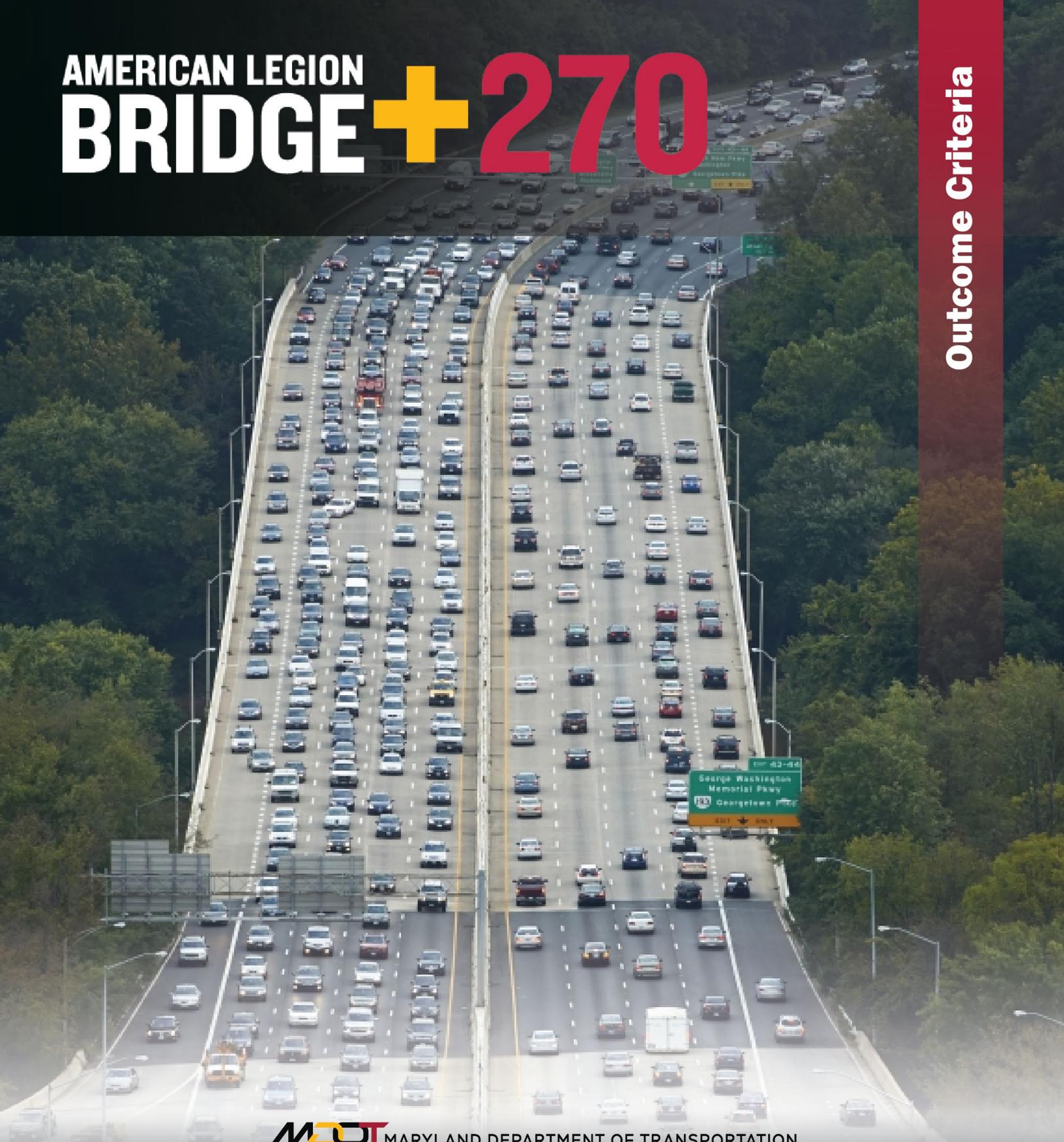


# AMERICAN LEGION BRIDGE+270

Outcome Criteria



**MDOT** MARYLAND DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION

## FY 2024 MPDG GRANT APPLICATION

Location: Montgomery County, Maryland  
MDOT UEI: GASRKUGPZCC7

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## OUTCOME CRITERIA

### Criterion 1: Safety

Maryland is a Vision Zero State and SHA's vision is "To provide a safe, well-maintained, reliable highway system that enables mobility choices for all customers and supports Maryland's communities, economy, and environment." This vision embodies the commitment to safety on the State's roadways and aligns with the USDOT's focus on safety, as highlighted in the National Roadway Safety Strategy (NRSS).

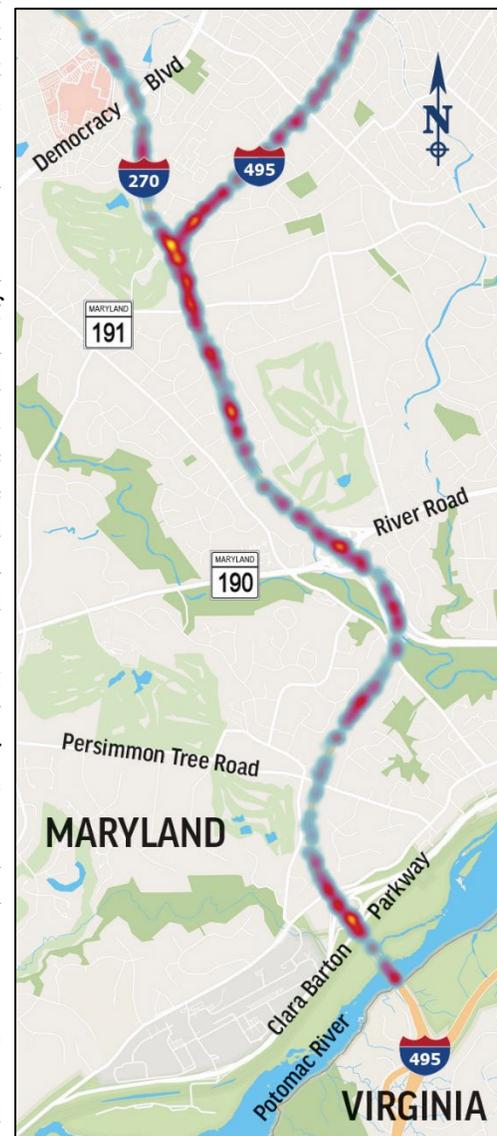
The NRSS focuses on increasing the safe use of transit and active transportation modes, ensuring safety for those users while supporting the strategy to achieve greenhouse gas reduction goals. The managed lanes proposed in this project present a unique opportunity to support this strategy by efficiently facilitating the use of transit and carpooling in the less congested managed lanes.

Both the Washington Area Metropolitan Transit Authority (WMATA) and the Fairfax County Department of Transportation have proposed express bus services that would use the managed lanes. Additionally, the project will incorporate a barrier-separated shared-use path on the American Legion Bridge, providing a direct connection to the multi-use paths, nature trails, and parklands on both the Maryland and Virginia sides of the Potomac River.

A detailed safety evaluation was conducted for I-495 and I-270 and crash data was obtained from SHA's Office of Traffic and Safety (OTS). OTS processes, reviews, and summarizes crash data from the Maryland Automated Crash Reporting System, which is the singular source of all traffic crash data that is reported by the Maryland State Police, Maryland Transportation Authority Police, and the local law enforcement departments for cities, towns, and counties in Maryland. The data includes fatal, injury and property damage crashes along the freeway, ramps, and crossroads and includes the crash location, date/time, conditions, type/manner of impact, and any contributing circumstances, see Figure 1 for crash densities in the study area. The crash study period (January 2016 to December 2018) reflects the available crash data at the time of the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS) analysis; both crash frequency and rates were reviewed to identify high crash locations and trends.

Within the project area that includes the west side of I-495 and the I-270 West Spur mainline segments, nearly 1,000 crashes occurred over the three-year crash study period. Nearly 30% of these crashes resulted in injuries and fatalities. In addition, 75% of crashes were rear-end or

Figure 1. Density of Reported Crashes



Source: SHA Office of Traffic and Safety

sideswipe collisions, which are often attributed to congested conditions. More than half of the crashes occurred during peak periods when traffic demand was highest (6:00 AM to 10:00 AM and 3:00 PM to 7:00 PM, as defined by the data and operational analyses).<sup>1</sup> Furthermore, 23% of segments within the project limits had a crash rate higher than the statewide average, with some segments more than triple the statewide average. The crashes within the corridors significantly affect the efficiency of the corridor for both automobile and freight traffic. Research studies, including those conducted by the National Highway Traffic Safety Administration,<sup>2</sup> suggest that the unstable traffic flow during congested operations increases the probability of rear-end and sideswipe crashes.

The high proportion of rear-end and sideswipe crash types, along with the high occurrence of crashes during the peak travel periods, show a strong correlation between the existing congested highway conditions and the safety performance of the corridors. In addition to the congested conditions, weaving movements were also identified as a contributing factor to the number of crashes. An example is the interchange of I-495 at MD 190/Cabin John Parkway that was identified as a high crash location, likely due to multiple, closely spaced merges/diverges combined with congestion.

The project will reduce the magnitude and duration of congestion along I-495 and at numerous interchanges. For example, at the MD 190/Cabin John Parkway, the three existing loop ramps will be removed, and the interchange will be reconfigured from a cloverleaf design to a diamond interchange. The reconfiguration will remove the weaving segments between the existing loop ramps along I-495 and thus reduce the potential for crashes, increasing safety for travelers.

Each of the interchanges within the project area were analyzed to determine how to provide safety and operational efficiency improvements. Based on the methodologies outlined in the *Highway Safety Manual*, a predictive crash analysis was used to provide a quantitative analysis on how the project will impact safety performance. The predictive tools included the Enhanced Interchange Safety Analysis Tool, which is used for the predictive crash analysis of mainline freeway segments, interchange ramps, acceleration lanes, crossroad ramp terminals and intersections, and crossroad segments within the project area. A safety analysis process developed for the Virginia I-495 NEXT Express Lanes project was also used for the predictive crash analysis for the portions of the project in Virginia. Traffic data, historical crash data, and roadway geometrics were used as inputs for developing the safety model. The predicted crash analysis was performed separately for the mainline/ramps and the managed lanes facilities. Because the managed lanes will be new lanes operated separately from the general-purpose lanes, the predicted safety analysis process is not able to show a reduction in crashes in those lanes; it can only show a comparative reduction to existing lanes. Based on the proposed geometric conditions and traffic volumes, the safety analysis predicted the following:

- Crashes along the general-purpose lanes on the West Spur could decrease by **10%**, with a **16%** decrease in fatal and injury crashes. Combined with ramps and the new managed lanes, the West Spur could expect to see a decrease of **3%** in fatal and injury crashes.

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<sup>1</sup> <https://oplanesmd.com/wp-content/uploads/2022/11/MDOT-SHA-Application-for-IAPA-August-2022.pdf>

<sup>2</sup> <https://www.nhtsa.gov/document/analyses-rear-end-crashes-and-near-crashes-100-car-naturalistic-driving-study-support-rear>

- Crashes along the I-495 ramps in Maryland (general-purpose and managed lanes) could decrease by 7%, with a 13% decrease expected in fatal and injury crashes.
- Crashes along the I-495 ramps in Virginia (general-purpose and managed lanes) could decrease by 25%, with a 28% decrease in fatal and injury crashes.

In addition, new pavement and resurfacing will improve friction along the roadway and help to mitigate wet-weather crashes that represent 17% of crashes. New Intelligent Transportation System (ITS) infrastructure will have the ability to collect data and measure speeds. These devices can be tied into an active warning system to alert motorists to downstream roadway conditions, such as congestion and slow speeds ahead. Active warning systems have been found to reduce crashes in several studies.<sup>3</sup> The project will increase vertical clearance at several overpasses to meet or exceed minimum requirements, including at multiple bridges with a history of bridge strikes by over-height vehicles (e.g., Persimmon Tree Road, MD 190, MD 191, Democracy Boulevard, and Greentree Road over I-495). Multimodal improvements including a barrier-separated bicycle/pedestrian facility on the American Legion Bridge and constructing accessible sidewalks, shared-use paths, and bike lanes will provide additional mobility options and improve safety for pedestrians and cyclists.

An operational assessment was performed to determine the operations in Build and No Build conditions. For the horizon year of 2045, the speeds, densities, and Level of Service will continue to improve throughout the network, enhancing both safety and mobility. In the Build condition, nearly 20% more throughput will be accommodated than the No Build on the American Legion Bridge. Many segments of the general-purpose lanes will experience an improvement in average speeds in 2045 during the AM and PM peak periods, with managed lanes operating at 45 mph or better on average. Specifically, 66% of trips in the peak periods will experience a benefit from traveling in the general-purpose lanes under the Build versus No Build conditions. Total traffic delays will be reduced by 20% systemwide across the 2045 four-hour PM peak period and by 10% across the four-hour AM peak period. Delays on the surrounding local roadways will be reduced, including 2.23% reduction in arterial delays in Montgomery County.

As demonstrated through the operational analysis, the project will reduce congestion levels—particularly during peak periods—address the needs of the system, and accommodate existing traffic and long-term traffic growth on I-495. By reducing the extent and duration of the congested, stop-and-go conditions on the highway, the potential for congestion-related crashes will be significantly reduced, particularly during peak periods.

### **Criterion 2: State of Good Repair**

The key purpose of this project is to modernize and improve the efficiency of the transportation system to enhance the mobility for people, goods, and services in the corridor. The majority of the highway and bridge infrastructure was constructed over 60 years ago and is not able to support the demands of today's transportation needs. Additionally, the infrastructure does not meet current design standards. For example, roadside barriers do not meet current criteria; bicycle and pedestrian facilities do not meet current multimodal recommendations nor complete streets

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<sup>3</sup> <https://mobility.tamu.edu/mip/strategies-pdfs/active-traffic/technical-summary/Queue-Warning-4-Pg.pdf>

principles; and the American Legion Bridge is approaching its useful physical life, in danger of falling into poor condition while not accommodating today’s traffic.

A major aspect of the project is focused on modernizing the infrastructure in the corridor by bringing it into a state of good repair and making the corridor more efficient for future use, while also promoting accessibility for the communities alongside the corridor. To this extent, SHA’s project will address the following areas of concern: 1) improvement of traffic flow; 2) connecting communities and delivering more multimodal options; and 3) mitigating community noise impacts. To support improved traffic flow, SHA will rehabilitate approximately 72 miles of general-purpose lanes, ramps, and side roads; construct 28 new miles of high-occupancy toll lanes; upgrade seven existing interchanges; replace a total of 16 bridges, including the American Legion Bridge; and construct eight new bridges. Further, a major culvert system is slated to be reconstructed and extended for the Thomas Branch stream for approximately two miles.

The second aspect of the project will address the multimodal component, which includes the construction or reconstruction of three miles of the Americans with Disabilities Act (ADA)-compliant sidewalks, three miles of shared-use paths, and two miles of bicycle lanes. Expanding the pedestrian, bicycle, and shared-use paths and trails will provide more options for travel, but also address long-standing grievances by communities that had been previously separated by the interstate. In addition to accessibility, improving the health of these communities is a major priority. SHA will replace, rehabilitate, and/or extend 11 noise barriers and build an additional six to mitigate noise.

The elements within the I-495 and I-270 corridor that do not meet current USDOT FHWA Controlling Design Criteria for the National Highway System include lane width, shoulder width, horizontal curve radius, stopping sight distance, vertical clearance, and roadside barriers.<sup>4</sup>

- **Lane Width:** Travel lanes on the I-270 West Spur, both northbound and southbound near Westlake Terrace, are currently 11 feet wide, see Figure 2. The project will improve these travel lanes to 12 feet wide to meet current standards.

Figure 2. Current Lane Width



<sup>4</sup> <https://www.fhwa.dot.gov/design/standards/160505.cfm>

- **Shoulder Width along I-270 West Spur:** The shoulder widths on the I-270 West Spur, both northbound and southbound in the vicinity of Westlake Terrace, are currently 6, 8, or 10-foot wide, see Figure 3. They will be widened to meet the AASHTO guidelines of 12 feet.

Figure 3. Current Left Shoulder Width



- **Shoulder Width on and approaching ALB:** While the Interstate Design Standards allow for 4-foot reduced shoulders on long bridges such as the American Legion Bridge, the existing left and right shoulders on the bridge are between 2 and 3.5 feet wide, see Figure 4. The shoulders on the approaches to the bridge also do not meet the minimum width requirements. The shoulders will be widened on both the bridge and its approaches to meet AASHTO guidelines of 12 feet.

Figure 4. Current Bridge Approach Shoulder Width



- **Horizontal Curve Radius:** The current design speed for I-495 over the I-270 West Spur is 50 mph, see Figure 5. Investigations are ongoing to identify opportunities to improve or provide enhanced mitigation for this limited horizontal curve radius.

Figure 5. Existing Horizontal Curve Radius



- **Stopping Sight Distance:** In a number of locations throughout the project, the width of the inside shoulders on horizontal curves do not meet the stopping sight distance criteria for a 60-mph design speed. The stopping sight distance will be improved to meet the design speed criteria at the locations shown in Table 1.

Table 1. Stopping Sight Distances

Roadway	Location	Shoulder	Current Design Speed	Proposed Design Speed
NB I-495	Seven Locks Road/ Cabin John Pkwy	Left	55 mph	60 mph
NB I-495	I-270 West Spur	Right	45 mph	50 mph
SB I-495	I-270 West Spur	Left	45 mph	50 mph
NB I-270	I-495 Outer Loop	Left	45 mph	60 mph
SB I-270	I-495 Outer Loop	Right	50 mph	60 mph

- Vertical Clearance:** The vertical clearance under I-495 over MacArthur Boulevard does not meet the requirements based on the roadway functional classification, see Figure 6. The vertical clearance will be raised to a minimum of 16 feet 9 inches with the bridge reconstruction.

Figure 4. Existing Vertical Clearance - MacArthur Boulevard



Source: Google Streetview

- Manual for Assessing Safety Hardware (MASH) (2016) Standard Compliance for Traffic Barrier W Beam and Concrete Barrier:** The majority of the rigid (concrete) and semi-rigid (metal) traffic barriers within the corridor are not MASH (2016)-compliant. These non-compliant barriers will be replaced to meet MASH criteria.

In 1962, the American Legion Bridge opened to motorists traveling on I-495, connecting Virginia and Maryland over the Potomac River. In 1992, the bridge was widened toward the median. As part of this project, the bridge will be replaced and modernized to meet today’s design standards. The new bridge will be widened to accommodate future traffic growth and provide a facility that is in a state of good repair.

According to the most recent National Bridge Inspection Standards report from 2023, both the superstructure and substructure of the bridge are rated in fair condition. For the superstructure, the report identifies section loss and rust holes that have been painted over, cracking in lateral bracing gusset plates, and arrested fatigue cracks, as well as concerns with bearings, anchor bolts, and bearing pedestal conditions. For the substructure, the inspection report notes large areas of cracked, spalled, and delaminated concrete with exposed reinforcing steel. In addition, replacement of the bridge deck is needed. Based on these current conditions, the bridge is anticipated to drop into poor condition within a three-year period unless the deck is replaced and the concrete deterioration is addressed.

As traffic has increased over the years and revisions have been made to the approach roadways to accommodate that increase, the American Legion Bridge was restriped so the lanes extend from parapet to parapet with 2 to 3.5-foot-wide shoulders, which is not consistent with Interstate

Design Standards. Additionally, the Bridge is a bottleneck for traffic and frequently causes congestion which impacts the network efficiency, as well as the mobility of goods and people. In addition to improved mobility, modernizing core infrastructure like the American Legion Bridge will ultimately lower future maintenance costs.

The American Legion Bridge replacement will ensure that the design follows SHA's current policies regarding evaluation of scour at bridges, including:

- Locating piers to minimize obstructions to flood flows to minimize the scour potential;
- Designing structures to be stable for worst-case conditions for the scour design flood;
- Verifying that the bridge piers remain stable for conditions of the scour check flood.

The American Legion Bridge was constructed prior to the use of epoxy-coated steel reinforcement and higher strength concrete for bridge decks, which subjects the bridge to a near constant state of repair due to traffic wear and tear. Reconstructing the bridge using Bridge Deterioration Preventative Measures, set forth in SHA's guidelines and procedures, will lead to a longer lasting bridge deck. Reconstruction will also provide the opportunity to employ modern protective coatings for steel structures, further reducing maintenance costs.

Throughout the project limits, improvements will be made to stormwater management and drainage facilities, bringing them up to current standards. Existing drainage and erosion issues will be addressed as part of the project with the updates to the drainage facilities, including removing undersized and deteriorated pipes and replacing them with concrete or more durable material. The existing stormwater management facilities will be refurbished or replaced as they will be enlarged to accommodate increased runoff.

### **Criterion 3: Economic Impacts, Freight Movement, and Job Creation**

Maryland's transportation infrastructure is a critical element not only to support a strong and growing state economy, but also for the national economy due to its central location along I-95 and the East Coast. Freight mobility is a key component of these economies with trucking as the largest contributor of all freight modes. The roadway network provides vital connections allowing the movement of goods and services within and through the region to local markets in the Washington, D.C. Metropolitan Area and numerous other large markets along the I-95 corridor. According to the FHWA Freight Analysis Framework, there are significant truck volumes that move through the project area as commodities being transported along I-495; volumes within the project area range between 10,000 and 20,000 trucks per day.<sup>5</sup> These truck volumes are projected to continue to increase by 53% in volume and 108% in value by 2050.<sup>6</sup> Statewide annual freight congestion costs, however, exceed \$250 million – causing driver delays, cargo delays, emissions from idling and additional fueling costs.

By addressing congestion with the addition of the managed lanes, easing congestion in the general-purpose lanes, and addressing the significant bottleneck at the bridge, I-495 and I-270 will operate more efficiently and provide better mobility for the freight movements throughout the region. The travel demand model results show a 20% decrease in hours of delay along I-495 and I-270 in 2045. As shown in the Benefit-Cost Analysis, the project results in almost

<sup>5</sup> <https://www.mwcog.org/documents/2023/07/19/national-capital-region-freight-plan-freight/>

<sup>6</sup> [https://www.mdot.maryland.gov/OPCP/MDOT\\_State\\_Freight\\_Complete\\_2022\\_12\\_06.pdf](https://www.mdot.maryland.gov/OPCP/MDOT_State_Freight_Complete_2022_12_06.pdf)

\$227.2 million in discounted operational cost savings for trucks over the 20-year analysis period. This enhanced freight mobility will support the economic vitality of the nation, state, and region.

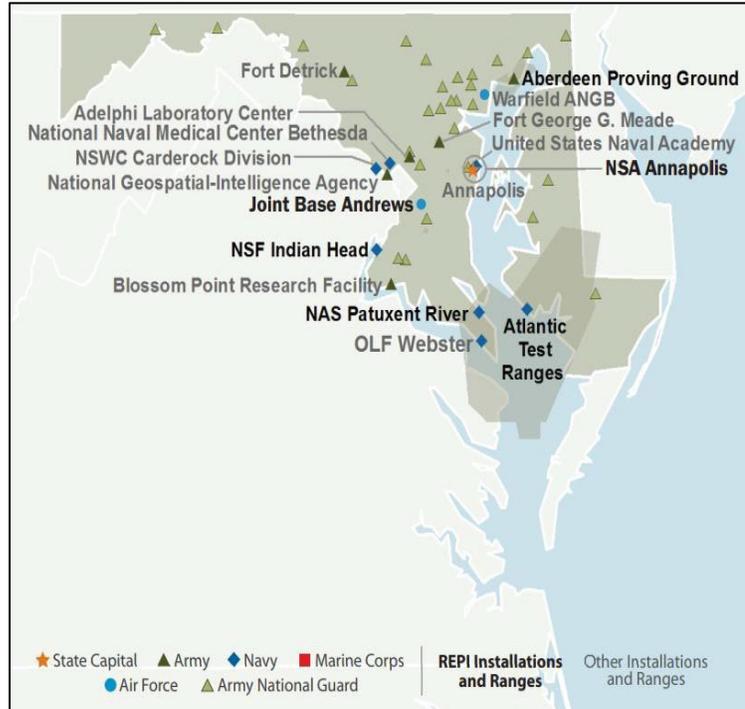
The aerospace and defense sectors are a significant component of the state and regional economy. There are numerous US military installations located in Maryland, as shown in Figure 7, and also Virginia, as shown in Figure 8. Defense spending creates economic activity through the attraction and support of related industries and investments, generating important state and local revenues. According to the US Department of Defense (DOD), as of 2021 there were over 96,000 DOD

active, reserve, and civilian personnel in Maryland. Defense spending comprised almost 6% of the state's Gross Domestic Product and generated over \$8 billion in payroll, with almost \$18 billion in contracts awarded.<sup>7</sup> I-495 and I-270, both designated as STRAHNET facilities, provide vital connections between the military installations for the movement of personnel, supplies, and equipment. The efficient connectivity between these installations in the region is of critical importance to national security.

I-495 and I-270 also provide vital connections to economic development opportunities. The

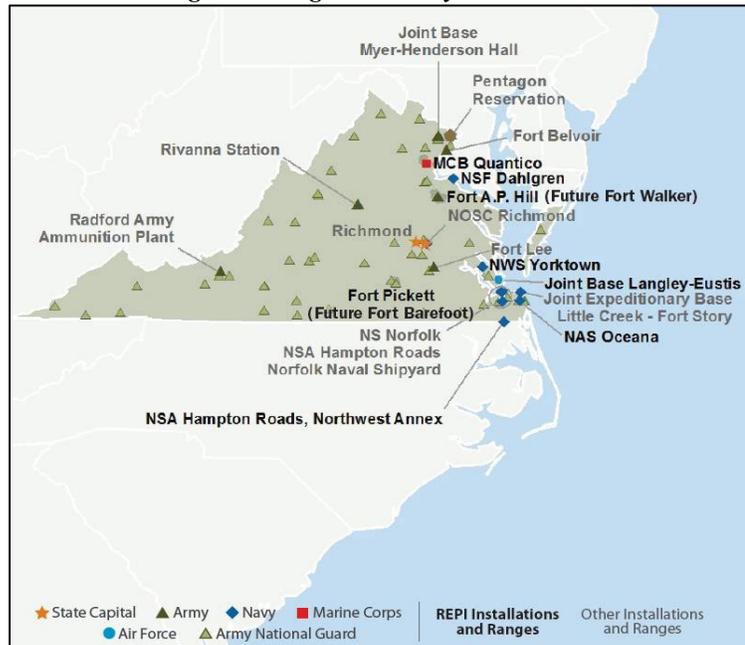
Maryland Department of Commerce maintains a database of economic development properties for a wide range of potential industries. The number of available properties directly adjacent to the two corridors, within and north of the study area, are dependent on the corridors for access

Figure 5. Maryland Military Installations



Source: US DOD

Figure 6. Virginia Military Installations



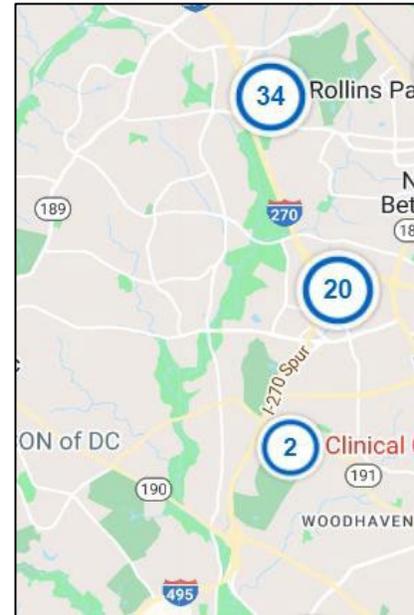
Source: US DOD

<sup>7</sup> [https://www.repi.mil/Portals/44/Documents/State\\_Fact\\_Sheets/Maryland\\_StateFacts.pdf](https://www.repi.mil/Portals/44/Documents/State_Fact_Sheets/Maryland_StateFacts.pdf)

and connectivity and are shown in Figure 9. These properties range from office space to industrial sites and, when developed, will increase the employment opportunities for residents of the region. As shown in the Montgomery County zoning map, the most prevalent land use in the study area outside of intersection/interchange areas is residential.<sup>8</sup> Efficient access is a key element in determining site locations for development and the project will support the operational efficiency of the corridors providing connections to the sites.

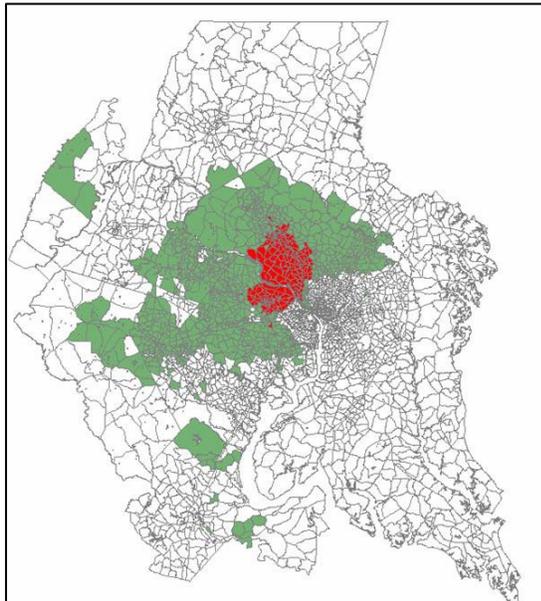
SHA is examining the anticipated labor needs for this project, the available workforce in the region, and the anticipated labor needs for other funded projects. SHA considers the project as a significant driver of jobs and estimates that it will create and sustain an average of over 900 jobs per year over a six-year period, or over 5,500 job years. These jobs will have good wages using Davis-Bacon wage rate requirements. Additionally, contractual project labor requirements are under evaluation to ensure adequate workforce availability for this large project could further enhance project standards on work schedules, premium time pay, shift pay, and premium operator pays. SHA continues to evaluate the implementation of a Project Labor Agreement to address these project standards that could ensure the safety and stability of the workforce; the ability to attract/retain sufficient labor staffing; and provide higher compensation to both skilled and unskilled labor.

**Figure 7. Economic Development Properties**



Source: MD Dept. of Commerce

**Figure 8. Improved Job Accessibility**



Source: MW Travel Demand Model

An analysis for job accessibility was undertaken using the regional travel demand model. The accessibility analysis focused on the AM peak period and showed that with the project in place, there will be improved accessibility for traffic analysis zones (TAZ) in both Maryland and Virginia. The TAZs shown in red in Figure 10 indicate the study area and the TAZs shown in green will have improved job accessibility once the project is completed. The analysis also shows a reduction of 35,000 hours in delay across the region on the arterial and highway systems.

In addition to improving freight mobility, supporting economic vitality, and national security, the project will improve the multimodal transportation systems within the region. Transit mobility will be enhanced because transit vehicles will be allowed to use the managed lanes toll-free, thereby increasing travel

<sup>8</sup> <https://mcatlas.org/zoning/>

speed and trip reliability for transit trips. Additionally, these lanes will improve connections to the regional Metrorail system and local bus service on arterials directly linked to urban and suburban commercial and economic centers.<sup>9</sup>

The multimodal improvements included within the project will provide a transportation connection with better access to activity centers. The improvements also create a connected multimodal system between Virginia and Maryland via a shared-use path across the American Legion Bridge, providing additional access to federal and local park lands, including a direct connection to the Chesapeake & Ohio (C&O) Canal. This direct connection minimizes the impact to National Park Service (NPS) lands, as well as to natural resources.

#### **Criterion 4: Climate Change, Resiliency, and the Environment**

Maryland is fully committed to the reduction of greenhouse gas emissions (GHG), resiliency of its infrastructure, and protection of the environment. MDOT's *Climate Pollution Reduction Plan*<sup>10</sup> presents the approach to support the requirements of the Climate Solutions Now Act of 2022 that requires a plan to reduce statewide GHG emissions by 60% from 2006 levels by 2031 (called "60 by 31"). To achieve this goal, MDOT is taking a comprehensive approach to reducing emissions in the transportation sector, including four pillars of GHG emission reductions strategies: adopting transportation technologies; reducing vehicle miles traveled (VMT); mitigating congestion; and advancing sustainable design, materials, and practices. This project demonstrates two of these critical strategies: adopting transportation technologies and mitigating congestion. As a result, this project incorporates demand management strategies, encourages shifts to lower emission modes, and improves water quality. These improvements will result in a more resilient system with the ability to recover from incidents.

In the air quality analysis in the Final EIS for the managed lanes, the project-level analysis showed that emissions are expected to decline in the opening and design years for GHG pollutants when compared to the existing conditions. Specifically, for carbon dioxide equivalents (CO<sub>2</sub>e), there is projected to be a 13% reduction in the opening year and a 9% reduction in the design year. These reductions will occur despite a projected increase in VMT on the affected network between 2016 and 2025 and 2045 Build condition.<sup>11</sup>

Additionally, the Maryland Commission on Climate Change has worked cooperatively with experts from state and local agencies, environmental groups, and academic institutions to quantify and understand potential impacts of programs and policies on future emissions. It found that the project supports achieving the state's GHG emission reduction goal. The project achieves these benefits through a variety of factors, including:

- Utilizing pricing as a demand management strategy to reduce induced demand and congestion;<sup>12</sup>
- Supporting modal shift in passenger movements from single occupant driving to carpooling, vanpooling, and transit use; and,
- Providing fast, reliable travel option that reduces congestion and associated emissions.

<sup>9</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/MLS\\_FEIS\\_00\\_ExecutiveSummary\\_June-2022p-2.pdf](https://oplanesmd.com/wp-content/uploads/2022/06/MLS_FEIS_00_ExecutiveSummary_June-2022p-2.pdf)

<sup>10</sup> [https://www.mdot.maryland.gov/OPCP/MDOT\\_CPRP\\_2023\\_Final.pdf](https://www.mdot.maryland.gov/OPCP/MDOT_CPRP_2023_Final.pdf)

<sup>11</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/25\\_MLS\\_FEIS\\_AppK\\_FinalAirQualityTechnicalReport\\_June-2022p.pdf](https://oplanesmd.com/wp-content/uploads/2022/06/25_MLS_FEIS_AppK_FinalAirQualityTechnicalReport_June-2022p.pdf)

<sup>12</sup> [https://www.fhwa.dot.gov/ipd/tolling\\_and\\_pricing/defined/demand\\_mgmt\\_tool.aspx](https://www.fhwa.dot.gov/ipd/tolling_and_pricing/defined/demand_mgmt_tool.aspx)

SHA coordinated extensively with state and federal partner agencies to minimize and mitigate environmental impacts from the project, as part of the NEPA study. Consequently, the project completely avoids significant Maryland-National Capital Park and Planning Commission's sensitive stream valley parks and minimizes impacts to George Washington Memorial Parkway, C&O National Historical Park, and Clara Barton Parkway. The project also avoids all business and residential displacements including the historic Morningstar Tabernacle No. 88 Moses Hall and Cemetery. SHA worked tirelessly over four years to minimize impacts to parks, NPS lands, wetlands, floodplains, waterways, cultural resources, and forest canopies.<sup>13</sup>

The existing I-495 was built prior to the enactment of the 1972 Clean Water Act and does not meet current Maryland stormwater management standards. The project will address stormwater for all new impervious areas and 50% of the existing disturbed impervious area. The changes from the project will result in a net benefit to the water quality in the immediate area, as well as downstream in the Potomac River and the Chesapeake Bay. The peak runoff rates will be limited/constrained to the existing runoff rates for most storms; more frequent storms should see a reduction of runoff rates as a result of the water quality being provided. In addition, several existing eroded or unstable channels will be stabilized throughout the project area.<sup>14</sup>

The project will also utilize nature-based solutions, called Environmental Site Design (ESD), to the maximum extent practicable (MEP) to minimize environmental impacts. Throughout the corridor, the roadside ditches will incorporate bioswales to filter and slow runoff as well as allow infiltration when soil conditions are appropriate. In this project, the bioswale ditches will predominately replace traditional ditches. This approach allows for treatment close to the source and minimizes impacts to neighboring communities by reducing off-site land required.

To achieve better outcomes for communities and the environment, an American Legion Bridge Strike Team was created to find solutions to minimize impacts. The Strike Team focused on alternative bridge designs and construction techniques because of the proximity of the bridge to NPS lands and the Potomac River. This Strike Team, comprised of technical experts from across the country, reviewed design approaches and identified an innovative bridge design to reduce the footprint of the replacement bridge and incorporate stormwater management facilities that provide both water quantity and quality treatment within the same footprint, avoiding placing them on NPS land. This innovative approach was undertaken in response to the coordination that occurred between SHA and the NPS and other agencies.

### **Criterion 5: Equity, Multimodal Options, and Quality of Life**

SHA developed a robust and transparent public engagement effort to communicate timely project information and updates to historically disadvantaged populations, including identifying and addressing potential impacts to these populations and ensuring they had equal access to study information. SHA's outreach and engagement plan was developed to exceed federal guidelines for engagement with Environmental Justice (EJ) populations within and adjacent to the project. Supplemental outreach was undertaken specific to the EJ communities to ensure meaningful engagement. For example, these efforts included a survey<sup>15</sup> that was distributed multiple ways,

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<sup>13</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/MLS\\_FEIS\\_05\\_Environmental\\_June-2022p-2.pdf#page=2](https://oplanesmd.com/wp-content/uploads/2022/06/MLS_FEIS_05_Environmental_June-2022p-2.pdf#page=2)

<sup>14</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/MLS\\_FEIS\\_03\\_Preferred-Alternative\\_June-2022p-1.pdf#page=14](https://oplanesmd.com/wp-content/uploads/2022/06/MLS_FEIS_03_Preferred-Alternative_June-2022p-1.pdf#page=14)

<sup>15</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/MLS\\_FEIS\\_08\\_PI-Agency-Coord\\_June-2022p-1.pdf#page=11](https://oplanesmd.com/wp-content/uploads/2022/06/MLS_FEIS_08_PI-Agency-Coord_June-2022p-1.pdf#page=11)

including on-line, local pop-up events at local specialty markets, and face-to-face interviews/discussions with participants, including in their primary language.

In addition, an EJ Working Group was established to support the EJ analysis and outreach efforts. The goals of the EJ Working Group were to develop potential mitigation measures if high or disproportionate impacts occur to EJ communities; identify potential commitments to EJ and public health community enhancement measures related to social/health vulnerability indicators; and identify recommendations for additional engagement opportunities.

The results of the analysis showed that project impacts occur consistently throughout the project and are primarily borne by non-EJ populations.<sup>16</sup>

From the outreach efforts, SHA received significant community concerns with regard to a desire to improve sidewalks and bicycle facilities, create better lighting, and provide traffic calming measures for both EJ and non-EJ populations. To address these concerns, SHA committed to working with the City of Rockville, the City of Gaithersburg, and Montgomery County to improve the community and quality of life for residents, including:

- Identify locations on state roadways where safer pedestrian crossings are needed;
- Identify locations where additional pedestrian or bicycle improvements, upgrades, and ADA compliance are needed;
- Identify locations on state roads where upgrades are needed for existing pedestrian facilities and lighting;
- Construct or fund a new parking lot for the historic Gibson Grove Church and Morningstar Tabernacle No. 88 Moses Hall and Cemetery; and
- Provide a new sidewalk along Seven Locks Road under I-495 to restore the historic connection between Gibson Grove Church and Morningside.

The project will correct a variety of deficiencies related to ADA compliance, including reconstructing an estimated 22 deficient sidewalk ramps. ADA-compliant access will be provided to seven bus stops that do not currently have such access. Non-compliant sidewalks with cross slope and vertical rise deficiencies will also be replaced.

The project also aligns with SHA's *Bicycle Policy & Design Guidelines* and Montgomery County's *Complete Streets Design Guide*. Several cross streets do not currently meet the Complete Streets standards and will be addressed through the project, including:

- Persimmon Tree Road – A nine-foot-wide side path, six-foot-wide sidewalk, street buffers and closed curb sections will be provided;
- Seven Locks Road – A six-foot-wide sidewalk, eight-foot-wide side path, and street buffer will be provided;
- Democracy Boulevard – Buffers will be provided and the sidewalk width improved; and
- Westlake Terrace – Six-foot-wide street buffers and eight-foot-wide sidewalks will be provided.

Additional bicycle and pedestrian accommodations will also be included in the project:

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<sup>16</sup> [https://oplanesmd.com/wp-content/uploads/2022/06/MLS\\_FEIS\\_00\\_ExecutiveSummary\\_June-2022p-2.pdf](https://oplanesmd.com/wp-content/uploads/2022/06/MLS_FEIS_00_ExecutiveSummary_June-2022p-2.pdf)

- Existing pedestrian and bicycle facilities will be replaced or upgraded where impacted by the project and will be consistent with local master plans and identified priorities;
- A new pedestrian and bicycle shared-use path will be incorporated on the American Legion Bridge to connect the existing multiuse paths, such as the C&O Canal National Historic Park, a 184.5-mile trail which skirts the banks of the Potomac River in both Maryland and Virginia;
- New shared-use paths will be constructed across MD 190 over I-495;
- The existing shared-use path along Seven Locks Road under I-495 will be widened; and
- New sidewalk will be constructed along the west side of Seven Locks Road under I-495 to re-establish the historic connection between First Agape African Methodist Episcopal Church and Morningstar Tabernacle No. 88 Moses Hall and Morningstar Cemetery.

To further enhance multimodal mobility options and quality of life, additional focus areas include:

- Free use of the new managed lanes for transit vehicles and carpools/vanpools with three or more occupants;
- Working with local governments to expand transit fare subsidies for low-income riders;
- Support new transit connections to include the Fairfax Connector Route 798, beginning service in 2024,<sup>17</sup> and WMATA's proposed Better Bus all day and overnight services;
- Improving accessibility to employment, educational and other services with expanded bicycle and pedestrian improvements, including new and upgraded facilities;
- Upgrading existing transportation facilities by replacing or rehabilitating all existing bridges on or over I-495 and I-270 within the project area; and
- Rehabilitating/resurfacing existing general-purpose lanes.

In May 2023, the Biden Administration selected Baltimore, among five US cities, to launch a new Workforce Job Hub to train workers to step into good-paying jobs in the growing clean energy and infrastructure industries. This workforce hub will provide high-quality training, apprenticeship programs, and technical education programs to workers in the Baltimore and Washington, D.C. area. The hub will focus on targeting hiring preferences to bring in and retain workers from Historically Disadvantaged Communities for the construction industry. The proximity of the workforce hub to this major construction project will help train local workers to support this critical infrastructure project and enhance workforce development in the region. As part of SHA's commitment to growing its workforce development and job creation efforts, MDOT will also be providing \$3.2 million annually to support the Workforce Job Hub for the five years beginning in state fiscal year 2025.<sup>18</sup>

Additionally, SHA has a strong record of developing apprenticeships. The On-the-Job Training Program helps contractors develop full journeyman status for minorities, females, the disadvantaged, and disabled individuals in the highway construction industry. It helps individuals gain skills in crafts and helps employers maintain or exceed the proposed workforce representation goals in their contracts. It thus meets the primary objective of equal employment

<sup>17</sup> <https://495next.vdot.virginia.gov/transportation-management-plan/>

<sup>18</sup> [FY24 FY29 CTP Full Report Regular Resolution for viewing.pdf \(maryland.gov\)](#)

opportunity and supports improvements in quality of life. This effort aids the contractor's affirmative action initiatives per their contracts and promotes equal opportunity in the highway construction industry. SHA requires full utilization of all training and skill-improvement opportunities to assure the increased participation of minority groups, the disadvantaged and women in all phases of the highway construction industry. SHA will require bidders to include a registered apprenticeship usage rate of at least 10 percent with supportive services provided to apprentices to help create a pipeline to the middle class through jobs in the construction industry.

**Criterion 6: Innovation Areas: Technology, Project Delivery, Financing**

A project of this size and complexity provides MDOT with a number of opportunities to deploy new innovations; as a result, the project incorporates innovative technology, financing, and project delivery elements.

The Managed Lanes project will be the first in Maryland to use dynamic pricing to help manage the severe congestion as well as assist in financing the construction of the project. This will ensure these lanes continue to provide value to users over the long-term by providing congestion-free capacity. The pricing and toll rates will be implemented to ensure free flow travel along the corridor, providing a fast and more reliable travel option. Congestion is a significant issue along I-495 and I-270 and in the past, it has stymied transit options along the corridor, causing bus routes to be cut due to low ridership as the buses sit in the congestion. The pricing structure will encourage users to carpool and vanpool by providing a 100% discount, as well as supporting transit with buses traveling free in the managed lanes. This will increase the throughput of people in the corridor every day.

In 2021, MDOT published the *Connected and Automated Vehicles Implementation Plan* for fiscal years 2021-25, outlining a strategy to accommodate and innovate the use of connected and autonomous vehicles (CAV) in five key areas: Safety, Equity, Economic Vitality, Efficiency, and Agency Readiness. This plan also considers how managed lanes will provide an opportunity for CAV advancement. The American Legion Bridge + 270 project will provide the technology and infrastructure components to support the use of CAVs in the managed lanes through aspects such as redundant fiber lines, state-of-the-art ITS devices, and data-centric infrastructure, in anticipation of an increased presence of CAVs. The managed lanes will include technologies that assist with congestion mitigation including cutting edge detection and analysis components that could communicate directly with CAVs, providing real-time information to enhance corridor safety. Additionally, the project will allow trucks to use the managed lanes, thus supporting future truck platooning capabilities to improve the safety and efficiency of freight mobility.

The implementation of congestion pricing incorporates technology throughout the corridor. The project will deploy traveler information systems to provide information to travelers on roadway conditions as well as the pricing of the lanes. This information will benefit commuters by allowing them to make informed decisions while enroute. While the main purpose of the congestion pricing is to manage traffic, it is anticipated that these revenues will provide funding for construction through toll revenue-backed debt financing. Without the support of these toll revenues, the project would not be able to advance. Toll revenue bonds will be issued by the state that will be repaid by toll revenues collected from congestion pricing. MDOT may seek a Transportation Infrastructure Finance Innovation Act (TIFIA) loan as well, but the state match is not dependent on receipt of a TIFIA loan; a TIFIA loan would likely only increase the amount of debt raised from the toll revenues.

This project also incorporates several innovative project delivery elements, several of which are a first for Maryland. These elements range from construction to design processes. As discussed in criteria #4, there were several innovation approaches that were undertaken during the NEPA and preliminary design. An American Legion Bridge Strike Team was created to find ways to minimize impacts and achieve a better outcome for communities and the environment. As a result, the overall project impacts were substantially reduced, which helped with environmental review and permitting. These impacts are quantified in Table 2, which compares the environmental impacts in the vicinity of the American Legion Bridge from the DEIS, which predates the Strike Team effort, through the post-Strike Team impacts from the FEIS.

Table 2. Comparison of Impacts from DEIS to FEIS

Resource	DEIS	FEIS	Difference	
			Number	Percentage
NPS Park Properties (acres)	16.18	9.66	-6.52	-40.3%
Live Trees	1,108	803	-305	-27.5%
Forest Canopy (acres)	17.74	11.78	-5.96	-33.6%
Waters of the US (acres)	8.81	8.25	-0.56	-6.4%
Waters of the US (linear feet)	3,830	3,263	-567	-14.8%
Wetlands (acres)	0.78	0.56	-0.22	-28.2%
Floodplain (acres)	22.22	10.89	-11.33	-51.0%

MDOT will also be using an innovative technique called trenchless technology for installing large culverts underneath the interstate without disturbing the existing roadway and disrupting travel. Typical construction techniques would have created significant disruptions to traffic causing numerous lanes shifts for a cut and cover construction. However, this technique allows for work to be completed.

This project will be delivered using design-build to accelerate the project’s delivery. With design-build, the owner manages a single contract with the design-build entity including a unified project team where the designer and the contractor work together to better fit the owner’s schedule and budget. Potential changes are comprehensively addressed through a collaborative effort by the full team. It is expected that design-build project delivery will accelerate the overall schedule and provide a greater level of confidence to deliver the project on time and on budget. According to FHWA, design-build accelerates project delivery and is a preferred innovative project delivery mechanism, without impacting environmental commitments. FHWA estimates that State DOTs can reduce project duration by at least one to two years utilizing design-build.<sup>19</sup> Additionally, studies have shown that design-build results in fewer schedule extensions and cost increases. For example, the study *Comparison of DB to DBB on highway projects in Washington State, USA* noted that cost growth and schedule growth on design-build projects is less than that on similar sized design-bid-build projects.<sup>20</sup> While SHA has led many design-build contracts, this is the largest construction project pursued through this procurement method. The largest project prior to this had a construction cost of \$2.4B.

<sup>19</sup> <https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/designbuild.cfm>

<sup>20</sup> <https://pdfs.semanticscholar.org/cbdd/b31b037f95f3e73ce14e2b8bfa787877f9e9.pdf>