Appendix A-2: Screen 1 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 1 ALTERNATIVES REPORT

Western & Ashland Corridors Bus Rapid Transit (BRT) Project

Prepared for

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October 12, 2012

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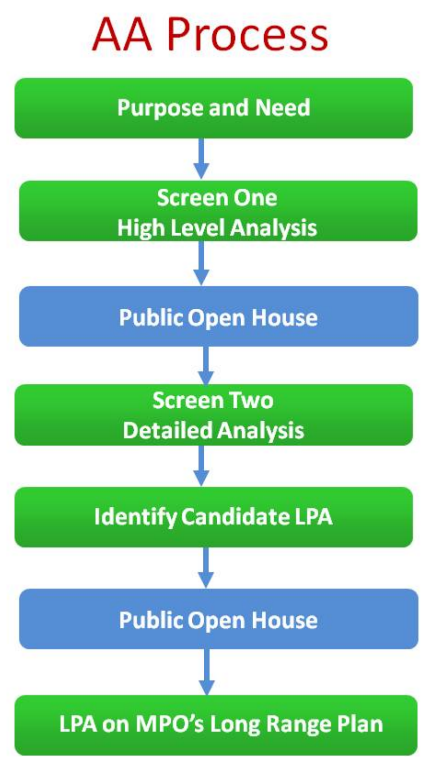
Section 1: Introduction

The Chicago Transit Authority (CTA), in cooperation with the Federal Transit Administration (FTA), is conducting an Alternatives Analysis (AA) for implementation of bus rapid transit (BRT) service along the primarily north-south corridors of Western Avenue and Ashland Avenue. Implementation of premium transit along these two corridors is planned as part of a citywide BRT network identified as part of the Chicago Metropolitan Agency for Planning (CMAP) 2040 regional long range transportation plan (LRTP). The BRT network has evolved through a series of studies, most recently codified in the Metropolitan Planning Council (MPC) 2011 report, *Integrating Livability Principles into Transit Planning: An Assessment of Bus Rapid Transit Opportunities in Chicago*.

This AA will use Bus Rapid Transit (BRT) as the preferred mode and focus on a multi-tiered evaluation of BRT features within the existing Western and Ashland Avenue Corridors. BRT is being used as the mode choice for this AA because it was identified by a series of previous CTA system planning efforts, as documented in Section 2.1 of this report. The ultimate goal of the AA is to select a Locally Preferred Alternative (LPA) that can move forward through the environmental documentation, design, construction, and operation phases.

1.1 Purpose of this Report



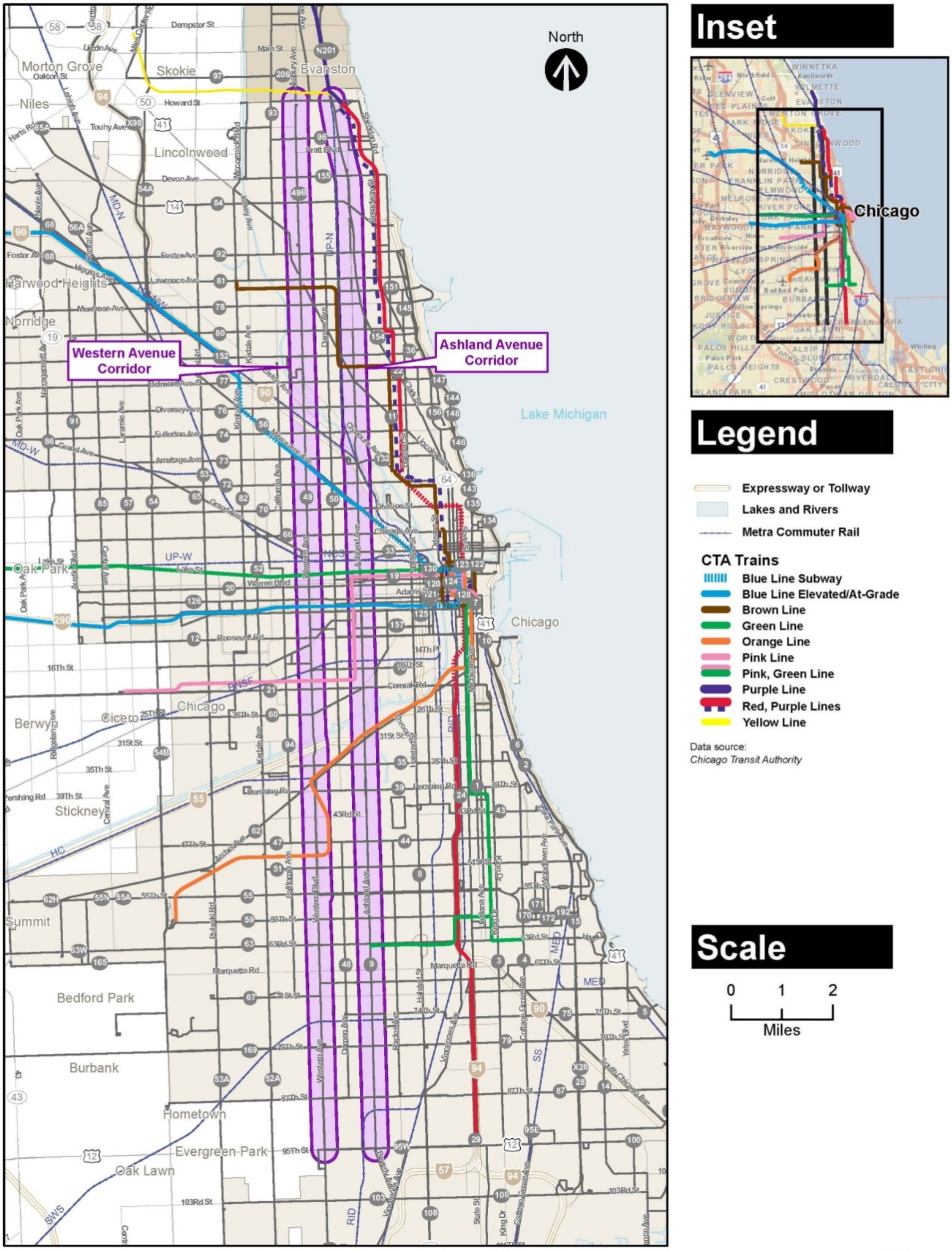
The AA process involves a series of steps in the development of the LPA. As a first step in this process, an existing conditions evaluation was conducted of the corridors to delineate the problems within the corridor and succinctly define the purpose and need for implementation of this project. Further information on the Purpose and Need may be found in the *Purpose and Need Statement Technical Memorandum*. Based on the project purpose and need statements and an engineering and planning analysis, a series of No-Build, Transportation Systems Management (TSM) and Build Alternatives were developed for further screening in the AA.

Because this is a mode specific AA, a two-level alternatives screening process is being conducted. The screen one evaluation, detailed in this report, describes the process and results of a fatal flaw analysis of the universe of BRT alternatives considered. The purpose of this Screen One Alternatives Report is to review the range of alternatives suggested during project scoping and document feasible alternatives to move forward in the screen two evaluation. The screen two evaluation will evaluate feasible alternatives against agreed upon project goals and objectives criteria, and will provide a more detailed assessment of alternatives including a review of potential station locations. The purpose and need, screen one and two analyses, along with community input at key milestones in the project will culminate in a recommended LPA along these corridors.

1.2 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**) span approximately 21 miles each in length.

Figure 1-1: Study Area



Corridor limits extend along both the Western and Ashland Corridors from Howard Street in the north to 95th Street in the south. For study purposes, the Ashland Avenue alignment transitions to Clark Street near Ridge Avenue (approximately 5800 north), and continues along Clark Street to Howard Street, the northern border of Chicago. Demographic characteristics for all Census tracts within a quarter mile of the Western and Ashland Avenue Corridors as well as all tracts between the two Avenues were used to define the study area and information was analyzed based on most recent 2010 U.S. Census data to identify an existing study area demographic profile. This study area boundary was chosen based on assumed reasonable walking distances to the corridor from surrounding residential areas.

STUDY AREA PROFILE	
Population:	**677,306**
Number Jobs:	**187,400**
Neighborhoods:	**55**
Wards:	**28**
Historic Areas:	**10**

These corridors are home to over 677,000 people (roughly 25 percent of the population of Chicago), over 187,000 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 high density residential (including single family, multi-family and mixed use), there are also 28 hospitals and several other health and social services 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.

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Section 2: Initial Considerations and Methodology

2.1 Initial Considerations and Assumptions

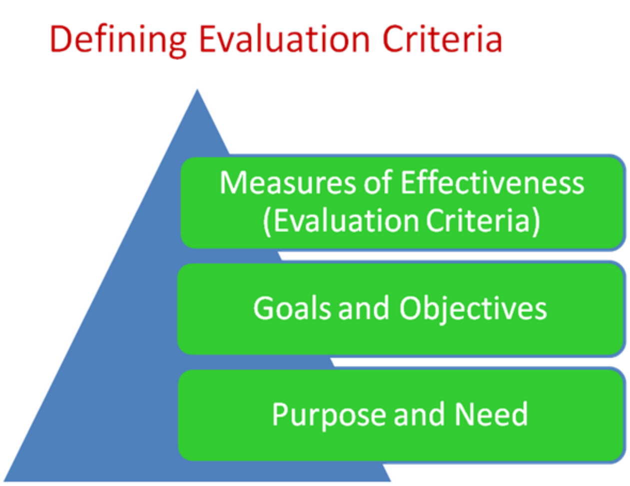
This AA will use BRT as the preferred mode and only focus on an evaluation of BRT features within the existing Western and Ashland corridors. BRT is being used as the mode choice because of the system planning efforts conducted to date. The justifications for BRT as the preferred mode and the definition of the Western and Ashland Corridors are summarized below:

- The *Circle Line Alternatives* Analysis Study considered all modes of transit including BRT along Western and Ashland. The Circle Line's Strategic Program of Projects recommended studying BRT along the Western and Ashland Corridors.
- In August 2011 the Metropolitan Planning Council (MPC), in coorperation with CTA and CDOT, completed a study entitled Integrating Livability Principles into Transit Planning: an Assessment of Bus Rapid Transit Opportunities in Chicago. This analysis identified the Western and Ashland Corridors as two of the top ten corridors with the greatest potential for integrating livability principles with BRT.
- These two corridors are two of the highest three bus ridership corridors in the CTA system.
- These two corridors have wide rights-of-way therefore providing an opportunity for the application of BRT.

Based on the information above, a grant application was submitted to the FTA to further study BRT applications along the Western and Ashland Corridors. The grant was obtained to complete an AA that would determine the appropriate application of BRT in these corridors. The AA process has been designed to comply with the FTA guidelines for New Starts/Small Starts projects and the National Environmental Policy Act (NEPA).

2.2 Screen One Evaluation Criteria

The screen one criteria represent performance measures for evaluating alternatives, and have been refined through the development of the purpose and need and goals and objectives process, as described below.



The *Project Purpose and Need* Technical *Memorandum* was developed early on in this AA and includes five strategies that helped define the scope of the project. The five purpose statements developed for this project were defined based on an extensive review of existing conditions as well as from public and stakeholder input to identify the key issues to be addressed through this project, and include the following:

- **Purpose 1** – Strengthen the north-south connections to CTA and Metra's transit network outside of the "loop" thereby improving regional, neighborhood, and job connectivity.
- **Purpose 2** – Provide a high quality transit experience by improving reliability, travel speed and ease of use.
- **Purpose 3** – Provide premium transit solutions that meet city/regional livability and mobility goals.
- **Purpose 4** – Provide premium transit solutions that support transportation, land use and economic development goals.
- **Purpose 5** – Develop premium transit solutions that effectively address both physical and financial constraints.

These project purposes provided the foundation for the development of goals and objectives, as indicated in **Table 2-1** below.

Table 2-1: 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
		Integrate Local Bus Service with Premium Service
		Design interconnectivity with CTA rail, Metra and bus service
		Improve Pedestrian Access
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
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
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

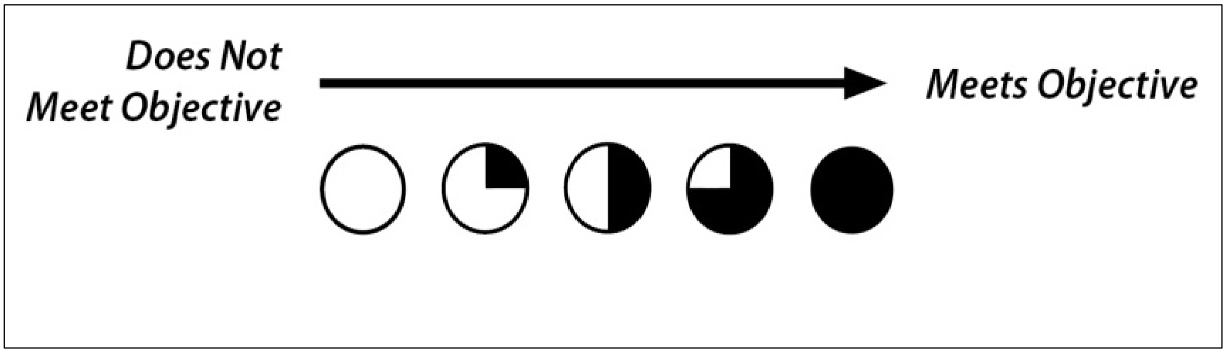
Quantitative evaluation criteria were subsequently developed based upon these larger project purposes and goals and objectives and provide measures of effectiveness in comparing alternatives. It should be noted that the screening criteria do not provide a comprehensive evaluation of alternatives, but rather provide a comparative assessment of benefits and impacts of the alternative's performance. **Table 2-2** presents the screening criteria. Each purpose statement has been more concisely categorized for ease of understanding and evaluation through the rest of this report.

Table 2-2: Screen Criteria

Purpose Category	Screen Criteria	Source Data and Evaluation Method
 Transit Network and Performance	Improve transit speed and reliability	Qualitative assessment of conceptual designs
	Provide off-board fare collection	
	Integration with local bus service	Location and separation of bus-only lanes
	Enforceability of bus-only lanes	
 Transit Rider Experience	Improve Ride Quality	Qualitative assessment of conceptual designs
	Improve Waiting and Boarding Experience	
 Livability, Urban Design and Economic Vitality	Improved pedestrian safety and access	Change in crossing distance; Change in median area.
	Enhance Integration with Adjacent Land Uses, Enhance Street Identity and Enhance Streetscape	Change in sidewalk and median areas; change in pedestrian amenities (trees, parking, etc)
 Road Design, Traffic and Parking	Number of general travel lanes	Change in travel lanes
	Meets Design Standards	Comparison with CTA standards and CDOT street design standards and review by CTA/CDOT
	Minimize taking of land for existing Curb-to-Curb Street Width	Change in curb-to-curb street width
	Minimize impacts to On-Street Parking and Loading	Change in parking and loading configuration
 Costs and Construction	Minimize Implementation Time	Qualitative assessment of costs and construction (curb relocation, etc)
	Minimize Operating and Capital Costs	
	Minimize Roadway Maintenance Costs	
	Minimize Construction Duration & Intensity	

Since detailed quantification was not undertaken as part of screen one, a comparative matrix was developed that could help identify those alternatives that warranted further analysis. The selected criteria were rated at five levels going from "Does Not Meet Objective" to "Meets Objective". This is shown in **Figure 2-1**. The comparative assessment of each alternative is summarized in **Section 4** of this report.

Figure 2-1: Alternative Ratings



Section 3: Screen One Alternatives

A series of no-build, transportation systems management (TSM), and build alternatives were developed for the screen one evaluation and are described in detail below. The build alternatives consider 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. Some alternatives also consider sidewalk width reductions to accommodate bus lanes, and assume an ability to reduce existing 15-foot sidewalks to 10-foot sidewalks. All alternatives were designed utilizing the existing right-of-way, which is typically 100 feet throughout the corridors. Variations of the 100-foot right-of-way were not assessed in this report and will be considered in the screen two evaluation. Stations are assumed to be at intersections for safety and operational reasons and will be evaluated as part of the screen two evaluation as well.

3.1 No-Build and TSM Alternatives

The No-Build and Transportation System Management (TSM) alternatives provide a baseline for comparing Build Alternatives against existing conditions and minimal transit investments within the corridor.

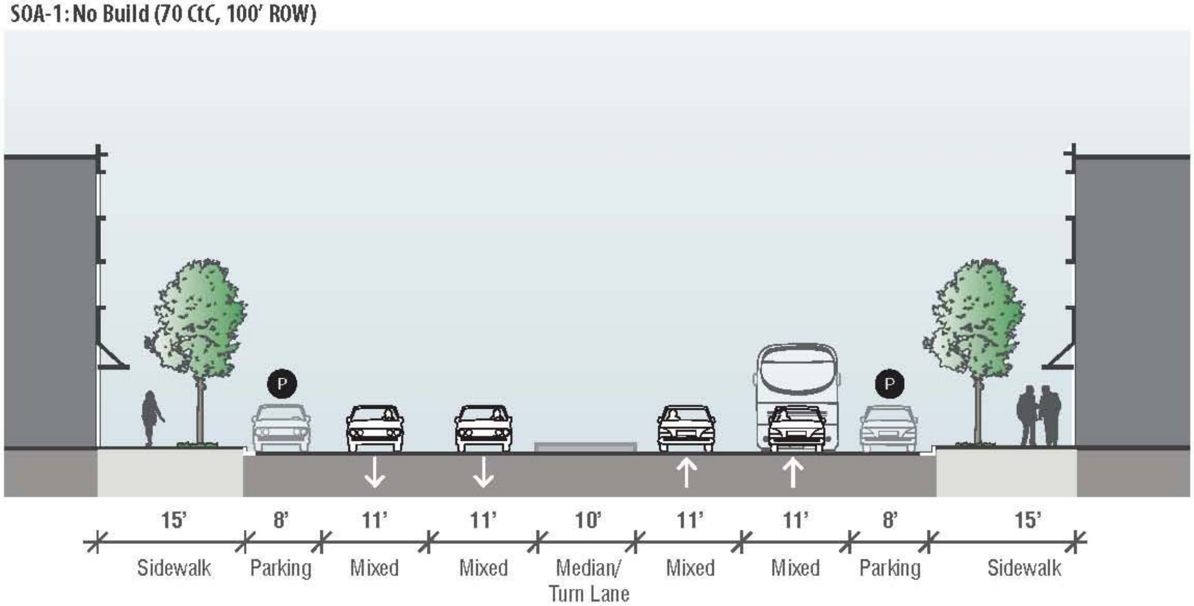
SOA-1A: No-Build Alternative

The No-Build Alternative consists of the existing street configuration and bus service. The No-Build Alternative will automatically carry over for evaluation in the screen two analysis and the subsequent environmental process.

SOA-1B: TSM Alternative

The TSM Alternative will consist of the existing street configuration and will consider implementation of express bus service without exclusive travel lanes. The TSM Alternative will automatically carry forward for evaluation in the screen two analysis.

SOA-1: No Build (70 CtC, 100' ROW)



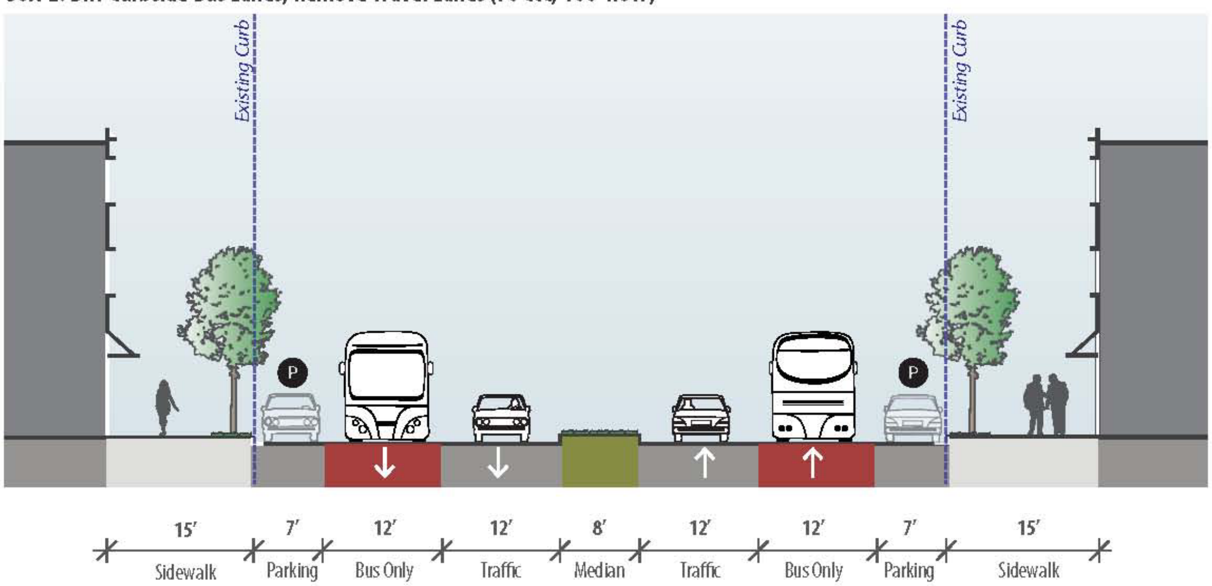
3.2 Build Alternatives

The following represents the series of potential build alternatives evaluated as part of the screen one evaluation process. All Build Alternatives utilize a combination of existing travel lanes, on-street parking, and/or existing sidewalk widths. The distinct Build Alternatives utilize these features to provide options for improving bus travel and safe operations.

SOA-2: BRT Curbside Bus Lanes, Remove Travel Lanes

This BRT alternative includes one curbside bus lane in each direction, one travel lane in each direction, parking, and a slightly reduced median. One travel lane is removed in each direction to accommodate bus lanes, but existing parking and sidewalk widths are preserved. A median is provided between lanes for safety reasons. The bus lane for this alternative includes colored pavement and "Bus Only" markings. Mixed traffic will be discouraged from entering the bus lane, but because the bus lanes are located on the curbside lane, cars are allowed to cross the lanes to access parallel parking and make right turns.

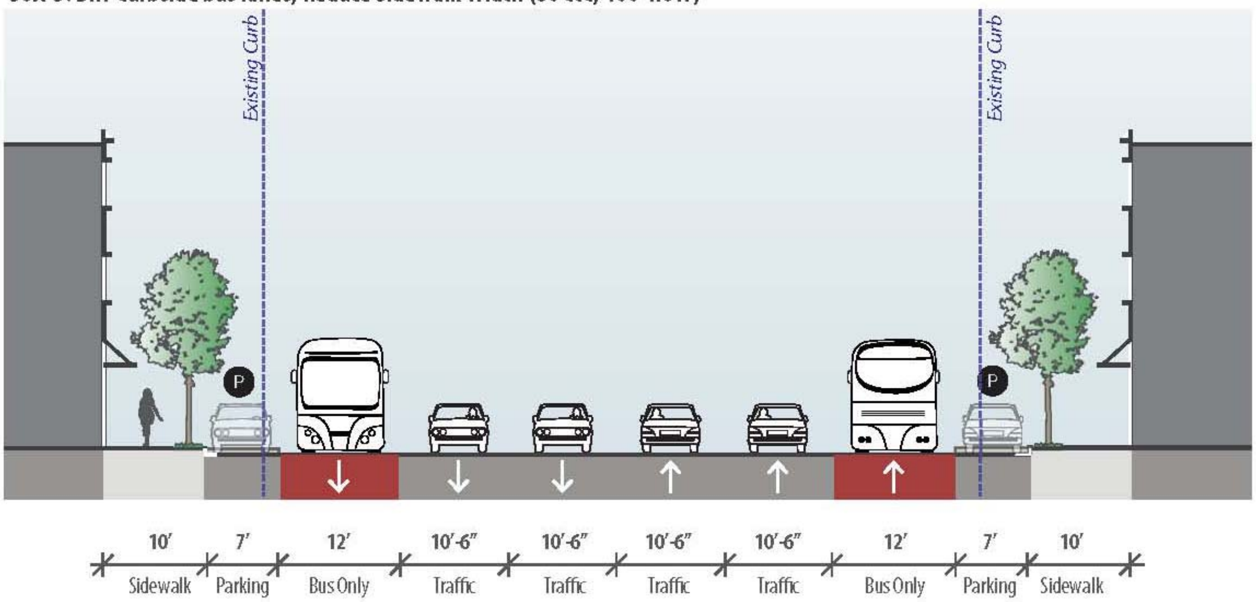
SOA-2: BRT Curbside Bus Lanes, Remove Travel Lanes (70 CtC, 100' ROW)



SOA-3: BRT Curbside Bus Lanes, Reduce Sidewalk Width, Remove Median

This BRT alternative includes one curbside bus lane in each direction, two travel lanes in each direction, and parking. Sidewalk width would be reduced to accommodate bus lanes and the center median/turn-lane would be removed, while parking and travel lanes are preserved. The bus lane will include colored pavement and "Bus Only" markings. Mixed traffic will be discouraged from entering the bus lane, but because the bus lanes are located on the curbside lane, cars are allowed to cross the lanes to access parallel parking and make right turns.

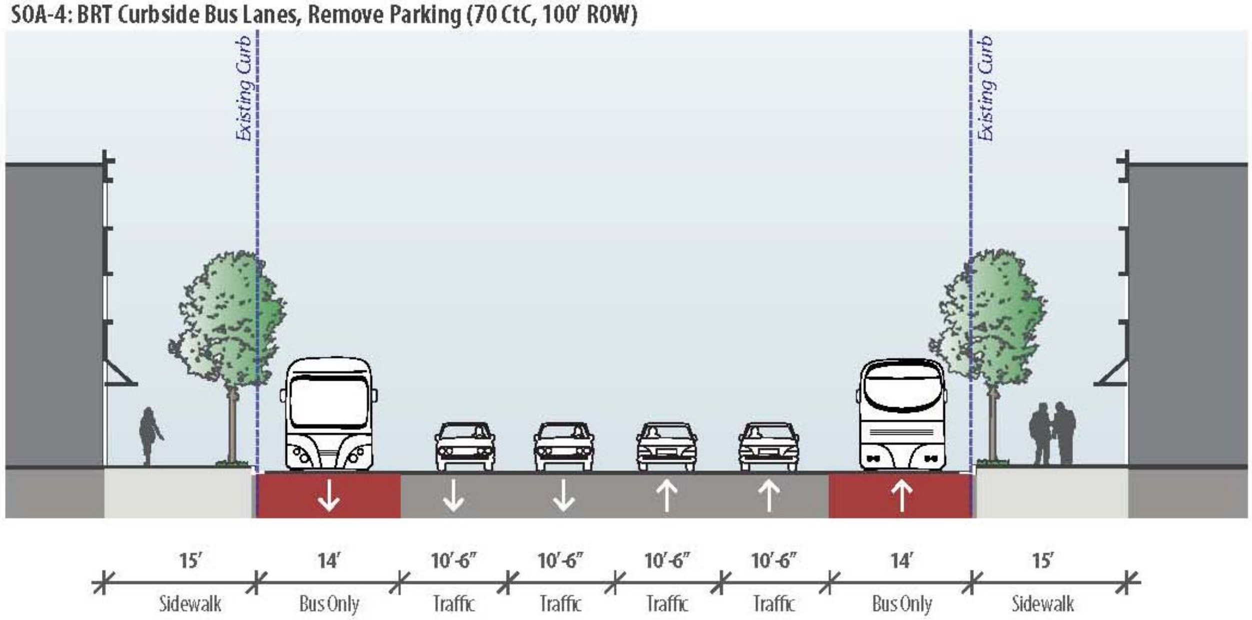
SOA-3: BRT Curbside bus lanes, Reduce Sidewalk Width (80 CtC, 100' ROW)



SOA-4: BRT Curbside Bus Lanes, Remove Parking and Median

This BRT alternative includes one curbside bus lane and two travel lanes in each direction. Parking and the existing median would be removed to accommodate bus lanes, while travel lanes and sidewalk widths are preserved. The bus lane for this alternative would include colored pavement and "Bus Only" markings. Mixed traffic will be discouraged from entering the bus lane, but because the bus lanes are located on the curbside lane, cars are allowed to cross the lanes to access parallel parking and make right turns.

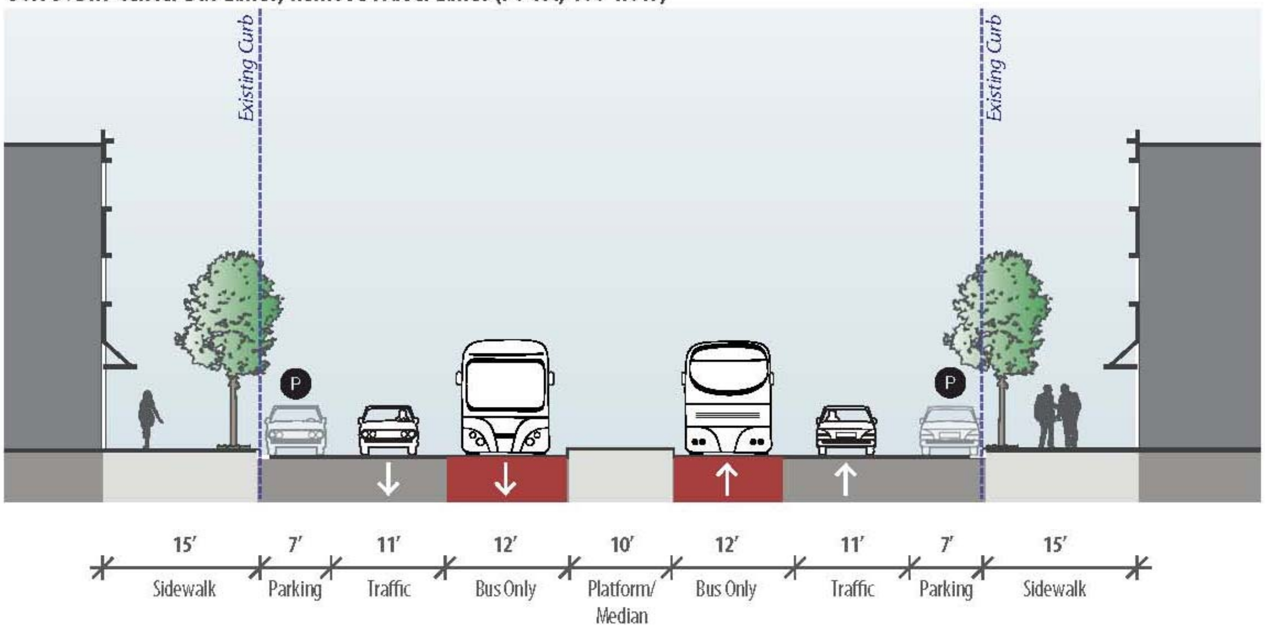
SOA-4: BRT Curbside Bus Lanes, Remove Parking (70 CtC, 100' ROW)



SOA-5: BRT Center Bus Lanes, Remove Travel Lanes

This BRT alternative includes one center bus lane in each direction, one travel lane in each direction, parking, and a median. One travel lane is removed in each direction to accommodate bus lanes, but parking and sidewalk widths are preserved. The bus lane for this alternative includes colored pavement and "Bus Only" markings.

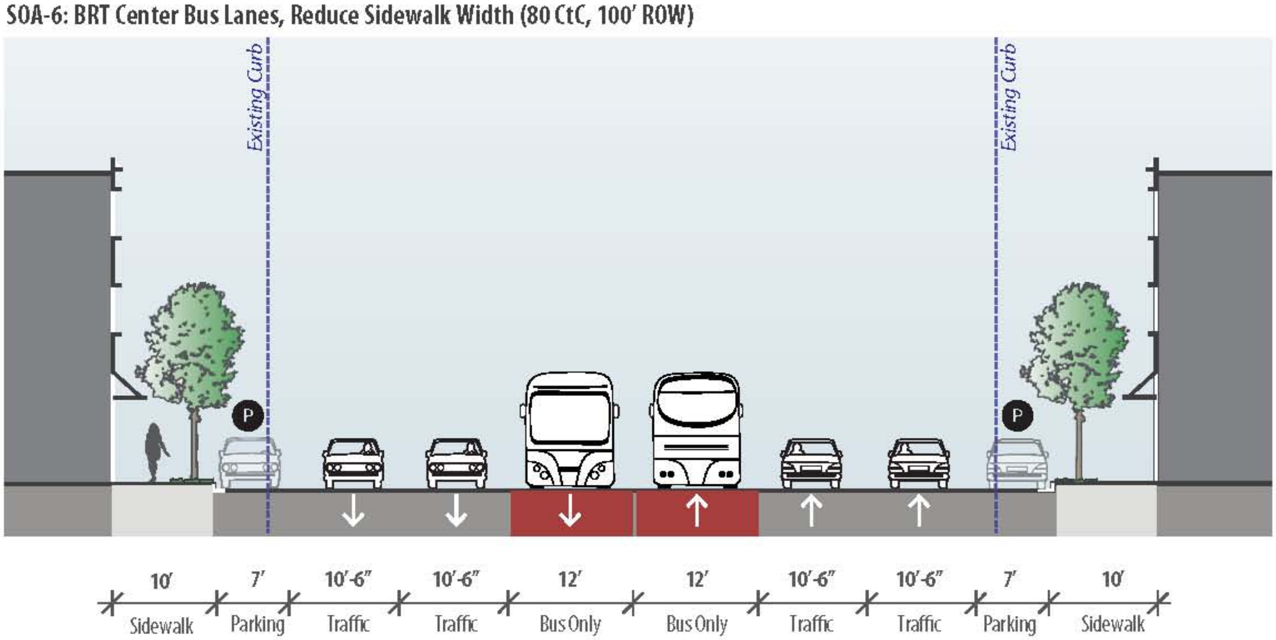
SOA-5: BRT Center Bus Lanes, Remove Travel Lanes (70 CtC, 100′ ROW)



SOA-6: BRT Center Bus Lanes, Reduce Sidewalk Width

This BRT alternative includes one center bus lane in each direction, two travel lanes in each direction and parking. Sidewalk width is reduced to accommodate bus lanes and the center median/turn lane would be removed, while parking and travel lanes are preserved. The bus lane for this alternative will include colored pavement and "Bus Only" markings.

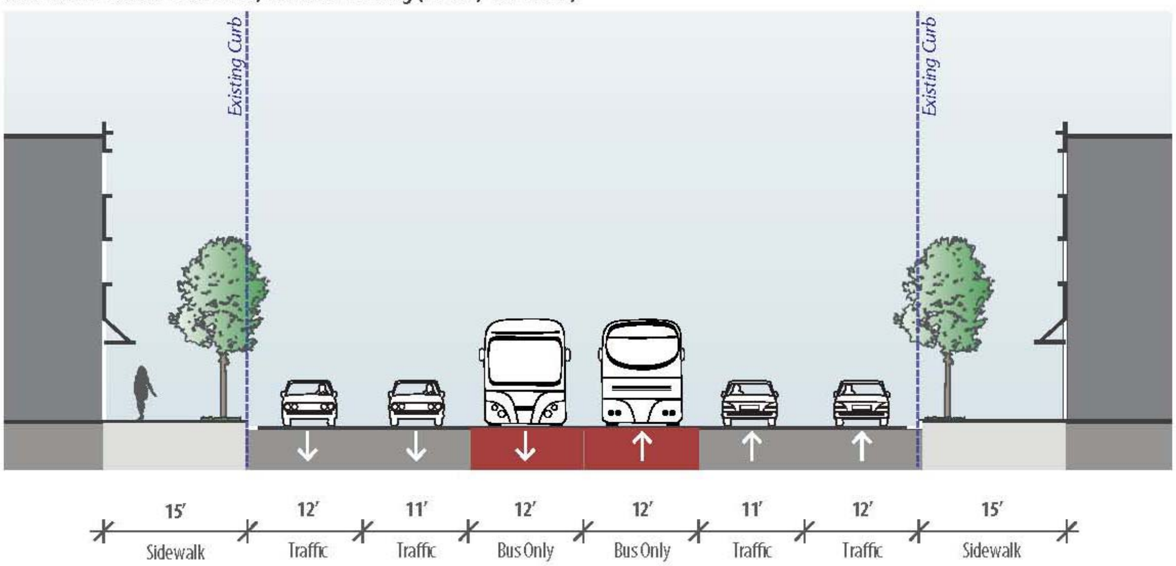
SOA-6: BRT Center Bus Lanes, Reduce Sidewalk Width (80 CtC, 100′ ROW)



SOA-7: BRT Center Bus Lanes, Remove Parking

This BRT alternative includes one center bus lane and two travel lanes in each direction. Parking and the center median/turn-lane would be removed to accommodate bus lanes, while travel lanes and sidewalk widths are preserved. The bus lane for this alternative would include colored pavement and "Bus Only" markings.

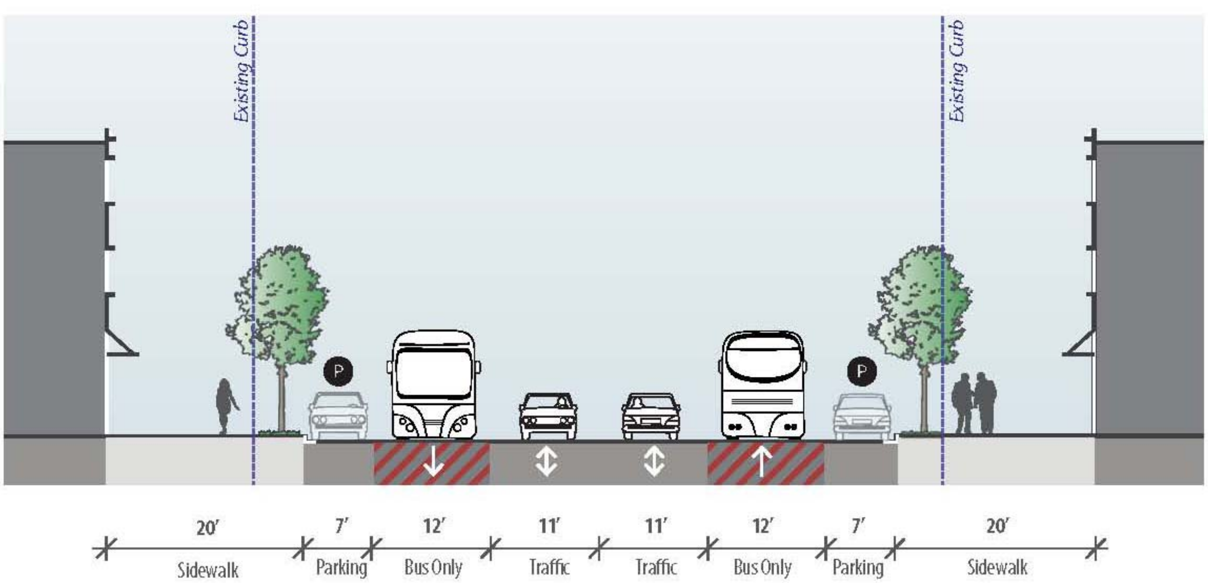
SOA-7: BRT Center Bus Lanes, Remove Parking (70 CtC, 100′ ROW)



SOA-8: Peak Period Bus Lane in Peak Direction

This is one of four potential alternatives (SOA-8 through SOA-11) where a reversible center lane could be utilized either for a travel lane or bus lane. This alternative would accommodate a bus lane and two travel lanes in the peak direction and would include a peak period bus lane in peak direction (two travel lanes in peak direction, one travel lane off peak direction, and parking, requires overhead reversible lane signs).

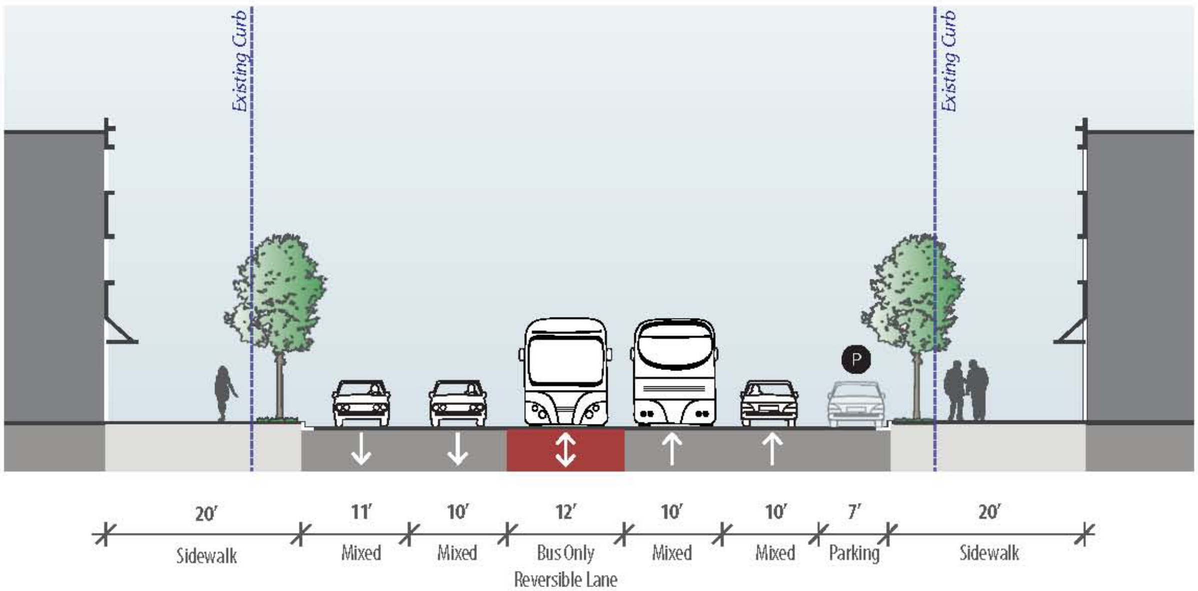
SOA-8: BRT Peak period bus lane in peak direction (60 CtC, 100′ ROW)



SOA-9: Reversible Bus Lane for Peak Direction

This is one of four potential alternatives (SOA-8 through SOA-11) where a reversible center lane could be utilized either for a travel lane or bus lane. This alternative would accommodate a bus lane and two travel lanes in the peak direction and would include a reversible bus lane for peak direction (two travel lanes in each direction, and one lane of parking).

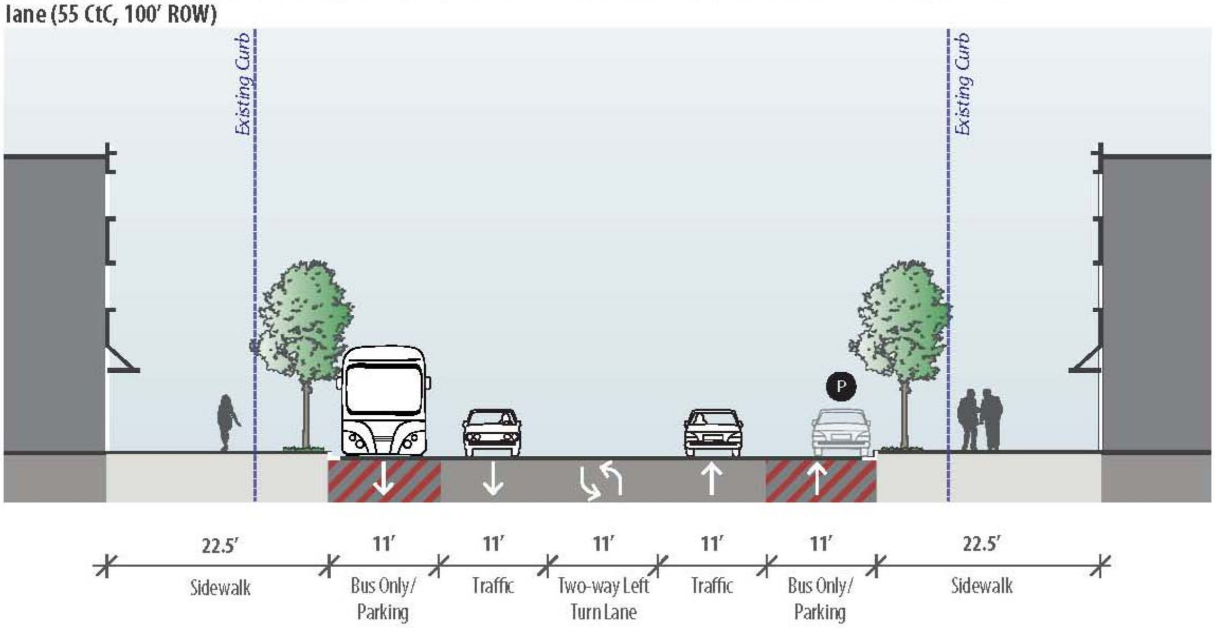
SOA-9: Reversible bus lane for peak direction (60 CtC, 100′ ROW)



SOA-10: Bus Lane for Peak Direction (parking off-peak), One Travel Lane in Each Direction and a Two-Way Left Turn

This is one of four potential alternatives (SOA-8 through SOA-11) where a reversible center lane could be utilized either for a travel lane or bus lane. This alternative would accommodate a bus lane and two travel lanes in the peak direction and would include a bus lane for peak direction (parking off peak) one travel lane in each direction, and a two-way left-turn lane.

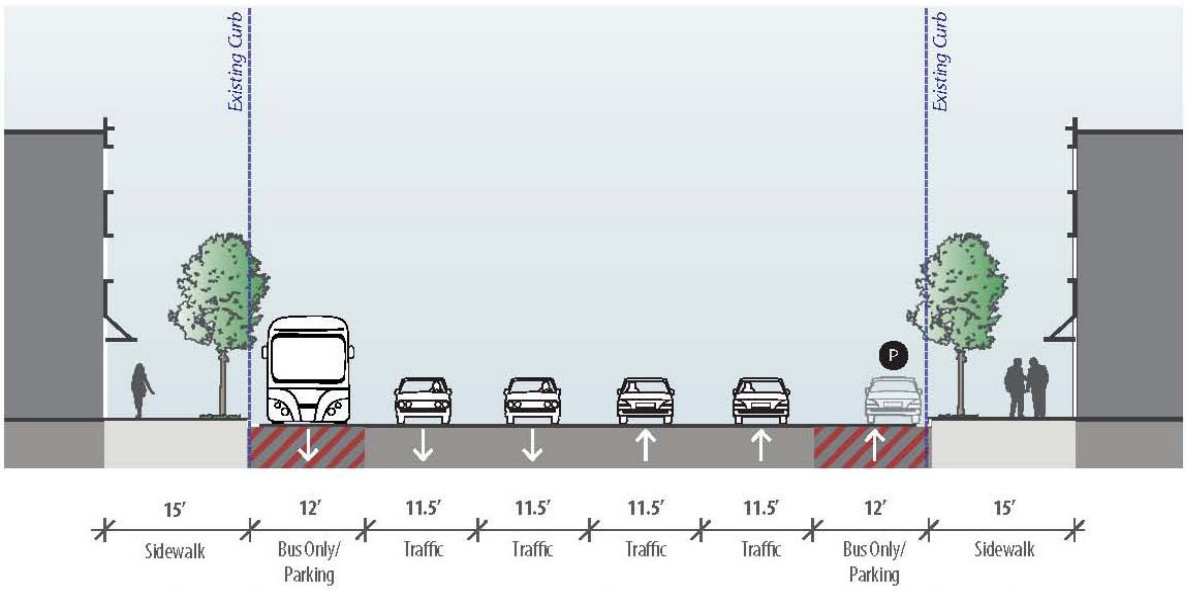
SOA-10: Bus lane for peak direction (parking off peak) one travel lane in each direction, and a two-way left-turn lane (55 CtC, 100′ ROW)



SOA-11: Bus Lane for Peak Direction (parking off-peak), Two Travel Lanes in Each Direction

This is one of four potential alternatives (SOA-8 through SOA-11) where a reversible center lane could be utilized either for a travel lane or bus lane. This alternative would accommodate a bus lane and two travel lanes in the peak direction and would include a bus lane for peak direction (parking off peak) and two travel lanes in each direction.

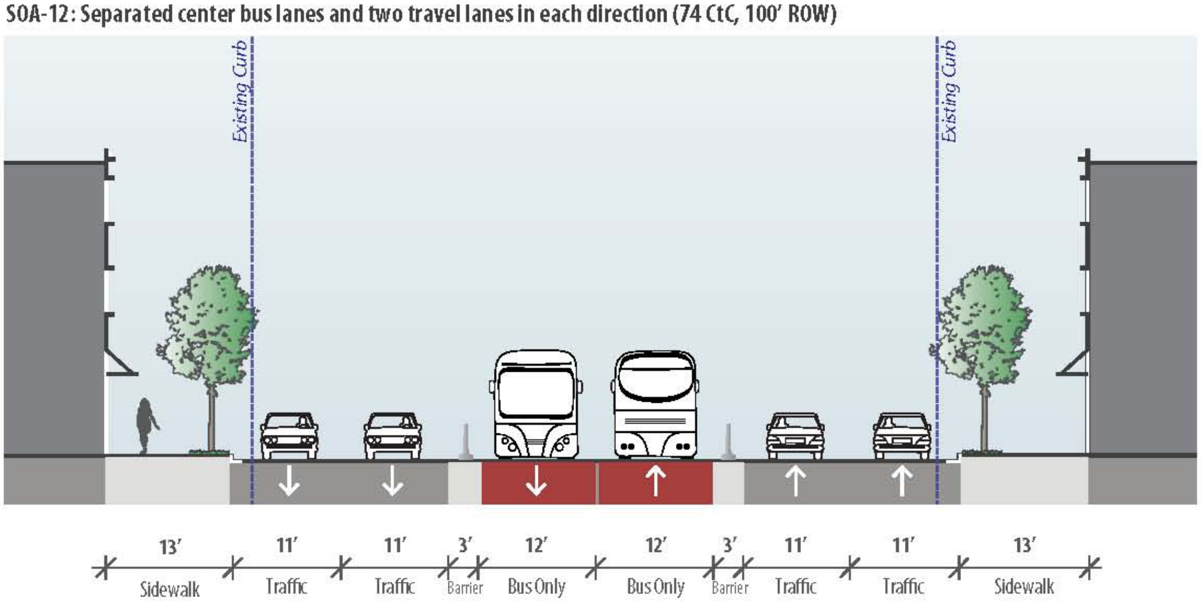
SOA-11: Bus lane for peak direction (parking off peak) and two travel lanes in each direction (70 CtC, 100′ ROW)



SOA-12: Separated Center Bus Lanes and Two Travel Lanes in Each Direction

This alternative is one of three potential alternatives (SOA-12 through SOA-14) that include barrier separated bus lanes. These alternatives all include bus lanes with physical separation from travel lanes, such as concrete barrier, mountable curbs or flexible posts. In this alternative, separated center bus lanes and two travel lanes would be provided in each direction.

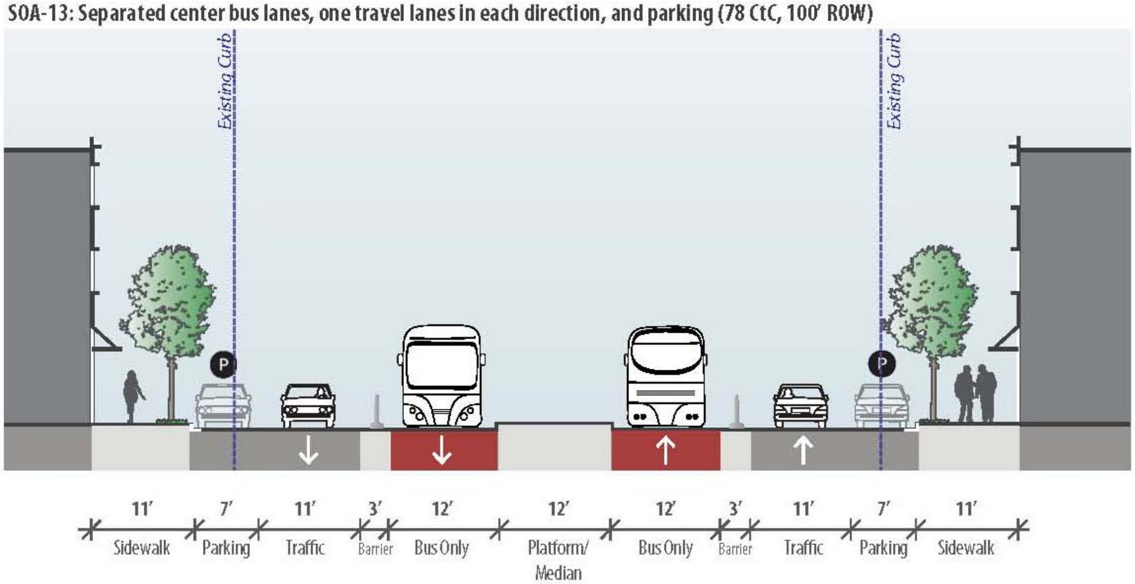
SOA-12: Separated center bus lanes and two travel lanes in each direction (74 CtC, 100′ ROW)



SOA-13: Separated Center Bus Lanes, One Travel Lane in Each Direction and Parking

This alternative is one of three potential alternatives (SOA-12 through SOA-14) that include barrier separated bus lanes. These alternatives all include bus lanes with physical separation from travel lanes, such as concrete barrier, mountable curbs or flexible posts. In this alternative, separated center bus lanes, one travel lane in each direction, and parking would be provided.

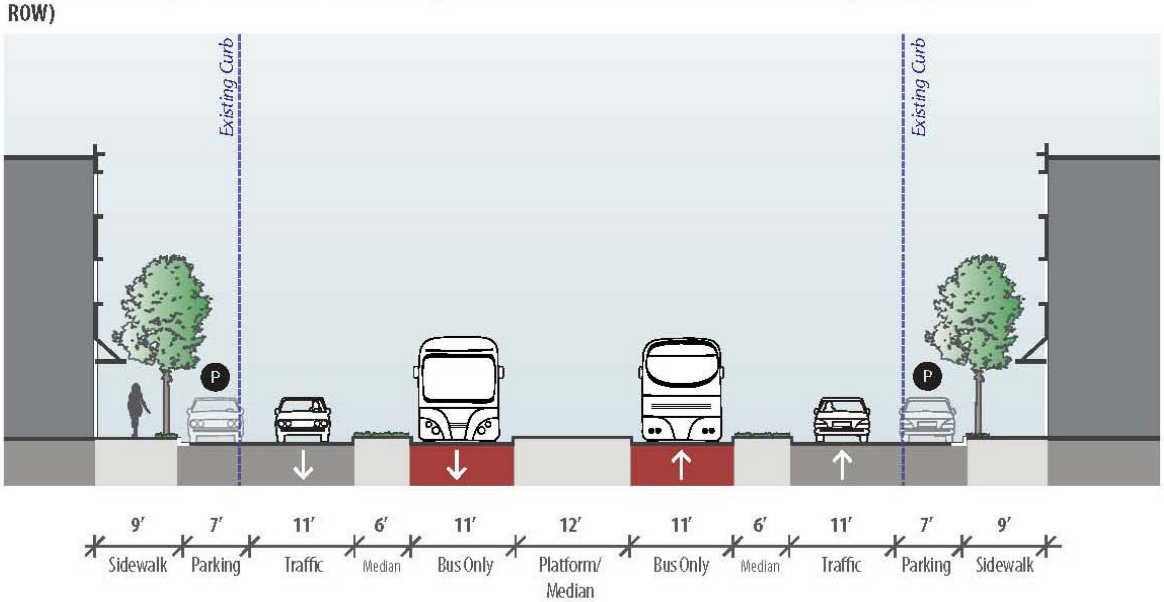
SOA-13: Separated center bus lanes, one travel lanes in each direction, and parking (78 CtC, 100′ ROW)



SOA-14: Median Separated Center Bus Lanes with Platform, One Travel Lane in Each Direction, and Parking

This alternative is one of three potential alternatives (SOA-12 through SOA-14) that include barrier separated bus lanes. These alternatives all include bus lanes with physical separation from travel lanes, such as concrete barrier, mountable curbs or flexible posts. In this alternative, median separated center bus lanes with a platform would be provided and one travel lane in each direction with parking would be provided.

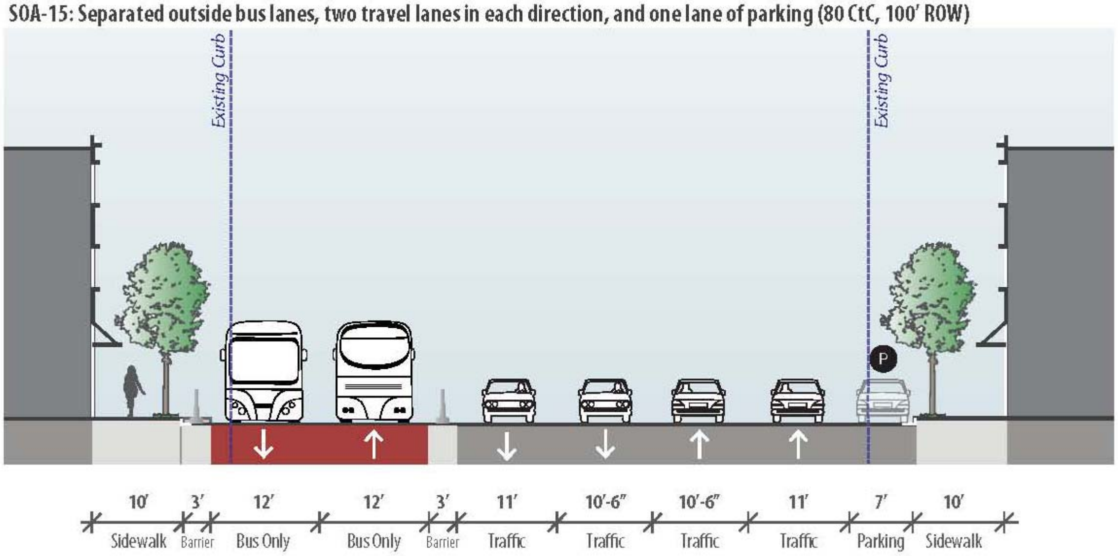
SOA-14: Median separated center bus lanes with platform, one travel lane in each direction, and parking (82 CtC, 100′ ROW)



SOA-15: Separated Outside Bus Lanes, Two Travel Lanes in Each Direction, and One Lane of Parking

This is one of two potential alternatives (SOA-15 through SOA-16) that includes a two-way adjacent bus lane. In both alternatives, a two-way bus lane runs adjacent to travel lanes. This alternative includes separated outside bus lanes, two travel lanes in each direction, and one lane of parking. This alternative would require reducing existing sidewalk widths to accommodate the two-way adjacent bus lanes.

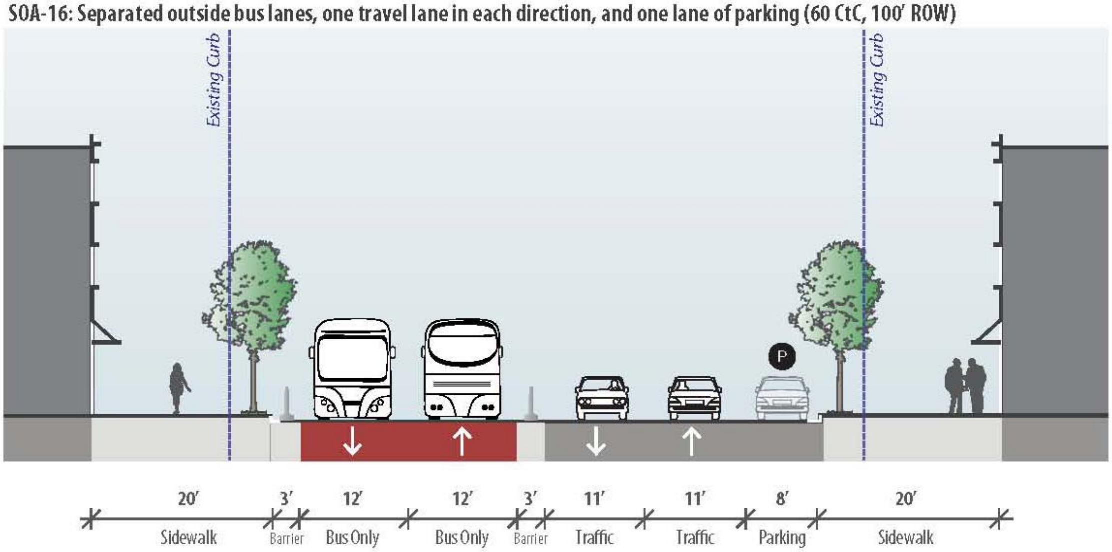
SOA-15: Separated outside bus lanes, two travel lanes in each direction, and one lane of parking (80 CtC, 100′ ROW)



SOA-16: Separated Outside Bus Lanes, One Travel Lane in Each Direction, and One Lane of Parking

This is one of two potential alternatives (SOA-15 through SOA-16) that includes a two-way adjacent bus lane. In both alternatives, a two-way bus lane runs adjacent to travel lanes. This alternative includes separated outside bus lanes, one travel lane in each direction, and one lane of parking. The configuration of two-way adjacent bus lanes may create operational complexity at intersections and stop locations, especially where automobile traffic turns across the two-way bus lanes.

SOA-16: Separated outside bus lanes, one travel lane in each direction, and one lane of parking (60 CtC, 100′ ROW)



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Section 4: Screen One Alternatives Evaluation

The following provides an overview of the results of the screen one alternatives evaluation.. The results of this screen one evaluation are described below in Sections 4.1 and 4.2 and are summarized in Appendix A.

4.1 Alternatives – Not Recommended to Advance

In conducting the screen one evaluation, alternatives were screened for fatal flaws. Alternatives determined to be infeasible due to transit operational issues, design considerations, or cost are not recommended for further evaluation and are described in detail below. These fatal flaw alternatives included reversible lane, barrier separated and two-way adjacent bus lane options.

Reversible Lane/Peak Direction Alternatives (SOA-8 through SOA-11)

There are four potential alternatives where a reversible center lane is utilized either for a travel lane or bus lane. Reversible lanes are not appropriate on the Western and Ashland corridors because there is not a dominant direction during peak travel periods. Furthermore, this would increase costs significantly because of the need for overhead lane control signs and a lane control systems. This practice is also not endorsed by either the Chicago Department of Transportation (CDOT) or CTA. For these reasons, reversible lane alternatives are not recommended for further consideration.

Alternatives removed from consideration include:

- **SOA-8**: Peak period bus lane in peak direction, two travel lanes in peak direction, one travel lane off peak direction, and parking (requires overhead reversible lane signs) (60' CtC, 100' ROW)
- **SOA-9**: Reversible bus lane for peak direction, two travel lanes in each direction, and one lane of parking (60' CtC, 100' ROW)
- **SOA-10**: Bus lane for peak direction (parking off peak), one travel lane in each direction, and a two-way left-turn lane (55' CtC, 100' ROW)
- **SOA-11**: Bus lane for peak direction (parking off peak) and two travel lanes in each direction (70' CtC, 100' ROW)

Barrier Separated Alternatives (SOA-12 through SOA-14)

There are three potential alternatives that include barrier separated bus lanes. It was determined that physically separated lanes do not conform to the urbanized, mixed-use context CDOT and CTA are trying to achieve. From an urban design standpoint, concrete barriers would reduce community cohesion and the perceived safety and walkability of the surrounding area.. These barriers also prevent buses from moving around stalled vehicles. Additionally, these separations restrict emergency access to the area. For these reasons, these alternatives are not recommended for further consideration.

Alternatives removed from consideration include:

- **SOA-12**: Separated center bus lanes and two travel lanes in each direction (74' CtC, 100' ROW)

- **SOA-13**: Separated center bus lanes, one travel lanes in each direction, and parking (78' CtC, 100’ ROW)
- **SOA-14**: Median separated center bus lanes with platform, one travel lane in each direction, and parking (82' CtC, 100’ ROW)

It should be noted that this does not preclude some form of surface treatment to indicate a separate lane such as rumble strips, different stripping, etc.

Two-way Adjacent Bus Lane Alternatives (SOA-15 through SOA-16)

There are two potential alternatives that include a two-way adjacent bus lane. This configuration creates operational difficulties at intersections and stop locations, especially in loading zones and where automobile traffic turns across the two-way bus lanes. Furthermore, this design creates a barrier for loading and unloading on one side of the street. For these reasons, these alternatives are not recommended for further consideration.

Alternatives removed from consideration include:

- **SOA-15:** Separated outside bus lanes, two travel lanes in each direction, and one lane of parking (80' CtC, 100’ ROW)
- **SOA-16**: Separated outside bus lanes, one travel lane in each direction, and one lane of parking (60' CtC, 100’ ROW)

4.2 Alternatives – Recommended for Further Evaluation

SOA-2: BRT Curb Side Bus Lanes, Remove Travel Lanes

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Because of the location of bus-only lanes along the curb, enforceability of bus-only lanes may be somewhat impeded by cars completing right turns from the bus-only lanes. Local buses would be able to utilize bus only lanes and local stops would remain in the same locations. BRT travel speeds would be impacted by parking spaces and loading zones and interaction with the local bus services.

Transit Rider Experience

Pedestrian safety improvements, such as curb extensions and increased landscaping would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information to improve the transit rider experience.

Urban Design

Pedestrian access and street identity would be improved by integrating streetscape enhancements including a median to be utilized for additional landscaping and as a pedestrian refuge.

Traffic and Parking

Traffic capacity may be reduced by the removal of travel lanes. Parking would continue to be located along the corridor.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be more cost effective than other alternatives because existing curb-to-curb width would be retained.

SOA-3: BRT Curbside bus lanes, Reduce Sidewalk Width

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Local buses would be able to utilize bus only lanes and local stops would remain in the same locations. BRT travel speeds would be impacted by parking spaces and loading zones and interaction with the local bus services.

Transit Rider Experience

Pedestrian safety improvements, such as curb extensions and increased landscaping, would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information. With the reduction in sidewalk widths to accommodate parking, the areas between stations may not be as pedestrian friendly as current conditions.

Urban Design

The identity of the street would be improved with streetscape enhancements. However, reduced sidewalk width may limit space for pedestrian amenities. Also, depending on how intersections are designed, there may be increased crossing distance at crosswalks.

Traffic and Parking

By reducing sidewalk widths to accommodate the bus lanes, traffic capacity and parking would be retained.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be less cost effective than other alternatives because existing curb-to-curb width would need to be widened.

SOA-4: BRT Curbside Bus Lanes, Remove Parking

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Local buses would be able to utilize bus only lanes and local stops would remain in the same locations. BRT travel speeds would be impacted by the interaction with the local bus services.

Transit Rider Experience

Pedestrian safety improvements, such as increased landscaping would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information.

Urban Design

Streetscape enhancements, such as landscaping and pedestrian amenities, would improve the identity of the street. However, on-street parking, which is proposed to be removed in this alternative, is an inherent element of walkable, compact, mixed-use urban areas and a component of economic health of urban businesses.

Furthermore, while sidewalk width would be retained in this alternative, pedestrian comfort and access may still be adversely impacted for several reasons, including:

- Pedestrians would need to cross six travel lanes without a median.
- On-street parking, which improves pedestrian comfort because it acts as a buffer between moving traffic and the sidewalk, is removed.
- On-street parking, which also acts as a buffer for pedestrians and businesses, is removed.
- Removal of on-street parking may encourage faster moving traffic (parking provides an indication to motorists that operating speeds are reduced).

Traffic and Parking

Parking and loading zones would be removed. Traffic capacity would be retained and may improve without potential conflicts with parking cars.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be more cost effective than other alternatives because existing curb-to-curb width would be retained.

SOA-5: BRT Center Bus Lanes, Remove Travel Lanes

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Local buses would not be able to use bus only lanes.

Transit Rider Experience

Pedestrian safety improvements, such as curb extensions and increased landscaping would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information.

Urban Design

Pedestrian access and street identity would be improved by integrating streetscape enhancements including a median to be utilized for bus shelters, landscaping and as a pedestrian refuge.

Traffic and Parking

Traffic capacity may be reduced by the removal of travel lanes. Parking would continue to be located along the corridor.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be more cost effective than other alternatives because existing curb-to-curb width would be retained.

SOA-6: BRT Center Bus Lanes, Reduce Sidewalk Width (80' CtC, 100' ROW)

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Local buses would not be able to use bus only lanes.

Transit Rider Experience

Pedestrian safety improvements, such as curb extensions, increased landscaping would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information.

Urban Design

The identity of the street would be improved with streetscape enhancements. However, reduced sidewalk width may limit space for pedestrian amenities. Also, depending on how intersections are designed, there may be increased crossing distance at crosswalks.

Traffic and Parking

Traffic capacity and parking would be retained.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be less cost effective than other alternatives because existing curb-to-curb width would be widened.

SOA-7: BRT Center Bus Lanes, Remove Parking

Transit Performance

Dedicated bus lanes would improve transit speed and reliability because buses do not intermix with through traffic. Furthermore, the BRT system would provide the opportunity for off-board fare collection, which would allow for all-door boarding helping reduce dwell times and improve the transit rider's waiting and boarding experience. Local buses would not be able to use bus only lanes.

Transit Rider Experience

Pedestrian safety improvements, such as increased landscaping would be provided. BRT stations would be of high-quality design and may have additional amenities, such as bicycle parking and real-time information.

Urban Design

Streetscape enhancements, such as landscaping and pedestrian amenities, would improve the identity of the street. However, on-street parking, which is proposed to be removed in this alternative, is an inherent element of walkable, compact, mixed-use urban areas and a component of economic health of urban businesses.

Furthermore, while sidewalk width would be retained in this alternative, pedestrian comfort and access may still be adversely impacted for several reasons, including:

- Pedestrians would need to cross six travel lanes without a median.
- On-street parking, which improves pedestrian comfort because it acts as a buffer between moving traffic and the sidewalk, is removed.
- On-street parking, which also acts as a buffer for pedestrians and businesses, is removed.

- Removal of on-street parking may encourage faster moving traffic (parking provides an indication to motorists that operating speeds are reduced).

Traffic and Parking

Parking and loading zones would be removed. Traffic capacity would be retained and may improve without potential conflicts with parking cars.

Costs Considerations

The screen one evaluation of capital costs were established based on whether alternatives could be accommodated within existing curb-to-curb widths since these alternatives represent the most financially feasible options for improvement. The subsequent screen two evaluation will provide greater quantitative comparisons for evaluating capital costs for each alternative. Based on this screen one evaluation of costs, this alternative was determined to be more cost effective than other alternatives because existing curb-to-curb width would be retained.

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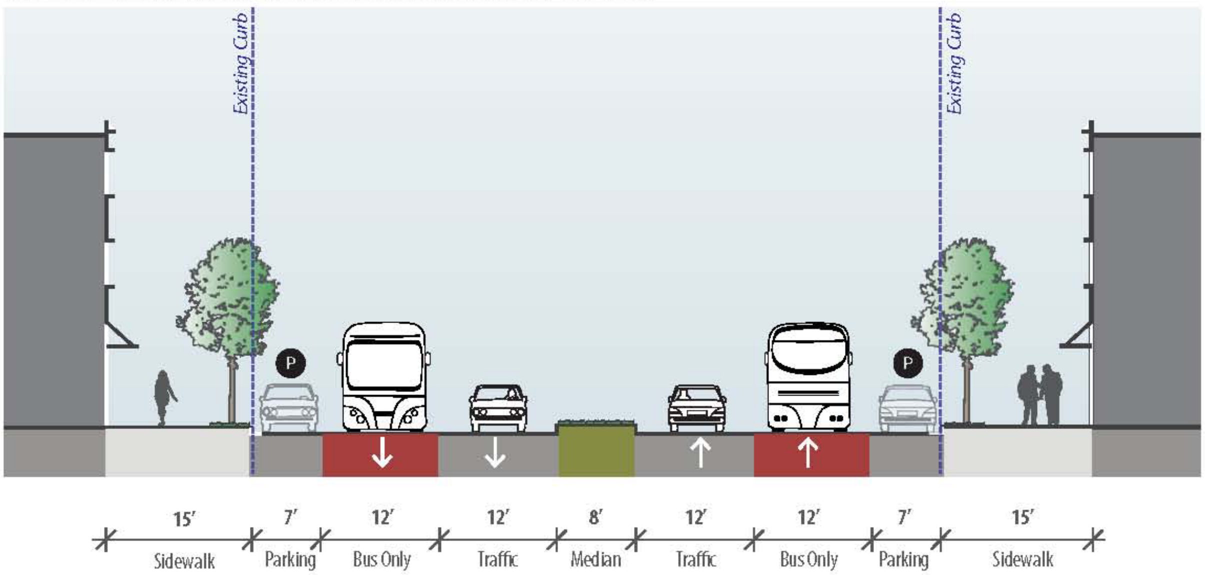
Section 5: Conclusions and Next Steps

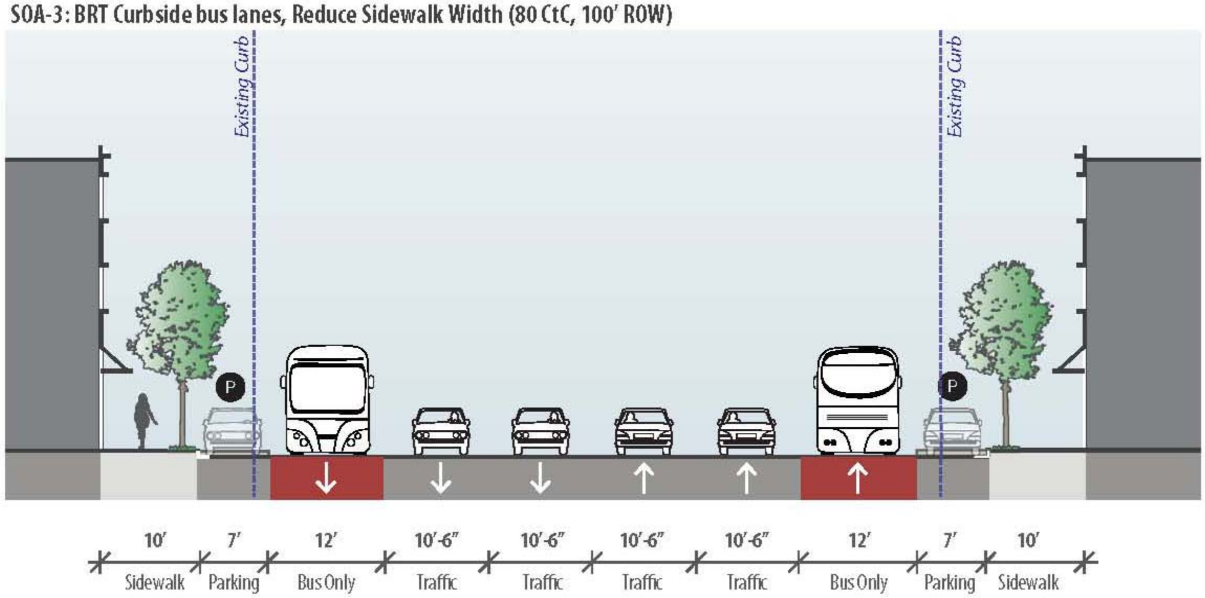
Based upon the screen one evaluation, six Build alternatives are recommended to move forward for further screening and evaluation in the screen two alternatives evaluation. These include the SOA-2 through SOA-7 alternatives. In addition, the No-Build and TSM alternatives will be retained for the screen two evaluation as well.

Figure 5-1: Screen One Build Alternative Recommendations

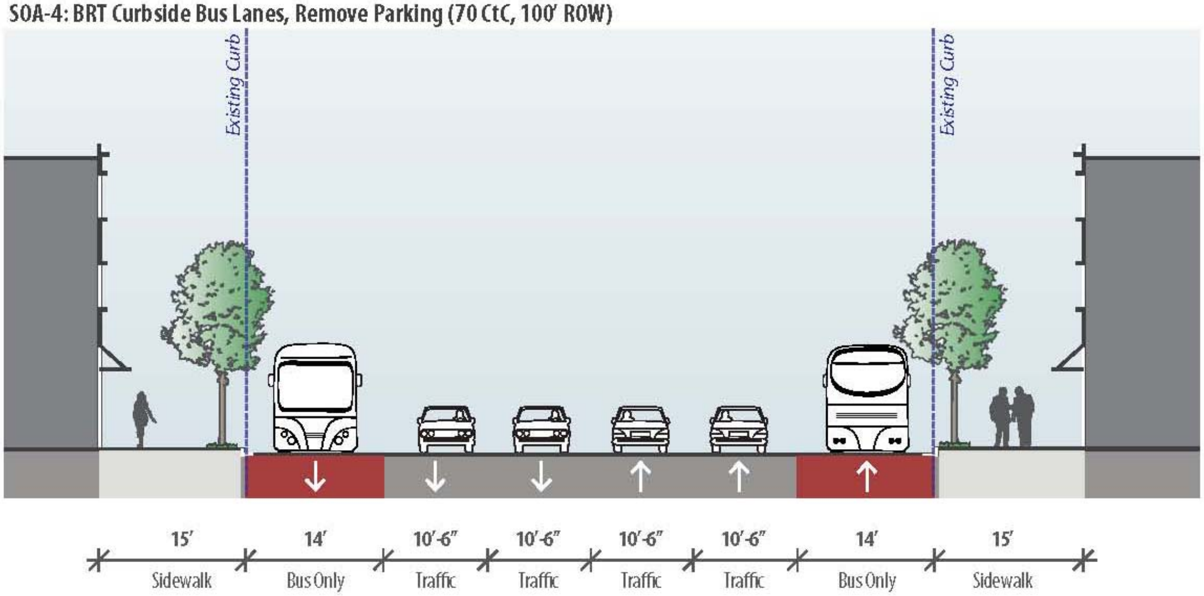
SOA-2: BRT Curbside Bus Lanes, Remove Travel Lanes (70 CtC, 100' ROW)



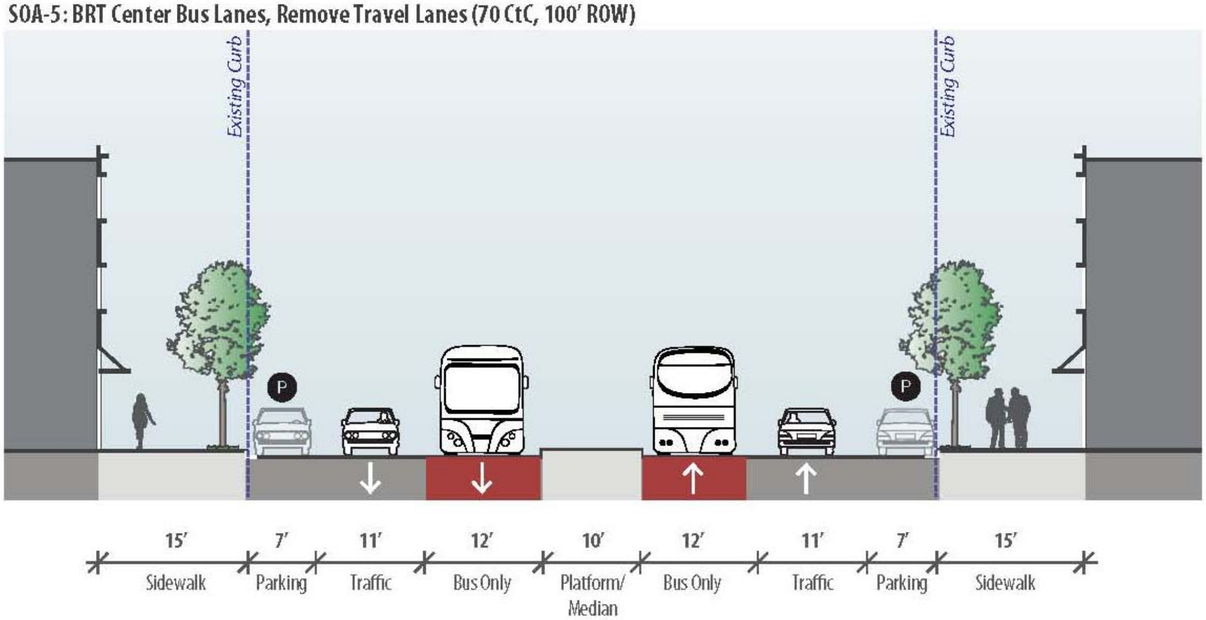
SOA-3: BRT Curbside bus lanes, Reduce Sidewalk Width (80 CtC, 100' ROW)



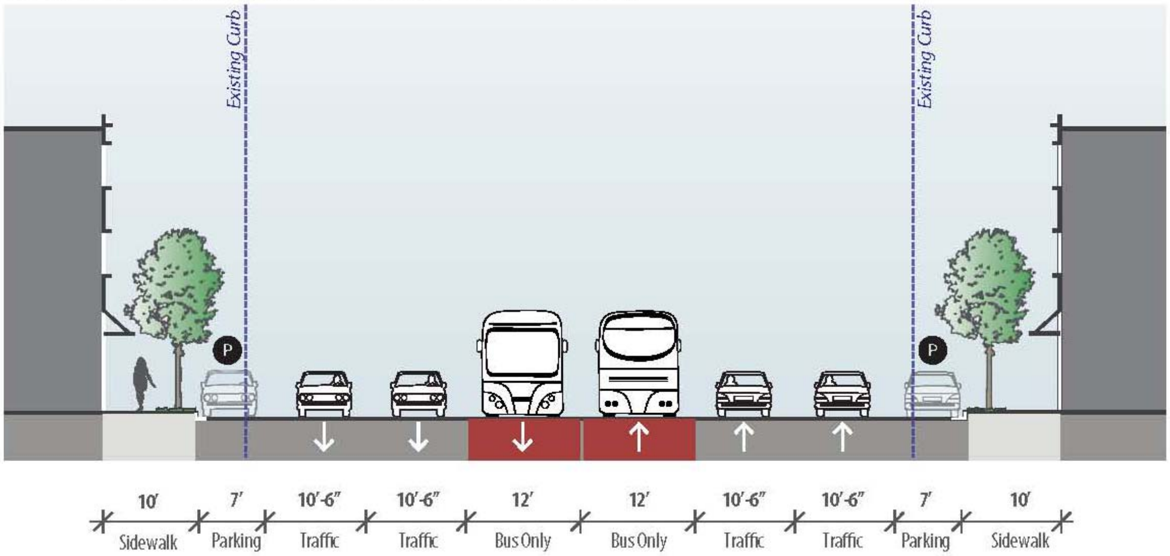
SOA-4: BRT Curbside Bus Lanes, Remove Parking (70 CtC, 100' ROW)



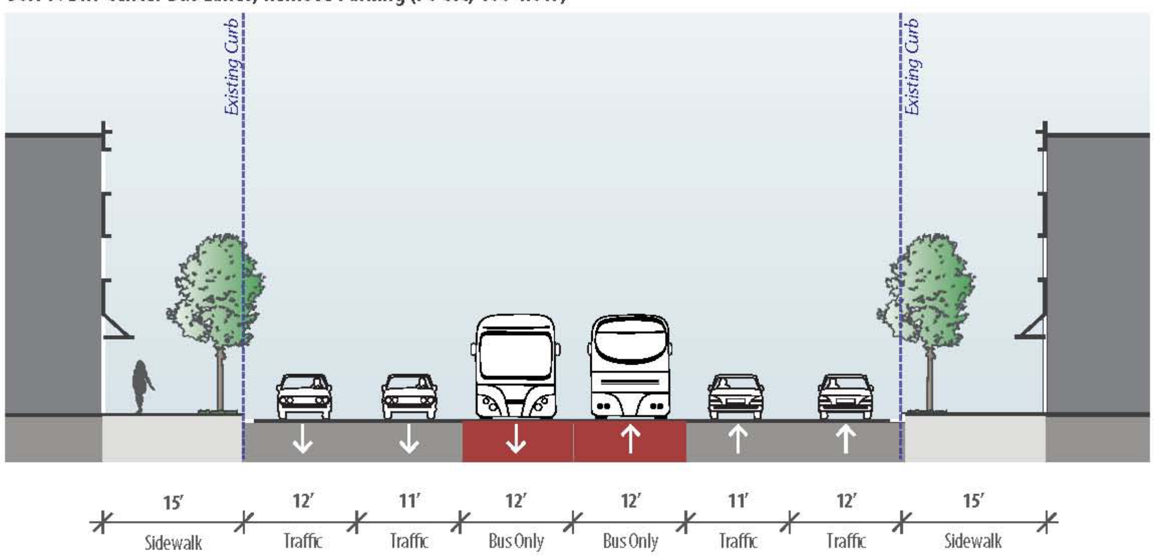
SOA-5: BRT Center Bus Lanes, Remove Travel Lanes (70 CtC, 100' ROW)



SOA-6: BRT Center Bus Lanes, Reduce Sidewalk Width (80 CtC, 100' ROW)



SOA-7: BRT Center Bus Lanes, Remove Parking (70 CtC, 100' ROW)



The next step in this AA will be to define each of these alternatives in greater detail. This screen two evaluation will include an assessment of alternatives based on impacts resulting from the removal of parking, medians, parking spaces, loading zones and the effects of taking a lane on regional traffic movements. The screen two process will also assess ridership, capital costs, bus and automobile travel times, and determine potential station locations. Public and stakeholder meetings will be conducted to review the results of this screen two evaluation and obtain additional public input. The results of the tiered screening process, in coordination with the public involvement process and the ability of alternatives to best meet the project's purpose and need, will be used to identify a recommended LPA that can be adopted into the Metroplitan Planning Organization's LRTP and move forward into environmental analysis, design, construction and operation.

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