

December 20, 2011

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
and
VIRGINIA DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL ASSESSMENT

I-395 HOV Ramp at Seminary Road
City of Alexandria
Project Number: 0095-100-722, P101; UPC No. 96261
Federal Project Number: NH-000S(218)

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for: Division Administrator
Federal Highway Administration

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Chapter 1.0 – PURPOSE AND NEED

1.1 DESCRIPTION OF THE STUDY AREA

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is evaluating a High Occupancy Vehicle (HOV) direct access ramp from the existing HOV lanes along Interstate 395 (I-395) to Seminary Road in Alexandria, VA to address the high volume of employee travel originating from south of Mark Center, also designated as BRAC 133 by the Department of Defense (DoD). Mark Center is an established, 350-acre mixed-use development consisting of high-rise office and residential buildings, a hotel, and retail space located west of I-395 and south of Seminary Road. The site is currently accessible via:

- the intersection of North Beauregard Street and Mark Center Drive to the west of the site; and
- the intersection of Seminary Road and Mark Center Drive to the northwest of the site.

The study area incorporates the existing I-395/Seminary Road interchange and associated roadway approaches along Seminary Road, as illustrated in **Figure 1**. The existing interchange is a three-level, full-service interchange with I-395 mainline at the first level, the Seminary Road ramp intersections in a rotary arrangement at the second level, and Seminary Road at the third level. I-395 at this location consists of four northbound and four southbound general purpose lanes, and two reversible HOV lanes, which are separated from the general purpose lanes by barriers. On weekdays, HOV-3 (three or more people in a vehicle) is in effect northbound during morning peak travel hours, and southbound during evening peak hours.

1.2 HISTORY

As part of the 2005 Base Realignment and Closure (BRAC) process, DoD will be relocating 6,400 personnel to Mark Center. Personnel relocation to the Mark Center is scheduled for completion in mid 2012. In addition, future expansion of the Institute for Defense Analysis, an existing tenant of Mark Center, is expected to bring 600 additional employees to the site.

A number of transportation studies have been conducted by the Army, VDOT, FHWA, and the City of Alexandria to analyze potential traffic impacts of Mark Center/BRAC 133 to area roadways, and identify ways to meet future traffic demands for the projected 7,000 new employees. *The Mark Center (BRAC 133) Transportation Study (April 2009)*, prepared for VDOT, analyzed existing and future traffic conditions and recommended direct access from I-395 to Mark Center. *The Mark Center (BRAC 133) Transportation Study (November 2009)*, prepared for the City of Alexandria, studied traffic operations and evaluated potential transportation

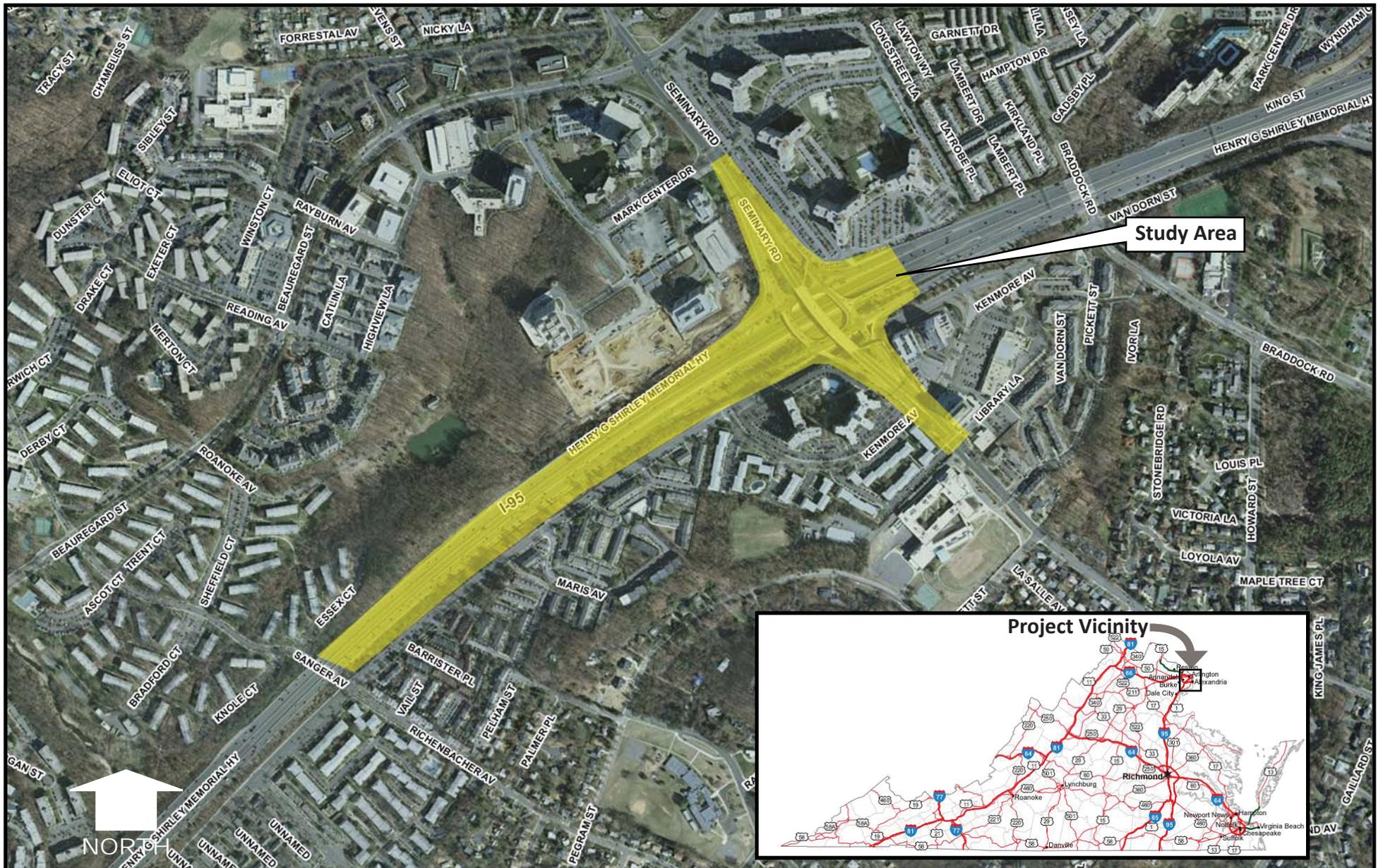
improvements at study area intersections and roadways. The study also evaluated a range of alternatives for a direct access ramp connecting I-395 to Mark Center.

In the *Mark Center (BRAC 133) Access Study*, completed in February 2010, VDOT identified alternatives to alleviate anticipated congestion at the I-395/Seminary Road interchange and surrounding local roadway network. The report recommended a new access point to Mark Center from I-395 acknowledging the need for the preparation of a National Environmental Policy Act (NEPA) document prior to implementing such access.

The *I-95/I-395 Bus Rapid Transit Study* (April 2010) analyzed the market demand for a Bus Rapid Transit (BRT) system, in addition to identifying infrastructure that would be required to support a BRT system within the I-95/I-395 corridor. The study projected that the Mark Center / BRAC 133 facility will attract heavy ridership, both as an origin/destination and as a transfer point. It found that potential routing of Priority Bus/BRT services through the rotary on Seminary Road is circuitous and recommended that better bus transit access to the BRAC site is needed.

In order to minimize traffic impacts due to BRAC 133, the Department of the Army completed the *Transportation Management Plan for BRAC 133 at Mark Center* (TMP) in July 2010. The TMP provided an analysis of the impacts of the BRAC on traffic operations at surrounding roadways and intersections, including anticipated employee commuting patterns to and from the site. The TMP identifies several initiatives including an aggressive parking management plan, bicycling and walking incentives, and employee telework options. However, an emphasis of the plan is placed on HOV access to the site, including multiple transit-related initiatives, rideshare activities such as car and van pooling, a DoD shuttle service between area Metro stations and the Mark Transportation Center, and Metrobus service to the site via the Pentagon.

To help alleviate congestion to and from BRAC 133 site, each of these studies recommended further evaluation of a direct HOV access ramp from I-395 HOV lanes to Seminary Road to address employee travel demand originating from south of the Mark Center. As a result, the addition of a reversible ramp from the I-395 HOV lanes to/from Seminary Road was included in the National Capital Region's Financially Constrained Long-Range Plan (CLRP) and Fiscal Year 2011-2016 Transportation Improvement Program (TIP) Amendments, which were approved by the Transportation Planning Board (TPB) Committee in July 2011. The amendments to the CLRP and TIP are currently pending approval from FHWA and Federal Transit Administration (FTA).



PROPOSED PROJECT LOCATION AND STUDY AREA
I-395 HOV RAMP AT SEMINARY ROAD
ALEXANDRIA, VIRGINIA

FIGURE NUMBER

FIGURE 1

DATE

DECEMBER 2011



SOURCE

ESRI

SCALE

1=10,000

1.3 NEEDS – EXISTING AND FUTURE CONDITIONS

1.3.1 Transit and HOV Access

The Mark Center / BRAC 133 facility includes two parking structures and a total of 3,747 parking spaces for use by DoD employees and visitors. The South Parking Garage is located to the south of the office buildings along I-395, and the North Parking Garage is located at the north end of the site at Mark Center Drive. A publicly-accessible Transportation Center has been constructed adjacent to the North Parking Garage, and includes five bus bays that will be available for shared-use by public and private transit providers to BRAC 133. Two existing bus stops are located on the west side of Mark Center Drive, directly across from the Transportation Center.

Currently, transit vehicle and HOV access is inadequate for the anticipated volume of ridership to Mark Center as a result of BRAC 133. Since available parking at BRAC is restricted to only 3,747 spaces for an anticipated 7,000 employees, SOV trips to the site will be severely limited. Consequently, the goals and objectives of the TMP will be largely achieved through implementation of an aggressive commuting program geared toward the use of public and private transit, establishment of a comprehensive DoD shuttle program between the Mark Center and area Metro stops, and other HOV modes of travel including van and carpooling, as well as other ride sharing programs.

The I-395 interchange at Seminary Road is the primary access point for traffic traveling from the northern and southern regions to the Mark Center site. A large percentage of trips to BRAC 133 originate from the south. The current access to the Mark Center from I-395 is only available via the general purpose lanes. There is no direct access from the I-395 HOV lanes to Seminary Road. The nearest HOV entrance/exit points to the south are at the Franconia-Springfield Parkway exit, approximately 5 miles south of Mark Center. Vehicles exiting the HOV lanes at the Franconia-Springfield Parkway exit must travel along the I-395 general purpose lanes to Seminary Road to access the Mark Center. Conversely, HOV vehicles traveling from the Mark Center south must travel the I-395 general purpose lanes before accessing the HOV lanes.

According to the BRAC 133 TMP, a large percentage of employees live to the south of Mark Center. It is projected that up to forty (40) percent of employees would utilize I-395 as the primary access road to the site from points south. The TMP has a stated goal of achieving forty 40 percent or more non-Single Occupancy Vehicle (SOV) trips to Mark Center / BRAC 133. The TMP identifies several initiatives for achieving this goal; however, an emphasis of the plan is placed on HOV access to the site and providing multiple transit-related initiatives.

1.3.2 Roadway Operations

Existing travel demand exceeds capacity at the I-395 / Seminary Road interchange ramps. Heavy congestion currently occurs, particularly at the on-ramp from Seminary Road to the southbound I-395 general purpose lanes during peak evening commuting hours. Along with the introduction of 7,000 new employees to Mark Center, congestion at this interchange is projected to worsen under a no-build scenario. VDOT's *Mark Center (BRAC 133) Access Study* indicated unacceptable future levels of service for years 2015 and 2035, due in part to traffic moving to and from Mark Center. Current and future LOS for Design Year 2035 is presented in **Table 1**.

Table 1. I-395/SEMINARY ROAD INTERCHANGE LEVELS OF SERVICE

Interchange	2009 Traffic		2015 (No Build) Traffic From VDOT Study/FHWA Draft P&N		2035 (No Build) Traffic From VDOT Study/FHWA Draft P&N	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
On-ramp: Seminary Road to SB I-395	LOS C	LOS D	LOS C	LOS F	LOS D	LOS F
Off-ramp: NB I-395 to Seminary Road	LOS C	LOS D	LOS C	LOS B	LOS F	LOS B

* Level of Service (LOS) is a qualitative assessment of a road's operating conditions, which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS A and congested conditions rated as LOS F.

According to the VDOT study, by 2035 peak travel time directions on I-395 are projected to operate at "severe" level of traffic congestion. During peak periods queues are expected to extend from the Seminary Road rotary onto the general purpose lanes. Without improved access to the Mark Center facility, the surrounding freeway network will not be able to handle this additional traffic under 2035 no-build conditions.

The FHWA is currently implementing several short and mid-term roadway improvements in the vicinity of Mark Center. These improvements include turn lanes, minor ramp widening, pavement re-striping, and a pedestrian overpass to help alleviate traffic congestion due to BRAC 133 at Mark Center. However, implementation of these improvements alone would not adequately alleviate current congestion I-395 / Seminary Road interchange, and would not accommodate the projected increases in HOV traffic and transit ridership as BRAC employees occupy the site.

1.4 SUMMARY / PURPOSE OF PROJECT

The purpose of the I-395 HOV Ramp at Seminary Road project is to:

- Address the need for adequate transit vehicle and High Occupancy Vehicle access to the Mark Center; and
- Relieve forecasted AM peak traffic congestion on the northbound I-395/Seminary Road off-ramp and forecasted PM peak congestion on the southbound Seminary Road/I-395 on-ramp.

Chapter 2.0 – ALTERNATIVES

This section describes the proposed project, which involves constructing a reversible high-occupancy vehicle (HOV) ramp originating from the existing reversible I-395 HOV lanes to the Seminary Road Interchange Bridge. This section also discusses alternatives to the proposed project which were considered, and the reasons they were eliminated from further consideration. The no action or No-Build Alternative is also under consideration and serves as a baseline for comparison to the proposed project.

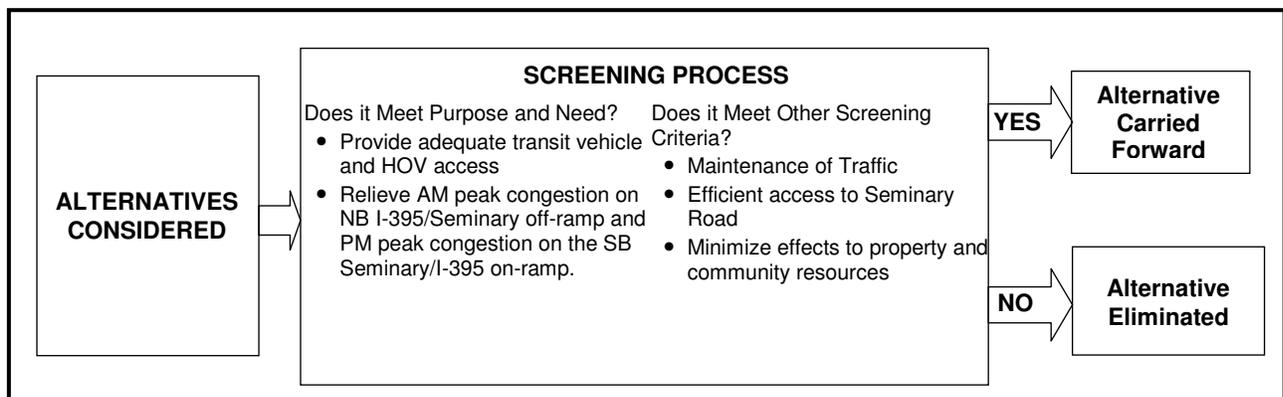
2.1 ALTERNATIVE DEVELOPMENT AND SCREENING

The alternative development and screening process involved identification and consideration of multiple alternatives, and narrowing the alternatives to those carried forward for detailed study.

The screening of conceptual alternatives involved two steps. First, alternatives were required to meet the stated purpose and need for the project. Alternatives that met the purpose and need were further evaluated using the following screening criteria:

- Maintenance of Traffic (MOT) – The alternative should provide for efficient maintenance of traffic, avoiding detours or extended lane closures which would impact traffic on I-395 or Seminary Road.
- Efficient access to Seminary Road.
- Minimize effects to surrounding property and community resources.

The flowchart below illustrates the steps in the alternative development and screening process:



2.2 ALTERNATIVES ELIMINATED FROM DETAILED STUDY

As discussed in the purpose and need section, several studies have previously evaluated conceptual interchange, intersection, and transit improvements in the Mark Center study area. The alternatives reviewed in these studies form the basis for alternatives considered. The studies are summarized in **Table 2**.

Table 2. PREVIOUS TRANSPORTATION STUDIES IN THE MARK CENTER AREA

Source	Brief Description
Mark Center Zoning – City of Alexandria Staff Report – January 2004	Requested an amendment to the current approved development special use permit/site plan for the Mark Center. Also amended the TMP to accommodate small scale transportation improvements.
VDOT/PB Mark Center Transportation Study – April 2009	Assessed the existing, opening year (2011), and year 2030 traffic conditions. Recommended direct access from I-395 to Mark Center.
Mark Center (BRAC 133) Transportation Study (November 2009) prepared for the City of Alexandria by VHB	Assessed potential improvements to study area intersections and roadways. Analyzed traffic operations for improvement concepts.
Mark Center (BRAC 133) Access Study, prepared for FHWA by VDOT – February 2010	Studied alternatives to meet future traffic demands for projected 7,000 new employees at Mark Center and alleviate resulting congestion at I-395/Seminary interchange and surrounding local roadway network.
I-95 / I-395 Bus Rapid transit Study – April 2010	Looked at opportunities for enhanced transit infrastructure within the I-95 / I-395 corridor in Northern Virginia. Noted that the Mark Transit Center will attract heavy bus ridership as origin, destination, and transfers.
Army Transportation Management Plan for the Mark Center – July 2010	Developed a TMP for BRAC 133 and suggested long term improvements to the I-395/Seminary Road interchange and Seminary Road / Beaugard Street intersection.
Long-term Access Improvement Presentation by VDOT to Alexandria City Council – February 2011	Compared alternatives from the Mark Center Access Study

As a result of the screening process, conceptual alternatives identified in previous studies were considered but ultimately eliminated from further consideration. **Table 3** lists these alternatives and the reasons for their elimination.

Table 3. ALTERNATIVES CONSIDERED AND ELIMINATED

Source Study	Alternative Description	Basis For Elimination
Mark Center (BRAC 133) Transportation Study	<i>Concept 1:</i> Direct access ramp to the BRAC 133 South parking garage	Would not meet the project need of relieving congestion at the I-395 / Seminary Road Interchange.
	<i>Concept 2:</i> Direct access ramp to Mark Center	Substantial MOT/traffic issues
	<i>Concept 3:</i> Direct access ramps to the South parking garage and Mark Center	Substantial MOT/traffic issues
	<i>Concept 4:</i> Added left turn lanes at Seminary/Beauregard intersection	Would not meet the project need of relieving congestion at the I-395 / Seminary Road Interchange.
Mark Center (BRAC 133) Access Study	<i>Alternative A1:</i> Provides direct access to the Army south garage P5 floor level from I-395 SB on-ramp	Would be restricted to cars destined for Mark Center only, thus would not meet the project need of relieving congestion at the I-395 / Seminary Road Interchange.
	<i>Alternative A2:</i> Provides direct access to the Army south garage from I-395 SB on-ramp via a new ground entrance.	Would be restricted to cars destined for Mark Center only, thus would not meet the project need of relieving congestion at the I-395 / Seminary Road Interchange.
	<i>Alternative B1:</i> Provides public access to Mark Center from I-395 SB on-ramp via an at-grade ramp to the Mark Center private street network	Effects to surrounding property and community resources
	<i>Alternative B2:</i> Provides public access to Mark Center from I-395 SB on-ramp via an at-grade ramp to Mark Center Drive, a public street	Effects to surrounding property and community resources
	<i>Alternative C:</i> Provides direct access to the Army south garage from I-395 SB on-ramp and NB GP lanes and from garage to SB I-395 GP lanes	Effects to surrounding property and community resources and would not meet the project need of relieving congestion at the I-395 / Seminary Road Interchange.
	<i>Alternative D:</i> Provides public access to Mark Center from I-395 HOV lanes (formerly proposed as HOT lanes). Includes a reversible flow ramp and auto-only SB exit movement to I-395 SB GP lanes	Effects to surrounding property and community resources
	<i>Alternative E:</i> Provides public access to Mark Center from I-395 HOV lanes (formerly proposed as HOT lanes). Includes a two-way ramp to both the south and north on the HOV lanes.	Effects to surrounding property and community resources

Table 3. ALTERNATIVES CONSIDERED AND ELIMINATED

Source Study	Alternative Description	Basis For Elimination
Mark Center (BRAC 133) Access Study	<i>Alternative G:</i> Provides public access to Mark Center through a reconstructed rotary on Seminary Road	Substantial MOT issues

2.3 ALTERNATIVES CARRIED FORWARD

2.3.1 No Action or No-Build Alternative

The No Action or No-Build Alternative serves as a benchmark for comparison to the proposed project. The No-Build Alternative includes several short-term and mid-term improvements planned by FHWA Eastern Federal Lands Division, and the Department of Defense. These improvements are reasonably foreseeable separate actions from this study, and include:

- Widen northbound I-395 general purpose exit ramp from two to three lanes and provide two through lanes and one right-turn lane.
- Widen the Seminary Road westbound approach and gore area from the rotary to the Mark Center Drive intersection from one to two lanes. Provide a physical separation between the two lanes from the rotary and the left turn lane at Mark Center Drive.
- Widen Seminary Road to provide a dedicated right turn lane from westbound Seminary Road to Southern Towers.
- Widen westbound Seminary Road to provide a deceleration lane and widen northbound Beauregard Street to provide an acceleration lane for the westbound to northbound right turn lane.
- Widen the eastbound Seminary Road approach to Mark Center Drive to allow three through lanes. Widen the northbound Mark Center Drive approach to four lanes to allow one left turn lane, one shared through/right turn lane and two right turn lanes.
- Widen northbound Beauregard Street between Mark Center Drive and Seminary Road to provide a dedicated right turn lane at the northbound approach to Seminary Road after the direct connect ramp from northbound Beauregard Street to eastbound Seminary Road.

- Widen eastbound Seminary Road and the southbound I-395 entrance ramp from Mark Center Drive to the ramp meter signal to provide a continuous two lane ramp from Seminary Road to the ramp meter.
- Construct an ADA-compliant pedestrian bridge over Seminary Road at the Mark Center Drive intersection to replace the at-grade pedestrian crossing currently in place.

The No-Build Alternative would not satisfy the identified needs of providing adequate transit vehicle and HOV access to the Mark Center; relieving forecasted AM peak traffic congestion on the northbound I-395/Seminary Road off-ramp; or relieving forecasted PM peak congestion on the southbound Seminary Road/I-395 on-ramp.

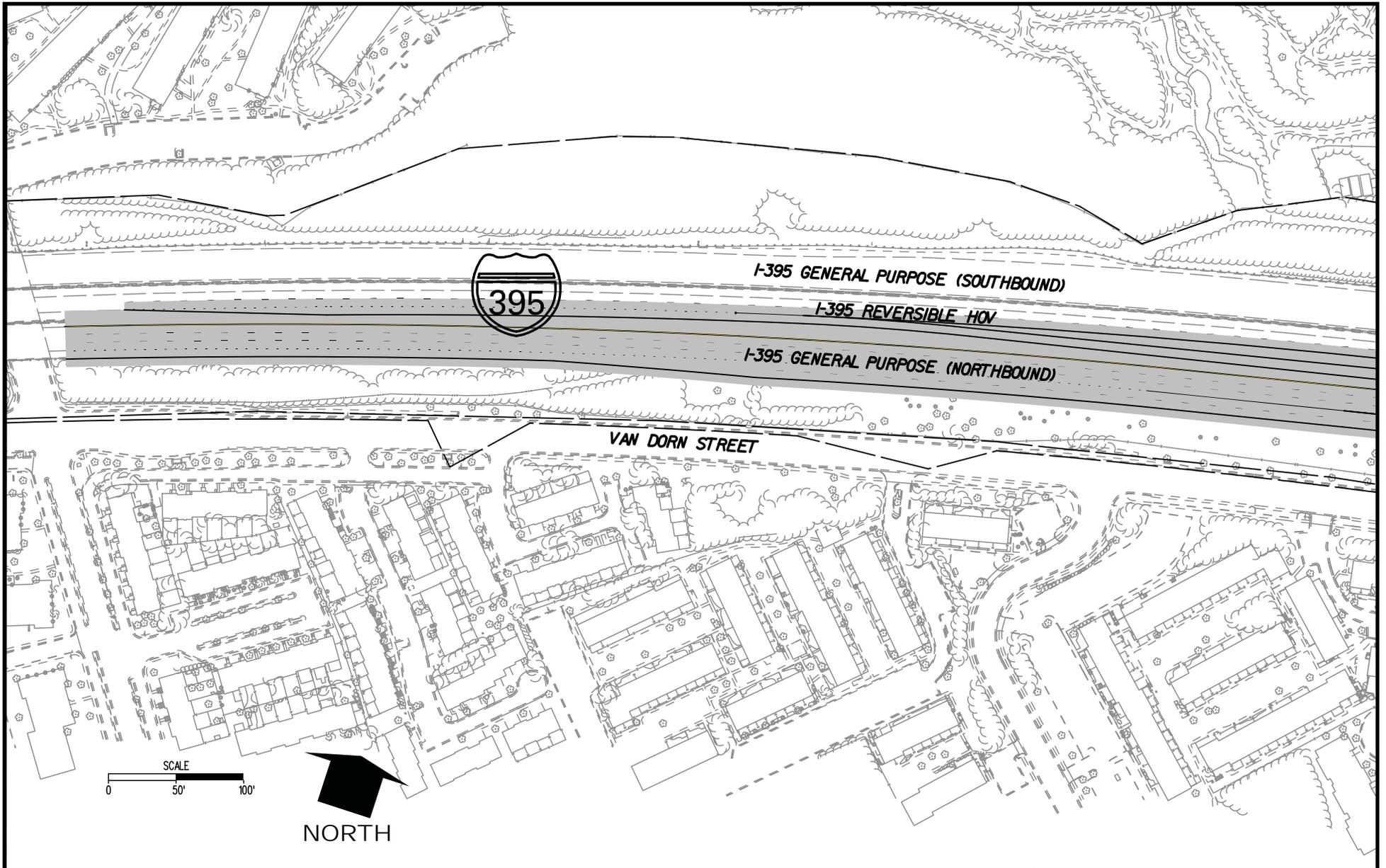
2.3.2 Proposed Project – Reversible HOV Ramp

Description: Alternative F from the *Mark Center Access Study*, as shown in **Figure 2**, has been carried forward for detailed study as the proposed project. This alternative best meets the purpose and need for the project and satisfies the alternative screening criteria more effectively than any of the other alternatives considered. Alternative F consists of a reversible HOV direct access ramp to Seminary Road. The ramp begins approximately 0.4 miles south of Seminary Road in the median of the existing I-395 reversible HOV lanes, and travels northerly to intersect with Seminary Road on the third level of the interchange, above the existing rotary. In the AM peak, the ramp would be restricted to vehicles traveling northbound on the I-395 HOV lanes to Seminary Road. In the PM peak, the ramp would be restricted to vehicles from Seminary Road to southbound I-395 HOV lanes.

The proposed typical sections for the proposed project are shown on **Figure 3** and include the following design features:

- **Design Speed:** 35 mph
- **Maximum Grade:** 5%
- **Travel Lanes:** 16-foot single lane, 12-foot dual lanes
- **Shoulders:** varies 6-foot to 20-foot paved
- **Bridge Width:** 38-foot to 46-foot clear width

In order to take into account what the actual environmental impacts may be as a result of implementing the proposed project, conceptual engineering computations have been prepared to determine the project “footprint.” This method provides a conservative estimate for the maximum impacts that may occur to allow for flexibility in final design, eliminating the need for further environmental analysis.



PROPOSED PROJECT
I-395 HOV RAMP AT SEMINARY ROAD
ALEXANDRIA, VIRGINIA

FIGURE NUMBER

DATE

FIGURE 2-1

DECEMBER 2011

SOURCE

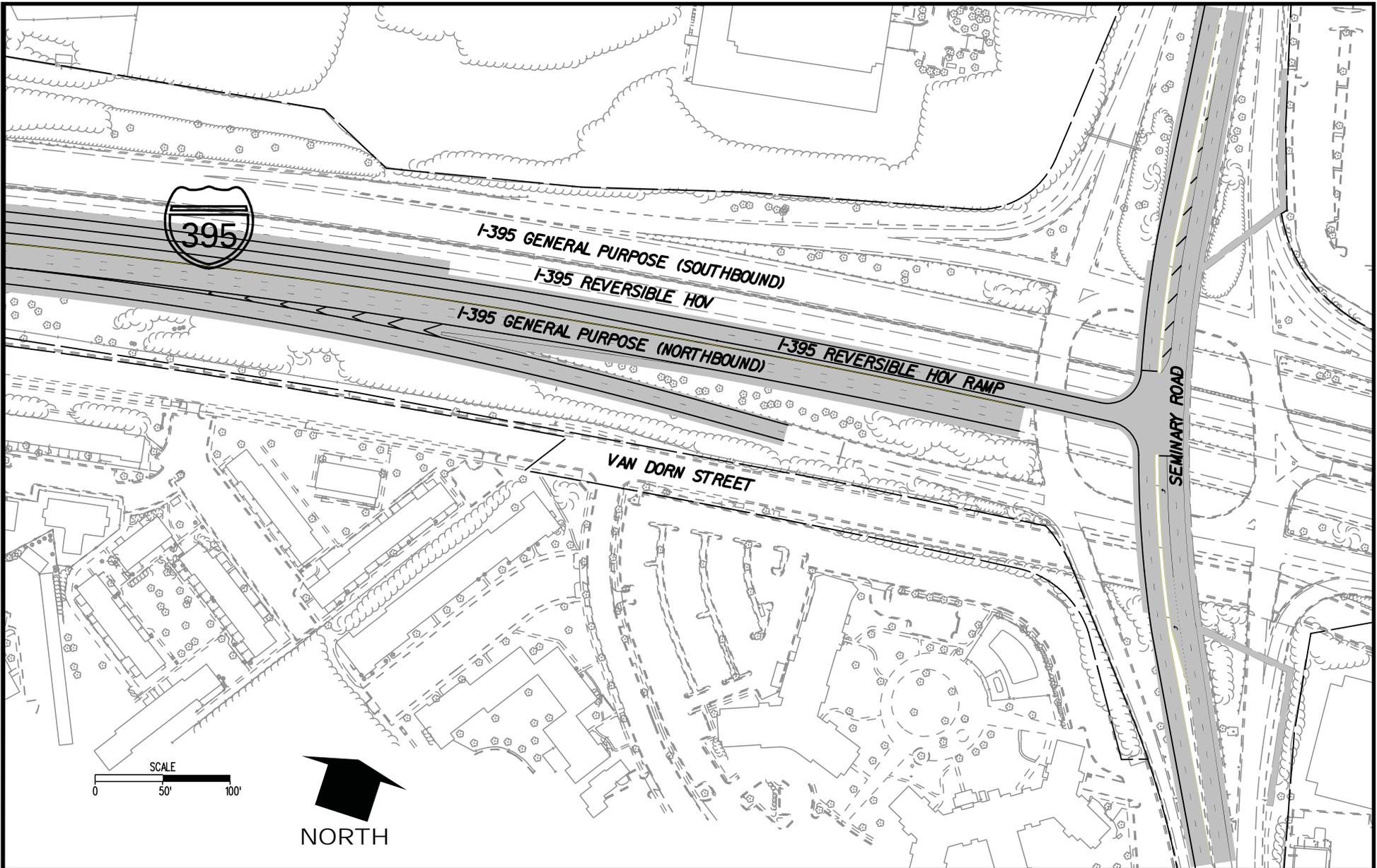
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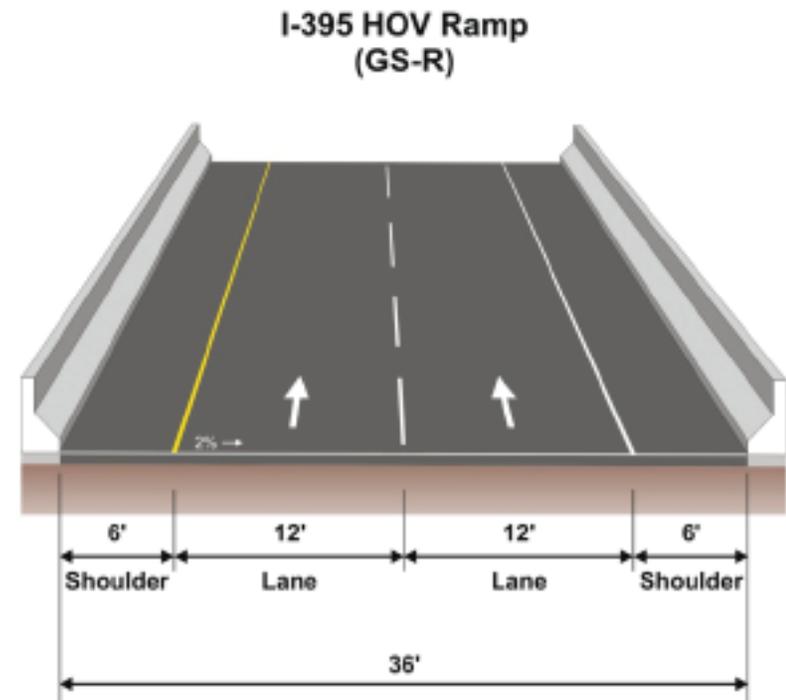
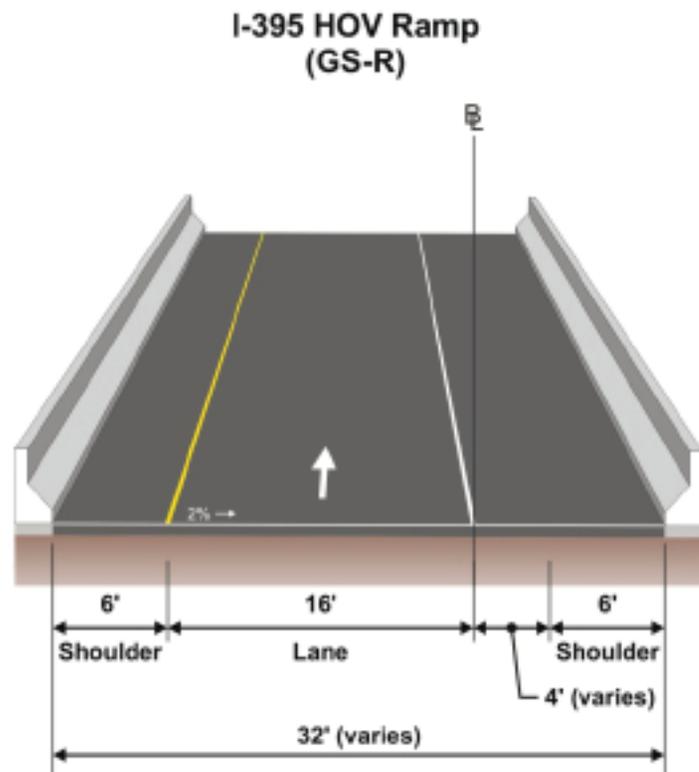
VDOT AERIAL SURVEY

1:50

MATCHLINE SHEET 1



<p>PROPOSED PROJECT I-395 HOV RAMP AT SEMINARY ROAD ALEXANDRIA, VIRGINIA</p>	<p>FIGURE NUMBER FIGURE 2-2</p>	<p>DATE DECEMBER 2011</p>
	<p>SOURCE VDOT AERIAL SURVEY</p>	<p>SCALE 1:50</p>



<p>TYPICAL SECTIONS I-395 HOV RAMP AT SEMINARY ROAD ALEXANDRIA, VIRGINIA</p>	<p>FIGURE NUMBER FIGURE 3</p>	<p>DATE DECEMBER 2011</p>
	<p>SOURCE VDOT</p>	<p>SCALE N.T.S</p>

The HOV ramp would rise at a maximum 5% grade to meet the existing Seminary Road Bridge. The ramp bridge would be approximately 1,200 feet long. At the Seminary Road intersection, the travel lane would widen to allow for dual lanes.

The proposed project would also include reconstruction of the existing pedestrian ramps and bridges, which cross over the Seminary Road approaches north and south of I-395. These improvements are needed to meet the requirements of the American with Disabilities Act (ADA).

Benefits of Proposed Project: The proposed project would provide HOV and transit access to the Mark Center; does not require reconstruction of the rotary, and as such is a lower cost alternative; maintains the Seminary Road through traffic third level flyover; has a shorter project completion schedule; and is largely within existing VDOT Right-of-Way. Compared to the other alternatives, this alternative minimizes effects to surrounding properties and community resources and meets the project need of relieving congestion at the I-395 / Seminary Road Interchange.

Also, the HOV ramp would meet the identified transportation need for adequate transit vehicle and HOV access to the Mark Center. The alternative would also help relieve congestion at the I-395 at Seminary Road interchange by allowing vehicles to access the HOV lanes without using the existing northbound I-395 off-ramp or southbound I-395 on-ramp.

Cost: The total estimated preliminary engineering and construction cost of the proposed project is \$80 million. A construction advertisement year of 2015 is assumed for this estimate.

Chapter 3.0 – ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION AND OVERVIEW OF ENVIRONMENTAL ISSUES

Transportation projects have the potential to affect social, economic, and natural resources; therefore, it is essential that the existing environmental conditions and potential project related impacts are understood. The purpose of the following section is to identify and analyze the environmental consequences resulting from the proposed project. The following assessment of the environmental consequences is focused on the study area of the proposed project.

The areas and resources listed in **Table 4** were identified as having the potential to be affected by the proposed project and have been analyzed to determine the presence of impacts. **Table 5** further quantifies these impacts associated with the proposed project. Overall, project related activities are expected to have a minimal to negligible effect on the surrounding social, economic, and natural resources described in the subsequent tables. Environmental issues of particular concern or anticipated consequence are described in the text which follows the tables. Except where discussed in this section, the No-Build Alternative would have no impact on environmental resources.

Table 4. SUMMARY OF ENVIRONMENTAL ISSUES

Geology	The proposed project lies within the Coastal Plain physiographic province, and is underlain by alluvial deposits that characterize this region (Davis et al. 2001). The proposed project would not impact geologic resources. The construction of the proposed HOV ramp would occur above ground and would only require minimal surface grading.
Topography	The site of the proposed project is located in a generally flat area at the crest of a gradual rise, where the elevation undulates between approximately 190-240 feet above mean sea level (MSL) (USGS 2011a). Due to the development that characterizes the area, the topographic effects from the proposed project are expected to be minimal.
Soils	Existing soils underlying the study area and surrounding vicinity are primarily classified as urban land and as such have previously been disturbed or converted to development (NRCS 2009). Coordination with the Virginia Department of Agriculture and Consumer Services as well as the Natural Resource Conservation Service has confirmed that there are no unusual soil conditions that would be impacted by the proposed project.

Table 4. SUMMARY OF ENVIRONMENTAL ISSUES

Agriculture and Prime Farmland	There are no farmlands within the study area, and therefore no lands subject to the provisions of the Farmland Protection Policy Act (FPPA) and 7 CFR 658.2.
Surface Water	The proposed project is located within the Potomac River-Cameron Run watershed between the Cameron Run subwatershed to the West and the Potomac River-Four Mile Run subwatershed in the East. The HOV ramp would not affect any surface waters. There are no wild and scenic rivers or rivers of national or state importance in the study area.
Water Quality	There are several streams within the area surrounding the proposed project that have been previously affected by development and are impaired (DEQ 2010). The proposed project would affect water quality in these streams. However, stormwater management (SWM) techniques as well as erosion and sediment control (ESC) measures will be implemented, in order to prevent further degradation or water quality.
Ground Water and Public Water Supply	Presently, most of the public drinking water supply for the City of Alexandria is provided by Fairfax County Water Authority, whose primary water sources are portions of the Potomac and Occoquan. The location of the proposed project is not included within the source water portions of these watersheds. Consultation with the Virginia Department of Health confirmed that there are no identified groundwater resources in the study area and there would be no impact to the ground water supply from the proposed project.
Floodplains and Wetlands	The proposed project does not lie within any identified floodplains (FEMA 2011). There would be no wetlands affected by the proposed project.
Vegetation and Wildlife	There is limited vegetation and wildlife within the study area. Development characterizes the majority of the areas surrounding the proposed project. Interspersed throughout this development are woods, shrubs, grass, and landscape plantings. Existing vegetation within the study area provides habitat for various wildlife species adapted to roadside environments such as rabbits, whitetail deer, eastern grey squirrels, red fox, and a number of common bird species. The proposed project would be located largely within the VDOT right of way and would impact roadside vegetation but would not have substantial impacts to other vegetation or wildlife populations within the study area.
Threatened and Endangered Species	In accordance with the Endangered Species Act of 1973, no impacts to endangered or federally listed species have been identified. Coordination with and information provided by the United States Fish and Wildlife Service (USFWS) as well as the Virginia Department

Table 4. SUMMARY OF ENVIRONMENTAL ISSUES

	of Game and Inland Fisheries (VDGIF) and the Virginia Department of Conservation Resources (VDCR) confirmed that the proposed project would have no impact to threatened or endangered species.
Invasive Species	In accordance with Executive Order 13112, any potential for the introduction of invasive terrestrial or aquatic animal or plant species infestation during construction of the proposed project would be controlled and minimized, by limiting the area of disturbance and revegetating with desirable species at the earliest opportunity following this disturbance (Executive Order No. 13112, 1999). Prompt seeding will be performed in adherence to the Virginia Seed Law and VDOT's specifications (Seed Law 2008; VDOT 2007).
Air Quality	In accordance with VDOT and FHWA guidance, as well as requirements established by the EPA, changes in existing carbon monoxide (CO), particulate matter (PM), and mobile source air toxics (MSATs) were analyzed. Based on air assumptions retained from air quality modeling data, no adverse impacts to ambient air quality or human health and welfare are anticipated. Construction related emissions will be minimized follow VDOT's <i>Road and Bridge Specifications</i> .
Historic Properties	There are no historic properties located near the proposed project. Virginia's State Historic Preservation Office (SHPO), the Virginia Department of Historic Resources, confirmed the determination of no historic properties affected on September 8, 2011.
Bicycle and Pedestrian Considerations	Presently there are pedestrian and bicycle facilities for crossing I-395 located on the east and west sides of the Seminary Road bridge. Reconstruction of these facilities to meet ADA requirements will be included in this project. Pedestrian and bicycle access will be maintained during construction.
Section 4(f)	No publicly owned parks, recreation areas, wildlife and waterfowl refuges, or historic sites would be impacted by the proposed project.
Displacements and Relocations	The proposed project is largely within the existing I-395 right-of-way. However, reconstruction of the pedestrian bridges will require minimal acquisition of property. No displacements or relocation of businesses or residences will occur.
Land Use	Land use in the study area supports a mix of residential and commercial uses within the study area. The proposed project is consistent with and would not affect zoning classifications within the study area. There would be no substantial impacts to land use.
Community Facilities	Community facilities including schools, churches, hospitals, fire stations, shopping complexes, and public libraries have been identified in the study area. HOV and transit access to these community features is expected to be enhanced by the proposed

Table 4. SUMMARY OF ENVIRONMENTAL ISSUES

	project. The proposed project would not result in negative impacts to community facilities.
Environmental Justice	In accordance with Executive Order 12898, minority and low-income populations have been identified in the study area. However, the proposed project is not anticipated to cause any disproportionately high or adverse effects to these populations.
Visual	Construction of the ramp and reconstruction of the pedestrian bridges would result in removal of the trees, shrubs and other vegetation increasing the visibility of the roadway. The proposed project would be similar in nature to the existing I-395 interchange, would be consistent with a highly urbanized area and there would be no effect to the character of the study area.
Noise	Projected future sound levels and sound levels for the proposed project are anticipated to vary by no more than one-half decibel. As a result the overall noise effect of the proposed project is expected to be minimal. Where a noise impact is expected to occur, noise walls may be required to mitigate any potential impacts to noise receptors.
Hazardous Waste Facilities	Several waste sites are located within proximity to the proposed project site. Issues related to these identified solid waste and/or hazardous materials are not anticipated as a result of the proposed project.

Table 5. SUMMARY OF IMPACTS

Category	Impacts	
	No-Build	Proposed Project
Total Area (acres)	0	11.5
Farmland (acres)	0	0
Wetlands (acres)	0	0
Floodplains (acres)	0	0
Violations of National Ambient Air Quality Standards	0	0
Vegetation (acres)	0	5.0 to 5.5
Threatened or endangered species impacted (no.)	0	0
Historic properties affected (no.)	0	0
Residences displaced (no.)	0	0
Businesses displaced (no.)	0	0
Community facilities impacted (no.)	0	0
Section 4(f) property use (acres)	0	0
Noise receptors impacted (no.)	631	635
Right-of-Way Acquisition (acres)*	0	0.25 to 0.31
Hazardous material sites impacted (no.)	0	0

*The acquisition of property and the relocation of residents, businesses, farms, and non-profit organizations will be conducted in accordance with all applicable Federal laws, regulations and requirements, including but not limited to, 23 CFR Part 710, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended and its implementing regulations found in 49 CFR Part 24. All persons displaced on Federally-assisted projects will be treated fairly, consistently, and equitably so that they do not suffer disproportionate injuries as a result of projects that are designed for the benefit of the public as a whole. Relocation resources will be available to all residential and business relocatees without discrimination.

3.2. PROPERTY IMPACTS AND DISPLACEMENTS

The proposed project is largely within the existing I-395 right-of-way. However, reconstruction of pedestrian accommodations will require minimal acquisition of property. Approximately 0.31 or fewer acres of uninhabitable property, adjacent to the roadway approaches along Seminary Road to the east and west of I-395, are anticipated to be acquired as a result of the pedestrian access improvements. This property primarily consists of apartment complex parking facilities and negligible vegetated land. No displacements or relocation of businesses or residences will be required.

3.3 NATURAL RESOURCES

3.3.1 Water Quality

In compliance with reporting requirements of the Clean Water Act Section 303(d), the Virginia Department of Environmental Quality (DEQ) monitors streams for water quality. Surface waters that are in violation of established criteria for clean water are listed as impaired. In order to restore and maintain the water quality for impaired waters, Total Maximum Daily Load (TMDL) plans are developed to determine the total pollutant a waterbody can assimilate and

still adhere to standards. TMDLs have been developed for three impaired waters within the drainage area of the study area: Four Mile Run, Holmes Run, and Cameron Run / Hunting Creek.

There are no surface waters which would be crossed by the proposed project. However, pollutants from study area roadways currently enter study area streams, including the impaired waters listed above, through storm drains. Pollutants include grease, oil, metals, nutrients, nitrogen, deicing salts, roadside vegetation management chemicals, and suspended solids. Under the proposed project, these impacts would continue. Stormwater management (SWM) techniques as well as erosion and sediment control (ESC) will be implemented, in accordance to VDOT's SWM and ESC program, in order to prevent further degradation to surrounding water quality as a result of any pollutant runoff generated from the proposed project (VDOT 2007). These measures would reduce or detain discharge volumes and remove most pollutants. During project design, VDOT and DEQ guidance will be met to identify appropriate stormwater management measures.

3.3.2 Floodplains and Wetlands

According to Federal Emergency Management (FEMA) Flood Insurance Rate Map (FIRM) for Alexandria, Virginia, the proposed project is in an area outside of the 100-year floodplain (FEMA 2011). Thus, the proposed project would not affect floodplains.

According to the National Wetlands Inventory mapping from the US Fish and Wildlife Service, there are no wetlands located in the study area. The closest wetland area is a small pond (0.24 acres) about 1,300 feet from the proposed project. Therefore, there would be no impacts to wetlands from the proposed project.

3.3.3 Vegetation and Wildlife

There is limited vegetation and wildlife within the study area. Development characterizes the majority of the areas surrounding the proposed project. Interspersed throughout this development are woods, shrubs, grass, and landscape plantings. Existing vegetation within the study area provides habitat for various wildlife species adapted to roadside environments such as rabbits, whitetail deer, eastern grey squirrels, red fox, and a number of common bird species. The proposed project would be located largely within the VDOT right of way and would impact roadside vegetation but would not have substantial impacts to other vegetation or wildlife populations within the study area.

3.4 AIR QUALITY

The City of Alexandria area is designated by the Environmental Protection Agency (EPA) as an attainment area for all criteria pollutants with the exception of ozone and Particulate Matter 2.5, which is designated as a non-attainment area. According to the traffic analysis average annual weekday traffic (AAWDT) levels within the study area are projected to be above the VDOT/FHWA carbon monoxide (CO) quantitative hot-spot analysis thresholds for the interim and design year conditions. As such, CO impacts were analyzed at the following five worst-case intersections located in the study area.

- Beaugard Street/Mark Center Drive;
- Beaugard Street/Seminary Road;
- Seminary Road/Mark Center Drive;
- Seminary Road at I395 SB On-ramp;
- HOV Ramp to Seminary Road (Proposed Project)

The results of the quantitative analysis show maximum modeled CO levels fall well below the National Ambient Air Quality Standards (NAAQS) for all conditions.

Since the area is designated as a non-attainment area for PM_{2.5}, an analysis was conducted to determine if the proposed project is considered a “project of air quality concern” under EPA criteria definitions. Based on the comparison of diesel truck traffic and AAWDT, the proposed project is not considered to be a “project of air quality concern” for PM; therefore, neither a qualitative nor quantitative analysis was required.

The proposed project was also evaluated for compliance with the FHWA guidance for addressing Mobile Source Air Toxics (MSATs) in a NEPA analysis. The proposed project was identified as one with Low Potential MSAT Effects; therefore, a qualitative analysis was conducted consistent with the FHWA guidance. The qualitative MSAT analysis demonstrated that there would be no long-term adverse impacts associated with implementing the proposed project.

The proposed project is also listed in the currently conforming 2010 Constrained Long Range Plan (CLRP) and FY 2011-2016 Transportation Improvement Program (TIP) adopted by the National Capital Region Transportation Planning Board.

Lastly, construction activities will be performed in accordance with VDOT’s “Road and Bridge Specifications.” These specifications conform to the SIP and require compliance with all applicable federal, state, and local regulations. This study has demonstrated that the proposed project is not expected to cause or contribute to any new violation of any standard, increase the frequency or severity of any existing violation, or delay timely attainment of any standard.

3.5 HISTORIC PROPERTIES

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to consider the effects of their actions on historic properties. Historic properties are archaeological sites and historic buildings, structures, objects, and districts that are listed in or eligible for listing in the National Register of Historic Places. Pursuant to Section 106, it was determined that there are no historic properties within the project's Area of Potential Effect. The State Historic Preservation Office (SHPO), the Virginia Department of Historic Resources, concurred with the determination of no historic properties affected on September 8, 2011. During construction, should the discovery of archaeological, paleontological, or historic artifact occur, work would be suspended according to VDOT's Road and Bridge Specifications regarding a "late discovery" (VDOT 2007). Given the extensive ground disturbance that has occurred in the area, there is negligible potential for impact to archeological resources from the proposed project.

3.6 SECTION 4(f) PROPERTIES

Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended (49 USC 303(c), 23 CFR 774), applies to publicly owned parks, recreation areas, wildlife or waterfowl refuges, and public or private historic sites.

As noted in the Historic Properties section of this document, the proposed project would not affect historic properties. Publicly owned recreation facilities in the study area include:

- Public recreation facilities at the Francis C. Hammond Middle School; approx. 600 feet east-southeast from the proposed project;
- Fort Ward Park; approx. 2000 feet south from the proposed project; and
- Public recreation facilities at the James K. Polk Elementary School; approx. 2000 feet southeast from the proposed project.

The Winkler Preserve, located adjacently west to the proposed project, is privately owned and therefore not a Section 4(f) property.

The proposed project would occur largely within the existing VDOT right-of-way. However, reconstruction of the pedestrian bridges will require minimal acquisition of property. There would be no impact on Section 4(f) properties.

3.7 SOCIOECONOMIC RESOURCES

3.7.1 Displacements and Relocations

Residences and businesses are located in the study area. However, the proposed project would be confined to the existing VDOT right-of-way. As such, there would be no displacement of any existing structures, and no relocation of residences or businesses.

3.7.2 Community Facilities

Many community facilities are located within the study area, including Fort Ward Park, the Francis C. Hammond Middle School and the James K. Polk, William Ramsay and John Adams Elementary Schools, Inova Alexandria Hospital, Fire Engine House #6, Seminary Plaza Shopping Center, several religious institutions, and the Burke Branch public library. The 44-acre Winkler Preserve, a wooded natural area managed by a private non-profit organization and used as a free outdoor environmental education laboratory for more than 12,000 Alexandria elementary and middle school children annually, abuts I-395 in the study area.

The proposed project would be largely within the existing VDOT right-of-way, no substantial negative impact to community facilities would occur. Upon completion of the project, users of these facilities would benefit from improved access and mobility.

3.7.3 Land Use

Information used to identify land use in the study area was obtained from the City of Alexandria Zoning Map, the Beauregard Corridor Plan, site visits and review of aerial photography of the study area. The existing I-395 Seminary Road interchange is comprised of four distinct areas separated by I-395 and Seminary Road. The areas both northeast and southwest of the interchange are zoned by the City of Alexandria as Residential High (RC). According to the City of Alexandria Zoning Ordinance, the RC zone is established to provide and maintain land areas for high density apartment buildings and to permit limited commercial uses in such structures. In the study area, these locations are characterized by high-density apartment complexes and high-rise apartment buildings.

The southeast area is zoned as Office Commercial High (OCH). The OCH classification is designed to allow office centers in those areas suitable for high density and heights. The area is characterized by several multistory office buildings. The northwest area is zoned as a Coordinated Development District (CDD). The CDD is intended for a mixture of uses to include office, residential, retail, hotel and other uses with appropriate open space and recreational amenities to serve the project users and residents of the city. The CDD in the project area contains several garden apartment communities, the 44-acre Winkler Botanical Preserve and the Mark Center, which is the site of the Mark Hotel, an office complex and BRAC-133-oriented military offices.

The proposed project is largely within VDOT right-of-way, including the median of I-395, on I-395 itself, and on Seminary Road. As such, there are no anticipated impacts to land use. The project is consistent with and would not affect zoning classifications within the study area. The proposed project is not expected to generate substantial additional traffic through residential areas; rather, the proposed project would provide a more direct connection to the I-395 HOV lanes and should encourage use transit and HOV use.

3.7.4 Economic Conditions

The Mark Center, immediately northwest of the I-395/Seminary Road interchange, has been selected as the site for the relocation of approximately 6,400 Department of Defense (DoD) personnel pursuant to the Base Realignment and Closure (BRAC) Commission's Recommendation #133. To accommodate this use, two office towers, two parking garages and a public transit center attached to the north parking garage have been built or currently are under construction. It is anticipated that the addition of these facilities and the increased size of the workforce would stimulate economic activity in the study area and vicinity.

The study area and the City of Alexandria, in general, support a broad range of commercial activity. According to Census 2000 data (the most recently compiled census data), the top industries in the city are:

- Professional, scientific, and management, and administrative and waste management services;
- Public administration;
- Educational services, health care and social assistance; and
- Arts, entertainment, recreation, accommodations and food services.

These industries account for approximately 59% of city employment. Public administration alone comprises 19% of employment within the City. This is expected to increase as the relocation of Department of Defense personnel to the study area progresses.

According to the Virginia Employment Commission (2011), those entities employing the largest number of people in Alexandria are:

- U.S. Department of Commerce;
- City of Alexandria;
- Alexandria City Public Schools;
- U.S. Department of Defense; and
- Alexandria Hospital.

Within the study area, the largest employers are:

- Institute for Defense Analysis;
- Center for Naval Analysis Corporation;
- Hilton Mark Center Hotel.

Under the No-Build Alternative, improved HOV and transit access to and from the study area and its existing and planned economic centers would not be created. Congestion and lack of access and mobility would hinder economic growth. No change from current employment trends would be anticipated.

Implementation of the proposed project would improve HOV and transit access to and from the study area and the businesses and residences located there. Improved mobility and access would accommodate continued economic growth in the study area, including economic activity at the Mark Center. The proposed project would not result in any substantial negative economic impacts.

3.7.5 Environmental Justice

This project has been developed in accordance with Title VI of the Civil Rights Act of 1964 as amended in 1968, and Executive Order 12898. Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to identify and address disproportionately high and adverse human health or environmental effects that their programs, policies and activities may have on minority and low-income populations.

According to DOT Order 6640.23 “FHWA Actions to address Environmental Justice in Minority Populations and Low-Income Populations,” minority and/or low-income populations are defined as “any readily identifiable groups of minority and/or low-income persons who live in geographic proximity.” To perform an environmental justice analysis, data were collected on minority and low-income populations for Census tract groups in all four quadrants adjoining the I-395/Seminary Road interchange, and for the City of Alexandria. These data consist of statistics regarding race and income.

There are four Census Tracts in the study area (**Table 6**). Census Tract 2001.04 comprises the northwest quadrant of the I-395/Seminary Road interchange, and includes the Mark Center and the Winkler Preserve. Census Tract 2001.05 is located in the northeast quadrant of the interchange, and includes office buildings and high density housing. Census Tract 2002.01 is located southeast of the interchange, and is comprised largely of multistory office buildings and shopping facilities. Census Tract 2003.01 is located southwest of the interchange and is comprised mainly of high density housing.

Table 6. ENVIRONMENTAL JUSTICE CENSUS TRACT DATA

Census Tract	Minority Population	Median Household Income	Percentage Below Poverty Level
City of Alexandria	35.5%	\$56,054	7.9%
Census Tract 2001.04	49.3%	\$51,563	6.4%
Census Tract 2001.05	63.9%	\$36,901	11.2%
Census Tract 2002.01	32.6%	\$48,643	12.5%
Census Tract 2003.01	56.8%	\$52,500	17.3%

Source: US Census 2000

Of the four census tracts in the study area, three have a minority population greater than the City of Alexandria, and are considered minority populations for the purpose of this environmental assessment. In addition, three of the four tracts have higher poverty rates and are thus considered low-income populations.

The proposed project would not cause disproportionately high and adverse effects on minority or low-income populations. The beneficial community effects of the project, including improved mobility and HOV and transit access, would be borne by all residents of the study area, including minority and low income populations.

3.8 VISUAL RESOURCES

The proposed project is to be constructed between the existing northbound and southbound lanes of I-395 and parallel with the existing reversible I-395 HOV lanes. The proposed ramp is planned to originate from the existing reversible I-395 HOV lanes, approximately 1,000 feet west-southwest and connect to the existing Seminary Road Bridge. Construction of the ramp would result in shifting the northbound general purpose lanes of I-395 and the auxiliary ramp to Seminary Road to the east-southeast, all within existing right-of-way. Removal of the trees, shrubs and other vegetation between these lanes and between the auxiliary ramp to Seminary Road and North Van Dorn Street would be required. In addition, the reconstruction of the pedestrian bridge would require the removal of trees, shrubs and other vegetation. The removal of the vegetation would increase visibility of the roadway.

The study area is characterized by dense urban development consisting of high-rise residential buildings to the north and south-southwest, the high-rise Mark Center to the north-northwest, and businesses to the east. Historically, the I-395 corridor was signed as I-95 until 1977 when the eastern portion of the Capital Beltway (I-495) was designated as I-95. This dense urban development, associated with the I-395 corridor, serves commuters living in Virginia communities of Fairfax County, Arlington, and Alexandria. As such, I-395 has been and continues to be a distinguishable characteristic in this region. The proposed project would be

consistent with the existing urbanized area surrounding the I-395 interchange and would not have a substantial effect on the character of the study area.

3.9 NOISE

3.9.1 Noise Analysis

The noise impact of the proposed project and the No-Build Alternative was assessed in accordance with revised 2011 FHWA and VDOT noise assessment regulations and guidelines. To determine the degree of impact of highway traffic and noise on human activity, the FHWA established Noise Abatement Criteria (NAC) for different categories of land use. The NAC are given in terms of the hourly, A-weighted, equivalent sound level in decibels (L_{eq} in dBA). In this study, residential areas (land use Category B), recreational areas (Category C), and commercial/office areas (Category E) were evaluated for noise impact. For Categories B and C, noise impact is assumed to occur when predicted exterior noise levels, approach or exceed 67 dBA in terms of $L_{eq}(h)$ during the loudest hour of the day. VDOT defines the word “approach” in “approach or exceed” as within 1 decibel. Therefore, the threshold for noise impact is where exterior noise levels are within 1 decibel of 67 dBA, $L_{eq}(h)$, or 66 dBA. Noise impact also would occur wherever noise is substantially increased over existing noise levels. VDOT defines a substantial increase as an increase of 10 decibels or more above existing noise levels. The NAC for Category E exterior land uses with frequent human use is 72 dBA.

Where the predicted design-year noise levels would approach or exceed the NAC during the loudest hour of the day or cause a substantial increase in existing noise, consideration of traffic noise reduction measures is necessary. Per current FHWA and VDOT guidance, Common Noise Environments were identified in the noise assessment and abatement evaluation. Their existence does not affect the study results, therefore the locations and significance of the Common Noise Environments are addressed in the Noise Analysis Technical Report located in **Appendix C**. For this study, noise levels throughout the study area were determined for Existing (2011) conditions, and for the design-year (2035) No-build and proposed project conditions.

The impact assessment for the No-build alternative includes the roadway improvements associated with Mark Center Short- and Mid-Term Improvements and the design-year proposed project includes both the HOV Ramp and the Mark Center Short- and Mid-Term Improvements as being in place. Incremental changes between the No-build and Build alternatives represent only the I-395 HOV Ramp project improvements.

A noise measurement program was conducted to document existing ambient noise levels in noise-sensitive locations in the study corridor, and to provide a means for validation of the

noise prediction model. Noise measurements were conducted at four short-term sites on September 30, 2011.

The measured short-term noise levels appear in **Table 7** as equivalent sound levels (L_{eq}), along with site addresses and measurement time periods. The measured Total L_{eq} range from a low of 62 dBA at the Seminary Towers apartments swimming pool (Site ST4) to a high of 72 dBA at the Parkside at Alexandria housing complex at 1397 N. Van Dorn St. (Site ST1). These measurement results also show that the measured Total L_{eq} and the Traffic-only L_{eq} are nearly the same at all sites, which is an indication that traffic was the dominant source of noise in spite of the presence of occasional aircraft.

Table 7. SHORT-TERM NOISE MEASUREMENTS ON SEPTEMBER 16, 2011

Site No.	Location	Time	Measured L_{eq} (dBA)		Dominant Sources of Noise
			Total	Traffic Only	
ST1	Parkside at Alexandria, 1397 N. Van Dorn St., Bldg 17	10:15 – 10:45	72	71	Traffic on N. Van Dorn St. & I-395, aircraft
ST2	Parkside at Alexandria, 1501A N. Van Dorn St., Bldg 12	11:15 – 11:45	71	71	Traffic on N. Van Dorn St. & I-395
ST3	Parkside at Alexandria, 1625 N. Van Dorn St., Bldg 7	12:20 – 12:50	65	65	Traffic on N. Van Dorn St. & I-395, aircraft
ST4	Seminary Towers Apartments swimming pool	13:20 – 13:50	62	62	Traffic on many local roads

All traffic noise modeling for this study was conducted using the latest version of the FHWA Traffic Noise Model (FHWA TNM 2.5) (Anderson et al. 1998). The FHWA TNM incorporates state-of-the-art sound emissions and sound propagation algorithms, based on well-established theory or on accepted international standards.

To fully characterize existing and future noise levels at all noise-sensitive land uses in the study area, over 480 noise prediction receptors (also called “receivers” and “sites”) were included in the TNM model. Each of these receptors represented exterior noise-sensitive land use, including the balconies on all floors of low- and high-rise multi-family housing. All noise levels were computed for the Existing 2009 and the design-year 2035 No-Build Alternative and the proposed project.

3.9.2 Noise Impacts

Computed noise levels for both the No-Build and proposed project range from 40 to 73 dBA L_{eq} . On average, sound levels are projected to increase from Existing to future conditions by

3.9.2 Noise Impacts

Computed noise levels for both the No-Build and proposed project range from 40 to 73 dBA L_{eq} . On average, sound levels are projected to increase from Existing to future conditions by approximately one decibel. This is due to projected increases in traffic in the area in general. Adjacent to I-395, sound level increases from the existing to future year are generally between zero and one decibel. Adjacent to Seminary Road, projected increases from 2009 to 2035 generally range from one to three decibels. These increases are due to the overall projected increases in traffic volumes on Seminary Road.

On average, there is no difference between future No-Build sound levels and sound levels for the proposed project. The greatest anticipated difference would be no more than one-half decibel. As a result, the overall noise effect of the addition of the proposed project is minimal. The Noise Abatement Criteria is 67 dBA L_{eq} at all residential and recreational receptors, and 72 dBA for commercial and office land uses. Most of the receptors that are projected to be impacted by the No-Build Alternative and proposed project occur under existing conditions, and nearly all receptors that would be impacted by the proposed project would also be impacted under the No-build Alternative.

Table 8 presents a summary of the noise impact for Existing Conditions, the No-Build Alternative, and the proposed project. With the exception of the Winkler Botanical Preserve and the Seminary Towers Apartments swimming pool, all of the impacts are exterior residential dwelling units. None of the other recreational areas associated with the residential properties are projected to be exposed to noise impact.

Table 8. NOISE IMPACT SUMMARY

Area Description	Receiver Nos.	Dwelling or Recreational units Impacted by Noise		
		Existing	No-build	Proposed Project
Multi-family residences between Richenbacher and Maris Avenues east of I-395	1 – 66	22	24	27
Multi-family residences along Essex Court	67 – 78	72	72	72
Winkler Botanical Preserve – recreational units	79 - 148	4	4	5
Multi-family residences between Maris Avenue and Seminary Road east of I-395	149 - 214	344	368	368
Seminary Towers Apartments Swimming Pool – recreational units	215	1	1	1
Southern Towers north of Seminary Road, west of I-395	238 - 261	152	154	154
Single-family residences north of Seminary Road, west of N Beauregard Street	262 - 271	1	1	1
Multi-family residences south of Seminary Road, west of N Beauregard Street	272 - 295	7	7	7

Table 8. NOISE IMPACT SUMMARY

Area Description	Receiver Nos.	Dwelling or Recreational units Impacted by Noise		
		Existing	No-build	Proposed Project
Mark Center, Hilton Hotel and nearby commercial/office properties	216 - 232	0	0	0
Commercial/office properties north of Seminary Road, east of I-395	233 - 237	0	0	0
Totals		603	631	635

3.9.3 Alternative Noise Abatement

FHWA has identified certain noise abatement measures that may be incorporated in projects to reduce traffic noise impact. In general, mitigation measures can include alternative measures (traffic management, the alteration of horizontal and vertical alignment, and low-noise pavement), in addition to the construction of noise barriers. Additionally, the Noise Policy Code of Virginia (HB 2577, as amended by HB 2025) states, *“Whenever the Commonwealth Transportation Board or the Department plan for or undertake any highway construction or improvement project and such project includes or may include the requirement for the mitigation of traffic noise impacts, first consideration should be given to the use of noise reducing design and low noise pavement materials and techniques in lieu of construction of noise walls or sound barriers. Vegetative screening, such as the planting of appropriate conifers, in such a design would be utilized to act as a visual screen if visual screening is required.”* Consideration will be given to these measures during the final design stage, where feasible.

Traffic management measures normally considered for noise abatement include reduced speeds and truck restrictions. Reduced speeds would not be an effective noise mitigation measure since a substantial decrease in speed is necessary to provide a significant noise reduction. A 10 mph reduction in speed would result in only a two decibel decrease in noise level. Restricting truck usage on I-395 is not practical as truck traffic is a primary function of this Interstate highway, and diversion of truck traffic to other roadways would increase noise levels in those areas. The alteration of the horizontal or vertical alignment of I-395 would not be practical because the roadway already exists, and also, the road would have to be shifted significantly to make the measure effective. Such shifts would require right-of-way acquisitions and would likely create new noise impact.

3.9.4 Noise Barriers

The only remaining abatement measure investigated was the construction of noise barriers. The feasibility of noise barriers was evaluated in locations where a potential noise impact from the proposed project is anticipated to occur. Where the construction of noise barriers was found to be physically practical, barrier noise reduction was estimated based on roadway, barrier, and receiver geometry as described below.

Feasibility and Reasonableness

FHWA and VDOT require that noise barriers be both “feasible” and “reasonable” to be recommended for construction.

To be feasible, a barrier must be effective, that is it must reduce noise levels at noise sensitive locations by at least 5 decibels, thereby “benefiting” the property. VDOT requires that at least fifty percent (50%) of the impacted receptors receive 5 decibels or more of insertion loss from the proposed barrier for it to be feasible.

A second feasibility criterion is that it must be possible to design and construct the barrier. Factors that enter into constructability include safety, barrier height, topography, drainage, utilities, maintenance of the barrier, and access to adjacent properties. VDOT has a maximum allowable height of 30 feet for noise barriers.

Barrier reasonableness is based on three factors:

- cost-effectiveness- a barrier cannot require more than 1600 square feet per benefited receptor. VDOT’s maximum barrier height of 30 feet figures into the assessment of benefited receptors.
- ability to achieve VDOT’s insertion loss design goal- noise reduction design goal of seven decibels. This goal must be achieved for at least one of the impacted receptors, for the barrier to be considered reasonable.
- views of the benefited receptors- a majority of the benefited receptors must favor the barrier for it to be considered reasonable to construct. Community views are surveyed in the final design phase of projects.

Where multi-family housing includes balconies at elevations above that of a 30-ft high barrier, or terrain lifts ground-based receptors above the elevation of a 30-ft barrier, these receptors are not assessed for barrier benefits and are thereby not included in the computation of the barrier’s reasonableness.

Impacted Areas Where Barriers are Not Feasible

Seven multi-family homes and one single-family home are projected to be impacted in the existing conditions, No-build scenario, and with the proposed project in place along Seminary Road north of N. Beauregard Street near the intersection with Heritage Lane and Fairbanks Avenue. Noise barriers are not feasible for these homes because sufficient noise reduction is not achievable due to the nearby intersections of Heritage Lane and Fairbanks Avenue.

Twelve multi-family homes in a three-story building are projected to be impacted in the existing conditions, No-build scenario, and with the proposed project in place along Seminary Road between Kenmore Avenue and Library Lane, south of the Seminary Road interchange with I-395. Noise barriers are not feasible for these homes because sufficient noise reduction is not achievable due to the nearby intersections of Kenmore Avenue and Library Lane.

One hundred fifty-two units of the easternmost 15-story building in the Southern Towers apartments are computed to be impacted under existing conditions. The computed total impact increases to 154 units in the both the No-Build and proposed project scenarios. The noise impact at this tower occurs at many upper-floor balconies with clear lines of sight to I-395, which is the primary source of noise. There are no impacts at ground-floor receivers, and only one at a second-floor balcony. Since noise barriers cannot be constructed higher than 30 feet, the impacted upper floors in this high-rise apartment building cannot be benefited by a noise barrier, and a barrier is not feasible for the impacts at this residential tower.

Details of Potential Feasible Barriers

There are three barriers which are potentially feasible that were evaluated for reasonableness. Details for each of the evaluated barriers are given in **Table 9**. All three barriers were found to be cost reasonable.

It is not anticipated that right of way acquisitions will be required in order to construct any of the barriers.

Table 9. PROPOSED NOISE BARRIER DETAILS

Barrier No.	Area	Barrier Data					Benefited Dwellings & Recreational Receptors Total (Impacted)	Surface Area of Barrier per Benefited Receptor (SF/BR)
		Noise Reduction Range (dBA)	Length (ft)	Height Range (ft)	Surface Area (sq ft)	Cost at \$30.00/sf		
1	N. Van Dorn St.	5 – 9	3,680	15 – 30	106,000	\$3,178,000	298 (73)	355
2	Essex Ct.	5 – 9	1,210	15	18,100	\$544,000	146 (72)	124

Table 9. PROPOSED NOISE BARRIER DETAILS

Barrier No.	Area	Barrier Data					Benefited Dwellings & Recreational Receptors Total (Impacted)	Surface Area of Barrier per Benefited Receptor (SF/BR)
		Noise Reduction Range (dBA)	Length (ft)	Height Range (ft)	Surface Area (sq ft)	Cost at \$30.00/sf		
3	Winkler Preserve	5 – 11	1,260	15	18,900	\$566,000	39 (5)	484

To be constructed, any noise barriers identified in this document must satisfy final feasibility and cost reasonableness criteria. Therefore, the noise barrier design parameters and cost identified in this document are preliminary and should not be considered final. Final design parameters, feasibility, and cost reasonableness cannot be determined, as the noise barrier cost estimate must be based upon an approved road design alignment and include all required materials and installation costs. If a noise barrier is determined to be feasible and reasonable, the affected public will be given an opportunity to decide whether they are in favor of construction of the noise barrier.

3.9.5 Construction Noise

Land uses that would be sensitive to traffic noise would also be sensitive to construction noise. A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, the VDOT has developed and FHWA has approved a specification which establishes construction noise limits. This specification can be found in VDOT's 2007 Road and Bridge Specifications (§ 107.16(b)(3)). The contractor will be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

3.10 HAZARDOUS MATERIALS

A search of federal and state regulatory agency databases was performed for the study area in order to identify potential hazardous materials. The EDR report did not identify sites of known environmental concern or regulation. The EDR report identified a total of 23 Pollution Complaint (PC) files associated with 17 leaking underground storage tank (LUST) sites, seven RCRA generator facilities (two small quantity generator (SQG) and five conditionally exempt small quantity generators (CESQG)) and one RCRA corrective action (CORRACTS) in the surrounding vicinity.

A site reconnaissance was performed to field verify information provided in the EDR report and to determine any additional information regarding recognized environmental conditions. No

indications of spills, leaks, noxious odors, stained soils, lagoons, above-ground storage tanks (ASTs), under-ground storage tanks (USTs), drums, groundwater monitoring wells, or stressed vegetation consistent with exposure to contaminants were observed on properties bordering the proposed project.

Based on the review of the EDR report, the distances and the status of the PC sites, the separation of any RCRA Generators and CORRACTS sites from the proposed project, there is a low probability to encounter contaminated soils, groundwater or other hazardous materials.

3.11 INDIRECT EFFECTS

The Council on Environmental Quality (CEQ) defines indirect effects as effects that “...are caused by the [proposed] action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR 1508.8(b)). Most commonly, indirect impacts associated with transportation infrastructure projects are related to induced development, i.e., development that would not occur if the project were not constructed.

The project area is urban and largely built-out. With the exception of the Mark Center, most other planned development projects in the study area vicinity are small. Based on information provided by the City of Alexandria Planning and Zoning Department, approved projects within one mile of the I-395 Seminary Road interchange include the following:

- Lynn House – 4400 W. Braddock Rd. – expansion of existing nursing home;
- All Nations Church of God – 5200 Fillmore Ave. – expansion of existing church;
- Syme property – 1226 Peagram St. – construction of four new single-family homes;
- Pickett’s Ridge, Phase II – 3 Buzzards Gap – construction of two new single-family homes;
- James K. Polk Elementary School – 5000 Polk Ave. – expansion of existing school;
- Beauregard Corridor Project – Beauregard Street – creation of an accessible, user-friendly mixed use community with public transit enhancements; and
- BRAC-133 – Mark Center – construction of new office buildings and transportation center.

None of these development projects are being induced by the proposed project. Rather, the project is being constructed to accommodate development which is already occurring or would occur regardless of whether the proposed project is constructed. Thus, there would be no

substantial indirect environmental effects caused by the proposed project. Other reasonably foreseeable indirect effects, which may be further removed in time or distance, are effects to community resources. These effects are expected to be beneficial, and would include improved mobility and access to community facilities, businesses, and neighborhoods. No substantial adverse indirect impacts to any environmental resources are expected to result from implementation of the proposed project.

3.12 CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ) defines cumulative impacts as "...impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7).

Other development actions, including those listed in the Indirect Effects section of this document, could result in impacts to environmental resources. However, only those environmental resources which would be directly affected by the proposed project could incur cumulative effects from the proposed project in combination with other actions. Because the project would have few direct environmental impacts, there are no subsequent contributions to cumulative impacts.

When considered with other development, beneficial cumulative impacts could occur to resources which are directly affected by the proposed project. This may include improved community cohesion, mobility, and access. These cumulative impacts are consistent with existing and future conditions in the City of Alexandria's planning documents (including the Beauregard Corridor Plan), and do not result in a measurable change to land use trends. Thus, the cumulative impacts would be minimal. There would be no substantial adverse cumulative impacts resulting from the project.

Chapter 4.0 – COORDINATION AND COMMENTS

4.1 AGENCY COORDINATION

Early and continuing coordination with the general public and appropriate agencies is an essential part of the environmental review process to determine the scope of environmental documentation, level of analysis, potential impacts, and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through formal and informal methods which include project development team meetings and interagency correspondence. The federal, state, and local agencies listed below were contacted to obtain pertinent information and to identify key issues regarding the potential environmental impacts for this project.

- United States Environmental Protection Agency
- Natural Resource Conservation Service
- United States Forest Service
- Office of the Deputy Under Secretary of Defense
- United States Department of the Army
- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- Virginia Department of Agriculture and Consumer Services
- Virginia Department of Conservation and Recreation
- Virginia Department of Environmental Quality
- Virginia Department of Game and Inland Fisheries
- Virginia Department of Health
- Virginia Department of Historic Resources
- Virginia Department of Mines, Minerals, and Energy
- Virginia Marine Resources Commission
- Virginia Outdoors Foundation
- Virginia Department of Rail and Public Transportation
- Virginia Department of Forestry
- Washington Metropolitan Area Transit Authority
- City of Alexandria Department of Transportation and Environmental Services
- City of Alexandria Economic Development Partnership
- Office of Historic Alexandria
- Alexandria Transit (DASH)
- Alexandria City Public Schools
- Fairfax County Public Schools

- Fairfax County Department of Transportation
- Fairfax County Cultural Resource Management and Protection
- Fairfax County Planning Commission
- City of Alexandria Planning and Zoning
- Virginia State Police Department
- Fairfax County Fire and Rescue
- Fairfax County Police Department
- Alexandria Office of Emergency Management
- Alexandria Fire Department
- Alexandria Police Department
- Alexandria City Hall
- Arlington Department of Community Planning and Housing Development
- Alexandria Office of the City Manager

4.2 PUBLIC INVOLVEMENT

VDOT will hold a location and design public hearing for this project on Wednesday, January 25, 2012. The purpose of this hearing will be to present the preliminary project design and findings of this Environmental Assessment (EA), provide a discussion forum between the public and project team, and obtain input and comments from the community. In addition, there will be a minimum of 30-day public comment period following notice of availability of the EA. Any comments received during the public hearing and public comment period will become part of the public hearing record.

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