

**GOVERNOR HARRY W. NICE MEMORIAL BRIDGE
IMPROVEMENT PROJECT
CHARLES COUNTY, MARYLAND AND KING GEORGE COUNTY, VIRGINIA**

**COMBINED PURPOSE AND NEED & ALTERNATES RETAINED
FOR DETAILED STUDY PACKAGE**

JANUARY 2008



EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

The Maryland Transportation Authority (Authority) initiated planning for the Governor Harry W. Nice Memorial (Nice) Bridge Improvement Project in 2006 to address the transportation conditions and capacity limitations at the Nice Bridge. The Nice Bridge study area extends a distance of approximately ten miles along US 301, from King George County, Virginia to just north of the US 301/MD 234 intersection in Charles County, Maryland.

The purpose of the Nice Bridge Improvement Project is to: provide a crossing of the Potomac River that is geometrically compatible with the US 301 approach roadways; provide sufficient capacity to carry vehicular traffic on US 301 across the Potomac River in the design year 2030; improve traffic safety on US 301 at the approaches to the Potomac River crossing and on the bridge itself; and, provide the ability to maintain two-way traffic flow along US 301 during wide-load crossings, incidents, poor weather conditions, and when performing bridge maintenance and rehabilitation work.

ALTERNATES DESCRIPTIONS

Preliminary Alternates

Thirteen alternates, along with the No-Build Alternate, were presented at the Alternates Public Workshops held in Maryland and Virginia on May 31, 2007 and June 7, 2007, respectively (**See Appendix C**). The study team has received requests from the public and agencies to include bicycle and/or pedestrian facilities to the Nice Bridge analysis.

The alternates presented at the workshops included:

Alternate 1 (No-Build):

Under Alternate 1, the No-Build Alternate, the existing Nice Bridge would undergo minor short-term improvements as part of normal maintenance and safety operations, as well as scheduled major rehabilitation in the 2015 – 2020 year timeframe to keep the existing structure in service. Rehabilitation of the bridge would include full deck replacement, complete cleaning and painting of bridge steel, and any repairs that may be needed to the super or substructure. Roadway features of the bridge would remain the same as they are today, including one 11-foot lane in each direction with no median separation of opposing traffic and a one-foot offset to travel lanes on each side. The No-Build Alternate serves as a baseline for comparing all of the other alternates.

In addition to the No-Build Alternate, several build alternates are being considered. The type of new structure (fixed or movable) is independent of size or location. Each build alternate includes the following elements: Open Road Tolling; Off-line Cash Lanes; Vehicle Inspection and Wide-Load Staging Areas; and, the Authority Nice Bridge Facility Campus Master Plan improvements.

Some of the build alternates call for the existing bridge to be taken out of service, which could include removing the bridge or retaining the existing bridge for recreational use. Whether the existing bridge will be removed or remain for recreational use will be determined through on-going coordination with the Maryland Historical Trust (MHT), the US Army Corps of Engineers (COE) and the US Coast Guard (USCG).

Alternate 2: New Two-Lane Bridge to the South, Rehabilitate Existing Bridge

Alternate 2 consists of constructing a new two-lane parallel structure to the south of the existing bridge for northbound traffic. This new structure would consist of a 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset). The existing two-lane bridge would continue to provide a 24-foot wide travel width and structural elements would be rehabilitated so the bridge would remain in use for southbound traffic.

Alternate 3: New Two-Lane Bridge to the South, Replace Existing Bridge

Similar to Alternate 2, Alternate 3 consists of constructing a new two-lane parallel structure to the south of the existing bridge for northbound traffic. This new structure would consist of a 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset). The existing two-lane bridge would be replaced with a new structure for southbound traffic consisting of a similar 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset).

Alternate 4: New Two-Lane Bridge to the North, Rehabilitate Existing Bridge

Alternate 4 consists of constructing a new two-lane parallel structure to the north of the existing bridge for southbound traffic. This new structure would consist of a 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset). The existing two-lane bridge would continue to provide a 24-foot wide travel width and structural elements would be rehabilitated so the bridge would remain in use for northbound traffic.

Alternate 5: New Two-Lane Bridge to the North, Replace Existing Bridge

Similar to Alternate 4, Alternate 5 consists of constructing a new two-lane parallel structure to the north of the existing bridge for southbound traffic. This new structure would consist of a 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset). The existing two-lane bridge would be replaced with a new structure for northbound traffic consisting of a similar 40-foot wide travel width (two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot inside offset).

Alternate 6: New Four-Lane to South, Take Existing Bridge Out of Service

Alternate 6 consists of constructing a new four-lane parallel structure to the south of the existing bridge for all traffic. This new structure would consist of an 83-foot wide travel width (four 12-foot travel lanes - two in each direction, a 12-foot outside shoulder in both directions, a four-foot inside offset in both directions to a three-foot median barrier). The existing two-lane bridge would be taken out of service.

Alternate 7: New Four-Lane to North, Take Existing Bridge Out of Service

Alternate 7 consists of constructing a new four-lane parallel structure to the north of the existing bridge for all traffic. This new structure would consist of an 83-foot wide travel width (four 12-foot travel lanes - two in each direction, a 12-foot outside shoulder in both directions, a four-foot inside offset in both directions to a three-foot median barrier). The existing two-lane bridge would be taken out of service.

Alternate 8: Off Existing Alignment

Alternate 8 would retain and rehabilitate the existing Nice Bridge for local traffic and provide a new crossing of the Potomac River by relocating US 301 a substantial distance (e.g., > 1 mile) either north or south of the existing crossing alignment. No specific roadway alignment for a relocation of US 301 or structure dimension has been designated for this alternate.

Alternate 9: Roadway Shift

Alternate 9 would involve a shift of US 301 along the existing bridge crossing, either to the north or south, in recognition of the right-of-way and resource constraints on each shore of the Potomac (e.g., Aqua-Land Marina and Campground, and Morgantown Generating Plant in MD, Public Parks and Naval

Support Facility Dahlgren in VA). Under this alternate, the existing bridge would be replaced. No specific structure dimension or alignments have been considered for this alternate.

Alternate 10: Tunnel

Alternate 10 proposes taking the existing bridge out of service and providing a tunnel crossing of the Potomac River in the vicinity of the existing bridge crossing. No specific structure dimension has been considered for this alternate.

Alternate 11: Stacked Deck

Alternate 11 proposes a stacked deck structure along the existing bridge crossing, which would involve placing a new structure with similar dimensions as the existing structure, over the existing bridge, while retaining and rehabilitating the existing bridge or installing a new parallel stacked decked structure. No specific structure dimensions have been considered for this alternate.

Alternate 12: Three-Lane Bridge with Moveable Barrier

Alternate 12 consists of a three-lane crossing of the Potomac River with a movable barrier in the vicinity of the existing bridge crossing. This alternate would include rehabilitation of the existing bridge including widening of the roadway to provide three lanes within and along the existing structure. No specific structure or roadway dimensions have been considered for this alternate.

Alternate 13: Transportation Systems Management/Travel Demand Management – TSM/TDM

Alternate 13 is a Transportation Systems Management/Travel Demand Management alternate which would involve retaining and providing minor improvements to the existing bridge, and identification and implementation of demand management strategies (e.g., van-carpooling, flexible work schedules, telecommuting, traveler information services) but no additional capacity would be provided.

Alternate 14: Transit

Alternate 14 would retain and rehabilitate the existing bridge, as well as consider a form of mass transit in the vicinity of the existing bridge crossing.

Alternates Retained for Detailed Study

The Alternates Retained for Detailed Study are as follows (see Figures 6 through 12):

Alternate 1 - No-Build (See Figure 6) is recommended to be retained for detailed study as a baseline for comparison; it does not otherwise meet the project's purpose and need. This alternate would require major rehabilitation to the existing bridge in the 2015-2020 year time frame and adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge.

Build Alternates 2 through 7 all provide reasonable tie-in points with existing and planned highway network, capacity for 2030 demand, ability to maintain two-way traffic flow, improved safety on approaches and bridge, and the ability to comply with navigational channel guidelines.

Alternate 2 (New Two-Lane Bridge to South, Rehabilitate Existing Bridge) (See Figure 7) – This alternate is recommended to be retained as it retains the existing bridge and proposes a new structure be built to the south to partially meet the project's purpose and need. Although safety improvements via widening of the existing bridge would not be possible, the new two-lane bridge (to the south of the existing bridge) would provide for improved safety, with two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot offset to the inside parapet. This Alternate would potentially result in low impacts

to Socioeconomic and Environmental Resources, low impacts to existing Authority facilities and lower construction costs.

Respectively, Alternates 2 and 3 result in similar impactful footprints to the south and north of the existing structure. However, Alternate 2 would be more likely to impact potential hazardous materials at the Naval Support Facility Dahlgren.

Alternates 2 through 5 would require adequate vessel collision protection be provided for one side of the existing/rehabilitated bridge and one side of the new bridge.

Alternate 3 (New Two-Lane Bridge to South, Replace Existing Bridge) (See Figure 8) – This alternate is recommended to be retained as it meets the project’s purpose and need with minimal impacts anticipated to socioeconomic and environmental resources. This alternate would also have potentially low impacts to existing Authority facilities as well as low operating/maintenance costs. Similar to Alternate 5 (which replaces the existing bridge), this alternate provides not only increased capacity but also increases safety on both the north and southbound crossings of the Potomac River as opposed to only one.

The ability to potentially replace the existing bridge will be coordinated with appropriate agencies, including the Maryland Historical Trust (MHT) and the US Coast Guard (USCG).

Alternate 4 (New Two-Lane Bridge to North, Rehabilitate Existing Bridge) (See Figure 9) - This alternate is recommended to be retained as it retains the existing bridge and proposes a new structure be built to the north to partially meet the project’s purpose and need. Although safety improvements via widening the existing bridge would not be possible, the new two-lane bridge (to the north of the existing bridge) would provide for improved safety, with two 12-foot travel lanes, a 12-foot outside shoulder and a four-foot offset to the inside parapet. This alternate would also have potentially low impacts to Environmental Resources and lower construction costs.

Respectively, Alternates 4 and 5 result in similar impactful footprints to the north and south side of the existing structure. This alternate would be more likely to incur residential and/or business displacements, impact existing Authority facilities, as well as disrupt land and water-based recreation activities and parkland along the shore.

Alternate 5 (New Two-Lane Bridge to the North, Replace Existing Bridge) (See Figure 10) – This alternate is recommended to be retained as it meets the project’s purpose and need. Similar to Alternate 3 (which replaces the existing bridge), this alternate provides increased safety on both northbound and southbound crossings of the Potomac River as opposed to only one. This alternate would have potentially low impacts to Environmental Resources and lower construction costs.

Respectively, Alternates 4 and 5 result in similar impactful footprints to the north and south side of the existing structure. This alternate would be more likely to incur residential and/or business displacements, impact existing Authority facilities, as well as disrupt land and water-based recreation activities and parkland along the shore.

The ability to potentially replace the existing bridge will be coordinated with appropriate agencies, including the Maryland Historical Trust (MHT) and the US Coast Guard (USCG).

Alternate 6 (New Four-Lane Bridge to the South, Take Existing Bridge Out of Service) (See Figure 11) – This alternate is recommended to be retained as it meets the project’s purpose and need with minimal impacts anticipated to socioeconomic, natural and cultural resources, and would have potentially

low operating/maintenance costs. Alternate 6 also has the lowest impacts to structural factors, including impacts to Authority facilities.

The existing two-lane bridge would be taken out of service. Whether the existing bridge will be removed or remain for recreational use will be determined through on-going coordination with the Maryland Historical Trust (MHT), US Army Corps of Engineers (COE) and the US Coast Guard (USCG).

This alternate is comparable to Alternate 7; however, construction to the south of the existing bridge may impact hazardous materials at the Naval Support Facility Dahlgren. Alternates 6 and 7 would require adequate vessel collision protection be provided for both sides of the new bridge. Both Alternates 6 and 7 have the ability to highly improve vessel collision avoidance.

Alternate 7 (New Four-Lane Bridge to the North, Take Existing Bridge Out of Service) (See Figure 12) - Alternate 7 is recommended to be retained as it meets the project's purpose and need. This alternate would also have potentially low construction impacts and low operating/maintenance costs.

Similar to Alternate 6, this alternate would eliminate the need for two crossings. However, construction to the north of the existing bridge would be more likely to incur residential and/or business displacements, impact existing Authority facilities, as well as disrupt land and water-based recreation activities and parkland along the shore.

The existing two-lane bridge would be taken out of service. Whether the existing bridge will be removed or remain for recreational use will be determined through on-going coordination with the Maryland Historical Trust (MHT), US Army Corps of Engineers (COE) and the US Coast Guard (USCG).

While not adequate as stand alone alternates, appropriate Transportation Demand Management and Transportation Systems Management strategies may be included as part of the ARDS.

Alternates Not Recommended for Detailed Study

The Authority recommends the following alternates to be dropped from further consideration:

Alternate 8 (Off Existing Alignment) - The team recommends that Alternate 8 be dropped from further consideration. It does not meet the project's purpose and need because it does not tie into the existing and/or planned highway network, and it would potentially be the most impactful to the greatest number of socioeconomic, environmental and cultural resources in the study area. This alternate would also have potentially high construction and operating/maintenance costs.

Similar to the No-Build Alternate (Alternate 1), this alternate would require adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge, as well as both directions at the new bridge.

Alternate 9 (Roadway Shift) – Although this alternate meets the project's purpose and need, the team recommends that Alternate 9 be dropped from further consideration because of its moderate potential to incur residential and business displacements and its complex maintenance of traffic methods during construction. Maintenance of traffic would be more complex due to requirements for shifting traffic across the existing bridge. This alternate is also anticipated to have high construction and operating/maintenance costs.

Alternate 10 (Tunnel) - Although this alternate meets the project's purpose and need, the team recommends that Alternate 10 be dropped from further consideration due to the following factors: the Potomac River soil bed has questionable bearing capacity for a tunnel; the tie-in point in Virginia would not be feasible for oversized vehicles and could hinder providing access to the local roads in Virginia, such as Roseland Road; and, hazardous materials are currently prohibited from being transported through Authority tunnels due to safety concerns. There is also high potential for impacting hazardous materials originating from the Navel Support Facility Dahlgren. This alternate would likely have a high impact to economic development since hazardous materials are currently permitted to cross the Nice Bridge. This alternate is anticipated to have high construction and operating/maintenance costs.

This alternate would not require vessel collision protection measures be provided.

Alternate 11 (Stacked Deck) – This alternate would not improve safety on the bridge and approach roadways as compared to Alternates 2 through 10. This alternate may counter driver expectancy of typical roadway approaches to a bridge crossing and it would likely not include improvements to shoulders on the existing bridge. The construction of a new parallel stacked decked structure results in similar driver expectancy concerns along with additional resource impacts due to the realignment of US 301. The team recommends that Alternate 11 be dropped from further consideration due to the lack of safety improvements, potentially high impacts due to construction activities, additional resource impacts if US 301 is realigned, and operating and maintenance costs.

Similar to the No-Build Alternate (Alternate 1) and Alternate 8, this alternate would require adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge.

Alternate 12 (Three-Lane Bridge with Moveable Barrier) – While it appears that a three-lane roadway section (three ten-foot lanes with no shoulders) could be provided on the existing bridge including the through truss, the team recommends that Alternate 12 be dropped from further consideration. Alternate 12 does not provide a roadway section compatible with the approach roadways due to lack of shoulders, high construction and operation costs are anticipated, and construction impacts to structural factors are potentially high. This alternate would also require adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge.

Alternate 13 (Transportation Systems Management/Travel Demand Management – TSM/TDM) – The team recommends that Alternate 13 be dropped from further consideration because it does not meet the project's purpose and need as a stand alone alternate. It does not provide a geometrically compatible crossing with approach roadways, does not provide capacity needs or ability to maintain two-way traffic flow, and it does not improve safety on the approaches and bridge. In addition, this alternate is not consistent with local county plans, has potentially high impacts to socioeconomic resources and high operating/maintenance costs.

Similar to Alternates 1, 8 and 12, this alternate would require adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge.

Alternate 14 (Transit) - The team recommends that Alternate 14 be dropped from further consideration because it does not meet the project's purpose and need as a stand alone alternate. It does not provide a geometrically compatible crossing with approach roadways, does not provide capacity needs or ability to maintain two-way traffic flow, and it does not improve safety on the approaches and bridge. In addition, this alternate is not consistent with local county plans. This alternate also has potentially high impacts to socioeconomic resources and high operating/maintenance costs.

Similar to Alternates 1, 8, 12 and 13, this alternate would require adequate vessel collision protection be provided for both directions of vessel travel at the existing bridge.