Multimodal Transportation Assessment

Block W

Arlington, Virginia

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CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

Executive Summary

The following report is a Multimodal Transportation Assessment (MMTA) for the Block W development in the Crystal City area of Arlington, Virginia.

Site Location and Study Area

The proposed development site is located in the Crystal City area of Arlington, Virginia. The existing site is currently occupied by a segment of an existing service road (hereafter referred to as "Crystal City Service Road", an unpaved surface lot, park space, and the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Prior to construction of the new building, the off-ramp connecting the existing Airport Access Road to northbound Crystal Drive will be demolished, and the proposed development will realign the service road to connect to Crystal Drive at the northwest corner of the project site as shown in Figure 2. The general extents of the study area are 23rd Street S to the north, Potomac Avenue to the south, the rail corridor to the east, and Richmond Highway to the west.

The vehicular study area consists of 8 intersections along Crystal Drive, Richmond Highway, Potomac Avenue, and 23rd Street S, as vetted and approved by Arlington County.

The proposed development site occupies a segment of Crystal City Service Road. The site is currently zoned as C-O-1.5: Office – Apartment in the General Land Use Plan (GLUP).

Proposed Project

The proposed development will construct a new 7-story multifamily residential building with ground floor retail at the project site. Prior to construction of the new building, the off-ramp connecting the existing Airport Access Road to northbound Crystal Drive will be demolished. The development will include 370 dwelling units and approximately 3,360 square feet of ground-floor retail.

A total of 158 parking spaces will be provided for the development (148 residential and 10 visitor spaces), resulting in a 0.4 parking ratio for the site. 109 of these spaces (including all 10 visitor spaces) will be provided in a partially below-grade garage on site. 49 additional parking spaces will be made available in the Parks block garage, which can be accessed via the building at 2451 Crystal Drive, immediately north of the development site.

Policies and Goals

The Arlington County Master Transportation Plan (MTP), adopted in 2011 and updated in 2019, outlines goals to improve various modes of transportation throughout the County. Similarly, the Crystal City Sector Plan, adopted by the County Board in 2010, developed a series of goals and objectives specifically for Crystal City. The Block W development achieves several of the goals and policies of both the MTP, Sector Plan, and other guiding documents for the County.

Multi-Modal Overview

Transit

The subject site is well-served by transit:

- The site is located 0.5 miles from the Crystal City Metro Station which is served by the Blue and Yellow lines, and 0.5 miles from VRE.
- There are 7 bus stops within a quarter-mile of the site. These stops are directly served by WMATA (Metrobus), Metroway, Arlington Transit (ART), OmniRide, Fairfax Connector, and Loudoun County Commuter routes.
- Metroway is a premium bus service that connects the Pentagon City, Crystal City, and Potomac Yards neighborhood (National Landing), as well as the Braddock Road neighborhood in Alexandria, VA. Metroway buses travel in mixed traffic adjacent to the site along Crystal Drive and in other segments; however, there are also sections of the route in Crystal City and Potomac Yards where Metroway buses operate in dedicated bus-only lanes. The nearest stop to the site is the 27th and Crystal Drive station, located 0.25 miles from the site.
- Future planned transit improvements in the vicinity of the site include the Transitway Extension to Pentagon City. These will further improve transit access by providing additional facilities and connectivity via Metroway.
- A VRE station is located approximately 0.5 miles north of the proposed development site on the east side of Crystal Drive.

Bicycle

The site has access to several on- and off-street bicycle facilities, including the Mt. Vernon Trail and bike lanes on S Clark Street, Potomac Avenue, and Crystal Drive. There are protected bicycle lanes on portions of S Clark Street and Potomac Avenue within a quarter mile radius of the site. These, in turn, provide regional access to destinations within Virginia and the District.

The recently adopted Bicycle Element of the Arlington Master Transportation Plan makes the following recommendations in the vicinity of the project site:

- Upgrade the existing bicycle lanes on Potomac Avenue and Crystal Drive through the Potomac Yard and Crystal City areas. Where feasible provide further separation or protection of bicyclists from motor vehicle traffic. Provide for a lower stress route to link the Four Mile Run Trail to Crystal City, Pentagon City and Long Bridge Park.
- Use the Airport Viaduct structure to provide a grade-separated connection of S. Eads Street and Crystal City with the National Airport passenger terminals area and Mount Vernon Trail. This project could be replaced by alternative, new pedestrian/bicycle connection(s) of Crystal City to airport buildings.

The Crystal City Sector Plan makes the following recommendations for roadways in the vicinity of the site:

- Parallel pedestrian and bicycle facilities along Route 233 (Airport Access Road) from Crystal City to Reagan National Airport with a connection to the Mount Vernon Trail.
- Bicycle lanes along S Clark Street between 27th Street S and 26th Street S.
- Cycle track along S Clark Street between 18th Street S and 26th Street S.
- Bicycle lanes along Crystal Drive between 20th Street S and S Glebe Road.

In December 2020, County staff developed recommendations for a bicycle network that provides new north-south bicycle facilities along with improvements to east-west streets in Crystal City. Following public input in 2021, the updated Recommended Crystal City Bike Network includes:

- A protected contraflow bike lane on S Clark Street from 20th Street S to 23rd Street S and a two-way cycle track from 23rd Street S to 27th Street S.
- Protected bike lane on 23rd Street S between Crystal Drive and S Clark Street.
- Protected bike lanes on Crystal Drive between 18th Street S and 23rd Street S, with only a southbound bike lane provided between 20th Street S and 23rd Street S.
- Buffered bike lane on 26th Street S between S Clark Street and Crystal Drive
- Buffered bike lanes and a two-way cycle track on the portion of S Bell Street between 20th Street S and S Clark Street.

As part of the 23rd Street Realignment project, eastbound and westbound protected bike lanes will be added on 23rd Street S between Crystal Drive and S Clark Street, improving east-west connectivity. The project will also add two (2) protected intersection corners along 23rd Street S, the southeast corner of S Clark Street and 23rd Street S and the northwest corner of Crystal Drive and 23rd Street S. Protected intersection corners improve sightlines and provide more separation between bicycles and vehicles. The project will also add a bike box on the westbound approach of the S Clark Street and 23rd Street S intersection.

Pedestrian

The site is surrounded by a well-connected pedestrian network. The pedestrian facilities around the site provide a quality walking environment. Barriers exist east of the site due to Virginia Rail Express (VRE), George Washington Memorial Parkway, and Ronald Reagan Washington Airport but overall, there is good connectivity and quality infrastructure.

As a result of the proposed development, pedestrian facilities along the perimeter of the site will be improved by adding and improving sidewalks adjacent to the site so that they meet or exceed Arlington County and ADA standards.

Vehicular

The site is accessible from several principal arterials such as Richmond Highway (Route 1), VA-120 (S Glebe Road), and VA-110. The arterials create connections to VA-244 (Columbia Pike), I-395, I-66, George Washington Memorial Parkway, and ultimately the Capital Beltway (I-495) and I-95. These principal arterial roadways bring vehicular traffic within half-mile of the

site, at which point minor arterials, collectors, and local roads can be used to access the site directly.

Existing Conditions

Intersection capacity analyses were performed for the morning and afternoon peak hours at study area intersections. Synchro version 11 was used to analyze the study intersections based on the *Highway Capacity Manual* (HCM) 2000 methodology.

The existing conditions analysis shows that many intersections and movements operate at an acceptable level of service during the morning and afternoon peak hours. However, four (4) study intersections have one or more movements that operate at levels beyond Level of Service (LOS) E or better in one or more peak hour. LOS E is typically used as the acceptable LOS threshold in the County; although LOS F is generally accepted in urbanized areas if vehicular improvements would be a detriment to safety or to non-auto modes of transportation. The capacity analysis results also show that four (4) intersections have 95th percentile queues that exceed the available storage length in one or more peak hour in existing conditions.

Travel Demand Assumptions

Mode split (also called mode share) is the percentage of travelers using a particular type (or mode) of transportation when traveling. The main source of mode split information for this report was based on Census data using Transportation Analysis Districts (TADs) and data contained in the 2016 State of the Commute, the Crystal City Multimodal Transportation Study, the WMATA Ridership Survey, and the Arlington County Mode Share Assumptions for Crystal City. The following mode splits were assumed in the analysis, as vetted and approved by Arlington County:

- Residential
  - Auto – 32%, Transit – 59%, Bike – 3%, Walk – 6%
- Neighborhood-Serving Retail
  - Auto – 5%, Transit – 15%, Bike – 5%, Walk – 75%

Weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation*,* 11th Edition.

Residential trip generation is based on the development program of 370 residential dwelling units. Residential trip generation was calculated based on ITE Land Use 221 (Multifamily Housing – Mid-Rise), using the setting/location of Center City Core and Not Close to Rail Transit (with Close to Rail Transit defined by ITE as being within 0.5 miles walking distance to the nearest rail transit station), splitting trips into different modes using assumptions outlined in the mode split section of this report.

Retail trip generation is based on the development program of 3,360 square feet of neighborhood-serving ground floor retail. Retail trip generation was calculated based on ITE's baseline vehicular trips for Land Use 822 (Retail Shopping Strip <40k), using the setting/location of General Urban/Suburban (limited data is available for person trips), splitting trips into different modes using assumptions outlined in the mode split section of this report.

Future Improvements

A number of planned transportation improvements in the vicinity of the Block W development are expected to be complete by 2026. The full list of improvements is detailed in the report, but examples include:

- Transitway Extension to Pentagon City
- Crystal City Metro Station 2nd Entrance
- Plaza Block Crystal City Sector Plan Realignment
- 23rd Street South Realignment
- DCA South Pedestrian Access Improvements

Future Traffic Operations

Capacity analyses were developed to analyze three future scenarios:

- 2026 Background Conditions without the removal of the Airport Access Road off-ramp and without the proposed development
- 2026 Future Conditions with the removal of the Airport Access Road off-ramp and without the proposed development
- 2026 Future Conditions with the removal of the Airport Access Road off-ramp and with the proposed development

Intersection capacity analyses were performed for the morning and afternoon peak hours at study area intersections. Synchro version 11 was used to analyze the study intersections based on the *Highway Capacity Manual* (HCM) 2000 methodology.

Traffic projections for 2026 are based on existing volumes, plus plus inherent growth on the roadway (representing regional traffic growth) and traffic generated by background developments expected to be completed prior to 2026

(representing local traffic growth). The methodology of using an inherent growth rate to account for regional growth and background development trips to account for local growth has been vetted and approved by the County.

Mitigations

Mitigation measures were identified based on Arlington County standards and as outlined in the approved scoping document. The proposed development is considered to have an impact at an intersection if any of the following conditions are met:

- The overall intersection or any movement operates at LOS F in the future conditions with the proposed development where it operates at LOS E or better in the background conditions without the proposed development;
- The overall intersection or any movement operates at LOS F during the background condition and the delay increases by more than 10% in the future conditions with the proposed development; or
- If any 95th percentile queue length in the future condition exceeds the available capacity where it does not in the background conditions or increases the 95th percentile queue length by more than 150 feet where is already exceeds the available capacity in the background conditions.

The 2026 Future With Ramp Removal/Without Development scenario was compared to the 2026 Background Without Ramp Removal/Without Development scenario to identify the impacts of the removal of the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Following the above County guidelines for impacts, mitigation measures were explored and included the following recommendation(s):

- Adjustments to signal timings and lane geometry at the 23rd Street S and Crystal Drive intersection, including:
    - The reconfiguration of the eastbound approach from a shared left-thru lane and right-turn lane to a left-turn lane and a shared thru-right lane, plus modifications to signal phasing and signal timings.

With these mitigations in place, the analysis shows that traffic operations with the proposed development will improve or is consistent with the 2026 Background Without Ramp Removal/Without Development scenario at many intersections.

The 2026 Future With Ramp Removal/With Development scenario was compared to the mitigated 2026 Future With Ramp Removal/Without Development scenario to identify the impacts of the proposed development. Following the above County guidelines for impacts, no impacts were identified at the study intersections as a result of the proposed development.

Transportation Management Plan

A Transportation Management Plan (TMP) will be provided for the project based on the County's requirements, and a framework for a TMP is included in this report. This TMP will include typical components such as the establishment of a TMP coordinator, the distribution of transit literature, the establishment of ride-sharing programs, and the on-site sale of discounted fare media. Management measures taken by the Block W development can be monitored and adjusted as needed to continually create opportunities to reduce the amount of vehicular traffic generated by the site.

Summary and Recommendations

This report concludes that the proposed development will not have a detrimental impact to the surrounding transportation and roadway network, assuming that all planned site design elements and recommended mitigation measures are implemented.

The development has many positive elements contained within its design that minimize potential transportation impacts, including:

- The proposed development's close proximity to the Crystal City Metro Station, Crystal City VRE Station, and multiple bus lines.
- Improvements to the pedestrian facilities adjacent to the site that meet or exceed Arlington County and ADA requirements.
- The inclusion of secure-long-term bicycle parking meeting zoning requirements.
- The installation of short-term bicycle parking spaces around the perimeter of the site that meet zoning requirements.
- Limited on-site parking, which will promote the use of non-auto modes of travel to and from the proposed development.
- A Transportation Management Plan (TMP) that aims to reduce the demand of single-occupancy, private vehicles to/from the proposed development during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.

Introduction

This report presents the findings of a Multimodal Transportation Assessment (MMTA) conducted for the proposed Block W development in Arlington, VA.

The development site currently consists of a surface lot serving the rail corridor via service roads. The proposed development plan details 370 dwelling units and approximately 3,360 square feet of ground floor retail. The proposed project build-out year is 2026.

The existing site is currently occupied by a segment of an existing service road (hereafter referred to as “Crystal City Service Road”), an unpaved surface lot, park space, and the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. The site is currently zoned C-O-1.5 and is shown as Low Office-Apartment-Hotel in the GLUP.

Purpose of Study

The purpose of this study is to evaluate the transportation network in the vicinity of the site and identify any potential transportation impacts that may result from the proposed redevelopment. Elements of this report include a description of the proposed development, an evaluation of the existing multimodal transportation network, and evaluations of the future transportation network with and without the proposed development.

Study Tasks

The following tasks were completed as part of this study:

- A scoping form dated April 10, 2023 was submitted by Gorove Slade to Arlington County and signed on May 22, 2023. This scope includes discussions about the parameters of the study and relevant background information. A copy of the signed scoping document is included in the Technical Appendix.
- Turning movement counts at six (6) study area intersections were conducted on May 17, 2023 during the morning hours between 6:30 and 9:30 AM and evening hours between 4:00 and 7:00 PM. Additionally, 24-hour counts were collected on the same day at three (3) locations along the Airport Access Road.
- As outlined in the scoping document, a number of proposed developments in the vicinity of the site were assumed to be in place for the Background (2026) and Future (2026) Conditions.
- Proposed site traffic volumes were generated based on the methodology outlined in Trip Generation, 11th Edition published by the Institute of Transportation Engineers (ITE).
- Intersection capacity analyses were performed using the software package Synchro, Version 11 based on the Highway Capacity Manual (HCM) methodology. As outlined in the scoping document, the scenarios to be included in the study are Existing (2023), Future Without Development/Without Ramp Removal (2026), Future Without Development/With Ramp Removal (2026), and Future With Development/With Ramp Removal (2026).
- A Transportation Management Plan framework was developed as a TMP will be necessary to meet County requirements.

Project Summary

Site Location

The project site is located in the Crystal City area of Arlington, Virginia. Figure 1 shows the regional location of the project. The project site is bounded by outdoor park space to the north, 26th Street S/Airport Access Road to the south, a railroad corridor to the east, and Crystal Drive to the west. The site location is shown in Figure 2.

Parcel Information

The existing site is currently occupied by a segment of an existing service road (hereafter referred to as “Crystal City Service Road”), an unpaved surface lot, park space, and the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Prior to construction of the new building, the off-ramp connecting the existing Airport Access Road to northbound Crystal Drive will be demolished, and the proposed development will realign the service road to connect to Crystal Drive at the northwest corner of the project site as shown in Figure 2. The proposed development site will be bound by the realigned Crystal City Service Road to the north, the rail corridor to the east, Airport Access Road to the south, and Crystal Drive to the west. A parcel map showing the location of the property is presented in Figure 3.

General Land Use Plan Recommendations

The site is currently zoned as C-O-1.5: Mixed-Use. According to Arlington County’s General Land Use Plan (GLUP), this site is listed as a low office-apartment-hotel land use. The GLUP map for the site is shown in Figure 4. The zoning map is shown in Figure 5.

Proposed Site Plan

The proposed development will construct a new multifamily and retail project at the new development site created through the demolition of the Airport Access Road off-ramp. The development will include 370 dwelling units and approximately 3,360 square feet of ground-floor retail. A total of 158 parking spaces will be provided for the development (148 residential and 10 visitor spaces), resulting in a 0.4 parking ratio for the site. 109 of these spaces (including all 10 visitor spaces) will be provided in a partially below-grade garage on site. 49 additional parking spaces will be made available in the Parks block garage, which can be accessed via the building at 2451 Crystal Drive, immediately north of the development site.

The proposed site plan is shown in Figure 6.

Scope and Limits of the Study Area

The general extents of the study area are 23rd Street S to the north, Potomac Ave to the south, Crystal Drive to the east, and Richmond Highway to the west. The following intersections were identified for inclusion in the vehicular study area, as shown in Figure 7.

1. 23rd Street S/Richmond Highway
2. 23rd Street S/S Clark Street
3. 23rd Street S/Crystal Drive
4. Richmond Highway/Airport Access Off Ramp
5. Crystal Drive/HAWK & Airport Access Off Ramp
6. Crystal Drive/26th Street S/Crystal City Service Road
7. Crystal Drive/Potomac Ave
8. Crystal Drive/Crystal City Service Road (Planned)

Data Sources

Sources of data for this study include Arlington County, the Virginia Department of Transportation (VDOT), the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, Census Transportation Planning Products (CTPP), JBG Smith, SK+I, Bohler, and the office files and field reconnaissance efforts of Gorove Slade Associates, Inc.

Contents of Study

This report contains 10 chapters as follows:

- Study Area Overview
  This chapter reviews the area near and adjacent to the project and includes an overview of the site location.
- Transit
  This chapter summarizes the existing and future transit service adjacent to the site, reviews how the project's transit demand will be accommodated, outlines impacts, and presents recommendations as needed.
- Pedestrian Facilities
  This chapter summarizes existing and future pedestrian access to the site, reviews walking routes to and from the project site, outlines impacts, and presents recommendations as needed.
- Bicycle Facilities
  This chapter summarizes existing and future bicycle access to the site, reviews the quality of cycling routes to and from the project site, outlines impacts, and presents recommendations as needed.
- Project Design
  This chapter reviews the transportation components of the project, including the site plan and access.
- Travel Demand Assumptions
  This chapter outlines the travel demand of the proposed project. It summarizes the expected mode splits and multimodal trip generation of the project.
- Traffic Operations
  This chapter provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. It summarizes the routing assumptions used in the analysis. This chapter highlights the vehicular impacts of the project, including presenting mitigation measures for minimizing impacts as needed.
- Safety Review
  This chapter reviews the findings of a crash data analysis of adjacent intersections and frontage of the proposed project.
- Transportation Management Plan
  This chapter outlines the components of the proposed development's Transportation Management Plan (TMP).
- Summary and Conclusions
  This chapter presents a summary of the recommended mitigation measures by mode and presents overall findings and conclusions.

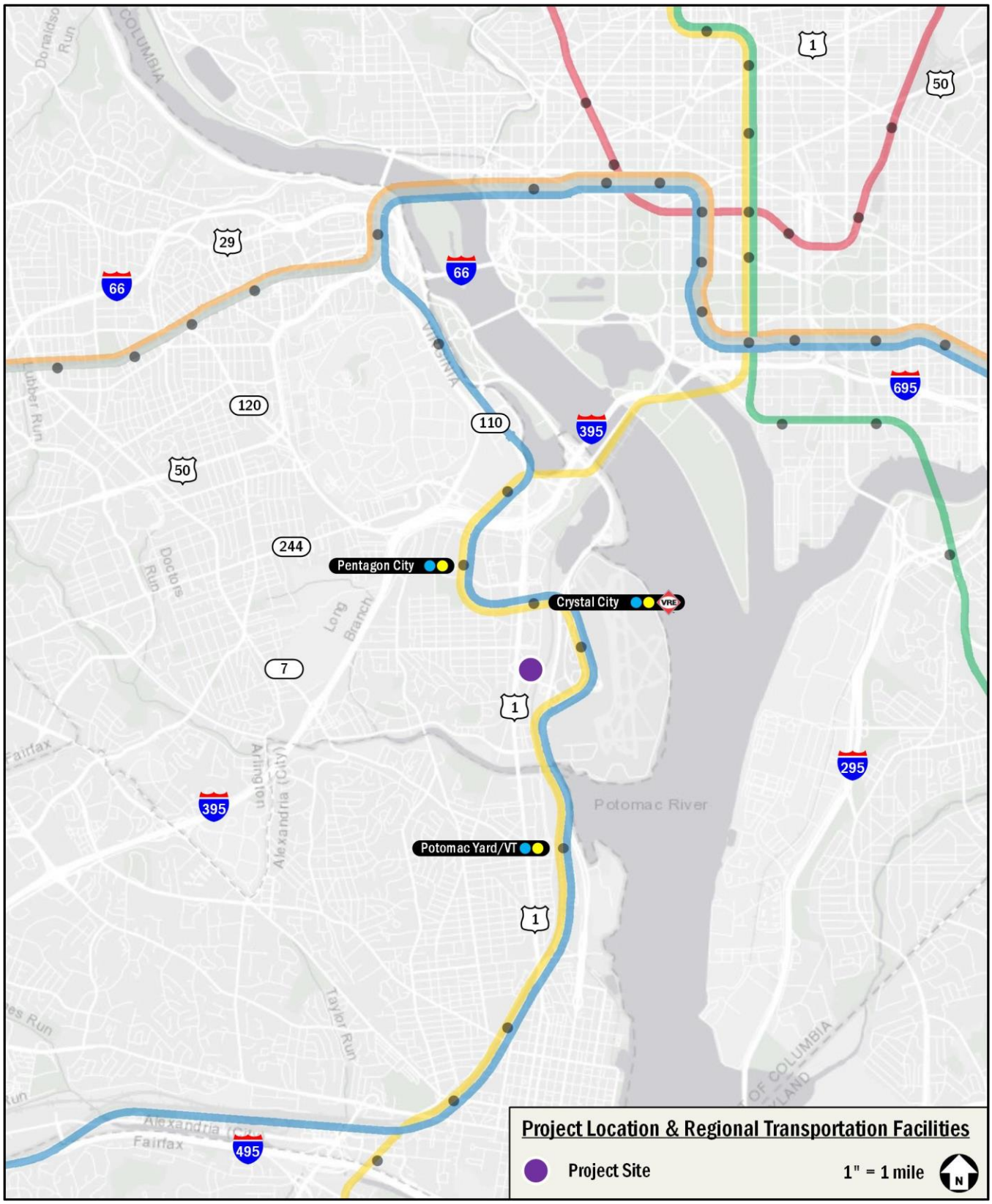

Figure 1: Major Regional Transportation Facilities

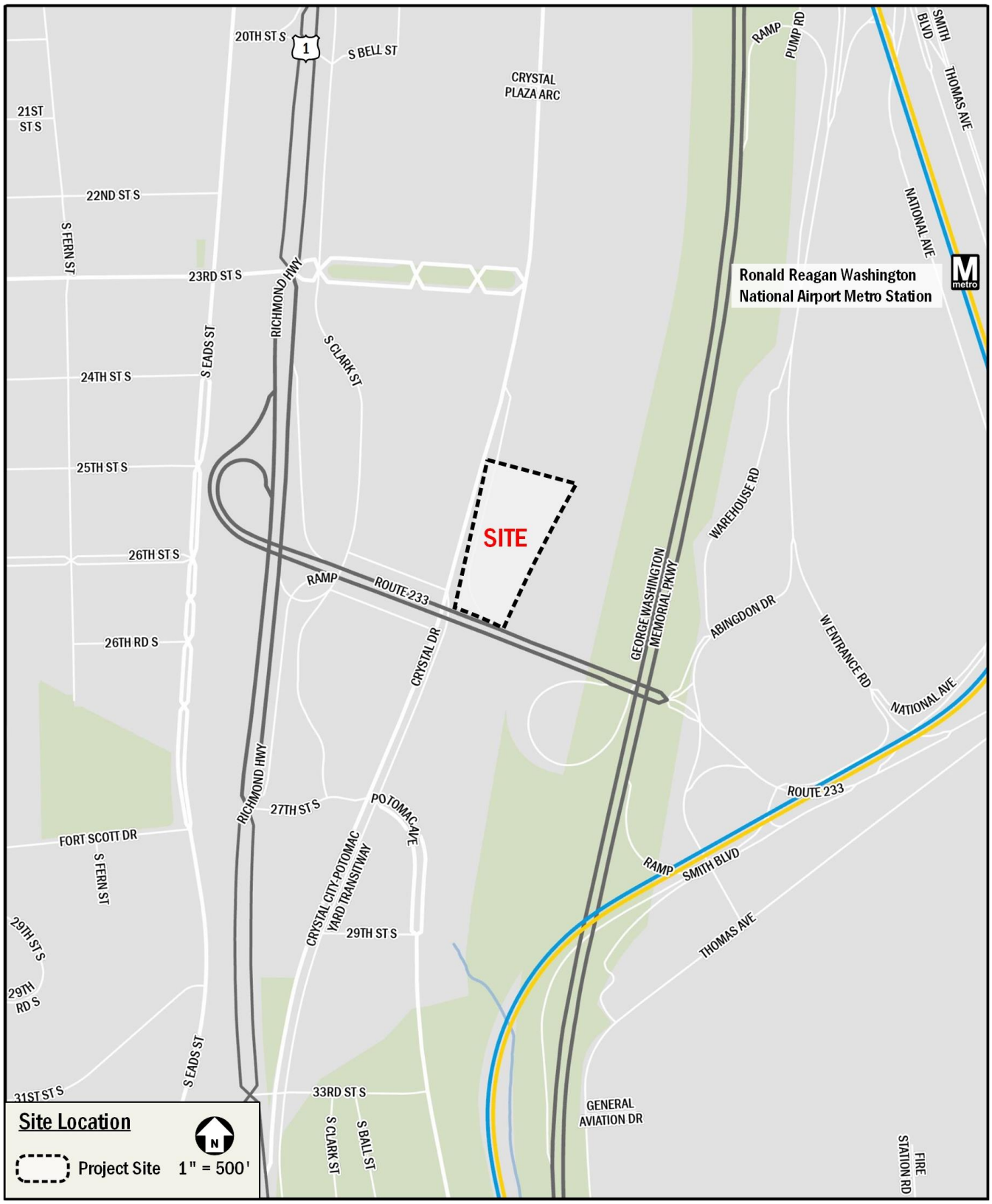

Figure 2: Site Location

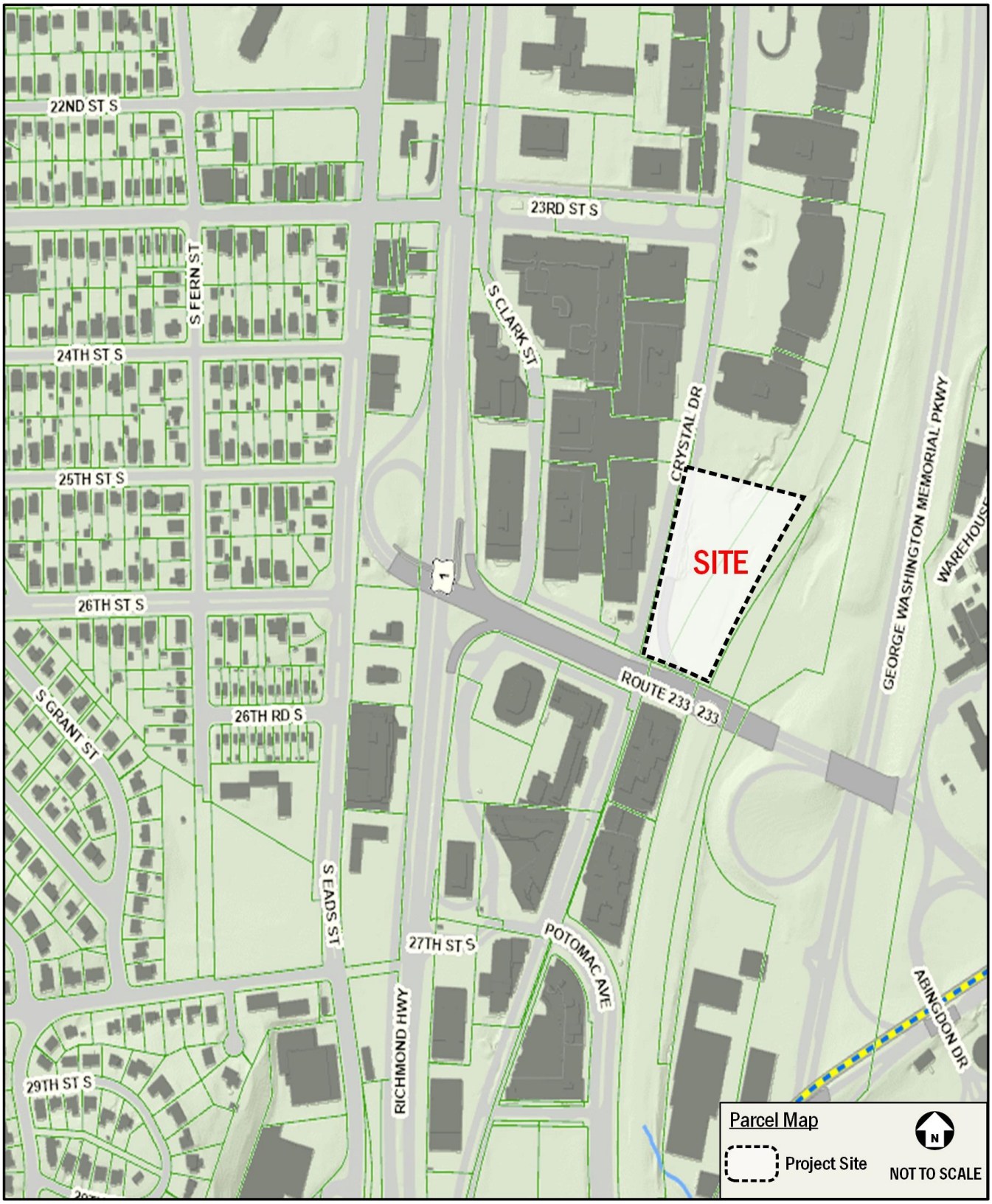

Figure 3: Parcel Map (Source: Arlington County Real Estate Map, January 2022)

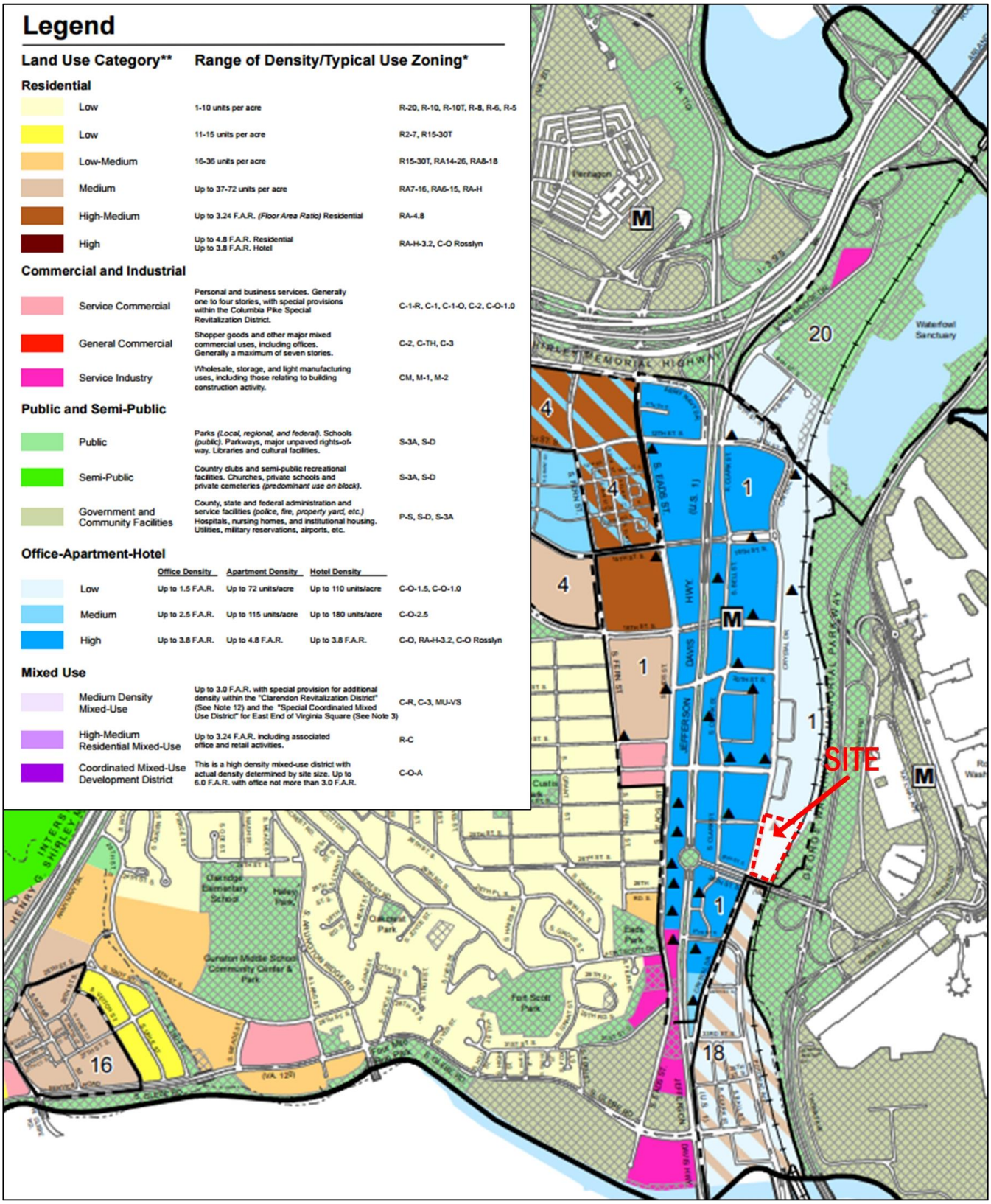

Figure 4: Planned Land Uses (Source: Arlington General Land Use Plan (GLUP), June 2017)

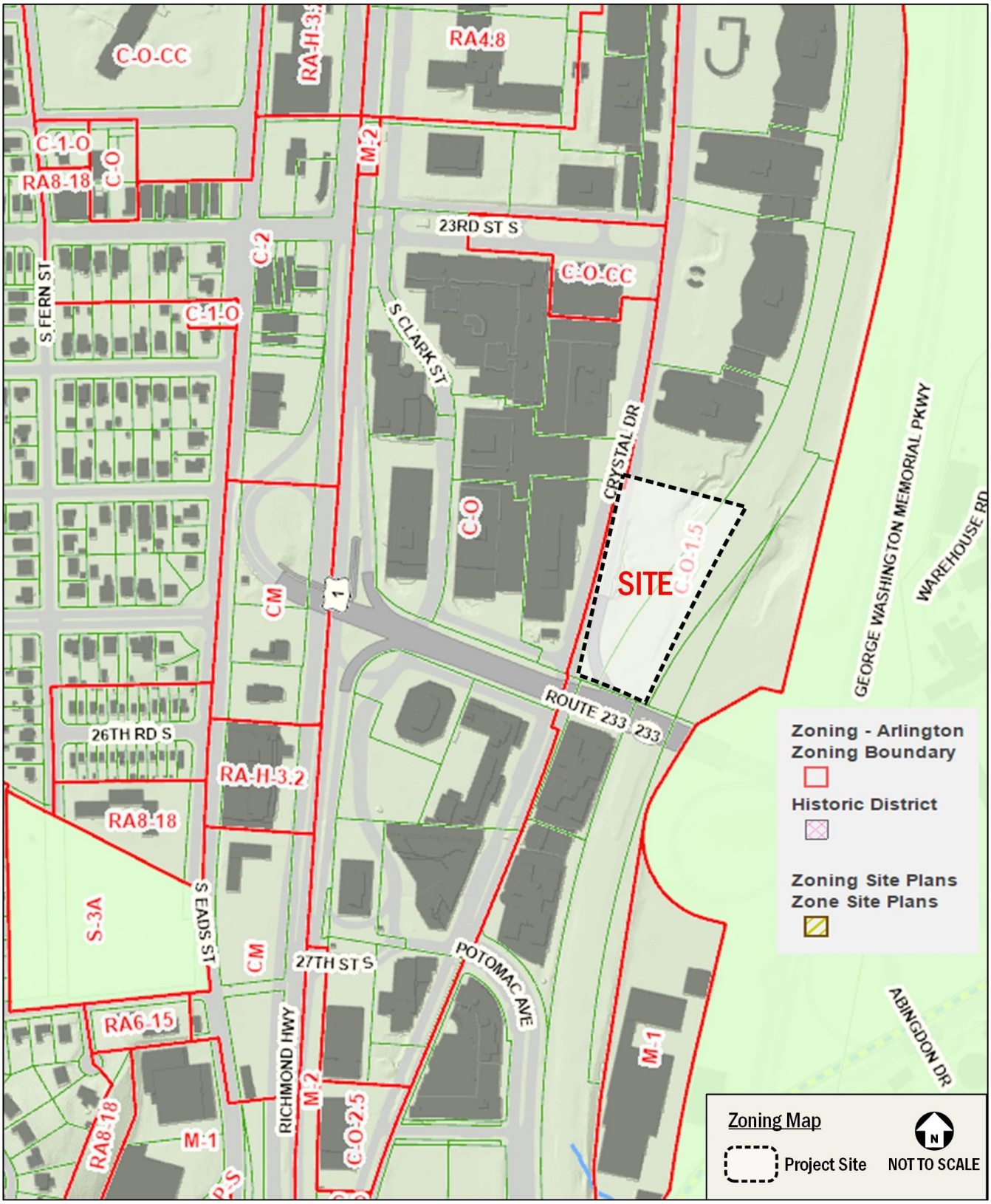

Figure 5: Zoning Map (Source: Arlington County)

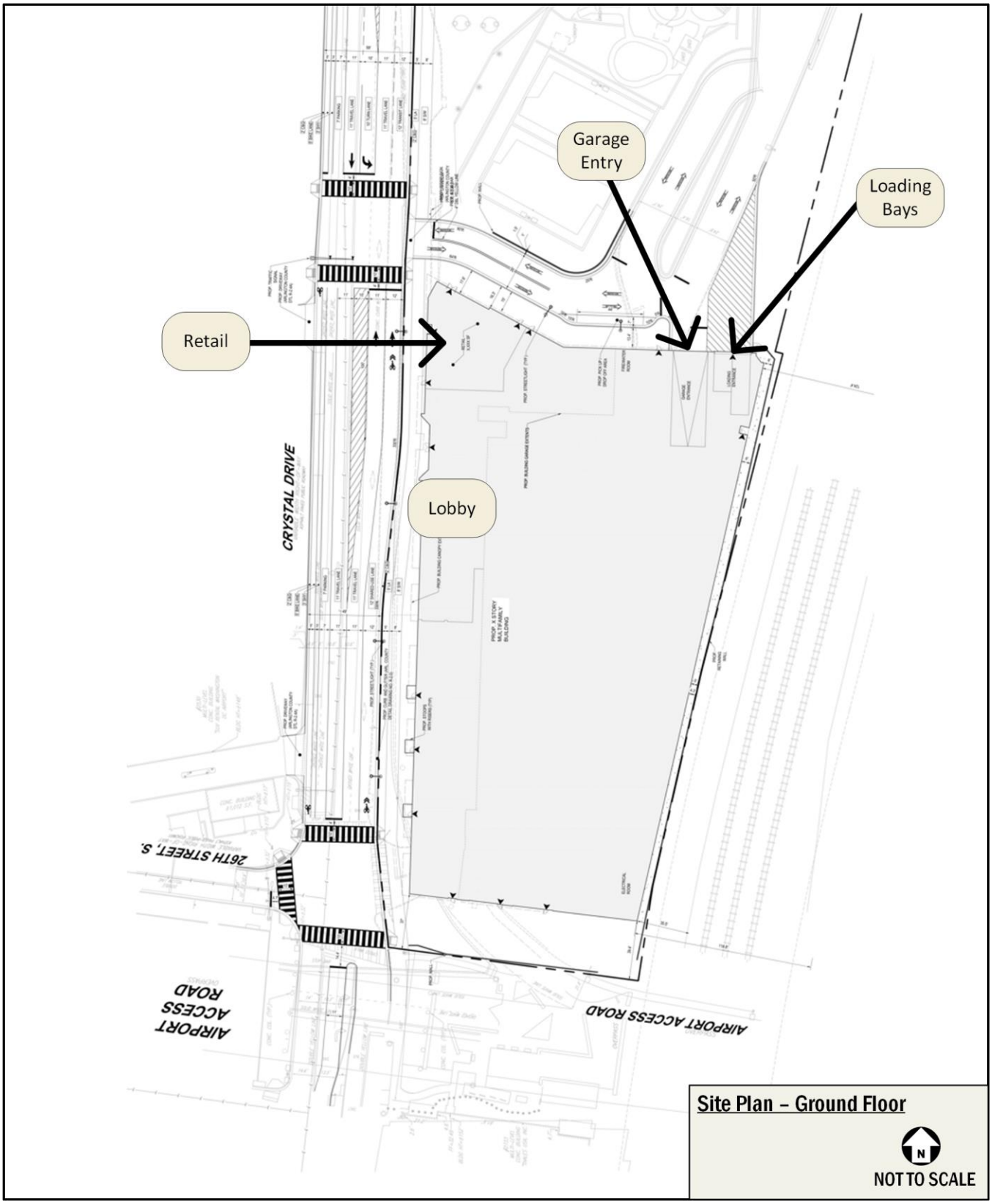

Figure 6: Site Plan – Ground Floor

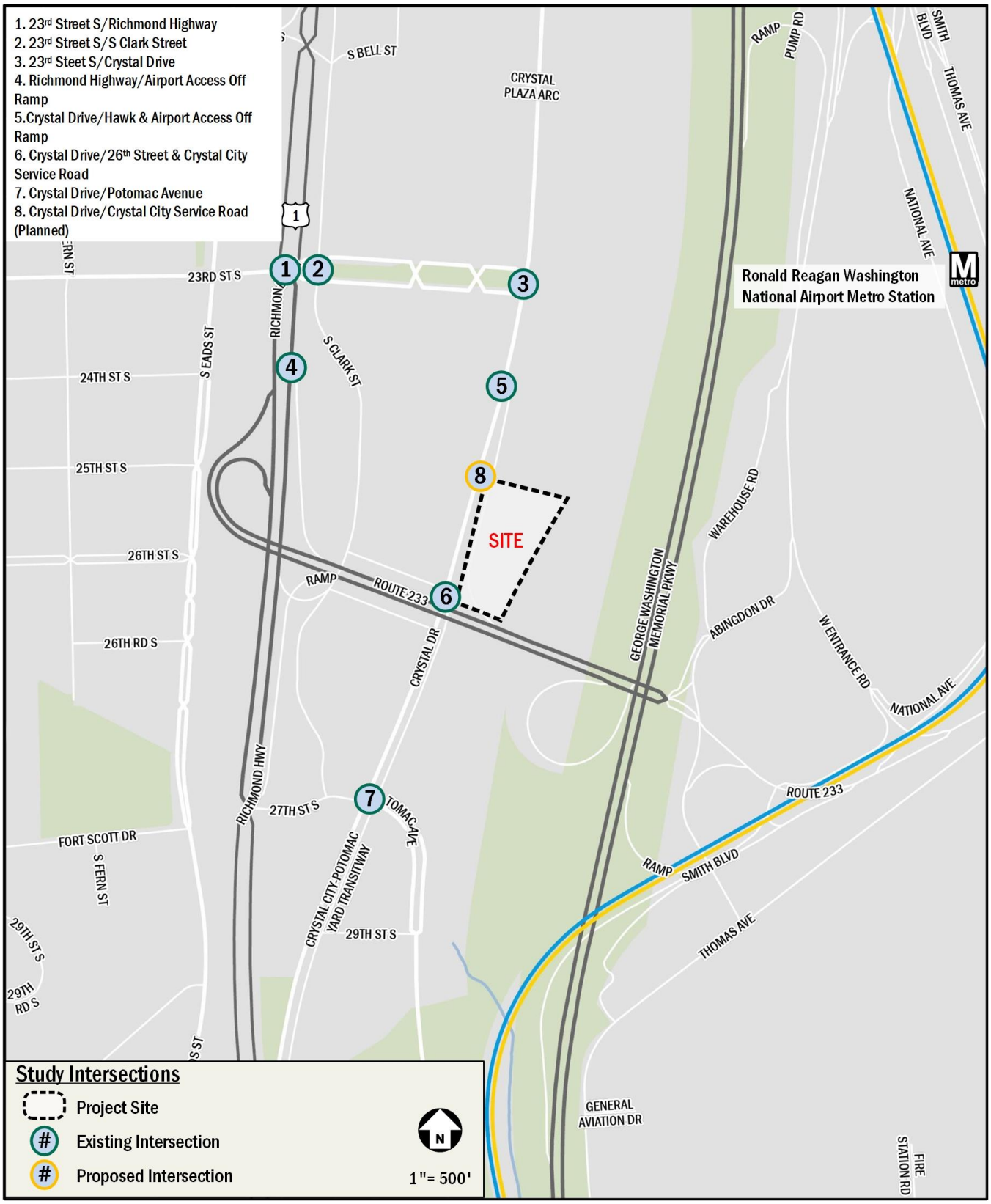

Figure 7: Study Intersections

Study Area Overview

This chapter reviews the existing conditions of the surrounding transportation network and includes an overview of the site location, including a summary of the major transportation characteristics of the area and of future regional projects. Detailed characteristics of each mode and their subsequent study areas will be defined in the following chapters.

The following conclusions are reached within this chapter:

- The site is surrounded by an extensive regional and local transportation system that will accommodate the residents, employees, and patrons of the proposed development.
- The site is well-served by public transportation with access to the Metrorail's Blue and Yellow Lines, the VRE, and several local and regional bus lines.
- The site is surrounded by a well-connected pedestrian environment. In the vicinity of the site, sidewalks generally meet standards recommended by the Arlington County Master Transportation Plan with some gaps in the system.
- The site has access to several on- and off-street bicycle facilities, including bicycle lanes on Crystal Drive, S Clark Street, and S Potomac Ave which connect to the Mt. Vernon Trail and Four Mile Run Trail.
- Local initiatives will positively impact the study area, including the 23rd Street S Realignment project, Crystal City to DCA Pedestrian Bridge, and DCA South Pedestrian Access Improvements.

Major Transportation Features

Overview of Regional Access

Under existing conditions, the proposed development site has ample access to regional vehicular and transit-based transportation options, as shown in Figure 1, that connect the site to destinations within Virginia, the District, and Maryland.

The site is accessible from several principal arterials such as Route 1, VA-120 (S Glebe Road), and VA-110. The arterials create connections to VA-244 (Columbia Pike), I-395, I-66, George Washington Memorial Parkway, and ultimately the Capital Beltway (I-495) and I-95. These principal arterial roadways bring vehicular traffic within one half-mile of the site, at which point minor arterials, collectors, and local roads can be used to access the site directly.

The site has access to the Blue and Yellow Lines via the Crystal City Metro Station, which provides connections to areas in Virginia, the District, and Maryland. The Blue Line connects Springfield, VA with Largo, MD and the Yellow Line connects Huntington, VA with Mt Vernon Square, DC, with both lines providing access to the District core. Both lines provide connections to the Red Line, which provides a direct connection to Union Station, a hub for commuter rail – such as Amtrak, MARC, and VRE – in addition to all additional Metrorail lines, allowing for access to much of the DC Metropolitan area. The site is located approximately 0.5 miles south of the Crystal City VRE station.

The proposed development is located approximately 0.5 miles from the Mount Vernon Trail, an 18-mile off-street bicycle trail running along the Potomac River from George Washington's Mount Vernon estate to Theodore Roosevelt Island, just across the river from downtown Washington, DC. The Mount Vernon Trail connects to the W&OD, Four Mile Run, and Custis Trails in Arlington County, as well as the Capital Crescent Trail in Washington, DC, providing regional bicycle connectivity to Rosslyn and the District. A detailed review of existing bicycle infrastructure is provided in a later chapter of this report.

Overall, the site has access to several regional roadways, transit, and bicycle options, making it convenient to travel between the site and destinations in Virginia, the District, and Maryland.

Overview of Local Access

There are several local transportation options near the site that serve vehicular, transit, walking, and cycling trips under existing conditions, as shown on Figure 8.

In addition to several principal arterials, the site is served by a local vehicular network that includes several minor arterials and collectors such as Crystal Drive, Potomac Avenue, 23rd Street S, and 26th Street S. In addition, there is an existing network of local roadways that provide access to the site.

Several bus systems provide local transit service in the vicinity of the site, including connections to several neighborhoods within Virginia, the District, and additional Metro stations. As shown in Figure 8, there are multiple bus routes that serve the site. In the vicinity of the site the majority of routes travel along Crystal Drive, S Clark Street, Potomac Avenue, and 23rd Street S.

There are existing bicycle facilities that connect the site to areas within Arlington, Virginia, and the District, most notably the

Mount Vernon Trail. There are bike lanes on Crystal Drive, S Clark Street, and Potomac Avenue. A detailed review of existing and proposed bicycle facilities and connectivity is provided in a later chapter of this report.

In the vicinity of the site, most sidewalks meet Americans with Disabilities Act (ADA) standards and standards recommended by the Arlington Master Transportation Plan. Anticipated pedestrian routes, such as those to public transportation stops, retail zones, nearby residential areas, and community amenities, provide well-connected pedestrian facilities. A detailed review of existing and proposed pedestrian access and infrastructure is provided in a later chapter of this report.

Overall, the site is surrounded by an extensive local transportation network that allows for efficient transportation options via transit, bicycle, walking, or vehicular modes.

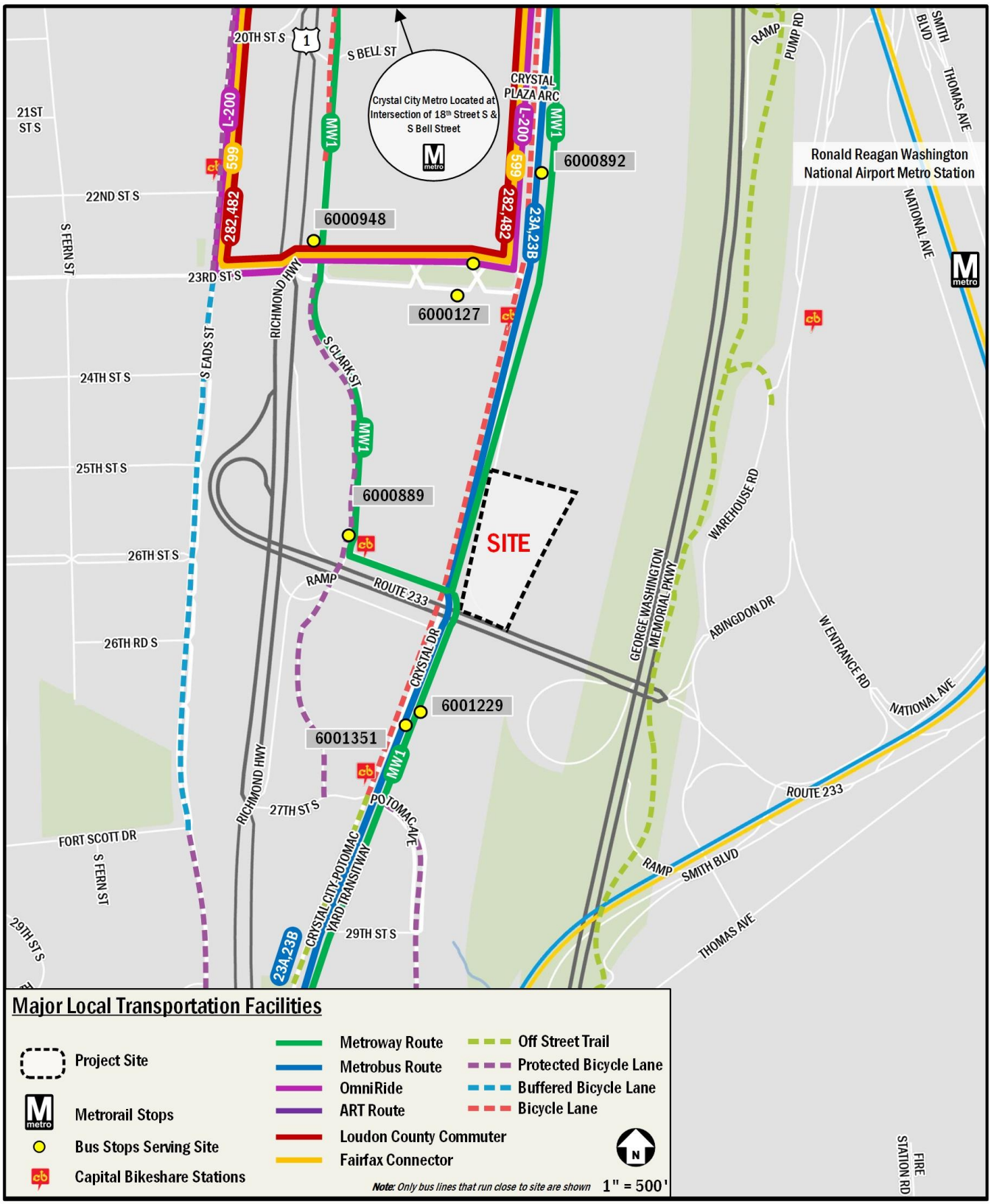

Figure 8: Major Local Transportation Facilities

Car-sharing

Car-sharing service in Arlington is provided by Zipcar. This is a private company that provides registered users access to a variety of automobiles. Zipcar has designated spaces for their vehicles. One (1) Zipcar location is located within a half-mile of the site. This location and the number of available vehicles are listed in Table 1.

Table 1: Carshare Location

Zipcar Carshare Location	Number of Vehicles
292 20th Street S	1 Vehicle

E-Scooters and Dockless E-Bicycles

Five (5) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies provide Shared Mobility Device (SMD) service in Arlington County: Bird, Lime, Veo, Link/Superpedestrian, and Spin. These SMDs are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many SMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many SMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where you’ll find other street signs, street furniture, trees, parking meters, etc.). At this time, SMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Walk Score and Bike Score

Walkscore.com is a website that provides scores and rankings for the walking, biking, and transit conditions for an area. This project site is located in an area that has a walk score of 82 (or “Very Walkable”), transit score of 75 (or “Excellent Transit”), and a bike score of 84 (or “Very Bikeable”). shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

The site is situated in an area with a “very walkable” walk score because of the abundance of neighborhood serving retail locations, where daily errands can be completed by walking.

The proposed development is located in an area with an “excellent transit” transit score because of its proximity to the Crystal City Metro Station as well as its proximity to other bus lines.

The site is situated in an area with a “very bikeable” bike score due to surrounding bicycle facilities including bike lanes, sharrows, bikeshare stations, and trails such as the Mount Vernon Trail, and flat topography.

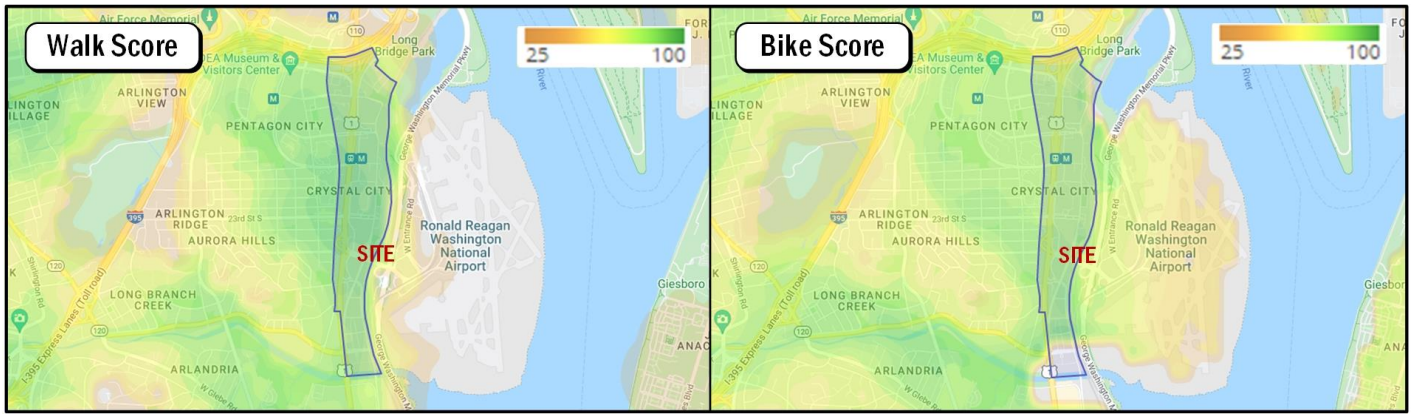

Figure 9: Summary of Walkscore and Bikescore

Future Projects

There are several County-wide initiatives, local initiatives, and planned improvements located in the vicinity of the site. These planned projects are summarized below.

County-wide Initiatives

Arlington Master Transportation Plan

The Arlington County Master Transportation Plan (MTP), adopted in 2011 and updated in 2019, outlines goals to improve various modes of transportation throughout the County. The MTP identifies goals and objectives for each mode to improve safety and access for all users, particularly for pedestrians, bicyclists, and transit users. The Arlington Master Transportation Plan's recommended policies for transportation in the County that apply to the Block W development are outlined as follows:

- Streets (2016) – The County will address the street system and enhance the transportation network by: (1) Utilizing the plan's street typology to guide street planning and ensure each street type supports the general policies of complete streets and adjacent land uses; (2) Including appropriate facilities to meet and balance the needs of all modes; (3) Constructing/converting some local streets to a pedestrian priority or a shared street; (4) Accommodating travel growth through shifts to non-auto modes; (5) Designing streets to favor lower vehicular speeds; and (6) Maintaining a grid-style network to enhance connectivity. The planned improvements included in the MTP in the vicinity of the site are shown in Figure 11.
- Transit (2016) – The County will address the transit system by: (1) Developing a Premium Transit Network of high-frequency service connecting major destinations; (2) Operating a Secondary Transit Network of fixed route services that improves access to destinations across Arlington; (3) Making transit more accessible and convenient to all through enhanced facilities and transit-oriented land use policies; (4) Improving Metrorail services and stations; and (5) Expanding pedestrian access to transit facilities.
- Pedestrian (2011) – The County will address the pedestrian system by: (1) Completing the walkway network with appropriate facilities on both sides of arterial streets and at least one side of neighborhood streets; (2) Upgrading existing pedestrian facilities to comply with current standards; (3) Implementing measures aimed at changing motorist behavior to manage vehicular speed and minimize vehicle/pedestrian conflicts; and (4) Developing strategies to encourage more people to walk.
- Bicycle (2019) – The County will address the bicycle system by: (1) Making existing streets safer and more comfortable for bicycling by all users; (2) Expanding travel safety education programs; (3) Providing a network of low-traffic-stress bicycle routes that connect all land uses; (4) Accommodating bicycle infrastructure as part of all street improvement projects; (5) Establishing bicycles as a mainstream travel mode; and (6) Encouraging bicycle facilities, including parking, showers, and lockers. The improvements planned for the bicycle facilities surrounding the site as part of the Plan are shown in Figure 12.
- Parking and Curb Space (2009) – The County will address the parking system by: (1) Prioritizing the use of curb space, matching the various types of uses to the most appropriate locations; (2) Promoting on-street parking within residential neighborhoods and on commercial streets to calm traffic; (3) Ensuring the minimum parking needs are met and limit excessive parking; (4) Discouraging off-street surface parking; and (5) Allowing reduced parking space requirements for new developments in close proximity to frequent transit service and requiring enhanced TDM measures.
- Transportation Demand Management (2008) – The County will address transportation demand management by: (1) Incorporating comprehensive TDM plans for all site plans to minimize vehicular trips and maximize the use of other modes; (2) Exploring strategies and incentives to achieve TDM measures in existing private buildings; and (3) Applying TDM programs to non-work travel, as well as commuting, through marketing strategies.

A number of elements in the proposed development are consistent with these policies:

- Pedestrian:
  - Improvements to the adjacent sidewalks specifically along the site's frontage.
- Bicycle:
  - Short-term bicycle parking will be provided along the perimeter of the site.
  - Secure, long-term bike parking will be provided in bike rooms located on the ground level of the building and in the proposed parking garage.
- Parking and Curb Space:
  - On-site parking will be located in an off-street, partially below-grade parking garage.

- Transportation Demand Management:
  - A TMP will be implemented for the development to discourage auto travel and encourage the travel by other modes.

The MTP also identifies the following recommendations in the vicinity of the Block W development:

- Transit:
  - Expansion of the Crystal City/Potomac Yard transitway currently running along Crystal Drive.
- Bicycle:
  - Upgrade the existing bicycle lanes on Potomac Avenue and Crystal Drive through the Potomac Yard and Crystal City areas. Where feasible provide further separation or protection of bicyclists from motor vehicle traffic. Provide a lower stress route to link the Four Mile Run Trail to Crystal City, Pentagon City and Long Bridge Park.
  - Reconstruct 18th Street S between Richmond Highway (Rt.1) and Crystal Drive to include an enhanced on-street bicycle facility and improve the connection with the Crystal City Connector Trail. Also identified in the Crystal City Sector Plan.

In direct relation to the Block W development, these recommendations would create additional multi-modal capacity and connectivity to/from the site.

Local Initiatives

Crystal City Sector Plan

The Crystal City Sector Plan, adopted in 2010, outlines the vision to transform Crystal City with more ground floor retail, high-quality office space, and more housing options through improvements to existing street, sidewalk, and bicycle networks. The key transportation-related goals of the Sector Plan include:

- Creating a high-quality public realm that strengthens the sense of community
- Providing a mix of office, residential, retail, cultural, and civic uses
- Preserving the integrity of the single-family neighborhoods
- Enhancing multimodal access and connectivity

The Block W development is consistent with the outlined goals. The development includes ground floor retail and provides ample bicycle accommodation on-site. Additionally, recommendations in the Sector Plan may positively impact the connectivity of the development to the surrounding areas. Recommendations include bike lanes on Crystal Drive and S Clark Street south of 26th Street S, cycle track on S Clark Street/S Bell Street between 12th Street S and 26th Street S, signed bicycle routes on 23rd Street S, and additional off-street trails connecting 26th Street S to Mt. Vernon Trail.

The Sector Plan includes a proposed street network, which includes a future street (25th Street) between Crystal Drive and Richmond Highway, splitting the block south of 23rd Street. The proposed development is consistent with this proposal; in the proposed cross-section of Crystal Drive adjacent to the development, the cross-section provides additional width to accommodate a northbound left-turn lane into this future location of 25th Street.

Crystal City Multimodal Transportation Study

The Crystal City Multimodal Transportation Study (2010) is a supporting document of the Crystal City Sector Plan that further evaluates the existing and future multimodal transportation network in Crystal City. The study highlights recommendations to improve accommodations for all travel modes, including a Complete Streets program, with recommendations for sidewalks, crosswalks, bicycle lanes, transit facilities, on-street parking, and left-turn lanes.

Given the Block W development is located in Crystal City, multiple recommendations are made near the development. The study recommends: (1) 5-foot wide bicycle lanes on Crystal Drive, (2) 7- to 8-foot wide parallel parking lanes on sections of Crystal Drive, S Clark Street, and 23rd Street S, (3) Construction of a cycle track along S Clark Street to 27th Street S, and (4) extension of Crystal Drive Bike lanes between 23rd Street S and 31st Street S.

22202 Study

In response to community concerns regarding the development impacts in Crystal City and Pentagon City, Arlington County completed a study including transportation material, data, and plans for the 22202 Zip Code. The study, completed in 2016, presents data on past, present, and projected vehicular traffic and multimodal trends for the entire zip code. Among the data presented in the report is the Journey to Work Mode Split information by census tract, which shows a 35% auto mode split in the Crystal City area and a 28% auto mode split in the Pentagon City area, which supports the mode splits assumed in this report.

Planned Improvements

23rd Street Realignment

The Crystal City Sector Plan recommends improvements to 23rd Street S, between S Eads Street and Crystal Drive. The project will be completed in two phases. The first phase of this project focuses on 23rd Street S between S Eads Street and Richmond Highway. This phase will widen the sidewalk and retail parking areas on the south side of the street by narrowing the existing travel lanes. This will improve pedestrian safety while maintaining the existing level of vehicular access. The second phase will address 23rd Street S between Richmond Highway and Crystal Drive. This phase will be initiated by redevelopment along the north portion of the street. During this phase, 23rd Street S will be realigned to remove the wide median island so that development sites can be built in accordance with the Crystal City Sector Plan. This phase will also add pick-up/drop-off areas along the south side of 23rd Street S, eastbound and westbound protected bike lanes, a protected intersection corner at the southeast corner of the S Clark Street and 23rd Street S intersection, a protected intersection corner at the northwest corner of the Crystal Drive and 23rd Street S intersection, and a bike box on the westbound approach of the S Clark Street and 23rd Street S intersection.

In direct relation to the Block W development, improvements along 23rd Street S will create a more comfortable multimodal environment and improve east-west connectivity to the site.

Route 1 To-Grade Project

In late 2018, the Commonwealth of Virginia identified the improvements to Route 1 to be fully or partially funded by the Commonwealth. The Route 1 To-Grade Project will improve pedestrian, bicycle, and transit connectivity between Pentagon City and Crystal City. The project will bring Route 1 down to grade at the existing grade-separated intersections of 15th Street S and 18th Street S to create an urban boulevard through Pentagon City and Crystal City. In this section of roadway, Route 1 will include a total of six-lanes plus left turn lanes, a wide median, and a wide, urban sidewalk. The project will be led by VDOT and is currently under study.

VRE Station Relocation

The Crystal City VRE station is proposed to be relocated farther south along Crystal Drive from its existing location. The new station will be located between 1805 Crystal Drive and 2121 Crystal Drive. The new station will construct an 850-foot long platform situated between Tracks 2 and Track 3 on the existing rail corridor. Pedestrian access will be accommodated with two (2) grade-separated pedestrian crossings between the platform and Crystal Drive. The project is expected to be completed in 2026.

In direct relation to the Block W development, relocating the VRE station further south along Crystal Drive will increase accessibility and improve the connectivity between the station and the proposed development.

Crystal City Metro Station 2nd Entrance

In order to accommodate the projected increase in demand at the Crystal City Metrorail Station as a result of the redevelopment efforts in Crystal City, a second entrance is planned for the station. The new entrance would provide improved access from Crystal Drive, the VRE station, and the Transitway station at Crystal Drive and 18th Street S. The project will also include improvements and upgrades to elevator and lobby facilities at the station. The tentative opening of the new entrance is planned for 2025.

In direct relation to the Block W development, the second entrance will make Metrorail more accessible by the proposed development and create more multimodal connectivity.

Crystal City to DCA Pedestrian Bridge

The Crystal City Business Improvement District's vision is to link Crystal City with DCA via a context-sensitive pedestrian bridge to strengthen Crystal City's office and hotel community. In May 2023, the Arlington County Board endorsed the location of the Preferred Alternative for the Crystal City to DCA Multimodal Connection project. The location would connect to the east side of the future VRE station and span the width of the rail corridor perpendicularly before crossing the George Washington Memorial Parkway. The project is fully funded as of July 2024.

Figure 10 highlights elements of future projects with respect to the proposed site area.

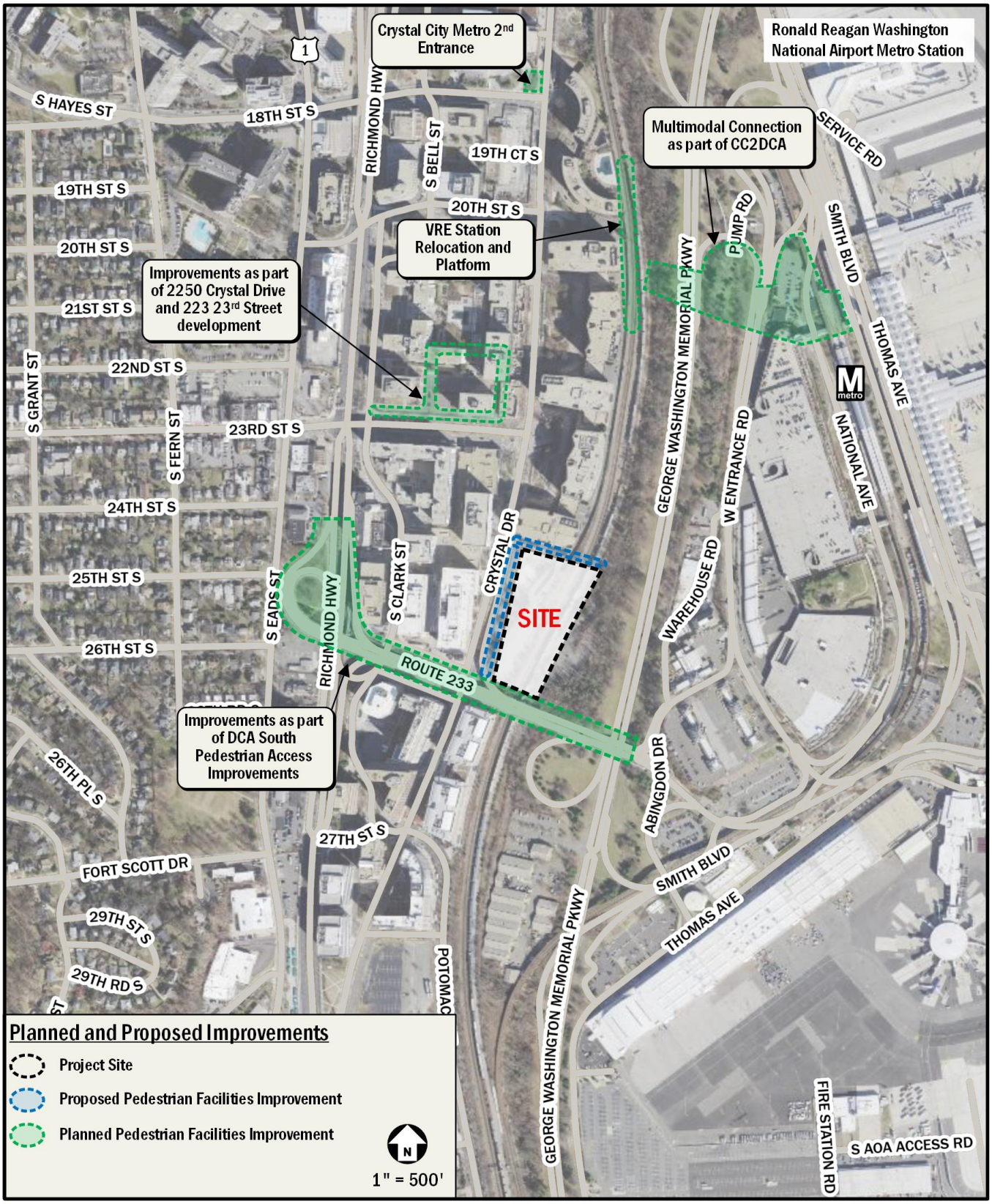

Figure 10: Planned and Proposed Improvements

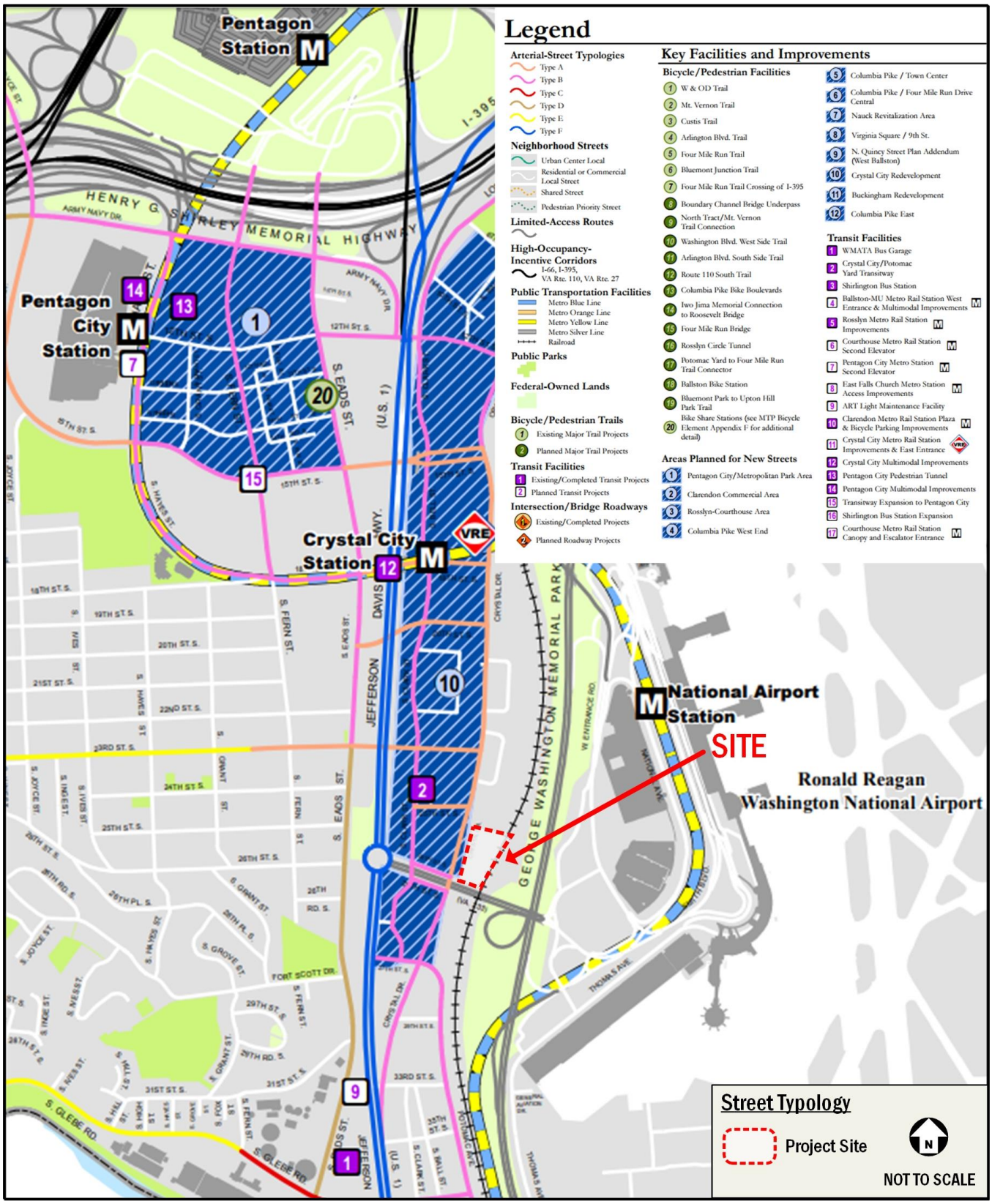

Figure 11: Street Typology (Source: Arlington Master Transportation Plan, 2011)

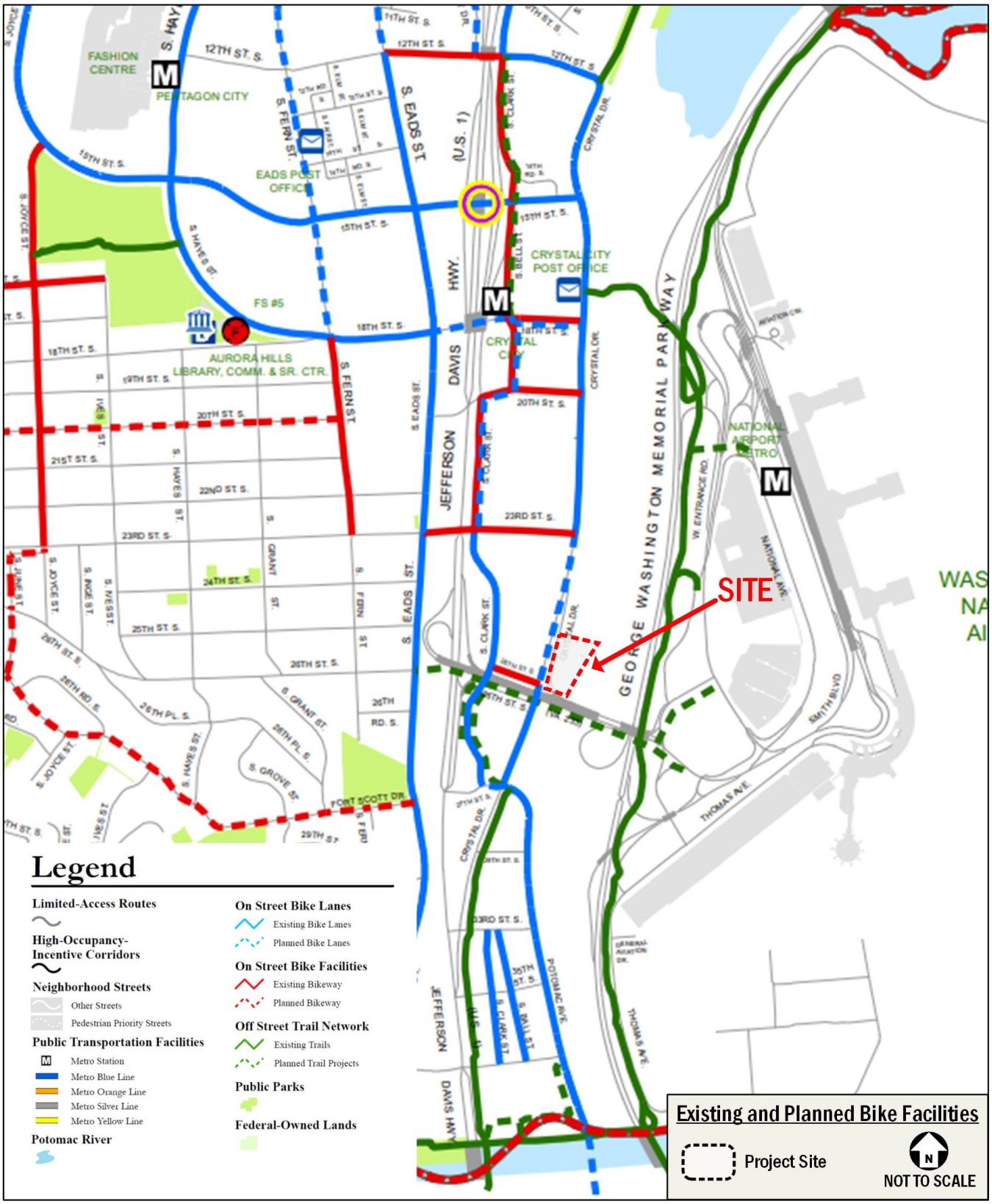

Figure 12: Existing and Planned Bike Facilities (Source: Arlington Master Transportation Plan, 2019)

Project Design

This chapter reviews the transportation components of the Block W development, including the proposed site plan and access points. It includes descriptions of the site's vehicular access, loading, parking, bicycle, and pedestrian facilities.

The proposed development site is located in the Crystal City area of Arlington, Virginia. The existing site is currently occupied by a segment of an existing service road (hereafter referred to as "Crystal City Service Road"), an unpaved surface lot, park space, and the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Prior to construction of the new building, the off-ramp connecting the existing Airport Access Road to northbound Crystal Drive will be demolished, and the proposed development will realign the service road to connect to Crystal Drive at the northwest corner of the project site as shown in Figure 2. The proposed development site will be bound by the realigned Crystal City Service Road to the north, the rail corridor to the east, Airport Access Road to the south, and Crystal Drive to the west.

The proposed development will consist of approximately 370 residential units and 3,360 square feet of ground-floor retail space. A total of 158 parking spaces will be provided for the development (148 residential and 10 visitor spaces), resulting in a 0.4 parking ratio for the site. 109 of these spaces (including all 10 visitor spaces) will be provided in a partially below-grade garage on site. 49 additional parking spaces will be made available in the Parks block garage, which can be accessed via the building at 2451 Crystal Drive, immediately north of the development site.

The proposed development will provide one (1) 40-foot loading berth and one (1) 25-foot loading berth. 157 secure long-term and 10 short-term bicycle spaces will be provided. A total of 8 short-term bicycle parking spaces for residential use and 2 short-term bicycle spaces for retail use will be provided.

Adjacent Roadways

Consistent with the Crystal City Sector Plan, the proposed development will provide improved multimodal infrastructure along the adjacent roadways.

Crystal Drive

As part of the proposed development, Crystal Drive will be improved along the western frontage of the development site. Immediately north of 26th Street S, Crystal Drive is envisioned to be an approximately 49-foot wide, urban, tree-lined street that provides a safe pedestrian environment and accommodates multiple modes. Streetscape elements that contribute to this include a southbound bike lane, street parking on the west side of Crystal Drive, and wide sidewalks. The proposed development will provide an 8-foot sidewalk and 5-foot tree area along its frontage. Between 26th Street and the proposed new location of Crystal City Service Road, the Crystal Drive cross-section will transition to a 59-foot curb-to-curb width; the additional 10 feet of cross-section width is provided to accommodate a northbound left-turn lane into the future 25th Street S, a new street proposed in the Crystal City Sector Plan. Figures 13 and 14 show the typical cross-section and design elements that can be expected along Crystal Drive. Figure 13 and 15 show the typical cross-section and design elements that can be expected along Crystal City Service Road and two sections on-site as part of the proposed development.

Crystal City Service Road

As part of the proposed development, the portion of Crystal City Service Road running through the site will be realigned to intersect with Crystal Drive at the northwest corner of the development site; this new intersection will be signalized. The new segment of Crystal City Service Road will run along the northern frontage of the site and envisioned to be a 26-foot wide urban street that provides a safe pedestrian environment and accommodates multiple modes. Streetscape elements that contribute to this include a pick-up/drop-off zone on the south side of the street and wide sidewalks. Figure 14 shows the typical cross-section and design elements that can be expected along Crystal City Service Road as part of the proposed development.

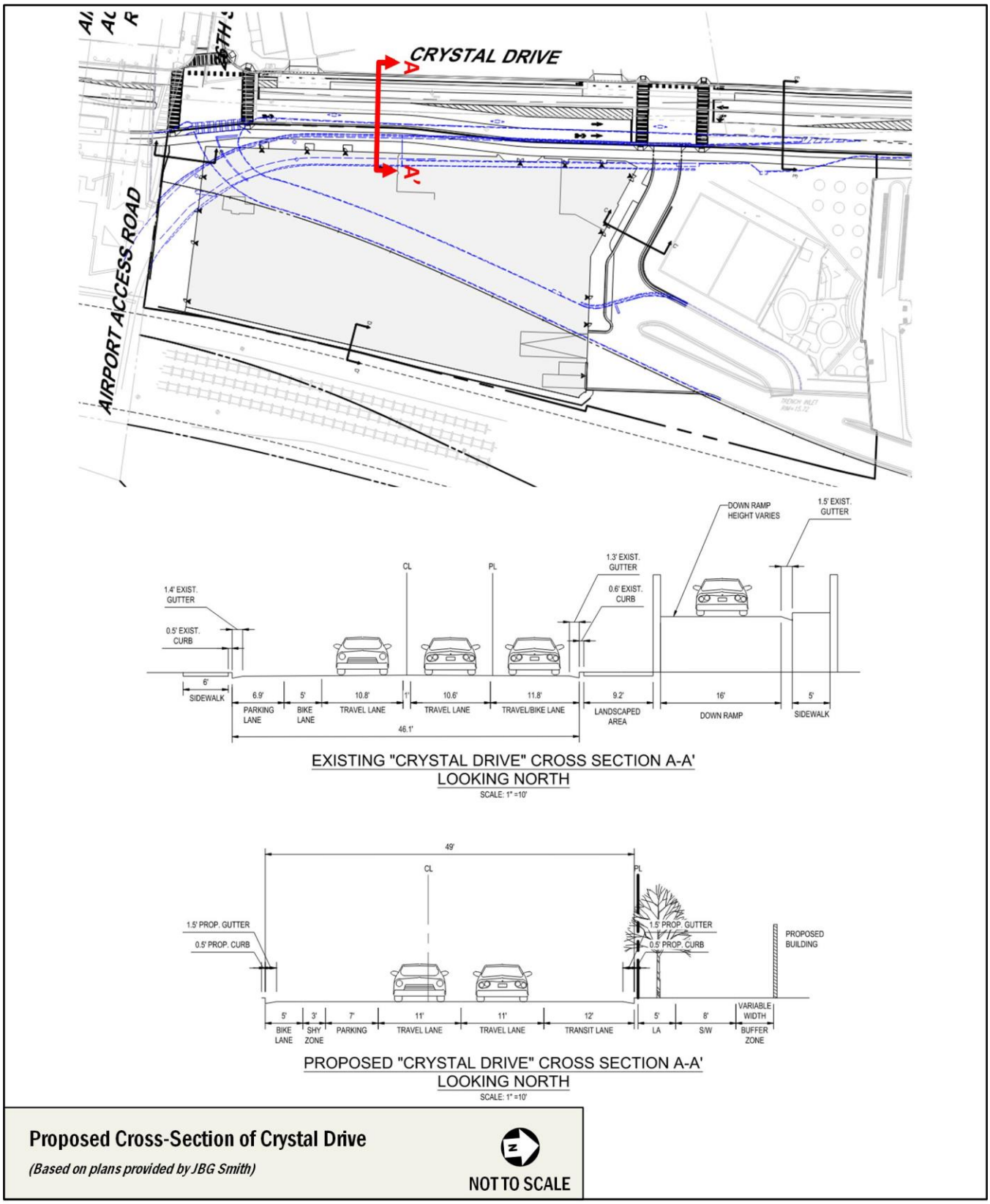

Figure 13: Typical Cross-Section of Crystal Drive between 26th Street S and Crystal City Service Road

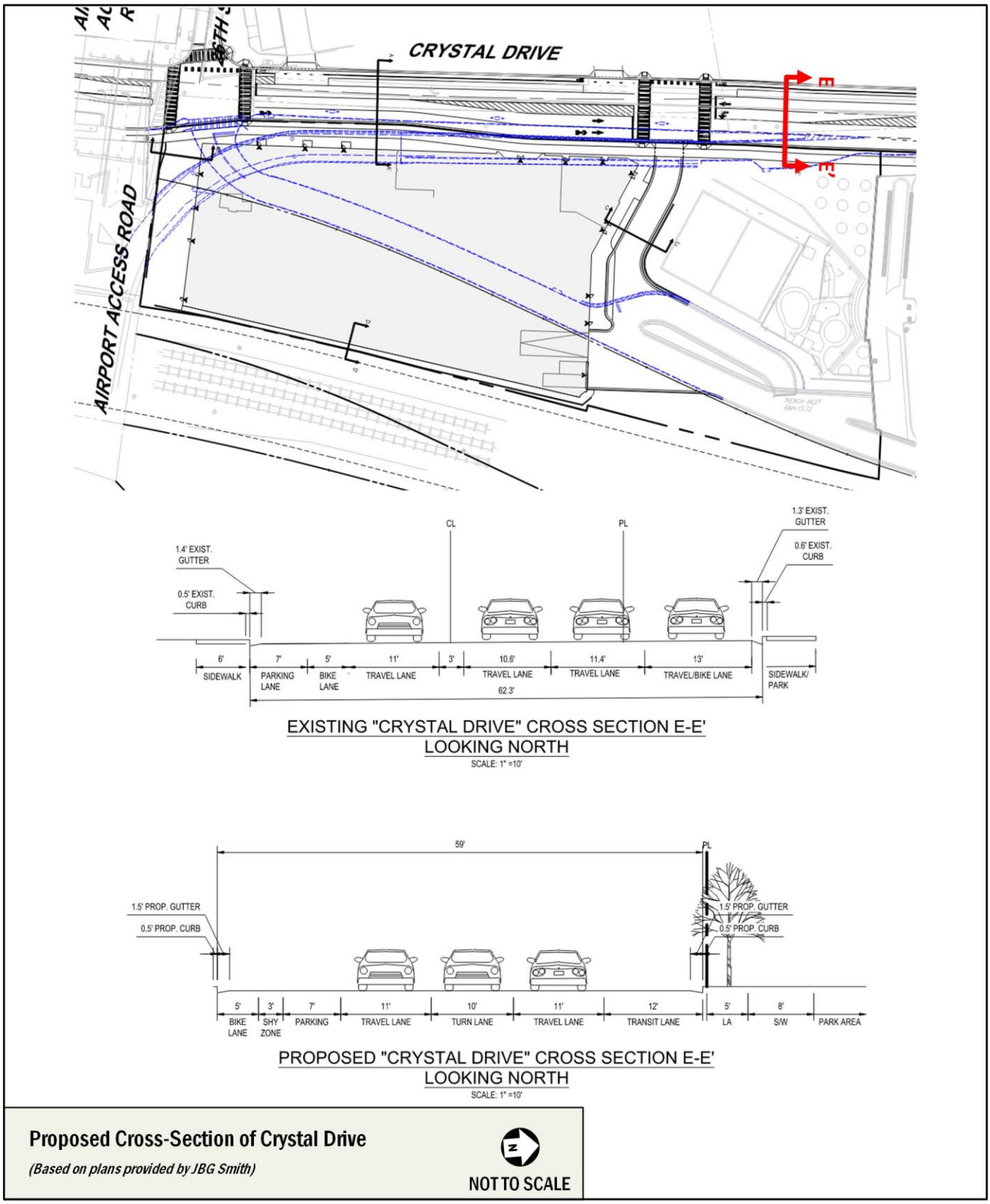

Figure 14: Typical Cross-Section of Crystal Drive between Crystal City Service Road and 23rd Street S

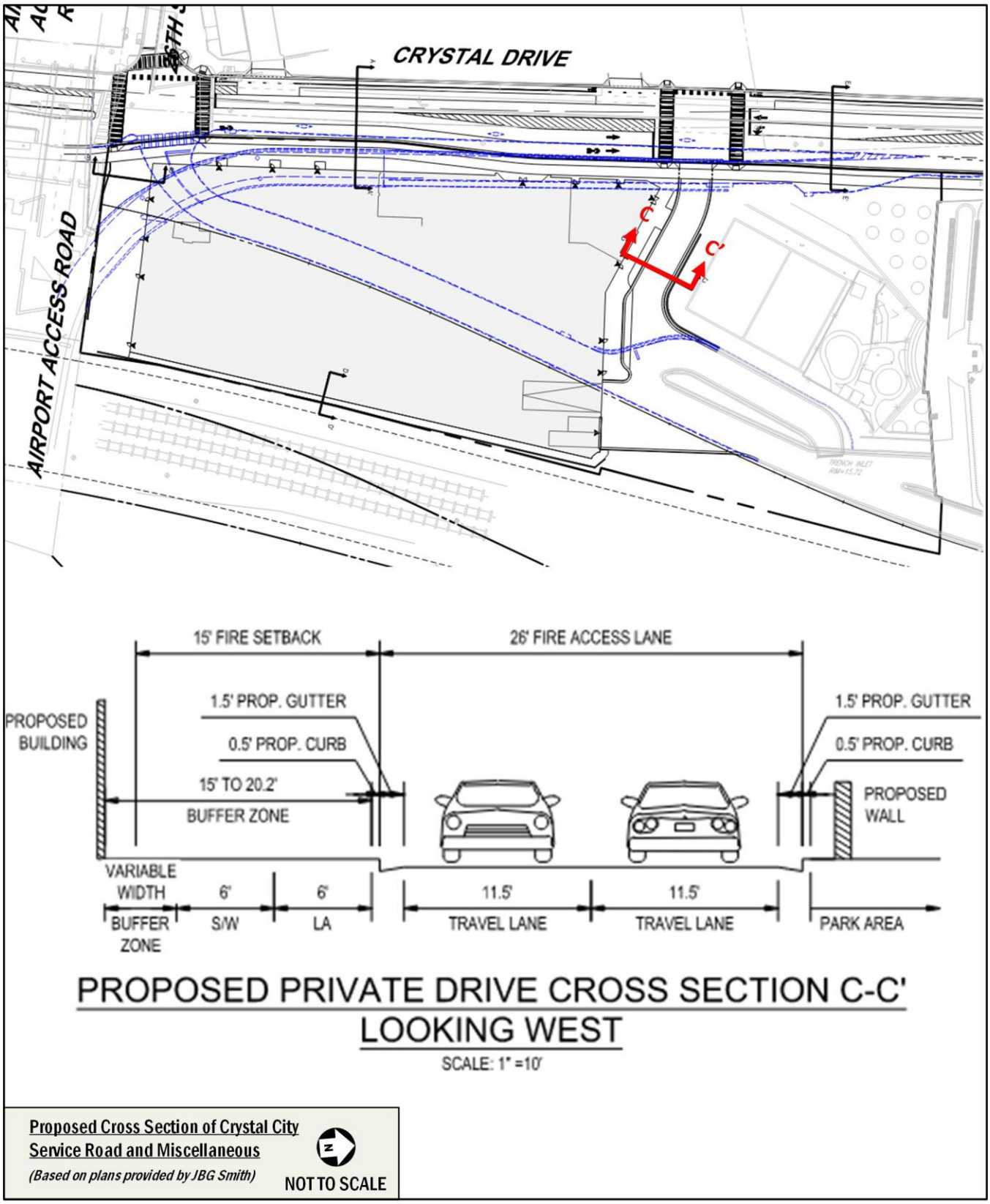

Figure 15: Typical Cross-Section of Crystal City Service Road

Site Access and Circulation

Pedestrian Access

The primary pedestrian access to the residential and retail components are shown in Figure 16. Access to both the residential and retail components of the proposed development will primarily occur on Crystal Drive and Crystal City Service Road. A circulation plan showing expected pedestrian routes is shown in Figure 17.

Bicycle Access

Bicycle access will be provided at multiple locations on the site. 70 secure long-term bike parking spaces will be provided in a ground floor bike room accessed via a door on Crystal City Service Road. Additionally, 87 more spaces will be provided in a second bike room located in the core of the parking garage, which can be accessed through a door form the street-level bike room or via the vehicular ramp from Crystal City Service Road.

A circulation plan showing expected bicycle routes is shown in Figure 17.

Vehicular Access

Vehicular access to parking and loading will be provided along Crystal City Service Road.

Access to the partially below-grade garage and loading facilities is shown on Figure 16. A circulation plan showing expected vehicular routes is shown in Figure 17.

Loading

Per the Zoning Ordinance, the following outlines the loading facility requirements for land uses of the development:

- Residential
  Multifamily uses with more than 50 dwelling units are required to provide one (1) loading space for each 200 units.
- Retail
  Buildings with over 3,000 square feet of retail space are required to provide one (1) loading space, with one (1) additional space for more than 15,000 square feet and one (1) additional space for more than 50,000 square feet.

The proposed development will provide one (1) 25-foot loading space and one (1) 40-foot loading berth. The number of on-site loading facilities will accommodate the practical needs of the development. Figure 6 shows the locations of the loading berths and within the building. The breakdown of loading berths for the proposed development are shown in Table 2.

Table 2: Loading Space by Land Use

Land Use	Quantity	Loading Berths Required	Loading Berths Provided
Residential	370 du	2	2 (1 shared with retail)
Retail	3,360 sf	1	1 (shared with residential)
Total		**3**	**2**

Parking

Based on the Arlington County Zoning Ordinance, the following outlines the vehicular parking requirements for the proposed development, under C-O-1.5: Office – Apartment – Hotel requirements:

- Residential
  One and one-eighth (1.125) spaces for the first 200 dwelling units and one (1) space for each additional dwelling unit.
- Retail
  One (1) space per 1,000 square feet of floor area.

Residential Parking

Per the Zoning Ordinance, the proposed development is required to provide 398 parking spaces for residential use. However, the County Board adopted the Off-Street Parking Guidelines for Multi-Family Residential Projects in November 2017 which reduces this parking requirement. These guidelines recognize that a lower on-site parking ratio may be appropriate for a project, among other considerations, and may range from 0.2 to 0.6 spaces per unit depending on a project site's distance to Metro. Based on the site location and per these guidelines, a minimum of 0.4 spaces per unit are required for the proposed development. These guidelines also require 0.05 visitor parking spaces for the first 200 dwelling units. Per these guidelines, the proposed development is required to provide 148 parking spaces for residential use and 10 parking spaces for residential visitor use, for a total of 158 parking spaces. Consistent with these guidelines, a total parking provision of 158 spaces is proposed for the residential component of the proposed development; 10 of these spaces will be visitor spaces. 109 of these spaces, including all 10 visitor spaces, will be provided in the on-site,

partially below-grade parking garage. An additional 49 parking spaces will be made available in the Parks block garage, which can be accessed via the building at 2451 Crystal Drive, immediately north of the development site.

Retail Parking

No parking will be provided for retail use as part of the proposed development.

A summary of the proposed parking supply is shown in Table 3.

Table 3: Proposed Parking Allocation

Land Use	Quantity	Parking Spaces Required	Parking Spaces Provided
Residential	370 du	148 (Resident) 10 (Visitor)	148 10
Retail	3,360 sf	0	0
Total		**158**	**158**

*Spaces required were based on Arlington County's Off-Street Parking Guidelines

Curbside Management

A review of the existing curbside management was conducted and is shown on Figure 18. Currently, Crystal Drive along the site frontage allows no on-street parking. The proposed development will maintain the no-parking zone along the east side of Crystal Drive. Along the new segment of Crystal City Service Road on the northern frontage of the site, the proposed development will provide curbside space for pick-up/drop-off activity. The proposed curbside management is shown on Figure 19.

Bicycle and Pedestrian Facilities

Bicycle Facilities

Bicycle Parking

Per the Standard Site Plan Conditions, the following outlines the bicycle parking requirements for land uses of the development:

- Residential
  Provide one (1) long-term space for every 2.5 residential dwelling units; and one (1) short-term space for every 50 residential dwelling units.
- Retail
  Provide one (1) long-term space for every 25,000 square feet of retail space; and two (2) short-term spaces for every 10,000 square feet of the first 50,000 square feet of retail space and one (1) additional space for every 12,500 square feet of additional space.

Long-Term Bicycle Parking

The proposed development will provide 164 long-term bicycle parking spaces for residential use and two (2) long-term space for retail employee use, meeting the requirements in the Standard Site Plan Conditions. Secure long-term bicycle parking for the development will be provided in two bicycle rooms located in the parking garage.

Short-Term Bicycle Parking

Per these requirements, the proposed development is required to provide eight (8) short-term spaces for residential use and two (2) spaces for retail use. The proposed development will provide at least eight (8) short-term bicycle parking spaces for residential use and two (2) short-term bicycle spaces for retail use, meeting the requirements in the Standard Site Plan Conditions. Short-term bicycle parking spaces will be placed along the development site frontage.

A detailed breakdown for bicycle parking for the proposed development is shown in Table 4.

Table 4: Proposed Bicycle Parking Allocation

Land Use	Quantity	Parking Spaces Required	Parking Spaces Provided
Residential	370 du	148 (Long-Term) 8 (Short-Term)	156 8
Retail	3,360 sf	1 (Long-Term) 2 (Short-Term)	1 2
Total		**159**	**167**

Bicycle Showers and Lockers

Per the Standard Site Plan Conditions, the following outlines the bicycle shower and locker requirements for the retail uses of the development:

- Showers
  1) Within residential buildings, retail space equal to or greater than 25,000 square feet and less than 50,000 square feet, provide a minimum of one (1) unisex shower; for retail space greater than 50,000 square feet, provide a minimum of one (1) shower per gender.
- Lockers
  For every required employee bicycle parking space, either:

1) A minimum of one (1) clothes storage locker per gender shall be installed in gender-specific changing rooms; or

2) A minimum of one (1) clothes locker shall be installed adjacent to, but outside of changing rooms.

Bicycle Showers

Per these requirements, no showers are required to be provided.

Bicycle Lockers

Per these requirements, the proposed development is required to provide one (1) locker for retail employee use. The proposed development will provide at least one (1) locker for this purpose.

Pedestrian Facilities

The existing pedestrian facilities around the site provide a quality walking environment with minimal sidewalk width deficiencies. Pedestrian facilities directly surrounding the site will be improved along the northern, western, and southern frontages of the project. These facilities will provide a more inviting pedestrian environment and comply with the improvements laid out in the Arlington Master Transportation Plan.

New pedestrian facilities are expected to meet or exceed Arlington County requirements with an emphasis on pedestrian safety and comfort. This includes sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, and curb ramps with detectable warnings.

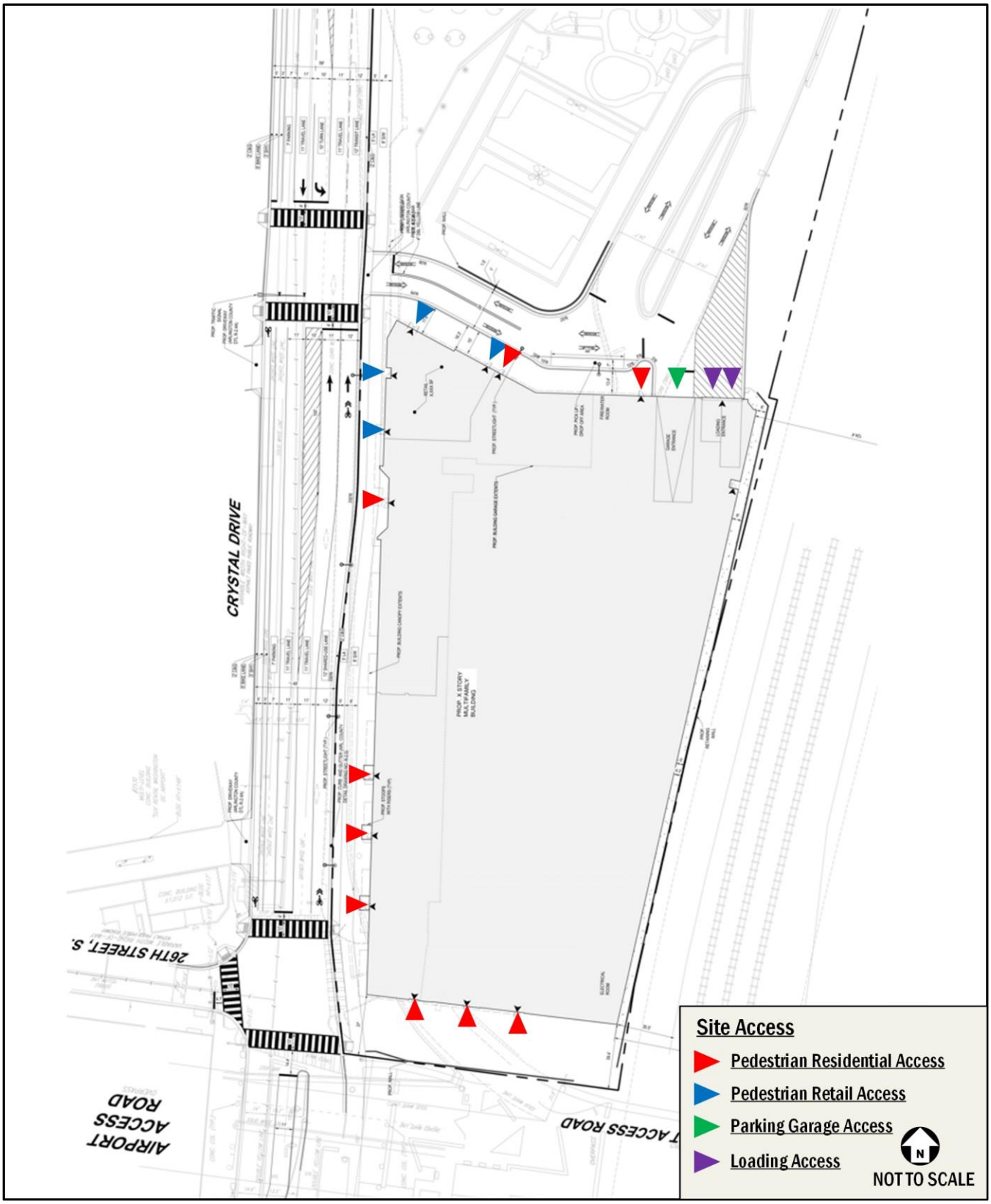

Figure 16: Site Access

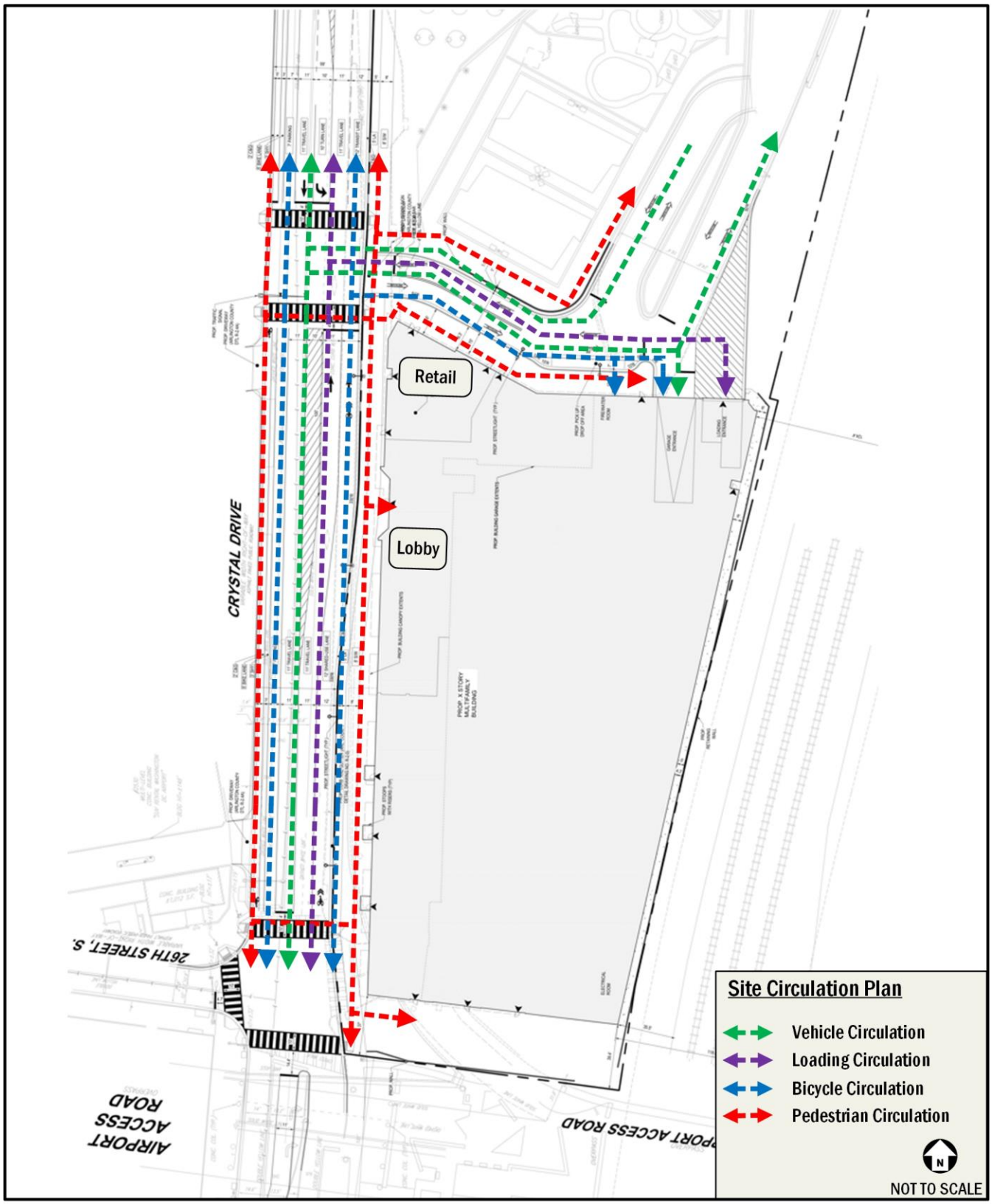

Figure 17: Proposed Circulation Plan

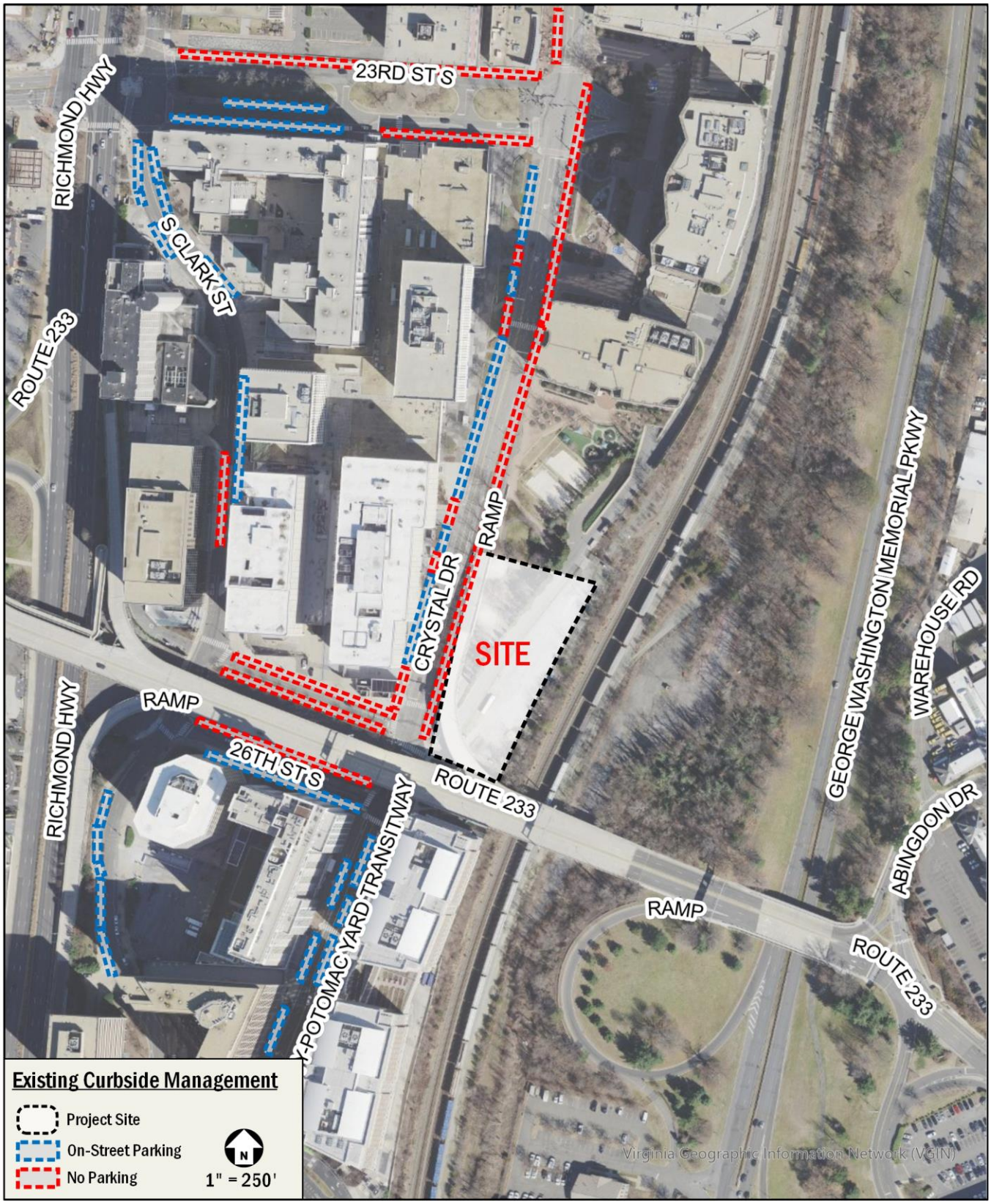

Figure 18: Existing Curbside Management

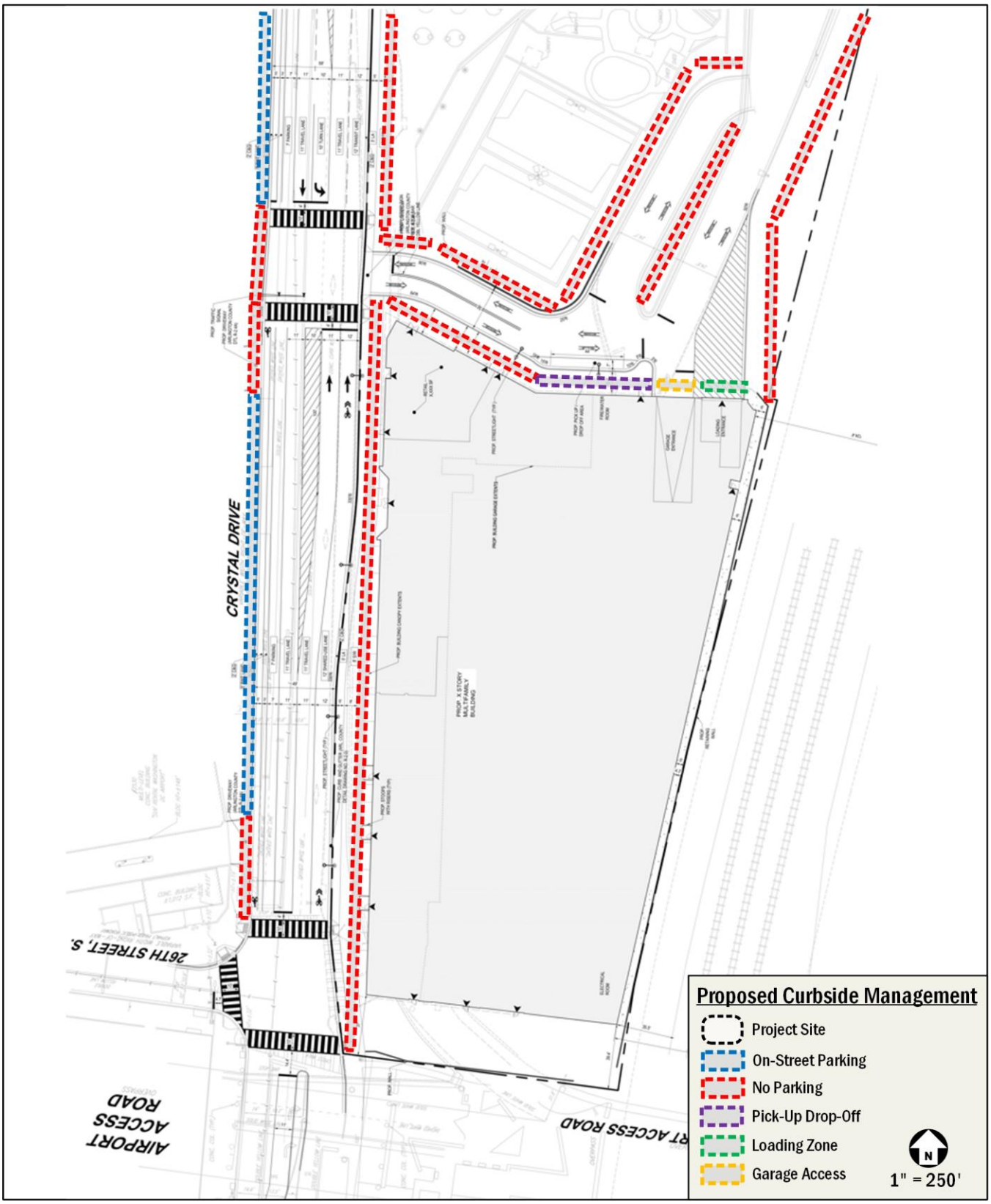

Figure 19: Proposed Curbside Management

Transit

This chapter discusses the existing and proposed transit facilities in the vicinity of the site, accessibility to transit, and evaluates the overall transit impacts of the project.

The following conclusions are reached within this chapter:

- The development has excellent access to transit.
- The development is located 0.5 miles from the Crystal City Metro Station and 0.5 miles from VRE.
- The development is located 0.2 miles from the 27th and Crystal Drive Metroway station.
- There are seven (7) bus stops within a quarter-mile of the site. These stops are directly served by WMATA (Metrobus), Metroway, and Arlington Transit (ART), OmniRide, Fairfax Connector, and Loudoun County Commuter routes.
- Future planned transit improvements in the vicinity of the site include an expanded and relocated VRE station, a second entrance to the Crystal City Metro Station, and the Transitway Extension to Pentagon City. These will further improve connectivity by providing expanded facilities and more convenient access to transit.

The site is well-served by numerous transit options under existing conditions. Combined, these transit services provide local, citywide, and regional transit connections and link the site with major cultural, residential, employment, and commercial destinations throughout the region. Figure 20 identifies the major transit routes, stations, and stops in the study area.

Metrorail Service

The site is located approximately 0.5 miles from the Crystal City Metro Station. The Crystal City Metro station is located north of the development site between 15th Street S and 18th Street S on S Bell Street. It can be reached by walking north from the site on S Bell Street. There are sidewalks, curb ramps, and crosswalks along the route, providing a quality walking environment to and from the Metro station.

The Crystal City Metro Station serves the Blue and Yellow Lines. The average daily ridership at the Pentagon City, Pentagon, and Crystal City stations in 2019 was approximately 12,500 and 11,700 boardings on weekdays, respectively, according to the WMATA Ridership Data Portal. The Blue Line travels north from Springfield, VA to Rosslyn then continues east to Largo, MD. Trains run approximately every 8 minutes during the morning and afternoon peak periods. They run about every 12 minutes during weekday non-peak periods, every 20 minutes on weekday evenings after 9:30pm, and every 12-20 minutes on weekends. The Yellow Line travels north from Huntington, VA to the Pentagon, east to the District core, and continues north to Mt Vernon Sq. Trains run approximately every 8 minutes during the morning and afternoon peak periods. They run about every 12 minutes during weekday non-peak periods, every 20 minutes during weekday evenings after 9:30pm, and every 12-20 minutes on weekends.

In order to accommodate the projected increase in demand at the Crystal City Metro Station as a result of redevelopment in Crystal City, a second entrance is planned for the station. The new entrance will provide improved access from Crystal Drive, the VRE station, and the nearby Metroway station. The project will also include improvements and upgrades to the elevator and lobby facilities at the station. The second entrance is planned to open in 2025.

Bus Service

A review of the existing Metrobus stops within a quarter-mile radius of the site, detailing individual bus stop amenities and conditions, is shown in Table 5. There are 6 bus stops within one-quarter mile of the site: Three (3) on Crystal Drive, one (1) on 23rd Street S, and two (2) on S Clark Street. There is one former bus stop location that serves connector routes such as OmniRide, Fairfax Connector, and Loudon County Transit. Currently, only the OmniRide continues its service and passes through this location. These stops are served by three (3) WMATA (Metrobus) routes, one (1) OmniRide route. Metroway bus service is available near the site, including a station at 27th Street S & Crystal Drive and the Crystal City Metro station. These bus routes expand and provide connectivity to the greater Washington Metropolitan Area. A development under construction in this area caused one bus stop to relocate which is accounted for in Figure 20.

The site is served by several bus lines and routes along multiple primary corridors. These bus lines connect the site to many areas of Virginia and the District, including several Metrorail stations serving all six (6) Metrorail lines. Figure 20 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

Crystal City Potomac Yard Metroway

Metroway is an enhanced bus route that provides a connection between the Crystal City Metro, Pentagon City Metro, and Braddock Road Metro, traveling through Pentagon City, Crystal City, and Potomac Yard. Arlington's section of Metroway opened in April 2016 and includes an all-day dedicated transit lane through Potomac Yard, a peak period transit lane through Crystal City, and seven new transit stations. The Potomac Yard Line provides 4.5 miles of service between the Crystal City, Pentagon City, and Braddock Road Metro stations with faster, more reliable bus service along the Route 1 corridor, with a ridership of approximately 2,400 passengers per day.

Metroway buses travel in dedicated bus-only lanes adjacent to the site along S Clark Street in the southbound direction and travel along Crystal Drive in the northbound direction; however, there are also sections of the route in Crystal City and Potomac Yard where Metroway buses operate in mixed traffic. Figure 21 shows the 10-minute, 20-minute, and 30-minute transit travel shed to and from the proposed development. As shown in the transit travel shed, most of the District and Northern Virginia area is accessible via transit within 30 minutes from the proposed development. Several destinations in the District, Arlington, and Alexandria are accessible within a 20-minute transit trip from the proposed development, including Ronald Reagan Washington International Airport, Downtown DC, and Metro stations served by all metro lines in the area.

Planned Transit Facilities

Improvements to transit facilities will be made as part of the Transitway Extension to Pentagon City project. As part of the Crystal Drive segment of the Transitway Extension to Pentagon City project, improvements will initially include curbside rush hour bus-only lanes from 15th Street S to 12th Street S/Long Bridge Drive and five (5) new transitway stations, with two (2) additional stations included in later phases.

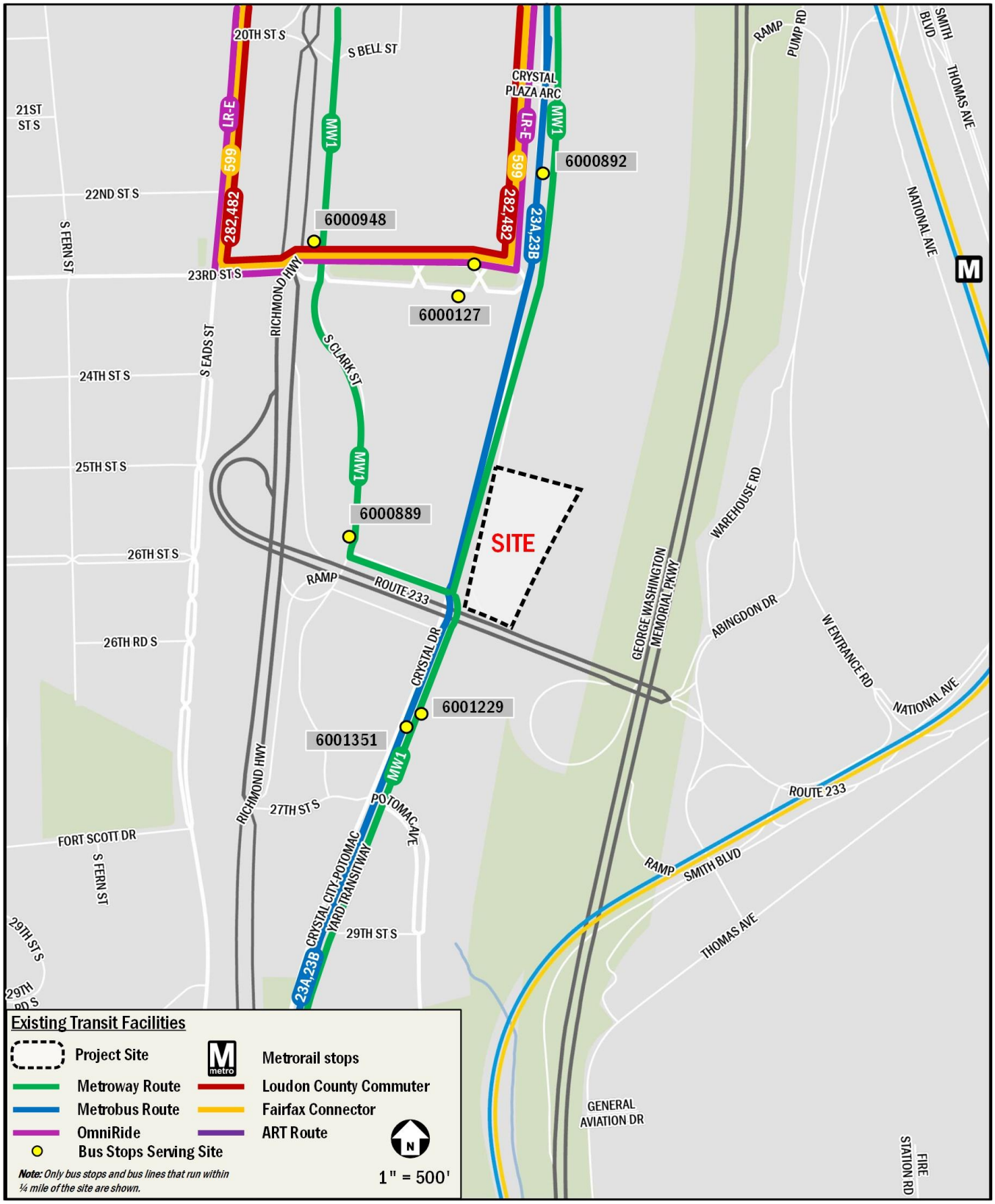

Figure 20: Existing Transit Service

Table 5: Bus Stop Inventory

Location	Stop ID	Routes Served	Features								
			Sign	ADA Landing Pad	Sidewalk	Street Lighting	Info Case	Seating	Shelter	Trash	Real Time Bus Display
23rd Street & Crystal Drive (EB)	6000127	23A, 23B	●	●	●	●	●				
23rd Street & S Clark Street (SB)	6000948	23A, 23B, MWY	●	●	●	●	●	●	●	●	●
26th Street & S Clark Street	6000889	MWY	●	●	●	●	●	●	●	●	●
Crystal City Transitway & 27th St	6001229	MWY	●	●	●	●	●	●	●	●	●
27th Street S & Crystal	6001351	MWY	●	●	●	●	●	●	●	●	●
23rd Street & Crystal Drive (NB)	6000892	23A, 23B, MWY, LR-E, 282,482,599	●	●	●	●	●	●	●	●	●

*Includes bus stops within ¼-mile of the proposed development

Table 6: Bus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
23A, 23B	McLean-Crystal City Line	Weekdays: 6:22AM-2:30AM Weekend: 6:06AM-2:37AM	25-40 min	0.3 miles, 7 minutes
Metroway	Metroway-Potomac Yard Line	Weekdays: 5:41AM-10:05PM	12-20 min	0.2 miles, 4 minutes
L-200	Lake Ridge-Pentagon & Crystal City	Weekdays: 6:18AM-7:48AM, 12:28PM-6:53PM	25-40 min	0.3 miles, 5 minutes
Fairfax Connector (599)	Pentagon-Crystal City Express Line	Weekdays: 6:20AM-8:50AM, 3:20PM-5:50PM	20-35 min	0.3 miles, 5 minutes
LC 482, LC 882	Leesburg P&R-Eads & 12th Line	Weekdays: 5:30AM-7:30AM, 2:50PM-5:35PM	30 min	0.3 miles, 5 minutes

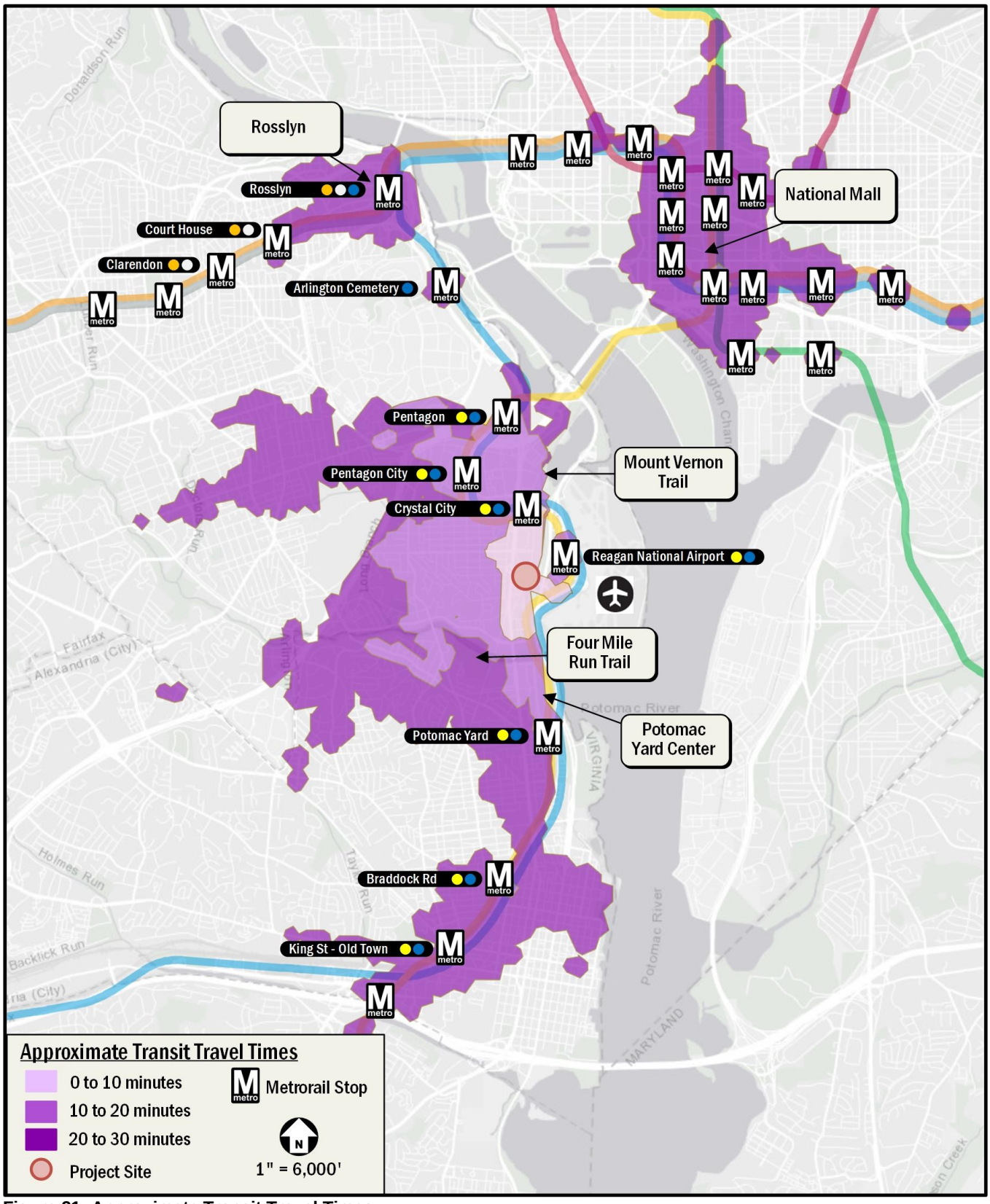

Figure 21: Approximate Transit Travel Times

Bicycle Facilities

This chapter summarizes existing and future bicycle access and reviews the quality of cycling routes to and from the site.

The following conclusions are reached within this chapter:

- The site has access to several on- and off-street bicycle facilities, including bicycle lanes on Crystal Drive, S Clark Street, and S Potomac Avenue which connect to the Mt. Vernon Trail and Four Mile Run Trail.
- Future planned and proposed projects in the vicinity of the site include protected bike lanes and intersection corners along 23rd Street S as part of the 23rd Street Realignment project. These will further improve bicycle access and connectivity by upgrading the bicycle facilities existing along these routes.
- As part of the proposed development, short- term bicycle parking spaces will be provided along the site's perimeter. Long-term bicycle parking spaces and lockers will be provided for use by residential tenants and retail employees.

Existing Bicycle Facilities

The site has access to several existing on- and off-street bicycle facilities, including bicycle lanes on S Bell Street, S Clark Street, and Crystal Drive. Figure 22 shows the existing facilities within the study area. These bike facilities connect to the Mt. Vernon Trail to the east and the Four Mile Run Trail to the south.

Arlington County publishes an annual Bicycle Comfort Level Map highlighting the most comfortable bicycle routes throughout Arlington County. The map uses a rating system of "perception of comfort" to show which routes are most comfortable. Routes are rated as 'Easy', 'Medium', 'Challenging', 'Expert Level', or 'Prohibited'. The most recent publication of the map (2020) shows a mix of bicycle routes in the vicinity of the site rated as 'Medium' and 'Challenging'. Parts of Crystal Drive are rated 'Medium' and 'Challenging' adjacent to the site.

There is short-term bicycle parking provided along the perimeter of the site near the Airport Access Off Ramp under existing conditions. Short-term bicycle racks are also available at the Crystal City Metro Station as well as at the Metroway stop in the vicinity of the site.

Figure 24 shows the 10-minute, 20-minute, and 30-minute bicycle travel shed for the proposed development. Within a 10-minute bicycle ride, the proposed development has access to several destinations including the Mount Vernon and Four Mile Run trails, public transportation stops, Metro stations served by the Blue and Yellow lines, the Crystal City VRE Station, retail zones, residential neighborhoods, and community amenities. Within a 20-minute bicycle ride, the proposed development has access to destinations in the District, Arlington, and Alexandria such as Custis Trail, Arlington Memorial Bridge, Lincoln Memorial, residential neighborhoods, and retail zones. Within a 30-minute bicycle ride, the proposed development is accessible to most of Arlington and Alexandria, and several destinations in the District including Downtown, and the Southwest Waterfront.

Capital Bikeshare

In addition to personal bicycles, the Capital Bikeshare program provides additional cycling options for residents and patrons of the proposed development. The Bikeshare program has placed over 550 Bikeshare stations across Washington, DC, Arlington County, VA, City of Alexandria, VA, Montgomery County, MD, Fairfax County, VA, Prince George's County MD, and most recently the City of Falls Church, VA, with over 4,500 bicycles provided. There are three (3) existing Capital Bikeshare stations with 41 available bicycle docks within a quarter mile of the site, located along S Clark Street.

E-Scooters and Dockless E-Bicycles

Five (5) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies provide Shared Mobility Device (SMD) service in Arlington County: Bird, Lime, Veo, Link/Superpedestrian, and Spin. These SMDs are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many SMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many SMDs are parked in public space, most commonly in the "furniture zone" (the portion of sidewalk between where people walk and the curb, often where you'll find other street signs, street furniture, trees, parking meters, etc.). At this time, SMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Planned Bicycle Facilities

Existing bike facilities have been recommended by the Arlington Master Transportation Plan and Crystal City Sector Plan to be upgraded in the future, as shown on Figure 12.

The recently adopted Bicycle Element of the Arlington Master Transportation Plan makes the following recommendations in the vicinity of the project site:

- Upgrade the existing bicycle lanes on Potomac Avenue and Crystal Drive through the Potomac Yard and Crystal City areas. Where feasible provide further separation or protection of bicyclists from motor vehicle traffic. Provide for a lower stress route to link the Four Mile Run Trail to Crystal City, Pentagon City and Long Bridge Park.
- Use the Airport Viaduct structure to provide a grade-separated connection of S. Eads Street and Crystal City with the National Airport passenger terminals area and Mount Vernon Trail. This project could be replaced by alternative, new pedestrian/bicycle connection(s) of Crystal City to airport buildings.

The Crystal City Sector Plan makes the following recommendations for roadways in the vicinity of the site:

- Parallel pedestrian and bicycle facilities along Route 233 (Airport Access Road) from Crystal City to Reagan National Airport with a connection to the Mount Vernon Trail.
- Bicycle lanes along S Clark Street between 27th Street S and 26th Street S.
- Cycle track along S Clark Street between 18th Street S and 26th Street S.
- Bicycle lanes along Crystal Drive between 20th Street S and S Glebe Road.

In December 2020, County staff developed recommendations for a bicycle network that provides new north-south bicycle facilities along with improvements to east-west streets in Crystal City. Following public input in 2021, the updated Recommended Crystal City Bike Network includes:

- A protected contraflow bike lane on S Clark Street from 20th Street S to 23rd Street S and a two-way cycle track from 23rd Street S to 27th Street S.
- Protected bike lane on 23rd Street S between Crystal Drive and S Clark Street.
- Protected bike lanes on Crystal Drive between 18th Street S and 23rd Street S, with only a southbound bike lane provided between 20th Street S and 23rd Street S.
- Buffered bike lane on 26th Street S between S Clark Street and Crystal Drive
- Buffered bike lanes and a two-way cycle track on the portion of S Bell Street between 20th Street S and S Clark Street.

As part of the 23rd Street Realignment project, eastbound and westbound protected bike lanes will be added on 23rd Street S between Crystal Drive and S Clark Street, improving east-west connectivity. The project will also add two (2) protected intersection corners along 23rd Street S, the southeast corner of S Clark Street and 23rd Street S and the northwest corner of Crystal Drive and 23rd Street S. Protected intersection corners improve sightlines and provide more separation between bicycles and vehicles. The project will also add a bike box on the westbound approach of the S Clark Street and 23rd Street S intersection.

The proposed development will include both short- and long-term bicycle parking spaces. The proposed development will provide at least eight (8) short-term bicycle parking spaces for residential use and two (2) short-term bicycle spaces for retail use, meeting the requirements in the Standard Site Plan Conditions. The proposed development will provide a total of 156 long-term bicycle parking spaces for residential use and 1 long-term bicycle parking spaces for retail employee use, meeting the requirements in the Standard Site Plan Conditions. 70 secure long-term bike parking spaces will be provided in a ground floor bike room accessed via a door on Crystal City Service Road. Additionally, 87 more spaces will be provided in a second bike room which can be accessed via the parking garage, which can be accessed through a door from the street-level bike room or via the vehicular ramp from Crystal City Service Road.

The proposed development will provide at least one (1) locker for retail employee use, meeting the requirements in the Standard Site Plan Conditions. No showers are required to be provided.

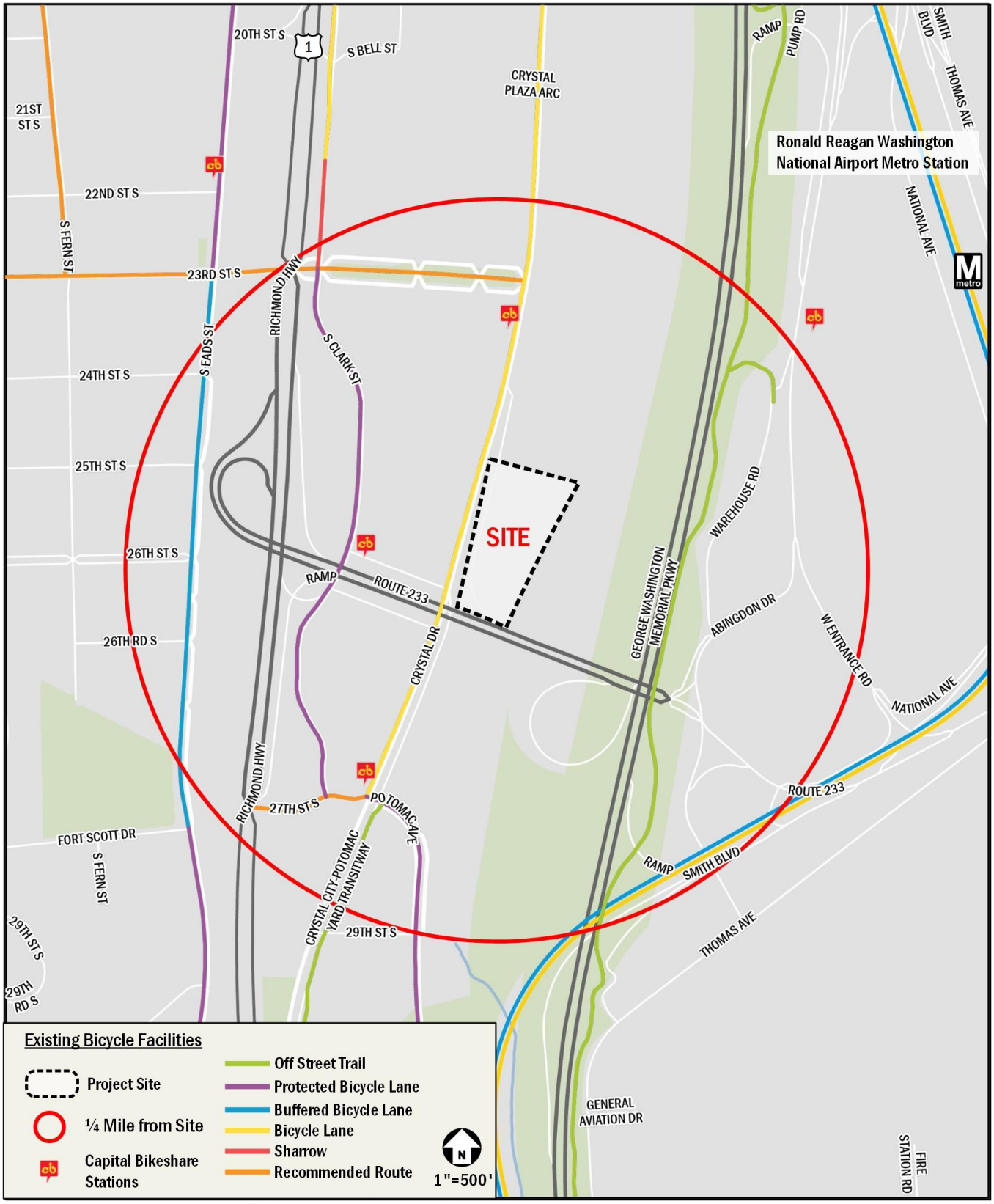

Figure 22: Existing Bicycle Facilities

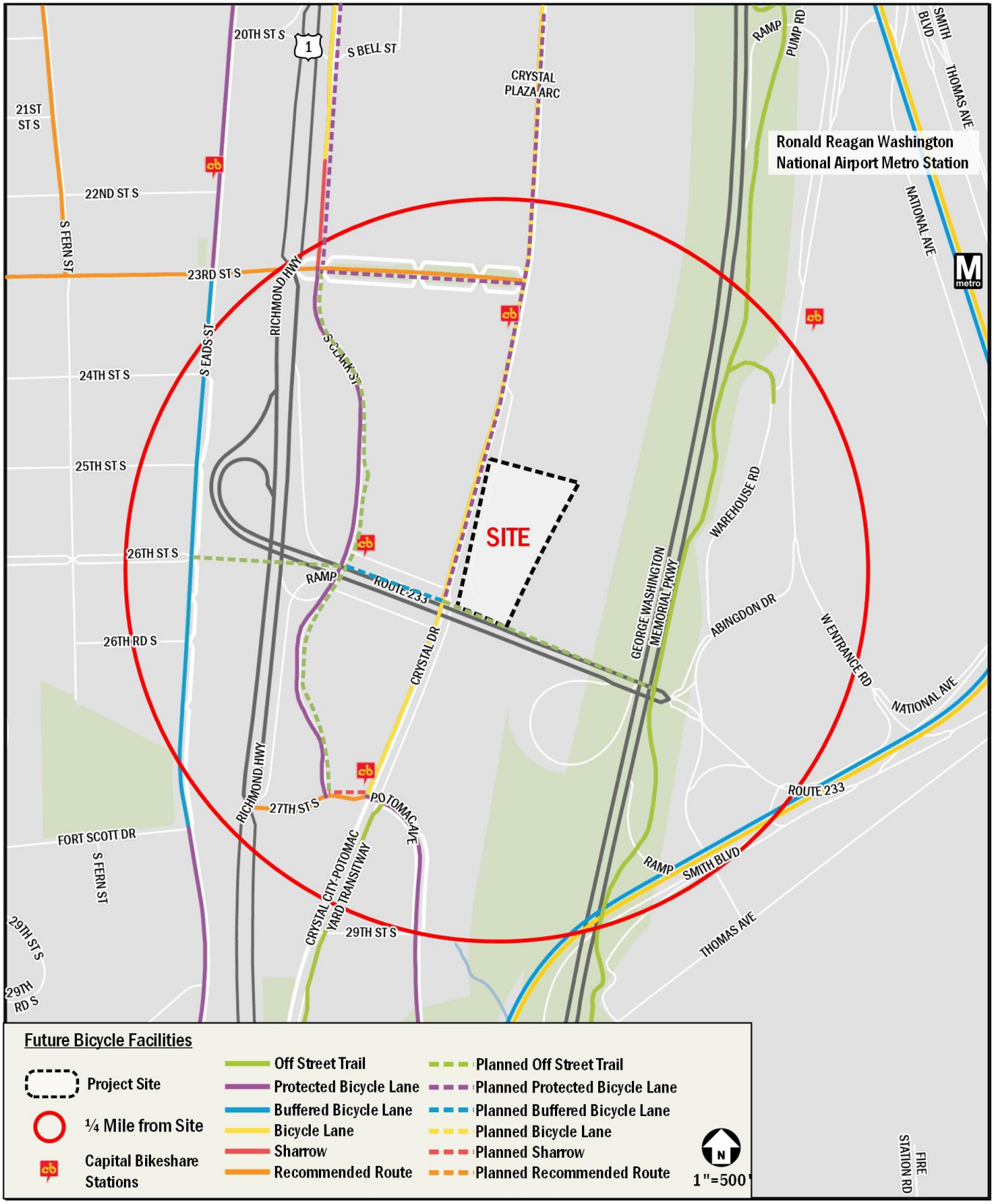

Figure 23: Future Bicycle Facilities

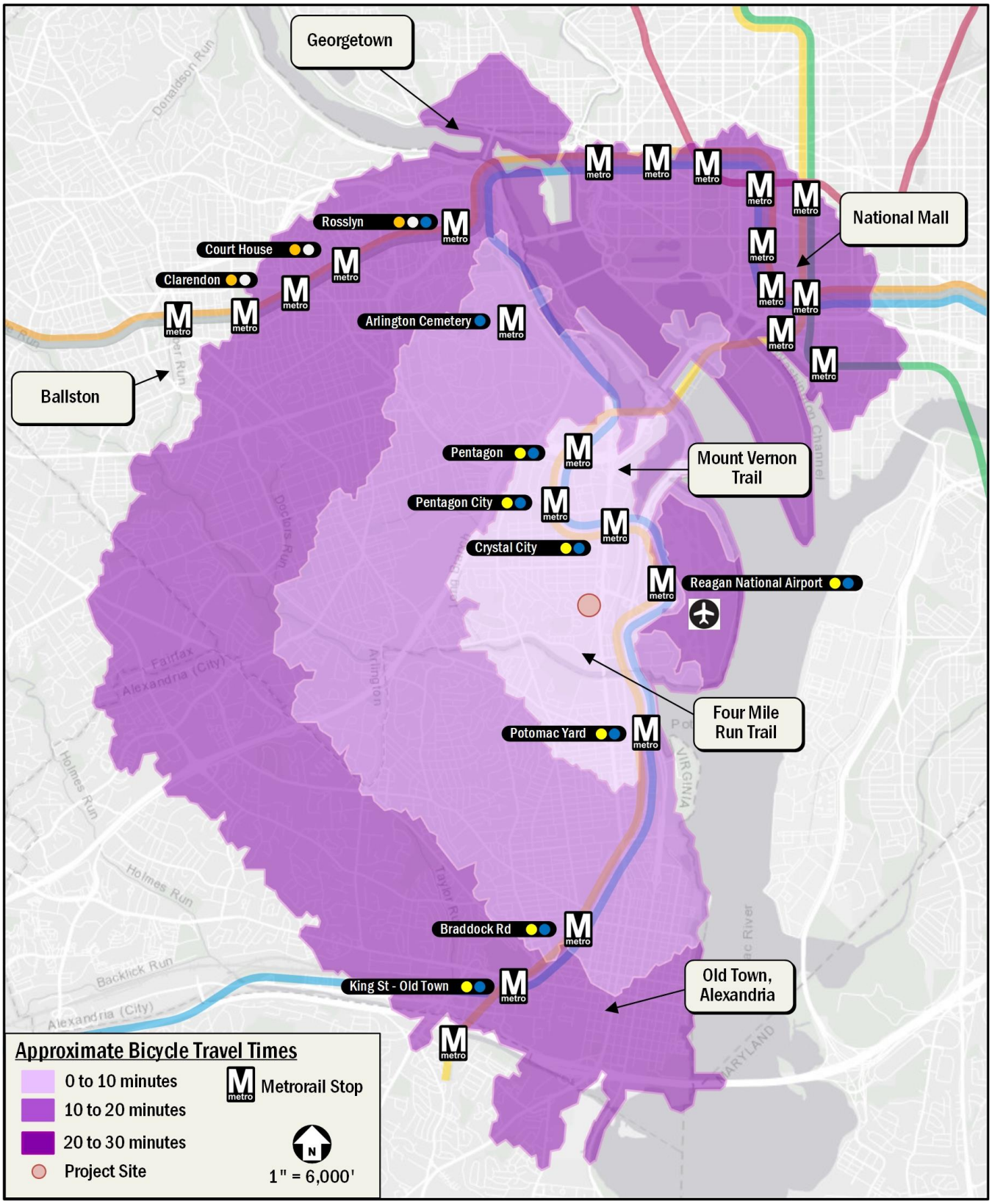

Figure 24: Approximate Bicycle Travel Times

Pedestrian Facilities

This chapter summarizes the existing and future pedestrian access to the site and reviews walking routes to and from the site.

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the site provides a quality walking environment. There are sidewalks along the majority of primary routes to pedestrian destinations with few gaps in the system.
- Planned and proposed improvements to the pedestrian infrastructure surrounding the site will improve pedestrian comfort and connectivity.

Pedestrian Study Area

Pedestrian facilities within a quarter-mile of the site were evaluated as well as routes to nearby transit facilities, including routes to the Crystal City Metro Station to the north, Pentagon City Metro Station to the northwest and Ronald Reagan National Airport Metro Station to the northeast. The site is accessible to transit options such as the two (2) bus stops along 23rd Street S to the north. The Crystal City Metro Station is approximately 0.5 miles from the site, which provides additional access to Metroway. In general, existing pedestrian facilities surrounding the site provide comfortable walking routes to and from nearby transit options. However, there are some areas of concern within the study area that negatively impact the quality and attractiveness of the walking environment. This includes physical barriers that limit pedestrian connectivity. The railroad corridor to the east of the site limits the pedestrian facilities connecting to the airport.

Figure 25 shows expected pedestrian pathways, walking time and distances, and barriers or areas of concern. Route 1 bifurcates through Crystal City from north to south. Although Route 1 is not a full pedestrian barrier, it presents challenges for pedestrians by limiting east-west connection points to approximately once every 1000 feet. The study area is also bordered by railroad tracks and the George Washington Memorial Parkway to the east which limits pedestrian connectivity to areas to the east such as the Mount Vernon Trail.

Figure 26 shows the 10-minute, 20-minute, and 30-minute walk travel shed for the proposed development. Within a 10-minute walk, the proposed development has access to several destinations including public transportation stops, Metro stations served by the Blue and Yellow lines, the Crystal City Shops, the Crystal City VRE Station, Virginia Highlands Park, retail zones, nearby residential neighborhoods, and community amenities. Within a 20-minute walk, the proposed development has access to destinations such as residential neighborhoods to the south and west, Long Bridge Park, and the Fashion Center at Pentagon City. Within a 30-minute walk, the proposed development has access to destinations including Ronald Reagan Washington International Airport, Mount Vernon Trail, Arlington Cemetery, and residential neighborhoods to the south and west.

Existing Pedestrian Facilities

A review of pedestrian facilities surrounding the proposed development shows that many facilities provide a quality walking environment. Figure 27 shows a detailed inventory of the existing pedestrian infrastructure surrounding the site. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by the Arlington County, and ADA standards. Sidewalk and buffer widths and recommendations are shown in Table 7. It should be noted that the sidewalk widths shown in Figure 27 reflect the total sidewalk widths based on observations in the field taken from curb to building, with pinch points and locations with a clear width of less than four (4) feet noted.

ADA standards require that curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks is not desired. As shown in Figure 27, under existing conditions the majority of curb ramps meet ADA standards.

Within the study area, the majority of roadways have existing sidewalks on both sides, with few deficiencies. The deficiencies identified during field reconnaissance were some portions of the sidewalk on the east side of Crystal Drive between 26th Street. All primary pedestrian destinations are accessible via routes with sidewalks, most of which meet Arlington County and ADA standards.

Overall, the site is situated within an urban transportation network, with quality pedestrian access. The most heavily-used crosswalk in the study area is across 23rd Street S west of Crystal Drive, most likely a result of the proximity to office buildings within Crystal City and access to the underground pedestrian connections within the block.

Planned Pedestrian Facilities

As a result of the development, pedestrian facilities around the perimeter of the site will be improved to meet or exceed Arlington County and ADA standards. This includes improvements of sidewalks along the site frontage along Crystal Drive and Fire Access/Service Lanes that meet or exceed width requirements and provide a more inviting pedestrian environment.

Additional improvements will be made as part of the 23rd Street Realignment and Crystal City to DCA Pedestrian Bridge projects. Planned and proposed pedestrian improvements are shown in Figure 25.

Table 7: Sidewalk Recommendations per Arlington County Master Transportation Plan

Street Name	Section	Minimum Sidewalk Width	Minimum Sidewalk Width Met	Existing Sidewalk Width*	Minimum Buffer Width	Minimum Buffer Width Met	Existing Buffer Width*
23rd Street S	S Fern Street to S Eads Street	10-16 ft	N	9 ft	6 ft	N	0 ft
23rd Street S	S Eads Street to Route 1	10-16 ft	N	9 ft	6 ft	N	4 ft
23rd Street S	Route 1 to Crystal Drive	10-16 ft	N	8 ft	6 ft	N	0 ft
Route 1	20th Street S to 23rd Street S	6 ft	Y	11 ft	8+ ft	N	4 ft
Route 1	23rd Street S to 26th Street S	6 ft	N	5 ft	8+ ft	N	4 ft
Crystal Drive	18th Street S to 20th Street S	10-16 ft	Y	10 ft	6 ft	N	3 ft
Crystal Drive	20th Street S to 23rd Street S	10-16 ft	N	8 ft	6 ft	Y	6 ft
Crystal Drive	23rd Street S to 26th Street S	10-16 ft	N	7 ft	6 ft	Y	6 ft
Crystal Drive	26th Street S to Potomac Avenue	10-16 ft	N	9 ft	6 ft	Y	6 ft
26th Street S	S Clark Street to Crystal Drive	10-16 ft	Y	11 ft	6 ft	Y	6 ft
27th Street S	S Clark Street to Crystal Drive	10-16 ft	N	9 ft	6 ft	Y	6 ft

* Widths based most narrow measurement along either side of roadway section

Figure 25: Pedestrian Pathways

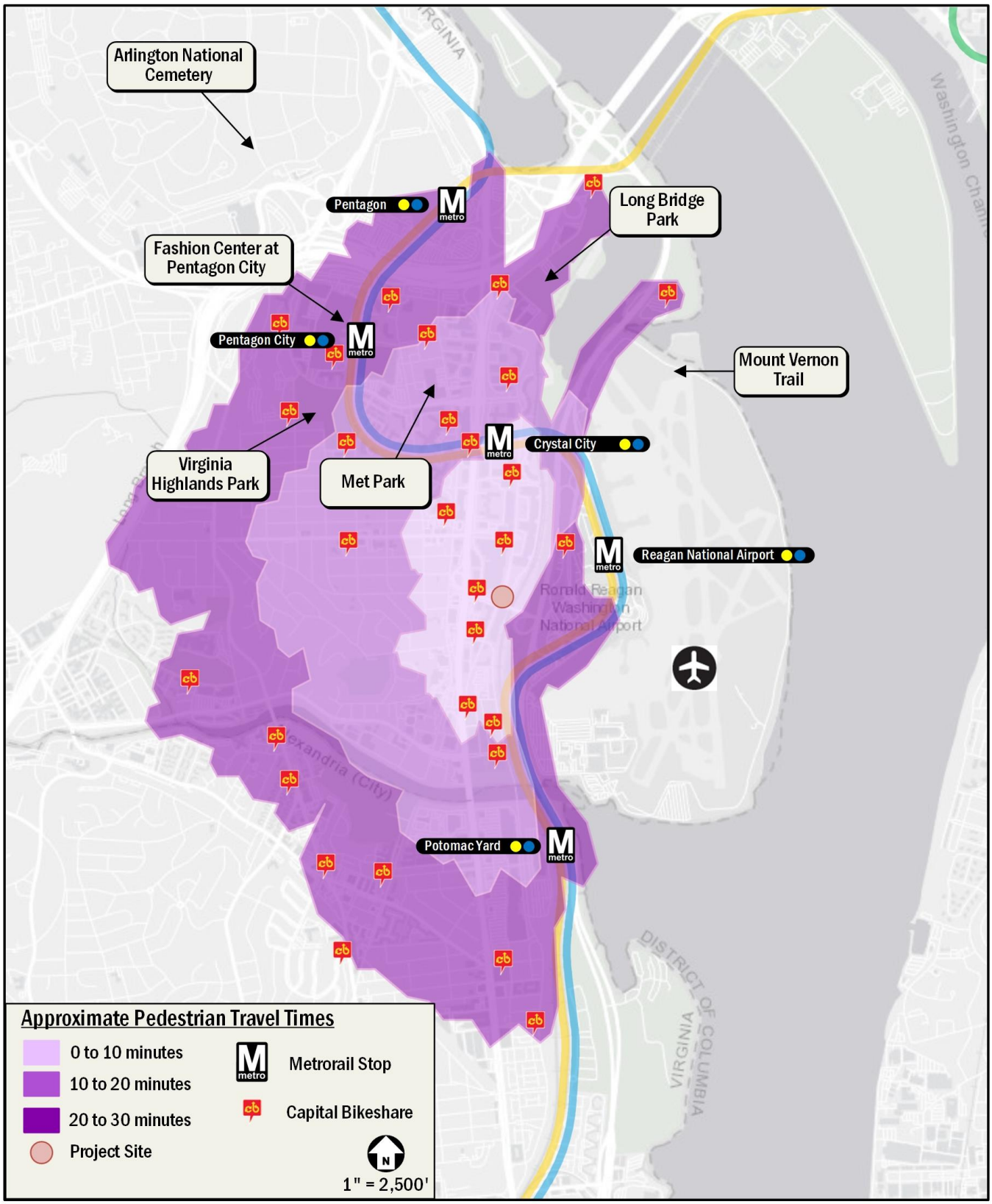

Figure 26: Approximate Pedestrian Times

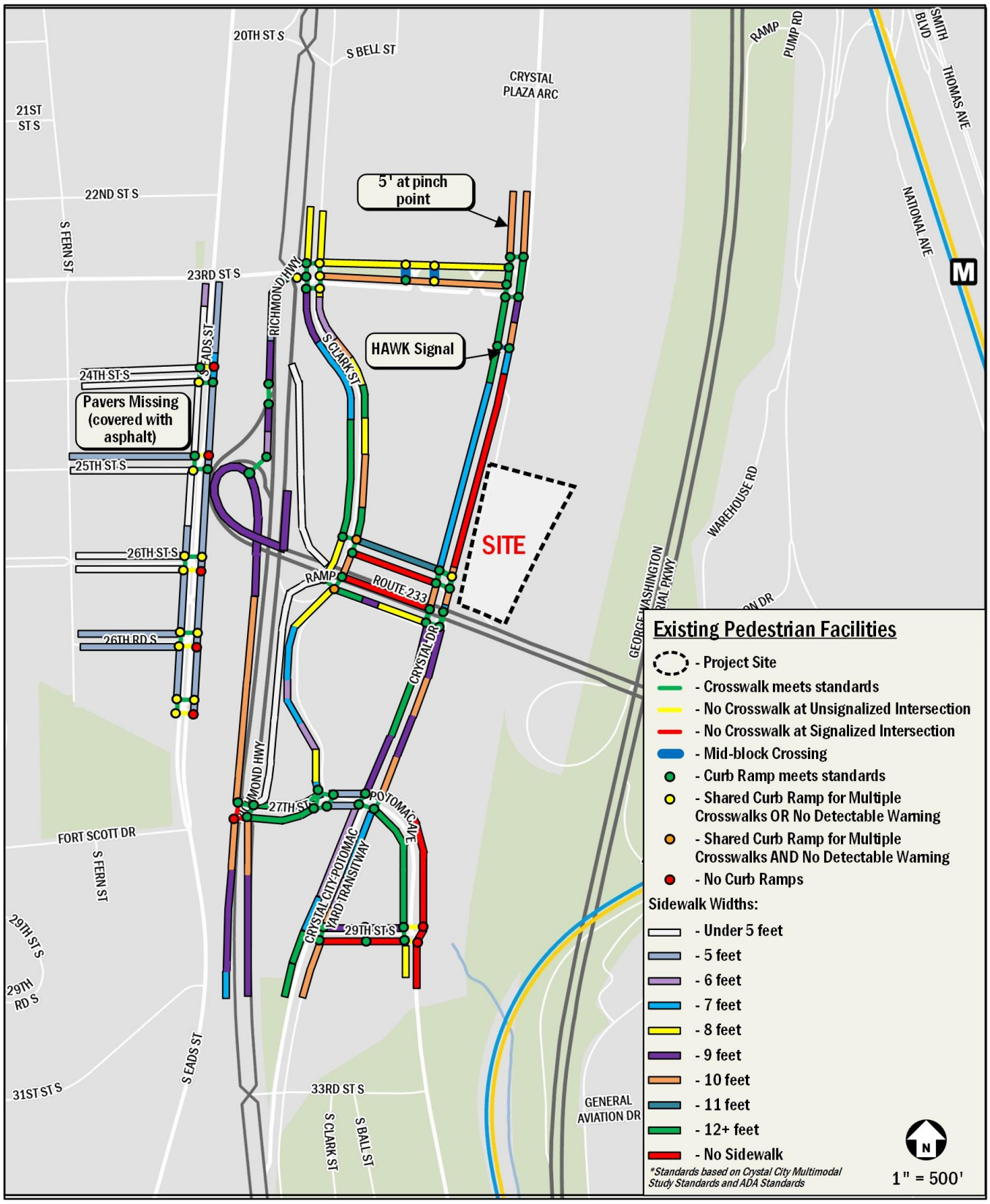

Figure 27: Existing Pedestrian Facilities

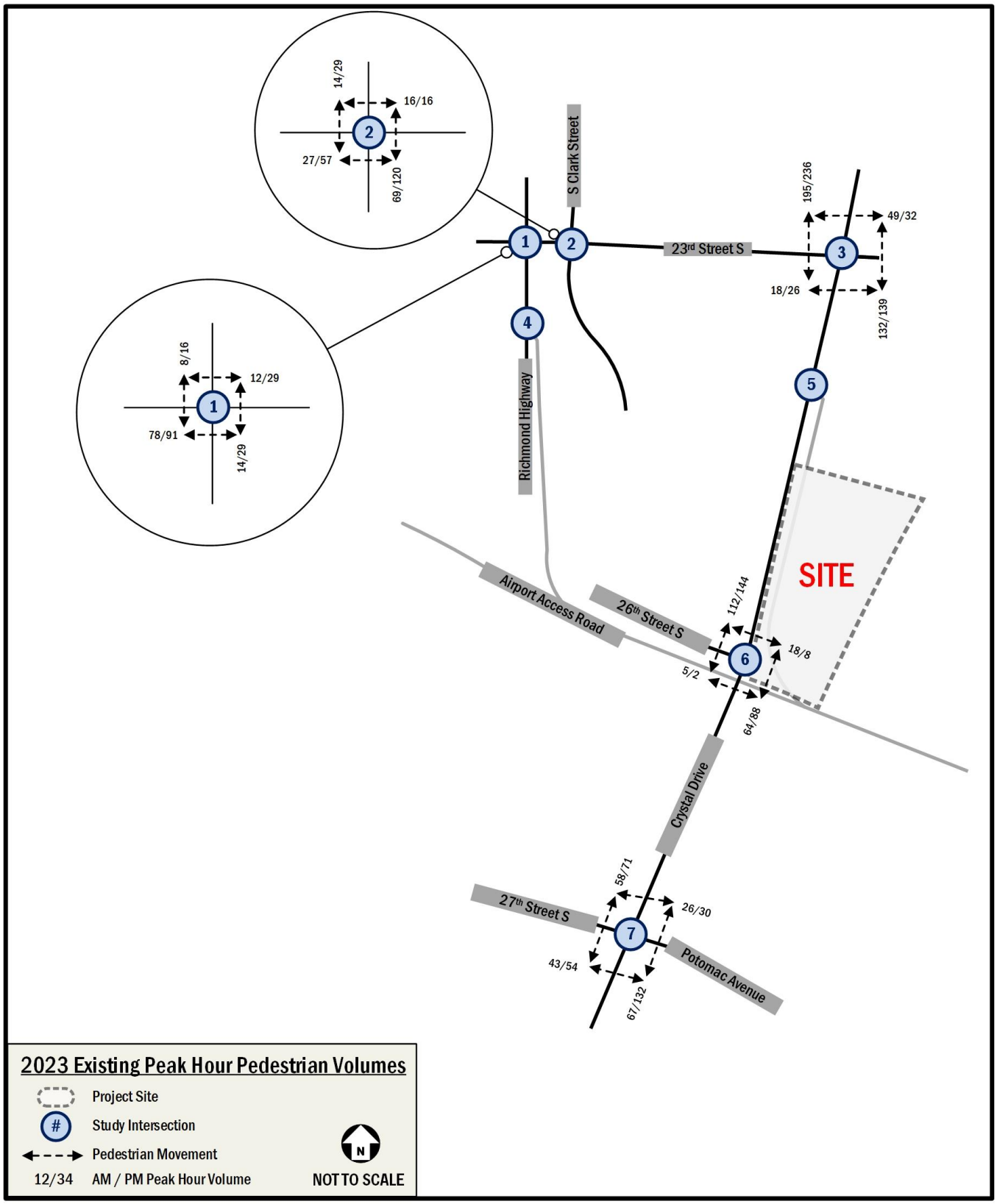

Figure 28: 2023 Existing Peak Hour Pedestrian Volumes

Travel Demand Assumptions

This chapter outlines the transportation demand of the proposed Block W development. It reviews the expected mode splits, multimodal trip generation, and the trip distribution and routing assumptions, which forms the basis for the chapters that follow.

Mode Split Methodology

Mode split (also called mode share) is the percentage of travelers using a particular type (or mode) of transportation when traveling. The main source of mode split information for this report was based on Census data using Traffic Analysis Districts (TADs) and data contained in the Crystal City Multimodal Transportation Study, the WMATA Ridership Survey, and the Arlington County Mode Share Assumptions for Crystal City.

Residential Mode Splits

Residential mode splits were primarily based on the County's guidance on mode share assumptions for trip productions in Crystal City, as well as Census data at the TAD level for commuters with origins in the TAD. Figure 30 shows the TAD used in the analysis in relation to the proposed development and Figure 31 shows the destinations of driving commuters with origins in the project TAD. Table 8 summarizes the data that was used to establish the residential mode split assumptions for this report.

Table 8: Summary of Residential Mode Split Data

Information Source	Mode				
	SOV	Carpool	Transit	Bike/ Walk	Telecommute/ Other
Census Transportation Planning Products (TAZ 21501)	28%	4%	50%	12%	6%
Census Data (Tract 1034.02)	38%	4%	42%	8%	8%
22202 Transportation Study - Journey to Work (for Crystal City Core)	34%	3%	50%	9%	4%
22202 Transportation Study - Journey to Work (for Pentagon City Core)	28%	2%	53%	7%	10%
WMATA Ridership Survey (average for Crystal City Station Area)	47%		46%	7%	---
WMATA Ridership Survey (average for Suburban-Inside the Beltway)	39%		49%	12%	---
Arlington County Mode Share Assumptions for Crystal City (Productions)	32%		59%	9%	---
Arlington County Mode Share Assumptions for Pentagon City (Productions)	27%		64%	9%	---

Neighborhood Retail Mode Splits

Neighborhood retail mode splits were primarily based on information contained in WMATA's 2005 *Development-Related Ridership Survey*. Table 9 summarizes the data that was used to establish the neighborhood retail mode split assumptions for this report.

Table 9: Summary of Neighborhood Retail Mode Split Data

Information Source	Mode				
	SOV	Carpool	Transit	Bike/ Walk	Telecommute/ Other
WMATA Ridership Survey (Crystal City Shops)	27%		37%	36%	---
WMATA Ridership Survey (Crystal Plaza Shops)	24%		41%	35%	---

The site has multiple bus stops in the vicinity and one (1) Metro station near the site. It is expected that a significant portion of trips will be by Metrorail, bus, bicycle, or on foot during the morning and afternoon peak hours, rather than by personal vehicle. Based on this, the auto mode splits for the development were determined to be 32% for the residential component and 5% for the neighborhood-serving retail component. The proposed mode splits were vetted and approved by Arlington County during the scoping process. Table 10 shows the mode split for the development.

Table 10: Summary of Mode Split Assumptions by Land Use

Land Use	Mode			
	Auto	Transit	Bike	Walk
Residential	32%	59%	3%	6%
Retail	5%	15%	5%	75%

Trip Generation Methodology

Weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation, 11th Edition.

Proposed Trip Generation

The proposed development will construct a new 7-story multifamily residential building with ground floor retail at the project site. The development will include 370 dwelling units and approximately 3,360 square feet of ground-floor retail.

Residential trip generation is based on the development program of 370 residential dwelling units. Residential trip generation was calculated based on ITE Land Use 221 (Multifamily Housing – Mid-Rise), using the setting/location of Center City Core and Not Close to Rail Transit (site located greater than 0.5 miles away from nearest transit station), splitting trips into different modes using assumptions outlined in the mode split section of this report.

Neighborhood-serving retail trip generation is based on the development program of 3,360 square feet of neighborhood-serving ground floor retail. Retail trip generation was calculated based on ITE's baseline vehicular trips for Land Use 822 (Strip Retail Plaza <40k), using the setting/location of General Urban/Suburban (limited data is available for person trips), splitting trips into different modes using assumptions outlined in the mode split section of this report.

A summary of the multi-modal trip generation for the proposed development is shown in Table 11 for the weekday morning and weekday afternoon peak hours. Detailed trip generation calculations are included in the Technical Appendix.

Table 11: Multi-Modal Trip Generation

Mode	Land Use	Mode Split %	Quantity	AM Peak Hour			PM Peak Hour		
				In	*Out*	*Total*	*In*	*Out*	*Total*
Auto	Residential	32%	370 du	12 veh/hr	42 veh/hr	54 veh/hr	37 veh/hr	21 veh/hr	58 veh/hr
	Retail	5%	3,360 s.f.	0 veh/hr	1 veh/hr	1 veh/hr	1 veh/hr	0 veh/hr	1 veh/hr
	Total Proposed			**12 veh/hr**	**43 veh/hr**	**55 veh/hr**	**38 veh/hr**	**21 veh/hr**	**59 veh/hr**
Transit	Residential	59%	370 du	26 ppl/hr	92 ppl/hr	118 ppl/hr	81 ppl/hr	43 ppl/hr	124 ppl/hr
	Retail	15%	3,360 s.f.	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr
	Total Proposed			**27 ppl/hr**	**93 ppl/hr**	**120 ppl/hr**	**84 ppl/hr**	**46 ppl/hr**	**130 ppl/hr**
Bike	Residential	3%	370 du	1 ppl/hr	5 ppl/hr	6 ppl/hr	4 ppl/hr	2 ppl/hr	6 ppl/hr
	Retail	5%	3,360 s.f.	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr
	Total Proposed			**1 ppl/hr**	**6 ppl/hr**	**7 ppl/hr**	**5 ppl/hr**	**3 ppl/hr**	**8 ppl/hr**
Walk	Residential	6%	370 du	3 ppl/hr	9 ppl/hr	12 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr
	Retail	75%	3,360 s.f.	7 ppl/hr	4 ppl/hr	11 ppl/hr	15 ppl/hr	15 ppl/hr	30 ppl/hr
	Total Proposed			**10 ppl/hr**	**13 ppl/hr**	**23 ppl/hr**	**23 ppl/hr**	**20 ppl/hr**	**43 ppl/hr**

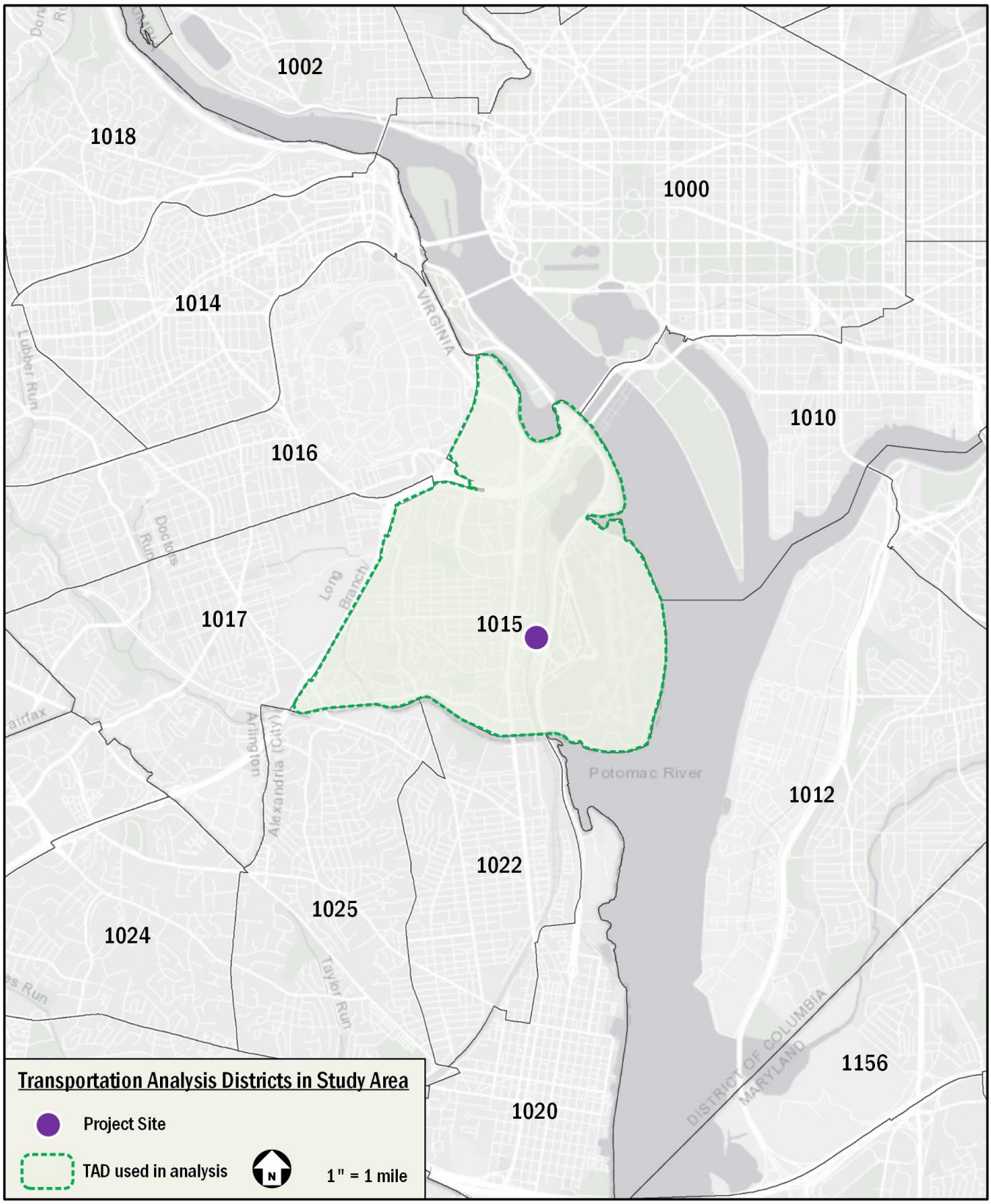

Figure 29: Transportation Analysis District (TAD) in Study Area

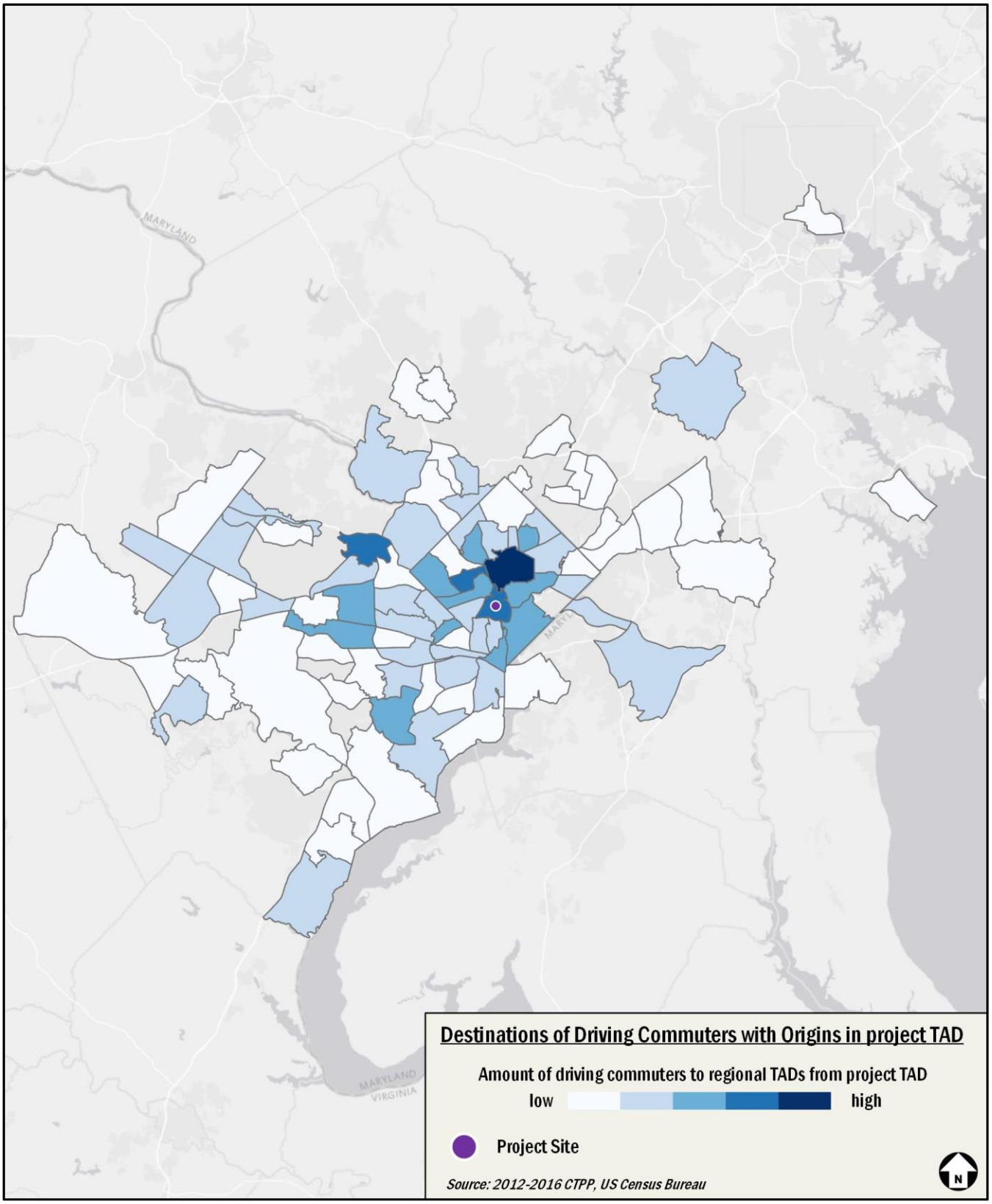

Figure 30: Destinations of Driving Commuters with Origins in project TAD

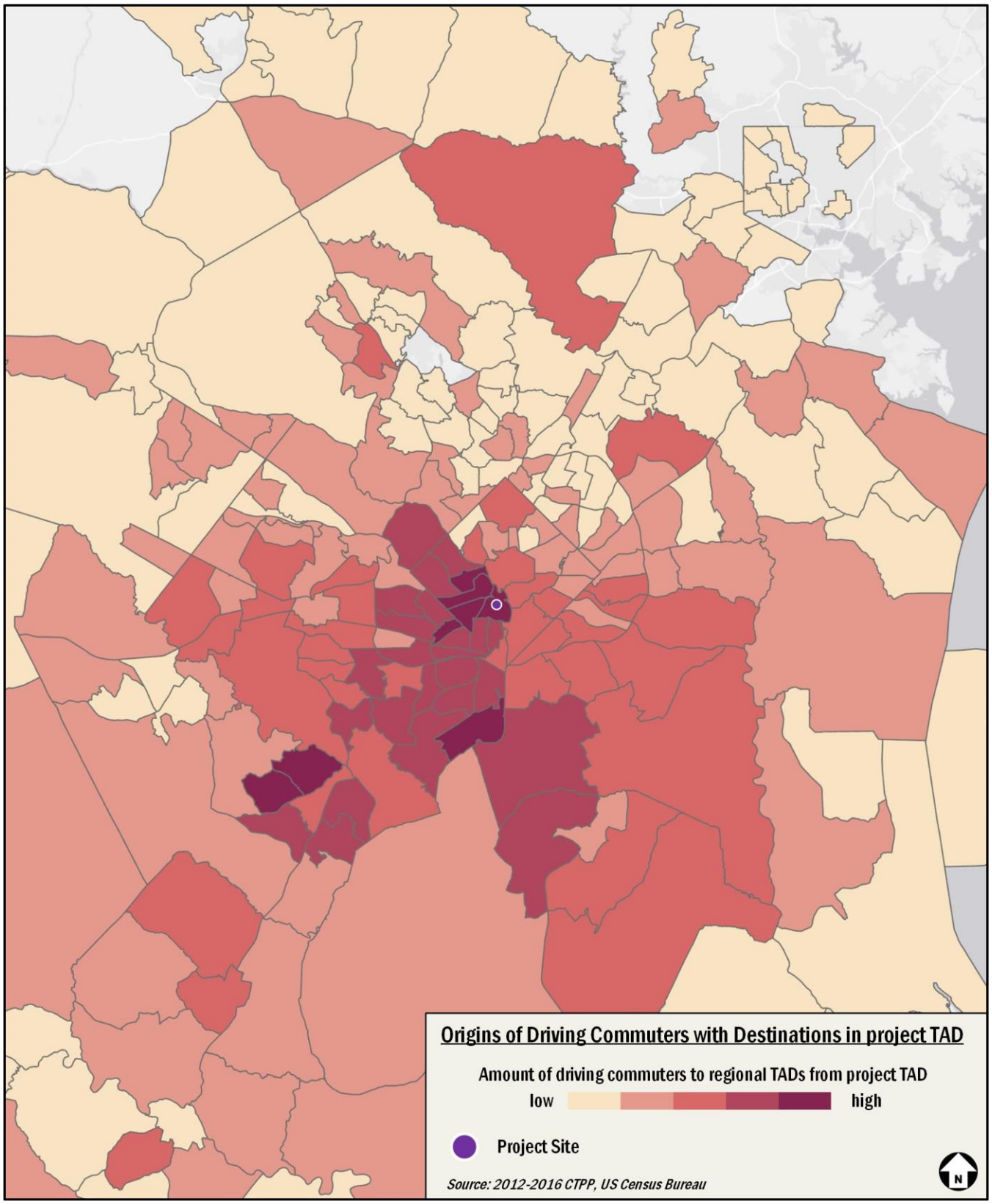

Figure 31: Origins of Driving Commuters with Destinations in project TAD

Traffic Operations

This chapter provides a summary of an analysis of the existing and future roadway capacity in the study area for the 2026 analysis year. Included is an analysis of potential vehicular impacts of the Block W development and a discussion of potential improvements.

The purpose of the capacity analysis is to:

- Determine the existing capacity of the study area roadways;
- Determine the overall impact of the proposed development on the study area roadways; and
- Discuss potential improvements and mitigation measures to accommodate the additional vehicular trips.

The capacity analysis focuses on the morning and afternoon commuter peak hours, as determined by the existing traffic volumes in the study area.

A project is considered to have an impact at an intersection within the vehicular study area if any of the following conditions are met:

- The overall intersection or any movement operates at LOS F in the future conditions with the proposed development where it operates at LOS E or better in the background conditions without the proposed development;
- The overall intersection or any movement operates at LOS F during the background condition and the delay increases by more than 10% in the future conditions with the proposed development; or
- If any 95th percentile queue length in the future condition exceeds the available capacity where it does not in the background conditions or increases the 95th percentile queue length by more than 150 feet where it already exceeds the available capacity in the background conditions.

The following conclusions are reached within this chapter:

- There are impacts to one (1) study intersection as a result of the removal of the Airport Access Road off-ramp.
- Mitigation measures were analyzed and discussed at this intersection, of which feasible solutions were recommended for implementation given Arlington County approval.
- No impacts were identified at the study intersections as a result of the proposed development.
- Overall, this report concludes that the proposed development will not have a detrimental impact to the surrounding transportation network.

Study Area, Scope, & Methodology

This section outlines the assumptions used to develop the existing and future roadway capacity analyses, including volumes, roadway geometries, and traffic operations. The scope of the analysis contained within this report was discussed with and approved by Arlington County staff. The general methodology of the analysis follows national and Arlington County guidelines on the preparation of transportation impact evaluations of site development.

Capacity Analysis Scenarios

The vehicular capacity analyses are performed to determine if the proposed development will lead to adverse impacts on traffic operations. This is accomplished by comparing future scenarios: (1) without the proposed development and without the removal of the Airport Access Road off-ramp, (2) without the proposed development and with the removal of the Airport Access Road Off Ramp, (3) with the development approved and constructed, and with the removal of the Airport Access Road Off Ramp.

Specifically, the roadway capacity analysis examined the following scenarios:

1. 2023 Existing Conditions
2. 2026 Background Conditions without the removal of the Airport Access Road off-ramp and without the proposed development
3. 2026 Future Conditions with the removal of the Airport Access Road off-ramp and without the proposed development
4. 2026 Future Conditions with the removal of the Airport Access Road off-ramp and with the proposed development

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses are performed for the scenarios listed above. The set of intersections included are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the proposed development.

Based on the projected future trip generation and the location of the site access points, as agreed to in this report's scoping agreement, the following intersections were chosen for analysis:

1. 23rd Street S and Richmond Highway
2. 23rd Street S and S Clark Street
3. 23rd Street S and Crystal Drive
4. Richmond Highway and Airport Access Off Ramp
5. Crystal Drive/HAWK and Airport Access Off Ramp
6. Crystal Drive and 26th Street S/Crystal City Service Road/Crystal City Transitway
7. Crystal Drive and Potomac Avenue
8. Crystal Drive and Crystal City Service Road (Planned)

Figure 7 shows the vehicular study area intersections. Roadway characteristics, including classification, number of lanes, speed limit, the presence of on-street parking and average annual daily traffic volumes (AADT) are outlined in Table 12.

Table 12: Existing Roadway Network

Roadway	Classification*	Lanes	Speed	On-Street Parking	AADT**
Crystal Drive	Major Collector (VDOT) Arterial Type B (Arlington)	2	30 mph	Yes	7,300
23rd Street S	Major Collector (VDOT) Minor Arterial (Arlington)	2-3	25 mph	Yes	12,000
Richmond Highway	Principal Arterial (VDOT) Arterial Type F (Arlington)	4-6	35 mph	No	47,000

* From VDOT and Arlington GIS

** VDOT AADT Data from 2019

Traffic Volume Assumptions

The following section reviews the traffic volume assumptions and methodologies used in the roadway capacity analyses.

Existing Traffic Volumes

The existing traffic volumes are comprised of turning movement count data and 24-hour counts collected in May 2023. Existing volumes were balanced where appropriate. Based on the average peak hours from all of the count data, the system peak hours assumed were 8:15 AM to 9:15 AM for the morning peak hour and 4:45 PM to 5:45 PM for the afternoon peak hour. The existing turning movement counts, without volume balancing, are included in the Technical Appendix.

The existing peak hour traffic volumes for intersections within the vehicular study area are shown in Figure 32.

2026 Traffic Volumes

2026 Background Traffic Volumes (Without Ramp Removal and Without Development)

Traffic projections for the 2026 Background Conditions consist of the existing volumes with two additions:

- Inherent growth on the roadway (representing regional traffic growth); and
- Traffic generated by developments expected to be completed prior to 2026 (representing local traffic growth, known as background developments).

The background peak hour traffic volumes for intersections within the vehicular study area are shown in Figure 34.

Regional Traffic Growth

While the background developments represent local traffic changes, regional traffic is typically accounted for using growth rates. The growth rates used in this analysis were derived using VDOT's Annual Average Daily Traffic (AADT) data, transportation studies for recently-approved projects, and discussions with Arlington County staff during the scoping process. According to historical data, the average historical growth rate on roadways near the project site has been 0.4% in recent years. Since the volumes generated by the background developments are expected to account for much of the volume growth in the local roadway network, an annual growth rate of 0.25% was applied to volumes on Crystal Drive to account for regional traffic growth.

Background Developments (2026)

Following industry methodologies, a background development must meet the following criteria to be incorporated into the analysis:

- Be located in the study area, defined as having an origin or destination point within the cluster of study area intersections;
- Have entitlements; and
- Have a construction completion date prior or close to the proposed development.

Based on these criteria, ten (10) developments were included in the 2026 Background Conditions scenario. These developments are:

1. Crystal House Lofts
2. Century Center
3. Pentagon Centre – Phase I
4. Metropolitan Park 6, 7, 8
5. PenPlace
6. 2250 Crystal Drive/223 23rd Street (Crystal Plaza 5)
7. 101 12th Street S
8. 2000 and 2001 S Bell Street
9. Verizon Site
10. 1900 Crystal Drive

The location of the background developments included in the 2026 Background Conditions scenario in relation to the proposed Block W development is shown on Figure 33. Transportation studies were available for the majority of the background developments included in the 2026 Background Conditions. Details on each of the background developments included in the 2026 Background Conditions are presented below:

1. **Crystal House Lofts:** Located in the Pentagon City area and bounded by 18th Street S to the north, S Eads Street to the east, 22nd Street S to the south, and S Fern Street to the west, the approved Crystal House development will raze a portion of an existing parking lot and redevelope it with 798 residential dwelling units. The expected build-out year is 2026. The Crystal House development is expected to generate 130 weekday AM peak hour vehicle trips and 153 weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Wells & Associates dated October 19, 2018.

2. **Century Center:** Located in the Crystal City area at the southwest corner of the intersection of Crystal Drive and 23rd Street S, the approved Century Center development will maintain the existing parking garage and retail on site and redevelop the existing office space with a new residential tower containing approximately 300 dwelling units. The expected build out year was initially projected to occur in 2019; however, construction has not yet begun. The Century Center development is expected to generate 53 weekday AM peak hour vehicle trips and 64 weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated January 10, 2017.
3. **Pentagon Centre – Phase I**: **Pentagon Centre:** Located in the Pentagon City area and bounded by 12th Street S to the north, 15th Street S to the south, S Fern Street to the east, and S Hayes Street to the west, the approved Pentagon Centre development will redevelop the existing 337,900 square feet of retail space into multiple uses including 357,800 square feet of retail space and 714 dwelling units. The expected build out year is 2023. The development is expected to generate 173 net weekday AM peak hour vehicle trips and 217 net weekday PM peak hour vehicle trips based on the Trip Generation Comparison prepared by Wells + Associates dated June 12, 2014 (Revised April 2, 2015).
4. **Metropolitan Park 6, 7, 8**: Located in the Pentagon City area and bounded by 13th Street S to north, 15th Street S to the south, S Elm Street to the west, and S Eads Street to the east, the approved Metropolitan Park 6, 7, 8 development will raze the existing warehouse space and redevelop to include two buildings with approximately 2.1 million square feet of office space and 55,000 square feet of neighborhood-serving ground floor retail. The expected build out year is 2023. The development is expected to generate 558 net weekday AM peak hour vehicle trips and 524 net weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated October 22, 2019.
5. **PenPlace**: Located in the Pentagon City area and bounded by Army Navy Drive to the north, 12th Street S to the south, S Eads Street to the east, and S Fern Street to the west, the approved PenPlace development will include four (4) buildings with approximately 2.8 million square feet of office space, 391,800 square feet of amenity space, 14,600 square feet of daycare, 94,400 square feet of neighborhood-serving ground floor retail space, and 26,500 square feet of community space. The expected build out year is 2025. The development is expected to generate 867 weekday AM peak hour vehicle trips and 821 weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated February 11, 2022.
6. **2250 Crystal Drive/223 23rd Street (Crystal Plaza 5)**: Located in the Crystal City area and bounded by commercial property to the north, Crystal Drive to the east, 23rd Street S to the south, and a commercial property to the west. The proposed development site currently consists of two existing buildings, a vacant office building and retail building along Crystal Drive. The proposed development will redevelop the site to include two buildings with approximately 651 residential units, 513,100 square feet of the office space, and 33,500 square feet of neighborhood-serving ground floor retail space. The expected build out year is 2026. The development is expected to generate 256 vehicle AM peak hour trips and 260 vehicle PM peak hour trips. Due to uncertainty in project schedules, it is possible that the Block W development will be completed prior to the completion of the 2250 Crystal Drive/223 23rd Street development and the associated improvements to 23rd Street listed above. For the purposes of providing a more conservative analysis, it was assumed that the 2250 Crystal Drive/223 23rd Street development and 23rd Street improvements being constructed as part of that development would be in place prior to the completion of Block W. As a result, the background trips from the 2250 Crystal Drive/223 23rd Street development were included in all background and future conditions.
7. **101 12th Street S**: Located in the Crystal City area and bounded by 10th Street S to the north, CSX tracks to the east, 12th Street S to the south, and a commercial

property to the west, the approved 101 12th Street S development will include one mixed-use building with approximately 234,500 square feet of office space and 5,200 square feet of neighborhood-serving ground floor retail space. The expected build out year is 2023. The development is expected to generate 76 weekday AM peak hour vehicle trips and 79 weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated October 22, 2020.

8. **2000 and 2001 S Bell Street:** Located in the Crystal City area along 20th Street S between S Clark Street and Crystal Drive. The development will raze the existing office building and redevelop to include two buildings with approximately 786 residential dwelling units and 29,600 square feet of ground-floor retail. The expected build out year is 2025. Trip generation was calculated based on ITE Land Use 222 (Multifamily Housing – High-Rise), using the setting/location of Center City Core, ITE Land Use 820 (Shopping Center), using the setting/location of General Urban/Suburban, and ITE Land Use 710 (General Office Building), using the setting Center City Core. The development is expected to generate 94 net weekday AM peak hour vehicle trips and 98 net weekday PM peak vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated February 12, 2021.
9. **Verizon Site**: Located in the Crystal City area and bounded by S Eads Street to the west, 11th Street S to the north, existing office and residential buildings to the east, and 12th Street S to the south, the approved Verizon Site development will raze the existing telecommunications facility and redevelop to include one mixed-use building with approximately 306 dwelling units and 10,908 square feet of neighborhood-serving ground floor retail. The expected build out year is 2022. The development is expected to generate 42 net weekday AM peak hour vehicle trips and 40 net weekday PM peak hour vehicle trips based on the Traffic Impact Study prepared by Gorove Slade Associates dated July 19, 2019.
10. **1900 Crystal Drive**: Located in the Crystal City area and bounded by a new North-South connection between 18th Street S and 20th Street S to the west, Crystal Drive to the east, 18th Street S to the north, and 20th Street S to the South. The mix-use development will replace an existing office building containing approximately 782 apartment units and approximately 40,076 sf of ground floor retail. The expected build out year is 2023. The development is expected to generate 109 vehicle weekday AM peak hour trips and 137 vehicle weekday PM peak hour trips based on the Multi-modal Transportation Assessment prepared by Gorove Slade Associates dated March 15th, 2019.

Trips generated by the approved background developments are included in the Technical Appendix. The traffic volumes generated by background developments were added to the existing traffic volumes in order to establish the 2026 Background traffic volumes. Trip distribution assumptions for the background developments were based on the distributions included in their respective studies or based on those determined for the proposed development and altered where necessary based on anticipated travel patterns. The traffic volumes for the 2026 Background conditions are shown on Figure 34.

Table 13: Traffic Generated by 2028 Background Developments

Development	Trip Generation					
	AM Peak Hour			PM Peak Hour		
	In	*Out*	*Total*	*In*	*Out*	*Total*
Crystal House Lofts [1]						
Total New Vehicle-Trips	37	93	130	92	61	153
Century Center [2]						
Total New Vehicle-Trips	10	43	53	42	22	64
Pentagon Centre [3]						
Total New Vehicle Trips	39	134	173	137	80	217
Metropolitan Park 6, 7, 8 [4]						
Total New Vehicle Trips	485	73	558	87	437	524
PenPlace [5]						
Total New Vehicle Trips	723	144	867	173	648	821
2250 Crystal Drive/223 23rd Street (Crystal Plaza 5) [6]						
Total New Vehicle Trips	62	174	236	142	107	249
101 12th Street S [7]						
Total New Vehicle Trips	66	10	76	14	65	79
2000 and 2001 S Bell Street [8]						
Total New Vehicle Trips	2	92	94	73	25	98
Verizon Site [9]						
Total New Vehicle Trips	12	30	42	23	17	40
1900 Crystal Drive[10]						
Total New Vehicle Trips	31	78	109	75	62	137
Total Background Trips	**1467**	**871**	**2338**	**858**	**1524**	**2382**

(1): Extracted from Crystal House III TIA (05.24.2017) prepared by Wells + Associates.
(2): Extracted from Century Center TIS (01.10.2017) prepared by Gorove Slade Associates.
(3): Extracted from Pentagon Centre PDSP Trip Generation Comparison (04.02.2015) prepared by Wells + Associates.
(4): Extracted from Metropolitan Park 6, 7, 8 MMTA (10.22.2019) prepared by Gorove Slade Associates.
(5): Extracted from PenPlace MMTA (02.11.2022) prepared by Gorove Slade Associates.
(6): Extracted from 2250 Crystal Drive 223 23rd Street S MMTA (8.26.2021) prepared by Gorove Slade Associates.
(7): Extracted from 101 12th Street S MMTA (10.22.2020) prepared by Gorove Slade Associates.
(8): Extracted from 2000 and 2001 S Bell Street MMTA (02.12.2021) prepared by Gorove Slade Associates.
(9): Extracted from Verizon Site MMTA (07.19.2019) prepared by Gorove Slade Associates.
(10): Extracted from 1900 Crystal Drive MMTA (3.15.2019) prepared by Gorove Slade Associates.

2026 Future Traffic Volumes (With Ramp Removal and Without Development)

The 2026 Future With Ramp Removal/Without Development scenario traffic volumes consist of the 2026 Background Without Ramp Removal/Without Development volumes with the addition of rerouted traffic volumes resulting from the removal of the Airport Access Road off-ramp to Crystal Drive.

The distribution of the rerouted trips from the Airport Access Road off-ramp was primarily determined using existing volumes and anticipated traffic patterns. It was assumed that all existing trips on the Crystal Drive off-ramp would utilize the northbound Richmond Highway off-ramp in this scenario. The distribution of rerouted trips for these conditions is shown Figure 37. Rerouted trip distribution assumptions were vetted and approved by Arlington County. The 2026 Future With Ramp Removal/Without Development scenario traffic volumes, which are comprised of existing volumes, background developments, regional growth, and rerouted Airport Access Road off-ramp trips are shown in Figure 35.

2026 Future Traffic Volumes (With Ramp Removal and With Development)

The 2026 Future With Ramp Removal/With Development scenario traffic volumes consist of the 2026 Future With Ramp Removal/Without Development volumes with the addition of the traffic volumes generated by the proposed development (site-generated trips). Thus, the 2026 Future With Ramp Removal/With Development scenario traffic volumes include traffic generated by: the existing volumes, background developments, regional growth, rerouted Airport Access Road off-ramp trips, and the proposed development.

Trip distribution and assignments for site-generated traffic was primarily determined using existing volumes, anticipated traffic patterns, and other recent studies conducted in the area. The origins of outbound and destinations of inbound vehicular trips were the garage access off of the realigned portion of Crystal City Service Road, located on the northern face of the building. A summary of the inbound and outbound trip distribution assumptions for the proposed development without the ramp removal is shown on Figure 36 and with the ramp removal on Figure 37.

Trip distribution and assignment assumptions were vetted and approved by Arlington County. Based on the trip distribution and assignment assumptions, site-generated trips were distributed though the study area intersections. The site-generated traffic volumes are shown on Figure 38. The 2026 Future With Ramp Removal/With Development scenario traffic volumes are shown on Figure 39.

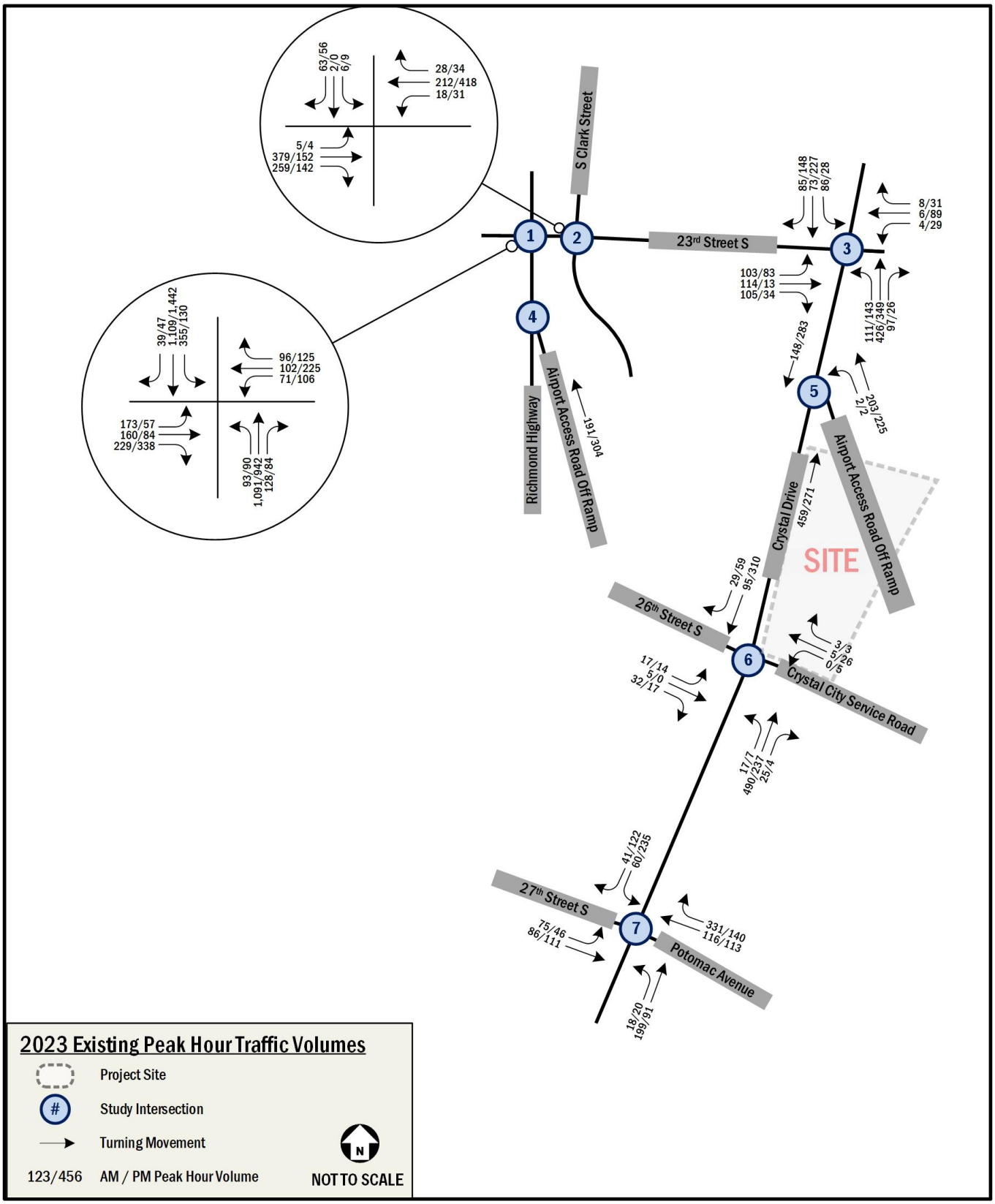

Figure 32: 2023 Existing Peak Hour Traffic Volumes

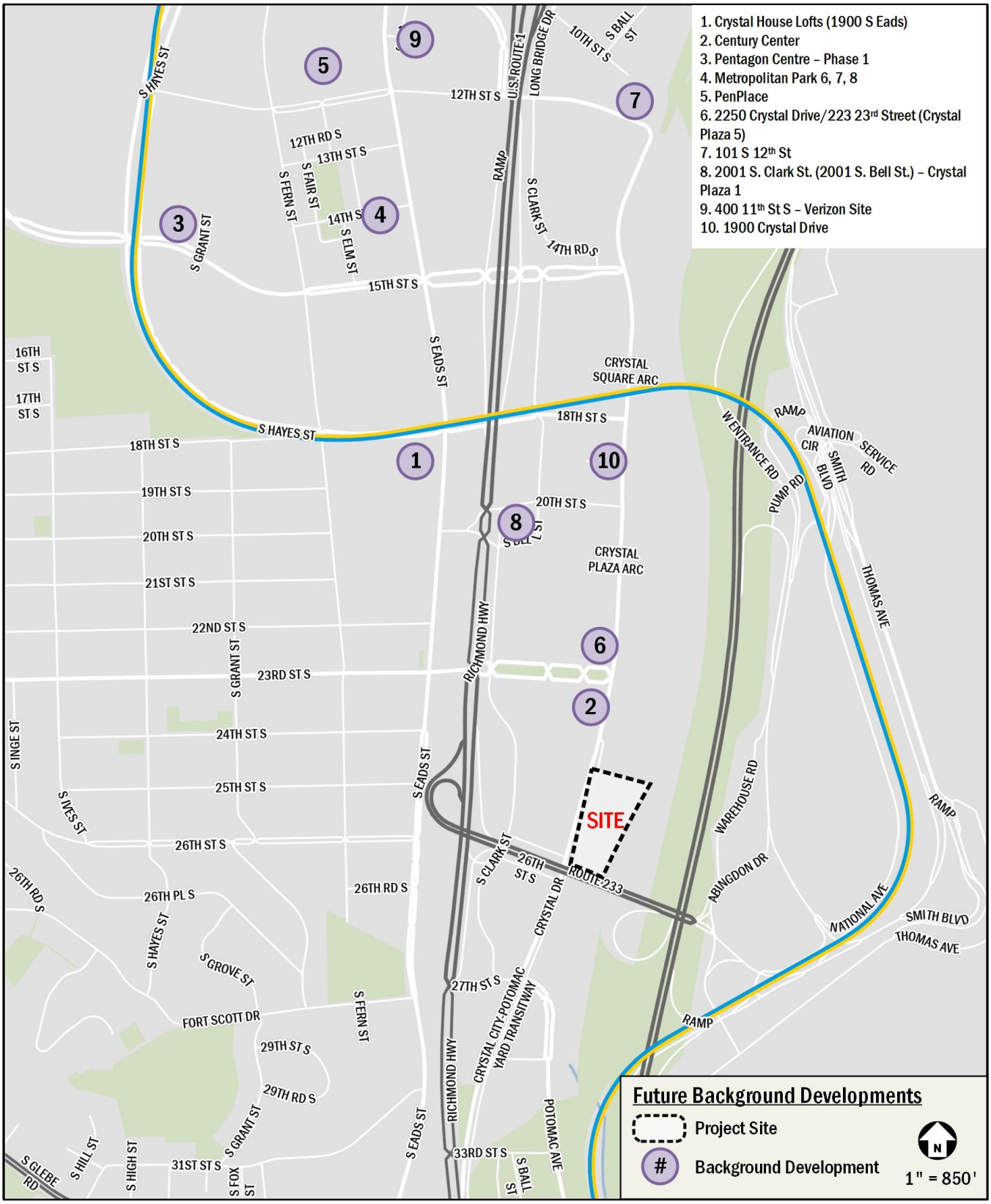

Figure 33: Future Background Developments

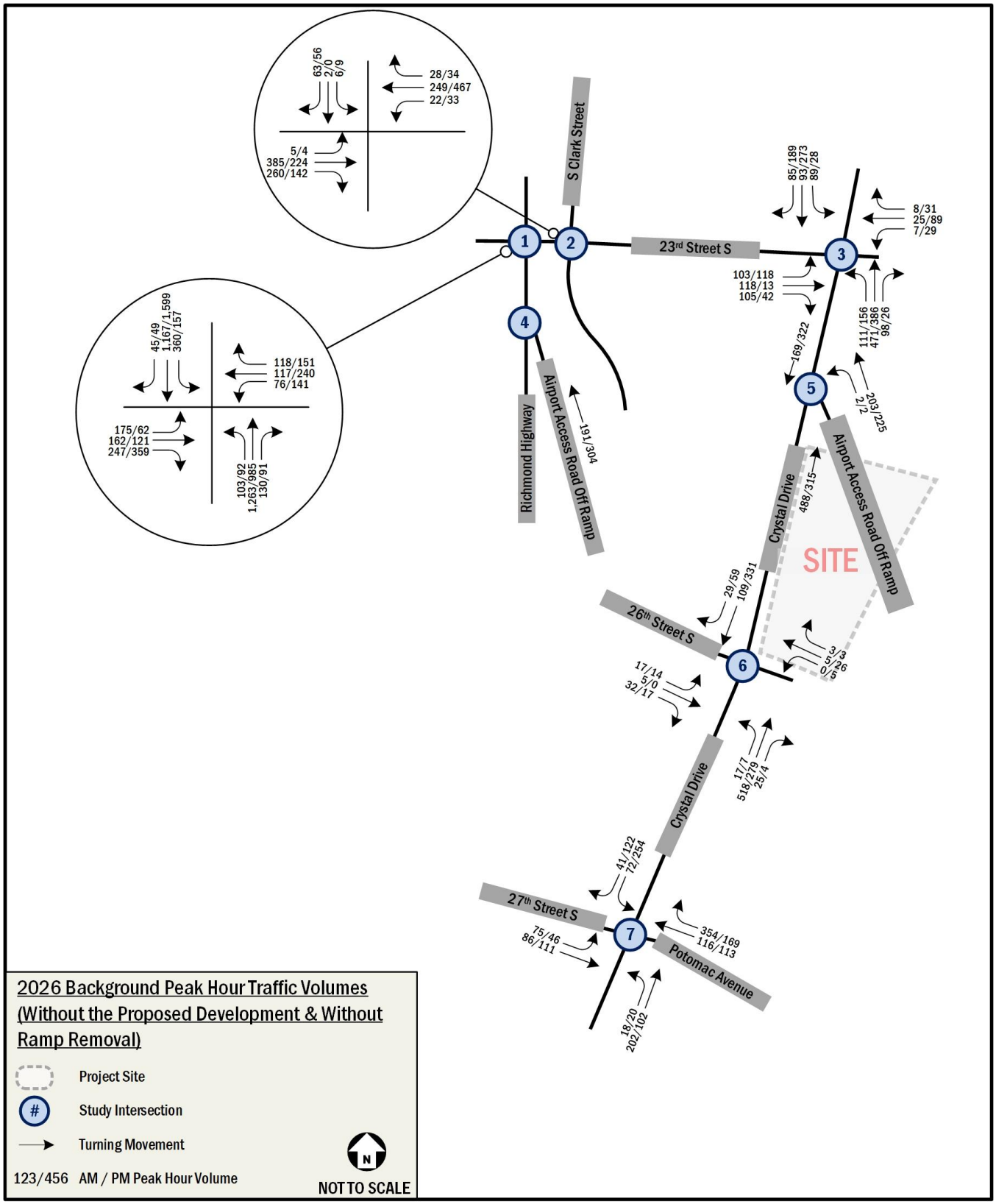

Figure 34: 2026 Background Peak Hour Traffic Volumes (Without the Proposed Development and Without Ramp Removal)

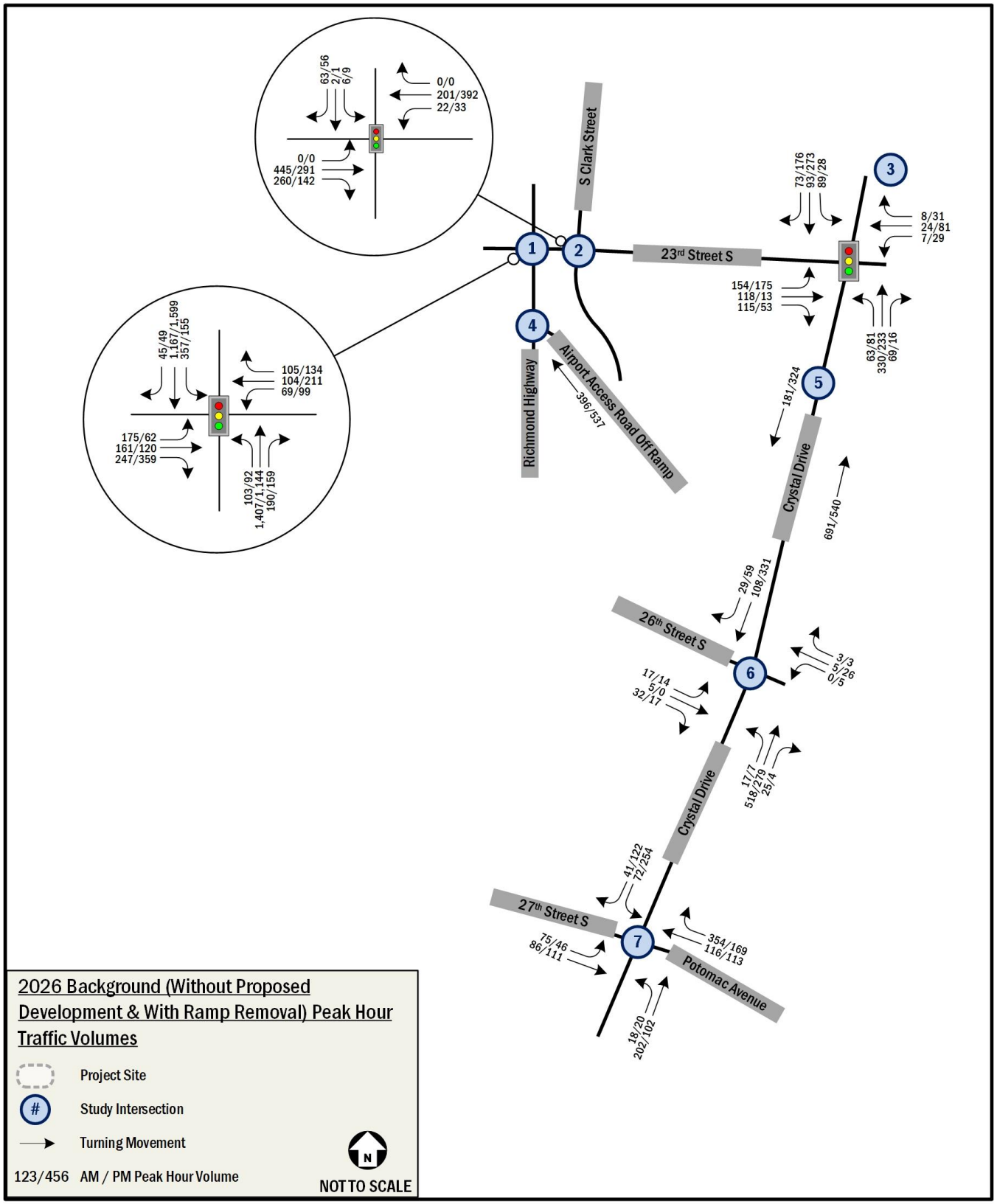

Figure 35: 2026 Future Peak Hour Traffic Volumes (Without the Proposed Development/With Ramp Removal)

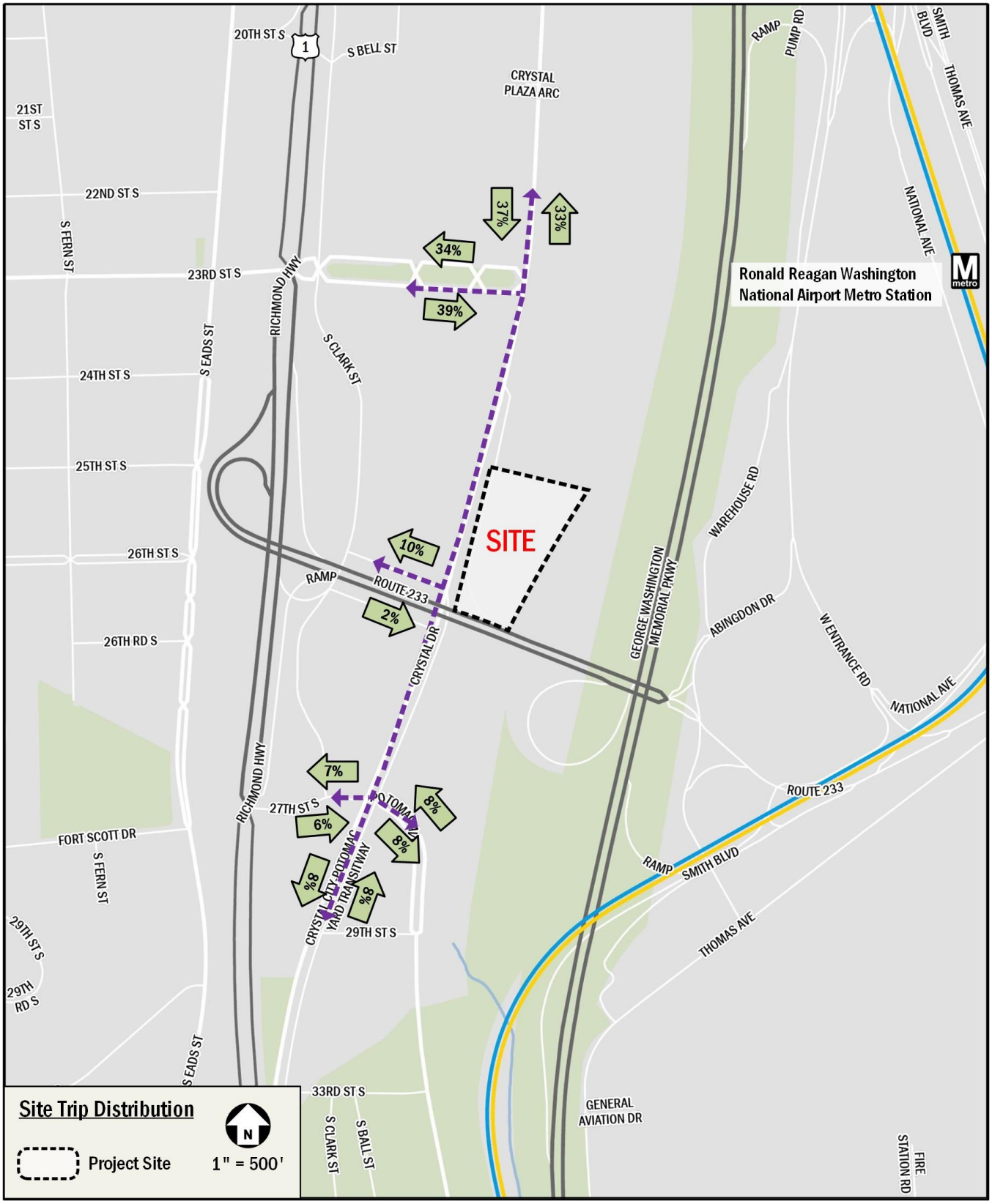

Figure 36: Site Trip Distribution

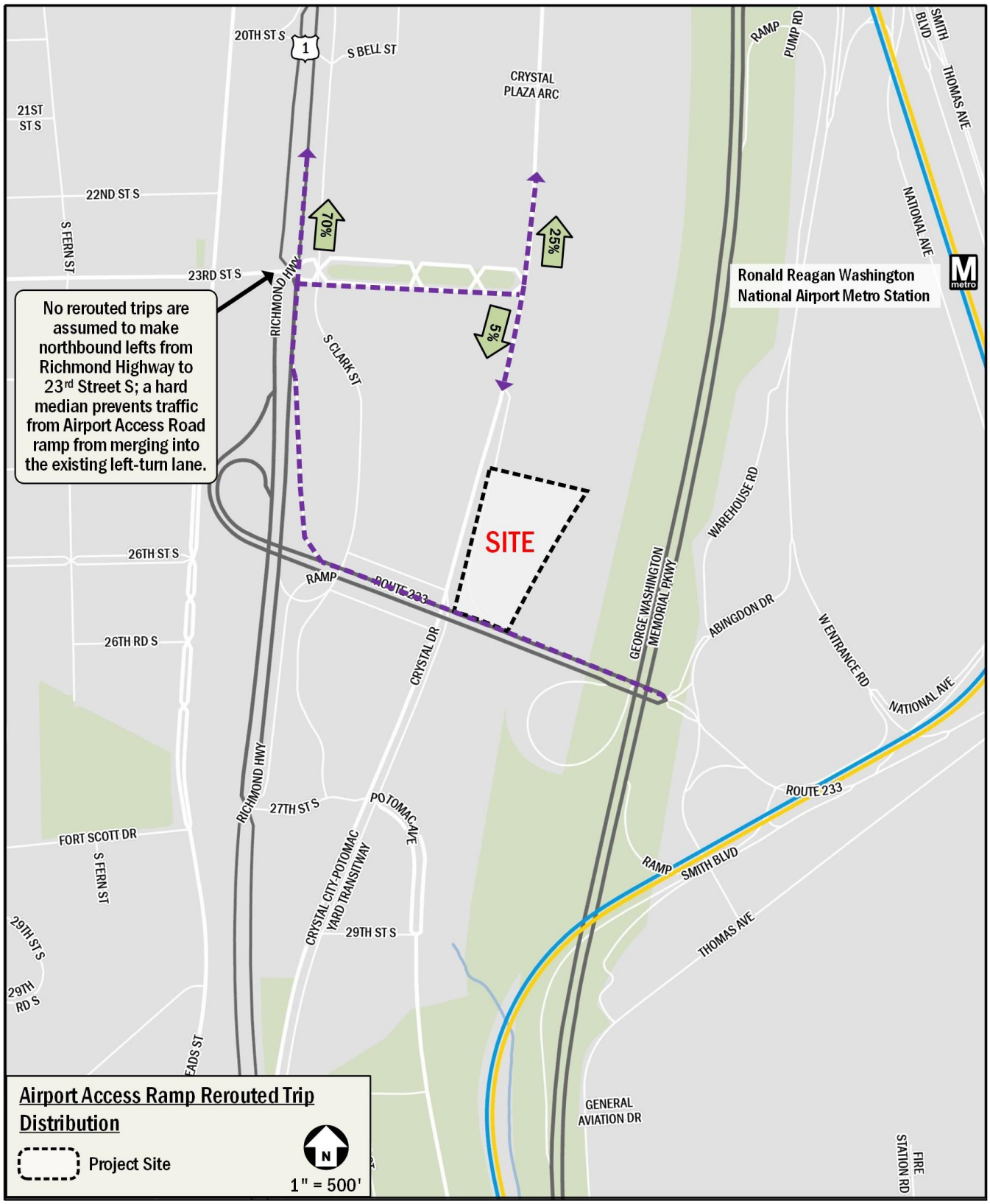

Figure 37: Airport Access Ramp Rerouted Trip Distribution

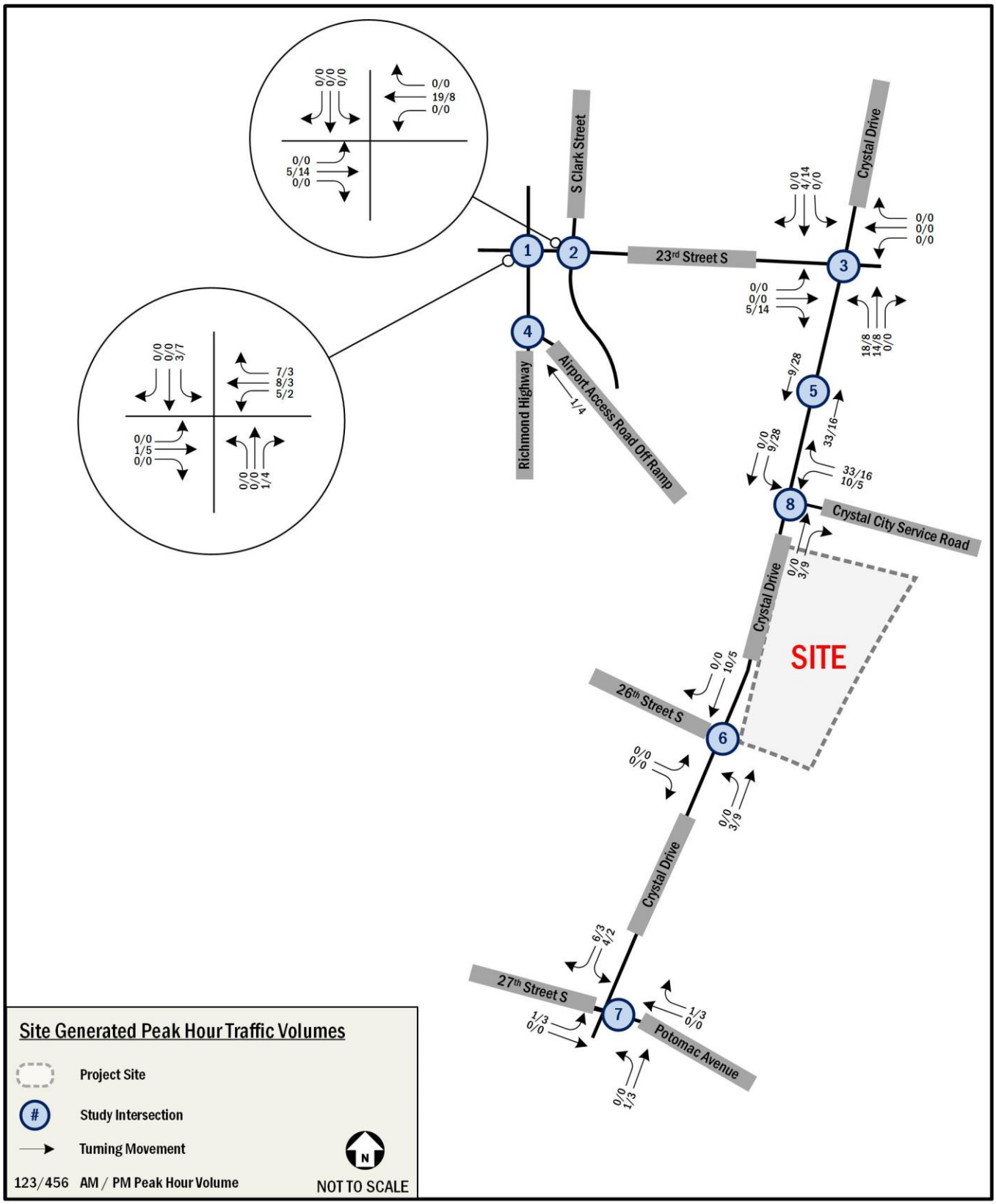

Figure 38: Site-Generated Peak Hour Traffic Volumes

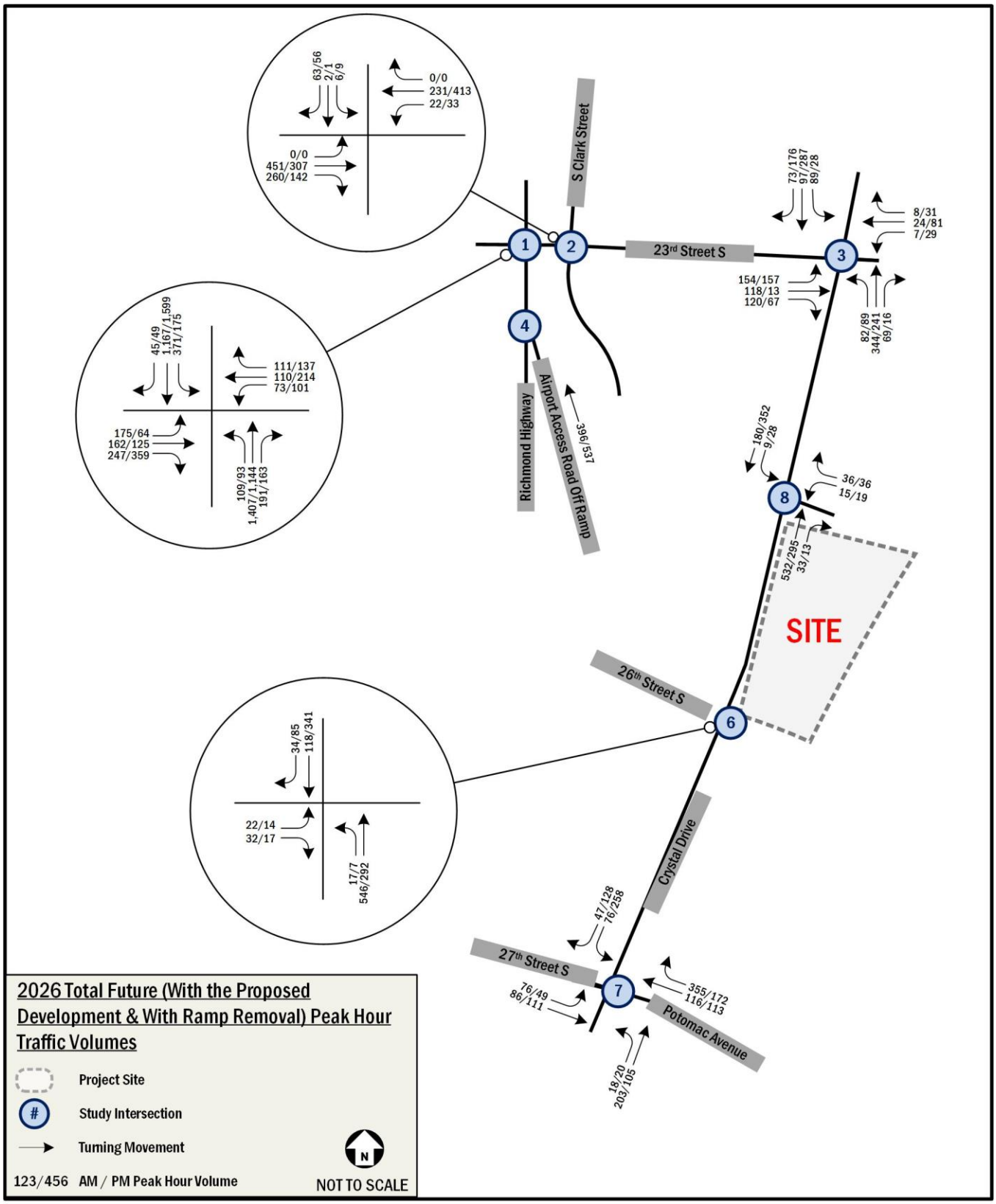

Figure 39: 2026 Total Future Peak Hour Traffic Volumes (With the Proposed Development & With Ramp Removal)

Geometry and Operations Assumptions

The following section reviews the roadway geometry and operations assumptions made and the methodologies used in the roadway capacity analyses.

2023 Existing Geometry and Operations Assumptions

The geometry and operations assumed in the existing conditions scenario are those present when the main data collection occurred. At the time of data collection, two-way traffic was temporarily permitted on the segment of S Clark Street between 23rd Street S and 20th Street S due to construction; as such, the existing conditions analysis reflects this temporary condition. It was assumed in all background and future conditions that S Clark Street will revert to its usual southbound-only condition along this segment. Gorove Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from Arlington County and confirmed during field reconnaissance.

A description of the roadways within the study area is presented below in Table 12. The existing local roadway network including lane configurations and intersection control is detailed in and illustrated in Figure 40.

2026 Background Geometry and Operations Assumptions (Without Ramp Removal and Without Development)

Following industry standard methodologies, a background improvement must meet the following criteria to be incorporated into the analysis:

- Be funded; and
- Have a construction completion date prior or close to the proposed development.

Based on these criteria, a number of geometry and operations improvements were included in the 2026 Background scenario. Roadway improvements that are part of the 23rd Street S realignment and improvements to 23rd Street as part of the 2250 Crystal Drive/223 23rd Street S Street development and were incorporated into the 2026 Background Conditions scenario.

23rd Street S realignment and 2250 Crystal Drive/223 23rd Street S Development

The 23rd Street S realignment and 2250 Crystal Drive/223 23rd Street S Development include the following changes to roadway geometry and operations at Richmond Highway & 23rd Street S, S Clark Street & 23rd Street S, and Crystal Drive & 23rd Street S:

1. The reconfiguration of the S Clark Street and 23rd Street S intersection to convert:
    - The southbound approach from one left turn lane, one thru lane, and one right turn lane to one left/thru lane and one right turn lane.
2. The reconfiguration of the 23rd Street S and Crystal Drive intersection. Each intersection approach is configured with the following:
    - The eastbound approach will include one left/thru lane and one right-turn lane.
    - The westbound approach will include one left/thru lane and one thru/right lane.
    - The northbound approach will include one left-turn lane, one thru lane, and one right-turn lane.
    - The southbound approach will include one left-turn lane and one thru/right lane.

Signal phasing is based on preliminary phasing information provided by Arlington County. No proposed signal timings were provided by the County; as such, signal timing assumptions were based on existing signal timings and adjusted as necessary.

Due to uncertainty in project schedules, it is possible that the Block W development will be completed prior to the completion of the 2250 Crystal Drive/223 23rd Street development and the associated improvements to 23rd Street listed above. For the purposes of providing a more conservative analysis, it was assumed that the 2250 Crystal Drive/223 23rd Street development and 23rd Street improvements being constructed as part of that development would be in place prior to the completion of Block W. As a result, the geometric and operational changes resulting from those two projects were included in all background and future conditions.

Lane configurations and traffic controls for the 2026 Background Without Ramp Removal/Without Development scenario are shown in Figure 41.

2026 Future Geometry and Operations Assumptions (With Ramp Removal and Without Development)

The configurations and traffic controls assumed in the 2026 Future With Ramp Removal/Without Development scenario are based on the 2026 Background Without Ramp Removal/Without

Development scenario, plus the removal of the Airport Access Road off-ramp to Crystal Drive.

The changes in geometry included in this scenario include the removal of the Airport Access Road off-ramp at its intersection with Crystal Drive. The existing HAWK crossing at this location would remain.

There are no proposed changes to signal timing resulting from the 2026 Future With Ramp Removal/Without Development scenario. Lane configurations and traffic controls for this scenario are shown in Figure 42.

2026 Future Geometry and Operations Assumptions (With Ramp Removal and With Development)

The configurations and traffic controls assumed in the 2026 Future Conditions are based on the 2026 Without Ramp Removal/Without Development scenario with the addition of the proposed development.

The changes to the geometry as a part of the proposed development include the realignment of Crystal City Service Road and changes to the intersection of Crystal Drive and 26th Street S. The proposed development will realign the service road to connect to Crystal Drive at the northwest corner of the project site. The new intersection of Crystal Drive and Crystal City Service Road is proposed to be signalized; a signal warrant analysis is provided in the next section. In addition, this realignment would result in the closure of the eastern leg of the Crystal Drive/26th Street S intersection. Additionally, the northbound approach to that intersection would be modified to remove the northbound right-turn lane and provide a single northbound thru lane. Access to and from the Crystal City Transitway at this intersection would be maintained.

The closure of the eastern leg of Crystal Drive/26th Street would require changes to signal phasing to remove signal phases associated with the eastern leg of the intersection. There are otherwise no proposed changes to existing signal timings as part of the proposed development in the 2026 Future Conditions. Lane configurations and traffic controls for the 2026 Future Conditions are shown in Figure 44.

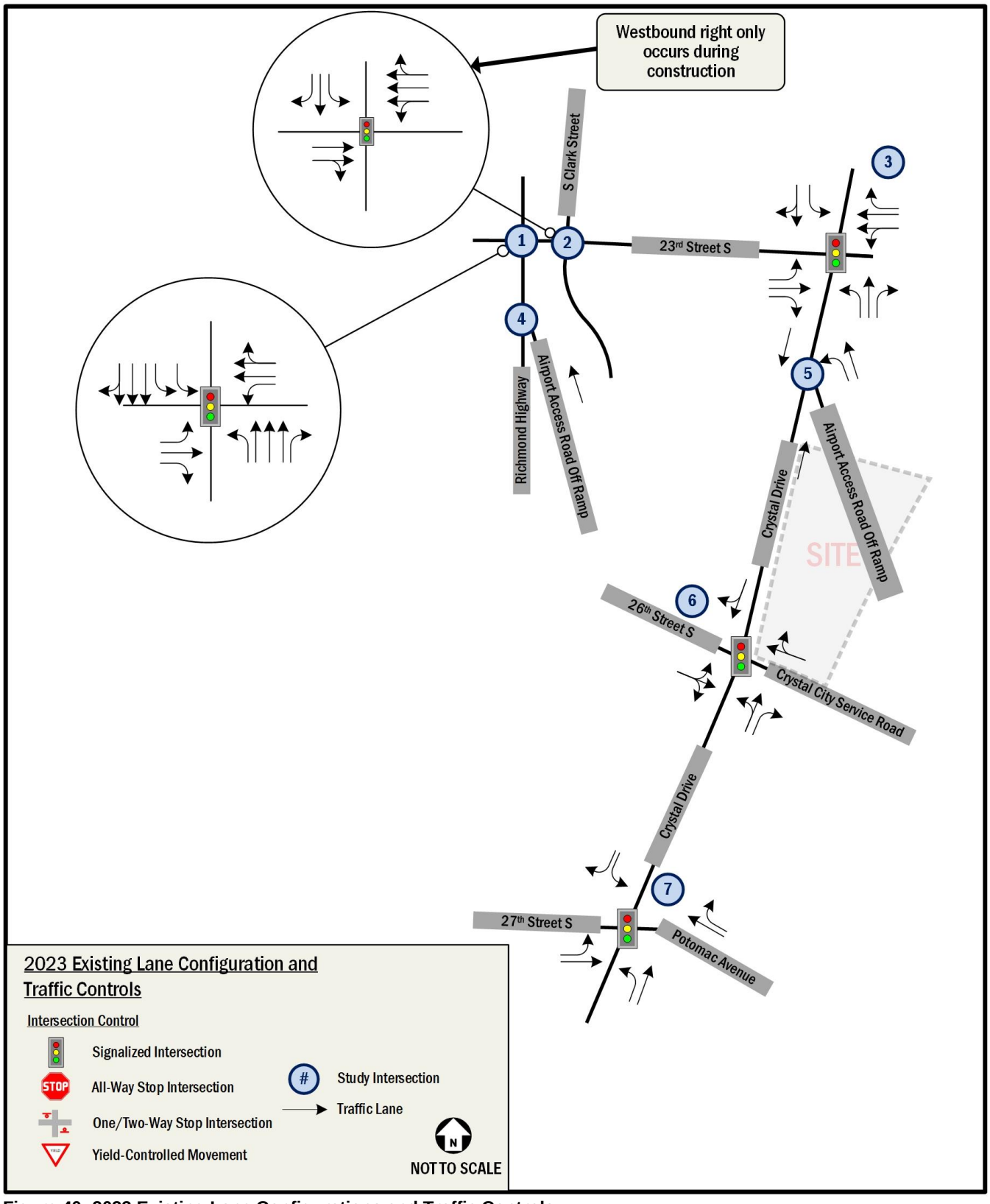

Figure 40: 2023 Existing Lane Configurations and Traffic Controls

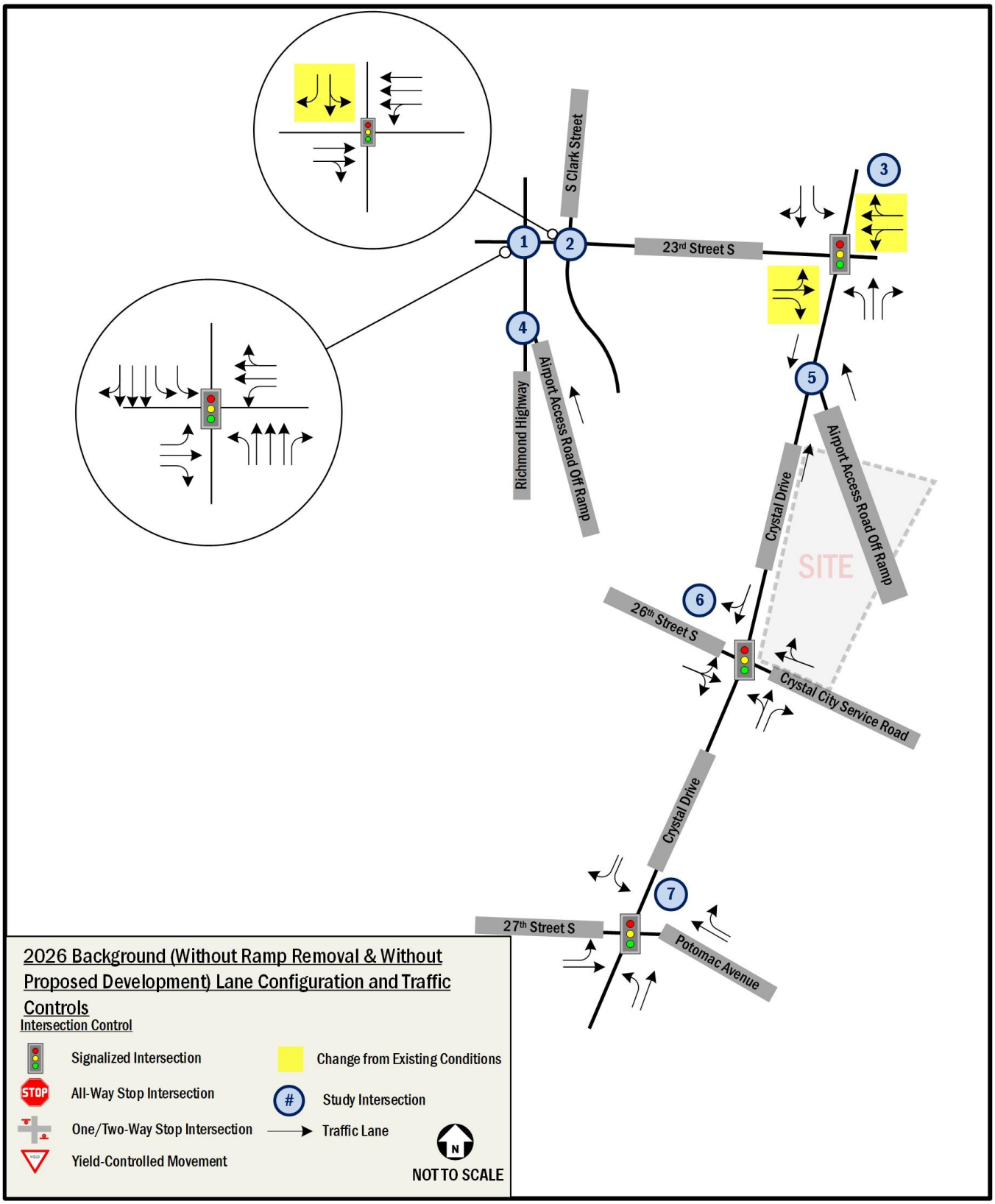

Figure 41: 2026 Background (Without Ramp Removal & Without Proposed Development) Lane Configuration and Traffic Controls

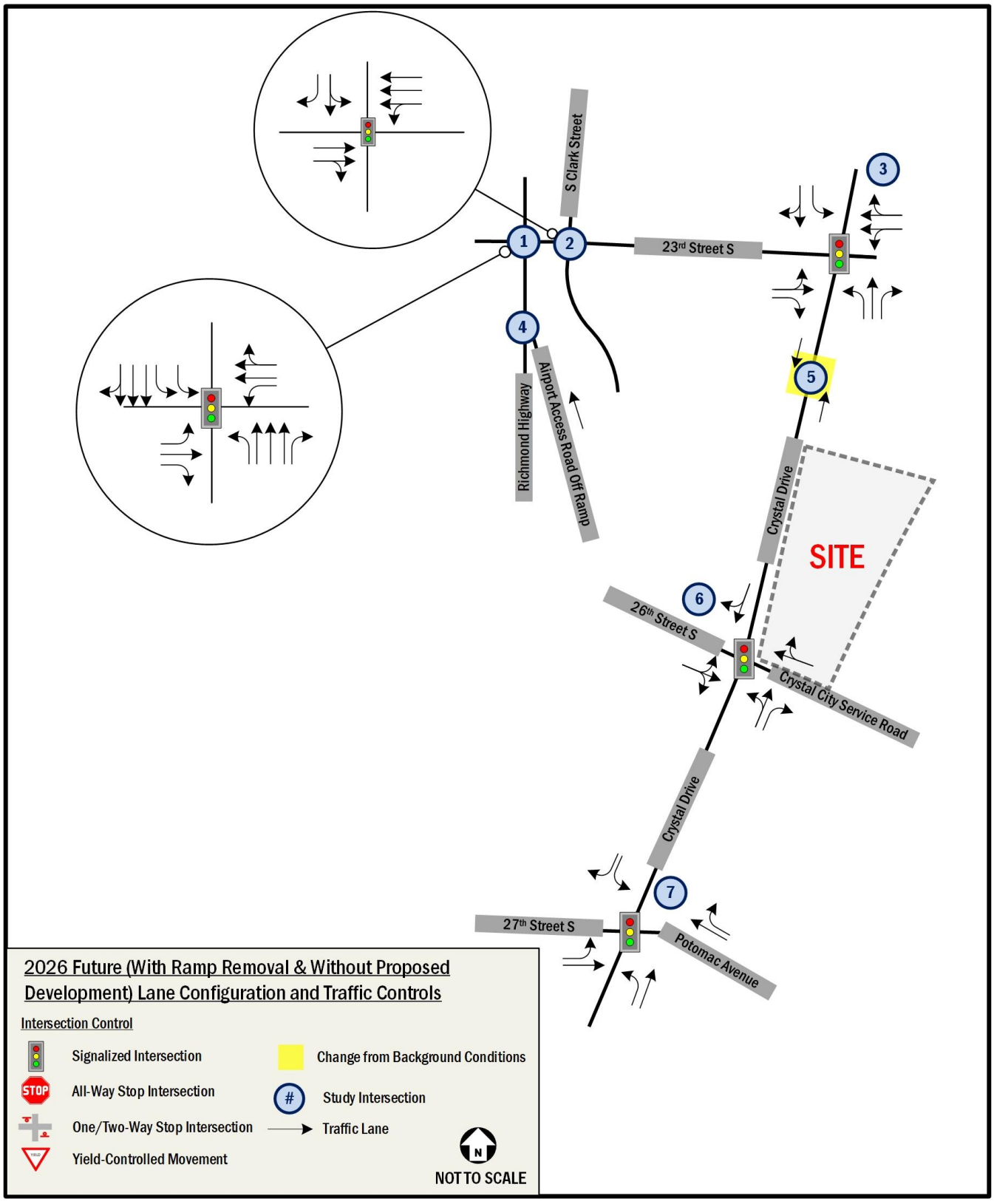

Figure 42: 2026 Future (With Ramp Removal & Without Proposed Development) Lane Configuration and Traffic Controls

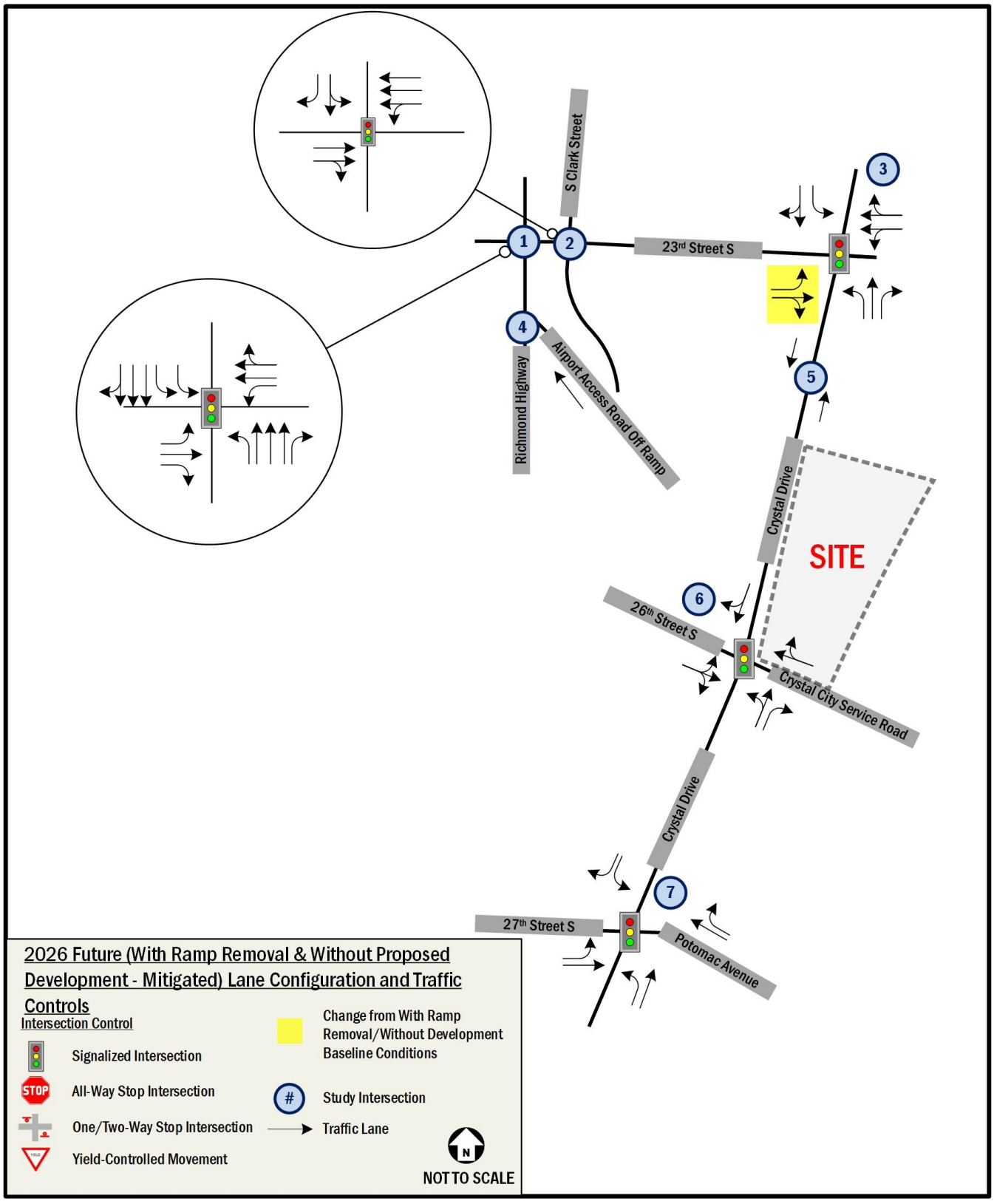

Figure 43: 2026 Future (With Ramp Removal & Without Proposed Development - Mitigated) Lane Configuration and Traffic Controls

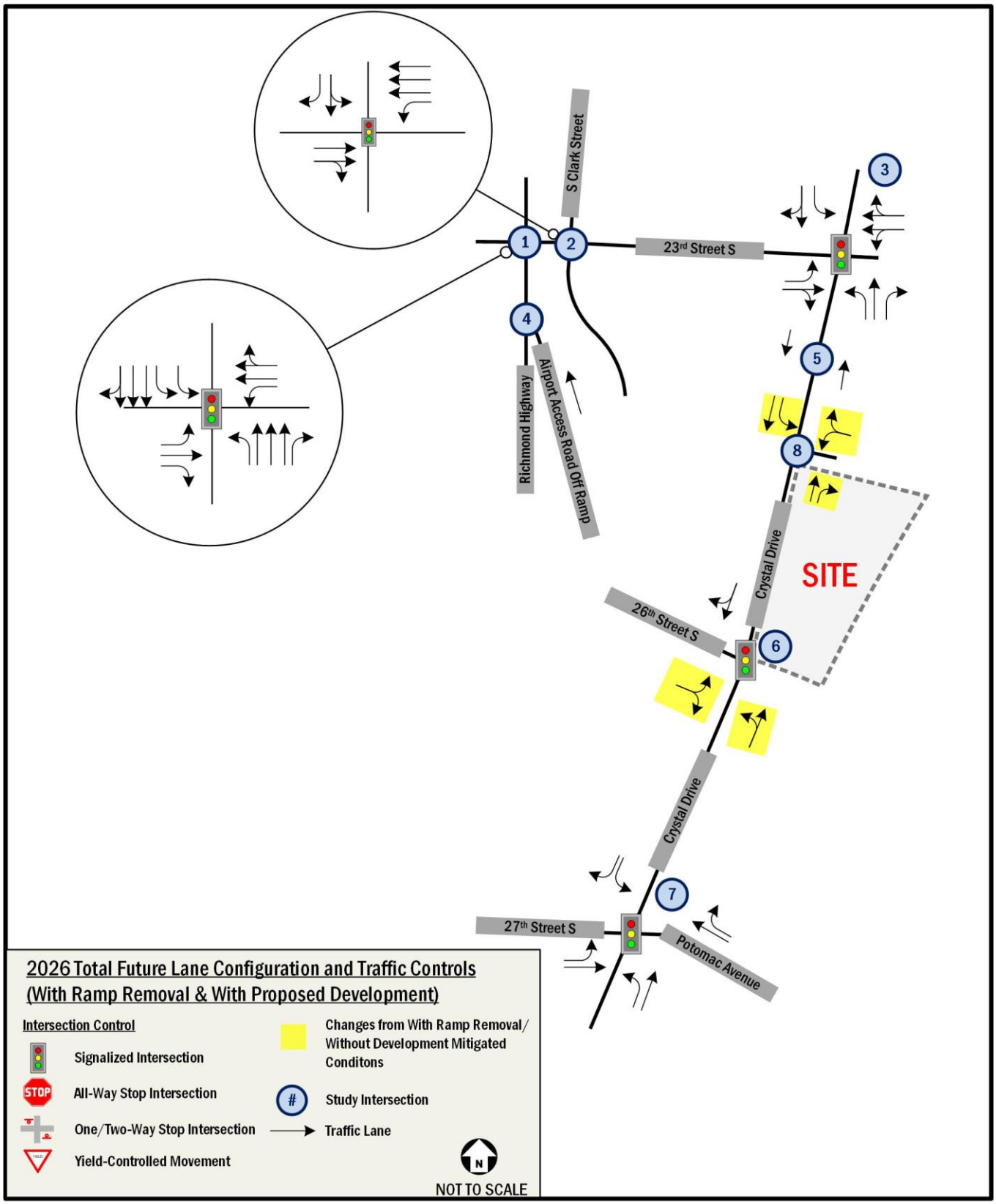

Figure 44: 2026 Total Future Lane Configuration and Traffic Controls (With Ramp Removal & With Proposed Development)

Signal Warrant Analysis

This section presents the evaluation of the traffic signal control warrant for the proposed intersection of Crystal City Service Road and Crystal Drive, located at the northwest corner of the proposed development. The signal warrant analysis was performed following the procedures outlined in the 2009 Manual on Uniform Traffic Control Devices (MUTCD) for Warrant 4 (Pedestrian Volume). According to the MUTCD, only one of the warrants needs to be satisfied to allow for the installation of a traffic control signal.

Warrant 4 was evaluated on the basis that the proposed intersection would provide crosswalks across Crystal Drive (one crossing each of the north and south legs); simultaneously, the existing HAWK crossing of Crystal Drive, located immediately north of the proposed intersection, would be removed. The existing HAWK crossing is well-utilized, and as a result of its removal, it is anticipated that the crossing volume at that location would reroute to the crossings at the proposed intersection.

The inputs for Warrant 4 include the major street (in this case, Crystal Drive) vehicular volume and pedestrians crossing the major street. At the time of the data collection effort conducted for this study, construction activity near this crossing lowered volumes below what is known to be typical for the area. Additionally, the data collected for this study only included AM and PM peak periods and did not include mid-day data collection. As a result, historical vehicular and pedestrian count data (collected April 25, 2019) was utilized to develop signal warrant volumes, as it reflects pre-construction conditions at the crosswalk, and captures mid-day activity, when pedestrian crossing volumes are highest.

Vehicular volumes were determined based on the historical count data, using the Crystal Drive approach volumes collected at the HAWK crossing, and removing any northbound trips that came from the Airport Access Road off-ramp, which would be removed under future conditions.

Pedestrian volumes were determined based on the following:

- Existing HAWK crossing volumes (based on historical count data) were assumed to reroute to cross at the proposed intersection.
- A total of 75% of non-auto trips generated by the site (walk, bike, and transit trips) were assumed to cross at the proposed intersection, based on the distribution of activity nodes in Crystal City. Hourly trip generation throughout the day was determined by applying time-of-day trip distribution percentages outlined in the Institute of Transportation Engineers' (ITE) Trip Generation, 11th Edition.

The expected hourly vehicular and pedestrian volumes are shown in Table 14. Based on these volumes, the intersection meets Warrant 4 based on the Pedestrian Four-Hour Volume criterion (as shown in Figure 45). It does not meet Warrant 4 based on the Pedestrian Peak Hour criterion (as shown in Figure 46). Since the intersection only needs to meet one of these criteria to meet the warrant, the proposed Crystal City Service Road/Crystal Drive intersection meets Warrant 4.

Table 14: Signal Warrant Volume Inputs

Time Period	Marker	Input	
		Major Street Volume (Vehicles)	Pedestrian Volume
7:00 AM - 8:00 AM		771	262
8:00 AM - 9:00 AM		854	271
9:00 AM - 10:00 AM		570	202
10:00 AM - 11:00 AM		368	155
11:00 AM - 12:00 PM		361	237
12:00 PM - 1:00 PM		415	430
1:00 PM - 2:00 PM		374	267
2:00 PM - 3:00 PM		385	191
3:00 PM - 4:00 PM		511	227
4:00 PM - 5:00 PM		626	282
5:00 PM - 6:00 PM		667	266
6:00 PM - 7:00 PM		554	227

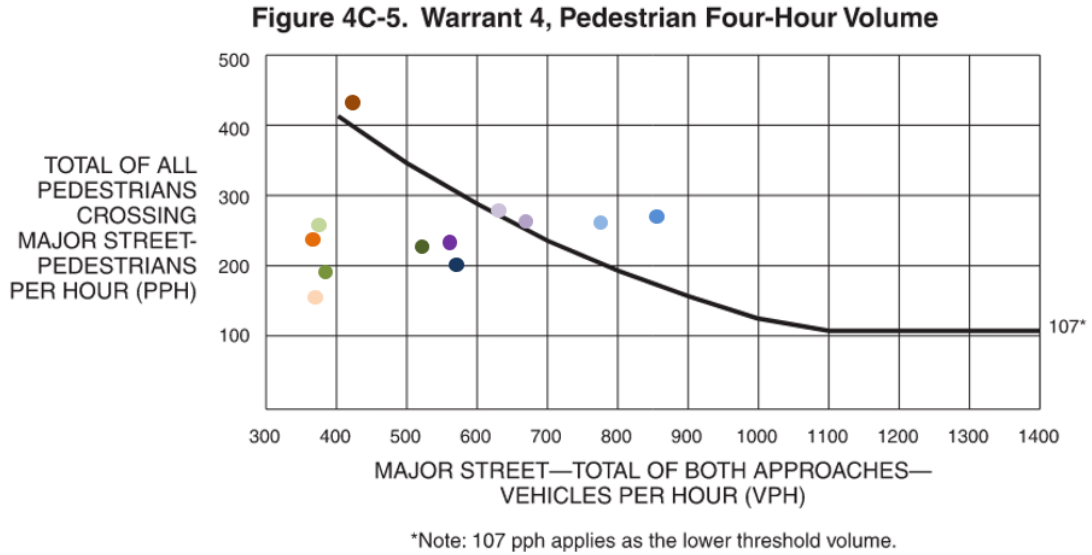

Figure 45: Warrant 4, Pedestrian 4-Hour Volume – Crystal Drive & Crystal City Service Road

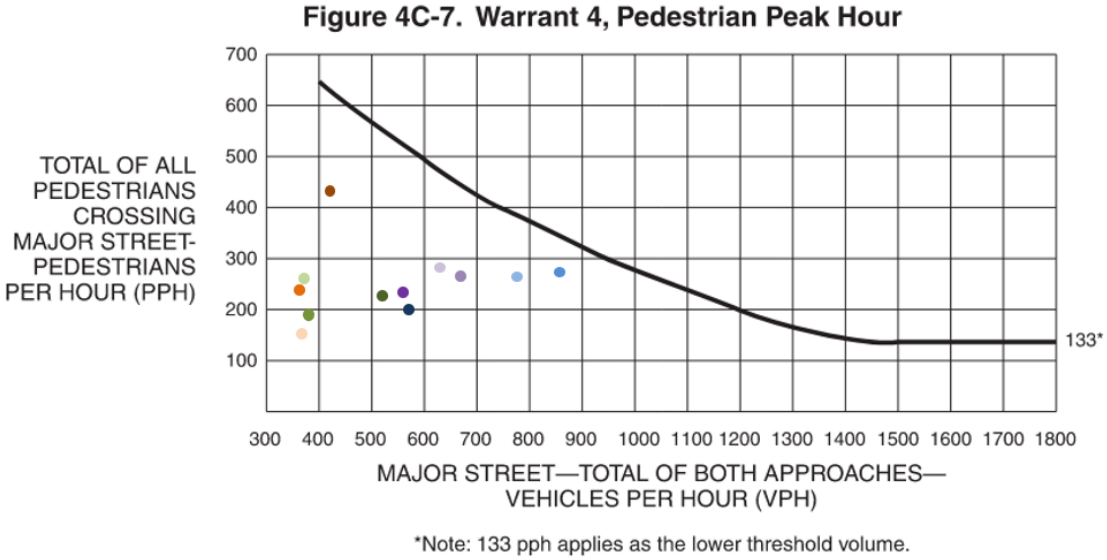

Figure 46: Warrant 4, Pedestrian Peak Hour – Crystal Drive & Crystal City Service Road

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the four (4) scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. *Synchro*, version 11 was used to analyze the study intersections based on the Highway Capacity Manual 2000 (HCM) methodology and includes level of service, delay, and queue length comparisons for the turning movements analyzed. Both signalized and unsignalized intersections were evaluated using HCM 2000.

Peak Hour Factors

Peak hour factors were applied in accordance with *Traffic Operations and Safety Analysis Manual 2.0* prepared by VDOT dated February 2020. As such, peak hour factors by approach between 0.85 and 1.00 were used for the existing year analysis. Where the calculated peak hour factor based on the existing turning movement counts was greater than 0.85, the calculated factor was applied. Where the calculated factor was 0.85 or less, a factor of 0.85 was applied.

Peak hour factors by approach between 0.92 and 1.00 were used for all future scenarios. Where the calculated peak hour factor based on the existing turning movement counts was greater than 0.92, the calculated factor was applied. Where the calculated factor was 0.92 or less, a factor of 0.92 was applied.

Heavy Vehicle Percentages

A heavy vehicle percentage of 2% was used for existing movements unless determined to be higher from the turning movement counts, in which case the higher percentage was used. A default heavy vehicle percentage of 2% was used for any new movements.

Geometry and Operations

Existing signal timings were obtained from Arlington County for signalized intersections in the vehicular study area. These timings were verified in the field by Gorove Slade and adjusted where necessary.

Level of Service and Delay

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each movement. A LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from “A” being the best to “F” being the worst. LOS E is typically used as the acceptable LOS threshold in Arlington County; although LOS F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation. For the purpose of this analysis, it is desirable to achieve a level of service (LOS) of E or better for each movement at the intersections.

The LOS capacity analyses were based on: (1) the peak hour traffic volumes; (2) the lane use and traffic controls; and (3) the Highway Capacity Manual (HCM) methodologies (using the *Synchro* software). The average delay of each movement and LOS is shown for the signalized intersections in addition to the overall average delay and intersection LOS grade. The HCM does not give guidelines for calculating the average delay for a two-way stop-controlled intersection, as the approaches without stop signs would technically have no delay. Detailed LOS descriptions and the analysis worksheets are contained in the Technical Appendix.

Queuing Analysis

In addition to the capacity analyses, a queuing analysis was performed at the study intersections. The queuing analysis was performed using *Synchro* software. The 50th percentile and 95th percentile queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile queue is the maximum back of queue on a median cycle. The 95th percentile queue is the maximum back of queue that is exceeded 5% of the time. For unsignalized intersections, only the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM 2000 calculations. Queuing analysis worksheets are contained in the Technical Appendix.

2023 Existing Analysis Results

The 2023 Existing results of the intersection capacity analyses for the AM and PM peak hours are expressed in level of service (LOS) and delay (seconds per vehicle) per movement and presented in Table 15. The capacity analysis results indicate that most intersections operate at acceptable LOS under the Existing (2023) Conditions; however, four (4) intersections have one or more movements that operate at levels beyond acceptable thresholds in one or more peak hour:

- Richmond Highway & 23rd Street S
  - Northbound Left (AM and PM Peak Hour)
- S Clark Street & 23rd Street S
  - Southbound right (AM Peak Hour)
- 23rd Street S & Crystal Drive
  - Northbound Thru (AM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- Crystal Drive & Potomac Avenue
  - Southbound Left (AM Peak Hour)

The Existing (2023) queuing results for the AM and PM peak hours are expressed by movement are presented in Table 17.

Four (4) intersections do have at least one movement with 95th percentile queues that exceed the available storage length in the morning and/or afternoon peak hour:

- Richmond Highway & 23rd Street S
  - Eastbound Left (AM Peak Hour)
  - Eastbound Thru (AM Peak Hour)
  - Eastbound Right (PM Peak Hour)
- 23rd Street S & Crystal Drive
  - Eastbound Left (AM Peak Hour)
  - Westbound Thru (PM Peak Hour)
  - Northbound Thru (AM and PM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- Crystal Drive & 26th Street S/Crystal City Service Road
  - Northbound Left/Thru (AM and PM Peak Hour)
- Crystal Drive & Potomac Avenue
  - Southbound Left (PM Peak Hour)

2026 Analysis Results

2026 Background Analysis Results (Without Ramp Removal & Without the Proposed Development)

The 2026 Background Without Ramp Removal/Without Development results of the intersection capacity analyses for the AM and PM peak hours are expressed in level of service (LOS) and delay (seconds per vehicle) per movement and presented in Table 15. The capacity analysis results indicate that most intersections operate at acceptable LOS under the 2026 Background Without Ramp Removal/Without Development scenario; however, three (3) intersections have one or more movements that operate at levels beyond acceptable thresholds in one or more peak hour:

- Richmond Highway & 23rd Street S
  - Northbound Left (AM and PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- 23rd Street & S Clark Street
  - Southbound Right (AM Peak Hour)
- 23rd Street & Crystal Drive
  - Eastbound Thru/Right (PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)

The 2026 Background Without Ramp Removal/Without Development queuing results for the AM and PM peak hours are expressed by movement are presented in Table 17.

Four (4) intersections have at least one movement with 95th percentile queues that exceed the available storage length in the morning and/or afternoon peak hour:

- Richmond Highway & 23rd Street S
  - Eastbound Left (AM Peak Hour)
  - Eastbound Thru (AM and PM Peak Hour)
  - Eastbound Right (PM Peak Hour)
  - Westbound Left (PM Peak Hour)
- 23rd Street S & Crystal Drive
  - Eastbound Thru (AM and PM Peak Hour)
  - Westbound Thru (PM Peak Hour)
  - Northbound Thru (AM Peak Hour)
  - Southbound Left (AM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- Crystal Drive & 26th Street S/Crystal City Service Road
  - Northbound Left/Thru (AM and PM Peak Hour)
- Crystal Drive & Potomac Avenue
  - Southbound Left (PM Peak Hour)

2026 Future Analysis Results (With Ramp Removal & Without the Proposed Development)

The 2026 Future With Ramp Removal/Without Development results of the intersection capacity analyses for the AM and PM peak hours are expressed in level of service (LOS) and delay (seconds per vehicle) per movement and are presented in Table 15. The capacity analysis results indicate that most intersections operate at acceptable LOS under the 2026 Future With Ramp Removal/Without Development scenario; however, three (3) intersections have one or more movements that operate at levels beyond acceptable thresholds in one or more peak hour:

- Richmond Highway & 23rd Street S
  - Northbound Left (AM and PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- 23rd Street & S Clark Street
  - Southbound Right (AM Peak Hour)
- 23rd Street & Crystal Drive
  - Overall Intersection (PM Peak Hour)
  - Eastbound Left/Thru (PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)

The 2026 Future with Ramp Removal/Without Development queuing results for the AM and PM peak hours are expressed by movement and are presented in Table 17.

Four (4) intersections have at least one movement with 95th percentile queues that exceed the available storage length in the morning and/or afternoon peak hour:

- Richmond Highway & 23rd Street S
  - Eastbound Left (AM Peak Hour)
  - Eastbound Thru (AM and PM Peak Hour)
  - Eastbound Right (PM Peak Hour)
  - Westbound Left (PM Peak Hour)
- 23rd Street S & Crystal Drive
  - Eastbound Thru (AM and PM Peak Hour)
  - Westbound Thru (PM Peak Hour)
  - Northbound Thru (AM Peak Hour)
  - Southbound Left (AM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- Crystal Drive & 26th Street S/Crystal City Service Road
  - Northbound Left/Thru (AM and PM Peak Hour)
- Crystal Drive & Potomac Avenue
  - Southbound Left (PM Peak Hour)

2026 Future With Ramp Removal/Without Development - Mitigations

Mitigation measures were identified based on Arlington County standards and as outlined in the approved scoping document. A project is considered to have an impact at an intersection if any of the following conditions are met:

- The overall intersection or any movement operates at LOS F in the future conditions with the proposed development where it operates at LOS E or better in the background conditions without the proposed development;
- The overall intersection or any movement operates at LOS F during the background condition and the delay increases by more than 10 percent in the future conditions with the proposed development; or
- If any 95th percentile queue length in the future condition exceeds the available capacity where it does not in the background conditions or increases the 95th percentile queue length by more than 150 feet where it already exceeds the available capacity in the background conditions.

The 2026 Future With Ramp Removal/Without Development scenario was compared to the 2026 Background Without Ramp Removal/Without Development scenario to identify the impacts of the removal of the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Following the above County guidelines for impacts, the removal of the Airport Access Road off-ramp creates impacts to one (1) intersection. Mitigation measures were tested at this intersection, with results shown in Table 16 and Table 18, and with detailed Synchro reports included in the Technical Appendix. The following conclusions were made:

- 23rd Street S & Crystal Drive

  Under Future (2026) Conditions, during the morning peak hour, delay for the overall intersection increases to LOS F from LOS E in 2026 Future Condition (With Ramp Removal & Without Proposed Development). The delay

for the Eastbound Left/Thru also increases by more than 10 percent from an already LOS F-level delay.

The increase in delay at this intersection attributable to the ramp removal can be mitigated by reconfiguring the eastbound approach from a shared left-thru lane and right-turn lane to a left-turn lane and a shared thru-right lane, plus modifications to signal phasing and signal timings.

The 2026 Future With Ramp Removal/Without Development Mitigated results of the intersection capacity analyses for the AM and PM peak hours are expressed in level of service (LOS) and delay (seconds per vehicle) per movement and presented in Table 16.

2026 Future Analysis Results (With Ramp Removal & With the Proposed Development)

The 2026 Future With Ramp Removal/With Development results of the intersection capacity analyses for the AM and PM peak hours are expressed in level of service (LOS) and delay (seconds per vehicle) per movement and presented in Table 16. The capacity analysis results indicate that most intersections operate at acceptable LOS under the 2026 Future With Ramp Removal/With Development scenario; however, three (3) intersections have one or more movements that operate at levels beyond acceptable thresholds in one or more peak hour:

- Richmond Highway & 23rd Street S
  - Northbound Left (AM and PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- 23rd Street & S Clark Street
  - Southbound Right (AM Peak Hour)
- 23rd Street & Crystal Drive
  - Eastbound Left (PM Peak Hour)
  - Southbound Left (AM and PM Peak Hour)

The 2026 Future with Ramp Removal/With Development Mitigated queuing results for the AM and PM peak hours are expressed by movement are presented in Table 18.

Four (4) intersections have at least one movement with 95th percentile queues that exceed the available storage length in the morning and/or afternoon peak hour:

- Richmond Highway & 23rd Street S
  - Eastbound Left (AM Peak Hour)
  - Eastbound Thru (AM and PM Peak Hour)
  - Eastbound Right (PM Peak Hour)
- 23rd Street S & Crystal Drive
  - Eastbound Left (PM Peak Hour)
  - Eastbound Thru/Right (AM Peak Hour)
  - Northbound Thru (AM Peak Hour)
  - Southbound Left (AM Peak Hour)
  - Southbound Thru/Right (PM Peak Hour)
- Crystal Drive & 26th Street S/Crystal City Service Road
  - Northbound Left/Thru (AM and PM Peak Hour)
- Crystal Drive & Potomac Avenue
  - Southbound Left (PM Peak Hour)

Table 15: Capacity Analysis Results

	Intersection and Movement	Existing (2023)				Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	**23rd Street & Richmond Highway**	**44.0**	**D**	**40.1**	**D**	**49.8**	**D**	**59.8**	**E**	**52.2**	**D**	**60.1**	**E**
	Eastbound L	82.4	F	49.7	D	68.1	E	51.5	D	66.1	E	50.8	D
	Eastbound T	52.6	D	48.3	D	49.4	D	48.5	D	49.4	D	48.5	D
	Eastbound R	42.6	D	63.5	E	47.7	D	56.8	E	47.7	D	60.6	E
	Westbound L	5.8	A	5.5	A	4.2	A	16.6	B	3.9	A	4.9	A
	Westbound TR	0.1	A	0.2	A	0.3	A	0.9	A	0.3	A	1.0	A
	Northbound L	111.1	F	148.6	F	144.2	F	135.4	F	144.1	F	135.3	F
	Northbound T	40.8	D	36.6	D	50.9	D	40.1	D	57.2	E	41.9	D
	Northbound R	33.4	C	29.9	C	37.9	D	33.0	C	40.4	D	35.4	D
	Southbound L	83.4	F	60.5	E	89.3	F	109.2	F	89.3	F	109.2	F
	Southbound T	33.8	C	39.5	D	39.8	D	82.9	F	39.8	D	82.9	F
2.	**23rd Street & S Clark Street**	**29.5**	**C**	**32.5**	**C**	**24.1**	**C**	**42.1**	**D**	**21.5**	**C**	**30.0**	**C**
	Eastbound LT	10.3	B	0.8	A	4.5	A	28.6	C	3.7	A	8.6	A
	Eastbound TR	10.3	B	0.8	A	4.5	A	28.6	C	3.7	A	8.6	A
	Westbound T	50.6	D	51.7	D	46.0	D	50.7	D	45.5	D	49.2	D
	Southbound L	66.1	E	56.9	E	--	--	--	--	--	--	--	--
	Southbound T	65.8	E	--[a]	--[a]	--	--	--	--	--	--	--	--
	Southbound LT	--	--	--	--	68.0	E	52.4	D	68.0	E	52.4	D
	Southbound R	121.6	F	60.2	E	114.6	F	57.4	E	114.6	F	57.4	E
3.	**23rd Street & Crystal Drive**	**59.9**	**E**	**72.1**	**E**	**45.2**	**D**	**55.1**	**E**	**48.6**	**D**	**100.1**	**F**
	Eastbound L	75.2	E	56.1	E	--	--	--	--	--	--	--	--
	Eastbound LT	--	--	--	--	65.7	E	201.4	F	79.7	E	443.4	F
	Eastbound T	44.7	D	41.1	D	--	--	--	--	--	--	--	--
	Eastbound R	41.2	D	40.9	D	35.0	C	38.3	D	31.2	C	38.4	D
	Westbound LT	40.3	D	44.1	D	32.8	C	40.5	D	28.9	C	40.7	D
	Westbound R	40.1	D	40.3	D	--	--	--	--	--	--	--	--
	Northbound L	21.6	C	31.9	C	61.7	E	70.8	E	65.1	E	60.2	E
	Northbound T	99.0	F	44.4	D	37.2	D	17.3	B	30.7	C	13.4	B
	Northbound R	27.2	C	23.4	C	--	--	--	--	--	--	--	--
	Southbound L	26.6	C	28.2	C	110.9	F	131.4	F	110.9	F	131.4	F
	Southbound TR	36.1	D	142.6	F	21.9	C	43.1	D	22.5	C	33.2	C
5.	**Crystal Drive (HAWK)**	**0.1**	**A**	**0.1**	**A**	**6.4**	**A**	**6.6**	**A**	**6.4**	**A**	**6.6**	**A**
	Northbound T	0.1	A	0.1	A	6.4	A	6.2	A	6.4	A	6.2	A

	Intersection and Movement	Existing (2023)				Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	Southbound T	0.1	A	0.2	A	6.2	A	7.2	A	6.3	A	7.2	A
6.	**Crystal Drive & 26th Street S/Crystal City Service**	**20.1**	**C**	**25.5**	**C**	**17.0**	**B**	**28.2**	**C**	**17.0**	**B**	**28.2**	**C**
	Eastbound LTR	35.2	D	34.3	C	35.0	D	35.3	D	35.0	D	35.3	D
	Westbound TR	32.8	C	34.0	C	32.8	C	34.9	C	32.8	C	34.9	C
	Northbound LT	19.8	B	20.6	C	16.0	B	22.0	C	16.0	B	22.0	C
	Northbound R	45.3	D	41.7	D	40.1	D	41.3	D	40.1	D	41.3	D
	Southbound TR	8.7	A	27.1	C	8.7	A	31.4	C	8.7	A	31.4	C
7.	**Crystal Drive & Potomac Ave**	**23.1**	**C**	**25.6**	**C**	**19.1**	**B**	**30.8**	**C**	**19.1**	**B**	**30.8**	**C**
	Eastbound L	14.5	B	22.8	C	17.1	B	23.4	C	17.1	B	23.4	C
	Eastbound T	14.3	B	25.0	C	16.9	B	25.7	C	16.9	B	25.7	C
	Westbound T	1.5	A	23.4	C	16.8	B	24.5	C	16.8	B	24.5	C
	Westbound R	14.2	B	0.0	A	15.3	B	12.7	B	15.3	B	12.7	B
	Northbound L	22.4	C	22.4	C	22.2	C	22.3	C	22.2	C	22.3	C
	Northbound T	26.9	C	23.8	C	29.5	C	25.0	C	29.5	C	25.0	C
	Southbound L	170.2	F	56.2	E	17.3	B	66.3	E	17.3	B	66.3	E
	Southbound R	18.3	B	1.7	A	16.9	B	1.5	A	16.9	B	1.5	A
8.	**Crystal Drive & Crystal City Service Road (Planned)**												
	Westbound LR	--	--	--	--	--	--	--	--	--	--	--	--
	Northbound TR	--	--	--	--	--	--	--	--	--	--	--	--
	Southbound LT	--	--	--	--	--	--	--	--	--	--	--	--

[a] No result provided because volume is zero.

Table 16: Capacity Analysis Results (With Mitigations)

	Intersection and Movement	Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)				2026 Future (With Ramp Removal & Without Proposed Development) - Mitigated				2026 Future (With Ramp Removal & With Proposed Development)			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	**23rd Street & Richmond Highway**	**49.8**	**D**	**59.8**	**E**	**52.2**	**D**	**60.1**	**E**	**52.7**	**D**	**60.3**	**E**	**52.6**	**D**	**60.6**	**E**
	Eastbound L	68.1	E	51.5	D	66.1	E	50.8	D	66.1	E	50.8	D	49.5	D	50.8	D
	Eastbound T	49.4	D	48.5	D	49.4	D	48.5	D	49.4	D	48.5	D	47.7	D	48.9	D
	Eastbound R	47.7	D	56.8	E	47.7	D	60.6	E	47.7	D	60.6	E	4.1	A	61.1	E
	Westbound L	4.2	A	16.6	B	3.9	A	4.9	A	3.9	A	3.8	A	0.3	A	3.9	A
	Westbound TR	0.3	A	0.9	A	0.3	A	1.0	A	0.3	A	0.8	A	0.3	A	0.8	A
	Northbound L	144.2	F	135.4	F	144.1	F	135.3	F	144.2	F	135.4	F	144.2	F	135.4	F
	Northbound T	50.9	D	40.1	D	57.2	E	41.9	D	58.4	E	42.9	D	58.4	E	42.9	D
	Northbound R	37.9	D	33.0	C	40.4	D	35.4	D	40.9	D	35.8	D	41.0	D	35.9	D
	Southbound L	89.3	F	109.2	F	89.3	F	109.2	F	89.3	F	109.2	F	90.4	F	116.4	F
	Southbound TR	39.8	D	82.9	F	39.8	D	82.9	F	39.8	D	82.9	F	39.8	D	82.9	F
	Southbound R	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2.	**23rd Street & S Clark Street**	**24.1**	**C**	**42.1**	**D**	**21.5**	**C**	**30.0**	**C**	**21.5**	**C**	**47.3**	**D**	**21.9**	**C**	**47.3**	**D**
	Eastbound LT	4.5	A	28.6	C	3.7	A	8.6	A	3.7	A	43.7	D	3.8	A	43.6	D
	Eastbound TR	4.5	A	28.6	C	3.7	A	8.6	A	3.7	A	43.7	D	3.8	A	43.6	D
	Westbound T	46.0	D	50.7	D	45.5	D	49.2	D	45.6	D	49.6	D	45.8	D	49.8	D
	Southbound LT	68.0	E	52.4	D	68.0	E	52.4	D	68.0	E	52.4	D	68.0	E	52.4	D
	Southbound R	114.6	F	57.4	E	114.6	F	57.4	E	114.6	F	57.4	E	114.6	F	57.4	E
3.	**23rd Street & Crystal Drive**	**45.2**	**D**	**55.1**	**E**	**48.6**	**D**	**100.1**	**F**	**42.7**	**D**	**70.2**	**E**	**35.6**	**E**	**57.1**	**E**
	Eastbound L	--	--	--	--	--	--	--	--	66.0	E	229.4	F	55.1	E	175.8	F
	Eastbound LT	65.7	E	201.4	F	79.7	E	443.4	F	--	--	--	--	42.1	D	32.8	C
	Eastbound TR	--	--	--	--	--	--	--	--	48.7	D	32.7	C	42.1	D	32.8	C
	Eastbound R	35.0	C	38.3	D	31.2	C	38.4	D	--	--	--	--	--	--	--	--
	Westbound LT	32.8	C	40.5	D	28.9	C	40.7	D	33.9	C	33.9	C	34.4	C	33.6	C
	Northbound L	61.7	E	70.8	E	65.1	E	60.2	E	65.1	E	60.2	E	61.2	E	59.2	E
	Northbound T	37.2	D	17.3	B	30.7	C	13.4	B	24.0	C	18.1	B	16.8	B	17.6	B
	Northbound R	--	--	--	--	--	--	--	--	15.6	B	13.5	B	11.4	B	13.5	B
	Southbound L	110.9	F	131.4	F	110.9	F	131.4	F	110.9	F	131.4	F	94.5	F	101.6	F
	Southbound TR	21.9	C	43.1	D	22.5	C	33.2	C	18.0	B	51.2	D	13.6	B	41.7	D
5.	**Crystal Drive (HAWK)**	**6.4**	**A**	**6.6**	**A**	**6.4**	**A**	**6.6**	**A**	**6.4**	**A**	**6.6**	**A**	**--**	**--**	**--**	**--**

	Intersection and Movement	Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)				2026 Future (With Ramp Removal & Without Proposed Development) - Mitigated				2026 Future (With Ramp Removal & With Proposed Development)			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	Northbound T	6.4	A	6.2	A	6.4	A	6.2	A	6.4	A	6.2	A	--	--	--	--
	Southbound T	6.2	A	7.2	A	6.3	A	7.2	A	6.3	A	7.2	A	--	--	--	--
6.	**Crystal Drive & 26th Street S/Crystal City Service**	**17.0**	**B**	**28.2**	**C**	**17.0**	**B**	**28.2**	**C**	**17.0**	**B**	**28.1**	**C**	**14.3**	**B**	**24.5**	**C**
	Eastbound LTR	35.0	D	35.3	D	35.0	D	35.3	D	35.0	D	35.3	D	34.4	C	40.0	D
	Westbound TR	32.8	C	34.9	C	32.8	C	34.9	C	32.8	C	34.9	C	--	--	--	--
	Northbound LT	16.0	B	22.0	C	16.0	B	22.0	C	16.0	B	21.8	C	15.2	B	21.5	C
	Northbound R	40.1	D	41.3	D	40.1	D	41.3	D	40.3	D	41.1	D	--	--	--	--
	Southbound TR	8.7	A	31.4	C	8.7	A	31.4	C	8.7	A	31.4	C	3.7	A	25.5	C
7.	**Crystal Drive & Potomac Ave**	**19.1**	**B**	**30.8**	**C**	**19.1**	**B**	**30.8**	**C**	**19.1**	**B**	**30.7**	**C**	**18.5**	**A**	**26.9**	**A**
	Eastbound L	17.1	B	23.4	C	17.1	B	23.4	C	17.2	B	23.5	C	16.7	B	23.2	C
	Eastbound T	16.9	B	25.7	C	16.9	B	25.7	C	16.9	B	25.7	C	16.5	B	25.0	C
	Westbound T	16.8	B	24.5	C	16.8	B	24.5	C	16.8	B	24.5	C	16.4	B	24.0	C
	Westbound R	15.3	B	12.7	B	15.3	B	12.7	B	15.3	B	12.7	B	14.8	B	12.9	B
	Northbound L	22.2	C	22.3	C	22.2	C	22.3	C	22.2	C	22.3	C	22.2	C	21.9	C
	Northbound T	29.5	C	25.0	C	29.5	C	25.0	C	29.5	C	25.0	C	28.1	C	24.1	C
	Southbound L	17.3	B	66.3	E	17.3	B	66.3	E	17.3	B	66.3	E	16.9	B	53.4	D
	Southbound R	16.9	B	1.5	A	16.9	B	1.5	A	16.9	B	1.5	A	16.5	B	1.4	A
8.	**Crystal Drive & Crystal City Service Road (Planned)**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**7.6**	**A**	**7.4**	**A**
	Westbound LR	--	--	--	--	--	--	--	--	--	--	--	--	32.4	C	32.5	C
	Northbound T	--	--	--	--	--	--	--	--	--	--	--	--	6.3	A	5.0	A
	Northbound R	--	--	--	--	--	--	--	--	--	--	--	--	4.3	A	2.6	A
	Southbound L	--	--	--	--	--	--	--	--	--	--	--	--	5.6	A	4.7	A
	Southbound T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 17: Queuing Results

Intersection and Lane Group	Storage Length (ft)	Existing (2023)				Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1. 23rd Street & Richmond Highway													
Eastbound L	135	175	#285	57	96	170	#282	54	104	169	#270	53	103
Eastbound T	135	148	220	80	122	142	217	101	165	142	217	101	165
Eastbound R	135	62	135	119	220	25	115	67	212	25	115	96	#271
Westbound L	55	6	m8	8	11	3	m5	22	63	3	m5	6	9
Westbound T	55	0	m0	0	0	1	m0	0	0	0	m0	0	0
Northbound L	375	109	#218	99	#208	118	#253	93	#213	108	#195	85	#166
Northbound T	1000	369	435	287	352	453	516	298	349	469	469	325	335
Northbound R	300	99	161	58	107	101	161	63	110	142	193	107	152
Southbound L	445	209	#291	69	107	202	#297	86	#160	202	#297	86	#160
Southbound T	760	363	420	449	#587	389	445	~643	#741	389	445	~643	#741
2. 23rd Street & S Clark Street													
Eastbound LT	150	18	m58	0	0	0	m0	33	m44	0	m0	0	m1
Eastbound TR	150	18	m58	0	0	0	m0	33	m44	0	m0	0	m1
Westbound T	305	81	109	144	176	86	116	150	192	74	103	124	162
Southbound L	190	7	24	9	27	--	--	--	--	--	--	--	--
Southbound T	190	2	11	--[A]	--[A]	8	29	9	28	--	--	--	--
Southbound LT	190	--	--	--	--	--	--	--	--	8	29	9	28
Southbound R	190	70	#163	57	99	67	#155	50	97	67	#155	50	97
3. 23rd Street & Crystal Drive													
Eastbound L	225	~187	#310	73	#140	--	--	--	--	--	--	--	--
Eastbound LT		--	--	--	--	177	264	~137	#270	219	#390	~240	#394
Eastbound T	225	89	154	10	28	--	--	--	--	--	--	--	--
Eastbound R	225	0	22	0	0	0	14	0	0	0	22	0	0
Westbound T	75	4	12	51	80	10	23	43	76	9	23	44	76
Westbound TR	75	0	0	0	0	--	--	--	--	--	--	--	--
Northbound L	295	53	94	71	120	79	132	117	#192	52	97	67	118
Northbound T	295	~400	#607	265	#453	331	#594	194	294	--	--	--	--
Northbound R	295	0	11	0	0	--	--	--	--	--	--	--	--

	Intersection and Lane Group	Storage Length (ft)	Existing (2023)				Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)			
			AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
	Northbound TR	415	--	--	--	--	--	--	--	--	216	329	98	153
	Southbound L	125	40	75	12	30	76	#182	23	#64	76	#182	23	#64
	Southbound TR	275	77	157	~346	#550	69	155	305	#546	73	145	271	#521
5.	**Crystal Drive (HAWK)**													
	Northbound T	650	0	0	0	0	51	68	39	53	51	68	39	53
	Southbound T	260	0	0	0	0	33	58	70	112	36	62	70	112
6.	**Crystal Drive & 26th Street S/Crystal City Service**													
	Eastbound LTR	275	30	63	17	40	27	62	15	41	27	62	15	41
	Westbound TR	425	5	17	19	44	4	15	16	42	4	15	16	42
	Northbound LT	125	260	373	107	157	279	364	122	160	279	364	122	160
	Northbound R	125	16	m42	3	m13	16	m31	2	m9	16	m31	2	m9
	Southbound TR	680	34	63	166	277	36	71	181	301	36	71	181	301
7.	**Crystal Drive & Potomac Ave**													
	Eastbound L	115	28	54	21	49	28	62	20	49	28	62	20	49
	Eastbound T	140	32	59	54	99	32	67	52	99	32	67	52	99
	Westbound T	500	42	74	51	95	43	84	52	97	43	84	52	97
	Westbound R	180	0	0	0	0	39	111	0	28	39	111	0	28
	Northbound L	1000	8	24	9	27	8	25	9	26	8	25	9	26
	Northbound T	1000	109	173	43	84	102	172	47	91	102	172	47	91
	Southbound L	225	~46	#125	89	m#272	33	65	107	m#284	33	65	107	m#284
	Southbound R	340	21	46	4	m5	19	44	3	m4	19	44	3	m4
8.	**Crystal Drive & Crystal City Service Road (Planned)**													
	Westbound LR		--	--	--	--	--	--	--	--	--	--	--	--
	Northbound TR		--	--	--	--	--	--	--	--	--	--	--	--
	Southbound LT		--	--	--	--	--	--	--	--	--	--	--	--

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.
~ Volume exceeds capacity, queue is theoretically infinite.
[a] No result is provided because volume is zero.

Table 18: Queuing Results (With Mitigations)

	Intersection and Lane Group	Storage Length (ft)	Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)				2026 Future (With Ramp Removal & Without Proposed Development) - Mitigated				2026 Future (With Ramp Removal & With Proposed Development)			
			AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1.	23rd Street & Richmond Highway																	
	Eastbound L	135	170	#282	54	104	169	#270	53	103	169	#270	53	103	169	#279	54	103
	Eastbound T	135	142	217	101	165	142	217	101	165	142	217	101	165	143	218	106	172
	Eastbound R	135	25	115	67	212	25	115	96	#271	25	115	96	#271	25	115	99	#276
	Westbound L	55	3	m5	22	63	3	m5	6	9	3	m5	4	6	3	m5	4	6
	Westbound T	55	1	m0	0	0	0	m0	0	0	0	m0	0	0	1	m0	0	0
	Northbound L	375	118	#253	93	#213	108	#195	85	#166	118	#253	93	#213	118	#253	93	#213
	Northbound T	1000	453	516	298	349	469	469	325	335	528	#601	362	419	528	#601	362	419
	Northbound R	300	101	161	63	110	142	193	107	152	156	235	117	183	157	236	120	187
	Southbound L	445	202	#297	86	#160	202	#297	86	#160	202	#297	86	#160	203	#302	89	#168
	Southbound TR	760	389	445	~643	#741	389	445	~643	#741	389	445	~643	#741	389	445	~643	#741
2.	23rd Street & S Clark Street																	
	Eastbound TR	150	0	m0	33	m44	0	m0	0	m1	0	m0	80	m97	0	m0	83	m99
	Westbound LT	305	86	116	150	192	74	103	124	162	75	104	130	168	79	109	132	171
	Southbound T	190	8	29	9	28	--	--	--	--	--	--	--	--	8	29	9	28
	Southbound LT	190	--	--	--	--	8	29	9	28	8	29	9	28	8	29	9	28
	Southbound R	190	67	#155	50	97	67	#155	50	97	67	#155	50	97	67	#155	50	97
3.	23rd Street & Crystal Drive																	
	Eastbound L	225	--	--	--	--	--	--	--	--	124	194	~192	#342	107	163	~179	#329
	Eastbound LT		177	264	~137	#270	219	#390	~240	#394	--	--	--	--	126	189	8	49
	Eastbound TR	225	--	--	--	--	--	--	--	--	154	229	8	45	126	189	8	49
	Eastbound R	225	0	14	0	0	0	22	0	0	--	--	--	--	--	--	--	--
	Westbound LT/TR	75	10	23	43	76	9	23	44	76	10	23	38	68	10	22	38	67
	Northbound L	295	79	132	117	#192	52	97	67	118	52	97	67	118	58	108	73	126
	Northbound T	295	331	#594	194	294	216	329	98	153	185	329	116	181	147	284	118	181
	Northbound R	295	0	34	0	0	0	19	0	0	0	19	0	0	0	23	0	0
	Southbound L	125	76	#182	23	#64	76	#182	23	#64	76	#182	23	#64	65	#164	23	#59
	Southbound TR	275	69	155	305	#546	73	145	271	#521	62	145	317	#584	50	125	312	#565

	Intersection and Lane Group	Storage Length (ft)	Background (2026)				2026 Future (With Ramp Removal & Without Proposed Development)				2026 Future (With Ramp Removal & Without Proposed Development) - Mitigated				2026 Future (With Ramp Removal & With Proposed Development)			
			AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
5.	Crystal Drive (HAWK)																	
	Northbound T	650	51	68	39	53	51	68	39	53	51	68	39	53	--	--	--	--
	Southbound T	260	33	58	70	112	36	62	70	112	36	62	70	112	--	--	--	--
6.	Crystal Drive & 26th Street S/Crystal City Service Road																	
	Eastbound LTR	275	27	62	15	41	27	62	15	41	27	62	15	41	27	61	18	40
	Westbound TR	425	4	15	16	42	4	15	16	42	4	15	16	42	--	--	--	--
	Northbound LT	125	279	364	122	160	279	364	122	160	278	364	121	159	288	375	125	165
	Northbound R	125	16	m31	2	m9	16	m31	2	m9	16	m30	2	m9	--	--	--	--
	Southbound TR	680	36	71	181	301	36	71	181	301	36	71	181	301	3	6	199	322
7.	Crystal Drive & Potomac Ave																	
	Eastbound L	115	28	62	20	49	28	62	20	49	29	63	22	51	28	61	22	50
	Eastbound T	140	32	67	52	99	32	67	52	99	32	67	52	99	32	65	51	97
	Westbound T	500	43	84	52	97	43	84	52	97	43	84	52	97	43	82	52	95
	Westbound R	180	39	111	0	28	39	111	0	28	39	111	0	28	39	103	0	28
	Northbound L	1000	8	25	9	26	8	25	9	26	8	25	9	26	8	25	9	26
	Northbound T	1000	102	172	47	91	102	172	47	91	102	172	47	91	101	168	48	91
	Southbound L	225	33	65	107	m#284	33	65	107	m#284	33	65	107	m#284	35	70	101	m#267
	Southbound R	340	19	44	3	m4	19	44	3	m4	19	44	3	m4	21	49	3	m5
8.	Crystal Drive & Crystal City Service Road (Planned)																	
	Westbound LR	50	--	--	--	--	--	--	--	--	--	--	--	--	7	35	8	38
	Northbound T	400	--	--	--	--	--	--	--	--	--	--	--	--	55	124	39	61
	Northbound R	100	--	--	--	--	--	--	--	--	--	--	--	--	0	m6	0	m1
	Southbound L	100	--	--	--	--	--	--	--	--	--	--	--	--	2	8	6	16
	Southbound T	600	--	--	--	--	--	--	--	--	--	--	--	--	41	70	89	137

95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.
~ Volume exceeds capacity, queue is theoretically infinite.

Crash Data Review

This chapter reviews available crash data within the study area, reviews potential impacts of the proposed development on crash rates and informs future transportation improvements that work toward the County's goals outlined in the Vision Zero Action Plan.

VDOT Crash Data

Based on guidelines contained in the Safety Analysis Guidance (May 2021) provided by Arlington County DES, crash data from 2018 to 2022 was obtained from the VDOT Crash Analysis Tool for crashes occurring in the vicinity of the site. This data was used to conduct a review of safety at study intersections and the segment of Crystal Drive adjacent to the development site. The crash data used in the analysis is included in the Technical Appendix.

Based on the historical crash data, a total of 36 crashes occurred at study area intersections and on the segment of Crystal Drive adjacent to the site between 2018 and 2022. The year with the highest number of crashes was 2018 with 10 crashes per year, while the years with the lowest number of crashes were 2020 and 2021 with five (5) crashes. Figure 47 shows the number of crashes per year in in the study area over the last five years. The data obtained from VDOT shows that the number of reported crashes generally varies from year to year.

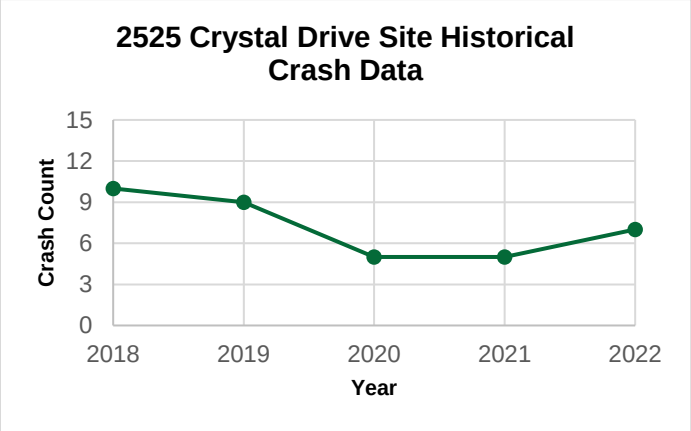

Figure 47: Historical Crash Data

Crash Characteristics

Crash Severity

According to the 2017 VDOT Crash Data Manual, crash severity is measured using the KABCO scale as per the Model Minimum Uniform Crash Criteria (MMUCC) based on the most severe injury to any person involved in the crash. The KABCO scale definitions are as follows:

- K: Fatal Injury
- A: Suspected Serious Injury
- B: Suspected Minor Injury
- C: Possible Injury
- O: Property Damage Only (No Apparent Injury)

From 2018 to 2022, 61% were classified as O (Property Damage Only) and 39% were classified as B (Suspected Minor Injury). No reported crashes involved a fatal injury, and no reported crashes involved suspected serious injuries. Table 19 shows the number of crashes according to its severity.

Table 19: Crash Count by Severity (2018-2022)

Crash Severity	Count	%
K	0	0%
A	0	0%
B	14	39%
C	0	0%
O	22	61%
Total	**36**	**100%**

Collision Type

The most common type of collision found in the study area was rear end collisions, with 39% of crashes occurring in this manner, followed by angle collisions with 33% of crashes. Table 20 summarizes the collision type for all analyzed crashes.

Table 20: Crash County by Collision Type

Collision Type	Count	%
Rear End	14	39%
Angle	12	33%
Pedestrian	3	8%
Sideswipe - Same Direction	3	8%
Other	2	6%
Head On	1	3%
Sideswipe - Opposite Direction	1	3%
Total	**36**	**100%**

Crash Factors

Several factors that contribute to crashes were reviewed as part of this safety analysis. These factors include environmental factors, driver behavior, and vehicle characteristics.

Environmental Factors

Light conditions at the moment of the crash can contribute to the quantity and severity of crashes. For the data analyzed, 92% of the crashes occurred during daylight (67%) or during darkness in a lighted road (25%). This information suggests that, in the majority of crashes, light condition might not have been the primary cause for the crash. Table 21 summarizes the light conditions for crashes in the vicinity of the Block W site.

Table 21: Crash Count by Light Condition

Light Condition	Count	%
Daylight	24	67%
Darkness - road lighted	9	25%
Dusk	2	6%
Darkness - road not lighted	1	3%
Dawn	0	0%
Total	**36**	**100%**

Driver Behavior

The intentional or unintentional characteristics and actions that a driver performs while operating a vehicle also contribute to crashes. As shown in Table 22, a distracted driver was reported in 8% of the analyzed crashes, while speeding and alcohol were involved in 14% and 8% of the crashes, respectively. This information suggests that, in the majority of cases, driver behavior might not have been the primary cause of the crash but is a contributing cause.

Table 22: Crash Count by Driver Behavior Factors

Driver Behavior Factors	Count	%
Distracted Driver?		
Yes	3	8%
No	33	92%
Speeding?		
Yes	5	14%
No	31	86%
Alcohol Involved?		
Yes	3	8%
No	33	92%
Total	**36**	**100%**

Vehicle Characteristics

Vehicle characteristics including type of vehicle and vehicle size were analyzed to determine their contribution to crashes in the vicinity of the Block W site. As shown in Table 23, three (3) crashes involving motorcyclists have been reported in the past five (5) years while two (2) crashes have been reported to involve a bicyclist. In addition, three (3) crashes (8%) reported a large truck being involved in the crash. In terms of transportation modes other than automobiles, nine (9) crashes (25%) were reported to involve a pedestrian.

Table 23: Crash Count by Vehicle Characteristics

Vehicle Characteristics Factors	Count	%
Large Truck Involved		
Yes	3	8%
No	33	92%
Motorcycle Involved		
Yes	3	8%
No	33	92%
Bike Involved		
Yes	2	6%
No	34	94%
Pedestrian Involved		
Yes	9	25%
No	27	75%
Total	**36**	**100%**

Findings

According to the VDOT historical crash data for the study area, the locations with the greatest number of reported crashes were the intersections of Richmond Highway and 23rd Street S, and S Clark Street and 23rd Street S with 17 of the 36 (or 47%) reported crashes occurring at or near these intersections. Five (5) of the 17 crashes at this location involved a pedestrian, as shown in Figure 47.

As part of the proposed development, new pedestrian facilities that meet or exceed Arlington County requirements will be provided along the street frontage of the site. These improvements are consistent with several County-wide and national guidelines which prioritize shifting trips to non-auto modes, complete streets principles, and safety for all users, including the Arlington Master Transportation Plan, Vision Zero Action Plan, and NACTO Urban Streets Design Guide. The proposed development would also create a new intersection at the northeast corner of the site at Crystal Drive and the realigned Crystal City Service Road. The crash rate at the new intersection is expected to be consistent with the crash rates at other intersections along Crystal Drive.

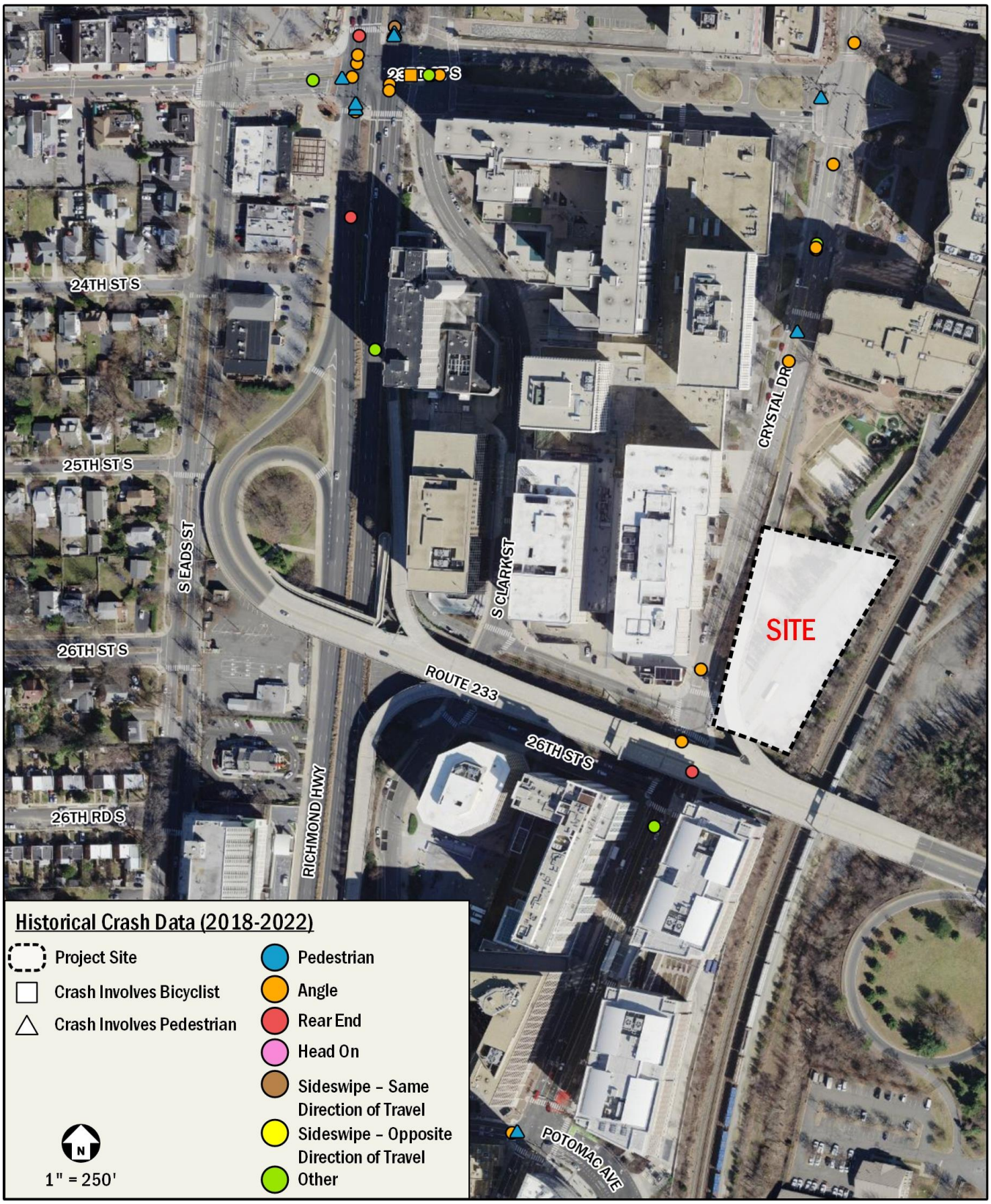

Figure 48: Historical Crash Data (2018-2022

Transportation Management Plan

A Transportation Management Plan (TMP) has many components that are tailored to accommodate a given facility with the goal being the reduction of automobile trips by encouraging alternative forms of transportation. A few of the typical TMP components include the establishment of a TMP coordinator, the distribution of transit literature, the establishment of ride-sharing programs, and the on-site sale of discounted fare media. Management measures taken by the proposed Block W development can be monitored and adjusted as needed to continually create opportunities to reduce the amount of vehicular traffic generated by the site.

The TMP will include a schedule and details of implementation and continued operation of the elements in the plan. The location of the site near the Crystal City and Pentagon City Metro Stations allows for a TMP that may include, but not be limited to, the following:

Participation and Funding

(1) Establish and maintain an active, ongoing relationship with Arlington Transportation Partners (ATP), or successor entity, at no cost to the developer, on behalf of the property owner.

(2) Designate and keep current a member of building management as Property Transportation Coordinator (PTC) to be primary point of contact with the County and undertake the responsibility for coordinating and completing all Transportation Management Plan (TMP) obligations. The PTC shall be trained, to the satisfaction of Arlington County Commuter Services (ACCS), to provide, transit, bike, walk, rideshare and other information provided by Arlington County intended to assist with transportation to and from the site.

(3) Contribute annually to ACCS, or successor, to sustain direct and indirect on-site and off-site services in support of TMP activities. Payment on this commitment shall begin as a condition of issuance of the First Partial Certificate of Occupancy for Tenant Occupancy for each respective building or phase of construction. Subsequent payments shall be made annually.

Facilities and Improvements

(1) Provide in the lobby or lobbies, a transportation information display(s), the number/content/design/location of which will be approved by ACCS. The developer agrees that the required transportation information displays shall meet the Arlington County Neighborhood Transportation Information Display Standards in effect on the date of the site plan approval, or equivalent as approved by the County Manager.

(2) Comply with requirements of the Site Plan conditions to provide bicycle parking/storage facilities, a Parking Management Plan (PMP), and a Bicycle Facilities Management Plan.

Promotions, Services, Policies

(1) Prepare, reproduce and distribute, in digital or hard copy, materials provided by Arlington County, which includes site-specific transit, bike, walk, and rideshare related information, to each new residential lessee and retail, property management, or maintenance employee, from initial occupancy through the life of the site plan. These materials shall be distributed as a part of prospective tenant marketing materials, as well as communications associated with lease signing, on-boarding, or similar activities.

(2) Provide one time, per person, to each new residential lessee and each new retail, property management, or maintenance employee, whether employed part-time or full-time, directly employed or contracted, who begins employment in the building throughout initial occupancy, the choice of one of the following:

a. Metro fare on a SmarTrip card or successor fare medium (amount to be determined)

b. A one year bikeshare membership

c. A one year carshare membership

The County Manager may approve additions to, or substitution of one or more of these choices with a comparable transportation program incentive, as technology and service options change, if he/she finds that an incentive shall be designed to provide the individual with an option other than driving alone in a personal vehicle, either by removing a barrier to program entry, such as a membership cost, or by providing a similar level of subsidized access to a public or shared transportation system, program or service.

(3) Provide, administer, or cause the provision of a sustainable commute benefit program for each on-site property

management and maintenance employee, whether employed part-time or full-time, directly employed or contracted. This commute benefit program shall offer, at a minimum, a monthly pre-tax transit benefit or a monthly subsidized/direct transit benefit.

(4) Provide, under a “transportation information” heading on the Developer and property manager’s websites regarding this development:

a. Links to the most appropriate Arlington County Commuter Services and/or external transportation-related web page(s). Confirmation of most appropriate link will be obtained from ACCS.

b. A description of key transportation benefits and services provided at the building, pursuant to the TMP.

Performance and Monitoring

(1) During the first year of start-up of the TMP and on an annual basis thereafter, the Developer shall submit an annual report, which may be of an online, or e-mail variety, to the County Manager, describing completely and correctly, the TDM related activities of the site and changes in commercial tenants during each year.

(2) The Developer agrees to conduct and/or participate in, a transportation and parking performance monitoring study at two years, five years, and each subsequent five years (at the County’s option), after issuance of the First Certificate of Occupancy for Tenant Occupancy. The County may conduct the study or ask the owner to conduct the study (in the latter case, no reimbursement payment shall be required). As part of the study, a report shall be produced as specified below by the County. The study may include building occupancy rates, average vehicle occupancy, average garage occupancy for various day of the week and times of day, parking availability by time of day, average duration of stay for short term parkers on various days of the week and times of day, pedestrian traffic, a seven-day count of site-generated vehicle traffic, a voluntary mode-split survey, and hourly, monthly, and special event parking rates.

The building owner and/or operator shall notify, assist, and encourage building occupants and visitors on site to participate in mode-split surveys which may be of an on-line or email variety.

Summary and Conclusions

This report concludes that the proposed development will not have a detrimental impact to the surrounding transportation and roadway network assuming that all planned site design elements and recommended mitigation measures are implemented.

The Block W site is well served by transit and is surrounded by a well-connected pedestrian and bicycle network. The site is located near several principal arterials such as Route 1 and creates connections to I-395, I-66, George Washington Memorial Parkway, and ultimately the Capital Beltway (I-495) and I-95.

The proposed development will construct a new 7-story multifamily residential building with ground floor retail at the project site. Prior to construction of the new building, the off-ramp connecting the existing Airport Access Road to northbound Crystal Drive will be demolished. The development will include 370 dwelling units and approximately 3,360 square feet of ground-floor retail.

A total of 158 parking spaces will be provided for the development (148 residential and 10 visitor spaces), resulting in a 0.4 parking ratio for the site. 109 of these spaces (including all 10 visitor spaces) will be provided in a partially below-grade garage on site. 49 additional parking spaces will be made available in the Parks block garage, which can be accessed via the building at 2451 Crystal Drive, immediately north of the development site.

The proposed development will provide one (1) 40-foot loading berth and one (1) 25-foot loading berths. The number of on-site loading facilities will accommodate the practical needs of the development. Vehicular access to the garage and loading berths will be provided along the northern frontage of the proposed development on Crystal City Service Road.

A number of planned transportation improvements in the vicinity of the Block W development are expected to be complete by 2026. The full list of improvements is detailed in the report, but examples include:

- Transitway Extension to Pentagon City
- Metropolitan Park 6, 7, 8
- PenPlace
- Crystal City Metro Station 2nd Entrance
- Plaza Block Crystal City Sector Plan Realignment
- DCA South Pedestrian Access Improvements

Capacity analyses were developed to analyze three future scenarios:

- 2026 Background Conditions without the removal of the Airport Access Road off-ramp and without the proposed development
- 2026 Future Conditions with the removal of the Airport Access Road off-ramp and without the proposed development
- 2026 Future Conditions with the removal of the Airport Access Road off-ramp and with the proposed development

Traffic projections for 2026 are based on existing volumes plus inherent growth on the roadway (representing regional traffic growth) and traffic generated by background developments expected to be completed prior to 2026 (representing local traffic growth), and traffic generated by the proposed Block W development.

The 2026 Future With Ramp Removal/Without Development scenario was compared to the 2026 Background Without Ramp Removal/Without Development scenario to identify the impacts of the removal of the off-ramp connecting westbound Airport Access Road to northbound Crystal Drive. Following the above County guidelines for impacts, mitigation measures were explored and included the following recommendation(s):

- Adjustments to signal timings and lane geometry at one (1) intersection:
  - 23rd Street S and Crystal Drive
  - The reconfiguration of the eastbound approach from a shared left-thru lane and right-turn lane to a left-turn lane and a shared thru-right lane and signal timing adjustments

With these mitigations in place, the analysis shows that traffic operations with the proposed development will improve or are consistent with the 2026 Background Without Ramp Removal/Without Development scenario at many intersections.

The 2026 Future With Ramp Removal/With Development scenario was compared to the mitigated 2026 Future With Ramp Removal/Without Development scenario to identify the impacts of the proposed development. Following the above County

guidelines for impacts, no impacts were identified at the study intersections as a result of the proposed development.

The development has many positive elements contained within its design that minimize potential transportation impacts, including:

- The proposed development's close proximity to the Crystal City Metro Station, Crystal City VRE Station, and multiple bus lines.
- Improvements to the pedestrian facilities adjacent to the site that meet or exceed Arlington County and ADA requirements.
- The inclusion of secure-long-term bicycle parking meeting zoning requirements.
- The installation of short-term bicycle parking spaces around the perimeter of the site that meet zoning requirements.
- Limited on-site parking, which will promote the use of non-auto modes of travel to and from the proposed development.
- A Transportation Management Plan (TMP) that aims to reduce the demand of single-occupancy, private vehicles to/from the proposed development during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.

As noted above, this report concludes that the proposed development will not have a detrimental impact to the surrounding transportation and roadway network assuming that all planned site design elements and recommended mitigation measures are implemented.