



# Traffic Signal and Safety Improvements at Interchange 127 (Newton Corner)

## *Concept Alternatives*

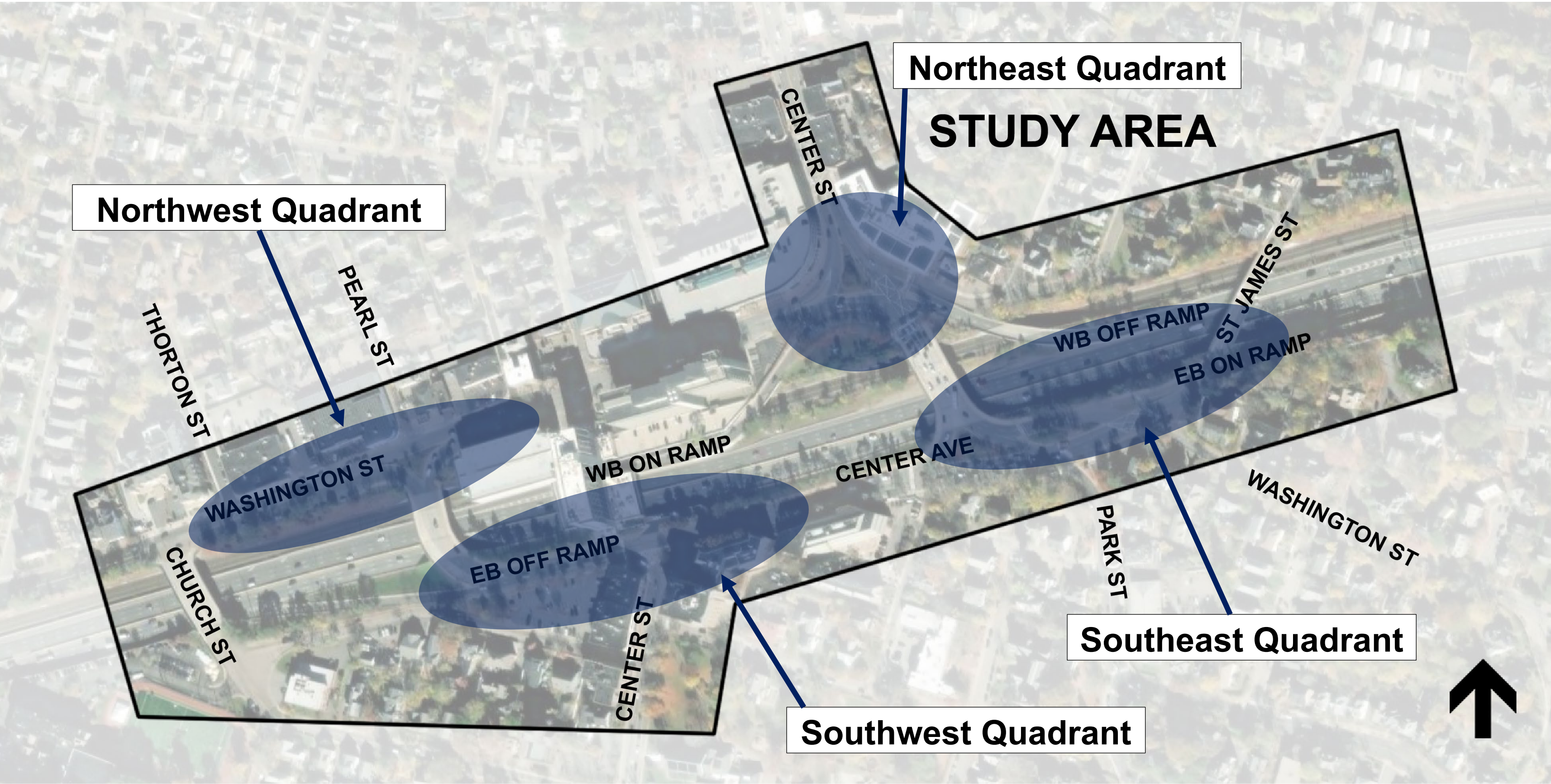
From Public Outreach Workshop #3 | October 24, 2023

Project File No. 609288



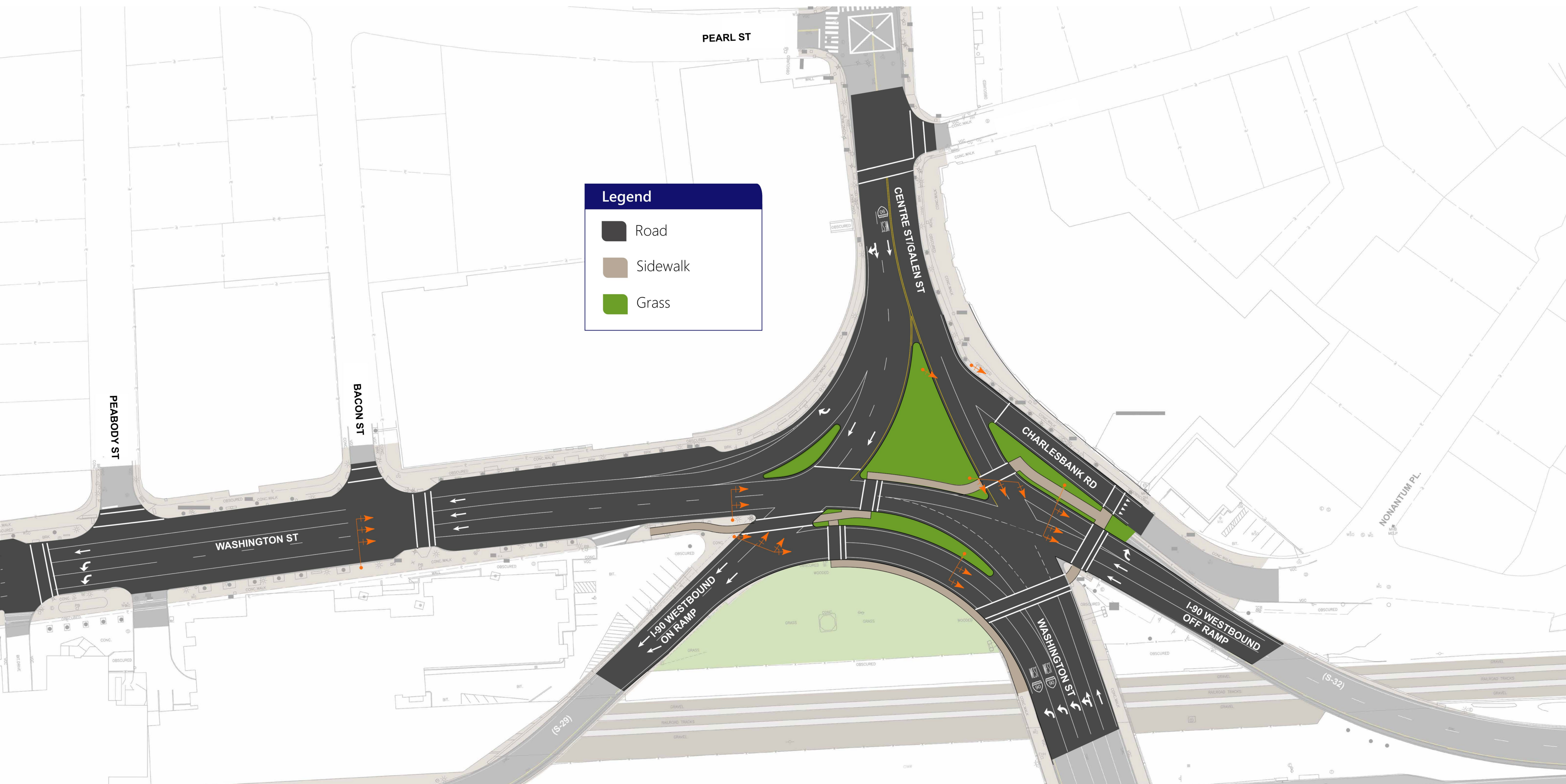


# Alternative Focus Areas











# Northeast Quadrant—Concept A



# Alternative Summary – Northeast Quadrant

## Concept A (Intersection Improvements)

Goal	Infrastructure Changes
 Enhance Safety	<ul style="list-style-type: none"><li>- Minor geometric and signal timing changes</li><li>- Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Extended bus stop provided on Washington St WB after the right-turn slip lane</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- New crosswalks installed across Centre St NB and Washington St WB lanes</li><li>- Two new/expanded pedestrian islands (south of Charlesbank Rd and north of Bell Tower Park)</li><li>- No pedestrian crossing installed across SB right-turn slip lanes</li><li>- No dedicated bicycle infrastructure</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal impacts to property access and parking</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>













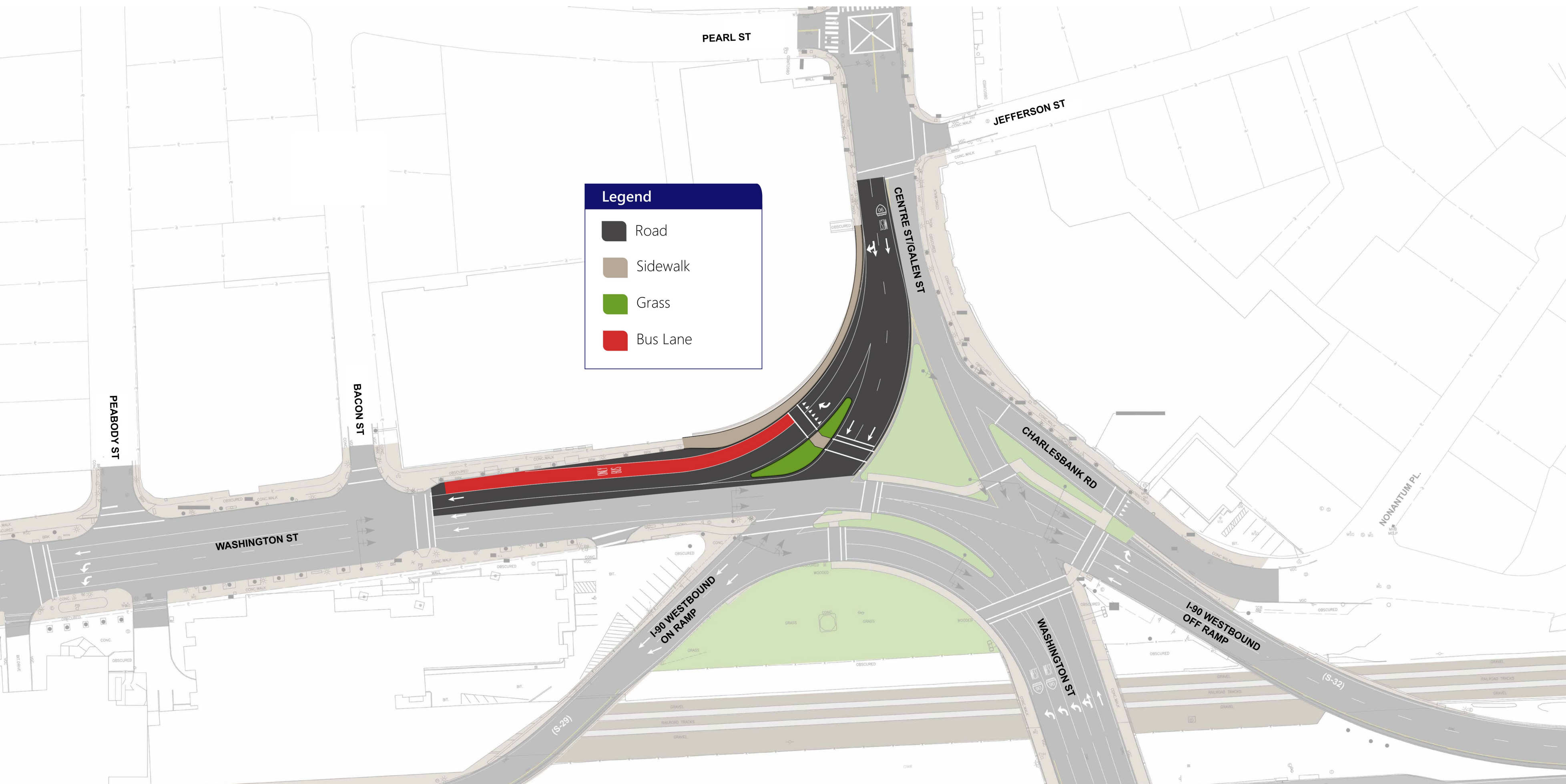
# Alternative Summary – Northeast Quadrant

## Concept B (Intersection Improvements + SB Right-Turn Bus Lane)

Goal	Infrastructure Changes
 Enhance Safety	<ul style="list-style-type: none"><li>- Minor geometric and signal timing changes</li><li>- Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- New SB right-turn bus-only lane from Centre St SB onto Washington St WB</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- New crosswalks installed across Centre St NB and Washington St WB lanes</li><li>- Two new/expanded pedestrian islands (south of Charlesbank Rd and north of Bell Tower Park)</li><li>- No pedestrian crossing installed across SB right-turn slip lanes</li><li>- No dedicated bicycle infrastructure</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal impacts to property access and parking</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>









# Northeast Quadrant—Concept C





# Alternative Summary – Northeast Quadrant







## Concept C (Intersection Improvements + SB Right-Turn Crosswalk)

Goal	Infrastructure Changes
 Enhance Safety	<ul style="list-style-type: none"><li>- Minor geometric and signal timing changes</li><li>- Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp</li><li>- Designated pedestrian crossing of SB right-turn lane</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- New SB right-turn bus-only lane from Centre St SB onto Washington St WB starting after pedestrian crossing</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- New crosswalks installed across Centre St NB, Washington St WB, and Centre St SB lanes</li><li>- Three new/expanded pedestrian islands (south of Charlesbank Rd, north of Bell Tower Park, and east of SB right-turn slip lane)</li><li>- No pedestrian crossing installed across SB right-turn slip lanes</li><li>- No dedicated bicycle infrastructure</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal impacts to property access and parking</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>



# Alternative Evaluation—Northeast Quadrant

(Poll Question #4)

Goal		Concept A: Intersection Improvements	Concept B: Int. Improvements + SB Right-Turn Bus Lane	Concept C: Int. Improvements + SB Right-Turn Crosswalk
	Enhance Safety	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Improve Traffic & Reduce Congestion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Improve Transit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Expand Multimodal Infrastructure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	Property Access & Parking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Land Use & Placemaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Legend

☒

Positive  
Impact

☐

Neutral /  
No Impact

☒

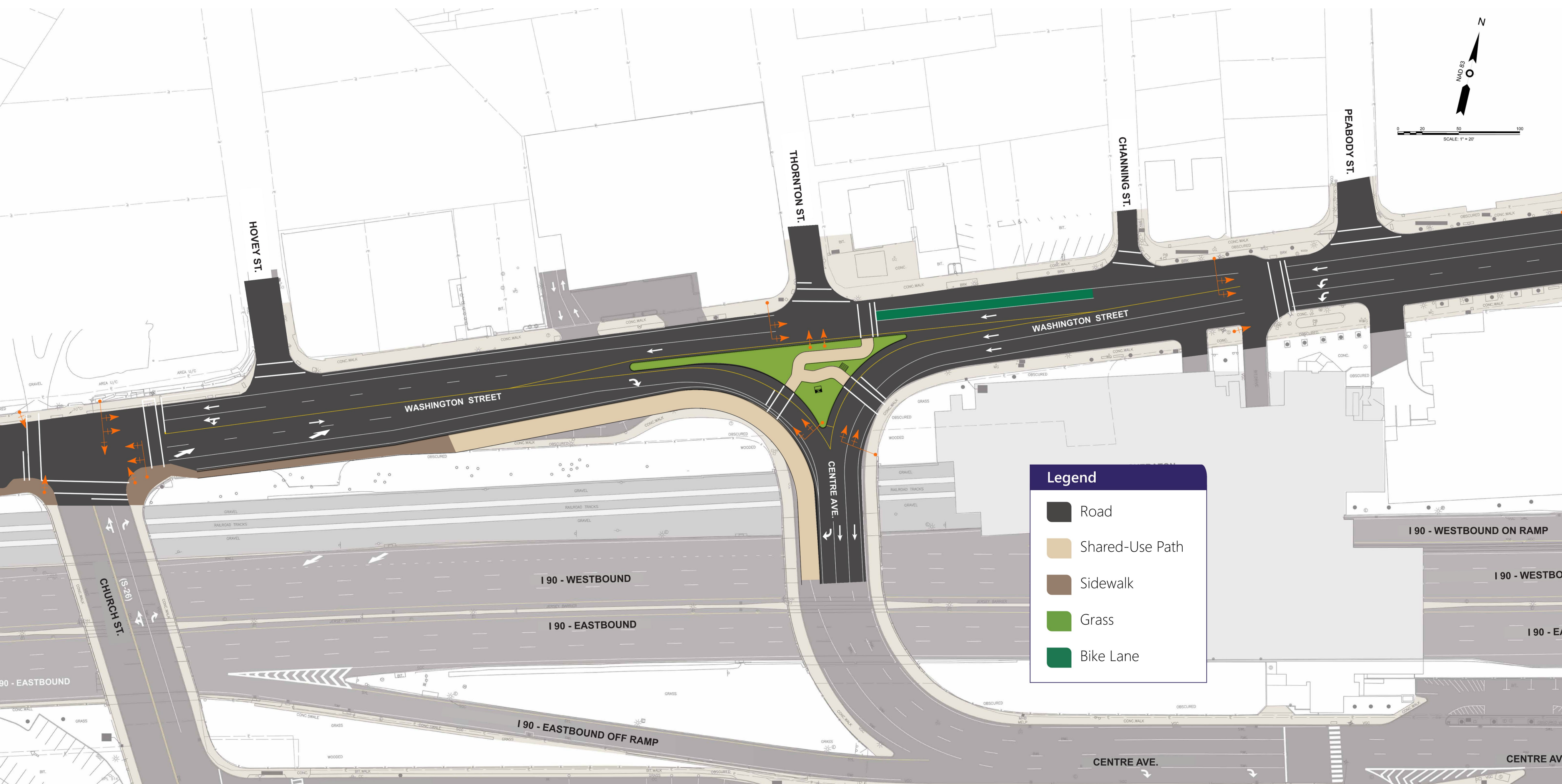
Negative  
Impact

☒☒

*Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*









# Northwest Quadrant—Concept A





# Alternative Summary – Northwest Quadrant

## Concept A (Signal Control with One Lane Eastbound)

Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Eliminates weave on bridge</li><li>- New traffic signals for Washington St and Thorton St controls pedestrians and vehicles</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- New traffic signals control traffic flow</li><li>- Eastbound traffic will need to merge to a single lane</li><li>- Potential for delays at Hovey St with EB vehicles stopped in merge area waiting to turn left</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Opportunity for enhanced inline bus stop on Washington St EB east of Church St</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides a shared-use path for pedestrians and bicyclists on Washington St EB bridge</li><li>- Provides protected signalized crossings across Washington St EB and WB</li><li>- Option for an on-road bicycle lane on Washington St WB</li><li>- Wider shared-use path west of overpass than provided in Concept B</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- May introduce conflicts for on-street parking adjacent to EB merge</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>









# Northwest Quadrant—Concept B





# Alternative Summary – Northwest Quadrant







## Concept B (Signal Control with Two Lanes Eastbound)

Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Eliminates weave on bridge</li><li>- New traffic signals for Washington St and Thorton St controls pedestrians and vehicles</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- New traffic signals control traffic flow</li><li>- Maintains two lanes eastbound without the need for vehicles to merge</li><li>- Shorter vehicle queues than Concept A</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Opportunity for enhanced inline bus stop on Washington St EB east of Church St</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides a shared-use path for pedestrians and bicyclists on Washington St EB bridge</li><li>- Provides protected signalized crossings across Washington St EB and WB</li><li>- Option for an on-road bicycle lane on Washington St WB</li><li>- Narrower shared-use path west of overpass than provided in Concept A</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Likely no changes to parking or land access</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>



# Alternative Evaluation—Northwest Quadrant

(Poll Question #5)

Goal		Concept A: Signal Control with One Lane EB	Concept B: Signal Control with Two Lanes EB
	Enhance Safety	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Improve Traffic & Reduce Congestion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	Improve Transit	<input type="checkbox"/>	<input type="checkbox"/>
	Expand Multimodal Infrastructure	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Property Access & Parking	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Land Use & Placemaking	<input type="checkbox"/>	<input type="checkbox"/>

Legend

☒

Positive Impact

☐

Neutral / No Impact

☒

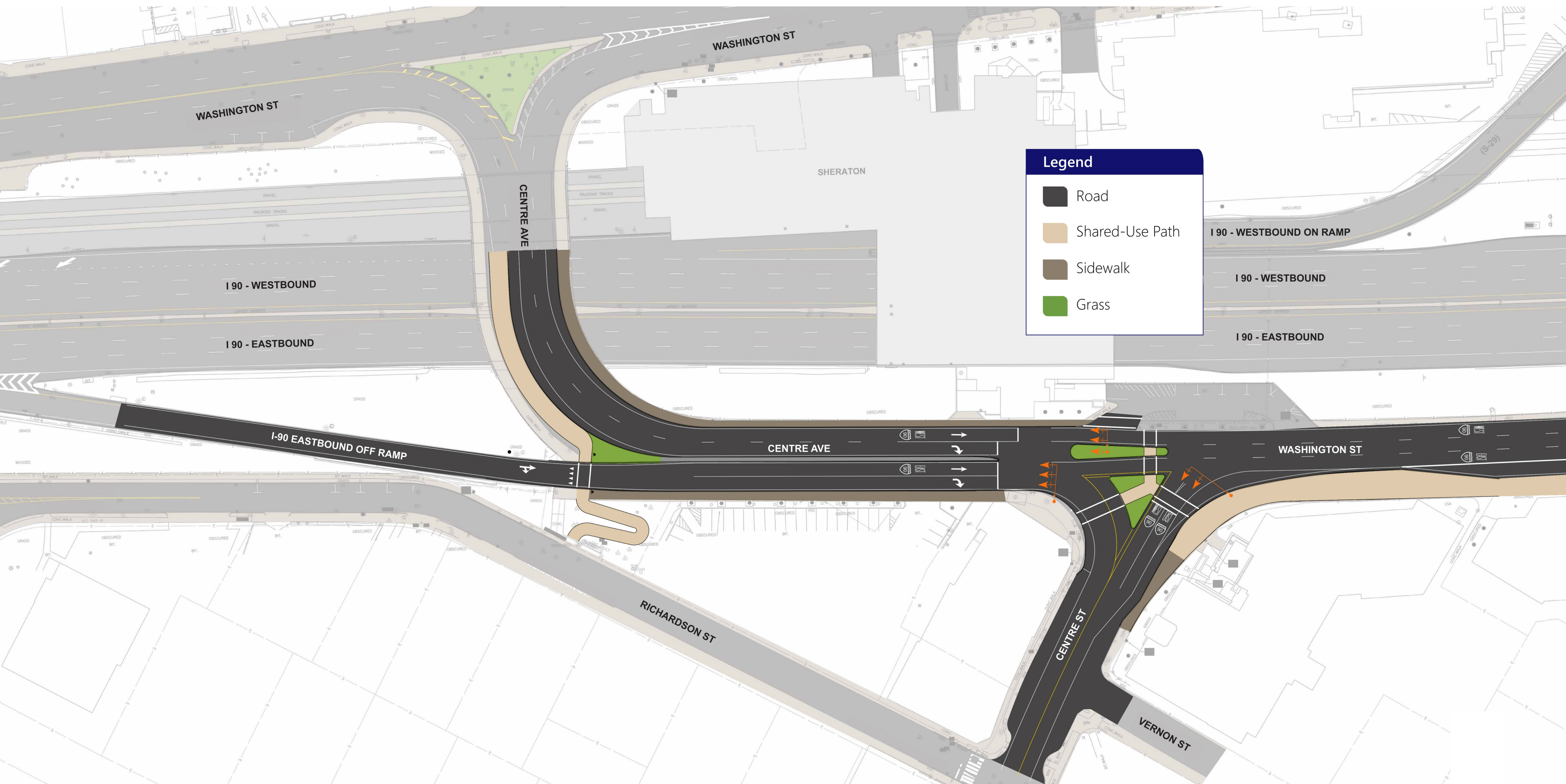
Negative Impact

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*Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*



# Southwest Quadrant—Concept A





# Alternative Summary – Southwest Quadrant

## Concept A (Off-Ramp Divided to Signal at Centre Street)

Goal

Infrastructure Changes



Enhance  
Safety

- Places off-ramp traffic under signal control and eliminates weave on Centre Ave EB
- Provides a physical separation between I-90 EB off-ramp and Washington St EB traffic
- Ped/bike crossing of off-ramp traffic unsignalized (possible RRFB)



Improve Traffic &  
Reduce Congestion

- Reduces queues for I-90 EB off-ramp traffic
- Includes queue detection for off-ramp to control queues from spilling onto I-90 mainline
- Increases delays and queues for Washington St EB and Centre St NB traffic



Improve Transit

- Minimal impacts to transit accommodations



Expand Multimodal  
Infrastructure

- Provides a shared-use path for pedestrians and bicyclists on the Washington St EB bridge
- Unsignalized mid-block ped/bike crossing of off-ramp (possible RRFB)
- Shared-use path connection to Richardson St south of I-90 EB off-ramp
- No shared-use path on Centre Ave EB, bike traffic must transition to Richardson St
- Shorter pedestrian crossing across Centre Ave EB



Property Access &  
Parking

- Access eliminated to Richardson St parking lot from Centre Ave EB

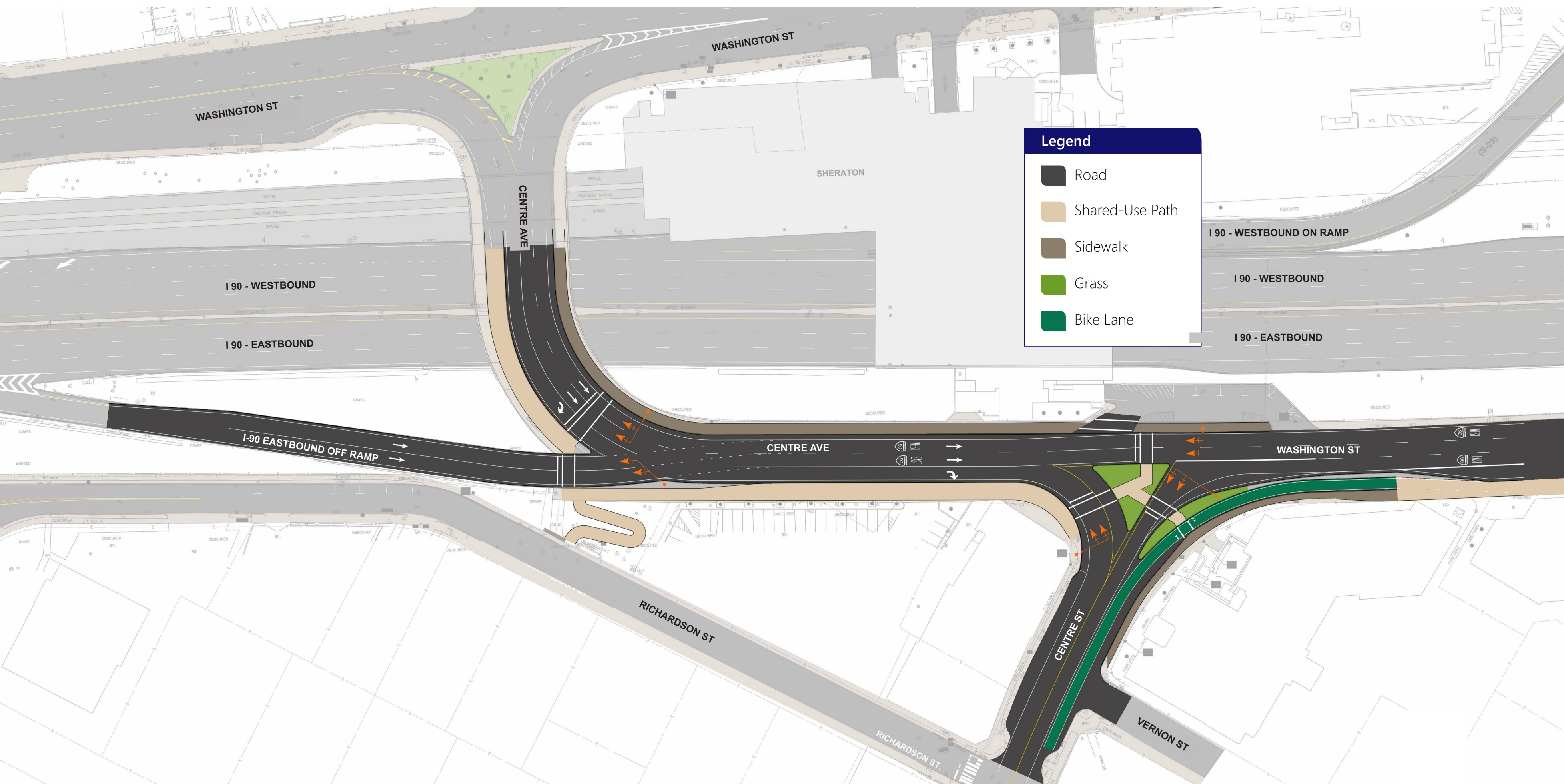


Land Use &  
Placemaking

- Minimal changes for land use and placemaking









# Southwest Quadrant—Concept B





# Alternative Summary – Southwest Quadrant





















## Concept B (Two-Lane Off-Ramp with Signal Control)

Goal		Infrastructure Changes
	Enhance Safety	<ul style="list-style-type: none"><li>- Places off-ramp traffic under signal control and eliminates weave on Centre Ave EB</li><li>- All ped/bike crossings under signal control</li><li>- Does not eliminate weave east of Centre St as NB and EB traffic will have concurrent green lights</li></ul>
	Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Reduces queues for I-90 EB off-ramp traffic</li><li>- Includes queue detection for off-ramp to control queues from spilling onto I-90 mainline</li><li>- Increases delays and queues for Washington St EB traffic</li></ul>
	Improve Transit	<ul style="list-style-type: none"><li>- Minimal impacts to transit accommodations</li></ul>
	Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides a shared-use path for pedestrians and bicyclists on the Washington St EB bridge and on the south side of Centre Ave EB</li><li>- Signalized ped/bike crossing of I-90 EB off-ramp traffic</li><li>- Shared-use path connection to Richardson St south of I-90 EB off-ramp</li><li>- Sidewalk-level bicycle lane on Centre St NB onto Centre Ave EB</li><li>- Shorter pedestrian crossing across Centre Ave EB</li></ul>
	Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal impacts to property access and parking</li></ul>
	Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>




# Alternative Evaluation—Southwest Quadrant


(Poll Question #6)

Goal		Concept A: Off-Ramp Divided to Signal at Centre Street	Concept B: Two-Lane Off-Ramp with Signal Control
	Enhance Safety		
	Improve Traffic & Reduce Congestion		 
	Improve Transit		
	Expand Multimodal Infrastructure		 
	Property Access & Parking		
	Land Use & Placemaking		


Legend



Positive  
Impact



Neutral /  
No Impact



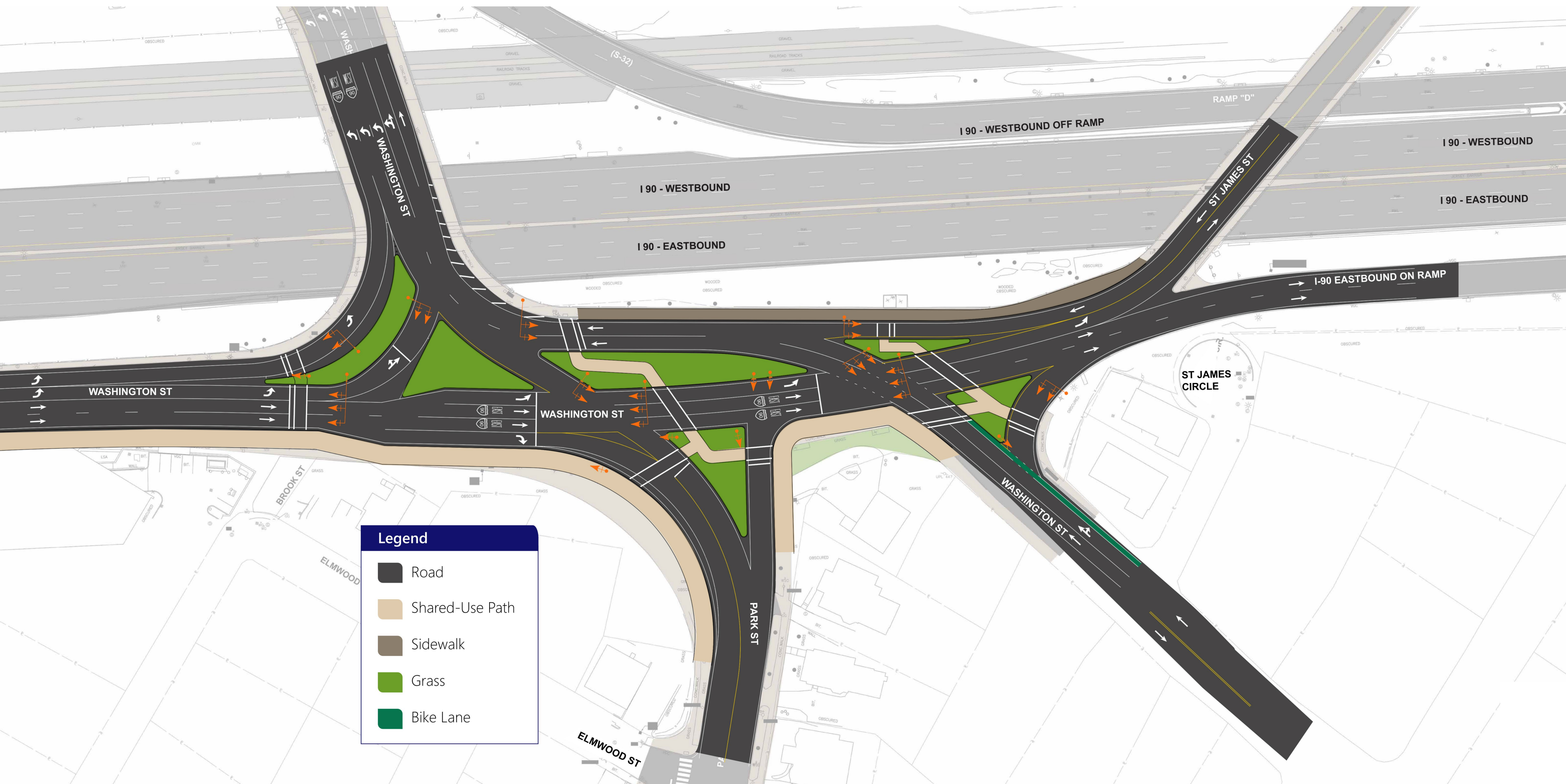
Negative  
Impact



*Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*









# Southeast Quadrant—Signalized Concept A1





# Alternative Summary – Southeast Quadrant: Signals

## Concept A1 (Signal Control with Divided Eastbound Left-Turns)

Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Eliminates weave on Washington St WB bridge (far left lane will be free-flow, but will not conflict with other movements)</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Introduces new signal control for Washington St EB left-turn movements towards West Newton and Watertown</li><li>- Minimal changes to operations on other approaches</li><li>- New traffic signal equipment throughout the quadrant</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Minimal impacts to transit accommodations</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides a shared-use path for pedestrians and bicyclists on south side of Washington St EB</li><li>- No changes to locations of existing crosswalks</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal changes to property access and parking</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Minimal changes for land use and placemaking</li></ul>













# Alternative Summary – Southeast Quadrant: Signals



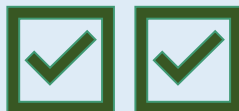















## Concept A2 (Signal Control with Combined Eastbound Left-Turns)

Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Eliminates weave on Washington St WB bridge by adding signal control for all movements</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Introduces new signal control for all Washington St EB left-turn movements</li><li>- Minimal changes to operations on other approaches</li><li>- New traffic signal equipment throughout the quadrant</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Minimal impacts to transit accommodations</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides a shared-use path for pedestrians and bicyclists on south side of Washington St EB</li><li>- New signalized crosswalks across both approaches at the foot of the Washington St WB bridge</li><li>- Existing crosswalk across Washington St EB west of Park St shifted approximately 300 ft east to be included in Park St signal</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Minimal changes to property access and parking</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Opportunity for increased green space and placemaking with larger median island at foot of Washington St WB bridge</li></ul>




# Alternative Evaluation—Southeast Quadrant: Signals


(Poll Question #7)

Goal		Concept A1: Signal Control with Divided EB Left-Turns	Concept A2: Signal Control with Combined EB Left-Turns
	Enhance Safety		
	Improve Traffic & Reduce Congestion		
	Improve Transit		
	Expand Multimodal Infrastructure		
	Property Access & Parking		
	Land Use & Placemaking		


Legend



Positive Impact



Neutral / No Impact



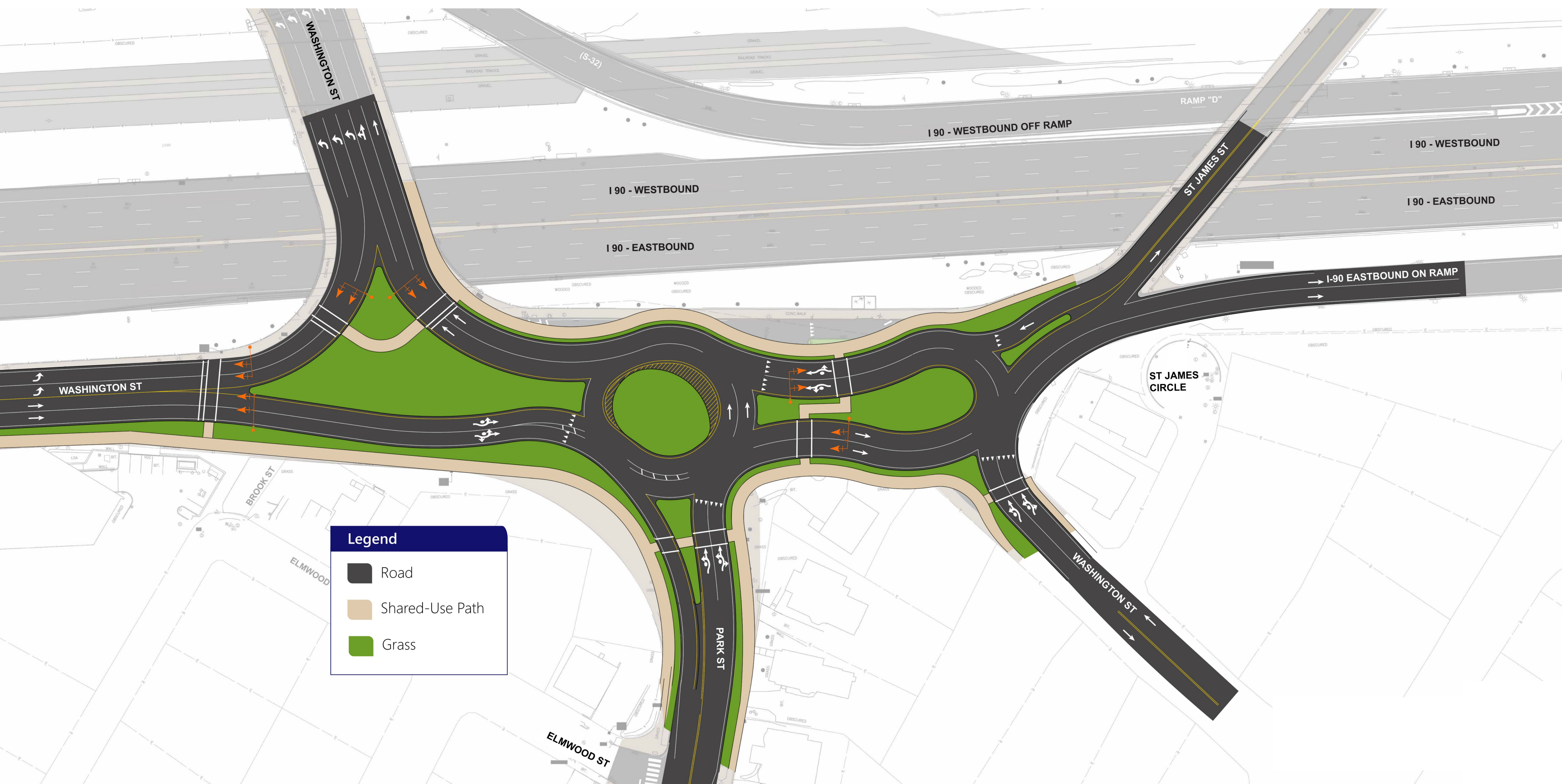
Negative Impact



*Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*









# Southeast Quadrant—Roundabout Concept B1





# Alternative Summary – Southeast Quadrant: Roundabouts

## Concept B1 (Roundabouts with Two Lanes Westbound)

Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Roundabouts instead of signalized intersections reduces number of conflict points</li><li>- Geometry of roundabouts requires vehicles to slow down at all times of day</li><li>- Eliminates weave on Washington St WB bridge by adding signal control for both approaches</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Roundabouts result in minimal stops or conflicts for Washington St EB traffic towards I-90 EB</li><li>- Result in longer queues for Park St NB and Washington St NB approaches than signal concepts</li><li>- Mid-roundabout signalized pedestrian crossings may cause traffic to stop in roundabouts</li><li>- New St James St WB to Park St SB and I-90 EB on-ramp movements allowed with roundabouts</li><li>- Introduces new signal control for Washington St EB left-turns onto bridge</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Minimal impacts to transit accommodations</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides shared-use paths for pedestrians and bicyclists on both sides of Washington St</li><li>- Signalized ped/bike crossings provided between Park St and Washington St NB roundabouts</li><li>- Signalized crosswalks provided across both approaches at foot of Washington St WB bridge</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Partial ROW taking required for property southeast of Park St roundabout</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Opportunities for placemaking within the roundabouts</li></ul>







# Southeast Quadrant—Roundabout Concept B2























# Alternative Summary – Southeast Quadrant: Roundabouts

## Concept B2 (Roundabouts with One Lane Westbound)


Goal	Notes
 Enhance Safety	<ul style="list-style-type: none"><li>- Roundabouts instead of signalized intersections reduces number of conflict points</li><li>- Geometry of roundabouts requires vehicles to slow down at all times of day</li><li>- Eliminates weave on Washington St WB bridge by adding signal control for both approaches</li></ul>
 Improve Traffic & Reduce Congestion	<ul style="list-style-type: none"><li>- Roundabouts result in minimal stops or conflicts for Washington St EB traffic towards I-90 EB</li><li>- One lane WB decreases efficiency for movements from Washington St NB and St James St WB</li><li>- Result in longer queues for Park St NB, Washington St NB, and St James St WB approaches</li><li>- Mid-roundabout signalized pedestrian crossings may cause traffic to stop in roundabouts</li><li>- New St James St WB to Park St SB and I-90 EB on-ramp movements allowed with roundabouts</li><li>- Introduces new signal control for Washington St EB left-turns onto bridge</li></ul>
 Improve Transit	<ul style="list-style-type: none"><li>- Minimal impacts to transit accommodations</li></ul>
 Expand Multimodal Infrastructure	<ul style="list-style-type: none"><li>- Provides shared-use paths for pedestrians and bicyclists on both sides of Washington St</li><li>- Signalized ped/bike crossings provided between Park St and Washington St NB roundabouts</li><li>- Signalized crosswalks provided across both approaches at foot of Washington St WB bridge</li></ul>
 Property Access & Parking	<ul style="list-style-type: none"><li>- Small ROW taking required for property southeast of Park St roundabout (less impactful than ROW taking required for Concept B1)</li></ul>
 Land Use & Placemaking	<ul style="list-style-type: none"><li>- Opportunities for placemaking within the roundabouts</li></ul>

# Alternative Evaluation—Southeast Quadrant: Roundabouts


(Poll Question #8)

Goal		Concept B1: Roundabouts with Two Lanes Westbound	Concept B2: Roundabouts with One Lane Westbound
	Enhance Safety		
	Improve Traffic & Reduce Congestion		
	Improve Transit		
	Expand Multimodal Infrastructure		
	Property Access & Parking		
	Land Use & Placemaking		


Legend



Positive  
Impact



Neutral /  
No Impact



Negative  
Impact



*Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*