

II. ALTERNATIVES CONSIDERED

A. Initial Concepts Considered

During the initial scoping process, numerous concepts were considered in the development of preliminary alternatives. Additionally, several concept recommendations for the Patuxent River crossing were received at the initial Open House meetings. Two attendees wished to see a tunnel, either at the current location or to the north of the existing location. SHA performed a preliminary study and determined that tunnel options were problematic due to the extreme depth of the channel at the existing location, impacts to fish and aquatic vegetation habitats, and the construction cost of the tunnel and new roadway alignment further to the north. Other initial recommendations included reinitiating the ferry system that operated when the bridge was shut down for repairs in the 1990s and providing improved transit in lieu of bridge construction. After preliminary study, it was determined that a ferry system and transit-only solution do not adequately address the traffic capacity and safety needs for this project. Also during scoping, the Project Team reviewed the impacts of aligning a two-lane bridge facility to the north of the existing bridge. Preliminary findings indicated that aligning a new facility to the north would result in greater right-of-way (ROW) impacts and potential displacements than aligning a similar span south of the existing facility. This would result in greater environmental impacts and costs in comparison to the bridge alternatives carried forward for study.

B. Preliminary Alternatives Presented at the Alternates Public Workshops

Two Alternates Public Workshops were held in June 2008 to present the results of the preliminary planning study to the public. The study area had been broken into three sections: the Patuxent River Crossing, the MD 4 Mainline Widening, and the MD 4/MD 235 Intersection. A total of five Patuxent River Crossing alternatives, two MD 4 Mainline widening options, and four MD 4/MD 235 intersection options were developed during the Phase I Planning Study.

Each Patuxent River Crossing build alternative and mainline widening option includes the widening of MD 4 to improve safety, traffic capacity, and overall operations and is compatible with any of the four intersection options presented at the workshop.

Alternative 5 and Intersection Option C were dropped from further consideration after the Alternatives Public Workshops. Their descriptions along with the reasons they were dropped from further consideration are provided below.

Alternative 5 – Myrtle Point Crossing

Alternative 5 provided a new four-lane bridge that would be built from the Naval Recreation Center in Calvert County to the terminus of Patuxent Boulevard in Myrtle Point in St. Mary's County, approximately 4,000 feet to the northwest of the current Thomas Johnson Memorial Bridge. In each direction, the bridge consisted of two 12-foot-wide lanes, a four-foot-wide inside shoulder, and a 10-foot-wide outside shoulder. In addition, there would be a 10-foot-wide shared use bicycle/pedestrian lane on one side of the bridge, separated from the shoulder by a concrete barrier. This alternative would avoid physical impacts to Myrtle Point Park, and would maintain access to the park. Road connections with existing MD 4 would be maintained. The existing Thomas Johnson Memorial Bridge would eventually be demolished after the new bridge opened for traffic.

This alternative was dropped due to its increased environmental impacts, costs, and opposition from the public in comparison to other options that meet the project's purpose and need. Furthermore, St. Mary's County sent a letter to the state recommending that this alternative be omitted from further consideration based on its close proximity to Myrtle Point Nature Park. (**Appendix B**).

Option C: Partial Cloverleaf Interchange

This option featured a grade-separated interchange option, with MD 4 crossing over MD 235. Traffic turning from southbound MD 4 onto southbound MD 235 would travel straight through the interchange and then make a right turn onto a two-lane loop ramp to reach MD 235. The bridge over MD 235 would be six lanes, with two through lanes and a turn lane in each direction. MD 235 would have three through lanes in each direction. Ramps would be provided from northbound MD 235 to northbound MD 4 and for southbound MD 4 to northbound MD 235. Two signals were proposed along MD 4, and the current signal on MD 235 would be eliminated.

This intersection option was dropped due to impacts to a pending development project at the intersection and provided similar mobility benefits in comparison to other options that meet the project's purpose and need with similar costs and environmental impacts. St. Mary's County sent a letter to the state requesting this option not be retained (**Appendix B**).

C. Alternatives Retained for Detailed Study

During the Phase II Planning Study SHA determined through detailed engineering and traffic analysis that the study area should be broken into the following four sections to ensure logical breaks for each section:

- MD 4 Mainline, Calvert County – extends from the northern study limit (MD 4/Patuxent Point Parkway Intersection) to north of the Patuxent River crossing in Calvert County
- Patuxent River Crossing – extends from Solomons Cemetery in Calvert County to Patuxent Beach Road in St. Mary's County
- MD 4 Mainline Widening, St. Mary's County – extends from Patuxent Beach Road to just beyond Patuxent Boulevard in St. Mary's County
- MD 4/MD 235 Intersection – extends from just beyond Patuxent Boulevard in St. Mary's County to east of FDR Boulevard.

The project team recommended that the following alternatives be retained for detailed study (ARDS):

1. No-Build Alternative

No major improvements are proposed under Alternative 1, the No-Build Alternative. Minor short-term improvements would occur as part of routine maintenance and safety operations. The bridge would have to undergo re-decking during the next 15-25 years. The No-Build Alternative does not address future traffic concerns or the purpose and need for the project. It serves as the baseline for comparing the impacts and benefits associated with the build alternatives that have been retained for detailed study.

2. Transportation Systems Management (TSM)

The Transportation Systems Management (TSM) Alternative consists of spot improvements and access management along the corridor to address short-term safety, operational, and public concerns at specific locations. TSM improvements could generally be constructed with relatively low costs and environmental impacts, but would provide no substantial improvements to address future concerns. TSM strategies being considered for this corridor include:

- Removing the off-ramp from northbound MD 4 to MD 2 to eliminate congestion
- Consolidating access points from MD 4 to the parallel access road in Calvert County
- Closing either the northern or southern access point to South Patuxent Beach Road
- Separating the intersection improvements as stand-alone projects.

3. Build Alternatives

i. MD 4 Mainline Alternatives (Figure II-1)

a) MD 4 Mainline, Calvert County

Based on feedback from citizens, business owners, and elected officials, SHA has developed options for two sections of the MD 4 Mainline (Calvert County) Alternative. The first section is from the Thomas Johnson Bridge to approximately 600 feet south of Holiday Drive and the second section is from approximately 600 feet south of Holiday Drive to the project limits at the intersection of MD 4 / Patuxent Point Parkway. Both sections maintain a No-Build Option as a viable option for this portion of the overall MD 4 Project Planning Study. In addition, except for the Short-Term Improvements option within the first section, all of the options developed for each section of MD 4 Mainline (Calvert County) were designed to function interchangeably with the other options.

There are four options in addition to the No-Build option that focus on the section of MD 4 from the Thomas Johnson Bridge to approximately 600 feet south of Holiday Drive (**Figure II-1**). The purpose of these options is to improve access from the Thomas Johnson Bridge to Solomons Island Road. In all options other than the no-build option, the access point from northbound MD 4 to Solomons Island Road southbound closest to the Visitor's Center is proposed to be closed due to the proximity of the new bridge span. The four options include:

- The Short-Term Improvements option eliminates the right-in from northbound MD 4 to southbound Solomons Island Road. It also eliminates the right-out from Solomons Island Road to MD 4 northbound. This option adds a stop controlled intersection for MD 4 northbound and Solomons Island Road approximately 950 feet south of Holiday Road. The option maintains the existing access point from MD 4 southbound to Thomas Johnson Road.

This option is a stand-alone option and does not coincide with the other options designed for the section from approximately 600 feet south of Holiday Drive to the MD 4/Patuxent Point Parkway intersection of the MD 4 Mainline (Calvert County).

- Right Turn Option A maintains the existing access point from MD 4 southbound to Thomas Johnson Road. This option eliminates the right-in from northbound MD 4 to southbound Solomons Island Road and eliminates access to the Naval Recreation Area. It also eliminates the right-out from Solomons Island Road to MD 4 northbound. It does

add a right-in/right-out access point for MD 4 northbound/Solomons Island Road approximately 750 feet south of Holiday Road.

- Right Turn Option B maintains the existing access point from MD 4 southbound to Thomas Johnson Road. This option eliminates the right-in from northbound MD 4 to southbound Solomons Island Road and eliminates access to the Naval Recreation Area. It also eliminates the right-out from Solomons Island Road to MD 4 northbound. It does add a right-in/right-out access point for MD 4 northbound/Solomons Island Road approximately 900 feet south of Holiday Road.
- Left Turn Option maintains the existing access point from MD 4 southbound to Thomas Johnson Road while adding a left turn lane along northbound MD 4 just beyond the bridge to access Thomas Johnson Road. This option eliminates the right-in from northbound MD 4 to southbound Solomons Island Road and eliminates access to the Naval Recreation Area. It also eliminates the right-out from Solomons Island Road to MD 4 northbound. It does add a right-out only access point for Solomons Island Road to northbound MD 4 approximately 750 feet south of Holiday Road.

In addition to the no-build option, there have been two options developed for the section of MD 4 from approximately 600 feet south of Holiday Drive to the MD 4/Patuxent Point Parkway intersection (**Figure II-2**). The purpose of these options is to improve traffic movements along MD 4 and access to Solomons Island Road.

Both options for the section from approximately 600 feet south of Holiday Drive to the MD 4/Patuxent Point Parkway intersection include a reduced median to a 22-foot-wide open grass median with 2 to 4 foot median shoulder.

- The Median Shoulder Widening Option maintains that same access to Solomons Island Road as they exist today.
- The Median Shoulder Widening with Access Closures Option modifies access to Solomons Island Road. This option eliminates the right-in/right-out at just south of holiday Drive and removes the right-out from Solomons Island Road to MD 4 located 100 feet north of Holiday Drive. The only access point for Solomons Island Road to and from MD 4 would be at MD 4/Patuxent Point Parkway intersection.

Constructability and Maintenance of Traffic

No issues related to constructability or maintenance of traffic are anticipated with the construction of the MD 4 Mainline in Calvert County as most roadway improvements would be in the median or along the shoulder. The work would be completed with standard lane and shoulder closures, day and/or night.

b) MD 4 Mainline Widening, St. Mary's County

MD 4 would be widened to a four-lane divided roadway from Patuxent Beach Road to just beyond Patuxent Boulevard in St. Mary's County. The typical section would consist of two 12-foot-wide lanes, a 10-foot-wide outside shoulder, and a four-foot-wide inside shoulder in each direction, with a 30-foot-wide open grass median (**Figure II-1**). Turn lanes may be added to intersections where needed along MD 4. An option for a 10-foot-wide bicycle and pedestrian facility to be constructed to the south side of MD 4, separated by a 10-foot-wide buffer, is included.

Constructability and Maintenance of Traffic

No issues related to constructability or maintenance of traffic are anticipated with the construction of the MD 4 Mainline in St. Mary's County. Most of the improvements would be conducted to the south side of the existing MD 4 roadway, where there are fewer connecting roads to MD 4. The existing roadway can be maintained while the additional lanes are constructed. Standard maintenance of traffic details will be utilized.

ii. Patuxent River Crossings

A mast height survey was conducted for the Thomas Johnson Bridge to determine the minimum vertical clearance required for the proposed Patuxent River Crossing alternatives. In June 2008, 27 marinas were contacted for information regarding the size and mast heights of the boats that make use of these facilities. In November 2009 the same marinas and other boat service businesses in the area were contacted to verify the June 2008 survey results and gather any additional information. The results of the survey determined that the average mast height of the recreational boat traffic is approximately 40 feet. Because the Intracoastal Waterway maximum clearance is 65 feet, the majority of the marinas in the study area are located downriver of the bridge. The marinas located upriver of the bridge have indicated that it is very rare to have a boat with a combined draft and mast height taller than 75 feet.

Under these alternatives, **Option A** would decrease the vertical profile of the new bridge to approximately a 70-foot-high vertical clearance. **Option B** would maintain the existing vertical profile of the bridge, with a 140-foot-high vertical clearance in the Patuxent River shipping channel.

In March 2010, a project newsletter was distributed to all of the properties that have frontage along the navigable portion of the Patuxent River upstream of the Thomas Johnson Bridge in an effort to gather feedback about the proposed bridge height. SHA has not received any comments since the distribution of the March 2010 newsletter.

Both of the proposed Patuxent River Crossing alternatives described below will include crossovers at either end of the bridge in order to accommodate roadway and bridge maintenance activities, emergencies (accidents, broken-down vehicles, etc.) and evacuations.

a) Alternative 3: Two-Lane Parallel Span

Alternative 3 (**Figure II-3**) is a new, two-lane bridge that will be built parallel to the existing Thomas Johnson Memorial Bridge. With this alternative, the existing bridge will be kept open to traffic and converted to carry traffic in the southbound direction. The new span will carry traffic in the northbound direction and will consist of two 12-foot-wide travel lanes, a four-foot-wide inside shoulder, and a 10-foot-wide outside shoulder. In addition, the bridge will have a 10-foot-wide shared-use bicycle/pedestrian path separated by a concrete barrier on the southern side of the bridge.

Constructability and Maintenance of Traffic

Under this alternative, a parallel span would be constructed south of the existing bridge. The existing structure would be maintained to carry the traffic in both directions. Upon completion of

the second span, the existing bridge would be rehabilitated and converted to carry southbound traffic and the new span would carry northbound traffic.

b) Alternative 4: Four-Lane Parallel Span

Alternative 4 (**Figure II-3**) is a new four-lane bridge that will be built parallel and to the south of the existing Thomas Johnson Memorial Bridge. Upon completion of the new bridge, the existing bridge will be removed. In each direction, the bridge will consist of two 12-foot-wide lanes, a four-foot-wide inside shoulder, and a 10-foot-wide outside shoulder. In addition, there will be a 10-foot-wide shared-use bicycle/pedestrian lane on the south side of the bridge, separated from the shoulder by a concrete barrier.

Constructability and Maintenance of Traffic

Under this alternative, the new four-lane bridge would be built south of the existing bridge, which would remain open during the construction of the new span to carry northbound and southbound traffic. Upon completion of the new bridge, the existing bridge would be removed.

iii. MD 4/MD 235 Intersection Options

a) Option A: Continuous Flow Intersection

This option will modify the existing traffic signal and add two new signals on the north and west legs of the intersection. The three traffic signals will be used to disperse traffic through the intersection. This option (**Figure II-4**) takes the primary left-turning traffic at the intersection of MD 4 and MD 235 and moves it to the left of oncoming traffic. Under this option, left turning southbound traffic at the intersection from MD 4, as well as MD 235 will be made into a two-lane, continuous-flow leg. MD 4 will carry two through lanes in each direction, and MD 235 will maintain three through lanes in each direction. Bicycles and pedestrian facilities will be provided through the intersections and connect with the County's proposed Three Notch Trail.

Constructability and Maintenance of Traffic

The construction of the Continuous Flow Intersection (CFI) would be completed in three phases and take a total of two to three years to complete. In Phase 1, new pavement outside of the existing travel lanes would be constructed. During Phase 2, traffic would utilize the pavement constructed during Phase 1 while new the new left turn lanes from eastbound MD 4 to southbound MD 235 are constructed. Phase 3 would open up traffic to the ultimate configuration and would include the construction of the medians and the island for channelized right turns.

b) Option B: At-Grade Intersection with One-Directional Flyover

This option (**Figure II-5**) takes traffic turning left from southbound MD 4 to southbound MD 235 and moves it onto a single-lane flyover ramp to bypass the MD 4/MD 235 intersection. The traffic signal will remain for all other intersection movements. MD 4 will carry two through lanes in each direction, and MD 235 will maintain three through lanes in each direction. MD 235 will have two left-turn lanes in each direction, and northbound MD 4 will have two left-turn lanes. Northbound MD 235 will have a free-flowing right turn onto northbound MD 4, and northbound MD 4 will have a free-flowing right turn onto southbound MD 235. Bicycles and pedestrian facilities will be provided through the intersections and connect with the County's proposed Three Notch Trail.

Constructability and Maintenance of Traffic

The flyover would be constructed in four phases over approximately two to three years. In Phase 1, construction would begin with the flyover ramp approach on MD 4 and outside widening on MD 235. Traffic would continue to operate as existing, with lane shifts. In Phase 2, the outermost lanes of the eastern leg of the intersection would be reconfigured. Traffic on MD 235 would shift to the outside in order to accommodate the construction of the bridge pier in the MD 4 median and the abutment walls in the MD 235 median. In Phase 3, the installation of the structural steel would be completed using temporary closures. Since curved steel girders would be used, it is anticipated that an extended closure (longer than 15 minutes) will be required to place the steel. In Phase 4, the remaining portions of MD 4 and the medians would be constructed.

c) Option D: Single Point Urban Interchange

This option (**Figure II-6**) is a grade-separated interchange option, with MD 4 crossing under MD 235. Option D keeps all through traffic on MD 235 flowing (without a traffic signal) and three lanes in each direction. It directs all turns through ramps to a single signalized intersection with MD 4 below MD 235. Through traffic along MD 4 will also cross through the signal, with two through lanes in each direction. Bicycles and pedestrian facilities will be provided through the intersection and connect with the County's proposed Three Notch Trail.

Constructability and Maintenance of Traffic

The Single Point Urban Interchange (SPUI) would require the most phases (five) as well as the longest amount of time for construction to be completed. It is anticipated that construction would be between four and five years. Phase 1 involves the construction of temporary roadways and the relocation of traffic along both legs of the MD 235 and the southern leg of the MD 4 off-alignment to construct the new MD 4 bridge over MD 235 and the eastern ramps. Traffic on the northern leg is diverted to a temporary signal to the west of the existing intersection. Phase 2 would involve utilizing the temporary roadways constructed during Phase 1 as well as detouring all movements to MD 4 to and from the east. Phase 2 would include the construction of the bridge and a majority of the interchange. After the bridge is constructed during Phase 2, Phase 3 would have all MD 235 traffic use the bridge, traffic bound for MD 4 will be diverted to a temporary road west of the current alignment and continue to use the temporary signal. Phase 3 includes the majority of the construction of MD 4 east of the MD 235 intersection. During Phase 4, the work on the northern leg of MD 4 would be completed. Once the MD 4 connection is made, the temporary signal would be removed and the full interchange would be open to traffic. Phase 5 includes the removal of all temporary roadways.

d) Traffic Analysis for Intersection Options

SHA conducted an intersection capacity analysis for Options A and D using the Highway Capacity Software and Option B using the VISSIM model. The models determined the level-of-service (LOS) for the 2030 AM and PM peak periods (**Table II-1**). The build options operated between an overall LOS C-D during the AM and from a LOS C-E in the PM. The No-Build option had a LOS F in both the AM and PM peak periods.

Table II-1. Intersection Capacity Analysis

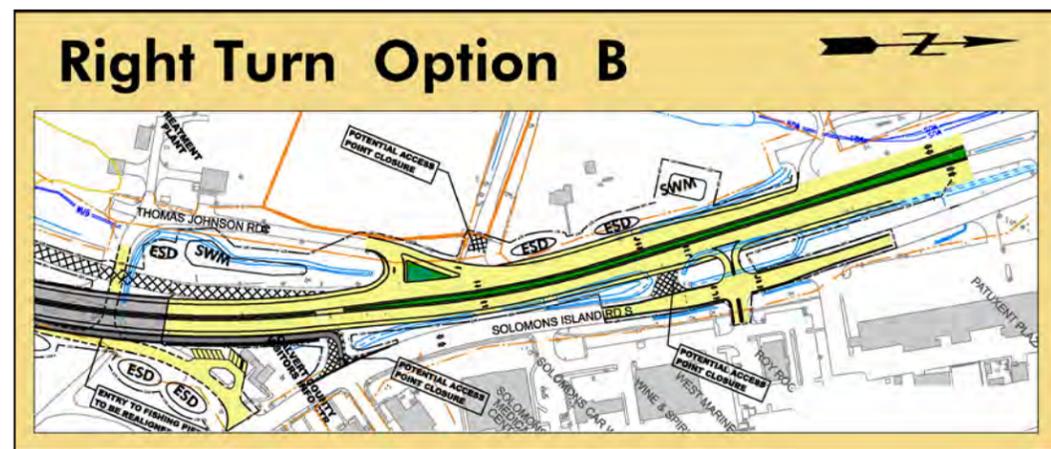
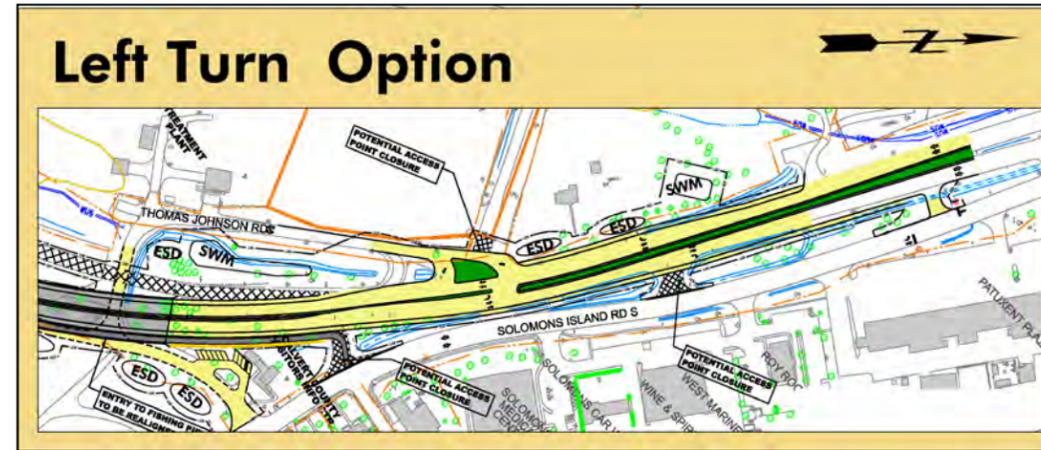
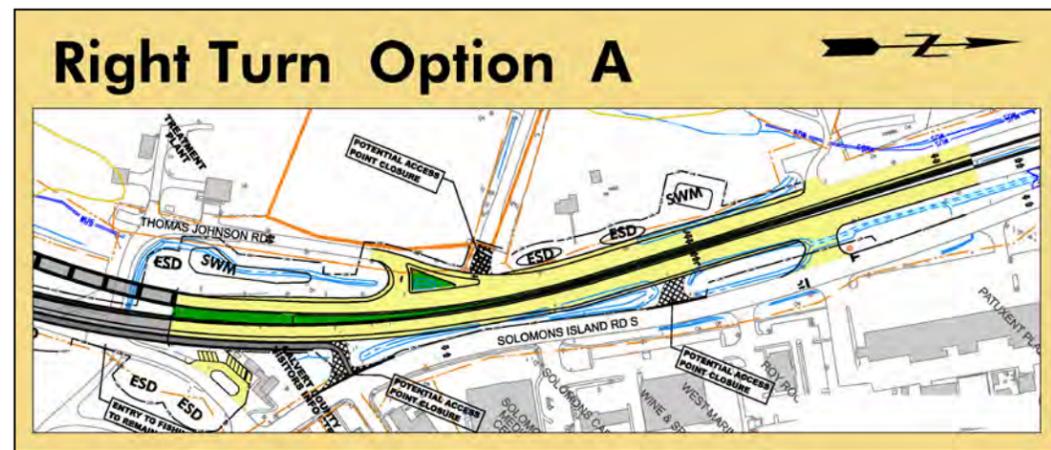
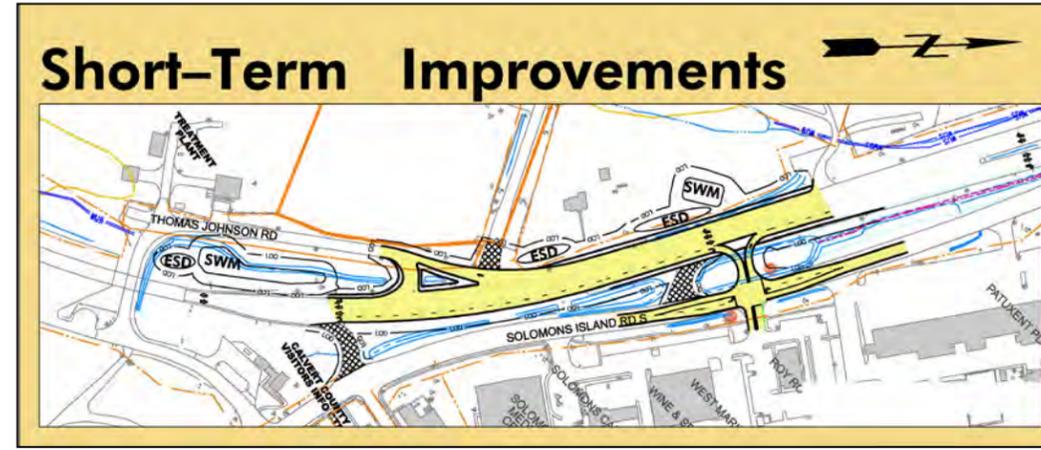
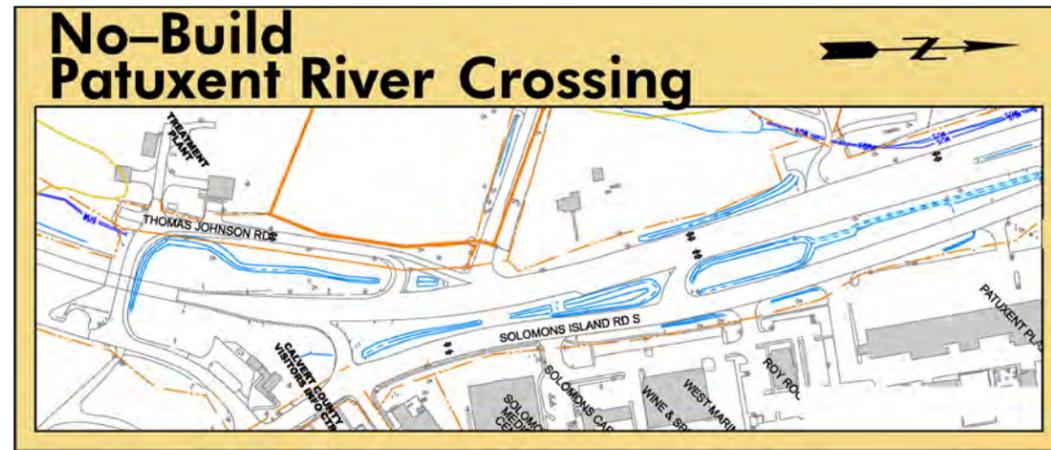
Location of Signals	2030 AM LOS (sec/vehicle)¹	2030 PM LOS (sec/vehicle)¹
No-Build Option		
MD 4 /MD 235	F (96)	F (313)
Overall	F (96)	F (313)
Option A – Continuous Flow		
MD 4	C (26)	C (22)
MD 4/MD 235	B (14)	C (22)
MD 235	A (9)	A (9)
Overall	D (49)	D (53)
Option B – Directional Flyover		
MD 4 /MD 235*	C (31)	E (64)
Overall	C (31)	E (64)
Option D - SPUI		
MD 4 /MD 235**	C (35)	D (49)
Overall	C (35)	D (49)

This number represents the delay (in seconds) for a vehicle. Lower numbers represent less congestion and shorter delays.

*Uninterrupted flow from southbound MD 4 left-turn to southbound MD 235

** Uninterrupted flow northbound and southbound MD 235

Figure II-1:
MD 4 Mainline, (Calvert County)
 Options for Section of MD 4 from the Thomas Johnson Bridge to approximately 600 feet south of Holiday Drive



Typical Sections for MD 4 Mainline (St. Mary's County)

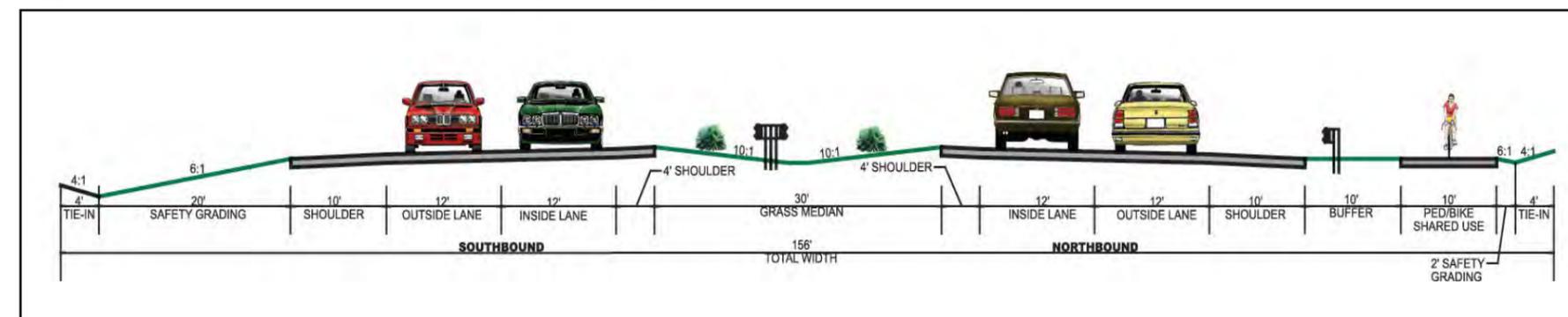


Figure II-2:
MD 4 Mainline, (Calvert County) - Options for Section of MD 4 from approximately 600 feet south of Holiday Drive to the MD 4/Patuxent Point Parkway

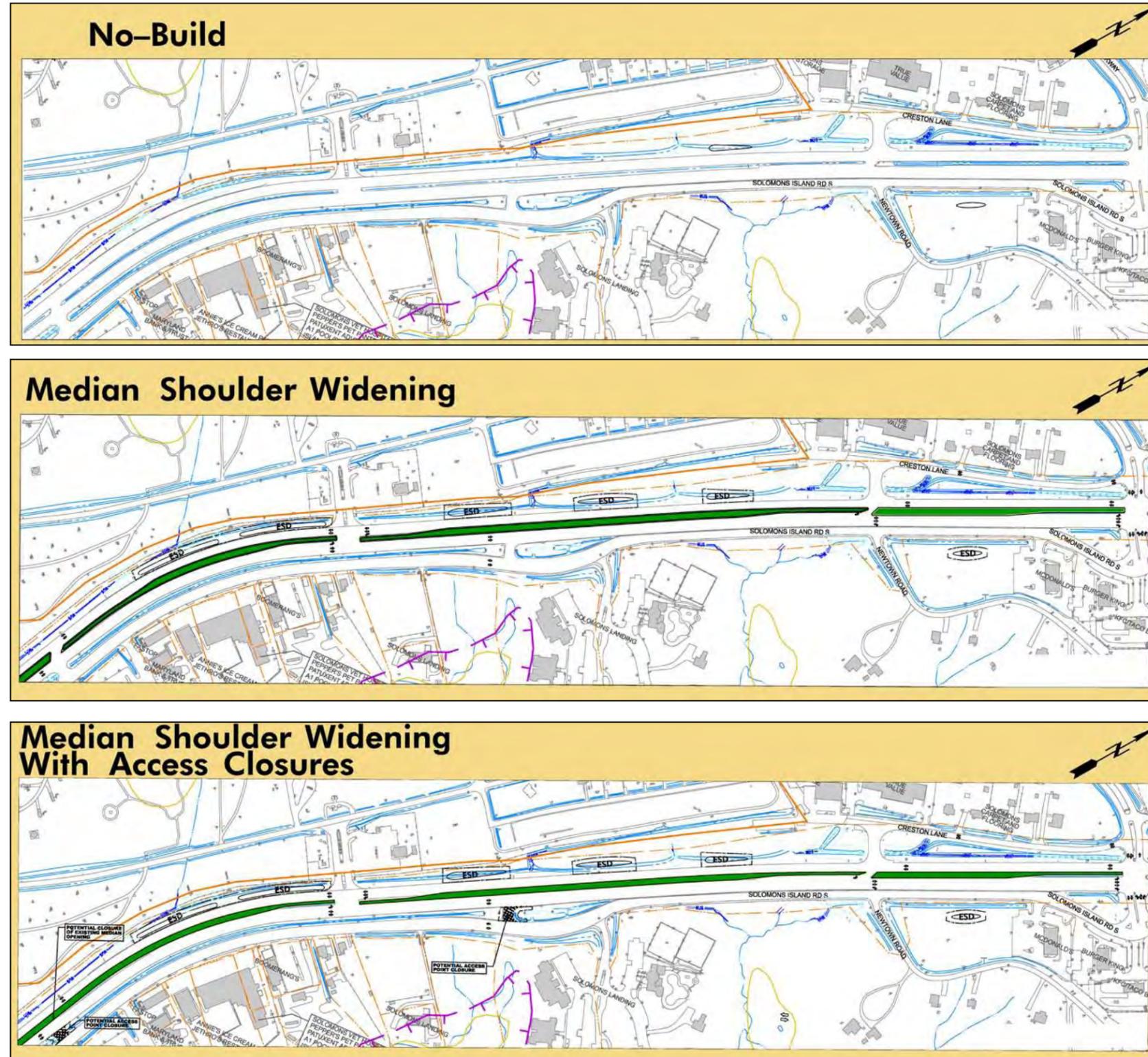
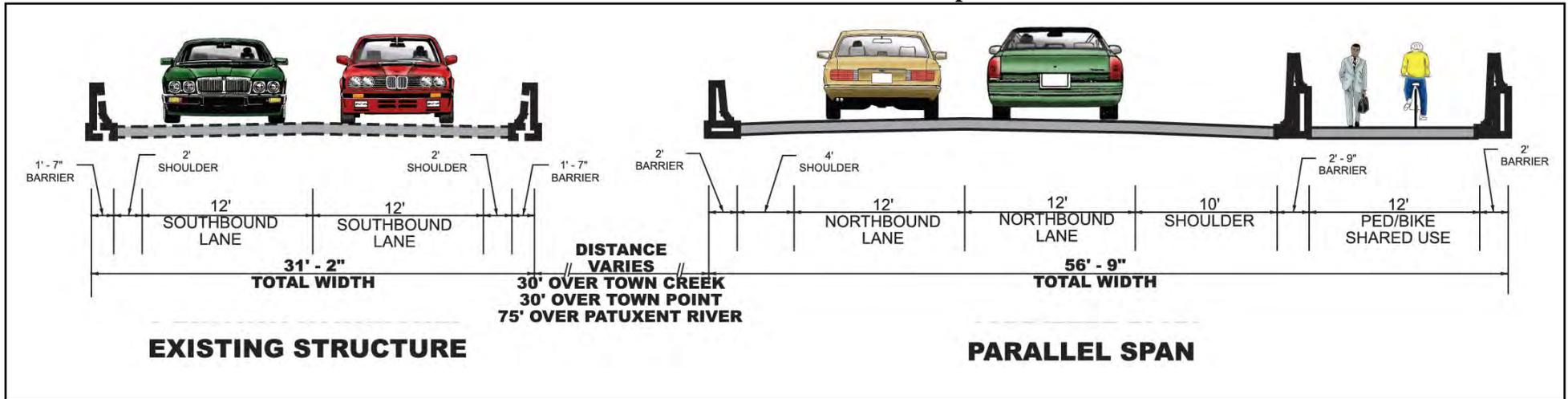
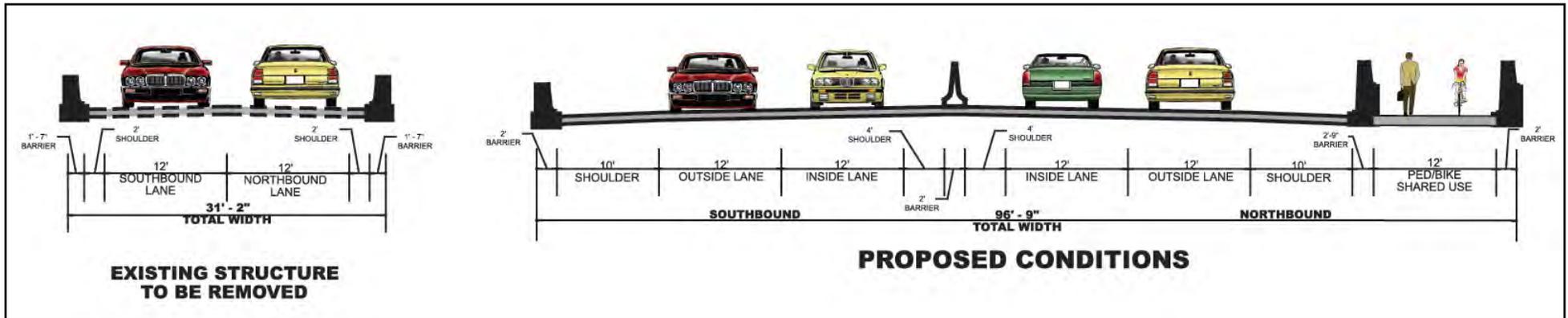


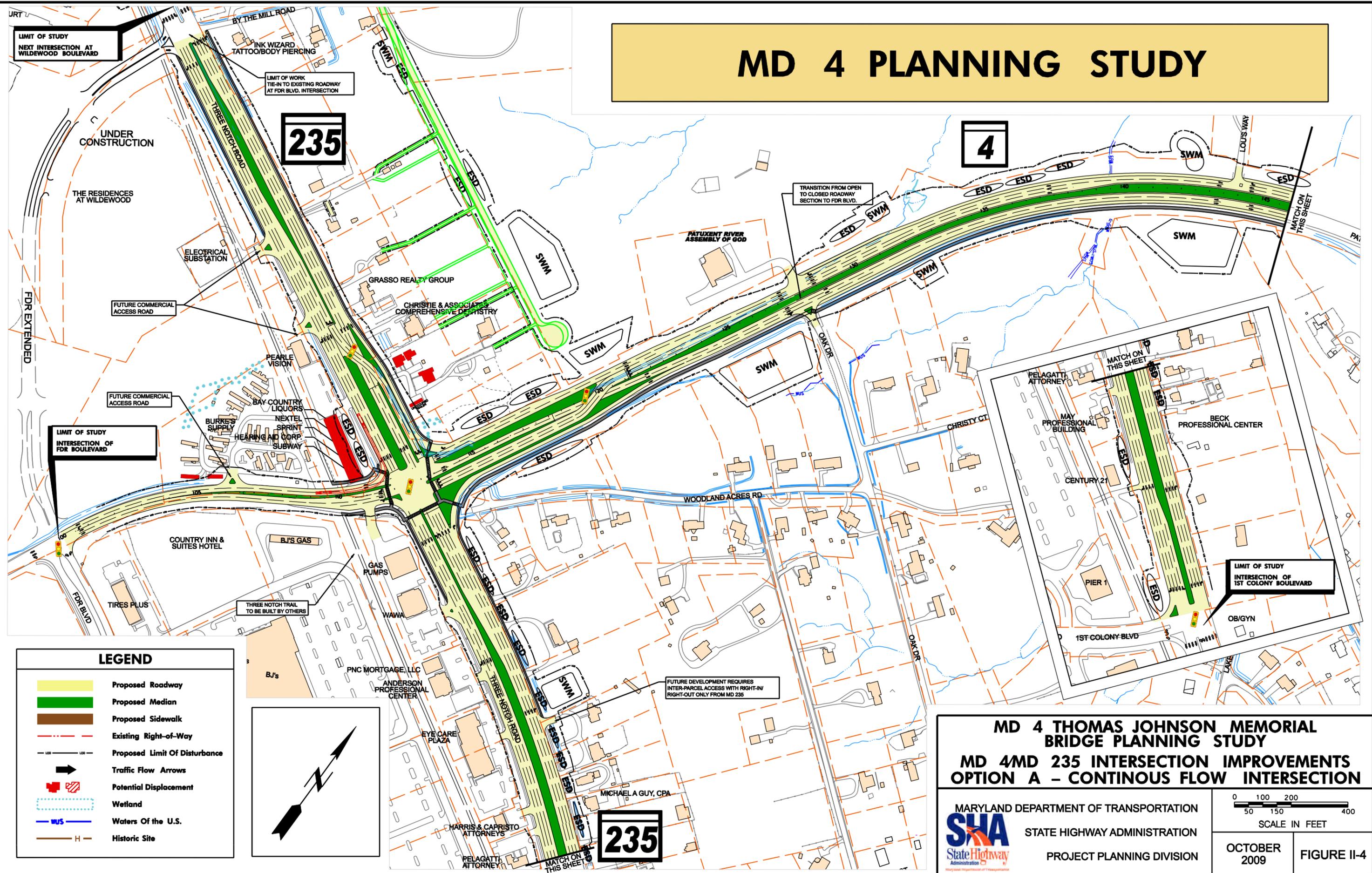
Figure II-3: Typical Sections for Alternatives 3 and 4
Alternative 3: Two-Lane Parallel Span



Alternative 4: Four-Lane Parallel Span

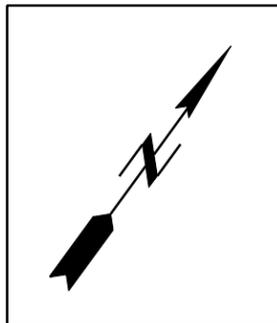


MD 4 PLANNING STUDY



LEGEND

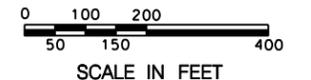
- Proposed Roadway
- Proposed Median
- Proposed Sidewalk
- Existing Right-of-Way
- Proposed Limit Of Disturbance
- Traffic Flow Arrows
- Potential Displacement
- Wetland
- Waters Of the U.S.
- Historic Site



MD 4 THOMAS JOHNSON MEMORIAL BRIDGE PLANNING STUDY

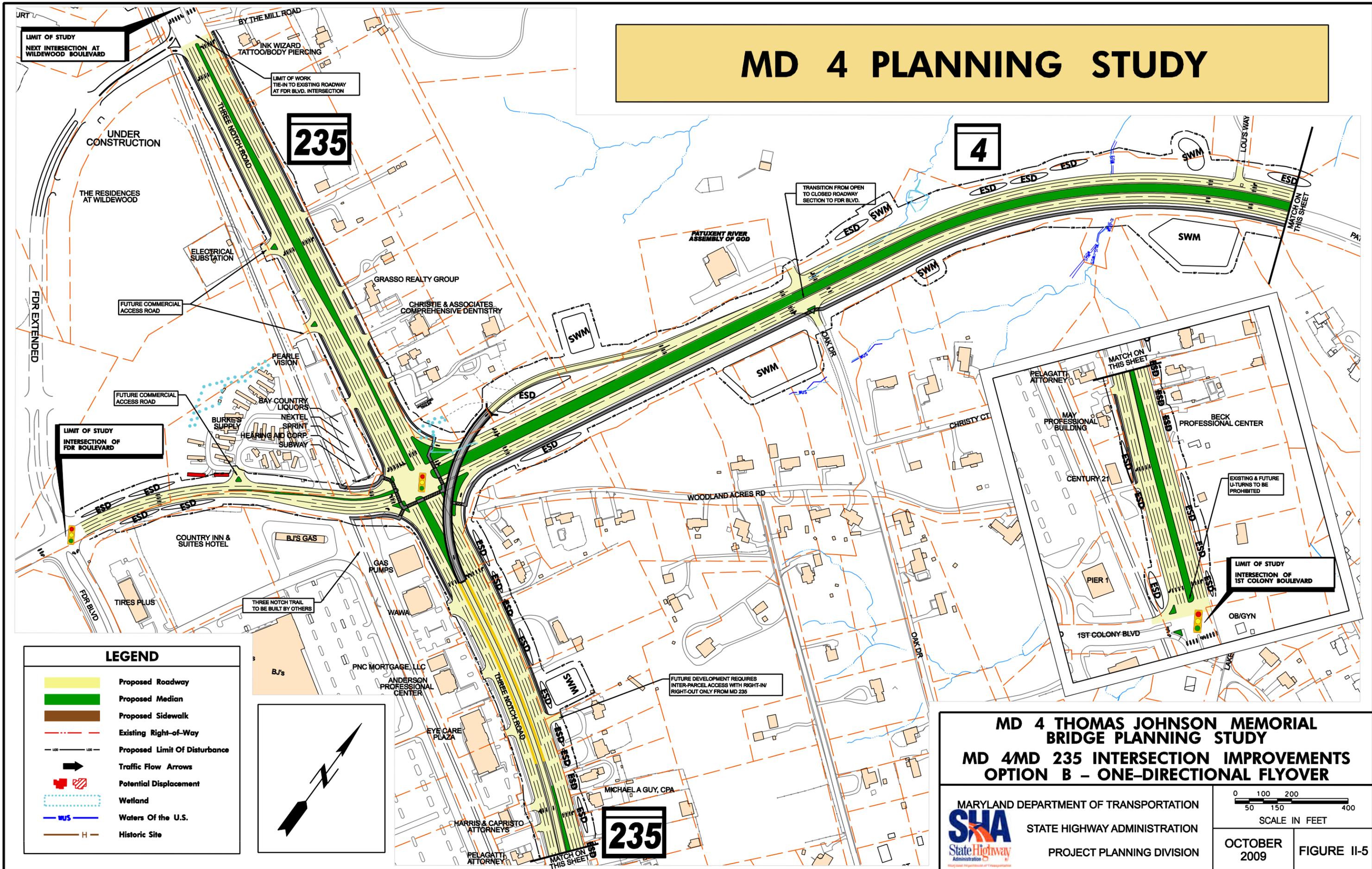
MD 4MD 235 INTERSECTION IMPROVEMENTS OPTION A - CONTINUOUS FLOW INTERSECTION

MARYLAND DEPARTMENT OF TRANSPORTATION
SHA STATE HIGHWAY ADMINISTRATION
 PROJECT PLANNING DIVISION



OCTOBER 2009 FIGURE II-4

MD 4 PLANNING STUDY



LIMIT OF STUDY
NEXT INTERSECTION AT
WILDEWOOD BOULEVARD

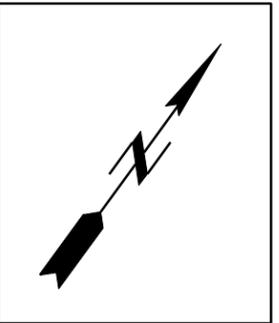
235

4

235

LEGEND

- Proposed Roadway
- Proposed Median
- Proposed Sidewalk
- Existing Right-of-Way
- Proposed Limit Of Disturbance
- Traffic Flow Arrows
- Potential Displacement
- Wetland
- Waters Of the U.S.
- Historic Site



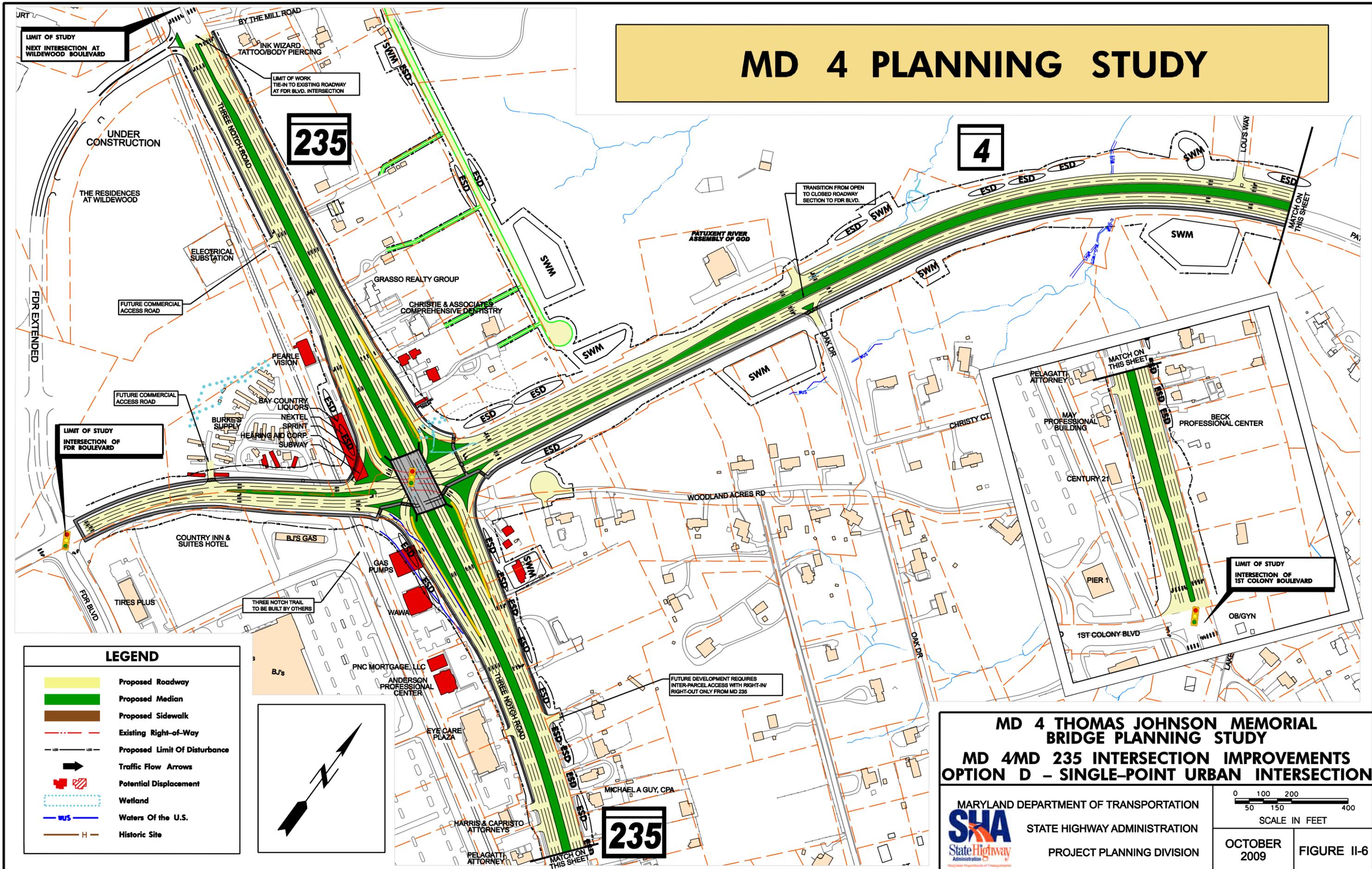
**MD 4 THOMAS JOHNSON MEMORIAL
BRIDGE PLANNING STUDY**
**MD 4MD 235 INTERSECTION IMPROVEMENTS
OPTION B - ONE-DIRECTIONAL FLYOVER**

MARYLAND DEPARTMENT OF TRANSPORTATION
SHA STATE HIGHWAY ADMINISTRATION
PROJECT PLANNING DIVISION

0 100 200
50 150 400
SCALE IN FEET

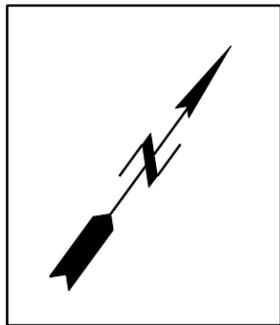
OCTOBER 2009
FIGURE II-5

MD 4 PLANNING STUDY



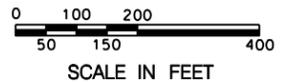
LEGEND

- Proposed Roadway
- Proposed Median
- Proposed Sidewalk
- Existing Right-of-Way
- Proposed Limit Of Disturbance
- Traffic Flow Arrows
- Potential Displacement
- Wetland
- Waters Of the U.S.
- Historic Site



MD 4 THOMAS JOHNSON MEMORIAL BRIDGE PLANNING STUDY MD 4MD 235 INTERSECTION IMPROVEMENTS OPTION D - SINGLE-POINT URBAN INTERSECTION

MARYLAND DEPARTMENT OF TRANSPORTATION
SHA STATE HIGHWAY ADMINISTRATION
PROJECT PLANNING DIVISION



OCTOBER 2009

FIGURE II-6

D. Costs for Alternatives

The term No-Build is often misleading. It does not mean that there will be no cost associated with the alternative. Rather, it means that no funds would be expended to increase the capacity of the roadway. There would still be costs associated with maintaining the facility. This would include activities such as roadway resurfacing, bridge maintenance, signing, lighting, pavement markings, and landscaping.

There are no preliminary costs estimated for the No-Build Alternative since it did not included any additional work beyond the normal maintenance activities. The following is a breakdown of the total cost associated with the mainline alternatives, bridge alternatives, and intersection options.

Table II-2: Estimated Total Costs for Alternatives*

Alternative	Neat Cost (in millions)	Preliminary Engineering Cost (in millions)	Right-of-Way Cost (in millions)	Construction Management (in millions)	Total Cost (in millions)
No-Build	N/A	N/A	N/A	N/A	\$122 - \$163 ¹
TSM	N/A	N/A	N/A	\$4 - \$6	\$30 - \$40
MD 4 Mainline: Calvert County	\$1.5 – 2.0	\$0.35-0.45	\$0.27- 0.30	\$0.23 – 0.25	\$2.4 - 3.0
MD 4Mainline: St. Mary’s County	\$51- 53	\$7.6 – 8.5	\$28.4 – 30	\$9 – 9.5	\$96 - 100
Two lane Parallel Bridge	\$225 - 235	\$34 - 38	\$4.8 - 6	\$40 - 46	\$304 – 325 ¹
Four Lane Parallel Span	\$355 - 368	\$53 - 58	\$7.3 – 8.5	\$60 - 65.5	\$475 – 500
MD 4/MD 235 Option A	\$24.3 - 25	\$3.6 - 4	\$38.8 - 40	\$4.2 – 4.3	\$67 – 73
MD 4/MD 235 Option B	\$39 - 43	\$5.9 – 7	\$25.2 - 26	\$6.7 - 7	\$77 – 83
MD 4/MD 235 Option D	\$73 - 75	\$11 - 13	\$40 - 41	\$12.6 – 14	\$137 - 143

¹Costs estimates include the foreseeable maintenance costs associated with the re-decking of the existing bridge structure.

*Costs displayed are in 2010 dollars.