II. SUMMARY OF ACTIONS AND RECOMMENDATIONS

A. Project Location

This study includes improvements to I-95, from north of MD 43 to north of MD 22, in Baltimore and Harford Counties, Maryland for a length of approximately 17 miles (**Figure II-1**). The Section 200 Study Area includes four grade-separated interchanges located at MD 152, MD 24, MD 543, and MD 22. Additionally, the Maryland House Travel Plaza is located in the median of I-95 between MD 543 and MD 22 (**Figure II-2**).

B. Purpose and Need

1. Identification in Master Plan

I-95 in Maryland extends 110 miles from the Woodrow Wilson Bridge at the Virginia State line to the Delaware State line. It provides continuity for regional traffic from Florida to Maine and operates as an important backbone for commuter traffic within Maryland. As the "East Coast's Main Street," I-95 serves high volumes of regional commercial/business and recreational traffic. MDTA owns, operates, and maintains a 50-mile portion of I-95 in Maryland, beginning north of Baltimore City and extending to the Delaware State line, known as the John F. Kennedy (JFK) Memorial Highway.

MDTA, in cooperation with the FHWA and the Maryland Department of Transportation (MDOT), developed the I-95 Master Plan study approach to comprehensively identify long-range transportation needs that establish clear goals for system maintenance, preservation and enhancement, and ensure the development of environmentally sensitive and intermodal-friendly solutions for the JFK Memorial Highway.

MDTA adopted the I-95 Master Plan in April 2003. The I-95 Master Plan identified four independent projects (**Figure I-1**), including:

Section 100: I-95, I-895 (N) Split to North of MD 43
Section 200: North of MD 43 to North of MD 22
Section 300: North of MD 22 to North of MD 222
Section 400: North of MD 222 to the Delaware State Line

Throughout the I-95 Master Plan process, MDTA coordinated with local, state, and federal regulatory and resource agencies. This coordination resulted in agency concurrence on the need for four independent projects and their termini and the concepts to be carried forward for each. This was outlined within the description for Logical Termini dated July, 2001. Concurring agencies included the FHWA, U.S. Environmental Protection Agency (EPA), United States Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-Fisheries), Maryland Department of the Environment (MDE), and the Maryland Department of Natural Resources (DNR).

I-95 Section 200
Location/Regional Map
Baltimore and Harford Counties, Maryland

Figure II-1

Source: ESRI

Figure II-2: Study Area

In July 2003, the I-95 Express Toll Lanes (ETL) Project Planning Study (formally known as Section 100) was initiated. This was the first independent project identified in the I-95 Master Plan to be taken into the project planning phase. The study limits extended from the I-95/ I-895(N) split to just north of MD 43. During the planning phase, several alternatives were developed and analyzed in an effort to address capacity and safety concerns within the I-95 ETL project study limits. On July 20, 2005, the planning phase concluded when FHWA concurred with the FONSI for the Selected Alternative (the ETL Alternative) for the I-95 ETLs Project. Design began in 2005, and construction ongoing. The I-95 ETLs Project involves the addition of two barrier-separated lanes in each direction along I-95 that will be managed as ETLs and interchange modifications at I-895, I-695 and MD 43. Section 200 is the second independent project identified in the I-95 Master Plan to be initiated. The southern limit of the Section 200 project will connect to the northern limit of the I-95 ETLs Project.

2. Purpose of the Project

The purpose of the proposed action is to address capacity and safety needs on Section 200 and thereby improve access, mobility, and safety for local, regional, and inter-regional traffic, including passenger, freight, and transit vehicles.

3. Need for the Project

The proposed action is intended to address the following capacity and safety needs on Section 200:

a. Capacity

The I-95 ETLs Project includes four General Purpose Lanes (GPLs) and two ETLs in each direction to north of MD 43. The roadway transitions back to four GPLs north of MD 43. The existing typical section along I-95 through the transition area between the I-95 ETLs Project and Section 200 contains four-lanes in each direction up to the MD 24 interchange. The I-95 mainline loses one travel lane at the MD 24 interchange and continues as three GPLs from MD 24 through the remainder of the Study Area. Currently the southbound lanes between MD 43 and MD 24 operate at a Level of Service (LOS) D to E during the AM peak hours and the northbound lanes operate at a LOS E during PM peak hours. Traffic operates today at slightly below free flow operations except during the Friday and weekend peak periods on the north end of the project which operates at capacity. Future growth by the year 2030 will mean that the number of hours for congestion will grow from less than 10 to over 30 or greater than a 300% increase for the entire week. Also, congestion would increase the level of diversion to alternative routes, such as the community-oriented arterials US 40, US 1, and MD 7. By 2030, weekend peak hours for the Section 200 Study Area are projected to operate at a LOS F.

Table II-1 shows the expected increases in average daily traffic (ADT) from 1990 to 2030 along I-95 within the Section 200 Study Area.

Table II-1. Average Daily Traffic

Average Daily Traffic (Prior to BRAC Allocation)												
	1990 Total	**1990 Autos**	**1990 Trucks**	**2000**	**2000 Autos**	**2000 Trucks**	**2005**	**2005 Autos**	**2005 Trucks**	**2030 Total**	**2030 Autos**	**2030 Trucks**
MD 43 to MD 152	**120,000**	104,500	15,500	**160,000**	139,000	21,000	**165,000**	143,500	21,500	**230,000**	200,000	30,000
MD 152 to MD 24	**N/A**	N/A	N/A	**145,000**	126,000	19,000	**151,000**	131,500	19,500	**215,000**	187,000	28,000
MD 24 to MD 543	**72,000**	61,500	10,500	**114,000**	97,000	17,000	**120,000**	102,000	18,000	**180,000**	153,000	27,000
MD 543 to MD 22	**N/A**	N/A	N/A	**96,000**	81,500	14,500	**101,000**	86,000	15,000	**148,000**	126,000	22,000
MD 22 to Maxa Road	**62,000**	53,000	9,000	**83,000**	70,500	12,500	**89,000**	75,500	13,500	**131,000**	111,000	20,000

The forecasted growth rates of the ADT for portions of I-95 in the Study Area are expected to increase between 40 to 50 percent (**Table II-2**).

Table II-2. Forecasted ADT Growth

Forecasted ADT Growth from 2005 to 2030 (Prior to BRAC Allocation)	
Section of I-95	**Percentage Change/Increase**
MD 43 to MD 152	40%
MD 152 to MD 24	42%
MD 24 to MD 543	50%
MD 543 to MD 22	47%
MD 22 to Maxa Road	47%

While the Section 200 study was underway, the State of Maryland and Department of Defense (DOD) announced the Base Realignment and Consolidation (BRAC) program. It was announced that the Aberdeen Proving Ground will have an increase in personnel. MDTA performed a BRAC sensitivity analysis on the traffic model used to generate the traffic analysis for the Section 200 study. The sensitivity analysis included the number of jobs and new households that are expected in the Baltimore/Harford/Cecil Region as a result of BRAC. The results of the sensitivity analysis indicated that while BRAC has a significant influence on the Baltimore/Harford/Cecil Region, the impact will be far greater on the local highways and roadways and less on I-95. The sensitivity analysis indicates that the traffic analysis performed on 2030 forecasted traffic volumes will not significantly change with additional traffic estimated from the BRAC relocations.

b. Safety

The crash rate for Section 200 is approximately 12 percent higher than similar state maintained highways. Crashes normally identified as congestion-related (side-swipe and rear-end), account for 50 percent of the crashes reported between 2002 and 2004. Section 200 has been identified with 34 Candidate Safety Improvement Locations (CSILs) by the Maryland State Highway Administration (SHA). If the anticipated congestion levels in Section 200 are not addressed, an increase in the number and severity of congestion-related crashes would likely occur.

The Purpose and Need section in the EA provides additional information about the capacity and safety issues related to Section 200.

C. Alternatives Retained for Detailed Study (ARDS)

The public was given the opportunity to provide feedback on the Section 200 preliminary alternatives, including interchange options, during several focus group meetings and a Public Workshop held on June 22, 2006. Based upon public feedback, engineering traffic analysis, right-of-way impacts, and environmental impacts, the viability of the alternatives and interchange options was evaluated and it was determined which alternatives and interchange

options would be carried forward and which would be dropped. The following are descriptions of the alternatives that were carried forward for detailed study:

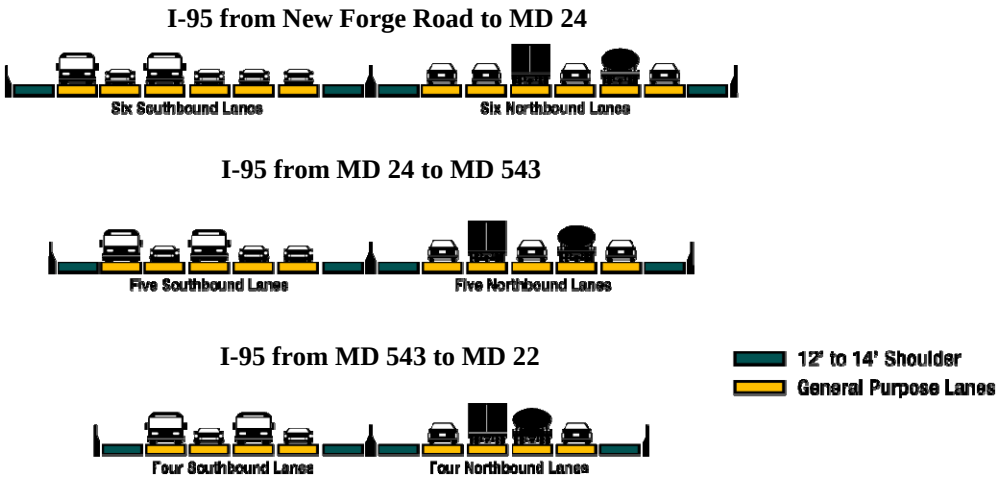
1. No-Build Alternative

The No-Build Alternative would retain the existing I-95 highway within the study limits, and allow for maintenance improvements and safety upgrades. Some of the improvements and upgrades associated with the No-Build Alternative include the replacement of bridge decks, resurfacing of pavement, and replacement and upgrades of traffic barriers, signs and lights. There would be no increase in roadway capacity and an increase in congestion and accidents would likely occur. The No-Build alternative has been retained for further study as a baseline for comparison.

2. General Purpose Lanes Alternative

This alternative would include additional GPLs to accommodate the projected traffic demand. Improvements would be proposed along the mainline of I-95 from north of MD 43 to north of MD 22, and at the MD 152, MD 24, MD 543 and MD 22 interchanges.

Figure II-3. General Purpose Lanes Alternative - Typical Roadway Section



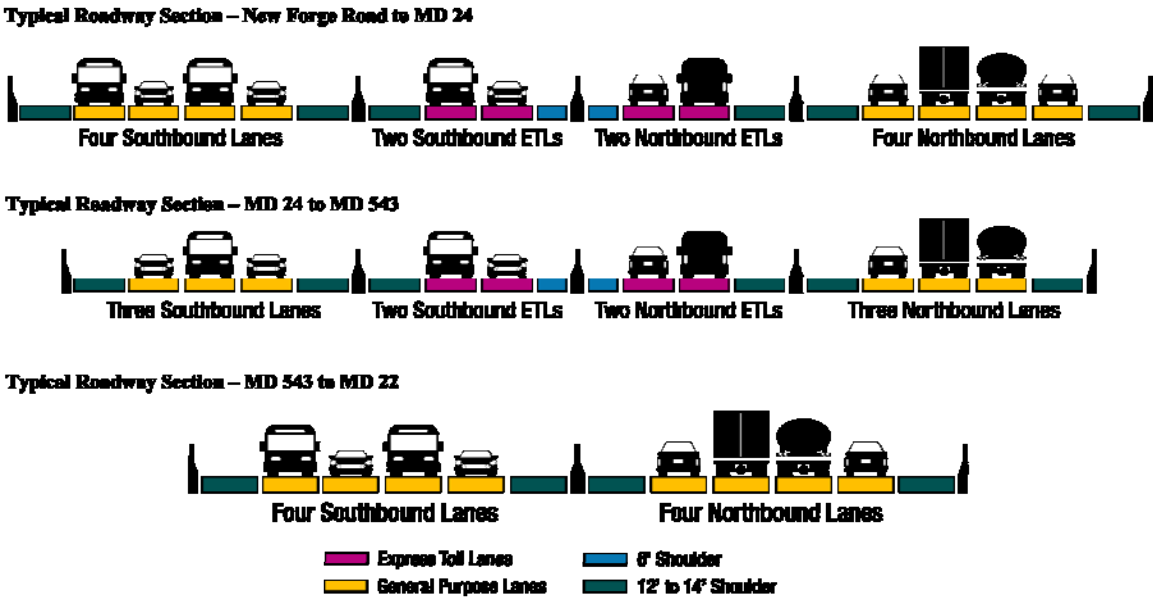
This alternative would tie four GPLs and two ETLs in each direction from the I-95 ETLs Project, into six GPLs in each direction from the northern limit of the I-95 ETLs Project to the MD 24 interchange. From the MD 24 interchange to the MD 543 interchange, there would be five GPLs in each direction and from the MD 543 interchange to north of MD 22, there would be four GPLs in each direction. At the northern limit of Section 200, the four GPLs would merge to tie into the existing three GPLs in each direction.

In addition to improvements to the mainline, the alternative would improve the configuration of the four existing interchanges. The Alternates Considered section of the EA discusses the configurations considered for the MD 152, MD 24, MD 543 and MD 22 interchanges.

3. Express Toll Lanes Alternative

This alternative would include adding ETLs to the existing roadway to accommodate the projected traffic demand. Under this alternative, I-95 would have four GPLs and two ETLs in each direction, extending the typical section of the I-95 ETLs Project from just north of the MD 43 interchange to the MD 24 interchange. From MD 24 to MD 543, three existing GPLs would be retained and two ETLs in each direction would be added. The ETLs would terminate at MD 543 providing four GPLs to the project limits north of MD 22. At the northern limit of Section 200, the four GPLs will merge to tie into the existing three GPLs in each direction. Improvements would be proposed at the MD 152, MD 24, MD 543 and MD 22 interchanges.

Figure II-4. Express Toll Lanes Alternative - Typical Roadway Section



MDTA conducted the I-95 Express Toll Lanes Northern Termini Study to determine the most logical terminus for the ETLs. The results of the study indicated that the terminus of ETLs at MD 543 was most practical based on traveler demand and capital cost associated with ETLs. A copy of the Express Toll Lanes Northern Termini Study is available upon request.

In addition to improvements to the mainline, this alternative would improve the configuration of four interchanges: MD 152, MD 24, MD 543 and MD 22.

D. Preferred Alternative

The FHWA and MDTA carried the No-Build Alternative, the GPLs Alternative, and the ETLs Alternative forward for detailed study. After performing detailed engineering and environmental analysis, and considering public and agency input, MDTA selected the following:

1. The Express Toll Lanes Alternative as the Preferred Alternative

2. Four Preferred Interchange Options:

   a. I-95/MD 152 Option 1A (Figure II-5)

This option would consist of a diamond interchange. The interchange includes median ETL ramp access to MD 152. Two full traffic signals would serve I-95 GPL ramp traffic and one full traffic signal would serve I-95 ETL ramp traffic. This option incorporates cul-de-sacs to eliminate direct access from Old Mountain Road into the interchange ramp area. The Old Mountain Road Bridge over I-95 would be removed and would not be replaced.

The Joppa - Magnolia Volunteer Fire Company is located on Old Mountain Road adjacent to the interchange. The Fire Company currently uses the direct access from Old Mountain Road to the interchange area to respond to emergencies along the I-95 southbound lanes. To mitigate the elimination of this direct connection, another connection from the Fire Company to MD 152 including an emergency traffic signal is proposed with this option.

For this option the I-95 northbound approach would consist of four GPLs and two ETLs through the interchange. A one-lane diagonal GPL ramp would lead to MD 152 northbound and southbound. Access to the I-95 GPL northbound lanes from MD 152 would be provided via a one lane diagonal ramp. A one-lane, left-side median ETL ramp would connect I-95 northbound ETLs to MD 152 northbound and southbound. A one-lane, left-side median ETL ramp would lead to the I-95 northbound ETLs.

The I-95 southbound approach would consist of four GPLs and two ETLs through the interchange. A one-lane diagonal GPL ramp would lead to MD 152 northbound and southbound. Access to the I-95 GPL southbound lanes from MD 152 would be provided via a two lane diagonal ramp. One-lane, left-side median ETL ramps would connect I-95 southbound ETLs to MD 152 northbound and southbound. A one-lane, left-side median ETL ramp would lead to the I-95 southbound ETLs.

Two through lanes in each direction would generally be provided on MD 152, with additional turn lanes at the interchange ramps.

   b. I-95/MD 24 Option 2 (Figure II-6)

This preferred option would be a combination partial cloverleaf/directional configuration, with a single loop in the southwest quadrant, and a flyover ramp. One half traffic signal along MD 24 northbound would provide access to the I-95 northbound GPL lanes. One full traffic signal along MD 24 would provide access for the I-95 northbound and southbound ETL median access ramps. One half traffic signal along MD 24 southbound would provide access for the I-95 southbound GPL on- and off-ramps.

The I-95 northbound GPL approach would consist of four lanes. A two-lane flyover ramp would lead to MD 24/MD 924/Tollgate Road. This ramp would split before reaching MD 24, with one lane to MD 24 southbound, and two lanes crossing I-95 leading to MD 24 northbound and MD 924/Tollgate Road. After crossing over I-95, the ramp would then split again, with one lane leading to MD 24 northbound and one lane leading to MD 924/Tollgate Road. Three I-95 northbound GPLs would continue north to MD 543. The I-95 northbound ETL approach would consist of two lanes. A one-lane, left-side median ETL ramp would lead to MD 24 and a one-lane, left-side median ETL ramp would lead to the two I-95 northbound ETLs. The two I-95 northbound ETLs would continue north to MD 543.

The I-95 southbound GPL approach would consist of three lanes. The I-95 southbound approach would add a one-lane distributor roadway. A one-lane outer connection ramp would lead from I-95 southbound to MD 924/Tollgate Road. The one-lane far side loop ramp would then lead from southbound I-95 to MD 24. An outer connection ramp from MD 24/MD 924/Tollgate Road to I-95 southbound would add a lane to I-95 southbound and four GPLs would continue south to MD 152. The I-95 southbound ETL approach would consist of two lanes. A one-lane, left-side median ETL ramp would lead to MD 24 and a one-lane, left-side median ETL ramp would lead to the two I-95 southbound ETLs. The two I-95 southbound ETLs would continue south to MD 152.

Three through lanes in each direction would generally be provided on MD 24, with additional turn lanes at the interchange ramps. A braided ramp system would be constructed along MD 24 northbound and southbound between I-95 and the MD 924/Tollgate Road interchange.

The proposed improvements associated with this interchange option would tie-in and are consistent with the improvements currently under construction at the MD 24/MD 924 Intersection (independent project).

c. I-95/MD 543 Option 7 (Figure II-7)

This preferred option would include a diamond interchange with the addition of a single loop ramp from northbound MD 543 to southbound I-95. Two full traffic signals on either side of the interchange would provide access for I-95 GPL ramps. One full traffic signal along MD 543 would serve I-95 ETL median access ramps.

The I-95 northbound GPL approach would consist of three lanes. A two-lane diagonal ramp would lead to MD 543. A one-lane diagonal ramp from MD 543 would merge onto I-95 northbound. The I-95 northbound ETL approach would consist of two lanes. The left-hand ETL would drop at the one-lane median access ramp to MD 543. One I-95 northbound ETL would join three GPLs to carry four GPLs north to MD 22.

The I-95 southbound GPL approach would consist of four lanes. The left GPL would drop into the I-95 southbound ETLs and three GPLs would continue south to MD 24. A one-lane outer connection ramp would lead to MD 543. The loop ramp in the northwest quadrant would serve traffic from MD 543 northbound to I-95 southbound. A one-lane diagonal ramp from MD 543

southbound would merge on to I-95 southbound. A one-lane, left-side median ETL ramp would lead to the I-95 southbound ETLs. Two I-95 southbound ETLs would continue south to MD 24.

Two through lanes in each direction would generally be provided on MD 543, with additional turn lanes at the interchange ramps.

d. I-95/MD 22 Option 1 (Figure II-8)

This preferred option would maintain the existing partial cloverleaf configuration with no modifications. The existing interchange contains loops in the northwest and southeast quadrants. One full traffic signal along MD 22 provides access for the I-95 northbound off-ramp. One full traffic signal along MD 22 provides access for the I-95 southbound off-ramp. I-95 through the interchange would consist of four GPLs in each direction.

The existing I-95 northbound approach adds a one-lane C-D roadway. A one-lane ramp then leads to MD 22. The existing I-95 southbound approach adds a one-lane C-D roadway. A one-lane ramp then leads to MD 22.

Two through lanes in each direction are generally provided on the existing MD 22, with additional turn lanes at the interchange ramps.

3. Park and Ride Facilities

a. MD 152 Park and Ride Site

The existing MD 152 Park and Ride facility will be impacted by the mainline improvements. Site A Revised was selected at the preferred location for the new MD 152 Park and Ride. This site is located near the northwestern quadrant of the I-95/MD 152 interchange (**Figure II-9**). It provides good visibility from both the I-95 and MD 152 corridors. The proposed park and ride facility would occupy approximately seven acres of the 15 acre parcel. Site improvements, in addition to the proposed park and ride, would include a new signal at the intersection of MD 152 and Jaycee Drive, a right turn lane along northbound MD 152 and left turn lanes for both northbound and southbound MD 152. Existing Jaycee Drive would be relocated to provide a direct connection from MD 152 to Brocks Road. Brocks Road is currently a private roadway. MDTA would acquire Brocks Road and transfer it over to Baltimore County to maintain. The proposed park and ride would consist of approximately 385 spaces, with space available to expand the site to up to 500 spaces in the future.

b. MD24/MD 924 Site

An existing Park and Ride facility is located along MD 24 south on the interchange. This facility would remain. The need for an additional facility north of the interchange was identified north of the interchange. The MD 24/MD 924 site was selected as the preferred location for the additional MD 24 Park and Ride. This site is located near the southeast quadrant of the MD 24 and MD 924 intersection, and is located adjacent to the existing I-95/MD 24 interchange (**Figure II-10**). The

proposed park and ride facility would utilize approximately 3.5 acres of the existing 7.5 acre parcel, as well as existing state owned property. The proposed park and ride would consist of approximately 200 spaces, with space available to expand the site to up to 450 spaces in the future.

4. I-95/MD 24/MD 924 Pedestrian / Bicycle Access

The Woodsdale Road option was selected as the preferred I-95/MD 24/MD 924 Pedestrian Bicycle option. This option is on the east side of MD 24 (**Figure II-11**). This option would provide the most direct shared-use path around the interchange. This option would begin south of the interchange at the intersection of MD 24 and Edgewood Road. A 10-foot shared-use path would connect the intersection with Waldon Road. Currently, Waldon Road is closed to vehicular traffic between commercial properties to the southwest and residential properties on the northeast end. The shared-use path would intersect Waldon Road with bollards to allow pedestrians and bicyclists to continue while keeping the road closed to vehicular traffic. Improvements along Waldon Road would be limited to signing and marking. Pedestrians and bicyclists would follow Waldon Road north to a shared-use bridge that would span I-95 just north of the interchange. The path over the bridge would be 14-foot wide, and would be constructed to allow an emergency or maintenance vehicle to cross. On the west side of I-95, the path would descend along a retained fill section adjacent to the Woodsdale Senior Housing Community Center Building. Pedestrians and bicyclists would then continue north along Woodsdale Road to the intersection at MD 924. Currently, shoulders along Woodsdale Road are 8-foot wide on both sides to support pedestrian and bicycle travel. There is also a section of sidewalk from Box Hill Center Corporate Drive and MD 924 along Woodsdale Road that supports pedestrian traffic in that area. Improvements along Woodsdale Road and at the intersection of MD 924 and Woodsdale Road would be limited to signing and marking.

The 2010 estimated construction and right-of-way cost for this option is $6.52 Million. This consists of $6.0 Million for the shared-use bridge over I-95, $414,000 for the remainder of the project, and $104,000 for right-of-way. Pedestrians and bicyclists following this path would traverse an extra 1500’ compared to their path if they traveled along MD 24 directly.

With the implementation of this option, the I-95/MD 24 interchange area would be signed to prohibit pedestrian and bicyclists.


ETL Alternative
I-95 / MD 152 Interchange
Option 1A
CLAYTON ROAD
CONSERVATION AREA
FRANKLINVILLE ROAD
HILLTOP DRIVE
TRINITY CHURCH
MARYLAND 7
FABER ROAD
STANS ROAD DRIVE
FARRS LANE
ROAD
Legend
GENERAL PURPOSE LANES
EXPRESS TOLL LANES
PROPOSED BRIDGE / OVERPASS
TRAFFIC FLOW
TRAFFIC SIGNALS
APPROXIMATE RIGHT-OF-WAY LINE
FIREHOUSE
CHURCH

Figure II-5


ETL Alternative
I-95 / MD 24 Interchange
Option 2
MARYLAND 924
MARYLAND 24
MARYLAND 24
INTERSTATE 95
WINTERS RUN
FASHION WAY
FRIENDSHIP
ARUNDEL COURT
CONSTANT
HAVEN AVENUE
MARPAT DRIVE
WALDON ROAD
TOREY LANE
WOODSDALE ROAD
PENNY LANE
MEMORY LANE
LAKESIDE BUSINESS PARK
EMMORTON
EMMORTON BUSINESS PARK
COLUMBIA PARK ROAD
LAKESIDE BLVD
WALTON ROAD
RED MAPLE DRIVE
RUBBER ROAD
Legend
GENERAL PURPOSE LANES
EXPRESS TOLL LANES
PROPOSED BRIDGE / OVERPASS
TRAFFIC FLOW
TRAFFIC SIGNALS
APPROXIMATE RIGHT-OF-WAY LINE

Figure II-6


ETL Alternative
I-95 / MD 543 Interchange
Option 7
N
W
E
S
JAMES RUN
MARYLAND
543
INTERSTATE
95
CRESWELL
ROAD
CABBINS RUN ROAD
HENLEY
DRIVE
BELLCAMP
ROAD
BUSH DECLARATION
NATURAL RESOURCES
MANAGEMENT AREA
MARYLAND
7
HANDLER DRIVE
EXISTING
ARK & RIDE
OLD
PHILADELPHIA
ROAD
BELLCAMP
VILLAGE OF
CHURCH CREEK
GOLDEN ROD COURT
PRIMROSE
PLACE
DRIVE
DALMATION
DRIVE
MARIGOLD LANE
BAWE
BERRY
DRIVE
POLICY
SANFORD COURT
BRISTOL
FOREST
Legend
GENERAL PURPOSE LANES
EXPRESS TOLL LANES
PROPOSED BRIDGE /
OVERPASS
TRAFFIC FLOW
TRAFFIC SIGNALS
APPROXIMATE
RIGHT-OF-WAY LINE
CHURCH

Figure II-7


ETL Alternative
I-95 / MD 22 Interchange
Option 1
MARYLAND
22
INTERSTATE
95
RIPKEN
YOUTH BASEBALL
ACADEMY
RIPKEN
STADIUM
GILBERT
ROAD
TECHNOLOGY
DRIVE
WARWICK
ROAD
AGREEMENT
LANE
NORTHEAST
ROAD
AVENUE
Legend
GENERAL PURPOSE LANES
EXPRESS TOLL LANES
PROPOSED BRIDGE / OVERPASS
TRAFFIC FLOW
TRAFFIC SIGNALS
APPROXIMATE RIGHT-OF-WAY LINE

Figure II-8

Site A Revised

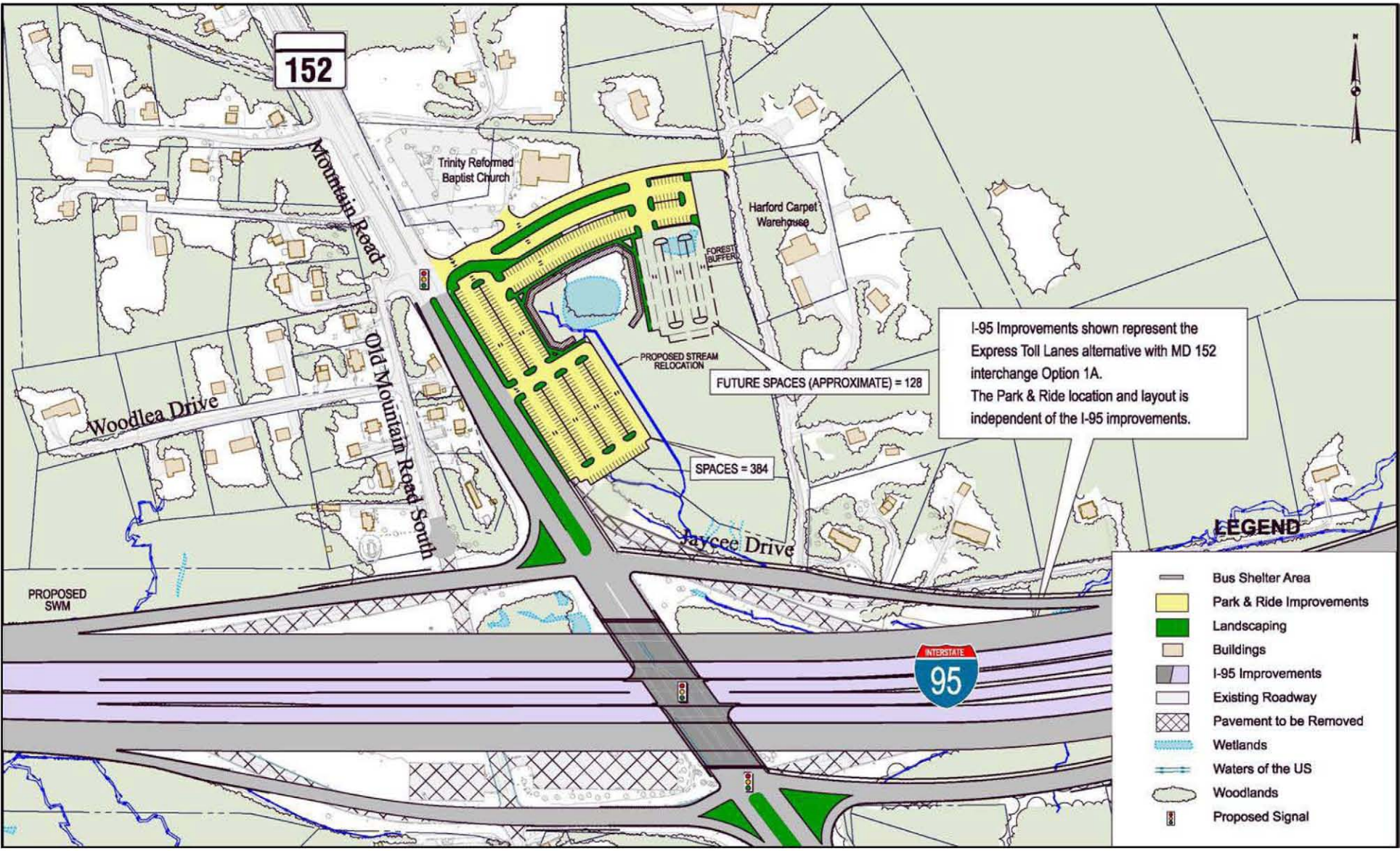


Figure II-9: MD 152 Park and Ride Facility

MD 24/MD 924 Site

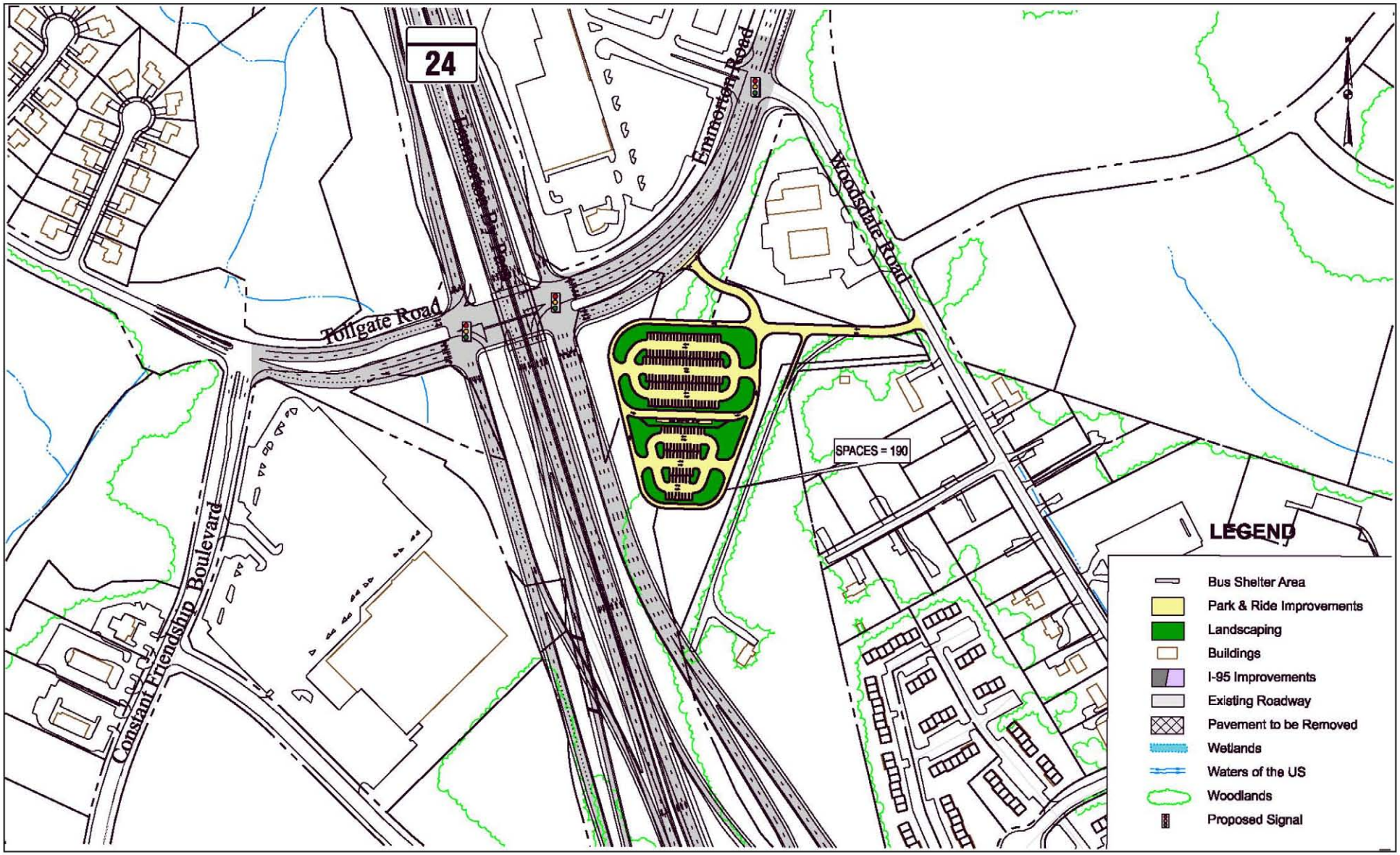


Figure II-10: MD 24 Park and Ride Facility

Woodsdale Road Option

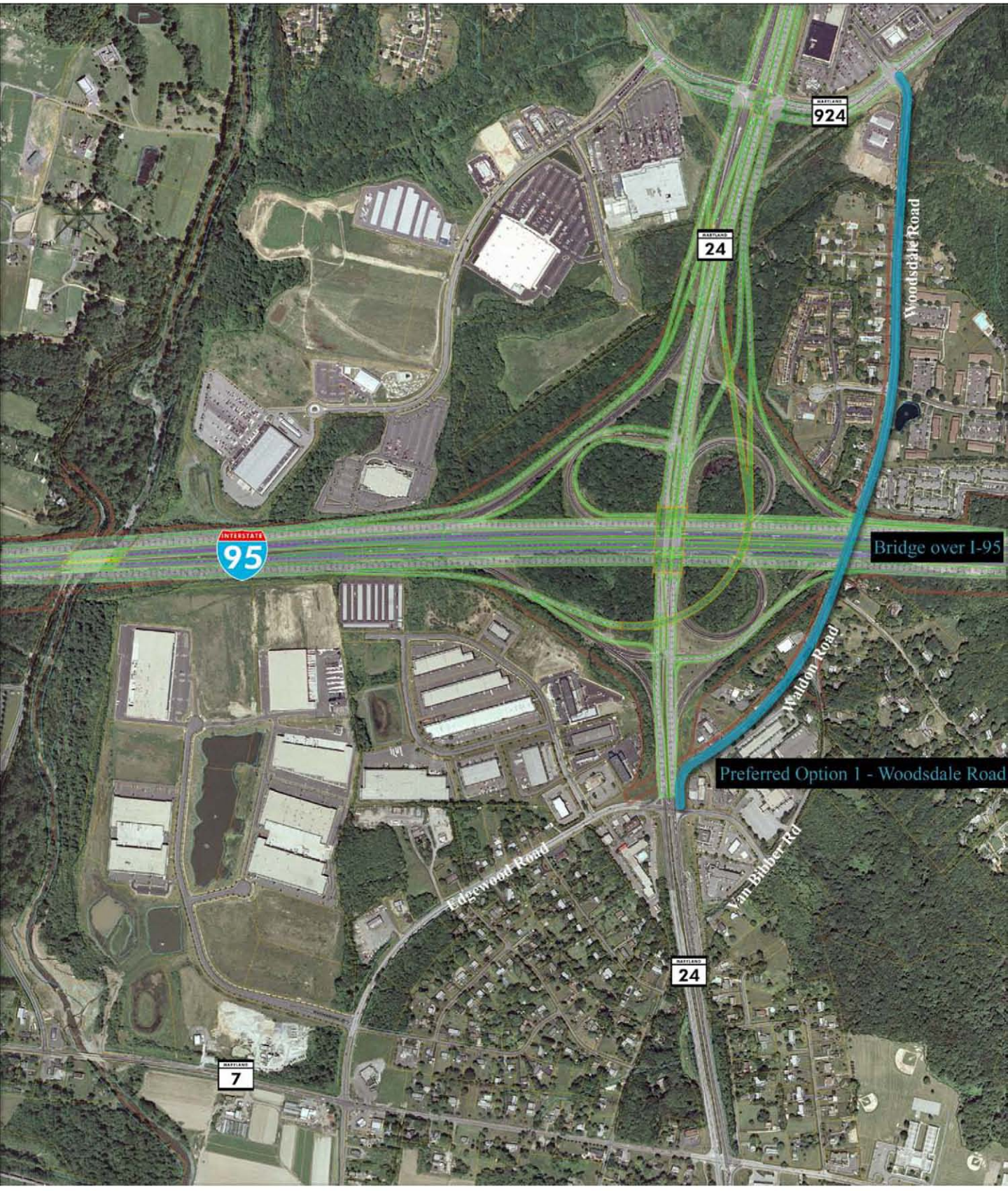


Figure II-11: I-95 / MD 24 / MD 924 Pedestrian / Bicycle Option

E. Selection Process of the Preferred Alternative

The No-Build Alternative was not selected because it does not satisfy the purpose and need of the project. Minor improvements for normal traffic maintenance and safety operations proposed under this alternative would not improve the safety or capacity along Section 200.

1. The Express Toll Lanes Alternative and Interchange Options

Having eliminated the No-Build Alternative, MDTA compared the General Purpose Lanes Alternative and the Express Toll Lanes Alternative based upon the following evaluation criteria (**Table II-3**):

- Ability to meet Purpose and Need
- Environmental impacts
- Operational efficiency
- Fiscal responsibility
- Consistency with the State Transportation Policy
- Public comments
- State and local agencies input

The overall results of this comparison demonstrate that the Express Toll Lanes Alternative would more effectively meet these criteria, as explained below.

a. Ability to Meet Purpose and Need

i. Congestion

Both Alternatives would provide congestion relief compared to the No-Build condition, because both of the build alternatives would provide substantial new capacity. However, the Express Toll Lanes Alternative would provide one important congestion relief benefit that is not available under the General Purpose Lanes Alternative: the ability to provide congestion management through a consistently congestion-free travel option, which would continue to be available even as traffic volumes increase over time.

The General Purpose Lanes Alternative would add one to two additional GPLs in each direction. This would improve traffic operations over the no build condition. Traffic is anticipated to operate at Level of Service (LOS) D or better on the weekday and LOS E or better on the weekends (**Table II-4**). Although this alternative would provide good overall traffic operations for both weekday and weekend peak periods the number of accessible travel lanes would make it difficult to implement a travel demand management program. Over time, the General Purpose Lanes Alternative would experience increasing congestion levels on all lanes of travel since there would be limited opportunities for travel demand management programs. Additionally, there would be limited incentive for transit or carpooling.

Table II-3. Comparison of Evaluation Criteria

Evaluation Criteria	General Purpose Lanes Alternative	Express Toll Lanes Alternative
Ability to meet Purpose and Need		
Congestion	Limited opportunities for travel demand and limited incentive for transit and carpooling.	ETLs offer superior LOS (A-C) and dependable travel times. Predictable travel times promote transit use.
Safety	Drivers may need to weave 5 to 6 lanes to exit highway. Disabled vehicles may have difficulty accessing the shoulder.	GPL drivers maximum weave is four lanes and ETL drivers is one lane. Disabled vehicles can access the shoulder easier than the GPL Alternative. The ETL Alternative provides four full shoulders compared to two full shoulders for the GPL Alternative.
Environmental Impacts		
Natural and Human Environment	Slightly less impacts due to smaller footprint.	Slightly more impacts compared to GPL Alternative due to larger footprint.
Land Use Impacts	Minor land use impacts	Minor land use impacts
Air and Noise Impacts	No air impacts and requires noise abatement for six NSAs	No air impacts and requires noise abatement for seven NSAs
Operational Efficiency		
Incident Management	Two full (12’ to 14’) shoulders allow for improvement incident management.	Four full (12’ to 14’) shoulders allow for improvement incident management. Grade separated GPLs and ETLs allow for emergency services detours, quicker response times, and improved traffic management.
Facility Maintenance	Maintenance work conducted during off-peak hours, usually at night only. More difficult in protecting work zones due to contiguous lanes.	Maintenance work conducted during off-peak hours, usually at night. Minimal effort and materials required to redirect the traffic during maintenance work due to barrier separated GPLs and ETLs.
Enforcement	Improved shoulders for enforcement vehicles.	Additional shoulders for ETLs would facilitate additional enforcement.
Intermodal Access	Reduced bus transit travel times.	Use of ETLs allows for substantial improvement and dependability to bus transit travel times.
Costs	$1.48 Billion	$1.92 Billion
Consistency with State Transportation Policy	Is not consistent with State Transportation Policy	Is consistent with State Transportation Policy

The Express Toll Lanes Alternative would provide superior service for motorists that use the ETLs (separated from the GPLs). The ETLs are anticipated to operate at a superior LOS compared to the LOS of the GPLs in both the Express Toll Lanes and General Purpose Lanes Alternatives. The volume for the ETLs would vary depending on the time of day with the greater ETL volumes occurring when more congestion is present in the GPLs.

One of the potential benefits of ETLs is the ability to provide for predictable and dependable travel times and speeds. Predictable travel times promote transit by providing reliable service.

Table II-4. Projected Weekday 2030 LOS Summary

Alternative	Roadway Section		AM Peak Hour		PM Peak Hour		Weekend Peak Hour	
			NB	SB	NB	SB	NB	SB
No-Build	New Forge Road to MD 152		D	F	F	D	F	F
	MD 152 to 24		C	F	F	D	F	F
	MD 24 to MD 543		D	F	F	E	F	F
	MD 543 to MD 22		C	C	D	D	F	F
General Purpose Lanes	New Forge Road to MD 152		B	D	D	C	D	C
	MD 152 to MD 24		B	C	D	C	C	C
	MD 24 to MD 543		B	C	C	C	D	D
	MD 543 to MD 22		B	C	C	C	E	D
Express Toll Lanes	New Forge Road to MD 152	ETL	A	C	C	A	B	B
		GPL	C	E	E	D	E	D
	MD 152 to MD 24	ETL	A	C	B	A	B	B
		GPL	C	D	D	D	D	D
	MD 24 to MD 543	ETL	A	A	B	A	B	B
		GPL	D	D	E	E	E	E
	MD 543 to MD 22	GPL	B	C	C	C	E	D

ii. Safety

The safety of any roadway is based on many factors. These include geometrics, roadside obstructions, congestion, and traffic control devices. The potential for rear-end and sideswipe crashes is greater with congested conditions which would exist for the no-build condition. On a roadway with four lanes in each direction, there are 16 conflict points where sideswipe crashes could occur. When the roadway increases to six lanes in one direction, the number of conflict points increases to 46 opportunities for crashes to occur. With the General Purpose Lanes Alternative, motorists need to weave across six contiguous lanes in each direction from New Forge Road to MD 24 and five lanes in each direction from MD 24 to MD 543. Due to the number of contiguous lanes associated with the General Purpose Lanes Alternative, motorists would be at a greater safety risk due to the number of lanes they must weave across to exit the highway or allow disabled vehicles to access the shoulder.

The Express Toll Lanes Alternative would consist of two contiguous ETLs and four contiguous GPLs in each direction from New Forge Road to MD 24, separated by a median barrier. From MD 24 to MD 543, three existing GPLs would be retained and two ETLs in each direction would be added. The ETLs would terminate at MD 543 providing four GPLs to the project limits north of MD 22. At the northern limit of Section 200, the four GPLs will merge to tie into the existing three GPLs in each direction. Vehicles in the ETL lanes would have dedicated ramps at each of the existing interchanges. The ETLs are expected to be operated at LOS D or better, thereby allowing for gaps in traffic where vehicles can switch lanes to pass other drivers. By separating the GPLs and ETLs and providing a maximum of four contiguous lanes, safety would be enhanced through a reduction of lanes to be traversed when entering or exiting, and allowing disabled vehicles to more easily access the shoulder.

The provision of ETLs will reduce congestion, improve emergency response times, and/or reduce the number of conflict points between vehicles, thereby providing opportunities for improved public safety. In addition, the Express Toll Lanes Alternative could improve work zone safety by allowing for off-peak closures of the managed or general purpose lanes thus reducing conflict points between motorists and maintenance or construction activities.

b. Environmental Impacts

i. Natural and Human Environment

The General Purpose Lanes Alternative has a slightly smaller footprint than the Express Toll Lanes Alternative, and thus would have a proportionally smaller direct impact on the natural and human environment. Notwithstanding this slight difference in footprint, the Express Toll Lanes Alternative could provide environmental benefits that would not be provided by the General Purpose Lanes Alternative. A long-term benefit of the Express Toll Lanes Alternative is that appropriate variable toll management of the ETLs could cause motorists to modify travel behavior. An example of modified travel behavior through peak spreading of variable tolls occurs in Lee County, Florida. Approximately 38 percent of drivers eligible for toll discounts for off-peak hours use them, which results in the reduction of peak hour volume. For Section 200, this type of management strategy could reduce the need for future highway widening and its associated environmental impacts. The Express Toll Lanes Alternative would cause short-term environmental benefits as well, such as reducing vehicle emissions by creating a transportation facility that maintains stable travel speeds.

ii. Land Use Impacts

The General Purpose Lanes and Express Toll Lanes Alternatives would result in the conversion of minor amounts of residential, commercial, forested, and undeveloped land to transportation use. These minor land use impacts would be located throughout the I-95 corridor, adjacent to the existing highway. However, the overall land use in the Study Area would not be substantially affected because all changes in land use that would result from these alternatives would occur within an already existing transportation corridor. In addition, the build alternatives would not indirectly affect local development patterns because they would not result in new access within the corridor. I-95 within the Study Area is currently, and would remain a fully access-controlled

highway. The build alternatives would support planned growth and redevelopment within the corridor, by accommodating projected traffic volume increases and providing additional parking for the growing number of commuters utilizing the park and ride lots.

The Section 200 Study Area is considered to be located entirely within a State-certified Priority Funding Area (PFA) because it connects two distinct PFAs, and is therefore consistent with the Smart Growth initiatives. The extent, pace, and location of development growth along I-95, including Section 200, would be influenced and controlled by State and County land development policies and plans. Section 200 would accommodate future planned growth within the Study Area; however, future growth is not dependent on proposed improvements to Section 200.

iii. Air and Noise Impacts

The General Purpose Lanes and Express Toll Lanes Alternatives would not result in any CO concentrations in violation of the NAAQS under either the existing or design year (2030) for any of the receptors for each alternative. Based on review and analysis as discussed above, it is determined that the Section 200 project will not lead to a significant increase in diesel vehicles and does not meet any other criteria in 40 CFR 93.123(b) for a project of air quality concern. In addition, the project meets the Clean Air Act (CAA) and 40 CFR 93.109 requirements for particulate matter without a project-level hot-spot analysis, since the project has **not been found to be a project of air quality of concern** as defined under 40 CFR 93.123(b)(1). Since the project meets the Clean Air Act and 40 CFR 93.109 requirements, the project will not cause or contribute to a new violation of the $PM_{2.5}$ NAAQS, or increase the frequency or severity of a violation. The Express Toll Lanes Alternative would not have an increased impact on air quality because the project has not been found to be a project of air quality concern.

Based on the noise analysis, the General Purpose Lanes Alternative would require noise abatement for six Noise Sensitive Areas (NSA) for a total cost of $12.4 million and the Express Toll Lanes Alternative would require noise abatement for seven NSAs for a total cost of $14.6 million. Although there are slightly more noise impacts anticipated with the Express Toll Lanes Alternative, the noise impacts would be mitigated for through the use of noise abatement techniques.

c. Operational Efficiency

i. Incident Management

It is essential that police, fire, rescue, and maintenance personnel be able to respond quickly to an incident by accessing the site, assessing the nature of the incident, and taking appropriate measures. To that end, both of the build alternatives have been designed with 12 to 14-foot wide shoulders. This would not only provide additional clearance for emergency vehicles using the shoulders, but would also give the emergency responders additional room to establish their work perimeter and the necessary traffic control measures.

Of the two build alternatives, the Express Toll Lanes Alternative would offer the most benefit for incident management. First, physical separation of the GPLs and ETLs would provide adjacent detour routing and/or access for emergency services during traffic related and other incidents. In addition, the ETLs would provide emergency responders with unimpeded access throughout Section 200, since the ETLs would operate at LOS D or better. Furthermore, by having a maximum of four contiguous lanes (GPLs) and additional shoulders associated with the ETLs, additional areas would be available for crews to work and safely access the site.

ii. Facility Maintenance

Heavily traveled Interstate facilities require substantial levels of routine maintenance such as the replacement of pavement markings and overhead lights, cleaning of drainage systems, replacement/repair of guardrail and energy absorption systems, repaving/resurfacing, and upkeep of stormwater management (SWM) facilities. High traffic volumes make almost any maintenance activity a major undertaking. As a result, most maintenance is performed off-peak, often at night.

Of the two build alternatives, the Express Toll Lanes Alternative would offer the least obstacles to facility maintenance. Most work could be done off-peak by diverting traffic to either the ETL or GPL roadway. There would be minimal effort and materials required to redirect the traffic, and worker safety would be enhanced by the concrete barrier that would separate them from the traffic. Maintenance activities performed for the General Purpose Lanes Alternative would also be performed during off-peak hours, but would involve lane closures, crash trucks (i.e. safety maintenance vehicles) and police escort.

iii. Enforcement

The No-Build Alternative would provide decreasing opportunities for enforcement activities, since when congestion increases, the ability of police units to pull motorists over to the highway shoulder decreases. The General Purpose Lanes Alternative will reduce congestion, thereby increasing opportunities for safer roadside activities. The Express Toll Lanes Alternative, with a maximum separation of two lanes from an available shoulder, would facilitate roadside patrols and enforcements.

iv. Intermodal Access

Section 200 provides indirect access to the Port of Baltimore, BWI and Martin State Airports, Amtrak rail service, and the local transit system. In order to provide dependable intermodal connectivity, it is important that highway travel times remain fairly consistent, and that those times be perceived as reasonable by users.

The General Purpose Lanes Alternative would have a moderate effect on bus transit in the Section 200 corridor. Although the capacity of I-95 would increase for the short term, all travelers including transit services would experience decreasing benefits as traffic volumes grow over time. As the traffic volume increases over time, the increased capacity becomes more congested. The congestion leads to increasing transit service travel times along the Section 200 corridor.

The Express Toll Lanes Alternative would allow buses to benefit from the improved LOS during peak periods. By providing reliable and predictable transit service times, the Express Toll Lanes Alternative could improve the attractiveness of transit services. Access to and from the ETLs at interchanges, where transit services are planned, would be considered in the design of the Express Toll Lanes Alternative and the proposed park and rides.

The success of ETLs hinges on a user's ability to consistently experience a predictable travel time and a facility operator's ability to consistently manage traffic volumes to provide the expected travel speed and travel time with a high degree of certainty. Predictable travel times create advantages for transport fleets with schedules to meet such as those engaged in transit services or commercial express freight delivery services. **Table II-5** provides estimated travel times and speeds for 2030 for ETLs and GPLs.

Based on the information in **Table II-5**, in 2030, the use of the Express Toll Lanes Alternative over the General Purpose Lanes Alternative during peak periods can reduce the travel time up to 11 minutes and increase travels speeds as much as 25 miles per hour (MPH). Based on this assessment, the Express Toll Lanes Alternative would best provide for intermodal access, because it is anticipated that the ETLs would operate at LOS D or better, and provide faster, more consistent travel conditions as compared to the General Purpose Lanes Alternative.

Table II-5. Estimated Travel Speeds and Times for 2030

		From MD 543 to the I-95/I-895 (N) Split (18 miles) in the Peak Direction		
		Travel Time	**Travel Speed**	**Level of Service Range**
Existing		24 Min	60 MPH	C to E
2030 No Build		57 Min	15 MPH	F
2030 General Purpose Lanes Alternative	**Section 100 and 200 GPLs**	29 Min	40 MPH	C to E
	Section 100 ETL and Section 200 GPLs	21 Min	55 MPH	
2030 Express Toll Lanes Alternative	**Section 100 and 200 GPLs**	33 Min	35 MPH	C to E
	Section 100 and 200 ETLs	18 Min	65 MPH	A to C

d. Costs

The term No-Build means that no funds would be expended to increase the capacity of the roadway. There would still remain costs associated with maintaining the facility. This would include activities such as roadway resurfacing, bridge replacement, signing, lighting, pavement markings, etc.

The preliminary cost estimated for the No-Build Alternative is approximately $0.21 Billion. It does not include any additional work beyond the normal maintenance activities mentioned above. The General Purpose Lanes Alternative preliminary cost estimate is approximately $1.48 Billion, while the Express Toll Lanes Alternative preliminary cost estimate is approximately $1.92 Billion. All costs are indicated in 2010 dollars.

Under the Express Toll Lanes Alternative, the revenues collected by the ETLs would help offset the cost to construct, operate, and maintain the facility.

e. Consistency with State Transportation Policy

On May 4, 2004, the Maryland Secretary of Transportation announced an Express Toll Lanes initiative. Under this initiative, the Secretary has directed MDOT and MDTA to consider implementing ETLs on several existing facilities in Maryland, including I-95. The ETL concept, as outlined in this initiative, involves the construction of new tolled lanes adjacent to existing free lanes. Tolls would be collected electronically, without the use of toll booths, and would vary by time of day and demand.

The General Purpose Lanes Alternative would not allow for tolling and thus is not compatible with the Secretary's initiative.

2. Park and Ride Facilities

a. MD 152 Park and Ride Facility

Site A Revised was identified as the preferred location for the proposed park and ride improvements at the MD 152 interchange. The critical factors in the selection of this location included convenient access for the majority of the existing park and ride users, preferred location for bus operations because it is located along existing MTA routes, good visibility from both I-95 and MD 152, increased forest buffer to residences along Jaycee Drive, and minimal environmental impacts.

b. MD 24 Park and Ride Facility

The site located at the intersection of MD 24 and MD 924/Tollgate Road was identified as the preferred location for the proposed park and ride improvements. Critical factors associated with the selection of this site as the preferred location at the MD 24 interchange included close proximity to the I-95/MD 24 interchange, convenient access for transit operations because it is located along existing transit routes, a portion of the proposed site is state-owned, and environmental impacts are limited.

3. I-95/MD 24/MD 924 Pedestrian / Bicycle Access

The Woodsdale Road option was chosen because it provides the most direct access for pedestrian and bicyclists around the I-95/MD 24 Interchange. Other critical factors associated with the

selection of this option include: significant pedestrian/bicycle safety because majority of route is closed to vehicular traffic, minimal environmental impacts, and a majority of the trail will be on state-owned ROW.