

HARRY W. NICE/THOMAS “MAC” MIDDLETON BRIDGE REPLACEMENT PROJECT

NEWBURG, MD TO DAHLGREN, VA

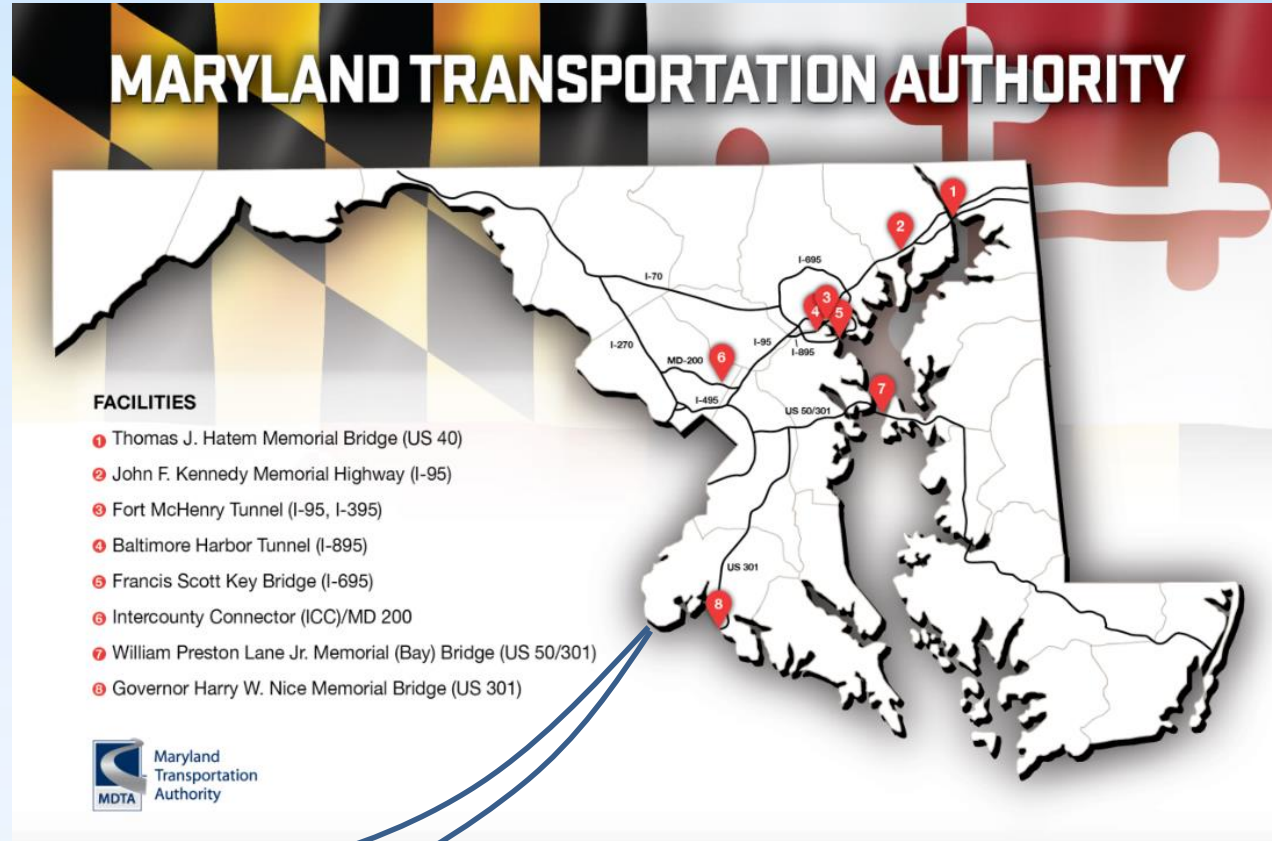
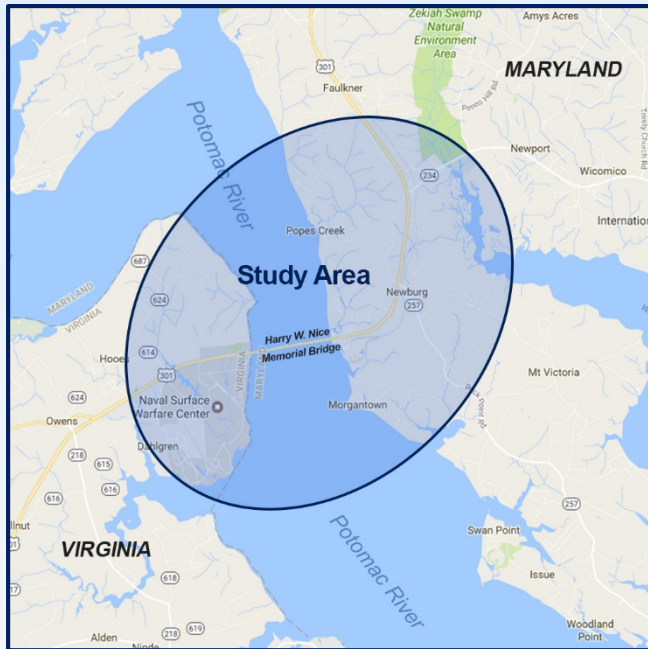
Bicycle/Pedestrian Path Decision

December 18, 2019

Project Overview

Project Location

- Charles Co., MD & King George Co., VA
- Newburg, MD To Dahlgren, VA



Project Overview



US 301 Northbound Virginia approach

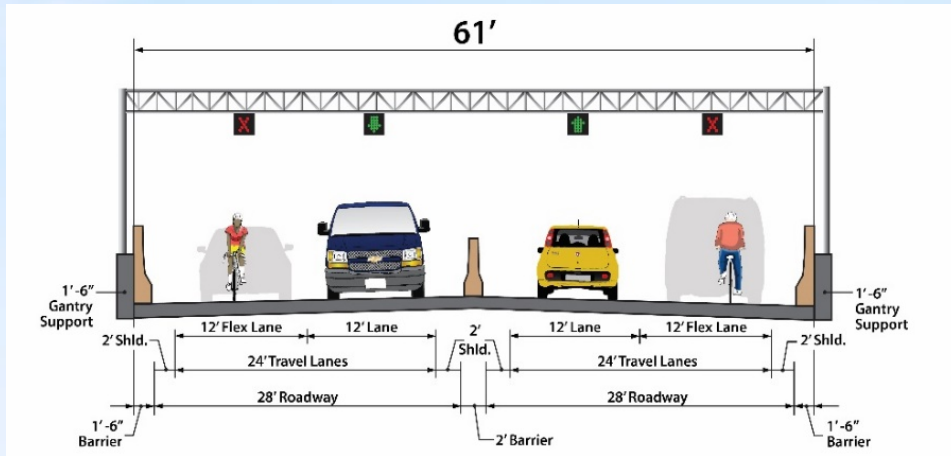


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Bid Alternative Results



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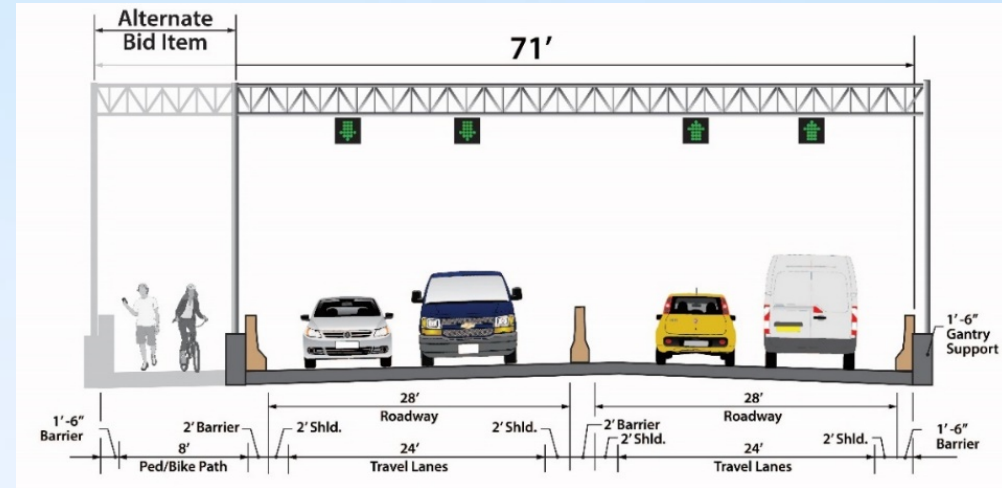


Base Bid

Lane Sharing for Bicycle Accommodations

Total = **\$462,957,000**

CTP total = **\$635,800,000**



Add-Alternate Bid

Barrier Separated 8' wide Shared-Use Path,
separated from traffic with a barrier.

Bike Path = **\$63,988,300**

Total = **\$526,945,300**

CTP total = **\$707,500,000**

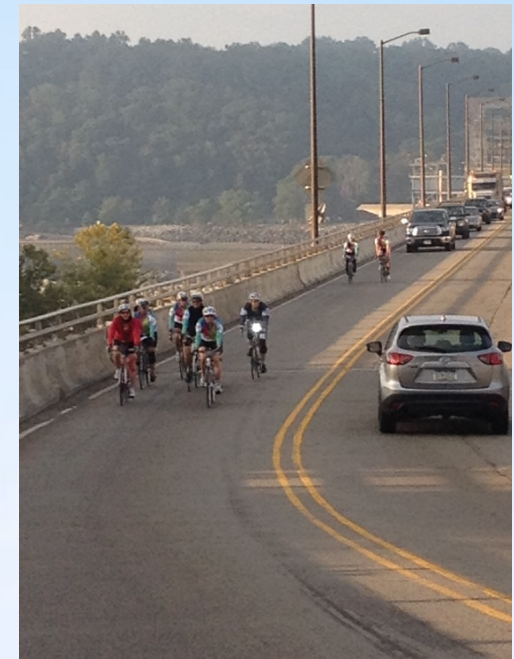
MD Bridges with Bike Accommodations

Analysis - Comparison



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Bridge	Route / Location	Travel Lanes	Bicycle and Pedestrian Access	Additional Considerations
Hatem Bridge	US 40 / Cecil and Harford Counties	4	Shared lane only	Restrictions apply to bicycle access. Pedestrian access prohibited.
Conowingo Dam	US 1 / Cecil and Harford Counties	2	Shared lane only	Restrictions apply to bicycle access. Pedestrian access prohibited.
Sinepuxent Bay Bridge	US 50 / Worcester County	4	Shared lane and < 5' sidewalk	Fence added to prevent jaywalking
Thomas Johnson Bridge	MD 4 / Calvert and St. Mary's Counties	2	Shared lane with +/- 2' Shoulders	Posted that Bicycle Access is Unadvised. New Expansion Planned - Not funded for construction
MD 231 at Patuxent River	Charles and Calvert Counties	2	Shared Lane only	<2' Shoulders
US 11 at Potomac River	Washington County	2	Shared Lane only	<2' Shoulders
US 522 at Potomac River	Washington County	2	Shared lane and < 5' sidewalk	
MD 213 at C&D Canal	Cecil County	2	Shared lane and 5' sidewalk	Has steep grades for Navigational Passage
MD 313 at Nanticoke River	Dorchester and Wicomico Counties	2	Shared Lane only	+/- 2' Shoulders



Shared Lanes at US 1 over Conowingo Dam

NOTE: There have been no reported bicycle related incidents over the last 5 years on US 1 at the Conowingo Dam

* Source: MD SHA Office of Traffic and Safety Development Support Division

Lane Sharing Safety Features



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To address safety considerations with the Base Bid (Lane Sharing) Option and promote ridership, MDTA has incorporated several design features to enhance safety, including:

- Bicycle-compatible bridge joints,
- Additional signing,
- Intelligent Transportation Systems (ITS), like bicycle warning beacons
- Real time monitoring from MDTA operations center



Demand Analysis

Bike/Ped Path Usership Projections



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Woodrow Wilson Bridge Comparison:

WWB Vicinity (within 3 Miles)		Nice/Middleton Bridge Vicinity (within 3 Miles)	
Jurisdiction	Population	Jurisdiction	Population
PG Co, MD	38,361	Charles Co, MD	4,886
Washington, DC	16,167	KG Co, VA	<u>4,977</u>
Alexandria, VA	<u>53,197</u>		
Total Area Population:	107,725	Total Area Population:	9,863

- As shown in the table above, the Nice/Middleton Bridge vicinity population is about 9% of the Woodrow Wilson Bridge area population. Therefore, it is assumed that bicycle and pedestrian volumes will not exceed 10% of the trail users on the Woodrow Wilson Bridge.



Demand Analysis

Bike/Ped Path Usership Estimate

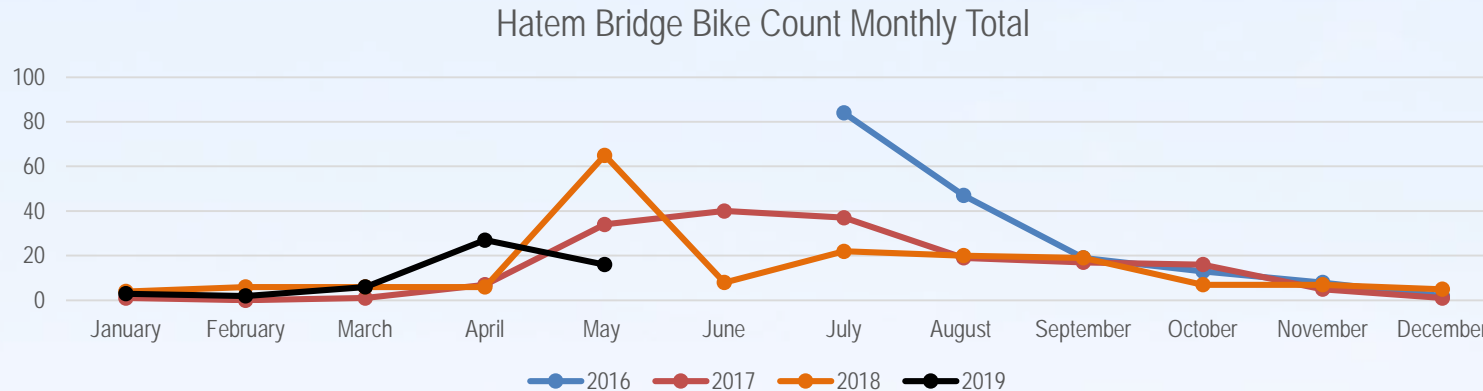


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Woodrow Wilson Bridge Comparison (cont'd):

- The Woodrow Wilson Bridge's annual trips on the trail are estimated to be 168,000.
- Estimated Nice/Middleton Bridge annual trips on the trail, scaled based on population sizes = $0.1 \times 168,000 = 16,800$ trips/yr
- Estimated Nice/Middleton Bridge daily trips on the trail = $16,800 \div 365 = 46$ trips/day
- It is important to note that this is an order of magnitude estimate of average daily usage. There may be periods with less (winter) and more (summer / special events) usage.

Hatem Bridge (Lane Sharing) Monthly Bike Count (Low – 0, High – 84, Average – 16):



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Bike/Ped Path Usership – Census Data



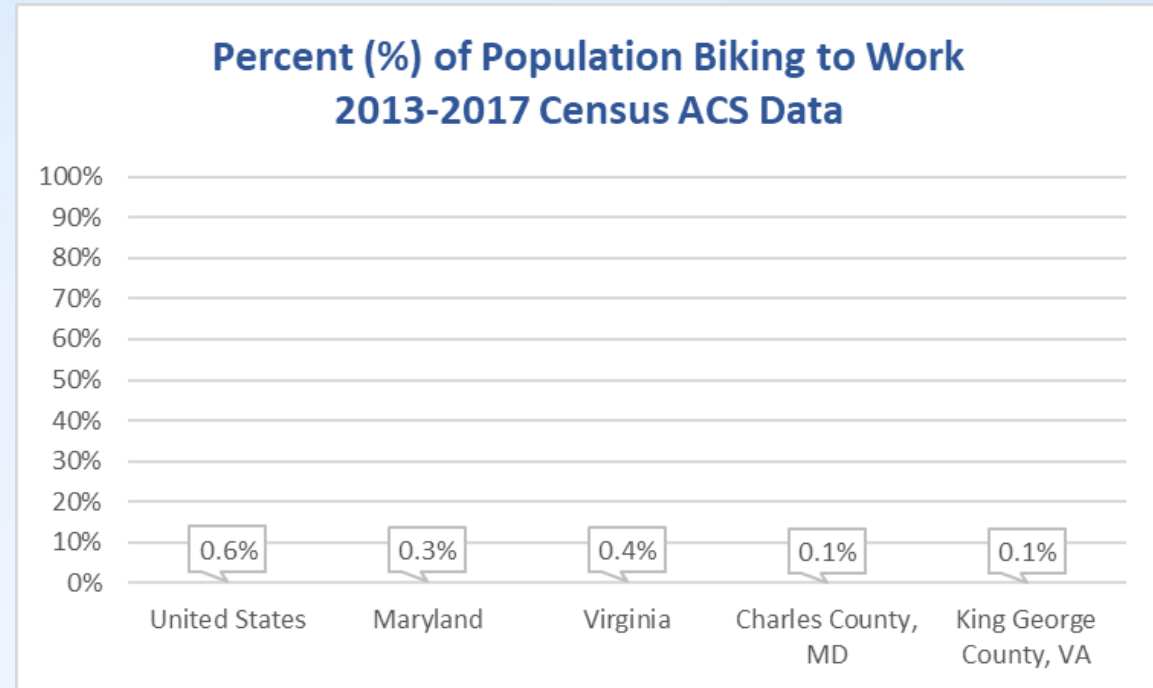
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Additional Census Bureau Data on Bicycling to Work:

- 2013-2017 American Community Survey 5-Year Estimates – Population that Bicycle to Work.
- Census data supports the order of magnitude reasonableness of the usage estimate

Source:

https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S0801&prodType=table



Demand Analysis

Bike/Ped Path Usership Estimate



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Costs for each mode:

- With this previous estimate, and the costs for the bridge and separated path, the following information is calculated:

Trips	Average Daily Traffic	Contract Construction Cost (<u>not</u> CTP) Bridge Roadway / Path	Estimated Construction Cost per Average Daily User
Vehicular Trips	18,800	\$463 M	\$25,000
Trail-User Trips	46	\$64 M	\$1,300,000

Other Considerations

Shared Lanes (Base Bid)



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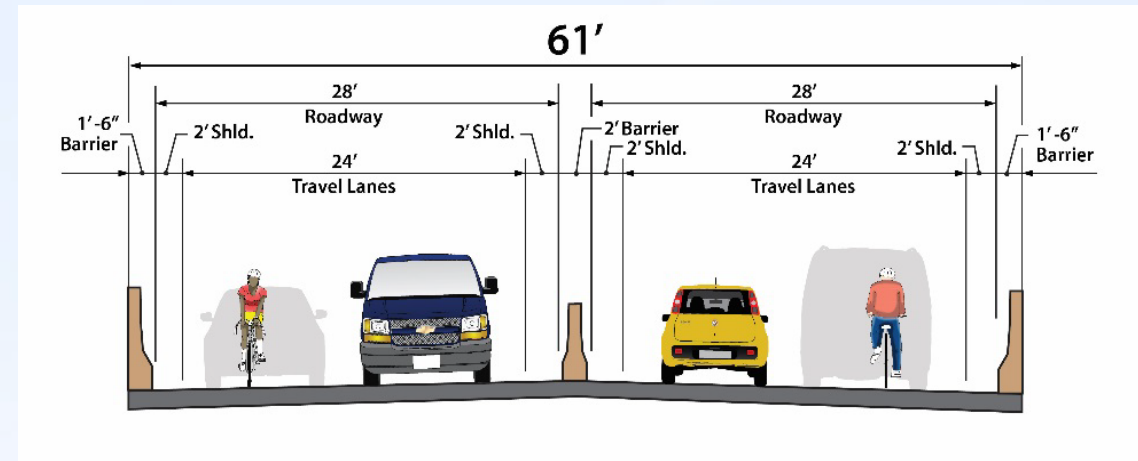
Design Elements:

- Restrictions to bicycle access will apply to avoid high congestion periods.
- Pedestrian traffic is prohibited.
- Requires bicycle-compatible surface treatments for full deck (drainage grates, deck joints, rumble strips, etc.).
- AASHTO Guidance: "Rural roadways with good sight distances that carry low volumes of traffic and operate at speeds of 55 mph or less may be suitable as shared lanes." (AASHTO Guide for Bicycle Facilities, page 4-2, 4.3, Shared Lanes).

Other items:

- Can be maintained using standard equipment.
- Reduces impervious surfaces and stormwater management needs.
- Provides access to meet the demand for experienced riders.
- Ties in with the Virginia approach roadway width
- Retains funds for other priority projects.

\$71.7M Project Cost Reduction



Other Considerations

Separated Shared-Use Trail (Add-Alternative)



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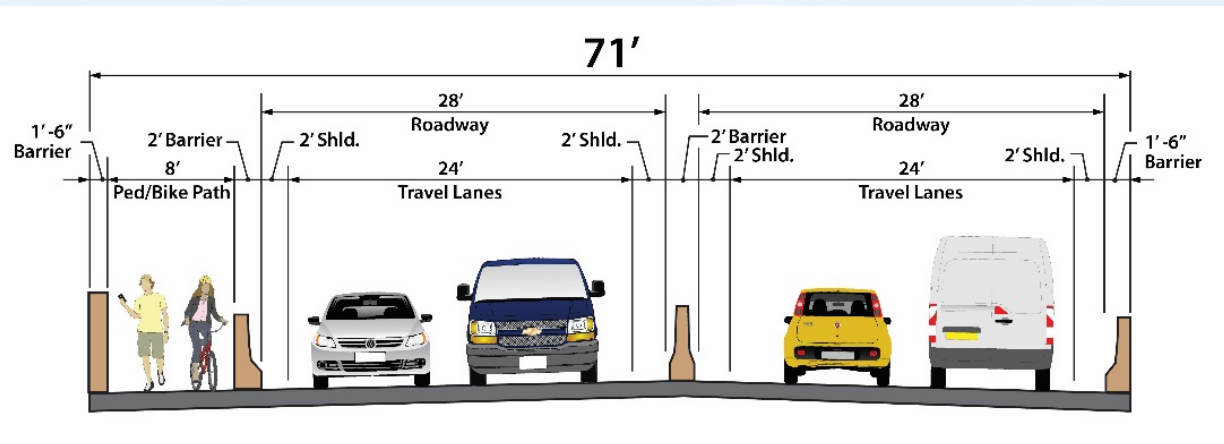
Considerations:

- No current plans by local jurisdictions to link off-road trails to the Nice-Middleton Bridge.
- Path requires under bridge connections to the shoulders in Maryland and roadway lanes in Virginia.
- Not able to be maintained or plowed with standard equipment. Expected to be closed during snow events and used for snow storage.
- Current demand and trail user projections are low.
- Tolling logistics for non-motorized traffic.
- Increases impervious surfaces by about 2.7 acres.
- Increases security and policing concerns.
- Increases complexity of drainage for separated roadway and path areas.

\$71.7M Additional Project cost

Benefits:

- Provides an area separated from vehicular traffic.
- Provides access for both bicycles and pedestrians.
- Additional bridge width may be beneficial during future construction sequencing.
- Provides convenient cycling access on the bridge that is not impacted by future traffic growth.

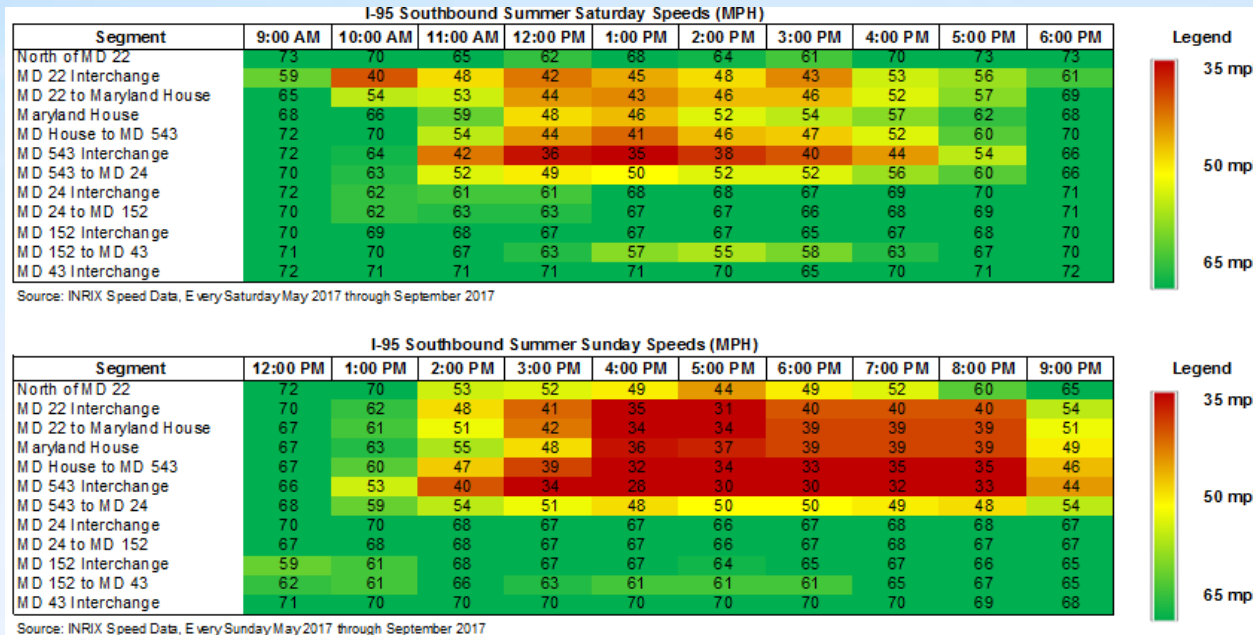


Capital Program Project Alternative

I-95SB Phase 1 (Maryland House Travel Plaza to MD24)



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- 2018 SB I-95 Traffic Volume at Maryland House Travel Plaza
 - AM Peak Hour = 3,350; PM Peak Hour = 3,560; Summer Sunday Peak Hour = 6,635
 - Weekday ADT = 54,155; Weekend ADT = 65,230
- 2018 Summer (May –Sept) congestion on SB I-95 between MD 22 and MD 24
 - 18 hours of congestion per weekend (Saturday and Sunday)
 - The section of roadway ranked within top 10 weekend bottlenecks in Maryland
 - Max queue approximately 6 miles

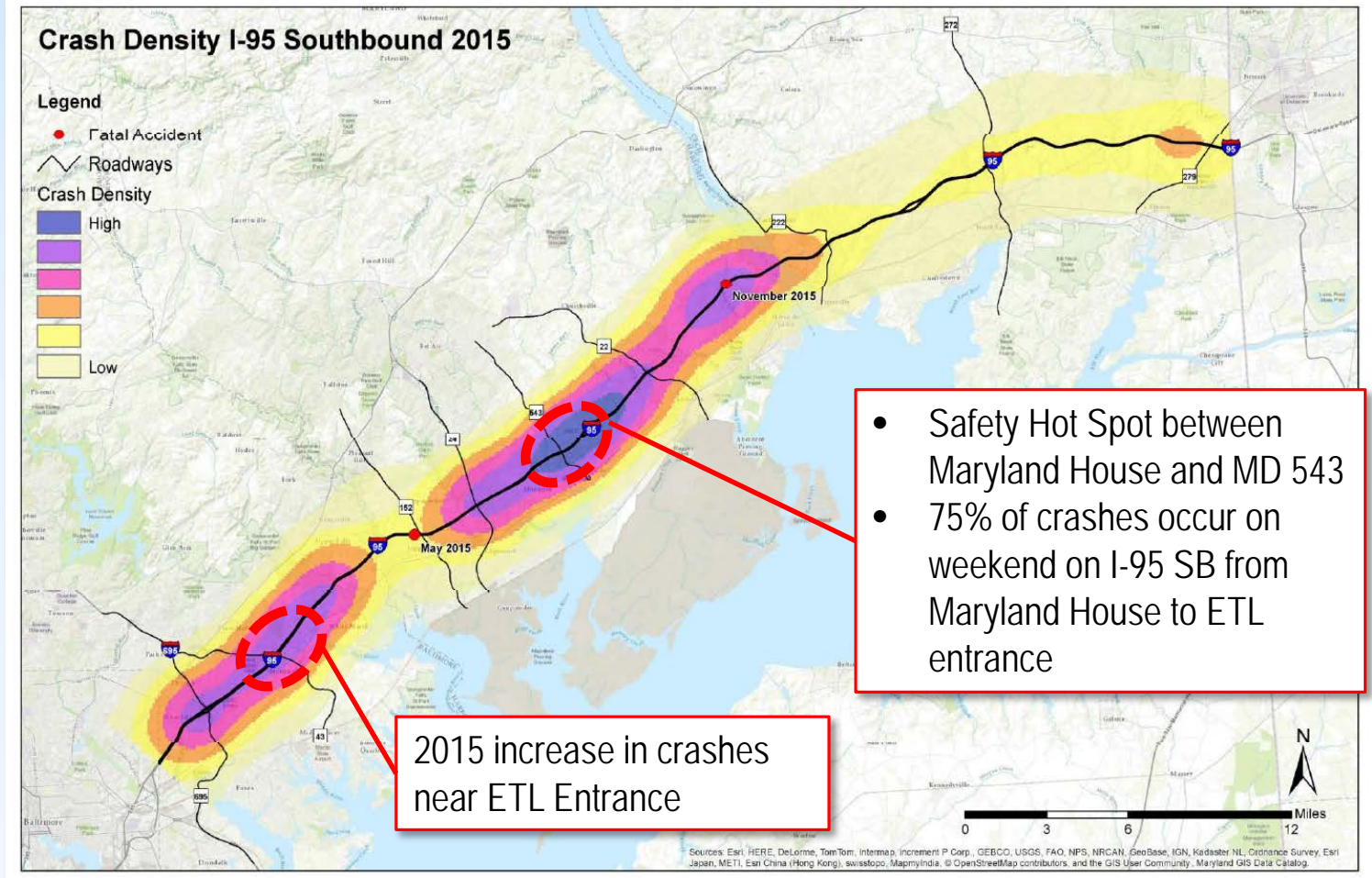
Capital Program Project Alternative

I-95 SB Phase 1 (Maryland House Travel Plaza to MD24)



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- Safety Analysis (2013 – 2017):
 - 35 crashes
 - 8 Injury Crashes
 - 1 Fatal Crash

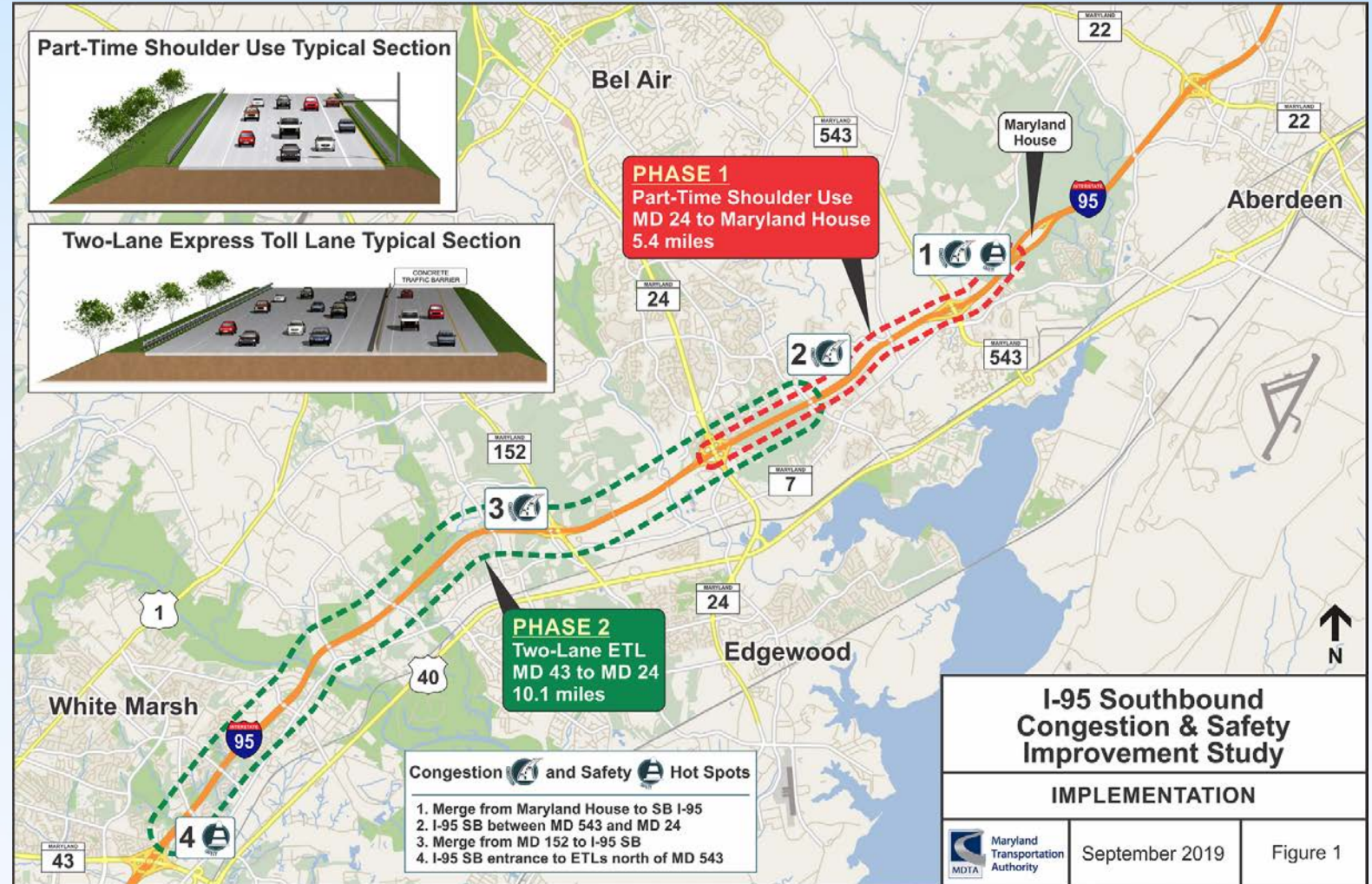


Capital Program Project Alternative

I-95SB Phase 1 (Maryland House Travel Plaza to MD24)



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Background

Public / Stakeholder Input

Analysis

Other Considerations

Capital Program Project Alternative

I-95SB Phase 1 (Maryland House Travel Plaza to MD24)



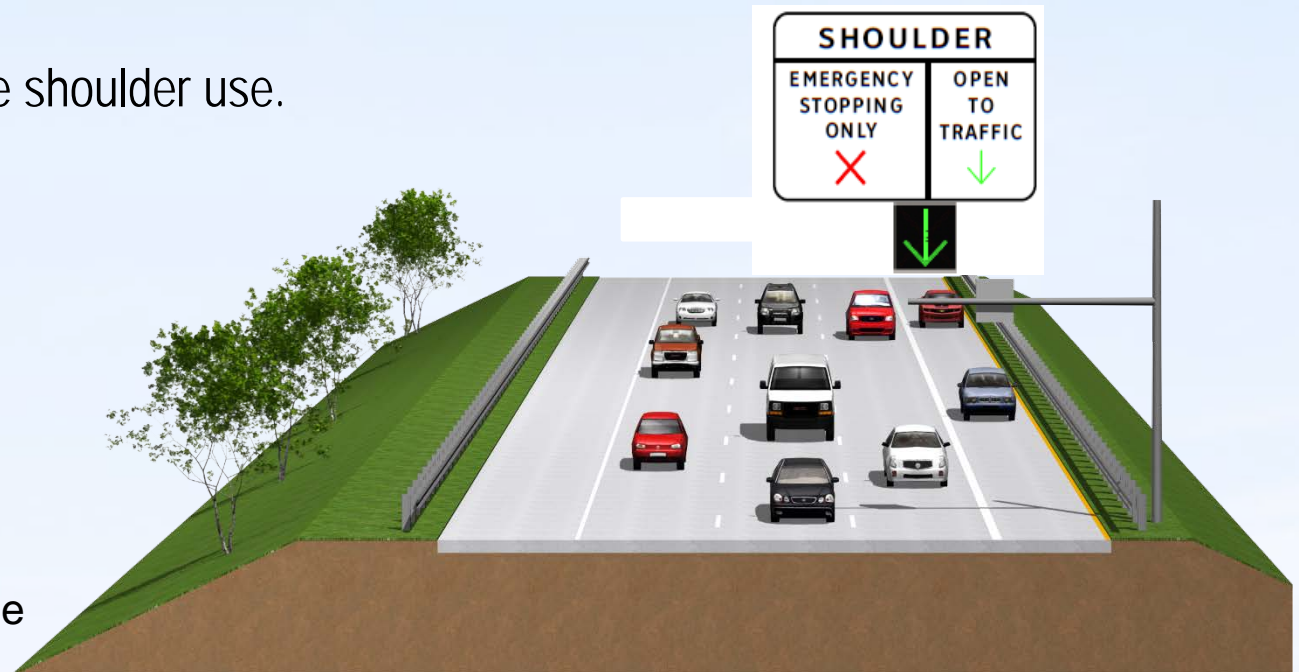
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- **Part-Time Shoulder Use (Hard Shoulder Running)**

- Maryland House Entrance Ramp to South of MD 24 (5.4 miles)
- Install lane use signals (LUS) and full-color DMS (1/2 mile spacing)
- Install CCTV cameras for full coverage
- Shoulder reconstruction
- Install supplemental signing for the shoulder use.
- Cost: \$58M

- **Maintenance of Traffic Impact:**

- Shoulder closure
- Lane shift
- Off-peak lane closure
- Requires coordination with the NB ETL Extension Program





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Capital Program Project Alternative

I-95SB Phase 1 (Maryland House Travel Plaza to MD24)

- Part-Time Shoulder Use (Hard Shoulder Running)
 - Addresses Hot Spot 1 & 2
 - 20% Travel Time Reduction During Summer Weekend
 - Travel Time Savings: 7 min = \$8.5M annual operation saving
 - Interstate congestion and safety relief



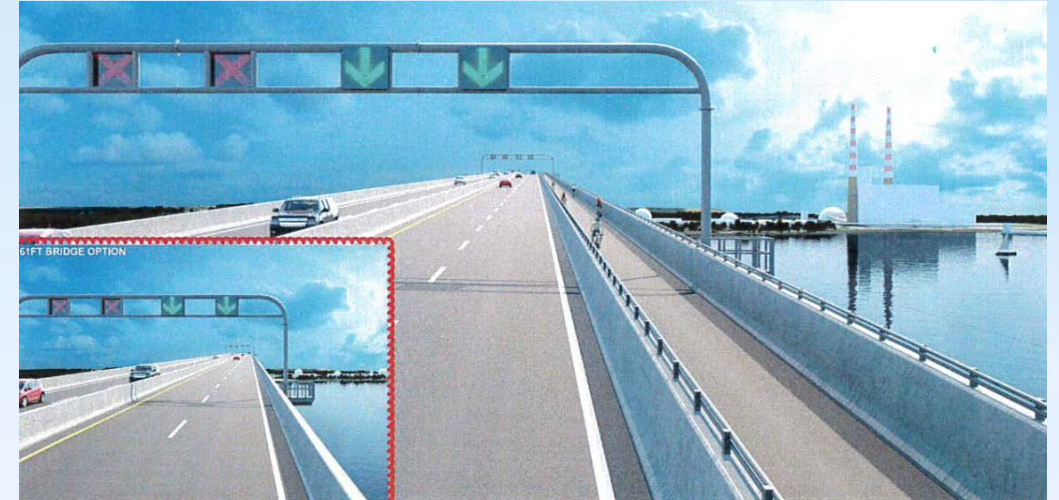


Authority Board Unanimous Capital Program Decision

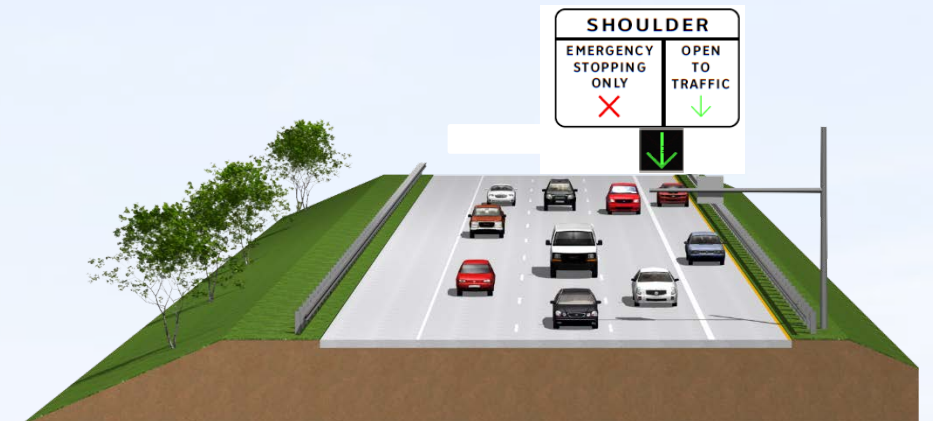


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Add Alternative providing for a Barrier Separated Shared-Use Path to Nice-Middleton Bridge



Add I-95SB (Maryland House Travel Plaza to MD 24) Safety and Congestion Improvements



Authority Board Decision Summary



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- The MDTA Board must work within the limited funds of the Authority and chose to spend the funds in question projects with higher immediate impacts and needs.
- With real budget constraints, the Board's responsibility is to make decisions that provide the most benefit to the most citizens.
- The project will be built to accommodate bikes with design and construction investments to support lane sharing, so that bikes can safely use the new Nice-Middleton bridge.

Authority Board Decision Summary

- There were no offers of actual financial assistance to support any portion of the additional funding needed for a barrier separated shared use path.
- Letters recently received from the Congressional Delegation and others requesting support for the shared use path did not offer actual funding that could be used on this project to fund the bike path.
- In the absence of funding from other sources for the bike path, the Board's November decision was necessary.



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