

II. ALTERNATIVES CONSIDERED

A wide range of alternatives were developed and refined to minimize impacts to the natural, socio-economic, and cultural environment while addressing the Purpose and Need for the project. The initial Alternatives Retained for Detailed Study (ARDS) was included in the 1999 Draft Environmental Impact Statement (DEIS). These alternatives included the No-Build Alternative and Build Alternatives I and II. Both build alternatives included construction of MD 32 as a four-lane divided highway with a 34-foot wide median. Build Alternative I included seven interchanges: Linden Church Road, Dayton Shop, Rosemary Lane, Burntwoods Road, Nixon's Farm Lane, MD 144, and I-70. Build Alternative II included six of the seven interchanges. It did not include a separate interchange at Nixon's Farm Lane. The access to Nixon's Farm was combined with the MD 144 interchange.

A three-year environmental reevaluation of the DEIS was prepared in February 2004 in accordance with the CEQ Regulations and 23 CFR 771. In response to public comments received on the DEIS, additional interchange options at Burntwoods Road, Rosemary Lane, and MD 144 were considered and included in this three-year environmental reevaluation. FHWA provided concurrence on the reevaluation on March 22, 2004, agreeing that a supplemental DEIS was not required.

Following the FHWA concurrence in March 2004, additional interchange options at Rosemary Lane and MD 144 were developed in response to new public and agency comments to minimize impacts. These additional interchange options, as well as those from the 2004 Reevaluation were presented at the Informational Public Workshop on September 8, 2004. A second environmental reevaluation was prepared to describe the additional interchange options developed at MD 144 and Rosemary Lane. The FHWA concurred with the Reevaluation on April 27, 2005.

Descriptions of the alternatives and the numerous interchange options are presented in this section in the following order:

- A.** Alternatives Presented in the DEIS and at the Location and Design Hearing
- B.** Alternatives Developed Subsequent to the Public Hearing
- C.** Alternatives Not Preferred
- D.** Interchange Options Considered
- E.** SHA's Selected Alternative and Interchange Options.

Plans at a scale of 1" = 400' are presented in **Appendix A, Sheets 1 through 5**.

A. Alternatives Presented in the Draft Environmental Impact Statement and at the Location and Design Public Hearing

The initial Alternatives Retained for Detailed Study (ARDS) were presented in the 1999 Draft Environmental Impact Statement (DEIS) and at the March 18, 1999 Location and Design Public Hearing. These alternatives included the No-Build Alternative, Build Alternative I, and Build Alternative II.

1. No-Build Alternative

Under the No-Build Alternative, no major improvements other than roadway maintenance and minor repairs would be considered or constructed. The existing conditions of a two-lane undivided highway with partial access control south of Burntwoods Road and no access control north of Burntwoods Road would be maintained. Since the study began in the mid 1990s, a number of safety and operations improvements have been implemented by SHA along the study corridor. They include the following:

- Installed hazard identification beacons,
- Installed special warning signs throughout the corridor to suggest that motorists use headlights for added visibility to other motorists,
- Installed overhead intersection street lights at all public roads within the corridor
- Modified traffic signal left turn phase along northbound and southbound MD 32 at MD 144 (changed from protected/permissive left turn to flashing red left arrow),
- Modified the geometry along MD 32 at East and West Linden Church Road to provide left turn median acceleration lanes for motorists entering MD 32,
- Modified pavement marking on MD 32 at Rosemary Lane to provide a left turn lane,
- Modified pavement markings on MD 32 at the Dayton Shop entrance to provide a left turn lane,
- Added a rumble strip between the yellow centerline pavement markings in the no passing areas; and
- Resurfaced the entire corridor and installed raised pavement markings on the centerline.

While these improvements have provided short-term solutions, they do not address the long-term needs of the corridor.

2. Build Alternatives

Two build alternatives were considered for the corridor. Build Alternative I would provide a four-lane, fully access controlled, divided highway with a 34-foot median. Seven interchanges were proposed: Linden Church Road, Dayton Shop, Burntwoods Road, Rosemary Lane, Nixon's Farm Lane, MD 144, and I-70.

Build Alternative II, like Build Alternative I, would provide a four-lane, fully access controlled, divided highway with a 34-foot median. Five of the interchanges (Linden Church Road, Dayton Shop, Burntwoods Road, Rosemary Lane, and I-70) would be the same as those described for Build Alternative I. However, under Build Alternative II, access to Nixon's Farm Lane and MD 144 would be combined using the MD 144 Interchange and access roads.

a. General Engineering Design Concepts

Mainline Improvements for MD 32

The MD 32 mainline typical section was developed for a 60-mile per hour (MPH) design speed and is shown in **Figure II-1**. The mainline section provides four 12-foot lanes and a 34-foot

median. The outside shoulders are ten feet wide (all paved) and the inside shoulders are ten feet wide (four-foot paved and six-foot graded). Beyond the travel lane is a 30-foot wide clear zone, which includes the ten-foot shoulder and 20 feet of grading at a 6:1 slope. The clear zone provides a recovery area for an errant vehicle that is free of hazards such as trees, ditches, culverts, etc. The standard side slopes beyond the clear zone range from 4:1 to 2:1 depending on the height of the cut or fill. In some sensitive areas, the clear zone could be reduced to a minimum width of six feet with traffic barrier W-beam two feet beyond the edge of the shoulder and a steeper side slope (3:1 or 2:1). The proposed right-of-way and limit of disturbance have been set 25 feet beyond the toe of slope to accommodate drainage facilities, erosion and sediment control, and possible construction easements.

Interchange Ramps

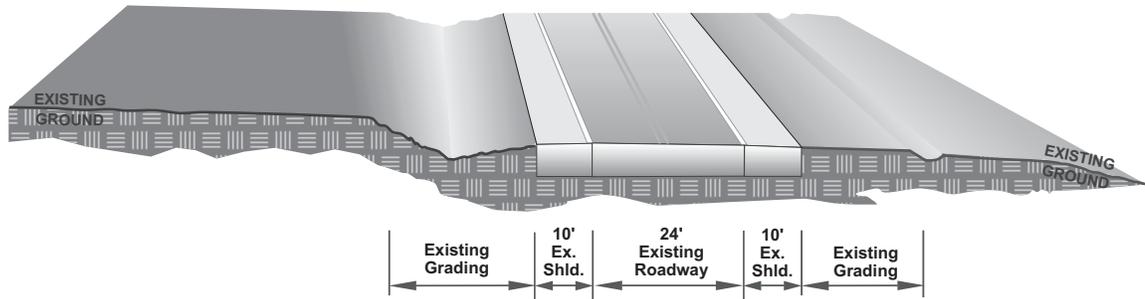
The interchange ramps were developed with design speeds ranging from 50 MPH where they leave the mainline to 25 MPH near the local road connections to afford a gradual speed change for the drivers as they traverse the ramp. The typical section for the interchange ramps is shown in **Figure II-2**. Ramps include one lane, which is 15 feet wide for curve radii greater than 260 feet and 16 feet wide for curve radii less than 260 feet. The shoulders have a ten-foot wide graded area; the right shoulder includes a 6-foot wide paved area and the left shoulder includes a four-foot wide paved area. The clear zone is 16 feet wide including the ten-foot shoulder and six feet of grading at a 4:1 slope. The standard side slope criteria used on the mainline were also used on the ramps. The proposed right-of-way line and limit of disturbance have been set 25 feet from the toe of slope.

Acceleration and deceleration lanes for the interchange ramps include one 12-foot lane followed by the same roadside grading as the MD 32 mainline: 10-foot paved shoulder, 30-foot clear zone which includes the shoulder, and standard side slope criteria. This typical section is reduced through sensitive areas, similar to the MD 32 mainline reductions. The proposed right-of-way line and limit of disturbance have been set 25 feet from the toe of slope.

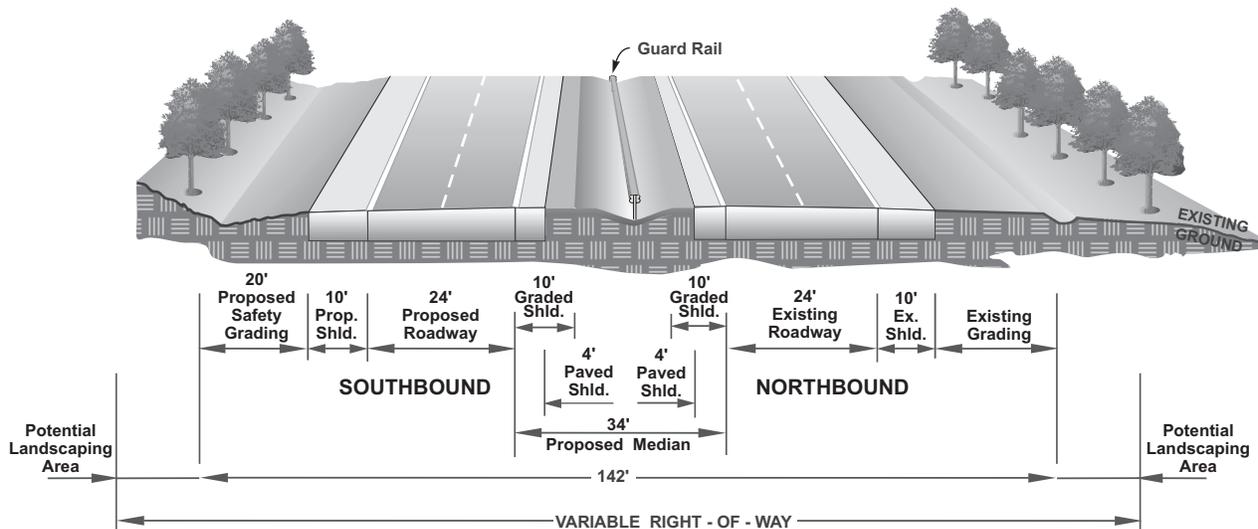
Local, Frontage, and Access Roads

A 30 MPH design speed was used for the frontage roads and local roads unless otherwise noted in the interchange description. The typical section shown in **Figure II-3** consists of two 11-foot lanes and two 10-foot wide graded shoulders with a four-foot paved area. The clear zone is 16 feet wide including the ten-foot shoulder, and six feet of grading at a 4:1 slope, followed by the standard side slope criteria. The proposed right-of-way line and limit of disturbance have been set 25 feet from the toe of slope.

Access roads are defined as publicly maintained roadways or driveways that provide access to two to fifteen houses. Access road design speeds range from 20 to 25 MPH. The typical section shown in **Figure II-3** is based on the Howard County standard for access roads with an average daily traffic (ADT) volume of less than 100 vehicles. It consists of a 14-foot roadway, two 4-foot graded shoulders, two one-foot offsets at a 6:1 slope, and the standard side slope criteria. The proposed right-of-way line and limit of disturbance have been set 25 feet from the toe of slope.



**EXISTING
TYPICAL SECTION**

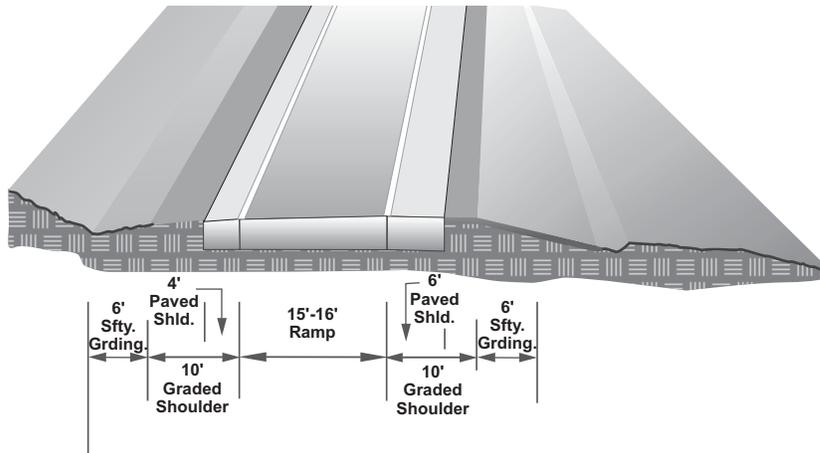


**PROPOSED
TYPICAL SECTION**

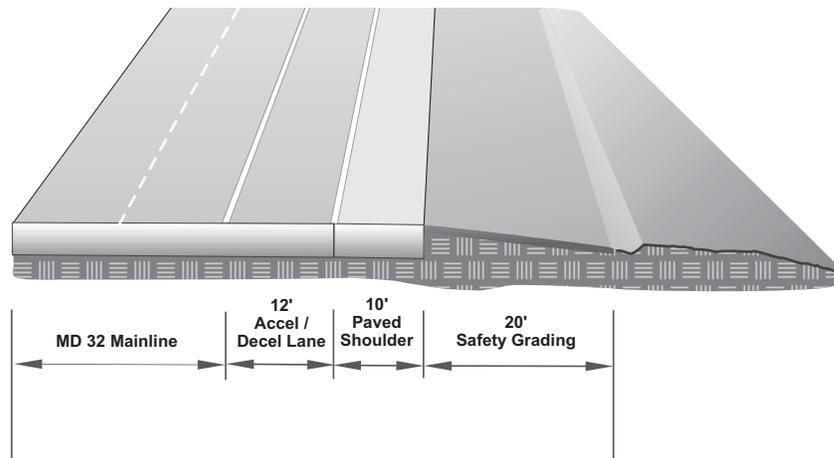
MD 32 PLANNING STUDY
MD 108 TO I-70

Typical Sections for
Mainline MD 32

The dimensions shown are for the purpose of determining cost estimates and environmental impacts and are subject to change during the final design phase.



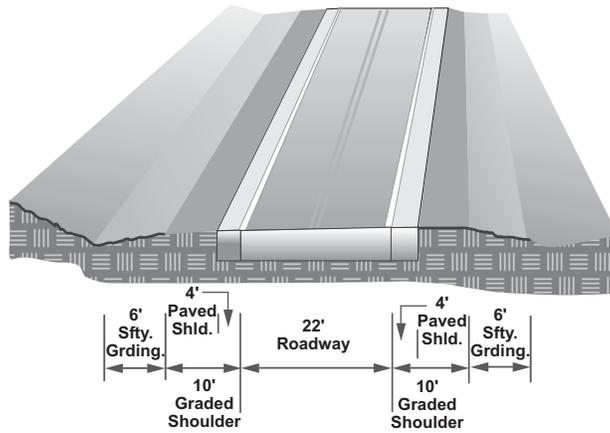
RAMP TYPICAL SECTION



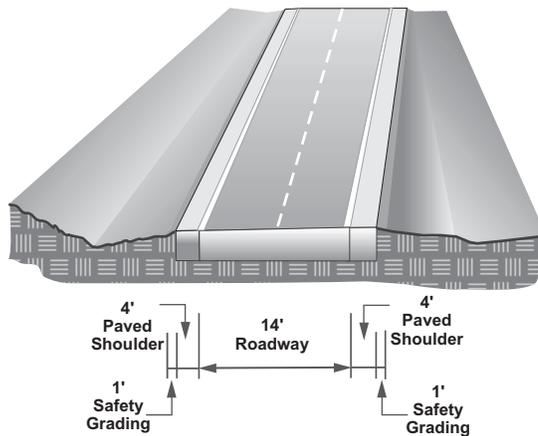
ACCELERATION AND DECELERATION LANE TYPICAL SECTION

The dimensions shown are for the purpose of determining cost estimates and environmental impacts and are subject to change during the final design phase.

MD 32 PLANNING STUDY MD 108 TO I-70		
Typical Sections for Ramps and Acceleration / Deceleration Lanes		
	September 2005	Figure II-2



**LOCAL ROAD / FRONTAGE ROAD
TYPICAL SECTION**



ACCESS ROAD TYPICAL SECTION

The dimensions shown are for the purpose of determining cost estimates and environmental impacts and are subject to change during the final design phase.

**MD 32 PLANNING STUDY
MD 108 TO I-70**

**Typical Sections for
Local Roads, Frontage Roads,
and Access Roads**

b. Build Alternative I

Build Alternative I would provide a four-lane, fully access controlled, divided highway with a 34-foot wide median. This alternative would include seven interchanges:

- Linden Church Road Interchange,
- Dayton Shop Interchange,
- Burntwoods Road Interchange,
- Rosemary Lane Interchange,
- Nixon's Farm Lane Interchange,
- MD 144 Interchange, and
- I-70 Interchange.

Existing MD 32 south of MD 108 is a four-lane, access-controlled facility with a 54-foot median. Just north of MD 108, the southbound lanes would generally be constructed on the west side of the existing roadway to stay within the existing 300-foot right-of-way and would include a tapered section to provide a smooth transition between the existing 54-foot median and the proposed 34-foot median.

From MD 108 to Linden Church Road, the dualization would continue on the west side of the existing roadway. Near MD 108, 2:1 slopes would be used to minimize impacts to Wetland W. From Linden Church Road to Dayton Shop, the dualization would continue on the west side of the existing roadway to stay within the existing 300-foot right-of-way. A retaining wall (approximately 1,100 feet long) would be required to support the fill between the MD 32 southbound lanes and the southbound ramps at the proposed Dayton Shop interchange.

Continuing north from Dayton Shop to Ten Oaks Road, the dualization would remain on the west side of the existing roadway. The Triadelphia Road overpass is within this section of the roadway. The existing structure, designed in 1960, could be completely replaced or it could be lengthened to accommodate the dualization of MD 32; this decision will be made later in the design phase. Construction of either bridge option could be accomplished without adversely impacting the adjacent historic property.

Beginning at Ten Oaks Road and extending through Burntwoods Road to north of Pfefferkorn Road, MD 32 would be completely reconstructed. Approximately 2,200 feet of existing MD 32 would be reconstructed and the mainline would be shifted slightly to the east to improve the geometry by flattening the horizontal and vertical alignments to meet the 60 MPH design speed.

From north of Pfefferkorn Road to south of River Valley Chase, in order to stay within existing right-of-way, MD 32 would be dualized to the west of existing MD 32. North of River Valley Chase, the entire four-lane section would be constructed west of the existing roadway so the existing roadway could be used as a frontage road to provide access from Rosemary Lane to Parliament Place. The shift to the west would also improve the geometry of the roadway.

North of Rosemary Lane, the alignment would shift back and utilize the existing roadway for the northbound lanes. To provide the separate interchanges at Nixon's Farm Lane and MD 144,

dualization of MD 32 from Rosemary Lane to MD 144 would occur primarily on the west side. Through the curve at Nixon's Farm Lane, the alignment would shift to the east to avoid impacts to the Terrapin Branch. Approximately 2,400 feet of existing MD 32 would be reconstructed. South of MD 144, the alignment would shift back onto the existing roadway. A retaining wall or other form of stabilized fill measure, approximately 950 feet long, would be built between Access Road 1 and the auxiliary lane for MD 144 and Nixon's Farm Lane to avoid impacts to the Terrapin Branch. Just north of Rosemary Lane, on the west side of MD 32, a reduced clear zone and 2:1 slopes would be used to avoid impacting Wetlands H and F. From Nixon's Farm Lane to MD 144, 2:1 outside slopes would be used to minimize impacts to the adjacent properties and the sensitive environmental areas.

At MD 144, the proposed 34-foot median would be widened to connect with the existing dualized section of MD 32. From MD 144 to north of I-70, the existing MD 32 is dualized with a 54-foot median. The median would be modified for the I-70 Interchange Option 2 to include acceleration lanes for the traffic turning left onto MD 32 from the outer ramps.

c. Build Alternative II

Build Alternative II would provide a four-lane, access-controlled, divided highway with a 34-foot median. Five of the interchanges (Linden Church Road, Dayton Shop, Burntwoods Road, Rosemary Lane, and I-70) would be designed as described above for Build Alternative I. Access to Nixon's Farm Lane and the adjacent residential properties would be provided via the MD 144 Interchange and access roads.

From Rosemary Lane to MD 144, the dualization of MD 32 would occur on the west side of the existing roadway. Just north of Rosemary Lane, the southbound outside slopes would be 2:1 to avoid impacts to Wetland H and to minimize impacts to Wetland F. A retaining wall or other structure would be required south of Nixon's Farm Lane to avoid impacts to the Terrapin Branch. Retaining walls would also be built along the acceleration and deceleration lanes for MD 144 to avoid impacts to the Terrapin Branch. From Nixon's Farm Lane to MD 144, 2:1 outside slopes would be used on both MD 32 and the access road to minimize impacts to the adjacent properties and the sensitive environmental areas.

Plans for the MD 32 mainline and interchanges are presented in **Appendix A** and generalized in **Figure II-4**.

B. Alternatives Developed Subsequent to the Public Hearing

In response to agency and public comments on the DEIS, Build Alternative II was modified and a two-lane alternative was studied.

1. Build Alternative II Modified

Build Alternative II Modified is similar to the Build Alternative II in the DEIS. However, Build Alternative II Modified includes modified interchange designs at Burntwoods Road (Option 3), Rosemary Lane (Option 2A), MD 144 (Option 12M), and additional minimization measures in

response to the agency and public comments. At Linden Church Road, the northbound outside slopes would be 2:1 along the acceleration lane from Linden Church Road to minimize impacts to Waters of the US. Just north of Linden Church Road to south of Dayton Shop, the southbound outside slopes would be 2:1 to minimize impacts to Wetland Q, Wetland P, and Waters of the US. Build Alternative II Modified also includes a 12-foot mainline shift to the east to provide a greater buffer for the Terrapin Branch. The shift would begin just north of the Terrapin Branch crossing of MD 32 and continue to the existing dualized section, just south of MD 144. This shift would require that 12 feet of existing pavement be removed on the west side and be replaced on the east side of the existing roadway. This alternative is SHA's Selected Alternative because it best balances the natural resource and socio-economic resource impacts. SHA's Selected Alternative is described in **Section II.E**. **Figure II-4** shows the general interchange locations of Build Alternative II Modified.

2. Two-Lane Build Alternative

In response to comments at the Public Hearing and on the DEIS, two-lane alternatives were studied. In addition, a two-lane alternative was considered for the Land Use Expert Panel Report. (Refer to **Section IV.O**)

The current roadway operates at level of service E/F in the AM/PM Peak Hour due to the high mainline volumes. The No-Build Alternative (which considers only two lanes) would have LOS F throughout all segments of the roadway. Even with a two-lane build alternative that includes interchanges or median barrier, the LOS would remain at F due to the high mainline volumes.

The accident rates for the average two-lane roadway in Maryland is 95.3 accidents per 100 million vehicle miles from 2001 through 2003. MD 32 has an accident rate of 95.2 accidents per 100 million vehicle miles for this same time period. The average accident rate for a four-lane divided roadway in Maryland is 38.7 accidents for every 100 million vehicle miles. This statistic implies that a four-lane roadway would provide a reduction in accident rate of 56.6 accidents for every 100 million vehicles miles traveled.

Two, two-lane options were considered. Brief descriptions and the justification for not selecting these are provided below.

Option 1: Two-lane roadway with median barrier. The barrier would extend from MD 108 to MD 144. This option would include either at-grade intersections or grade-separated interchanges.

- Pavement widening would be required to provide an offset from the median barrier and to provide full width outside shoulders.
- Sight distance would be an issue due to the geometrics of the roadway. In order to meet the design speed, wider inside shoulders would be required.
- Barrier would not allow for a recovery area if a vehicle went slightly outside of the travel lane – today, a driver would hit the rumble strip and then have an opportunity to recover.

- Since there is an extensive amount of guardrail along the outside of the roadway, there would be barriers on both sides of the roadway, thus changing the aesthetics of the roadway.
- If an incident occurred, it could cause a bottleneck for that movement if it covered both the lane and the shoulder in one direction. Today, traffic could make use of the two lanes and two shoulders to bypass an incident.
- If an incident occurred and it blocked one direction, there could be extensive cut-through traffic in the neighborhoods.
- Barrier would not decrease the highest number of accidents, which are rear-end accidents which are significantly higher than the statewide average rate for similar-type roads.
- Existing passing zones would be eliminated.
- All left turn movements would be eliminated.
- Extensive u-turn movements would be made at MD 108 and MD 144 intersections.
- School bus stops would remain on MD 32.
- Barrier in the median would not support the rural character of the area.

Option 2: Two-lane roadway with interchanges, but no median barrier.

- Would cause an increase in travel speeds when the signals are removed.
- Higher speeds and the potential for higher-speed collisions could be a safety concern.
- Side roads would access MD 32 from ramps to acceleration lanes. During the peak hour, there are virtually no gaps in the traffic flow to allow these vehicles to merge onto MD 32, regardless of the length of the acceleration lane.
- All driveways would be removed from MD 32 in the northern end due to safety concerns of accessing a higher speed, freeway-type facility.

In addition, a traffic analysis on the two-lane alternative was performed. Theoretically, the capacity of one lane in the peak direction along a two-lane roadway should be able to handle approximately 2,000 vehicles per hour (vph). As access points, intersections, and interchanges are added to the corridor the capacity of the one lane is reduced to approximately 1,800 vph. Depending on how traffic signals operate, this capacity could be further reduced at those signal locations.

Existing 2003 traffic data for MD 32 shows that there are approximately seven hours per day where the corridor is handling 1,300 to 1,800 vph. With signalized intersections, this causes back-ups at certain locations along MD 32 during these seven hours. The 2025 No-Build data indicates an increase in the daily traffic demand and includes projected volumes of around 1,800 to 2,500 vph for the same seven-hour period in the morning and evening where the corridor is over capacity.

With the No-Build Alternative, this would cause delays along the entire length of the roadway for seven hours a day at a minimum as it will take time to get traffic moving as the demand on the roadway decreases. If a barrier or interchanges were added to the two-lane build alternative, there would be no significant improvement in capacity. In addition, barriers or interchanges for a two-lane roadway could make for more unsafe conditions by consolidating the locations where vehicles enter the roadway, while taking away the protected time to enter the roadway that the

signals provide. It would be difficult to merge onto a roadway from an entrance ramp when that roadway is already congested. This results in an alternative that does not address the safety or capacity desires in the Purpose and Need for MD 32.

C. Alternatives Not Preferred

1. No-Build Alternative

The No-Build Alternative was not selected as the recommended alternative because it does not meet the Purpose and Need to improve safety conditions and traffic operations in the study area and complete MD 32 as a controlled access divided roadway.

2. Build Alternative I

Build Alternative I was not selected because an additional interchange was not needed at Nixon's Farm to accommodate traffic and there was concern over the close proximity of the three interchanges at I-70, MD 144, and Nixon's Farm and their consecutive ramps. Also, Build Alternative I would require additional new crossings of the Terrapin Branch.

3. Two-Lane Build Alternative

The two-lane alternative was not selected. Although it would address access control on MD 32, it would not meet the need for increased capacity for the mainline. Therefore, the two-lane build alternative does not fully meet the Purpose and Need of increased safety and adequate capacity and was not selected.

D. Interchange Options Considered

1. Summary of Interchange Options Considered

A broad range of interchange options were evaluated for each of the selected interchange locations. **Table II-1** lists the locations and option numbers for each of the options described in this section.

Table II-1: Interchange Options Considered

Location	Option	Presented				Status Following 2004 Workshop
		DEIS	2004 Reevaluation	2004 Workshop	2005 Reevaluation	
Linden Church Road	Option 2	X	X	X	X	Retained
Dayton Shop	Option 1 Modified	X	X	X	X	Retained
Burntwoods Road	Option 2	X	X	X	X	Not Retained
	Option 3		X	X	X	Retained
Rosemary Lane	Option 2	X	X	X	X	Not Retained
	Option 2A			X	X	Retained
	Option 4		X	X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 6 (Options 6B & 6N)		X	X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 7			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 8			X	X	Retained <i>Removed from consideration following 12-20-04 USACE meeting</i>
	Option 9			X	X	Retained <i>Removed from consideration following 12-20-04 USACE meeting</i>
	Option 10			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 11			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
Nixon's Farm	Option 2	X	X		X	Build Alternative I was not retained
MD 144	Option 3M	X	X	X	X	Not Retained
	Option 4	X	X	X	X	Retained <i>Removed from consideration following 12-20-04 USACE meeting</i>

Location	Option	Presented				Status Following 2004 Workshop
		DEIS	2004 Reevaluation	2004 Workshop	2005 Reevaluation	
MD 144	Option 4M		X		X	Not Retained
	Option 5			X	X	Retained <i>Removed from consideration following 12-20-04 USACE meeting</i>
	Option 5A				X	Not Retained. <i>Removed from consideration following 4-15-05 USACE meeting</i>
	Option 5M			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 8			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 9			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 9M			X	X	Not Retained <i>Removed from consideration following 9-24-04 USACE meeting</i>
	Option 10			X	X	Retained <i>Removed from consideration following 12-20-04 USACE meeting</i>
	Option 12				X	Not retained. Removed from consideration in March 2005
	Option 12M				X	Retained
	Option 13				X	Not retained. Removed from consideration in March 2005
	Option 14				X	Not retained. Removed from consideration in March 2005
	Option 15				X	Not retained. Removed from consideration in March 2005
	I-70	Option 2	X	X	X	X

2. Interchange Options Retained for Consideration after the Public Hearing

Following the Public Hearing, six interchange options were retained at the six proposed interchange locations (refer to **Figure II-4**). These interchange options are described on the next page.

a. Linden Church Road Interchange Option 2

Linden Church Road Interchange Option 2 was included in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. One subsequent design modification was made following the 2004 Reevaluation, the addition of a roundabout at the northbound ramp terminal. This design modification would not result in additional impacts. This interchange option would provide access to the local roadway network with a full diamond interchange at MD 32 and Linden Church Road.

West of the proposed interchange, Linden Church Road begins at an existing T-intersection with Ten Oaks Road. Just east of Ten Oaks Road, Linden Church Road would be realigned to the south and would then cross over MD 32. On the east side of MD 32, the roadway would tie back into existing Linden Church Road just east of Broadwater Lane. In the northeast quadrant of the interchange, Greenberry Lane would be realigned to the east to create a four-leg intersection with Broadwater Lane and Linden Church Road. Greenberry Lane would be designed as an access road. In the southwest quadrant of the interchange, 2:1 slopes would be used to avoid right-of-way impacts.

On the west side, the ramp terminals would form a four-leg intersection with Linden Church Road, and stop control is anticipated for the southbound ramp approach. A roundabout would be constructed at the intersection of Linden Church Road and the northbound ramp terminals on the east side of the interchange.

This option was selected following the Public Hearing.

b. Dayton Shop Interchange Option 1 Modified

Dayton Shop Interchange Option 1 Modified was included in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. This interchange option would provide access to the State and County Dayton Shop maintenance facilities with diamond ramps to and from MD 32 southbound and right-in/right-out access northbound. The southbound ramps would connect to a bridge spanning MD 32 just north of the existing entrance. The new bridge and entrance road is referred to as Dayton Shop Road. The northbound access point would be relocated approximately 500 feet south of the existing driveway and is referred to as Access Road 3. Within the Dayton Shop property, an additional road, Access Road 2, would be constructed to connect Access Road 3 to Dayton Shop Road in front of the State maintenance facilities. Access Road 1 would connect Dayton Shop Road with the back of the State facilities. Two retaining walls, approximately 1,100 feet long, would be required to support the fill between the southbound ramps and the MD 32 mainline.

This option was selected following the Public Hearing.

c. Burntwoods Road Interchange Option 2

Burntwoods Road Interchange Option 2 was included in the DEIS, the 2004 Reevaluation, the 2004 the 2004 Informational Public Workshop, and the 2005 Reevaluation. This interchange option would provide access to the local roadway system with northbound and southbound right-in/right-out ramps.

Approximately 2,200 feet of the MD 32 mainline would be shifted to the east through the interchange. The southbound right-in/right-out ramps would connect to a realigned Pfefferkorn Road at a T-intersection. The northbound right-in/right-out ramps would connect to Burntwoods Road and East Ivory Road at a T-intersection. This interchange would replace four existing at-grade intersections with MD 32: Ten Oaks Road, Burntwoods Road, Pfefferkorn Road, and Ivory Road East. These local roads would be realigned to provide access to MD 32 via the proposed interchange.

West of the interchange, Burntwoods Road would be relocated north of its existing alignment and would continue in a northeasterly direction across MD 32 to connect with East Ivory Road in the northeast quadrant of the interchange. East Ivory Road north of the ramps would be designed as an access road. Pfefferkorn Road would extend south, parallel to MD 32, to intersect with Burntwoods Road and an extended Ten Oaks Road at a four-leg intersection. From this new intersection, Ten Oaks Road would continue south and connect to its existing alignment slightly south of the existing terminus. A cul-de-sac would be constructed at the northern end of Ivory Road to limit Ivory Road to local traffic; Ivory Road would no longer be accessed from Ten Oaks Road. Ten Oaks Road, Pfefferkorn Road, and Burntwoods Road west of MD 32 would have a 40 MPH design speed and 12-foot wide lanes.

Following the 2004 community meetings, this option was not selected because of the close proximity of the northbound ramps to a number of residences. Option 3 offered an improved condition for these residences.

d. Rosemary Lane Interchange Option 2

Rosemary Lane Interchange Option 2 was included in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. This interchange option would provide access to the local roadway system with right-in/right-out ramps to frontage roads on both sides of MD 32. On the west side, the frontage road would connect the ramps to River Valley Chase, and on the east side the frontage road would connect the ramps to Rosemary Lane. Rosemary Lane would be extended over MD 32 to the west frontage road to provide east to west access. Since the 2004 Reevaluation, a roundabout was added on the east side of the interchange at the intersection of Rosemary Lane and the east frontage road.

The MD 32 mainline would be constructed immediately west of the existing roadway for approximately one mile through the interchange to avoid impacts to the King's Grant community and improve the horizontal geometry. A portion of the existing roadway on the east side would be used as the east frontage road to connect Parliament Place with Rosemary Lane. The northbound right-in/right-out ramps would create a T-intersection with the frontage road that

would connect Rosemary Lane to Parliament Place. The southbound right-in/right-out ramps would create a T-intersection with the west frontage road that would connect the extension of Rosemary Lane to River Valley Chase.

In the northeast quadrant, an access road would connect a small community of houses to Rosemary Lane. This access road would replace their existing driveway access to MD 32. In the southwest quadrant, the access driveway from River Valley Chase serving Fox Valley flag lots would be realigned to connect to the west frontage road. In the northwest quadrant of the interchange, 2:1 slopes would be used to minimize impacts to the floodplains and avoid impacts to Wetland H.

Rosemary Lane Interchange Option 2, as described above, was not selected because of agency concerns about impacts to the Middle Patuxent tributary. Option 2A is the result of modifications to this option.

e. Nixon's Farm Lane Interchange Option 2

The Nixon's Farm Lane Interchange Option 2 was presented in the DEIS, the 2004 Reevaluation, and the 2005 Reevaluation as a separate interchange as a part of Build Alternative 1. Nixon's Farm Lane Interchange Option 2 would provide access to the dispersed properties along MD 32 with right-in/right-out ramps, access roads, and a connection across MD 32 with an overpass. The MD 32 mainline would be shifted to the east side of the existing roadway for approximately 2,400 feet through the interchange in order to minimize impacts to the Terrapin Branch.

Additional Nixon's Farm interchange options were considered at Nixon's Farm. Refer to the MD 144 Minimization Interchange Options 8, 9, and 10.

This interchange option was not selected following the 2004 Reevaluation with the selection of Build Alternative II Modified, eliminating the consideration of separate interchanges at Nixon's Farm Lane and MD 144. There were concerns about the close spacing of the three interchanges and their consecutive ramps, I-70, MD 144, and Nixon's Farm. Further, the interchange required additional new crossings of Terrapin Branch and the traffic could be accommodated in two interchanges.

f. MD 144 Interchange Option 3M

The MD 144 Interchange Option 3M was included in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. This option would provide access to the local network with two loop ramps and two outer ramps in the southeast and southwest quadrants.

MD 144 would remain in its existing location, but it would be raised to span over MD 32. The southbound exit ramp would be a loop ramp that connects to MD 144. The southbound entrance ramp would run parallel to the exit ramp for approximately 1,300 feet then it would separate to cross the Terrapin Branch and tie to southbound MD 32. The northbound entrance ramp would be a loop ramp that would run parallel to the exit ramp for approximately 500 feet before both

ramps connect to MD 144. Roundabouts would be provided at the intersections of the ramps and MD 144. The entrance to the West Friendship Shopping Center would be provided from the roundabout on the west side of MD 32. The MD 144 design speed would be 35 MPH through the interchange area.

MD 144 Option 3M and Build Alternative I were not selected following the 2004 Reevaluation, eliminating the consideration of separate interchanges at Nixon's Farm Lane and MD 144. Concerns were expressed regarding the close spacing (less than 700 feet apart) of the three interchanges and their consecutive ramps, I-70, MD 144, and Nixon's Farm. Further, the interchange required additional new crossings of Terrapin Branch and the traffic could be accommodated in two interchanges.

g. MD 144 Interchange Option 4

MD 144 Option 4 was included in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. This option would provide southbound access with right-in/right-out ramps and a frontage road along southbound MD 32. Northbound access would be provided by a loop ramp and an outer directional ramp in the southeast quadrant and an access road to connect the dispersed properties on the east side of MD 32. This option would not include a separate interchange at Nixon's Farm. MD 144 would remain in its existing location, but it would be raised to span over MD 32. Roundabouts would be provided at the intersections of the ramps/access road with MD 144. The MD 144 design speed would be 35 MPH through the interchange area.

One business and three residential displacements would be required with the MD 144 Interchange Option 4 improvements; 2:1 slopes would be used to minimize right-of-way impacts, woodland impacts and impacts to Terrapin Branch. Wetlands A and UU would be impacted by the grade separation of MD 144. Near Nixon's Farm driveway, Wetlands C, D/E, RR, and S would be impacted. On the west side of MD 32, there would be four crossings of the Terrapin Branch and two proposed retaining walls which would minimize stream impacts. On the west side of the interchange, the southbound ramps would impact a portion of an agricultural easement. This option was retained as a base line comparison for the new options.

MD 144 Interchange Option 4 was not selected because the west frontage road was not designed to accommodate the volume of local traffic that is now generated by the Fox Chase Estates development.

h. I-70 Interchange Option 2

I-70 Interchange Option 2 has not changed from the design presented in the DEIS, the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. I-70 Interchange Option 2 would provide a partial cloverleaf interchange with loop ramps and slip ramps in the northeast and southwest quadrants. The loop ramps would provide free flow access from MD 32 to I-70. The left turn movement from the I-70 off ramps to MD 32 would utilize slip ramps, which would be controlled by half signals. Northbound traffic on MD 32 would be controlled by the signal at the westbound I-70 exit ramp while the southbound traffic would be

controlled by the signal at the eastbound I-70 exit ramp.

This option was selected following the Public Hearing.

3. Minimization Interchange Options

In response to public and agency comments received on the DEIS, additional interchange options at Burntwoods Road, Rosemary Lane, and MD 144 were considered in the three-year Reevaluation of the DEIS (approved March 2004).

Subsequent to the 2004 Reevaluation, further minimization interchange options at Rosemary Lane and MD 144 were developed in response to new public and agency comments to reduce the extent of impacts. At the Informational Public Workshop on September 8, 2004, five additional, minimization interchange options were presented at Rosemary Lane and six additional, minimization interchange options were considered at MD 144. Following the Informational Public Workshop, six more minimization interchange options at MD 144 were developed at the request of the agencies. Consequently, a second environmental reevaluation was prepared in Spring 2005 to describe the additional minimization interchange options and impacts. All interchange options considered are described below. **Table II-2** compares the impacts of the Rosemary Lane minimization interchange options. **Table II-3** compares the MD 144 minimization interchange options.

a. Burntwoods Road Interchange Option 3

Option 3 was developed based on comments received at the 1999 Public Hearing in an attempt to reduce residential impacts. Option 3 was included in the 2004 Reevaluation, the 2004 Informational Public Workshop, and the 2005 Reevaluation. The mainline and interchange improvements would be designed as described previously for Burntwoods Road Option 2; however, diamond ramps would be used on the east side of the interchange instead of right-in/right-out ramps. A roundabout would be located at the intersection of the ramp terminals and Burntwoods Road. On the west side of the interchange, a roundabout would be located at the intersection of Burntwoods Road, Ten Oaks Road, and Pfefferkorn Road. This option would accommodate higher traffic volumes than the right-in/right-out interchange presented in the DEIS. Option 3 has fewer residential impacts, but would affect the Board of Education property on the east.

Burntwoods Road Interchange Option 3 was selected because it was preferred by the residents on the east side since it moved the ramps further away from their homes. Impacts to the Board of Education property would not affect the school's operation and the Board was amenable to the land transfer.

b. Rosemary Lane Interchange Option 2A

Rosemary Lane Interchange Option 2A (formerly referred to as Option 2 with Avoidance Efforts) was developed after the 2004 Reevaluation and presented at the 2004 Informational Public Workshop and in the 2005 Reevaluation. Option 2A would include a roundabout on the east side of the interchange at the intersection of Rosemary Lane and the east frontage road.

At the request of the Army Corps of Engineers (USACE), the option was developed to reduce and minimize impacts to the unnamed tributary of the Middle Patuxent River. The Rosemary Lane bridge over MD 32 would be extended on the west side to span the tributary. A retaining wall or other form of retained fill would be utilized along the southbound exit ramp to avoid the relocation of approximately 480 feet of the tributary.

In addition, there would also be a new culvert crossing of the unnamed tributary on the east side of MD 32 for the East Frontage Road. Based on the Code of Maryland Regulations (COMAR), this proposed culvert would not exceed 150 feet in length.

Based on comments received at the 1999 Public Hearing and community coordination, the small community of properties in the northeast quadrant would connect to Wellworth Way rather than Rosemary Lane and the access road in the northeast quadrant would be modified to provide access to only one driveway. The southern limit of existing Wellworth Way would be extended west to existing MD 32 and would then travel south parallel to MD 32 and cul-de-sac at the existing driveway. The existing structure that crosses the Terrapin Branch would be widened to accommodate the Wellworth Way extension.

Rosemary Lane Interchange Option 2A was selected because it balances the natural and socioeconomic impacts and addresses the agencies concerns about the length of stream impacts.

c. Rosemary Lane Interchange Option 4

Rosemary Lane Interchange Option 4 was developed as a result of comments received at the Public Hearing following publication of the DEIS, and it was included in the 2004 Reevaluation as Option 4N. Option 4 was also included in the 2004 Informational Public Workshop and the 2005 Reevaluation. Rosemary Lane Option 4 would provide right-in/right-out access along northbound MD 32 at Rosemary Lane at a speed of 10-15 MPH. King's Grant and properties on the east side would have frontage access to the south through the Burntwoods Roads Interchange instead of through the Rosemary Lane Interchange. This option would not provide access to/from southbound MD 32 on the west side nor for residents along Rosemary Lane on the east side. Fire and rescue service providers did not support this option because it eliminated access to Rosemary Lane and River Valley Chase.

Rosemary Lane Interchange Option 4 was not selected because access was eliminated from southbound MD 32 to Rosemary Lane and River Valley Chase, which would change the existing response routes for Howard County emergency services.

d. Rosemary Lane Interchange Option 6

Rosemary Lane Interchange Option 6 was developed based on comments received at the Public Hearing and included in the 2004 Reevaluation as Options 6B and 6N. The two options were subsequently combined as Option 6 and presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation. Option 6 could be constructed with the flexibility of either the southbound mainline lanes remaining in the same location and the northbound lanes shifted to the east, or the northbound mainline lanes remaining in the same location and the southbound lanes shifted to the west.

Option 6 would provide access for Rosemary Lane to and from southbound MD 32 with median ramps that cross underneath northbound MD 32. The southbound ramp movements would be separated from MD 32. The east side of the interchange would include the same movements as the DEIS option (Option 2). This option would provide all movements to residents on the east side, but no access to/from MD 32 would be provided on the west side. Fire and rescue service providers did not support this option because it would eliminate access to River Valley Chase.

Rosemary Lane Interchange Option 6 was not selected because access was eliminated from southbound MD 32 to Rosemary Lane and River Valley Chase, which would change the existing response routes for Howard County emergency services.

e. Rosemary Lane Interchange Option 7

Rosemary Lane Interchange Option 7 was developed subsequent to the 2004 Reevaluation at the request of the USACE in order to minimize impacts to the unnamed tributary to the Middle Patuxent River. This option was presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation. This interchange option would include southbound diamond ramps and a shift of the Rosemary Lane bridge over MD 32 to the south of the existing Rosemary Lane intersection and create a skewed structure over MD 32 that would also span the unnamed tributary to the Middle Patuxent River. A frontage road on the west side of MD 32 would provide access to River Valley Chase and to Rosemary Lane. On the east side, right-in/right-out ramps would intersect with a frontage road that would connect to Parliament Place and Rosemary Lane, similar to Option 2.

This interchange option would minimize impacts to the unnamed tributary to the Middle Patuxent River by spanning the tributary with the skewed bridge; however, the southbound exit ramp would require a second long structure to span the tributary. The option would also require retaining walls along the mainline to further avoid impacts to the tributary, similar to Option 2A. The diamond ramps would require a realignment of the west frontage road, resulting in increased right-of-way impacts to adjacent residential properties.

Rosemary Lane Interchange Option 7 was not selected because of the one additional crossing of the unnamed tributary to the Middle Patuxent and the increased residential impacts.

f. Rosemary Lane Interchange Option 8

Rosemary Lane Interchange Option 8 was developed subsequent to the 2004 Reevaluation at the request of the USACE in order to minimize impacts to the unnamed tributary to the Middle Patuxent River. This option was presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation.

Rosemary Lane Option 8 is similar to Option 2; however, this option would include shifting the southbound right-in/right-out ramps to the south to reduce the length of the deceleration lane of the southbound exit ramp over the tributary. This option would require the frontage road on the west side of MD 32 to be realigned resulting in increased impacts to adjacent residential properties. It would also lengthen the Rosemary Lane bridge to avoid stream impacts. A 600-foot long retaining wall along southbound MD 32 would be required to reduce stream impacts for an approximate reduction of 500 linear feet of stream impacts.

Rosemary Lane Interchange Option 8 was not selected because it provides a small additional reduction to the stream impacts beyond Option 2A, but it further impacts the residents on the west side who already have right-of-way impacts to their properties.

g. Rosemary Lane Interchange Option 9

Rosemary Lane Interchange Option 9 was developed subsequent to the 2004 Reevaluation at the request of the USACE in order to minimize impacts to the unnamed tributary to the Middle Patuxent River. This option was presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation.

Rosemary Lane Option 9 is similar to Options 2 and 8 with northbound and southbound right-in/right-out ramps. However, the southbound exit and entrance ramps would be shifted further to the south, eliminating the width of the deceleration lane over the tributary to the Middle Patuxent River. The west frontage road would be realigned resulting in increased impacts to adjacent residential properties, including one confirmed displacement and one potential displacement. The Rosemary Lane bridge would also be shifted to the south of the existing intersection and be skewed over MD 32. A 600-foot long retaining wall along southbound MD 32 would be required to reduce stream impacts for an approximate reduction of 530 linear feet of stream impacts.

Rosemary Lane Interchange Option 9 was not selected because it provides a small additional reduction to the stream impacts beyond Option 2A, and it further impacts the residents on the west side who already have right-of-way impacts to their properties.

h. Rosemary Lane Interchange Option 10

Rosemary Lane Interchange Option 10 was developed to minimize all impacts to the environment and the residential properties. This option was presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation.

Option 10 does not provide an interchange at Rosemary Lane and MD 32. There would be no direct access to MD 32 from Rosemary Lane, Fox Valley Chase, or Parliament Place. On the west side, residents would access MD 32 at the Burntwoods Road interchange to the south. Access on the east side would also be provided at the Burntwoods Road interchange with a new frontage road extending from the Twin Pines Development south of Rosemary Lane to Ivory Road East. The east frontage road would result in additional residential impacts and one additional displacement. Option 10 would also result in more traffic directed to the Burntwoods Road Interchange. Fire and rescue service providers did not support this option because it eliminated access from MD 32 in close proximity to Rosemary Lane and River Valley Chase.

Rosemary Lane Interchange Option 10 was not selected because it would re-direct the additional traffic through the Burntwoods Road interchange and it does not provide access for emergency vehicles at Rosemary Lane and River Valley Chase.

i. Rosemary Lane Interchange Option 11

Rosemary Lane Interchange Option 11 was developed subsequent to the 2004 Reevaluation at the request of the USACE in order to minimize impacts to the unnamed tributary to the Middle Patuxent River. This option was presented at the 2004 Informational Public Workshop and included in the 2005 Reevaluation.

Interchange Option 11 would include dualization of the MD 32 mainline on the east side of the existing MD 32 rather than the west side in an attempt to reduce impacts to the unnamed tributary of the Middle Patuxent River. Interchange ramp movements from Option 2 would be included for access to MD 32. This option would result in increased property impacts to residents along the east side of MD 32 and would ultimately not reduce the length of the stream impacts.

Rosemary Lane Interchange Option 11 was not selected due to increased residential impacts and lack of stream impact reduction.

Table II-2: Comparison of Impacts for Rosemary Lane Interchange Options¹

Option	Natural Environment				Human / Socioeconomic	
	Wetland	Streams	Floodplain	Woodlands	Right-of-Way	Displacements
Option 2	0.2 acre	2,757 LF	1.6 acres	15.1 acres	11.7 acres	2
Option 2A	0.2 acre	2,277 LF	1.3 acres	14.7 acres	11.7 acres	2
Option 4 ²	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	No changes as compared to Option 2.	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	2
Option 6 ²	Reduces impacts as compared to Option 2.	Increases impacts as compared to Option 2.	Increases impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	2
Option 7	0.3 acre	2,227 LF	1.3 acres	14.8 acres	14.4 acres	2
Option 8	0.3 acre	2,257 LF	1.3 acres	16 acres	12.4 acres	2
Option 9	0.2 acre	2,227 LF	1.3 acres	14.7 acres	14.5 acres	4
Option 10 ²	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	Reduces impacts as compared to Option 2.	Reduces overall property impacts as compared to Option 2, but requires additional property impacts and an additional residential displacement near East Ivory Road.	3
Option 11 ²	Increases impacts as compared to Option 2.	2,227 LF	1.3 acres	Reduces impacts as compared to Option 2.	Reduces overall property impacts as compared to Option 2, but would impact additional residents on east side of MD 32	2

Notes: 1 Impacts were calculated using ten feet from the toe of slope to the limit of disturbance to account for impacts related to construction activities.

2 Detailed engineering (profiles and cross sections) was not prepared for Options 4, 6, 10, or 11.

j. MD 144 Interchange Option 4M

MD 144 Option 4M was developed in an effort to reduce some of the impacts of Option 4 and was included in the 2004 Reevaluation and the 2005 Reevaluation. This interchange option is similar to Option 4; however, it would avoid impacts to the agricultural easement by shifting the west frontage road to the east, providing an 850-foot long retaining wall adjacent to the shoulder, and extending the frontage road to the south into the adjacent properties. The mainline median of MD 32 would be narrowed from 34 feet to ten feet. The ramp terminal intersections with the west frontage road would create an unusual intersection condition because they would be separated by 100 feet, which could violate driver expectancy. In addition, the ramp geometry was compromised because of the short distance between the gore area and the intersection with the frontage road.

This option was not selected prior to the 2004 Informational Public Workshop because the west frontage road was not designed to accommodate the volume of local traffic that is now generated by the Fox Chase Estates development.

k. MD 144 Interchange Option 5

MD 144 Option 5 was developed subsequent to the 2004 Reevaluation, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. MD 144 Interchange Option 5 would include the same interchange configuration as Option 4, but it would provide a geometrically improved access road on the west side to connect the Fox Chase Estates development to MD 144. The access road would be realigned west of Terrapin Branch, which would result in increased property impacts to the four residences south of the agricultural easement but would reduce impacts to and crossings of the Terrapin Branch. The design speed of the access road is 30 mph.

Following the Informational Public Workshop, design modifications were made to provide a greater buffer between the access roadway and Terrapin Branch to reduce property impacts.

This option was not selected because it does not provide the amount of buffer to the Terrapin Branch that was requested by the agencies. Option 5A is the result of modifications to this option.

l. MD 144 Interchange Option 5A

MD 144 Interchange Option 5A was developed following the Informational Public Workshop at the request of USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 5A would include the same interchange configuration as Option 5, but would shift the mainline 12 feet to the east to provide a greater buffer for the Terrapin Branch. The shift would begin just north of the Terrapin Branch crossing of MD 32 and continue to the existing dualized section near MD 144. This option would require 12 feet of existing pavement be removed on the west side and be replaced on the east side of the existing roadway. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

This option was not selected because it crosses the Terrapin Branch at a meander in the stream, which could cause further erosion of the banks. In addition, it would impact the contiguous forest surrounding the stream. The environmental agencies did not support this option.

m. MD 144 Interchange Option 5M

MD 144 Interchange Option 5M was developed subsequent to the 2004 Reevaluation, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. This interchange modification includes the same interchange configuration as Option 4M, but provides a geometrically improved access road on the west side to connect Fox Chase Estates development to MD 144. The median along MD 32 would be narrowed from 34 feet to ten feet. This option would include a retaining wall adjacent to the agricultural easement in order to minimize the impacts to the agricultural property.

Due to the reduced median width along MD 32 and the compromised geometry of the ramps, this option was not selected.

n. MD 144 Interchange Option 8

MD 144 Interchange Option 8 was developed at the request of the residents at the July 29, 2004 Community Meeting, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. This interchange option would include a split interchange with the southbound right-in/right-out ramps located near Nixon's Farm Lane and the northbound ramps located at MD 144. The ramps and frontage road on the west side of MD 32 were located as close to MD 32 as possible to reduce impacts to the Terrapin Branch, the agricultural easement, and residential properties.

This option was not selected due to SHA concerns that this option does not meet the Purpose and Need. Regional traffic destined for Howard County Fairgrounds would have a minimal increase in travel distance of one mile to MD 144 and would use the frontage road, which was designed to collect the local traffic. In addition, the option has two new crossings of the Terrapin Branch.

o. MD 144 Interchange Option 9

MD 144 Interchange Option 9 was developed at the request of the residents at the July 29, 2004 Community Meeting, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. This option would provide two interchanges similar to Build Alternative I. The interchange at MD 144 would include right-in/right-out ramps along southbound MD 32 with an access road collecting the dispersed driveways north of Nixon's Farm and intersecting MD 144 at a roundabout. From northbound MD 32, loop and directional ramps would be provided which intersect with MD 144 at a roundabout. At the Nixon's Farm Interchange, diamond ramps would be provided along northbound MD 32 and right-in/right-out ramps would be provided from southbound MD 32. Nixon's Farm Lane would extend over MD 32 to provide the east/west connection.

Option 9 would impact the Terrapin Branch by adding four new stream crossings. In addition, it would add four ramp movements on MD 32, close to MD 144, similar to Build Alternative I, and there were concerns with the close proximity of these movements. For these reasons, this option was not selected.

p. MD 144 Interchange Option 9M

MD 144 Interchange Option 9M was developed at the request of the USACE, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. Option 9M would provide two interchanges similar to Build Alternative I and Option 9; however, the southbound right-in/right-out ramps would be shifted further to the south to eliminate additional crossings of the Terrapin Branch. This option would require an additional displacement on the west side of MD 32, as well as impacts to a historic structure, the Milton Shipley House Corncrib.

This option was not selected due to the potential residential and historic impacts.

q. MD 144 Interchange Option 10

MD 144 Interchange Option 10 was developed at the request of the USACE, presented at the 2004 Informational Public Workshop, and included in the 2005 Reevaluation. This option would include dualization of the MD 32 mainline on the east side of existing MD 32 rather than the west side. The shift would begin just south of the Terrapin Branch crossing of MD 32 and continue up to the existing dualization near MD 144. This shift would provide the maximum buffer between the roadway and Terrapin Branch compared to the other options. The ramp movements would be similar to Option 5 with a geometrically improved frontage road to serve multiple residences, although any of the previous described options could be used with this widening. This option would increase woodland and property impacts and would require an additional residential displacement.

This option was not selected because it would have greater overall impacts even though it increased the buffer to the stream; consequently, it did not appear to balance the natural and socioeconomic impacts because it was more impactive to both types of resources.

r. MD 144 Interchange Option 12

MD 144 Interchange Option 12 was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 12 would include the same mainline and interchange configuration as Option 5A, but would shift the southbound interchange ramps to the south 1,200 feet in order to reduce impacts to the forested land around the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

This interchange option would have greater impacts to wetlands, streams, and right-of-way even though it would have reduced impacts to the contiguous forest adjacent to the Terrapin Branch. Motorists traveling southbound on MD 32 would have a minimal increase in travel distance of 0.5 mile to access MD 144 and would pass in front of the residences along the access road. In

addition, the environmental agencies did not support this option. For these reasons, MD 144 Interchange Option 12 was not selected.

s. MD 144 Interchange Option 12M

MD 144 Interchange Option 12M was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 12M would include the same mainline and interchange configuration as Option 12, but it would shift the frontage road to the west, north of the Nixon Farm driveway, to avoid impacts to Wetland OO. In addition, at the request of the USFWS, it would shift the frontage road to the west, south of Nixon's Farm driveway, to provide a greater buffer between the limit of disturbance and the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

This interchange option would have greater impacts to wetlands, streams and right-of-way. Motorists traveling southbound on MD 32 would have a minimal increase in travel distance of 0.5 mile to access MD 144 and would pass in front of the residences along the access road. However, the option would eliminate impacts to Wetland OO and it would reduce impacts to the contiguous forest adjacent to the Terrapin Branch. The environmental agencies supported this option. For these reasons, MD 144 Interchange Option 12M was selected.

t. MD 144 Interchange Option 13

MD 144 Interchange Option 13 was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 13 would include the same mainline and interchange configuration as Option 5A, but would shift the southbound interchange ramps to the south 850 feet in order to reduce impacts to the forested land around the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

MD 144 Interchange Option 13 was not selected because it would have greater impacts to wetlands, streams, and right-of-way even though it would have reduced impacts to the contiguous forest adjacent to the Terrapin Branch. In addition, motorists traveling southbound on MD 32 would have a minimal increase in travel distance of 0.4 mile to access MD 144 and would pass in front of the residences along the access road. The environmental agencies did not support this option.

u. MD 144 Interchange Option 14

MD 144 Interchange Option 14 was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 14 would include the same mainline and interchange configuration as Option 5A, but would shift the southbound interchange ramps to the south 600 feet in order to reduce impacts to the forested land around the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

MD 144 Interchange Option 14 was not selected because it would have greater impacts to wetlands, streams, and right-of-way. In addition, motorists would pass in front of the residences along the access road. The environmental agencies did not support this option.

v. MD 144 Interchange Option 15A

MD 144 Interchange Option 15A was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 15A would include the same mainline shift configuration as Option 5A, but would shift the interchange ramps to the south approximately 300 feet in order to reduce impacts to the forested land around the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

MD 144 Interchange Option 15A was not selected because it would have greater impacts to wetlands, streams, and right-of-way. In addition, the environmental agencies did not support this option.

w. MD 144 Interchange Option 15B

MD 144 Interchange Option 15B was developed after the Informational Public Workshop at the request of the USACE and included in the 2005 Reevaluation. MD 144 Interchange Option 15B would include the same mainline shift configuration as Option 5A, but would shift the interchange ramps to the south approximately 450 feet in order to reduce impacts to the forested land around the Terrapin Branch. At the request of USACE, bridges would be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

MD 144 Interchange Option 15B was not selected because it would have greater impacts to wetlands, streams, and right-of-way. In addition, the environmental agencies did not support this option.

Table II-3: Comparison of Impacts for MD 144 Interchange Options

Option	Natural Environment					Human/Socioeconomic	
	Wetlands	Streams	Stream Crossings	Floodplain	Woodlands	Right-of-way	Displacements
DEIS Option 4 ¹	0.3 acre	1,634 LF	3 new (2 existing remain)	0 acre	20.1 acres	36.4 acres	3
Option 4M ¹	Increases impacts as compared to Option 4.	Increases impacts as compared to Option 4.	4 new (1 existing remains)	0 acre	Increases impacts as compared to Option 4.	Reduces impacts as compared to Option 4.	3
Option 5 ¹	0.3 acre	1,514 LF	2 new (3 existing removed)	0 acre	20.9 acres	54 acres total, including discontinuous properties	3
Option 5A ²	0.3 acre	1,691 LF	2 new (3 existing removed)	0 acre	22.6 acres	56.4 acres total, including discontinuous properties	3
Option 5M ¹	0.3 acre	1,254 LF	2 new (3 existing removed)	0 acre	20.7 acres	58 acres total, including discontinuous properties	3
Option 8 ¹	Reduces impacts as compared to Option 4.	Reduces impacts compared to Option 4.	2 new (3 existing removed)	0 acre	Increases impacts as compared to Option 4.	Increases impacts as compared to Option 4.	3
Option 9 ¹	Reduces impacts as compared to Option 4.	Increases impacts as compared to Option 4.	5 new (2 existing remain)	0 acre	Increases impacts as compared to Option 4.	Increases impacts as compared to Option 4.	4
Option 9M ¹	Reduces impacts as compared to Option 4.	Increases impacts as compared to Option 4.	3 new (2 existing remain)	0 acre	Increases impacts as compared to Option 4.	Increases impacts as compared to Option 4.	5
Option 10 ¹	0.3 acre	1,704 LF	2 new (3 existing removed)	0 acre	27.2 acres	76.6 acres total, including discontinuous properties	4
Option 12 ²	0.6 acre	1,744 LF	2 new (3 existing removed)	0 acre	20.8 acres	56.4 acres total, including discontinuous properties	3
Option 12M ²	0.6 acre	1,830 LF	2 new (3 existing removed)	0 acre	20.4 acres	59.0 acres total, including discontinuous properties	3
Option 13 ²	0.6 acre	1,710 LF	2 new (3 existing removed)	0 acre	20.8 acres	57.7 acres total, including discontinuous	3

Option	Natural Environment					Human/Socioeconomic	
	Wetlands	Streams	Stream Crossings	Floodplain	Woodlands	Right-of-way	Displacements
Option 14 ²	0.5 acre	1,723 LF	2 new (3 existing removed)	0 acre	20.9 acres	properties 57.2 acres total, including discontinuous properties	3
Option 15A ²	0.5 acre	1,915 LF	2 new (3 existing removed)	0 acre	21.8 acres	57.2 acres total, including discontinuous properties	3
Option 15B ²	0.5 acre	1,932 LF	2 new (3 existing removed)	0 acre	21.0 acres	57.2 acres total, including discontinuous properties	3

Notes: 1 Impacts were calculated using ten feet from the toe of slope to the limit of disturbance to account for impacts related to construction activities.

2 Impacts were calculated using 25 feet from the toe of slope to the limit of disturbance to account for impacts related to construction activities.

E. SHA’s Selected Alternative and Interchange Options

1. Description of the Selected Alternative

Based on information and analyses contained herein and input from the public and agencies, SHA’s Selected Alternative for MD 32 from MD 108 to I-70 is Build Alternative II Modified. Build Alternative II Modified was selected because it meets the Purpose and Need for the project by improving safety and capacity throughout the corridor while attempting to minimize right-of-way impacts; residential and business displacements; and environmental impacts.

SHA’s Selected Alternative will include construction of two new lanes generally on the west side of existing MD 32 resulting in a four-lane divided highway. Upon completion of this project, the access points onto MD 32 will be controlled and limited to the interchanges. This project will complete MD 32 from I-97 in Anne Arundel County to I-70 as a fully access controlled roadway.

Access control on MD 32 from MD 108 to I-70 will be achieved through six grade-separated interchanges: Linden Church Road, Dayton Shop, Burntwoods Road, Rosemary Lane, MD 144, and I-70. Typical sections for the interchanges are described in **Section II.A.2.a** and shown in **Figures II-2, II-3, and II-4.**

The **Linden Church Interchange Option 2** will provide access to the local roadway network with a full diamond interchange at MD 32 and Linden Church Road. West of the proposed interchange, Linden Church Road begins at an existing T-intersection with Ten Oaks Road. Just east of Ten Oaks Road, Linden Church Road will be realigned to the south and will then cross over MD 32. On the east side of MD 32, the roadway will tie back into existing Linden Church Road just east of Broadwater Lane. In the northeast quadrant of the interchange, Greenberry

Lane will be realigned to the east to create a four-leg intersection with Broadwater Lane and Linden Church Road. Greenberry Lane will be designed as an access road.

On the west side, the ramp terminals will form a four-leg intersection with Linden Church Road, and stop control is anticipated for the southbound ramp approach. A roundabout will be constructed at the intersection of Linden Church Road and the northbound ramp terminals on the east side of the interchange. Plans for this interchange are presented in **Appendix A, Sheet 2**.

The **Dayton Shop Interchange Option 1 Modified** will provide access to the State and County Dayton Shop maintenance facilities with diamond ramps to and from MD 32 southbound and right-in/right-out access northbound. The southbound ramps will connect to a bridge spanning MD 32 just north of the existing entrance. The new bridge and entrance road is referred to as Dayton Shop Road. The northbound access point will be relocated approximately 500 feet south of the existing driveway and is referred to as Access Road 3. Within the Dayton Shop property, an additional road, Access Road 2, will be constructed to connect Access Road 3 to Dayton Shop Road in front of the State maintenance facilities. Access Road 1 will connect Dayton Shop Road with the back of the State facilities. Two retaining walls, approximately 1,100 feet long, will be required to support the fill between the southbound ramps and the MD 32 mainline. Plans for this interchange are presented in **Appendix A, Sheet 2**.

The **Burntwoods Road Interchange Option 3** will consolidate the current access points at Ten Oaks Road, Burntwoods Road, and Pfefferkorn Road on the west and East Ivory Road on the east. Approximately 2,200 feet of the MD 32 mainline will be shifted to the east through the interchange. The southbound right-in/right-out ramps will connect to a realigned Pfefferkorn Road at a T-intersection. The northbound diamond ramps will connect to the extended Burntwoods Road at a roundabout, just east of MD 32.

West of the interchange, Burntwoods Road will be relocated north of its existing alignment and will continue in a northeasterly direction across MD 32 to connect with East Ivory Road in the northeast quadrant of the interchange. Pfefferkorn Road will be extended south, parallel to MD 32, to intersect with Burntwoods Road and an extended Ten Oaks Road at a roundabout. From this new roundabout, Ten Oaks Road will continue south and connect to its existing alignment slightly south of the existing terminus. Ivory Road will connect to Ten Oaks Road, south of the roundabout. Plans for this interchange are presented in **Appendix A, Sheet 3**.

The **Rosemary Lane Interchange Option 2A** will provide access to the local roadway system with right-in/right-out ramps to frontage roads on both sides of MD 32. Rosemary Lane will be extended over MD 32 to the west frontage road to provide east to west access. The Rosemary Lane bridge over MD 32 will be extended on the west side to span the unnamed tributary of the Middle Patuxent River and a retaining wall or other form of retained fill will be utilized along the southbound exit ramp to avoid the relocation of the tributary.

The MD 32 mainline will be constructed immediately west of the existing roadway for approximately one mile through the interchange to avoid impacts to the King's Grant community and improve the horizontal geometry. A portion of the existing roadway on the east side will be used as the east frontage road to connect Parliament Place with Rosemary Lane. A roundabout

will be located at the intersection of the frontage road and Rosemary Lane. The northbound right-in/right-out ramps will create a T-intersection with this east frontage road. In the northeast quadrant, an access road will connect one driveway to the roundabout.

On the west side, the frontage road will connect River Valley Chase to Rosemary Lane extended over MD 32. The southbound right-in/right-out ramps will create a T-intersection with this west frontage road. In the southwest quadrant, the access driveway serving the River Valley Chase flag lots will remain in its current location. Plans for this interchange are presented in **Appendix A, Sheet 4**.

The small community of properties in the northeast quadrant of the Rosemary Lane interchange will connect to the north to Wellworth Way and MD 144. The southern limit of existing Wellworth Way will be extended west to existing MD 32 and will then travel south parallel to MD 32 and cul-de-sac at an existing driveway. This extension of Wellworth Way will not allow access to MD 32. Plans for this access road are presented in **Appendix A, Sheet 5**.

The **MD 144 Interchange Option 12M** will consolidate the current access points at MD 144, Fox Chase Estates, and the dispersed driveways between these two roads. This option will provide a frontage road parallel to and west of southbound MD 32, which extends from Fox Chase Estates to MD 144 and is designed to accommodate local traffic. Southbound access will be provided with right-in/right-out ramps located approximately 2,500 feet south of the existing MD 144 intersection that creates a T-intersection with this frontage road. At the request of USACE, bridges will be used on the southbound ramps to provide stream protection when crossing the Terrapin Branch.

Northbound access will be provided by a loop ramp and an outer directional ramp in the southeast quadrant. MD 144 will remain in its existing location, but it would be raised to span over MD 32. Roundabouts will be provided at the intersections of the ramps/access road with MD 144.

The mainline will be shifted 12 feet to the east to provide a greater buffer to the Terrapin Branch; this shift will require 12 feet of existing pavement be removed on the west side and be replaced on the east side of the existing roadway. The shift will begin just north of the Terrapin Branch crossing of MD 32 and continue to the existing dualized section near MD 144. Plans for this interchange are presented in **Appendix A, Sheet 5**.

The **I-70 Interchange Option 2** will provide a partial cloverleaf interchange with loop ramps and slip ramps in the northeast and southwest quadrants. The loop ramps will provide free flow access from MD 32 to I-70. The left turn movement from the I-70 off ramps to MD 32 will utilize slip ramps, which will be controlled by half signals. Northbound traffic on MD 32 will be controlled by the signal at the westbound I-70 exit ramp while the southbound traffic will be controlled by the signal at the eastbound I-70 exit ramp. Plans for this interchange are presented in **Appendix A, Sheet 5**.

The environmental impacts for SHA's Selected Alternative compared to the DEIS Build Alternatives I and II are summarized in **Table II-4**. It should be noted that the impacts in the

DEIS were calculated using a ten-foot offset from the preliminary engineered toe of slope to the limit of disturbance to account for drainage ditches and impacts related to construction activities. Since the time of the DEIS, SHA's construction experience has shown that a ten-foot offset does not provide an adequate area to perform the construction activities. Consequently, a 25-foot offset from the preliminary engineered toe of slope to the limit of disturbance has been used for SHA's Selected Alternative to ensure there is adequate distance to construct the roadside drainage ditch; include slope rounding; provide erosion and sediment control measures; install temporary and permanent diversion ditches for clean water as needed; and allow the contractor access to construct the side slopes. For these reasons, two sets of impact numbers for SHA's Selected Alternative are presented in the impacts table. The purpose of providing the impacts with ten feet to the limit of disturbance is to allow the reader to compare the impacts of SHA's Selected Alternative to the impacts presented for Alternative I and Alternative II in the DEIS. The impacts calculated using 25 feet to the limit of disturbance are also provided. These totals represent the proposed impacts of SHA's Selected Alternative and are being used to develop appropriate mitigation for the project.

2. Stormwater Management Facilities

SHA's Selected Alternative includes a preliminary stormwater management (SWM) plan. The dualization of MD 32 and the addition or modification of six interchanges would result in approximately 81.3 acres of new impervious surface requiring treatment in the Middle Patuxent Watershed. Stormwater management for the project will be designed to satisfy the requirements of the MDE's "*Maryland Stormwater Management Guidelines for State and Federal Projects, July 2001*", which is based on design principles required by the MDE's "*2000 Maryland Stormwater Design Manual, Volumes I & II*". The stormwater management facilities have been located adjacent to the roadway to control runoff, treat for water quality, and provide quantity control. A total of 92 facilities located within the 35 points of study will provide treatment for 88.2 acres of new and existing impervious surface. Consequently, there will be an overall surplus of 6.9 acres of treatment throughout the project area.

It is anticipated that a variety of SWM practices will be selected throughout the corridor. These facilities may include Best Management Practice groups such as ponds, wetlands, infiltration, filtering systems, and open channel practices. The exact type, size and suitability of SWM facilities will be determined at design stage and will depend on many factors such as final geotechnical information, ground water level, drainage areas, terrain and other factors. Where feasible, SWM practices such as Pocket Wet Ponds, Pocket Wetlands, Surface Sand Filters, Bioretention, Dry or Wet Swales, and Grass Channels will be fully assessed and utilized. Beyond providing the required treatment necessary under stormwater regulations, this conceptual design sought to minimize impacts to environmental and cultural resources, and to maintain, as much as possible, existing hydrologic conditions and connectivity.

3. Access Management Plan

An Access Management Plan has been developed and it could be implemented prior to the full construction of SHA's Selected Alternative. The interim improvements would be considered to address the public concerns about the need for short-term safety improvements. The plan will

provide improvements to MD 32 between Burntwoods Road and MD 144 by removing existing driveways and access points from MD 32 and redirecting the traffic to the existing local intersections. These improvements will be designed to coordinate with the alignments in SHA's Selected Alternative and will minimize the amount of wasted pavement and earthwork. The access management options are detailed below.

The **Wellworth Way** access will provide access from parcels 76, 78, 97, 125, 126, 127, and 246 to Wellworth Way. This connection will eliminate direct access to MD 32 for five driveways and numerous residences. In addition, this access option will require the purchase of parcel 38; SHA is currently in the process of acquiring this property. Wellworth Way will be extended west toward MD 32 and then parallel MD 32 across the Terrapin Branch bridge and cul-de-sac at the existing driveway for parcel 76. This is the ultimate configuration and will not require future modifications to be compatible with SHA's Selected Alternative.

The **Rosemary Lane West Frontage Road** alignment will follow the horizontal and vertical alignment of the frontage road in SHA's Selected Alternative from River Valley Chase to the driveway for parcel 35. It will provide access from the properties just north of Rosemary Lane to Fox Valley Estates, on the west side of MD 32. The frontage road will connect two driveways and five homes to River Valley Chase and remove their direct access to MD 32. This is the ultimate configuration and will require no future modifications to be compatible with SHA's Selected Alternative.

This improvement will require the purchase of parcels 93 and 79 before construction could begin. Parcel 93 is a proposed displacement in SHA's Selected Alternative for the Rosemary Lane Interchange. The displacement is also required to complete the West Frontage Road. Purchase of this property will remove one residence/one driveway (the driveway is a shared driveway). Parcel 79 is also a proposed displacement in SHA's Selected Alternative for the Rosemary Lane Interchange, which is required to complete the west Frontage Road. Purchase of the property will remove one driveway and one residence.

The **Rosemary Lane East Frontage Road** alignment will follow the ultimate east frontage road horizontal alignment from the Rosemary Lane interchange configuration. It will provide access from Parcel 17, Lots 1-12, A and B and parcel 119 to Rosemary Lane. Parcel 17 was a single-family lot with driveway access to MD 32 that was developed into a 12-parcel residential subdivision called Twin Pines Subdivision in 2004. Twin Pines currently accesses MD 32 using a right-in/right-out intersection just south of Rosemary Lane. Providing the frontage road connection to Rosemary Lane will remove the intersection connection to MD 32 and direct the twelve new residences plus one existing residence to access MD 32 at Rosemary Lane. For the construction of SHA's Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed Rosemary Lane.

The **Rosemary Lane East Driveway** alignment will follow the ultimate east driveway horizontal alignment from the Rosemary Lane interchange configuration. It will provide access from Parcel 36 to Rosemary Lane. Parcel 36 is a single-family lot with driveway access to MD 32. Providing the frontage road connection to Rosemary Lane will remove the driveway connection to MD 32 and require the property to access MD 32 at Rosemary Lane. For the

construction of SHA's Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed Rosemary Lane.

The **MD 144 West Frontage Road** alignment will follow the ultimate west frontage road horizontal alignment from the MD 144 interchange configuration. The west frontage road will connect from Fox Chase Estates, the new 12-home subdivision, to Nixon's Farm driveway to MD 144. Currently, Fox Chase Estates has a right-in/right-out intersection on MD 32. Providing the frontage road connection to MD 144 will remove this intersection connection, three driveways (one south of Nixon's Farm and two north of Nixon's Farm), and Nixon's Farm Lane as well as 21 residences who will access MD 32 from MD 144. In addition, there is the potential for a new development on the Nixon property, which could include numerous homes. For the construction of SHA's Selected Alternative, a portion of this interim frontage road will need to be reconstructed due to the vertical geometry of existing and proposed MD 144.

This improvement will require two right-of way purchases before construction could begin: Parcel 141 and Parcel 16, both near MD 144. Parcel 16 includes the Terrapin Branch and a wetland; however, it does not include any residences. Parcel 141 is located adjacent to Parcel 16 in the southwest quadrant of the MD 32 and MD 144 intersection. There is one residence located on this parcel that is owned by a development corporation.

Parcel 8 is a 64-acre open parcel near the Burntwoods Road interchange, just north of Ivory Lane East on the east side of MD 32. It is zoned rural residential. The land use is designated as agricultural (2002 Howard County Land Use), but the land is currently not farmed. The parcel includes two driveways with access to MD 32 and is owned by an individual who resides in the state of Oregon. This parcel is not specifically part of the Access Management Plan; however, it is described because it has the potential to develop in the future and would require some type of access to MD 32. If the parcel develops, then access would be provided to the south to Ivory Road East; however, it is possible that a developer could provide this access.

4. Selected Alternative and Conceptual Mitigation Package

The Selected Alternative and Conceptual Mitigation Package (SACM) was presented to the agencies at the Interagency Review Meeting (IAR) in May 2005 in accordance with the Maryland Streamlined Environmental and Regulatory Process. **Section V-G** contains the agencies' comments and concurrence on the SACM.

The Maryland Department of the Environment, the Maryland Historical Trust, and Maryland Department of Planning had no comments on the project.

The agencies that concurred on the project with minor comments were the Federal Highway Administration, the US Army Corps of Engineers, the US Environmental Protection Agency, US Fish and Wildlife, and the Maryland Department of Natural Resources. Their comments were addressed in the FEIS or will be resolved in final design.

Table II-4: Comparison of Environmental Impacts

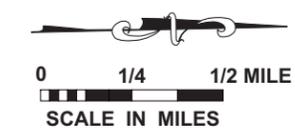
Environmental Factors	No-Build	DEIS Build Alternative I	DEIS Build Alternative II	Build Alternative II Modified SHA's -Selected Alternative	
		10 feet to LOD ¹	10 feet to LOD ¹	10 feet to LOD ²	25 feet to LOD ³
Socio-economic					
Right-of-way	0	101.6 acres	89.1 acres	124.0 acres	125.1 acres
Residential Relocations	0	9	9	9	9
Business Displacements	0	1	1	1	1
Active Farmland	0	23.5 acres	21.5 acres	28.3 acres	28.3 acres
Public Parks	0	0	0	0	0
Public Facilities	0	0	0	0	0
Cultural Resources					
Archeological Sites	0	0	0	1	1
Historic Structures	0	0	No adverse effect	No adverse effect	No adverse effect
Natural Resources					
Stream Crossings	0	20	20	39	39
Stream Impact	0	8,940 lf	5,732 lf ⁴	6,742 lf	7,200 lf⁴ (41,150 sf)
100-Year Floodplain	0	14.1 acres	14.1 acres	11.5 acres	14.7 acres
Wetlands	0	3.3 acres	2.2 acres	3.4 acres	4.0 acres³ (173,349 sf)
Woodlands	0	73.1 acres	71.5 acres	71.0 acres	87.4 acres
Federally Listed RTE Species	0	0	0	0	0
State Listed RTE Species	0	0	0	0	0
Air Quality	0	No violation	No violation	No violation	No violation
Noise Receptors Impacted	0	15	15	12	12
Hazardous Waste Sites	0	4	4	2	2

Notes: 1 The DEIS Build Alternative impacts were calculated using 10 feet to the limit of disturbance.

2 Impacts were calculated using 10 feet to the limit of disturbance for SHA's Selected Alternative for comparison purposes.

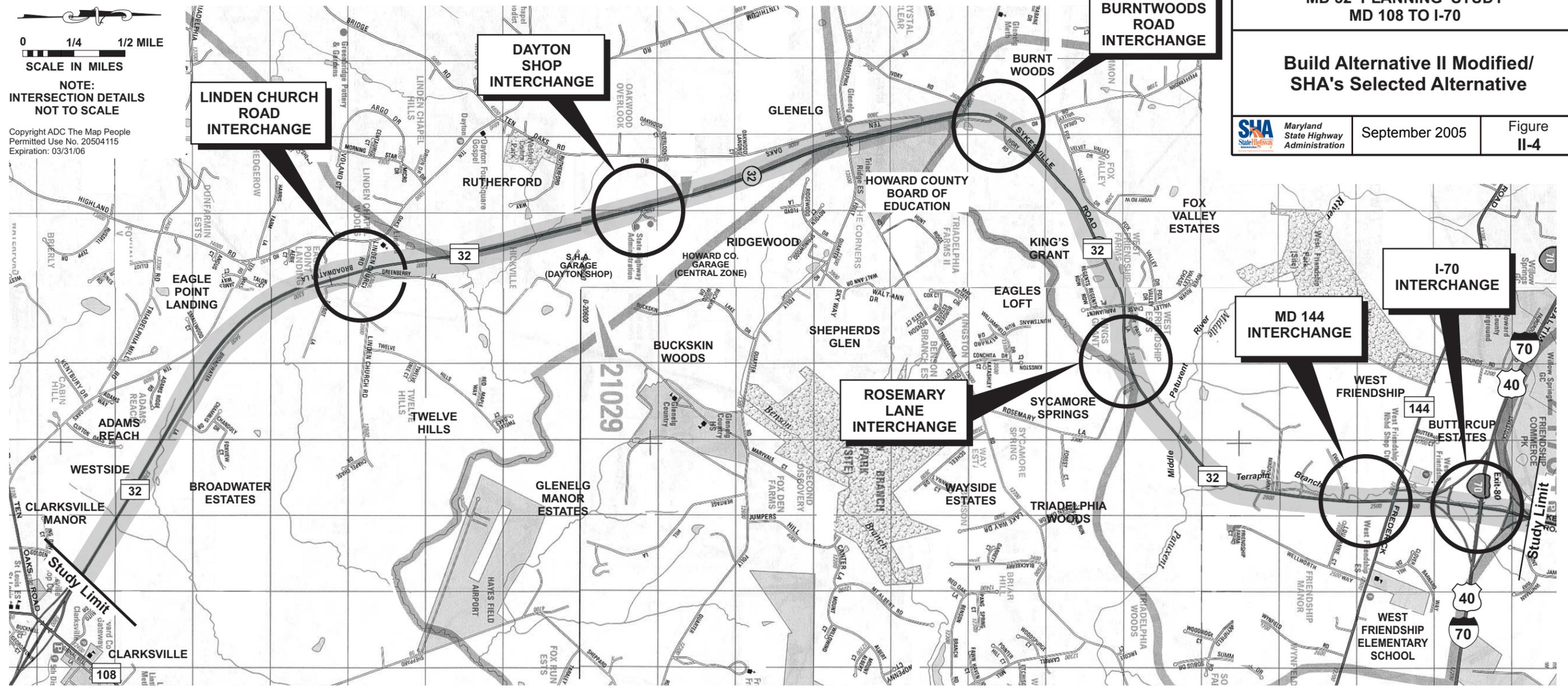
3 SHA's Selected Alternative impacts calculated using 25 feet to the limit of disturbance represent the proposed impacts and are being used to develop appropriate mitigation for the project.

4 Stream impacts for DEIS Build Alternative II was 5,732LF. This number could not be verified; therefore, a new total for stream impacts was calculated as 13,314 LF. 6,114 LF are ephemeral streams that will be replaced in kind at a ratio of 1:1. The remaining 7,200 LF of stream impacts require stream mitigation.

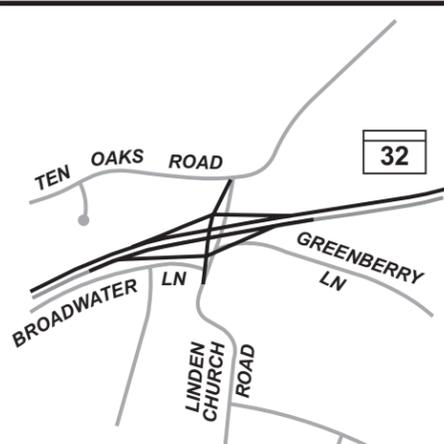


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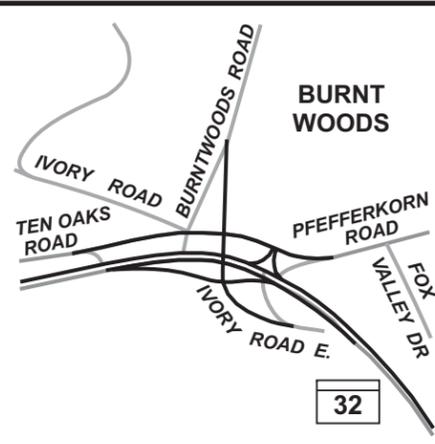
LINDEN CHURCH ROAD INTERCHANGE - OPTION 2



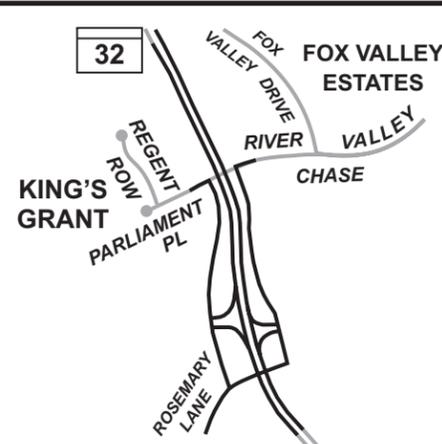
DAYTON SHOP INTERCHANGE - OPTION 1M



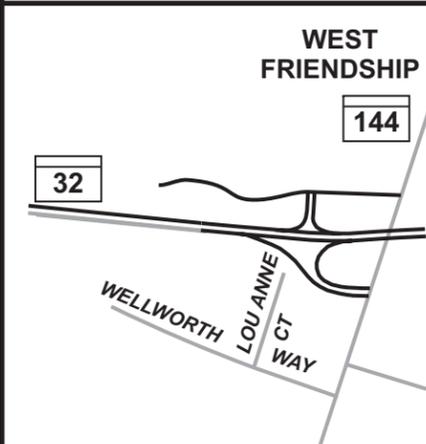
BURNTWOODS ROAD INTERCHANGE - OPTION 3



ROSEMARY LANE INTERCHANGE - OPTION 2A



MD 144 INTERCHANGE - OPTION 12M



I-70 INTERCHANGE - OPTION 2

