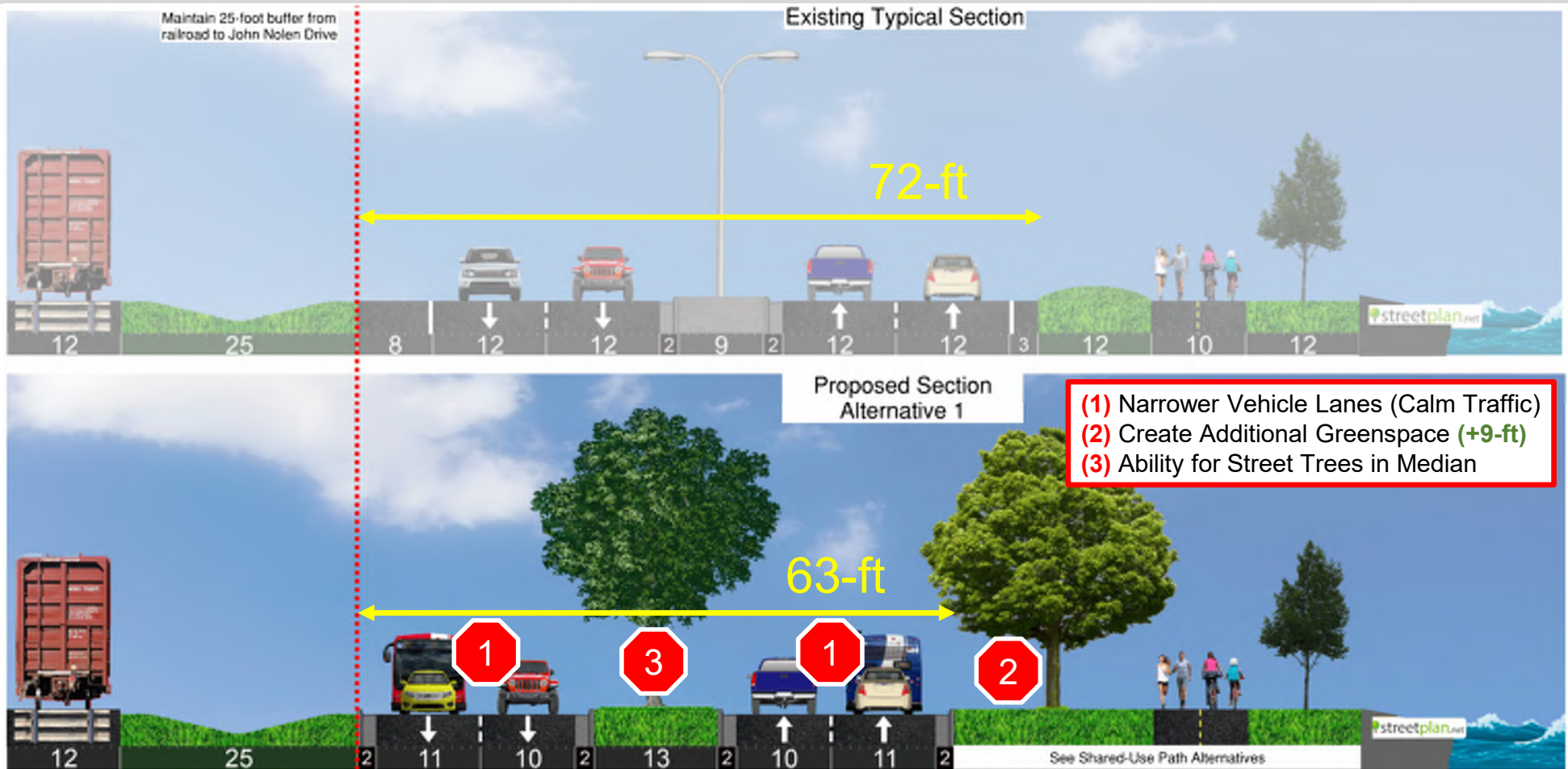




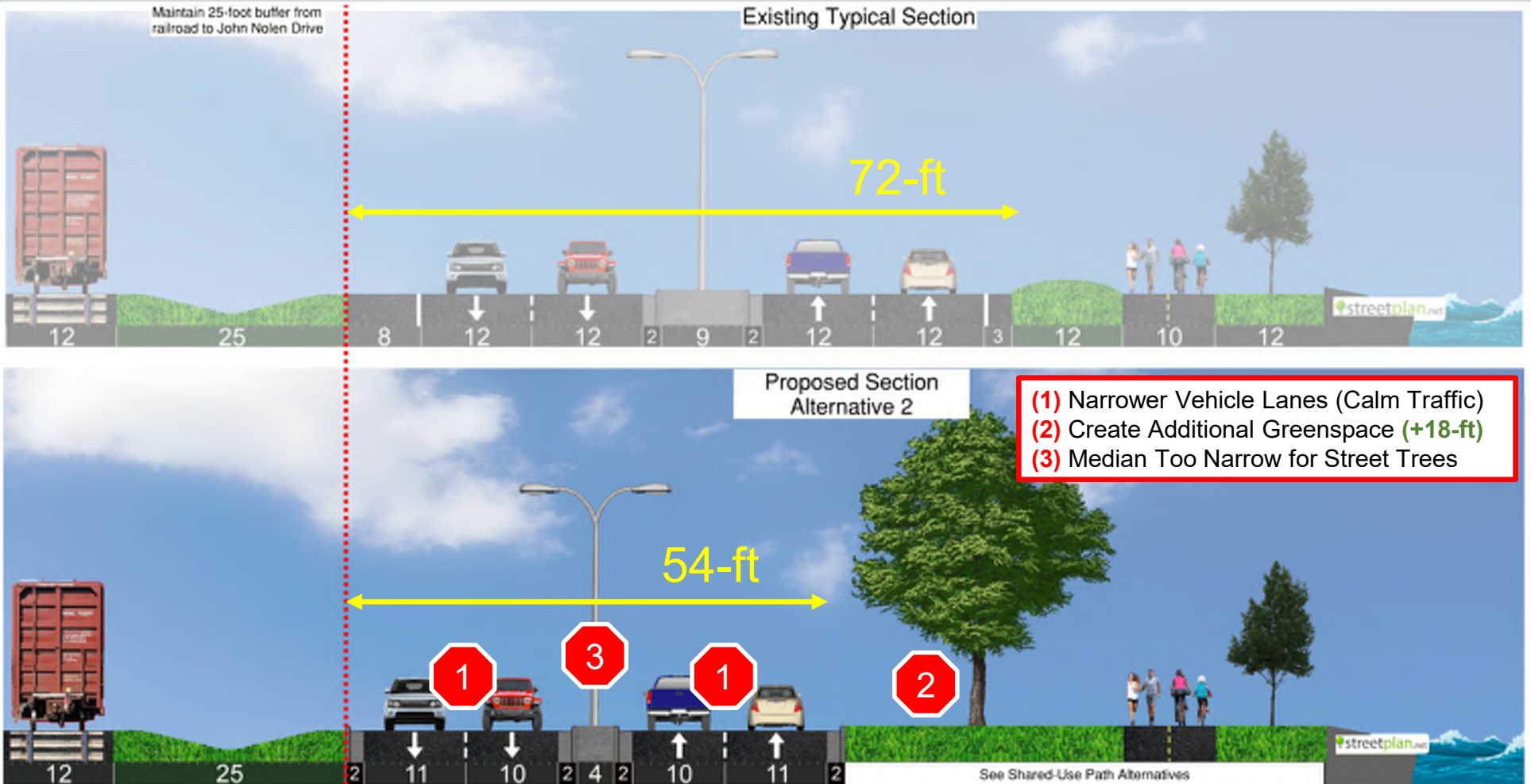
# John Nolen Drive Alternatives




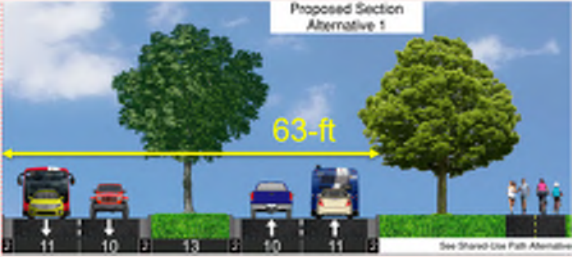

# Roadway Typical Sections – Alt 1 (Wide Median)



# Roadway Typical Sections – Alt 2 (Narrow Median)



# Roadway Typical Sections – POLLING

	NOTES	DETAILS
<p><b>EXISTING</b> (No Change)</p>	<p>72-ft Roadway Width No Trees in Median</p>	 <p>Existing Typical Section</p> <p>72-ft</p> <p>Diagram showing a cross-section of a roadway with a central median, two travel lanes, and a sidewalk. A yellow arrow indicates the total roadway width of 72 feet. Dimensions below the roadway are: 8, 12, 12, 9, 9, 12, 12, 3, 12, 10.</p>
<p><b>ALT 1</b></p>	<p>63-ft Roadway Width Wider Median Trees in Median Balance Green Space</p>	 <p>Proposed Section Alternative 1</p> <p>63-ft</p> <p>Diagram showing a cross-section of a roadway with a wider median, trees in the median, and a sidewalk. A yellow arrow indicates the total roadway width of 63 feet. Dimensions below the roadway are: 11, 10, 13, 10, 11, 6. A note at the bottom right says 'See Shared Use Path Alternative'.</p>
<p><b>ALT 2</b></p>	<p>54-ft Roadway Width Narrower Median No Trees in Median Max Green Space to Park</p>	 <p>Proposed Section Alternative 2</p> <p>54-ft</p> <p>Diagram showing a cross-section of a roadway with a narrower median, no trees in the median, and a sidewalk. A yellow arrow indicates the total roadway width of 54 feet. Dimensions below the roadway are: 11, 10, 6, 4, 7, 10, 11, 6. A note at the bottom right says 'See Shared Use Path Alternative'.</p>

# Pathway Typical Sections – Existing

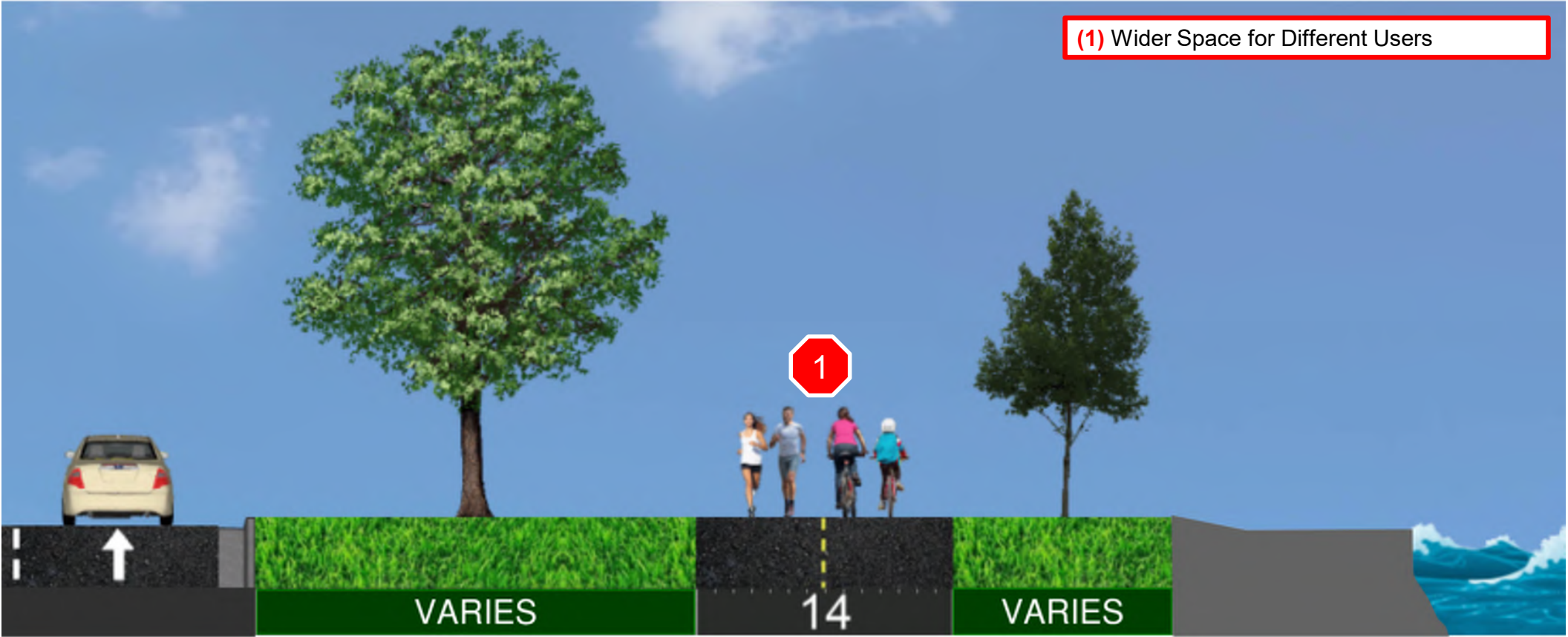


- (1) Safety (No "Barrier" from Vehicles)
- (2) Capacity (Too Narrow - Congested)
- (3) Experience (Mix of User Speeds on Path)



# Pathway Typical Sections – Alt 1 (Wide Shared-Use)

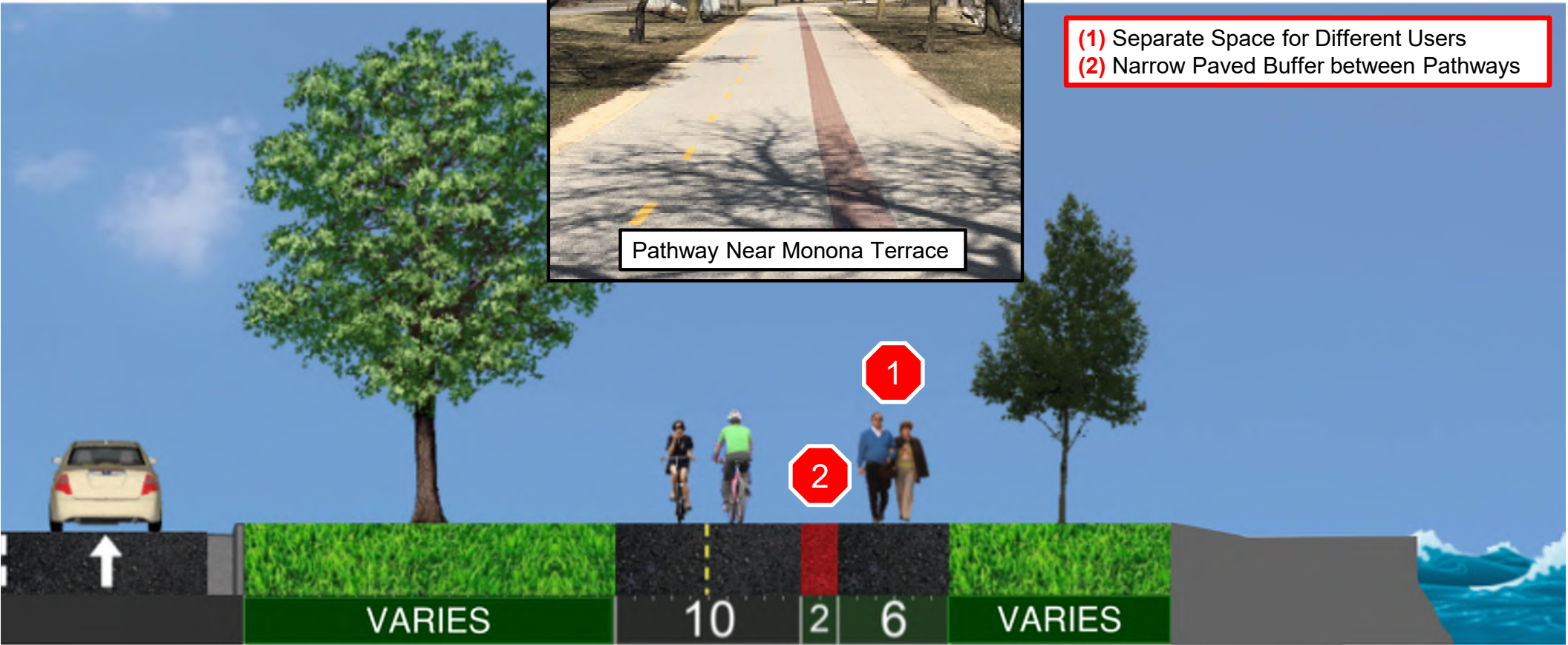
(1) Wider Space for Different Users



# Pathway Typical Sections – Alt 2 (Separate w/ Buffer)



- (1) Separate Space for Different Users
- (2) Narrow Paved Buffer between Pathways



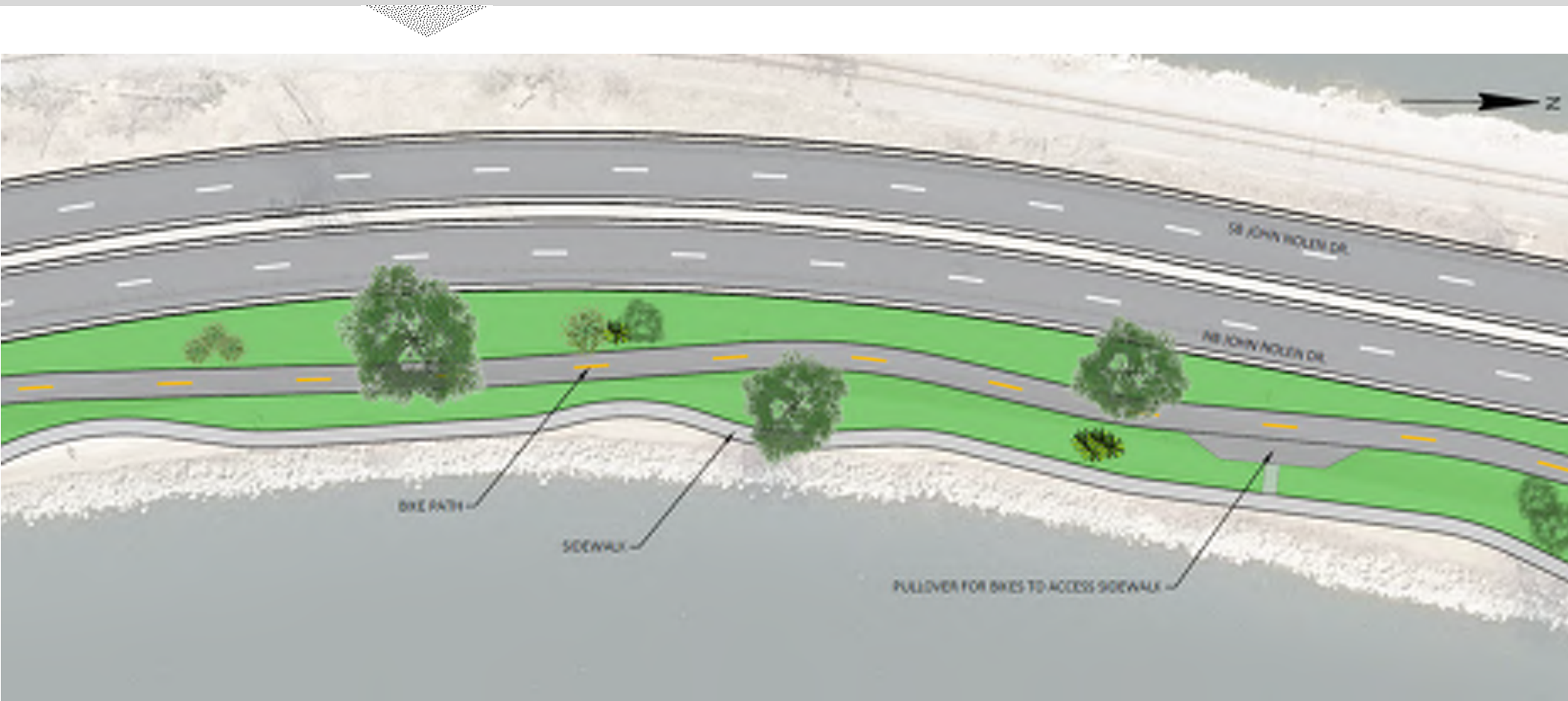
# Pathway Typical Sections – Alt 3 (Separate Pathways)

- (1) Separate Space for Different Users
- (2) Wider Grassed Buffer between Pathways









# Conceptual Pathway

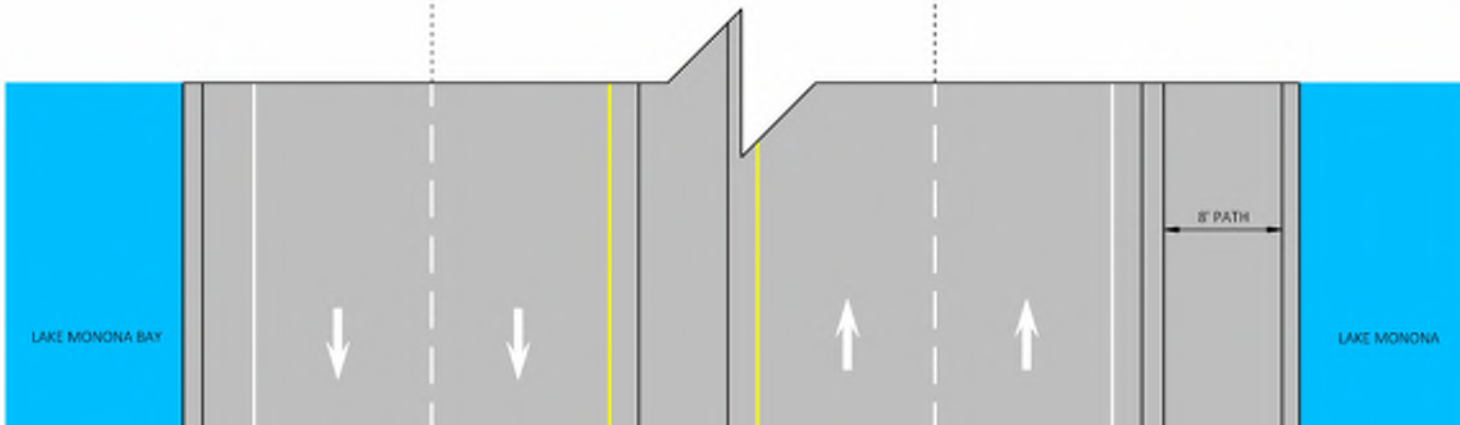
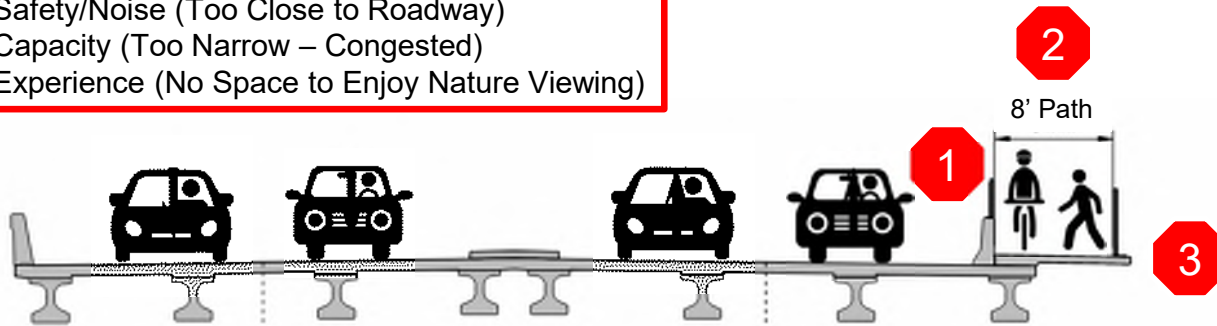


# Pathway Typical Sections – POLLING

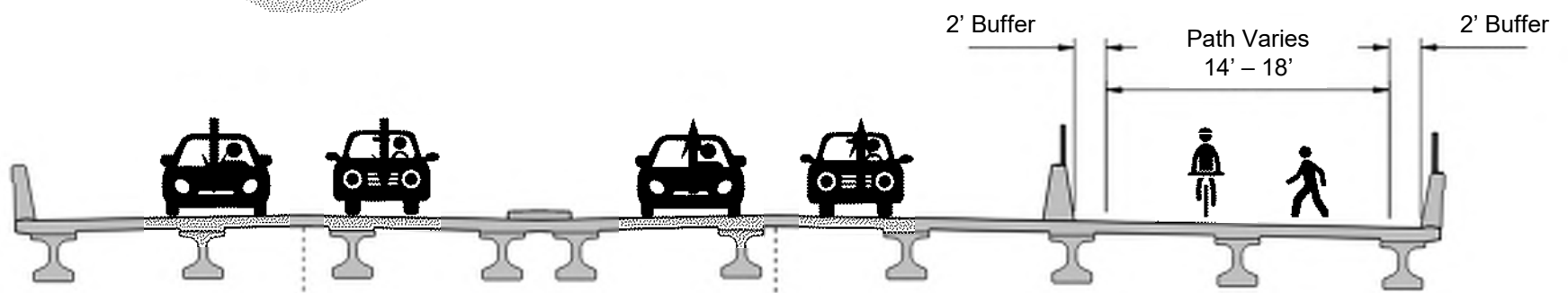
	NOTES	DETAILS
<b>EXISTING</b> (No Change)	10-ft Width	
<b>ALT 1</b>	14-ft Width	
<b>ALT 2</b>	10-ft & 6-ft Width w/ 2-ft Paved Buffer	
<b>ALT 3</b>	10-ft & 6-ft Width w/ Wider Grass Buffer	

# Pathway Bridge Sections – Existing

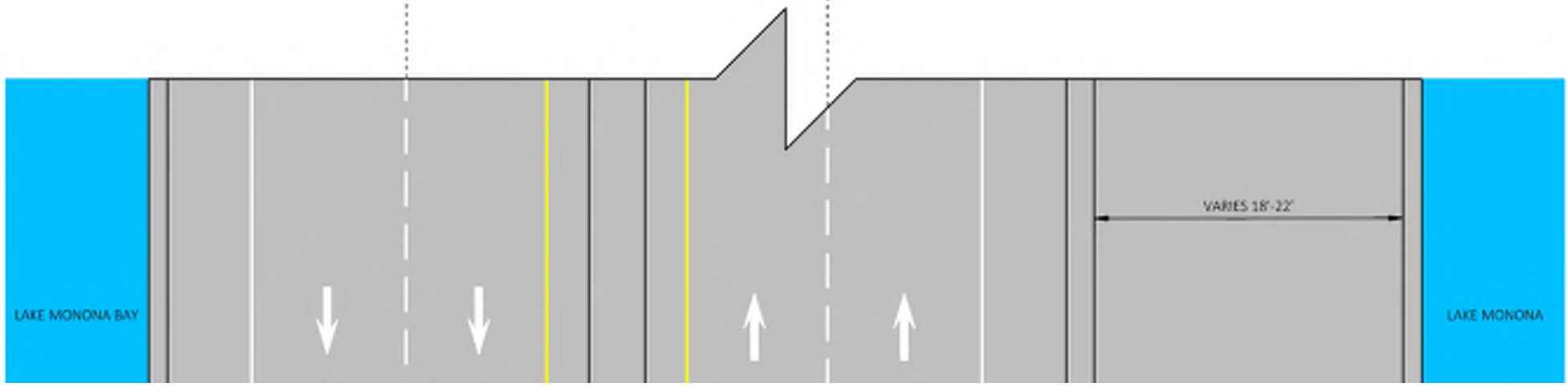
- (1) Safety/Noise (Too Close to Roadway)
- (2) Capacity (Too Narrow – Congested)
- (3) Experience (No Space to Enjoy Nature Viewing)



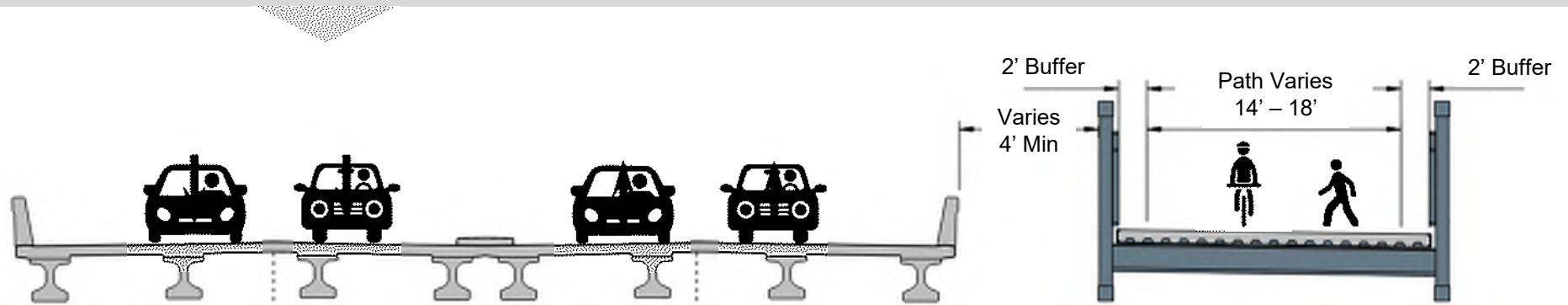
# Pathway Bridge Sections – Alt 1 (Combined Structure)



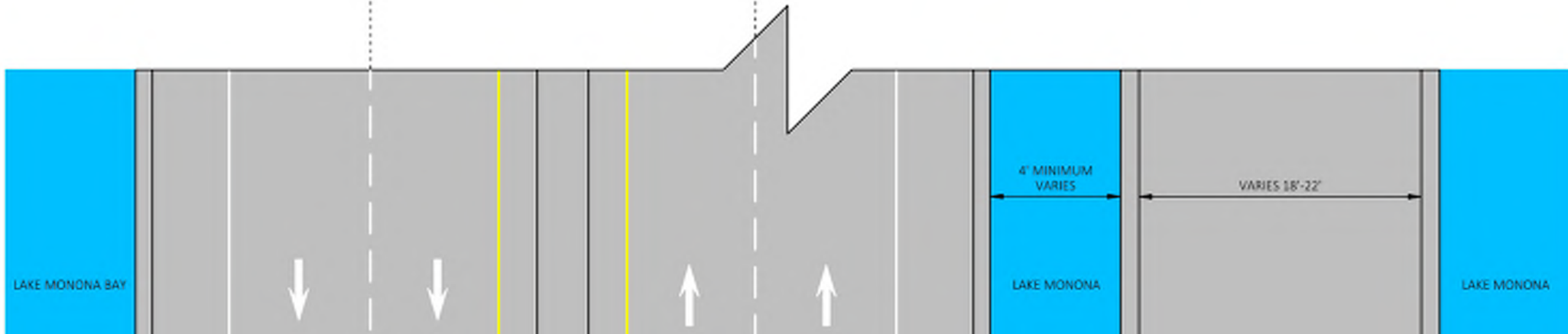
Note: Pathway Bridge is Pre-Stressed Concrete Girder Style (Same as Roadway Bridge)



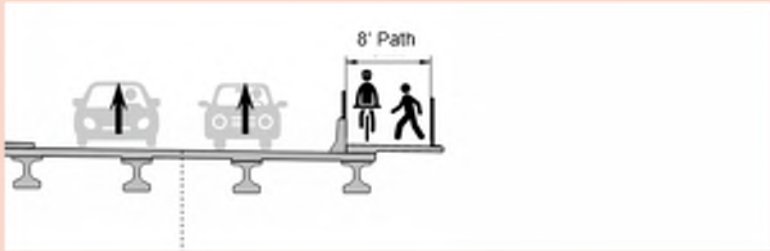
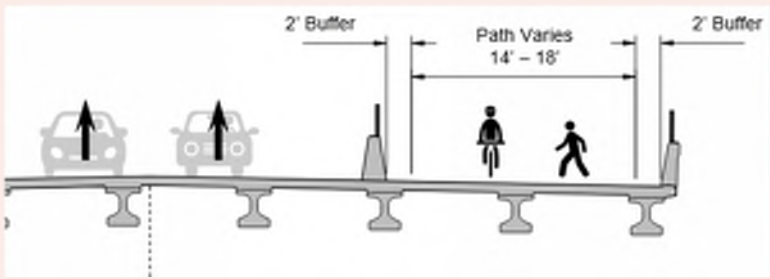
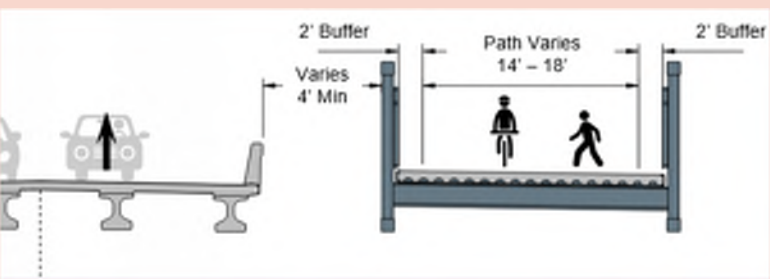
# Pathway Bridge Sections – Alt 2 (Separate Structures)



Note: Pathway Bridge is Pre-Fabricated Truss Style (~5% - 15% Cost Savings vs Roadway Bridge)

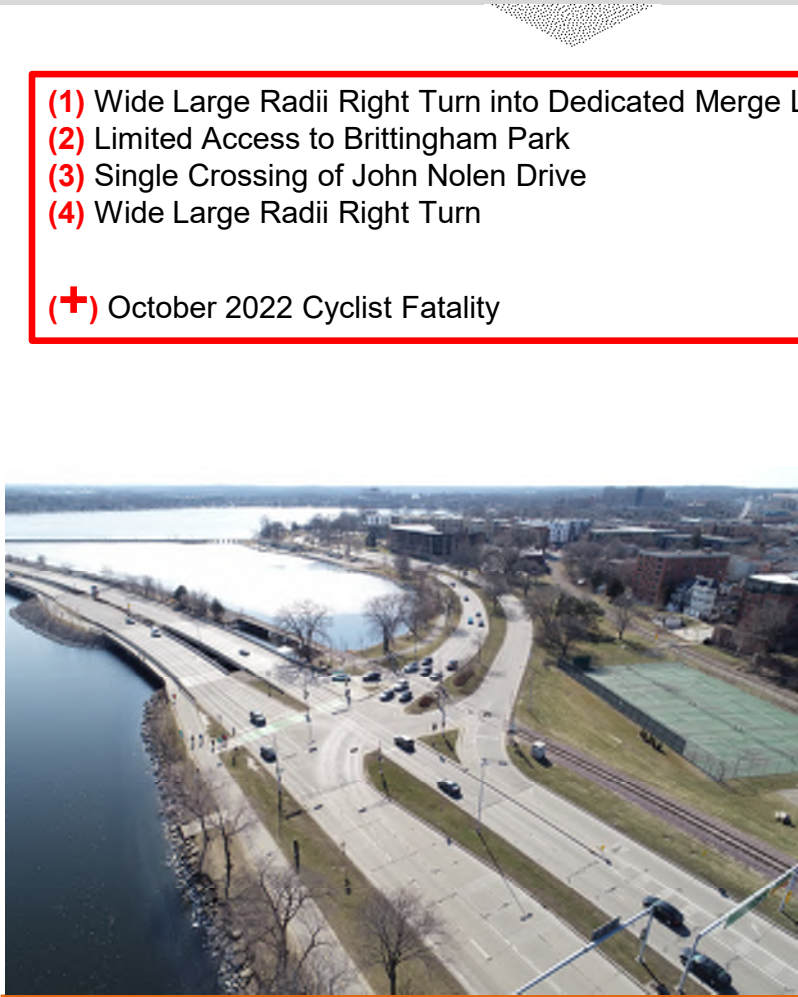


# Pathway Bridge Sections – POLLING

	NOTES	DETAILS
<p><b>EXISTING</b> (No Change)</p>	<p>Narrow Width Attached to Roadway Structure</p>	 <p>8' Path</p> <p>This diagram shows a cross-section of a narrow bridge. On the left, two cars are shown on the roadway. To the right, a path for a cyclist and a pedestrian is shown, with a dimension line indicating it is 8 feet wide. The path is directly adjacent to the roadway.</p>
<p><b>ALT 1</b></p>	<p>Attached to Roadway Structure</p>	 <p>2' Buffer Path Varies 14' - 18' 2' Buffer</p> <p>This diagram shows a cross-section of a bridge where the pathway is attached to the roadway structure. The roadway has two lanes for cars. To the right, a 2-foot buffer zone separates the roadway from the pathway. The pathway is 14 to 18 feet wide and contains a cyclist and a pedestrian. Another 2-foot buffer zone is shown on the far right.</p>
<p><b>ALT 2</b></p>	<p>Separated from Roadway Structure</p>	 <p>2' Buffer Path Varies 14' - 18' 2' Buffer Varies 4' Min</p> <p>This diagram shows a cross-section of a bridge where the roadway and pathway are separated. The roadway has two lanes for cars. A 4-foot minimum gap separates the roadway from the pathway. The pathway is 14 to 18 feet wide and contains a cyclist and a pedestrian. 2-foot buffer zones are shown on both sides of the pathway.</p>

# North Shore Drive Intersection – Existing

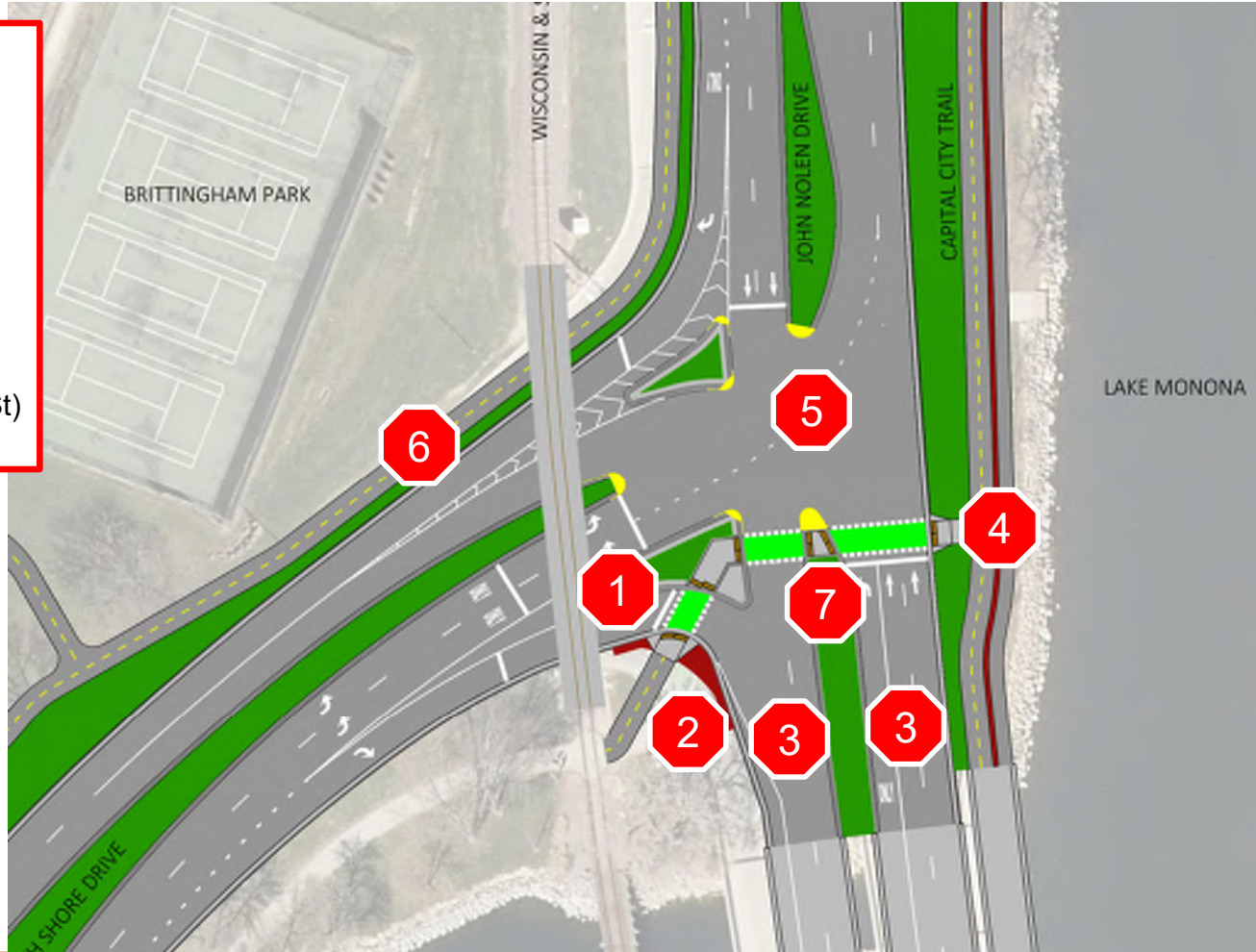
- (1) Wide Large Radii Right Turn into Dedicated Merge Lane
  - (2) Limited Access to Brittingham Park
  - (3) Single Crossing of John Nolen Drive
  - (4) Wide Large Radii Right Turn
- (+) October 2022 Cyclist Fatality



# North Shore Drive Intersection – Alt 1 (Single Crossing w/ Island)

- (1) Smaller Radius Intersection to Calm Traffic (Remove Merge Lane)
- (2) Tracking Pavement for Larger Turning Vehicles
- (3) Narrower Roadway Lanes to Calm Traffic (Reduced Pavement)
- (4) Single Crossing of John Nolen Drive (Single-Stage) (Reduced 14-ft)
- (5) Traffic Signal with Head per Lane (Increased Driver Awareness & Compliance)
- (6) Pathway with Access to Brittingham Park (Connections to Bedford St, Bassett St, & Broom St)
- (7) Improved Median Refuge

	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	NSD
<b>ALT 1</b>	---	<b>+5</b>
ALT 2	---	+5
ALT 3	+10	---
ALT 4	+35	+80

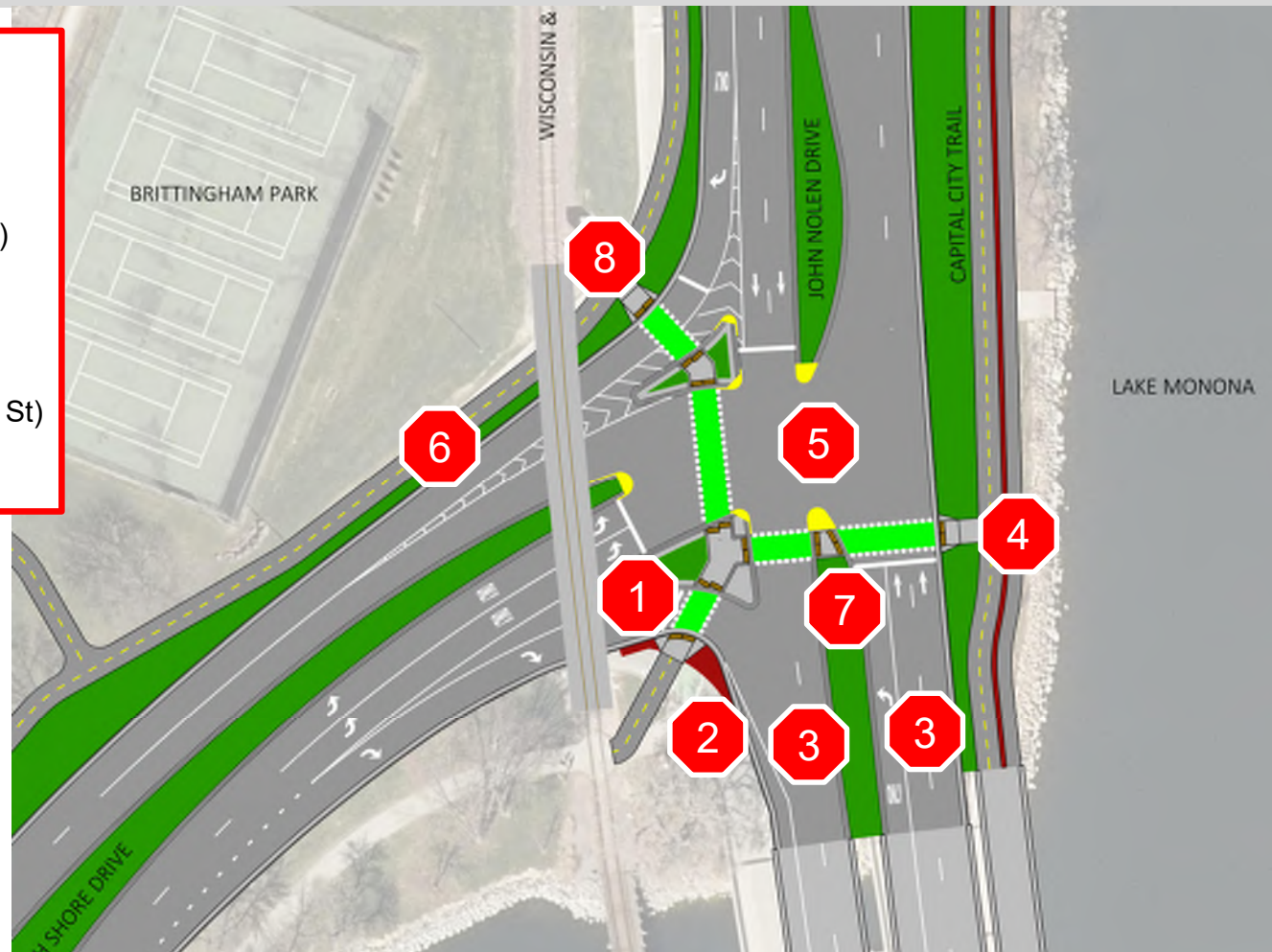




# North Shore Drive Intersection – Alt 2 (Single “L” Crossing w/ Islands)

- (1) Smaller Radius Intersection to Calm Traffic (Remove Merge Lane)
- (2) Tracking Pavement for Larger Turning Vehicles
- (3) Narrower Roadway Lanes to Calm Traffic (Reduced Pavement)
- (4) Single Crossing of John Nolen Drive (Single Stage) (Reduced 14-ft)
- (5) Traffic Signal with Head per Lane (Increased Driver Awareness & Compliance)
- (6) Pathway with Access to Brittingham Park (Connections to Bedford St, Bassett St, & Broom St)
- (7) Improved Median Refuge
- (8) Crossing of North Shore Drive

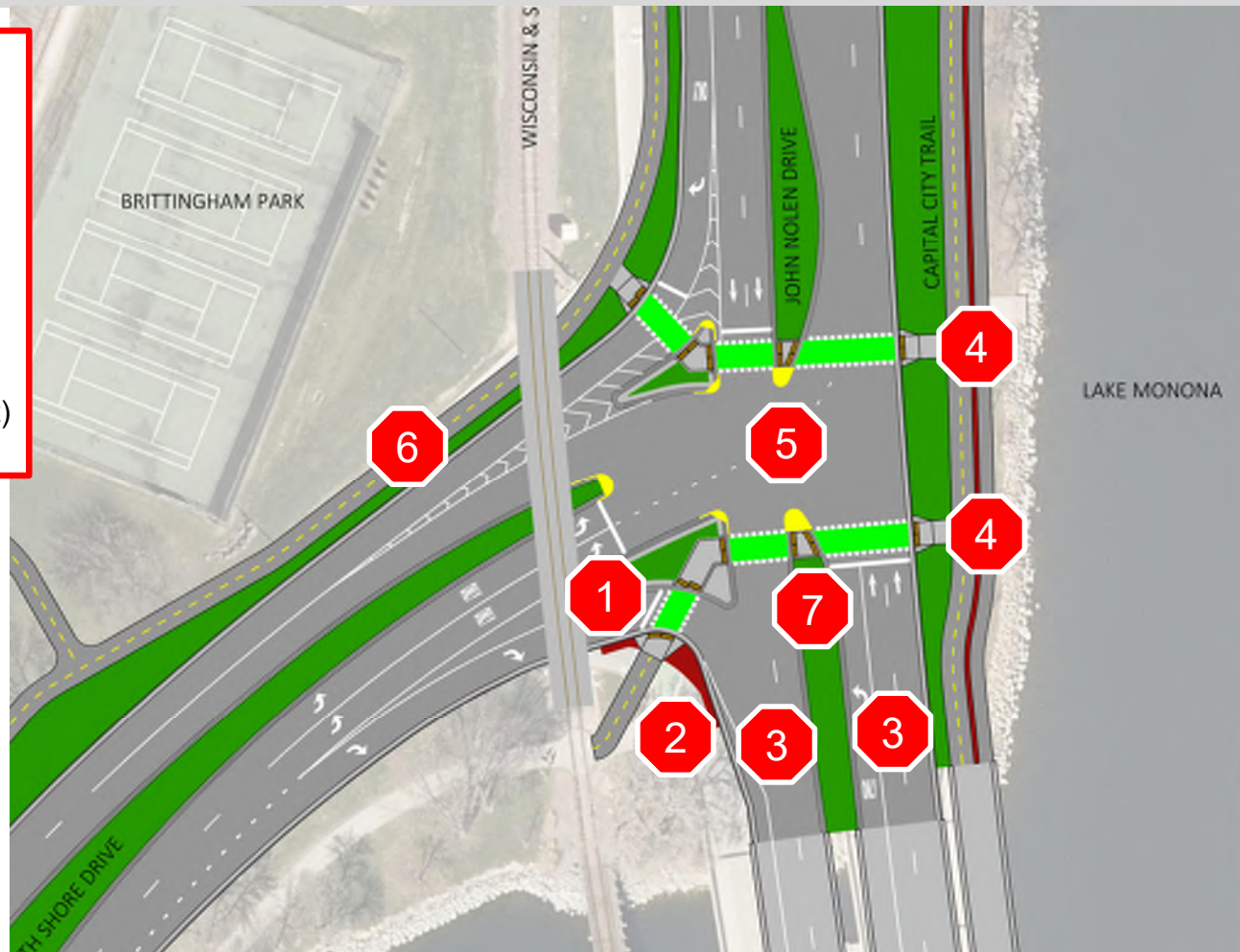
	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	NSD
ALT 1	---	+5
<b>ALT 2</b>	---	<b>+5</b>
ALT 3	+10	---
ALT 4	+35	+80



# North Shore Drive Intersection – Alt 3 (Dual Crossings w/ Islands)

- (1) Smaller Radius Intersection to Calm Traffic (Remove Merge Lane)
- (2) Tracking Pavement for Larger Turning Vehicles
- (3) Narrower Roadway Lanes to Calm Traffic (Reduced Pavement)
- (4) Dual Crossings of John Nolen Drive (Single Stage) (Reduced 14-ft)
- (5) Traffic Signal with Head per Lane (Increased Driver Awareness & Compliance)
- (6) Pathway with Access to Brittingham Park (Connections to Bedford St, Bassett St, & Broom St)
- (7) Improved Median Refuge

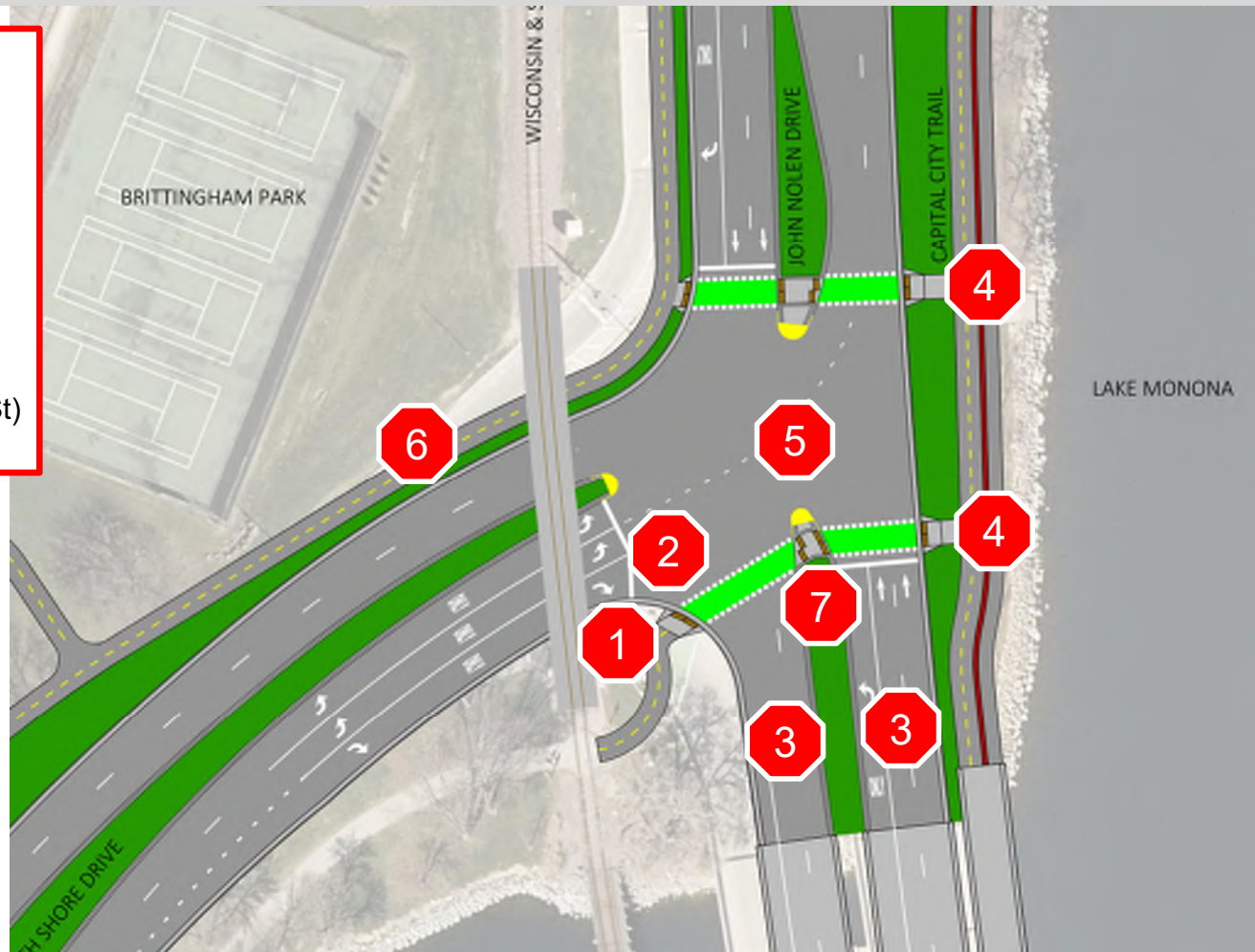
	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	NSD
ALT 1	---	+5
ALT 2	---	+5
<b>ALT 3</b>	<b>+10</b>	---
ALT 4	+35	+80



# North Shore Drive Intersection – Alt 4 (Dual Crossings w/o Islands)

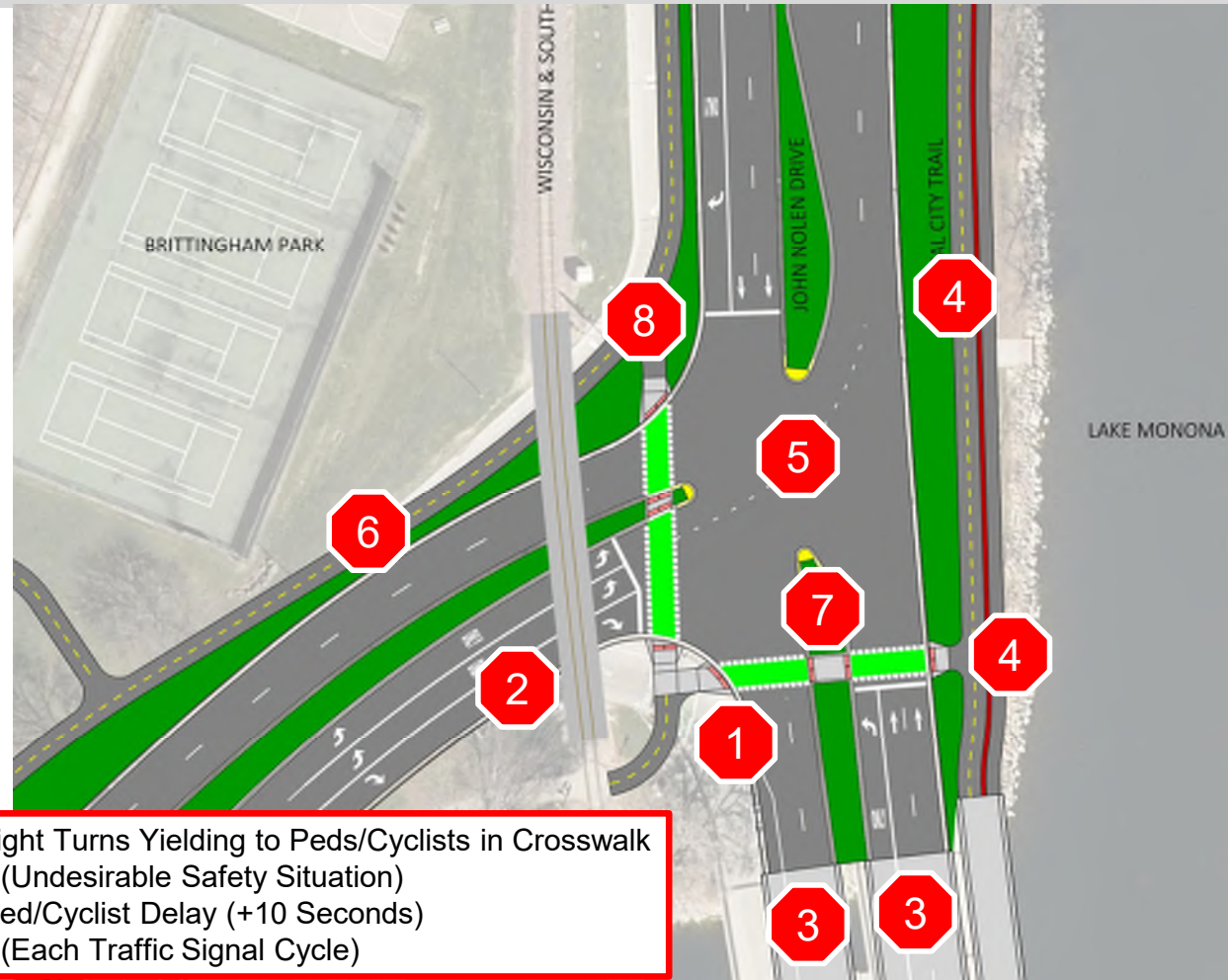
- (1) Larger Radius for Turning Vehicles  
(Remove Merge Lane)
- (2) Curbed Island (Channelized Right) Removed
- (3) Narrower Roadway Lanes to Calm Traffic  
(Reduced Pavement)
- (4) Dual Crossings of John Nolen Drive (Single Stage)  
(Reduced 14-ft)
- (5) Traffic Signal with Head per Lane  
(Increased Driver Awareness & Compliance)
- (6) Pathway with Access to Brittingham Park  
(Connections to Bedford St, Bassett St, & Broom St)
- (7) Improved Median Refuge

	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	NSD
ALT 1	---	+5
ALT 2	---	+5
ALT 3	+10	---
<b>ALT 4</b>	<b>+35</b>	<b>+80</b>



# North Shore Drive Intersection – Alt 4B (Single “L” Crossing w/o Islands)





- (1) Larger Radius for Turning Vehicles (Remove Merge Lane)
- (2) Curbed Island (Channelized Right) Removed
- (3) Narrower Roadway Lanes to Calm Traffic (Reduced Pavement)
- (4) Single Crossing of John Nolen Drive (Single Stage) (Reduced 73-ft)
- (5) Traffic Signal with Head per Lane (Increased Driver Awareness & Compliance)
- (6) Pathway with Access to Brittingham Park (Connections to Bedford St, Bassett St, & Broom St)
- (7) Improved Median Refuge
- (8) Crossing of North Shore Drive

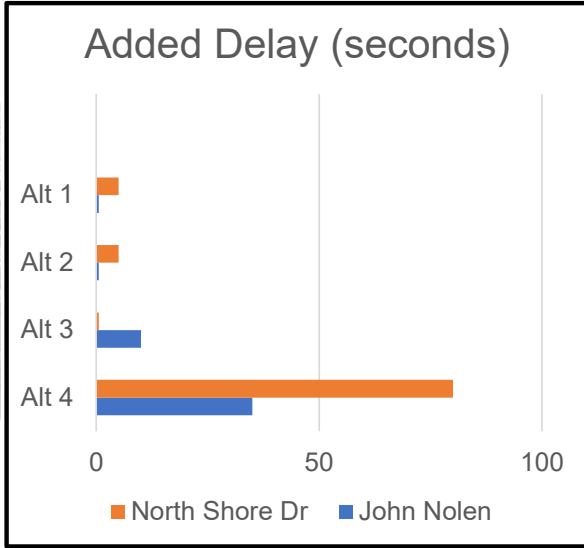


	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	NSD
ALT 1	---	+5
ALT 2	---	+5
ALT 3	+10	---
ALT 4A	+35	+80
ALT 4B	Conventional Signal Timing (*)	
	-5	-10
	Permissive RT Turn Signal Timing (+)	
	+25	+20

- (\*) Right Turns Yielding to Peds/Cyclists in Crosswalk (Undesirable Safety Situation)
- (+) Ped/Cyclist Delay (+10 Seconds) (Each Traffic Signal Cycle)

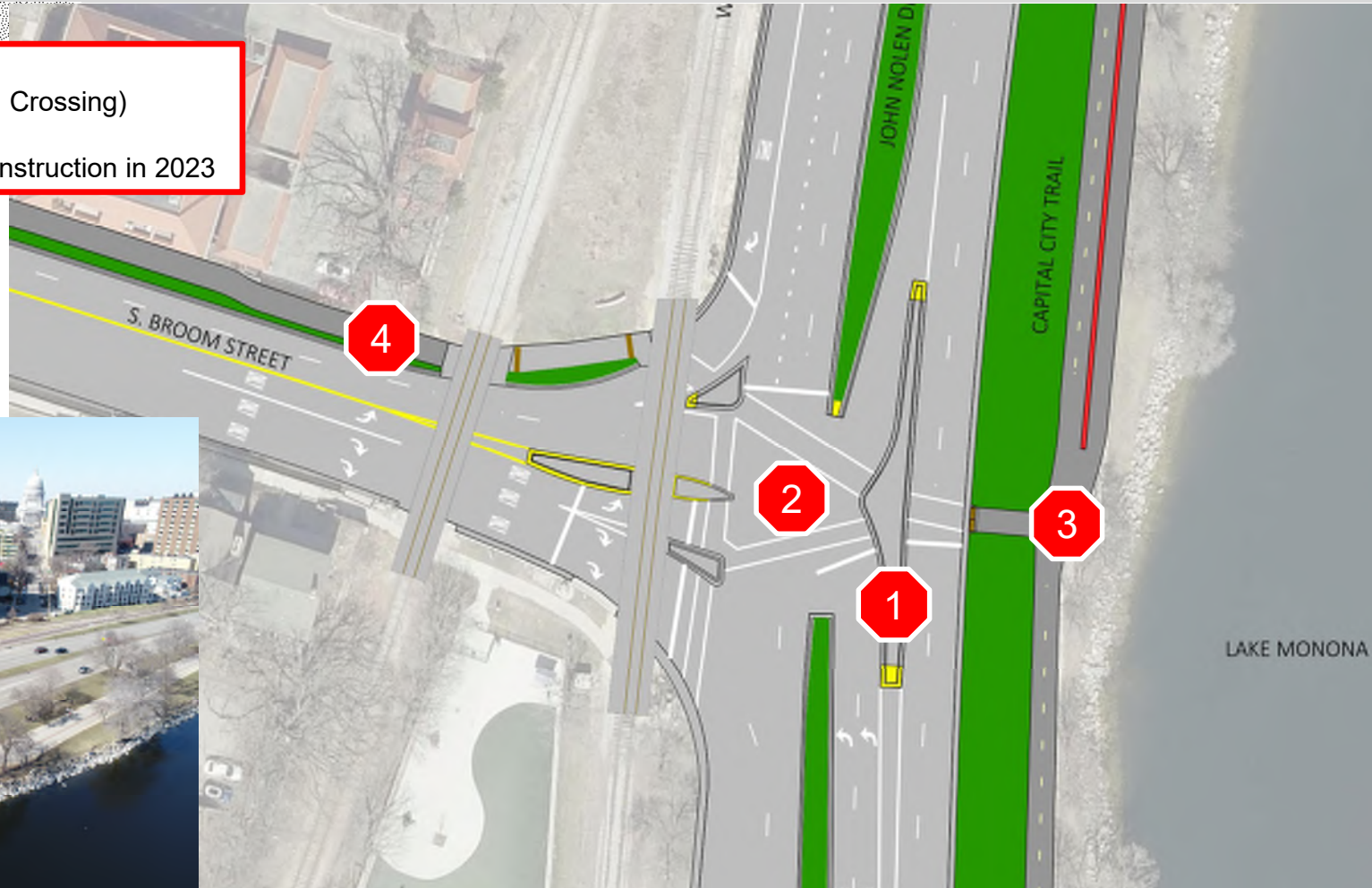
# North Shore Drive Intersection – POLLING

	NOTES	DETAILS
<b>ALT 1</b>	Single Crosswalk w/ Islands +0 Sec Delay (JND) +5 Sec Delay (NSD)	
<b>ALT 2</b>	Single "L" Crosswalk w/ Islands +0 Sec Delay (JND) +5 Sec Delay (NSD)	
<b>ALT 3</b>	Dual Crosswalks w/ Islands +10 Sec Delay (JND) +0 Sec Delay (NSD)	
<b>ALT 4</b>	Dual Crosswalks w/o Islands +35 Sec Delay (JND) +80 Sec Delay (NSD)	



# Broom Street Intersection – Existing

- (1) Protected-T Intersection
- (2) Pedestrian Confusion (Non-Typical Crossing)
- (3) Crossing of John Nolen Drive
- (4) Broom Street Shared-Use Path Construction in 2023



# Broom Street Intersection – Alt 1 (Conventional-T)

## **\*\*Conceptual Design for Planning Purposes Only\*\***

(Not Currently Funded)

- (1) Conventional-T Intersection  
(Simpler/Safer Crossing)
- (2) Smaller Radius for Turning Vehicles
- (3) Narrower Roadway Lanes to Calm Traffic  
(Reduced Pavement)
- (4) Single Crossing of John Nolen Drive  
(Reduced 28-ft)
- (5) Single Crossing of Broom Street  
(Reduced 15-ft)
- (6) Traffic Signal with Head per Lane  
(Increased Driver Awareness & Compliance)
- (7) Pathway with Access to North Shore Drive
- (8) Improved Median Refuge
- (9) Shared-Use Path Construction in 2023



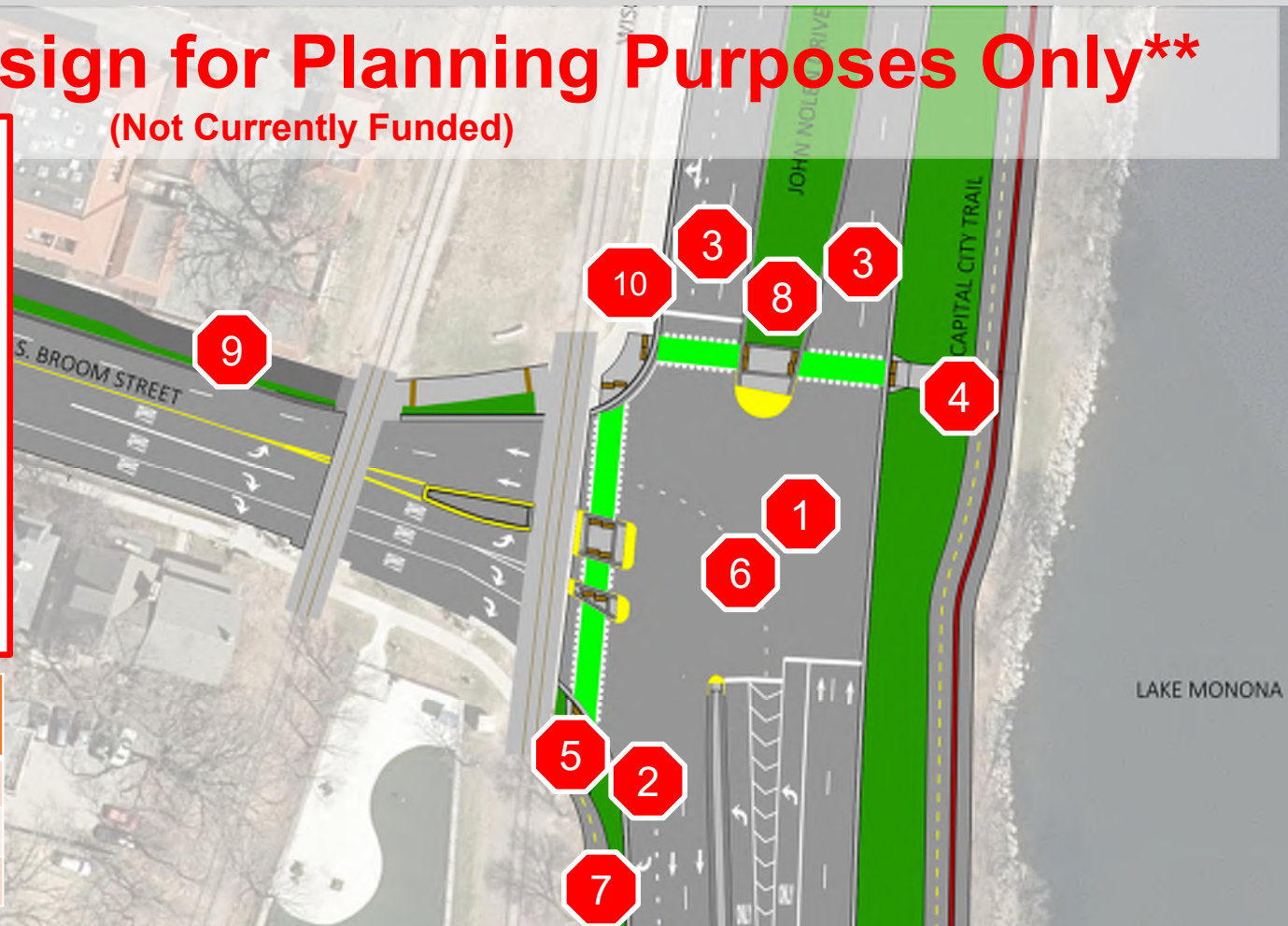
	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	BROOM
ALT 1	+10	-5
ALT 2	+10	-5

# Broom Street Intersection – Alt 2 (Conventional-T w/o Right Turn Lane)

## **\*\*Conceptual Design for Planning Purposes Only\*\***

(Not Currently Funded)




- (1) Conventional-T Intersection  
(Simpler/Safer Crossing)
- (2) Smaller Radius for Turning Vehicles
- (3) Narrower Roadway Lanes to Calm Traffic  
(Reduced Pavement)
- (4) Single Crossing of John Nolen Drive  
(Reduced 59-ft)
- (5) Single Crossing of Broom Street  
(Reduced 41-ft)
- (6) Traffic Signal with Head per Lane  
(Increased Driver Awareness & Compliance)
- (7) Pathway with Access to North Shore Drive
- (8) Improved Median Refuge
- (9) Shared-Use Path Construction in 2023
- (10) Dedicated Right Turn Lane Removed



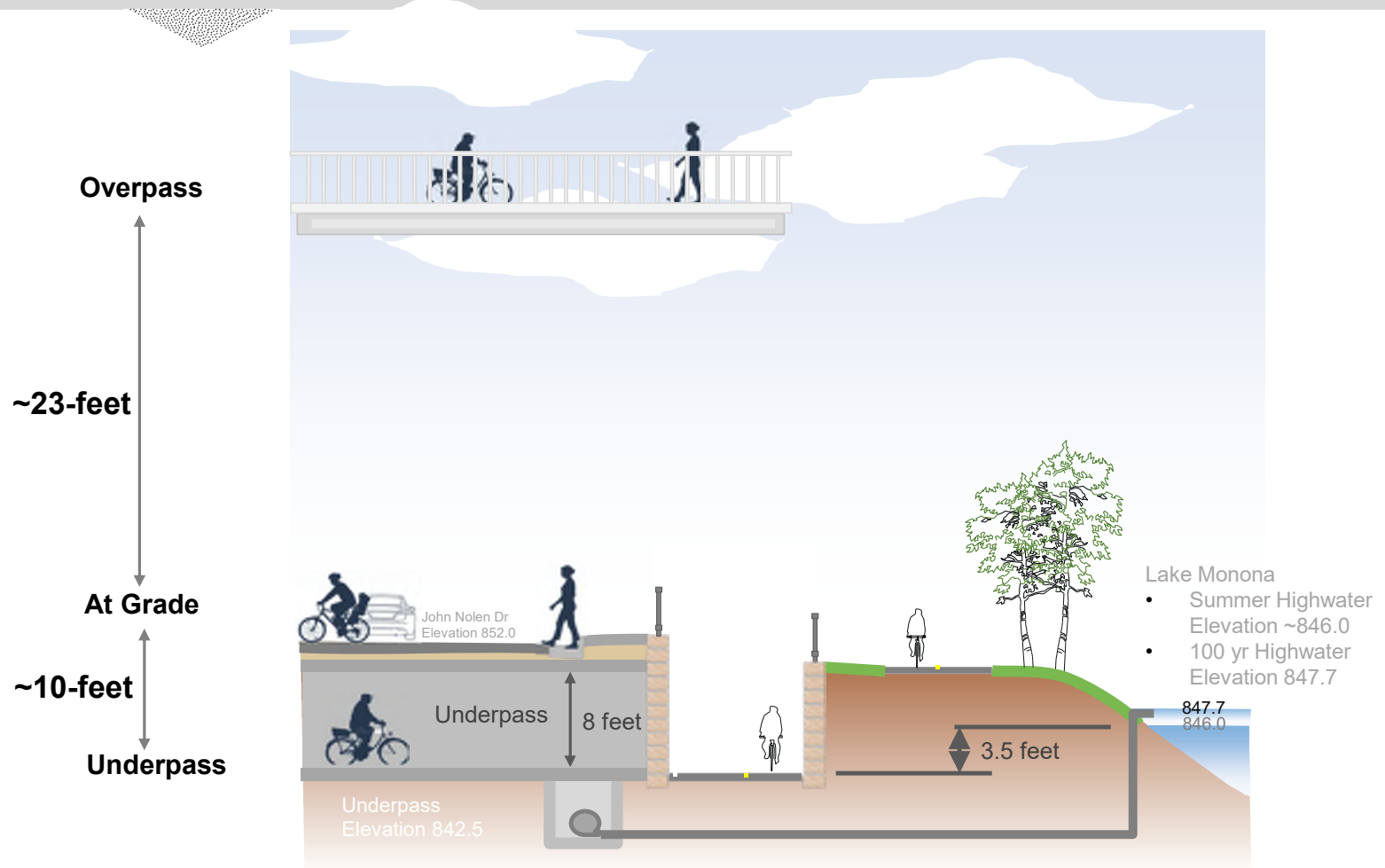
	ADDITIONAL OPERATIONAL DELAY PER VEHICLE (SECONDS)	
	JND	BROOM
ALT 1	+10	-5
ALT 2	+10	-5



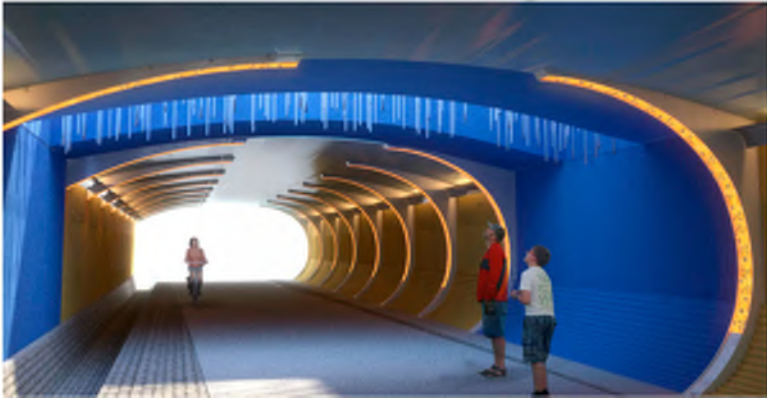
# Broom Street Intersection – POLLING

	NOTES	DETAILS
<p><b>EXISTING</b> (No Change)</p>	<p>Protected-T Intersection</p>	
<p><b>ALT 1</b></p>	<p>Conventional-T Intersection Includes Southbound Right Turn Lane +10 Sec Delay (JND) -5 Sec Delay (Broom)</p>	
<p><b>ALT 2</b></p>	<p>Conventional-T Intersection Removes Southbound Right Turn Lane +10 Sec Delay (JND) -5 Sec Delay (Broom)</p>	

# Mobility Crossing Options (North Shore – Broom)



# Mobility Crossing Examples



## Underpass (Tunnel) Examples

# Mobility Crossing Examples



## Overpass (Bridge) Examples

# Mobility Crossing Options – POLLING

## DETAILS

**UNDERPASS  
(TUNNEL)**



**OVERPASS  
(BRIDGE)**



**AT-GRADE  
(STREET-LEVEL)**

