

SECTION II
ALTERNATES CONSIDERED

CHAPTER II

ALTERNATES CONSIDERED

The following section describes the initial set of alternates considered and the reasons for eliminating them from further consideration. It also describes the physical and operating characteristics, and estimated capital costs, for each alternate retained for consideration in the MD 3 Project Planning Study.

A. ALTERNATES PRESENTED AT THE ALTERNATES PUBLIC WORKSHOP

Five roadway alternates with interchange options were presented at the November 7, 2002 Alternates Public Workshop. The roadway alternates under consideration were Alternate 1 (No-Build), Alternate 2 (TSM/TDM), Alternate 3 (Boulevard), Alternate 4 (Mainline Improvements), and Alternate 5 (Modified Boulevard). In addition to those roadway alternates, Alternate 6 (Additional Interchange Options) was also presented. The following is a description of the Alternates that were presented at the Alternates Public Workshop.

1. Roadway Alternates

a. Alternate 1 – No Build

No major improvements were proposed under Alternate 1, the No-Build Alternate. Minor short-term improvements would occur as part of normal maintenance and safety operations.

b. Alternate 2 – TSM/TDM Alternate

Alternate 2 proposed a combination of reasonable Transportation System Management (TSM) and Transportation Demand Management (TDM) techniques that go beyond the No-Build Alternate. TSM is a relatively low-cost transportation improvement strategy consisting of minor construction and operational enhancements to make the most productive and cost-effective use of existing transportation facilities and services. TDMs are voluntary and include pricing programs designed to increase vehicle occupancy, or reduce the time or need to travel. The TSM/TDM Alternate attempted to maximize the existing system by promoting access management and/or consolidation, addition of auxiliary lanes, minor intersection improvements and signal optimization measures.

TSM measures presented as part of Alternate 2 included additional auxiliary lanes as necessary to provide ingress and egress to the many businesses and residences along MD 3. In addition, areas for consolidation or elimination of access were identified throughout the corridor. Additional turning lanes and storage length were added where necessary to improve the level-of-service at each intersection.

TDM measures considered included the expansion of the existing transit service in the corridor and the consideration of additional transit service. Anne Arundel County is currently working with Howard County Transit to provide service to the Odenton MARC Station from the Crofton area. A park and ride feasibility study was undertaken for the MD 3 corridor as part of the US 50 HOV study. No decisions have been made at this time concerning recommended locations or inclusion as part of the MD 3 Build Alternates.

c. Alternate 3 – Boulevard Concept

Alternate 3 was developed building upon the consensus reached by the 1998 MD 3 Task Force. The proposed typical section for this alternate included three 11-foot through lanes in each direction, a 30-foot grass median, and 16-foot auxiliary lanes or 8-foot shoulders. This alternate included landscape features such as planted medians, street trees, and formalized bicycle and pedestrian facilities.

Key roadway improvements associated with Alternate 3 included:

- Dualizing the current alignment of northbound MD 3 from Belair Drive to MD 450 and providing a continuous auxiliary lane on the outside from Belair Drive to just north of Forest Drive;
- Converting existing southbound MD 3 from MD 450 to Forest Drive to a two-way service road with access provided from MD 450 and a right-in/right-out with MD 3 at Forest Drive;
- Separating MD 450 through traffic from MD 3 through traffic and providing a partially access-controlled interchange between MD 450 and MD 3;
- Maintaining the existing alignments of MD 3 from MD 450 to MD 32 and providing a continuous auxiliary lane on the outside and a continuous left auxiliary lane from MD 424 to Johns Hopkins Road and from just north of St. Stephens Church Road to MD 175;
- Grade separating northbound MD 3 over MD 424.

d. Alternate 4 – Mainline Improvement

Alternate 4 included the addition of a third through lane for MD 3 northbound from St. Stephens Church Road to MD 32, and a third through lane for MD 3 southbound from MD 450 to US 50. This additional lane would improve the traffic operations by eliminating the current lane reductions and subsequent bottlenecks at these locations. This alternate included landscape features such as planted medians, street trees, and formalized bicycle and pedestrian facilities.

The typical section proposed for this alternate included 11-foot through lanes and 16-foot auxiliary lanes or 12-foot shoulders. From St. Stephens Church Road to MD 32, auxiliary lanes were provided where necessary to safely accommodate access to the businesses and residences along MD 3. The existing MD 3 roadway section was maintained throughout the remainder of the corridor with the exception of the proposed interchange alternates.

Key improvements for this alternate included:

- Widening southbound MD 3 from two lanes to three lanes from MD 450 to the Belair Drive interchange;
- Separating MD 450 through traffic from MD 3 through traffic and providing a fully access-controlled interchange between MD 450 and MD 3;
- Providing a grade-separated interchange at the intersection with Crawford and Cronson Boulevards with a service road on the northbound side;
- Providing a grade-separated interchange for MD 3 at MD 424 (Davidsonville Road) and Conway Road;
- Providing intersection improvements at MD 3 and Johns Hopkins Road, similar to the existing Waugh Chapel Road intersection design, in an effort to improve the intersection operations;
- Providing a grade-separated interchange for MD 3 and the intersection at Waugh Chapel and Reidel Roads;
- Widening of northbound MD 3 from 2 lanes to 3 lanes from St. Stephens Church Road to MD 32.

e. Alternate 5 – Modified Boulevard

Alternate 5 included improvements similar to Alternate 3 (MD 3 from US 50 to MD 424 (Davidsonville Road)). North of MD 424, Alternate 5 included the dualization of southbound MD 3 from MD 424 to MD 32 and conversion of existing northbound MD 3 into a two-way service road. This alternate included the partial control of access along MD 3 northbound, with limited access provided for properties located along MD 3 southbound.

The typical section proposed for this alternate was similar to Alternate 3: three 11-foot through lanes in each direction, a 30-foot grass median, and 16-foot auxiliary lanes or 12-foot shoulders. Landscape features such as planted medians, street trees, and formalized bicycle and pedestrian facilities were included. Key improvements for this alternate included:

- Dualizing the current alignment of northbound MD 3 from Belair Drive to MD 450 and providing a continuous right auxiliary lane from Belair Drive to just north of Forest Drive;
- Dualizing the current alignment of southbound MD 3 from MD 424 to MD 32 and providing a continuous right auxiliary lane on the outside from MD 424 to Johns Hopkins Road and from just north of St. Stephens Church Road to MD 175;
- Converting existing northbound MD 3 from MD 424 to Wellfleet Drive and St. Stephens Church Road to MD 175 to a two-way service road;
- Providing a full access controlled interchanges between MD 3 and both MD 450 east and MD 450 west. MD 450 and MD 3 was proposed to remain on the same alignment between MD 450 east and west;
- Providing a grade-separated interchange for MD 3 at MD 424;
- Providing a grade-separated interchange for MD 3 and the intersection at Waugh Chapel Road and Reidel Road.

f. Alternate 6 – Additional Interchange Options

Alternate 6 provided a set of additional interchange options for the four major intersections. These options were to be integrated into the roadway alternates and are discussed under Interchange Options in greater detail.

2. Interchange Options

Each interchange option was presented at the Alternates Public Workshop in conjunction with specific roadway alternates; however, any option may be applied to roadway Alternates 3, 4 or 5. The following is a detailed description of each interchange option.

a. MD 450 Intersections:

MD 450 – Option A (Presented with Alternate 3)

With this option, MD 450 west of MD 3 crossed over MD 3 south of the Patuxent River and connected to MD 450 east of MD 3 with a separate parallel roadway located east of MD 3. A signalized intersection was provided at northbound MD 3 and MD 450 in Anne Arundel County to accommodate the left turn from southbound MD 3 to MD 450 eastbound. All other movements between MD 450 and MD 3 were provided by a trumpet interchange south of the Patuxent River crossing in Prince George's County.

MD 450 – Option B (Presented with Alternate 4)

MD 450, west of MD 3, was connected via a separate roadway located in the median of MD 3. Southbound MD 3 crossed over MD 450 at the south interchange. Northbound MD 3 crossed over MD 450 at the north interchange. Left exit (median) slip ramps connected MD 3 to signalized interchanges with MD 450.

MD 450 – Option C (Presented with Alternate 5)

The existing signalized intersections at MD 450 east and west were replaced with grade separated fully access-controlled trumpet interchanges. MD 450 and MD 3 retained their current alignments between MD 450 east and west.

MD 450 – Additional Interchange Option (presented as part of Alternate 6)

This set of interchange options included partially access-controlled, signalized intersections separating MD 450 from MD 3. Collector/distributor roads outside of MD 3 accommodated movements to eastbound and westbound MD 450. Access to the collector/distributor road were limited to specific access points, providing free flow movements from northbound MD 3 to eastbound MD 450 and from southbound MD 3 to westbound MD 450.

b. Crawford/Cronson Boulevards

Crawford/Cronson – Option A (Presented with Alternates 3 and 5)

This option included upgrading the existing signalized intersection to provide improved geometrics and lane storage areas along both MD 3 and Crawford/Cronson Boulevards. No major changes to the existing intersection were proposed under this option.

Crawford/Cronson – Option B (Presented with Alternate 4)

This option introduced a compressed diamond interchange with MD 3 crossing over Crawford and Cronson Boulevards. A ramp/service road combination was provided for the businesses on the west side of MD 3. A ramp/service road was added along northbound MD 3 that connects with any of the MD 424 interchange options. A slip ramp, located north of Cronson Boulevard, provided access to the MD 424 interchange to bypass the Cronson/Crawford interchange.

c. MD 424 (Davidsonville Road)/Conway Road

MD 424 – Option A (Presented with Alternate 3)

This option included grade separating northbound MD 3 over MD 424, with a left exit from northbound MD 3 and providing an access/service road at a new intersection with MD 424. The access/service road extended north of the MD 424 intersection connecting to northbound MD 3 at Carver Road. Southbound MD 3 remained at grade, shifted west to accommodate the new northbound access/service road.

MD 424 – Option B (Presented with Alternate 4)

This option included a grade separated, compressed diamond interchange for MD 3 at MD 424. Placing MD 3 over MD 424 made an additional roadway crossing possible under MD 3 at the entrance to Crofton Station. This new roadway connected Crofton Station on the east side of MD 3 to Cronson Boulevard on the west side of MD 3, thereby providing access to area businesses from the local roads. Signalized intersections were provided where the new crossing intersects the MD 3 ramps.

MD 424 – Option C (Presented with Alternate 5)

This option included a grade separated single point urban interchange for MD 3 at MD 424. MD 424 was relocated over MD 3 to the north to allow for maintenance of traffic during construction of the interchange. It included a new access road to Patuxent River Park from Conway Road. To attain adequate grades and weaving distances, access to Crofton Station from MD 3 was eliminated.

MD 424 – Additional Interchange Option (presented as part of Alternate 6)

This option was similar to MD 424 - Option C, but used a compressed diamond interchange design instead of a single point urban interchange.

d. Waugh Chapel/Reidel Road

Waugh Chapel/Reidel Road – Option A (Presented with Alternate 3)

This option upgraded the existing signalized intersection.

Waugh Chapel/Reidel Road – Option B (Presented with Alternate 4)

This option consisted of a grade separated compressed diamond interchange for MD 3 and the intersection at Waugh Chapel Road and Reidel Road.

Waugh Chapel/Reidel Road – Option C (Presented with Alternate 5)

This option consisted of a traditional diamond interchange with roundabouts instead of traffic signals at the access ramp terminal intersections with Waugh Chapel and Reidel Roads.

Waugh Chapel/Reidel Road – Additional Interchange Option (presented as part of Alt. 6)

This option included a signalized traffic “square” at the intersection of MD 3 with Waugh Chapel Road and Reidel Road. This unconventional approach would have attempted to slow traffic through the MD 3 study area while providing access to Waugh Chapel Road and Reidel Road. All traffic would be guided to the right, counter-clockwise, around the traffic square and continued toward destinations along MD 3, Waugh Chapel Road or Reidel Road. Traffic flow and capacity was metered by traffic signals on each corner of the square.

B. ALTERNATES NOT RECOMMENDED FOR DETAILED STUDY

The following alternates were not recommended for detailed study following the Alternates Public Workshop. Regulatory and review agencies concurred with this recommendation as part of the environmental streamline process. This concurrence is included in **The MD 3 Draft Environmental Impact Statement, Chapter VI – Comments and Coordination**. The following summary provides the reasons why each alternate was not recommended for detailed study.

1. Roadway Alternates

a. Alternate 2 – TSM/TDM

The TSM/TDM alternate did not provide a significant operational improvement. This alternate consisted mainly of safety improvements. There were few proposed changes to the signalized intersections and it was similar to the no-build. The design improvements of this alternate were selected to be retained and integrated into each alternate retained for further study. An overall Access Management Plan was developed apart from the project planning process and a form of the TSM/TDM improvements was incorporated into the retained alternates.

b. Alternate 4 – Mainline Improvements

Alternate 4 was dropped from consideration due to lack of substantial improvement to corridor operations and safety (similar to the No-Build Alternate) and lack of system continuity. Due to the minimal improvement, Alternate 4 did not meet the Purpose and Need of this study, particularly along the northern segment in the areas with the existing median development. This alternate retains only two lanes on southbound MD 3 from MD 32 to St. Stephens Church Road (LOS F at MD 175 1.35-1.40) and on northbound MD 3 from US 50 to MD 450 (Link LOS 0.74-1.18).

2. Interchange Options

a. MD 450 Intersections

Additional Interchange Options (Alternate 6)

Alternate 6 Interchange Option at the MD 450 Intersections was dropped from consideration because the intersections continue to operate at a high failing Level-of-Service (LOS F 1.45-1.76) with the proposed option.

b. Crawford/Cronson Boulevards

None of the Crawford/Cronson Boulevards options were dropped following the Alternates Public Workshop.

c. MD 424 (Davidsonville Road)/Conway Road

Additional Interchange Options (Alternate 6)

Alternate 6 Interchange Option at MD 424 was dropped from consideration due in part to its similarity to the MD 424 Interchange Option C for Alternate 5 Modified, single point urban interchange option, and for its lack of improvement to traffic operations over Alternate 5 (Alt. 6 LOS 0.61-0.87 vs. Alt. 5 LOS 0.48-0.53).

d. Waugh Chapel/Reidel Road

Additional Interchange Options (Alternate 6)

The proposed traffic square interchange option at Waugh Chapel Road/Reidel Road was dropped from further consideration due to poor operational characteristics. The traffic analysis completed for this option showed a LOS F for all segments of the traffic square. This option also did not receive any public support at the Alternates Public Workshop.

e. MD 175/Millersville Road

Following the Alternates Public Workshop, several comments were received expressing the desire for improvements to the intersection of MD 3 with MD 175 and Millersville Road. Part of the alternate evaluation included consideration of access to Charles Hall Road, Belts Drive and Holiday Park Drive located on the west side of southbound MD 3 between MD 32 and MD 175. Three access options were developed to respond to the comments received and agency input associated with Jabez Branch. The options were presented to the agencies following the workshop and two are included in the Alternates Recommended for Detailed Study as part of the MD 175/Millersville Road Options.

An additional option extending Charles Hall Road to MD 175 has been eliminated from consideration. This option provided an extension of Charles Hall Road parallel to the existing Jabez Branch within the existing right-of-way owned by the State of Maryland. Given the close proximity to Jabez Branch, stormwater runoff concerns and the loss of tree cover over Jabez Branch, this option was eliminated from consideration. In addition, the close proximity of its connection to MD 175 could potentially compromise safety at the MD 175 intersection with MD 3.

C. ALTERNATES RECOMMENDED FOR DETAILED STUDY AND PRESENTED AT THE MAY 2004 PUBLIC HEARING

The following is an overview of the roadway Alternates and Interchange Options recommended for detailed study and presented at the May 2004 Public Hearing. With the exception of Interchange Option A at MD 424, all interchange options may be applied to either Alternate 3 or Alternate 5 Modified. Detailed mapping showing the Alternates Recommended for Detailed Study is included in **Appendix F – SHA Selected Alternate and ARDS Mapping**.

In an effort to better evaluate the impacts and costs associated with each of the alternates, the overall corridor was divided into seven segments. The boundaries for each segment were identified to include the various interchange options with the mainline alternates. This allows for a mixing and matching of the various interchange options with either Alternate 3 or Alternate 5 Modified. This also allows for Alternate 3 and Alternate 5 Modified to be selected in different segments. Cost and impact tables throughout the FEIS have been included for each individual segment.

1. Roadway Alternates

a. Alternate 1 – No Build

No major improvements are proposed under Alternate 1, the No-Build Alternate. Minor short-term improvements would occur as part of normal maintenance and safety operations. The No-Build Alternate serves as a basis for comparing all of the other alternates.

b. Alternate 3 – Boulevard Concept

Alternate 3 (see **Figures II-1 and II-2**) is similar to the alternate for which consensus was reached by the MD 3 Task Force in 1998. It also contains community-supported design elements.

The proposed typical section applied throughout the MD 3 study area includes three 11-foot through lanes in each direction, a 30-foot grass median (where applicable), and 16-foot auxiliary lanes or 10-foot shoulders. Landscape features such as planted medians, street trees, and formalized bicycle and pedestrian facilities are included in this alternate. In addition, the TSM/TDM strategies identified and included as part of Alternate 2, as presented at the November 2002 Alternates Public Workshop, are incorporated into Alternate 3 and were presented at the Public Hearing.

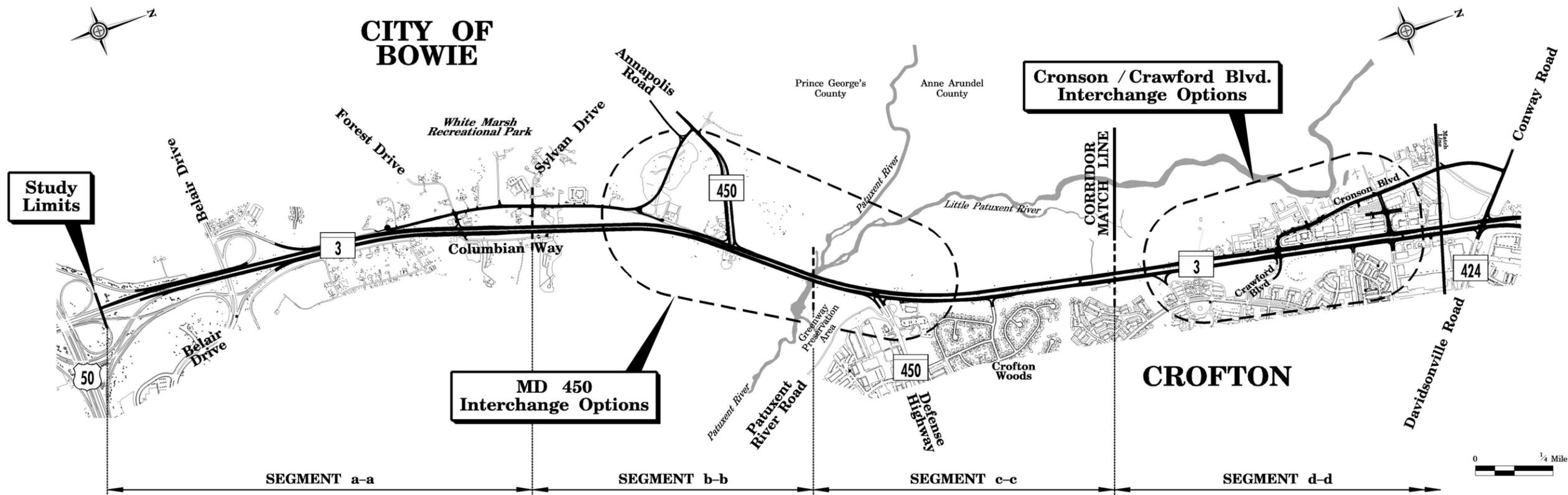
Key roadway improvements associated with Alternate 3 include:

- Dualizing the current alignment of northbound MD 3 from Belair Drive to MD 450 and providing a continuous auxiliary lane on the outside from Belair Drive to just north of Forest Drive;
- Converting existing southbound MD 3 from MD 450 to Forest Drive to a two-way service road with access provided from MD 450 and a right-in/right-out with MD 3 at Forest Drive;
- Maintaining the existing alignments of MD 3 from MD 450 to St. Stephens Church Road and providing a continuous auxiliary lane on the outside and a continuous left auxiliary lane from MD 424 to Johns Hopkins Road;
- Maintaining the existing alignments of MD 3 from St. Stephens Church Road to MD 32 with the addition of a third through travel lane and a continuous auxiliary lane on the outside. In addition, a continuous left auxiliary lane is provided from just north of St. Stephens Church Road to MD 175.

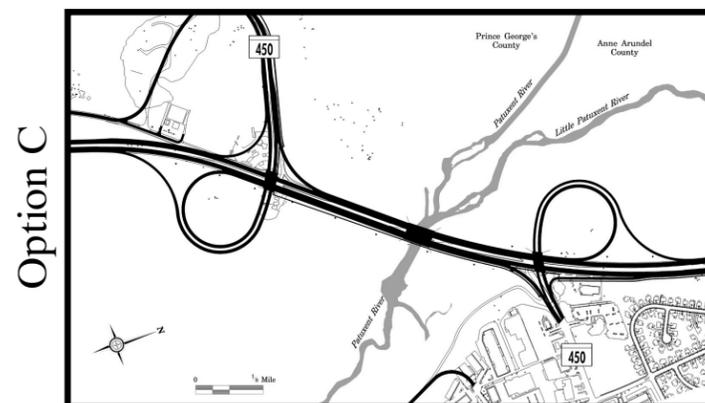
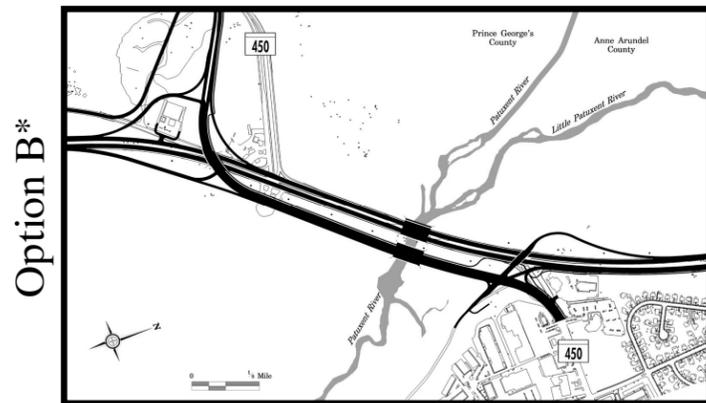
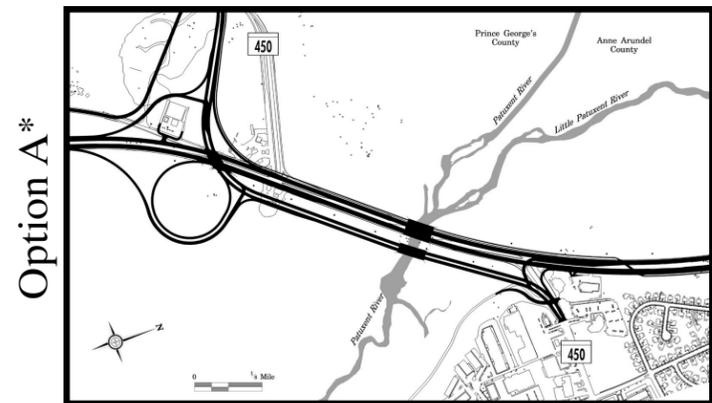
The dualization of MD 3 through Prince George's County improves safety by eliminating the number of entrances onto MD 3. In addition, access to White Marsh Park is provided by a service road, eliminating the weaving that currently exists on southbound MD 3 as traffic leaves the park with destinations north of the park. The introduction of 11-foot lanes and a closed cross section are an effort to help reduce the tendency for drivers to speed, thereby providing more of a community feel and less of a freeway feel. The 16-foot auxiliary lane and 10-foot shoulders have been provided to accommodate bicycle traffic along MD 3 in addition to providing additional clearance between slower turning traffic and faster through traffic.

c. Alternate 5 Modified – Dualization Concept

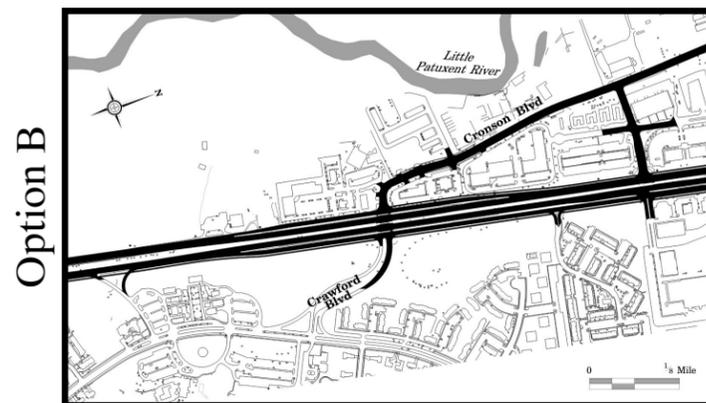
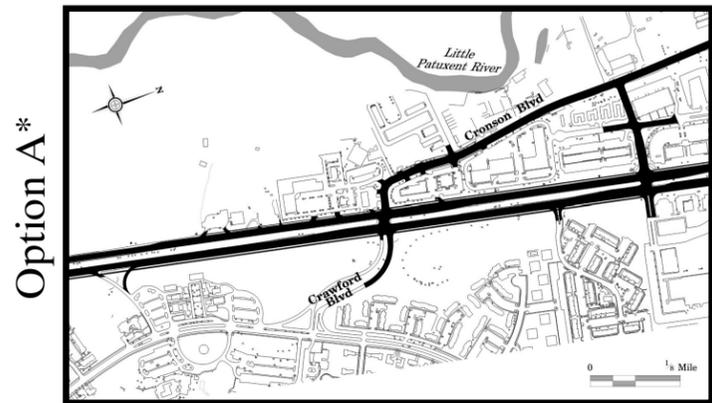
Alternate 5 Modified (see **Figures II-3 and II-4**) improvements from US 50 through MD 450 include the addition of a third through travel lane in both directions and a 16-foot auxiliary lane for southbound MD 3. From MD 450 to MD 424 the improvements are similar to those presented in Alternate 3. North of MD 424, Alternate 5 Modified provides the dualization of southbound MD 3 with a 16-foot median from MD 424 to MD 32. The existing northbound



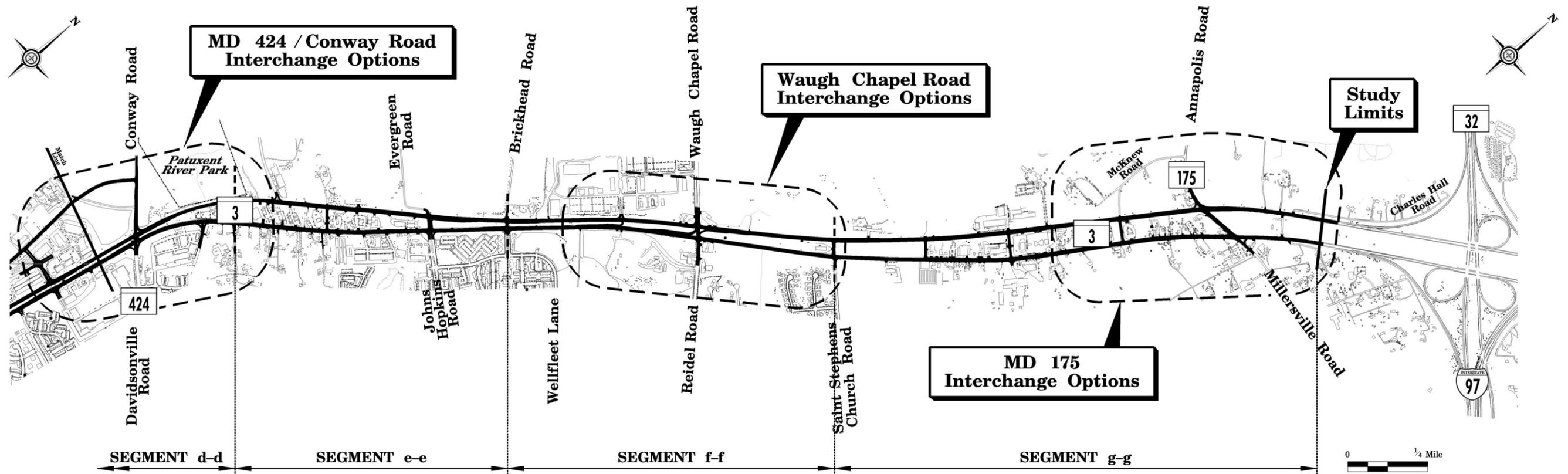
MD 450 Interchange Options



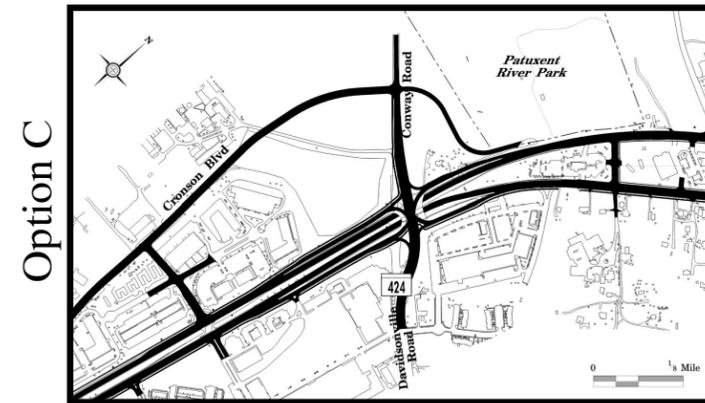
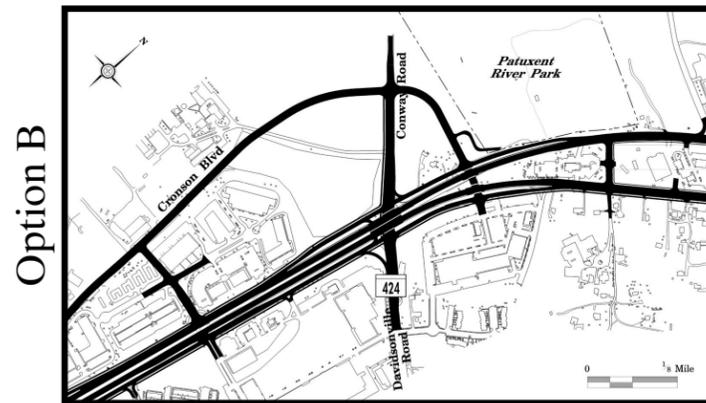
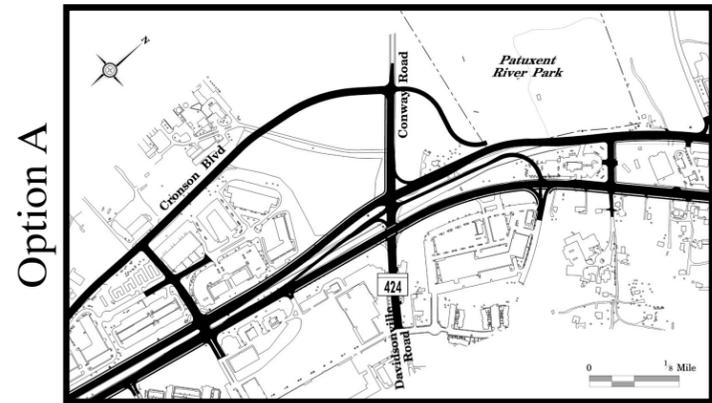
Cronson / Crawford Blvd. Interchange Options



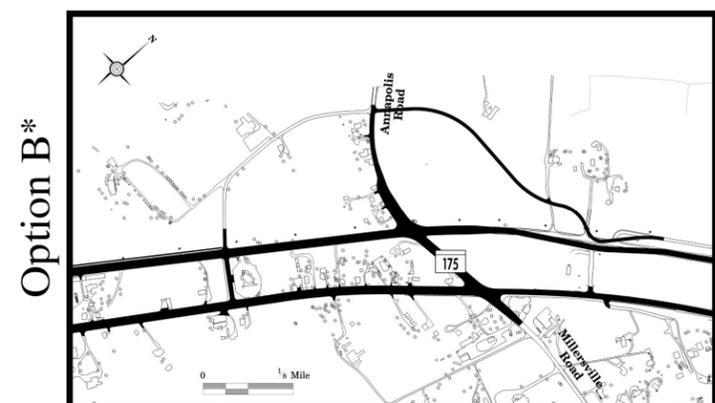
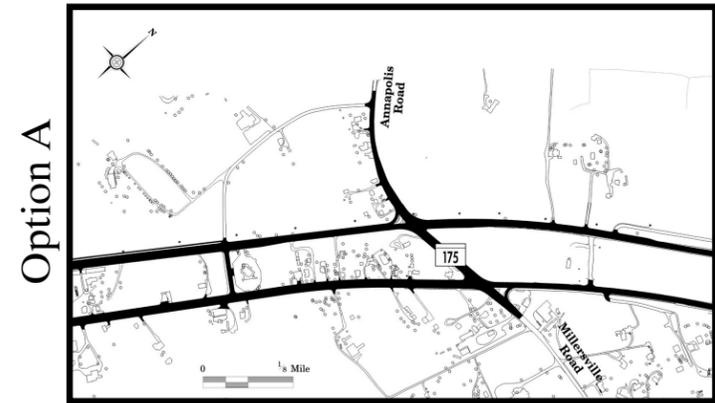
* Included as part of the SHA Selected Alternate; for MD 450, Option A was selected in Prince George's County and Option B in Anne Arundel County



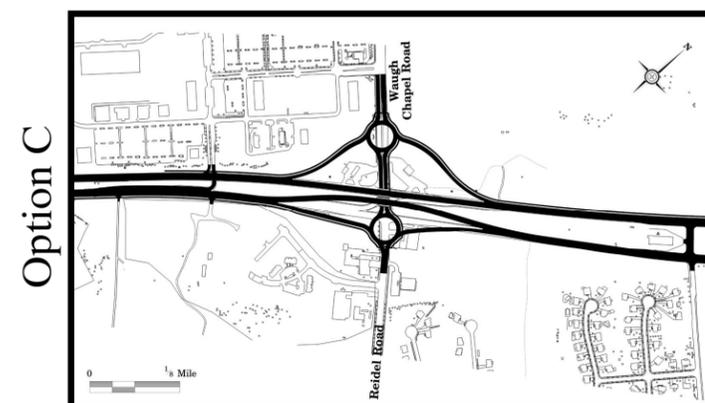
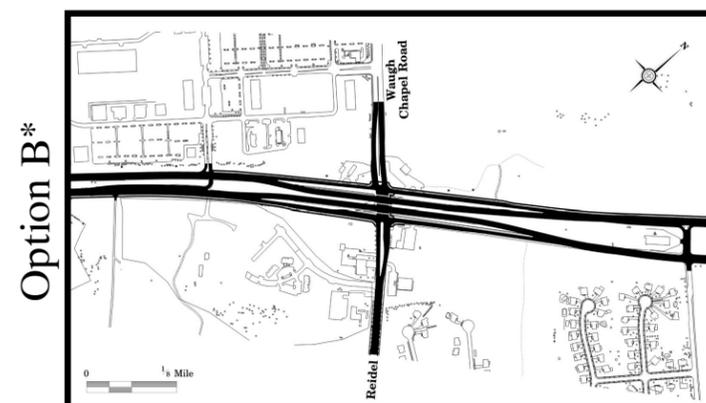
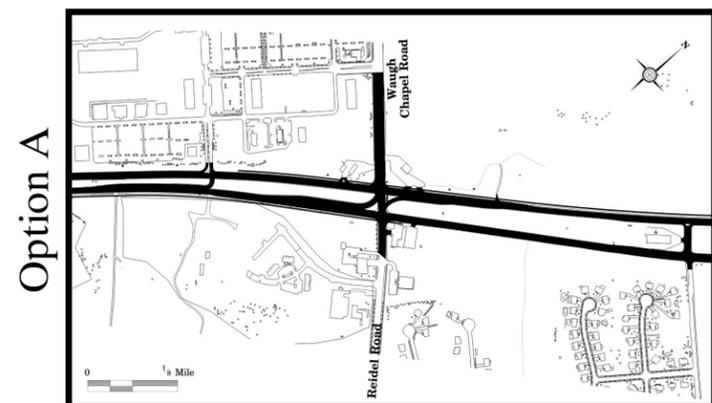
MD 424 Interchange Options



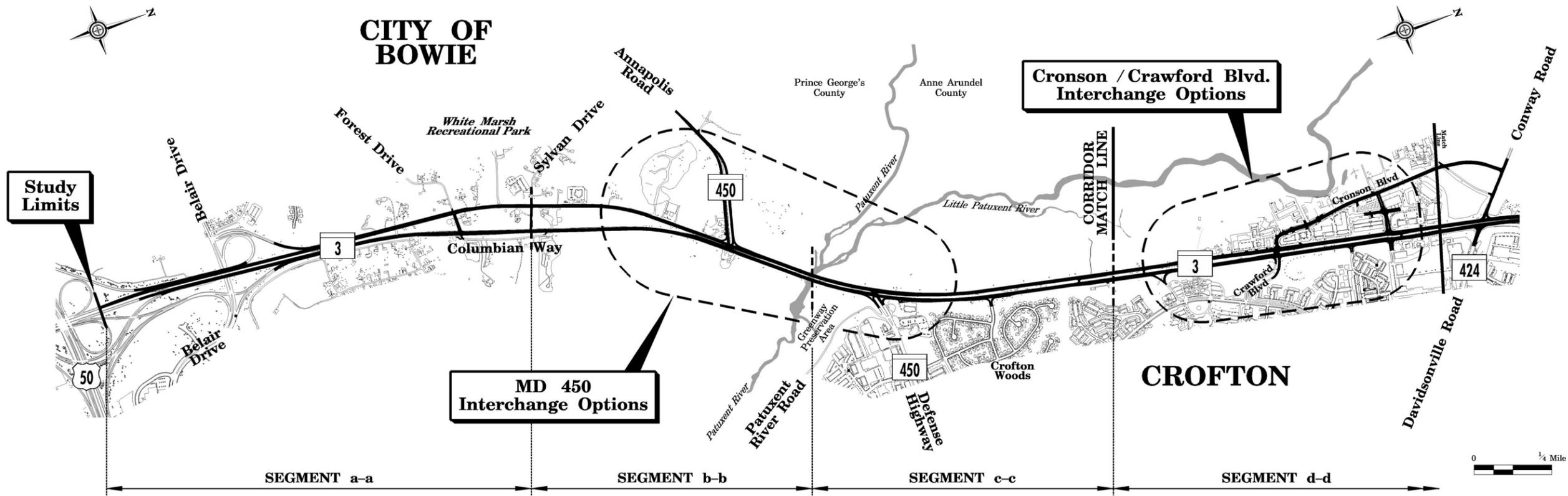
MD 175 Interchange Options



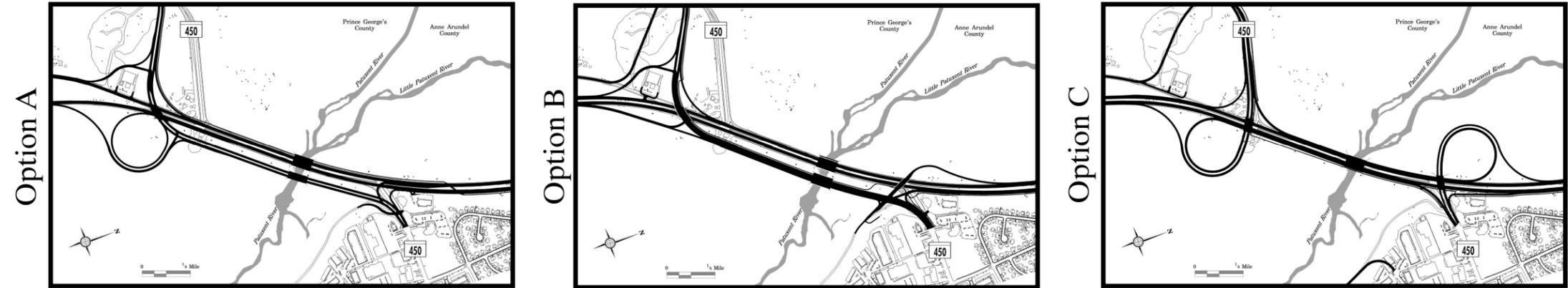
Waugh Chapel Road Interchange Options



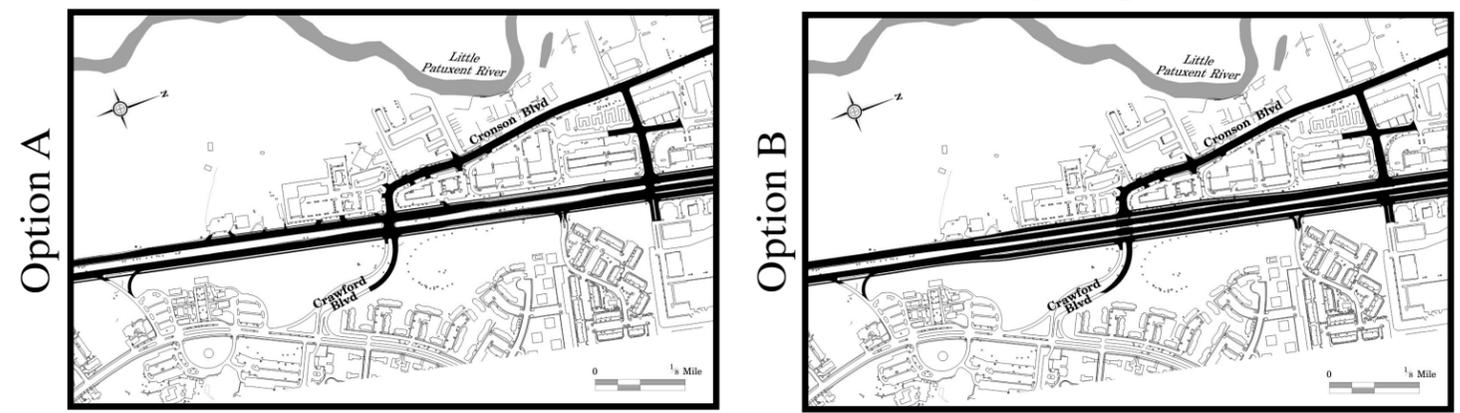
* Included as part of the SHA Selected Alternate. None of the MD 424 Options above were chosen for the SHA Selected Alternate; instead, a Continuous Flow Intersection was selected at this intersection.

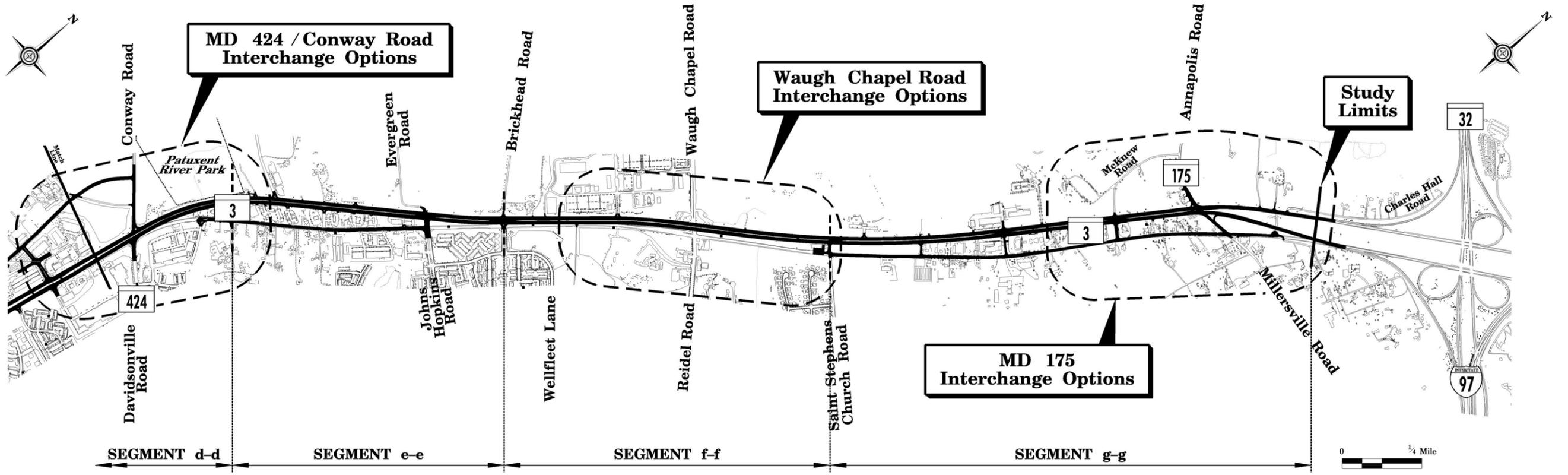


MD 450 Interchange Options



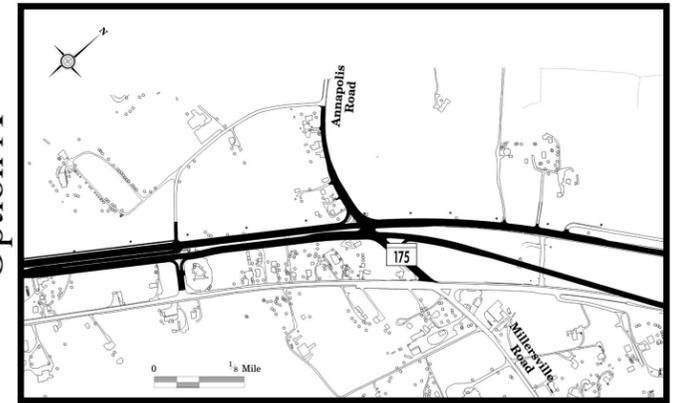
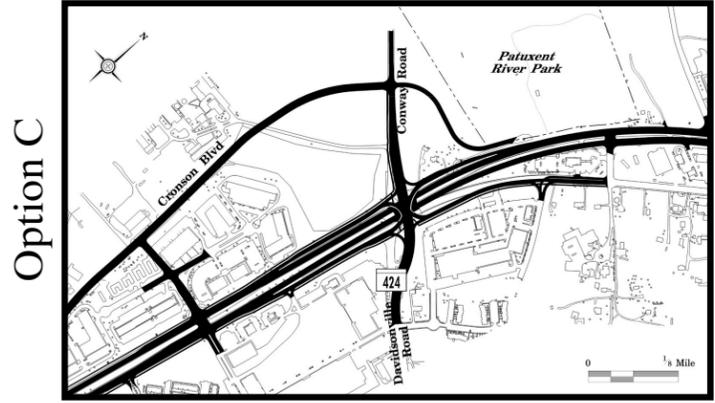
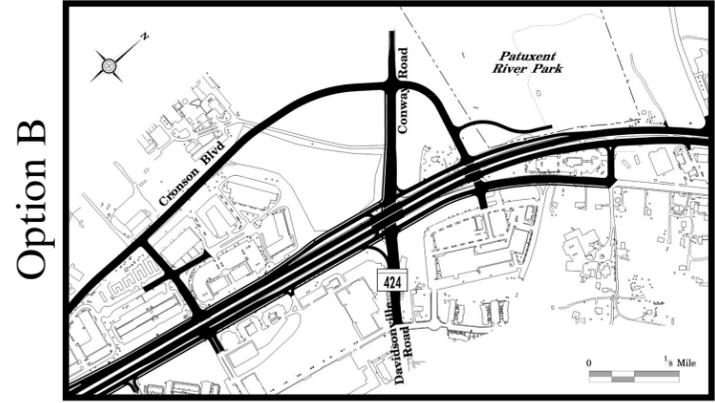
Cronson / Crawford Blvd. Interchange Options



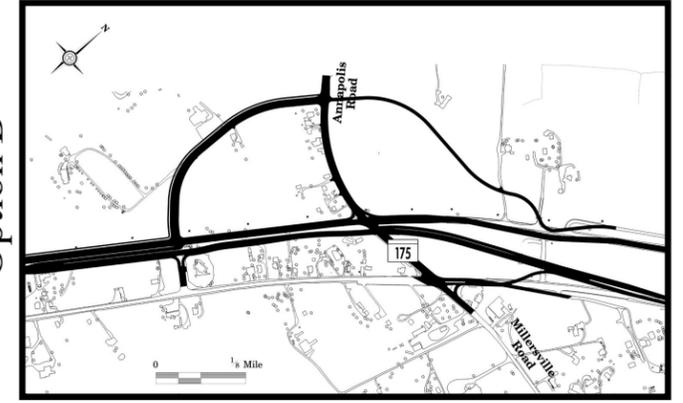
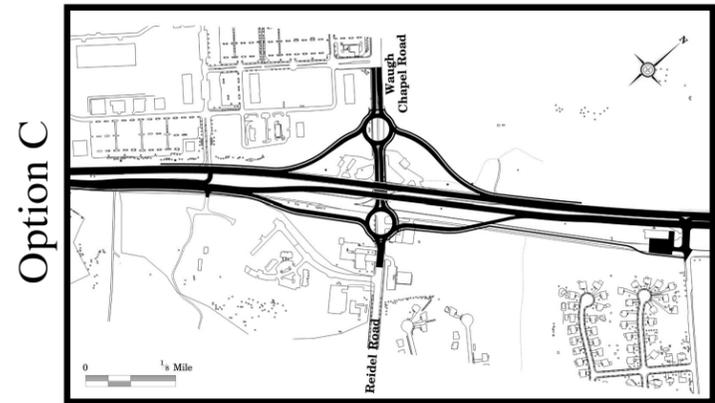
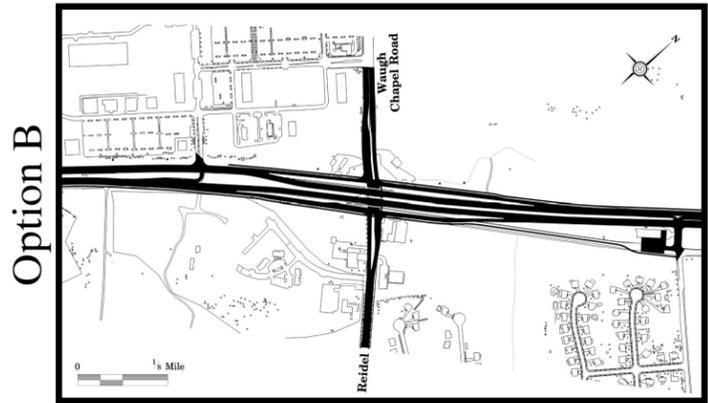
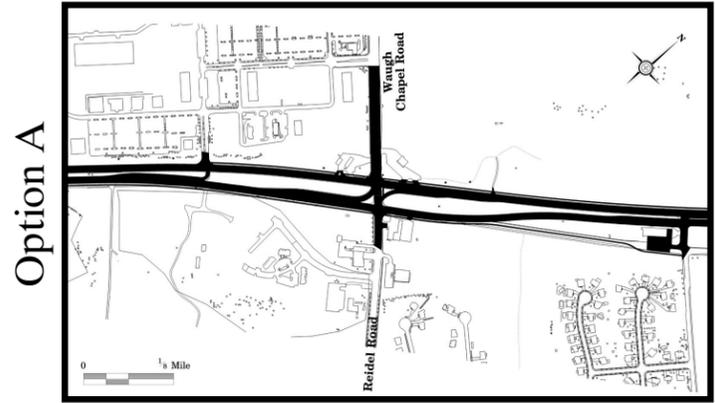


MD 424 Interchange Options

MD 175 Interchange Options



Waugh Chapel Road Interchange Options



ALTERNATE 5 MODIFIED - DUALIZATION CONCEPT
Figure II-4

MD 3 is converted into a two-way service road. This alternate includes limited access (right-in/right-out) along MD 3 northbound and southbound in the dualized portions north of MD 424.

The typical section for this alternate is similar to Alternate 3; three 11-foot through lanes in each direction, and 16-foot auxiliary lanes or 10-foot shoulders. The median width varies from 16 feet to 300 feet depending on its location within the corridor. This Alternate also includes landscape features such as planted medians, street trees, and formalized bicycle and pedestrian facilities. In addition, the TSM/TDM strategies identified and included as part of Alternate 2, as presented at the Alternates Public Workshop, are incorporated into Alternate 5 Modified.

Key roadway improvements associated with Alternate 5 Modified include:

- Maintaining the existing alignment of northbound MD 3 from Belair Drive to MD 450 with the addition of a third through lane for both directions of MD 3;
- Dualizing the current alignment of southbound MD 3 from MD 424 to MD 32 and providing a continuous right auxiliary lane on the outside from MD 424 to Johns Hopkins Road and from just north of St. Stephens Church Road to MD 175;
- Converting existing northbound MD 3 from MD 424 to Wellfleet Drive and St. Stephens Church Road to MD 175 to a two-way service road.

Alternate 5 Modified - Dualization Concept was selected for further detailed study because of the corridor-wide improvement to traffic and safety operations.

The dualization of MD 3 north of MD 424 helps eliminate the number of left turn movements and entrances into businesses located in the median and provide designated cross-over areas to the service road. As with Alternate 3, the 11-foot through lanes and closed cross-section are provided in an effort to reduce speeding throughout the corridor. The 16-foot auxiliary lane and 10-foot shoulders have been provided to accommodate bicycle traffic along MD 3 in addition to providing additional clearance between slower turning traffic and faster thru traffic.

2. Interchange Options

Interchange/Intersection improvement options at five locations along MD 3 are provided for Alternate 3 and Alternate 5 Modified. The locations were identified as major points of congestion in the corridor. The following is a summary of the options recommended for detailed study.

a. MD 450 Intersections

Option A (Applicable to Alternates 3 and 5 Modified)

MD 450 is connected via a separate parallel roadway located east of MD 3. MD 450 crosses over MD 3 south of the Patuxent River. A signalized intersection is provided in Anne Arundel County to accommodate left turning vehicles from southbound MD 3 to MD 450 eastbound. Traffic on northbound MD 3 and MD 450 would be stopped to accommodate this turning movement. In addition, an access ramp from MD 450 westbound to MD 3 northbound is

provided. All other movements between MD 450 and MD 3 are accommodated by a trumpet interchange south of the Patuxent River crossing in Prince George's County. The trumpet is comprised of a 35 mph loop ramp connecting eastbound MD 450 to northbound MD 3.

Providing a direct connection between MD 450 greatly reduces the number of conflict points along MD 3. In addition, the grade separation and interchange ramps provided on MD 3 eliminate the signals located on MD 3, which will help improve safety. The only remaining signal would be for the left turn from southbound MD 3 to MD 450 in Anne Arundel County. This would require minimal delay to northbound MD 3.

Option B (Alternates 3 and 5 Modified)

The alignment of MD 450 is similar to that proposed under Option A. Instead of a trumpet interchange in Prince George's County, diamond interchange ramps are employed to minimize right-of-way and wetland impacts. Access from southbound MD 3 to eastbound MD 450 is provided by a MD 3 fly-over, tying in at a signalized intersection south of the existing intersection with MD 450 in Anne Arundel County. Patuxent River Road is realigned with the MD 3 exit ramp with a four direction signalized intersection. This revised Option B improves the original option in response to comments received from the public and the regulatory and review agencies.

Providing a direct connection between MD 450 greatly reduces the number of conflict points along MD 3. In addition, the grade separation and interchange ramps provided on MD 3 eliminate the signals located on MD 3, which will help improve safety.

Option C (Alternates 3 and 5 Modified)

The existing signalized intersections at MD 450 east and west are replaced with grade separated, fully access controlled "trumpet" interchanges. MD 450 and MD 3 remain on the same alignment between MD 450 east and west. Between the MD 450 intersections, five traffic lanes would be provided to accommodate the traffic between MD 450, the existing through traffic on MD 3, and merging traffic to and from MD 3 and MD 450. An extended weaving area is provided to safely accommodate access to and from MD 3 and MD 450.

b. Crawford/Cronson Boulevards

Option A (Alternates 3 and 5 Modified)

This option upgrades existing intersection conditions as proposed in the MD 3 Task Force's concurred-upon alternate presented in the mid 1990's. This option includes upgrading the existing signalized intersection to provide improved geometrics and lane storage areas along both MD 3 and Crawford/Cronson Boulevards. No major changes to the existing intersection are proposed under this option.

Option B (Alternates 3 and 5 Modified)

Option B at Cronson/Crawford Boulevards is a compressed diamond interchange with MD 3 going over Cronson and Crawford Boulevards. Exit and entrance ramps to and from MD 3 are provided for movements from southbound MD 3. A ramp/service road combination is provided to Cronson/Crawford Boulevards for northbound MD 3. This option utilizes the existing median of MD 3 to the greatest extent possible to avoid impacts to the existing commercial properties on the west side, and Lake Louise on the east side of MD 3. The proposed interchange with MD 3 improves operations and safety on MD 3 due to the elimination of the traffic signal on mainline MD 3. New signals are introduced with the ramp connections to Crawford and Cronson Boulevards serving local traffic.

c. MD 424 (Davidsonville Road)/Conway Road

Option A (Alternate 3)

This option provides for a grade separation of northbound MD 3 over MD 424, removing the through traffic for northbound MD 3 from the existing intersection. A left exit ramp from northbound MD 3 provides access to the new intersection with MD 424. This service road extends north of the MD 424 intersection to tie back into northbound MD 3 at Carver Road, providing access to the Crofton Station retail properties. Southbound MD 3 is realigned to provide sufficient area between northbound and southbound MD 3 for the new access/service road. The grade separation of northbound MD 3 helps improve the safety by removing the traffic signal at MD 424. The delay introduced by the traffic signal at Carver Road will be minimal due to the lower volumes than the existing intersection with MD 424 and southbound MD 3.

Option B (Alternates 3 and 5 Modified)

This option provides a grade-separated compressed diamond interchange for MD 3 at MD 424. MD 3 passes over MD 424 with exit and entrance ramps to MD 424 and Conway Road. To assist in providing access to the Crofton Station retail properties, an extension of Cronson Boulevard passes under MD 3 just north of the intersection of MD 3 and MD 424. The grade separation for both directions of MD 3 helps to improve the operations and safety of MD 3 due to the elimination of the signalized intersection.

Option C (Alternates 3 and 5 Modified)

This option utilizes a grade-separated single point urban interchange for MD 3 at MD 424. MD 424 is relocated over MD 3 to the north to allow for maintenance of traffic during construction of the interchange. Access between MD 3 and MD 424 is provided by a series of compressed ramps in an effort to minimize right-of-way impacts. The grade separation of both directions of MD 3 helps to improve the operations and safety of MD 3 due to the elimination of the signalized intersection.

d. Waugh Chapel/Reidel Road

Option A (Alternates 3 and 5 Modified)

This option was proposed as part of the MD 3 Task Force's concurred upon alternate. It incorporates a few changes to the signalized intersection, but is similar to the No-Build Alternate.

Option B (Alternates 3 and 5 Modified)

This option uses a grade separated compressed diamond interchange for MD 3 over the Waugh Chapel/Reidel Road intersection. This option realigns northbound and southbound MD 3, utilizing the existing median width to minimize right-of-way and utility impacts. The ramp access with Waugh Chapel and Reidel Road is similar to the location of existing MD 3. The proposed interchange with MD 3 improves operations and safety on MD 3 due to the elimination of the traffic signal on mainline MD 3.

Option C (Alternates 3 and 5 Modified)

This option uses a traditional grade-separated diamond interchange with MD 3 and Waugh Chapel and Reidel Roads. Roundabouts are proposed in place of traffic signals at the access ramp terminal intersections with Waugh Chapel Road and Reidel Road. The proposed interchange with MD 3 improves operations and safety on MD 3 due to the elimination of the traffic signal on mainline MD 3.

e. MD 175/Millersville Road

Following the Alternates Public Workshop, several comments were received expressing the desire for improvements to the intersection of MD 3 with MD 175 and Millersville Road. The following options were developed in response to the comments received and the travel demand and intersection LOS analyses. These options were presented to the agencies following the workshop. Regulatory and review agencies agreed to include these Options in the Alternates Retained for Detailed Study package.

Option A (Alternate 3)

Option A at MD 175 for Alternate 3 consists of at-grade intersection improvements included with the widening of MD 3. MD 175 is widened east and west of MD 3 to four through travel lanes (two in each direction). This four-lane section would taper to two lanes west of Jabez Branch and east of Maryland Muffler Shop. Two through lanes and left-turn storage lanes are provided for MD 175 in each direction between northbound and southbound MD 3. The option provides channelized right turn lanes for traffic moving west onto northbound MD 3 and traffic moving east turning onto southbound MD 3. Charles Hall Road traffic is accommodated under this option via an auxiliary lane connecting the existing Charles Hall Road access point and MD 175 along southbound MD 3. The additional lanes and storage areas decrease the amount of delay at the signalized intersections.

Option A (Alternate 5 Modified)

Option A at MD 175 for Alternate 5 Modified consists of at-grade intersection improvements included with the widening and realignment of the dualized MD 3. From the west, MD 175 is widened to accommodate a double left turn onto the realigned northbound MD 3. From the east, MD 175 is widened to accommodate a double left turn onto southbound MD 3. Two through lanes accommodate traffic along westbound MD 175, while a single through lane serves eastbound MD 175 traffic. Similar to Alternate 3 Option A, channelized right turn lanes allow traffic to access northbound and southbound MD 3. Charles Hall Road traffic is accommodated under this option via an auxiliary lane connecting the existing Charles Hall Road access point and MD 175 along southbound MD 3. The additional lanes and storage areas decrease the amount of delay at the signalized intersections.

Option B (Alternate 3)

Option B at MD 175 for Alternate 3 consists of at-grade intersection improvements including the widening of MD 3. For this option, a triple right turn onto southbound MD 3 from eastbound MD 175 is added to meet existing and forecasted high volume traffic for this movement. A single through lane remains for eastbound MD 175 traffic. Two through lanes are provided for westbound MD 175 traffic along with two left turn lanes for westbound MD 175 access to southbound MD 3. A double left turn is provided for eastbound MD 175 traffic to access northbound MD 3. Charles Hall Road is extended to intersect with the MD 175/McKnew Road intersection as a two-lane roadway. The additional lanes and storage areas decrease the amount of delay at the signalized intersections.

Option B (Alternate 5 Modified)

Option B at MD 175 for Alternate 5 Modified consists of a grade separated half-diamond interchange, with northbound MD 3 passing over MD 175. MD 175 is widened to accommodate four lanes of through traffic extending from McKnew Road past Maryland Muffler Shop. Slip ramps are used from MD 175 to access northbound MD 3 to I-97, MD 32, and the service road (former northbound MD 3 alignment). McKnew Road is widened to four lanes to accommodate the existing and forecasted high levels of traffic accessing MD 175 west of MD 3. At its intersection with MD 3, McKnew Road is widened to accommodate a triple right turn movement onto southbound MD 3. McKnew Road provides dual receiving lanes for the double left turn off of northbound MD 3 for traffic accessing MD 175. Charles Hall Road is extended to the MD 175/McKnew Road intersection as a two-lane roadway, necessitating an additional signal. Finally, this option provides a channelized right turn off southbound MD 3 onto westbound MD 175. The grade separation of northbound MD 3 over MD 175 and the addition of the slip ramps help to improve the operations of MD 3 by eliminating the signal with MD 175. The signalized intersections on southbound MD 3 serve to remind travelers as they enter the MD 3 corridor that they are no longer on an interstate or freeway facility and serve to decrease the travel speeds.

D. BICYCLE AND PEDESTRIAN ACCOMMODATION

As part of the Build Alternates, SHA included bicycle provisions throughout the study area using either a 16-foot outside auxiliary lane or a 10-foot shoulder. To accommodate bicyclists off the roadway, a 10-foot bicycle path is proposed east of MD 3 from the MD 450 interchange north to the intersection of Waugh Chapel and Reidel Roads. A 10-foot bicycle path is under consideration on the west side of MD 3 from the intersection of Waugh Chapel and Reidel Roads north to McKnew Road. An 8-foot bicycle path is proposed on the west side of MD 3 between Crawford/Cronson Boulevard and Conway Road to accommodate both bicycle and pedestrian traffic. The locations of the proposed bicycle paths are shown on the detailed mapping in **Appendix F – SHA Selected Alternate and ARDS Mapping**.

Wherever possible, 5-foot wide sidewalks would be provided both to the outside of the improvement as well as along developed segments of the existing median. Special consideration is given to providing safe pedestrian crossing areas at Crawford/Cronson Boulevard, MD 424/Conway Road, Waugh Chapel/Reidel Road and MD 175. This includes sidewalk striping, signal coordination, median refuge areas and pedestrian/bicycle roadway advisory signs.

E. COMBINATION LOCATION/DESIGN PUBLIC HEARING

Following completion of the Draft Environmental Impact Statement, SHA held a Combination Location/Design Public Hearing on May 20, 2004 at the Crofton Middle School in Crofton, Maryland. The purpose of the Public Hearing was to present the Alternates Retained for Detailed Study, described previously, and provide an opportunity for public participation in the overall planning process. The aesthetic features developed for the corridor and the results of the engineering and environmental studies were also presented. Representatives from SHA presented the alternates under consideration for public comment to nearly 200 attendees and received 47 written and 35 testimonial comments through the closing date of July 8, 2004.

F. AGENCY INVOLVEMENT SUBSEQUENT TO THE DEIS & PUBLIC HEARING

There have been over a dozen formal meetings and many informal discussions with the environmental regulatory agencies since the submittal of the DEIS regarding their concerns about the proposed design of the SHA Selected Alternate. Included in the formal meetings were three conflict resolution meetings coordinated with the FHWA.

The conflict resolution meetings took place on January 25, 2005, October 31, 2005, and April 17, 2007 with representatives (including senior representatives at the April 17th meeting) from FHWA, the Army Corps of Engineers (USACOE), the U.S. Environmental Protection Agency (EPA), the Maryland Department of the Environment (MDE), USFWS and SHA (see **Chapter V – Comments and Coordination**, pages **V-A-24, V-A-32 and V-A-67** for meeting minutes). The focus of these meetings was to discuss the concerns that the USACOE, USFWS, MDE and EPA had with inadequate level-of-service in 2025 along MD 3 in the Crofton area, environmental impacts associated with proposed interchange at MD 450, the potential need for a future western bypass of MD 3, and the mitigation and preservation package compiled by SHA.

At the September 21, 2005 (see **V-A-30**) Interagency Review Meeting (IRM), the USACOE stated that they would not concur with the SHA Selected Alternate and that they were speaking on behalf of the USFWS as well. It was noted at this meeting that the potential for a future western bypass of MD 3 is of major concern to the agencies because several contiguous acres of pristine wetland and floodplain areas associated with the Patuxent and Little Patuxent Rivers exist in this location. It is the agencies' position that if existing MD 3 is not upgraded to a fully access controlled highway, then a bypass will be needed to handle the growing traffic along the corridor. In order to prevent a future bypass scenario, the agencies have asked that FHWA, SHA, and Anne Arundel County purchase the right-of-way needed to construct a fully access controlled facility in the future.

The agencies were also concerned with the initial round of proposed wetland mitigation and preservation sites compiled by the study team. The team has responded to the site concerns with updated locations that have been agreed upon in principle by USACOE, USFWS, and MDE as of October 2007 (see **V-A-74**).

The following decisions were made in response to the request for right-of-way preservation:

- FHWA would not participate in funding right-of-way purchases around intersections if they were not needed for the SHA Selected Alternate. However, SHA and Anne Arundel County would work collaboratively to develop a solution that could meet the desired outcome by requesting that developers preserve the right-of-way needed to meet future expansion needs.
- SHA agreed to continue working with potential developers to limit access along MD 3 near the intersections for the purposes of not precluding grade-separated interchanges. The MD 3 corridor will be tracked through SHA's Access Management Program. However, SHA will not make right-of-way purchases that would cause residential or business displacements. USACOE, EPA and FWS have agreed to the SHA proposal to use an access management approach that does not involve developed property displacements.

In addition, the USACOE expressed concerns with justifying the selection of the Option A/B combination at the MD 450 interchange because Option B/B at the MD 450 interchange is the least environmentally damaging practicable alternate (LEDPA) at this location, insofar as it minimizes wetland impacts by two acres (12.4 for SHA Selected versus 10.5 for Option B).

SHA agreed to evaluate Option B/B in terms of operations and safety. The SHA Office of Traffic and Safety completed their review and analysis of the MD 450 options that concluded that the combination of Option A and B at the MD 450 provides the best improvement from an operations and safety stand point.

Subsequent meetings were held with the USACOE to develop a solution for the interchange at MD 450 that would satisfy both the purpose and need of the project, as well as minimize impacts to wetlands. The USACOE approached SHA with a new concept for the MD 450 interchange in an effort to reduce impacts to a pristine wetland on the east side of MD 3. SHA developed a

preliminary design of the concept and presented the results of the team's evaluation to the USACOE. The new concept had major constructability issues, brought the roadway closer to the Patuxent / Little Patuxent Rivers confluence and did not reduce the overall impact to wetlands.

Following the discussion on USACOE's proposed interchange at MD 450, the USACOE then asked SHA to provide justification as to why continuous flow intersections (CFIs) were not considered at the major intersections north of MD 450 (besides the one proposed at MD 424). After providing the justification that CFIs would be too damaging to residential and commercial properties due to their large, constrained footprint without providing adequate operational and safety improvement, the USACOE agreed that they could concur with the SHA Selected Alternate with additional minimization efforts. SHA has agreed to investigate the potential incorporation of bridges, retaining walls, and Mechanically Stabilized Earth (MSE) walls as part of the SHA Selected Alternate's design. The proposed structures would be located along MD 450 exit ramps, one from northbound MD 3 to MD 450 and the other from southbound MD 3 to MD 450 in place of 2:1 slopes.

The team's initial investigation in 2005 revealed that the incorporation of structures could save a total of two acres of wetlands and would add an additional \$8.3 million to the overall cost estimate. However, the agencies maintained that the mitigation measures will remain based on the 2:1 slope limits to represent the worst case scenario, regardless of whether structural elements are incorporated into the design. Due to the fact SHA wasn't going to get any reduction in wetland mitigation requirements, the team dropped the structures from consideration and maintained the grading limits as previously proposed.

During the subsequent formal presentation of the Selected Alternate-Conceptual Mitigation (SACM) Package at the IRM on June 21, 2006, concerns were raised by FHWA and the USACOE about the need for a design exception for the 25 mph loop ramp at the MD 450 intersection and the sight distance for the traffic signal located on MD 450 at the ramp from northbound MD 3 (see V-A-33). SHA informed the agencies that it would need to investigate these issues and address them at a later date.

Follow-up meetings were then held with FHWA, SHA, USACOE and USFWS on July 18, 2006, and August 8, 2006 to address the sight distance issues raised at the IRM. As part of the discussion, modifications to the SHA Selected Alternate were proposed and the pros and cons of each discussed. As a result of the meetings, consensus was reached to modify the SHA Selected Alternate to increase the ramp to a 30 mph design speed and include a deceleration lane for the movement from eastbound MD 450 to northbound MD 3 in Prince George's County. In addition, as part of the safety improvements and signal design, eastbound MD 450 traffic will be stopped at the signal on the west side of MD 450 when the green is provided for the northbound MD 3 ramp. This will help minimize the queuing for eastbound MD 450 at the signal on the east side of MD 3. Even with their comments addressed, the agencies would not concur on the SACM package due to outstanding concerns with the limited access highway proposed north of the MD 450 interchange. Specifically, they did not support a SHA Selected Alternate that would allow a developer to introduce a new signalized entrance just south of Cronson/Crawford Boulevard in Crofton.

A third conflict resolution meeting was held April 17, 2007 with FHWA and the principals from the concerned agencies. The outstanding issues regarding the wetland impacts at MD 450, the desire for a fully access controlled facility, and concerns with the adequacy of the proposed mitigation and preservation sites were discussed. The agencies requested that the team modify the SHA Selected Alternate to remove the proposed loop ramp at the MD 450 interchange concept. However, the study team determined that removing the loop ramp would result in unacceptable levels of service and therefore decided to maintain the loop ramp. In addition the agencies requested that the upland parcel, along MD 3 southbound, adjacent to the Patuxent River be purchased for preservation. SHA is continuing to investigate the options available to meet this preservation request.

In December 2008, SHA and the Agencies came to an agreement regarding the wetland impacts associated with the proposed MD 450 interchange (**see V-A-80**). SHA agreed to incorporate retaining walls along the impactful portions of the interchange in order to decrease the grading impacts from 12.4 acres to 9.9 acres. The Agencies agreed in principle that this design meets their LEDPA requirements and would be approved. Additional details on the design changes are provided in **Section H**, below.

G. ALTERNATES CONSIDERED SUBSEQUENT TO THE DEIS

The engineering modifications described below are based on comments received at or subsequent to the May 2004 Public Hearing and approval of the DEIS. The majority of comments received involved suggested/desired changes to the proposed interchanges. In most cases these comments reflected a desire to minimize the footprint and impacts of the proposed interchanges. The modifications noted as proposed as part of the SHA Selected Alternate can be compared to the ARDS provided in the figures. In addition, the environmental impacts associated with the engineering modifications are detailed in the discussion below.

a. MD 450 Intersections

Wetland Impact Minimization/Retaining Walls

As detailed previously in this document, continued coordination with environmental agency representatives centered on the issue of potential grading impacts to the sensitive wetland systems bordering the Patuxent River/MD 450/MD 3 crossing. Several modifications to the DEIS and ARDS interchange concepts were developed and evaluated by the study team and agency representatives, ultimately resulting in an agreement that provided the optimal combination of improved traffic operations, safety, and wetland impact minimization. In this case, the agencies agreed to an interchange concept that combined MD 450 Option A, featuring a 30-mph design speed loop ramp in Prince George's County, and Option B in Anne Arundel County, along with a series of retaining wall structures aimed at reducing grading impacts to the wetlands.

By introducing the retaining walls to the interchange options, wetland impacts have been reduced by 2.5 acres. Specifically, in the vicinity of the proposed interchange, estimated wetland impacts

were reduced from 12.4 acres to 9.9 acres. The estimated additional costs associated with the retaining walls would be approximately \$12 million.

b. MD 424 (Davidsonville Road)/Conway Road

Continuous Flow Intersection (CFI)

A new option identified during the value engineering effort (after the Public Hearing) for MD 3 would provide for a CFI for MD 3 at MD 424. A continuous flow intersection is designed to move the left-turn conflicts for the mainline out of the main intersection. This would be accomplished by crossing the left turning traffic and the oncoming through traffic at a signalized left-turn bay placed several hundred feet before the intersection. Traffic from this early left turn bay would be fed into a special CFI leg, which in turn empties into the cross street at the main signalized intersection. The signals at the left-turn bay and the main intersection would be operated by a single controller and coordinated to provide smooth traffic flow.

The CFI intersection for MD 3 and MD 424 provides improved operations by decreasing the average delay for the intersection with minimal impacts, although the level-of-service remains an F. Given public comments preferring maintenance of the at-grade intersection at this location, this option provides the best operations and avoids impacts to the Patuxent River Park.

There would be changes to wetland, floodplain, stream, and forested area impacts associated with the CFI. Wetland impacts are reduced to 0.4 acres, compared to the maximum of 0.7 acres associated with both Alternate 3 and Alternate 5 Modified Options B and C. Floodplain impacts would be eliminated compared to the maximum of 1.1 acres associated with both Alternate 3 and Alternate 5 Modified Option C. Stream impacts would be lowered to 2,355 linear feet (LF), compared to the maximum of 2,512 LF associated with Alternate 5 Modified Option A. Forest impacts would be minimized to 3.1 acres compared to a maximum of 8.5 acres associated with Alternate 5 Modified Option B. The CFI will displace one business, the AMOCO gas station just north of the MD 424 intersection. The displacement is a result of loss of access to the gas station. However, the proposed modifications provide impact avoidance for two properties previously impacted by the ARDS.

c. Waugh Chapel Road/Reidel Road

Option B Modified

This option would provide a grade-separated compressed diamond interchange for MD 3 over the Waugh Chapel Road/Reidel Road intersection. This option would realign northbound and southbound MD 3, utilizing the existing median width to minimize right-of-way and utility impacts. The ramp access with Waugh Chapel Road and Reidel Road would be similar to the location of existing MD 3. The proposed interchange with MD 3 would provide the greatest improvements to operations and safety on MD 3 by eliminating the traffic signal on mainline MD 3. This option also would result in fewer impacts to the environmental resources and right-of-way as compared with ARDS Interchange Option C.

It was requested by citizens at the Combination Location/Design Public Hearing that MD 3 be depressed under the existing intersection to help minimize visual and noise impacts on the surrounding communities. Depressing MD 3 under the intersection with Waugh Chapel and Reidel Roads would create a low point in which a pumping station would be required to meet the drainage needs for mainline MD 3. Due to the additional cost for the pumping station and future maintenance requirements, the SHA has determined that mainline MD 3 would need to be elevated over the intersection as presented at the Public Hearing.

Because of the close proximity of the left-turn intersection from northbound MD 3 to Waugh Chapel Village with the interchange ramps, Option B Modified includes the relocation of this movement south to the location of the existing entrance to Waugh Chapel Village Retirement Community from southbound MD 3. To accommodate this relocation, the right-in entrance will be improved to accommodate all movements. In addition, given the close proximity to the relocation, the median at Brickhead Road and Wellfleet Road will be closed and both roads will be converted to right-in/right-outs with MD 3.

As part of this option, it is recommended that the intersection with St. Stephens Church Road becomes a right-in/right-out, thereby eliminating the existing signal. U-turn movements would be provided at this location to accommodate access and circulation to businesses in the median and along MD 3. This would help prevent the traffic stopped at the signal for St. Stephens Church Road from queuing into the ramps for the interchange. With the Waugh Chapel Option B Modified interchange, the ramps from MD 3 to Waugh Chapel and Reidel Road would operate at a level-of-service D or better with the exception of the PM peak hour movement from southbound MD 3, which would operate at a level-of-service F.

There are no changes to natural environmental impacts associated with Waugh Chapel Option B Modified. However, this option will require approximately 2.7 additional acres of right-of-way not previously identified by the ARDS.

d. MD 175/Millersville Road/Charles Hall Road

Option B Modified

Option B at MD 175 proposed with Alternate 3 would consist of at-grade intersection improvements including the widening of MD 3. This option would provide the best level-of-service of all the interchange options developed for MD 175 with Alternate 3 with minimal changes to the amount of impervious surface in the vicinity of Jabez Branch. With the MD 175 Option B Modified improvements to MD 3 at MD 175, the intersection with southbound MD 3 would operate at a level-of-service B in the AM peak hour and E in the PM peak hour. For northbound MD 3, the intersection would operate at a much-improved level-of-service F in the AM peak hour and a level-of-service B in the PM peak hour. For this option, a triple right-turn onto southbound MD 3 from eastbound MD 175 would be added to meet existing and forecasted high volume traffic for this movement. A single through lane would remain for eastbound MD 175 traffic. Two through lanes would be provided for westbound MD 175 traffic along with two left turn lanes for access to southbound MD 3 from westbound MD 175. A double left-turn would be provided for eastbound MD 175 access to northbound MD 3. Northbound MD 3

would be modified to four lanes through the intersection to improve the peak hour operations. MD 175 Option B Modified improvement would not be located near Jabez Branch and therefore causes no additional potential impact to this sensitive brown trout stream. As part of the modification Charles Hall Road would be extended to the proposed county road in the Holiday Park Development, thereby eliminating access directly to MD 3 southbound. The additional lanes and storage areas proposed decrease the amount of delay at the signalized intersections.

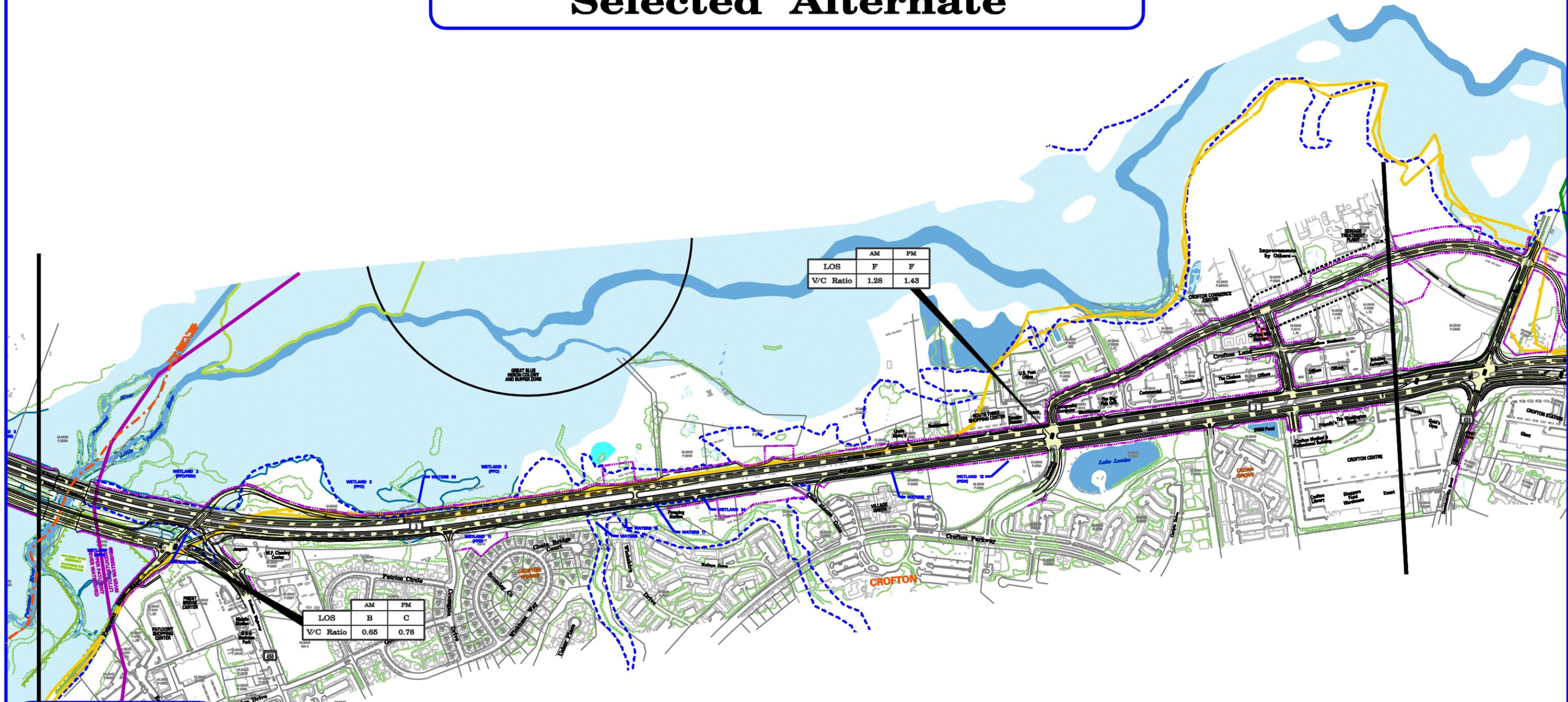
At the Public Hearing, comments were received from the public and the Maryland Department of Natural Resources (DNR) in favor of Option A. In addition, Option B was not favored primarily due to the re-alignment of Charles Hall Road to McKnew Road in an effort to minimize impacts to Jabez Branch. Following the Public Hearing, the study team worked with Anne Arundel County and the environmental and regulatory agencies to change the alignment of Charles Hall Road to tie-in with Holiday Park Road. This re-alignment minimizes the impacts to Jabez Branch and improves safety on MD 3 by eliminating the access to MD 3. This access closure also eliminates the need for a school bus stop directly on MD 3. In addition, Charles Hall Road would be a closed section with the stormwater runoff carried to the median of MD 3, thereby eliminating the direct runoff to Jabez Branch. All runoff for MD 3 will also be serviced by a stormwater management facility located in the median of MD 3, thereby preventing the discharge of runoff directly into Jabez Branch.

There are changes to wetland, floodplain, stream, and forested area impacts associated with the MD 175 Option B Modified. Wetland impacts would be reduced to 0.5 acres, compared to a maximum of 0.6 acre associated with Alternate 5 Modified Options A and B. However, the associated wetland impacts would be higher than the 0.3 acre of impact associated with Alternate 3 Option C. There are no floodplain areas located within the vicinity of the proposed MD 175 Option B Modified intersection. Stream impacts associated with the MD 175 Option B modifications have been reduced to 1,831 LF, compared to a maximum of 2,575 LF associated with Alternate 5 Modified Option A. However, the stream impacts associated with Alternate 3 Option B were the lowest at 1,819 LF. Forest impacts associated with the modifications are 21.3 acres, compared to a maximum of 28.7 acres associated with Alternate 5 Option B. However, the forest impacts associated with Alternate 3 Option A were the lowest at 19.7 acres. There would be no additional displacements associated with the MD 175 Option B Modified intersection as compared to Alternate 3 Options A, and B (eight residential and five business displacements). Alternate 5 Modified Options A and B would displace three residences and two businesses. A total of seven properties, previously unaffected by the ARDS, would be affected by this modification.

H. DESCRIPTION OF THE SHA SELECTED ALTERNATE

Based on the continuing technical study and agency and public comments received during and following the Location/Design Public Hearing on May 20, 2004, an alternate has been selected by SHA. This SHA Selected Alternate incorporates all of the design modifications discussed in **Section G**, above, and is comprised of a combination of the mainline and intersection options developed in the DEIS (see **Figures II-5 through II-8**). The SHA Selected Alternate results in the fewest total environmental impacts with an exception at the relocation of Charles Hall Road (MD 175 Option B Modified). The combination option selected for MD 450 provides the most

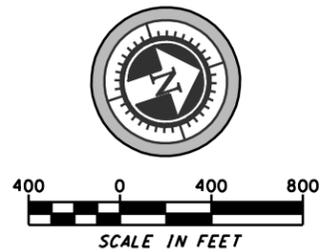
Selected Alternate



LEGEND

- Access Closure
- New or Reconfigured Entrance
- Add Continuous Auxiliary Lane
- Property Displacement
- PFO Wetlands
- PSS Wetlands
- PEM Wetlands
- Water Features
- Wetlands Field Delineated Only
- Greenway
- State / County Park
- - - Floodplain
- PFA Boundary
- Sub-Watershed Boundary
- Proposed Right-of-Way

000(000) AM(PM) Peak Hour Volumes



SHA MARYLAND DEPARTMENT OF TRANSPORTATION
State Highway STATE HIGHWAY ADMINISTRATION

MD 3 PROJECT PLANNING STUDY
Final Environmental Impact Statement

SELECTED ALTERNATE

SCALE As Shown	FIGURE II-6
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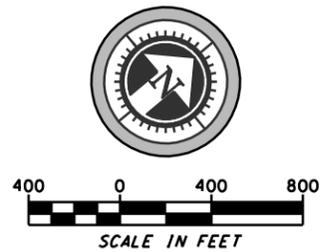
Selected Alternate



LEGEND

- Access Closure
- New or Reconfigured Entrance
- Add Continuous Auxiliary Lane
- Property Displacement
- PFO Wetlands
- PSS Wetlands
- PEM Wetlands
- Water Features
- Wetlands Field Delineated Only
- Greenway
- State / County Park
- Floodplain
- PFA Boundary
- Sub-Watershed Boundary
- Proposed Right-of-Way

000(000) AM(PM) Peak Hour Volumes



SHA MARYLAND DEPARTMENT OF TRANSPORTATION
State Highway STATE HIGHWAY ADMINISTRATION

MD 3 PROJECT PLANNING STUDY
Final Environmental Impact Statement

SELECTED ALTERNATE

SCALE As Shown	FIGURE II-7
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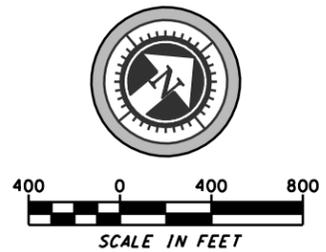
Selected Alternate



LEGEND

- Access Closure
- New or Reconfigured Entrance
- Add Continuous Auxiliary Lane
- Property Displacement
- PFO Wetlands
- PSS Wetlands
- PEM Wetlands
- Water Features
- Wetlands Field Delineated Only
- Greenway
- State / County Park
- Floodplain
- PFA Boundary
- Sub-Watershed Boundary
- Proposed Right-of-Way

000(000) AM(PM) Peak Hour Volumes



SHA MARYLAND DEPARTMENT OF TRANSPORTATION
State Highway ADMINISTRATION

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SELECTED ALTERNATE

SCALE As Shown	FIGURE II-8
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favorable operational conditions and with the proposed retaining walls, provides the lowest estimated wetland impact. The selected option also includes the incorporation of the TSM/TDM strategies identified throughout the study process. The following is a description of the SHA Selected Alternate. Also discussed is the progression and resolution of issues that have arisen since its recommendation from the study team and selection by the SHA Administrator.

1. Roadway Alternate

Alternate 3 – Boulevard Concept Included in the DEIS

The current alignment of northbound MD 3 from Belair Drive to MD 450 would be dualized and a continuous auxiliary lane provided on the outside from Belair Drive to just north of Forest Drive. The majority of the widening would be in the median area. Existing southbound MD 3 from MD 450 to Forest Drive would be converted to a two-way service road with access provided from MD 450 and a right-in/right-out with MD 3 at Forest Drive. Existing alignments of MD 3 from MD 450 to St. Stephens Church Road would be maintained and a continuous auxiliary lane provided on the outside along with a continuous left auxiliary lane from MD 424 to Johns Hopkins Road. The existing alignments of MD 3 from St. Stephens Church Road to MD 32 would be maintained with the addition of a third through travel lane and a continuous auxiliary lane on the outside. In addition, a continuous left auxiliary lane is provided from just north of St. Stephens Church Road to MD 175. Where possible, private access locations will be minimized or consolidated to eliminate conflict points along MD 3, thereby improving safety.

The dualization of MD 3 south of MD 450 through Prince George's County improves operations and safety by eliminating 14 entrances onto MD 3. With the dualization of MD 3, southbound MD 3 is converted to a service road and access to mainline MD 3 is provided only from Columbia Way and Forest Drive with a more controlled and protected movement. In addition, access to White Marsh Park is provided by the service road, eliminating the weaving that currently exists on southbound MD 3 as traffic leaves the park for destinations north.

The introduction of gateway features, particularly in Anne Arundel County, and traffic calming measures, including 11-foot lanes and a closed cross section, are efforts to help reduce the tendency of drivers to speed and to provide a roadway aesthetically consistent with the community surroundings. The boulevard concept is also consistent with and appropriate for the high percentage of local trips, as opposed to the features of a freeway serving through traffic. The recommended design and posted speed will be 45 mph. The 16-foot auxiliary lane or 10-foot shoulders have been provided to accommodate bicycle traffic along MD 3 and will provide additional clearance between the slower turning traffic and the faster through traffic. The footprint of a future trail crossing just north of MD 175 will be provided by Anne Arundel County. Residents along this section of MD 3 prefer Alternate 3.

To accommodate bicyclists off the roadway, a 10-foot bicycle path is proposed east of MD 3 from the MD 450 interchange north to the intersection of Waugh Chapel and Reidel Roads. A 10-foot bicycle path is under consideration on the west side of MD 3 from the intersection of Waugh Chapel and Reidel Roads north to McKnew Road. An 8-foot bicycle/pedestrian path is

proposed on the west side of MD 3 between Crawford/Cronson Boulevard and Conway Road, to accommodate both bicycle and pedestrian traffic.

Sidewalks, five feet wide, are included where possible, in addition to the bicycle/pedestrian path. Where a bicycle/pedestrian path is not provided pedestrian connections to existing facilities will be provided where reasonable. In addition, 5-foot sidewalks will be provided where feasible within the median of MD 3 where development exists. Special consideration is given to provide safe pedestrian crossing areas at Crawford/Cronson Boulevard, MD 424/Conway Road, Waugh Chapel/Reidel Road and MD 175. This includes sidewalk striping, signal coordination, median refuge areas and pedestrian/bicycle roadway advisory signs.

2. Interchange Options

a. MD 450 Intersections

Combination Option A and Option B – Included in the DEIS and Modified with Retaining Walls

The east to west running MD 450 is connected via a separate parallel roadway located east of MD 3. MD 450 crosses over MD 3 south of the Patuxent River. Movements between MD 450 and MD 3 are accommodated by a trumpet loop ramp interchange south of the Patuxent River crossing in Prince George's County (Option A). In Anne Arundel County, the diamond interchange connection (Option B) with MD 3 is provided. Access from southbound MD 3 to eastbound MD 450 is provided by a MD 3 fly-over tying in at a signalized intersection south of the existing intersection with MD 450 in Anne Arundel County. Patuxent River Road is realigned with the MD 3 exit ramp with a four-leg directional signalized intersection. In addition, this option provides a redundant movement to access northbound MD 3, thereby providing better operations for the future design year (2025).

Providing a direct connection between MD 450 East and MD 450 West, east of the MD 3 crossing of the Patuxent River, greatly reduces the number of conflict points along MD 3. In addition, the grade separation and interchange ramps provided to MD 3 eliminate the signals located on MD 3, which will help improve safety and operations. The introduction of the loop ramp in Prince George's County decreases the number of left turns required at the MD 450 intersection in Anne Arundel County, thereby, improving the overall operation of the intersection from a near failing level-of-service E to a level-of-service C. In addition, a ramp design speed of 30 mph has been provided to improve the site distance, while minimizing the footprint and associated wetland impacts. The signal system along MD 450 will be synchronized to have the eastbound MD 450 on the west side of MD 450 stop prior to the green phase for the vehicles turning from northbound MD 3 to westbound MD 450. This synchronization will help improve safety by minimizing the amount of queuing at the eastbound MD 450 signal on the east side of MD 3.

As noted previously, retaining walls have been introduced as part of the combination option. The walls will run along the direct connection of MD 450, as well as along the flyover ramp.

The retaining walls will save an estimated 2.5 acres of pristine wetland areas that would have otherwise been impacted by the proposed grading limits.

Option C (not selected) has the greatest wetland impacts at the MD 450 location of all possible options (15.7 acres). The combination option with retaining walls chosen for the SHA Selected Alternate has fewer wetland impacts at the MD 450 interchange (9.9 acres) compared to either Option A (11.5 acres) or Option B (10.5 acres), and it was chosen because it provides the greatest safety and operational benefits for this intersection.

b. Crawford/Cronson Boulevard

Option A – Included in the DEIS

Option A would upgrade existing intersection conditions as proposed in the MD 3 Task Force’s recommended alternate presented in the mid 1990’s. This option includes upgrading the existing signalized intersection to provide improved geometrics and lane storage areas along both MD 3 and Crawford/Cronson Boulevards, including a double left from northbound MD 3. No other major changes to the existing intersection are proposed under this option; hence, the intersection will operate at a level-of-service F even with the proposed improvements. However, Option A was chosen because it maintains community aesthetics for a “Crofton Gateway” and the introduction of the signal will assist in reducing speeds as travelers enter the commercial area from the south. The public requested both features.

c. MD 424 (Davidsonville Road)/Conway Road

Continuous Flow Intersection (CFI) – Developed Subsequent to the DEIS

The CFI intersection is described in detail previously in **Section G**.

d. Waugh Chapel/Reidel Road

Option B Modified – Developed Subsequent to the DEIS

The Waugh Chapel/Reidel Road Option B Modified is described in detail in **Section G**.

e. MD 175/Millersville Road/Charles Hall Road

Option B Modified – Developed Subsequent to the DEIS

The MD 175/Millersville Road/Charles Hall Road Option B Modified is described in detail in **Section G**.

f. Waugh Chapel South Developer Proposed Upgrades of MD 3

Subsequent to the selection of the SHA Selected Alternate, Reliable Contracting Company submitted plans to develop their currently undeveloped site along southbound MD 3, just south

of the existing Waugh Chapel Village development. This proposed development, “Waugh Chapel Village South,” will serve as existing conditions for MD 3 if completed.

Ongoing coordination between SHA, Anne Arundel County and the developers has determined that any potential impacts to existing public facilities generated by the proposed site improvement must be mitigated by upgrading MD 3 as necessary to maintain proper function of the surrounding facilities once the development is built and operational. SHA and Anne Arundel County concur that upgrades are required for the intersections at Waugh Chapel/Reidel Road, Evergreen Road/John Hopkins Road, and MD 424/Conway Road to facilitate the additional traffic generated by the proposed development.

Developer Upgrade of Waugh Chapel Road/Reidel Road/MD 3 Intersections

At the Waugh Chapel Road/Reidel Road/MD 3 intersection, the developer of the proposed Waugh Chapel South complex is proposing an intersection based upon the “Michigan Left” design. Michigan Lefts are defined as intersections where at least one road is a divided highway, in this case, MD 3. Left turn movements from the side streets (Waugh Chapel Road and Reidel Road) onto the divided highway are prohibited.

To make a left from the side streets drivers are required to turn right onto MD 3. Within a short distance, they merge into a signalized U-turn lane in the median. When traffic is stopped, drivers complete the U-turn and go back through the initial intersection.

Unlike a traditional Michigan Left, where traffic on the divided highway cannot turn left at the existing intersection, this design does allow left turns from MD 3 onto the side streets. Pedestrian crossing facilities will be provided in conjunction with the intersection improvement.

Developer Upgrade of Evergreen Road/Johns Hopkins Road/MD 3 Intersections

The proposed offset intersection at this location is intended to split the traffic volumes between two different signalized intersections that would allow for additional queuing lengths and increased traffic clearance times. One signalized intersection will remain at the current northbound MD 3/Johns Hopkins Road/Evergreen Road intersection, and the other will be introduced just to the north on southbound MD 3 as part of the main entrance to the proposed shopping center.

The offset intersection will no longer allow a through movement across MD 3 between Johns Hopkins Road and Evergreen Road. However, left-turn movements will be available in all directions with the exception of Evergreen Road to northbound MD 3. Evergreen Road will be realigned as a right-in/right-out only access point. Likewise right-turns to and from northbound MD 3 are available at Johns Hopkins Road.

Just to the north, at the new entrance intersection, traffic signals are introduced along both southbound and northbound legs of MD 3 to control left turns to and from the shopping center. Pedestrian facilities will be provided as part of the proposed upgrade.

Developer Upgrade of MD 3/MD 424/Conway Road Intersection

The developer is proposing to provide a dedicated right-turn only lane from southbound MD 3 to westbound Conway Road in conjunction with an additional MD 3 southbound through lane. The new through lane would begin where the existing right-turn lane currently starts and terminates a short distance (under one mile) to the south as a right-turn only entrance to an exiting office complex. The short distance of this proposed improvement, combined with its' footprint not exceeding that of the SHA Selected Alternate, excuse this improvement from any air quality conformity requirements. The existing pedestrian facilities will be maintained as required.

I. TRAFFIC & SAFETY ENHANCEMENTS

The effects of the SHA Selected Alternate on existing and projected operational and safety issues for local traffic on MD 3 are summarized below. Increasing the capacity of the highway to provide ideal LOS conditions and uncongested peak hour traffic operation is not a primary purpose of the MD 3 project. To meet project purpose and need the SHA Selected Alternate focuses on improvements, which to the extent possible, provides operational and safety enhancements that address the concerns of the public, local elected officials, and state and federal agencies while minimizing impacts to environmental, cultural, and community features. While some intersections are improved from LOS F to LOS E or better, some intersections were enhanced through delay minimization techniques (such as the CFI at MD 424) or were left as LOS F due to community concerns regarding impacts (as occurs at Cronson/Crawford).

Design elements such as access point consolidation, auxiliary turn lanes, and grade separations were incorporated to reduce conflict points thereby improving safety and operations. In addition, the SHA selected Alternate includes buffer separated sidewalk and hiker/biker trail facilities to enhance pedestrian and bicyclist safety and connectivity throughout the corridor. These safety enhancements are intended to address the 716 police reported crashes that occurred between 2006 and 2008. The study team feels that the auxiliary lane, specifically, will reduce the relatively high rate of rear end accidents by separating vehicles exiting and entering the highway at access points. Further, by improving overall traffic operations and reducing congestion, the team anticipates a reduction in sideswipe and angle collision types.

Existing, Future No-Build (2025) and SHA Selected Alternate Build (2025) Average Daily Traffic (ADT) conditions are compared in **Table II-1**. The SHA Selected Alternate would slightly decrease or maintain projected ADT volumes in 2025. (Note: These volumes were verified as part of a 2009 traffic sensitivity analysis and approved by FHWA for use in this document.)

**Table II-1
Existing, No-Build, and SHA Selected Alternate ADT**

Intersection with MD 3	Truck Percent	Existing Conditions ADT (2000)	No-Build Conditions ADT (2025)	SHA Selected Alternate ADT (2025)
MD 450 East (Annapolis Road)	15	67,125	105,375	105,300
MD 450 West (Defense Highway)	11	67,125	105,375	105,300
Cronson Boulevard	15	57,925	93,025	93,025
MD 424	9	56,475	90,275	90,250
Waugh Chapel Shopping Center	16	54,200	86,100	86,100
Waugh Chapel Road / Riedel Rd.	16	56,325	90,575	90,575
St. Stephen's Church Road	12	57,400	91,675	91,675
MD 175 / Millersville Road	12	57,400	91,675	91,675

Table II-2 provides a comparison of LOS and V/C Ratios for Existing (2000), No-Build (2025), and SHA Selected Alternate Build (2025). This data shows that while not all intersections experience passing LOS under the SHA Selected Alternate, they do experience some improvement in operations. The lone exception is Crofton Boulevard which was only minimally enhanced at the request of the community to minimize property, environmental, and visual impacts. Further, traffic analyses conducted for the SHA Selected Alternate has not shown any evidence that traffic would divert to secondary roads because all non-displaced properties and existing side streets will remain accessible from MD 3.

**Table II-2
Level of Service and Volume-to-Capacity (v/c) Ratio As of March 2003**

Intersection with MD 3	Existing (2000)				No-Build (2025)				SHA Selected Alternate (2025)**			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
Belair Drive – MD 3 NB Ramps*	A	0.19	A	0.20	A	0.34	A	0.38	-	-	-	-
Belair Drive – MD 3 SB Ramps*	A	0.22	A	0.19	A	0.34	A	0.30	-	-	-	-
Forest Drive	E	0.96	A	0.60	F	1.37	E	0.99	-	-	-	-
Columbian Way	A	0.62	F	1.14	F	1.17	F	1.77	-	-	-	-
Sylvan Drive – West	E	0.99	B	0.65	F	1.39	F	1.05	-	-	-	-
Sylvan Drive – East	A	0.60	F	1.10	F	1.14	F	1.72	-	-	-	-
MD 450 (Annapolis Road Loop)*	E	0.91	F	1.06	F	1.46	F	1.58	B	0.66	A	0.56
MD 450 (Annapolis Road) Southbound Access Signal*	-	-	-	-	-	-	-	-	A	0.62	E	0.91
MD 450 (Defense Highway)*	E	0.96	F	1.11	F	1.40	F	1.68	B	0.65	C	0.76
Cronson Boulevard*	E	0.94	E	1.00	F	1.34	F	1.46	F	1.28	F	1.43
Crofton Boulevard	D	0.82	D	0.88	F	1.19	F	1.29	F	1.28	F	1.43
MD 424 (Conway Road)*	E	0.96	E	0.98	F	1.42	F	1.51	F	1.32	F	1.31
Carver Road – West	C	0.73	A	0.52	F	1.00	D	0.87	-	-	-	-
Carver Road – East	A	0.52	C	0.79	E	0.99	F	1.15	-	-	-	-
Johns Hopkins Road – West*	D	0.88	A	0.60	F	1.21	E	0.97	F	1.08	F	1.20
Johns Hopkins Road – East*	C	0.77	C	0.77	F	1.29	F	1.12				
Brickhead Road – West	B	0.68	A	0.53	E	0.94	D	0.88	-	-	-	-
Brickhead Road – East	B	0.68	C	0.79	F	1.18	F	1.15	-	-	-	-
Waugh Chapel Shopping Center *	B	0.64	B	0.70	F	1.06	F	1.00	D	0.90	E	0.97
Waugh Chapel Road*	D	0.88	D	0.88	F	1.44	F	1.39	A	0.58	D	0.85
Waugh Chapel Road (Northbound)*	-	-	-	-	-	-	-	-	D	0.88	F	1.10
St. Stephen's Church Road – West	D	0.84	D	0.84	F	1.11	F	1.35	-	-	-	-
St. Stephen's Church Road – East*	C	0.76	B	0.71	F	1.31	E	0.98	-	-	-	-
MD 175 (Annapolis Road) – West*	E	0.95	F	1.00	F	1.27	F	1.59	B	0.68	E	0.95
MD 175/Millersville Road – East*	F	1.07	E	0.95	F	1.80	F	1.30	F	1.05	B	0.72

* Signalized Intersections

**Unsignalized Intersections were not analyzed under the SHA Selected Alternative

Note: all locations analyzed using Critical Lane Volume Analysis (both signalized and unsignalized intersections)

J. COST COMPARISON

1. Construction Costs

Table II-3 provides the construction costs for each of the proposed alternates and interchange options retained for detailed study. The costs are provided on a segment basis for the No-Build, the two Build Alternates and the three Interchange/Intersection Options retained for detailed study and the SHA Selected Alternate.

2. Preliminary Right-of-Way Costs

Table II-4 presents the preliminary right-of-way costs for the two Build Alternates and the three Interchange/Intersection Options retained for detailed study and the SHA Selected Alternate. The information was developed for the seven separate segments so that costs can be calculated for various road and intersection combinations.

**Table II-3
Construction Cost Estimates**

	Costs per Segment (in \$Millions)						
	a-a	b-b	c-c	d-d	e-e	f-f	g-g
	US 50 to Sylvan Drive	Sylvan Drive to Patuxent River	Patuxent River to South of Clubhouse Gate	South of Clubhouse Gate to Carver Road	Carver Road to Brickhead/ Wellfleet Road	Brickhead/ Wellfleet Road to St. Stephens Church Road	St. Stephens Church Road to MD 32
Alternate 1 (No-Build)	0	0	0	0	0	0	0
Alternate 3 w/ Option A	27-29	132-136	34-36	66-68	22-24	28-30	42-44
Alternate 3 w/ Option B	27-29	137-141	53-55	144-148	22-24	62-64	45-47
Alternate 3 w/ Option C	27-29	87-89	55-57	87-89	22-24	46-48	N/A
Alternate 5 Modified w/ Option A	25-27	125-129	38-40	132-136*	21-23	30-32	37-39
Alternate 5 Modified w/ Option B	25-27	132-136	55-57	141-145	21-23	56-58	60-62
Alternate 5 Modified w/ Option C	24-26	85-87	56-58	88-90	18-20	47-49	N/A
SHA Selected Alternate**	47-49	244-249	78-80	86-88	38-40	85-87	73-76

**Includes the MD 424/Conway Road Interchange Option B*

***Costs updated February 2009*

**Table II-4
Right-of-Way Cost Estimates**

	Costs per Segment (in \$Millions)						
	a-a	b-b	c-c	d-d	e-e	f-f	g-g
	US 50 to Sylvan Drive	Sylvan Drive to Patuxent River	Patuxent River to South of Clubhouse Gate	South of Clubhouse Gate to Carver Road	Carver Road to Brickhead/ Wellfleet Road	Brickhead/ Wellfleet Road to St. Stephens Church Road	St. Stephens Church Road to MD 32
Alternate 1 (No-Build)	0	0	0	0	0	0	0
Alternate 3 w/ Option A	3	20	4	12	5	3	13
Alternate 3 w/ Option B	3	16	6	11	5	3	13
Alternate 3 w/ Option C	3	17	14	16	5	7	N/A
Alternate 5 Modified w/ Option A	2	19	13	25	4	5	9
9Alternate 5 Modified w/ Option B	2	14	6	12	5	7	10
Alternate 5 Modified w/ Option C	2	14	17	13	5	8	N/A
SHA Selected Alternate*	24	61	54	37	34	42	58

**Costs Updated February 2009*