

# TRANSITWAY CORRIDOR FEASIBILITY STUDY



High Capacity Transit Corridor Work Group  
January 19, 2012

Corridor B - Alternatives Evaluation Summary



T&ES

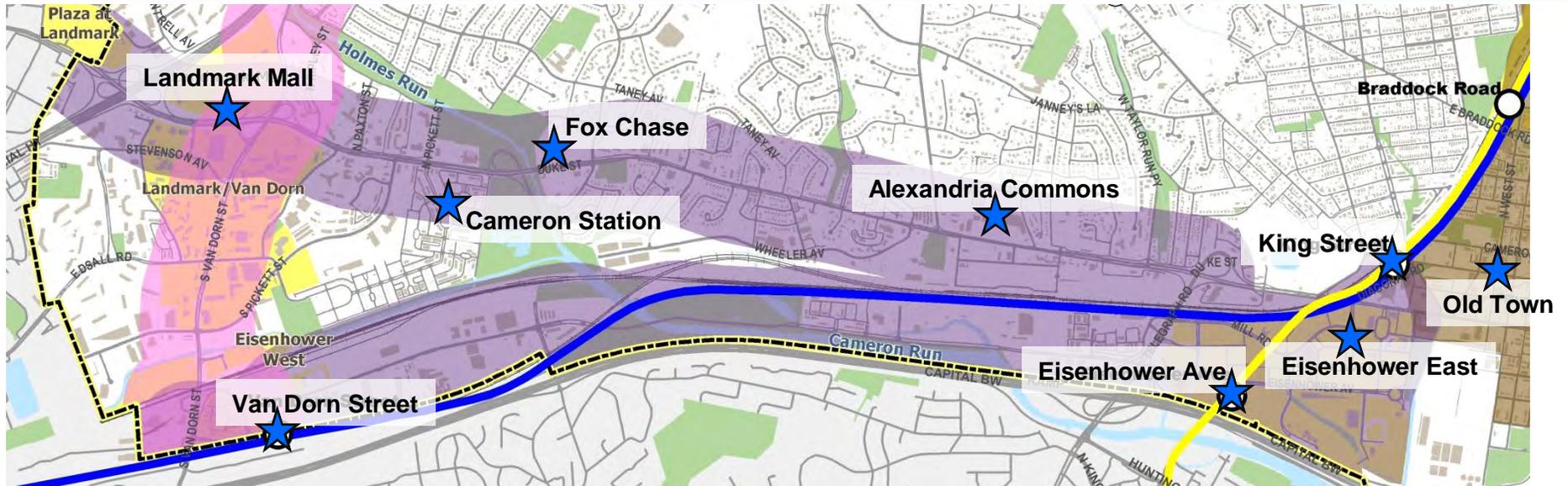


Kimley-Horn  
and Associates, Inc.

## *Meeting Agenda*

- Introduction and Background
- Corridor B Discussion
  - Recap of Preliminary Alternatives
  - Alternatives for Secondary Screening
  - Criteria
  - Secondary Screening Summary
- CWG & Public Comment
- Next Steps

# TRANSITWAY CORRIDOR FEASIBILITY STUDY



## *Corridor B: Duke/Eisenhower*

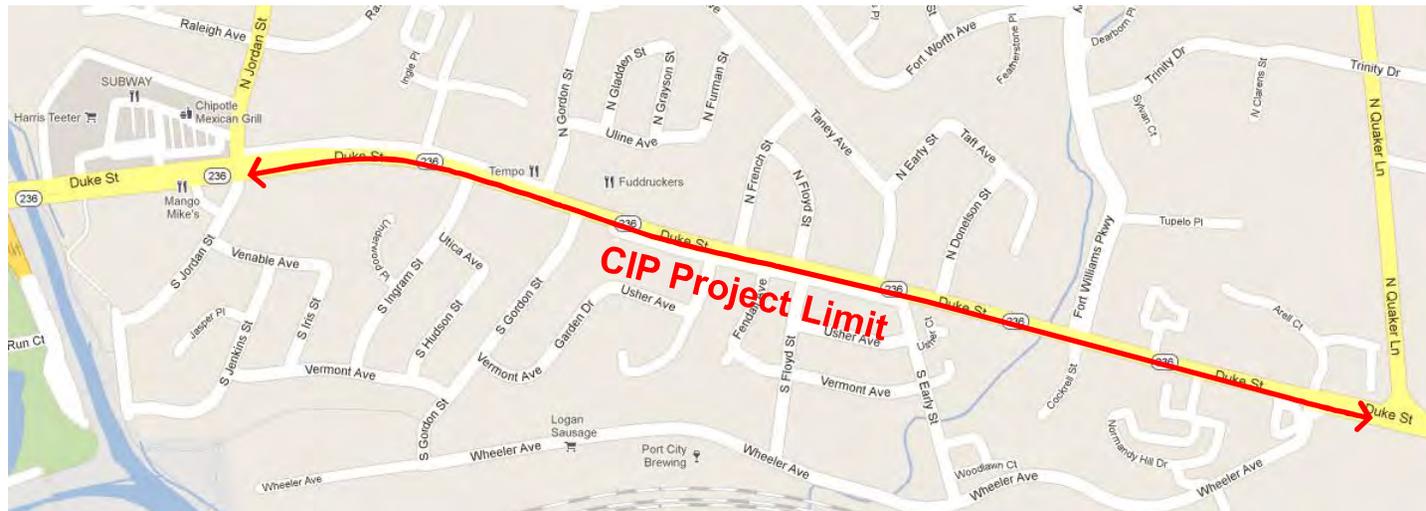
- Major destinations
  - Eisenhower East
  - Landmark Mall Area
  - Cameron Station
  - Fox Chase
  - Alexandria Commons
  - Old Town
  - Van Dorn Metro
  - King Street Metro
  - Eisenhower Avenue Metro



## *Planned Capital Improvement Project*

### Duke Street Modification Project

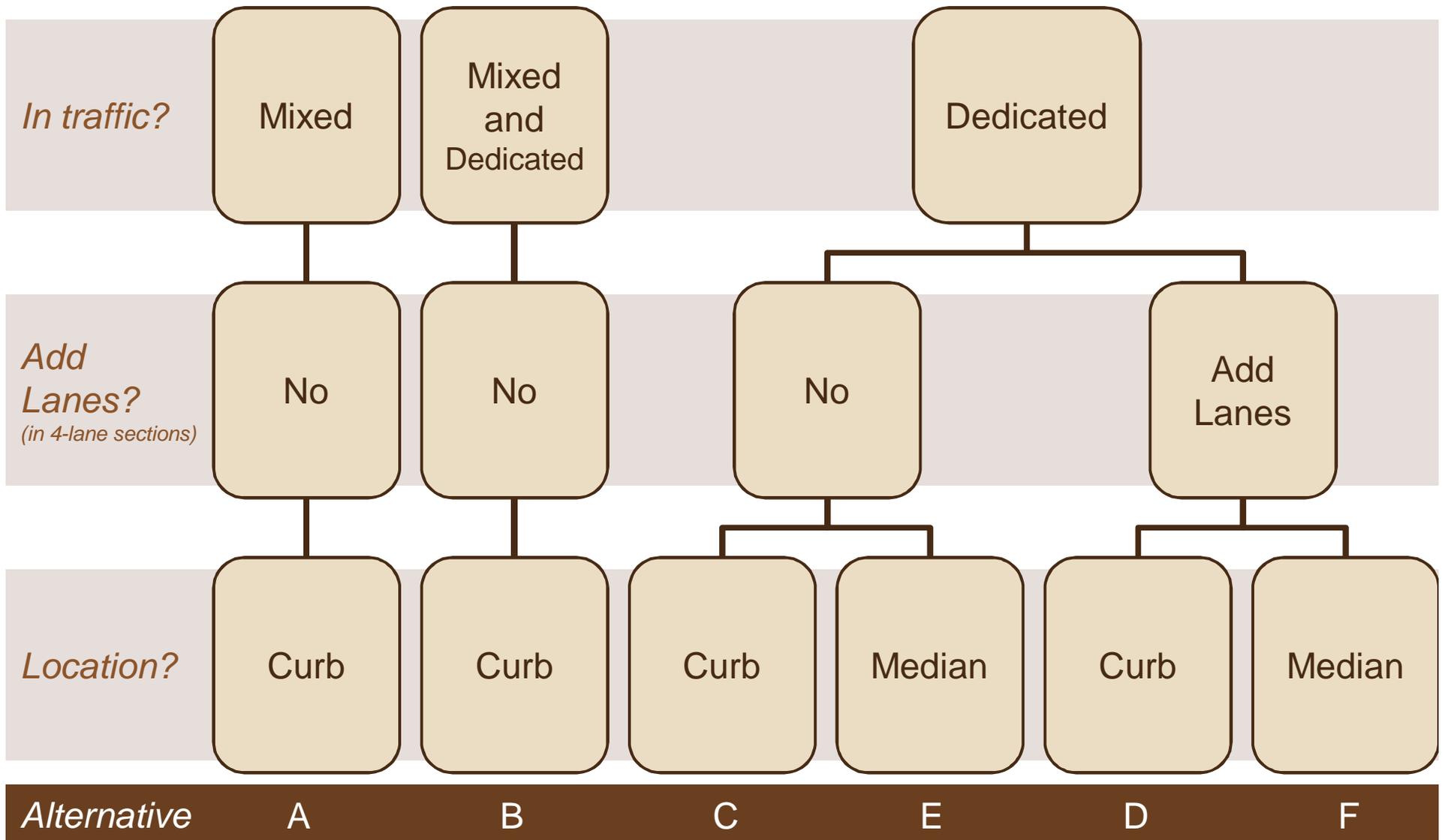
- Includes the construction of a fifth lane (center turn lane) along Duke Street
- Project extends from Jordan Street to Wheeler Avenue
- Fifth lane will accommodate left turn movements
- Raised medians at various locations to protect left turning vehicles and provide pedestrian refuges
- Project funding: \$2.31 million



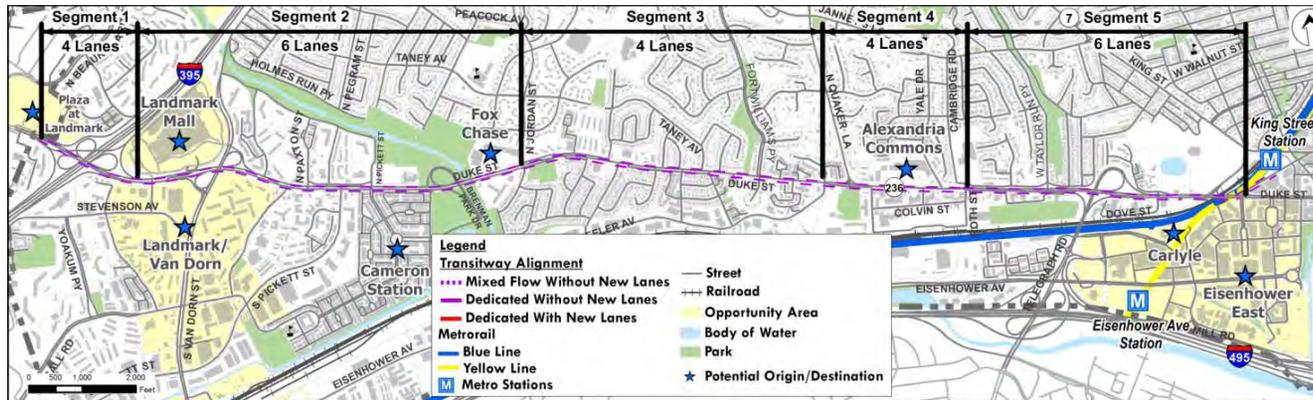
***PRELIMINARY ALTERNATIVES***

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Options

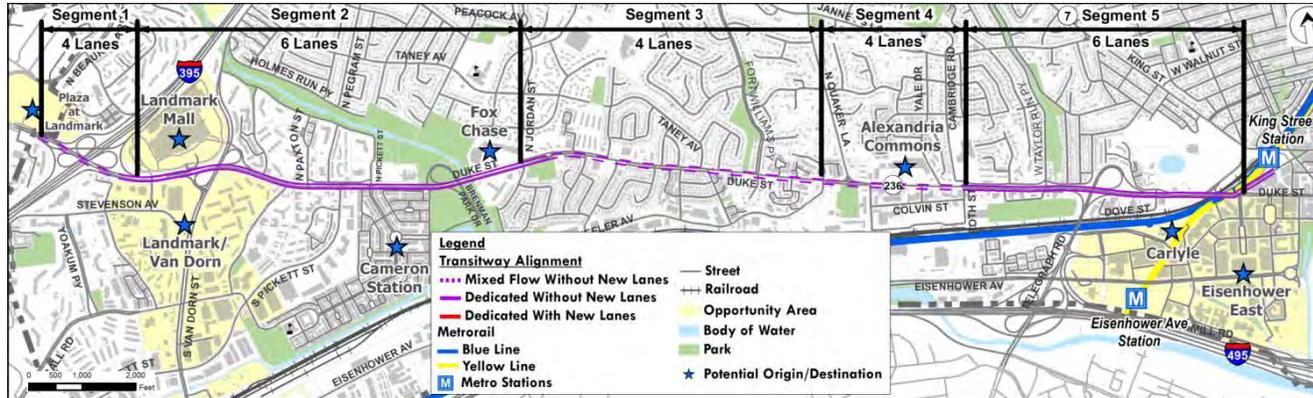


## Alternative A: Curb Running in Mixed Flow



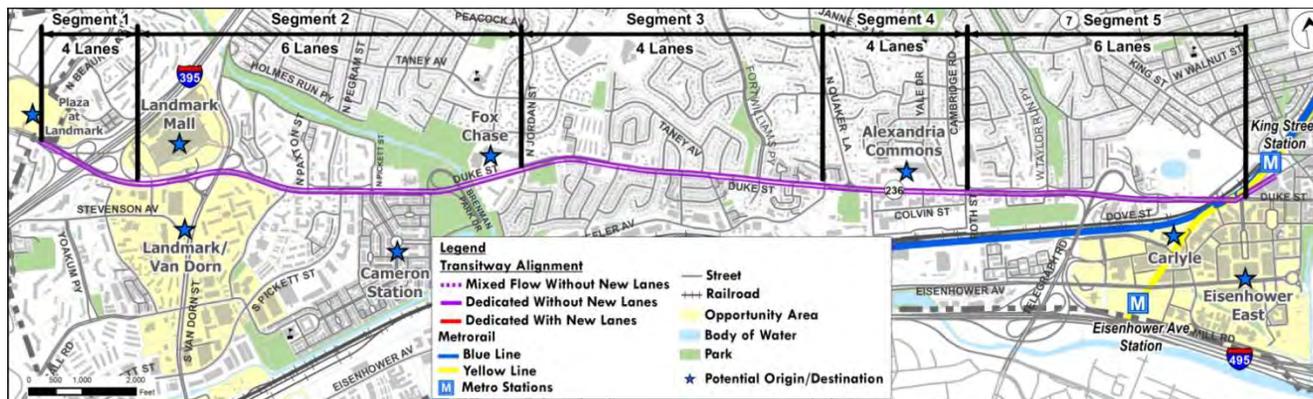
- Uses queue jumps and TSP
- Some impacts to property and service roads to accommodate queue jumps

## Alternative B: Curb Running in Mixed Flow and Dedicated Lanes



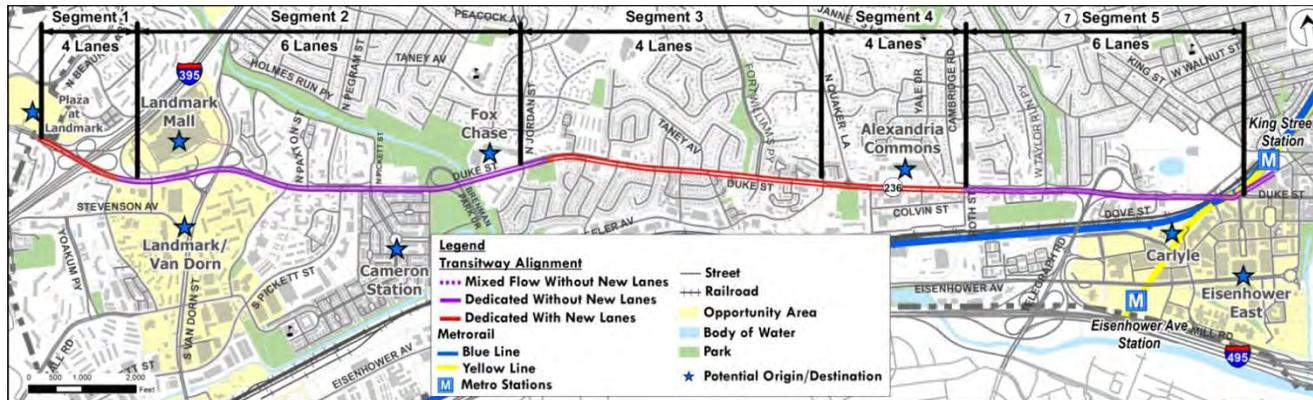
- Uses queue jumps and TSP
- Some impacts to property and service roads to accommodate queue jumps

## Alternative C: Curb Running in Dedicated Lanes without New Lanes



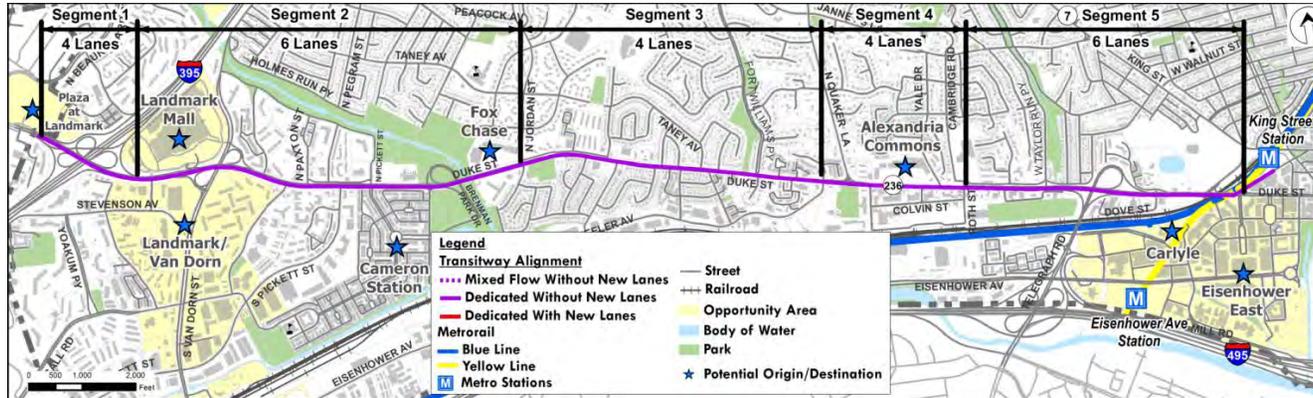
- Reduces Duke Street to one lane per direction in 4-lane segments (2 miles total)
- Minimal impacts to property and service roads

### Alternative D: Curb Running in Dedicated Lanes with New Lanes



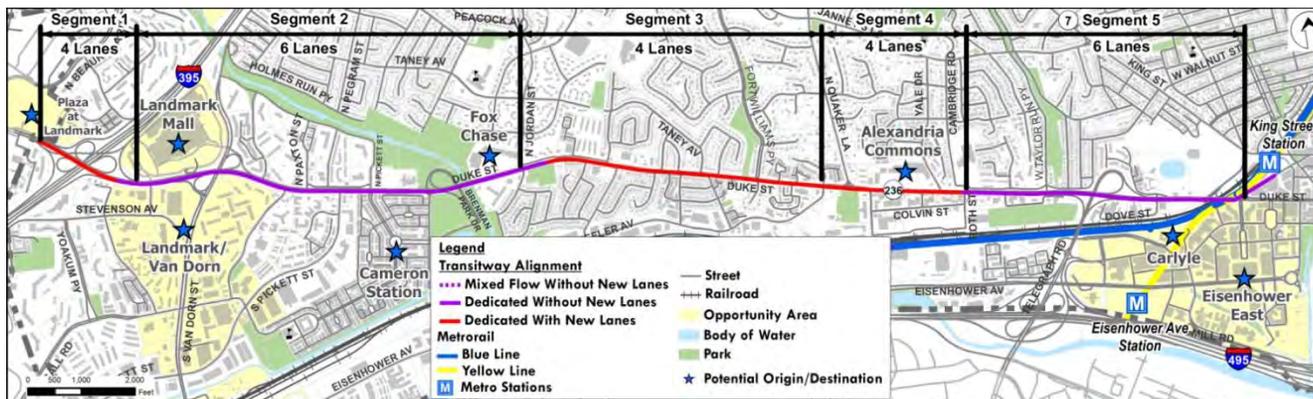
- Requires widening in 4-lane segments (2 miles total)
- Impacts to property and service roads

### Alternative E: Median Running in Dedicated Lanes without New Lanes



- Reduces Duke Street to one lane per direction in 4-lane segments (2 miles total)
- Minimal impacts to property and service roads

### Alternative F: Median Running in Dedicated Lanes with New Lanes



- Requires widening in 4-lane segments (2 miles total)
- Impacts to property and service roads

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Evaluation Criteria

General Evaluation Criteria Grouping	Criteria Sub-Group	Evaluation Criteria	Preliminary Screening	Measurement Method
<b>Effectiveness</b> - Addresses stated transportation issues in the corridor	Coverage	Transit Connectivity	✓	Access to other transit services (existing and planned)
	Operations	Avoidance of Congestion	«	Number and locations of LOS E/F intersections avoided
		Transit Travel Time	«	Transit travel time
		Intersection Priority	✓	Percent of intersections where TSP is needed and can be implemented successfully - notation of where it cannot be implemented successfully
	Alignment	Runningway Status	‡	Percent of corridor to be located on new or realigned roadway
	Phasing	Phasing	✓	Identification of ability to phase operations and implementation
<b>Impacts</b> - Extent to which economics, environment, community, transportation are affected	Natural Environmental	Natural Environment	‡	Summary of key environmental conditions affected (wetlands, floodplains, T&E, streams, and similar)
	Neighborhood and Community	Property	✓	Number, use type, and quantity of properties impacted with anticipated level of impact (ROW only, partial take, total take)
		Streetscapes	«	Impact to existing streetscapes
		Noise and Vibration	‡	Summarize relative noise and vibration impacts of different mode types and corridor configurations
	Transportation	Traffic Flow Impact	«	Effect of transit implementation on vehicular capacity of corridor
		Multimodal Accommodation	✓	Impacts to, and ability to accommodate bicycles and pedestrians
		Parking	✓	Impacts to parking
<b>Cost Effectiveness</b> - Extent to which the costs are commensurate with their benefits	Cost	Capital cost	✓	Order of magnitude capital cost for corridor (stations, runningway, etc.)
		Operating cost	✓	Order of magnitude operating cost
		Cost Per Rider	✓	Order of magnitude operating cost per rider
<b>Financial Feasibility</b> - Extent of funding is driven by cost	Funding	Funding	✓	Availability to specific funding sources

Screening Criteria Legend:	«	Highest Importance	✓	Normal Importance	○	Lesser Importance
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## *General Traffic Evaluation Summary*

- Level of service and queuing evaluation together is best representation of potential future operations
- Existing six-lane section have the potential to be reduced to four-lanes with left-turn lanes and operate acceptably (D or better)
- Benefit to increased capacity on Duke Street in vicinity of Quaker Lane and Telegraph Road
- Four general purpose through lanes are needed on Duke Street between Quaker Lane and Telegraph Road
- Widening to accommodate transit would have some benefit in specific locations along Duke Street
- For dedicated lane transitway implementation, some compromise between widening four-lane sections and not widening four-lane sections of Duke Street seems logical as a “best fit” option

## Preliminary Evaluation Summary

Preliminary Screening Criteria	Alternative					
	A	B	C	D	E	F
	<i>In traffic?</i> Mixed <i>Add lanes?</i> No <i>Location?</i> Curb	Both No Curb	Dedicated No Curb	Dedicated Add a lane Curb	Dedicated No Median	Dedicated Add a lane Median
Transit Connectivity	◐	◐	◐	◐	◐	◐
Avoidance of Congestion	○	◐	●	●	●	●
Transit Travel Times	○	◐	●	●	●	●
Intersection Priority	○	◐	●	●	●	●
Runningway Status <small>(Percent already in place)</small>	◐	◐	●	○	●	○
Runningway Configuration <small>(Percent dedicated)</small>	○	◐	●	●	●	●
Phasing	●	●	◐	○	◐	○
Natural Environment Impacts	◐	◐	●	○	●	○
Property Impacts	◐	◐	●	○	●	○
Impacts to Existing Streetscape	◐	◐	●	○	●	○
Noise and Vibration	◐	◐	◐	○	●	●
Traffic Flow Impact	◐	◐	○	●	○	●
Pedestrian Accommodation	●	●	●	●	◐	◐
Bicycle Accommodation	○	○	◐	◐	●	●
Parking Impacts	◐	◐	●	○	●	○
Capital Cost	◐	◐	●	○	◐	○
Operating Cost	○	○	●	●	●	●
Funding	◐	◐	●	○	◐	○

NOTE: Data to evaluate Cost Per Rider is not available at this time.

Rating:	●	Best	◐	Fair	○	Poor
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## *Summary of CWG and Public Comments*

### Public Comments

- Transitway along Duke Street will disrupt quality of life for adjacent residents
- Poor pedestrian and bicycle conditions along Duke Street
- There is limited non-peak and weekend bus service along Duke Street
- Need to protect neighborhood streets
- Show bicycle facilities on alternatives
- Traffic model underestimates potential transit ridership
- Service roads between Jordan Street and Quaker Lane should not be impacted
- Traffic congestion east of Quaker Lane
- Minimize roadway widening, use narrower lanes
- Use median for transit and prohibit left turns
- Consider only constructing a turn lane between Quaker Lane and Jordan Street
- Southbound left-turn lane from Quaker onto Duke Street too short
- Median lanes compromise safety

## *Summary of CWG and Public Comments*

### CWG Member Comments

- Use redevelopment at the Landmark Mall for additional right-of-way
- Right-in/right-out on westbound Duke Street near Taylor Run Parkway; restrict left turns onto Duke Street
- Impacts to emergency services (two fire stations) on Duke Street corridor
- Congestion could create a division between east and west Alexandria
- Consider needs of bicyclists without compromising needs of pedestrians
- From the Transportation Master Plan, the City does not cater to through traffic
- Existing lanes should be dedicated, with curbside transit in shared lanes between Jordan and Roth Streets

## *Alternatives Preferred for Further Evaluation*

### Alternative B: Curb Running in Mixed Flow and Dedicated Lanes

- Preferred by CWG
- Base alternative for implementation within existing footprint
- Consider modified Alternative B with dedicated lanes at narrowest segment utilizing service road right-of-way

### Alternative C: Curb Running in Dedicated Lanes without New Lanes

- Fewer impacts to property and environment, but adverse impact on traffic
- Should be modified to consider reversible lane configuration in order to use auto lane in off-peak direction (combo with D)

### Alternative D: Curb Running in Dedicated Lanes with New Lanes

- Viewed as efficient and effective
- Would reduce traffic, but would result in greater impacts to property and environment
- Should be modified to consider reversible lane configuration in order to use auto lane in off-peak direction (combo with C)

### Alternative F: Median Running in Dedicated Lanes with New Lanes

- Viewed as a worst-case scenario from property and environment impact perspective

***ALTERNATIVES FOR  
SECONDARY SCREENING***

## *Preliminary Alternatives*

Alternative A – Curb Running in Mixed Flow

Alternative B – Curb Running in Mixed Flow and Dedicated Lanes

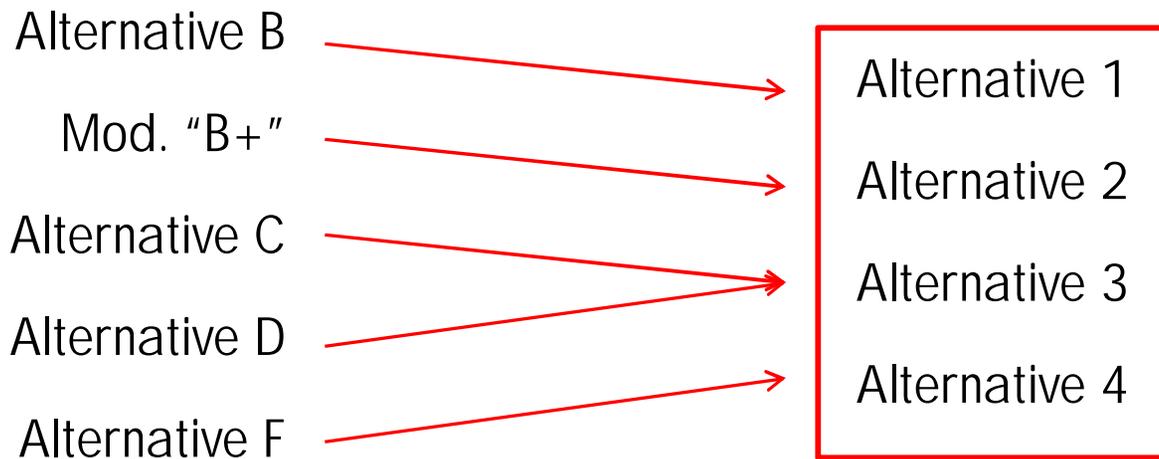
Alternative C – Curb Running in Dedicated Lanes without New Lanes

Alternative D – Curb Running in Dedicated Lanes with New Lanes

Alternative E – Median Running in Dedicated Lanes without New Lanes

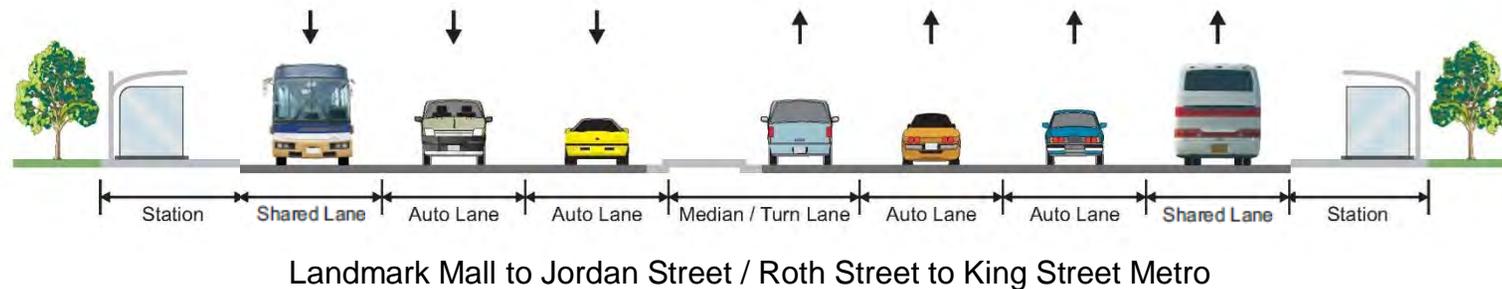
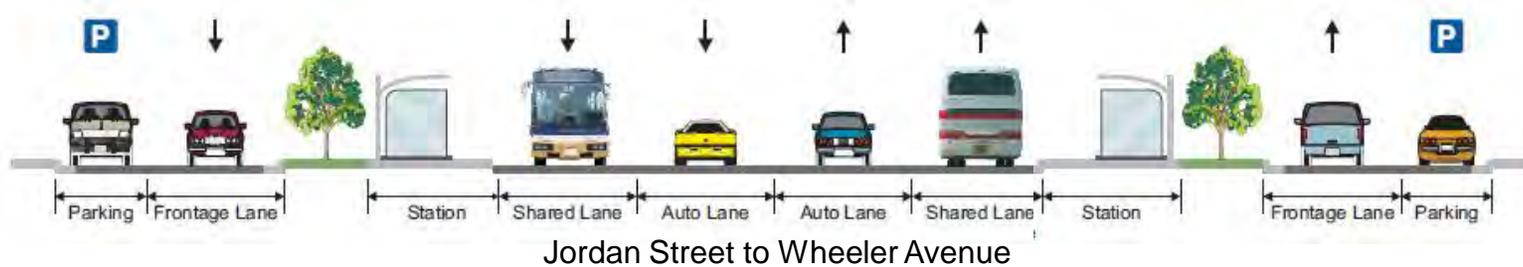
Alternative F – Median Running in Dedicated Lanes with New Lanes

## *Alternatives for Further Evaluation*



# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Existing Conditions

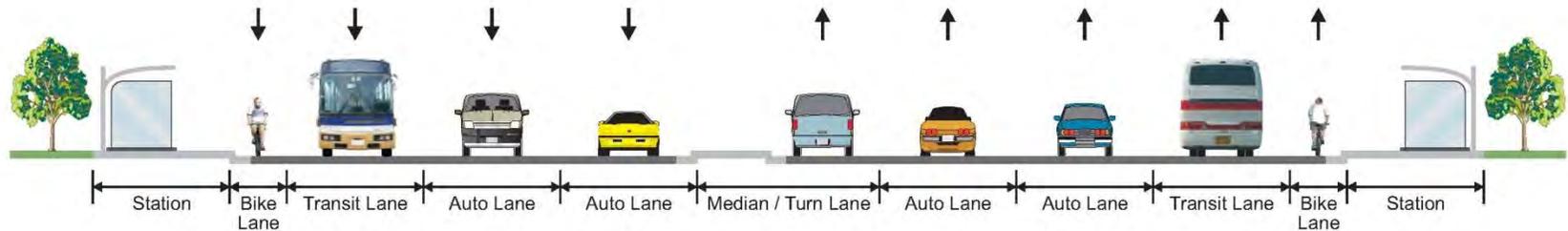
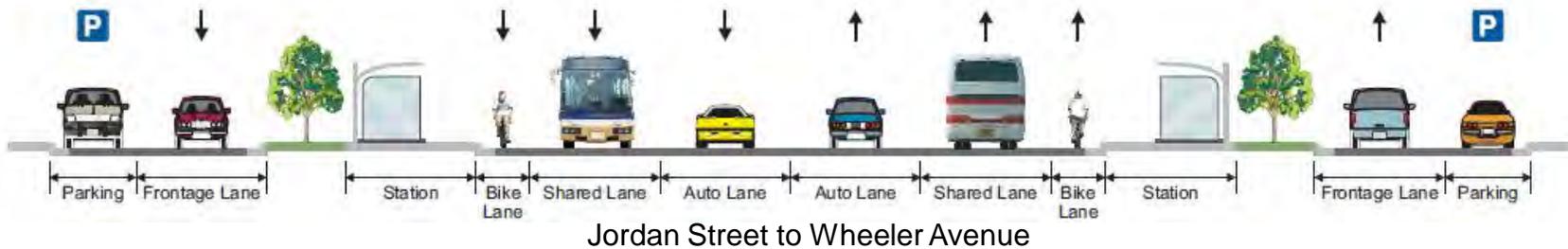


### Description

- DASH and WMATA bus service run along curb
- 4.5 miles total - 4-lane segments for 2 miles total 6-lane segments for 2.5 miles total
- ROW width varies and is not centered on Duke Street travel lanes
- Service roads between Jordan Street and Wheeler Avenue accommodate individual property driveways

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 1 – Existing Configuration



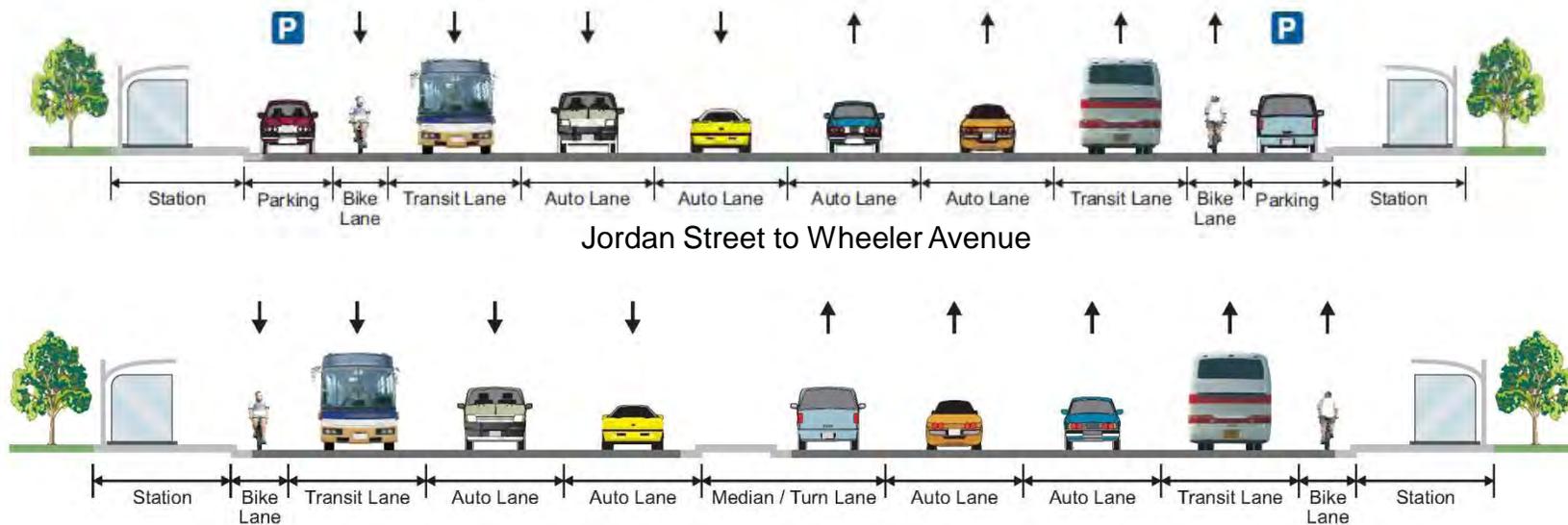
Landmark Mall to Jordan Street / Wheeler Avenue to King Street Metro

### Description

- Transit running along curb
- Transit in mixed flow on 4-lane segments (2 miles total) and in dedicated lanes on 6-lane segments (2.5 miles total)
- Uses existing lanes for transit and widens the road to accommodate bicycle facilities
- Uses queue jumps where there are not dedicated lanes
- Impacts to property and service roads to accommodate queue jumps and bike lanes

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 2 – Uses Service Road Right-of-Way



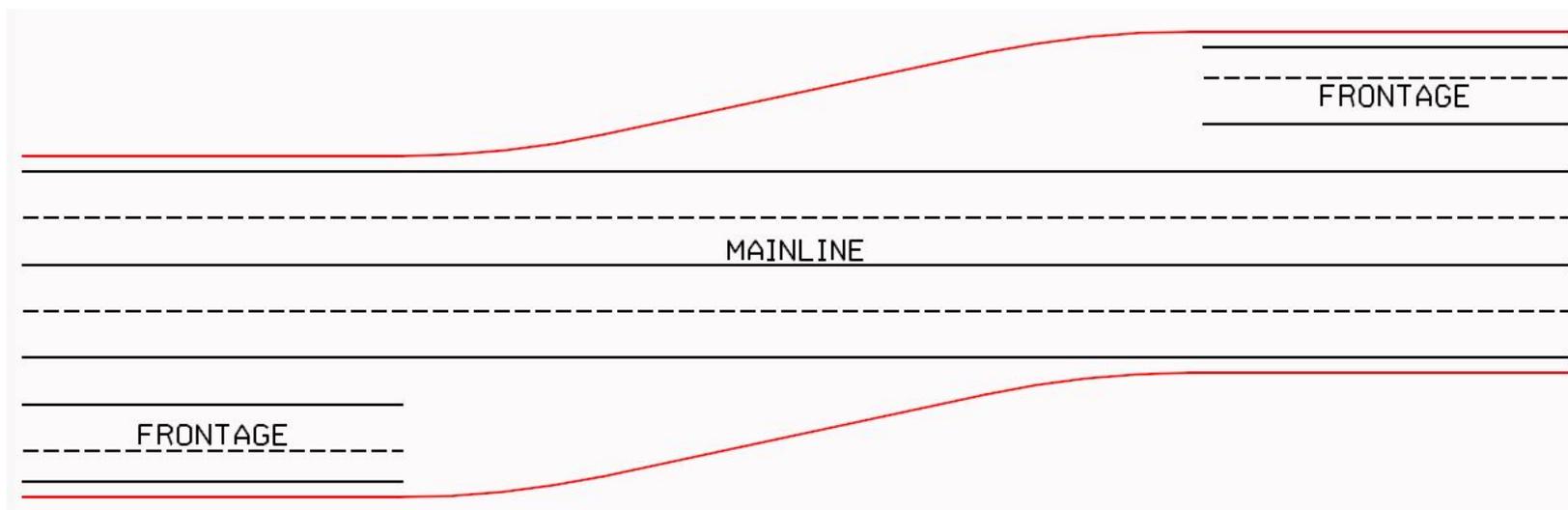
Jordan Street to Wheeler Avenue

Landmark Mall to Jordan Street / Wheeler Avenue to King Street Metro

### Description

- Transit running along curb
- Transit in dedicated lanes for full corridor length
- Adds one lane per direction in 4-lane segments (2 miles total)
- Reduces impacts to property by shifting roadway centerline to make use of service roads (described on following slide)
- On-street parking in some locations
- Bike lanes or shared outside lane
- Could accommodate CIP project at major intersections with additional widening

## *Alternative 2 – Alignment Shift*

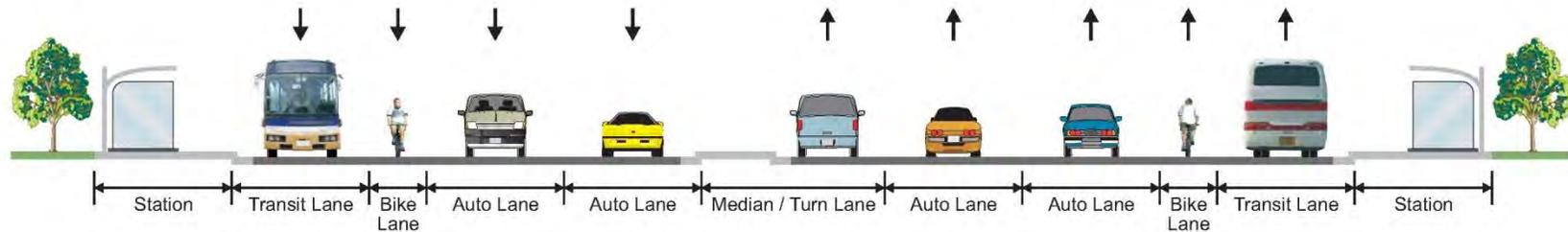
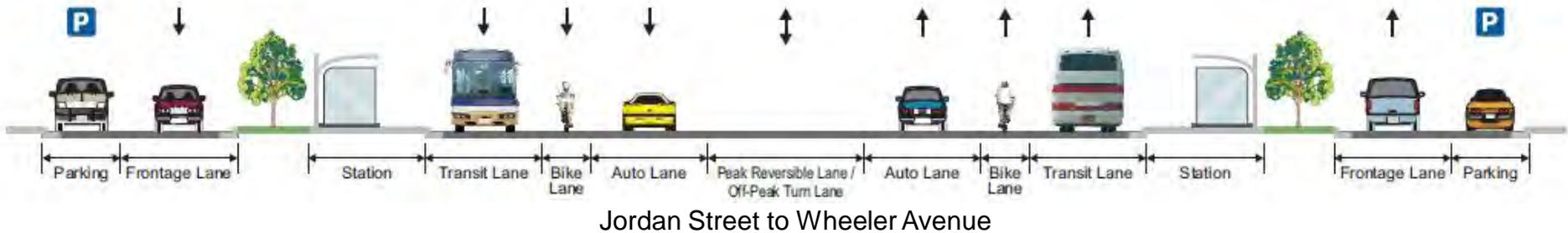


### LEGEND

- = Existing Edge of Pavement
- = Proposed Edge of Pavement

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 3 – Reversible Lane

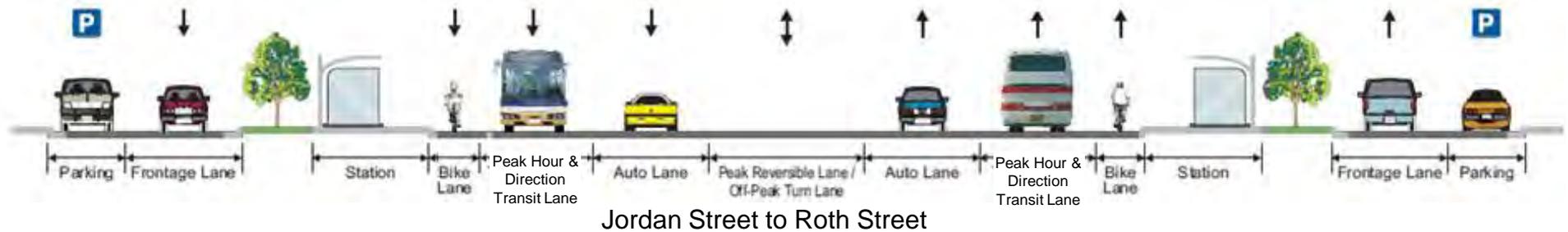


### Description

- Transit running along curb
- Transit in dedicated lanes for full corridor length
- Adds ½ lane in each direction in 4-lane segments (2 miles total)
- Center lane would function as reversible lane for traffic
- Reversible lane would transition at Jordan Street and Wheeler Avenue
- Impact to property and existing streetscape
- Service roads would be maintained
- Bike lanes or shared outside lane
- Incorporates CIP project during off-peak

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 3 Variation

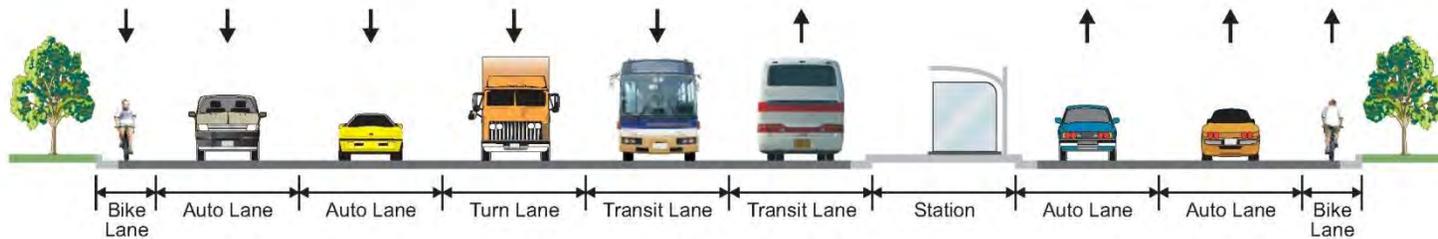
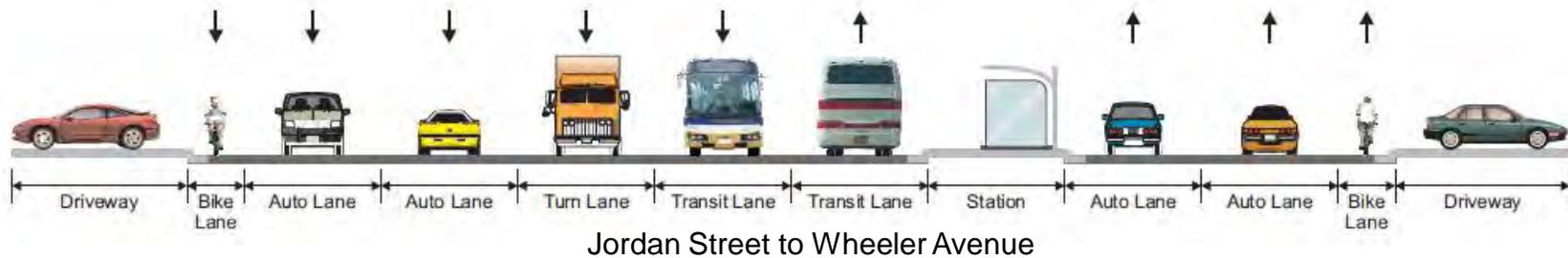


### Description

- Same as Alternative 3 between Landmark Mall and Jordan Street & Roth Street and King Street Metro
- Peak direction and period dedicated transit lane between Jordan Street and Roth Street
- Off-peak direction, during peak period, transit operates in mixed flow between Jordan Street and Roth Street
- Off-peak period, both directions, transit operates in mixed flow
- Adds ½ lane in each direction in 4-lane segments (2 miles total)
- Reversible lane transitions at Roth Street and Jordan Street
- Less property impact between Jordan Street and Roth Street
- Service roads would be maintained
- Bike lanes or shared outside lane
- Incorporates CIP project

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 4 – Median Running



Landmark Mall to Jordan Street / Wheeler Avenue to King Street Metro

### Description

- Transit running in median
- Transit in dedicated lanes for full corridor length
- Adds 2 lanes in each direction in 4-lane segments (2 miles total)
- Significant impacts to property
- Service roads would be removed and driveways would be accessed directly from Duke Street
- Bike lanes or shared outside lane
- Incorporates currently programmed CIP project

***SECONDARY SCREENING  
EVALUATION***

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Secondary Screening Evaluation Criteria

General Evaluation Criteria Grouping	Criteria Sub-Group	Evaluation Criteria	For Use in Preliminary Screening of Concepts	For Use in Comparative Evaluation of Concepts	Measurement Method	
<b>Effectiveness</b> - Addresses stated transportation issues in the corridor	Coverage	Service to Regional Destinations		✓	Notation of regional destinations directly served	
		Service to Population, Employment, and Other Destinations		✓	Tabulate population, employment, key destinations, and similar, served by option	
		Transit Connectivity	✓	✓	Access to other transit services (existing and planned)	
	Operations	Running-way Configuration(s)			✓	Quantify amount of runningway that is dedicated and amount that is mixed flow
		Corridor Length			✓	Measured length of the corridor (mi or feet)
		Capacity			✓	Potential corridor capacity (hourly) based on mode technology, headways, and other conditions
		Interoperability			✓	Identification of whether the chosen runningway configuration and transit mode technology are compatible with regionally planned systems
		Avoidance of Congestion	«		✓	Number and locations of LOS E/F intersections avoided
		Transit Travel Time	«		✓	Transit travel time
		Intersection Priority	✓		✓	Percent of intersections where TSP is needed and can be implemented successfully - notation of where it cannot be implemented successfully
		Ridership			✓	Forecast number of riders
	Alignment	Geometrics			✓	Geometric quality of alignment
		Runningway Status	†		✓	Percent of corridor to be located on new or realigned roadway
	Phasing	Phasing	✓		✓	Identification of ability to phase operations and implementation

Screening Criteria Legend:	«	Highest Importance	✓	Normal Importance	○	Lesser Importance
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# TRANSITWAY CORRIDOR FEASIBILITY STUDY

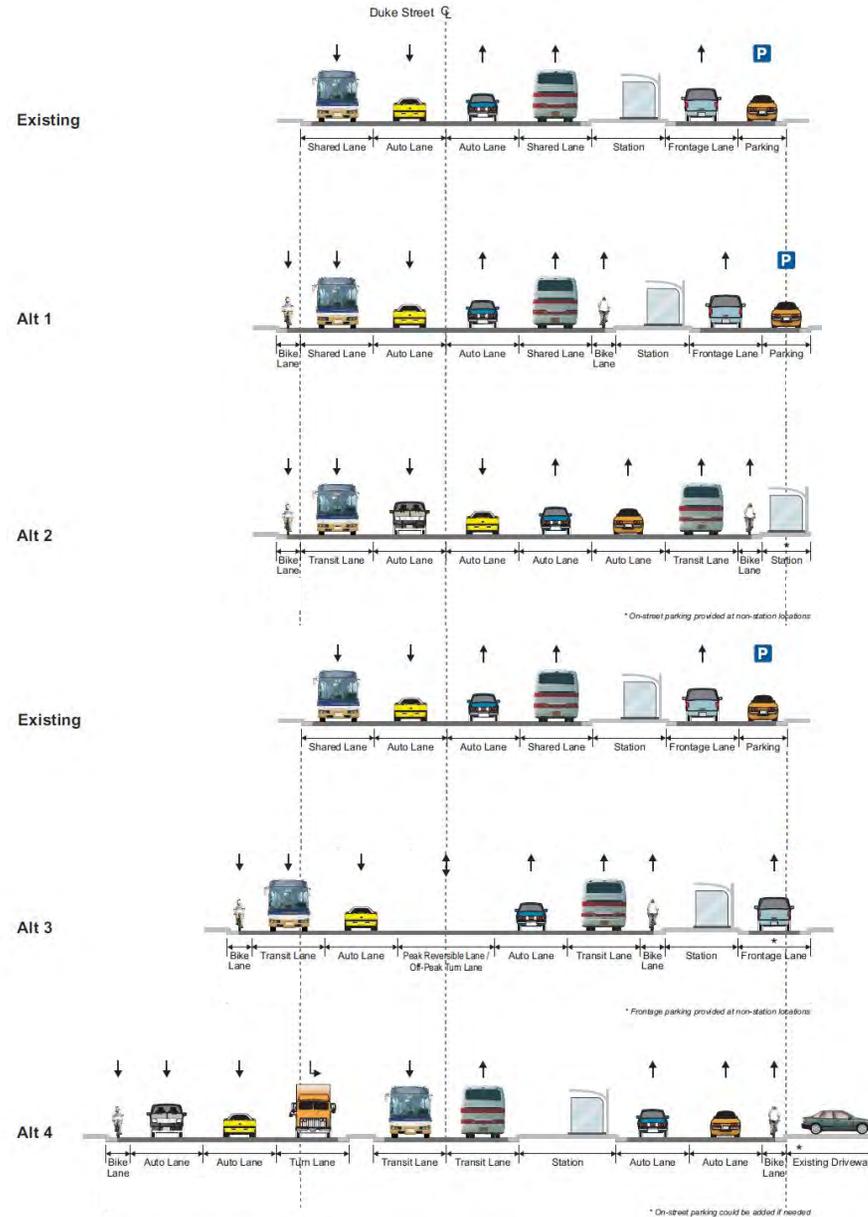
## Secondary Evaluation - Effectiveness

Evaluation Criteria		Alternative			
		1	2	3	4
Description		Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
Coverage	Service to Regional Destinations	◐	◐	◐	◐
	Service to Population, Employment, & Retail in the Corridor	●	●	●	●
	Transit Connectivity	●	●	●	◐
Operations	Running-way Configuration(s)	◐	●	●	●
	Corridor Length	●	●	●	●
	Capacity	●	●	●	●
	Interoperability	●	●	●	●
	Avoidance of Congestion	○	◐	◐	●
	Transit Travel Times	○	◐	◐	●
	Ridership	○	◐	◐	●
	Intersection Priority	◐	●	●	●
Align-ment	Alignment Quality	●	◐	●	●
	Runningway Status	●	◐	◐	○
	Phasing	●	◐	◐	○

Rating:	●	Best	◐	Fair	○	Poor
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# TRANSITWAY CORRIDOR FEASIBILITY STUDY

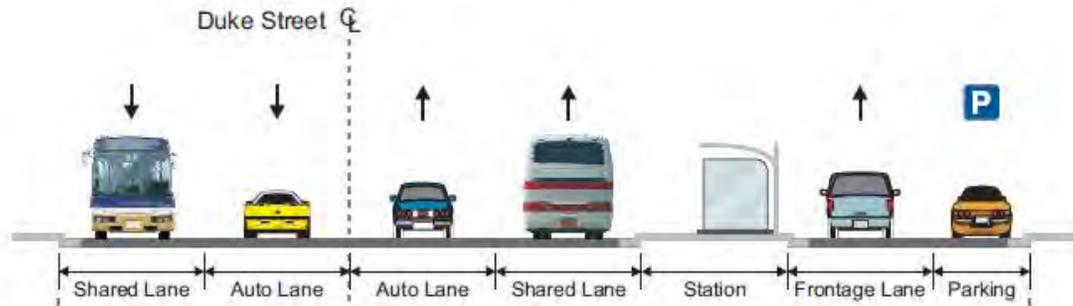
## Cross-section Comparison



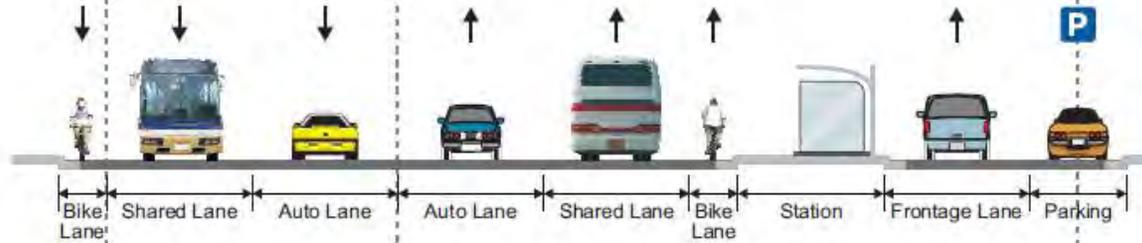
*Note: Illustrations show a general comparison of cross-sectional width. Actual service road location varies depending upon whether service roads are located north or south of Duke Street*

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

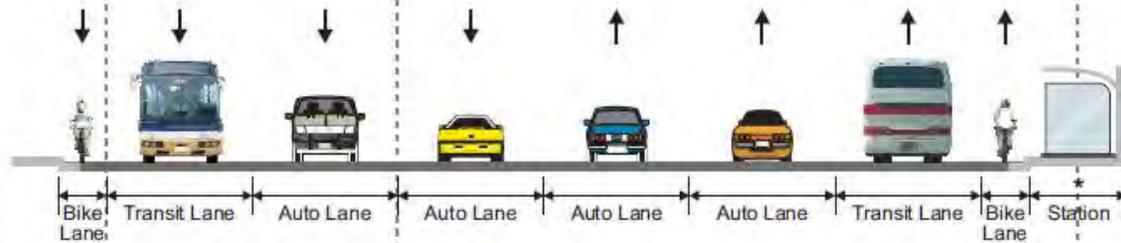
Existing



Alt 1



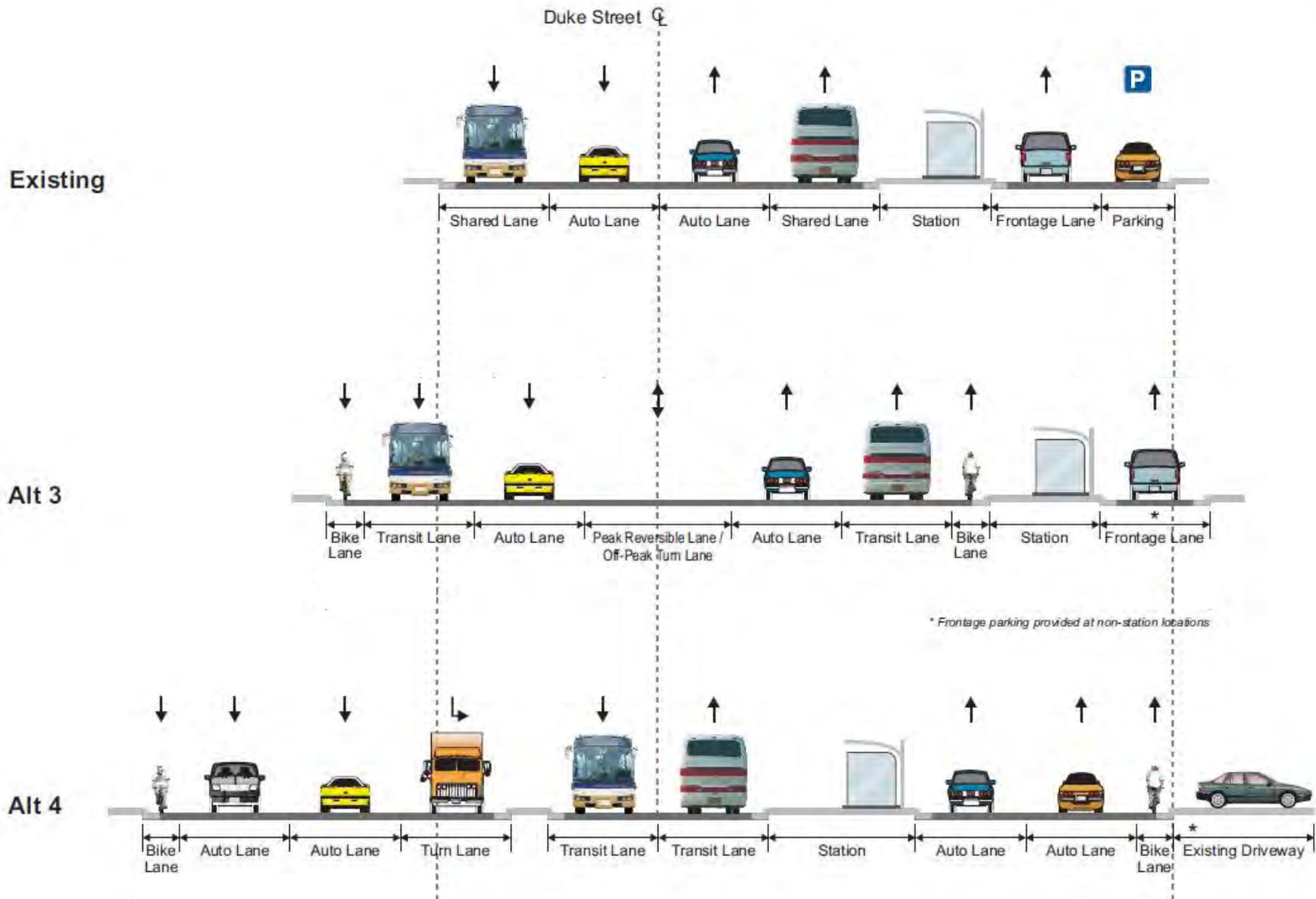
Alt 2



Note: Illustrations show a general comparison of cross-sectional width. Actual service road location varies depending upon whether service roads are located north or south of Duke Street

\* On-street parking provided at non-station locations

# TRANSITWAY CORRIDOR FEASIBILITY STUDY



Note: Illustrations show a general comparison of cross-sectional width. Actual service road location varies depending upon whether service roads are located north or south of Duke Street

\* On-street parking could be added if needed

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Secondary Screening Evaluation Criteria (continued)

General Evaluation Criteria Grouping	Criteria Sub-Group	Evaluation Criteria	For Use in Preliminary Screening of Concepts	For Use in Comparative Evaluation of Concepts	Measurement Method
<b>Impacts -</b> Extent to which economics, environment, community, transportation are affected	Economic	Development Incentive		✓	Perceived value of transit mode technologies with regard to development potential
	Natural Environmental	Natural Environment	†	✓	Summary of key environmental conditions affected (wetlands, floodplains, T&E, streams, and similar)
		Parks and Open Space		✓	Summary of parks and/or open spaces affected
	Neighborhood and Community	Property	✓	✓	Number, use type, and quantity of properties impacted with anticipated level of impact (ROW only, partial take, total take)
		Streetscapes	«	✓	Impact to existing streetscapes
		Community Resources		✓	Identify number and location of historical, cultural, community, archaeological resources affected
		Demographics		✓	Identification of impacts to special populations
	Transportation	Noise and Vibration	†	✓	Summarize relative noise and vibration impacts of different mode types and corridor configurations
		Traffic Flow Impact	«	✓	Effect of transit implementation on vehicular capacity of corridor
		Traffic Signals		✓	Number of existing signalized intersections affected by transit, identification of need for new signal phases, and number/location of new traffic signals needed to accommodate transit
Multimodal Accommodation		✓	✓	Impacts to, and ability to accommodate bicycles and pedestrians	
<b>Cost Effectiveness -</b> Extent to which the costs are commensurate with their benefits	Cost	Capital cost	✓	✓	Order of magnitude capital cost for corridor (stations, runningway, etc.)
		Operating cost	✓	✓	Order of magnitude operating cost
		Cost Per Rider	✓	✓	Order of magnitude operating cost per rider
<b>Financial Feasibility -</b> Cost of system/concept is in alignment with available funding	Funding	Funding	✓	✓	Availability to specific funding sources
		Private Capital Incentive		✓	Judgment as to whether the concept has the potential to attract private capital investment and innovative procurement

Screening Criteria Legend:	«	Highest Importance	✓	Normal Importance	○	Lesser Importance
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## *Preliminary Impacts – Alternative 4*

	Alternative			
	1	2	3	4
Description:	Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
Park Impact	< 0.25 acres	< 0.25 acres	< 0.25 acres	< 0.5 acres
Water Impact	< 0.1 acres	< 0.1 acres	< 0.1 acres	< 0.1 acres
Property Impact	1.75 acres	3.5 acres	4 acres	7 acres

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Secondary Evaluation - Impacts

Evaluation Criteria		Alternative				
		1	2	3	4	
Description:		Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running	
Economic	Development Incentive	●	●	●	●	
	Natural Environment	●	◐	◐	○	
Neighborhood and Community	Parks and Open Space	●	◐	◐	○	
	Property	●	●	◐	○	
	Existing Streetscapes	●	○	◐	○	
	Community Resources	●	◐	◐	○	
	Demographics	●	◐	◐	○	
Transportation	Noise and Vibration	◐	○	○	●	
	Traffic Flow Impact	◐	●	○	●	
	Traffic Signals	○	◐	◐	○	
	Multimodal Accommodation	Pedestrian	●	●	●	◐
		Bike	◐	◐	◐	●
Parking	●	◐	●	○		

Rating:	●	Best	◐	Fair	○	Poor
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## *Assumed Transit Hours of Operations and Headways*

Day of Week		Headway	Duration	Total Duration of Operation
Weekdays	Peak	7.5 min	8 hours	18 hours
	Off-Peak	15 min	10 hours	
Saturdays		15 min	18 hours	18 hours
Sundays/ Holidays		20 min	12 hours	12 hours

- All alternatives assume the same duration of service and headways
- Hours of operation are complementary of Metrorail services

## *Planning-Level Ridership Projections*

	Alternative			
	1	2	3	4
Assumed Transit Mode:	BRT	BRT	BRT	BRT
Description:	Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
Year 2035 Daily Weekday Ridership	6,000 to 9,000 riders/day	8,000 to 12,000 riders/day	9,000 to 13,000 riders/day	12,000 to 16,000 riders/day

- Alternative 4 has highest ridership potential
- Alternative 1 has lowest ridership potential

## *Planning-Level Operating Cost Estimate*

	Alternative			
	1	2	3	4
Assumed Transit Mode:	BRT	BRT	BRT	BRT
Description:	Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
Annual Operating Cost	\$3.9 M	\$3.5 M	\$3.5 M	\$2.7 M
25-year Operating Cost <sup>1</sup>	\$67 M	\$60 M	\$60 M	\$47 M
Average Operating Cost/Rider	\$4.00	\$2.70	\$2.50	\$1.50

- Alternative 1 has highest operating cost due to anticipated transit travel speeds and numbers of vehicles required
- Alternative 4 has the potential for the most cost-efficient operation

Notes

1. Operating costs assume an annual 3% inflation rate

## *Planning-Level Cost Estimates*

	Alternative			
	1	2	3	4
<b>Assumed Transit Mode:</b>	BRT	BRT	BRT	BRT
<b>Description:</b>	Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
<b>Capital Cost Estimate<sup>1</sup></b> <small>(exclusive of vehicles, based on cost per-mile within the City)</small>	\$22 M	\$27 M	\$26 M	\$37 M
<b>25-year Fleet Cost Estimate<sup>2</sup></b>	\$20 M	\$16 M	\$16 M	\$13 M
<b>Right-of-Way Cost Estimate</b>	\$5 M	\$21 M	\$22 M	\$33 M
<b>25-year Operating Cost</b>	\$67 M	\$60 M	\$60 M	\$47 M
<b>Planning-Level Cost Estimate<sup>1</sup></b>	<b>\$114 M</b>	<b>\$124 M</b>	<b>\$124 M</b>	<b>\$130 M</b>

Notes  
 1. Planning level cost estimates are shown in year 2012 dollars and do not include additional contingency or escalation to a future year mid-point of construction. Totals listed do not include costs for major utility relocations/new service, or the capital costs for roadway/streetscape improvements that may be implemented concurrently, but are not required for the transit project.

## Secondary Evaluation – Costs

Evaluation Criteria		Alternative			
		1	2	3	4
Description:		Existing Configuration	Uses Service Road ROW	Reversible Lane	Median Running
Cost Effectiveness	Capital Cost	●	◐	◐	○
	Right-of-Way Cost	●	◐	◐	○
	Operating Cost	○	◐	◐	●
	Order of Magnitude Cost Per Rider	○	◐	◐	●

Rating:	●	Best	◐	Fair	○	Poor
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Notes

1. Planning level cost estimates are shown in year 2012 dollars and do not include additional contingency or escalation to a future year mid-point of construction. Totals listed do not include costs for major utility relocations/new service, or the capital costs for roadway/streetscape improvements that may be implemented concurrently, but are not required for the transit project.

## *New Starts/Small Starts Summary*

- Small Starts
  - Typical Range of FTA funding participation (based on 2012 awards by FTA)
    - 35% to 80% federal funding
    - Maximum participation (Small Starts, 80% or \$75 million, whichever is less)
  
- Rail Transit Projects (generally FTA New Starts)
  - Range of project capital costs: \$200 million to more than a billion dollars
  - Range of FTA funding participation
    - 40% to 60% federal funding
    - Maximum participation – varies, generally in 50% to 60% range

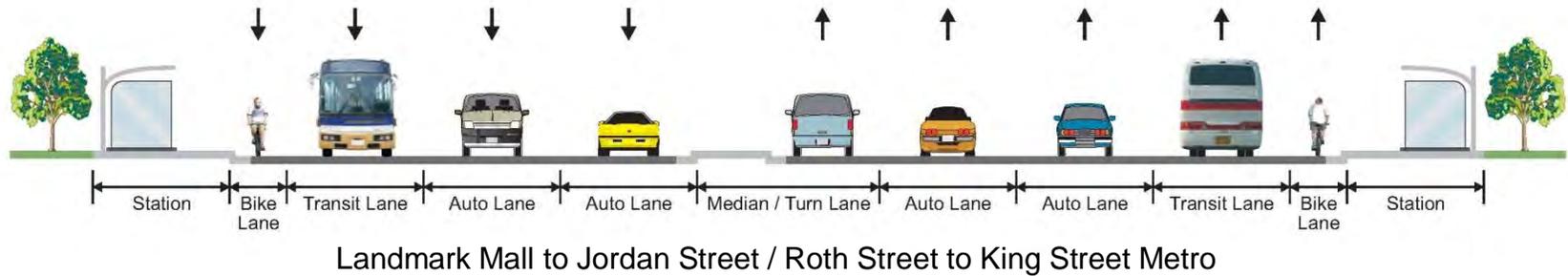
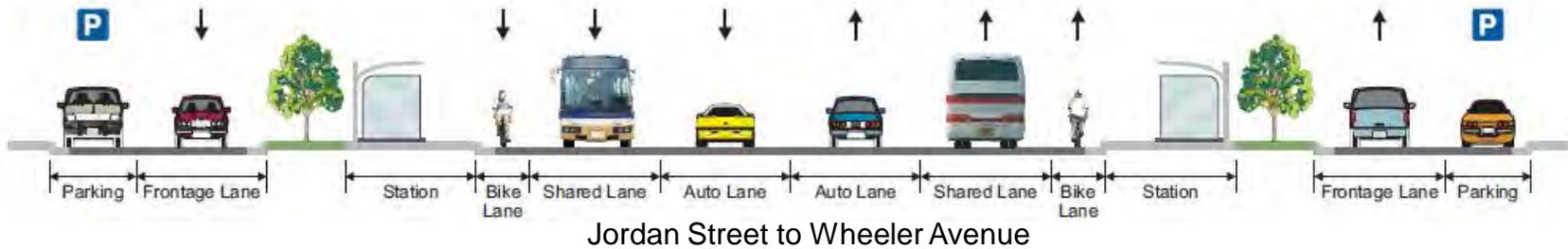
## *Corridor B - Conceptual Project Funding Scenario*

Project	Assumed Transit Mode	Total Capital Cost (millions)	Federal Share (millions)	Local Share (millions)	Federal Percent	Section 5309 Project Type
Alternative 1 Existing Configuration	BRT	\$36 M	\$29 M	\$7 M	80%	Small Starts
Alternative 2 Uses Service Road ROW	BRT	\$56 M	\$44 M	\$11 M	80%	Small Starts
Alternative 3 Reversible Lane	BRT	\$55 M	\$44 M	\$11 M	80%	Small Starts
Alternative 4 Median Running	BRT	\$76 M	\$61 M	\$15 M	80%	Small Starts

***BRIEF SUMMARY OF ADVANTAGES  
& DISADVANTAGES***

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

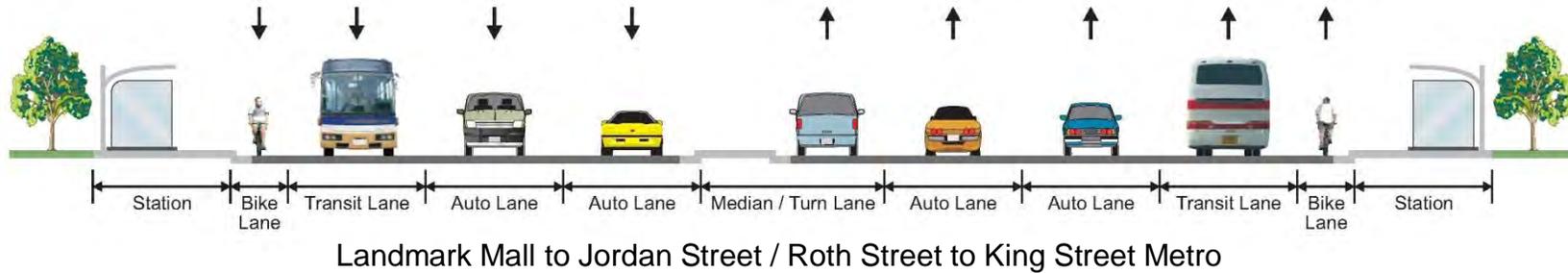
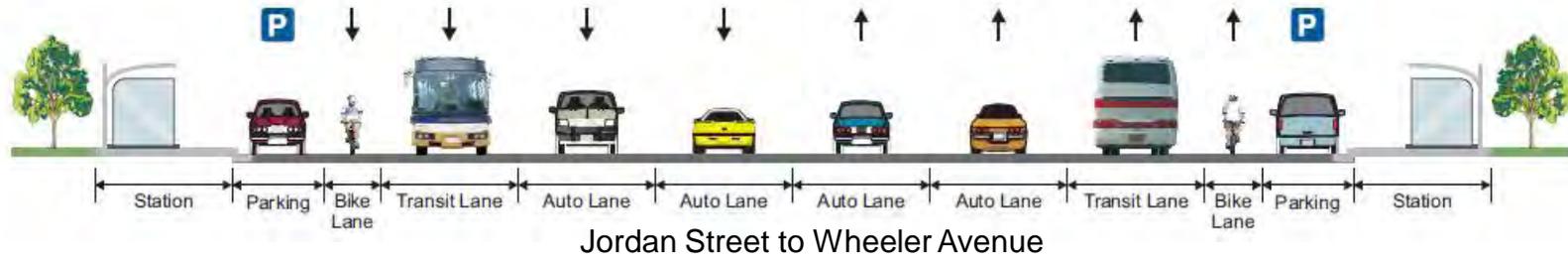
## Alternative 1



	Advantages	Disadvantages
Alternative 1 – Existing Configuration	<ul style="list-style-type: none"> <li>•Fewest negative impacts (including property)</li> <li>•Maintains service roads</li> <li>•Lowest capital cost</li> <li>•Easy to phase</li> </ul>	<ul style="list-style-type: none"> <li>•Worst transit operation due to shared lanes</li> <li>•Highest operating cost</li> <li>•Highest fleet cost</li> <li>•May be impacted by congestion on Duke Street</li> <li>•Longest transit travel time</li> <li>•Lowest ridership potential</li> </ul>

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

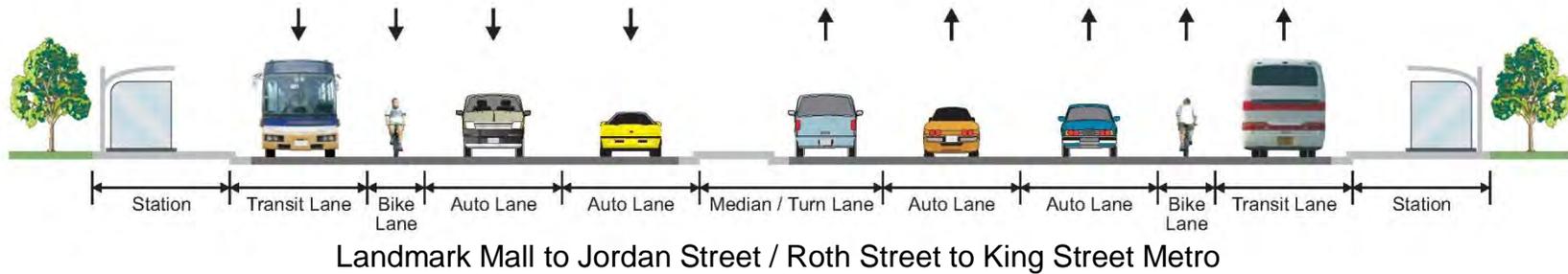
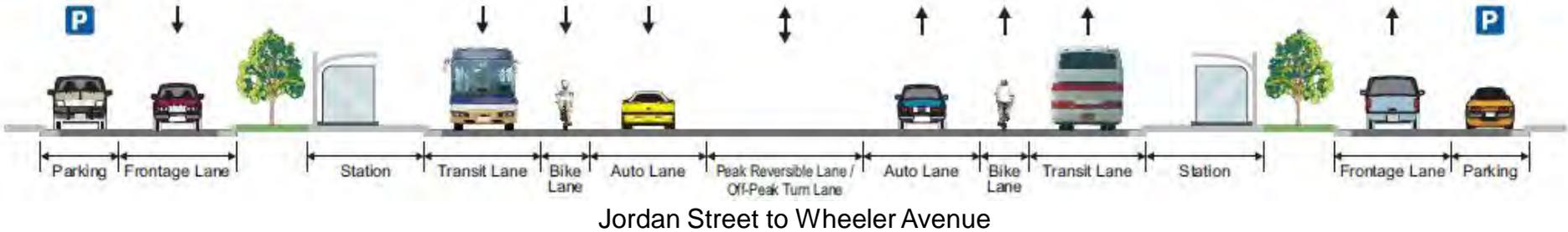
## Alternative 2



	Advantages	Disadvantages
Alternative 2 – Uses Service Road ROW	<ul style="list-style-type: none"> <li>•Minimal impact to traffic flow</li> <li>•High-quality transit operation</li> <li>•Moderate capital, fleet, and operating cost</li> <li>•Some avoidance of congestion for transit</li> </ul>	<ul style="list-style-type: none"> <li>•Curvilinear alignment</li> <li>•On-street parking could disrupt transit operations</li> <li>•Impacts service roads and streetscape as a result</li> </ul>

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

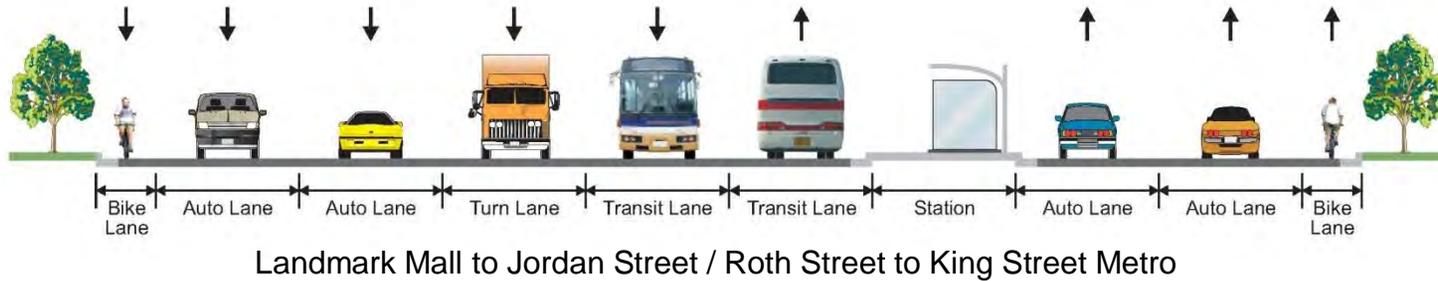
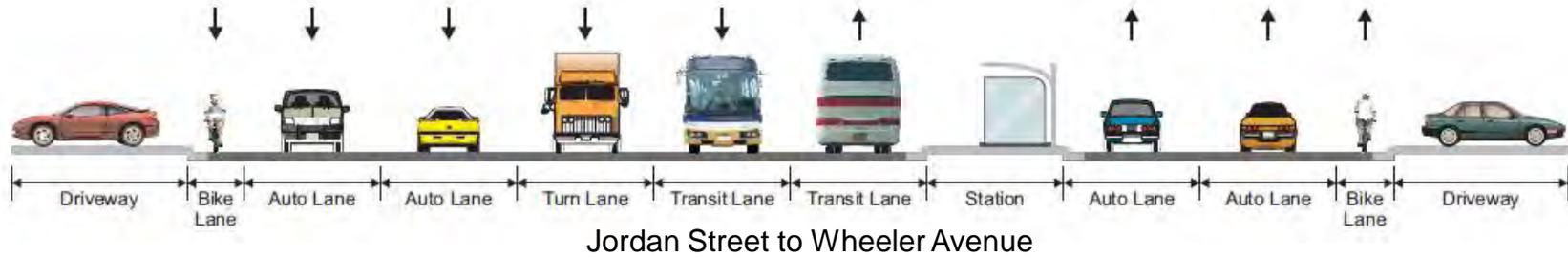
## Alternative 3



	Advantages	Disadvantages
Alternative 3 – Reversible Lane	<ul style="list-style-type: none"> <li>•High-quality transit operation</li> <li>•Maintains most service roads</li> <li>•Moderate capital, operating, and fleet cost</li> <li>•Provides turn lanes at some new locations to help traffic flow</li> </ul>	<ul style="list-style-type: none"> <li>•Off-peak direction traffic impact OR off-peak direction transit impact</li> <li>•Property impacts</li> <li>•Would require overhead gantries to control reversible condition</li> <li>•May be confusing to drivers</li> </ul>
Alternative 3 - Variation	<ul style="list-style-type: none"> <li>•Maintains most service roads</li> <li>•Less property impact than Alternative 3</li> <li>•Provides peak direction, peak period transit lane</li> <li>•Lower capital cost than Alternative 3</li> </ul>	<ul style="list-style-type: none"> <li>•No dedicated lanes off-peak time and direction</li> <li>•Would require overhead gantries to control reversible condition</li> <li>•Could be very confusing to drivers due to changing lane use condition</li> </ul>

# TRANSITWAY CORRIDOR FEASIBILITY STUDY

## Alternative 4



	Advantages	Disadvantages
Alternative 4 – Median Running	<ul style="list-style-type: none"> <li>•Best transit operation due to elimination of conflicts with driveways and traffic</li> <li>•Lowest fleet and operating cost</li> <li>•Avoids impacts from traffic congestion</li> <li>•Highest ridership potential</li> </ul>	<ul style="list-style-type: none"> <li>•Largest property impact</li> <li>•Eliminates service roads and parking (in front of 28 homes)</li> <li>•Highest capital cost</li> <li>•Highest right-of-way cost and impacts</li> </ul>

# *DISCUSSION & COMMENTS*

## *Thank you for your attention!*

For access to the information that was presented tonight, as well as other study information, please visit the project website at:

- <http://alexandriava.gov/HighCapacityTransit>

Once there, follow the link for the “[High Capacity Transit Corridor Work Group](#)”



# TRANSITWAY CORRIDOR FEASIBILITY STUDY