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

Maryland Transportation Authority

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 impactive 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 impactive 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 impactive 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 impactive 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.

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I. INTRODUCTION

The Maryland Transportation Authority (Authority) is responsible for constructing, managing, operating, and improving Maryland's toll facilities, including the Governor Harry W. Nice Memorial (Nice) Bridge (originally called the Potomac River Bridge). The 1.7 mile long Nice Bridge opened in December 1940 and was the first bridge to provide direct roadway access from Maryland into Virginia south of the nation's capital. The Authority has initiated a planning study to address the transportation conditions and capacity limitations at the Nice Bridge, as several of the bridge's structural elements are nearing the end of their service life and will require major rehabilitation between 2015 and 2020.

As part of the National Highway System (NHS), the Nice Bridge is a link on the US 301 corridor, providing a direct connection between Southern Maryland and the northeastern region of Virginia. The bridge is also the southernmost roadway crossing of the Potomac River. The Woodrow Wilson Bridge along I-95 (a portion of the Capital Beltway) is the nearest parallel crossing of the Potomac River, located 25 miles upstream of the Nice Bridge near Washington, D.C.

The study process involves developing and evaluating improvement alternates and identifying the possible impacts to environmental resources. These include not only environmental resources, such as forests and wetlands, but also neighborhoods, communities, historic sites and cultural resources. The purpose of studying alternates and conducting this analysis is to identify potential capacity and safety enhancements at the existing bridge, including the inconsistent bridge geometry as compared to approach roadways, including grades, number of lanes and lane widths.

A. Study Area

The Nice Bridge study area **(*See Figure 1*)** includes Dahlgren and Mathias Point Neck, located in King George County, Virginia and the communities of Morgantown and Newburg, located within Charles County, Maryland. The 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 project team will work with environmental resource agencies, local and state governments and the public throughout the study in accordance with the National Environmental Policy Act (NEPA) and other related environmental laws and regulations. The project planning phase of the study was initiated in Summer 2006.

B. Land Use

Within Charles County, communities near the Nice Bridge such as Newburg and Morgantown are targeted for new growth and economic development. These areas were proposed by the County and have been certified by the Maryland Department of Planning (MDP) as Priority Funding Areas (PFAs) (***See Appendix A***). The 2006 *Charles County Comprehensive Plan* lists the area just north of the bridge as a commercial/business district and the area just south (Morgantown) as an employment/industrial park district. The purpose of these two areas' designations is to ensure that land is reserved to provide job opportunities and economic growth for the surrounding communities. The majority of land within the Charles County portion of the study area (excluding the PFA) is within Agricultural Conservation Districts, for the purpose of preserving farmland and limiting the amount of development that can occur.

Public projects planned within the vicinity of the Nice Bridge include:

- **Nice Bridge Toll Plaza Improvements** – Upgrades to the roadway approaches to the toll plaza will accommodate future traffic growth and the increase in E-ZPass market share. Located on the north side of the Nice Bridge, approximately 1,300 feet from the beginning of the bridge, the toll plaza currently contains four southbound toll lanes with one lane dedicated to E-ZPass, while the other three lanes are cash and E-ZPass lanes. Proposed improvements include realigning the northbound and southbound US 301 lanes approaching the toll facility, rehabilitation of the existing pavement from the Authority's maintenance limits of the abutment of the bridge, and upgrading of specific toll booths. Construction is proposed to begin in mid-October 2007 and be completed by May 2009.

- **US 301 Waldorf Area Transportation Improvements Project** – This project is being undertaken by the Maryland State Highway Administration to improve local traffic operation along US 301 in the Waldorf area; facilitate the safe and efficient flow of through traffic and commuter traffic between the Waldorf area and the Washington metropolitan area while providing a cost-effective and environmentally sensitive multi-modal transportation system to support existing and future travel demand, land use, and development efforts that are consistent with smart growth planning policies; and promote and secure environmental stewardship.

- **Freight Railroad Realignment Feasibility Study** - Managed jointly by the District of Columbia Department of Transportation and the National Capital Planning Commission, this study was conducted to determine the feasibility of relocating the existing freight rail line within Washington, D.C. to address security issues related to transporting hazardous materials. One viable alternative found in the study will need to be coordinated with the Nice Bridge Improvement Project: The Dahlgren alignment. This alignment would cross the Potomac River via a new two-mile-long railroad drawbridge that would be constructed just south of the existing Nice Bridge and would connect the southern terminus of Pope's Creek Branch in Charles County, Maryland to a new railroad in King George County, Virginia.

Figure 1. Harry W. Nice Memorial Bridge (Nice) Bridge Improvement Project Study Area.

II. PURPOSE AND NEED

A. Existing Conditions

US 301 is classified as a Rural Principal Arterial and both approaches to the Nice Bridge are four-lane divided roadways, consisting of two 11 to 12-foot travel lanes in each direction with 10-foot outside shoulders. The 1.7-mile long Nice Bridge has one 11-foot lane in each direction with no median separation and a one-foot offset on each side. The posted speed on the bridge varies from 40 – 50 miles per hour (mph). There is also a four-lane toll plaza north of the Nice Bridge that provides one-way toll collection for southbound vehicles ***(See Figures 2 and 3)***. The percentage of trucks crossing the bridge in 2005 was approximately 14 percent of the vehicle mix with nearly 1,200 wide-load vehicle (in excess of ten feet) crossings. In 2006, there were 1,708 recorded vehicles that used the unofficial pull-off areas for staging and inspection (including permit checks and wide loads). Due to the limited roadway width on the bridge, the bridge must be closed to two-way traffic flow during each wide-load crossing. The Nice Bridge facility is part of the National Highway System (NHS) and Strategic Highway Network (STRAHNET), indicating its importance as a transportation element. Current NHS and STRAHNET design standards recommend that the cross section of approach roadways be carried across the bridge; these standards are not currently met at the Nice Bridge.

On an average weekday, traffic on the Nice Bridge (northbound and southbound) operates at Level of Service (LOS) "D" for most of the day, and LOS "E" during the PM peak period. Bridge traffic operates at LOS "E" for at least 7 hours during an average summer weekend day ***(See Tables 9 and 10)***. Currently, there are no significant queuing delays associated with weekday traffic flows; however, based on citizen observation, normal weekend queues extend up to 0.25 miles, and on major holiday weekends, queues can extend to at least four miles in both directions. The most frequent type of reported crash between January 2003 and December 2005 on the bridge (36 percent) was opposite direction crashes primarily resulting from the lack of a barrier between vehicles traveling in opposing directions.

B. Project Purpose

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.

C. Project Need

There is a need to eliminate the current bottleneck along US 301 created by the existing two-lane bridge, and to provide a bridge crossing that matches the current four-lane US 301 roadway approach features. Current and projected future capacity constraints at the Nice Bridge that impact traffic operations and safety need to be addressed. ***Table 1*** lists the current roadway and bridge geometrics. In

addition, the NHS and STRAHNET designations indicate its importance as a transportation element, and due to its location, it is a critical evacuation route for Southern Maryland (e.g., Calvert Cliffs power plant) and the Washington D.C. area to points south.

1. Current Roadway and Bridge Design Features

As part of the NHS and STRAHNET, the Nice Bridge should provide travelway features consistent with the approach roadways. The Nice Bridge meets current AASHTO geometric design standards for horizontal alignment, vertical grades, transition areas, and sight distance and has acceptable structural ratings. However, transportation improvements are needed to address capacity limitations and traffic operation effects of the inconsistent bridge roadway features as compared to the US 301 approach roadways. Inconsistencies include the 3.75 percent grade on single lanes in each direction, the lack of roadside shoulders or buffer areas, and the reduction of lanes from the four 11- to 12-foot lanes on US 301 to the two 11-foot lanes on the Nice Bridge. As a result of these geometrical inconsistencies, the bridge is rated functionally obsolete. The following is a summary of current roadway and bridge design features along US 301 within the study area.

- Median Separation:
  The approach roadways to the Nice Bridge include a varying width median that provides a physical separation for vehicles traveling in opposing directions. The Nice Bridge does not have physical lane separation between vehicles traveling in opposing directions. This lack of a median barrier between opposing vehicles on the bridge increases the opportunity for and potential severity of opposite direction crashes. In addition, as shown in ***Figure 2***, there is currently full movement access from Roseland Road (approximately 500-feet from bridge, north of US 301) in Virginia to northbound and southbound US 301. This full movement access needs to be maintained for residents along Roseland Road.

- Number of Travel Lanes:
  The approach roadways of US 301 to the Nice Bridge consist of four lanes with two travel lanes in each direction. The Nice Bridge has one travel lane in each direction. This reduction in travel lanes directly impacts traffic operations as vehicles in the two lanes on the approach roadways must merge to one lane to cross the bridge, and the capacity of the bridge is less than the approach roadways.

- Width of Travel Lanes:
  The approach roadways of US 301 to the Nice Bridge consist of two 11 to 12-foot wide travel lanes in each direction. The Nice Bridge travel lanes are 11-feet wide with minimal offsets (one-foot from roadway to parapet). The narrower travel lanes on the bridge reduce its capacity, as 12-foot travel lanes are typically desired and would lessen the frequency of bridge closures for wide-load crossings. In addition, AASHTO guidelines recommend for roadways with over 2,000 vehicles per day (vpd) and design speed of 60 miles per hour (mph), the minimum width of traveled way should be 24-feet wide with eight-foot shoulders. The existing 11-foot travel lanes with one-foot offset to parapet are substandard when compared to the desired typical section for a long bridge (those over 200-feet) with two thru traffic lanes (one lane in each direction), which, according to AASHTO design standards, should be as wide as the approach roadway traffic lanes (i.e., 12 feet in this case).

- Available Shoulder:
  The approach roadways of US 301 to the Nice Bridge include a 10-foot wide outside shoulder in each direction; however, the travel lanes on the Nice Bridge have substandard one-foot outside buffers to the bridge parapet. AASHTO recommends 10-feet as the normal shoulder width that should be provided along high-type facilities, such as the Nice Bridge, which is a NHS and STRAHNET facility. Vehicular capacity is reduced on the bridge as a result of this lack of shoulder area. The existing

one-foot outside buffer provides an inadequate width for disabled vehicles to pull out of the travelway, for emergency vehicles to access incidents on the bridge, and for minor repair or maintenance activities to be performed without closing one direction of travel on the bridge. In addition to physical restraints, the one-foot outside buffer affects driver behavior, including the tendency to reduce speeds on the bridge. As well as outside shoulders, AASHTO standards recommend that long bridges (over 200 feet in length) have at least four feet between the parapet and the edge of the traveled way on both sides of the roadway.

- Vehicle Inspection Stations:
  There are no vehicle inspection stations for either northbound or southbound wide-loads or commercial permit vehicles. Currently southbound wide-loads and permit vehicles wait in the shoulder of US 301 north of the toll plaza for inspection and escort, as indicated in ***Figure 3***. Northbound vehicles wait in an inadequate area in the shoulder of US 301 across from Roseland Road as indicated on ***Figure 2***. Virginia currently has weigh stations for both northbound and southbound permit vehicles approximately 0.9 miles south of the Nice Bridge.

- Vertical Grade:
  The maximum vertical grade on the northern and southern approach roadways of US 301 to the Nice Bridge are 2.6 percent and 1.0 percent, respectively. Vertical grades on the bridge reach 3.75 percent for lengths of over 3,100 feet on the Virginia side of the main span and over 2,500 feet on the Maryland side, making it difficult for heavy trucks to maintain the posted speed limit (40 – 50 mph) and reducing the average travel speeds and capacity of the bridge. Trucks account for approximately seven percent of total traffic on an average summer weekend day and between 14 to 20 percent on an average weekday, which exceed the Maryland Statewide Average (4 percent) on other four-lane rural principal arterials. As a comparison to other long bridges, the William Preston Lane Memorial Bay Bridge (Bay Bridge) and Woodrow Wilson Bridge both have a maximum vertical grade of 3.0 percent on the bridges. The maximum grade desired by AASHTO on level freeways with a design speed over 60 mph is 3.0 percent. Grades in excess of 3.0 percent for lengths longer than 1,320 feet will affect the performance of heavy vehicles. Decreasing the existing grade on the bridge to 3.0 percent would result in the bridge grade tying into existing US 301 approximately 1,000 feet closer to the Virginia shore and 900 feet further into the Maryland shore in the vicinity of the existing toll plaza.

2. Traffic Operations and Safety ***(See Appendix B)***.

The two-lane existing bridge acts as a bottleneck to the adjacent four-lane approach roadways. A total of 6.4 million vehicles used the Nice Bridge in 2005, and daily trips across the bridge averaged nearly 21,000 vehicles per day (vpd) on summer weekend days and 17,100 vpd on non-summer weekdays in 2006. Traffic operation analysis indicates that the total traffic volumes on the existing two-lane bridge approach the capacity of the bridge roadway (2,650 vehicles per hour or vph) during the existing peak hours. Currently, normal (non-holiday) weekend vehicle queues extend up to 0.25 miles at the bridge. Vehicle queues of several miles (at least four) have been observed by citizens in both directions at the bridge during major holiday weekends, depending on the peak direction of travel.

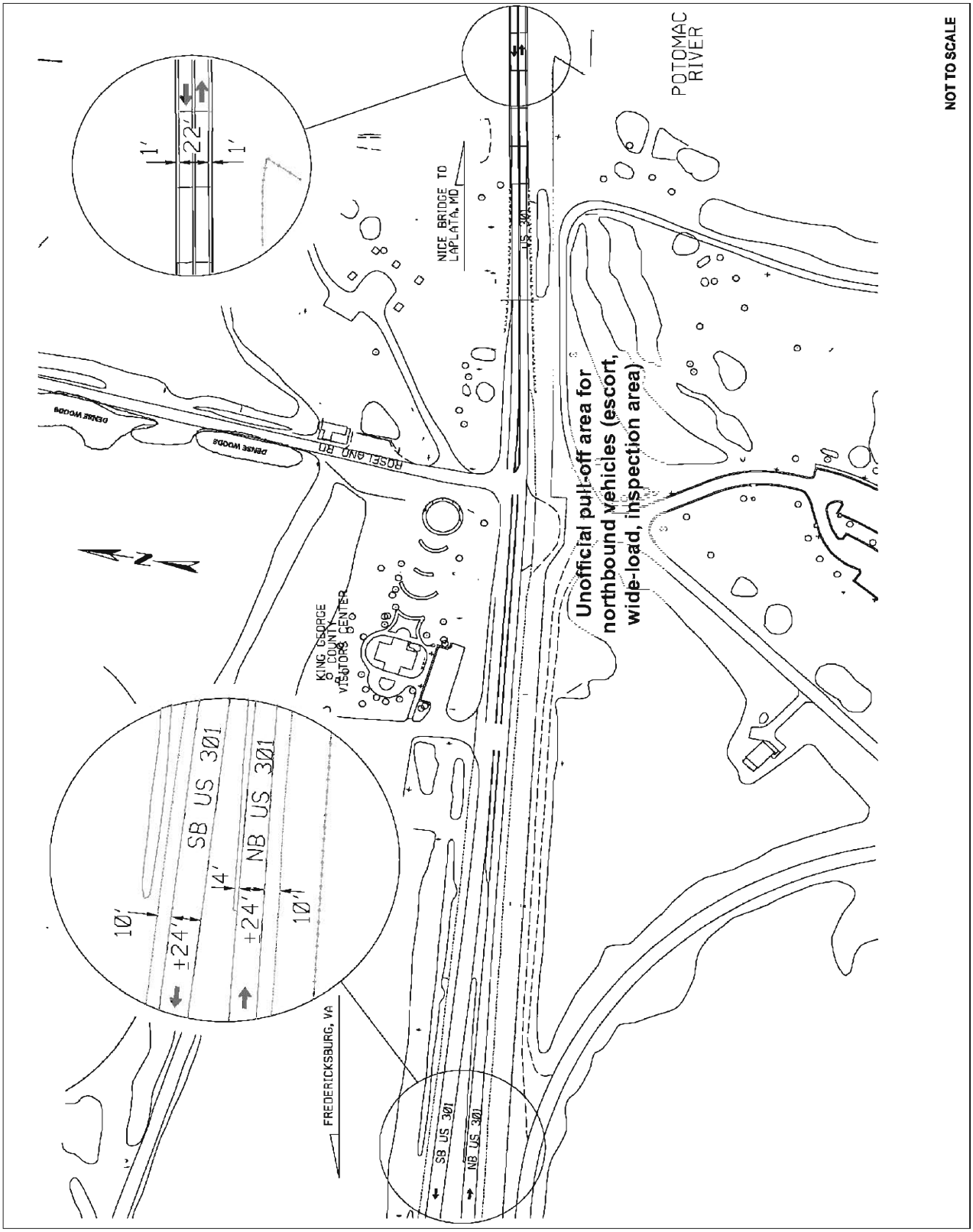


Figure 2. Southern Approach Roadway to the Nice Bridge (King George County, VA).

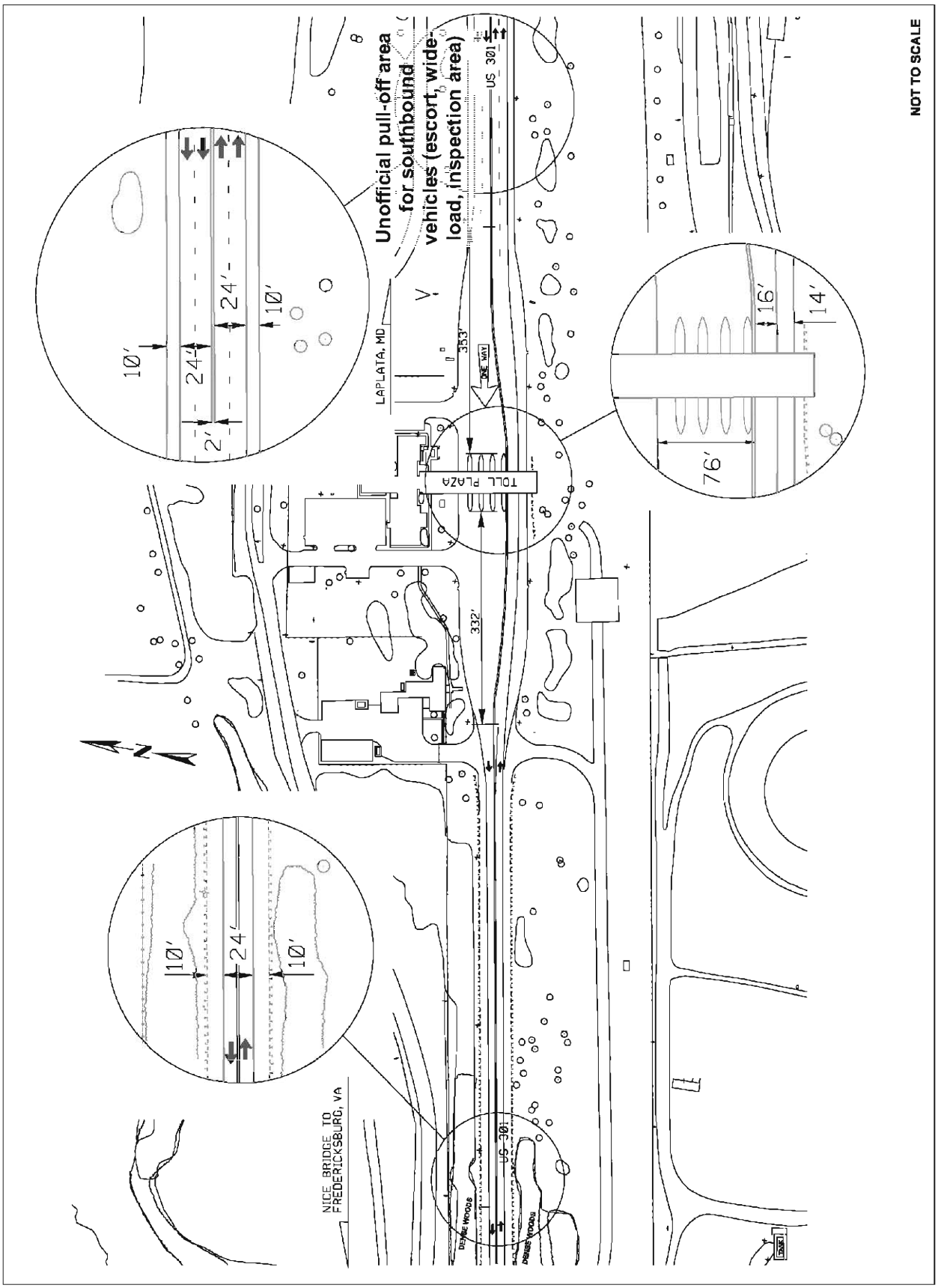


Figure 3. Northern Approach Roadway to the Nice Bridge (Charles County, MD).

Table 1. Existing Roadway Geometry along US 301 Within the Nice Bridge Study Area

SEGMENTS	North Approach Roadway (Maryland)		Bridge		South Approach Roadway (Virginia)	
LIMITS	Orland Park Road to North Abutment		North Abutment to South Abutment		South Abutment to Barnesfield Road	
DIRECTION	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
Roadway Classification	Rural Principal Arterial					
Posted Speed	55 mph		40 – 50 mph		50 mph	
Median Width	Variable	Variable	No Median		Variable	Variable
Number of Lanes	2	2	1	1	2	2
Transition Length	Approaching Toll Plaza: 350'; Toll Plaza to Bridge: 330'	Bridge to 2-lane section: >700'	None		1050'	
Number of Toll Lanes	4	N/A	N/A	N/A	N/A	N/A
Lane Width	12' n. of plaza; 11' s. of plaza	12' n. of plaza; 11' s. of plaza	11'	11'	11 – 12'	11 – 12'
Shoulder Width/Offset	10' outside; 1' inside	10' outside; 1' inside	1' outside; No inside shoulder/offset	1' outside; No inside shoulder/offset	10' outside	10' outside
Wide Load Vehicle Waiting Area	N/A	Opposite Roseland Road	N/A	N/A	None	N/A
Maximum Vertical Grade	+2.6%	-2.6%	±3.75%	±3.75%	-1.0%	+1.0%

a. Travel Demand Trends

Trips across the Nice Bridge consist of local trips (such as work related and discretionary trips) with origins and destinations relatively close to the shores, and regional trips (such as commerce and regional traffic) with origins and destinations in Maryland, Virginia and beyond. To understand the travel patterns in the study area, the Authority completed an origin-destination (O-D) study in 2001 and a follow-up survey in 2004. Separate O-D surveys were conducted in the southbound direction on a day during a summer weekend (Saturday in August) and an "average" weekday (Wednesday in October) to capture seasonal variations in traffic across the Bridge. The follow-up survey conducted in April 2004 included both northbound and southbound motorists. Of the 14,554 surveys distributed in 2001, 9,272 surveys were distributed on a summer weekend day in August and 5,282 surveys were distributed on an average weekday in October. Of the forms distributed, 15 and 21 percent of the forms were returned for the summer weekend day and average weekday, respectively. This represents valid return rates that

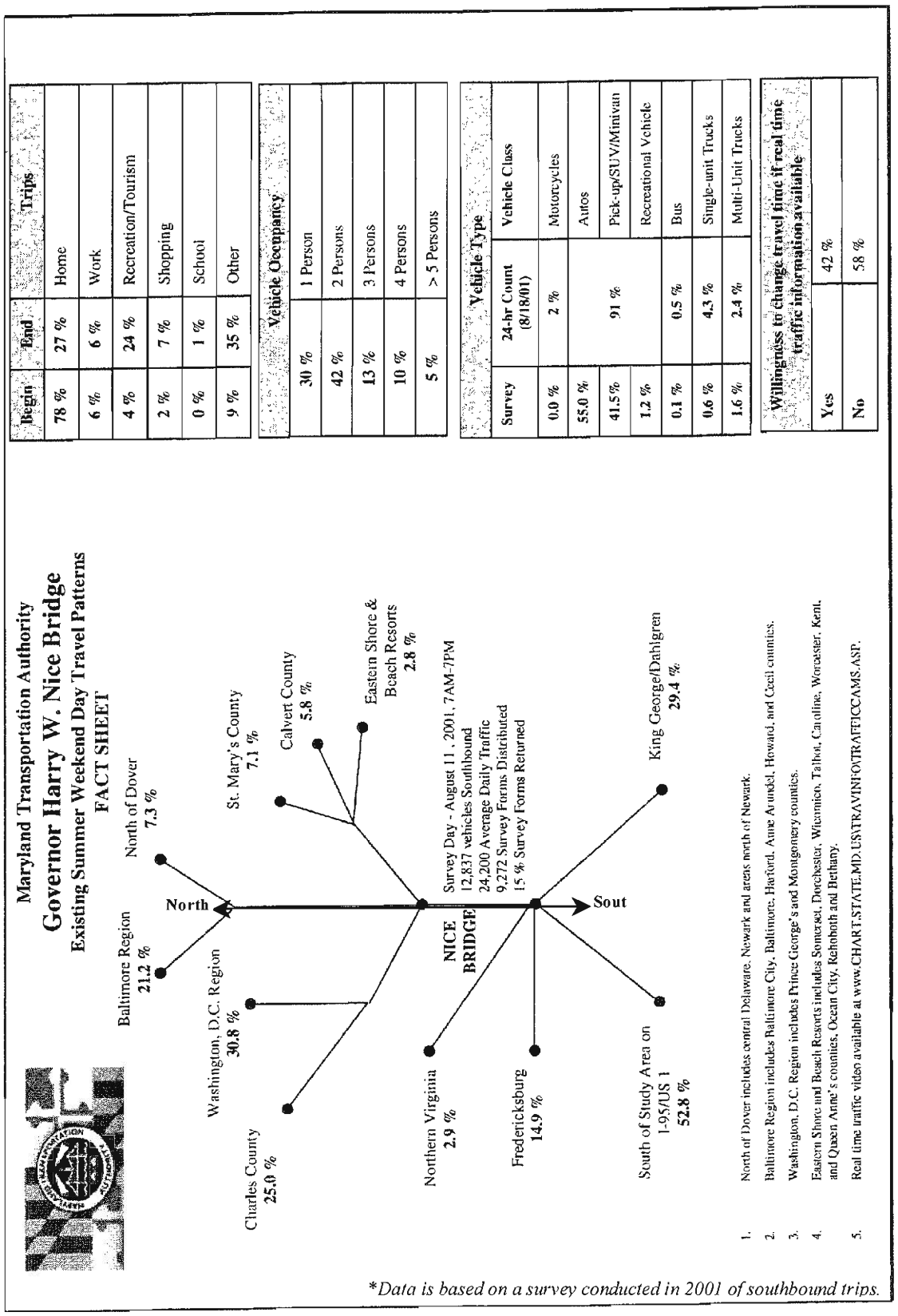
provided sufficient data, adequate sample size, and information on both summer weekend and average weekday travel. The O-D study indicated that most of the typical summer weekend southbound bridge traffic is traveling from the Washington, D.C. area with the most frequent destination being areas south of the O-D study area (e.g., Fredericksburg, King George, Dahlgren). On an average weekday, most of the travel is between Charles County, Maryland and King George County, Virginia. The 2004 follow-up survey had a similar response rate as the 2001 survey and confirmed the results of the 2001 O-D survey.

As shown on ***Figure 4***, on a typical summer weekend day, 31 percent of the southbound traffic using the Nice Bridge comes from the Washington, D.C. area, 25 percent from Charles County, and 21 percent from the Baltimore region. Fifty-three percent of the traffic is traveling to areas south of the study area. On an average summer weekend day, 24 percent of the trips are recreation or tourism related and 35 percent have purposes other than those included in the survey.

On an average weekday, 31 percent of southbound traffic is from Charles County, 30 percent from the Washington, D.C. area, and 15 percent from the Baltimore region ***(See Figure 5).*** Thirty-nine percent of this traffic is traveling to King George County, 24 percent to Fredericksburg, and 34 percent to south of the study area (e.g., south of Fredericksburg, King George, Dahlgren) on I-95 or U.S. Route 1. On an average weekday most of the trips (nearly 80 percent) are between home and work.

b. Travel Demand Volumes:

Traffic counts were conducted June through August of 2006 on weekends (representative of average summer weekend days), and Wednesday, October 6, 2004 (representative of an average weekday). ***Table 2*** summarizes the existing (2006) total daily traffic volume information collected for the summer weekend and ***Table 3*** summarizes the representative average weekday at the Nice Bridge. Traffic count results indicate that the bridge currently carries approximately 20 percent more traffic on an average summer weekend day than on a representative average weekday.



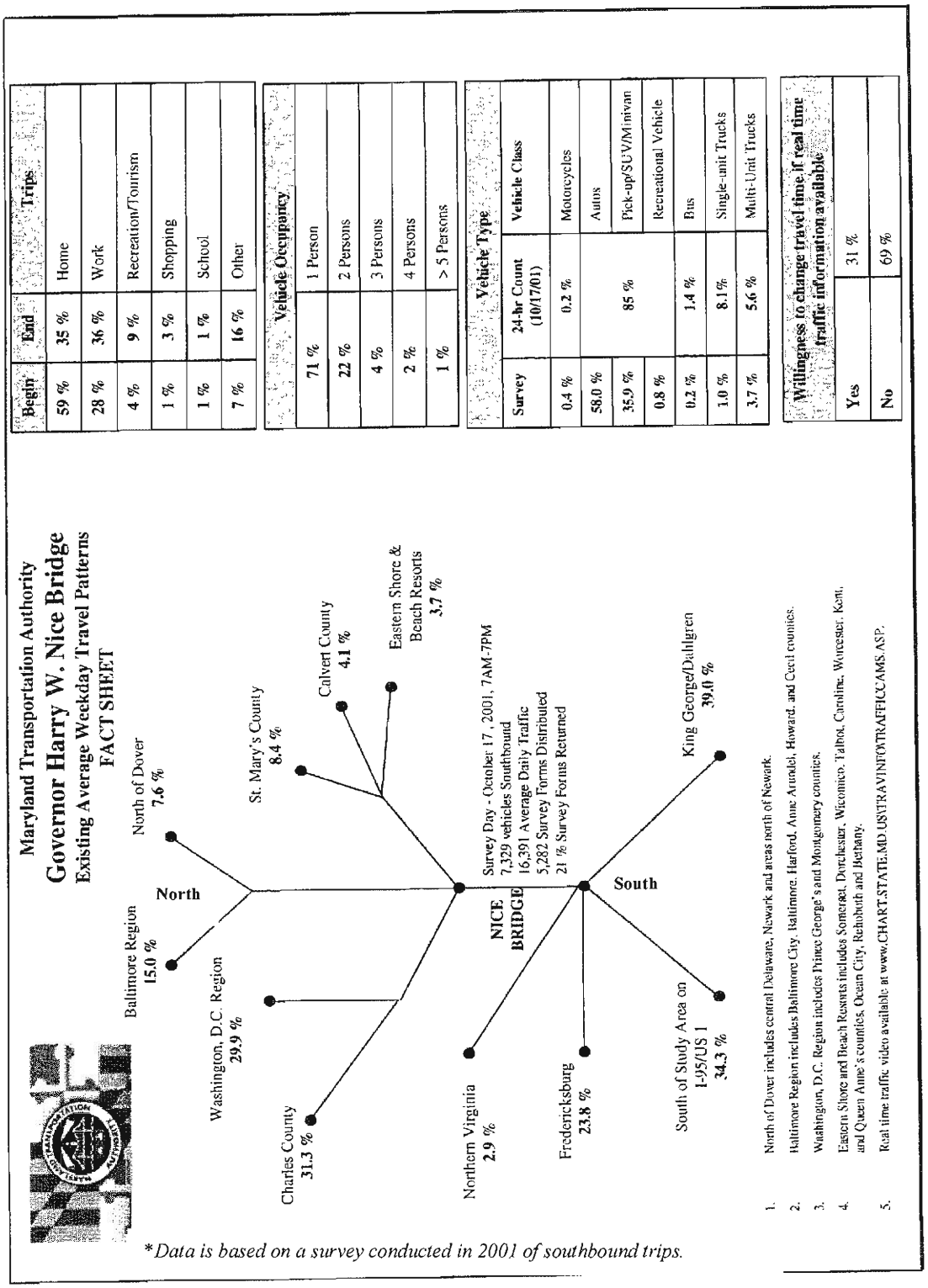
Begin	End	Trips
78 %	27 %	Home
6 %	6 %	Work
4 %	24 %	Recreation/Tourism
2 %	7 %	Shopping
0 %	1 %	School
9 %	35 %	Other

Vehicle Occupancy	
30 %	1 Person
42 %	2 Persons
13 %	3 Persons
10 %	4 Persons
5 %	> 5 Persons

Vehicle Type		
Survey	24-hr Count (8/18/01)	Vehicle Class
0.0 %	2 %	Motorcycles
55.0 %	91 %	Autos
41.5%		Pick-up/SUV/Minivan
1.2 %		Recreational Vehicle
0.1 %	0.5 %	Bus
0.6 %	4.3 %	Single-unit Trucks
1.6 %	2.4 %	Multi-Unit Trucks

Willingness to change travel time if real time traffic information available	
Yes	42 %
No	58 %

Figure 4. 2001 Survey Results showing Existing Regional Travel Patterns on an Average Summer Weekend Day.



Begin	End	Trips
59 %	35 %	Home
28 %	36 %	Work
4 %	9 %	Recreation/Tourism
1 %	3 %	Shopping
1 %	1 %	School
7 %	16 %	Other

Vehicle Occupancy	
71 %	1 Person
22 %	2 Persons
4 %	3 Persons
2 %	4 Persons
1 %	> 5 Persons

Vehicle Type		
Survey	24-hr Count (10/17/01)	Vehicle Class
0.4 %	0.2 %	Motorcycles
58.0 %	85 %	Autos
35.9 %		Pick-up/SUV/Minivan
0.8 %		Recreational Vehicle
0.2 %	1.4 %	Bus
1.0 %	8.1%	Single-unit Trucks
3.7 %	5.6 %	Multi-Unit Trucks

Willingness to change travel time if real time traffic information available	
Yes	31 %
No	69 %

Figure 5. 2001 Survey Results showing Existing Regional Travel Patterns on an Average Weekday.

Table 2. 2006 Total Daily Traffic Volume for an Average Summer Weekend Day on US 301 at the Nice Bridge.

DATE	NORTHBOUND	SOUTHBOUND	TOTAL
Saturday (June through August 2006)	10,024	10,776	20,800
Sunday (June through August 2006)	11,674	8,426	20,100

Table 3. 2006 Total Daily Traffic Volume for a Representative Average Weekday at the Nice Bridge.

DATE	NORTHBOUND	SOUTHBOUND	TOTAL
Wednesday (October 6, 2004)	8,670	8,430	17,100

Average Daily Traffic

Average daily traffic volume projections were made for no-build conditions in the year 2030 at the Nice Bridge using the regional Integrated Travel Demand Model developed for the Authority, which incorporates data from the Metropolitan Washington Council of Government Model (MWCOG), Baltimore Metropolitan Council's Regional Model (BMC), Delaware Department of Transportation's Statewide Model (DelDOT), and the Rappahannock Area Development Commission Model (RADCO) also known as the FAMPO model (Fredericksburg Area MPO). ***Tables 4 and 5*** summarize the projected total daily traffic volumes for 2030 summer weekends and average weekdays at the Nice Bridge. Results show that in 2030, the bridge is expected to carry more than double the vehicle volume experienced in 2006.

Table 4. 2030 No-Build Total Projected Daily Traffic Volume for an Average Summer Weekend Day at the Nice Bridge.

DATE	NORTHBOUND	SOUTHBOUND	TOTAL
Saturday (2030)	20,528	22,072	42,600
Sunday (2030)	23,870	17,230	41,100

Table 5. 2030 No-Build Total Projected Daily Traffic Volume for an Average Weekday at the Nice Bridge.

DATE	NORTHBOUND	SOUTHBOUND	TOTAL
Weekday (2030)	17,745	17,255	35,000

Vehicle Classification

The vehicle classifications recorded at the Nice Bridge on Saturday, August 18, 2001, and Wednesday, March 29, 2006, are illustrated as percentages in ***Table 6.*** Heavy vehicles, defined as Single-Unit trucks* and larger, accounted for approximately 7 percent of total traffic during the August weekend observation period and about 14 percent during the March weekday observation period. The trucks travel predominantly during off-peak periods; however, the truck percentage of 14 percent for an average weekday exceeds the Maryland Statewide average of 4 percent for other rural arterials.

Table 6. Vehicle Classifications (Percent) recorded at the Nice Bridge on Saturday, August 18, 2001 and Wednesday, March 29, 2006.

Date	Direction	MC	Cars	Buses	Heavy Vehicles					
					SU	WB40	WB50	WB60	>66'	Total
Saturday August 18, 2001	**NB**	0.7	92.8	0.3	3.0	0.6	2.3	0.2	0.1	6.2
	SB	1.8	91.0	0.5	4.3	0.8	1.5	0.1	0.0	6.7
Wednesday March 29, 2006	**NB**	0.7	84.6	0.1	3.8	2.0	7.7	0.9	0.2	14.6
	SB	0.9	82.6	1.5	6.0	4.1	3.7	0.6	0.5	14.3

MC – Motorcycles, SU – Single Unit Trucks, WB – Wheel Base (in feet)
NB – Northbound, SB – Southbound
*Single-Unit (Class E) truck: A motor vehicle consisting primarily of a single motorized device with more than two axles or more than four tires.

Peak Hour Traffic

Table 7 shows the two-way peak hour volumes at the Nice Bridge for the two observation periods. The peak hour is 3:00 PM – 4:00 PM during a typical summer weekend day and from 4:00 PM – 5:00 PM on an average weekday.

Table 7. 2006 Peak Hour Volume Summary for an Average Weekend Day and an Average Weekday at the Nice Bridge.

DATE	DIRECTION	PEAK HOUR	PEAK HOUR VOLUME
Average Weekend Day	2-way	3:00 – 4:00 PM	1,526
Average Weekday	2-way	4:00 – 5:00 PM	1,585

Table 8 shows the two-way peak hour volumes at the Nice Bridge projected for 2030 average weekend days and average weekdays. The peak hour projections for 2030 during a typical summer weekend day indicate a 99 percent growth from existing peak hours on summer weekend days, and a 105 percent growth from existing peaks hours on average weekdays.

Table 8. 2030 No-Build Projected Peak Hour Volumes for an Average Weekend Day and an Average Weekday at the Nice Bridge.

DATE	DIRECTION	PEAK HOUR	PEAK HOUR VOLUME
Average Weekend Day	2-way	3:00 PM – 4:00 PM	3,122
Average Weekday	2-way	4:00 – 5:00 PM	3,244

Traffic Operations:

The *Highway Capacity Manual* (Transportation Research Board, 2000) defines Level of Service (LOS) as "a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience." Six LOS are defined for each type of facility and are designated from A to F, with LOS "A" representing the best operating conditions and LOS "F" the worst, or failing.

c. Levels of Service (LOS)

Analysis of the 2006 traffic counts found that on an average weekday, traffic on the Nice Bridge operates at LOS "D" for most of the day, and LOS "E" during the PM peak period. Bridge traffic operates at LOS "E" for at least seven hours during an average summer weekend day. Currently, there are no significant queuing delays associated with weekday traffic flows; however, based on citizen observation, normal weekend queues extend up to 0.25 miles, and on major holiday weekends, queues can extend to at least four miles in either direction of the bridge depending on the direction of the peak flow.

Capacity Analysis

The bridge roadway capacity in one direction is approximately 1,325 vph. The capacity of the southbound toll plaza is 1,900 vph (900 vph for the one exclusive E-ZPass lane and 333 vph for each of the three combined E-ZPAss/cash lanes). While the toll plaza reduces the travel speed of vehicles, the four lanes can process more vehicles per hour than the capacity of the southbound bridge roadway, therefore concluding that it is the bridge itself and not the toll plaza that is the constraining factor to traffic flow.

The mathematical relationships presented are based on the procedures contained within the 2000 Edition of the *Highway Capacity Manual* (Transportation Research Board, 2000), in particular, "Chapter 20 – Two-Lane Highways." The actual calculations were performed using the input and output mechanisms enclosed in HCS-2000 Highway Capacity Software, Version 4.1b.

Table 9 shows the results of the analysis for the average summer weekend day when the Nice Bridge operates at LOS "E" from 11 AM to 6 PM. ***Table 10*** shows the results of the analysis for the average weekday when the bridge operates at LOS "E" from 4 PM to 6 PM.

Table 9. 2006 Hourly Level of Service (LOS) for an Average Summer Weekend Day at the Nice Bridge.

START TIME	2006 TOTAL NB	2006 TOTAL SB	TOTAL	LOS
7:00 AM	175	401	576	C
8:00	269	537	805	D
9:00	401	676	1,077	D
10:00	533	768	1,301	D
11:00	659	751	1,409	E
12:00 PM	766	717	1,483	E
1:00	831	685	1,516	E
2:00	849	663	1,511	E
3:00	879	647	1,526	E
4:00	919	598	1,517	E
5:00	881	554	1,435	E
6:00	793	477	1,269	D

Table 10. 2006 Hourly Level of Service (LOS) for an Average Weekday at the Nice Bridge.

START TIME	2006 TOTAL NB	2006 TOTAL SB	TOTAL	LOS
7:00 AM	549	565	1,114	D
8:00	494	517	1,011	D
9:00	404	455	859	D
10:00	406	447	853	D
11:00	416	403	819	D
12:00 PM	401	386	787	D
1:00	410	450	860	D
2:00	490	492	982	D
3:00	674	649	1,323	D
4:00	740	845	1,585	E
5:00	624	750	1,374	E
6:00	472	547	1,019	D

Table 11 shows the results of the analysis for the projected 2030 No-Build average summer weekend day when the Nice Bridge is expected to operate at LOS "F" from 11 AM to 6 PM. ***Table 12*** shows the results of the analysis for the projected 2030 No-Build average weekday when the Bridge operates at LOS "F" from 4 PM to 6 PM.

Table 11. 2030 Projected No-Build Hourly Level of Service (LOS) for an Average Summer Weekend Day at the Nice Bridge.

START TIME	2030 TOTAL NB	2030 TOTAL SB	TOTAL	LOS
7:00 AM	359	820	1,178	D
8:00	550	1,098	1,648	E
9:00	821	1,384	2,205	E
10:00	1,090	1,572	2,662	E
11:00	1,348	1,536	2,883	F
12:00 PM	1,567	1,468	3,034	F
1:00	1,700	1,402	3,102	F
2:00	1,736	1,356	3,092	F
3:00	1,798	1,324	3,122	F
4:00	1,880	1,225	3,104	F
5:00	1,802	1,134	2,936	F
6:00	1,621	975	2,596	E

Table 12. 2030 Projected No-Build Hourly Level of Service (LOS) for an Average Weekday at the Nice Bridge.

START TIME	2030 TOTAL NB	2030 TOTAL SB	TOTAL	LOS
7:00 AM	1,124	1,157	2,281	E
8:00	1,010	1,058	2,068	E
9:00	827	931	1,758	E
10:00	831	915	1,746	E
11:00	851	824	1,675	E
12:00 PM	820	790	1,610	E
1:00	839	921	1,760	E
2:00	1,003	1,007	2,010	E
3:00	1,380	1,328	2,708	E
4:00	1,515	1,729	3,244	F
5:00	1,277	1,535	2,812	F
6:00	966	1,120	2,086	E

d. Crash Experience:

Crash data in the Nice Bridge study area along US 301 from MD 234 to VA 206 (including the Nice Bridge) was analyzed for the period from January 2003 to December 2005. During the study period, a total of 136 crashes occurred in the study area, which equates to 74.8 crashes per 100 million vehicle miles of travel (VMT). This rate is below the Maryland Statewide average rate for rural arterials, which is 113 crashes per 100 million VMT. The probable cause listed on the police reports for over 61 percent of the crashes was "failure to give full time/attention", which may be a result of drivers being distracted by the geometric conditions, volume of traffic, other vehicle occupants, in-vehicle electronic devices, scenery and/or unfamiliar roadways.

The type of crash most often experienced along US 301 between MD 234 and VA 206 (including the Nice Bridge) was rear-end collisions (34 percent of all crashes). Approximately 13 percent of the crashes involved trucks, resulting in a truck crash rate of 9.3 crashes per 100 million VMT, which is higher than the Maryland Statewide average rate of 8.8 crashes per 100 million VMT for similar facilities.

Approximately 32 percent of the crashes occurred in the months of June, July, and August when traffic volumes are highest and 39 percent were reported on a Friday, Saturday or Sunday.

Crashes on the Bridge

The most frequent type of crash on the bridge (5 of 14, or 36 percent) was opposite direction crashes, primarily resulting from the lack of a barrier between vehicles traveling in opposite directions. Other crash types included rear end, fixed object, sideswipe, and other crashes. Three of the crashes, 21 percent, were due to the driver's failure to give full time/attention. Other causes for crashes included failure to keep right of center, going too fast for conditions, fell asleep or fainted, and followed too closely. Four crashes (28 percent) reported on the bridge occurred in wet, icy, or other than dry conditions. Finally, approximately 43 percent of the crashes on the bridge occurred between 2 AM and 7 AM while 36 percent occurred between 5 PM and 6 PM.

North Approach Roadway Crashes

Of the crash types identified, the most frequent type of the crash (14 of 49, or 29 percent) occurring on the north approach roadway was rear-end collision ***(See Table 13)***. The remaining crash types included angle, fixed object, and other crashes. Four crashes (8 percent) were reported in the immediate vicinity of the toll plaza. Eighteen of the crashes, 37 percent, were due to the driver's failure to give full time/attention. Other causes for crashes included being under the influence of alcohol or drugs, failure to yield right-of-way, improper lane change, following too closely, too fast for conditions, failure to keep right of center, fell asleep and failure to obey traffic signal. Fourteen of the crashes in this segment (22 percent) occurred on wet or snowy roadway surfaces The split between crashes occurring on Monday through Thursday and crashes occurring on Friday, Saturday, or Sunday was also almost even (47 percent versus 53 percent respectively).

Table 13. Crash Types Occurring on the North Approach Roadway to the Nice Bridge (from January 2003 to December 2005).

Crash Type	Number of Crashes	Percent of Total Crashes
Opposite Direction	1	2
Rear End	14	29
Sideswipe	2	4
Left Turn	2	4
Angle	9	18
Fixed Object	6	12
Other	15	31
Total	49	100

South Approach Roadway Crashes

There were 73 reported crashes on the south approach roadway with rear-end crashes (38 percent) being the most common crash experience reported. Sixty-two of the crashes, 85 percent, were due to the driver's failure to give full time/attention ***(See Table 14)***. Other causes for crashes included being under the influence, too fast for conditions, defective equipment, wet roadway and unknown. Eight of the crashes in this segment (11 percent) occurred during wet or snowy roadway conditions, fifteen crashes (21 percent) occurred during nighttime hours. Twenty-seven of the crashes (37 percent) were reported on a weekend and the same percent were reported during the summer months.

Table 14. Crash Types Occurring on the South Approach Roadway to the Nice Bridge (from January 2003 to December 2005).

Crash Type	Number of Crashes	Percent of Total Crashes
Rear End	28	38
Sideswipe	10	14
Angle	24	33
Fixed Object	6	8
Other	5	7
Total	73	100

Severity of Crashes

The total crashes, by severity, are shown in ***Table 15.*** Of the 136 crashes occurring in the study period between January 2003 and December 2005, one resulted in a fatality (1 percent, or 0.5 per 100 million vmt), 54 were injury crashes (40 percent, or 30.1 per 100 million vmt) and 81 were property damage (59 percent, or 44.5 per 100 million vmt) crashes. These values resulted in crash rates that are below the Maryland Statewide rate for fatal crashes (1.8 per 100 million vmt), injury crashes (54.7 per 100 million vmt), and property damage crashes (56.5 per 100 million vmt) for rural arterials.

Table 15. **Overall Nice Bridge Study Area (MD 234 to VA 206)Crashes by Severity (from January 2003 to December 2005).**

Crash Severity	Number of Crashes	Percent of Total Crashes	Study Rate*	Statewide Rate*
Fatal Crashes	1	1	0.5	1.8
Injury Crashes	54	40	30.1	54.7
Property Damage Crashes	81	59	44.5	56.5
Total Crashes	136	100	74.8	113.0

** Crash rates are calculated as the number of crashes per 100 million vehicle miles of travel.*

Truck Crashes

There were 17 truck-related crashes reported during the study period within the study area. This results in a truck crash rate of 9.3 crashes per 100 million VMT, slightly above the statewide average of 8.8 truck-related crashes per 100 million VMT.

Weather Conditions

There were 24 reported crashes that occurred on a wet surface within the study area. The percentage of wet surface crashes, 18 percent, is lower than the statewide average for other principle arterials, which is 28 percent. The percent of crashes occurring on the bridge during wet or icy surfaces was 28 percent, or four crashes.

3. Bridge Maintenance

The original bridge deck was rehabilitated in 1985, approximately 45 years after it was opened to traffic (1940). Based on the need for bridge deck rehabilitation approximately every 40 years, it is anticipated that the deck will require rehabilitation between 2015 and 2020 due to the increased loadings from the growing number of annual vehicle crossings. In addition, the bridge would also undergo a complete cleaning and painting of the bridge steel, and any repairs that may be needed to the super or substructure would be made at this time. The bridge was designed for an HS 20 (36 Ton) loading;

however, current design standards for new bridges is HS 25 (45 Ton) loading, which is 25 percent heavier loading than HS 20. This revision in design standards presents the likelihood that some current bridge members may be structurally deficient.

Depending on the type and method of construction, rehabilitation of the Nice Bridge could require long-term single lane closures or complete nighttime bridge closures as was done during the last deck rehabilitation in 1985. Due to the lack of nearby alternate routes and the single lane capacity of the bridge in each direction, substantial travel time delays and decreased economic revenue within the areas where traffic will be diverted could occur during rehabilitation. In addition, routine maintenance such as painting of pavement markings, sign repair, and snow/ice clearing operations, affect the capacity of the bridge as these activities influence the availability of travel lanes.

4. Transportation Significance

The Nice Bridge facility is part of the NHS and STRAHNET, indicating its importance as a transportation element for both the public and military facilities (i.e. Naval Support Facility Dahlgren and the Patuxent River Naval Air Station Complex, or Pax River). Facilities that are part of the NHS and STRAHNET should be designed to the highest standards and follow NHS and STRAHNET guidelines, including providing consistent bridge and approach roadway features. As mentioned, the features of the Nice Bridge are not consistent with the approach roadways and the bridge has been designated as functionally obsolete due to the limited vehicular capacity.

The May 30, 2007 transportation priority letter from Charles County designates the expansion of the Nice Bridge as the seventh highest transportation priority by the Charles County Delegation and Commissioners (***See Appendix A***). The letter specifically states that the bridge is a major limiting factor in the path of evacuation from Southern Maryland and the Washington, D.C. area to points south. With its capacity currently limited to two lanes, this bridge would create a major bottleneck in the event of a natural disaster or a Homeland Security incident. In addition, the 2006 *Charles County Comprehensive Plan* recommends increasing the capacity of the bridge to improve traffic flow, alleviate congestion, and provide an evacuation route of greater capacity; therefore, the Nice Bridge Improvement Project is not inconsistent with the 2006 *Charles County Comprehensive Plan*.

Another element related to Homeland Security is adequate vehicle inspection stations along the northbound and southbound approach roadways to the bridge. Currently, vehicle inspections are conducted on the Maryland or Virginia approach roadways in unofficial pull-off areas. Southbound vehicles wait in the shoulder of US 301 north of the toll plaza for inspection and escort, and northbound vehicles wait in an area across from Roseland Road as indicated on ***Figure 2***. Vehicle Inspection Stations will be evaluated as part of this study.

The existing Nice Bridge Facility Campus is outdated (buildings range in age from 25 to 40 years old) and no longer meets the needs of the facility. Improvements to the campus facilities will be evaluated as part of this study to support increasing resource needs (maintenance, operations, police, etc.) at the facility.

D. Conclusion

In general, the Nice Bridge meets current AASHTO geometric design standards for horizontal alignment, vertical grades, transition areas, and sight distance and has acceptable structural ratings. As part of the NHS and STRAHNET, the bridge should provide consistent travelway features as the approach roadways. Transportation improvements are needed to address capacity limitations and traffic operation effects of the inconsistent bridge roadway features as compared to the US 301 approach

roadways, including the 3.75 percent grade on single lanes in each direction, the lack of roadside shoulders or buffer areas, and the reduction of lanes from the four 11- to 12-foot lanes on US 301 to the two 11-foot lanes on the Nice Bridge. As a result of these geometrical inconsistencies, the bridge is rated functionally obsolete. The most frequent type of crash reported on the bridge was opposite direction, which can be attributed to only one lane in each direction, no separation of opposing flows of traffic and minimal offsets on the structure.

In addition, planned future maintenance and rehabilitation of the Nice Bridge deck could require long-term lane closures or complete nighttime bridge closures, which would likely result in substantial travel time delays. Improvements to the Nice Bridge are needed to maintain a structurally safe crossing (i.e., replace bridge deck, improve load rating of structural members) and to provide sufficient capacity to carry passenger vehicle and truck 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 during wide-load crossings, incidents, poor weather conditions, and when performing bridge maintenance and rehabilitation work.

III. ALTERNATES ANALYSIS

The identification, consideration and analysis of alternates are key to the National Environmental Policy Act (NEPA) process and a goal of objective decision making. ***Table 16*** presents the design guidelines used when developing alternates for the Nice Bridge study.

A. Design Guidelines

Table 16. Design Guidelines for Nice Bridge Improvement Project.

Design Guidelines	
Design Speed	60 mph
Maximum Grade	3.0% for lengths less than 0.75 mile
Bridge Cross Slope	2.0%
Travel Lane Width	12-feet (two lanes in each direction of travel)
Median Shoulder	4-feet
Outside Shoulder	12-feet
Single 2-lane Bridge Width (parapet to parapet)	40-feet
Single 4-lane Bridge Width (parapet to parapet)	83-feet
Navigational Channel	Maintain existing 800-foot span across navigational channel at/along existing bridge alignment
Vertical Clearance	Maintain existing 135-foot minimum vertical clearance over navigational channel
Distance between Two Separate Bridges	22-feet minimum (dependant upon construction method, inspection access and type of foundation selected)
Vertical Roadway Clearance	17-feet 6-inches
Design Vehicle	Type HL-93
Pier Accidental Collision Design	Collision Level of Importance – Critical Impact Force – 8,800 kips Impact Energy – 45,900 kip-ft
Possible Main Span Types	Through Truss/Arch Cast-in-place Segmental Cable Stay
Base Wind Load	100 mph (main span will require wind studies and model testing)
100-year Flood Elevation	8 – referenced to the National Geodetic Vertical Datum of 1929
Seismic Acceleration Coefficient	0.06 Seismic Level of Importance – Critical
Design Storm and Stability Check Storm	Will require studies and model testing

In addition, Virginia and Maryland stormwater management regulations and methods of vessel collision protection (longer spans, larger piers, fender systems and/or protection islands) will be considered during detailed studies for the retained alternates.

The study team has received requests from the public and agencies to include bicycle and/or pedestrian facilities to the Nice Bridge analysis. While the US 301 approach roadway shoulders are wide enough to accommodate bicyclists in Maryland and Virginia, there are currently no designated bike routes or pedestrian facilities along the US 301 approach roadways to the Nice Bridge. The Annotated Code of Maryland (21-1405 and 21-1401) currently prohibits bicycles and pedestrians from using any bridge,

tunnel, and their approaches within the jurisdiction of the Authority. Therefore, there are no provisions for bicycles or pedestrians usage considered under any alternates.

B. Preliminary Alternates *(See Appendix C)*

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. The following alternates were presented at the workshops:

1. No-Build Alternate (Alternate 1)

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 rehabilitation in the 2015 – 2020 year timeframe. 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.

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.

2. Build Alternates (Alternates 2 to 14)

In addition to the No-Build Alternate, several build alternates with varying size and location are being considered at this point. The type of a new structure (fixed or movable) is independent of size or location. Each build alternate includes the following elements:

- Open-Road Tolling (ORT): Tolls would be collected electronically at highway speeds without the need for traditional tollbooths. The Authority is currently considering this form of toll collection for the Nice Bridge, and is the planned toll-collection method for the Intercounty Connector and I-95 Express Toll Lanes. Tolls are registered by E-ZPass transponders using overhead gantry structures. An advantage of ORT is decreased delays at the bridge since drivers can maintain roadway speeds without stopping or slowing at the toll plaza.

- Off-line Cash Lanes: Off-line cash lanes would be available for motorist without E-ZPass and tolls would be collected separate from the through-lanes of US 301 to minimize disruption to traffic using the open road toll lanes.

- Vehicle Inspection and Staging Areas: Vehicle inspection and staging areas will be added along the US 301 approach roadways to the Potomac River crossing (southbound in Maryland and northbound in Virginia) for wide-loads and commercial permit vehicles prior to the bridge. These areas would provide on-site truck inspections to examine commercial vehicles and drivers, including the length, weight, height and other mechanical features of the vehicle.

- Improvement to the Authority Nice Bridge Facility Campus Master Plan: The Administration Building for the Nice Bridge Facility was constructed in the early 1980's, and the Maintenance Administration Building was built in 1940. Increases in staff and equipment has strained the available space and created substandard conditions for several critical activities. Critical

needs and potential solutions will be identified through meetings with the Facility Administrator and Authority Police.

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

Alternate 2 consists of constructing of 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 on a relocation of 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.

C. Alternates Analysis/Screening

Each alternate was qualitatively analyzed to determine overall feasibility. Criteria used to screen the alternates include elements of the Purpose and Need, Socioeconomic, Environmental and Cultural Resources, Structural Factors and Cost. Through use of a qualitative evaluation matrix ***(See Table 17)***, consistent criterion were applied to all alternates to determine the rationale for retaining or dropping each alternate. Note that a designation of "HN" = High Negative Impact indicates that a high level of negative impacts is likely and mitigation measures to offset the impacts would be extensive or cost would be high; "M" = Moderate Impact and a moderate level of negative impacts is likely and mitigation measures and costs would be moderate; and "L" = Low Impact where a low potential for negative impacts is anticipated and little or no mitigation may be required and costs would be low.

Dahlgren strongly urged the Authority to remove Alternates 2, 3, and 6 from further consideration in the study. These Alternates would impact mission critical safety and security zones, including installation facilities and employees. Dahlgren has physical security issues due to the closer drive-by traffic access, as well as shoreline security concerns from a closer bridge position. Future growth or expansion of critical mission areas in the northeastern sector of the installation may be inhibited.

Table 17. Nice Bridge Improvement Project Alternates Analysis Criteria (See below for description of codes and criteria definitions)

Criteria	Alternates													
	1 – No Build	2 – New 2-lane to south, rehabilitate existing	3 – New 2-lane to south, replace existing	4 - New 2-lane to north, rehabilitate existing	5 - New 2-lane to north, replace existing	6 – New 4-lane to south, take existing out of service	7 - New 4-lane to north, take existing out of service	8 – Off existing alignment, rehabilitate existing	9 – Roadway Shift	10 - Tunnel	11 – Stacked Deck	12 – Three-lane with movable barrier	13 - TSM	14 - Transit
Meets Purpose and Need														
Provides a geometrically compatible crossing with approach roadways (Y/N)	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N
Availability of Reasonable Tie-In Points with Existing and Planned Highway Network (Y/N)	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Provide capacity for 2030 demand (Y/N)	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Improve safety on approaches and bridge (Y/N)	N	N	Y	N	Y	Y	Y	N	N	Y	N	N	N	N
Provides ability to maintain two-way traffic flow (Y/N)	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N
Socioeconomic Impacts														
Business / Residential Displacements	L	L	L	HN	HN	L	HN	HN	M	M	M	M	L	L
Land-based Recreation	L	L	L	HN	HN	L	HN	M	M	M	L	M	L	L
Viewshed	L	L	L	L	L	L	L	HN	M	L	M	L	L	L
Economic Development	HN	L	L	L	L	L	L	M	L	HN	L	M	HN	HN
Environmental Justice – Low Income and/or Minority Populations	L	L	L	M	M	L	M	M	L	L	L	L	L	L
Water-based Recreation	L	L	L	HN	HN	L	HN	M	L	M	L	M	L	L
Consistent with Local Plans (Y/N)	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N
Parkland	L	L	L	HN	HN	L	HN	M	M	M	M	M	L	L

Criteria	Alternates													
	1 – No Build	2 – New 2-lane to south, rehabilitate existing	3 – New 2-lane to south, replace existing	4 - New 2-lane to north, rehabilitate existing	5 - New 2-lane to north, replace existing	6 – New 4-lane to south, take existing out of service	7 - New 4-lane to north, take existing out of service	8 – Off existing alignment, rehabilitate existing	9 – Roadway Shift	10 - Tunnel	11 – Stacked Deck	12 – Three-lane with movable barrier	13 - TSM	14 - Transit
Environmental Impacts														
Wetlands	L	M	M	M	M	M	M	HN	M	M	M	M	L	L
Stream Crossings (excluding the Potomac R.)	L	L	L	L	L	L	L	HN	L	L	L	L	L	L
Floodplains	L	M	M	M	M	M	M	HN	M	M	M	M	L	L
Forest	L	M	M	HN	HN	M	HN	HN	M	M	M	M	L	L
RTE Species (Federal and State-listed fish, wildlife and plants)	L	L	L	L	L	L	L	L	L	M	L	L	L	L
Proximity to Bald Eagles	L	M	M	M	M	M	M	M	M	M	M	M	L	L
Critical Lands (steep slopes etc.)	L	L	L	L	L	L	L	L	L	L	L	L	L	L
SAV	L	M	M	M	M	HN	HN	H	M	H	M	M/H	L	L
Potential Hazardous Materials	L	HN	HN	M	M	HN	M	M	M	HN	L	M	L	L
Agricultural	L	L	L	L	L	L	L	HN	L	L	L	L	L	L
Land Use Consistency	L	L	L	L	L	L	L	HN	L	L	L	L	L	L
Cultural Impacts														
Archeological	L	HN	HN	HN	HN	HN	HN	HN	M	M	L	M	L	L
Tribal	L	M	M	M	M	M	M	HN	M	M	M	M	L	L
Historic	L	M	HN	M	HN	M	M	M	M	M	HN	HN	L	L
Ability to Salvage Existing Bridge	L	M	HN	M	HN	M	M	M	M	M	M	M	L	L
Structural Factors														
Level of impact to Ex MdTA Facilities	L	L	L	HN	HN	L	HN	M	M	M	M	M	L	L
Construction Impacts	L	M	M	M	M	L	L	L	HN	M	HN	HN	L	L
Meets Seismic Level of Importance (Y/N)	N	N	Y	N	Y	Y	Y	N	N	Y	N	N	N	N
Improves vessel collision avoidance (Y/N)	N	N	Y	N	Y	Y	Y	N	N	Y	N	N	N	N

Criteria	Alternates													
	1 – No Build	2 – New 2-lane to south, rehabilitate existing	3 – New 2-lane to south, replace existing	4 - New 2-lane to north, rehabilitate existing	5 - New 2-lane to north, replace existing	6 – New 4-lane to south, take existing out of service	7 - New 4-lane to north, take existing out of service	8 – Off existing alignment, rehabilitate existing	9 – Roadway Shift	10 - Tunnel	11 – Stacked Deck	12 – Three-lane with movable barrier	13 - TSM	14 - Transit
Complies with Navigational Channel Guidelines (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cost														
Construction Costs without mitigation	L	M	HN	M	HN	HN	HN	HN	M	HN	HN	HN	L	L
Operating / Maintenance Costs	HN	M	L	M	L	L	L	HN	HN	M	HN	HN	HN	HN
ADVANCE THIS ALTERNATE?	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N

Legend:
HN = High Negative Impact: A high level of negative impacts is likely and mitigation measures to offset the impacts would be extensive or cost would be high.
M = Moderate Impact: A moderate level of negative impacts is likely and mitigation measures and costs would be moderate.
L = Low Impact: There is a low potential for negative impacts, little or no mitigation may be required and costs would be low.

Definitions:
Land-based Recreation = Includes activities such as birdwatching, hiking, sightseeing, kite flying, hunting, etc.

Critical Area = All land within 1,000 feet of the Mean High Water Line of tidal waters or the landward edge of tidal wetlands and all waters of and lands under the Chesapeake Bay and its tributaries.

Economic Development = The ability of commercial vehicles to cross State boundaries for commerce.

Tribal = Coordination with the Maryland Commission on Indian Affairs identified a state tribal presence – three Piscataway tribe bands that are within the vicinity of the Nice Bridge study area. They are the Piscataway Indian Nation, Inc., the Cedarville Band of Piscataway Indians, and the Piscataway Conoy Confederacy and Sub-Tribes, Inc.

Notes:
Methods to address vessel collision via a longer main span with larger piers, installation of fender systems, and/or protection islands have not been defined. These methods would result in additional impacts to aquatic resources. These methods and their impacts will be further defined during the detailed phase of the project.

D. Alternates Retained for Detailed Study

The alternates to be retained for detailed study are as follows (qualitative impacts for all alternates are shown in ***Table 17***, and potential quantitative impacts for alternates to be retained are shown in ***Table 18* on page IV-9**):

- ***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 impactive 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.

During detailed study, alternates with two bridges will be analyzed for natural, environmental, socioeconomic, and cost impacts versus alternates that consider a new four-lane structure.

- ***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 impactive 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 the project's purpose and need. Similar to Alternate 3 (which replaces the existing bridge), this alternate provides increased safety on both north and south-bound 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 impactive 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 made part of the ARDS.

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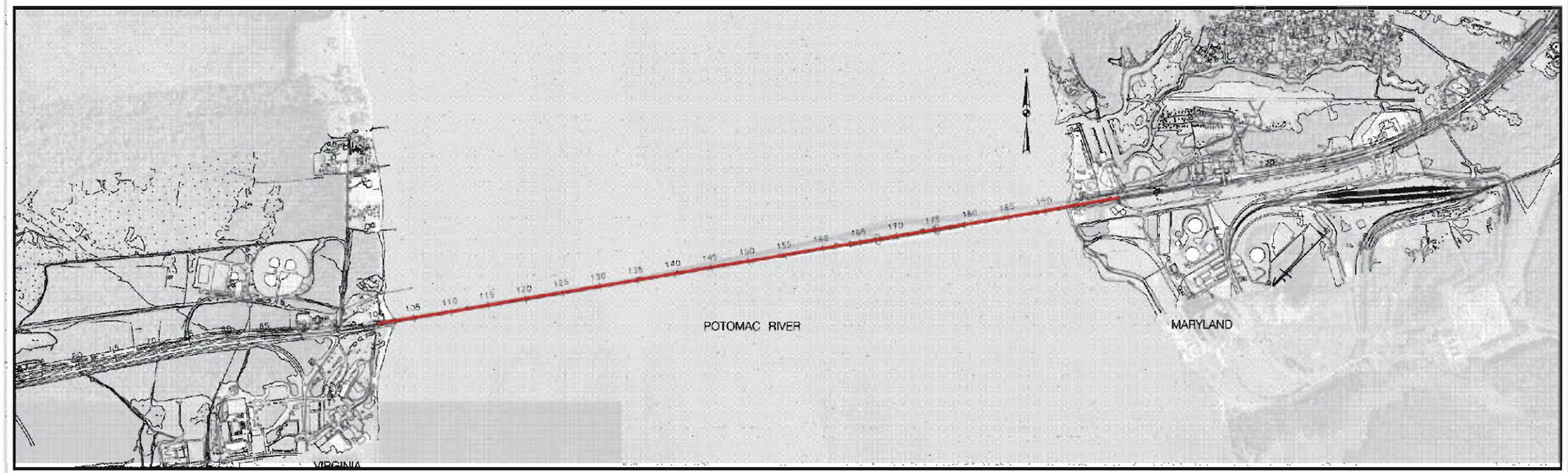
ALTERNATE 1

Maryland Transportation Authority



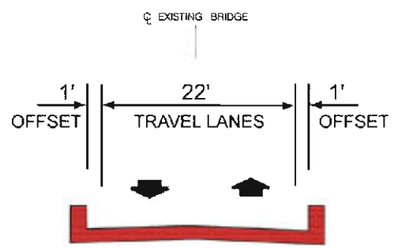


Figure 6. Alternate 1 – No-Build.

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ALTERNATE 2

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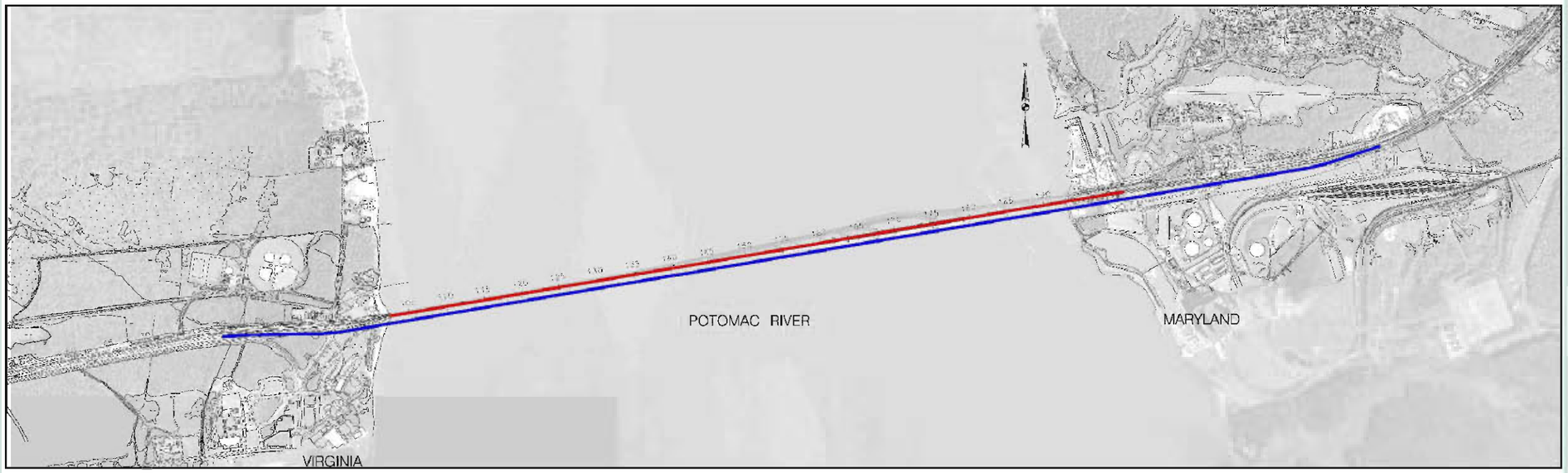

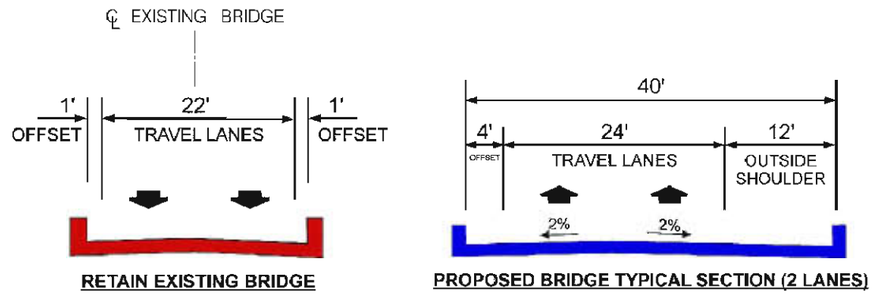

Figure 7. Alternate 2 – New Two-Lane Bridge to the South, Rehabilitate Existing Bridge.

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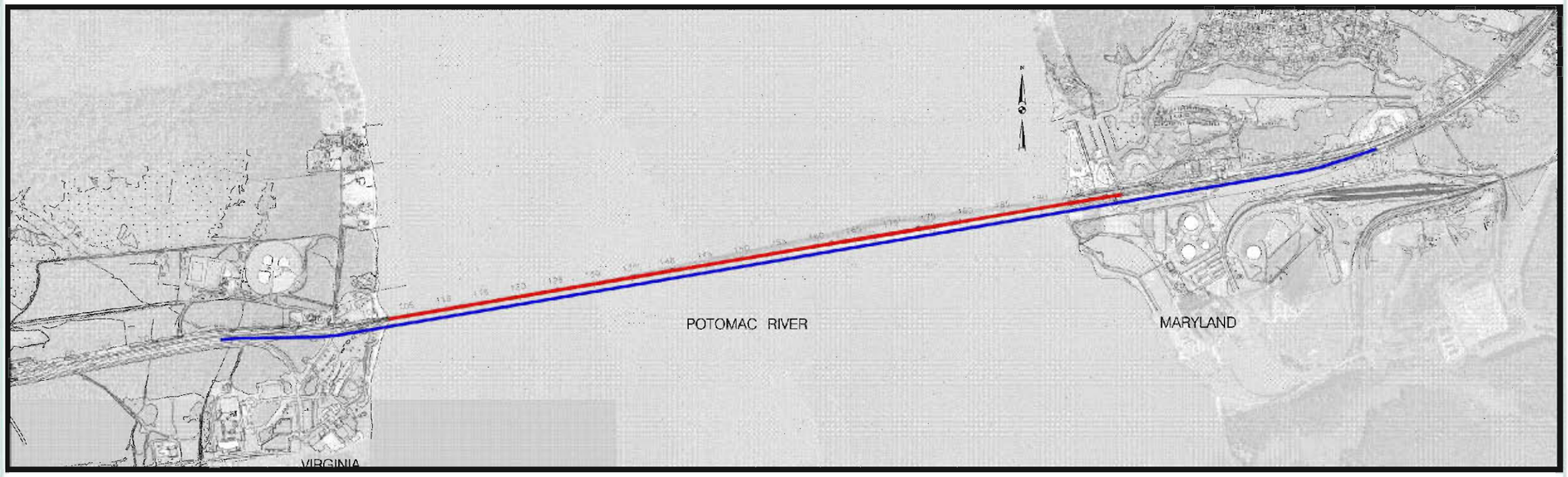
ALTERNATE 3

Maryland Transportation Authority



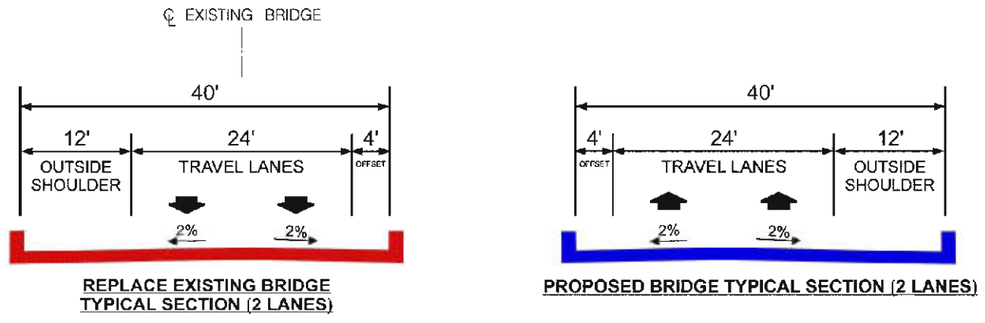


Figure 8. Alternate 3 - New Two-Lane Bridge to the South, Replace Existing Bridge.

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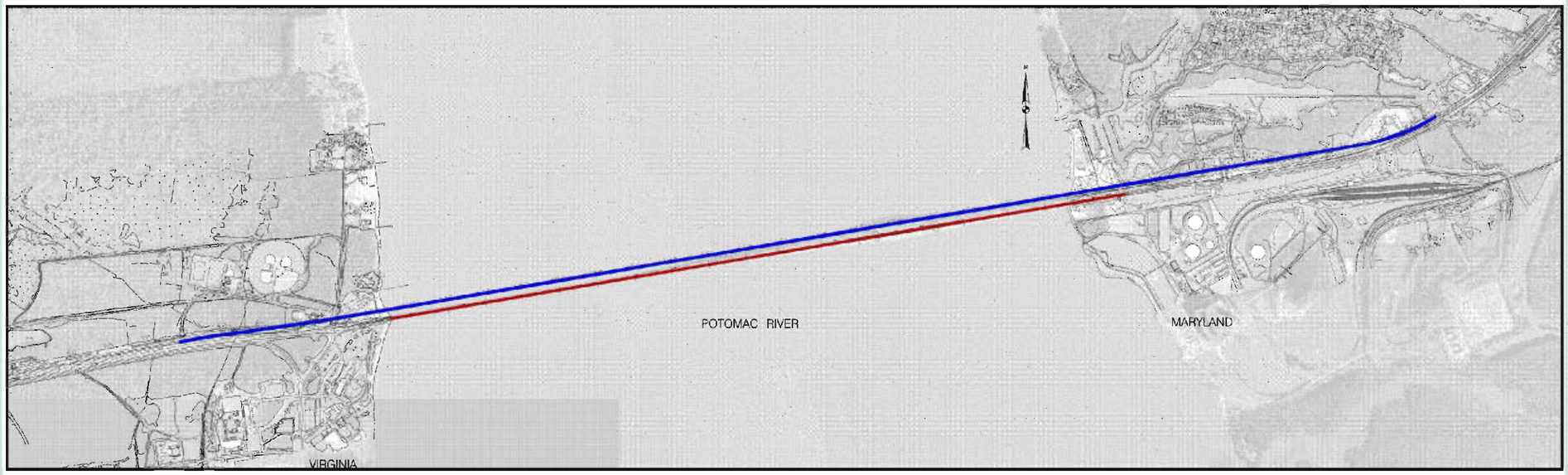
ALTERNATE 4

Maryland Transportation Authority



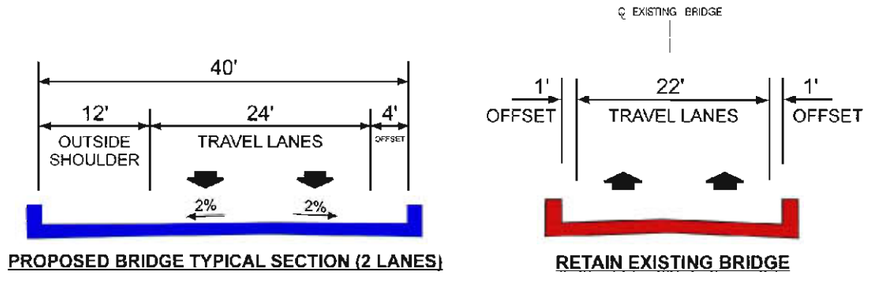


Figure 9. Alternate 4 - New Two-Lane Bridge to the North, Rehabilitate Existing Bridge.

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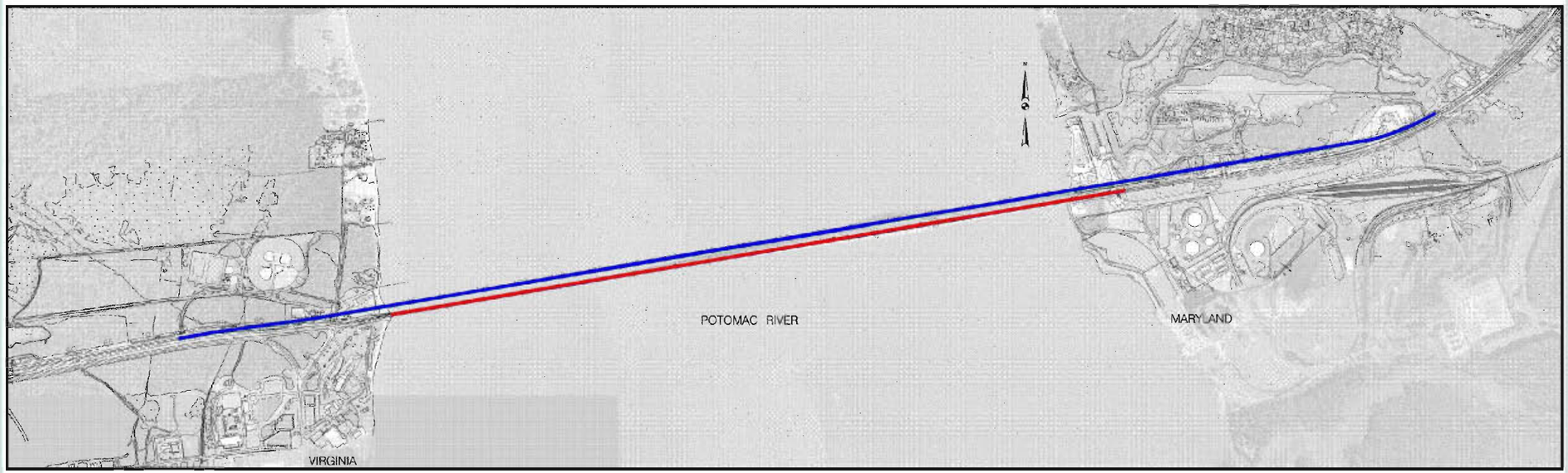
ALTERNATE 5

Maryland Transportation Authority



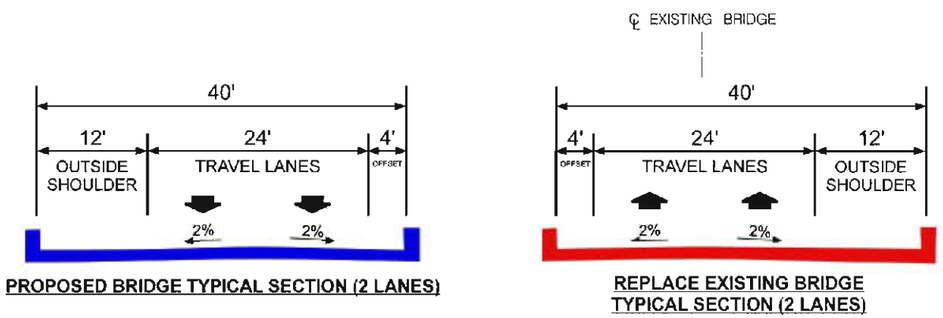


Figure 10. Alternate 5 - New Two-Lane Bridge to the North, Replace Existing Bridge.

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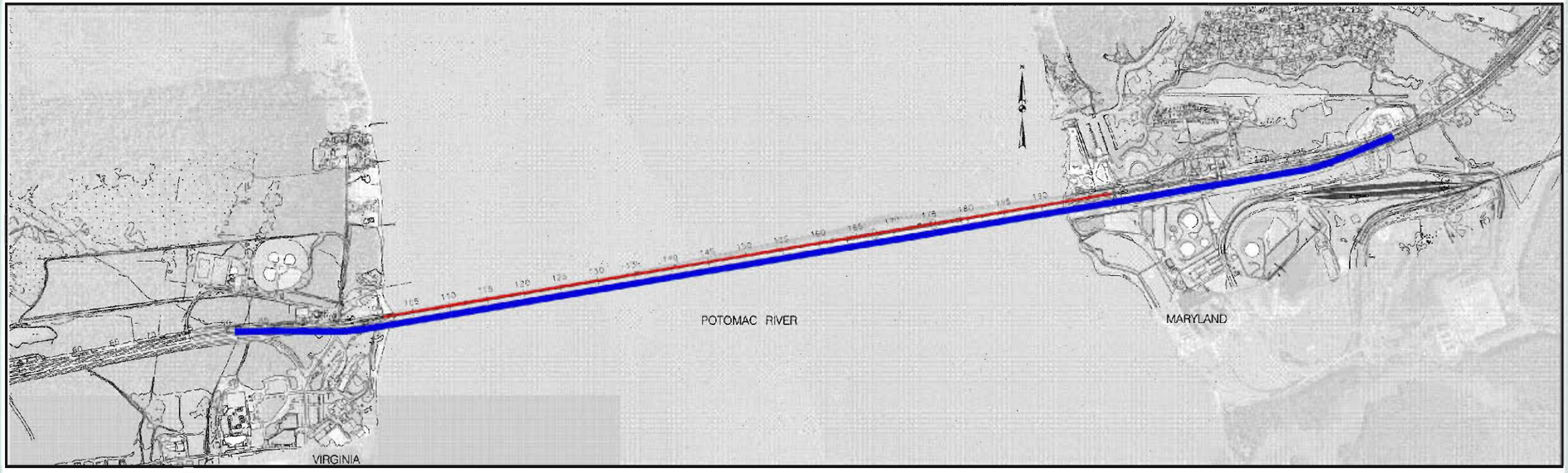
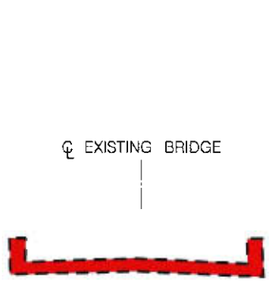
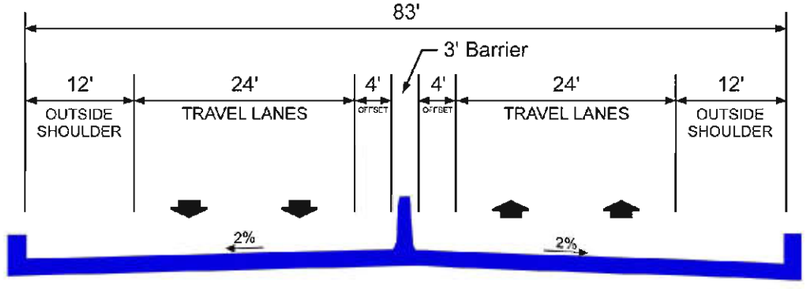
ALTERNATE 6

Maryland Transportation Authority





(TAKEN OUT OF SERVICE)



PROPOSED BRIDGE TYPICAL SECTION (4 LANES)

Figure 11. Alternate 6 – New Four-Lane Bridge to the South, Take Existing Bridge Out of Service.

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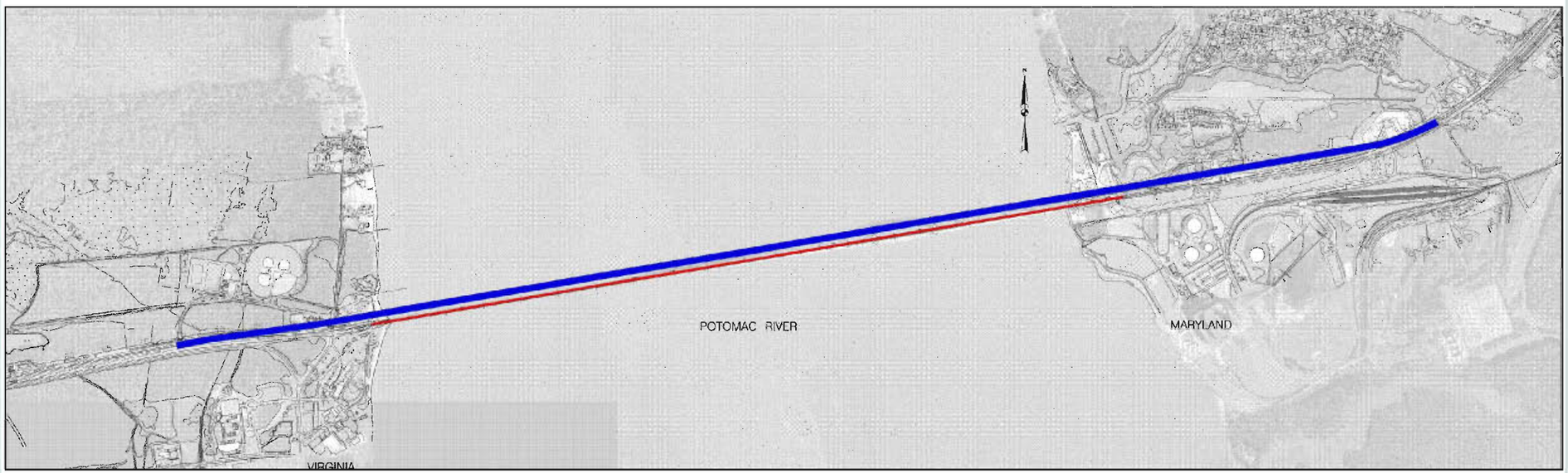
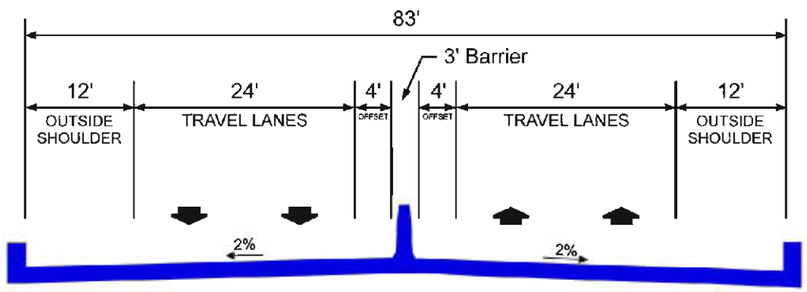
ALTERNATE 7

Maryland Transportation Authority





PROPOSED BRIDGE TYPICAL SECTION (4 LANES)

(TAKEN OUT OF SERVICE)

Figure 12. Alternate 7 - New Four-Lane Bridge to the North, Take Existing Bridge Out of Service.

E. 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 impactive 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.

IV. ENVIRONMENTAL OVERVIEW AND IMPACT ASSESSMENT

Environmental resources within the Nice Bridge study area have been identified through the preliminary stages of the project planning process ***(See Figure 13)***. A summary of potential impacts, based upon conceptual engineering, for each alternate can be found in ***Table 18***. These resources are described below in relation to the Alternates Retained for Detailed Study. Methodologies to be used for detailed environmental impact assessment can be found in ***Appendix D.***

A. Socioeconomic Environmental Resources

1. Land Use & Major Employment Centers

Existing land use within the study area includes commercial, residential, and government uses. The majority of the study area in Maryland is considered medium to high-density residential or commercial use north of US 301, and industrial use south of US 301. The majority of the study area in Virginia is comprised of retail commercial or rural agricultural north of US 301, and retail commercial, residential, or government use south of US 301.

In Maryland, some of the dominant land use features include the Aqua-Land Campground and Marina and the Authority's Nice Bridge Campus facilities north of US 301, and Morgantown Generating Plant south of US 301. In Virginia, the dominant land use includes Barnesfield and Wayside Parks north of US 301, and the Naval Support Facility Dahlgren and Town of Dahlgren south of the highway. Commercial areas along US 301 are common throughout the study area, in addition to residential areas along secondary roadways.

Two major employment centers within the study area are the Naval Support Facility Dahlgren in Virginia and the Morgantown Generating Plant in Maryland.

2. Environmental Justice Populations

In compliance with Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in the Minority and Low-Income Populations," the Authority has identified potential minority and/or low-income communities within the study area. These communities include the Aqua-Land Campground (MD), and Shiloh Church Road (MD), and Fence Road (VA) residents. Environmental Justice (EJ) outreach conducted to date includes distribution of Alternates Public Workshop announcement post cards to the Aqua-Land General Store and the Shiloh Community Church. Residences along Fence Road do not have a central community facility, however, it was verified that these residences are on the project mailing list and workshop announcement post cards were mailed to them.

Build alternates proposing a new bridge north of the existing structure would potentially impact the Aqua-Land community. The study team will continue outreach to these three communities throughout the project. Additional steps will be taken as well to identify and avoid disproportionately high and adverse effects on minority and low-income communities.

3. Displacements and Right-of-Way

No residential or business displacements are anticipated as a result of any of the alternates retained for detailed study. However, all build alternates would require right-of-way from business/institutional property owners in both Maryland and Virginia.

Figure 13. Natural Environmental Resource Inventory Map.

Alternates to the north of the existing structure (Alternates 4, 5 and 7) would require right-of-way from the Aqua-Land Marina and Campground. The northern build alternates could potentially impact from 2.3 to 5.0 acres of the Aqua-Land Marina and Campground. The northern alternates would also potentially require right-of-way, from 5.9 to 8.7acres, from Barnesfield and Wayside parks in Virginia.

Alternates to the south of the existing structures (Alternates 2, 3 and 6) do not appear to require right-of-way from the Morgantown Generating Plant but would impact existing Authority facilities along US 301 in Maryland and may require right-of-way from the Aqua-Land Marina and Campground (0 to 1.1 acres), and the Naval Support Facility Dahlgren in Virginia , from 4.3 to 7.1 acres.

4. Parklands

Parkland and recreational opportunities are present in the Nice Bridge study area, including:

- Aqua-Land Marina and Campground (Maryland),
- Barnesfield Park (Virginia), and
- Wayside Park (Virginia).

Both Barnesfield Park and Wayside Park are significant publicly-owned and publicly-used parks and, thus, are protected under Section 4(f) of the U.S. DOT Act. Aqua-Land is privately-owned and, as such, is not protected by Section 4(f). Barnesfield Park is also a Land & Water Conservation Fund (LWCF) protected park and, therefore, impacts to this park are subject to Section 6(f)(3) of the Land and Water Conservation Fund Act of 1965. On-going coordination with King George County, the Department of Conservation and Recreation, and possibly the National Park Service is needed to confirm if Wayside Park is protected under Section 6(f).

Alternates to the north of the existing structure (Alternates 4, 5 & 7) will impact approximately 5.9 to 8.7 acres of Barnesfield Park and Wayside parks collectively. Coordination with local officials will continue throughout the planning study to ensure impacts have been minimized to the greatest extent possible to these parkland and recreational facilities.

5. Growth Implications

Development and travel demand may increase in the vicinity of the project facility. During the Detailed Studies phase of the project, future travel demand under build conditions and the Indirect and Cumulative Effects of the project will be evaluated and appropriate mitigation measures identified to address any negative impacts that are identified.

B. Environmental Resources

1. Aquatic Resources

Several aquatic resources are located within the study area, including the Potomac River and associated tributaries, submerged aquatic vegetation (SAV), wetlands, 100-year designated floodplains, oyster bars, Chesapeake Bay Critical Areas (Maryland) and Chesapeake Bay Preservation Areas (Virginia). The majority of potential impacts to all aquatic resources would occur within the immediate vicinity of the existing structure and would not have a significant effect on other water resources located elsewhere in the study area. Methods to address vessel collision via a longer main span with larger piers, installation of fender systems, and/or protection islands have not been defined at this point in the project process. These methods would result in additional impacts to aquatic resources, which will be determined

in the Detailed Study phase of the project. The environmental impacts resulting from the potential demolition of the existing bridge will be further evaluated during the detailed study phase.

a. Waters of the U.S. (Streams and Wetlands)

All of the build alternates would traverse the Potomac River and any associated tributaries within the immediate vicinity of the existing bridge. Impacts to streams within the study area range from 500 to 800 linear feet. In addition, impacts to these streams could potentially affect water quality and aquatic habitat within the watersheds.

Both palustrine and riverine wetlands have been identified within the study area using National Wetland Inventory (NWI) mapping, DNR wetland mapping (Maryland only), and windshield surveys. This information has been combined with field reconnaissance to determine the extent of wetland impacts for all build alternates retained for detailed study; impacts to wetlands within the study area are anticipated to be less than one acre.

b. Floodplains

The build alternates are anticipated to impact approximately 2.1 to 3.2 acres of 100-year floodplains.

c. Submerged Aquatic Vegetation (SAV)

The Maryland Department of Natural Resources (DNR), in coordination with the Virginia Institute of Marine Science (VIMS) Submerged Aquatic Vegetation (SAV) mapping for 2005, indicated that SAV is present along:

- shoreline of the Lower Potomac River between Lower Cedar Point and Waverly Point;
- Allens Fresh;
- Pasquahanza Creek; and,
- Waverly Creek.

Further coordination will be necessary to determine the extent in which SAV will be impacted by any of the build alternates. The environmental document will provide the results from the SAV impact analysis for all alternates.

d. Aquatic Life

The Virginia Department of Game and Inland Fisheries indicates the Potomac River and Gambo Creek are designated Anadromous Fish Use Areas. The Maryland Department of Natural Resources (DNR) has also documented anadromous fish species spawning in many Lower Potomac River mainstem that are within the study area. Coordination with DNR indicates that anadromous fish species may be present adjacent to the study area, including:

- yellow perch (*Perca flavescens*),
- white perch *(Morone Americana*),
- herring species *(Alosa sp.*), and
- striped bass

Alternates to the north of the existing bridge (Alternates 4, 5 and 7) have the potential to impact anadromous fish species due to the alternate's proximity to spawning areas.

As required under the Magnuson-Stevens Fishery Conservation & Management Act (MSA), an Essential Fish Habitat report will be completed and incorporated into the environmental document as a separate and distinct section. Juvenile and adult summer flounder, and juvenile bluefish are likely to occur in the project area, and impacts to these species, along with their prey species which include alewife, blueback herring, American shad and white perch, will be covered in the EFH assessment.

As the project progresses, methods to protect finfish during construction activities (e.g., pile-driving operations, subaqueaous blasting, etc.) will be pursued as part of developing measures to avoid, minimize, and mitigate impacts on aquatic life resources.

The shortnose sturgeon (*Acipenser brevirostrum),* a federally protected species, has been documented as a transient species in the Potomac River. However, records do not indicate sturgeon spawning in study area waters, which generally takes place from March 1 through June 15. As required under Section 7 of the Endangered Species Act, consultation with the National Marine Fisheries Service, Protected Resources Division will be conducted.

In addition to fish species, DNR and National Oceanic & Atmospheric Administration (NOAA) data indicate the presence of eight natural oyster bars within the study area. However, none of these are within close proximity of the existing structure, and direct impacts to these oyster bars from the build alternates are not anticipated.

2. Terrestrial Habitat and Wildlife

The majority of forested tracts and Forest Interior Dwelling Species (FIDS) are located within the inland portion of the study area and will not be significantly impacted by any of the build alternates. Forest impacts associated with the Alternates Retained for Detailed Study are expected to range from 0.4 to 1.9 acres. Of these forest impacts, none are anticipated to be impactive to potential FIDS habitat. As detailed studies are conducted, coordination will continue with the Maryland Department of Natural resources and the Virginia Department of Game and Inland Fisheries with respect to the assessment of and impacts to wildlife in Maryland and Virginia, respectively.

3. Chesapeake Bay Areas

Through coordination with Maryland DNR, areas just north and south of US 301 at the Nice Bridge in Maryland were identified as being within the Chesapeake Bay Critical Area (Critical Area). It is anticipated that approximately 10.1 to 14.0 acres of Critical Area will be impacted by the build alternates. In order to meet all State and local Critical Area regulations, including completion and submission of the Critical Area Commission Project Application Checklist, critical area impacts will be evaluated and addressed.

Similarly, a portion of the study area encompasses portions of Chesapeake Bay Preservation Area. It is anticipated that approximately less than one acre of these areas will be impacted by the build alternates. These impacts will be evaluated and addressed to meet all Virginia and King George County regulations.

4. Rare, Threatened and Endangered Species

Coordination with the US Fish and Wildlife Service (FWS), DNR, the Virginia Department of Conservation and Recreation (VDCR), Virginia Department of Game and Inland Fisheries (VDGIF) and other interested parties indicated the presence of Federal and State listed animal and plant species within the study area. Bald eagle nests and an associated concentration zone (Virginia) have been identified in the study area, primarily to the north of the existing structure. Based on a 50-foot buffer of Bald Eagle Concentration Zone areas, no direct impacts to Bald Eagle nesting areas or any other rare, threatened or endangered species (State or Federal) habitat is anticipated. State law requires that appropriate protection measures of these zones be incorporated into actions taken by state agencies. Specific protection measures depend on site conditions, planned activities, nest history and other factors.

The Virginia Department of Conservation and Recreation, on behalf of the Virginia Department of Agriculture and Consumer Services, has indicated no documented state-listed plants or insects, nor State Natural Area Preserves under their jurisdiction, would be impacted by the project.

In addition, a waterbird colony has been documented under the existing Nice Bridge during breeding season. Waterbird colonies are generally protected during the breeding season within a 0.25 mile radius of their colony location. The open waters to the north and south of the existing structure on the Potomac River are known historic waterfowl concentration areas. Therefore, impacts to these colonies would be similar for all of the build alternates.

Additional steps will be taken with the appropriate officials to further identify and minimize impacts (including work prohibitions during critical times such as breeding seasons) to all threatened, endangered and sensitive species located within the study area.

5. Soils

Prime farmland soils and Soils of Statewide Importance were identified within the study area, located both north and south of the existing structure in both Maryland and Virginia. Coordination consistent with the requirements of the Farmland Policy Protection Act (FPPA) will be completed, if required. Impacts to Prime Farmland and Soils of Statewide Importance would potentially range from 1.6 to 2.9 acres for the build alternates. During the detailed study phase, geologic formations and mineral resource activities will be evaluated.

6. Hazardous Materials

An Initial Site Assessment (ISA) has identified 29 properties with the potential for environmental concern within or adjacent to the study area. Each of these 29 properties was assigned a potential contaminate value of high, medium/high, medium, or low based on property operations, presence of underground storage tanks and/or listing on an environmental database (i.e., National Priority List, Maryland State Priorities List, CERCLIS, RCRA, Emergency Response Notification System, Toxic Release Inventory System, etc.). Two sites were classified as having a high potential contaminant value, four sites with a medium/high potential contaminant value, 19 sites with a medium potential contaminant value, and four sites with a low potential contaminant value. "No further action" was recommended for 23 properties due to the limited likelihood of impact, while "No further action at this time" was recommended for five properties. If it is later determined that these sites will be impacted, additional reviews will be necessary. A Preliminary Site Assessment (PSA) was recommended at one site, the Naval Support Facility Dahlgren, due to the high contaminant value and the likelihood that it would be impacted by one or more of the proposed alternates.

As a result of test bombing exercises conducted at the Naval Support Facility Dahlgren within the last 90 years, there is the potential for unexploded ordnances (UXOs) both north and south of the existing Nice Bridge within the Potomac River and along both state shorelines. Initial coordination has been conducted with the Naval Support Facility Dahlgren staff to identify the process for determining whether UXOs are within the vicinity of the build alternates. Based on this coordination, as part of any future design and construction efforts, the Authority is responsible for identifying any UXOs for the project. If UXOs are identified, the U.S. Navy will be responsible for UXO removal and dismantling.

The existing bridge may contain lead paint. Repainting efforts for the existing bridge would be increased because of this factor adding to the cost of retaining this bridge versus replacement or taking it out of service. The environmental impacts resulting from the potential demolition of the existing bridge will be further evaluated during the detailed study phase.

C. Cultural Resources

1. Historic Properties

In 2001 the Governor Harry W. Nice Memorial Bridge was determined eligible for listing on the National Register of Historic Places (NRHP). Three other structures in the Maryland portion of the study area are also eligible for the NRHP, including Edge Hill Farm (CH-148), Marshall's Rest (CH-140), and Wise's Market and Service Station (CH-568). Two other previously identified structures, the George Purcell House (CH-737) and the Lee Graves property (CH-181) are listed by MHT; however, they are awaiting evaluation for listing on the NRHP. In addition to the previously identified sites, the Authority has identified 15 additional properties within the Maryland portion of the study area that are over 50 years of age, and will need to be evaluated according to NRHP criteria.

According to the Virginia Department of Historic Resources' Data Sharing System (DSS), one property, the Naval Support Facility Dahlgren (DHR ID# 048-0104), has been identified as potentially historic within the Virginia portion of the study area. This property as a whole has not been determined eligible for the National Register of Historic Places (NRHP), however portions of the property, namely the housing facilities, were evaluated and recommended as eligible. Portions of the naval base have been proposed as a historic district, however official boundaries have not been determined and no formal decisions have been made. The Authority will continue to coordinate with the Virginia Department of Historic Resources (VDHR) regarding the boundaries of the proposed historic district.

With the exception of the No-Build Alternate, the Nice Bridge could potentially be impacted by all of the Alternates Retained for Detailed Study. In addition, it is anticipated that build alternates located to the south of the existing structure (Alternates 2, 3 and 6) would impact the potentially historic Naval Support Facility Dahlgren. Prudent and feasible alternatives that avoid the use of a historic site will be examined in accordance with Section 4(f) of the USDOT Act.

2. Archeology

An archeological sensitivity assessment has identified several areas in undeveloped portions of the study area where there is moderate to high potential for prehistoric and historic archeological sites, particularly along river terraces and level piedmont uplands adjacent to tributary streams. Further archeological investigations will be performed in the next stage of the project planning process. Coordination with MHT and VDHR will continue throughout the study in accordance with Section 106 of

the National Historic Preservation Act to determine the effect of the various alternates on historic standing structures and archeological resources.

3. Tribal Organizations

Coordination with Native American tribal organizations is also being conducted as part of the Nice Bridge Improvement Project. Through coordination with the Virginia Council on Indians and MHT, it was determined that there are no known federally-recognized tribes within either the Virginia or Maryland portion of the Nice Bridge study area. However, coordination with the Maryland Commission on Indian Affairs identified a state tribal presence – three Piscataway tribe bands that are within the vicinity of the Nice Bridge study area. They are the Piscataway Indian Nation, Inc., the Cedarville Band of Piscataway Indians, and the Piscataway Conoy Confederacy and Sub-Tribes, Inc. The study team is in the process of coordinating with each of these bands to provide a brief background on the location and purpose of the Nice Bridge Improvement Project and to answer or follow-up on any questions or requests for information that they may have.

Outreach efforts will continue throughout the study to identify federally recognized tribes, including non-resident tribes, which may be interested in the project and invite them to participate as appropriate.

Table 18: Summary of Potential Environmental Impacts

Resource	Unit	Alternates Retained For Detailed Study						
		No-Build	Alternate 2	Alternate 3	Alternate 4	Alternate 5	Alternate 6	Alternate 7
Historic and Cultural Resources								
Historic Properties	no.	0	2	2	1	1	2	1
Recorded Archeology Sites[1]	no.	0	0	0	0	0	0	0
Community Resources								
Business/Institutional Displacements	no.	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Residential Displacements	no.	0	0	0	0	0	0	0
Business/Institutional Right-of-Way[2]	acres	0	1.1/4.3	1.1/4.3	2.3/5.9	2.3/5.9	0/7.1	5.0/8.7
Residential Right-of-Way	acres	0	0	0	0	0	0	0
Parkland/Recreational Facilities	no.	0	0	0	3	3	0	3
Low-Income/Minority Populations	no.	0	0	0	1	1	0	1
Natural Environmental Resources								
Streams	linear ft.	0	< 800	< 800	< 750	< 750	< 700	< 500
Wetlands[3]	acres	0	< 1	< 1	< 1	< 1	< 1	< 1
Chesapeake Bay Critical Areas (MD)	acres	0	10.1	10.1	13.7	13.7	14.0	10.5
Chesapeake Bay Preservation Areas (VA)[4]	acres	0	< 1	< 1	< 1	< 1	< 1	< 1
Oyster Bars	no.	0	0	0	0	0	0	0
100-Year Designated Floodplains	acres	0	3.2	3.2	3.0	3.0	2.7	2.1
Submerged Aquatic Vegetation (SAV)	acres	0	TBD	TBD	TBD	TBD	TBD	TBD
Rare, Threatened and Endangered Species[5]	no.	0	0	0	0-1	0-1	0-1	0-1
Forest	acres	0	1.7	1.7	0.4	0.4	1.9	1.6
Forest Interior Dwelling Species (FIDS)	acres	0	0	0	0	0	0	0
Prime Farmland Soils/Soils of Statewide Importance	acres	0	1.6	1.6	1.8	1.8	1.6	2.9

1 Additional Testing Will Be Conducted Within The Proposed Limit-of-Disturbance to determine the presence, if any, unrecorded archeology sites.

2 Business Right-of-Way impacts consist of impacts to the Aqua-Land Marina and Campground. Institutional Right-of-Way requirements consist of Dahlgren, county-owned property and parkland (e.g., Wayside and Barnesfield Parks).

3 Impacts based on existing wetland data. Impacts will be further refined based on wetland field studies to be conducted later during the planning process.

4 Impacts based on a 100-foot buffer of tidal area within the Limit-of-Disturbance of the Virginia portion of the study area.

5 Impacts based on 50-foot buffer of Bald Eagle Concentration Zone area(s). No direct impacts to Bald Eagle nesting areas or any other rare, threatened or endangered species (State or Federal) habitat is anticipated.

Note: Limit-of-Disturbance does not include potential stormwater management areas, bridge pilings, vessel collision protection methods, vehicle inspection stations, or the campus area master plan improvements.

TBD – To be determined during detailed studies.

V. PUBLIC INVOLVEMENT STRATEGY AND AGENCY COORDINATION

A. Public Involvement

Public involvement is a key element of the Nice Bridge Improvement Project. Currently, the Nice Bridge serves residents in the project study area as well as commuters and others traveling through Maryland and Virginia. As the project progresses, the study team will continue to provide information to and interact with the public through the following:

- Project newsletters / postcards;
- Project information locations (i.e. libraries, welcome centers);
- Meetings with communities, upon request;
- Focus Group meetings;
- Public workshops and public hearings; and,
- Project webpage.

Public outreach activities provide an opportunity for the public to learn about the project and understand how the project may affect their communities. Outreach also involves gaining feedback from the public in order to incorporate their concerns and views into the transportation decision making process.

In summer 2006, the project initiation announcement was published in regional and local newspapers in Charles County, Maryland and King George County, Virginia. Concurrently, residents and businesses in the study area received a flier announcing the initiation of the project planning study. The flier included a comment card that provided the public with the opportunity to mail a response with any comments, concerns or questions.

1. Project Newsletters and Postcards

Project newsletters are mailed periodically to residents within the Nice Bridge study area, as well as to those who have requested to be added to the project mailing list. Newsletters are designed to inform the community of the project status and schedule, provide study details, and can also serve as invitations to upcoming public events such as workshops or hearings.

Initially, when the study team receives a comment via standard mail, at a public meeting or the webpage, a postcard is mailed to the stakeholder acknowledging receipt of their comment. In addition to the postcards, detailed responses to comments are then provided, in a timely manner.

2. Project Information Locations

Project information will continue to be disseminated to the public at different key milestones of the project planning study. Six community facilities throughout the study area in both Maryland and Virginia were identified as locations where project announcements and other informational materials could be placed. Four of these locations (the Charles County Library – La Plata Branch, the Maryland Welcome Center, the Virginia Welcome Center in King George County and the L.E. Smoot Library in King George County) are intended to serve larger groups of the public including residents, commuters and visitors in the study area. The other two locations, the Aqua-Land General Store and the Shiloh Community Church, both in Newburg, Maryland were identified as locations to place information in order to reach residents at the Aqua-Land Marina and Campground and the residences along Shiloh Church Road,

respectively. Postcards announcing the spring 2007 Alternates Public Workshops were placed at each of these six locations. Brochures were delivered to the Shiloh Church, Aqua-Land Marina and Campground and the Virginia Visitor's Center.

3. Presentations to Stakeholders

As part of the study's outreach, if a stakeholder (e.g., communities, businesses, special interest groups, elected officials, local government entities) requests a presentation or meeting, the study team will honor that request. To date, presentations have been given to the following stakeholders:

- *Upcoming:* Presentation to Cub Scouts Troop in La Plata (date TBD)
- Western Charles County Business Association – May 8, 2007
- King George County Chamber of Commerce – March 12, 2007
- Southern Maryland Delegation – February 16, 2007
- Naval Support Facility Dahlgren – September 14, 2006
- King George County Board of Supervisors – August 15, 2006
- Charles County Commissioners – July 24, 2006
- Charles County Chamber of Commerce (Regional Transportation Committee) – June 15, 2006

4. Focus Group Meetings

In November 2006, a Focus Group was formed for the project. The purpose of the Focus Group was to gain a local perspective on the project from the stakeholders in the study area. The Focus Group consists of 17 members who are residents, business owners, elected officials, local government officials and representatives of special interest groups. The group does not issue formal recommendations or make decisions. However, by meeting regularly in a small group, members become knowledgeable of the planning process and applicable laws the Authority must comply with, and provide the study team with a valuable local perspective as the project planning study progresses.

Two Focus Group meetings have been held as of July 2007. Focus Group Meeting #1 was held on Tuesday, December 5, 2006 at the Dr. Thomas L. Higdon Elementary School in Newburg, Maryland. Focus Group Meeting #2 was held on Thursday, May 10, 2007 at Naval Support Facility Dahlgren in Dahlgren, Virginia. The project team will meet with the Focus Group two to three more times, alternating host state locations, throughout the project planning study. Meeting minutes from the Focus Group meetings are in ***Appendix C***.

5. Public Workshops and Public Hearings

In spring 2007, newsletters and postcards were mailed to residents and businesses in the study area announcing the Alternates Public Workshops. The workshops were held near the Nice Bridge in Newburg, Maryland on May 31, 2007 and in Dahlgren, Virginia on June 7, 2007 for the public to review the purpose and need and the preliminary alternates, ask questions and provide comments to study team members. Over 80 people attended the May 31st workshop and over 45 people attended the June 7th workshop. Materials presented at the public workshops, as well as a summary of comments received, are located in ***Appendix C***.

Over 30 comment cards were submitted during and after the workshops. The comments from the public provided valuable information regarding community facilities in the area, and questions and concerns regarding the Nice Bridge and the proposed preliminary alternates. The comments received

from the public at the Alternates Public Workshop are a key element in the decision making process for the Alternates Retained for Detailed Study (ARDS). Based on the study team's assessment, it was determined that there is strong support from the public for improvements to the bridge in the form of a build alternate. However, there was not one preliminary alternate preferred by a majority over another alternate, but rather a mix of preferences for having a new two-lane or four-lane crossing, south or north of the existing Nice Bridge. The study team took these various preferences into account during the ARDS process.

Upon completion of the draft environmental document, a Public Hearing will be held for interested parties to provide testimony on the document for the project record. Currently, the Public Hearings (Maryland and Virginia) are anticipated to take place in the Spring/Summer of 2008.

6. Project Webpage

The Nice Bridge Improvement Project webpage can be accessed through the Authority's main webpage (www.mdtransportationauthority.com). The project webpage features announcements, updates and information on the project, background on the study area, and an on-line comment form. To date, over 100 people have submitted comments to the study team via the webpage comment form.

B. Agency Coordination

On Thursday, October 12, 2006, the Nice Bridge Improvement Project team met with Federal, State (MD and VA) and Local agency representatives for a Project Scoping Meeting at the Charles County Department of Social Services in La Plata, Maryland. Agency representatives were presented with information on why the study is being conducted, how the study will evaluate different ways to improve the Nice Bridge, the known environmental and community resources and how the team is reaching out to the public. A question and answer session was held after the team's presentation. Several agencies asked the team to conduct further research on certain environmental issues. Other agencies provided input on additional environmental and community resources valuable to the Nice Bridge study area.

The Nice Bridge Improvement Project team will continue to find the best means to effectively communicate with these agencies throughout project planning. Typically, this is done through periodic interagency coordination meetings held prior to key project milestones. The Purpose and Need was presented at the interagency coordination meetings held in Virginia on January 22, 2007 and in Maryland on February 21, 2007.