

City of Madison Engineering Division

John Nolen Drive Reconstruction

Project I.D. 5992-11-20
City of Madison, John Nolen Drive
(Olin Avenue – North Shore Drive)

Transportation Commission
April 12, 2023



Project Overview

Reconstruction of John Nolen Drive between North Shore Drive to Olin Avenue including roadway, bridges, multi-use path, and shoreline

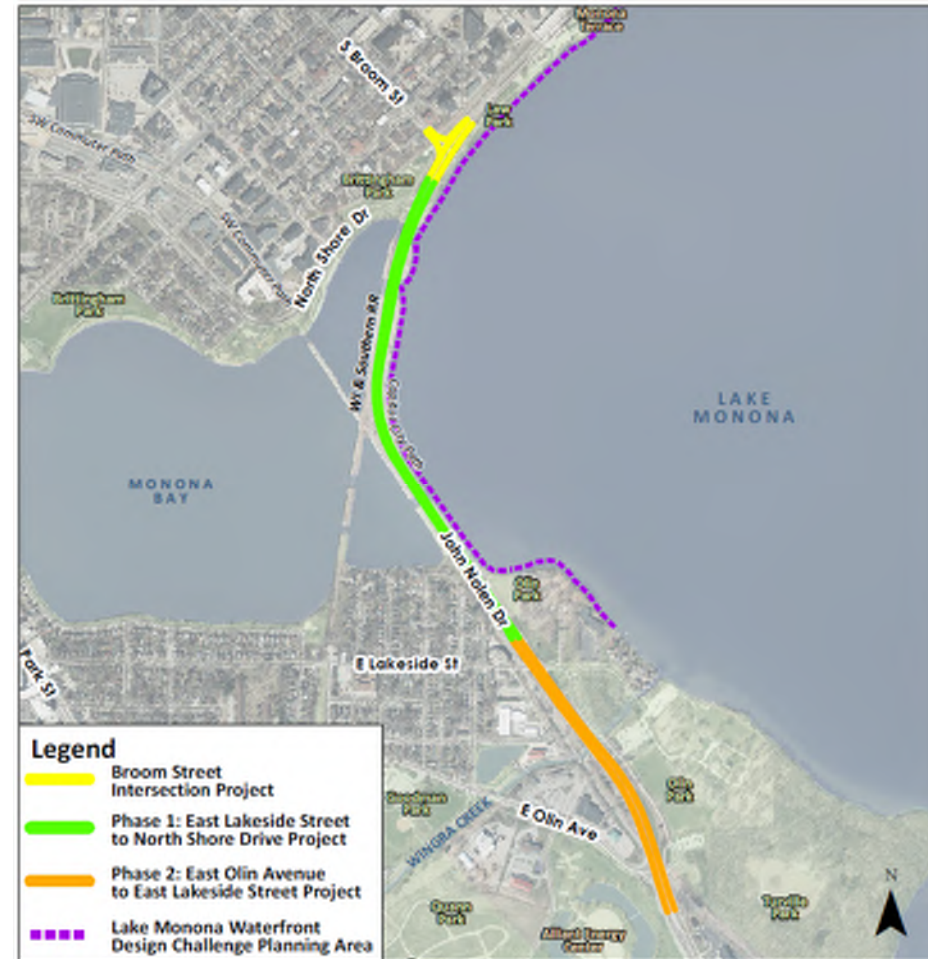
Phase One – East Lakeside St to North Shore Dr

Phase Two – East Olin Ave to East Lakeside St

Future – Broom Street Intersection

Project Goals

- ✓ Increase safety
- ✓ Improve mobility and environment
- ✓ Replace aging infrastructure
- ✓ Improve lake front accessibility
- ✓ Improve stormwater management



Project Overview

		2021	2022	2023	2024	2025	2026	2027
Phase 1	East Lakeside St - North Shore Dr							
	Alternative Analysis & Preliminary Design							
	Final Design							
	Advanceable Schedule							
	Construction							
	Construction (Advanceable Schedule)							
Phase 2	East Olin Ave - East Lakeside St							
	Alternative Analysis & Preliminary Design							
	Final Design							
	Construction (Dependent on Funding)							
Broom Street Intersection								
	Alternative Analysis							
	Preliminary & Final Design							
	Construction (Dependent on Funding)							
Lake Monona Waterfront Design Challenge & Master Plan								

Community engagement, planning, and design through Spring 2026.

What We Heard...



- Increase safety for all
- Replace aging infrastructure
- Increase space between path and road
- Reduce speeds
- Better lighting
- Safer merges for vehicles
- Wider bicycle/pedestrian facilities
- Reduce traffic noise
- More “Green” infrastructure
- Improve water quality
- Improve accessibility to the shoreline

Less “Highway”...



Urban Multimodal Streets

Features	Safety Benefits
Narrower Roadway Lanes & Shoulders	Calm Travel Speeds & Buffer from Pathways **Gray to Green** (20% Reduction in Vehicle Pavement)
Narrower Intersections	Improve Delineation & Shorten Ped/Cyclist Crossing Distance
Expanded Pathways	Path Space for All Speeds (Commuters to Strollers)
Use Curb & Gutter over Beam Guard	Calm Travel Speeds & Less “Highway”
Signal Head per Travel Lane (Traffic Signals)	Increased Driver Awareness (Better Compliance)



Roadway Typical Sections – POLLING

	NOTES	DETAILS
EXISTING (No Change)	72-ft Roadway Width No Trees in Median	
ALT 1	63-ft Roadway Width Wider Median Trees in Median Balance Green Space	
ALT 2	54-ft Roadway Width Narrower Median No Trees in Median Max Green Space to Park	

Results:

Zoom – 1%

Padlet:
3 (Yes)
13 (No)

Zoom – 31%

Padlet:
5 (Yes)
1 (No)

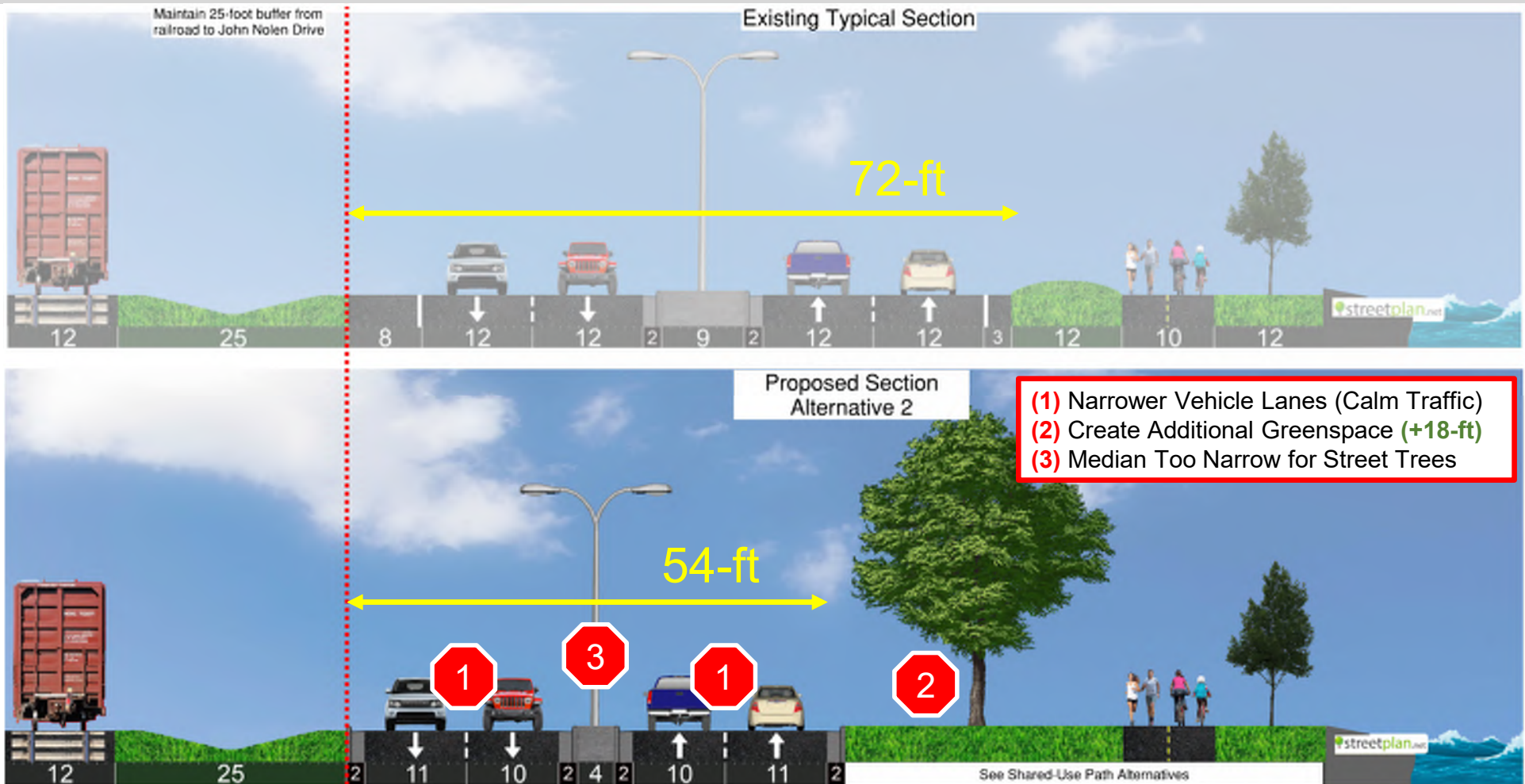
Zoom – 62%

Padlet:
31 (Yes)
0 (No)





6% (Need More Info)



Roadway Typical Sections – Alt 2 (Narrow Median)



Pathway Typical Sections – POLLING

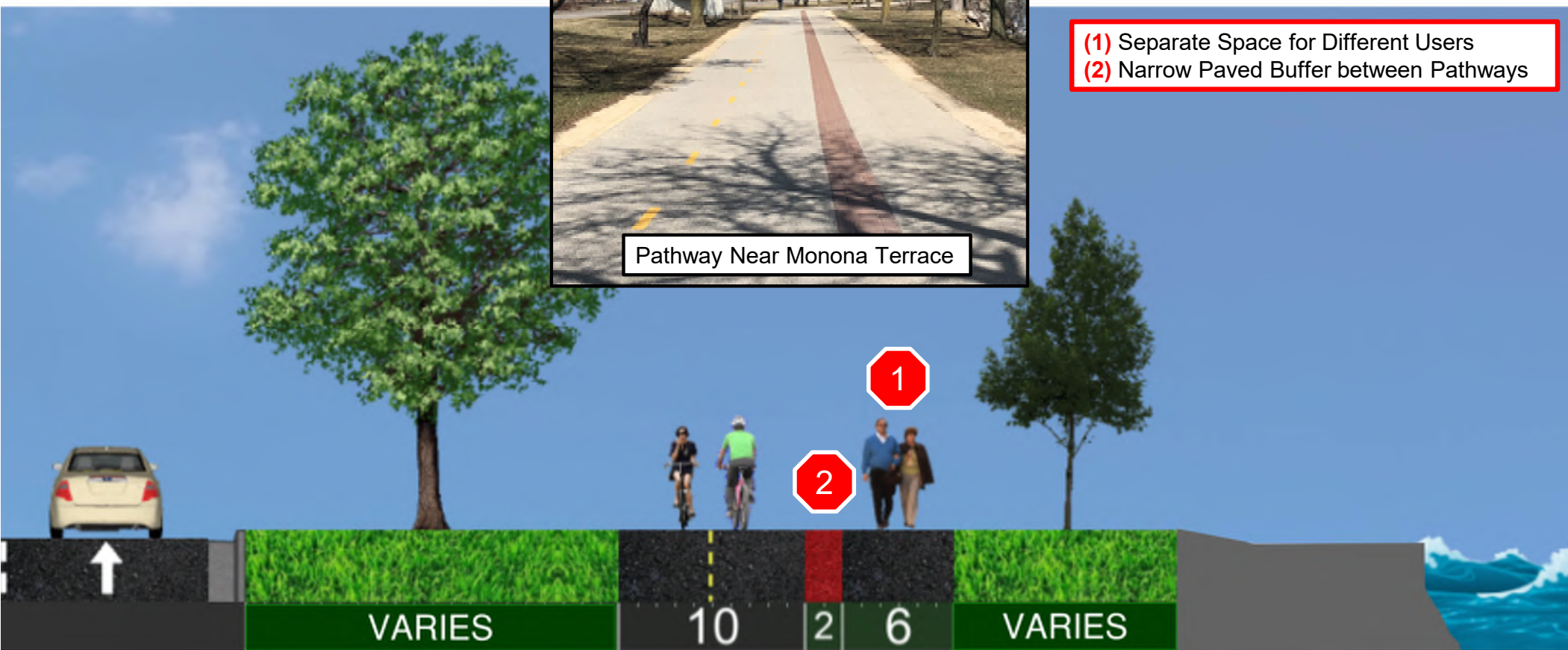
	NOTES	DETAILS	Results:
EXISTING (No Change)	10-ft Width		Zoom – 0% Padlet: 2 (Yes) 11 (No)
ALT 1	14-ft Width		Zoom – 1% Padlet: 1 (Yes) 3 (No)
ALT 2	10-ft & 6-ft Width w/ 2-ft Paved Buffer		Zoom – 39% Padlet: 28 (Yes) 0 (No)
ALT 3	10-ft & 6-ft Width w/ Wider Grass Buffer		Zoom – 60% Padlet: 21 (Yes) 0 (No)
<div> <div>Combination of Alt 2 and Alt 3 (Based on Available Width)</div> <div> <div>★</div> <div>↕</div> <div>★</div> </div> </div>			
			6% (Need More Info)

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

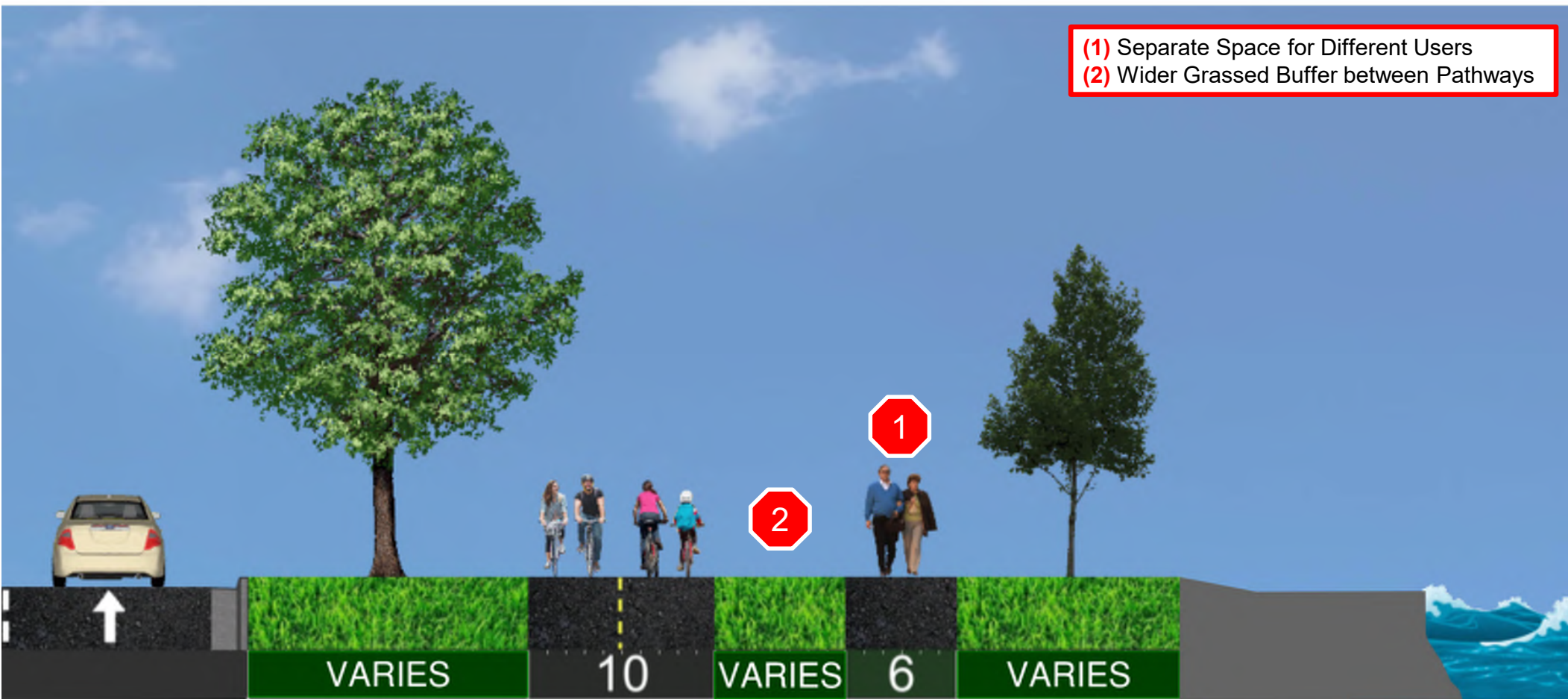


Pathway Near Monona Terrace

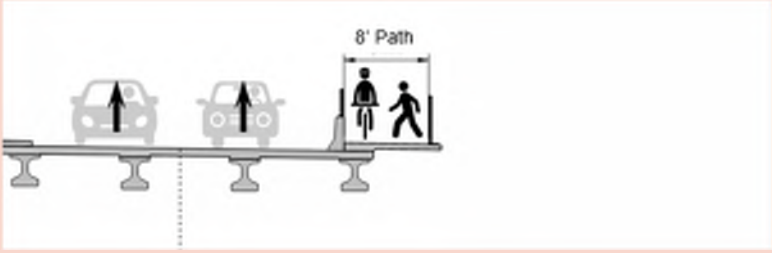
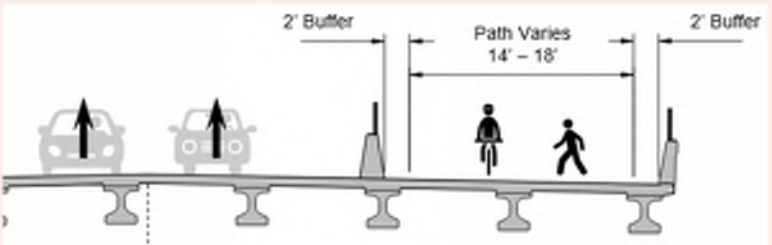
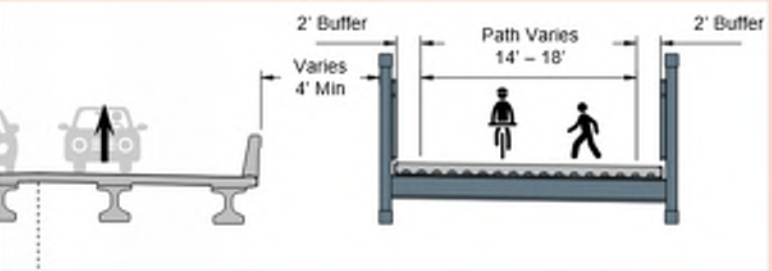
- (1) Separate Space for Different Users
- (2) Narrow Paved Buffer between Pathways



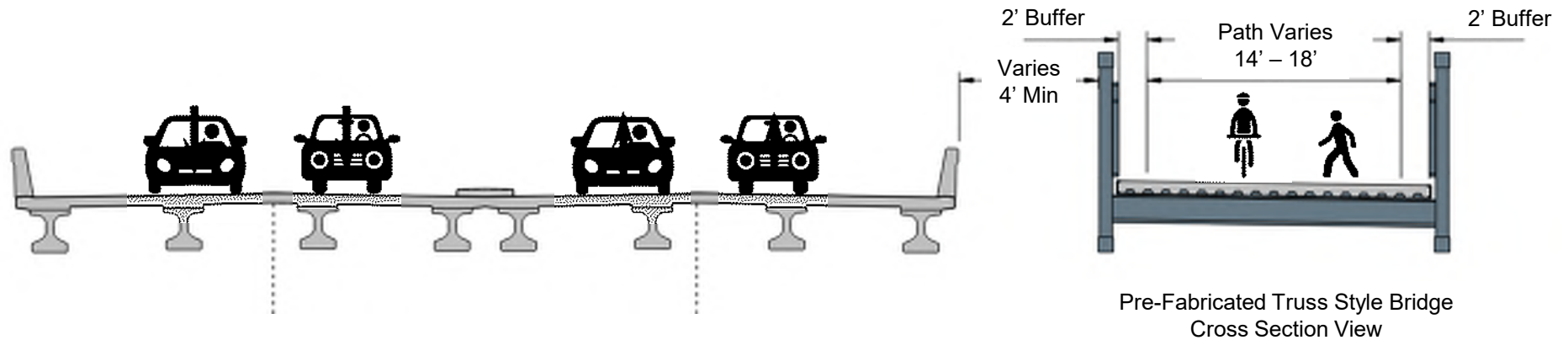
Pathway Typical Sections – Alt 3 (Separate Pathways)



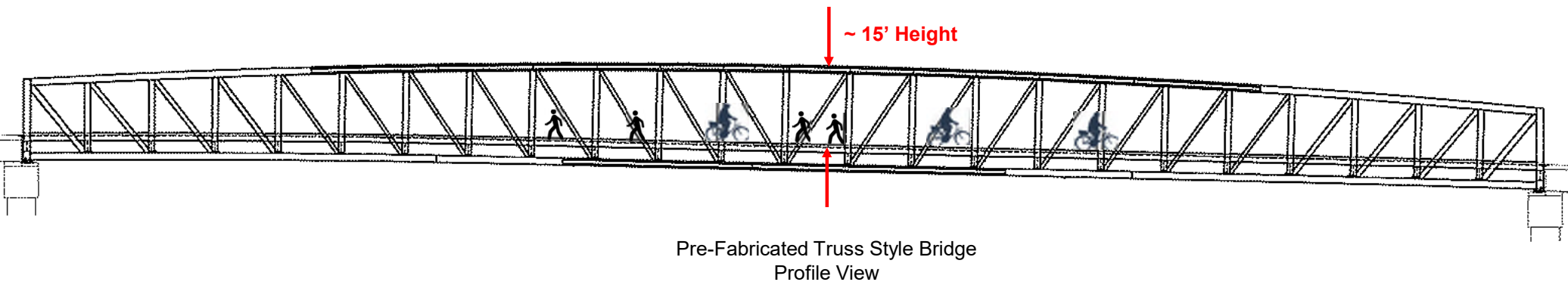
Pathway Bridge Sections – POLLING

	NOTES	DETAILS	Results:
EXISTING (No Change)	Narrow Width Attached to Roadway Structure		Zoom – 0% Padlet: 0 (Yes) 7 (No)
ALT 1	Attached to Roadway Structure	 <div>**Concern** Sight Restriction of Truss Style Bridge</div>	Zoom – 7% Padlet: 8 (Yes) 0 (No) ★
ALT 2	Separated from Roadway Structure		Zoom – 84% Padlet: 27 (Yes) 0 (No) ★
			9% (Need More Info)

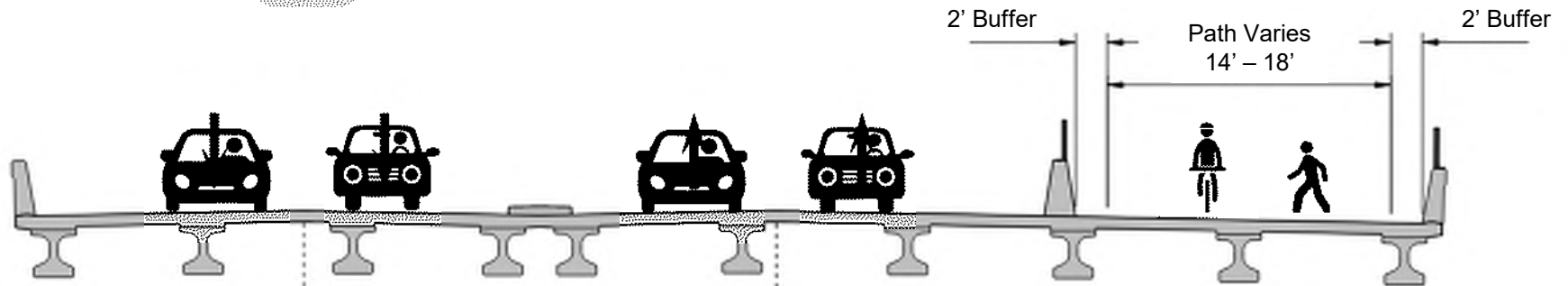
Pathway Bridge Sections – Alt 2 (Separate Structures)



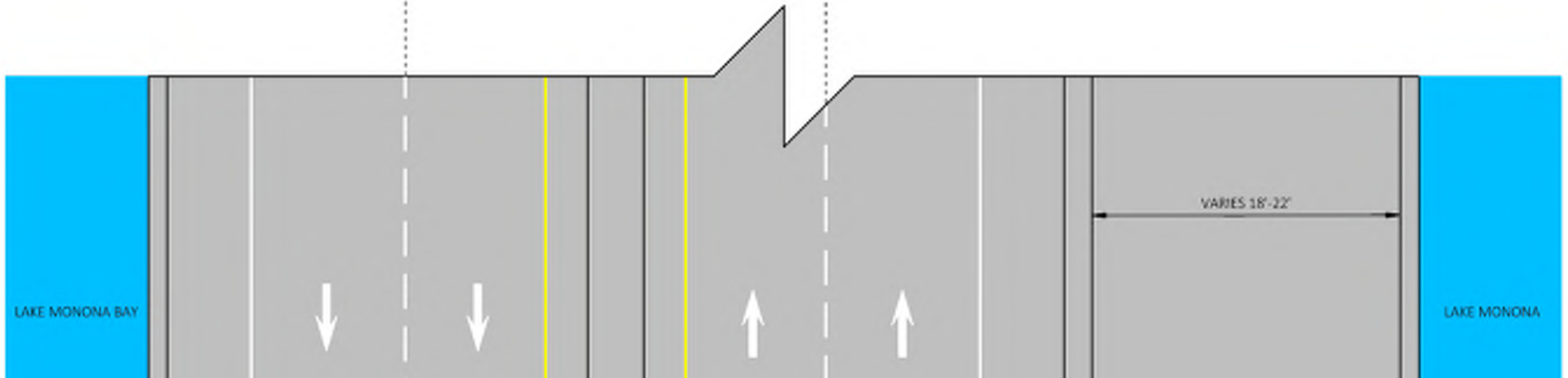
****Concern** Vertical and Diagonal Bracing and Protective Screening of the Truss Structure Restricts Sight of the Pathway Users (Vision of the Lake or Roadway or Downtown or State Capitol)**



Pathway Bridge Sections – Alt 1 (Combined Structure)



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



Intersections – Right Turns

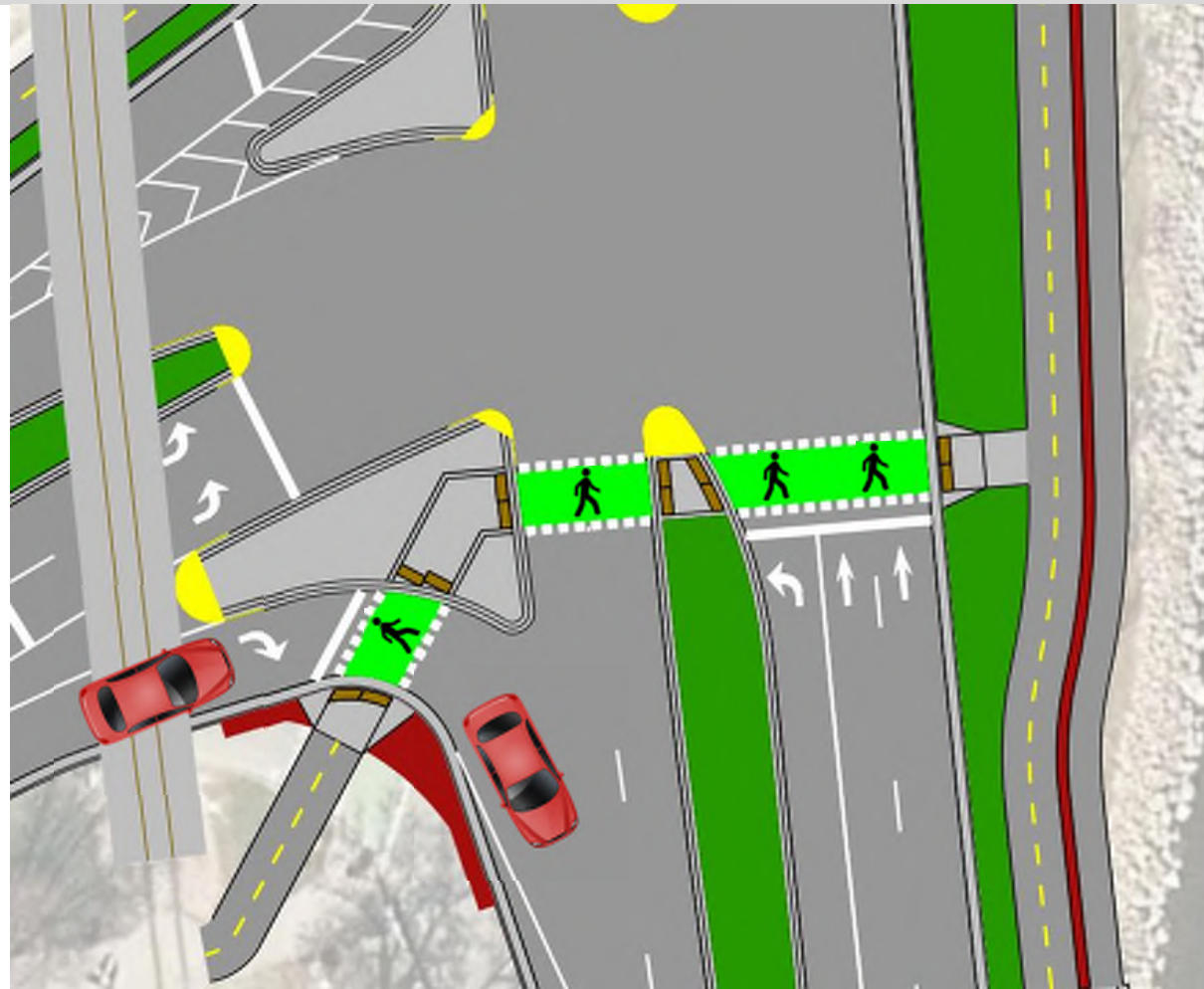
With a Refuge Island:

The channelization of the right turns allow the right turn lane to be controlled independently of the through lanes and walk signal. **Pedestrians/cyclists are able to cross on the walk signal without conflict from right turning vehicles.** Pedestrians/cyclists are able to cross the right turn lane on their own phase.

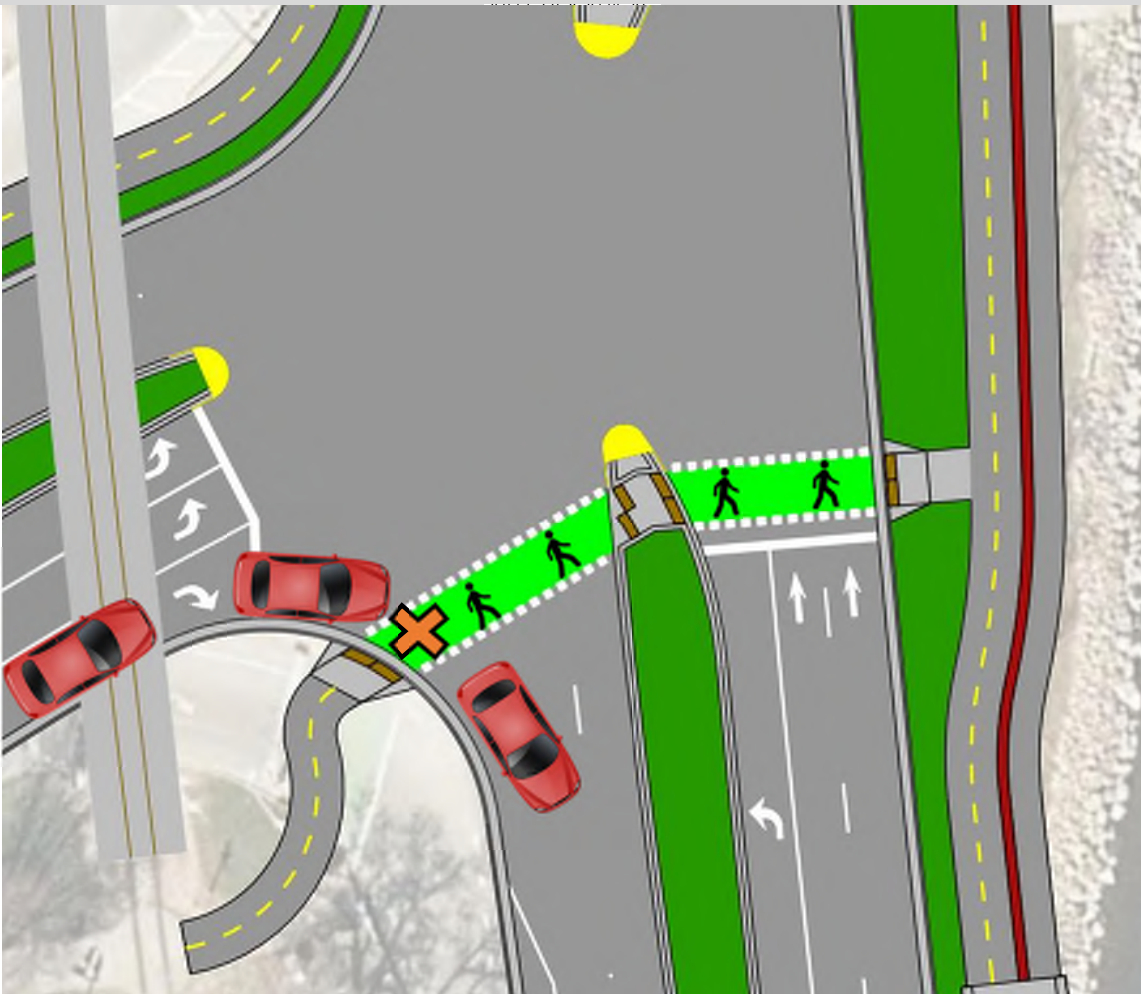
No right-turn-on-red compliance is better at channelized crossing (a focus of Vision Zero).

A channelized right turn lane can be a raised crossing.

The disadvantages include performing this crossing maneuver in multiple stages and waiting in a limited size island.



Intersections – Right Turns



Without a Refuge Island:

Right turning vehicles have the same signal phase as the walk phase for **pedestrians/cyclists crossing**. This concurrent walk signal and right turn green light increases **conflicts between peds/cyclists and right turning vehicles**. Delays for both peds/cyclists and right turning vehicles increases.







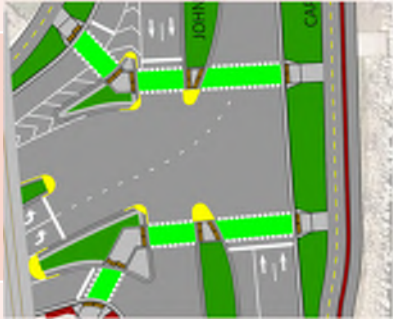


Without channelizing (refuge island), curb radii are large enough to allow for truck turning movements, which creates longer and more exposed ped/cyclist crossings (often experiencing higher operating speeds).

The advantages include performing this crossing maneuver in a single stage and plenty of storage for peds/cyclists is available on the side of the roadway.

Intersections – Right Turns

Video Capture Examples

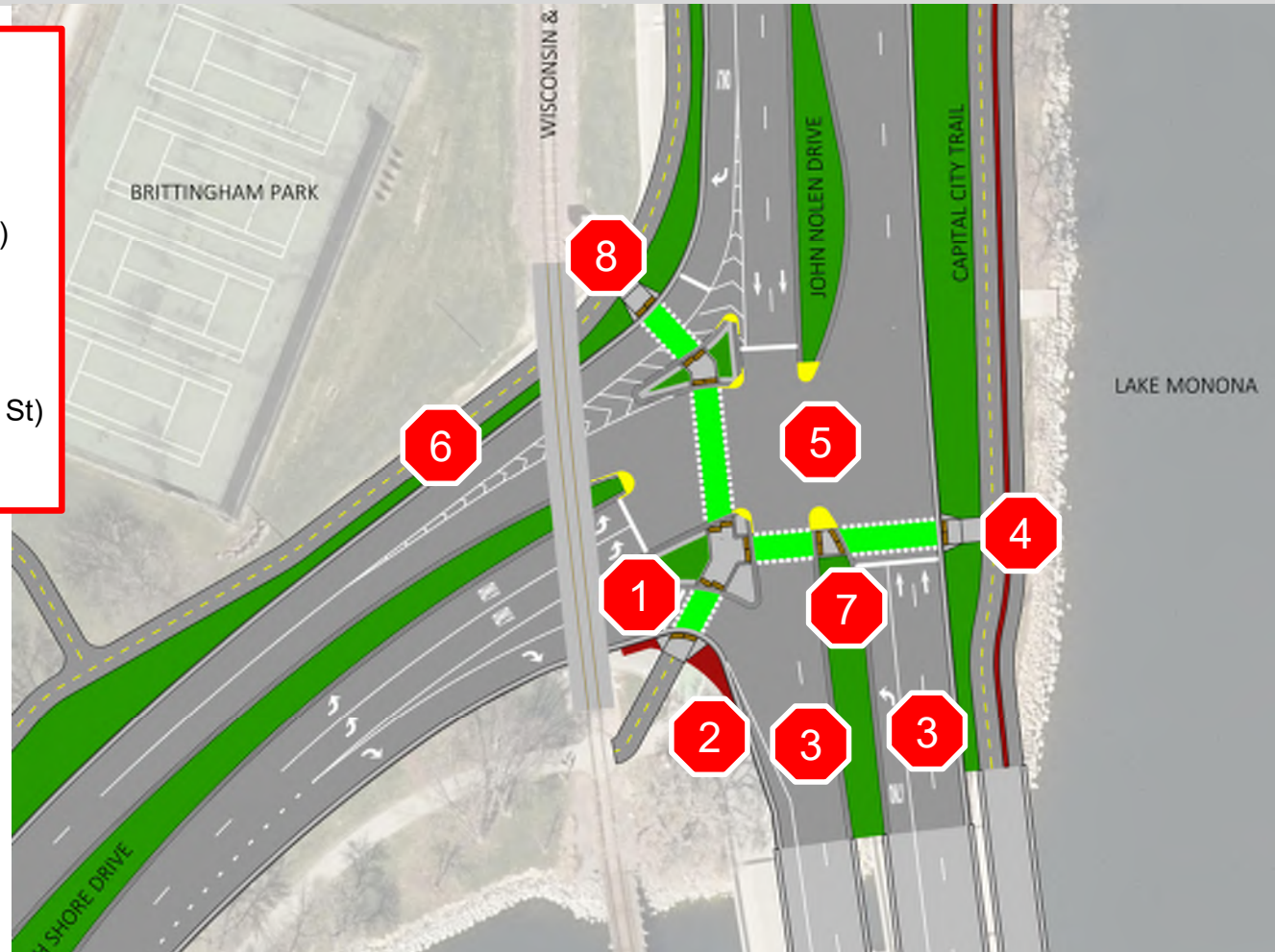
North Shore Drive Intersection – POLLING

	NOTES	DETAILS	
ALT 1	Single Crosswalk w/ Islands +0 Sec Delay (JND) +5 Sec Delay (NSD)		 <p>Results:</p> <p>Zoom – 3%</p> <p>Padlet: 1 (Yes) 4 (No)</p>
ALT 2	Single “L” Crosswalk w/ Islands +0 Sec Delay (JND) +5 Sec Delay (NSD)		 <p>Results:</p> <p>Zoom – 48%</p> <p>Padlet: 4 (Yes) 4 (No)</p> 
ALT 3	Dual Crosswalks w/ Islands +10 Sec Delay (JND) +0 Sec Delay (NSD)		 <p>Results:</p> <p>Zoom – 25%</p> <p>Padlet: 3 (Yes) 7 (No)</p>
ALT 4 (A)	Dual Crosswalks w/o Islands +35 Sec Delay (JND) +80 Sec Delay (NSD)	 <div> <p>Introduce Alt 4B **NEW**</p> <p>Single “L” Crosswalk w/o Islands</p> </div>	<p>Results:</p> <p>Zoom – 17%</p> <p>Padlet: 31 (Yes) 2 (No)</p>  <p>7% (Need More Info)</p>

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
ALT 2	---	+5
ALT 3	+10	---
ALT 4	+35	+80

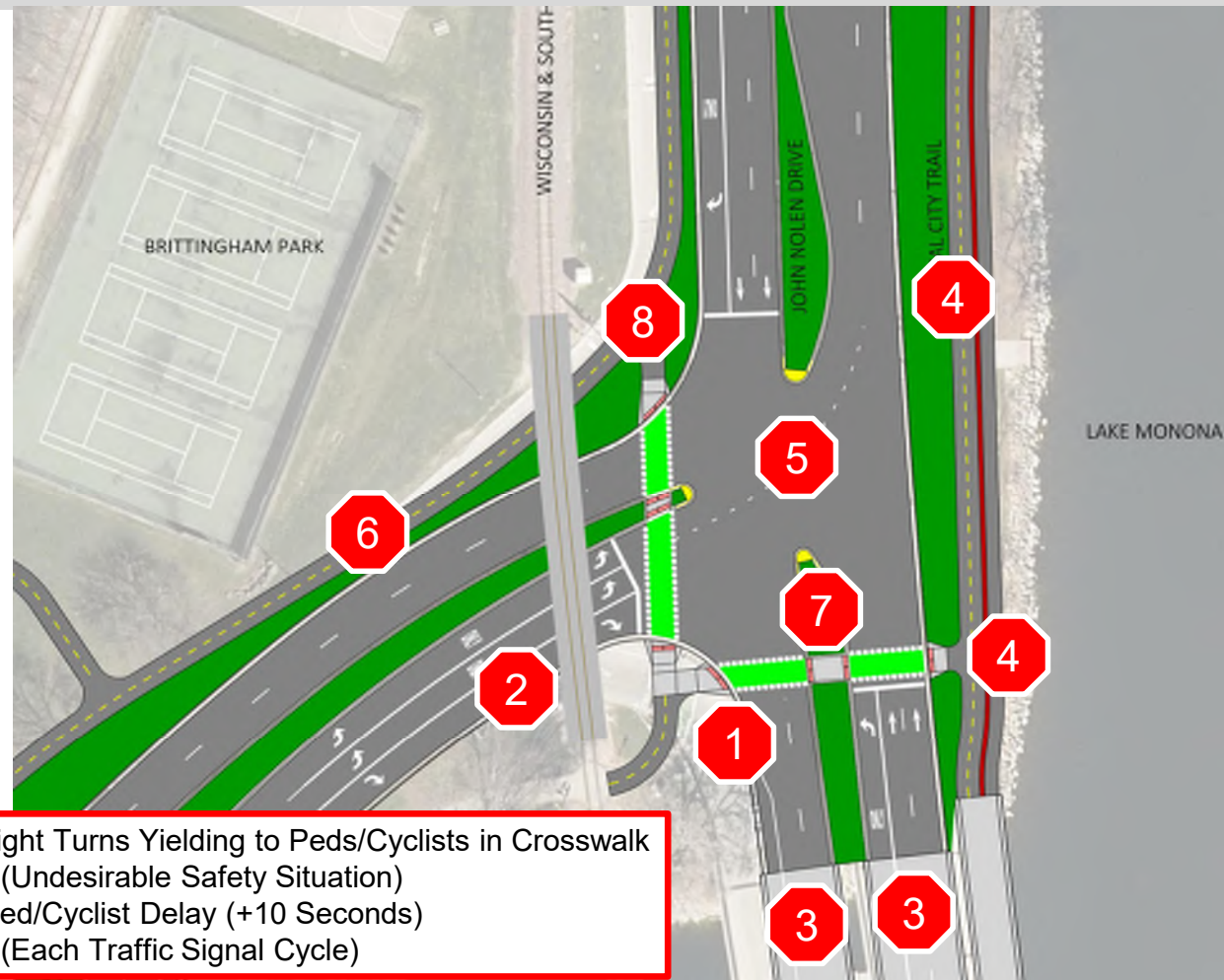


North Shore Drive Intersection – Alt 4B (Single “L” Crossing w/o Islands)

- (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)

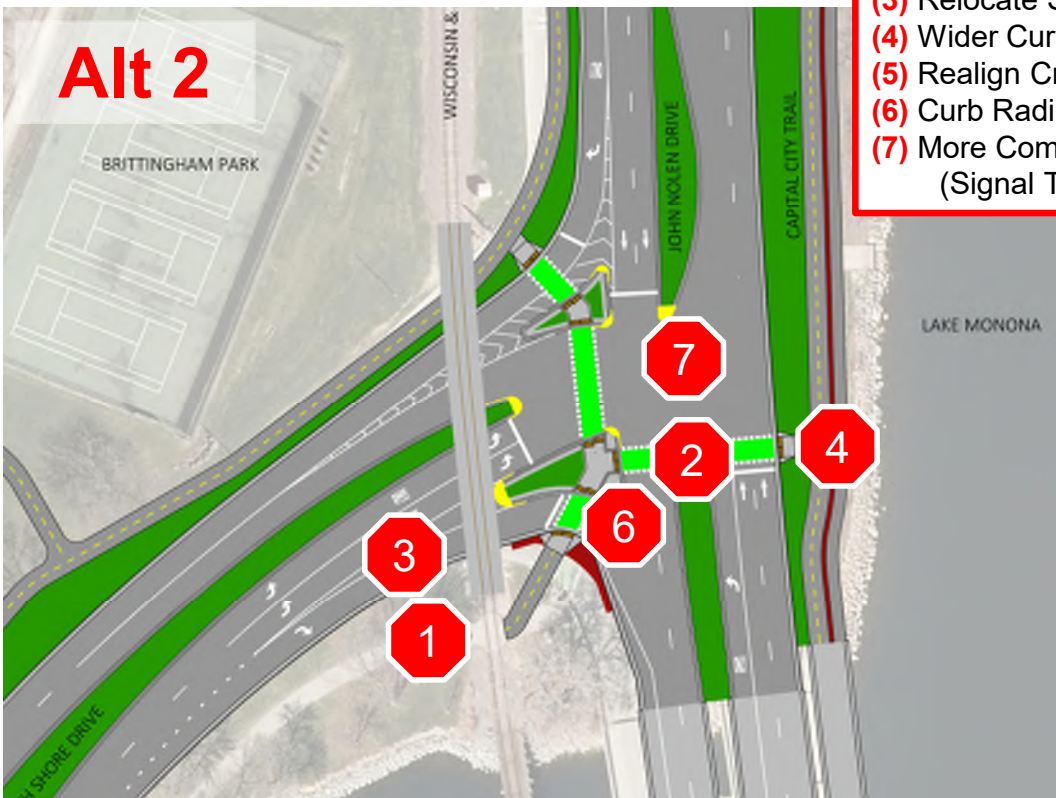


North Shore Drive Intersection

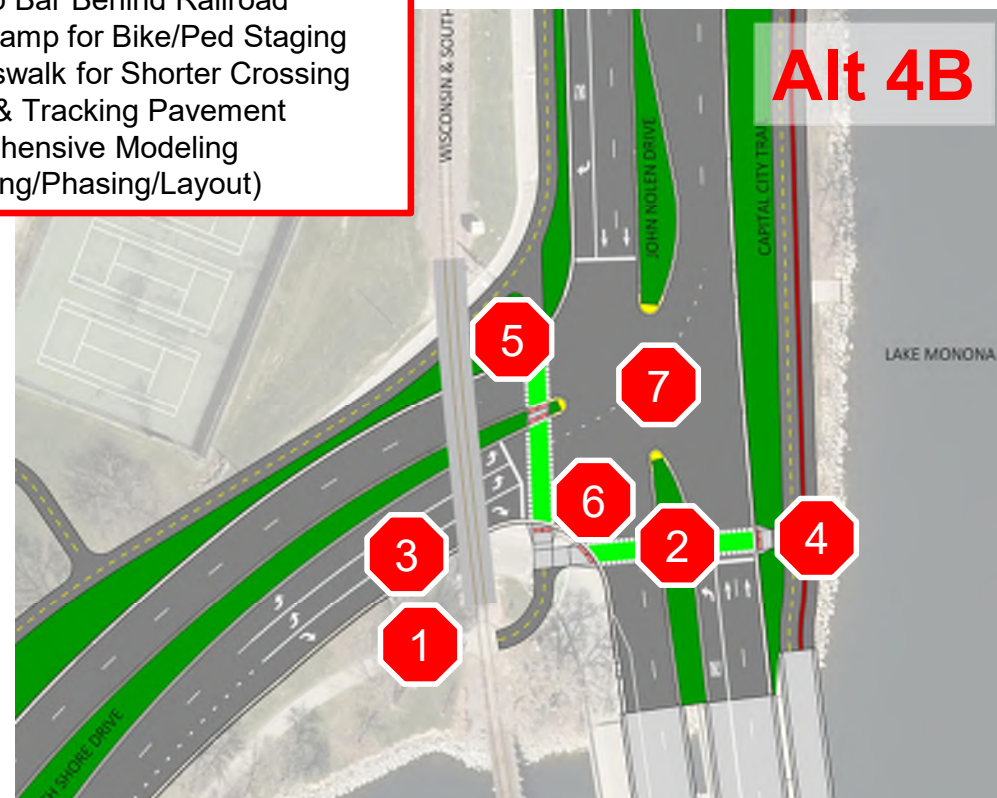
Under Further Consideration & Analysis

- (1) Realign Path over Railroad
- (2) Widen Crosswalk (Separate Bikes/Peds?)
- (3) Relocate Stop Bar Behind Railroad
- (4) Wider Curb Ramp for Bike/Ped Staging
- (5) Realign Crosswalk for Shorter Crossing
- (6) Curb Radius & Tracking Pavement
- (7) More Comprehensive Modeling
(Signal Timing/Phasing/Layout)

Alt 2






Alt 4B



Broom Street Intersection – POLLING

****Conceptual Design for Planning Purposes Only** (Not Currently Funded)**

	NOTES	DETAILS	Results:
EXISTING (No Change)	Protected-T Intersection		Zoom – 7% Padlet: 2 (Yes) 8 (No)
ALT 1	Conventional-T Intersection Includes Southbound Right Turn Lane +10 Sec Delay (JND) -5 Sec Delay (Broom)		Zoom – 24% Padlet: 1 (Yes) 7 (No)
ALT 2	Conventional-T Intersection Removes Southbound Right Turn Lane +10 Sec Delay (JND) -5 Sec Delay (Broom)		Zoom – 69% Padlet: 26 (Yes) 1 (No) 0% (Need More Info)

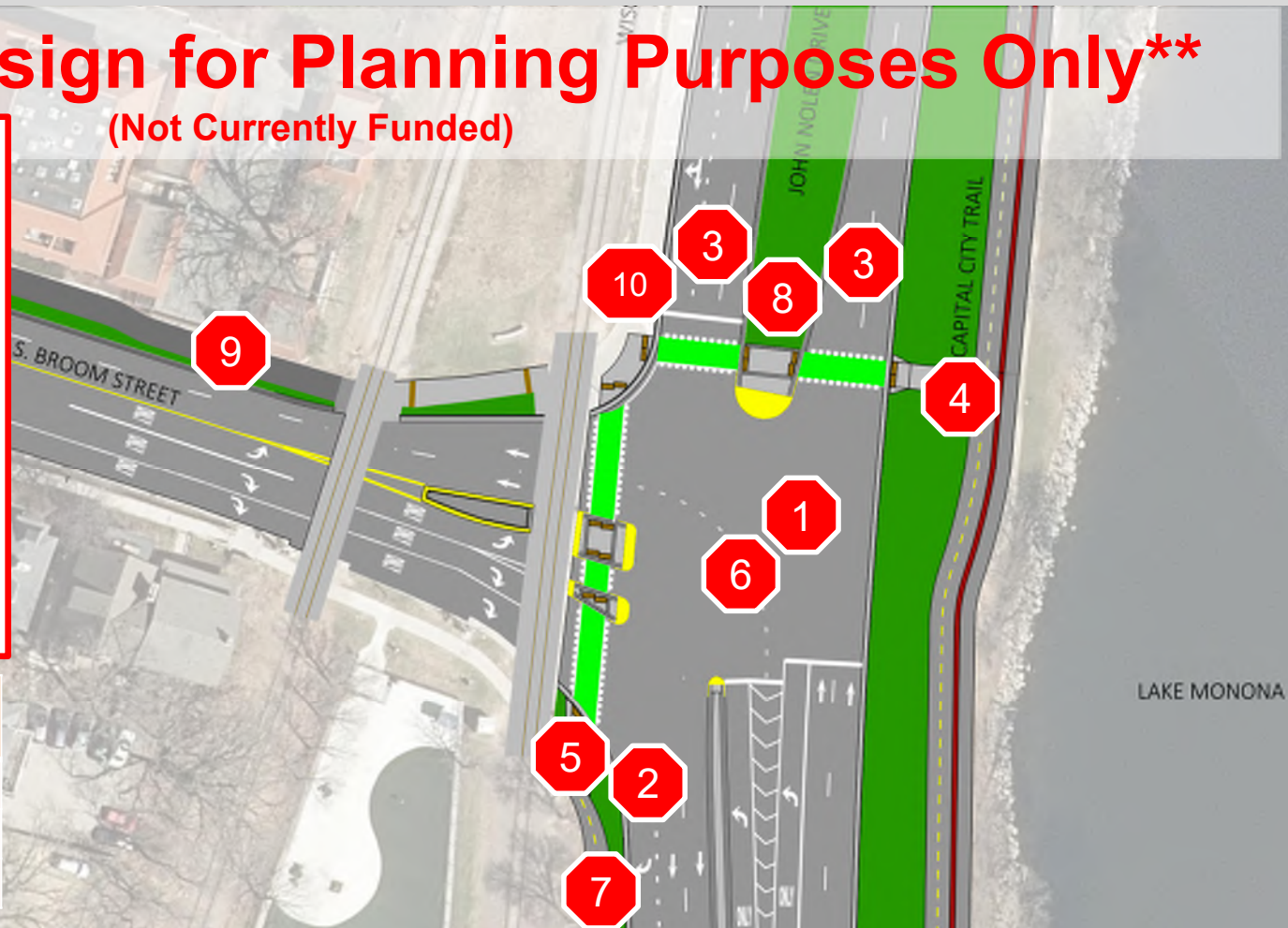


Broom Street Intersection – Alt 2 (Conventional-T w/o Right Turn Lane)

****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

Mobility Crossing Options – POLLING

****Conceptual Design for Planning Purposes Only** (Not Currently Funded)**

DETAILS

I would use an
**UNDERPASS
(TUNNEL)**



I would use an
**OVERPASS
(BRIDGE)**



I would ONLY use an
**AT-GRADE
(STREET-LEVEL)**



Results:

Zoom – 49%

Padlet:
23 (Yes)
1 (No)



Zoom – 10%

Padlet:
2 (Yes)
9 (No)

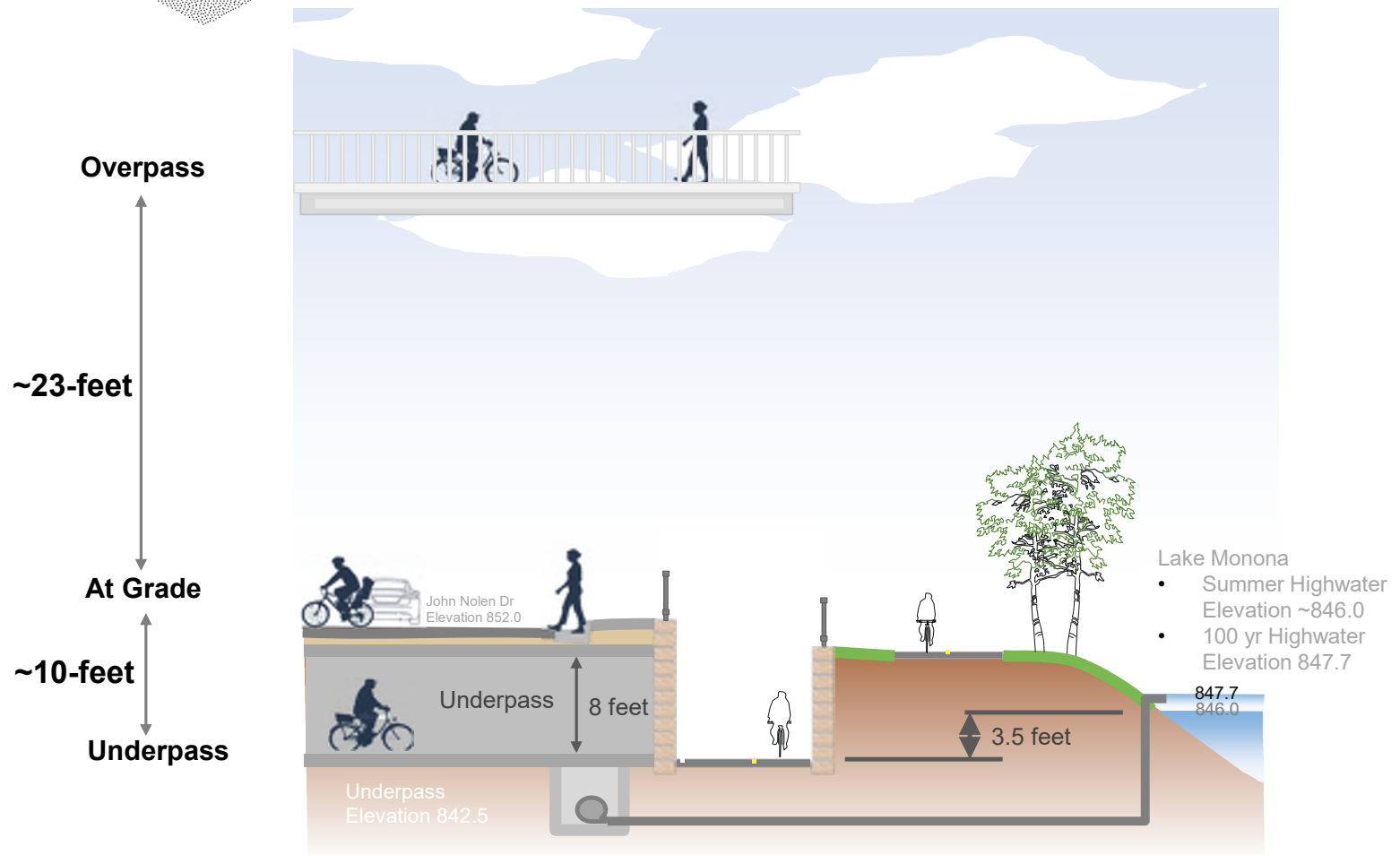
Zoom – 33%

Padlet:
6 (Yes)
4 (No)

8% (Need More Info)

Mobility Crossing Options (North Shore – Broom)

****Conceptual Design for Planning Purposes Only** (Not Currently Funded)**



THANK YOU!

- Public Survey Link: <https://www.surveymonkey.com/r/JND2023>
- Project Website: <https://www.cityofmadison.com/JohnNolenDrive>
- Contact: JohnNolenDrive@cityofmadison.com

