Appendix A-3: Screen 2 Alternatives Report

Due to the large size of the Appendices, they have been removed from this document; however, they are available at CTA's office, upon request.

SCREEN 2 ALTERNATIVES REPORT

Western & Ashland Corridors Bus Rapid Transit (BRT) Project

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Section 1: Study Overview

1.1 Document Purpose

The Chicago Transit Authority (CTA), in coordination with the Chicago Department of Transportation (CDOT), the Chicago Department of Housing and Economic Development (DHED), and in cooperation with the Federal Transit Administration (FTA), is conducting the Western and Ashland Bus Rapid Transit (BRT) Project Alternatives Analysis (AA) for implementation of BRT service along the primarily north-south corridors of Western Avenue and Ashland Avenue. Implementation of BRT was identified as part of the Chicago Metropolitan Agency for Planning (CMAP) GO TO 2040 regional long range plan. This BRT initiative has evolved through a series of approaches most recently codified in the Mayor's *Chicago 2011 Transition Plan* (Initiative #46) and the Metropolitan Planning Council (MPC) 2011 report, *Integrating Livability Principles into Transit Planning: An Assessment of Bus Rapid Transit Opportunities in Chicago*.

Three separate technical memorandums have been developed to date in the development of this AA, and this *Screen 2 Alternatives Technical Memorandum* represents the fourth and final technical evaluation to identify a Preferred Alternative (PA) that can be carried forward for further analysis and study. Previous technical memorandums have included the following:

- *Western & Ashland Corridors Bus Rapid Transit Project Existing Conditions Technical Memorandum*
- *Western & Ashland Corridors Bus Rapid Transit Project Purpose and Need Technical Memorandum*
- *Western & Ashland Corridors Bus Rapid Transit Project Screen 1 Alternatives Technical Memorandum*

1.2 Background

As part of a broad reform agenda to enhance mobility in the City through the 21st Century, Chicago is experiencing a mobility revolution. BRT – in tandem with state of good repair investments, new infill rail stations, bike-sharing, bike lane network, car-sharing, transit information technology – is moving forward from concept to implementation. BRT will provide a new transit mode in Chicago targeting an untapped market niche that falls between local bus service and rail. Chicago's BRT initiative is guided by strong agency and political leadership (from local, state, and federal levels) and will have a profound impact on the connectivity of the city.

Currently, there are over one million boardings per day on the CTA bus system, but these numbers are down substantially from historic levels due to increased road congestion which has slowed bus speeds and created unpredictable service delivery. At the same time, the demand for passenger rail service is up for the first time in 50 years. BRT will introduce a new mode of transit in Chicago that is designed to remedy these trends by speeding bus travel times and increasing reliability on high-demand bus corridors.

The current BRT program includes four projects, including this Western and Ashland Avenue project. These four projects have been identified through a series of studies to have the highest potential to be fully developed and constructed in the near future. The Western and Ashland corridors, in particular, represent some of the highest existing ridership in the City. Additional information on the historic context under which the Western Avenue and Ashland Avenue corridors have evolved may be found in the *Existing Conditions Technical Memorandum*.

The BRT initiative has received strong civic support from community leaders who understand that transit investments are a vital component to make the city more livable and economically viable. Aside from the formal intergovernmental agreements, the current project also holds the support of the Mayor, CTA President, and CDOT Commissioner.

1.3 Project Study Area

Located approximately 2.5 and 1.5 miles, respectively, west of Chicago's Loop (the central business district), the Western and Ashland corridors (shown in **Figure 1-1**) each span approximately 21 miles in length.

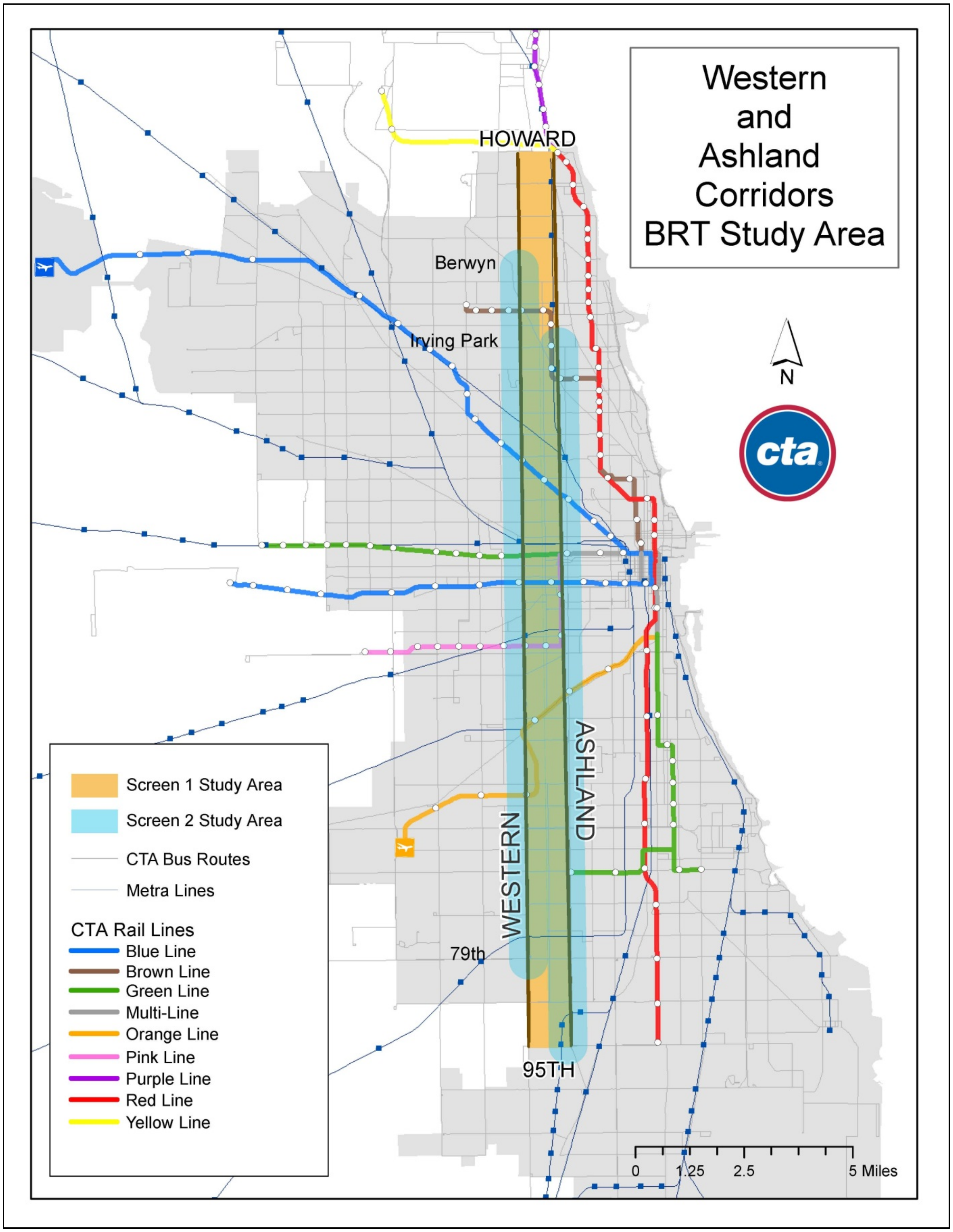
Initial corridor study limits for the purposes of the Screen 1 Evaluation extended along both the Western and Ashland Corridors from Howard Street in the north to 95th Street in the south. These study limits were further refined in the Screen 2 Evaluation to follow existing bus service operations and the previously implemented express bus service routes. Along Western Avenue, the Screen 2 alignment extends from Berwyn Avenue in the north to 79th Street in the south. Along Ashland Avenue, the Screen 2 alignment extends from Irving Park Road in the north to 95th Street in the south.

For study purposes of the Screen 1 Evaluation, the Ashland Avenue alignment transitions to Clark Street near Ridge Avenue and continues along Clark Street to the northern terminus. Based on 2010 U.S. Census tract data within a half-mile of each corridor, these corridors combined are home to approximately 463,545 people, 208,924 jobs, and intersect with 28 of the city's 50 Aldermanic Wards. The area also contains a high transit-dependent population. While over 50 percent of the land use in the study area is medium to high density residential (including single family, multi-family and mixed use), there are also 10 hospitals and several other health and social service facilities in the study area that make up over 40,000 jobs (approximately 21 percent of total jobs in the corridor). Most notably, the large Illinois Medical District is located in the central portion of the study area and serves as an economic cluster of health care jobs in the region.

1.3 Purpose and Need

The purpose of the Western and Ashland Corridors BRT Project is to expand connectivity to the region's existing transit system by providing a new high quality, high capacity and cost effective premium transit service that will address the transportation needs of population and employment outside of the Central Business District (CBD). In addition, this project supports local and regional land use, transportation and economic development initiatives by improving mobility, transit travel times and reliability, and passenger facilities in these heavily transit-reliant corridors. As part of this AA, potential BRT configurations for each corridor are being evaluated to determine the PA for implementing BRT on each of these corridors. As such, a PA will be identified for advancement for each corridor at the completion of this study. Further information on the Purpose and Need for this project may be found in the *Purpose and Need Statement Technical Memorandum.*

Figure 1-1: Study Area



1.4 Goals and Objectives

Project goals and objectives were developed based on the project purpose and need described above with consideration to the *Six Livability Principles* published by the federal government's Partnership for Sustainable Communities (EPA, HUD, and DOT). These goals and objectives have evolved through this study in coordination with public and stakeholder involvement and have been used through the study process to develop quantifiable measures of effectiveness that provide a comparative analysis of alternatives for this project. **Table 1-1** summarizes the five major project goals and supporting objectives. Further information on the development of these goals and objectives may be found in the *Purpose and Need Statement Technical Memorandum*.

Table 1-1: Project Goals and Objectives

Purpose		Goals and Objectives
1	**Strengthen the non-downtown north-south connections to CTA and Metra's rail network while improving regional, neighborhood and job connectivity.**	Expand Premium Transit Network
		Design Interconnectivity with CTA Rail, Metra and Bus Service
2	**Provide a high quality bus travel experience by improving reliability, travel speeds and ease of use.**	Improve Transit Speed
		Improve Reliability
		Improve Ride Quality
		Improve Waiting and Boarding Experience
		Improve Pedestrian Safety
		Integrate Local Bus Service with Premium Service
3	**Provide a BRT alternative in order to meet city/regional livability and economic goals.**	Improve Pedestrian Experience
		Enhance Integration with Adjacent Land Uses
		Enhance Streetscape
4	**Balance road design with current and future demand for increased capacity along the corridors.**	Enhance Street Identity
		Meets Design Standards
		Use Existing Curb-to-Curb Street Width
		Design For Future Expansion Flexibility
		Enforce Bus Lane Restrictions
		Minimize Impacts to On-Street Parking and Loading
		Improve Pedestrian Environment
5	**Develop premium transit solutions that effectively address physical and financial constraints.**	Minimize Implementation Time
		Minimize Capital Expense Costs
		Minimize Bus Operating Costs
		Minimize Roadway Maintenance Costs
		Use a Unique, Specialized, Dedicated Fleet
		Minimize Construction Duration & Intensity

Section 2: Alternatives Evaluation Process

This AA is based on the premise that BRT is the preferred premium transit mode. It focuses on a multi-tiered evaluation of BRT features within the existing Western and Ashland Avenue Corridors. BRT has been identified and evolved as the mode choice for this AA through an extensive series of previous CTA system planning efforts. The ultimate goal of the AA is to select a PA for each corridor that can move forward through the environmental documentation, design, construction, and operation phases.

The AA process involves a series of steps in the development of a PA for each corridor. As a first step in this process, an existing conditions evaluation was conducted for the corridors to define specific problems to be addressed and succinctly define the purpose and need for implementation of this project.

Based on the project purpose and need statements and an engineering and planning analysis, a series of alternatives were developed for evaluation. Alternatives include a No-Build Alternative, a Transportation Systems Management (TSM) Alternative, and a number of BRT Build Alternatives structured to provide a way to clearly highlight basic differences in options available. While the BRT Build Alternatives represent a number of options for implementing BRT along these corridors, the No-Build and TSM Alternatives provide a baseline for comparing BRT Build Alternatives against existing conditions and other minimal transit investments within the corridor. In all cases where improvements are identified, it is assumed that existing local bus service will continue as is, with BRT or express services added to the existing service to enhance mobility and transit options within the corridors.

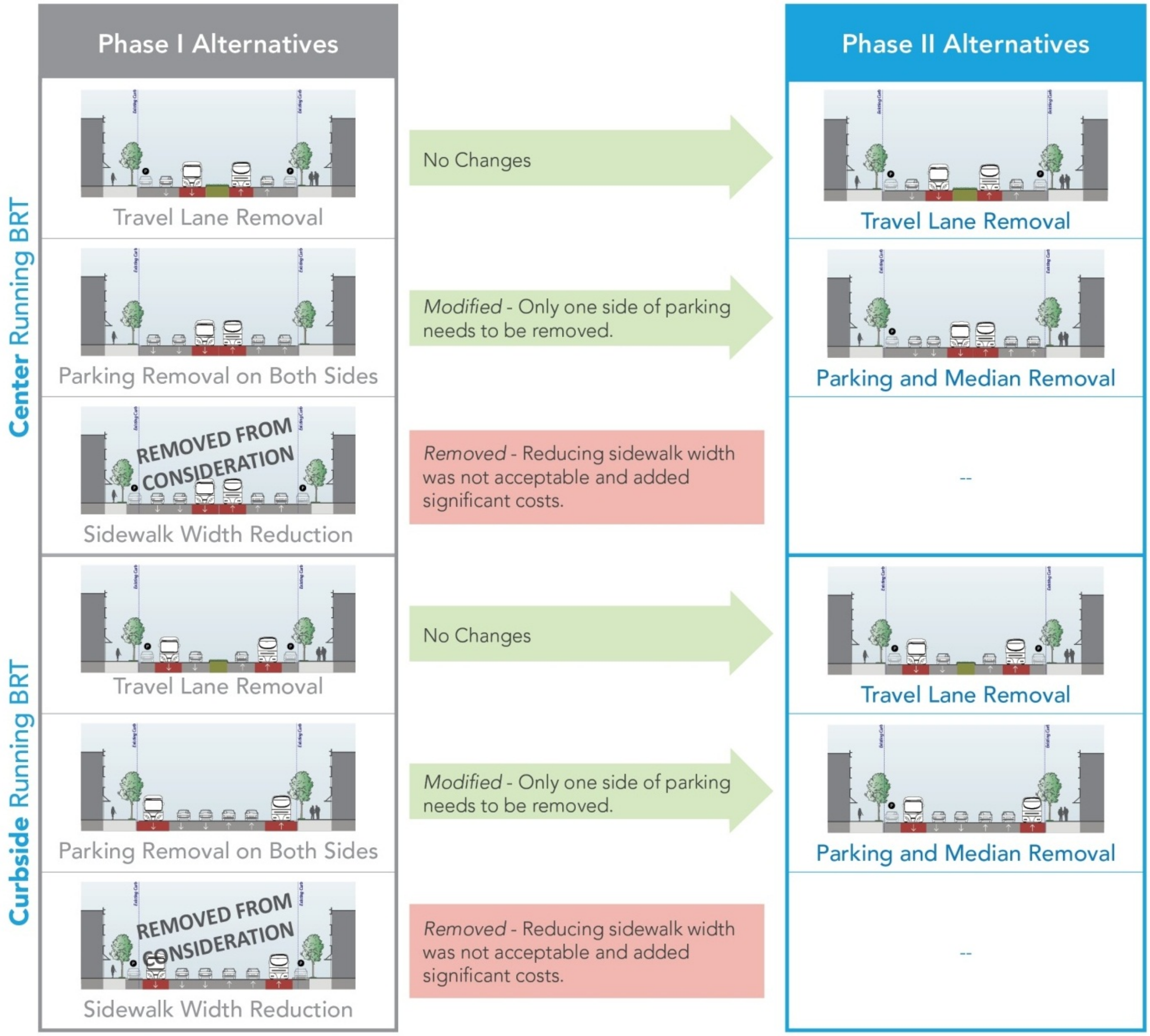
The following sections provide further detail on the Screen 1 and Screen 2 Evaluation process.

2.1 Screen 1 Evaluation

The purpose of the Screen 1 Evaluation was to review the range of alternatives suggested during project scoping and, through an evaluation of project goals and objectives as well as an engineering fatal flaws analysis, document feasible alternatives to move forward in the Screen 2 Evaluation. For the purposes of the Screen 1 Evaluation, a No-Build, Transportation Systems Management (TSM), and 16 Build Alternative concepts were developed. The BRT Build Alternatives considered a variety of lane configuration designs to accommodate BRT, including curbside bus lanes, center bus lanes, reversible center lane strategies, barrier separated bus lanes, as well as two-way adjacent bus lanes. Specific measures of effectiveness and evaluation criteria for the Screen 1 Evaluation were based on the project purpose and need and allowed for a comparison of these 16 Build Alternatives with regard to transit network and performance, rider experience, urban design and economic vitality, road design and traffic capacity, and relative costs of construction.

Based on this Screen 1 Evaluation, six configurations were recommended to move forward for further evaluation in the Screen 2 Analysis. These six alternatives then were presented to the public in June 2012 and to stakeholders in a design charette held in July 2012 (see **Section 5** of this report for further public involvement details). Based on input from the public and stakeholders during this design charette, the six alternatives were further narrowed down to four for the Screen 2 Evaluation, as shown in **Figure 2-1**. The two alternatives dropped from further consideration involved narrowing sidewalks; comments from the public indicated that there was a desire to retain existing sidewalk width.

Figure 2-1: BRT Alternatives Refinement, Screen 1 to Screen 2



As indicated in **Figure 2-1** above, the final Screen 1 BRT Build Alternatives identified for further evaluation in Screen 2 include the following potential BRT configurations:

- Center Running BRT – Travel Lane Removal
- Center Running BRT – Parking and Median Removal
- Curbside Running BRT – Travel Lane Removal
- Curbside Running BRT – Parking and Median Removal

Further information on the Screen 1 Evaluation may be found in the *Screen 1 Alternatives Technical Memorandum*.

2.2 Screen 2 Evaluation

The Screen 2 Evaluation includes a detailed definition of the remaining alternatives and an evaluation of multiple factors that will enable CTA to assess the differences between the alternatives and ultimately to select the PA to advance for further study and analysis.

2.2.1 Detailed Definition of Alternatives

Alternatives advancing to Screen 2 were defined more thoroughly to include station locations, station design considerations, and necessary infrastructure improvements. The Detailed Definition of Alternatives provides an understanding of the unique components and requirements of each BRT Build Alternative. The Detailed Definition of Alternatives are further described in **Section 3** of this report.

2.2.2 Screen 2 Evaluation of Alternatives

The evaluation factors for the Screen 2 Evaluation include a mix of qualitative and quantitative measures intended to estimate the performance of each alternative with respect to the project goals and objectives. Each alternative's performance was compared and assigned an evaluation rating for each evaluation factor, as follows:

○ Substantially Worse than No-Build Conditions

◔ Worse than No-Build Conditions

◑ Similar to No-Build Conditions

◕ Better than No-Build Conditions

● Substantially Better than No-Build Conditions

For the purpose of this evaluation, the alternatives were evaluated individually within each corridor. As such, evaluation results were developed for both Western and Ashland Avenues. The following eight factors were used to evaluate each alternative, and represent further refinements of the Screen 1 Evaluation based on the Detailed Definition of Alternatives. The detailed results of this evaluation are provided in **Section 4** of this report.

1. **Demographic:** These include an evaluation of existing and future year population, housing and employment as well as transit dependency and environmental justice characteristics, such as minority and low-income populations, youth and senior populations, limited English proficiency, and household vehicle accessibility. Any changes to these factors based on the Detailed Definition of Alternatives were identified to evaluate the relative merits of each alternative.

2. **Economic:** These criteria include an evaluation of tax increment financing districts within each corridor as well as a review of enterprise and empowerment communities within each corridor to identify the potential for alternatives to incentivize economic development in these areas and help to shape development over time.

3. **Environmental:** These criteria involve an evaluation of a range of natural, man-made, and community features along the corridors. The purpose of this evaluation was to identify and evaluate environmental resources, potential environmental constraints and factors that might alter decision-making between alternatives.

4. **Ridership:** Ridership factors include average daily boardings and potential mode split evaluations for each of the alternatives to identify comparative ridership increases that could result from different alternatives.

5. **Transit Operations:** Transit operational factors include comparisons of bus speed, travel times, and bus reliability for each of the alternatives. These factors help delineate the relative merits of each alternative with consideration to improving transit service in the corridors.

6. **Complete Streets:** Urban design and complete streets criteria include a comparative evaluation of alternatives against specific design factors that impact pedestrian access and safety as well as successful integration with adjacent land uses. These factors include an evaluation of pedestrian space, medians, and sidewalk buffers for each alternative.

7. **Traffic and Parking:** Traffic and parking criteria include an evaluation of relative automobile speeds resulting from each alternative, impacts to existing left-turn lanes in the corridors, and impacts to parking and loading zones for each alternative.

8. **Capital and Operating Costs:** Comparing capital and operational costs associated with each alternative provides a comparative evaluation of the ultimate cost effectiveness of each alternative versus a no-build or minimal improvements investment along the corridor.

The above evaluation factors were selected based on the project goals and objectives and a refinement of criteria from the Screen 1 Evaluation, and are shown in **Table 2-1**.

In addition to these eight evaluation factors, a qualitative evaluation of public support for each of the BRT Build Alternatives was developed based upon the series of public involvement and outreach efforts undertaken throughout this project. A final evaluation matrix was prepared to summarize the results of the Screen 2 Evaluation, including public involvement support. Based on this cumulative evaluation, a preliminary technical recommendation for the PA for each corridor was identified and is detailed in **Section 5** of this report.

Table 2-1: Project Goals, Objectives, and Evaluation Factors

Goals and Objectives		Evaluation Factors: Demographic	Economic	Environmental	Transit Operations	Ridership	Complete Streets	Traffic /Parking	Capital/Operating Costs
1	Expand Premium Transit Network	●			●	●			
	Interconnectivity with Other Transit Services				●	●			
2	Improve Transit Speed				●				
	Improve Reliability				●				
	Improve Ride Quality				●				
	Improve Waiting and Boarding Experience				●	●	●		
	Improve Pedestrian Safety						●		
	Integrate Local Bus Service with Premium Service				●	●			
3	Improve Pedestrian Experience						●		
	Enhance Integration with Adjacent Land Uses		●				●		
	Enhance Streetscape						●	●	
4	Enhance Street Identity						●	●	
	Meets Design Standards						●		
	Use Existing Curb-to-Curb Street Width						●		
	Design For Future Expansion Flexibility						●	●	
	Enforce Bus Lane Restrictions						●	●	
	Minimize Impacts to On-Street Parking and Loading						●	●	
	Improve Pedestrian Access	●					●		
5	Minimize Implementation Time			●				●	●
	Minimize Capital Expense Costs								●
	Minimize Bus Operating Costs								●
	Minimize Roadway Maintenance Costs								●
	Use a Unique, Specialized, Dedicated Fleet				●	●			
	Minimize Construction Duration & Intensity			●			●		●

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Section 3: Detailed Definition of Alternatives

This section provides details on the No-Build Alternative, a Transportation Systems Management (TSM) Alternative that would include the provision of express bus service within each corridor along with traffic signal priority treatments (TSP), and four refined BRT Build Alternatives. The four BRT Build Alternatives under consideration include a variety of design configurations to accommodate BRT either in center or curbside lanes. TSP, which will allow for the priority treatment of transit vehicles to cross signalized intersections within each corridor utilizing detection software in transit vehicles, is proposed for both the TSM Alternative and all BRT Build Alternatives.

Queue jumps, or bypass lanes, are also proposed for all BRT Build Alternatives at intersections in advance of a pinch point where a dedicated lane may not be accommodated and the bus would need to merge with mixed traffic. This allows the bus to avoid any long queues of automobiles, resulting in more efficient transit service. All BRT Build Alternatives are designed to utilize the existing right-of-way, which is typically 100 feet throughout the corridors. Design considerations for variations in this right-of-way width along each corridor are also discussed for each alternative described below.

For each of the BRT Build Alternatives and the TSM Alternative, it is assumed that the existing local bus service will continue to serve commuters within the corridor and the BRT or express bus service would be implemented in addition to these services to enhance mobility and transit options within the corridor. More detailed operational plans will be developed in future phases of study.

3.1 Route Extents and Station Locations

The TSM and all BRT Build Alternatives have identical route extents and station locations within each corridor, as shown on **Figure 3-1**. Following public review and CTA internal review during the Screen 1 Evaluation, it was determined appropriate to reduce the proposed route extents to mimic the existing #9 and #49 CTA bus routes. Ashland Avenue service would therefore be located between Irving Park Road in the north and 95th Street in the south, while Western Avenue service would be located between Berwyn Avenue in the north and 79th Street in the south.

Both corridors contain unique intersections and geometry which may require special design considerations. The portion of Ashland Avenue within the Illinois Medical District (IMD) is unique in that it has narrower sidewalks and three lanes of travel in each direction. Design considerations for this portion of the corridor are described for each of the BRT Build Alternatives. The Boulevard section of Western Avenue, located between West 33rd Street in the north and West 55th Street in the south, is another example where the roadway configuration is atypical. In this portion of the corridor, there are two parallel roadways—Western Avenue and Western Boulevard—which are separated by a 100-foot linear park. Design considerations for this portion of the corridor are described in detail for each of the BRT Build Alternatives.

Conceptual station locations for Western and Ashland Avenues were identified through the review of existing conditions data, including:

- Corridor demographics and land use
- CTA local bus stop locations as well as boarding and alighting activity
- CTA and Pace local bus stop transfer locations and CTA rail station transfer locations

Figure 3-1: BRT Stations and Route Extents

- Metra rail station transfer locations
- CTA local bus stop locations previously served by the discontinued #X49 and #X9 express routes
- Recommended BRT station locations included in *Integrating Livability Principles Into Transit Planning: An Assessment of Bus Rapid Transit Opportunities in Chicago* (Metropolitan Planning Council, 2011)
- Distance between conceptual BRT station locations (0.50 miles preferred)
- Aerial structure locations along the corridor

3.2 No-Build Alternative

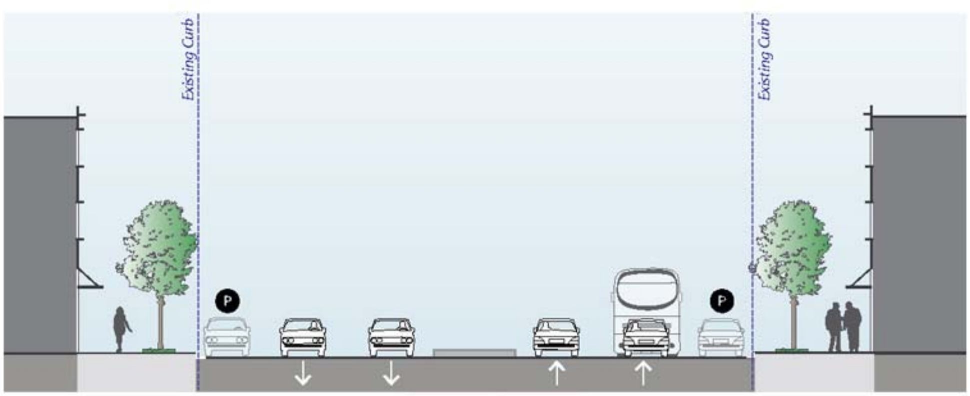
The No-Build Alternative, shown on **Figure 3-2**, consists of the existing street configuration and bus service that provides a baseline for comparing the TSM and BRT Build Alternatives against existing conditions within the corridor. The No-Build Alternative will automatically carry over for evaluation in the subsequent environmental analysis process.

The operational service characteristics of each existing primary north-south bus route along the Western and Ashland Avenue Corridors are detailed in **Table 3-1**. CTA bus routes #49, #49A, #49B, provide primary north-south service along Western Avenue, while CTA bus route #9 currently provide primary north-south service along the Ashland Avenue Corridor. During weekday peak periods, buses are scheduled along the Western and Ashland Avenue Corridors every four to 10 minutes.

Table 3-1: No-Build Alternative Transit Operational Service Characteristics

Route (Agency)	Northern/Southern Terminus	Hours	Headways
Ashland Avenue			
#9/N9 (CTA)	Belle Plaine/104th	Weekday	5-10 Minutes
		Weekend	10-12 Minutes
		Midnight-3a.m.	30 Minutes
Western Avenue			
#49/N49 (CTA)	Berwyn/79th	Weekday	4-9 Minutes
		Weekend	9-12 Minutes
		Midnight – 3 a.m.	30 Minutes
#49A (CTA)	79th/135th	Weekday	30 Minutes
#49B (CTA)	Howard/Leland	Weekday Peak	10 Minutes
		Weekend Peak	15 Minutes
		Weekday Off-Peak	13-21 Minutes
		Weekend Off-Peak	17-22 Minutes

Figure 3-2: No-Build Alternative



3.3 TSM Alternative

The TSM Alternative consists of the existing street configuration and retains local bus services with the addition of express bus service in mixed traffic and TSP upgrades along Western and Ashland Avenues. These TSP upgrades are currently under study by CTA and CDOT. For analysis purposes, the headway for the express bus service is assumed to be 5 minutes.

The TSM Alternative provides a baseline for comparing BRT Build Alternatives (described below) against minimal transit investments within the corridor.

3.4 Center Running BRT, Travel Lane Removal

This BRT Build Alternative, shown on **Figure 3-3**, includes one center running bus lane in each direction, one automobile travel lane in each direction, parking on both sides, and a median. One automobile travel lane is removed in each direction to accommodate bus lanes, while parking is retained on both sides of the street. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained and new landscaped medians will also be provided where there are none existing. Left turn lanes and left turn pockets at intersections are removed.[1]

This BRT Alternative also assumes TSP upgrades along Western and Ashland Avenues, which are currently being studied by CTA and CDOT. For analysis purposes, the headway for the BRT service in this alternative is assumed to be 5 minutes. The ultimate service headways of the BRT service will be between 5 and 15 minutes and will meet the FTA definition of BRT. Local bus services are assumed to continue as is under this alternative, with BRT service added to increase mobility and enhance transit options within the corridors.

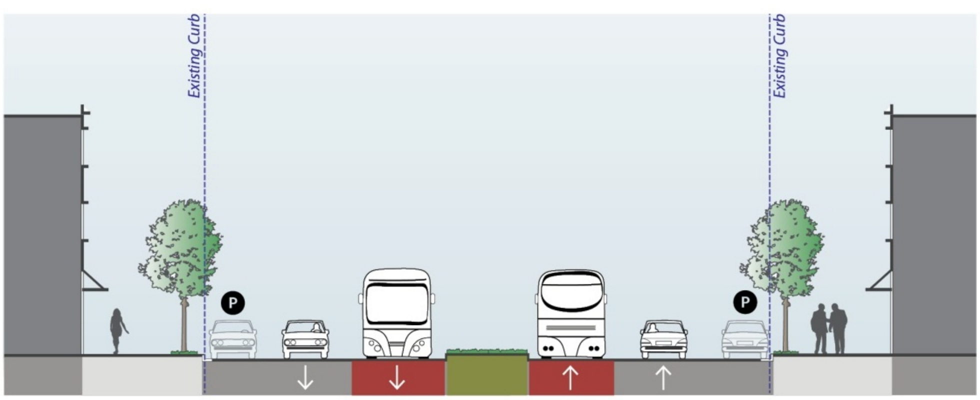
3.4.1 Western Avenue Design Considerations

- Western Avenue has an existing 70-foot curb to curb width at both mid-block and intersection locations. At station intersections, two four to six foot curb extensions are provided on the far side corners of the intersection.

- The "Boulevard" portion of Western Avenue between 31st Street and 55th Street is an area under IDOT jurisdiction where special design considerations must be made. Curb to curb width in this boulevard section is 55 feet, a reduction of 15 feet compared with other portions of the corridor. The parallel roadway—Western Boulevard—is separated from Western Avenue by a 100-foot wide linear park and provides additional location for bus lanes and automobile travel. The preferred configuration would include a southbound bus-only lane on Western Boulevard and a northbound bus-only lane on Western Avenue. Stations would be on the right side of the bus in the planted boulevard median. This configuration would require BRT vehicles to have left and right sided doors.

[1] Left turns may be retained in special circumstances. These locations will be determined in future phases of the project and special design considerations where left turns are retained will be evaluated at that time.

Figure 3-3: Build Alternative 1- Center Running BRT, Travel Lane Removal



3.4.2 Ashland Avenue Design Considerations

- At most station intersections along Ashland Avenue the existing curb to curb width widens from 70 feet to 80 feet. This additional roadway width is used to accommodate two nine foot curb extensions provided on the far side corners of the intersection.

- The roadway configuration changes on Ashland Avenue within the Illinois Medical District, between Jackson Boulevard and Roosevelt Road. The curb to curb width is 80 feet with three lanes in each direction and no parking. For this portion one automobile travel lane is removed in each direction to accommodate bus lanes, while retaining two automobile travel lanes in each direction.

3.5 Center Running BRT, Parking and Median Removal

This BRT Alternative, shown on **Figure 3-4**, includes one center running bus lane in each direction, two automobile travel lanes in each direction, and parking on one side. One side of parking is removed as well as all medians. Sidewalk widths remain the same in most instances. However, at station intersections on Western Boulevard sidewalk width is reduced (see description below). Left turn lanes and left turn pockets at intersections are removed.[2]

This BRT Alternative also assumes TSP upgrades along Western and Ashland Avenues, which are currently being studied by CTA and CDOT. For analysis purposes, the headway for the BRT service in this alternative is assumed to be 5 minutes. The ultimate BRT service headways will be between 5 and 15 minutes and will meet the FTA definition of BRT. Local bus services are assumed to continue as is under this alternative, with BRT service added to increase mobility and enhance transit options within the corridors.

3.5.1 Western Avenue Design Considerations

- Western Avenue has an existing 70-foot curb to curb width at both mid-block and intersection locations. However, the design of station intersections requires an 80 foot curb to curb width. This relates to a 5' reduction of sidewalk width in order to accommodate station platforms.

- The "Boulevard" portion of Western Avenue between 31st Street and 55th Street is an area where special design considerations must be made. Curb to curb width is 55 feet, a reduction of 15 feet compared with other portions of the corridor. The parallel roadway—Western Boulevard—is separated from Western Avenue by a 100-foot wide linear park and provides additional location for bus lanes and automobile travel. The preferred configuration would include a southbound bus-only lane on Western Boulevard and a northbound bus-only lane on Western Avenue. Stations would be on the right side of the bus in the planted boulevard median. This configuration would require buses to have left and right sided doors.

3.5.2 Ashland Avenue Design Considerations

- At most station intersections along Ashland Avenue the existing curb to curb width widens from 70 feet to 80 feet. This additional roadway width is used to accommodate center station platforms.

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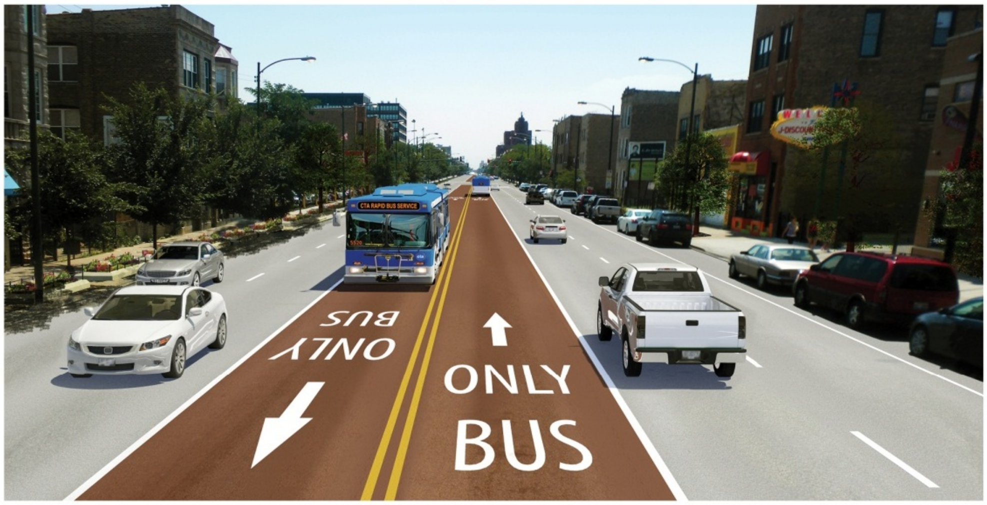
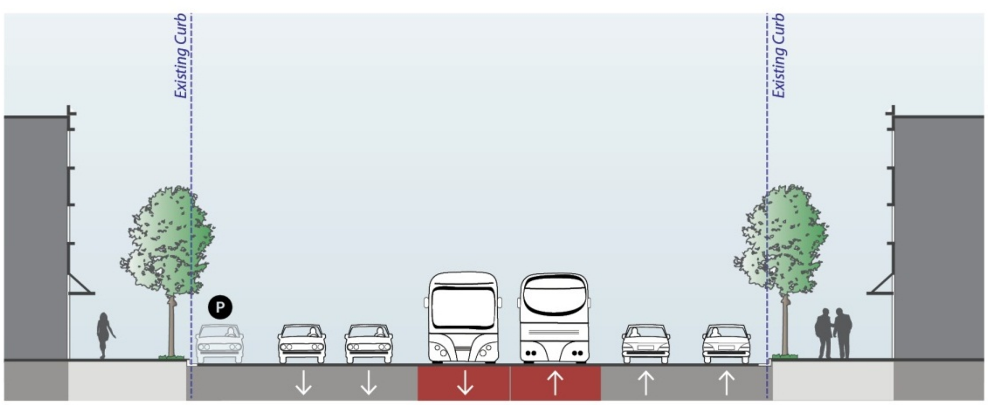
[2] Left turns may be retained in special circumstances. These locations will be determined in future phases of the project and special design considerations where left turns are retained will be evaluated at that time.

Figure 3-4: Build Alternative 2: Center Running BRT, Parking and Median Removal





- The roadway configuration changes on Ashland Avenue within the Illinois Medical District, between Jackson Boulevard and Roosevelt Road. The curb to curb width is 80 feet with three lanes in each direction and no parking. For this portion one automobile travel lane is removed in each direction to accommodate bus lanes, while retaining two automobile travel lanes in each direction. Medians are retained in this portion of the corridor.

3.6 Curbside Running BRT, Travel Lane Removal

This BRT Alternative, shown on **Figure 3-5**, includes one curbside running bus lane in each direction, one automobile travel lane in each direction, parking on both sides, and a median. One automobile travel lane is removed in each direction to accommodate bus lanes, while parking is retained on both sides of the street. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained or reconstructed. All left turn pockets and approximately 25 percent of left turn lanes will be retained. The potential for queue jumps at specific intersections in advance of pinch points where dedicated lanes cannot be accommodated would be considered under this option to allow curbside running buses to bypass automobile traffic with transit signal priority treatments.

This BRT Alternative also assumes TSP upgrades along Western and Ashland Avenues, which are currently being studied by CTA and CDOT. For analysis purposes, the headway for the BRT service in this alternative is assumed to be 5 minutes. The ultimate BRT service headways will be between 5 and 15 minutes and will meet the FTA definition of BRT. Local bus services are assumed to continue as is under this alternative, with BRT service added to increase mobility and enhance transit options within the corridors.

3.6.1 Western Avenue Design Considerations

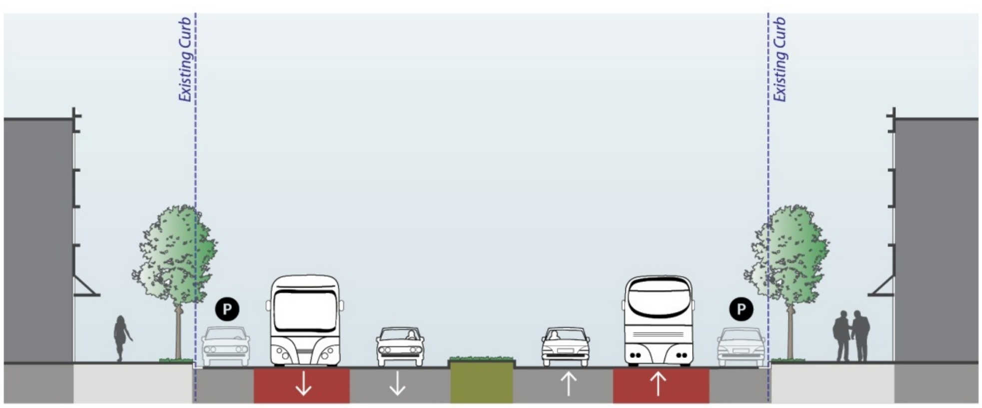
- At the approach to station intersections, four seven-foot curb width extensions are provided on all corners of the intersection. On the side where the BRT station is located, the amount of the curb extension provided will be longer to provide additional space for station amenities.

- The "Boulevard" portion of Western Avenue between 31st Street and 55th Street is an area where special design considerations must be made. Curb to curb width is 55 feet, a reduction of 15 feet compared with other portions of the corridor. The parallel roadway—Western Boulevard—is separated from Western Avenue by a 100-foot wide linear park and provides additional location for bus lanes and automobile travel. The preferred configuration would include curbside bus-only lanes on Western Avenue.

3.6.2 Ashland Avenue Design Considerations

- At most station intersections along Ashland Avenue the existing curb to curb width widens from 70 feet to 80 feet. In these locations the curb will be extended to make a consistent 70 curb to curb width. Additionally, four seven-foot curb extensions are provided on all corners of the intersection. On the side where the BRT station is located, the curb extension will extend to provide additional space for station amenities.

Figure 3-5: Build Alternative 3 – Curbside Running BRT, Travel Lane Removal



- The roadway configuration changes on Ashland Avenue within the Illinois Medical District, between Jackson Boulevard and Roosevelt Road. The curb to curb width is 80 feet with three lanes in each direction and no parking. For this portion one automobile travel lane is removed in each direction to accommodate bus lanes, while retaining two automobile travel lanes in each direction. Medians are retained in this portion of the corridor, as they are in the rest of the corridor.

3.7 Curbside Running BRT, Parking and Median Removal

This BRT Alternative, shown on **Figure 3-6**, includes one curbside running bus lane in each direction, two automobile travel lanes in each direction, and parking on one side. One side of parking is removed as well as all medians. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained or reconstructed. All left turn pockets and approximately 25 percent of left turn lanes will be retained. The potential for queue jumps at specific intersections in advance of pinch points where dedicated lanes cannot be accommodated would be considered under this option to allow curbside running buses to bypass automobile traffic with transit signal priority treatments.

This BRT Alternative also assumes TSP upgrades along Western and Ashland Avenues, which are currently being studied by CTA and CDOT. For analysis purposes, the headway for the BRT service under this alternative is assumed to be 5 minutes. The ultimate BRT service headways will be between 5 and 15 minutes and will meet the FTA definition of BRT. Local bus services are assumed to continue as is under this alternative, with BRT service added to increase mobility and enhance transit options within the corridors.

3.7.1 Western Avenue Design Considerations

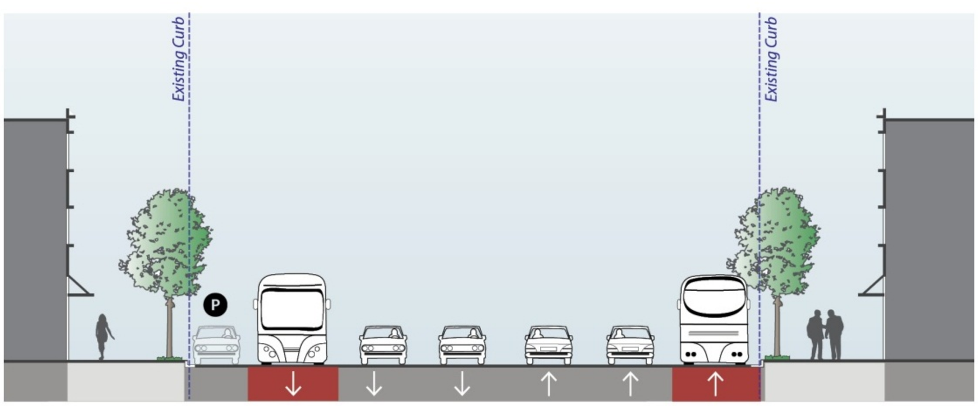
- The "Boulevard" portion of Western Avenue between 31st Street and 55th Street is an area where special design considerations must be made. Curb to curb width is 55 feet, a reduction of 15 feet compared with other portions of the corridor. The parallel roadway—Western Boulevard—is separated from Western Avenue by a 100-foot wide linear park and provides additional location for bus lanes and automobile travel. The preferred configuration would include curbside bus-only lanes on Western Avenue.

3.7.2 Ashland Avenue Design Considerations

- At most station intersections along Ashland Avenue the existing curb to curb width widens from 70 feet to 80 feet. In these locations the curb will be extended to make a consistent 70 curb to curb width.

- The roadway configuration changes on Ashland Avenue within the Illinois Medical District, between Jackson Boulevard and Roosevelt Road. The curb to curb width is 80 feet with three lanes in each direction and no parking. For this portion one automobile travel lane is removed in each direction to accommodate bus lanes, while retaining two automobile travel lanes in each direction. Medians are retained in this portion of the corridor.

Figure 3-6: Build Alternative 4 – Curbside Running BRT, Parking and Median Removal



3.8 Summary of BRT Build Alternatives

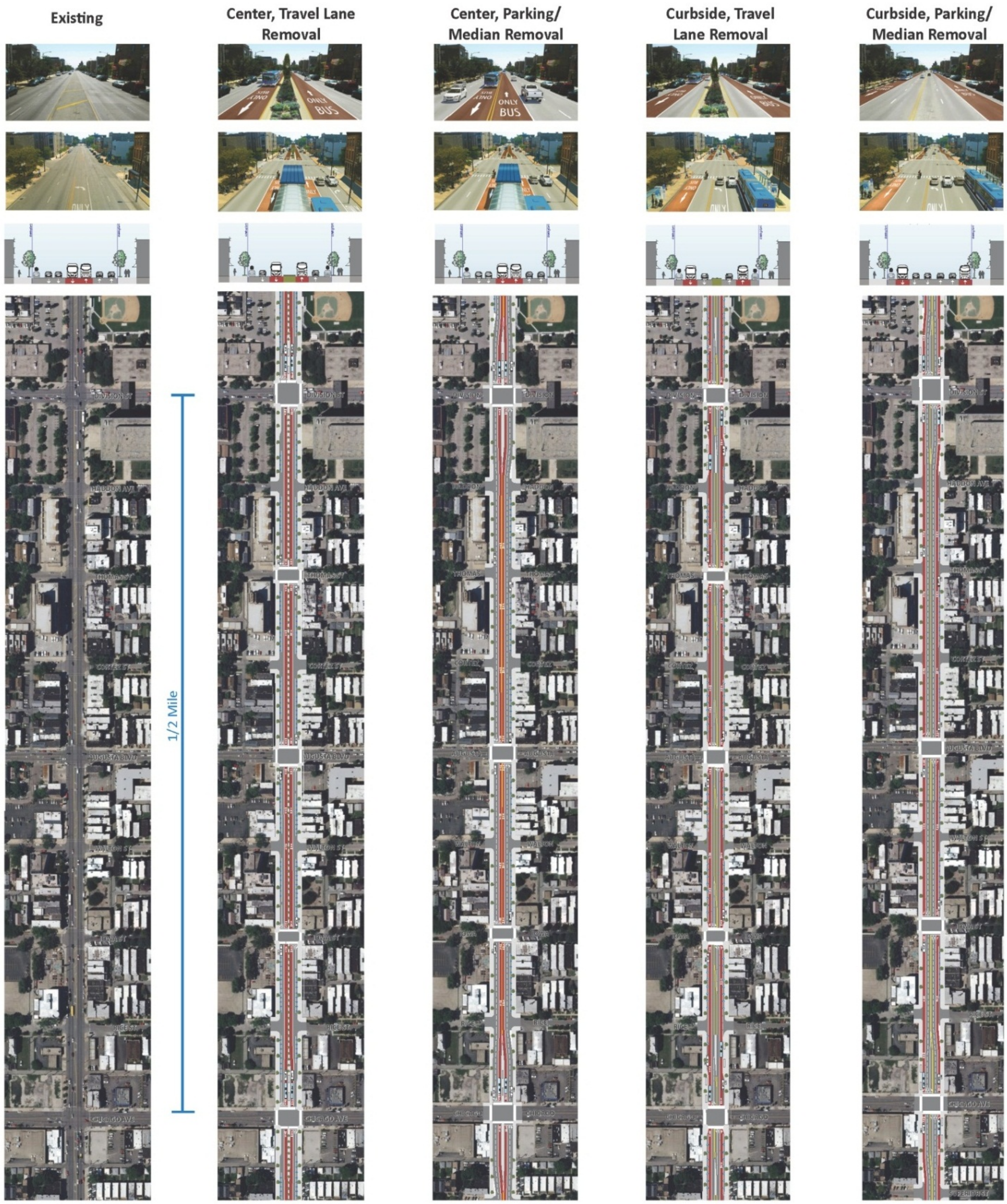
A summary of the BRT Build Alternatives characteristics is shown in **Table 3-2**. Plan views for the BRT Build Alternatives are shown on **Figure 3-8**.

Table 3-2: BRT Build Alternative Characteristics Summary

Center Running BRT, Travel Lane Removal	Curbside Running BRT, Travel Lane Removal
 *Typical layout between stations*  *Typical layout at station*	 *Typical layout between stations*  *Typical layout at station*
• **One** center running bus lane in each direction • **One** auto travel lane in each direction • Parking retained on **both sides** • Left turns **removed** • **Wider** sidewalks provided at station intersections • **Landscaped medians** provided	• **One** curbside running bus lane in each direction • **One** auto travel lane in each direction • Parking retained on **both sides** • Left turns **retained** • **Wider** sidewalks provided at station intersections • **Landscaped medians** provided

Center Running BRT, Parking and Median Removal	Curbside Running BRT, Parking and Median Removal
 *Typical layout between stations*  *Typical layout at station*	 *Typical layout between stations*  *Typical layout at station*
• **One** center running bus lane in each direction • **Two** auto travel lanes in each direction • Parking retained on **one side** • Left turns **removed**	• **One** curbside running bus lane in each direction • **Two** auto travel lanes in each direction • Parking retained on **one side** • Left turns **retained**

Figure 3-8: BRT Build Alternative Plan View Configurations



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Section 4: Screen 2 Evaluation of Alternatives

The Screen 2 Evaluation described in this section consists of eight main criteria based on the goals and objectives of this project. They include:

- Demographic
- Economic
- Environmental
- Ridership
- Transit Operations
- Complete Streets
- Traffic and Parking
- Capital and Operating Cost

The results of this Screen 2 Evaluation are further described in the sub-sections that follow; each contains an evaluation section to summarize the findings for each corridor. Results of this Screen 2 Evaluation were also presented to the public in October 2012 to further assess public support for the alternatives, and are discussed in this section. Subsequent to public meetings, this data was also slightly refined through additional analysis of conceptual engineering criteria. Although this refined data reflects slight variations in numbers, overall rankings for each of the criteria presented in this report remained the same. Final results are provided in the appendices referenced throughout this report.

All evaluations and cost estimates for the alternatives were based on data available in October 2012 and are subject to continued refinement. All cost estimates included in this analysis represent year 2012 dollars. The preliminary evaluation estimates were based on corridor-level conceptual designs. The next phase of this project will include detailed preliminary designs for the entire corridor and will further refine the evaluation estimates.

4.1 Demographic Evaluation

For the purposes of this evaluation, demographic estimates represent total populations within a half-mile buffer around each corridor. Demographic estimates were developed based on data from three primary sources: 2010 Decennial Census (Summary File 1), 2010 American Community Survey (five-year summary), and CMAP 2009 Travel Demand Model Traffic analysis zone (TAZ) data. Additional supporting documentation for this data may be found in **Appendix A**.

Nine demographic factors were identified and evaluated to determine each alternative's performance, and represent three main areas: (1) population and housing (2) employment, and (3) transit dependency and environmental justice factors. Sources for the data used in this analysis include the following:

- Population 2010 (2010 U.S. Census)
- Households 2010 (2010 U.S. Census)
- Employment 2010 (CMAP 2009)
- Youth (2010 Decennial Census)
- Senior (2010 Decennial Census)
- Minority (2010 Decennial Census)
- Limited English Proficiency (2010 American Community Survey)

- Low-Income by Family (2010 American Community Survey)
- No or One Vehicle Available by Household (2010 American Community Survey)

4.1.1 Demographic Evaluation Results

Demographic data for each of the corridors and subsequent evaluation rankings are provided in **Table 4-1** and **Table 4-2**. Because there are no changes to existing demographic data as a result of this project, both corridors have equivalent rankings for all alternatives.

Table 4-1: Western Avenue Demographic Evaluation

Demographic Factor (Densities expressed per acre)	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
2010 Population	231,494	No Change	No Change	No Change	No Change	No Change
2010 Population Density	21.8	No Change	No Change	No Change	No Change	No Change
2010 Households	87,107	No Change	No Change	No Change	No Change	No Change
2010 Household Density	8.2	No Change	No Change	No Change	No Change	No Change
2010 Employment	75,127	No Change	No Change	No Change	No Change	No Change
2010 Employment Density	5.4	No Change	No Change	No Change	No Change	No Change
2010 Minority	111,827	No Change	No Change	No Change	No Change	No Change
2010 Minority Density	10.5	No Change	No Change	No Change	No Change	No Change
2010 Low-Income Families	9,215	No Change	No Change	No Change	No Change	No Change
2010 Low-Income Families Density	0.9	No Change	No Change	No Change	No Change	No Change
2010 Youth	22,809	No Change	No Change	No Change	No Change	No Change
2010 Youth Density	2.1	No Change	No Change	No Change	No Change	No Change
2010 Senior	25,747	No Change	No Change	No Change	No Change	No Change
2010 Senior Density	2.4	No Change	No Change	No Change	No Change	No Change
2010Limited English Proficiency	10,816	No Change	No Change	No Change	No Change	No Change
2010Limited English Proficiency Density	1.0	No Change	No Change	No Change	No Change	No Change
2010 No or One Vehicle Available	58,244	No Change	No Change	No Change	No Change	No Change
2010 No or One Vehicle Available Density	5.5	No Change	No Change	No Change	No Change	No Change

Table 4-2: Ashland Avenue Demographic Evaluation

Demographic Factor (Densities expressed per acre)	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
2010 Population	232,051	No Change	No Change	No Change	No Change	No Change
2010 Population Density	21.5	No Change	No Change	No Change	No Change	No Change
2010 Households	90,781	No Change	No Change	No Change	No Change	No Change
2010 Household Density	8.4	No Change	No Change	No Change	No Change	No Change
2010 Employment	133,797	No Change	No Change	No Change	No Change	No Change
2010 Employment Density	8.0	No Change	No Change	No Change	No Change	No Change
2010 Minority	127,550	No Change	No Change	No Change	No Change	No Change
2010 Minority Density	11.8	No Change	No Change	No Change	No Change	No Change
2010 Low-Income Families	9,031	No Change	No Change	No Change	No Change	No Change
2010 Low-Income Families Density	0.8	No Change	No Change	No Change	No Change	No Change
2010 Youth	21,518	No Change	No Change	No Change	No Change	No Change
2010 Youth Density	2.0	No Change	No Change	No Change	No Change	No Change
2010 Senior	28,031	No Change	No Change	No Change	No Change	No Change
2010 Senior Density	2.6	No Change	No Change	No Change	No Change	No Change
2010Limited English Proficiency	6,894	No Change	No Change	No Change	No Change	No Change
2010Limited English Proficiency Density	0.6	No Change	No Change	No Change	No Change	No Change
2010 No or One Vehicle Available	64,089	No Change	No Change	No Change	No Change	No Change
2010 No or One Vehicle Available Density	5.9	No Change	No Change	No Change	No Change	No Change

The analysis reveals there are no differences in the various alternatives for demographic factors. Since each alternative has the same station locations, alignment, and study area buffers, the totals for the demographic factors are identical to the No-Build Alternative whether express bus (TSM), center running or curbside running BRT Build Alternatives are implemented. As such, the demographic summation factor rating is **Similar to No-Build Conditions** for the TSM and all BRT Build Alternatives.

4.1.2 Demographic Evaluation Summary

The summation of all demographic factors for each alternative compared to the No-Build option is shown **Table 4-3**. In each alternative and for both corridors, the resulting evaluation is **Similar to No-Build Conditions** since changes in demographics are not anticipated to result.

Table 4-3: Demographic Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	◑	◑	◑	◑
Ashland Avenue	◑	◑	◑	◑	◑

4.2 Economic Evaluation

Three economic factors were estimated and evaluated to determine each alternative's performance, including the following:

- **Tax Increment Financing Districts** – Number of Tax Increment Financing (TIF) Districts and estimated available TIF funding along the corridor
- **Empowerment Zones** – Number of Empowerment Zones along the corridor
- **Enterprise Communities** – Number of Enterprise Communities along the corridor

Backup documentation identifying these economic areas is provided in **Appendix A**. These factors each act as overlay districts within the corridors and provide incentives and funding sources for economic development and redevelopment. Designated Empowerment Zones and Enterprise Communities are distressed urban communities that are eligible for a combination of Federal grants, tax credits for businesses, bonding authority and other benefits. Although this program was recently discontinued at the federal level, these areas represent key opportunities for economic development and are associated with a number of existing business incentives through the city and state.

4.2.1 Economic Evaluation Results

Economic data for each of the corridors and subsequent evaluation rankings are provided in **Table 4-4** and **Table 4-5.** For the purposes of this analysis, tax increment financing would not be available for the No-Build Alternative since funding within these districts are contingent upon new projects.

Table 4-4: Western Avenue Economic Factors

Economic Factor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Number of TIF Districts	14	Same	Same	Same	Same	Same
Number of Empowerment Zones	2	Same	Same	Same	Same	Same
Number of Enterprise Communities	1	Same	Same	Same	Same	Same

Table 4-5: Ashland Avenue Economic Factors

Economic Factor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Number of TIF Districts	13	Same	Same	Same	Same	Same
Number of Empowerment Zones	3	Same	Same	Same	Same	Same
Number of Enterprise Communities	2	Same	Same	Same	Same	Same

The analysis reveals that TSM Alternative would result in similar economic development conditions to the No-Build Conditions while each of BRT Build Alternatives would result in greater economic development potential given the potential to leverage project funding through tax increment financing mechanisms and the broader potential impact of economic development within Enterprise Zones and Enterprise Communities where businesses are able to take advantage of tax incentives, grants and other incentives. The TSM Alternative has less potential to utilize TIF and other economic development zone dollars compared to the BRT Build Alternatives because the TSM Alternative is not as transformative. The No-Build Alternative is assumed to have a negligible impact on economic development in the area given its inability to leverage additional economic incentives in either corridor. Both corridors would be able to leverage these economic incentives and therefore receive equivalent rankings for these criteria. It should be noted that slightly more tax increment financing districts funding may be available along Western Avenue and therefore potential for leveraging these funding opportunities for improvement projects may be slightly higher for this corridor.

TSM

The TSM Alternative economic summation factor rating would be **Similar to No-Build Conditions** and is not expected to result in additional funding the project in the designated TIF districts within both the Western and Ashland corridors. Empowerment Zones and Enterprise Zones within each corridor are expected to have minimal benefit from investments in transit within the corridor and provide minimal opportunities for economic development through grants, business tax credits and other benefits.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative economic summation factor rating would be **Better than No-Build Conditions** and could result in additional funding for the project in the designated TIF districts within both the Western and Ashland corridors. Empowerment Zones and Enterprise Zones within each corridor are expected to benefit from investments in premium transit within the corridor and provide additional opportunities for economic development through grants, business tax credits and other benefits.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative demographic summation factor rating would be **Better than No-Build Conditions** and could result in additional funding for the project in the designated TIF districts within both the Western and Ashland corridors. Empowerment Zones and Enterprise Zones within each corridor are expected to benefit from investments in premium transit within the corridor and provide additional opportunities for economic development through grants, business tax credits and other benefits.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative demographic summation factor rating would be **Better than No-Build Conditions** and could result in additional funding for the project in the designated TIF districts within both the Western and Ashland corridors. Empowerment Zones and Enterprise Zones within each corridor are expected to benefit from investments in premium transit within the corridor and provide additional opportunities for economic development through grants, business tax credits and other benefits.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative demographic ridership summation factor rating would be **Better than No-Build Conditions** and could result in additional funding for the project in the designated TIF districts within both the Western and Ashland corridors. Empowerment Zones and Enterprise Zones within each corridor are expected to benefit from investments in premium transit within the corridor and provide additional opportunities for economic development through grants, business tax credits and other benefits.

4.2.2 Economic Evaluation Summation

The summation of all economic factors for each alternative is shown **Table 4-6**.

Table 4-6: Economic Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	◕	◕	◕	◕
Ashland Avenue	◑	◕	◕	◕	◕

4.3 Environmental Evaluation

For this evaluation, the potential for environmental impacts associated with each corridor were analyzed and evaluated for each alternative. The primary basis for this evaluation was the data collected for the *Environmental Overview* (CDM Smith, 2012), a preliminary environmental screen conducted during Screen 1 to identify environmental resources, potential environmental constraints and factors that would alter decision making between alternatives. Data sources used in the *Environmental Overview* included the U.S. Environmental Protection Agency, Federal Emergency Management Agency's Flood Insurance Rate Maps, U.S. Fish and Wildlife Service, U.S. Census Bureau, National Register of Historic Places and City of Chicago. Detailed exhibits of the environmental resources within a quarter mile of the project corridors and all the area in between are included in **Appendix B.** The Screen 1 Evaluation did not identify any factors that affected alternatives differently in a way significant enough to alter a decision.

This Screen 2 evaluation includes the following factors:

- **Wetlands** – Number of and potential for impacts to National Wetland Inventory wetland and surface water resources within 500 feet
- **Historic Districts** - Number of and potential for impacts to National Register and Chicago historic districts within 500 feet
- **Historical Buildings** - Number of and potential for impacts to National Register historic properties and Chicago historic landmarks within 500 feet
- **Parklands and Recreational Areas** - Number of and potential for impacts to parkland and recreational areas within 500 feet
- **Open Space** - Number of and potential for impacts to parkland and recreational areas within 500 feet
- **Critical Habitat and Threatened and Endangered Species** - Potential for impact to ecologically-sensitive natural areas and threatened and endangered species
- **Hazardous Materials** - Potential to encounter hazardous materials
- **Archeological Resources** - Potential for impacts to archaeological resources
- **Air Quality** – Potential for air quality impacts
- **Noise and Vibration** – Potential for increase in noise and vibration levels
- **Visual Impacts** – Potential for impacts to the visual character and quality of the surrounding area
- **Environmental Justice** - Potential for disproportionate negative impacts to minority and low-income populations

For the Screen 2 Evaluation, wetlands, historic, parklands and recreational areas, as well as open space resources within 500 feet of each corridor were identified and then the potential for impacts to these resources was assessed. For all other areas, a qualitative review of the potential for impacts was conducted. **Appendix B** also includes a list of the specific historic, parkland, recreational and open space resources within 500 feet of each corridor.

4.3.1 Environmental Evaluation Results

Table 4-7 and **Table 4-8** summarize the evaluation results for each factor for Western and Ashland Avenues, respectively. Environmental factors listed in these tables also identify the number of resources identified within each corridor when applicable. A "None", "Low", "Moderate", or "High" designation is provided for each of these environmental factors to denote the potential for impact – it should be noted that these designations do not indicate an overall positive or negative impact resulting from alternatives. More qualitative and quantitative analysis of environmental factors will be conducted in future phases of study to determine positive or negative impacts.

In all cases, a designation of "None" indicates no potential for impacts and relates to the No-Build and TSM Alternatives given that there would be no construction activity under these alternatives. For those environmental factors where the BRT Build Alternatives are not anticipated to have an impact, until such time as full environmental analysis has been completed, these factors have been designated as "Low". "Low to Moderate" designations relate to environmental factors that may result in impacts given the nature of existing environmental features in the corridors and the potential for impact under the proposed BRT Build Alternatives. "High" designations relate to areas where the potential for impacts and mitigation efforts are anticipated to be great; however, the initial environmental analysis indicates that none of these environmental factors are expected to generate severe impacts.

In general, because all alternatives share the same alignment, there are only slight differences in designations between alternatives for each corridor. There would be no potential for impacts for the No-Build Alternative, with the exception of existing air quality, noise, and vibration impacts associated with operating the existing Western and Ashland Avenue local bus routes.

TSM

Because the TSM Alternative would generally include only operational changes that improve service, no impacts are anticipated for most environmental factors under this alternative. There is a low to moderate potential for an increase in micro-scale pollution and noise due to the additional bus service; however, because ridership would be expected to increase under this alternative, at least some of the air quality impacts could be offset by a reduction in vehicle traffic from riders shifting from vehicles to the bus. As such, the TSM Alternative environmental summation factor rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

Because there are low impacts anticipated to result from the Center, Travel Lane Removal Alternative, the environmental summation factor rating would be **Similar to No-Build Conditions.** Environmental factors that could be potentially impacted by the Center, Travel Lane Removal Alternative include historical (Western and Ashland Avenues) and open space (Western Avenue only).

- **Wetlands:** Wetlands are adjacent to and within 500 feet of both Western and Ashland Avenues. All wetland resources are located within existing parks or protected open spaces and would likely not be directly affected by construction of the proposed project within existing right-of-way in this urban setting; therefore, no adverse impacts to wetlands resources would be expected to occur from the proposed project.

- **Historic Resources:** The Center, Travel Lane Removal Alternative would include bus service and features that would be adjacent to historic properties and run through historic districts on both Western and Ashland Avenues. In addition, Western Boulevard, which runs parallel to Western Avenue between 31st Street and 55th Street/Garfield Boulevard, is part of Chicago's Park Boulevard System. The City of Chicago has nominated the Park Boulevard System to the National Register. Therefore, there may be a potential for impacts to historic resources. However, potential impacts would be mitigated by designing BRT stations to minimize visual impacts to historic structures and/or to incorporating features to ensure compatibility with and sensitivity to historic districts.

- **Parklands and Recreation Areas:** Parklands and recreational areas are adjacent to and within 500 feet of both Western and Ashland Avenues. No right-of-way would be required from parks for this project and there would be no impairment of the current activities. As such, parklands would not be adversely impacted by the implementation of the Center, Travel Lane Removal Alternative or by the construction of stations along the existing roadway route.

Table 4-7: Western Avenue Environmental Factors

Environmental Factor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Wetlands (3)	None	None	Low	Low	Low	Low
Chicago Historic Districts (3)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
National Register Historic Districts (4)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Chicago Historic Landmarks (6)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
National Register Historic Properties (0)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Parklands (14)	None	None	Low	Low	Low	Low
Open Spaces (1*)	None	None	Low	Low	Low	Low
Critical Habitat/Threatened and Endangered Species	None	None	Low	Low	Low	Low
Hazardous Materials	None	None	Low	Low	Low	Low
Archaeological	None	None	Low	Low	Low	Low
Air Quality	Low	Low to Moderate	Low	Low to Moderate	Low	Low to Moderate
Noise and Vibration	Low	Low to Moderate	Low	Low to Moderate	Low to Moderate	Low to Moderate
Visual Impacts	None	None	Low	Low to Moderate	Low	Low to Moderate
Environmental Justice	None	Low	Low	Low	Low	Low

*Portions of Western Boulevard are designated as open space and counted as one resource.

- **Critical Habitat/ Threatened and Endangered Species**: Critical habitat such as wetlands, parklands and low to moderate densities of forest cover are adjacent to and within 500 feet of Western and Ashland Avenues. Therefore, there is the potential for threatened and endangered species to be present. However, because the Center, Travel Lane Removal Alternative would be constructed within the existing right-of-way in an existing urban environment, the potential for impacts to these resources is low.

Table 4-8: Ashland Avenue Environmental Factors

Environmental Factor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Wetlands (2)	None	None	Low	Low	Low	Low
Chicago Historic Districts (2)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
National Register Historic Districts (4)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Chicago Historic Landmarks (8)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
National Register Historic Properties (6)	None	None	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Parklands (18)	None	None	Low	Low	Low	Low
Open Spaces (3*)	None	None	Low	Low	Low	Low
Critical Habitat/Threatened and Endangered Species	None	None	Low	Low	Low	Low
Hazardous Materials	None	None	Low	Low	Low	Low
Archaeological	None	None	Low	Low	Low	Low
Air Quality	Low	Low to Moderate	Low	Low to Moderate	Low	Low to Moderate
Noise and Vibration	Low	Low to Moderate	Low	Low to Moderate	Low to Moderate	Low to Moderate
Visual Impacts	None	None	Low	Low to Moderate	Low	Low to Moderate
Environmental Justice	None	Low	Low	Low	Low	Low

*Portions of Garfield Boulevard, which crosses Ashland Avenue, are designated as open space and counted as one resource.

- **Open Space:** There is open space adjacent to and within 500 feet of both Western and Ashland Avenues; however, impacts are not anticipated because the improvements would be limited to within the existing right-of-way. One exception is the green space within Western Boulevard, which is designated as open space. If BRT stations were to be constructed in this open space area, there could be impacts; however, given that Western Boulevard is already an urban area with heavy transportation use and the station footprint would be minimized, the potential for impacts is low.

- **Hazardous Materials**: There is the potential to encounter hazardous materials during construction of the Center, Travel Lane Removal Alternative, either from specific sites adjacent to or near the corridors where hazardous materials are known or suspected to exist or from the presence of urban fill. Urban fill is typical of urban settings like this project and typically contains elevated concentrations of polynuclear aromatic hydrocarbons and metals, which are present due to an urban setting with nearby roadways, railways, and industrial and commercial land uses. In addition, urban fill may also include building demolition debris, which was commonly used as fill material in excavations, to increase elevations at sites during development. Quantities encountered and/or generated are expected to be limited and adherence to local, state and federal regulations would reduce the potential for adverse impacts.

- **Archaeological Resources:** Due to the urban setting and that the improvements are being conducted within an existing roadway, the potential for archaeological impact is low.

- **Air Quality:** Additional bus service would occur under the Center, Travel Lane Removal Alternative; however, because a lane of vehicle traffic would be removed and implementation of premium transit service would provide incentives for commuters to use the BRT service within the corridors, the number of vehicles spending time in congestion would be reduced. Therefore, the potential for air quality impacts is expected to be low from implementation of the Center, Travel Lane Removal Alternative.

- **Noise/Vibration:** Sensitive noise receptors are present along both corridors. Although additional bus service could increase noise levels, the dominant noise source is the existing automobile traffic. Removal of a travel lane is expected to reduce vehicular traffic, which would reduce noise levels. Therefore, the potential noise impact from this alternative is low. Vibration impacts are not anticipated from the operation of rubber-tired buses on smooth asphalt streets.

- **Visual Impacts:** Visual impacts could occur from the BRT shelters at stations; however, the shelters are generally small in size compared to the existing structures at intersections and would be designed so as not to substantially impact the visual character of the area. Therefore, negative visual impacts are not expected. Positive impacts to the visual environment are expected due to the enhanced streetscaping, additional pedestrian space, and smoother roadway surface that would be provided.

- **Environmental Justice**: Minority and low-income populations are present along both Western and Ashland Avenues; however, because the potential for significant impacts is low, the potential for disproportionate impacts is also low. Because no new right-of-way is required for this project, there would also be no community displacements resulting from any of the Center, Travel Lane Removal Alternative. Furthermore, minority and low-income populations would benefit from the positive impacts associated with a more reliable, accessible premium transit service and from the additional streetscaping, pedestrian space and smoother roadway surface that would be provided.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would have similar environmental effects as those noted above in the Center, Travel Lane Removal Alternative, for both Western and Ashland Avenues. However, it should be noted that under this alternative, air quality may have a greater potential for impacts under this alternative than the Center, Travel Lane Removal Alternative. Although implementation of premium transit service would provide incentives for commuters to use the BRT service within the corridors under this alternative, which would reduce the amount of vehicle traffic, the reduction would not include the removal of existing traffic lanes and thus, would not be as great as the Center, Travel Lane Removal Alternative. In addition, visual impacts are more likely to result from removing existing medians and on street parking. As such, the environmental summary rating would be **Worse than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside Travel Lane Removal Alternative would have similar environmental effects as the Center, Travel Lane Removal Alternative for both Western and Ashland Avenues. However, it should be noted that under this alternative, there is the potential for slightly higher increases in noise levels than the Center, Travel Lane Removal Alternative. This is due to the bus lanes being closer to the identified noise receptors that are adjacent to the roadway. Overall, the environmental summary ranking for this alternative would be **Similar to No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would have similar environmental effects as the Center, Parking and Median Removal. However, it should be noted that under this alternative, there is the potential for slightly higher increases in noise levels than the Center, Parking and Median Removal Alternative. This is due to the bus lanes being closer to the identified noise receptors that are adjacent to the roadway. In addition, visual impacts are more likely to result from removing existing medians and on street parking. As such, the environmental summary ranking for this alternative would be **Worse than No-Build Conditions**.

4.3.2 Environmental Evaluation Summary

Overall, the potential for environmental impacts are low with only four areas (historic resources, air quality, noise and visual) with a low to moderate potential for impacts. The evaluation found that for both Western and Ashland Avenues, environmental impacts would be relatively similar for all alternatives, with parking and median removal options being slightly worse than the other BRT Build Alternatives. The results of the Screen 2 Evaluation of each alternative's environmental factors are shown in **Table 4-9**.

Once the PA has been selected, the next phase of the project will include a more detailed environmental analysis in accordance with FTA and National Environmental Protection Agency (NEPA) requirements. Coordination with the State Historic Preservation Officer and other agencies, as necessary, to further quantify and/or address potential impacts would occur during this phase.

Table 4-9: Environmental Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	◑	◔	◑	◔
Ashland Avenue	◑	◑	◔	◑	◔

4.4 Ridership Evaluation

Two ridership factors were estimated and evaluated to determine each alternative's performance, including the following:

- Daily Boardings – Average daily transit boardings along the corridor
- Mode Split – Percentage of daily trips on transit within the corridor

Data used to evaluate each of these factors were obtained using the Chicago Metropolitan Agency for Planning (CMAP) travel demand model runs, and detailed data on these model runs are provided in **Appendix C**.

4.4.1 Daily Boardings Evaluation Results

For the purposes of this evaluation, daily boardings represent total transit boardings along the corridor during a typical weekday. Daily boarding estimates, for both local and BRT service, were developed based on historic ridership and the different transportation operational conditions for each alternative identified in the Detailed Definition of Alternatives and bus speed information from *TCRP Report 118 – Bus Rapid Transit Practitioner's Guide* (Transportation Research Board, 2007). Daily boarding estimates for each conceptual design alternative were then compared to No-Build existing daily boardings along the corridor to estimate changes, as shown in **Table 4-10** and **Table 4-11**.

Table 4-10: Western Avenue Daily Boardings Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Daily Boardings (local bus and BRT)	27,025	31,574	36,911	36,911	36,574	36, 574
Change vs. No-Build	n/a	17%	37%	37%	35%	35%
Rating	n/a	◐	●	●	●	●

Table 4-11: Ashland Avenue Daily Boardings Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Daily Boardings (local bus and BRT)	29,105	31,724	37,545	37,545	37,254	37,254
Change vs. No-Build	n/a	9%	29%	29%	28%	28%
Rating	n/a	◐	●	●	●	●

TSM

The TSM Alternative would operate in mixed traffic lanes. Some small estimated daily boardings increases would result from moderate increases in speed, reliability and transit capacity (larger buses and additional service over local bus levels). The resulting daily boardings rating would therefore be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, remove left-turns at intersections, and remove a vehicle travel lane in each direction. Increases to estimated daily boardings are a result of increased transit capacity, speed, and improved reliability (evaluation describing these factors is presented in Section 4.5). The resulting daily boardings rating would therefore be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane and remove left-turns at intersections. Increases to estimated daily boardings are a result of increased transit capacity, speed, and improved reliability (evaluation describing these factors is presented in Section 4.5). The resulting daily boardings rating would therefore be **Substantially Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane and remove a vehicle travel lane in each direction. Increases to estimated daily boardings are a result of increased transit capacity, speed, and improved reliability (evaluation describing these factors is presented in Section 4.5). However, operating BRT in the curbside lane would result in slightly less service reliability and slightly slower travel speeds because of shared right turns into driveways and side streets. The resulting daily boardings rating would therefore be **Substantially Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane. Increases to estimated daily boardings are a result of increased transit capacity, speed, and improved reliability (evaluation describing these factors is presented in Section 4.5). However, operating BRT in the curbside lane would result in slightly less service reliability and slower travel speeds because of shared right turns into driveways and side streets. The resulting daily boardings rating would therefore be **Substantially Better than No-Build Conditions**.

4.4.2 Mode Split Evaluation Results

For the purposes of this evaluation, mode split represents the percentage of trips taken on the corridor that were made on buses (transit) within the corridor under daily travel conditions during a typical weekday. Mode split estimates were developed based on output from CMAP travel demand model runs that modeled the different vehicle operational conditions for each alternative identified in the Detailed Definition of Alternatives.

The No-Build Alternative modeling assumptions were based on the regional modeling inputs used for the 2010 analysis year in the air quality conformity analysis completed by CMAP in Spring 2012 (C12 Q1). The No-Build Alternative model represented the existing roadway network and transit service levels. Modeling of the BRT Build Alternatives assumed roadway network and transit service level changes. The model output was compared to No-Build mode splits along each corridor to estimate transit mode split increases, as shown in **Table 4-12** and **Table 4-13**.

Table 4-12: Western Avenue Mode Split Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Transit Mode Share (%)	15%	17%	32%	21%	28%	19%
Change vs. No-Build	n/a	14%	111%	41%	85%	29%
Rating	n/a	◑	●	◕	●	◕

Table 4-13: Ashland Avenue Mode Split Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Transit Mode Share (%)	14%	15%	26%	19%	23%	17%
Change vs. No-Build	n/a	8%	86%	36%	64%	21%
Rating	n/a	◑	●	◕	●	◕

TSM

The TSM Alternative would operate in mixed traffic lanes. Estimated transit mode split increases are minimal, and would result from increased transit ridership. The resulting mode split rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, remove left-turns at intersections, and remove a vehicle travel lane in each direction. Estimated transit mode split increases would result from increased transit ridership and decreased auto trips. The resulting mode split rating would be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane and remove left-turns at intersections. Estimated transit mode split increases would result from increased transit ridership. The resulting mode split rating would be **Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane and remove a vehicle travel lane in each direction. Estimated transit mode split increases would result from increased transit ridership and decreased auto trips. The resulting mode split rating would be **Substantially Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane. Estimated mode split increases would result from increased transit ridership. The resulting mode split rating would be **Better than No-Build Conditions**.

4.4.3 Ridership Evaluation Summary

The summation of all ridership factors for each alternative is shown in **Table 4-14**. In most cases, the evaluation of both daily boardings and transit mode split compared with the No-Build Alternative were the same ranking when reviewing both corridors. Two exceptions are noted, and the most conservative summation rankings were given in these cases. For the Center, Parking Median Removal Alternative, daily boardings were rated as Substantially Better than No-Build Conditions while the mode split was rated as Better than No-Build Conditions. As such, the overall ranking for this alternative was determined to be Better than No-Build Conditions. Similarly, for the Curbside, Parking and Median Removal Alternative, daily boardings were ranked as Substantially Better than No-Build Conditions while mode split was ranked Better than No-Build Conditions. As such, the overall ranking for this alternative was determined to be Better than No-Build Conditions.

Table 4-14: Ridership Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	●	◕	●	◕
Ashland Avenue	◑	●	◕	●	◕

4.5 Transit Operations Evaluation

Three transit operational factors were estimated and evaluated to determine each alternative's performance, including the following:

- Bus Speed – Average bus speed along the corridor
- Bus Travel Time – Average travel time savings per trip along the corridor
- Bus Reliability – Improvement in bus reliability

For the TSM and all BRT Build Alternatives, express bus service or BRT are assumed to be added to existing local bus services to increase mobility and enhance transit options for commuters in the corridor.

4.5.1 Bus Speed Evaluation Results

For the purposes of this evaluation, bus speed represents average bus speed along the corridor under peak hour travel conditions during a typical weekday. Average bus speed estimates were developed based on the different conceptual design elements and service plans for each alternative identified in the Detailed Definition of Alternatives and bus speed information from *TCRP Report 118 – Bus Rapid Transit Practitioner's Guide* (Transportation Research Board, 2007). Express bus service and BRT service speeds for each conceptual design alternative were then compared to no-build existing bus speeds along each corridor to estimate bus speed changes, as shown in **Table 4-15** and **Table 4-16**.

TSM

The TSM Alternative would operate in mixed traffic lanes. Estimated bus speed increases would be small and would result from a reduction of bus stop locations and transit signal prioritization improvements. The resulting bus speed rating would be **Similar to No-Build Conditions**.

Table 4-15: Western Avenue Bus Speed Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Bus Speed (mph)	10.1	11.5	18.4	18.4	15.6	15.6
Change vs. No-Build	n/a	14%	82%	82%	54%	54%
Rating	n/a	◑	●	●	◕	◕

Table 4-16: Ashland Avenue Bus Speed Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Bus Speed (mph)	8.7	10.3	15.9	15.9	13.5	13.5
Change vs. No-Build	n/a	18%	83%	83%	55%	55%
Rating	n/a	◑	●	●	◕	◕

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, resulting in bus speed increases. Additional bus speed increases would result from increased station spacing compared to current local bus stops, off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. The resulting bus speed rating would be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane, resulting in bus speed increases. Additional bus speed increases would result from increased station spacing compared to current local bus stops, off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. The resulting bus speed rating would be **Substantially Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane, resulting in bus speed increases. Additional bus speed increases would result from increased station spacing compared to current local bus stops, off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The resulting bus speed rating would be **Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane, resulting in speed increases. Additional bus speed increases would result from increased station spacing compared to current local bus stops, off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The resulting bus speed rating would be **Better than No-Build Conditions**.

4.5.2 Bus Travel Time Evaluation Results

For the purposes of this evaluation, bus travel time represents travel time along the corridor under peak hour travel conditions during a typical weekday for average trip lengths. The average trip lengths for Western and Ashland Avenues, 2.9 and 2.5 miles, respectively, were based on CTA travel survey information collected in October 2010. Average bus travel times were estimated by multiplying average trip lengths by the preliminary average bus speeds for each alternative identified in the Detailed Definition of Alternatives. These travel times were compared to no-build bus travel times along each corridor to estimate bus travel time changes, as shown in **Table 4-17** and **Table 4-18**.

Table 4-17: Western Avenue Bus Travel Time Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Travel Time (min)	17.2	14.6	9.4	9.4	11.1	11.1
Change vs. No-Build	n/a	-15%	-45%	-45%	-35%	-35%
Rating	n/a	◐	●	●	●	●

Table 4-18: Ashland Avenue Bus Travel Time Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Travel Time (min)	17.2	14.6	9.4	9.4	11.1	11.1
Change vs. No-Build	n/a	-15%	-45%	-45%	-35%	-35%
Rating	n/a	◐	●	●	●	●

TSM

The TSM Alternative would operate in mixed traffic lanes. Estimated bus travel time decreases would be small and would result from a reduction of bus stop locations and transit signal prioritization improvements. The resulting bus travel time rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, resulting in bus travel time decreases. Additional bus travel time savings would result from increased station spacing compared to current local bus stops, level boarding through multiple doors with off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. The resulting bus travel time rating would be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane, resulting in bus travel time decreases. Additional bus travel time savings would result from increased station spacing compared to current local bus stops, level boarding with off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. The resulting bus travel time rating would be **Substantially Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane, resulting in bus travel time decreases. Additional bus travel time savings would result from increased station spacing compared to current local bus stops, level boarding with off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The reduction in travel times are somewhat less for curbside than center running due to shared right turns into driveways and side streets. However, the overall reduction of 35 percent is large. Therefore, the resulting bus travel time rating would be **Substantially Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane, resulting in bus travel time decreases. Additional bus travel time savings would result from increased station spacing compared to current local bus stops, level boarding with off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The reduction in travel times are somewhat less for curbside than center running due to shared right turns into driveways and side streets. However, the overall reduction of 35 percent is large. Therefore, the resulting bus travel time rating would be **Substantially Better than No-Build Conditions**.

4.5.3 Bus Reliability Results

For the purposes of this evaluation, bus reliability represents the on-time performance of buses compared to the published schedule under daily travel conditions during a typical weekday and is measured in average extra wait time.

2010 bus reliability data from CTA for existing local bus service (No-Build Alternative) was obtained for this analysis and bus reliability estimates were developed based on the different conceptual design elements and service plans for each alternative identified in the Detailed Definition of Alternatives and using bus reliability information from *TCRP Report 118 – Bus Rapid Transit Practitioner's Guide*

(Transportation Research Board, 2007). These elements were compared to no-build bus reliability along each corridor to estimate bus reliability changes, as shown in **Table 4-19** and **Table 4-20**.

Table 4-19: Western Avenue Bus Reliability Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Extra Wait Time (sec)	50	48	25	30	40	45
Change vs. No-Build	n/a	-5%	-50%	-40%	-20%	-10%
Rating	n/a	◑	●	●	◕	◕

Table 4-20: Ashland Avenue Bus Reliability Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Extra Wait Time (sec)	43	41	22	26	34	39
Change vs. No-Build	n/a	-5%	-50%	-40%	-20%	-10%
Rating	n/a	◑	●	●	◕	◕

TSM

The TSM Alternative would operate in mixed traffic lanes. Some bus reliability improvements may result from a reduction of bus stop locations and transit signal prioritization improvements. The resulting bus reliability rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, resulting in bus reliability improvements. Additional bus reliability increases would result from a reduction of bus stop locations, level boarding with off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. A 50 percent reduction in wait times are anticipated for this alternative, and the resulting bus reliability rating would therefore be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane, resulting in bus reliability improvements. Additional estimated bus reliability increases would result from a reduction of bus stop locations, level boarding with off-board fare collection, transit signal prioritization improvements, and left-turn removal at intersections and traffic signal optimization. A 40 percent reduction in wait times are anticipated for this alternative, and the resulting bus reliability rating would therefore be **Substantially Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane, resulting in bus reliability improvements. Additional bus reliability increases would result from a reduction of bus stop locations, level boarding with off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The resulting bus reliability rating would be **Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane, resulting in bus reliability improvements. Additional bus reliability increases would result from a reduction of bus stop locations, boarding with off-board fare collection, transit signal prioritization improvements, and queue jump lanes. The resulting bus reliability rating would be **Better than No-Build Conditions**.

4.5.4 Transit Operations Evaluation Summary

The summation of all transit operational factors for each alternative are shown **Table 4-21**. All BRT alternatives would perform Better or Substantially Better than No-Build Conditions and results are similar in magnitude for both corridors given similar design and operating configurations along both corridors. The TSM Alternative would provide improvements in bus speed, time and reliability by reducing the total number of stops and providing TSP at intersections; however, the express bus would still be operating in mixed traffic, thereby reducing the total benefits of this alternative, and so TSM would be Similar to No-Build Conditions.

Both Curbside Running BRT Alternatives would be Better than No-Build Conditions given their ability to operate along dedicated lanes, inclusion of increased stop spacing and TSP, and additional queue jump lanes in advance of roadway width pinch points at intersections to improve travel speeds, time, and reliability. Curbside running alternatives would share the lane with vehicles making right turns for driveways and cross streets, thereby not achieving the full benefits of a dedicated bus lane.

The Center Running BRT Alternatives provide the greatest transit operational benefits compared to the No-Build and other alternatives. In addition to providing dedicated lanes, increased stop spacing and TSP, these options would also result in left-turn lane removal at intersections along both corridors which would substantially increase transit operational performance.

Table 4-21: Transit Operations Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	●	●	◕	◕
Ashland Avenue	◑	●	●	◕	◕

4.6 Complete Streets Evaluation

Three complete streets factors were estimated and evaluated to determine each alternative's performance, including the following:

- Pedestrian Space – Conceptual sidewalk and median widths at proposed BRT station intersections along the corridor
- Medians – Raised median conditions along the corridor
- Sidewalk Buffers – Buffer conditions between pedestrians and vehicle travel lanes along the corridor

Bicycle lanes are currently provided on parallel roadways such as Damen and California Avenues and would complement these other pedestrian feature enhancements that create complete streets. As such, this criterion is not included as a separate factor for evaluation.

Pedestrian space calculations were developed at proposed BRT station intersections along each corridor to represent net gains in sidewalk and raised median space that could be realized by each of the alternatives. Detailed spreadsheets were developed in calculating these complete streets factors and other traffic data based on conceptual engineering plans and may be found in **Appendix D**.

4.6.1 Pedestrian Space Evaluation Results

For the purposes of this evaluation, pedestrian space represents the sidewalk, on both sides of the street, and raised median widths at proposed BRT station intersections along the corridor. Pedestrian space estimates were developed based on the different conceptual station layout designs for each alternative identified in the Detailed Definition of Alternatives. The pedestrian space widths assumed in the conceptual station design layouts were averaged for all proposed station locations along the corridor and then compared to average existing pedestrian space widths along each corridor to estimate pedestrian space available, as shown in **Table 4-22** and **Table 4-23**.

TSM

The TSM Alternative would utilize existing bus stops and would not change the existing pedestrian space along the corridor. The resulting pedestrian space rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would expand the sidewalk width and install a median at stations. The resulting pedestrian space rating would be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would reduce the sidewalk width and install a median at stations. The resulting pedestrian space rating would be **Better than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would expand the sidewalk width at stations by providing bump outs at station locations. The resulting pedestrian space rating would be **Better to Substantially Better than No-Build Conditions.**

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would have minor expansion of the sidewalk width at stations and no bump outs. The resulting pedestrian space rating would be **Better than No-Build Conditions**.

Table 4-22: Western Avenue Pedestrian Space Width Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Sidewalk Width on Both Sides (ft.)	25	25	36	20	38	30
Station Median Width(ft.)	0	0	12	14	0	0
Total Pedestrian Space Width (ft.)	25	25	48	34	38	30
Change vs. No-Build	n/a	0%	100%	44%	52%	20%
Rating	n/a	◑	●	◕	◕	◕

Table 4-23: Ashland Avenue Pedestrian Space Width Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Sidewalk Width on Both Sides (ft.)	27	27	29	20	38	30
Station Median Width (ft.)	0	0	14	14	0	0
Total Pedestrian Space Width (ft.)	27	27	43	34	38	30
Change vs. No-Build	n/a	0%	59%	26%	41%	11%
Rating	n/a	◑	●	◕	●	◕

4.6.2 Raised Median Length Evaluation Results

For the purposes of this evaluation, raised medians represent the linear feet of raised medians along the roadway corridor between station locations. Raised median estimates were developed based on the different conceptual roadway segment designs for each alternative identified in the Detailed Definition of Alternatives. The raised median lengths assumed in the conceptual roadway segment were compared to No-Build raised median lengths along each corridor to estimate raised median length changes, as shown in **Table 4-24** and **Table 4-25**. It should be noted that because these raised median calculations are based on the roadway segments between station areas only, they do not account for potential increases to overall raised median lengths that could result from enhanced medians at station locations along each corridor. Additional refined calculations which include intersection layout considerations were determined subsequent to public involvement meetings and are provided in **Appendix D** for reference.

Table 4-24: Western Avenue Raised Medians Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Medians (linear ft.)	6,048	6,048	54,140	0	6,048	0
Change vs. No-Build	n/a	0%	977%	-100%	0%	-100%
Rating	n/a	◑	●	○	◑	○

Table 4-25: Ashland Avenue Raised Medians Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Medians (linear ft.)	29,331	29,331	80,280	0	29,331	2,998
Change vs. No-Build	n/a	0%	174%	-100%	0%	-90%
Rating	n/a	◑	●	○	◑	○

TSM

The TSM Alternative would utilize the existing roadway configuration and would not change the amount of medians along the corridor. As such, the medians rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would install medians along all roadway segments between stations. As such, medians would be increased substantially along both corridors. The resulting median rating would therefore be **Substantially Better than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would remove all medians along all roadway segments between stations. As such, the resulting median rating for both corridors would be **Substantially Worse than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would not change the amount of medians along the corridor. The resulting median rating would be **Similar to No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would remove all medians along all roadway segments between stations. The resulting median rating would be **Substantially Worse than No-Build Conditions**.

4.6.3 Sidewalk Buffers Evaluation Results

For the purposes of this evaluation, sidewalk buffers represent the linear feet of buffers between sidewalks and vehicle travel lanes (parking lane or landscape) along the corridor. The sidewalk buffer was assumed to be in place or to be installed along portions of the corridor where travel lanes would directly abut the sidewalk in order to provide pedestrians a landscaped streetscape barrier between traffic and the sidewalk. A parking lane would also serve as a de facto buffer, since parked vehicles and the lane itself segregate pedestrians from traffic. Sidewalk buffer length estimates were developed based on the different conceptual roadway segment and intersection layout designs for each alternative identified in the Detailed Definition of Alternatives. The sidewalk buffer lengths assumed in the conceptual roadway segment and intersection layout designs were compared to No-Build sidewalk buffer lengths along each corridor to estimate sidewalk buffer lengths, as shown in **Table 4-26** and **Table 4-27**.

Table 4-26: Western Sidewalk Buffers Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Sidewalk Buffers (linear ft.)	86,895	86,895	143,680	108,700	143,680	111,340
Change vs. No-Build	n/a	0%	65%	25%	65%	28%
Rating	n/a	◑	●	◕	●	◕

Table 4-27: Ashland Avenue Sidewalk Buffers Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Sidewalk Buffers (linear ft.)	112,485	112,485	150,420	113,320	150,420	116,120
Change vs. No-Build	n/a	0%	34%	1%	34%	3%
Rating	n/a	◑	●	◑	●	◑

TSM

The TSM Alternative would include modifications to traffic signal prioritization along the Western and Ashland Avenue Corridors, with no roadway infrastructure improvements. As such, the TSM

Alternative would have exactly the same amount of sidewalk buffer as in No-Build Alternative and the evaluation would be **Similar to No-Build Conditions** along both corridors.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would provide additional sidewalk buffer compared to the No-Build Alternative. Neither side of the street would have direct exposure to vehicular travel lanes due to a parking lane. At BRT stations, pedestrians would be buffered by a bus stop or a bump out. As such, the evaluation for this alternative would be **Substantially Better than No-Build Conditions** for both corridors.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would provide additional sidewalk buffer compared to the No-Build Alternative, particularly along Western Avenue where there is less existing buffer. However, this alternative provides less sidewalk buffer than the Center, Travel Lane Removal Alternative. In this alternative, one side would have direct exposure to a vehicular travel lane along midblock sections. At BRT stations, pedestrians would not be provided an additional buffer due to the widened intersection and median removal. Because only minimal improvements to sidewalk buffers would result, the evaluation for this alternative would be **Similar to No-Build Conditions** for both corridors.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative has the same impact to sidewalk buffers as the Center, Travel Lane Removal Alternative. Neither side of the street would have direct exposure to vehicular travel lanes due to a parking lane. At BRT stations, pedestrians would be buffered by a bus stop or a bump out. As such, this option would be **Substantially Better than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would provide additional sidewalk buffer compared to the No-Build Alternative, particularly along Western Avenue where there is less existing buffer. However, this alternative would provide less sidewalk buffer than the Curbside, Travel Lane Removal Alternative. In this alternative, one side would have direct exposure to a vehicular travel lane along midblock sections. At BRT stations, pedestrians would not be buffered due to the widened intersection and median removal. There is only a slight increase in expected sidewalk buffering due to differing station lengths between the Center and Curbside Running BRT Build Alternatives. Because minimal improvements to sidewalk buffers would result, with greater improvements to sidewalk buffers in the Western Avenue corridor, the evaluation for this alternative would be **Better than No-Build Conditions** for Western Avenue and **Similar to No-Build Conditions** for Ashland Avenue.

4.6.4 Complete Streets Evaluation Summary

The summation of all complete streets factors for each alternative is shown in **Table 4-28**.

Table 4-28: Complete Streets Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	●	◑	◕	◑
Ashland Avenue	◑	●	◑	◕	◑

The TSM Alternative would provide similar pedestrian space, medians, and sidewalk buffers as the No-Build Alternative for both corridors since buses would continue to use the existing stops and no roadway infrastructure improvements would occur. The Center Running BRT Travel Lane Removal Alternative provides the greatest benefits for both corridors in terms of complete streets and would be Substantially Better than No-Build Conditions, providing additional pedestrian space by extending sidewalk widths and installing raised medians along all roadway segments between stations. The Curbside Running BRT, Travel Lane Removal would also be Better than No-Build Conditions for both corridors and would provide similar sidewalk expansions at stations, allowing for greater sidewalk buffer space, but would not expand existing raised median lengths.

The Center Running BRT, Parking and Median Removal Alternative would result in similar pedestrian space and sidewalks buffers as the existing conditions are expected, given reduced sidewalk widths and increased raised medians at stations.

Finally, the Curbside Running BRT, Parking and Median Removal Option would be Similar to No-Build Conditions. Under this alternative, there would be minor expansions of the sidewalk width at stations. The alternative would remove all raised medians along all roadway segments between stations and minor improvements to sidewalk buffers would be anticipated to result.

4.7 Traffic and Parking Evaluation

Three factors were estimated and evaluated to determine each alternative's performance with respect to traffic, including the following:

- Auto Speed – Average vehicle speed along the corridor
- Left Turns – Left turn conditions along the corridor, including left turn lanes along roadway segments and at intersections
- Parking – On-street parking conditions along the corridor, including loading zones, paid parking, and total parking spaces

Detailed spreadsheets were developed in calculating these complete streets factors and other traffic data based on conceptual engineering plans and may be found in **Appendix D**.

4.7.1 Auto Speed Evaluation Results

For the purposes of this evaluation, auto speed represents average vehicle speed along the corridor under peak hour travel conditions during a typical weekday. Average vehicle speed estimates were developed based on output from the Chicago Metropolitan Agency for Planning (CMAP) travel demand model which simulated the different vehicle operation conditions for each alternative identified in the Detailed Definition of Alternatives.

The No-Build modeling assumptions were based on the regional modeling inputs used for the 2010 analysis year and the air quality conformity analysis completed by CMAP in spring 2012 (C12 Q1). The No-Build model represents the existing roadway network and transit service levels. Modeling of the alternatives assumed roadway network and the additional BRT transit service. The model output was compared to No-Build auto speeds along each corridor to estimate auto speed reductions, as shown in **Table 4-29** and **Table 4-30**.

Two of the BRT Build Alternatives would entail removal of an existing lane of automobile traffic, thereby slightly reducing the estimated auto speeds along the corridors. Alternatives which remove parking and medians are estimated to retain or slightly improve existing speeds since they would not require removal of an existing traffic lane. Although alternatives that require removal of an existing lane of automobile traffic are expected to impact auto speeds, the robustness of Chicago's grid roadway system is anticipated to absorb traffic re-routing that may result from these alternatives, and therefore the reduction in auto speeds is estimated to be small.

Table 4-29: Western Avenue Auto Speed Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Auto Speed (mph)	17.9	17.9	16.3	18.3	16.3	17.9
Change vs. No-Build	n/a	0%	-9%	2%	-9%	0%
Rating	n/a	◑	◔	◑	◔	◑

Table 4-30: Ashland Avenue Auto Speed Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Auto Speed (mph)	18.3	18.7	17.4	18.5	17.4	18.3
Change vs. No-Build	n/a	0%	-5%	1%	-5%	0%
Rating	n/a	◑	◔	◑	◔	◑

TSM

The TSM Alternative would operate in mixed traffic lanes and would not impact vehicle speed. The resulting auto speed rating would therefore be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would operate in a dedicated center lane, remove left-turns at intersections, and remove a vehicle travel lane in each direction, resulting in a decrease in roadway capacity and speed. The resulting auto speed rating would be **Worse than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would operate in a dedicated center lane and remove left-turns at intersections, resulting in a slight increase in vehicle speed associated with traffic signal optimization. The resulting auto speed rating would be **Similar to No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would operate in a dedicated curbside lane and remove a vehicle travel lane in each direction, resulting in a decrease in roadway capacity and speed. The resulting auto speed rating would be **Worse than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would operate in a dedicated curbside lane, resulting in no change in vehicle speed. The resulting auto speed rating would be **Similar to No-Build Conditions**.

4.7.2 Parking Evaluation Results

For the purposes of this evaluation, parking represents the total on-street parking spaces, on both sides of the street, including loading zones, paid parking spaces, and total parking spaces, along the corridor. Parking space estimates were developed based on the different conceptual roadway segment and station layout designs for each alternative identified in the Detailed Definition of Alternatives.

The available parking spaces assumed in the conceptual roadway segment and station layouts designs were compared to No-Build available parking spaces along each corridor to estimate parking changes, as shown in **Table 4-31** and **Table 4-32**.

As these tables indicate, all BRT Build Alternatives would result in a loss of parking Worse than No-Build Conditions. The TSM Alternative would have the least impact on existing parking since this alternative would not involve roadway improvements. Parking impacts would be greatest for the Parking and Median Removal Alternatives. Although all of the BRT Build Alternatives would result in a loss of parking along the corridor compared to the No-Build existing conditions, additional parking would be proposed at nearby intersection cross streets to mitigate parking losses. According to the Western and Ashland Corridors BRT Parking Demand Analysis conducted in August 2012 (See **Appendix D**), nearly one-third of parking on each corridor is currently not utilized. Additional parking analysis will be conducted as future stages of the study move forward to identify conceptual plans for parking.

TSM

The TSM Alternative would utilize the existing roadway configuration and would not change the number of existing parking spaces along the corridor. The resulting parking rating would therefore be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would remove parking spaces from both sides of the street around stations only. The resulting parking rating would be **Worse than No-Build Conditions**.

Table 4-31: Western Avenue Parking Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Loading Zones	78	78	74	49	76	49
Change vs. No-Build	n/a	0%	-5.1%	-37.2%	-5.1%	-37.2%
Paid Parking	279	279	237	101	258	101
Change vs. No-Build	n/a	0%	-15.1%	-63.8%	-7.5%	-63.8%
Total Parking	3,063	3,063	2,895	1,448	2,979	1,448
Change vs. No-Build	n/a	0%	-5.5%	-52.7%	-2.7%	-52.7%
Rating	n/a	◑	◔	○	◔	○

Table 4-32: Ashland Avenue Parking Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Loading Zones	91	91	87	56	89	56
Change vs. No-Build	n/a	0%	-4.4%	-38.5%	-2.2%	-38.5%
Paid Parking	533	533	459	191	496	191
Change vs. No-Build	n/a	0%	-13.9%	-64.2%	-6.9%	-64.2%
Total Parking	3,610	3,610	3,317	1,662	3,461	1,662
Change vs. No-Build	n/a	0%	-8.1%	-54.0%	-4.1%	-54.0%
Rating	n/a	◑	◔	○	◔	○

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would remove parking spaces from both sides of the street around stations one side of the street between stations. The resulting parking rating would be **Substantially Worse than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would remove parking spaces from both sides of the street around stations. The resulting parking rating would be **Worse than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would remove parking spaces from both sides of the street around stations one side of the street between stations. The resulting parking rating would be **Substantially Worse than No-Build Conditions**.

4.7.3 Left Turn Lane Evaluation Results

For the purposes of this evaluation, left turns represent the number of intersections where left turns are permitted along the corridor. The estimated numbers of left turn lanes were developed based on the different conceptual intersection layout designs for each alternative identified in the Detailed Definition of Alternatives. The number of left turn lanes assumed in the conceptual intersection layout designs was compared to No-Build existing conditions to estimate left turn lane decreases, as shown in **Table 4-33** and **Table 4-34**.

Although the BRT Build Alternatives all represent estimated decreases in left turn lanes, removal of left turns can also result in through traffic efficiencies by providing longer green time at signalized intersections and eliminating left turn vehicle queues from through lanes of traffic. From a safety point of view, the Federal Highway Administration has noted that left turn collisions represent a particular risk in terms of collisions. Removal of left turns could enhance safety in the corridor, particularly for pedestrians. Pedestrians may also be better served through left turn lane removal at station intersections where medians and platforms may provide greater pedestrian space and safer mobility.

Table 4-33: Western Avenue Left Turn Lane Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Left Turn Lanes	206	206	0	0	53	53
Change vs. No-Build	n/a	0%	-100%	-100%	-74.3%	-74.3%
Rating	n/a	◐	○	○	◔	◔

Table 4-34: Ashland Avenue Left Turn Lane Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Left Turn Lanes	226	226	0	0	58	58
Change vs. No-Build	n/a	0%	-100%	-100%	-74.3%	-74.3%
Rating	n/a	◐	○	○	◔	◔

TSM

The TSM Alternative would utilize the existing roadway configuration and would not change the number of left turn lanes along the corridor. The resulting left turn rating would be **Similar to No-Build Conditions**.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would remove all left turn lanes at intersections and along roadway segments. The resulting left turn rating would be **Substantially Worse than No-Build Conditions**.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would remove all left turn lanes at intersections and along roadway segments. The resulting left turn rating would be **Substantially Worse than No-Build Conditions**.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would remove some left turn lanes along roadway segments. The resulting left turn lane rating would be **Worse than No-Build Conditions**.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would remove some left turn lanes along roadway segments. The resulting left turn rating would be **Worse than No-Build Conditions**.

4.7.4 Traffic and Parking Evaluation Summary

The summation of all traffic factors for each alternative is shown on **Table 4-35**. The TSM Alternative would be most Similar to No-Build Conditions since no roadway infrastructure improvements that could impact auto speeds, parking, or left turn lanes would result. All other BRT Build Alternatives are assigned a traffic summation rating of Worse than No-Build Conditions. Any of these BRT Build Alternatives are expected to impact automobile speed and/or parking by taking an existing lane of travel or parking and each of these BRT Build Alternatives would involve taking existing left turn lanes. Although these ratings show a negative impact for traffic, it should be noted that all the BRT Build Alternatives would greatly enhance public transportation service to the area, providing viable alternative transportation modes within these corridors. This allows for greater mobility, especially for transit dependent populations, and for growth potential in dense urban areas. Further, Chicago's street network is robust and offers inherent flexibility. Analyses are planned during the next step to examine traffic circulation patterns relative to the PA.

Table 4-35: Traffic Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◐	◔	◔	◔	◔
Ashland Avenue	◐	◔	◔	◔	◔

4.8 Capital and Operating Cost Evaluation

Costs were estimated and evaluated to determine each alternative's performance, including both capital and operational cost evaluations. This section provides a summary of those findings. Detailed cost spreadsheets were developed and may be found in **Appendix E**.

Preliminary capital cost estimates for the alternatives were developed by first quantifying existing roadway design elements including: curb to curb widths, right-of-way and sidewalk widths, median width and lengths, and distance to the next cross-street. At proposed BRT station locations, additional elements were quantified, including traffic signals and existing bus shelters. Based on the Detailed Definition of Alternatives, costs for construction between stations and at stations were developed. The capital cost for all alternatives is subject to continued refinement. Primary cost elements include the following and are described in greater detail in **Appendix E**:

- Between Stations:
  - Remove existing medians (depending on the alternative)
  - Mill, pave and stripe roadway
  - Install enhanced sidewalk streetscape
  - Install streetscape buffer
  - Install ADA-compliant ramps
  - Construct midblock medians (depending on the alternative)
- At Stations:
  - Remove existing medians and/or relocate curb
  - Construct new bus/pedestrian bump outs (depending on the alternative)
  - Construct station shelters and install station features such as off-board fare vending machines, bike racks, bus tracker signs and ADA-compliant ramps.
  - Install enhanced sidewalk streetscape
  - Construct station median (depending on the alternative)
  - Install new signals, bus pads and landscaping
  - Relocate existing bus pad and bus shelters
  - Mill, pave and stripe roadway

It should be noted that the capital costs do not include fleet costs associated with new or retrofitted vehicles. Fleet pricing will be contingent upon the PA identified through this AA process as well as additional environmental analysis and will therefore be determined at a later point in the study.

Operational cost estimates were provided by CTA based on existing costs, and anticipated headways, layovers and trip times for the TSM Alternative and all Build Alternatives. These estimates will be further refined in subsequent phases of the project.

4.8.1 Capital Cost Evaluation Results

For all BRT Build Alternatives, it was assumed that all of Western and Ashland Avenues within the project extents would be milled and a new asphalt surface applied, including colored asphalt for bus lanes. Median construction would differ dependent on the PA.

Improvements such as sidewalk and median removal, curb relocation, bus stop relocation, and bump outs at BRT stations depend on the existing width of a given intersection and the PA. The existing intersection widths vary along and between both corridors but typically are either 70 or 80 feet in curb to curb width.

Unique areas, such as the Western Boulevard section of the Western Corridor and the Illinois Medical District section of the Ashland Corridor, would require costs above and beyond the other areas as a result of unique design considerations and assumptions not included in other areas. A full description of capital cost methodologies and assumptions for each alternative and calculation sheets are included in **Appendix E**.

For the Western Avenue BRT Build Alternatives, the Center Running BRT Build Alternatives would have higher construction costs, due to the costs associated with construction of medians at BRT stations. The Center, Travel Lane Removal Alternative would also have construction of midblock medians, resulting in higher between station capital costs. The Center, Parking and Median Removal Alternative would have the highest station costs due to additional costs associated with curb relocation and sidewalk removal at some intersections. Both Parking and Median Removal Alternatives would have higher midblock costs due to additional costs of median removal and enhanced streetscape buffer installation. The Curbside, Travel Lane Removal Alternative would have the lowest between station cost due to minimal median removal; however station costs would be higher than the Curbside, Parking and Median Removal Alternative since station bump outs would be constructed under this center running alternative.

For the Ashland Avenue BRT Build Alternatives, the Center Running BRT Build Alternatives would have higher overall costs than the Curbside Running BRT Build Alternatives due to the costs associated with construction of medians at BRT stations, which is not required with the Curbside Running BRT Build Alternatives. The Center, Travel Lane Removal Alternative would include construction of midblock medians, resulting in higher costs than the Curbside, Parking and Median Removal Alternative. The Center, Parking and Median Removal Alternative would have the highest station costs due to additional costs associated with curb relocation and sidewalk removal at some intersections. Both the Center and Curbside Parking and Median Removal Alternatives would have higher costs between stations due to additional costs of median removal and enhanced streetscape buffer installation. The Curbside, Parking and Median Removal Alternative would have the lowest station costs of all alternatives since no curbs or sidewalks would be extensively modified at the stations and medians would not be constructed as with Center, Parking and Median Removal Alternative. The Curbside, Travel Lane Removal Alternative would be the lowest overall costs due to minimal median removal and the lack of need to install BRT station medians or midblock medians.

The results of the capital cost estimation evaluation are provided in **Table 4-36** and **Table 4-37**. In general, the two Curbside Running BRT Build Alternatives have the lowest capital costs for both Western and Ashland Avenues. The two Center Running BRT Build Alternatives are also similar in cost, with the Center, Parking and Median Removal Alternative being the highest overall to construct for both corridors. Primary typical cost differentiators between alternatives are further described below for each alternative.

Table 4-36: Western Avenue Capital Cost Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Capital Cost (2012)	$0 M	$22 M	$155 M	$170 M	$113 M	$108 M
Cost per Mile	$0 M	$1.4 M	$9.8 M	$10.7 M	$7.1 M	$6.8 M
Rating	n/a	◐	○	○	◔	◔

Table 4-37: Ashland Avenue Capital Cost Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Capital Cost (2012 $M)	$0 M	$25 M	$161 M	$175 M	$115 M	$120 M
Cost per Mile	$0 M	$1.6 M	$9.9 M	$10.8 M	$7.1 M	$7.4 M
Rating	n/a	◐	○	○	◔	◔

TSM

The TSM Alternative would be **Similar to No-Build Conditions** along both corridors. The TSM Alternative would use the existing Western bus routes #49 and #49B and Ashland bus route #9 and no new infrastructure would be required. Cost for TSP implementation would also be included; however these are negligible capital costs when compared to the No-Build and other BRT Build Alternatives.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would be **Substantially Worse than No-Build Conditions** for both corridors. Existing medians would remain along midblock sections and additional medians would need to be constructed. At stations, medians currently in place would be removed and replaced to accommodate BRT stations. For 80-foot curb to curb intersections, some sidewalk infill and curb relocation would be required. For 70-foot curb to curb intersections, no sidewalk infill would be necessary. Bump outs would also be constructed at all stations for this alternative. Center BRT stations would also require median inclusion and have more enhanced design features (such as larger shelters) compared to curbside stations, which make them more expensive.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would be **Substantially Worse than No-Build Conditions**. Existing medians would need to be removed along the entire corridor. Streetscaping would need to be installed for midblock sections with adjacent travel lanes to provide a buffer between pedestrians and vehicles. Some sidewalk removal and curb relocation would need to occur at 70-foot curb to curb intersections. Sidewalk removal would not be required at 80-foot curb to curb intersections; however, minor curb relocation would be necessary to accommodate the BRT station. Center BRT stations would also require median inclusion and have more enhanced design features (such as larger shelters) compared to curbside stations, which make them more expensive.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would be **Worse than No-Build Conditions**. All existing medians would remain and additional medians would need to be constructed along midblock sections. Bump outs would be required for the BRT station shelter and amenities. For 80-foot curb to curb intersections, some sidewalk infill and curb relocation would be required. For 70-foot curb to curb intersections, no sidewalk infill would be necessary.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would be **Worse than No-Build Conditions**. For Western Avenue, all existing midblock and station medians would be removed. For Ashland Avenue, existing medians would be removed except in the Illinois Medical District area, which has three travel lanes in each direction. This allows one travel lane to be removed in each direction in lieu of removing parking and medians. Curb relocation would not be required at 70-foot curb to curb intersections; however, at 80-foot curb to curb intersections, curb relocation and sidewalk infill would have to be constructed at some locations to accommodate the BRT shelters and amenities.

4.8.2 Operating Cost Evaluation Results

Operational costs are a large component of the life cycle costs of projects. While capital costs may be high, these represent one-time costs for construction. Operational costs, on the other hand, are recurring annual costs for the transit agency. **Table 4-38** and **Table 4-39** provide a summary of potential operational cost differences for the TSM and BRT Build alternatives, as compared to, but not combined with, operational costs for the current local bus service. These figures are based on 2012 dollars and were provided by CTA staff. As discussed in previous sections, the TSM and BRT Build Alternatives assume that local bus service would be maintained, with BRT or express bus service being added to enhance mobility and transit options in the corridor.

More detailed operational plans and costs for transit service within the corridor will be developed in future phases of study.

It should be noted that the most significant cost savings to be realized are with the Center Running BRT Build Alternatives. These design configurations provide the greatest bus speed optimization, and therefore are the most cost effective options. Significant cost improvements are also realized using the Curbside Running BRT Build Alternatives. The TSM Alternative would realize smaller gains in cost effectiveness of the service, and so the result is Similar to No-Build Conditions.

Table 4-38: Western Avenue Operating Cost Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Savings vs. No-Build	n/a	16%	43%	43%	37%	37%
Rating	n/a	◐	●	●	●	●

Table 4-39: Ashland Avenue Operating Cost Evaluation

Corridor	No-Build	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Savings vs. No-Build	n/a	13%	36%	36%	28%	28%
Rating	n/a	◐	●	●	●	●

TSM

The TSM Alternative would be **Similar to No-Build Conditions** along both corridors. Small improvements in travel speeds would be realized through the implementation of TSP as well as reductions in stops.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative would be **Substantially Better than No-Build Conditions** along both corridors. The Center Running BRT Build Alternatives provide the greatest increases to bus travel speeds as a result of operating in dedicated lanes, and combined with TSP and other improvements, are anticipated to provide the greatest benefit in relation to operating costs.

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative would be **Substantially Better than No-Build Conditions**. The Center Running BRT Build Alternatives provide the greatest increases to bus travel speeds compared to the No-Build Alternative as a result of operating in dedicated lanes, and combined with TSP and other improvements, are anticipated to provide the greatest benefit in relation to operating costs.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative would be **Substantially Better than No-Build Conditions**. Increased travel speeds for dedicated curbside bus lanes along with TSP, queue jumps and reduced stops would be realized, thereby reducing operating costs over the No-Build Alternative.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative would be **Substantially Better than No-Build Conditions**. Increased travel speeds for dedicated curbside bus lanes along with TSP, queue jumps and reduced stops would be realized, thereby reducing operating costs over the No-Build Alternative.

4.8.3 Capital and Operating Cost Summary

The capital and operating cost summation for each alternative is provided in **Table 4-40**. It should be noted that these costs all relate to benefits to be accrued as a result of the alternatives, as detailed in other evaluation criteria above. Because there are no additional operating and construction costs associated with the No Build Alternative, the TSM and BRT Build Alternatives were compared against each other in this category. All alternatives, exclusive of the No Build Alternative, have a similar overall cost ranking to each other (excluding fleet costs).

Table 4-40: Capital and Operating Cost Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	◑	◑	◑	◑
Ashland Avenue	◑	◑	◑	◑	◑

4.9 Public Support Evaluation

Public comments received throughout the project were also reviewed to evaluate public support for each alternative and to further assess and support the technical evaluation of alternatives described in this section. Additional details on the public involvement process and detailed public involvement plan may be found in **Appendix F**.

4.9.1 Public Support Evaluation Results

The following sources were used to evaluate public support:

- **Screen 1 Open House Comments:** A total of 46 comments were received. Comments were more general in nature although respondents generally preferred Center Running BRT Build Alternatives over Curbside Running BRT Build Alternatives and travel lane removal over parking removal or sidewalk width reduction.

- **Screen 2 Open House Comments:** A total of 75 comments were received. Of those that specifically expressed a preference between Center or Curbside Running BRT Build Alternatives, Center Running BRT Build Alternatives were preferred by 90 percent for Western Avenue and by 79 percent for Ashland Avenue. Of those that specifically expressed a preference between travel lane removal and parking and median removal, travel lane removal was preferred by 68 percent for both Western and Ashland Avenues.

- **Outreach by Others:** During the Screen 2 Open House, ATA and MPC jointly created and passed out a flyer advocating center running lanes and maintaining parking on both Western and Ashland Avenues.

- **Ongoing Community Meetings:** After the open house meetings, CTA continued to meet with and attend community group meetings. Certain groups, such as the Ashland-Avenue-Western

Avenue Coalition, are concerned with potential economic and transportation impacts to businesses and residents that live and work along the corridors if a travel lane, left turns and/or parking are removed.

4.9.2 Public Support Summary

The analysis reveals that, among members of the public participating in the public process thus far, there is generally a high level of public support for the project. When a preference was specifically provided, the Center, Travel Lane Removal Alternative was generally preferred over the other alternatives. The Screen 2 Evaluation of public support for each alternative is shown in **Table 4-41**. The results of the Screen 2 technical evaluation combined with this public support evaluation were used to determine the PA for the Western and Ashland Corridors, as further described in **Section 5** of this report.

Table 4-41: Public Support Evaluation Summary

Corridor	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Western Avenue	◑	●	◕	◕	◕
Ashland Avenue	◑	●	◕	◕	◕

4.10 Screen 2 Evaluation Summary

Tables 4-42 and **4-43** below indicate the summary of the Screen 2 Evaluation findings. Based on these findings, the overall ratings for each alternative were developed. Based upon the cumulative results of this Screen 2 Technical Evaluation, the Center Running BRT, Travel Lane Removal Alternative ranks highest for both the Western and Ashland Avenue Corridors. The following provides details on each of the alternatives and their summary ratings.

TSM

The TSM Alternative evaluation summation factor rating would be **Similar to No-Build Conditions**. Minor potential gains to economic development and transit operations would be expected from the implementation of express bus service, installation of TSP, and reduced bus stops. However, in all of the evaluation areas, the TSM Alternative would be Similar to No-Build Conditions.

Center, Travel Lane Removal

The Center, Travel Lane Removal Alternative evaluation summation factor rating would be **Substantially Better than No-Build Conditions**. In terms of ridership potential gains, transit operational components, and complete streets and urban design criteria, this alternative exceeds ratings for all other alternatives and ranks substantially better than No-Build Conditions. In all evaluation criteria, this alternative ranked higher or equivalent to all other alternatives, with the exception of traffic where the TSM Alternative ranks slightly higher given that no change to existing auto traffic or parking would occur from this alternative.

Table 4-42: Western Avenue Screen 2 Evaluation Summary

Evaluation	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Demographic	◐	◐	◐	◐	◐
Economic	◐	◕	◕	◕	◕
Environmental	◐	◐	◔	◐	◔
Ridership	◐	●	◕	●	◕
Transit Operations	◐	●	●	◕	◕
Complete Streets	◐	●	◐	◕	◐
Traffic and Parking	◐	◔	◔	◔	◔
Capital and Operating Cost	◐	◐	◐	◐	◐
Public Support	◐	●	◕	◕	◕
Screen 2 Summation	◐	●	◕	◕	◕

Table 4-43: Ashland Avenue Screen 2 Evaluation Summary

Evaluation	TSM	Center, Travel Lane Removal	Center, Parking and Median Removal	Curbside, Travel Lane Removal	Curbside, Parking and Median Removal
Demographic	◐	◐	◐	◐	◐
Economic	◐	◕	◕	◕	◕
Environmental	◐	◐	◔	◐	◔
Ridership	◐	●	◕	●	◕
Transit Operations	◐	●	●	◕	◕
Complete Streets	◐	●	◐	◕	◐
Traffic and Parking	◐	◔	◔	◔	◔
Capital and Operating Cost	◐	◐	◐	◐	◐
Public Support	◐	●	◕	◕	◕
Screen 2 Summation	◐	●	◕	◕	◕

Center, Parking and Median Removal

The Center, Parking and Median Removal Alternative evaluation summation factor rating would be **Better than No-Build Conditions**. Both Center Lane Running BRT Build Alternatives rated highest amongst the alternatives with respect to transit operational factors such as bus travel speeds, travel time savings, and bus reliability. In terms of ridership, this alternative would provide conditions better than the No-Build, however was determined to be less effective compared to the Center, Travel Lane Removal Alternative. Although ranking similarly to other alternatives in many of the other areas of evaluation, this option ranked lowest among BRT Build Alternatives in terms of complete streets factors like pedestrian space, raised median lengths, and sidewalk buffers. Parking and median removal were determined to negatively impact pedestrian buffers from auto and bus traffic.

Curbside, Travel Lane Removal

The Curbside, Travel Lane Removal Alternative summation factor rating would be **Better than No-Build Conditions**. Although ranking similarly in many of the evaluation criteria, both Curbside BRT Build Alternatives performed slightly lower than Center Running BRT Build Alternatives in terms of transit operational factors like bus speed, travel time savings, and bus reliability. In terms of ridership, this alternative would provide conditions better than the No-Build, however was determined to be less effective compared to the Center, Travel Lane Removal Alternative. In addition, urban design and complete streets factors such as pedestrian space, raised median lengths, and sidewalk buffers were lower for this alternative compared with the Center, Travel Lane Removal Alternative.

Curbside, Parking and Median Removal

The Curbside, Parking and Median Removal Alternative evaluation summation factor rating would be **Better than No-Build Conditions**. Although ranking similarly in many of the evaluation criteria, both Curbside BRT Build Alternatives performed slightly lower than Center Running BRT Build Alternatives in terms of transit operational factors like bus speed, travel time savings, and bus reliability. In terms of ridership, this alternative would provide conditions better than the No-Build and similar to other BRT Build Alternatives, however was determined to be less effective compared to the Center, Travel Lane Removal Alternative. Urban design and complete streets factors such as pedestrian space, raised median lengths, and sidewalk buffers were higher than the Center, Parking and Median Removal Alternative given additional buffering that a curbside option would provide to pedestrians; however, the Center Lane, Travel Removal Alternative continued to score higher in terms of meeting these urban design criteria.

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Section 5: Preferred Alternative (PA)

Based on the results of the Screen 1 and 2 Evaluation and public involvement outreach efforts, the PA for the corridors is as follows:

- Western Avenue: Center Running BRT, Travel Lane Removal
- Ashland Avenue: Center Running BRT, Travel Lane Removal

Based on the results of the AA Process, the Ashland Corridor has been identified as a priority for further project development and will proceed through the FTA New Starts process to obtain funding for the Ashland Corridor BRT. Next phases for the Ashland Corridor will involve environmental evaluation and conceptual engineering. Differing operating segments may be prioritized as this next phase of the project ensues.

5.1 Description of the Preferred Alternative

The PA for implementing BRT on the Western and Ashland Corridors is a Center Running BRT that utilizes existing right-of-way along both corridors, as shown on **Figure 5-1**. This PA will include one center running bus lane in each direction, one automobile travel lane in each direction, parking on both sides, and a median. One automobile travel lane will be removed in each direction to accommodate bus lanes, while parking is retained on both sides of the street. Sidewalk widths will remain the same and curb extensions are provided at station intersections. Existing medians will be retained and new landscaped medians will also be provided where there are none existing. Left turn lanes at signalized intersections and left turn pockets between signalized intersections will be removed.[3]

This BRT PA would include TSP upgrades along Western and Ashland Avenues, which are currently under review by CTA. The ultimate BRT service headways will be between 5 and 15 minutes and will meet the FTA definition of BRT. Existing local bus services would continue to operate within the corridor with BRT service added to increase mobility and enhance transit options for commuters in the corridors. As future phases of study ensue, refined operating plans will be developed.

5.2 Special Design Considerations

Both corridors contain unique intersections and sections which will require special design considerations. The portion of Ashland Avenue within the Illinois Medical District (IMD) is unique in that it has narrower sidewalks and three lanes of travel in each direction. Design considerations for this portion of the corridor are described for each of the BRT Build Alternatives. The Boulevard section of Western Avenue is another example where the roadway configuration is atypical, located between West 33rd Street in the north and West 55th Street in the south. In this portion of the corridor, there are two parallel roadways—Western Avenue and Western Boulevard—which are separated by a 100-foot linear park. Design considerations for this portion of the corridor are described in detail for each of the BRT Corridors.

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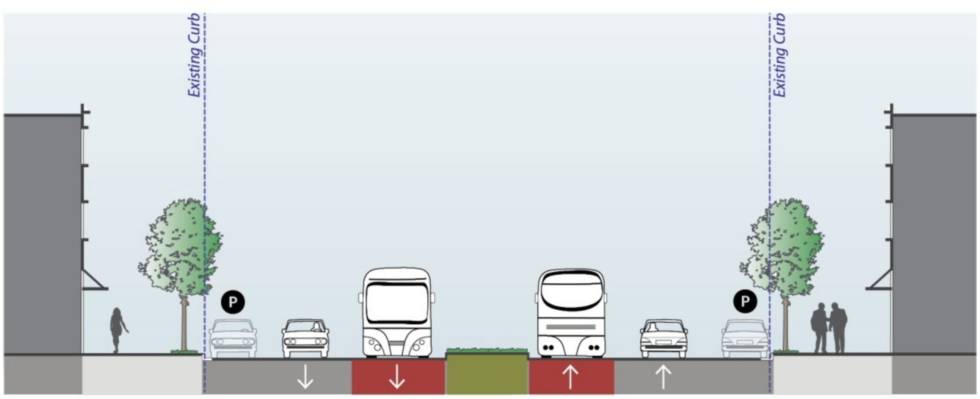
[3] Left and u- turns may be retained in special circumstances. These locations will be determined in future phases of the project.

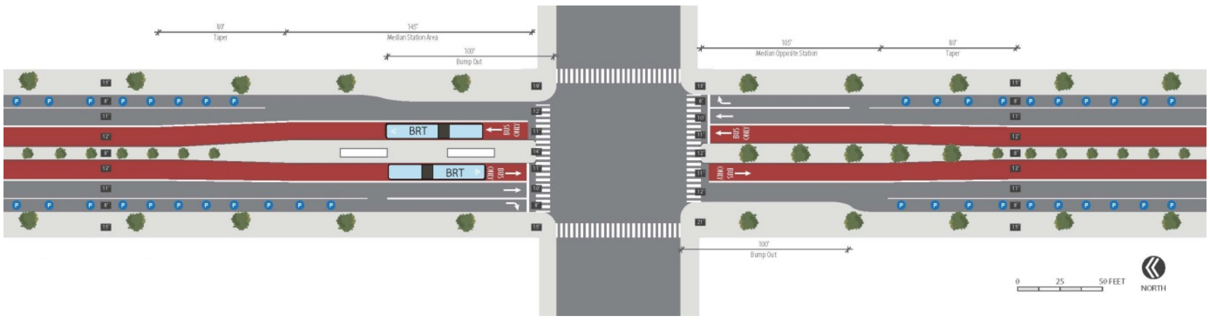
Figure 5-1: Preferred Alternative, Western and Ashland Avenues



5.2.1 Western Avenue Design Considerations

- At station intersections, two four to six foot curb extensions are provided on the far side corners of the intersection, as shown in **Figure 5-2**.

Figure 5-2: Western Avenue, Typical Station Design

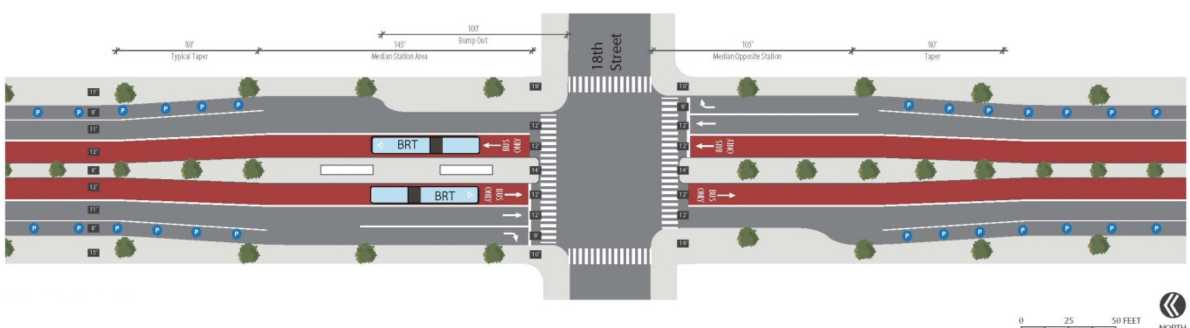


- The "Boulevard" portion of Western Avenue between 31st Street and 55th Street is an area where special design considerations must be made. Curb to curb width is 55 feet, a reduction of 15 feet compared with other portions of the corridor. The parallel roadway—Western Boulevard—is separated from Western Avenue by a 100-foot wide linear park and provides additional location for bus lanes and automobile travel. The preferred configuration would include a southbound bus-only lane on Western Boulevard and a northbound bus-only lane on Western Avenue. This configuration would require buses to have left and right sided doors.

5.2.2 Ashland Avenue Design Considerations

- At most station intersections along Ashland Avenue the existing curb to curb width widens from 70 feet to 80 feet. This additional roadway width is used to accommodate two nine foot curb extensions provided on the far side corners of the intersection, as shown in **Figure 5-3**.

Figure 5-3: Ashland Avenue, Typical Station Design



- The roadway configuration changes on Ashland Avenue within the Illinois Medical District, between Jackson Road and Roosevelt Road. The curb to curb width is 80 feet with three lanes in each direction and no parking. For this portion one automobile travel lane is removed in each direction to accommodate bus lanes, while retaining two automobile travel lanes in each direction.

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Section 6: Next Steps

The next steps for the Western and Ashland Corridors BRT project includes a project delivery and implementation plan for the Preferred Alternative that considers the construction and operating costs for the Ashland Corridor only. This corridor has been prioritized to move through to subsequent phases of implementation first. The Ashland Avenue Corridor was chosen because it has the highest ridership route in the CTA bus system, the slowest existing bus speeds of the two corridors, and more connections to the existing transit system and major activity generators. An implementation plan for the Western Avenue Corridor may follow at a later time and will be coordinated as funding is sought for this project.

While final design and construction timelines will be determined at a later date and are contingent upon available funding, to expedite this process an accelerated final design and construction packaging method is recommended which would allow for concurrent activities. Consideration should be given to the use of Construction Manager/General Contractor (CM/GC) contracting methods so that pre-construction activities and coordination of bid packages could begin early. The final design will need to be sequenced using multiple bid packages to begin underground utility work, station fabrication and advanced purchasing of long lead items such as signal poles, signal and ticketing equipment. Consideration may be necessary to begin some preconstruction activities prior to the full funding grant agreement depending upon date of the actual award such as utility agreements, permitting and temporary right-of-way. Also, physical survey will be needed quickly in the design process so that detailed design can begin immediately. Streamlining of the RFP, bid and award process will be necessary. The key milestone dates identified for this fast track project are provided below.

- Environmental Analysis & Conceptual Engineering — Spring 2013-Fall 2013
- Public Meeting — Summer 2013
- Final Design (contingent upon available funding) — To Be Determined

It should be noted that all anticipated project activities are subject to modification based upon FTA review schedules, state and federal requirements, contracting methods and other factors that could occur through environmental analysis, final design and construction of this project.

Agency coordination and environmental analysis in the next phase of study will determine the Class of Action in coordination with FTA and CTA. Based on the Class of Action determination and the results of the screening process in this Alternatives Analysis, the next phase of environmental analysis is proposed to consider a No-Build and Preferred Alternative option for comparative purposes. The TSM Alternative will not advance to the next stage of evaluation since it was determined through this AA that the TSM Alternative results in conditions similar to the No-Build Alternative. During the environmental clearance and preliminary engineering phases, additional capital, operating, and financial planning will also ensue to provide sufficient information for the submittal of the FTA Small Starts Application Package. Preparation and submittal of the Making the Case Document and other elements of the Small Starts Submittal will also occur as part of this process.

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