2 ALTERNATIVES

The analysis of the Build Alternatives was documented in the **Draft Environmental Impact Statement (DEIS), Chapter 2** and **DEIS, Appendix B** and can be viewed through the following links on the Program website:

DEIS, Chapter 2: https://495-270-p3.com/wp-content/uploads/2020/11/2020-06-02_DEIS_02_Alternatives_Development.pdf

DEIS, Appendix B: https://495-270-p3.com/wp-content/uploads/2020/07/DEIS_AppB_Alts_web.pdf

This SDEIS Chapter documents the following updates:

- Identification of the Preferred Alternative, which is Alternative 9 – Phase 1 South with two new, high-occupancy toll (HOT) managed lanes on I-495 in each direction from the George Washington Memorial Parkway to east of MD 187 and conversion of the one existing high-occupancy vehicle lane in each direction on I-270 to a HOT managed lane and adding one new HOT managed lane in each direction on I-270 from I-495 to north of I-370 and on the I-270 east and west spurs. There is no action or no improvements on I-495 east of the I-270 east spur.
- The on-site and off-site (compensatory) stormwater management considerations
- Review of existing culverts and potential culvert augmentation requirements
- Advanced constructability review of the Preferred Alternative
- Revisions to the Limit of Disturbance (LOD) for the Preferred Alternative
- Maryland Transportation Authority (MDTA) Toll Rate Setting Process and Proposal
- Transit considerations and connections with the Preferred Alternative
- Pedestrian and bicycle facilities included with the Preferred Alternative
- Public-Private Partnership (P3) solicitation and Phase 1 Developer Agreement

2.1 Overview of Alternatives Development Process

The alternatives development and screening process for the I-495 & I-270 Managed Lanes Study (Study) followed five steps to narrow the Preliminary Range of Alternatives under consideration to the Preferred Alternative (**Figure 2-1**). The results and documentation of the first four steps were presented in the Study's Draft Environmental Impact Statement (DEIS) with the last step, identification of the Preferred Alternative, being documented in this Supplemental DEIS (SDEIS).

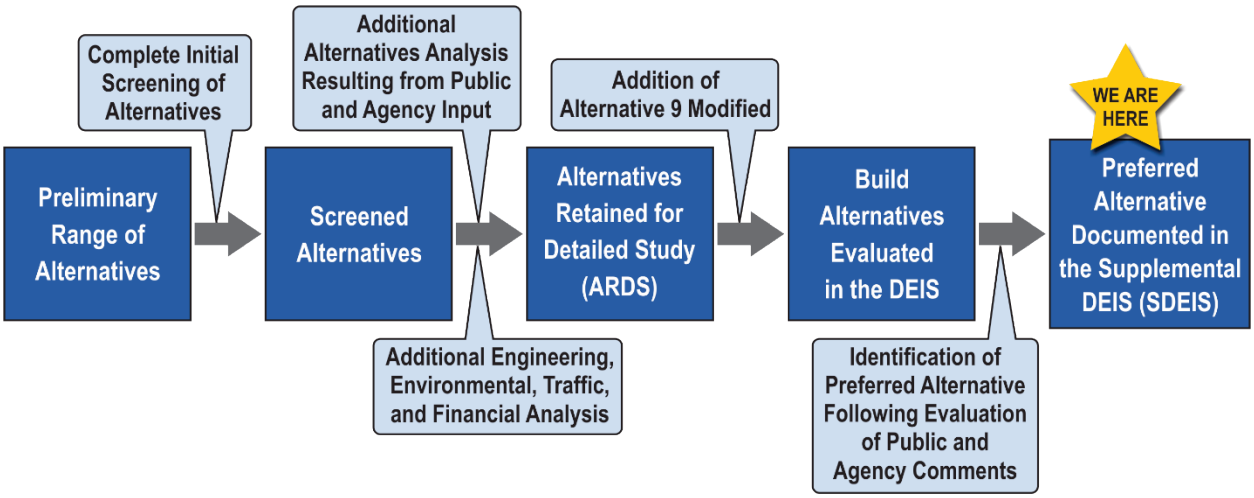
The DEIS evaluated the No Build Alternative (Alternative 1) and six Build Alternatives (Alternatives 8, 9, 9M, 10, 13B and 13C). The following list briefly describes those alternatives:

- Alternative 1: No Build – Though this alternative does not meet the Study's Purpose and Need, consistent with National Environmental Policy Act (NEPA) requirements, the scenario assuming no construction of a Build Alternative was carried forward for further evaluation to serve as a base case for comparing the other alternatives
- Alternative 8: Two Express Toll Lane (ETL) Managed Lanes Network on I-495 and one ETL and retain one High-Occupancy Vehicle (HOV) Lane Network on I-270

- Alternative 9: Two High-Occupancy Toll (HOT) Managed Lanes Network
- Alternative 9M: Two HOT Managed Lanes Network on the west and east side of I-495 and on I-270; one HOT Managed Lane Network on top side of I-495 between I-270 and I-95
- Alternative 10: Two ETL Managed Lanes Network on I-495 and I-270 and retain one HOV Lane Network on I-270 only
- Alternative 13B: Two HOT Managed Lanes Network on I-495 and two Reversible HOT Managed Lanes Network on I-270
- Alternative 13C: Two ETL Managed Lanes Network on I-495 and two Reversible ETL Managed Lanes Network on I-270 and retain one HOV Lane Network on I-270 only

Refer to **DEIS Chapter 2,** and **DEIS Appendix B, Alternatives Technical Report** for additional information.

Figure 2-1: Alternatives Screening Process



The DEIS considered how well each alternative met the Study's Purpose and Need using the following criteria:

- Engineering considerations:
  - Accommodates existing traffic and long-term traffic growth
  - Improves trip reliability
  - Provides additional roadway travel choice
  - Provides ease of use for travelers
- Accommodates homeland security
- Improves the movement of goods and services
- Enhances multimodal mobility and connectivity
- Financial viability
- Environmental considerations

The Council on Environmental Quality (CEQ) guidance describes an "agency's preferred alternative" as one that the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.[1] During the current NEPA process, and especially based on input from cooperating agencies and the general public following publication of the DEIS, the Federal Highway Administration (FHWA) and the Maryland Department of Transportation State Highway Administration (MDOT SHA) considered many common themes reflected in the comments.

In January 2021, Alternative 9 was announced as the MDOT SHA Recommended Preferred Alternative based on results of traffic, engineering, financial, and environmental analyses, as well as public comment. Commenters specifically highlighted the need to address improvements to the American Legion Bridge (ALB), a major regional traffic bottleneck, as soon as possible; to minimize property displacement and public parkland impacts; to coordinate with planned managed lane projects in Northern Virginia to provide a seamless regional managed lanes system; and to increase multi-modal transportation options in the Study Area.

After several months of further coordinating with and listening to agencies and stakeholders and reviewing public comments, MDOT SHA decided to align the Recommended Preferred Alternative to be consistent with the previously determined phased delivery and permitting approach, which focuses on Phase 1 South. As a result, FHWA and MDOT SHA identified a new Preferred Alternative: Alternative 9 – Phase 1 South. Alternative 9 – Phase 1 South includes the same improvements proposed as part of Alternative 9 but is limited to the Phase 1 South limits only. The limits of Phase 1 South are along I-495 from the George Washington Memorial Parkway to east of MD 187 and along I-270 from I-495 to north of I-370 and on the I-270 east and west spurs as shown in **dark blue** in **Figure 2-2**. The improvements include two new HOT managed lanes in each direction along I-495 and I-270 within the Phase 1 South limits. There is no action, or no improvements included at this time on I-495 east of the I-270 east spur to MD 5 (shown in **light blue** in **Figure 2-2**). While the Preferred Alternative does not include improvements to the remaining parts of I-495 within the Study limits, improvements on the remainder of the interstate system may still be needed in the future. Any such improvements would advance separately and would be subject to additional environmental studies and analysis and collaboration with the public, stakeholders and agencies.

The overall Study limits remain unchanged: I-495 from south of the George Washington Memorial Parkway in Fairfax County, Virginia, including the ALB over the Potomac River, to west of MD 5 in Prince George's County, Maryland and along I-270 from I-495 to north of I-370, including the east and west I-270 spurs in Montgomery County, Maryland. While the Preferred Alternative does not include improvements to the remaining parts of I-495 within the Study limits, improvements on the remainder of the interstate system may still be needed in the future. Any such improvements would advance separately, and would be subject to additional environmental studies, analysis and collaboration with the public, stakeholders and local agencies.

The FHWA and MDOT SHA's selection of the Preferred Alternative is based on currently available information and consideration of comments received on the DEIS. The majority of the key concerns and comments raised by the agencies and public through review of the DEIS were common among the Build

[1] Council on Environmental Quality, Memorandum to Agencies: Forty Most Frequently Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Federal Register 18026 (March 23, 1981), as amended (1986); Question 4a

Alternatives retained including, but not limited to, stormwater management, direct access, transit elements, noise, property impacts, and proposed relocations. Identifying a Preferred Alternative allows the lead agencies to continue the coordination, design, and analysis effort on a single alternative. The efforts to further address comments, avoid and minimize impacts, and determine mitigation for unavoidable impacts will continue through the development of the Final Environmental Impact Statement (FEIS).

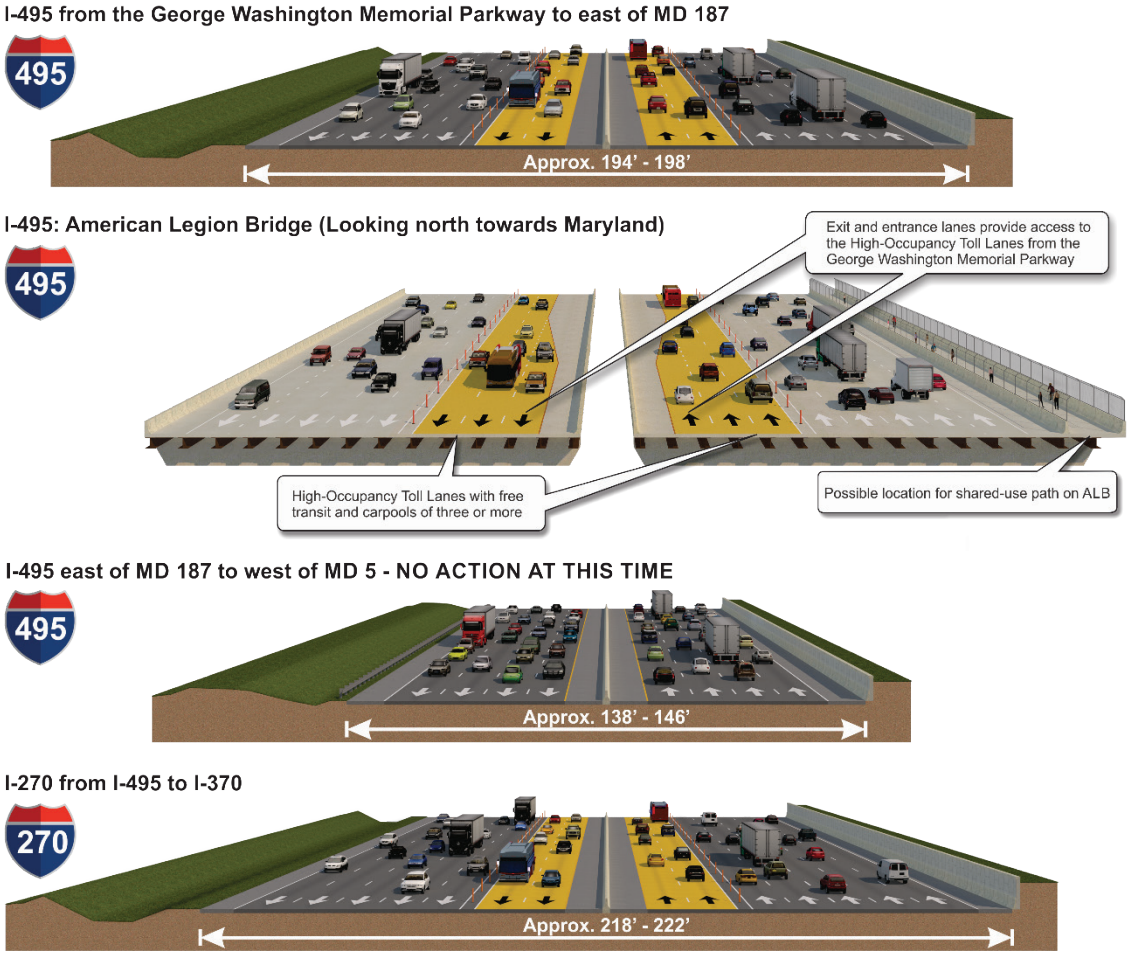
Figure 2-2: I-495 & I-270 Managed Lanes Study Corridors – Preferred Alternative

2.2 Preferred Alternative

Alternative 9 - Phase 1 South has been identified as the Preferred Alternative and includes a two-lane, HOT managed lanes network on I-495 and I-270 (**Figure 2-3**). On I-495, the Preferred Alternative consists of adding two new, HOT managed lanes in each direction from the George Washington Memorial Parkway to east of MD 187. On I-270, the Preferred Alternative consists of converting the one existing HOV lane in each direction to a HOT managed lane and adding one new HOT managed lane in each direction from I-495 to north of I-370 and on the I-270 east and west spurs. There is no action (i.e., no improvements) included at this time on I-495 east of the I-270 east spur. Along I-270, the existing collector-distributor (C-D) lane separation from Montrose Road to I-370 would be removed as part of the proposed improvements. The managed lanes would be separated from the general purpose (GP) lanes using flexible delineators placed within a buffer. Transit buses and HOV 3+ vehicles would be allowed free passage in the managed lanes.

The preliminary, estimated capital cost for the Preferred Alternative ranges between $3.0 and $3.5 Billion. This estimate includes costs for construction, property acquisition, and environmental mitigation.

Figure 2-3: Alternative 9 – Phase 1 South Typical Sections (HOT Managed Lanes Shown in Yellow)



Alternative 9 – Phase 1 South was identified as the Preferred Alternative in response to public and agency comments received on the DEIS. The Preferred Alternative would:

- Further align with the phased delivery and permitting approach.
- Focus improvements on Phase 1 South, including the American Legion Bridge, the biggest traffic chokepoint in the region. Replacement of the bridge is part of a bi-state effort to improve mobility and would provide a seamless regional system of managed lanes by connecting to Virginia over the American Legion Bridge.
- Expedite replacement of the American Legion Bridge with a private funding source.
- Provide options for travel by keeping all existing general purpose lanes free.
- Reduce reliance on single occupancy vehicles and permitting buses, carpool, vanpool, and personal vehicles with three or more people to travel faster and more reliably in the new HOT lanes free of charge any time of the day.
- Avoid all residential and commercial displacements.

- Minimize impacts by over 50% to National Parks near the American Legion Bridge (George Washington Memorial Parkway and Chesapeake & Ohio Canal National Historical Park) and completely avoid three other National Parks: Baltimore Washington Parkway, Greenbelt Park, and Suitland Parkway.
- Avoid approximately 22 acres of Maryland-National Capital Park and Planning Commission parkland including Rock Creek, Sligo Creek, and Northwest Branch Stream Valley Parks.
- Permit continued collaboration with the public and agency partners to work through issues raised outside of Phase 1 South through separate, future environmental studies.

As described in greater detail in **SDEIS, Chapter 3**, the Preferred Alternative is projected to provide substantial, tangible operational benefits to the regional system even though it includes no action for a large portion of the study area in an effort to avoid and minimize impacts. The Preferred Alternative would significantly increase throughput across the American Legion Bridge and on the southern section of I-270 while reducing congestion. It would also increase speeds, improve reliability, and reduce travel times and delays along I-495, I-270, and the surrounding roadway network compared to the No Build Alternative, albeit to a lesser degree than the Build Alternatives presented in the DEIS that provided managed lanes throughout the full study area limits. Projected daily traffic volumes served would increase with development of the Preferred Alternative when compared to the No Build Alternative because the freeways would be able to accommodate latent demand that would otherwise use the local roadway network to avoid congestion. Congestion would be present during the PM peak period on I-270 northbound and the I-495 inner loop in the design year of 2045 due to downstream bottlenecks outside of the Preferred Alternative limits, but overall operations would be significantly better than the No Build.

2.3 Elements of the Preferred Alternative

Updated design elements of the Preferred Alternative presented in this SDEIS include Interchanges and HOT Managed Lanes Access (**Section 2.3.1**); Stormwater Management Considerations (**Section 2.3.2**); Cross Culverts (**Section 2.3.3**); Construction and Short-term Effects (**Section 2.3.4**); Limit of Disturbance (**Section 2.3.5**); Tolling (**Section 2.3.6**); Transit-Related Elements (**Section 2.3.7**); and Pedestrian and Bicycle Considerations (**Section 2.3.8**). These elements contributed to refinement of the Preferred Alternative and associated impacts. Specifically, modifications to the Preferred Alternative since the DEIS included roadway design adjustments, revisions to noise barrier locations based on further analysis, consideration of additional needs at culvert augmentation sites, and continued application of avoidance and minimization efforts at sensitive resources.

2.3.1 Interchanges and HOT Managed Lanes Access

The HOT managed lane access locations within the Phase 1 South limits, except for the exchange ramps, did not change from those identified in the DEIS for the Build Alternatives. This section indicates which access points and interchange improvements are and are not included in the Preferred Alternative.

There are 34 existing interchanges within the Study limits, and 14 existing interchanges within the limits of Phase 1 South of the Preferred Alternative. All 14 interchanges would be modified as needed to accommodate the mainline widening of I-495 and I-270. The HOT managed lanes traveling in the same direction as the GP lanes would be separated from the GP lanes by a buffer and flexible delineators as shown in the typical sections (**Figure 2-3**). Access to and from the HOT lanes would be provided via direct

access ramps at select existing interchanges; direct access ramps at two new interchanges; exchange ramps between Virginia and Maryland where ingress to the managed lanes from the GP lanes or egress from the managed lanes to the GP lanes would be provided; and at the end points of the Preferred Alternative.

The preliminary direct access locations were identified using the following considerations:

- Providing system-to-system connections between major interstates and freeways (e.g., I-495/I-270 west spur, I-270/I-370)
- Providing access at interchanges with high traffic demand (e.g., MD 190)
- Providing access throughout the Study Area for reasonable access to the managed lanes (e.g., Gude Drive, Wootton Parkway)
- Providing access in consideration of land use and at major transit facilities (e.g., Westlake Terrace at Montgomery Mall Transit Center)
- Potential community, property, and environmental impacts resulting from providing access.

In total, access to and from the HOT managed lanes is proposed at nine locations (five existing interchanges, two new interchanges, and two exchange ramp locations), as well as at the end of the HOT lanes along eastbound I-495 east of MD 187, along the northbound I-270 east spur south of MD 187, and along southbound I-270 north of I-370. The interchanges that will be modified to accommodate the widened mainline and managed lane access locations are listed in **Table 2-1** and shown in **Figure 2-4**. **Table 2-1** also includes a list of the I-495 interchange locations within the Study Limits and outside of Phase 1 South limits that will not be improved for the Preferred Alternative.

Table 2-1: Interchange Improvements and HOT Managed Lane Access Locations under the Preferred Alternative[1]

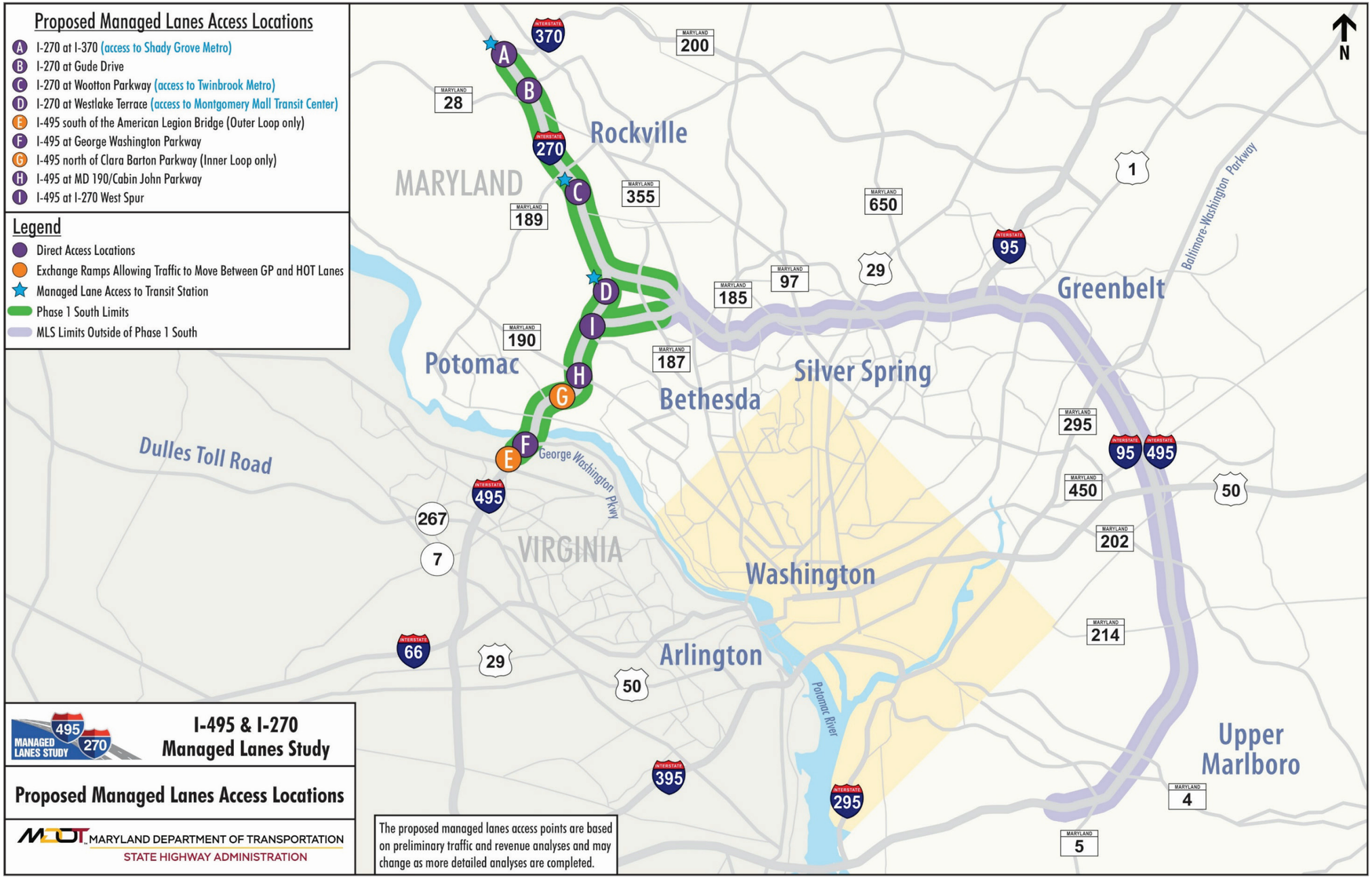
Location	Modification
Interface with Virginia I-495 HOT Lanes south of the ALB (see location 'E' on **Figure 2-4**)	• Exchange ramp from Maryland HOT managed lanes to Virginia GP lanes (outer loop only)
I-495/George Washington Memorial Parkway Interchange (see location 'F' on **Figure 2-4**)	• HOT lanes direct access to managed lanes in Maryland • Adjusted interchange ramps to accommodate widened mainline
I-495/Clara Barton Parkway Interchange	• Adjusted interchange ramps to accommodate widened mainline
Interface with Virginia I-495 HOT Lanes north of Clara Barton Parkway (see location 'G' on **Figure 2-4)**	• Exchange ramp from Virginia GP lanes to Maryland HOT managed lanes (inner loop only)
I-495/MD 190/Cabin John Parkway Interchange (see location 'H' on **Figure 2-4**)	• HOT lanes direct access interchange • Adjusted interchange ramps to accommodate widened mainline
I-495/I-270 west spur Interchange (see location 'I' on **Figure 2-4**)	• HOT lanes direct access interchange • Reconstructed interchange to accommodate HOT lanes
I-495/MD 187 Interchange	• Potential adjustment of interchange ramps to accommodate widened mainline
I-495/I-270 east spur/MD 355 Interchange	• No proposed interchange improvements
I-495/MD 185 Interchange	• No proposed interchange improvements
I-495/MD 97 Interchange	• No proposed interchange improvements

Location	Modification
I-495/US 29 Interchange	• No proposed interchange improvements
I-495/MD 193 Interchange	• No proposed interchange improvements
I-495/MD 650 Interchange	• No proposed interchange improvements
I-495/ I-95 Interchange	• No proposed interchange improvements
I-495/US 1 Interchange	• No proposed interchange improvements
I-495/Greenbelt Metro Interchange	• No proposed interchange improvements
I-495/MD 201 Interchange	• No proposed interchange improvements
I-495/Baltimore-Washington Parkway Interchange	• No proposed interchange improvements
I-495/MD 450 Interchange	• No proposed interchange improvements
I-495/US 50 Interchange	• No proposed interchange improvements
I-495/MD 202 Interchange	• No proposed interchange improvements
I-495/Arena Drive Interchange	• No proposed interchange improvements
I-495/MD 214 Interchange	• No proposed interchange improvements
I-495/Ritchie Marlboro Interchange	• No proposed interchange improvements
I-495/MD 4 Interchange	• No proposed interchange improvements
I-495/MD 337/Suitland Road Interchange	• No proposed interchange improvements
I-495/MD 5 Interchange	• No proposed interchange improvements
I-270 west spur/Democracy Boulevard Interchange	• Adjusted interchange ramps to accommodate widened mainline
I-270 west spur/Westlake Terrace Interchange (see location 'D' on **Figure 2-4**)	• Repurposed existing HOV only ramps to/from north to HOT lanes direct access ramps • Added HOT lanes direct access ramps to/from south
I-270 Y-Split Interchange	• Reconstructed interchange to accommodate HOT lanes
I-270/Montrose Road Interchange	• Adjusted interchange ramps to accommodate widened mainline
I-270/Wootton Parkway Interchange *(new interchange)* (see location 'C' on **Figure 2-4**)	• New interchange for HOT lanes direct access only
I-270/MD 189 Interchange	• Reconfigured interchange ramps to accommodate widened mainline
I-270/MD 28 Interchange	• Adjusted interchange ramps to accommodate widened mainline
I-270/Gude Drive Interchange *(new interchange)* (see location 'B' on **Figure 2-4**)	• New interchange for HOT lanes direct access only
I-270/Shady Grove Road Interchange	• Adjusted interchange ramps to accommodate widened mainline
I-270/I-370 Interchange (see location 'A' on **Figure 2-4**)	• HOT lanes direct access interchange (to/from south only) • Adjusted interchange ramps to accommodate widened mainline
I-270 east spur/MD 187/Rockledge Drive Interchange	• Adjusted interchange ramps to accommodate widened mainline

Note: The rows shaded in blue indicate HOT managed lanes access locations.

[1]The proposed managed lanes access points may change based on public and agencies' comments on the SDEIS and as more detailed analyses are completed, and the Interstate Access Point Approval request is reviewed by FHWA.

Figure 2-4: Proposed HOT Managed Lanes Access Locations



2.3.2 Stormwater Management Considerations

A. Introduction

A planning-level, conceptual identification of stormwater management (SWM) needs was considered throughout the Study Area when establishing the limit of disturbance (LOD) for the Preferred Alternative. The Maryland *Stormwater Management Act of 2007* emphasizes environmental site design (ESD)[2] and consideration of SWM early in the planning stage of a project to better balance transportation needs, right-of-way considerations, and requirements of the Act, which include both water quality (i.e., ESD) and water quantity management. Water quality management treats the first flush of rainfall to remove pollutants and improve downstream conditions. Water quantity management stores and slowly releases water to reduce downstream flooding.

Modifications to conceptual stormwater management for the SDEIS included: reevaluation of stormwater needs and locations for roadway updates based on traffic operations and noise barrier locations; continued avoidance and minimization; and coordination with key agency stakeholders. For example, continued coordination with National Park Service (NPS) led to the removal of all SWM facilities outside of the transportation footprint on NPS owned property. The methodology for stormwater evaluation remained the same as presented in the **DEIS, Chapter 2** and is restated below in **Section 2.3.2.B** for ease to the reader.

The land adjacent to the study corridors is heavily developed with numerous natural, cultural, and socioeconomic resources. The existing roadways are a mix of open section (i.e., no curb or concrete barrier) and closed section (i.e., curb or retaining wall) with superelevated cross slopes through horizontal curves. The density of development adjacent to the study corridors, combined with numerous environmental sensitive areas, complicated the efforts of finding enough suitable SWM site locations. However, as the design continues to progress, MDOT SHA will ensure SWM water quality requirements and treatment will be provided to the maximum extent practicable (MEP) at on-site locations, as required under the SWM Act.

B. Methodology and Assumptions

The 2000 Maryland Stormwater Design Manual (Rev. May 2009) requires all projects to provide Water Quality Volume (WQv), Channel Protection Volume (Cpv), Recharge Volume (Rev), and Overbank Protection Volume or Quantity management (Qp). In addition, the Preferred Alternative will need to meet the county requirements within their jurisdiction limits. Montgomery County requires a Qp of 10-year management and Qp of 100-year management if downstream flooding problems exist. Coordination with the county will continue through final design. All new impervious area and a minimum of 50 percent of reconstructed impervious area will require treatment. Reconstructed impervious area is defined as existing impervious area that is removed, exposing bare earth, before being repaved or repurposed. To calculate both the total new and reconstructed impervious area, water quality shading was performed for the preliminary roadway engineering for all new and existing pavement within the limits of the Preferred Alternative. Existing study points (where water leaves the State right-of-way) were identified in each

[2] Title 4, Subtitle 201.1(B) of the Stormwater Management Act of 2007 defines ESD as "...using small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources." Under this definition, ESD includes optimizing conservation of natural features (e.g., drainage patterns, soil, vegetation); minimizing impervious surfaces (e.g., pavement, concrete channels, roofs); slowing down runoff to maintain discharge timing and to increase infiltration and evapotranspiration; or using other nonstructural practices or innovative technologies approved by the Maryland Department of Environment (MDE).

section and field investigated to determine existing conditions. SWM requirements or impervious area requiring treatment were determined for the Preferred Alternative and preliminary SWM facility locations were identified. An evaluation of potential water quality loss was also conducted.

For this analysis, the redeveloped impervious area was quantified by assuming all shoulders and one to two of the existing lanes would need to be reconstructed. Based on the preliminary engineering, there are locations where existing pavement removal could result in a reduced SWM requirement. To be conservative, pavement removal was only included in the water quality shading when an existing interchange was reconfigured, resulting in ramp removal, or the pavement removal width was greater than ten (10) feet. During detailed design, further pavement removal opportunities may be realized.

C. Assumed Stormwater Management Provided for the Preferred Alternative

Six types of SWM facilities were identified in the analysis for this Study: quantity ponds, quality ponds, water quality outfalls, swales, quantity vaults, and water quality vaults. The proposed, preliminary large surface SWM features are shown on the *Environmental Resource Mapping* (**SDEIS, Appendix D**).

The quantity requirements for the Preferred Alternative must be met for each drainage section. The quantity management requirement is met in each drainage segment, except one: the ALB drainage segment. Based on typical practice, a quantity waiver could be granted for the ALB due to the direct discharge to the Potomac River, a major waterway. The ESD requirements must be maximized; however, any deficit within a given drainage segment could be met utilizing compensatory SWM within the same watershed as defined by the MDOT SHA *Sediment and Stormwater Guidelines and Procedures (SSGP), Section 5.5*., Compensatory SWM is anticipated to be provided through a variety of means including, but not limited to, new SWM facilities to provide water quality treatment for untreated existing impervious surfaces, stream restoration, outfall stabilization, existing SWM facility retrofits, pavement removal, or generation of water quality credits as provided in applicable sections of the SSGP. **Table 2-2** summarizes the required quantity, provided quantity, required ESD and provided ESD for the Preferred Alternative, and the resulting compensatory SWM mitigation requirement.

Table 2-2: Stormwater Management for the Preferred Alternative

Required Quantity surface area (ac)	Provided Quantity surface area (ac)	Required ESD surface area (ac)	Provided ESD surface area (ac)	Impervious Area Requiring Offsite Treatment (ac)
28	26	85	40	114

Due to the large amount of impervious area requiring treatment for the Preferred Alternative and existing site constraints, ESD could not be met onsite for the Preferred Alternative. Consequently, compensatory SWM treatment may be required to offset the ESD deficit, as shown in **Table 2-2**. It is important to consider that the methodology used to determine the conceptual SWM requirements for the Study was based on surface area requirements and was developed to support overall costs and determine right-of-way needs. Detailed stormwater management design, to be performed during final design, and/or use of innovative technologies may reduce the compensatory stormwater management requirements. As noted above, water quantity requirements were met on site in every drainage segment except one: the ALB drainage segment.

D. Compensatory Stormwater Management Plan Considerations

Due to the heavily urbanized areas and numerous resources along the study corridors that limit the amount of SWM water quality that can be practically provided on-site, alternate means for providing SWM were evaluated. MDOT SHA performed an extensive planning level study to identify compensatory, or off-site, SWM opportunities to ensure the SWM water quality requirements of the Preferred Alternative could be met. The results of this evaluation, presented in this SDEIS, were not included in the DEIS because the study was completed after the DEIS publication.

Potential SWM sites were identified to meet the compensatory SWM needs for the Preferred Alternative. The methodologies, assumptions, and evaluations documented below were used for this compensatory SWM analysis to support and inform the Joint Permit Application (JPA), the SDEIS, and ultimately the FEIS and Record of Decision (ROD). The compensatory treatment identified generally exceeds the requirement; however, the intent was to provide an excess of compensatory SWM sites to evaluate in detail during final design. Although it is anticipated that sites may be dropped from consideration when final design deems them infeasible and through coordination with Maryland Department of the Environment (MDE) and MDOT SHA permitting authorities, there would still be an adequate amount of treatment potential to meet the study area needs.

All findings of the compensatory SWM efforts are documented in the Compensatory Stormwater Mitigation Plan (**SDEIS, Appendix C**) and will be included in the JPA and FEIS, and ROD. This section summarizes the compensatory SWM requirements and potential water quality credit only.

a. Methodology and Assumptions

According to the Code of Maryland Regulations (COMAR), "the management of stormwater runoff is necessary to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding..." The quantification of the SWM required, water quality, and water quantity for a project is determined by the amount of existing impervious area and proposed impervious area located within the study area or LOD. While the MDE and MDOT SHA Water Quality Banking Agreement indicates SWM water quantity requirements must be met on-site for any given project, the SWM water quality requirements, while desirable to be met on-site, can be met elsewhere within the same MDE 6-digit watershed when on-site treatment is not practicable.

For the compensatory SWM analysis, LODs were identified for three types of sites: (1) SWM facilities, (2) stream restoration sites, and (3) pavement removal sites. In general, SWM facility sites were selected to maximize impervious area draining to the site and are primarily within the MDOT SHA right-of-way, while minimizing impacts to private properties and historic and environmental resources (trees, wetlands, waterways, 100-year floodplains, etc.). Each SWM facility is expected to meet a minimum of 1-inch treatment credit, which will provide full impervious area treatment (IAT) credit for MDOT SHA impervious area. For all non-MDOT SHA impervious areas draining to a site, or for pavement removal, half of the impervious area treated or removed is the resultant IAT credit. Unlike the SWM facility and pavement removal locations, the stream restoration sites are generally located outside of MDOT SHA right-of-way and will have impacts to private properties and environmental resources; however, impacts to wetlands and waterways at these sites are generally considered self-mitigating. Self-mitigating sites are sites where the potential design would improve the function of the environmental resources and would not require

impacts to be mitigated. The credit potential of one-acre IAT credit per 100 linear foot stream restored is a conservative estimate used for the efforts and additional credit may be realized during final design.

To ensure full compliance with NEPA requirements, impacts to forests, wetlands, waterways, floodplains, and properties were determined using desktop evaluations of compensatory SWM sites by the following disciplines: water resources, cultural resources, forestry, hazardous materials, maintenance of traffic, wetlands and waterways, right-of-way, parks/Section 4(f), structures, utilities, and constructability. All desktop evaluations were completed using the best data available at the time and were utilized to inform the LOD for each site. In addition to the desktop evaluations performed, field assessments were performed by the water resources, forestry, wetlands, and stream disciplines to inform the environmental resource delineations and determine SWM feasibility. Refer to **SDEIS, Appendix C** for additional details on the methodology.

b. Compensatory Stormwater Management Requirements and Potential

The current Compensatory Stormwater Management Plan will provide the opportunity for up to 298 acres of IAT for the Preferred Alternative, through use of SWM facilities, stream restoration, and pavement removal (**Table 2-3**). As stated above, the compensatory IAT potential exceeds the requirement; however, the intent of the plan is to provide an excess of compensatory SWM sites to evaluate in more detail during final design.

Table 2-3: Compensatory SWM Phase 1 South Potential

MDE 6-Digit Watershed	Target Compensatory SWM IART Requirement (AC)	Compensatory SWM IAT Potential (AC)
Washington Metropolitan (No. 021402)	114	298

Further avoidance and minimization of impacts to resources that would be caused by work associated with the compensatory SWM sites will be investigated during final design. In addition, the use of alternate sites which could have fewer or no impacts is encouraged. Final impacts should not exceed those presented in the JPA and the Compensatory Stormwater Management Plan, listed below in **Table 2-4**. While it may be possible that alternate compensatory SWM sites identified during final design could result in an increase in impacts, the full approval and permitting process, including any necessary evaluations for the anticipated environmental and other permitting approvals, would be required.

Table 2-4: Compensatory SWM Potential Phase 1 South Environmental Impacts

Potential LOD Area (acre)	Potential Property Impact (acre)	Wetland Impact (AC/SF)			Wetland Buffer Impact (AC/SF)	Waterway Impact (LF/SF)		FEMA 100-Year Floodplain Impact (AC/SF)	Forest Impact (AC/SF)	Specimen Tree Impact (Count/ DBH)
		PFO	PSS	PEM		Perennial	Intermittent			
234.9	37.5	4.1 / 176,854	0.02 / 871	0.6 / 27,007	7.7 / 335,232	20,994 / 226,250	4,666 / 24,126	46.5 / 2,023,362	76.4 / 3,329,321	38 / 1,410

2.3.3 Cross Culverts

The approach for identifying cross culverts and cross culvert augmentation remains the same as presented in the **DEIS, Chapter 2** and is included below for ease of review by the reader. All major cross culverts, defined as culverts 36 inches in diameter or greater with a drainage area greater than 25 acres, were

identified and analyzed to determine if they would need additional capacity in the proposed conditions. Major culverts were identified by desktop analysis using the MDOT SHA large and small structure database; LiDAR topographic data with one-foot contours; the MDOT SHA National Pollutant Discharge Elimination System (NPDES) database; and field observations.

If an existing culvert crossing needed additional capacity in the proposed conditions, then an auxiliary culvert was proposed to meet the need. It was assumed that the auxiliary culverts could be installed using trenchless technologies (installing the culvert underground without disturbing the existing road) so as not to disrupt traffic traveling on the existing road. Existing culverts were also proposed to be extended so the new outfall structure could be tied to the proposed grading limits for the Preferred Alternative.

After the need for the culvert augmentation was identified, further investigations including site visits and additional hydrologic and hydraulic computations, were conducted to set the LOD at each location. For all proposed culvert augmentation sites in the Preferred Alternative, site visits were conducted to assess the existing site condition, as well as the potential LOD requirements as they relate to the existing condition and the proposed crossing modification. Several agencies, including FHWA, United States Army Corps of Engineers (USACE) and MDE Nontidal Wetlands and Waterways, attended specific site visits to provide general feedback on the LOD requirements related to culvert augmentation.

To prepare for the site visit, a desktop review of each location was conducted, and the following data was compiled into an assessment form: existing and proposed culvert geometry, drainage area parameters, and an estimate of the potential capacity increase via augmentation. Additional site-specific information, such as upstream and downstream channel conditions including any bank erosion, channel head cutting, or other instability; notation of any unusual site circumstances including potentially impacted built infrastructure; and a photo documentation log, were added to the assessment form during the field investigations. Based on the field findings, LODs were proposed for each augmentation site, and they are included in the Preferred Alternative LOD.

Detailed hydrologic and hydraulic analysis will be completed during final design to confirm that augmentation is required. The detailed design will utilize additional data, including roadway and stream topographic survey, to analyze each culvert crossing location more thoroughly and will assess the hydraulic impacts associated with augmentation to confirm that the proposed design will meet the regulatory requirements. During final design, it is possible that culvert augmentation will not be needed at some previously identified locations or will be needed at other additional locations.

2.3.4 Construction and Short-term Effects

Construction of the Preferred Alternative will be conducted in a heavily developed area constrained by existing residential and commercial development and environmental resources. Continued, detailed analysis was completed since publication of the DEIS to further assess constructability requirements relative to the existing constraints and to identify additional appropriate adjustments to the LOD and cost estimate. Incorporation of the results of this constructability analysis allows for a more complete picture of the potential impacts. An overview of the analysis was provided in **DEIS, Chapter 2** and is repeated below, with an update on the ALB and Thomas Branch constructability evaluations that occurred following the publication of the DEIS.

A. Constructability Considerations

The constructability analysis was based on assumptions and conceptual ideas about construction phasing, methodology, and the general sequence of how the work may proceed. These include:

- Construction sequencing to construct the improvements in a manner that limits the total number of phases and accommodates reasonable and feasible construction methods.
- Maintenance of traffic to maintain the existing number of mainline travel lanes during peak periods, maintain traffic on crossroads, and maintain existing interchange ramp movements. Temporary off-peak lane closures were assumed.
- Construction access and staging to ensure that the LOD allows for storage of construction equipment and materials and construction access to/from the site.
- The ability of regional construction suppliers and contractors to meet the scheduled demand for resources given the scope of this project and the many other large concurrent projects proposed within the region.

B. Elements Included in the Constructability Analysis

The constructability analysis included potential approaches to complete the proposed work, including:

- Mainline widening to accommodate the HOT lanes.
- Interchange reconstruction to accommodate mainline widening and direct access for the HOT lanes, including new or reconstructed bridges and ramp structures within the existing interchange areas.
- Mainline bridges and overpass reconstruction to accommodate the widened mainline.
- Construction in challenging locations such as the ALB and the bridges over the Chesapeake and Ohio (C&O) Canal and Clara Barton Parkway (see section C. below) and widening adjacent to Thomas Branch. The constructability analysis included coordination with the regulatory agencies at the properties or resources under their jurisdiction including the National Park Service (NPS), Maryland-National Capital Park and Planning Commission (M-NCPPC), USACE, MDE, and Maryland Department of Natural Resources (DNR).
- Minimization of impacts to community, residential and commercial properties, and regulated resources such as cemeteries, parks, historic and archeological resources, and at wetlands and streams, to the greatest extent practicable.
- Drainage outfall stabilization and cross culvert reconstruction to accommodate roadway drainage, including MD Code 378[3] compliance.
- Avoidance and minimization of utility impacts where feasible and accommodation of utility relocations where impacts may be unavoidable.
- Retaining wall construction in cut and fill sections to minimize impacts.
- Construction, extension, or replacement of noise barriers.

The Preferred Alternative LOD also accounts for land needed for construction. The assumed areas for construction staging, materials storage, and access needs at specific locations are identified on the

[3] Plans must be submitted to the local Soil Conservation District for approval and prepared in accordance with MD 378: USDA Natural Resources Conservative Service Maryland Pond Code 378, January 2000.

Environmental Resource Mapping (**SDEIS, Appendix D**). The quantified property impacts presented in this SDEIS (**Chapter 4, Section 4.5**) are separated by permanent (or long-term) effects and temporary (or short-term) effects. Short-term, construction related work includes construction staging, material and equipment storage, construction easements, and other areas needed to support the construction, but are not part of the long-term improvements.

C. American Legion Bridge Strike Team

The Preferred Alternative includes the full replacement of the ALB on I-495 spanning the Potomac River with a new, wider bridge on the existing centerline. The existing bridge is nearly 60 years old and would need to be replaced regardless of the outcome of this Study. The new bridge would also need to be constructed to maintain the existing number of travel lanes at all times.

Comments on the Build Alternatives presented in the DEIS reflected a common support for advancing replacement of the ALB. With its location over the Potomac River and adjacent to several federally-owned parks, MDOT SHA created a separate group (the ALB Strike Team) whose mission was to investigate alternative bridge designs and construction techniques that could be employed to reduce, minimize, and avoid impacts to water and parkland resources in and around the ALB. The results of the effort are reflected in the Preferred Alternative and are the result of the coordination with key agency and public stakeholders, including NPS, M-NCPPC, USACE, MDE, and Maryland DNR.

The National Park Service properties that border the Potomac River at the ALB include the George Washington Memorial Parkway, the Chesapeake and Ohio Canal National Historic Park (including the C&O Canal Towpath and Plummer's Island), and Clara Barton Parkway. In addition to these sensitive properties, there are also many construction challenges associated with replacement of the ALB, such as access constraints.

A number of bridge types and construction methods (both standard and innovative) were evaluated during the Strike Team's analysis. A westward/upstream shift of the bridge alignment and additional phases of construction were also evaluated for the different bridge options. These options were presented to the stakeholders and a conventional structure was recommended that remained on the existing bridge centerline. Impacts to Plummer's Island were significantly reduced compared to those presented for the Build Alternatives in the DEIS by strategically locating the proposed piers for the replacement bridge and eliminating construction access from the island. In addition to a reduction of total impacts at the bridge construction site, the Strike Team effort resulted in a reduction of the number of construction access locations from all four quadrants, as noted in the DEIS, to the northwest quadrant only, due to its grade and proximity to a nearby roadway. This change substantially minimized impacts to the surrounding land. Refer to **Chapter 4, Section 4.4.3** for additional information on the minimization efforts around the ALB.

D. Thomas Branch Investigation

Thomas Branch runs parallel to I-495 and the I-270 west spur from the interchange of Democracy Boulevard and the I-270 west spur to the interchange of MD 190 (River Road) and I-495, for approximately three miles. The proposed roadway improvements along I-495 and I-270 would impact Thomas Branch for nearly the entire length where it runs parallel to and crosses under these roadways. An analysis of the impacts and minimization efforts along Thomas Branch were performed for the Build Alternatives for the DEIS. Further review efforts continued after publication of the DEIS and for this SDEIS to ensure that

multiple scenarios were considered to limit impacts to the resource while determining the LOD for the Preferred Alternative.

Because the LOD along Thomas Branch is constrained to minimize impacts to adjacent residential properties, a multi-disciplinary group was formed to identify a potential construction scenario for Thomas Branch based on the hydrologic and hydraulic conditions of the proposed improvement area. The group evaluated the major construction challenges and risks, as well as costs associated with those risks; this analysis informed the LOD required for construction of the Preferred Alternative. The group identified segments of Thomas Branch that would need to be enclosed and locations of retaining walls along the proposed roadway widening that would allow the stream to remain at grade. Major construction issues include the presence of bedrock slightly below the surface, maintenance of traffic, maintenance of stream flow, and utility constraints. Adjustments to the LOD recommended by this multi-disciplinary group were incorporated for the Preferred Alternative. Refinements to the proposed construction methods and minimization techniques to limit impacts to Thomas Branch will continue through final design.

2.3.5 Limit of Disturbance

A limit of disturbance (LOD) was established for the Preferred Alternative. The LOD is the proposed boundary within which all mainline construction-related activities would occur. The LOD for the Preferred Alternative was determined from the proposed roadway typical section, interchange configuration, and roadside design elements and is shown on the *Environmental Resource Mapping* (**SDEIS, Appendix D**). Property impacts associated with the LOD were broken into permanent (or long-term) and temporary (or short-term) areas. Examples of temporary impacts where a temporary construction easement would be acquired include the use of property for construction staging and/or storage that is not needed for the project after construction. The LOD for the Preferred Alternative assumed the potential area of disturbance for the following elements:

What changes were made to the Limit of Disturbance since the DEIS?

Modifications to the LOD for the Preferred Alternative included:

- Roadway design adjustments based on traffic operations;
- Revisions to noise barrier locations based on further analysis;
- Inclusion of LOD needs at culvert augmentation sites through detailed evaluation; and
- Continued application of avoidance and minimization efforts at sensitive resources

- Profile adjustments and roadway shifts due to mainline widening
- Inclusion of pedestrian and bicycle facilities for roads that cross over I-495 and I-270
- Direct access ramps and exchange ramps for access to the HOT managed lanes
- Interchange ramp relocation, reconfiguration, and tie-ins due to mainline widening
- On-site drainage and stormwater management, including swales, ponds, and large facilities along the roadside and within interchanges
- Relocation of existing streams, where determined to be feasible
- Culvert extensions, auxiliary pipes, and outfall stabilization areas
- Noise barrier replacement/construction
- Reconstruction of I-495 and I-270 mainline and interchange ramp bridges over water and roadways

- Full replacement of the ALB
- Utility relocations
- Avoidance and impact minimization of adjacent land uses such as: streams, wetlands, historic properties, parks, and private properties
- Construction access, staging, materials storage, grading, clearing, and erosion and sediment control

For the compensatory or off-site stormwater management sites, an LOD for each potential site was developed. Refer to **SDEIS, Appendix C** for details.

2.3.6 Tolling

The Preferred Alternative will include tolling of the HOT lanes. The toll rates and the toll rate ranges are determined through a multi-step process that is codified in Maryland law, which provides for public input through public hearings and official public testimony. This process was outlined in the DEIS and has advanced since the DEIS was published. The toll rate ranges are in the process of being finalized now, with an anticipated completion in Fall 2021, following the Notice of Availability for this SDEIS. This section provides a more detailed explanation of the toll rate setting process and the current status of the effort.

The toll-rate setting process is led by the Maryland Transportation Authority (MDTA). They are the only State entity with the authority to set, revise, and fix toll rates in accordance with Transportation Article §4-312 of the Annotated Code of Maryland and COMAR Title 11 Department of Transportation, Subtitle 07 MDTA, Chapter 05 Public Notice of Toll Schedule Revisions (11.07.05). The MDTA is responsible for setting the toll rate ranges and conducting toll collection operations for the Phase 1 South limits.

The MDTA toll rate proposal includes minimum toll and maximum toll rate ranges, soft rate caps, a process for annual toll escalation, and toll discounts for certain types of vehicles. The minimum and maximum toll rates are the lowest and highest toll rate per mile that would be charged in any tolling segment. The soft rate cap is the toll rate per mile that can only be exceeded when certain thresholds are met. More detailed explanations are provided below in **Section 2.3.6.C**.

Maryland law requires the establishment of toll rate ranges for variably priced facilities, including those utilizing dynamic pricing, such as the Preferred Alternative. The toll rate range proposal will be limited to only Phase 1 South. Any action to set, revise and fix tolls outside of Phase 1 South limits would require a separate toll setting process in accordance with State law.

MDTA has spent the past two years conducting due diligence activities on the toll rate range proposal which included traffic and revenue studies, post-model processing, and feedback from potential developers. The toll rate ranges proposed by MDTA are available on their website at http://mdta.maryland.gov/ALB270TollSetting/TollRateRangeSettingProcessandProposal. The following sections provide more detail on the toll rate setting process, variably and dynamically priced facilities, and the current MDTA toll proposal.

A. Toll Rate Setting Process

The toll rate range setting process is centered on a proposal by the MDTA staff to establish minimum toll rates, maximum toll rates, soft rate caps within the minimum and maximum toll rate ranges, a process for annual toll escalation, and toll discounts for certain types of vehicles.

The process for conducting the public hearings and recording comments from the public is specified in Transportation Article, §4-312, Annotated Code of Maryland. The initial proposal was presented to the MDTA Board on May 20, 2021. Per the process, the Board voted to take the toll proposal to public hearings and a public comment period, thereby ensuring the public is engaged in the toll rate range setting process and complying with State law by providing opportunities for public review and comment.

The comment period lasted from May 20 through August 12, 2021. Two public hearings were held:

- **Monday, July 12, 2021**: in-person hearing at the Hilton Washington D.C./Rockville Hotel & Executive Meeting Center in Rockville, 2 to 4 PM and 6 to 8 PM
- **Wednesday, July 14, 2021**: virtual hearing, 2 to 4 PM and 6 to 8 PM

All public hearing materials, including information and studies used in the analysis to justify the toll rate range proposal, were posted on the MDTA's website and remain available for the public to view at mdta.maryland.gov/ALB270TollSetting/PublicParticipation. The material presented included the background and justification for the toll rate ranges (minimum and maximum per-mile rates), soft rate caps within the ranges, and discounts, as well as the process required for completing the hearings.

The process for approving and finalizing the proposed toll rate ranges is also specified in Transportation Article, §4-312, Annotated Code of Maryland. At the August 26, 2021 MDTA Board Meeting, the MDTA staff presented a summary and analysis of comments received at the public hearings. In addition, they responded to questions from the Board members. A summary of the public comments received, and the analysis of the comments is available on the MDTA webpage at mdta.maryland.gov/ALB270TollSetting/PublicParticipation.

After consideration of the public comments, at the September 30, 2021 MDTA Board Meeting, the MDTA staff will present the final toll rate range proposal. This final toll rate range will be the recommended action for the Board and is available on the MDTA webpage at mdta.maryland.gov/ALB270TollSetting.

The MDTA is accepting written comments on the recommended action/final toll rate range proposal into October. At a fall MDTA Board Meeting, the MDTA staff are expected to present a summary and analysis of any public comments received during this second public comment period at an open meeting. The comment summary and analysis will be posted to the MDTA webpage at mdta.maryland.gov/ALB270TollSetting. During this meeting, the MDTA Board will vote on the final toll

rate range recommendation. Before the Board votes, the public will be provided a third opportunity to comment on the final toll rate range recommendation live during the MDTA Board Meeting.

B. Variably Priced and Dynamically Priced Facility

The Preferred Alternative will be a variably priced facility that utilizes dynamic pricing. A variably priced toll facility requires the establishment of toll rate ranges (minimum and maximum) for each vehicle classification and payment method. The MDTA Board is also responsible for establishing an annual escalation process and discount programs (including free passage) for certain types of vehicles.

Dynamic pricing is a method of calculating the toll where the pricing mileage rate varies within the approved toll rate range in real time. A dynamic facility uses operational metrics to adjust the toll in real time. Toll rates adjust to maintain free-flowing traffic by using pricing factors to influence the traffic flow—when lanes become more congested, the toll increases, and when the lanes become less congested, the toll decreases. Tolls will be collected electronically at highway speeds, using overhead gantries, with no toll plazas or toll booths (cashless tolling). Similar to the Virginia Express Lanes, MD 200, and the I-95 Express Toll Lanes north of Baltimore, current toll rates for common destinations will be displayed on electronic roadway signs allowing drivers to know their toll prior to entering the HOT lanes.

C. MDTA Toll Rate Range Proposal

The Preferred Alternative will be designed to maintain speeds of 45 mph or greater in the HOT lanes. The goal of the HOT lanes is to maintain free-flowing traffic and to use pricing factors to influence traffic flow. As such, the toll rate range will be set to ensure the HOT lanes operate to established operational metrics, which applies the economic principles of supply and demand to influence the utilization of the HOT lanes. The Phase 1 Section Developer will be responsible for setting toll rates within the established toll rate ranges, if approved at the end of the toll rate range setting process. The Developer will not only be responsible to ensure the free-flowing traffic goals but will also have to cover design, maintenance, finance and operations costs from the generated toll revenue. The toll rate range proposal will only be used if a ROD is signed by FHWA at the end of this study.

The proposed toll rate ranges for Phase 1 South will consist of minimum toll rates, soft toll rate caps, and maximum toll rates for the HOT lanes. The rates will also include annual escalation factors to ensure the toll rate ranges are adequate to cover the full term of the P3 Program agreements (anticipated to be 50 years). Toll rates will be set dynamically, meaning they could change up to every five minutes based on traffic volumes or speed in the HOT lanes to provide customers who choose to use the HOT lanes and pay a toll, a faster and more reliable trip. The actual toll rates will change based on real-time traffic within each tolling segment.

The toll rate ranges will only apply to the HOT lanes; the existing free general-purpose lanes will not be tolled. In addition, the proposal will include discounts for qualifying vehicles—including HOV 3+ (including carpools and vanpools), buses and motorcycles. MDTA recognizes that designated HOV compliant vehicles are required to be toll-free under the Federal regulation Section 166; however, MDTA is using the term ‘discount’ to refer to all vehicles that would have a toll rate that is lower than the standard toll rate.

a. Minimum Toll Rate

The minimum toll rate is the lowest toll rate per mile that will be charged at any tolling segment for the HOT lanes or the lowest total toll a customer will pay regardless of how far they travel. The minimum toll rate is intended to cover toll capture, processing and collection costs.

b. Soft Rate Caps

The soft rate cap is the toll rate amount that can only be exceeded when at least one of the following thresholds are met within a given tolling segment during the preceding five-minute period: the average traffic volume exceeds 1,600 passenger car equivalent vehicles per hour per lane or the average speed in a tolling segment is below 50 mph. The soft rate cap will always be lower than the maximum toll rate and can be exceeded only temporarily to provide customers who choose to pay a toll, a faster and more reliable trip. The toll rate will continue to decrease once throughput and speed performance targets are achieved until it is at or below the soft rate cap.

MDTA is proposing the soft rate cap as a protection for customers. The purpose of the soft rate cap is to constrain the toll rate charged to customers when throughput and speed performance targets are achieved. This provides customers protection from price gouging when traffic conditions do not justify higher rates. Although not standard practice in the tolling industry, the MDTA is choosing to be one of only two states in the United States to set a soft rate cap to constrain the toll rate as a protective measure for customers.

c. Maximum Toll Rate

The maximum toll rate is the highest per-mile toll rate that may be charged within any tolling segment for the HOT lanes. The actual per-mile rate paid by customers is responsive to real-time traffic. The maximum rates cannot be exceeded under any circumstance. The maximum rate will only be realized under conditions where the soft rate cap is exceeded, which would be during times of deteriorating performance. In extremely rare circumstances, when traffic demand is very high and customers are experiencing decreased speeds in a given tolling segment, the toll rate may reach the maximum toll rate. The toll rate is determined on a segment-by-segment basis. The maximum toll rate is required for the most congested tolling segments and likely would not come into effect for many segments.

d. Escalation

The minimum and maximum toll rate ranges, and the soft rate cap within them, will be adjusted annually according to pre-determined escalation factor equations. The adjustments are necessary to ensure the toll rates will (1) keep up with the growing traffic demand for the HOT lanes, (2) account for annual inflation, and (3) achieve the goal of providing a faster and more reliable trip for customers who choose to pay the toll over the life of project. For the toll rates to effectively manage demand and ensure reliability for users of the HOT lanes into the future, the maximum per mile rates, soft rate caps, and unregistered video surcharge rates will escalate over time to account for inflation, population employment, and income growth. The minimum per mile toll rate ranges and the minimum trip tolls are both subject to escalation for inflation only.

2.3.7 Transit-Related Elements

A description of the transit-related elements considered for the Build Alternatives and the State Board of Public Works (BPW) consideration of regional transit service improvements in the P3 agreements was

included in **DEIS, Chapter 2**. The same transit-related elements apply for the Preferred Alternative within the area of the build improvements. This section has been updated to describe additional transit considerations since publication of the DEIS and connections specifically related to the Preferred Alternative.

A. Enhanced Transit Mobility and Connectivity

A key element of this Study's Purpose and Need includes enhancing existing and planned multimodal mobility and connectivity. In furtherance of this key consideration and to address public and agency comments on the DEIS, MDOT SHA has identified opportunities to enhance transit mobility and connectivity within the Preferred Alternative including the following elements:

- Free bus transit usage of the HOT managed lanes to provide an increase in speed of travel, assurance of a reliable trip, and connection to local bus service/systems on arterials that directly connect to activity and economic centers.
- Direct and indirect connections from the proposed HOT managed lanes to existing transit stations and planned Transit Oriented Development as shown in **Figure 2-4** at the Shady Grove Metro (I-370), Twinbrook Metro (Wootton Parkway), Westfield Montgomery Mall Transit Center (Westlake Terrace), and Medical Center Metro (MD 187).
- Regional transit improvements to enhance existing and planned transit and support new opportunities for regional transit service including:
    - Construction of new bus bays at WMATA Shady Grove Metrorail Station
    - Increased parking capacity at the Westfield Montgomery Mall Park and Ride

a. BPW and Regional Transit Services

On August 11, 2021, in accordance with Maryland law, MDOT and MDTA presented to and received approval from the Board of Public Works to award the Phase 1 P3 Agreement to the Selected Proposer for the predevelopment work related to Phase 1 South of the P3 Program. As part of its proposal, the Phase Developer has committed to provide an estimated $300 million for transit services in Montgomery County over the operating term of Phase 1 South.

Transit Riders Will Benefit from the Managed Lanes

- Enhances transit mobility and connectivity to existing and planned transit facilities.
- Improved highway system will provide less-congested and more reliable routes for bus service.
- Provides opportunities for planned or modified bus service to connect to underserved suburban to suburban transit markets.
- Provides opportunities for new express bus service in National Capital Region, such as between Bethesda and Tysons.

To further support transit services, MDOT has committed, upon financial close of the Section P3 Agreement for Phase 1 South, to fund not less than $60 million for design and permitting of high priority transit investments in Montgomery County, such as Phase I of the Corridor Cities Transitway, Bus Rapid Transit in the MD 355 Corridor, or other high priority projects and to construct and equip the Metropolitan Grove Bus Operations and Maintenance Facility.

b. Transit Work Group, Transit Service Coordination Report, and I-495/American Legion Bridge Transit and TDM Plan

As described in the DEIS, the MDOT Secretary convened the I-495 & I-270 Managed Lanes Transit Work Group in May 2019 to seek input on existing transit services and help identify feasible opportunities for transit to use the managed lanes. The transit and planning representatives who are both directly and indirectly affected by the P3 Program include Montgomery, Prince George's, Frederick, Howard, Anne Arundel, and Charles Counties, as well as MDOT MTA commuter bus and Maryland Rail Commuter (MARC) and WMATA, MDOT Secretary's Office of Planning and Capital Programming, MDOT SHA, FHWA, Federal Transit Administration and the Metropolitan Washington Council of Governments.

The *Transit Service Coordination Report* was made available to the public in June 2020 and was the result of coordination between MDOT, local governments, and the transit providers through the I-495 & I-270 Managed Lanes Transit Work Group. The purpose of the report was to inform the development of the I-495 & I-270 P3 Program and assist the affected counties and transit providers in prioritizing capital and operating investments. Ongoing collaboration with the affected jurisdictions continues to establish priorities, identify and develop specific regional transit service improvements to be considered as part of the memorandum of understandings, and determine appropriate long-term funding strategies.

The I-495/American Legion Bridge Transit/Transportation Demand Management (TDM) Study was initiated to identify a range of current and future potential multimodal solutions that could be implemented to reduce congestion, improve trip reliability and regional connections, and enhance existing and planned multimodal mobility and connectivity for travel between Maryland and Virginia across the ALB. The study was a joint effort between the MDOT Maryland Transit Administration and the Virginia Department of Rail and Public Transportation. The potential construction of managed lanes in both states represents an opportunity to implement new transit service options that take advantage of the infrastructure and provide riders with congestion-free service.

The *I-495/ALB Transit/TDM Final Report and Plan*[4] was completed in March 2021 and identified a series of potential investment packages to provide new mobility choices to service bi-state travel. Each package outlined a combination of transit service elements, technology enhancements, Commuter Assistance Programs, and parking needs. The investment packages offered options to move more people across the ALB in fewer vehicles. The suggested next steps recommended in the Final Report included advancement of transit service before or during construction of the managed lanes, consideration of a bus-on-shoulder approach based on the sequence and duration of construction of the managed lanes, working with local entities and transit providers to facilitate first-last mile connections, and determining local service modifications. Additional next steps were related to commuter assistance programs and technology enhancements, and parking and facility needs. Consideration of these potential investment packages and regional transit improvements will continue through development of the FEIS, ROD and P3 agreements.

Further, the ALB will be designed and constructed such that a future capital improvement project will have one or more feasible options to achieve the full design and implementation of a transit line across the ALB. These options will be enabled by designing the northbound and southbound structures to not

[4] http://www.drpt.virginia.gov/media/3375/i495_alb_transittdm_study_finalreport_030521_combined.pdf

preclude future superstructure modifications and additional foundation and substructure capacity capable of supporting a new transit line.

2.3.8 Pedestrian and Bicycle Facility Considerations

A preliminary determination of existing pedestrian and bicycle facilities that would need to be replaced as part of the Build Alternatives was considered in the **DEIS, Chapter 2**. The updates since the DEIS consist of additional consideration of the proposed master plan facilities, refinement of the design approach applied for the Preferred Alternative in consultation with the key agency stakeholders, and development of options for a proposed shared use path connection across the ALB, between Maryland and Virginia.

Many pedestrian and bicycle facilities exist along crossroads or as separate facilities that cross over or under I-495 and I-270. The different facility types considered as part of this Study are described in guidance from the jurisdictions with ownership of these existing facilities within Phase 1 South including the MDOT SHA *Bicycle Policy & Design Guidelines* (January 2015), Montgomery County Planning Department's *Bicycle Facility Design Toolkit* (May 2018), and City of Rockville's *Bikeway Master Plan* (April 2017) and are defined below:

- Bikeway – General term denoting any trail, path, part of a highway, surfaced or smooth shoulder or any other travel way specifically signed, marked, or otherwise designated for bicycle travel. Bikeways include bike lanes, shared lanes, shared-use paths, and trails.
- Bike lane – Any portion of a roadway or shoulder which includes pavement markings and signage for the preferential or exclusive use of bicyclists. Separated bike lanes, or cycle tracks, are exclusive bikeways that are physically separated from both traffic and the sidewalk. They operate one-way or two-way.
- Shared lane – A roadway lane which is open to both bicycle and motor vehicle travel, without assigned space for each.
- Sidepath – Also known as a shared-use path, a paved or unpaved bikeway outside the motor vehicle traveled way providing two-way travel for pedestrians and bicycles within the highway right-of-way. A sidepath is physically separated from motorized vehicular traffic by an open space, curb, curb and gutter, or barrier.
- Off-street trail: A shared-use path providing two-way travel for pedestrians and bicycles located outside of the highway right-of-way.

Through coordination with the local agencies having jurisdiction over and/or maintenance responsibility for these facilities, existing pedestrian and bicycle facilities impacted by the Preferred Alternative would be replaced in kind or upgraded to meet the master plan recommended facilities. Provision of these upgraded facilities would be subject to maintenance agreements between MDOT SHA and the local jurisdictions in compliance with Maryland law.

The preliminary design approach for facilities along crossroads where the crossroad bridge would be reconstructed is to replace, upgrade, or provide new pedestrian/bicycle facilities consistent with the master plan, where adjacent connections on either side of the bridge currently exist. Where the I-495 and I-270 mainline or ramps cross over a roadway or pedestrian/bicycle facility and the bridge would be replaced, the mainline and ramp bridges would be lengthened to accommodate the footprint for the master plan facility under the structure. Identification of the proposed master plan facilities was conducted in coordination with M-NCPPC, the Montgomery County Department of Transportation

(MCDOT) and the City of Rockville and will be refined during final design. Additional new facilities or upgrades included in the Preferred Alternative were designed at a planning level in accordance with MDOT SHA, Montgomery County, or City of Rockville design requirements, as referenced above.

MDOT and the Virginia Department of Transportation have agreed to reconstruct the ALB with a new pedestrian and bicycle shared use path to provide multi-modal connectivity across the Potomac River, likely anticipated to be located along the east side of the ALB. The path would connect to the planned Fairfax County trail system and the Montgomery County master plan trail system at MacArthur Boulevard. An existing connection from the MacArthur Boulevard sidepath to the C&O Canal towpath exists just outside of the Study Area, supporting regional connectivity.

Since the DEIS, four options were developed for a proposed shared use path connection between the ALB and MacArthur Boulevard in Maryland. These options have been presented to agency stakeholders for input including NPS, MCDOT, M-NCPPC, and USACE. Through this coordination, Option 1 was eliminated from further consideration. A description of the remaining three options is summarized in the bullets below and graphical depictions of the path locations are shown in white in **Figure 2-5** through **Figure 2-7**. The shared use path options are included in the LOD for the Preferred Alternative and, therefore, any associated impacts are included in the overall impact totals.

- Option 2 (**Figure 2-5**) would provide the shortest path between the ALB and MacArthur Boulevard, traversing approximately 1,600 feet. From the ALB to north of eastbound Clara Barton Parkway, the path would be adjacent to and barrier-separated from I-495, thus presenting a single bridge structure over the towpath, Canal, and Parkway and limiting the visual effect of the path. North of the eastbound Clara Barton Parkway, the alignment of Option 2 would rise to cross over the northbound I-495 to eastbound Clara Barton Parkway ramp on a bridge and over Clara Barton Parkway westbound, connecting to the sidepath along MacArthur Boulevard. This alignment would allow for a natural buffer between the trail and I-495 ramps at the Clara Barton Parkway interchange, enhancing the user experience and reducing the visual effect of the trail from the Parkway.
- Option 3 (**Figure 2-6**) is similar to Option 2 and is approximately 1,770 feet long between the ALB and MacArthur Boulevard. From the ALB to north of the eastbound Clara Barton Parkway, Option 3 would be adjacent to and barrier-separated from I-495, thus presenting a single bridge structure over the towpath, Canal, and Eastbound Parkway and limiting the visual effect of the path. North of eastbound Clara Barton Parkway, the alignment would rise to cross over the northbound I-495 to eastbound Clara Barton Parkway ramp and over Clara Barton Parkway westbound on a bridge, connecting to the sidepath along MacArthur Boulevard. This option would keep the path alignment close to, but above, the existing loop ramp and would connect to MacArthur Boulevard further west than Option 2. The alignment would not provide a vegetative buffer between the trail and I-495 ramps.
- Option 4 (**Figure 2-7**) would provide an alignment approximately 2,050 feet long between the ALB and MacArthur Boulevard, which would remain parallel to I-495 while raising the elevation of the path to cross over the roadway ramps to and from the I-495 inner loop to Clara Barton Parkway. To meet vertical grade requirements of the Americans with Disabilities Act, Option 4 would include a switchback ramp north of the ALB to facilitate the grade change required to cross over the I-495 ramp to Clara Barton Parkway. This option would be on a continuous structure above I-

495, from the switchback ramp to MacArthur Boulevard. The trail would horizontally consolidate impacts with I-495 but would be more visible for a greater distance along the C&O Canal towpath and Clara Barton Parkway due to the height. It would also need to include additional safety measures due to the height and length of the structure.

These options for the shared use path connection between the ALB and MacArthur Boulevard will continue to be evaluated and coordinated with the agency stakeholders. The preferred alignment for the path will be identified in the FEIS. A summary of the key aspects of each shared use path option is provided in **Table 2-5**.

Table 2-5: Summary and Comparison of Shared Use Path Options

Alignment Option	Length between ALB and MacArthur Blvd	Overall Change in Elevation	Percent of Alignment in Tunnel	Percent of Alignment Higher than 25' above Existing Ground
Option 2	1,600'	29'	0%	34%
Option 3	1,770'	33'	0%	42%
Option 4	2,050'	51'	0%	78%

Figure 2-5: Shared Use Path Option 2 Alignment (Shown in White)

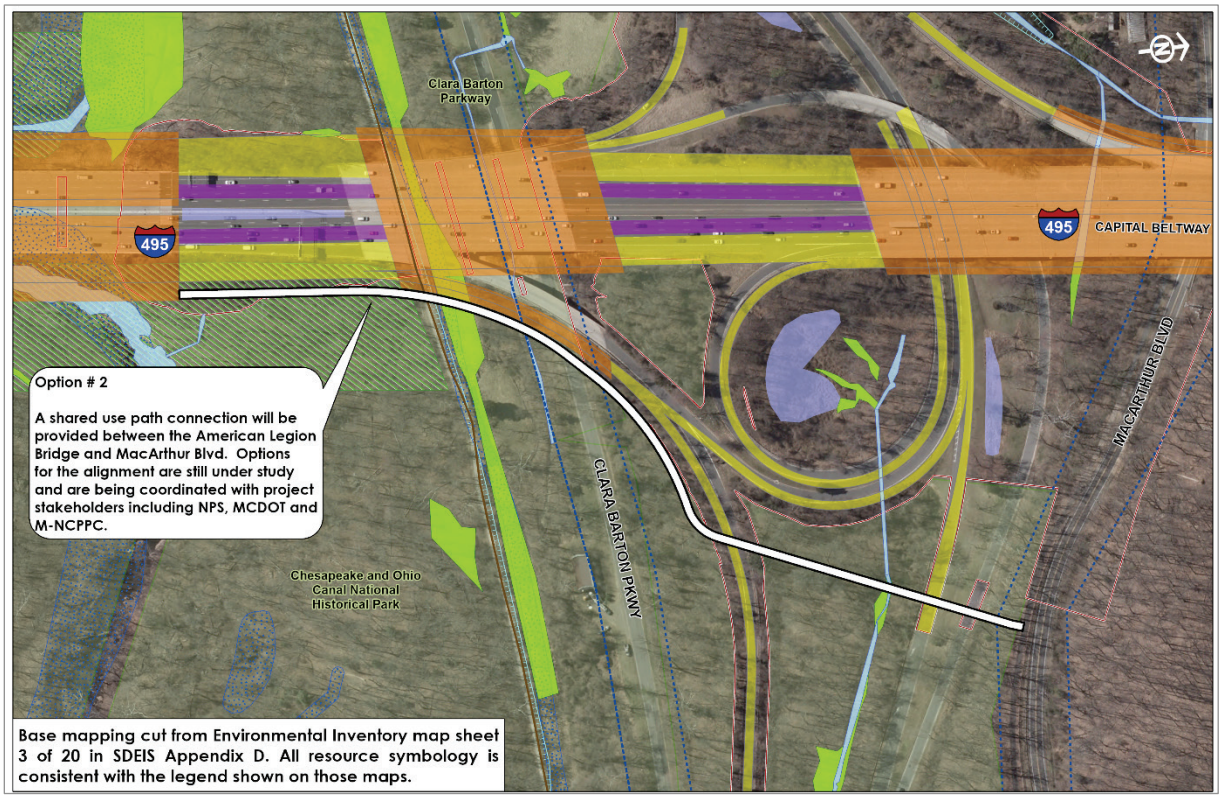


Figure 2-6: Shared Use Path Option 3 Alignment (Shown in White)

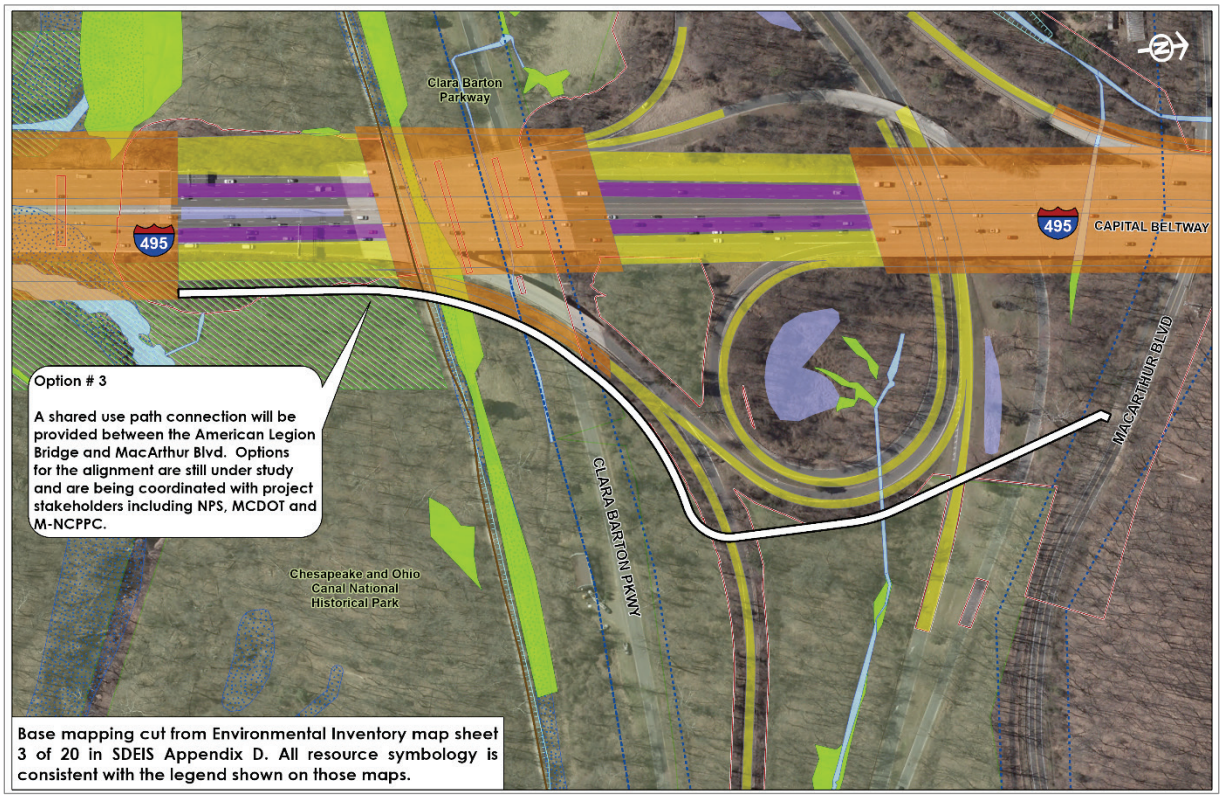
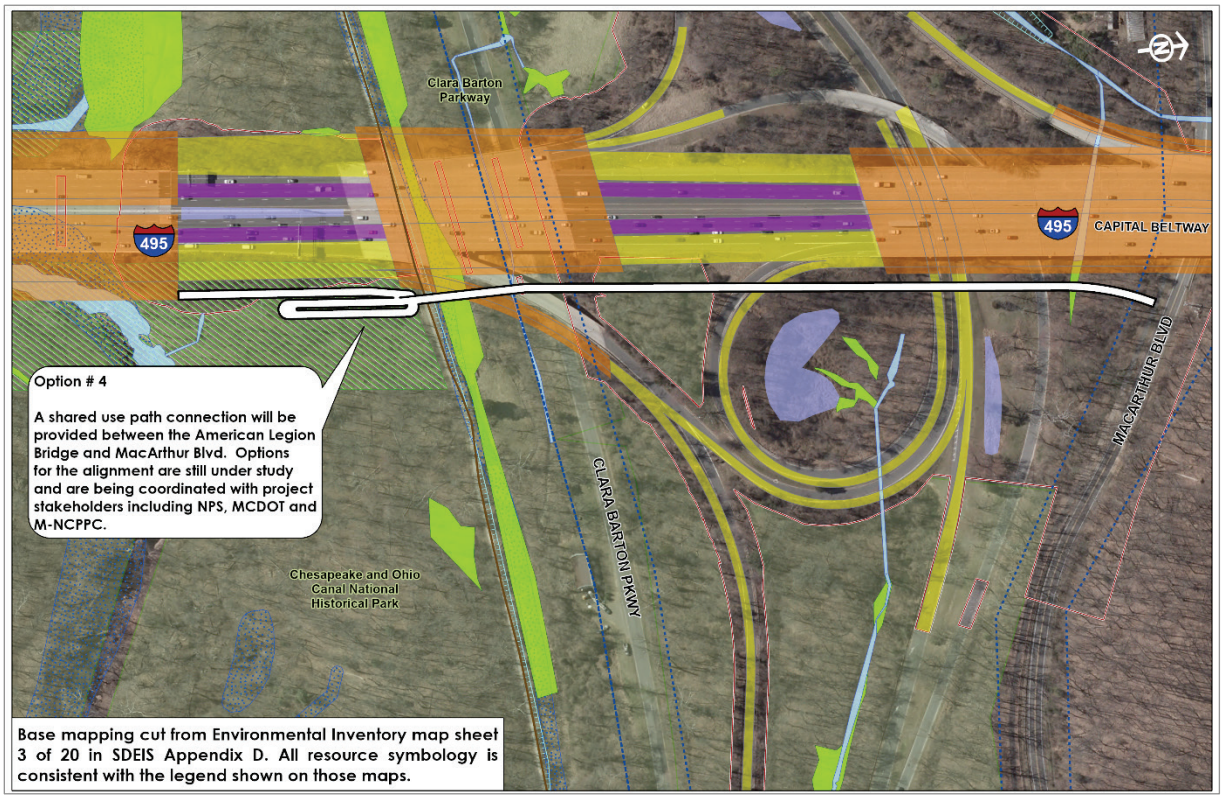


Figure 2-7: Shared Use Path Option 4 Alignment (Shown in White)



2.4 Transportation Commitments and Enhancements

Mitigation for unavoidable impacts is continuing to be evaluated and is being identified in close coordination with the partner resource and regulatory agencies. Final mitigation will be identified in the FEIS. Beyond mitigation for unavoidable impacts, MDOT SHA is committing to certain elements that have been identified as priorities through extensive coordination with local, state, and federal agency partners and in consideration of public comments received on the DEIS. These commitments and enhancements will serve to support new options for travel, reduce reliance on single occupancy vehicles, support new opportunities for regional transit service, and provide meaningful benefits to adjacent resources to improve values and functions that may be compromised. While extensive coordination efforts were performed to consider and address key concerns, the ultimate list of commitments will be finalized by MDOT SHA in the ROD. The current list of proposed commitments and enhancements include the following:

1. Commitment to *priority bicycle and pedestrian connections to remove barriers and provide connectivity* for bicyclists and pedestrians consistent with connections identified in the Montgomery County and City of Rockville master plans and priorities, including but not limited to:
    - Constructing a new pedestrian/bicycle shared use path across the ALB to connect facilities in Maryland and Virginia
    - Lengthening the I-270 bridge over Tuckerman Lane to accommodate future pedestrian/bicycle facilities along Tuckerman Lane
    - Constructing new sidepaths across MD 190 over I-495
    - Widening the existing variable-width sidepath along Seven Locks Road under I-495 (Cabin John Trail)
    - Constructing a new sidewalk along the west side of Seven Locks Road under I-495 to connect First Agape AME Zion Church (Gibson Grove Church) and Morningstar Tabernacle No. 88 Moses Hall and Cemetery
2. Commitment to certain *regional transit improvements* to enhance existing and planned transit and support new opportunities for regional transit service, as outlined in **Section 2.3.7** Transit Related Elements and below:
    - Construct new bus bays at WMATA Shady Grove Metrorail Station
    - Increase parking capacity at Westfield Montgomery Mall Transit Center
3. Commit to *environmental enhancements* that would provide meaningful benefits to adjacent resources to improve the values, services, attributes, and functions which may be compromised including water quality improvements, stream restoration, and removal of invasive species on county parkland.
    - Commit to continue working collaboratively with partner agencies to further avoid and minimize community, cultural, environmental, and parkland impacts, and finalize mitigation based on identified priorities that would, at a minimum, bring no net loss to impacted resources with a goal of net benefit.

- Commit to addressing water quality concerns on parkland focused on stabilizing streams, creating natural surface channels, and revegetating areas to improve water quality and reduce flooding and pollutant loads.
- Committed improvements include stream bank and bed stabilization and removal of concrete lined channels in identified priority areas such as Cabin John Stream Valley Park.

2.5 Phase 1 Solicitation Process and P3 Agreement

The Preferred Alternative is aligned with Phase 1 South Solicitation, which is the first section planned to be delivered under the I-495 & I-270 P3 Program. This Preferred Alternative does not suggest that improvements will not be needed on sections of I-495 that are recommended for no action at this time, including the top side and east side of I-495. However, under the Preferred Alternative, consideration of improvements to the remaining parts of I-495 would be required to advance separately, subject to additional environmental studies, analysis, and collaboration with the public, stakeholders, and agency partners. Additional improvements would proceed through subsequent P3 solicitation(s) or a public project delivery model, such as Design-Build. The following definitions of limits are provided to assist in understanding the NEPA and Phase 1 Solicitation process.

- Phase 1: I-495 from south of the ALB to I-270 and I-270 from I-495 to I-70. These are also the limits of the Phase 1 P3 Agreement.
- Phase 1 South: I-495 from south of the ALB to I-270 and I-270 from I-495 to I-370. These are also the limits of the NEPA Preferred Alternative.
- Phase 1 North: I-270 from I-370 to I-70.

2.5.1 Selection of the Phase Developer

The BPW originally approved the P3 designation for the P3 Program in June 2019 and provided a supplemental approval in January 2020. These approvals allowed MDOT SHA to use a Progressive P3 process to design and construct Phase 1 of the P3 Program, by seeking a phase developer for Phase 1. This progressive approach allowed the solicitation process to proceed without final commitment during the NEPA process.

As part of the progressive P3 solicitation, MDOT followed a two-step Request for Proposal (RFP) process, which began with MDOT seeking interested phase developers through a Request for Qualifications issued in February 2020. Statements of Qualifications were submitted and evaluated by MDOT and MDTA with participation from local jurisdictions and resulted in a shortlist of four highly qualified Proposers in July 2020.

The Proposers were then invited to submit proposals to enter into the Phase P3 Agreement for Phase 1 to assist in the predevelopment work and financial commitments for delivering Phase 1. The RFP outlined how each Proposer should present their plan to advance MDOT's goals of delivery certainty, minimizing impacts, maximizing value to the State, providing community benefits, congestion relief, and financial elements such as cost of performing predevelopment work and willingness to offer an upfront payment for the right to develop and deliver Phase 1 including I-495 from the ALB to I-270, and along I-270 from I-495 to I-70. Transparency, fairness, and competition were prioritized to ultimately identify the Proposer (the Selected Proposer) that could best deliver the project in a manner most advantageous to the State.

With the initiation of the solicitation process in February 2020, Proposers had nearly a year to develop their proposals.

Three of the four shortlisted firms submitted proposals to enter into the Phase P3 Agreement for Phase 1 to assist in the pre-development work. In February 2021, MDOT SHA identified the Selected Proposer that could best deliver the project in a manner most advantageous to the State.

On August 11, 2021, in accordance with Maryland law, MDOT and MDTA presented to and received approval from the Board of Public Works to award the Phase 1 P3 Agreement to the Selected Proposer, a jointly owned company created for the project, called Accelerate Maryland Partners, Inc. (AMP). Initially, they will be completing the predevelopment work related to Phase 1 South of the P3 Program; however, there is also an option in the Phase 1 Agreement for AMP to proceed with predevelopment work for Phase 1 North after the necessary NEPA approvals have been issued.

2.5.2 NEPA and the Progressive P3 Work Together

As noted above, Phase 1 South will be delivered using a Progressive P3 approach, which is designed to minimize risks to the State, provide more-efficient pricing, better schedule certainty, and support a phased delivery approach of the Preferred Alternative identified in this SDEIS.

As the first step to this two-step Progressive P3, AMP, the Phase Developer, has entered into the Phase P3 Agreement and is working collaboratively with MDOT, MDTA, and the stakeholders on predevelopment work for Phase 1 South. This upfront effort is focusing on advancing the preliminary design and due-diligence activities by involving all stakeholders – including Montgomery and Frederick Counties, municipalities, property owners, utilities, and citizens. During the predevelopment work, the focus will be on further avoiding and minimizing impacts to environmental resources, communities, properties, utilities, and other features.

After completion of the predevelopment work with respect to Phase 1 South and the FEIS and ROD, MDOT would seek final approval from the BPW to move forward with the Section P3 Agreement under which a subsidiary of the Phase Developer (called the “Section Developer”) will be responsible for the final design, construction, financing, operations and maintenance of such section for an estimated term of 50 years.