



National Capital Region
Transportation Planning Board

MEMORANDUM

TO: Transportation Planning Board
FROM: Kanti Srikanth, Planning Director, Michael Farrell, Regional Transportation Planner
SUBJECT: Governor Harry W. Nice Memorial Bridge Bicycle and Pedestrian Facility Recommendation
DATE: September 19, 2018

At its June 20 meeting, the Transportation Planning Board discussed the Maryland Transportation Authority's (MDTA) proposed alternatives for bicycle and pedestrian accommodations on the proposed replacement for the Governor Harry W. Nice Memorial bridge (Nice Bridge).

Staff reported that MDTA plans to study two design options for the bridge: (1) a shared lane alternative and (2) a barrier-separated, 8-foot wide shared use path.

The sentiment of the Board was that the shared lane alternative would not only preclude pedestrian movement, it would pose serious safety concerns and would be unwelcoming even to the most experienced bicyclists. There was support for the barrier-protected path which would not only be the safer alternative, but it would also accommodate pedestrians and provide vital connectivity for non-motoring users. Some members said that the TPB ought to endorse as its preference the barrier separated shared use path alternative on the Nice Bridge.

It was also noted that the TPB may wish to consider its preferred treatment for bicycle and pedestrian accommodation across river crossings in general. Chairman Allen suggested that the staff research the merits of the options and provide information for the board members to develop their thoughts on the matter regarding both the Nice Bridge as well as a position on river crossing projects in general.

This memo summarizes the information from staff research on a few factors related to shared bicycle lanes vs. barrier-separated lanes, which the TPB may wish to consider in developing its position on the matter. The position would serve not just to comment on the Nice Bridge but would be inclusive of all river crossings in the region. Also included is information on TPB's precedent regarding bicycle-pedestrian accommodations across major river crossing.

SAFETY

Both options for the Nice Bridge will feature four 12-foot travel lanes, and 2-foot shoulders. The proposed speed limit is 50 mph (same as the existing two-lane bridge). Under the shared lane option, bicyclists are to ride in middle of the travel lane (Figure 1).

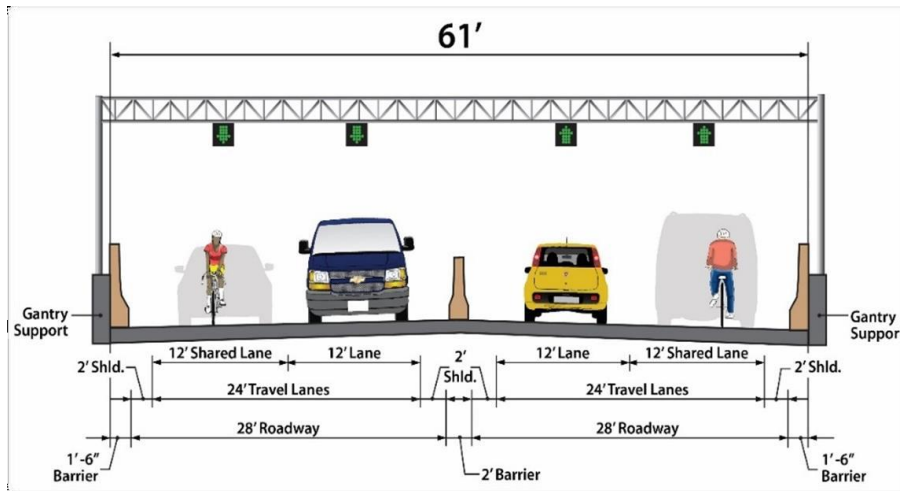


Figure 1: Conceptual Design – Shared Lane ¹

The speed differential between motor vehicles and bicycles on higher speed roadways is greater than on lower speed roadways. This presents additional challenges for cyclists and motorists, such as judging the time and distance required for vehicles to stop or overtake a cyclist.” Additionally, the severity of a crash involving a cyclist and motorist increases exponentially with speed (Figure 2).

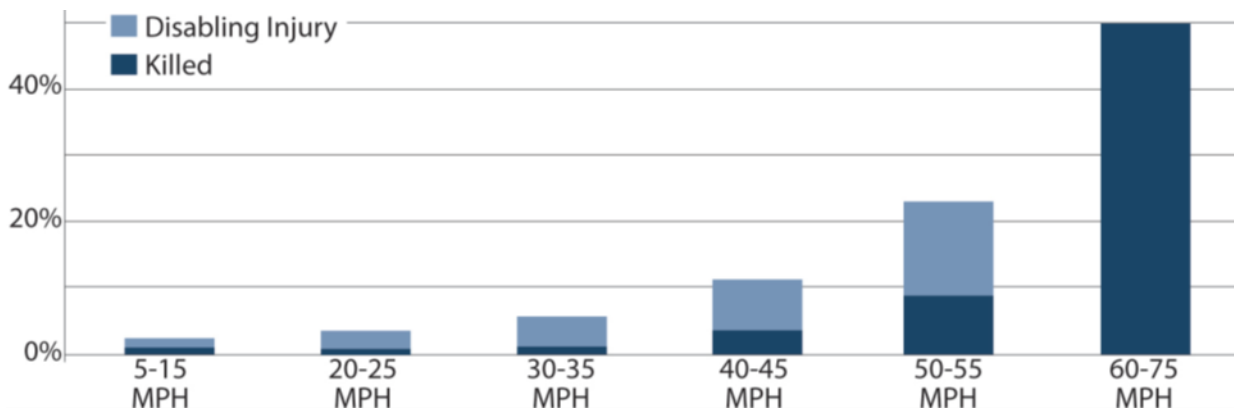


Figure 2: Percentage of Bicyclists Killed or Seriously Injured in Bicycle-Motor Vehicle Crashes²

In the interest of safety of the road users, best practice guidance from the Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO) recommend barrier separated facilities for bicyclists on roadways like Nice Bridge. These best practice recommendations include:

1. FHWA³ which recommends separation of bicycle and motorized facilities on high-speed and / or high-volume roads (Figure 3).

¹ MDTA Presentation to TPB Bike/Ped Subcommittee (5/15/2018)

² FHWA-SA-12-018, May 2012

³ https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa12018/

2. The 2012 (current) AASHTO Guide on Bicycle Facilities calls for barrier separation on any bridge greater than one-half mile in length, and at least 5 feet of separation or a crash-resistant barrier between a bike path and any high speed, high volume roadway.
3. It is TPB staff's understanding that the Draft 2018 AASHTO Guide on Bicycle Facilities calls for 5-foot shoulders on any rural road (Figure 4) with a speed limit greater than 45 mph and more than 6,000 vehicles per day.

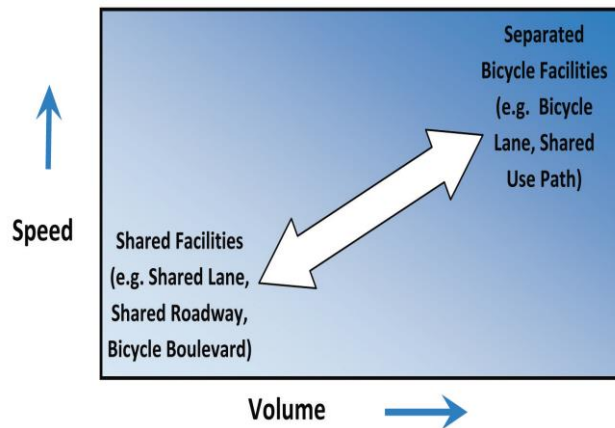


Figure 3: General Bicycle Facility Utilization Given the Context of Vehicular Traffic Volume and Speed ⁴

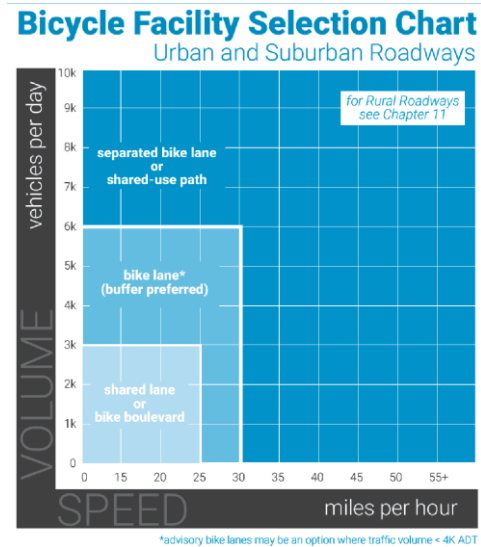


Figure 4: Recommended Minimum Shoulder on Rural Roadways ⁵

The barrier-separated alternative design option under consideration for the Nice Bridge replacement in Maryland would merit the first two best practice guidance noted above but it would not meet the third guidance noted above. The shared lane alternative also under consideration would not meet any of the above three best practice standards.

MARYLAND STANDARDS

Maryland law bans bicyclists from sharing the lane on roads with speed limits greater than 50 mph (though they may use the paved shoulders on such facilities). While the Nice Bridge is planned to be posted for 50 mph, it is likely that the average operating speeds will be higher than 50 mph. Additionally, the design consideration for the Nice Bridge includes a 2-foot shoulder that would be inadequate for bicyclists based on the previously-identified best practices.

Additional features affecting safety include the grade and truck traffic. The Nice Bridge features 4% grades, which would make it difficult for bicyclists to keep pace with motorists on the uphill segments while in a shared lane. The Nice Bridge is also a major truck route, which poses additional concerns for a shared use bicycle lane, especially with the proposed 2-foot shoulder.

⁴ FHWA-SA-12-018, May 2012

⁵ 2018 ASSHTO Bike Guide (Draft)

ACCESS

With only 2-foot shoulders under consideration, the shared lane option would provide no accommodation for pedestrians, including any motorists that may seek safety outside the path of traffic in the event a car breaks down. As such a shared lane would preclude access to pedestrians seeking to cross the bridge. Conversely a barrier-protected side path would accommodate pedestrians and stranded motorists and could also serve as a temporary detour to maintain traffic flow during major maintenance or reconstruction.

Due to the high motorized vehicle speeds, the presence of trucks, and the steep grade, a shared lane alternative on the Nice Bridge would accommodate only the most fit and fearless of bicyclists. As a result, access to bicyclists will for practical purposes would be restricted.

In proposing a shared lane, the MDTA cites⁶ the precedent of the Thomas J. Hatem Memorial Bridge (Hatem Bridge) that carries US 40 over the Susquehanna River. The Hatem Bridge precludes access to pedestrians and limits bicycle access to shared lane use during daylight hours on weekends and holidays. If MDTA manages the Nice Bridge like how it manages the Hatem Bridge, access hours for bicyclists on a shared lane will likely preclude usage during daylight hours on a weekend given that the bridge is expected to experience its peak traffic loads on weekends and summer holidays. Given that the nature of the use and the communities on either side of the Nice Bridge it is anticipated that peak demand for bicyclist use would also be on weekends and holidays.⁷

PROJECTED NEED AND POSSIBLE USE

MDTA estimates that there will be approximately 50 bicyclists per day on the Nice Bridge separated path, based on population within a reasonable commuting distance of the bridge.⁸ The TPB Bicycle and Pedestrian Subcommittee believes that the potential number of bicycle trips over the Nice Bridge will be greater than 50 per day, especially over weekends and holidays.

The Subcommittee believes that the future connections to statewide bicycle networks shown in long range plans and projects owned by the counties, parks, and private entities together with bicycling tourists will generate additional demand beyond what is assumed by MDTA.

An example of the additional demand from such a connection includes the May 30 Department of the Interior announcement⁹ of the addition of the nearby Dahlgren Trail¹⁰ to the national recreational trails system. When complete, it is likely to attract a significant number of recreational riders. MDTA did not include the Dahlgren Trail in its ridership projections for the Nice Bridge.

TPB's Bicycle and Pedestrian Subcommittee members noted that it is important to consider how future residents and employers would value non-motorized access to a river crossing, given that the Nice Bridge is only a 30-minute drive from the edge of the urbanized area of greater Washington with high potential for development in the immediate area of the bridge within the bridge's life span.

⁶ Presentation to the Bicycle and Pedestrian Subcommittee, Slide 5, William H. Pines. May 15, 2018.

⁷ "Nice Bridge Preservation and Replacement Project", Slide 12, November 21, 2016. Also, Bicycle and Pedestrian Subcommittee Meeting Notes, page 3, May 15 2018.

⁸ Bicycle and Pedestrian Subcommittee Meeting Notes, page 5, May 15, 2018.

⁹ <https://www.doi.gov/pressreleases/secretary-zinke-announces-19-new-national-recreation-trails-17-states>

¹⁰ https://www.friendsdrht.org/DRHT_TrailInfo.htm

TOURISM AND ECONOMIC DEVELOPMENT

In designing and building structures with long life spans, it is important to consider not only how many local bicyclists are projected to use the bridge based on existing travel patterns, but also consider the potential for enhanced usage, particularly by bicycle tourists, and the important benefits to the local economy.

For example, the Allegheny Passage Trail, which is in a remote rural area of Western Maryland and Pennsylvania, is a popular long-distance bike trail that attracts tourists, many of whom stay overnight. As the trail has expanded and connected more towns and natural areas, it has become a draw for visitors from all over the country¹¹. The total number of trail users for the Allegheny Passage Trail in 2016 was estimated to be 1.1 million. Trail use in 2016 was roughly 9% higher than in 2015.¹²

Results of a 2014 user survey found that 62% of Allegheny Passage Trail users stayed overnight. Overnight users spent \$125/day at businesses near the trail (including lodging). Businesses reported an overall increase in trail user customers from 34% in 2013 to 41% in 2014.¹³ Estimated revenue from trail users is currently \$50 million per year, of which roughly 20% is paid as wages to local employees.¹⁴ Trail related businesses are typically locally-owned small businesses, which are important components local economies.

Southern Maryland and the Northern Neck in Virginia have considerable potential as a bicycle tourism destination. These areas are sparsely populated, scenic, historic, and relatively flat. There is a network of bikeable roads with shoulders, as well as very wide, rumble-strip protected shoulders on US 301. Southern Maryland features the Religious Freedom National Scenic Byway.¹⁵

The National Park Service is promoting the Potomac Heritage Trail, which runs on both sides of the Potomac River. Much of this network is on-road. It includes the Southern Maryland Potomac Heritage (on-road) Bicycling Route, which crosses US 301 near the Nice Bridge, and the Northern Neck Heritage Trail Bicycling Route on the Virginia side¹⁶.

RELEVANT TPB POLICIES AND PRECEDENTS:

The TPB's guiding policy documents, The Vision, Regional Transportation Priorities Plan and the Metropolitan Washington Council of Governments' Region Forward documents all have goals to encourage walking, bicycling, and the use of public transportation as safe, convenient, environmentally friendly, and economical modes of transportation that promote health and independence for all people. Accordingly, the TPB has consistently supported the provision of bicycle and pedestrian accommodations and has called on its member agencies to make this part of consideration in all aspects of project planning and operations.

¹¹ <https://mobilitylab.org/2016/09/14/trail-towns-embracing-economic-benefits-of-distance-biking-routes/>

¹² Herr, Dr. Andrew R. *Analysis of 2016 Trail Usage Patterns along the Great Allegheny Passage, Final Report*. June 29, 2017. Saint Vincent College

¹³ <http://www.trailtowns.org/wp-content/uploads/2015/08/2015-GAP-Report.pdf>

¹⁴ Trail User Economic Impact Comparison Chart, Rails to Trails Conservancy

¹⁵ <https://www.visitmaryland.org/scenic-byways/religious-freedom-tour>

¹⁶ <https://www.northernneck.org/parks-nature-trails/#cycling>

In 2012 the TPB adopted its Complete Streets Policy¹⁷ which calls for, in all phases of project planning, development, and operations, **safe and adequate accommodation of all users** of the transportation network, **including pedestrians** and transit riders **of all ages and abilities, bicyclists**, individuals with disabilities, motorists, freight vehicles, and emergency vehicles, in a manner appropriate to the function and context of the relevant facility.

The Complete Streets policy and the TPB's Bicycle and Pedestrian Plan explicitly call for the use of current best practices and design standards in the design of bicycle and pedestrian facilities. A barrier separated facility that provides for safe movement of both pedestrians and bicyclists along a high-speed, high volume facility such as a river crossing is considered best practice of design standards.

A recent instance where the TPB played a role in securing a barrier separated bicycle and pedestrian facility across a major river crossing is the Woodrow Wilson Bridge, which carries the Capital Beltway across the Potomac River. The barrier separated facility today is very well used with at least 600 bicyclists and pedestrians using the facility on each weekend day. The existence of a high-quality connection across the Potomac at the Woodrow Wilson bridge has stimulated the development of bicycle and pedestrian facilities on the Maryland side, even though the area had not been very bike-friendly before. Specifically, since the Wilson Bridge Trail was built, a connecting trail from the bridge trail to the National Harbor waterfront, as well as a connecting trail from the bridge trail to MGM National Avenue have been built allowing bicyclists to access those two major destinations using the barrier separated bridge trail. The barrier separated facility along the bridge is the key connector between the trails in Maryland and Virginia. Without it, it is likely that many of these trails would not have been built.

The TPB calls for and supports transportation plans to be developed in coordination and cooperation with local jurisdictions. Charles County's Bicycle and Pedestrian Master Plan (2012) calls for barrier-separated bicycle and pedestrian facilities on the Nice Bridge.

Additionally, in a November 21, 2016 press release¹⁸ announcing funding for the bridge, Governor Hogan stated that "The new bridge will be built north of and parallel to the existing 1.7-mile bridge and will include two lanes of traffic in each direction and a barrier-separated bicycle and pedestrian path."

SUMMARY

General: The 8-foot barrier-separated bicycle-pedestrian path across river crossing is consistent with industry best practices, maximizes the safety of all bridge users, and can promote increased non-motorized use, which can have beneficial community and economic impacts. Lack of safe, attractive bicycle accommodation on river crossings would reduce the incentive to build bicycle-friendly facilities on either side of the river; and in certain instances, reduce the potential for bicycle tourism and related economic development.

¹⁷ <https://www.mwcog.org/transportation/planning-areas/walking-and-biking/complete-streets-policy/>

¹⁸ http://www.mdot.maryland.gov/News/Releases2016/2016_Nov_21_Hogan_Announces_New_Nice_Bridge

Specific to Nice Bridge:

1. The shared-lane option across the Nice Bridge will not accommodate pedestrian crossing and thus preclude the option for such mobility that could contribute to connecting two communities in two states.
2. The shared-lane option for bicyclists across the Nice Bridge, designed for high speed and relatively high traffic volumes would pose serious safety risks, and is not consistent with current best practice. It will be useable, if at all, by the most fit and fearless of bicyclists.
3. The shared-lane option is not consistent with the TPB's Complete Streets policy, the Charles County Bicycle and Pedestrian Plan, or Governor Hogan's announcement of a barrier-separated bicycle and pedestrian facility.
4. Based on the Hatem Bridge precedent (Maryland), it is reasonable to expect that, under a shared lane arrangement, bicycle access across the Nice Bridge will be significantly restricted or even discontinued as vehicular traffic volume in the shared lanes increases.

Additionally, it is important to note that the 2012 AASHTO Bicycle Guide states, "the minimum paved width for a two-directional shared use path is 10 feet" and that the design "should allow 2 feet of clearance on each side of the pathway" for safety reasons. As a result, an 8-foot barrier separated path that is currently under consideration would not conform to the AASHTO recommendation.