

# VAN DORN STREET METRO AREA BIKE AND PEDESTRIAN ACCESS IMPROVEMENTS STUDY

## Final Report

Van Dorn Street Metrorail Station  
Fairfax County/City of Alexandria, Virginia  
October 2015



Washington Metropolitan Area Transit Authority

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# VAN DORN STREET

## Metro Area

# Bike and Pedestrian Access Improvements Study

Washington Metropolitan Area Transit Authority  
Office of Real Estate and Station Planning

August 2015



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# Introduction



**Van Dorn Street  
Metro Area  
Bike and Pedestrian Access  
Improvements Study**

## **Section 1**

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## 1.0 INTRODUCTION

The Washington Metropolitan Area Transit Authority (WMATA or Metro) initiated the Van Dorn Street Metro Area Bike and Pedestrian Access Improvements Study to examine the bicycle and pedestrian connections to the Van Dorn Street Metrorail station (the station) in September 2014. The purpose of the study is to develop and assess the feasibility of various alternatives to provide safe, convenient, and functional bicycle and pedestrian connections between the station and neighborhoods to the south of the Capital Beltway (I-495) in Fairfax County, and to the east and west along Eisenhower Avenue. The approximate extent of the study area is illustrated in Figure 1.

This study is a follow-on to the Van Dorn Street Metrorail Station Kiss & Ride Shuttle Bus Access Improvement Study (WMATA, 2014), which proposed design options to the Kiss & Ride lot and the Bus Loop that would improve short- and long-term operations for buses and private shuttles. The previous study also documented the poor pedestrian connections beyond the immediate station area, which were a result of intermittent and narrow sidewalks, large block sizes, and barriers posed by CSX Transportation (CSX) railroad tracks and I-495.

Figure 1 Project Study Area



## 1.1 Station Overview

The Van Dorn Street Metrorail station is located on Eisenhower Avenue off South Van Dorn Street in the City of Alexandria, Virginia. I-495 and Fairfax County are located immediately to the south of the station (see **Figure 1**). The station opened in 1991 and serves the Metrorail Blue Line with Yellow Line “Rush-only Service” on weekdays. It is located between the King Street Metrorail station and the Franconia-Springfield Metrorail station, the western terminus of the Blue Line. In addition to Metrorail, multiple bus services, including DASH, Fairfax Connector, and Metrobus, serve the Station. It is also a major pickup and drop-off point for multiple private shuttle services.

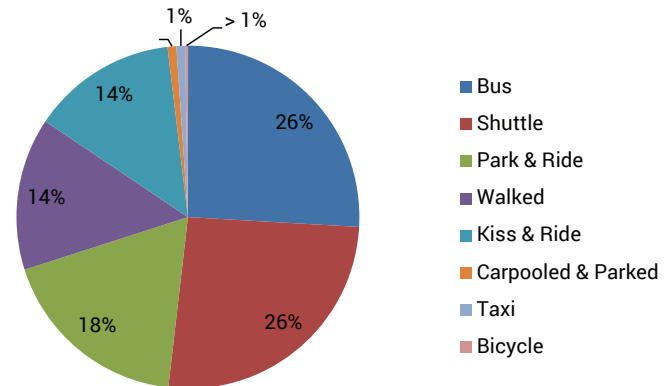
On an average weekday in 2012, the station served approximately 3,600 Metrorail boardings – a six percent increase from fiscal year 2000 to 2012.<sup>1</sup> Compared to the Metrorail system-wide average, the number of daily station boardings is low, but typical for an outer suburban station. Boardings in 2014 dropped to approximately 3,300; however, this drop in ridership reflects declining Metrorail ridership trends in the region.

According to the 2012 Metrorail Passenger Survey, 14 percent of passengers accessed the station via walking, while less than 1 percent of passengers accessed it by bicycle (see **Figure 2**). Although bicyclists accounted for only a small fraction of the total passengers in 2012, there is an increasing trend in bicycle ridership to the station; 122 bicyclists were observed within the study area during a.m. and p.m. peak period counts conducted for this study.

The area surrounding the Van Dorn Metrorail station lacks comfortable and direct paths. **Figure 3** illustrates the poor walkability around the station by calculating walking time to surrounding locations.

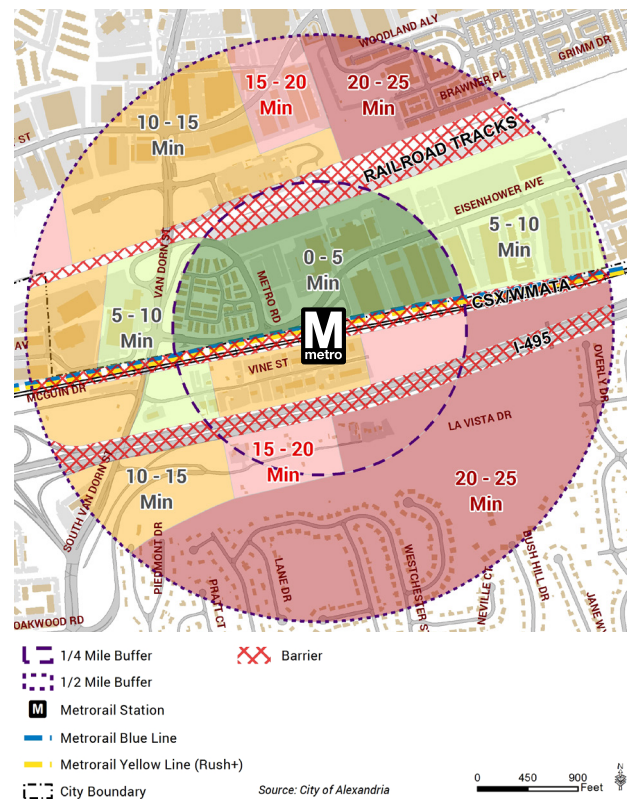
While bicycle racks and lockers exist at the station, bike lanes, trails, or sharrows do not connect to the station. With its proximity to existing trails such as the Holmes Run Trail and the Cameron Run Trail, this lack of bicycle connections presents a need and opportunity to link existing bicycle networks in the area to existing bicycle infrastructure at the station.

**Figure 2 2012 Access Mode to the Van Dorn Street Metrorail Station**



Source: Metrorail Passenger Survey (WMATA, 2012)

**Figure 3 Walking Time to the Van Dorn Street Metrorail Station**



Source: Van Dorn Metrorail Station Kiss & Ride Shuttle Bus Access Improvement Study (WMATA, 2014)

<sup>1</sup>Source: Metro 2012 Station boardings



## 1.2 Study Process

The study process began with a site visit to highlight initial findings and solicit input from agency representatives. Key agency stakeholders, including Metro, staff from Fairfax County and the City of Alexandria, and the consultant team participated in the site visit.

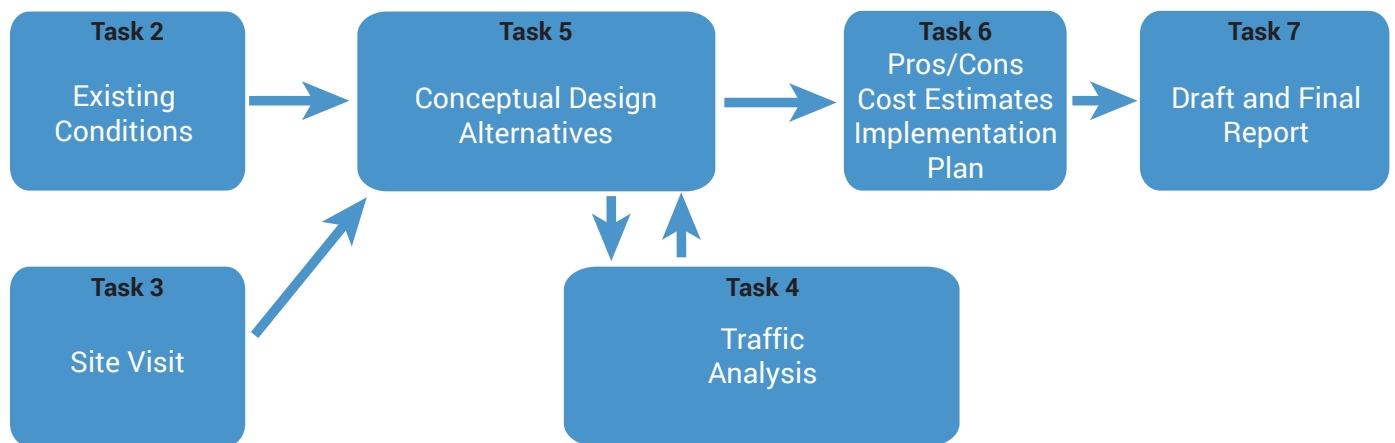
A formal kickoff meeting was held with stakeholders in Metro’s offices in October 2014. Following the kickoff meeting, the Virginia Department of Transportation (VDOT) was identified as a key stakeholder and invited to join Metro, the City of Alexandria, and Fairfax County as part of the Project Management Team (PMT).

**Figure 2** shows the key steps in the study process in developing the final recommendations and implementation plan for the project.

Four additional PMT meetings were held over the course of the project to update the PMT and solicit their feedback. Topics and presentations from the PMT meetings are included in **Appendix A**.

Based on the feedback from stakeholders, a series of alternatives were developed for each jurisdiction and presented at each of the PMT meetings. A preferred short-term alternative was developed for both the City of Alexandria and Fairfax County, while longer-term solutions for both jurisdictions were also studied. The PMT also conducted a traffic analysis of four high-volume intersections near the station and along South Van Dorn Street.

**Figure 4 Study Process - Key Deliverables**



## 1.3 Summary of Findings

Of the three alternatives developed for both the City of Alexandria and Fairfax County, a preferred alternative was selected for each jurisdiction based on feedback received from stakeholders. A summary of the preferred alternative for each jurisdiction is listed below. A full description of each alternative may be found in **Section 3**.

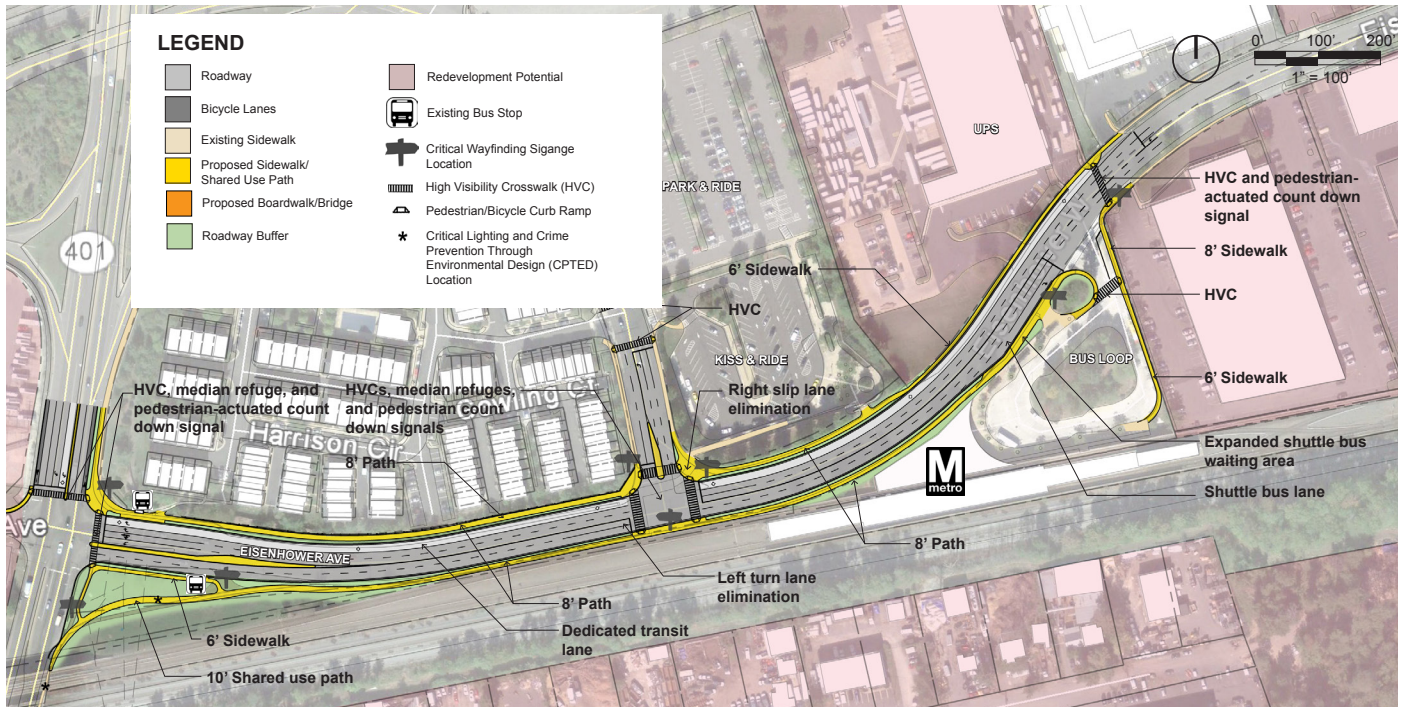
### 1.3.1 City of Alexandria

The preferred alternative for the City of Alexandria focuses on improving the Van Dorn Metrorail station Bus Loop and Eisenhower Avenue between the Bus Loop and South Van Dorn Street. Specific improvements include:

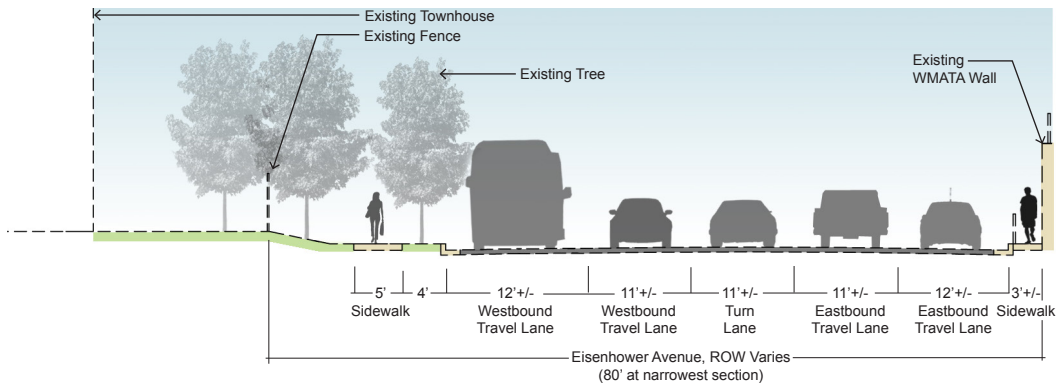
1. Improving pedestrian safety and access within and adjacent to the Bus Loop, as well as upgrading the Bus Loop for anticipated future redevelopment and transit projects, including the West End Transitway.
2. Reconstructing Eisenhower Avenue with a proposed dedicated transit lane between the Van Dorn bus bays and South Van Dorn Street.
3. Constructing two high visibility crosswalks (HVCs) and upgrading curb ramps across Metro Road at the Kiss & Ride entrance intersection.
4. Constructing a 10' shared use path to replace the existing asphalt path in the triangular parcel southeast of the Eisenhower Avenue and South Van Dorn Street intersection, with added crime prevention through environmental design (CPTED) to increase pedestrian safety and visibility.

**Figure 5** highlights the improvements for the City of Alexandria. A more detailed look at these improvements may be found in **Section 3**.

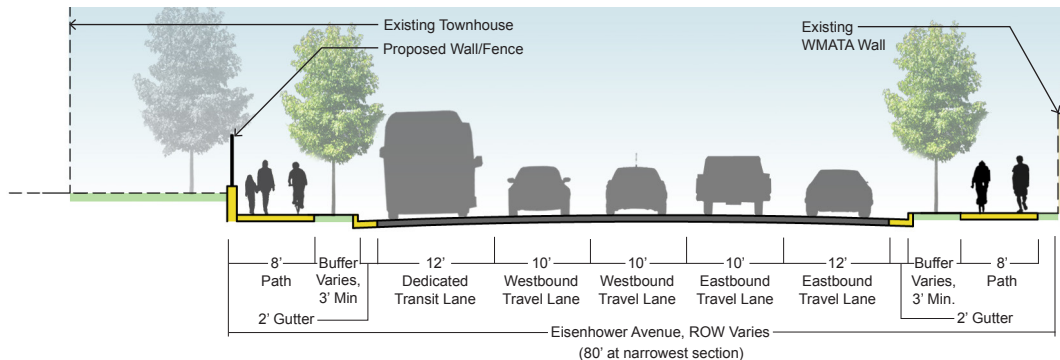
Figure 5 Preferred Conceptual Alternative within the City of Alexandria



Eisenhower Avenue Existing Section



Eisenhower Avenue Proposed Typical Section



### 1.3.2 Fairfax County

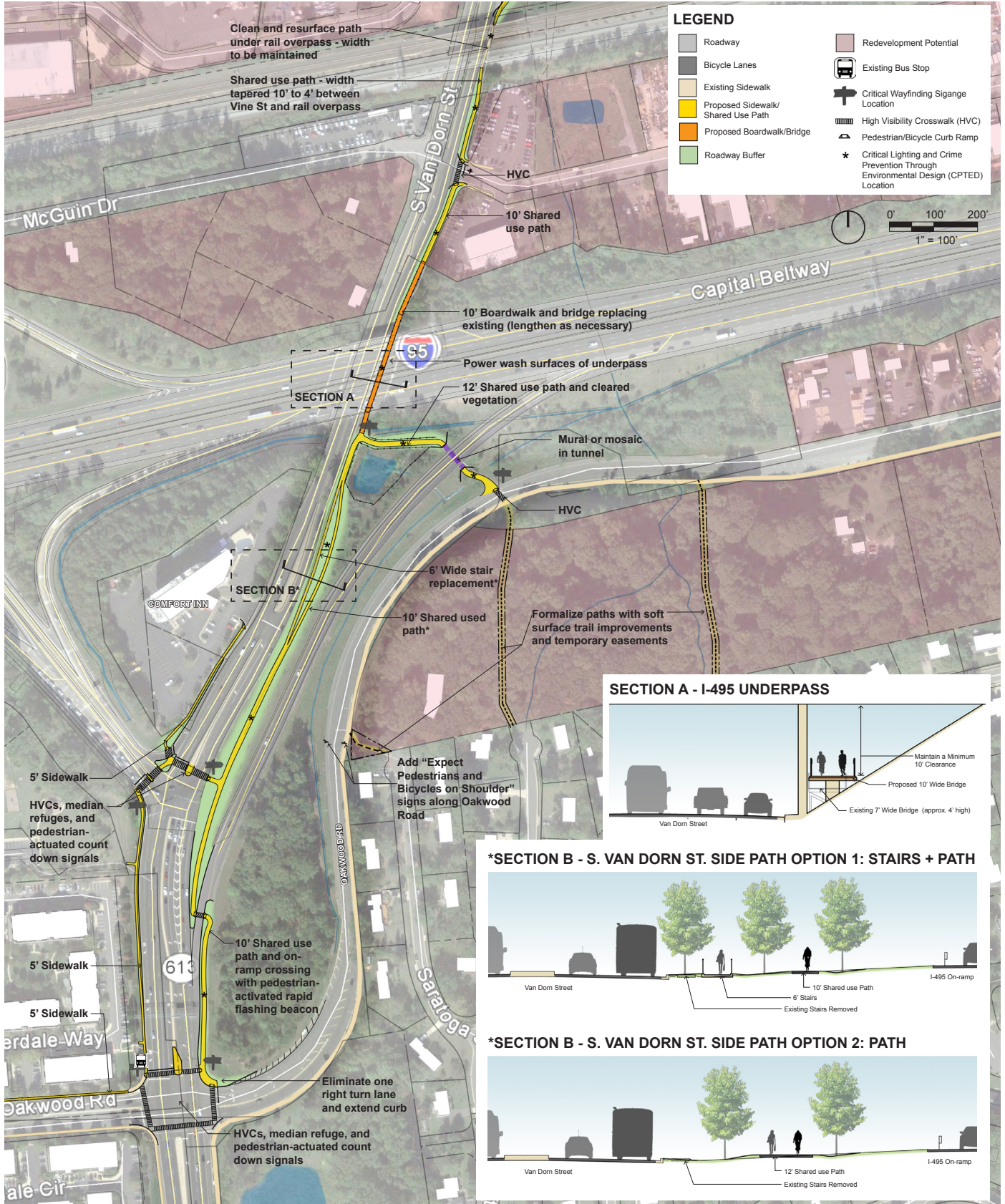
The preferred alternative for Fairfax County focuses on improving South Van Dorn Street between Eisenhower Avenue and Oakwood Road, along with adjacent pedestrian pathways and connections to nearby neighborhoods and residential development. Specific improvements include:

1. Cleaning the pedestrian path under the CSX and Metrorail tracks on South Van Dorn Street and resurface the existing path.
2. Replacing and widening of the existing pedestrian bridge and trail under the I-495 overpass, including upgrading existing pathway right-of-way and lighting.
3. Widening, clearing of vegetation, and lighting the trail between the I-495 overpass and Oakwood Road, including the trail in the tunnel under the I-495 on-ramp.
4. Implementing CPTED measures, such as trail lighting and vegetation clearing for the trail, between the CSX and Metrorail tracks and I-495 overpass.
5. Replacing the existing stairs along South Van Dorn Street between the I-495 overpass and I-495 off/on ramp intersection, which include both added lighting and vegetation clearing.
6. Constructing a new, lighted, shared use path to connect the existing paved portion of the South Van Dorn Street and the Oakwood Road intersection. Curb and gutter, a HVC, bicycle/pedestrian curb ramps, and a pedestrian-activated rapid flashing beacon across the I-495 on-ramp from South Van Dorn Street.
7. Constructing HVCs, median refuges, pedestrian/bicycle curb ramps, and pedestrian-actuated count down signals on the west and north sides of the South Van Dorn Street and I-495 on/off ramp intersection.
8. Constructing soft surface trails to replace the existing unpaved foot paths through the undeveloped property between the Rose Hill neighborhood streets and Oakwood Road.
9. Adding 5' sidewalks along the north side of Oakwood Road between South Van Dorn Street and Crown Royal Drive and the north side of Oakwood Road to La Vista Drive.

**Figure 6** highlights the improvements for Fairfax County. A more detailed look at these improvements may be found in **Section 3**.



Figure 6 Preferred Conceptual Alternative for Fairfax County



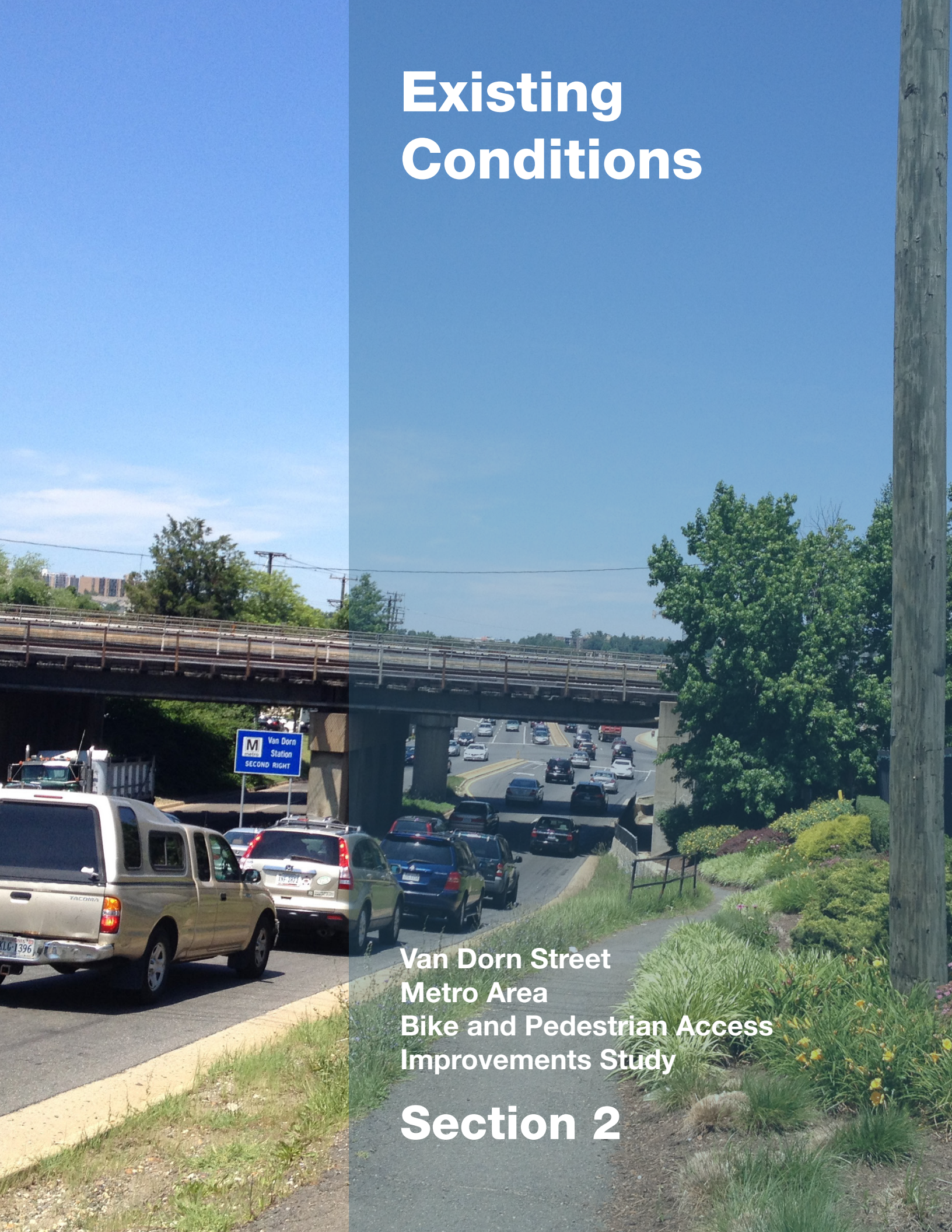
## 1.4 Organization of the Report

This report is organized into five sections:

- **Section 1:** Introduction
- **Section 2:** Existing Conditions
- **Section 3:** Preferred Conceptual Alternatives
- **Section 4:** Traffic Analysis
- **Section 5:** Implementation Plan and Cost Estimates



# Existing Conditions



Van Dorn Street  
Metro Area  
Bike and Pedestrian Access  
Improvements Study

## Section 2



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## 2.0 EXISTING CONDITIONS

### 2.1 Key Observations

The area around the Station is dominated by vehicles, which is typical for industrial land uses such as those that surround the Station. Pedestrian and bicycle facilities are scarce and, where available, not properly maintained. The main issues identified during the site visit are summarized below. For more details on the issues identified during the site visit, refer to **Appendix B** for the Site Visit Technical Memorandum.

- **Land Uses** - Land uses within a quarter- to half-mile of the Station are dominated by auto-oriented industrial, light industrial/warehouse, office, and commercial uses. Some residential and hotel uses also exist in the study area (**Figure 7** and **Figure 8**).
- **Pedestrian Facilities** - There is a need for safe, convenient, and continuous pedestrian accommodations along the study area's main travel corridors (**Figure 9** and **Figure 10**).

**Figure 7 Summers Grove Townhouse Community**



**Figure 8 The Comfort Inn and Suites on South Van Dorn Street**



**Figure 9 Pedestrians Cross Mid-Block Near the Comfort Inn and Suites**

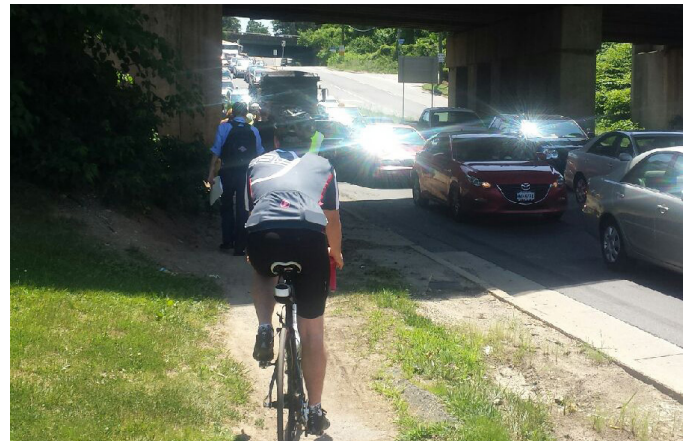


- **Bicycle Facilities** – There is a need for safe, continuous, and dedicated facilities to encourage bicycle use to access the Station (**Figure 11**).
- **Wayfinding** - Throughout the study area there is a lack of wayfinding signage directing pedestrians to the Station, especially along South Van Dorn Street (**Figure 12**).

**Figure 10** Narrow Sidewalk on Eisenhower Avenue near Metro Road



**Figure 11** Pedestrians and Bicyclists Compete for Space



**Figure 12** Auto-oriented Signs Point to the Metro Entrance





- **ADA Compliance** – ADA accommodations such as wheelchair ramps were inadequate or lacking altogether throughout the study area (**Figure 13** and **Figure 14**).
- **Safety and Lighting Concerns** – Existing lighting along the sidewalks and trails is generally poor, with highway-style “cobra head” street lights providing the majority of existing lighting along the Eisenhower Avenue and South Van Dorn Street corridors within

the study area. The only trail lighting aside from the street lights is located along the boardwalk under the I-495 underpass and in the I-495 on-ramp tunnel.

- Overgrown vegetation, lack of pedestrian signal phases, and poor light levels create unsafe conditions and force pedestrians and bicyclists to interact with high-speed vehicular traffic (**Figure 15** and **Figure 16**).

**Figure 13 No ADA Provisions along South Van Dorn Street**



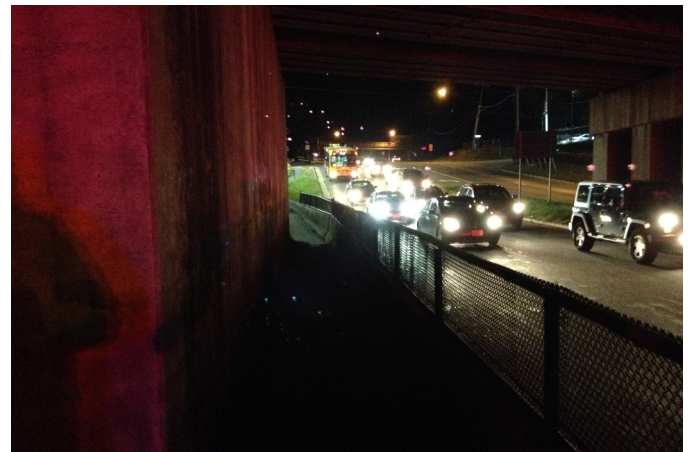
**Figure 14 Inadequate ADA Provisions at Oakwood Road**



**Figure 15 Overgrown Vegetation along South Van Dorn Trail**



**Figure 16 Poor Lighting under Metrorail Tracks**





## 2.2 Previous and Ongoing Studies

Metro, the City of Alexandria, Fairfax County, and VDOT have independently commissioned numerous planning studies ranging from neighborhood-level local plans to design documents for specific access improvements within the project study area. Relevant studies and their

applicable recommendations for this project are briefly described by jurisdiction in **Table 1**. For more detail on previous plans and studies in the study area, refer to **Appendix C** for the Existing Conditions Technical Memorandum.

**Table 1 Previous and Ongoing Studies by Jurisdiction**

Year	Study Name	Study Overview	Applicable Recommendations
<b>WMATA</b>			
2014	<i>Van Dorn Street Metrorail Station Kiss &amp; Ride Shuttle Bus Access Improvement Study</i>	<ul style="list-style-type: none"> <li>• Metro initiated the study in coordination with the City of Alexandria and Fairfax County</li> <li>• Recommends improvements to accommodate short- and long-term demand for shuttles and buses</li> </ul>	Pedestrian recommendations included: <ul style="list-style-type: none"> <li>• Reconfiguration of the Kiss &amp; Ride Lot</li> <li>• Extending the sidewalk west along the south side of Eisenhower Avenue at the Bus Loop entrance to accommodate shuttle riders</li> <li>• Extending the sidewalk within the Bus Loop to accommodate bus passengers</li> </ul>
2011	<i>WMATA Bicycle and Pedestrian Access Improvements Database</i>	<ul style="list-style-type: none"> <li>• Database for 90 Metrorail stations from the 2010 Bicycle and Pedestrian Access and Improvements Study</li> <li>• Includes strategies to enhance pedestrian and bicycle access and connectivity in and around the stations</li> </ul>	Recommendations for the Van Dorn Street Metrorail station: <ul style="list-style-type: none"> <li>• Widening existing paths</li> <li>• Constructing new paths</li> <li>• Replacing curb ramps</li> <li>• Improving the Eisenhower Avenue crossing with a median</li> <li>• Improving pedestrian signals</li> <li>• Addressing barriers</li> </ul>
<b>City of Alexandria</b>			
Ongoing – mid to late 2016	<i>Alexandria West End Transitway</i>	An Alternatives Analysis and Environmental Assessment for a Bus Rapid Transit system along the Van Dorn/Beauregard corridor. The BRT will provide high-capacity transit operations using a combination of dedicated and shared lanes	Recommendations within the study area included: <ul style="list-style-type: none"> <li>• Dedicated transit lanes along the westbound travel lane of Eisenhower Avenue and in the center of South Van Dorn Street traveling northbound within the study area</li> </ul>
Ongoing – Winter 2015	<i>Pedestrian and Bicycle Master Plan Update</i>	Will include an evaluation of existing conditions, issues, constraints, and needs, as well as a review of existing policies, goals, and objectives	Will identify short- and long-term projects, future bikeshare station locations, and actions and strategies to implement the plan

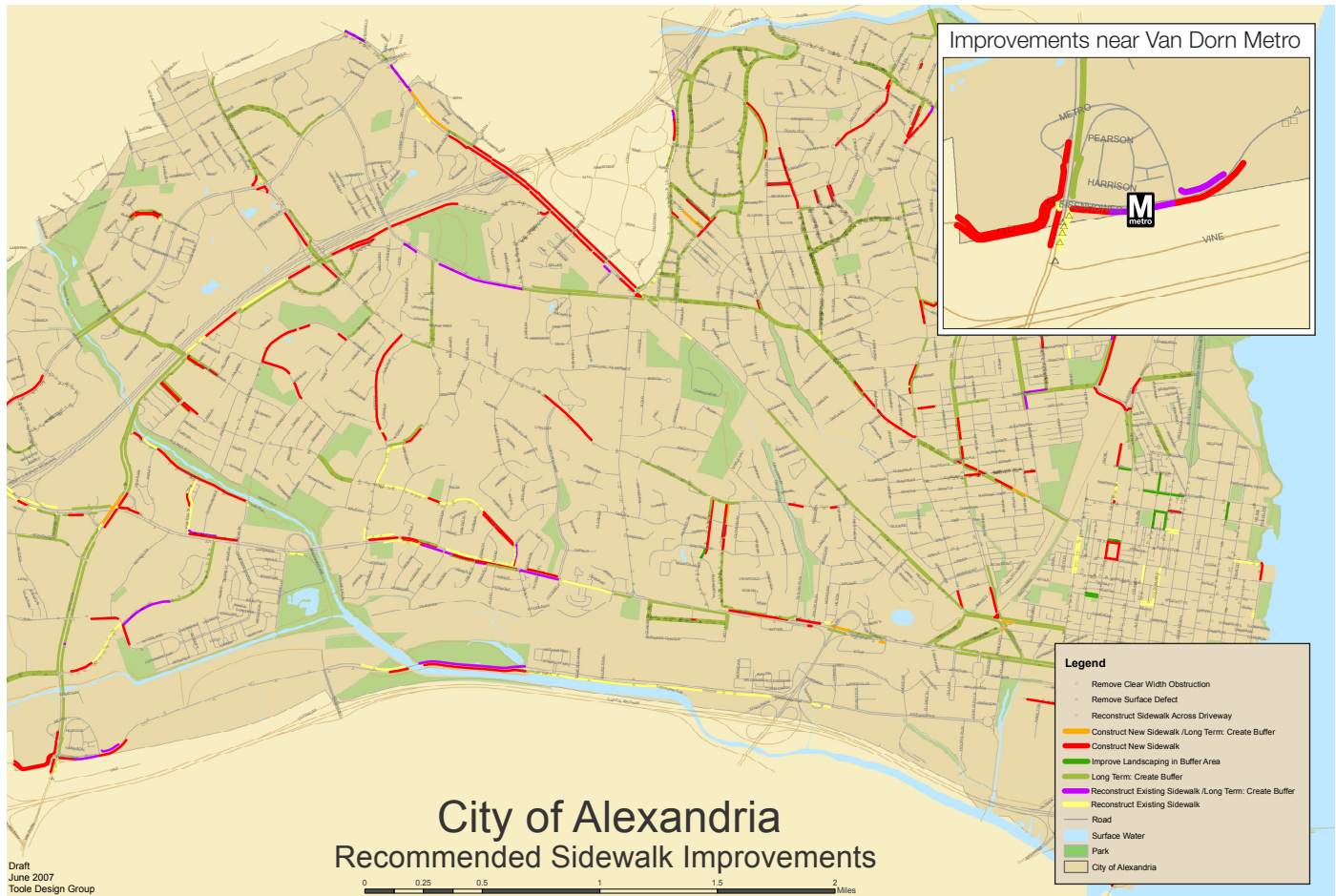


**Table 1 Continued Previous and Ongoing Studies by Jurisdiction**

Year	Study Name	Study Overview	Applicable Recommendations
Ongoing – Winter 2015	<i>Complete Streets Design Guidelines</i>	Will provide guidance to staff, developers and citizens on design tools and methodologies for ensuring City roads accommodate all users	Guidance on Eisenhower Avenue right-of-way
Ongoing – mid to late 2015	<i>Alexandria Eisenhower West Small Area Plan</i>	Will complement the efforts of the 2009 Landmark/Van Dorn Corridor Plan	Includes an Eisenhower West Transportation Study which focuses on improving non-motorized transport, transit, and auto travel
Ongoing – mid to late 2016	<i>Alexandria West End Transitway</i>	An Alternatives Analysis and Environmental Assessment for a Bus Rapid Transit system along the Van Dorn/Beauregard corridor. The BRT will provide high-capacity transit operations using a combination of dedicated and shared lanes	<p>Recommendations within the study area included:</p> <ul style="list-style-type: none"> <li>• Dedicated transit lanes along the westbound travel lane of Eisenhower Avenue and in the center of South Van Dorn Street traveling northbound within the study area</li> </ul>
2014	<i>Alexandria Access to Transit Improvements Project Design Drawings</i>	<ul style="list-style-type: none"> <li>• 60% plans to improve pedestrian access to the Van Dorn Street Metrorail station</li> <li>• The project has been superseded by other ongoing studies and will not advance beyond the 60% plans already developed</li> </ul>	<p>Pedestrian recommendations included:</p> <ul style="list-style-type: none"> <li>• Removing the existing southern path and sidewalk along Eisenhower Avenue and replacing the segment near the existing bus stop with a new sidewalk</li> <li>• Replacing the northern sidewalk along Eisenhower Avenue</li> <li>• Improving the crossing at Eisenhower Avenue and South Van Dorn Street with a median refuge</li> </ul>
2009	<i>Alexandria Landmark/Van Dorn Corridor Plan</i>	Envisions the Landmark/Van Dorn Corridor as a mixed-use, environmentally and economically sustainable community	<p>Recommendations within the study area included:</p> <ul style="list-style-type: none"> <li>• A more connected urban street grid north of the Station</li> <li>• A new bridge over the CSX tracks north of the Station</li> </ul>
2008	<i>Alexandria Pedestrian and Bicycle Mobility Plan</i>	Focused on 120 miles of heavily used roadways and the existing bikeway and trails network	<p>Pedestrian recommendations included:</p> <ul style="list-style-type: none"> <li>• Improvements to the Eisenhower Avenue/South Van Dorn Street intersection</li> <li>• Construction of new sidewalks (see <b>Figure 15</b>)</li> </ul>



**Figure 17 Recommended Sidewalk Improvements at Eisenhower Avenue and South Van Dorn Street**



**Table 1 Continued Previous and Ongoing Studies by Jurisdiction**

Year	Study Name	Study Overview	Applicable Recommendations
<b>VDOT (Refer to Figure 17)</b>			
2014	<i>VDOT Van Dorn Metro Station Intermodal Accessibility Measure Study</i>	<ul style="list-style-type: none"> <li>• Coordination effort between the Virginia Office of Intermodal Planning and Investment and VDOT</li> <li>• Developed a basic methodology for measuring accessibility for intermodal centers around Virginia</li> </ul>	Identified missing pedestrian pathways along South Van Dorn Street

**Table 1 Continued Previous and Ongoing Studies by Jurisdiction**

Year	Study Name	Study Overview	Applicable Recommendations
2008	<i>VDOT Van Dorn Corridor Study</i>	Study to address public requests to improve traffic operations along the Van Dorn Street corridor	Pedestrian Recommendations included: <ul style="list-style-type: none"> <li>• Rebuilding the existing stairs on South Van Dorn Street</li> <li>• Constructing a pathway on the eastern edge of South Van Dorn Street between Oakwood Road and the existing path</li> <li>• Providing a crosswalk across the I-495 on-ramp from South Van Dorn Street</li> <li>• Providing a crosswalk on Vine Street</li> </ul>
<b>Fairfax County (Refer to Figure 18)</b>			
2014	<i>Fairfax County Bicycle Master Plan</i>	Addresses the existing transportation system and improvements to bicycle safety and connectivity throughout the County	Bicycle and pedestrian recommendations included: <ul style="list-style-type: none"> <li>• Buffered bike lanes on South Van Dorn Street south of Oakwood Road</li> <li>• Bike lanes between Oakwood Road and the existing off-street pathway</li> <li>• Widened pathway and stairs to make them passable by bicycle</li> <li>• Improved bicycle access links between the existing path and tunnel, and Oakwood Road and La Vista Drive bicycle lanes and a new sidewalk along the south side on Eisenhower Avenue</li> </ul>
2013	<i>Fairfax County Comprehensive Plan</i>	Provides objectives, policies, and guidelines for implementing the County’s goals for future development of the built environment and the preservation of the natural and cultural resources in Fairfax County	Bicycle and pedestrian recommendations included: <ul style="list-style-type: none"> <li>• Reconstruction of Vine Street and Oakwood Road with a multimodal bridge connecting them</li> <li>• A bicycle/pedestrian tunnel to connect to the Station from Vine Street</li> <li>• Bicycle/pedestrian connections from the southern neighborhoods to the proposed new bridge and tunnel</li> <li>• A new interchange for I-495 at South Van Dorn Street</li> </ul>



Figure 18 Recommendations from VDOT and Fairfax County's Completed Studies



Source: Toole Design Group

- VDOT Recommendations
- Fairfax County Recommendations

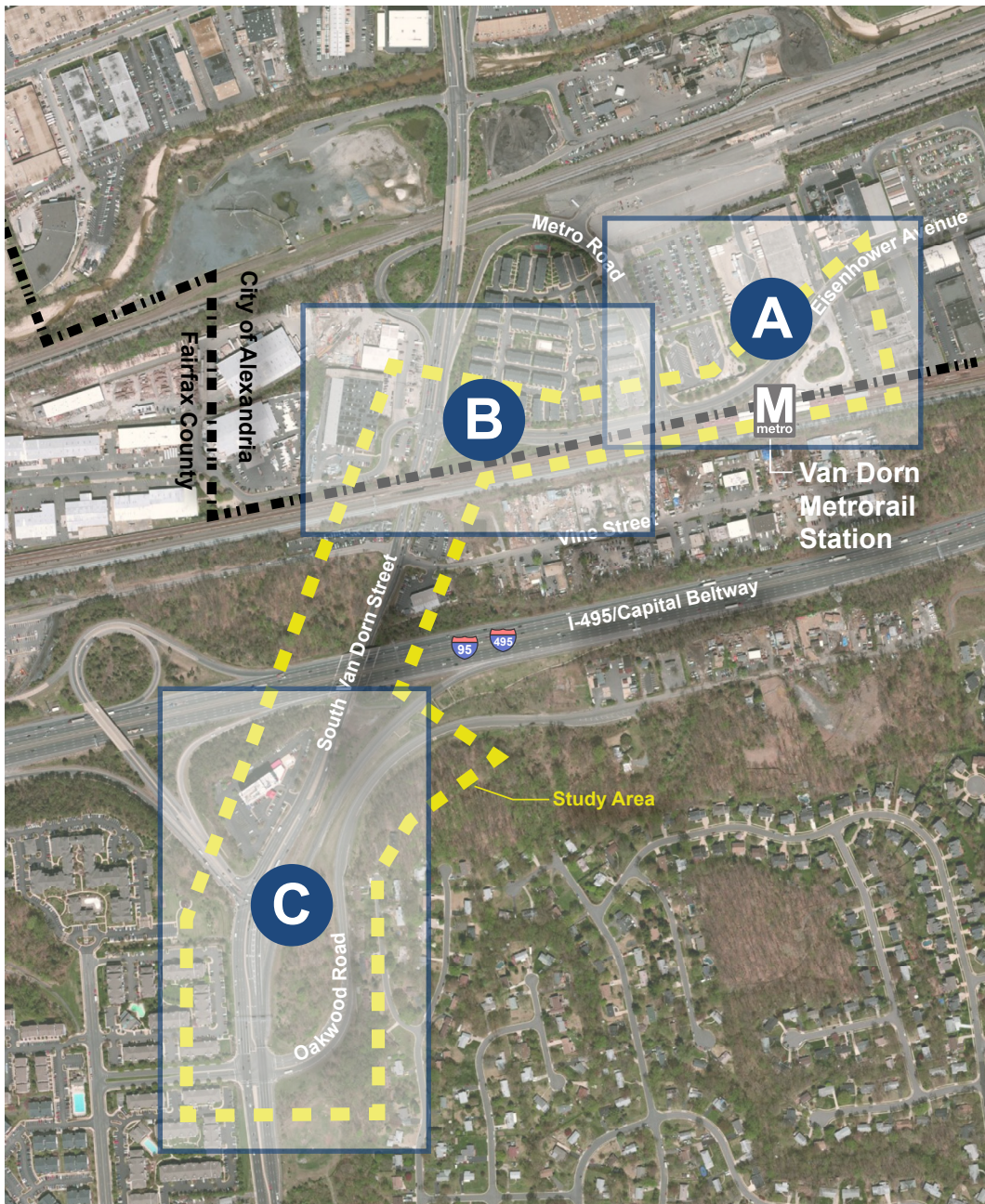
\*Note: Proposals shown outside of Fairfax County are advisory and shown primarily for continuity



## 2.3 Bicycle and Pedestrian Observations

The project team conducted site observations and counts at three locations within the project study area on October 14, 2014 from 6:00-9:00 a.m. and on October 27, 2014 from 4:00-7:00 p.m. (see **Figure 19**). Key observations regarding pedestrian and bicycle volumes, movements, capacity constraints, and traffic conflicts are described in the following section.

**Figure 19** Bicycle and Pedestrian Observation Areas





**Table 2** shows a.m. and p.m. peak period pedestrian and bicycle counts within the project study area. The majority of pedestrians in the study area were observed approaching Area A-Eisenhower Avenue east of Metro Road. Pedestrians approached the Station from the east along the south side of Eisenhower Avenue during the a.m. peak period and left the Station heading east during the p.m. peak period. At the entrance to the Bus Loop, crossing difficulties were observed between shuttles, buses, and pedestrians in the crosswalk. Multiple conflicts were also observed between Bus Loop traffic, Eisenhower Avenue traffic, and pedestrians crossing Eisenhower Avenue.

In Area B-Eisenhower Avenue west of Metro Road, the majority of pedestrians were observed using the northern sidewalk along Eisenhower Avenue. During the a.m. and p.m. peak periods, pedestrians were observed crossing mid-block on Eisenhower Avenue between Metro Road and South Van Dorn Street.

In Area C-South Van Dorn Street and Oakwood Road, equal amounts of pedestrians used the boardwalk on South Van Dorn Street and under the I-495 to head north and south during the a.m. peak period. During the p.m. peak period, most pedestrians were observed heading north and used the stairs. Approximately one-fourth of the pedestrians observed crossed South Van Dorn Street in and around the Comfort Inn Suites entrance.

Bicyclists were evenly distributed throughout the three areas during the a.m. peak period. In the p.m. peak period, the majority of bicyclists were observed in Area B-Eisenhower Avenue west of Metro Road.

Refer to **Appendix C** for a detailed account of the Bicycle and Pedestrian Observations.

**Table 2 Observed Pedestrian and Bicycle Volumes**

Observation Area	Morning Peak Period (6:00 - 9:00 a.m.)		Evening Peak Period (4:00 - 7:00 p.m.)	
	Pedestrians	Bicyclists	Pedestrians	Bicyclists
Area A - Eisenhower Avenue east of Metro Road	312	19	263	16
Area B - Eisenhower Avenue west of Metro Road	120	15	91	30
Area C - South Van Dorn Street and Oakwood Road	22	20	41	22



## 2.4 Stakeholder Interviews

Interviews were conducted via phone and email with representatives of Metro, the City of Alexandria, Fairfax County, and VDOT in October 2014. The purpose of the interviews was to understand agency responsibilities, property ownership, the status of transportation infrastructure in the study area, and to obtain information on any relevant current and proposed plans (see **Table 3**).

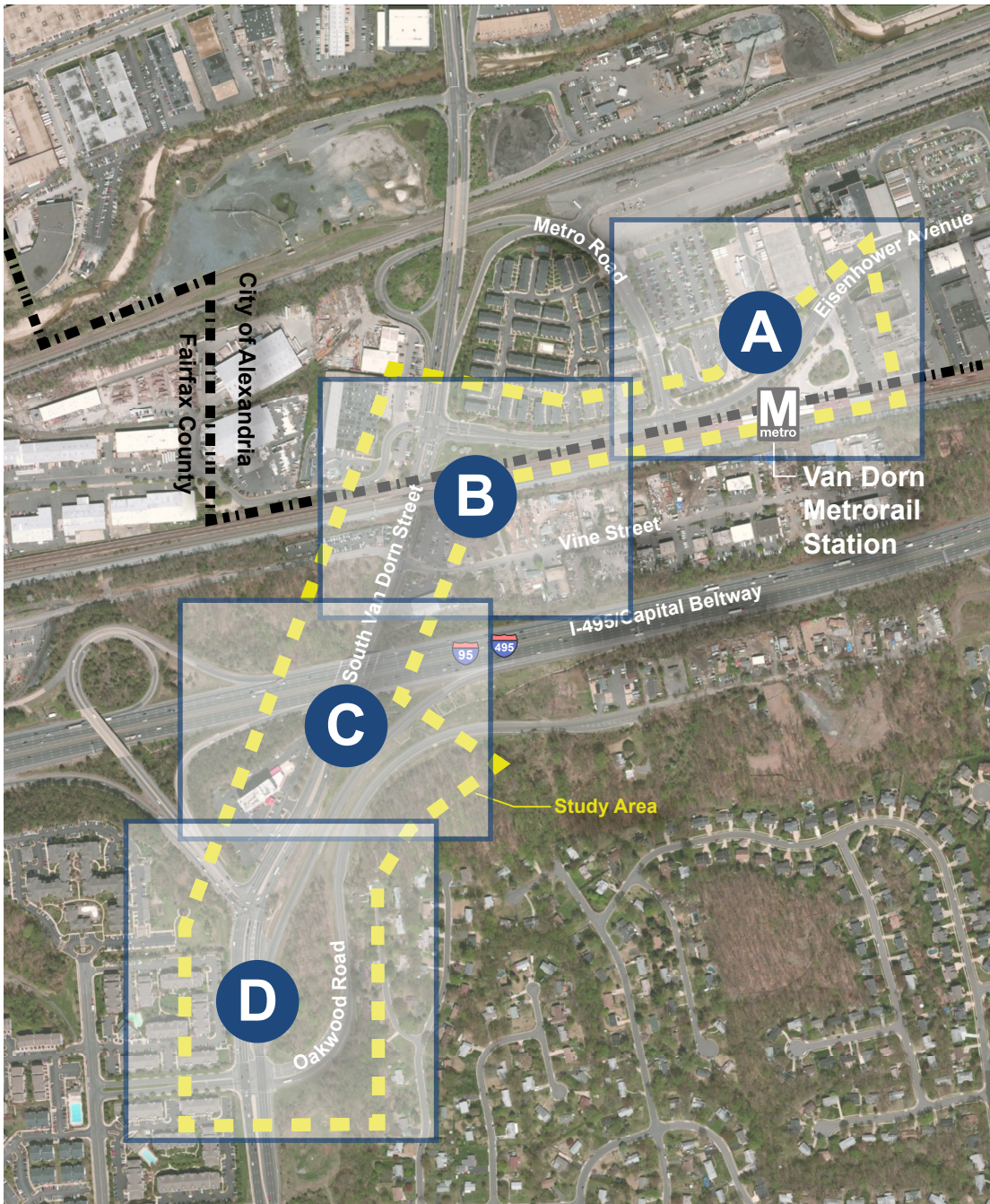
**Table 3 Summary of Agency Stakeholder Interviews**

Agency	Summary of Agenda/Outcome
Metro	Metro provided system-wide utility Out Grant maps to verify Metro ownership in the Van Dorn Street Metrorail station area.
City of Alexandria, Department of Transportation and Environmental Services (T&ES)	The City of Alexandria T&ES provided background information on the West End Transitway, Eisenhower West Small Area Plan, Complete Streets Design Guidelines, Pedestrian and Bicycle Master Plan Update, and 60% design drawings that were developed to improve pedestrian access to the Van Dorn Metrorail station. The 60% design drawings have been superseded by other ongoing studies.
VDOT	VDOT confirmed property ownership within the study area and provided several studies that address issues within in the study area. Traffic count data was included in the information provided, as well as VDOT's new policy regarding provisions for pedestrian accommodations at signalized intersections.
Fairfax County, Department of Public Works and Environmental Services (DPWES)	DPWES Infrastructure Branch, Maintenance and Stormwater Management Division confirmed the County's maintenance responsibilities along the Van Dorn corridor and provided information on key issues within the study area. Although the property is owned by VDOT, it is the responsibility of Fairfax County DPWES to maintain the bicycle and pedestrian facilities outside of the roadway within the Van Dorn Street study area.

## 2.5 Challenges and Opportunities

The challenges and opportunities identified during the site visit were augmented by the review of existing studies and plans, pedestrian and traffic patterns, and interviews with agency stakeholders. The challenges and opportunities were then compiled into a series of site analysis maps that document the issues for the entire project study area (see **Figure 20**).

**Figure 20 Site Analysis Map Locations**



## Area A Site Analysis

The key challenges and opportunities of this area are shown in **Figure 21** and described below.

### *Challenges*

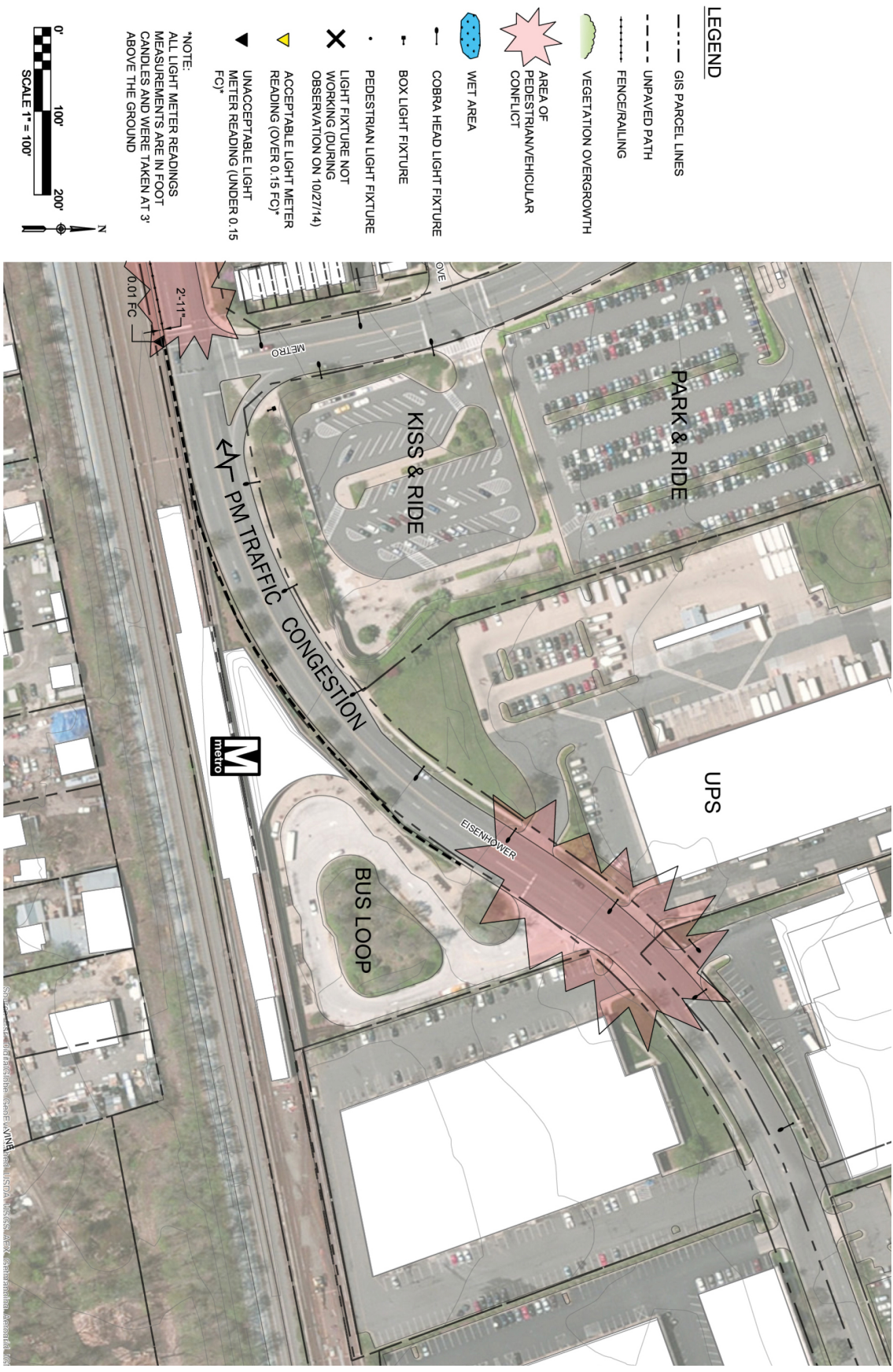
- Providing a safe crossing for pedestrians at the Eisenhower Avenue/Bus Loop intersection.
- Establishing a path along the south side of Eisenhower Avenue with only 2'-11" of right of way between the existing wall and curb line across from Metro Road.
- Accommodating increased shoulder widths or bicycle facilities along Eisenhower Avenue due to traffic congestion.

### *Opportunities*

- Left-turn lane from Eisenhower Avenue to Metro Road may not be necessary due to low traffic volumes and because Metro Road provides the same access function; eliminating the left-turn lane would provide additional room for bicycle and pedestrian facilities on Eisenhower Avenue.
- Potential reduction in lane widths along Eisenhower Avenue could provide room for bicycle and pedestrian facilities.
- Right-turn slip lane from Eisenhower Avenue to Metro Road may not be necessary, allowing more room for bicycle and pedestrian facilities.



Figure 21 Area A Site Analysis



## Area B Site Analysis

The key challenges and opportunities of this area are shown in **Figure 22** and described below.

### Challenges

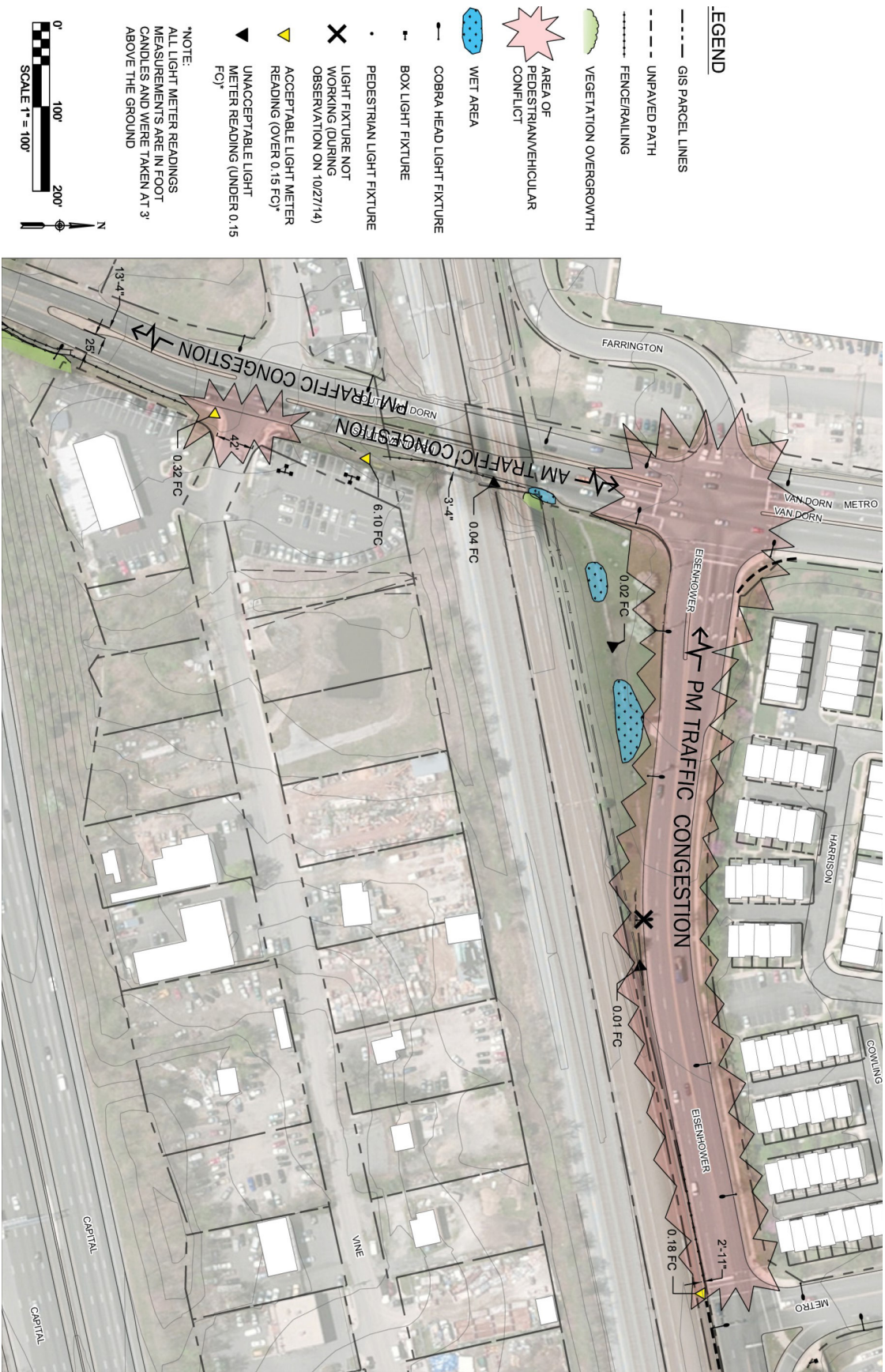
- Providing a safe crossing for pedestrians across Eisenhower Avenue at South Van Dorn Street that meets pedestrian circulation needs.
- Locating paths through the parcel on the southeast corner of Eisenhower Avenue and South Van Dorn Street due to utilities and stormwater conflicts.
- Providing a wider pedestrian path under the CSX and Metrorail tracks due to bridge abutment constraints; the existing right-of-way cannot be expanded because there are no plans to replace the structure supporting the tracks and spanning South Van Dorn Street in the project implementation time frame.

### Opportunities

- Wide right-of-way and medians along South Van Dorn Street could provide room for bicycle and pedestrian facilities.
- Opportunity to narrow the existing 42' wide Vine Street entrance at the South Van Dorn Street intersection to provide a safe crossing.



Figure 22 Area B Site Analysis





## Area Site C Analysis

The key challenges and opportunities of this area are shown in **Figure 23** and described below.

### *Challenges*

- Achieving ADA compliance along South Van Dorn Street south of the I-495 overpass.
- Providing a safe crossing for pedestrians from the Comfort Inn Suites or destinations southwest of South Van Dorn Street.
- Providing a wider bridge or path under the I-495 overpass due to structural abutment constraints.

### *Opportunities*

- Wide right-of-way and medians along South Van Dorn Street could provide room for bicycle and pedestrian facilities.
- Existing tunnel under the I-495 ramp is in fair condition and well lit.

Figure 23 Area C Site Analysis



## Area D Site Analysis

The key challenges and opportunities of this area are shown in **Figure 24** and described below.

### *Challenges*

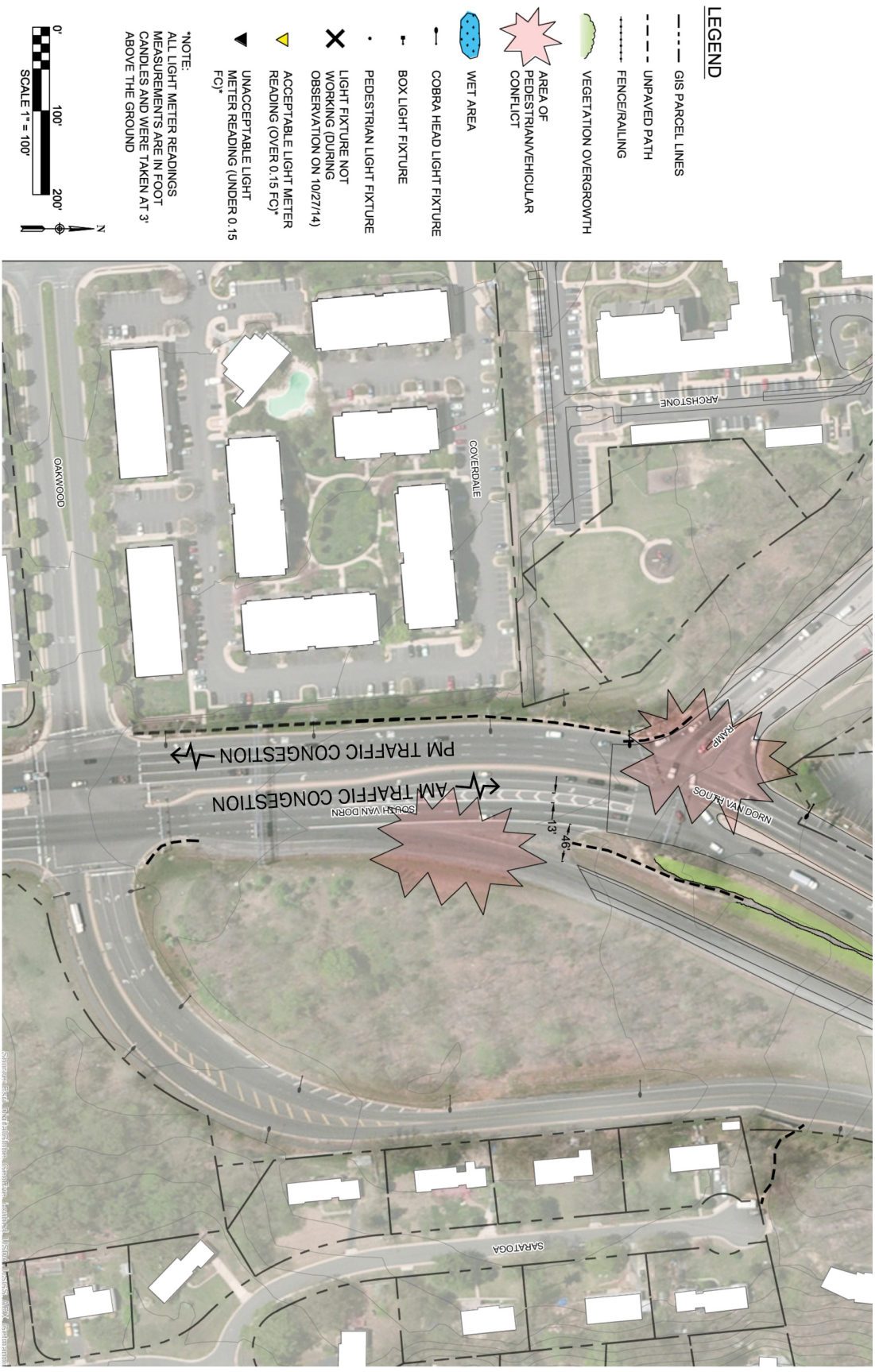
- Providing a safe crossing for bicyclists and pedestrians across the I-495 on-ramp from South Van Dorn Street.
- Providing a safe crossing for pedestrians at the South Van Dorn Street and I-495 on/off ramp intersection.
- Establishing on-road bicycle facilities due to high traffic volumes and speeds.

### *Opportunities*

- Existing wide swath of land along northbound South Van Dorn Street could provide room for bicycle and pedestrian facilities.
- Very wide VDOT right-of-way through the area could provide room for bicycle and pedestrian facilities.



Figure 24 Area D Site Analysis





# Preferred Conceptual Alternatives

Van Dorn Street  
Metro Area  
Bike and Pedestrian Access  
Improvements Study

## Section 3



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### 3.0 PREFERRED CONCEPTUAL ALTERNATIVES

Short-term alternatives that could be implemented within a 5- to -10 year horizon and long-term options that could be implemented as future redevelopment occurs were developed for this study.

The development of the short-term preferred alternative was an iterative process that evolved with stakeholder input (see **Figure 25**). The first iteration of conceptual alternatives was developed to respond to the challenges and opportunities identified previously. These alternatives were presented to agency stakeholders at the December 18, 2014 PMT meeting. The second iteration of the conceptual alternatives reflected the feedback and input provided by the agency stakeholders and was presented at the January 29, 2015 PMT meeting. Conceptual Alternatives Iteration #1 (dated December 14, 2014) and Conceptual Alternatives Iteration #2 (dated January 20, 2015) are included in **Appendix D**.

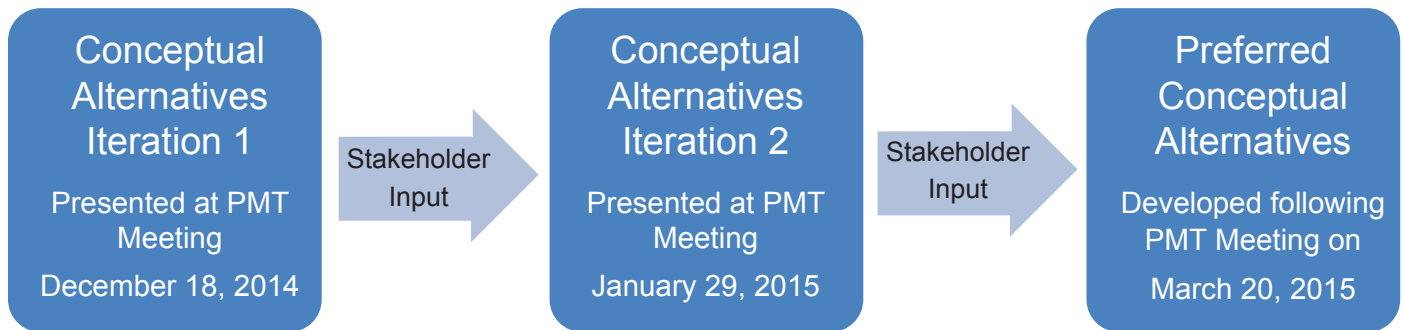
The agency stakeholders agreed upon both the Preferred Short-Term Conceptual Alternatives and potential long-

term options at the final PMT meeting on March 20, 2015.

The two iterations showing the development of the conceptual alternatives and the Preferred Conceptual Alternative, based on feedback from stakeholders, are presented in the following sections, and are described by jurisdiction.

The long-term options are described at the end of the chapter. No changes occurred through the stakeholder review process because stakeholders were in agreement with the proposals, recognizing that these improvements would be contingent on new development coming into the area in the future.

**Figure 25 Development of the Short-Term Preferred Conceptual Alternative**



### 3.1 City of Alexandria Preferred Conceptual Alternative

Based on feedback received from stakeholders, one preferred alternative was selected for the study area within the City of Alexandria (see **Figure 26**). The proposed improvements would lie within the existing 80' right-of-way on Eisenhower Avenue.

#### 1. Proposed recommendations at the Bus Loop include:

- A new HVC, curb ramps, and pedestrian-actuated countdown signals for Eisenhower Avenue immediately east of the Bus Loop entrance to permit pedestrians to cross the intersection.
- Relocation of the Bus Loop entrance crosswalk south of the Bus Loop entrance, offset from the sidewalks along Eisenhower Avenue, to help pedestrians avoid shuttles making U-turns at the Bus Loop entrance.
- Widening of the existing sidewalk along the Bus Loop's eastern wall by 3' to accommodate pedestrians using the relocated crosswalk; this would reduce the Bus Loop entrance at its narrowest point from 37' to 34'.
- Extension of the southern sidewalk on Eisenhower Avenue to meet the relocated crosswalk; no reductions to the existing curb radius are proposed to extend the sidewalk.
- Redesign of the Bus Loop for the West End Transitway, Kiss & Ride reconfiguration, or any future redevelopment scenario should accommodate a safe route for the high pedestrian volumes traffic moving across the entrance to the Bus Loop.

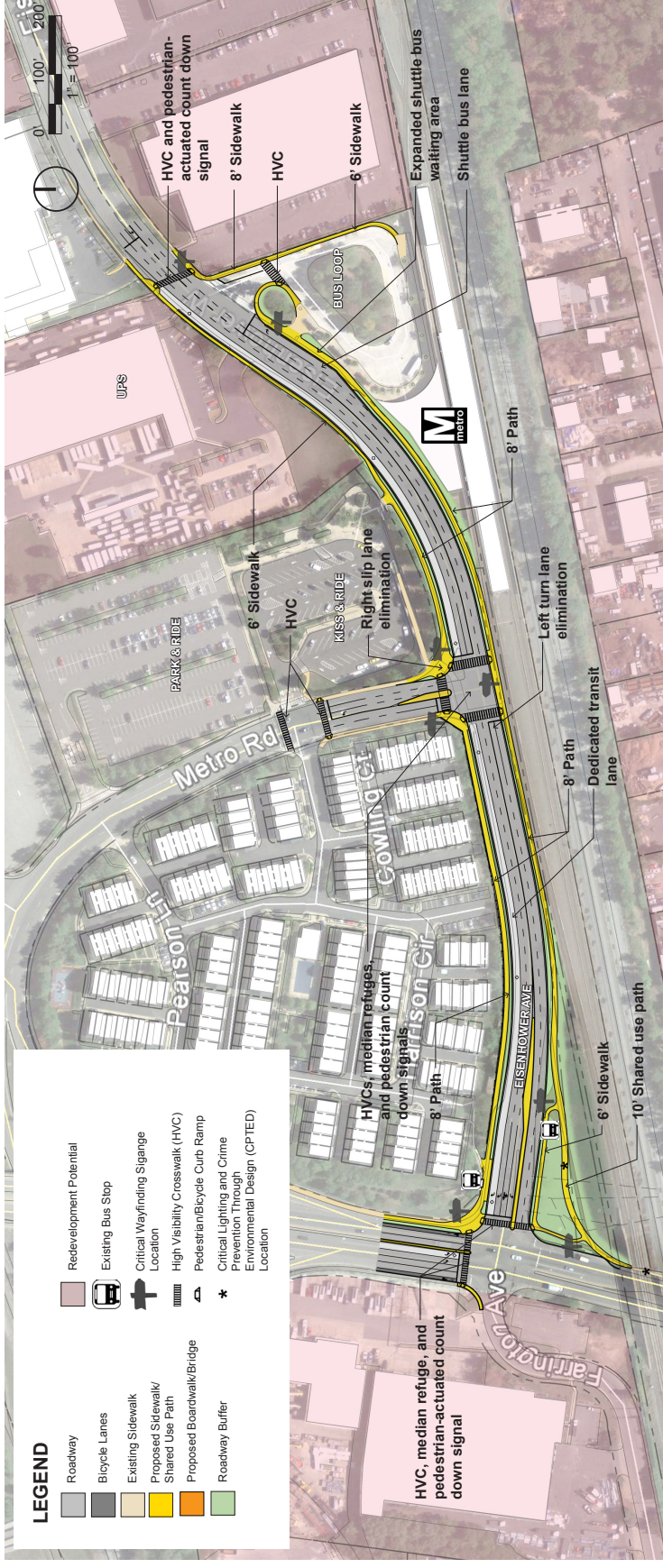
#### 2. Eisenhower Avenue would be reconstructed with the proposed dedicated transit lane between the Van Dorn bus bays and South Van Dorn Street. The following additional improvements are proposed for Eisenhower Avenue to increase bicycle and pedestrian access to the Station:

- A continuous 8'-10' wide path along the north and south side of Eisenhower Avenue between South Van Dorn Street and the Bus Loop. The final dimension of the path will vary due to available right of way.

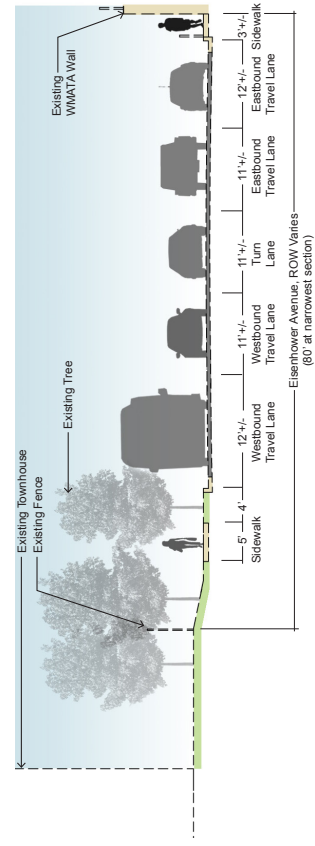
- A 2.5' to 6' vegetated buffer between the path and Eisenhower Avenue to increase the safety and comfort of pedestrians and bicyclist on the path. Tree plantings in the landscape buffer would be located where the vegetated buffer is greater than 4' in width. The final dimension of the landscape buffers will vary due to available right-of-way.
  - Pedestrian/bicycle wayfinding signage at the intersections of Eisenhower Avenue and South Van Dorn Street, and Eisenhower Avenue and Metro Road.
  - Improved crossing measures that include HVCs, median refuges, bicycle/ pedestrian curb ramps, and pedestrian countdown signals on the east and north legs of the South Van Dorn Street and Eisenhower Avenue intersection.
  - Elimination of the right-turn slip lane from Eisenhower Avenue to Metro Road and construct HVCs, curb ramps, and pedestrian-actuated count down signals on all three sides of the intersection. A median refuge is proposed across Metro Road.
  - Elimination of the left turn lane from Eisenhower Avenue to Metro Road to accommodate 8' paths on each side of Eisenhower Avenue.
3. Two HVCs and upgraded curb ramps across Metro Road at the Kiss & Ride entrance intersection.
4. A 10' shared use path replacing the existing asphalt path in the triangular parcel southeast of the Eisenhower Avenue and South Van Dorn Street intersection. CPTED measures would include trail lighting, wayfinding signage, stormwater drainage improvements, and vegetation clearing.



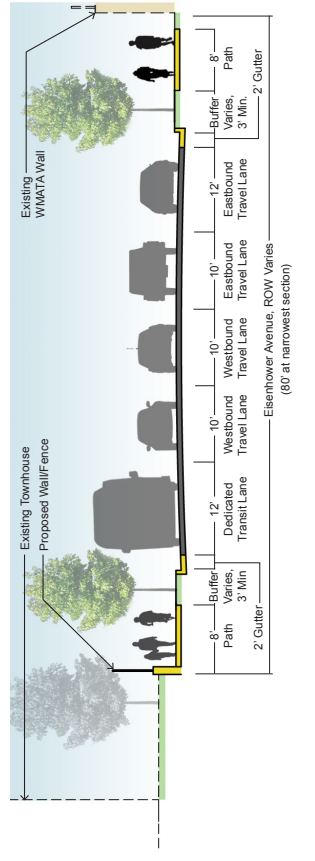
Figure 26 Preferred Conceptual Alternative within the City of Alexandria



EISENHOWER AVENUE EXISTING SECTION



EISENHOWER AVENUE PROPOSED TYPICAL SECTION



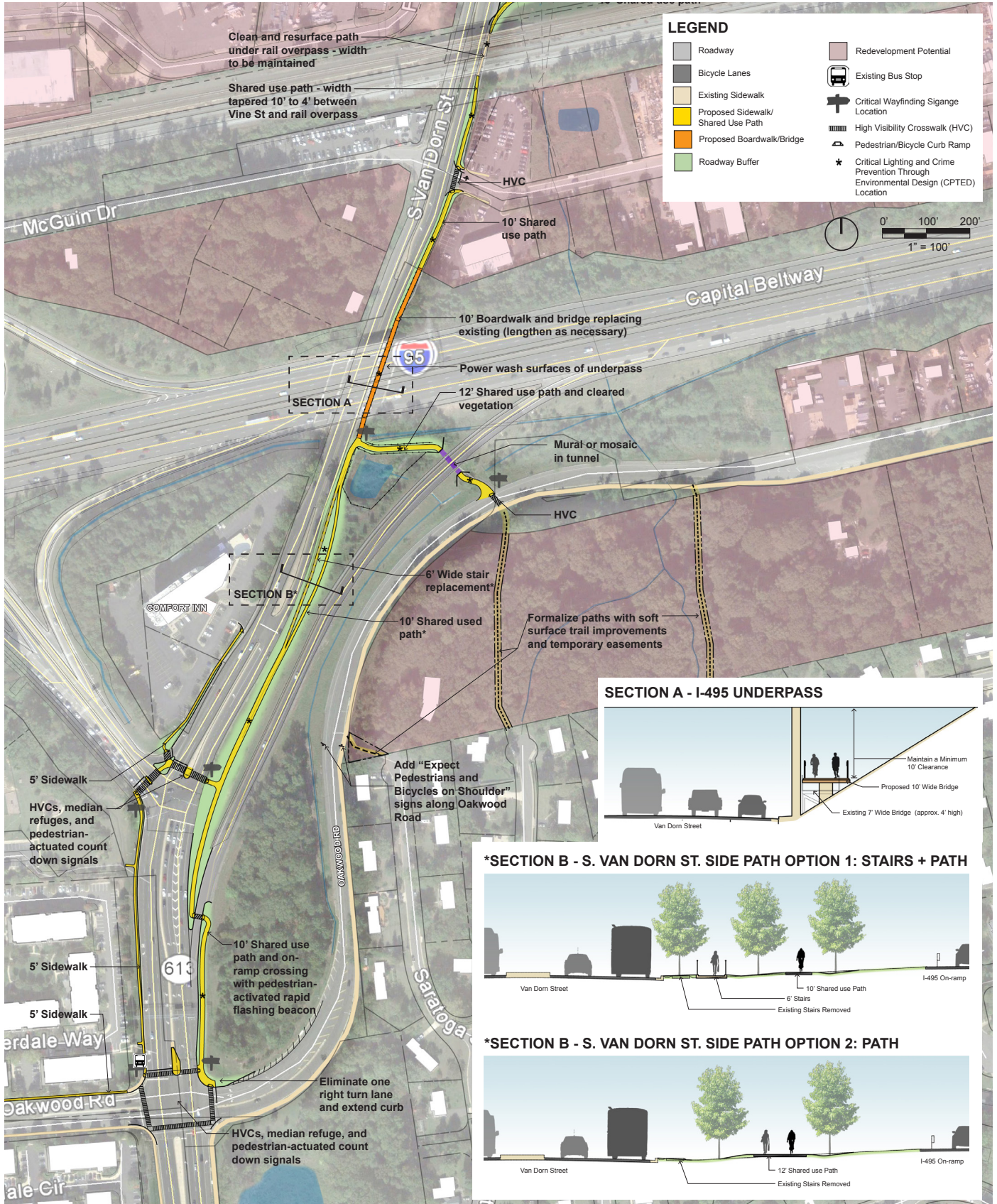


### 3.2 Fairfax County Preferred Conceptual Alternative

Based on feedback received from stakeholders, the following are recommendations for the Preferred Conceptual Alternative within Fairfax County (see **Figure 27**):

1. Cleaning the pedestrian path under the CSX and Metrorail tracks on South Van Dorn Street and resurface the existing path.
2. Replacing and widening of the existing pedestrian bridge and trail under the I-495 overpass. Upgrading the lights under the overpass and extending them along the boardwalk on both sides of the I-495 overpass. Pathway lighting levels along the corridor should be adequate, consistent, and continuous.
3. Widening, clearing of vegetation, and lighting the trail between the I-495 overpass and Oakwood Road, including the trail in the tunnel under the I-495 on-ramp. A mural or mosaic for the existing tunnel to increase its visibility and sense of place. A HVC across Oakwood Road and signs that warn motorists that they may encounter a bicyclist or pedestrian on shoulder.
4. CPTED measures, such as trail lighting and vegetation clearing for the trail, between the CSX and Metrorail tracks and I-495 overpass. Trail widened to a minimum of 10' and the Vine Street crossing re-stripped with a HVC and a stop bar.
5. Two options to replace the existing stairs along South Van Dorn Street between the I-495 overpass and I-495 off/on ramp intersection. Both would include new trail lighting and vegetation clearing.
  - Option 1 - The existing stairs would be replaced and relocated east to increase the buffer between the stairs and South Van Dorn Street. Additionally a 10' shared use path east of the stairs would make the route passible by bicyclists.
  - Option 2 - The existing stairs would be removed and replaced with a 12' shared use path further to the east to increase the buffer between the path and South Van Dorn Street.
6. Constructing a new, lighted, shared use path to connect the existing paved portion of the South Van Dorn Street and the Oakwood Road intersection. Curb and gutter, a HVC, bicycle/pedestrian curb ramps, and a pedestrian-activated rapid flashing beacon across the I-495 on-ramp from South Van Dorn Street. Improvements to the Oakwood Road/South Van Dorn Street intersection would include:
  - HVCs, bicycle/pedestrian curb ramps, and pedestrian-activated count down signals on all sides of the intersection.
  - An extension of the median on the north crossing of South Van Dorn Street replacing the small second left-turn pocket lane.
  - Elimination of one right turn lane and extended curb on the north side of Oakwood Road.
  - Station wayfinding signage.
7. Constructing HVCs, median refuges, pedestrian/bicycle curb ramps, and pedestrian-actuated count down signals on the west and north sides of the South Van Dorn Street and I-495 on/off ramp intersection. A continuous 5' sidewalk along the west side of South Van Dorn Street between the Comfort Inn Suites and Oakwood Road.
8. Constructing soft surface trails to replace the existing unpaved foot paths through the undeveloped property between the Rose Hill neighborhood streets and Oakwood Road, requiring temporary easements from private property owners.
9. Adding 5' sidewalks along the north side of Oakwood Road between South Van Dorn Street and Crown Royal Drive and the north side of Oakwood Road to La Vista Drive.

Figure 27 Preferred Conceptual Alternative for Fairfax County





### 3.3 Proposed Long-Term Options

As redevelopment occurs, along with the addition of new streets and major infrastructure improvements, the following potential long-term options are recommended for future pedestrian and bicycle improvements (see **Figure 28**):

#### 3.3.1 Proposed Recommendations within the City of Alexandria

- The multimodal bridge options currently being considered connecting South Pickett Street and Eisenhower Avenue would provide opportunities to build out the pedestrian and bicycle network.
- Bicycle lanes and improved sidewalks along both sides of South Van Dorn Street north of Eisenhower Avenue.
- Bicycle lanes along both sides of Eisenhower Avenue.
- A shared use path along the north side of Metro Road to South Van Dorn Street. Stairs or a ramp would be necessary to connect the shared use path to South Van Dorn Street.
- The Bus Loop at the Van Dorn Metrorail station would be expanded east.
- After the Bus Loop is expanded and private shuttles are no longer making the U-turn (that currently creates unsafe conditions for pedestrians), the pedestrian crosswalk will be realigned to the throat of the intersection to align with the sidewalks on Eisenhower Avenue.
- Crosswalks on all sides of the Eisenhower Avenue/South Van Dorn Street intersection and the bicycle and pedestrian facilities expanded into the potential new development along Farrington Avenue.

#### 3.3.2 Proposed Recommendations within Fairfax County

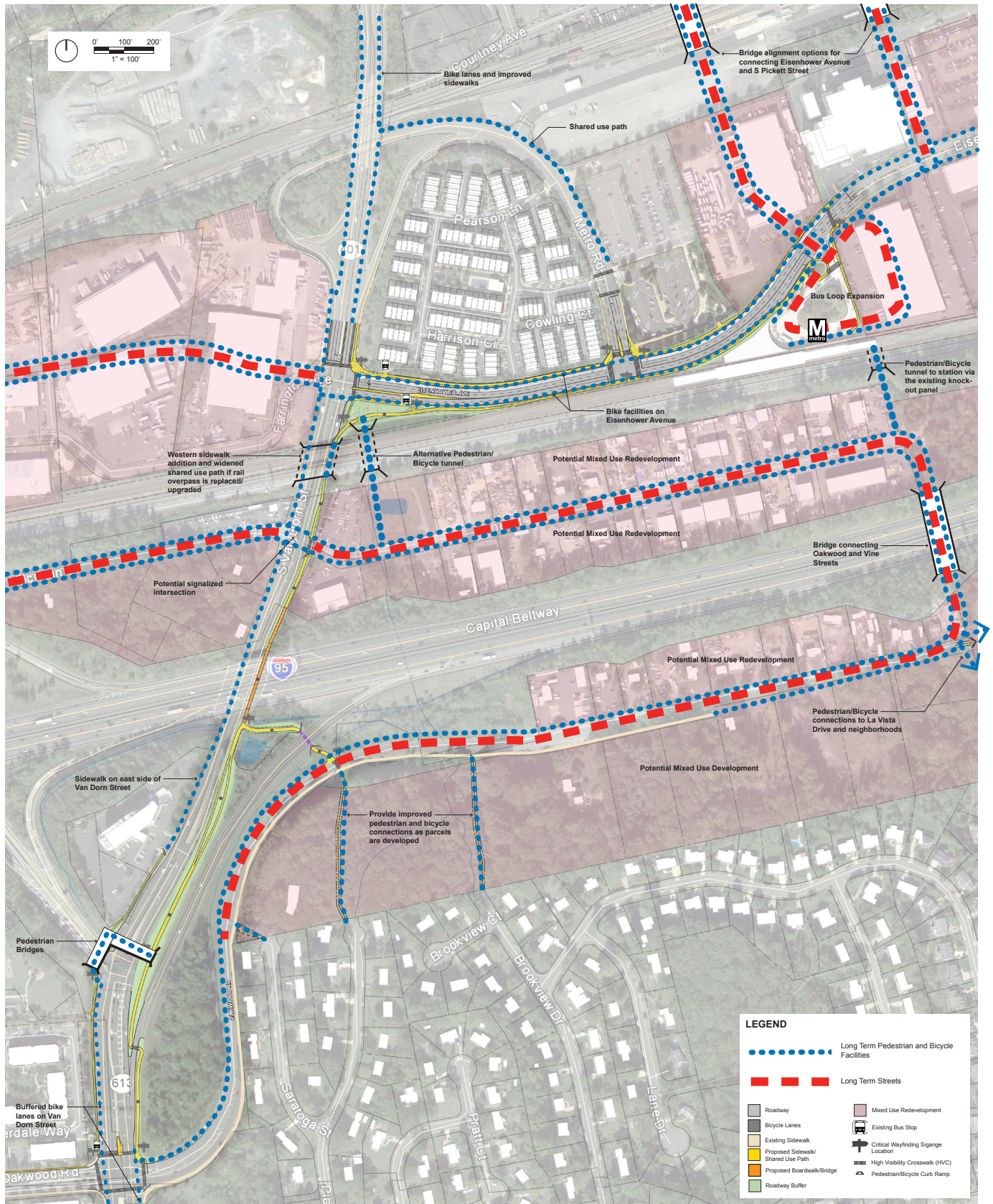
- Street network consistent with the additional pedestrian and bicycle improvements.
- A western sidewalk and widened shared use path, if the CSX and Metrorail overpasses are replaced or upgraded.
- Two options connecting under the Metro and CSX

rail corridors to improve pedestrian and bicycle connectivity. One would follow the existing utility and stormwater easements near South Van Dorn Street. The second option would connect into the existing Station knock-out panel off the new road between Oakwood and Vine Streets.

- A sidewalk along the west side of South Van Dorn Street between the Comfort Inn Suites and Eisenhower Avenue.
- Buffered bicycle lanes on South Van Dorn Street south of the I-495 on/off ramp intersection.
- Two pedestrian bridges would replace the at-grade crossings of the South Van Dorn Street/I-495 on/off ramp intersection.
- Soft surface trail improvements between Oakwood Road and the Rose Hill neighborhood to the southeast would be replaced with permanent pedestrian/bicycle connections as the parcels are developed.
- Continuous sidewalk and bicycle facilities on both sides of Oakwood Road between South Van Dorn Street and the proposed bridge to Vine Street.



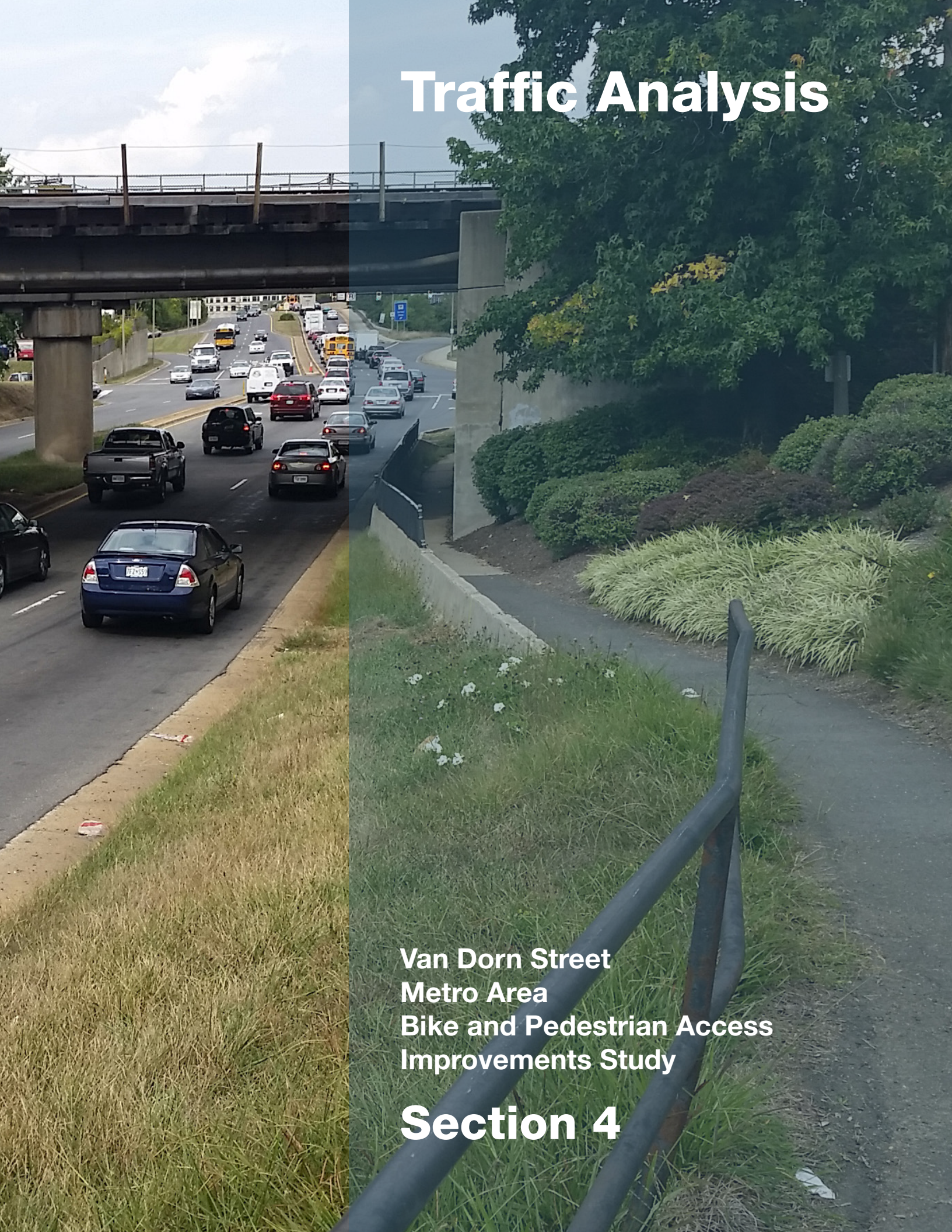
Figure 28 Proposed Recommendations for Fairfax County



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# Traffic Analysis



Van Dorn Street  
Metro Area  
Bike and Pedestrian Access  
Improvements Study

## Section 4



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## 4.0 TRAFFIC ANALYSIS

A traffic analysis was conducted as part of this study to assess potential impacts resulting from the proposed improvements. Morning and evening peak hour traffic operations, under existing conditions and with proposed improvements, were analyzed at four intersections in the study area (see **Figure 29**). Existing traffic volumes were used for the analysis. The four study intersections are listed below:

1. South Van Dorn Street and Oakwood Road;
2. South Van Dorn Street and I-495 On/Off Ramp;
3. South Van Dorn Street and Eisenhower Avenue; and
4. Eisenhower Avenue and Metro Road.

The analysis also includes average pedestrian delays at these intersections. No separate analysis was performed for bicyclists since they are expected to use the same crosswalks and signals as pedestrians.

Key findings of the traffic analysis are below. Refer to **Appendix E** for the full traffic analysis.

**Figure 29 Study Intersections for Traffic Analysis**





*Study Intersection 1 – South Van Dorn Street and Oakwood Road*

Based on the traffic analysis of the existing conditions, the intersection performs at a level of service (LOS) C in the morning peak and at LOS B in the evening peak. Marginal change in intersection performance is anticipated due to the proposed improvements. The proposed changes at the intersection as they relate to traffic, and the resulting changes in intersection performance are shown in **Figure 30**.

**Figure 30 Intersection Performance - South Van Dorn Street and Oakwood Road**



**Proposed Changes**

- New crosswalk on the northern leg
- Dual westbound right turn approach converted into a single right-turn lane
- Lane configuration on both Oakwood Road approaches to eliminate split phasing

Vehicular Delay	Existing	With Proposed Changes
AM Peak	LOS C (29)	LOS C (31)
PM Peak	LOS B (16)	LOS C (22)

Pedestrian Delay (sec)	With Proposed Changes
AM Peak	90
PM Peak	75

*Note: Pedestrian delay with proposed changes is not compared with existing pedestrian delays because there is no crosswalk at this location currently.*

### Study Intersection 2 – South Van Dorn Street and I-495 On/Off Ramp

The intersection of South Van Dorn Street and I-495 on/off ramp performs at LOS C in the morning peak and LOS D (almost LOS E at 53.5 sec delay) in the evening peak. A minor impact on intersection performance is anticipated due to the proposed improvements. Intersection delay would increase by about 9 seconds in both peak hours; intersection LOS would degrade from LOS C to LOS D in the morning peak hour, and from LOS D to LOS E in the evening peak hour. The proposed changes at the intersection as they relate to traffic, and the resulting changes in intersection performance are shown in Figure 31.

**Figure 31 Intersection Performance - South Van Dorn Street and I-495 On/Off Ramp**



**Proposed Changes**

- Two new crosswalks on the west and north leg
- North crosswalk runs concurrently with the northbound left turn phase

Vehicular Delay	Existing	With Proposed Changes	Pedestrian Delay (sec)	With Proposed Changes
AM Peak	LOS C (33)	LOS D (42)	AM Peak	90 <sup>A</sup> /175 <sup>B</sup>
PM Peak	LOS D (54)	LOS E (64)	PM Peak	75 <sup>A</sup> /93 <sup>B</sup>

A. Indicates the pedestrian delay to cross the new crosswalk on the north.  
 B. Indicates the pedestrian delay to cross both the west and north crosswalk.

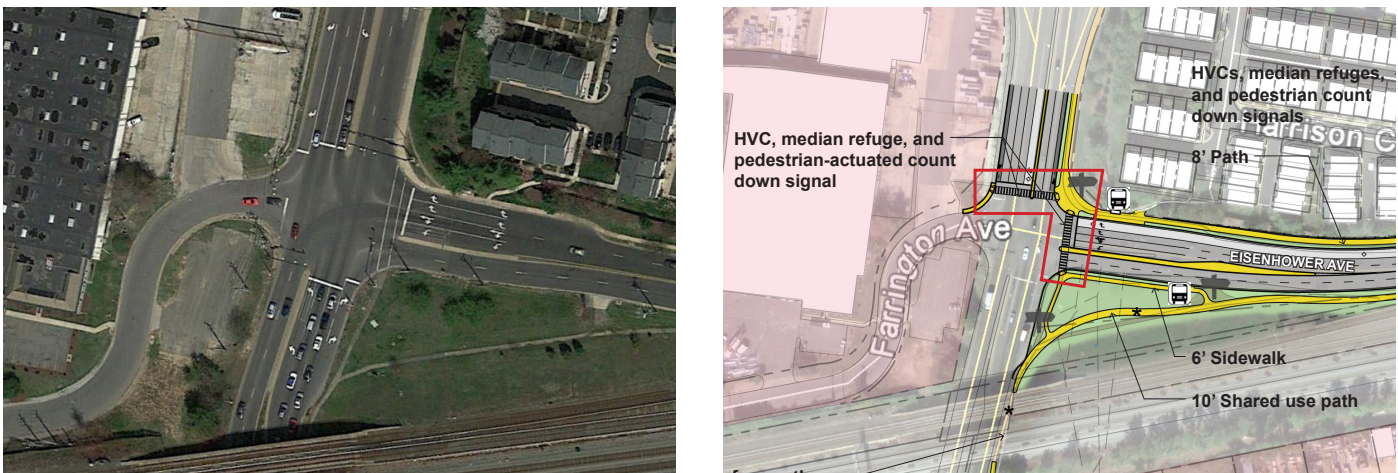
*Note: Pedestrian delay with proposed changes is not compared with existing pedestrian delays because there are no crosswalks at this location currently.*



### Study Intersection 3 – South Van Dorn Street and Eisenhower Avenue

The intersection currently performs at LOS D in the morning and evening peak; however, it is almost LOS E at 54.5 sec delay in the morning peak. With the proposed improvements, intersection performance would degrade to LOS E in both the morning and evening peaks. The proposed changes at the intersection as they relate to traffic, and the resulting changes in intersection performance are shown in Figure 32.

**Figure 32 Intersection Performance - South Van Dorn Street and Eisenhower Avenue**



**Proposed Changes**

- Two new crosswalks on the north and east leg

Vehicular Delay	Existing	With Proposed Changes
AM Peak	LOS D (55)	LOS E (74)
PM Peak	LOS D (37)	LOS E (71)

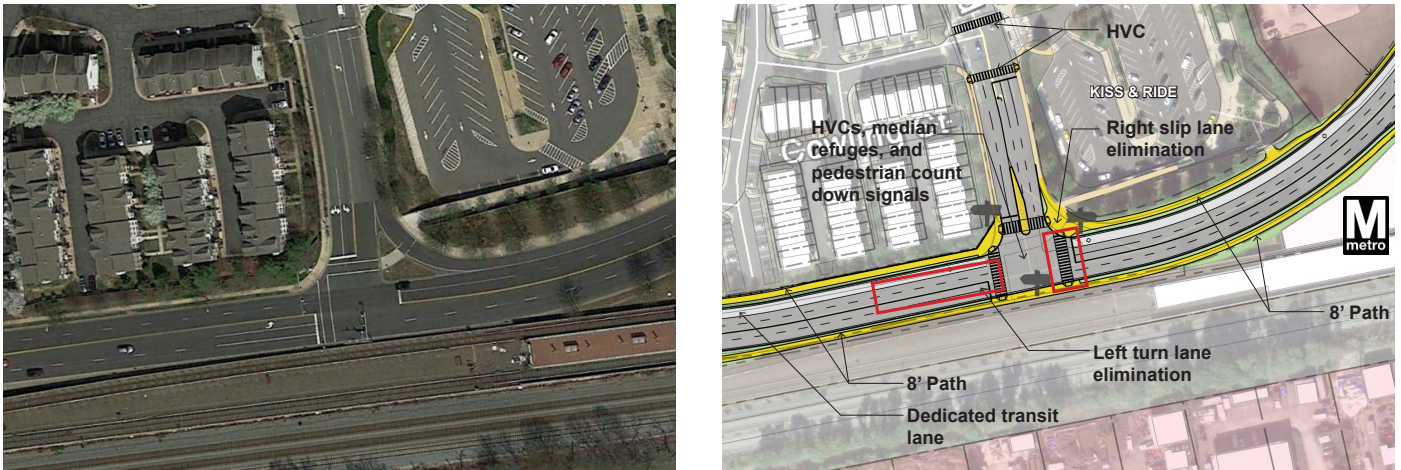
Pedestrian Delay (sec)	With Proposed Changes
AM Peak	79
PM Peak	64

Note: Pedestrian delay with proposed changes is not compared with existing pedestrian delays because there is no crosswalk at this location currently.

### Study Intersection 4 – Eisenhower Avenue and Metro Road

The intersection currently performs at LOS B in the morning and evening peak. No change in intersection performance is expected with the proposed improvements. The proposed changes at the intersection as they relate to traffic, and the resulting changes in intersection performance are shown in **Figure 33**.

**Figure 33 Intersection Performance - Eisenhower Avenue and Metro Road**



#### Proposed Changes

- New crosswalk on the east leg of the intersection
- Elimination of right-turn slip lane from Eisenhower Ave to Metro Road
- Elimination of left-turn lane from Eisenhower Ave (eastbound) to Metro Road

Vehicular Delay	Existing	With Proposed Changes	Pedestrian Delay (sec)	With Proposed Changes
AM Peak	LOS B (15)	LOS B (16)	AM Peak	40
PM Peak	LOS B (13)	LOS B (14)	PM Peak	38

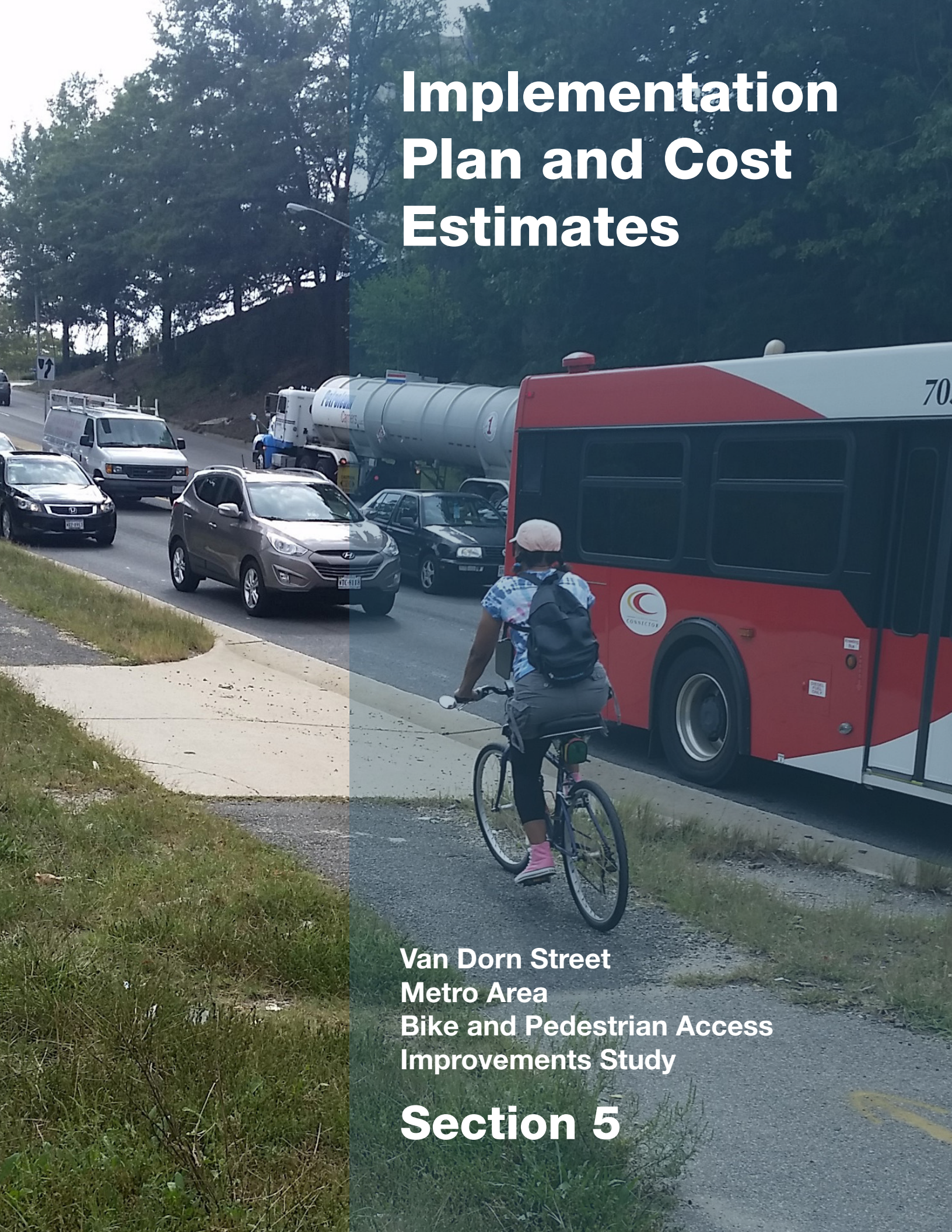
*Note: Pedestrian delay with proposed changes is not compared with existing pedestrian delays because there is no crosswalk at this location currently.*



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# Implementation Plan and Cost Estimates



Van Dorn Street  
Metro Area  
Bike and Pedestrian Access  
Improvements Study

## Section 5



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## 5.0 IMPLEMENTATION PLAN AND COST ESTIMATES

This section provides a detailed implementation plan for the improvements identified in the short-term Preferred Conceptual Alternative and addresses long-term improvement options in summary only. This section also provides key features and order-of-magnitude cost estimates for the short-term Preferred Conceptual Alternative.

### 5.1 Short-Term Improvements

#### 5.1.1 Project Groupings

The preferred conceptual alternative is organized into 13 groupings of discrete project components as shown in **Figure 34. Table 4** identifies the lead agency responsible for implementation, whether the project is a retrofit, reconstruction, or maintenance project, specific components included within each project grouping, and the estimated cost.

Project components were grouped primarily based on physical proximity and the jurisdiction within which it lies. In addition, other considerations in grouping the projects are below:

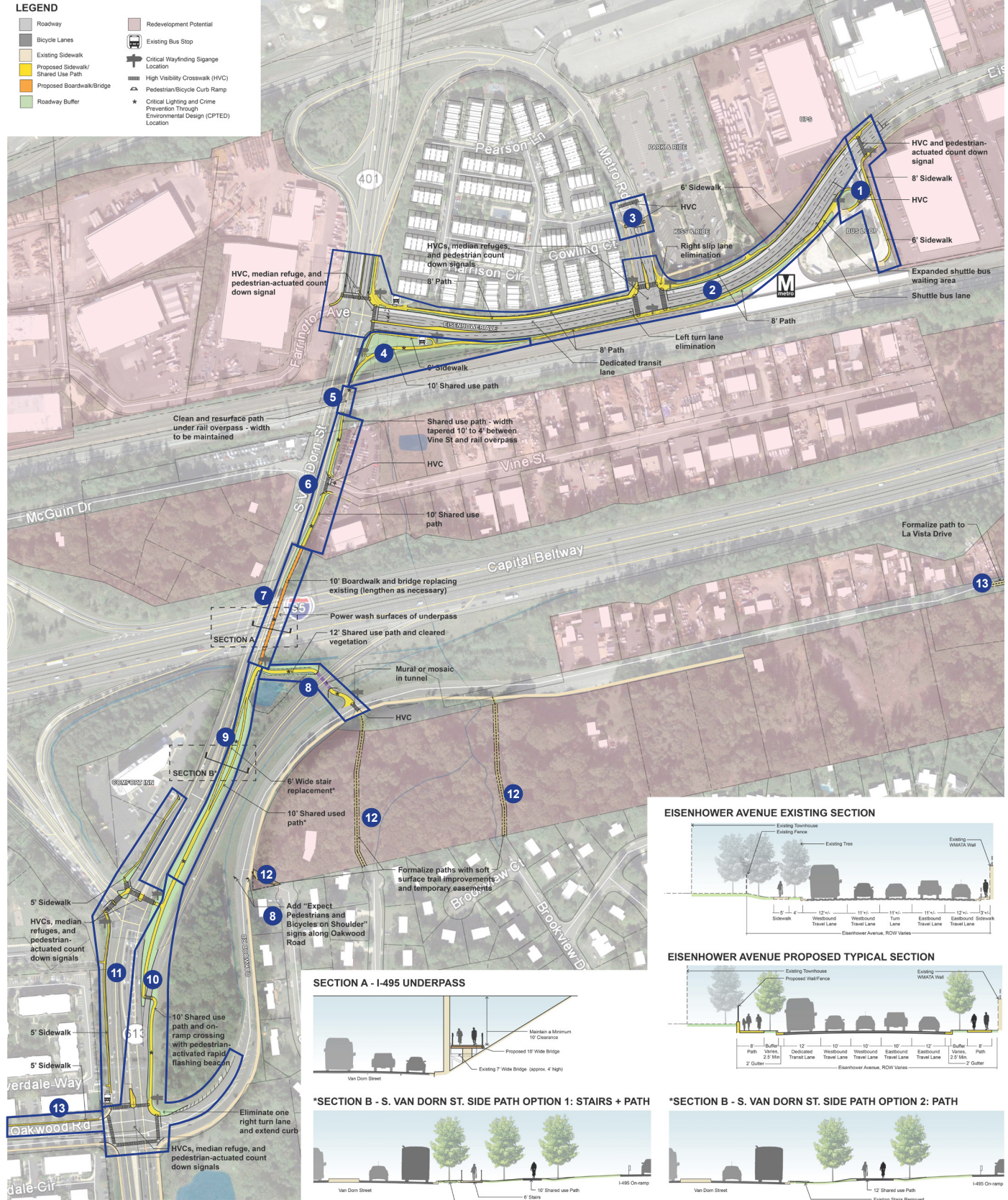
- Functional Unity and Utility – If one of the project groupings was to be implemented alone, it would make a meaningful difference for some users, even if only for a portion of their entire trip;
- Safety – Ensuring safety for bicyclists and pedestrians using the improvements, and motorists impacted by changes in roadway operations;
- Capital or Maintenance – For funding, designate project as a capital improvement or maintenance activity, and further grouping of similar activities (i.e. lighting upgrades, asphalt paving, crosswalk striping, cleaning and clearing, etc.)
- Address Key Deficiency – Ability of an individual project grouping to address one or more key deficiencies documented in the existing conditions, such as safe and convenient pedestrian accommodations, ADA compliance or personal safety concerns.

Other factors that will influence implementation strategies and project groupings within each jurisdiction are listed below.

- Alexandria West End Transitway – Improvements in Group 2 along Eisenhower Avenue will likely be implemented in conjunction with the West End Transitway Project and/or West Eisenhower Small Area Plan. As such, the estimated cost is excluded from this report.
- I-495 Boardwalk and Bridge (Pedestrian path under the I-495 Overpass) – Improvements in Group 7 are currently being designed for implementation by Fairfax County DPWES. As such, the estimated cost is excluded from this report.
- Fairfax County Maintenance – Many improvement activities such as vegetation clearing, pavement marking, signage improvements, repaving, and trail widening may be implemented independently as part of routine County maintenance tasks (the majority of components within Groups 5 through 8, with the exception of Group 7).



Figure 34 Van Dorn Street Metrorail Station Improvement Project Groupings



## 5.2 Cost Estimates

### 5.2.1 Basis of Cost Estimates

The order of magnitude cost estimates were prepared based on the Preferred Conceptual Alternative drawings dated March 26, 2015.

The pricing is based on the following general conditions of construction:

- The cost estimate reflects project design and engineering costs.
- The cost estimates include the following mark-ups:
  - Premium time,
  - Phasing (5%),
  - General Conditions/Requirements (15%),
  - Bond & Insurance (2%),
  - OH&P (15%),
  - Design Contingency (20%), and
  - Soft Costs (Landscape Architecture and Engineering - 15%)
- The estimates do not include right-of-way costs or utility relocations.
- The cost estimate is based on 2015 pricing. Escalated costs should the projects be implemented in 2020 or 2025, as well as additional details, are included in **Appendix F**.

### 5.2.2 Order of Magnitude Cost Estimate by Jurisdiction

A summary of estimated costs is shown in **Table 4**. If implemented in 2015, the cost estimate for the City of Alexandria projects is \$288,100, for the WMATA project is \$584,700, and for Fairfax County projects is \$2,355,000 or \$2,280,000 depending on the option selected for replacing the stairs adjacent to South Van Dorn Street. If implemented in 2020, escalation from 2015 would be 15.93 percent; if implemented in 2025, escalation from 2015 would be 34.39 percent.





**Table 4 Cost Estimates per Jurisdiction**

Improvement Project Grouping	Project Type	Project Components	Estimated Cost (2015)
<b>City of Alexandria</b>			
1. Bus Loop	Retrofit	<ul style="list-style-type: none"> <li>• HVC and a pedestrian-actuated signal on Eisenhower Avenue</li> <li>• HVC at the Bus Loop entrance</li> <li>• Widened sidewalk in the bus-loop and by the shuttle bus waiting area</li> <li>• Curb and gutter, signage</li> </ul>	\$216,073
2. Eisenhower Avenue (proposed improvements will be included in the West End Transitway implementation)	Reconstruction	<ul style="list-style-type: none"> <li>• Mill and overlay roadway and pavement marking</li> <li>• New widened sidewalks, median, curb and gutter, curb ramps,</li> <li>• Pedestrian-actuated countdown signals</li> <li>• Street Lights, street trees, and signage</li> <li>• Bus Shelter and Pad</li> </ul>	EXCLUDED
3. Kiss and Ride Entrance	Retrofit	<ul style="list-style-type: none"> <li>• Curb ramps, HVC, and a pedestrian-actuated countdown signal on Metro Road</li> </ul>	\$72,057
<b>TOTAL (City of Alexandria)</b>			<b>\$288,130</b>
<b>WMATA</b>			
4. Triangular Parcel SE of Eisenhower Ave and South Van Dorn Street Intersection	Reconstruction	<ul style="list-style-type: none"> <li>• New 6' wide sidewalk and a 10' wide shared use path</li> <li>• Vegetation clearing and stormwater improvements</li> <li>• Trail lighting and signage</li> </ul>	\$584,656
<b>TOTAL (WMATA)</b>			<b>\$584,656</b>
<b>Fairfax County</b>			
5. Rail Underpass	Maintenance	<ul style="list-style-type: none"> <li>• Power wash underpass surfaces</li> <li>• Trail resurfacing and new trail lighting</li> </ul>	\$65,593
6. South Van Dorn Street Trail - At Vine Street	Reconstruction	<ul style="list-style-type: none"> <li>• Widened shared use path, retaining wall and railing</li> <li>• New HVC across Vine Street, curb ramps, pavement markings</li> <li>• Trail Lighting</li> </ul>	\$430,512

**Table 4 (Continued) Cost Estimates per Jurisdiction**

Improvement Project Grouping	Project Type	Project Components	Estimated Cost (2015)
7. Boardwalk and Bridge under I-495 <sup>1</sup>	Reconstruction	<ul style="list-style-type: none"> <li>Vegetation clearing and power wash</li> <li>New boardwalk and bridge, trail lighting</li> </ul>	EXCLUDED
8. Oakwood Road Trail and On-ramp Tunnel	Maintenance/ Reconstruction	<ul style="list-style-type: none"> <li>Vegetation clearing, power wash tunnel</li> <li>Widened shared use path to 12', railing</li> <li>New mural or mosaic in the tunnel</li> <li>Trail lighting, signage</li> <li>HVC across Oakwood Road</li> </ul>	\$264,975
9.1 South Van Dorn Street Trail - Hillside Option 1	Reconstruction	<ul style="list-style-type: none"> <li>Vegetation clearing</li> <li>6' wide stairs replacement</li> <li>10' wide shared use path</li> <li>Trees and trail lighting</li> </ul>	\$370,537
9.2 South Van Dorn Street Trail - Hillside Option 2	Reconstruction	<ul style="list-style-type: none"> <li>Vegetation clearing</li> <li>12' wide shared use path</li> <li>Trees and trail lighting</li> </ul>	\$295,581
10. South Van Dorn Street Trail - Oakwood to I-495 Intersection	New Construction	<ul style="list-style-type: none"> <li>Vegetation clearing</li> <li>10' wide shared use path</li> <li>Curb and gutter, curb ramps</li> <li>Pavement marking, HVC</li> <li>Pedestrian-activated rapid flashing beacon</li> <li>Trail lighting, signage</li> </ul>	\$542,837
11. South Van Dorn Street and I-495 on/off ramp intersection	Retrofit/New Construction	<ul style="list-style-type: none"> <li>5' wide west sidewalk on South Van Dorn</li> <li>Curb and gutter, curb ramps</li> <li>Median refuge</li> <li>Pavement marking and HVCs</li> <li>Pedestrian-actuated countdown signal</li> <li>Signage</li> </ul>	\$516,092
12. Soft surface trail connections	New Construction	<ul style="list-style-type: none"> <li>Acquire temporary easements</li> <li>Formalize paths with soft surface trail improvements to Oakwood Road</li> </ul>	\$86,069

<sup>1</sup>Project was completed in Fall 2015. Steel bridge was removed while existing bridge piers and beams were cleaned and painted. The new fiberglass bridge consists of four bridge spans, totaling 210 feet in length (fiberglass performs better at handling winter conditions and salting compared to steel). New LED lights were installed on bridge after construction to reduce glare along Van Dorn Street.





**Table 4 Continued** Cost Estimates per Jurisdiction

Improvement Project Grouping	Project Type	Project Components	Estimated Cost (2015)
13. Oakwood Road Sidewalk - South Van Dorn Street to Crown Royal Drive; Oakwood Road to La Vista Drive	Retrofit/New Construction	<ul style="list-style-type: none"> <li>Sidewalk and curb ramps</li> </ul>	\$78,331
<b>TOTAL WITH 9.1 (Fairfax County)</b>			<b>\$2,354,947</b>
<b>TOTAL WITH 9.2 (Fairfax County)</b>			<b>\$2,279,991</b>

\*The above pricing includes the following mark-ups: Premium time, Phasing (5%), General Conditions/Requirements (15%), Bond & Insurance (2%), OH&P (15%), Design Contingency (20%), and Soft Costs (Landscape Architecture and Engineering - 15%)

## 5.3 Implementing the Long-Term Options

Detailed implementation steps for the long-term options identified in this study have not been developed due to their dependence on potential redevelopment, new street connections, and/or major infrastructure improvements. To complete an effective pedestrian and bicycle network in the entire station area, the following recommendations should be considered as additional development happens in the station vicinity or proposed long-term bicycle, pedestrian or multi-modal projects are developed.

### 5.3.1 Proposed Recommendations within the City of Alexandria

#### *Eisenhower Avenue and Metro Road*

- Both pedestrian and bicycle facilities should be included on both sides of any new bridge connection between Eisenhower Avenue and South Pickett Street.
- Bicycle lanes along Eisenhower Avenue should be included in any roadway upgrade or reconstruction in the future.

#### *South Van Dorn Street*

- A new or widened bicycle and pedestrian connection should be made across the rail corridor from Fairfax County to the Station.
- Sidewalks and buffered or separated bike lanes should be installed on both sides of South Van Dorn Street.

#### *Van Dorn Metrorail Station Bus Loop*

- Adequate sidewalk space and increased bicycle parking facilities should be added when the Station Bus Loop is expanded eastwards.

#### *Farrington Redevelopment*

- Sidewalks and crosswalks should be included with any new streets and intersections as part of the Farrington redevelopment area.

### 5.3.2 Proposed Recommendations within Fairfax County

#### *Vine Street and Oakwood Road*

- Bicycle and pedestrian facilities that are compatible with the future land uses and commensurate with expected motor vehicle traffic should be included on both sides of the roadway when Vine Street and Oakwood Road are reconstructed.
- Bicycle and pedestrian facilities should be included on any new bridge linking Vine Street to Oakwood Road.

#### *South Van Dorn Street*

- Pedestrian bridges or other pedestrian crossing accommodations should be included if the South Van Dorn Street/I-495 interchange is reconstructed.
- Buffered or separated bike lanes should be included with any future reconstruction of South Van Dorn Street.
- Sidewalks buffered by a planting strip should be provided on both sides of South Van Dorn Street.
- Pedestrian and bicycle connections along the informal trails should be maintained between Oakwood Road and the Rosehill neighborhood should the vacant properties along Oakwood Road be developed.



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