

TRANSPORTATION IMPACT STUDY

WEST HALF STREET OVERLAY REVIEW

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ZONING COMMISSION

District of Columbia

CASE NO.08-30B

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EXECUTIVE SUMMARY

The following report is a Transportation Impact Study (TIS) for the West Half Street project. This report reviews the transportation aspects of the projects Overlay Review Modification application. The Zoning Commission Case Number is 08-30B. The development was originally approved through ZC Order 08-30 and ZC Order 08-30A in 2009 and 2011, respectively.

The purpose of this study is to evaluate whether the project will generate a detrimental impact to the surrounding transportation network. This evaluation is based on a technical comparison of the existing conditions, background conditions, and total future conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming that all planned site design elements are implemented.

Proposed Project

This Capital Gateway Overlay Review Modification is for the mixed-use West Half Street Development. This development was originally approved through ZC Order 08-30 and ZC Order 08-30A in 2009 and 2011, respectively. The approved development proposed a mixed-use development consisting of 280 dwelling units, 369,292 square feet of office use, and 51,624 square feet of retail use. The footprint of the approved development consisted of the entirety of the eastern portion of Square 700, bounded by M Street, Half Street, N Street, and Van Street. The approved development was broken down into two separate portions with a pedestrian promenade running east to west in between.

The Modification Application applies only to the southern portion of the development, which is now under new ownership since the original ZC approval process. For the purpose of this study, the northern portion of the development will be included as a background development with the same development program that was originally approved.

The Applicant is proposing to develop the southern portion of the site into a mixed-use project including residential and retail uses. The site is bounded by Half Street to the east, N Street to the south, Van Street to the west, and the northern portion of the development to the north. The proposed development program includes 424 residential units and 65,175 square feet of retail space. The approved development included 119,245

square feet of office space, 37,287 square feet of retail space, and 280 residential units for the southern portion of the development.

Parking and loading access will be off of Van Street. There will be one curb cut for the parking access which leads to a 315 parking space garage. There will be another curb cut for the loading area, which will include two (2) 30' loading bays and two (2) 20' service/delivery spaces to be shared by the residential and retail uses. Due to the configuration of the loading area, back-in/head-out maneuvers will be required to access the loading bays. For this reason, the study recommends a loading management plan.

In addition, pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. Under existing conditions sidewalks along Van Street do not meet DDOT standards directly surrounding the site. The parking garage will supply secure bicycle parking spaces that meet or exceed the current DDOT requirements.

Multi-Modal Impacts and Recommendations

Transit

The site is well-served by regional and local transit services such as Metrorail, Metrobus, and Circulator. The site is less than 0.1 miles from the nearest Navy Yard Metrorail Station portal at M Street and Half Street and many Metrobus stops are located within a block of the site along M Street.

Although the West Half Street development will be generating new transit trips on the network, the existing facilities have enough capacity to handle the new trips. The Navy Yard Metrorail station and all nearby Metrobus lines do not have existing capacity concerns and are not expected to as a result of the West Half Street development.

Pedestrian

The site is surrounded by a well-connected pedestrian network. Most roadways within a quarter-mile radius provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes. There are some pedestrian barriers surrounding the site such as limited connectivity due to the Interstate to the north and the Anacostia River to the south.

As a result of the West Half Street development, pedestrian facilities along the perimeter of the site will be improved. Under existing conditions there is no sidewalk along Van Street.



The development will add or widen sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

Bicycle

Although not directly adjacent to any bike facilities, the site is just blocks away from many trails, bike lanes, and signed bike routes such as the Anacostia Riverwalk Trail to the south, north-south bike lanes along 4th Street SE, 1st Street SE, and 4th Street SW, and east-west bike lanes along I Street SE/SW. The site is also served by the Capital Bikeshare program which provides an additional cycling option for residents, employees, and patrons of the West Half Street development.

On site, the West Half Street development will provide short-term bicycle parking along the perimeter of the site and secure long-term bicycle parking in the parking garage.

Vehicular

The West Half Street site is well-connected to regional roadways such as I-395, I-695, and I-295, primary and minor arterials such as South Capitol Street, M Street, and I Street, and an existing network of collector and local roadways.

In order to determine if the proposed development will have a negative impact on the transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area.

The analyses conclude that the West Half Street development will not have adverse impacts on the surrounding transportation network. Most of the locations in the study area with unacceptable levels of delay occur in scenarios without the development of the project. The exception to this is the intersection of M Street and Van Street SE in which the northbound approach operates at a LOS E during the afternoon peak hour under Total Future conditions.

One potential improvement at this location would be the installation of a traffic signal. However, based on the capacity analysis, traffic volumes at this intersection do not warrant a signal and the proximity to adjacent signals along M Street would provide operational challenges.

Additionally, there is vehicular capacity at the intersection of Van Street and N Street. At the point in which the northbound approach of Van Street at M Street reaches unacceptable levels drivers are likely to change their driving patterns to avoid queues and exit to the south of the site as an alternative. For these reasons, no improvements are recommended at this intersection.

INTRODUCTION

This report is a Transportation Impact Study (TIS) in support of the Capital Gateway Overlay Review Modification for the West Half Street development. The project is located in the Southeast quadrant of Washington DC. This TIS is submitted into the Zoning Commission record for this case, as an evaluation of the transportation impacts of construction of the application. The Zoning Commission Case Number is 08-30B.

Contained within this report are a review of the transportation components of the application and the development's transportation impacts.

PURPOSE OF STUDY

This report reviews the transportation elements of the project, supplementing material provided in the Site Plan Package that accompanied the Zoning Commission Application.

The purpose of this report is to:

1. Review the transportation elements of the development site plan and demonstrate that the site conforms to DDOT's general policies of promoting non-automobile modes of travel and sustainability.
2. Provide information to the District Department of Transportation (DDOT) and other agencies on how the development of the site will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the site on all major modes of travel and where these trips will be distributed on the network.
3. Determine if development of the site will lead to adverse impacts on the local transportation network. This report accomplishes this by projecting future conditions with and without development of the site and performing analyses of vehicular delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The report discusses what improvements to the transportation network are needed to mitigate adverse impacts.

PROPOSED PROJECT

This Capital Gateway Overlay Review Modification is for the mixed-use West Half Street Development. This development was originally approved through ZC Order 08-30 and ZC Order

08-30A in 2009 and 2011, respectively. The approved development proposed a mixed-use development consisting of 280 dwelling units, 369,292 square feet of office use, and 51,624 square feet of retail use. The footprint of the approved development consisted of the entirety of the eastern portion of Square 700, bounded by M Street, Half Street, N Street, and Van Street. The approved development was broken down into two separate portions with a pedestrian promenade running east to west in between.

The Modification Application applies only to the southern portion of the development, which is now under new ownership since the original ZC approval process. For the purpose of this study, the northern portion of the development will be included as a background development with the same development program that was originally approved.

The Applicant is proposing to develop the southern portion of the site into a mixed-use project including residential and retail uses. The site is bounded by Half Street to the east, N Street to the south, Van Street to the west, and the northern portion of the development to the north. The proposed development program included 424 residential units and 65,175 square feet of retail space. The approved development includes 119,245 square feet of office space, 37,287 square feet of retail space, and 280 residential units for the southern portion of the development. Table 1 details the changes between the approved and proposed development program for the southern portion of the development.

Parking and loading access will be off of Van Street. There will be one curb cut for the parking access which leads to a 315 parking space garage. There will be another curb cut for the loading area, which will include two (2) 30' loading bays and two (2) 20' service/delivery spaces to be shared by the residential and retail uses. Due to the configuration of the loading area, back-in/head-out maneuvers will be required to access the loading bays.

In addition, pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirement. Under existing conditions sidewalks along Van Street do not meet DDOT standards directly surrounding the site. The parking garage will supply secure bicycle parking spaces that meet or exceed the current DDOT requirements.

**Table 1: Approved and Proposed Development Summary**

	Approved Development (southern portion only)	Proposed Development (southern portion only)
Development Program	Assumed within original TIS: 280 residential units 119,245 square feet of office space 37,287 square feet of retail space	From the Zoning Submission: 424 residential units 65,175 square feet of retail space
Parking	210 residential parking spaces 100 office parking spaces 59 retail parking spaces Total: 369 parking spaces	232 residential parking spaces 83 retail parking spaces Total: 315 parking spaces
Loading	Three (3) 30' berths	Two (2) 30' berths Two (2) 20' service/delivery spaces

CONTENTS OF STUDY

This report contains nine sections as follows:

- Study Area Overview

This section reviews the area near and adjacent to the proposed project and includes an overview of the site location.

- Project Design

This section reviews the transportation components of the project, including the site plan and access. This chapter also contains the proposed Transportation Demand Management (TDM) plan for the site.

- Trip Generation

This section outlines the travel demand of the proposed project. It summarizes the proposed trip generation of the project.

- Traffic Operations

This section provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project, including presenting mitigation measures for minimizing impacts.

- Transit

This section 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 section 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 section 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.

- Safety/Crash Analysis

This section reviews the potential safety impacts of the project. This includes a review of crash data at intersections in the study area and a qualitative discussion on how the development will influence safety.

- Summary and Conclusions

This section presents a summary of the recommended mitigation measures by mode and presents overall report findings and conclusions.

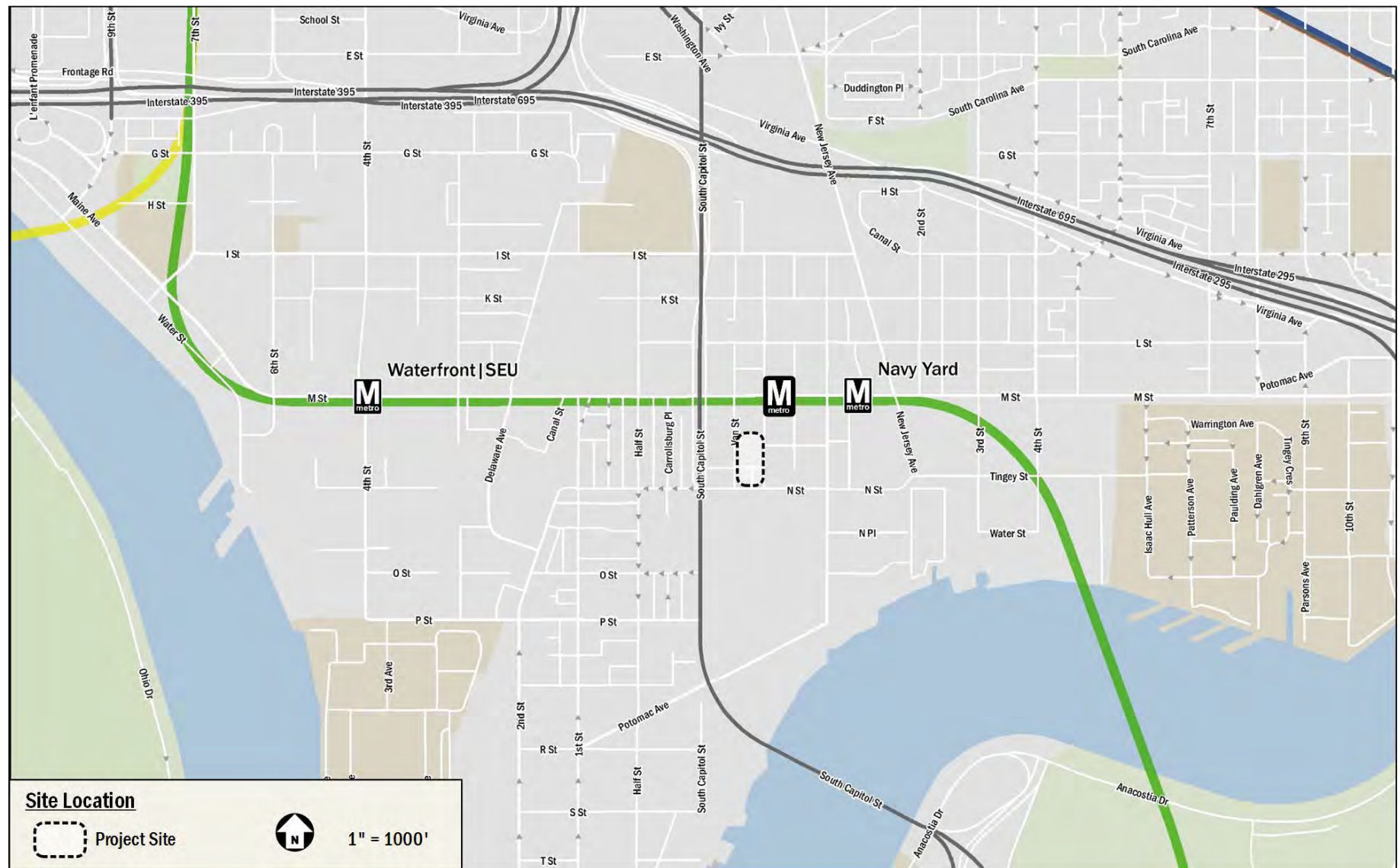


Figure 1: Site Location



STUDY AREA OVERVIEW

This section reviews the study area and includes an overview of the site location, including a summary of the major transportation characteristics of the area and of future regional projects.

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 West Half Street development
- The site is well-served by public transportation with access to the Metrorail Green Line and several local and regional Metrobus lines.
- There is some existing bicycle infrastructure including the Anacostia Riverwalk Trail and several bike lanes and signed routes in the vicinity of the site.
- Pedestrian conditions are generally good, particularly along anticipated major walking routes.

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

The West Half Street site has ample access to regional vehicular- and transit-based transportation options, as shown in Figure 3, that connect the site to destinations within the District, Virginia, and Maryland.

The site is accessible from several interstates such as I-395, I-695, and I-295. These interstates create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within half-mile of the site, at which point arterials and local roads can be used to access the site directly.

The West Half Street site has access to the Green Line which provides connections to areas in the District and Maryland. The Green Line connects Branch Avenue with Greenbelt while providing access to the District core. In addition, the Green Line provides connections to all additional Metrorail lines allowing for access to much of the DC Metropolitan area.

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

Overview of Local Access

There are several local transportation options near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 4.

The site is served by a local vehicular network that includes several primary and minor arterials such as South Capitol Street, M Street, I Street, and Maine Avenue. In addition, there is an existing network of connector and local roadways that provide access to the site.

The Metrobus and Circulator systems provide local transit service in the vicinity of the site, including a connection to Union Station which acts as a primary hub for Amtrak, VRE, and Marc services. As shown in Figure 4, there are eighteen bus routes that service the site. In the vicinity of the site the majority of routes travel along M Street and South Capitol Street. These bus lines connect the site to many areas of the District and Maryland, including several Metrorail stations serving five of the six Lines.

There are existing bicycle facilities that connect the site to areas within the District, most notably the Anacostia Riverwalk Trail, I Street bike lanes and 4th Street bike lanes which provide connections to the Mount Vernon Trail, Downtown, and other bicycle facilities. East and south of the site the Anacostia River Trail is primarily off-street, but some areas to the west require users to travel along signed routes throughout the roadway network. Other facilities include bike lanes along First Street SE, and signed bike routes along Half Street SW and 4th Street SW.

In the vicinity of the site, most roadways provide sidewalks with crosswalks present at most intersections. Anticipated pedestrian routes, such as those to public transportation stops, retail zones, and community amenities, provide acceptable pedestrian facilities; however there are some pedestrian barriers in the area that limit the overall connectivity to and from the site. A detailed review of existing and proposed pedestrian access and infrastructure is provided in a later section of this report.

Although there are some minor issues, overall the West Half Street site is surrounded by an extensive local transportation network that allows for efficient transportation options via transit, bicycle, walking, or vehicular modes.



Car-sharing

Three car-sharing companies provide service in the District: Zipcar, Enterprise Carshare, and Car2Go. All three services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar and Enterprise Carshare have designated spaces for their vehicles. There are multiple carshare locations located within a quarter-mile of the site; these locations are listed in Table 2.

Car-sharing is also provided by Car2Go, which provides point-to-point car sharing. Unlike Zipcar or Enterprise Carshare, which require two-way trips, Car2Go can be used for one-way rentals. Car2Go currently has a fleet of vehicles located throughout the District. Car2Go vehicles may park in any non-restricted metered curbside parking space or Residential Parking Permit (RPP) location in any zone throughout the defined "Home Area". Members do not have to pay the meters or pay stations. Car2Go does not have permanent designated spaces for their vehicles; however availability is tracked

through their website, which provides an additional option for car-sharing patrons.

Walkscore

Walkscore.com is a website that provides scores and rankings for the walking, biking, and transit conditions within neighborhoods of the District. Based on this website the West Half Street development is located nearest the Ballpark – Navy Yard Neighborhood. This neighborhood has a walk score of 83, a transit score of 81, and a bike score of 86. Within the neighborhood, the project location itself has a walk score of 80, transit score of 78, and a bike score of 74. Figure 2 shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

As represented in Figure 2, the site is situated in a neighborhood that encompasses some good and some average walk scores. However, the site is in an area that provides a better walking environment than areas to the south which

Table 2: Summary of Carshare Locations

Carshare Location	Number of Vehicles
Zipcar	
Capitol Skyline Hotel (10 I Street SW)	6 vehicles
Greenleaf Senior Center (1200 Delaware Avenue SW)	1 vehicle
Enterprise Carshare	
N Place SE / First Street SE	5 vehicles
First Street SE and K Street SE	6 vehicles
Total	18 vehicles

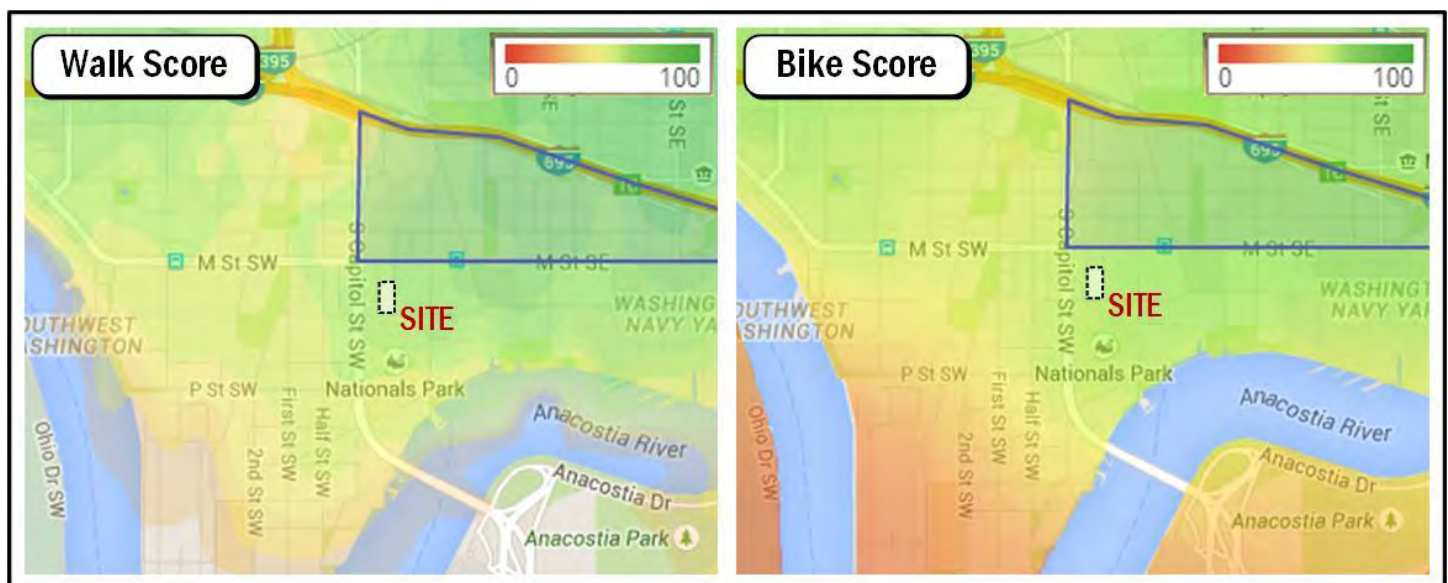


Figure 2: Summary of Walkscore and Bikescore



observe barriers such as the Anacostia River. The site is situated in an area with good bike scores due to its proximity to bike facilities and flat topography.

Overall, the Ballpark - Navy Yard neighborhood has high walk, transit, and bike scores. Additionally, other planned developments and roadway improvements will help increase the walk and bike scores in the Ballpark - Navy Yard neighborhood.

FUTURE REGIONAL PROJECTS

There are several District initiatives and background developments located in the vicinity of the site. These planned and proposed projects are summarized below.

Local Initiatives

MoveDC: Multimodal Long-Range Transportation Plan

MoveDC is an implementation-based plan that provides a vision for the future of DC's transportation system. As the District grows, so must the transportation system, specifically in a way that expands transportation choices while improving the reliability of all transportation modes.

The MoveDC report outlines recommendations by mode with the goal of having them complete by 2040. The plan hopes to achieve a transportation system for the District that includes:

- 70 miles of high-capacity transit (streetcar or bus)
- 200 miles of on-street bicycle facilities or trails
- Sidewalks on at least one side of every street
- New street connections
- Road management/pricing in key corridors and the Central Employment Area
- A new downtown Metrorail loop
- Expanded commuter rail
- Water taxis

In direct relation to the proposed development, the MoveDC plan outlines recommended transit and bicycle improvements such as a Streetcar route and new bicycle trails and cycle tracks. These recommendations would create additional multi-modal capacity and connectivity for the proposed development.

South Capitol Street Project

The purpose of the South Capitol Street project is to improve safety, mobility, and accessibility and to support economic

development in the vicinity of the project. The project will: (1) correct the design and deteriorating condition of the transportation infrastructure which creates safety concerns for vehicular, pedestrian, and bicycle traffic and transit riders; (2) construct missing critical regional roadway connections for vehicles, pedestrians, and bicycles; (3) correct mobility barriers that limit access to activity centers in the study area; and (4) support economic growth in order to improve the density of employment and residential development. Ultimately, the goal of the South Capitol Street projects is to address the problems of the corridor in a way that both addresses the transportation issues, while also revitalizing the surrounding neighborhoods south of the National Mall and transforming the roadway into a grand urban gateway in to the District. The future South Capitol Street corridor will correct design deficiencies, improving safety issues for all users, including drivers, transit riders, pedestrians, and bicyclists, as well as providing key connections in the local, regional, and national transportation network.

The Preferred Alternative from the Final Environmental Impact Statement includes rebuilding South Capitol Street as a six-lane boulevard with a landscaped median west of the Anacostia River. Along South Capitol Street, at-grade intersections will be reconstructed at I, N, O, P, K, L, and M Streets. The existing ramp from northbound South Capitol Street to I-395 will also be reconstructed as an at-grade interaction. A four- to five-lane traffic oval will be constructed to connect South Capitol Street, Potomac Avenue, R Street, and Q Street. The existing Frederick Douglas Memorial Bridge will be replaced and will include bicycle and pedestrian access. An additional traffic circle will be constructed to connect South Capitol Street, Suitland Parkway, and Howard Road, and several other roadway improvements are included on the eastern/southern side of the Anacostia River.

In addition to vehicular improvements, streetscape design features will be added to project area streets, including South Capitol Street, New Jersey Avenue, and Suitland Parkway. The reconstruction of South Capitol Street will also include pedestrian and bicycle facilities, which will consist of widened sidewalks, widened curbside lanes on some streets for bicycle travel, and increased pedestrian- and bicycle-oriented elements such as street trees, benches, and decorative streetlights. The proposed bicycle routes through the project area will consist primarily of signed bicycle routes that connect



to local activity centers, as well as other area facilities such as the Anacostia Riverwalk Trail.

The South Capitol Street project will also improve access to transit already in the corridor by providing additional pedestrian and bicycle facilities, streetscape, and pedestrian-friendly amenities. The Preferred Alternative will also provide linkages between transit nodes and the local and regional bicycle network, and will support future transit (streetcar and bus service) throughout the corridor. The Preferred Alternative will be better equipped to accommodate the proposed future Anacostia Line of the streetcar transit system due to the proposed wide sidewalks, streetlights, signed bike routes, and multi-use trails.

M Street SE/SW Transportation Study

The purpose of the M Street SE/SW Transportation Study is to prepare for the substantial new growth along the M Street/Maine Avenue corridor in the near Southeast and Southwest Waterfront area. The study area is projected to see in excess of 36 million square feet of development concentrated within a 0.78 square mile core area. The premise of the study is to better integrate the area of development with the surrounding neighborhoods and to improve multimodal travel and the public realm within the neighborhood. The study area encompasses an area of approximately 1.7 square miles along the M Street SE/SW corridor and the Southwest Waterfront from 12th Street SE to 14th Street SW. The study considers existing and future transportation conditions, reviews the planned future land uses in the study area, and develops solutions for the transportation network in order to promote livable communities and to encourage reinvestment within the study area. The study recommends improvements for three conditions: near term (2013-2016), mid-term (2015-2021), and long-term (2020 and beyond).

The Draft report recommends several potential near-term projects and policy updates. The policy updates include suggestions to improve travel demand management (TDM) strategies, parking systems and regulations, transit policies, motor coach and commuter bus staging/parking, freight loading and truck routes, bicycle and pedestrian policies, and sustainable design. Potential low-cost operational and system management projects include signing and pavement marking improvements, signal timing optimization along M Street, pedestrian and Anacostia Riverwalk Trail connectivity improvements, bicycle network improvements, transit service

improvements, parking changes, and sustainability and low-impact development improvements.

For the mid-term, three multimodal projects are proposed and investigated: Alternative 1 – M Street “Main Street”, Alternative 2 – “Balanced Links” and Alternative 3 – M Street “Mobility Arterial”. Alternative 1 includes prioritizing non-automobile transportation and establishing M Street as a core premium transit corridor, which would reduce M Street to two vehicular lanes in each direction with an exclusive outer transit lane. Alternative 2 balances the transit network to provide wider coverage to the entire study area by allocating new transit services to parallel corridors while creating new bicycle facilities along the M Street corridor. Alternative 3 focuses on preserving M Street as a primarily vehicular corridor with less emphasis on alternative modes by implementing operational improvements to maximize vehicular throughput, maintaining three vehicular travel lanes in each direction, and providing a shared outer lane for streetcar and transit. The three alternatives from the Draft report will be used to develop and analyze potential “hybrid” alternatives to be implemented in the mid-term.

The long-term improvements focus on potential new connections to complete the street grid in the study area if future development (beyond 2035) were to occur in areas not currently available. The long-term options include roadway improvements in the Buzzard Point area, as well as improvements to east-west connectivity; Metrorail station capacity improvements, along with Yellow line improvements; commuter rail enhancements; and multimodal transfer centers. These options would all require further study and significant agency coordination and public involvement. The study projects that the options could possibly be implemented between 2020 and 2040.

Planned Developments

There are several potential development projects in the vicinity of the West Half Street site. For the purpose of this analysis, only approved developments expected to be complete prior to West Half Street with an origin/destination within the study area were included. A detailed list of all background developments considered and a description of their applicability for incorporation in the study is included in the Technical Attachments. Of the background developments considered, eight were ultimately included and are described



below. Figure 5 shows the location of these developments in relations to the proposed development.

Akridge at Half Street

This development is the north portion of the development that was approved as part of ZC Order 08-30/08-30A. It will include approximately 239,953 square feet of office space and 22,282 square feet of retail space.

This portion of the development was recently acquired by Brandywine. Although the development plan may change due to this acquisition, for the purpose of this analysis the development plan that was entitled by the Zoning Commission in 2009 was used.

Gallery at Capitol Riverfront

This development is located at 1111 New Jersey Avenue SE and will include 324 residential units with 11,000 square feet of ground-floor retail. Construction began in September 2014 and is expected to be complete in 2016.

Half Street Phase II

Half Street Phase II is located on the northwest corner of N Street and Half Street SE and has two potential development plans: (1) 445 residential units and 60,100 square feet of retail space or (2) 365 residential units, 80 hotel rooms, and 60,100 square feet of retail space. The latter development plan was used in the analysis because it yielded slightly higher trip generation values. The development was approved by ZC Order 06-46B in June of 2015 and is expected to be complete in 2018.

50 M Street

The 50 M Street development is located in the southeast quadrant of DC and will include an 11-story, 195-room hotel with 4,800 square feet of retail space. Construction began in March 2015 and is expected to be complete in 2016.

Square 701

Square 701 is a mixed-use development located along 1st Street SE between N and M Street. It will include approximately 233,000 square feet of office space, 45,000 square feet of retail space, 170 hotel rooms, and approximately 285 residential units. The development was approved by ZC Order 12-05 in November 2012 and is expected to be complete in 2017.

Ballpark Hotel

Ballpark Hotel is located on the southeast corner of N Street and 1st Street SE and provides a 168-room Hampton Inn and Suites. Construction began in early 2014 and was completed in mid-2015. Although this development is complete, it was still under construction when counts were collected; therefore, it will be included as a background development.

1244 South Capitol Street

This development is located across Van Street from the proposed development. It will include 303 residential units and 23,000 square feet of ground-floor retail. The development was approved by ZC Order 14-15 and is expected to be complete in 2017.

One M Street/10 Van Street

This development broken down into two buildings is located across Van Street from the proposed development. One M Street will include 115,858 square feet of office space and 4,851 square feet of retail space and was approved by ZC Order 15-11 in July of 2015. 10 Van Street will include 165 dwelling units and was approved by ZC Order 15-23 in December of 2015. Both buildings are expected to be complete in 2018.

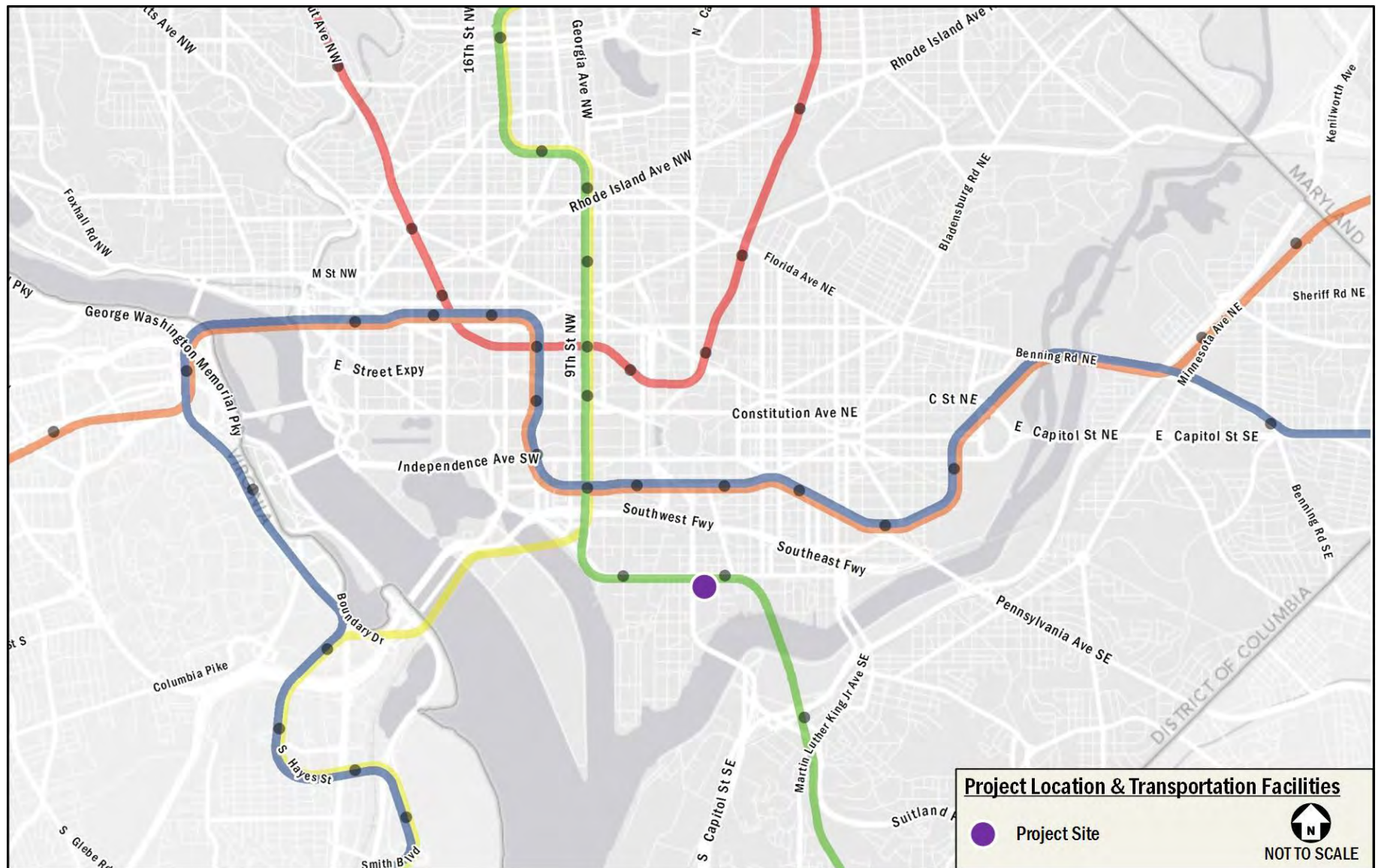


Figure 3: Major Regional Transportation Facilities

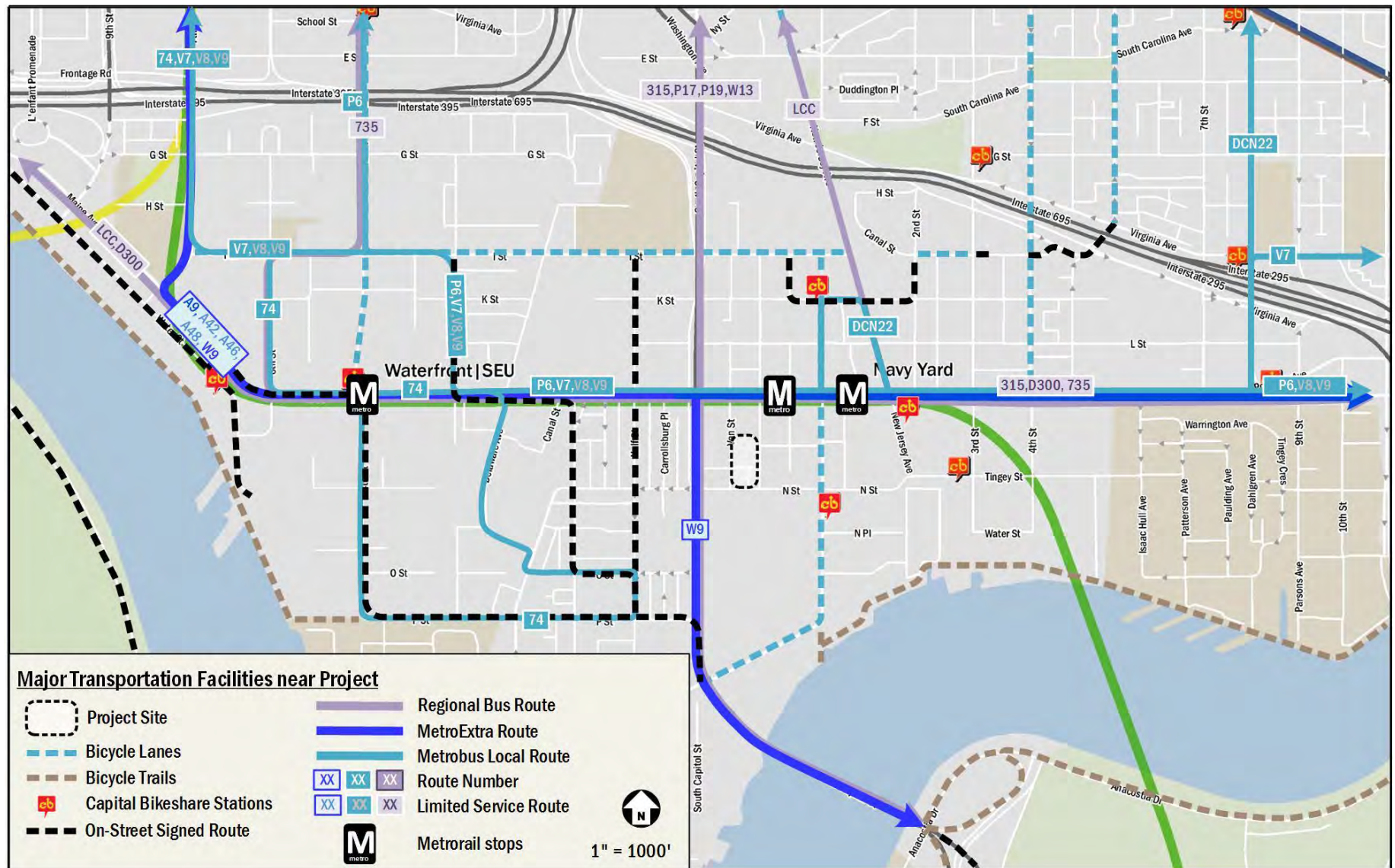


Figure 4: Major Local Transportation Facilities

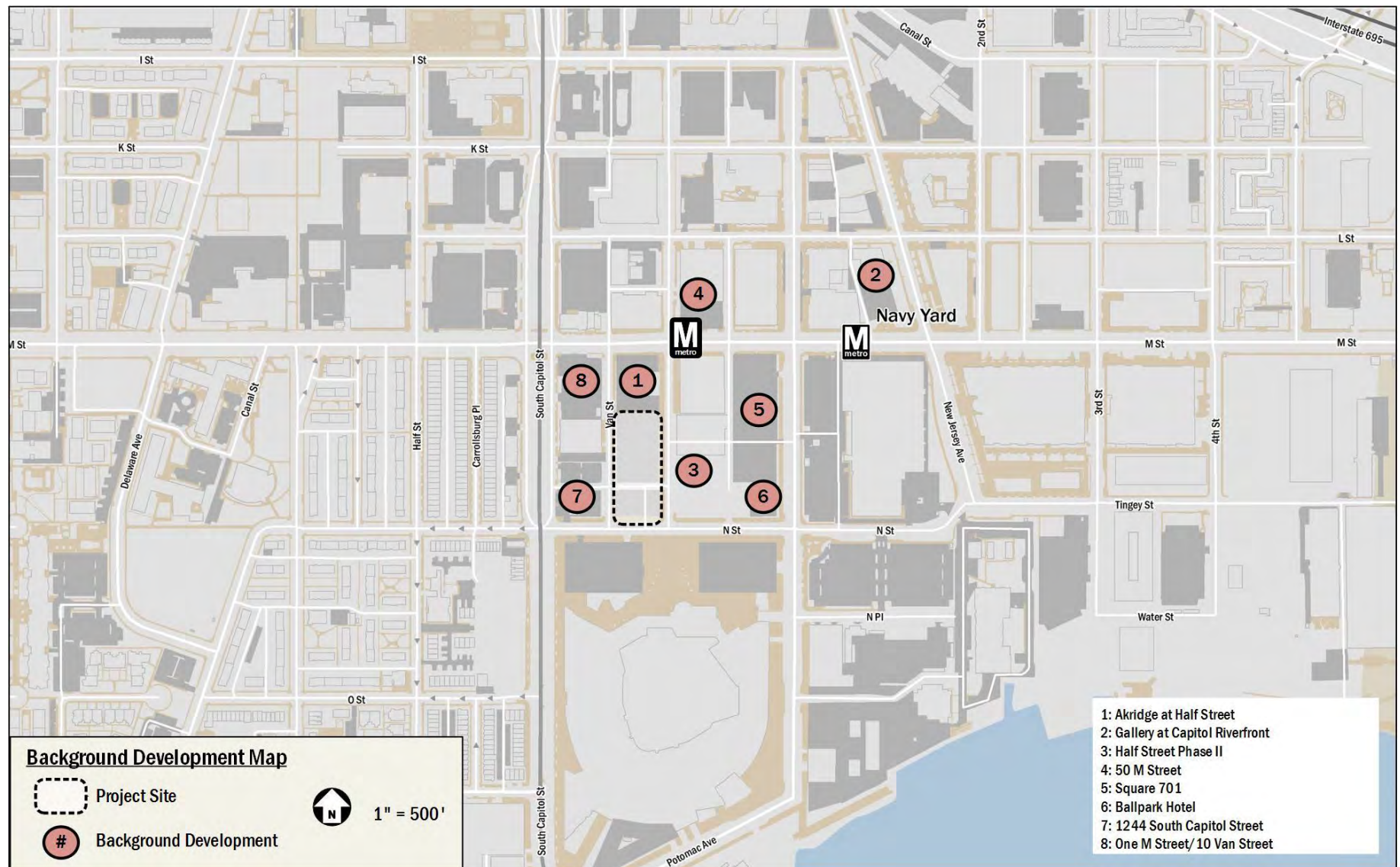


Figure 5: Planned Development Map



PROJECT DESIGN

This section reviews the transportation components of West Half Street, including the proposed site plan and access points. It includes descriptions of the site’s vehicular access, loading, parking, and Transportation Demand Management (TDM) plan. It supplements the information provided in the site plans package that accompanied the Zoning Application, which includes several illustrations of site circulation and layout.

The West Half Street project will replace the existing temporary seasonal entertainment space used by the Washington Nationals and other events with a mixed-use development. There is currently one curb cut along Van Street that accesses a small parking lot. The site is surrounded by temporary asphalt sidewalks that are used to accommodate pedestrian traffic, particularly for Washington Nationals games.

The West Half Street project will be a mixed-use development consisting of 424 residential units and 65,175 square feet of retail space. A below-grade parking lot will be accessible from Van Street and will supply 315 parking spaces. Figure 6 shows an overview of the development program and site plan elements.

ACCESS AND LOADING

All vehicular access to the site will be off of Van Street, which is a short local roadway between Half Street SE and South Capitol Street that connects M and N Streets. Van Street operates as an alley north of M Street until L Street. As shown in Figure 6, two curb cuts are proposed to provide vehicular access to the West Half Street development. The northernmost curb cut will serve as the loading access and the southernmost curb cut will serve as the parking access.

Truck routing to and from the site will be focused on South Capitol Street and M Street, which are designated truck routes and have access to the surrounding interstate system. Truck turning diagrams showing maneuvers into and out of the loading docks are included in the Technical Attachments.

According to DC zoning requirements, the residential use is required to provide one (1) 55’ loading berth and one (1) 20’ service/delivery space. Based on the size of the retail component, it is required to provide one (1) 55’ loading berth, one (1) 30’ loading berth, and one (1) 20’ service/delivery space. Alternatively, the development proposes to include two (2) 30’ loading berths and two (2) 20’ service/delivery spaces.

The amount of loading expected at the site is estimated based on the following assumptions:

- As a baseline, it is assumed that there will be three daily truck deliveries for the site as a whole (covering trash, a general shared delivery, and mail).
- Residential loading activity is estimated assuming an expected rental turnover of 18 months, with two trucks per move – one move-in and one move-out.
- An eating and drinking establishment is expected to generate an additional one (1) delivery per day over the shared deliveries.
- A general retail store is expected to generate an additional two (2) deliveries per day over the shared deliveries.

Although the distribution of retail spaces and the specific retailers is not known at this time, it is expected that there will be approximately 12 individual retail spaces. It is assumed that half of these retail spaces will be eating and drinking establishments and half of these will be general retail stores. Using these estimates, the anticipated loading activity for the site is shown in Table 3.

Based on the anticipated loading demand, it is expected that there will be approximately 13 SU-30 deliveries per day and 10 truck/van-sized deliveries per day. Assuming an average dwell time of 1 hour, this proposed amount of loading facilities is sufficient to accommodate all loading and service demand; however, deliveries should be scheduled in order to ensure that the dock is not overloaded at any given time. Additionally, the site will require back-in maneuvers due to space

Table 3: Summary of Loading Supply and Demand

Land Use	Proposed Loading Facilities	Anticipated Daily Loading Demand
Retail Component	Two (2) 30' loading berths	3 shared deliveries (consisting of two SU-30 deliveries and one truck/van-sized delivery)
	Two (2) 20' service/delivery spaces	18 retail-specific deliveries (consisting of nine SU-30 deliveries and nine truck/van-sized deliveries)
Residential Component		2 SU-30 deliveries



constraints. Back-in maneuvers are not standard for street operations, and although Van Street acts like an alley, it is technically designated as a street. For these reasons, the Applicant is proposing a loading management plan as follows:

- Deliveries will be permitted between 7:00 AM and 4:00 PM, seven days a week, except for when events occur at Nationals Park. Deliveries cannot be scheduled for the period between two (2) hours when an event begins and one (1) hour after an event is completed (including during the event itself).
- A representative of Building Management will supervise all deliveries to the loading dock, for 30-foot trucks (this does not apply to delivery vans). Building management will not schedule deliveries during Nationals Park events as defined above when there could be heavier than typical pedestrian traffic on Van Street.
- All residential and retail deliveries must be scheduled with Building Management to ensure that the dock capacity is not exceeded. Building management will not schedule deliveries during Nationals Park events as defined above when there could be heavier than typical pedestrian traffic on Van Street.
- A flagger will be present when a vehicle is entering the loading dock to ensure pedestrian, bicycle, and vehicle safety with truck back-in maneuvers.
- Building management will post a sign in a highly visible location within the loading area that states that all loading activities must be scheduled through building management.
- Trucks using the loading dock will not be allowed to idle and must follow all District guidelines for heavy vehicle operation including but not limited to DCMR 20 – Chapter 9, Section 900 (Engine Idling), the regulations set forth in DDOT's Freight Management and Commercial Vehicle Operations document, and the primary access routes listed in the DDOT Truck and Bus Route System.

PARKING

Based on current District zoning laws, the following outlines the parking requirements for all land uses of the development:

- Residential
1 space per 3 dwelling units, amounting to a minimum requirement of 139 parking spaces
- Retail

1 space per 750 square feet of retail space in excess of 3,000 square feet, amounting to a minimum requirement of 83 parking spaces

The proposed development will provide a total of 315 parking spaces on three below-grade levels. This parking supply satisfies the zoning requirements and provides parking consistent with what is expected by current market conditions.

BICYCLE AND PEDESTRIAN FACILITIES

The project will include short-term public bicycle spaces along the perimeter of the site. These short term spaces will include inverted U-racks placed in high-visibility areas. The Applicant is willing to work with DDOT in selecting locations for the racks in public space.

The project will also include secure long-term bicycle parking within the parking garage. The garage plans identify 145 spaces in the parking garage. According to the *DC Zoning Regulations and Bicycle Commuter and Parking Expansion Act of 2007*, all residential developments must provide at least one secure bicycle parking space for each 3 residential units. In addition the number of bicycle parking spaces for all other land uses amount to 5 percent of the automobile parking spaces required. Based on these regulations the development must provide at least 143 bicycle parking spaces. The development exceeds these requirements.

Pedestrian facilities will be improved along the perimeter of the site. Sidewalks along Half Street, Van Street, and M Street will be improved to comply with DDOT standards where they currently do not exist.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

TDM is the application of policies and strategies used to reduce travel demand or to redistribute demand to other times or spaces. TDM typically focuses on reducing the demand of single-occupancy, private vehicles during peak period travel times or on shifting single-occupancy vehicular demand to off-peak periods.

The Transportation Demand Management (TDM) plan for the West Half Street development is based on the DDOT expectations for TDM programs. The Applicant proposes the following TDM measures:

- The Applicant will comply with Zoning requirements to provide bicycle parking/storage facilities. This includes secure parking located in the garage for residents.
- The Applicant will unbundle the cost of residential parking from the cost of lease or purchase.
- The Applicant will identify a TDM Leader (for planning, construction, and operations). The TDM Leaders will work with residents in the building to distribute and market various transportation alternatives and options.
- The Applicant will dedicate two spaces in the residential garage for car sharing services to use with right of first refusal. These spaces will be convenient to the garage entrance, available to members of the car sharing 24 hours a day, seven days a week, without restrictions (the garage may be gated – members of the service would have access to the spaces via a key pad combinations to a pass code system or other similar device).
- The Applicant will place electronic message boards in the building lobby that provide real-time information on nearby transit services.

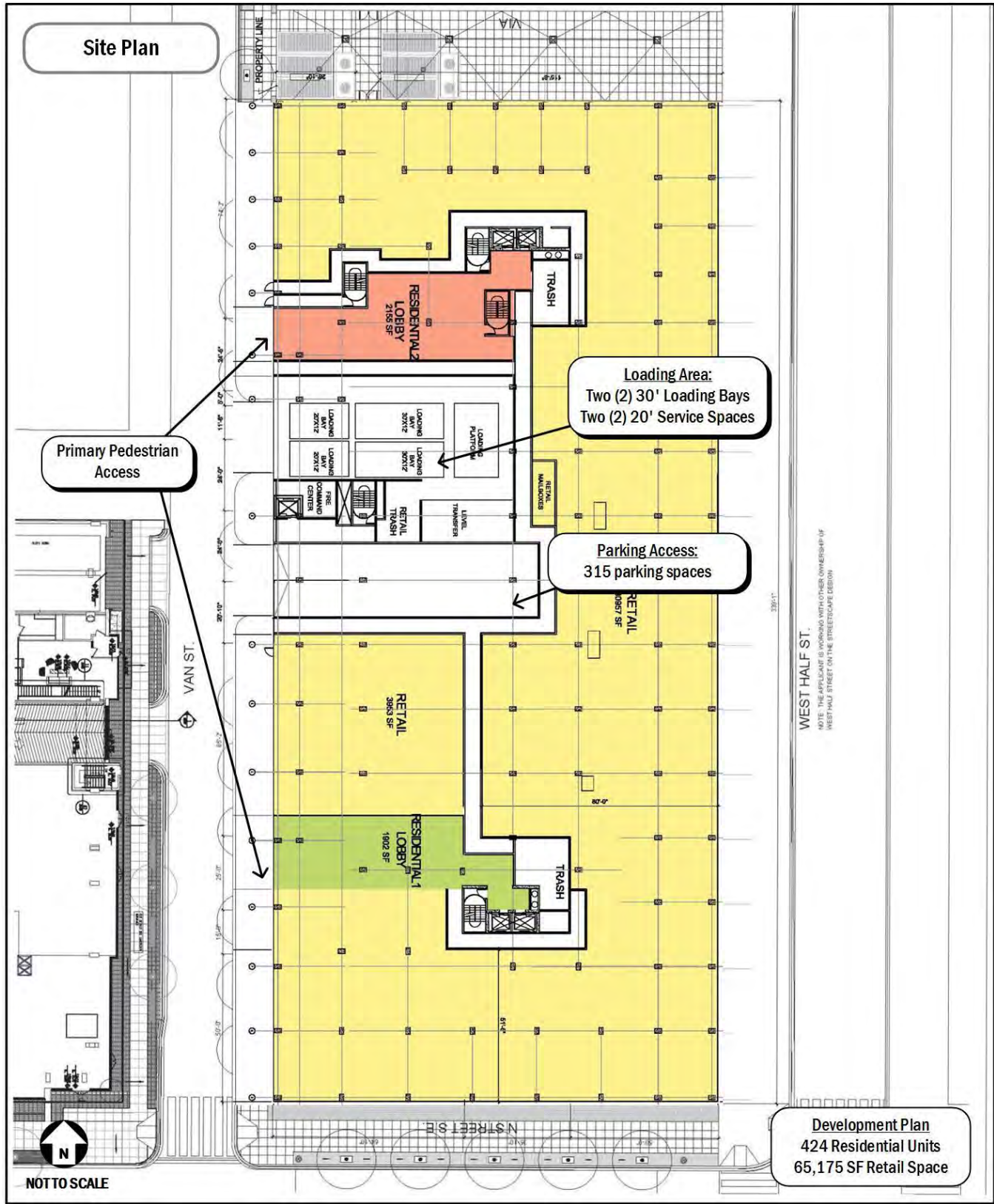


Figure 6: Site Plan

TRIP GENERATION

This section outlines the transportation demand of the proposed West Half Street project. It summarizes the projected trip generation of the site by land use (residential and retail) and by mode, which forms the basis for the chapters that follow.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation*, 9th Edition. This methodology was supplemented to account for the urban nature of the site (*Trip Generation* provides data for non-urban, low transit use sites) and to generate trips for multiple modes including vehicle, transit, biking, and walking.

Residential trip generation was calculated based on ITE land use 220, Apartment, splitting trips into different modes using assumptions derived from census data for the residents that currently live near the site and mode splits used for residential developments that have recently been studied. Mode splits were adjusted based on the anticipated parking supply.

Retail trip generation was calculated based on ITE land use 820, Shopping Center. Rates based on average vehicle trip ends per 1,000 square feet of gross leasable area were used. Mode splits for the retail portion of the site were based on information contained in WMATA's 2005 *Development-Related Ridership Survey* and mode splits used for retail uses of nearby developments that have recently been studied. A summary of

mode splits for all land uses within the development is shown on Table 5.

Table 5: Mode Split Summary

Land Use	Mode Split			
	Auto	Transit	Bike	Walk
Residential	45%	43%	4%	8%
Retail	40%	40%	5%	15%

It should be noted that due to the changes to the development program from the approved development to the proposed development, particularly the transition from office space to residential space, the overall trip generation for the development has decreased for both vehicular and non-auto modes. A summary of the multimodal trip generation for the proposed development, the approved development, and the difference between the two is provided in Table 4, Table 7, and Table 6, respectively, for the morning and afternoon peak hours. As shown, the vehicular trip generation decreases by 70 trips in the morning peak hour and 43 trips in the afternoon peak hour due to the updated development program. The non-auto trip generation decreases by 55 trips in the morning peak hour and 42 trips in the afternoon peak hour due to the updated development program. Detailed calculations are included in the Technical Appendix.

Table 4: Multi-Modal Trip Generation Summary (Proposed Development)

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Apartments	19 veh/hr	76 veh/hr	95 veh/hr	73 veh/hr	40 veh/hr	113 veh/hr
	Retail	16 veh/hr	9 veh/hr	25 veh/hr	46 veh/hr	51 veh/hr	97 veh/hr
	Total	35 veh/hr	85 veh/hr	120 veh/hr	119 veh/hr	91 veh/hr	210 veh/hr
Transit	Apartments	20 ppl/hr	82 ppl/hr	102 ppl/hr	79 ppl/hr	43 ppl/hr	122 ppl/hr
	Retail	28 ppl/hr	17 ppl/hr	45 ppl/hr	82 ppl/hr	90 ppl/hr	172 ppl/hr
	Total	48 ppl/hr	99 ppl/hr	147 ppl/hr	161 ppl/hr	133 ppl/hr	294 ppl/hr
Bike	Apartments	2 ppl/hr	8 ppl/hr	10 ppl/hr	7 ppl/hr	4 ppl/hr	11 ppl/hr
	Retail	3 ppl/hr	3 ppl/hr	6 ppl/hr	10 ppl/hr	12 ppl/hr	22 ppl/hr
	Total	5 ppl/hr	11 ppl/hr	16 ppl/hr	17 ppl/hr	16 ppl/hr	33 ppl/hr
Walk	Apartments	4 ppl/hr	15 ppl/hr	19 ppl/hr	15 ppl/hr	8 ppl/hr	23 ppl/hr
	Retail	10 ppl/hr	7 ppl/hr	17 ppl/hr	31 ppl/hr	34 ppl/hr	65 ppl/hr
	Total	14 ppl/hr	22 ppl/hr	36 ppl/hr	46 ppl/hr	42 ppl/hr	88 ppl/hr

Table 7: Multi-Modal Trip Generation Summary (Approved Development)

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Apartments	11 veh/hr	45 veh/hr	56 veh/hr	45 veh/hr	24 veh/hr	69 veh/hr
	Office	95 veh/hr	13 veh/hr	108 veh/hr	18 veh/hr	88 veh/hr	106 veh/hr
	Retail	16 veh/hr	10 veh/hr	26 veh/hr	37 veh/hr	41 veh/hr	78 veh/hr
	Total	122 veh/hr	68 veh/hr	190 veh/hr	100 veh/hr	153 veh/hr	253 veh/hr
Non-Auto	Apartments	17 ppl/hr	68 ppl/hr	85 ppl/hr	67 ppl/hr	36 ppl/hr	103 ppl/hr
	Office	95 ppl/hr	13 ppl/hr	108 ppl/hr	18 ppl/hr	88 ppl/hr	106 ppl/hr
	Retail	37 ppl/hr	24 ppl/hr	61 ppl/hr	119 ppl/hr	129 ppl/hr	248 ppl/hr
	Total	149 ppl/hr	105 ppl/hr	254 ppl/hr	204 ppl/hr	253 ppl/hr	457 ppl/hr

Table 6: Net Change in Proposed vs. Approved Trip Generation

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Net change in auto trips	-87 veh/hr	17 veh/hr	-70 veh/hr	19 veh/hr	-62 veh/hr	-43 veh/hr
Net change in non-auto trips	-82 ppl/hr	27 ppl/hr	-55 ppl/hr	20 ppl/hr	-62 ppl/hr	-42 ppl/hr



TRAFFIC OPERATIONS

This section provides a summary of an analysis of the existing and future roadway capacity in the study area. Included is an analysis of potential vehicular impacts of the West Half Street project 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 West Half Street project on the study area roadways; and
- Discuss potential improvements and mitigation measures to accommodate the additional vehicular trips.

This analysis was accomplished by determining the traffic volumes and roadway capacity for the following scenarios:

1. 2015 Existing Conditions
2. 2018 Background Conditions without the development (2018 Background)
3. 2018 Future Conditions with the development (2018 Total Future)

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

The following conclusions are reached within this chapter:

- The majority of intersections operate at an acceptable level of service during all analysis scenarios for both the morning and afternoon peak hours.
- Most intersections that operate at an unacceptable level of service during existing or background conditions will be improved as part of the South Capitol Street FEIS. Although the improvements will not be complete prior to completion of the West Half Street development, no further improvements are proposed.
- The northbound approach of Van Street at M Street operates at an LOS E during the afternoon peak hour of the Total Future conditions. Anticipated traffic volumes do not warrant a signal, and the proximity to adjacent signals could cause operational issues. Additionally, at the point in which the northbound approach degrades to an LOS E, the intersection of Van Street and N Street still has capacity, therefore it is expected that some drivers will

change their behavior and exit the site to the south to avoid excessive queues. With this said, no improvements are proposed at the intersection of M Street & Van Street.

- Overall, this report concludes that the project will not have a detrimental impact to the surrounding transportation network

STUDY AREA, SCOPE, & METHODOLOGY

This section outlines the vehicular trips generated in the study area along the vehicular access routes and defines the analysis assumptions.

The scope of the analysis contained within this report was discussed with and agreed to with DDOT. The general methodology of the analysis follows national and DDOT guidelines on the preparation of transportation impact evaluations of site development.

Capacity Analysis Scenarios

The vehicular analyses are performed to determine if the proposed development of the West Half Street project will lead to adverse impacts on traffic operations. (A review of impacts to each of the other modes is outlined later in this report.) This is accomplished by comparing future scenarios: (1) without the proposed development (referred to as the Background condition) and (2) with the development approved and constructed (referred to as the Total Future condition).

Specifically, the roadway capacity analysis examined the following scenarios:

1. 2015 Existing Conditions
2. 2018 Background Conditions without the development (2018 Background)
3. 2018 Future Conditions with the development (2018 Total Future)

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

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 decided upon during the study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the proposed development.

Although it is possible that impacts will occur outside of the study area, those impacts are not significant enough to be considered a detrimental impact nor worthy of mitigation measures.

Based on the projected future trip generation and the location of the site access points, the following intersections were chosen for analysis:

1. South Capitol Street & N Street
2. South Capitol Street SB & M Street
3. South Capitol Street NB & M Street
4. Van Street & M Street, SE
5. Van Street & N Street, SE
6. Half Street & M Street, SE
7. Half Street & N Street, SE
8. 1st Street & M Street, SE
9. 1st Street & N Street, SE
10. New Jersey Avenue & M Street, SE
11. Half Street & M Street, SW

Figure 7 shows a map of the study area intersections.

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, which was collected on Tuesday, April 28, 2015 and Thursday, May 15, 2014. The results of the traffic counts are included in the Technical Attachments. The existing peak hour traffic volumes are shown on Figure 8. For all intersections the individual morning and afternoon peak hours were used.

2018 Background Traffic Volumes (without the project)

The traffic projections for the 2018 Background conditions consist of the existing volumes with two additions:

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

Following national and DDOT 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, and discussed previously, eight developments were included in the 2018 Background scenario:

- Akridge at Half Street
- Gallery at Capitol Riverfront
- Half Street Phase II/Monument Properties
- 50 M Street
- Square 701
- Ballpark Hotel
- 1244 South Capitol Street
- One M Street/10 Van Street

Available background development traffic studies were used to determine the number of trips added for the background developments. These documents were used to determine the number of trips generated, the mode split percentages, and trip routing, as available. For developments that have updated development programs since being approved, the trip generation was recalculated accordingly.

When approved background studies were not available, trip generation for the background developments was calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation, 9th Edition. The Shopping Center trip rate was applied in lieu of individual trip rates, such as bank, pharmacy and supermarket, for the retail uses because applying individual rates would not account for interaction between the retail uses (shoppers visiting more than one store), and the Shopping Center trip rate does account for these uses and interactions. Additionally, the General Office Building, Hotel, and Residential Apartments rates were applied for office, hotel, and residential uses to estimate trips generated by the background developments.

Additionally, for this report, the Trip Generation methodology was supplemented to account for the urban nature of the site



(Trip Generation provides data for non-urban, low transit use sites). The WMATA Ridership Survey was used to determine transit reduction rates in order to account for trips taken by walking, bicycling, and transit. The mode split assumptions were based on the patterns and general findings from that document, observations of existing traffic, and the type and density of surrounding land uses. It was assumed that retail uses would generate a lot of local demand and therefore, have the highest assumed percentage of walking and biking trips. Residential based trips would be the most likely to use public transit, since they will be regular users that will be able to figure out and take advantage of the various routes and schedules. Although the location of the site near several major highways could lead to driving mode splits, the Metrorail, Metrobus, and DC Circulator service will be utilized to reach destinations in downtown areas of the District and to surrounding areas.

Table 9 summarizes the mode split assumptions for the background developments with no available approved study. The mode split assumptions were applied to the base trip

generation for the background developments as a reduction to the vehicular trips estimated by Trip Generation.

Table 9: Background Non-Auto Reduction Assumptions

Land Use	Non-Auto Reduction
Office	50%
Residential	55%
Retail	60%
Hotel	45%

Based on the available background studies and the trips estimated following the methodology outlined above, Table 8 shows the total number of trips generated by the background developments. Detailed trip generation tables are included in the Technical Attachments.

These trips were then distributed and assigned to the network based on the direction of approach included in the background study. Where a background study was not available, trips generated by the background developments were distributed using an analysis based on Metropolitan Washington Council of

Table 8: Summary of Background Trip Generation

Development	Trip Generation					
	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Akridge at Half Street						
Total Vehicular Trips	180	30	210	50	171	221
Gallery at Capitol Riverfront						
Total Vehicular Trips	17	60	77	65	39	104
Half Street Phase II/Monument Properties						
Half Street Hotel	10	7	17	14	12	26
Half Street Residential	31	74	105	107	80	187
50 M Street						
Total Vehicular Trips	32	22	54	38	32	70
Square 701						
Total Vehicular Trips	212	96	308	141	229	370
Ballpark Hotel						
Total Vehicular Trips	12	7	19	13	12	25
1244 South Capitol Street						
Total Vehicular Trips	16	36	52	47	36	83
One M Street/10 Van Street						
Office/Retail Building	105	16	121	22	98	120
Residential Building	8	30	38	32	17	49
Total	623	378	1001	529	726	1255

Governments (MWCOC) transportation planning models, as shown in Figure 9. Data from Traffic Analysis Zones (TAZs), including home-based and non-home-based trips, were used to determine the inbound and outbound vehicular trip distribution. The data used encompassed trips to and from the Southwest Waterfront development in 2010 and 2030. The data obtained from the MWCOC model was used in order to estimate the directions of approach for the study area. One trip distribution was assumed for all land uses because the MWCOC data for Southwest Waterfront aggregated all land uses for each TAZ.

While the background developments represent local traffic changes, regional traffic growth is typically accounted for using percentage growth rates. The growth rates used in this analysis were derived using the Metropolitan Washington Council of Government's (MWCOC) currently adopted regional transportation model and historic AADT volumes. These background growth rates, summarized in Table 10, were applied to thru movements at study area intersections.

The traffic volumes generated by the background developments and the inherent growth along the network were added to the existing traffic volumes in order to establish the 2018 Background traffic volumes. The traffic volumes for the 2018 Background conditions are shown on Figure 10.

Table 10: Summary of Background Growth Rates

Road & Direction	Proposed Annual Growth Rate		Total Growth between 2015 and 2018	
	AM Peak	PM Peak	AM Peak	PM Peak
S Capitol St NB	0.25%	0.32%	0.8%	1.0%
S Capitol St SB	0.77%	0.56%	2.3%	1.7%
M Street	1.00%	1.00%	3.0%	3.0%
1st Street	1.00%	1.00%	3.0%	3.0%
New Jersey Ave	1.00%	1.00%	3.0%	3.0%

2018 Total Future Traffic Volumes (with the project)

The 2018 Total Future traffic volumes consist of the 2018 Background volumes with the addition of the traffic volumes generated by the proposed development (site-generated trips). Thus, the 2018 Total Future traffic volumes include traffic generated by: the existing volumes, background developments, the inherent growth on the study area roadways, and the proposed project.

The trip distribution for project generated trips was assembled based on a review of existing traffic patterns and flow data from CTPP (Census Transportation Planning Products). Separate distributions were developed for the residential and retail components of the project. The residential trip distribution was influenced significantly by the CTPP TAZ flow data for drivers commuting from the site's TAZ and adjusted based on traffic volumes and patterns. The retail distribution was mostly based on locations of other retail centers, with some influence on the CTPP TAZ flow data for drivers commuting to the site's TAZ (representing retail employees that drive). Thus, the retail trip distribution is weighted more towards nearby residential areas and less on regional origins.

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. A summary of trip distribution assumptions is provided on Figure 11 with more specific trip routing shown on Figure 12.

The traffic volumes for the 2018 Total Future conditions were calculated by adding the development-generated traffic volumes to the 2018 Background traffic volumes. Thus, the future condition with the proposed development scenario includes traffic generated by: existing volumes, background developments through the year 2018, inherent growth on the network, and the proposed West Half Street development. The site-generated traffic volumes are shown on Figure 13 and the 2018 Total Future traffic volumes are shown on Figure 14.

Geometry and Operations Assumptions

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

Existing Geometry and Operations Assumptions

The geometry and operations assumed in the existing conditions scenario are those present when the main data collection occurred. 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 DDOT and confirmed during field reconnaissance.

The lane configurations and traffic controls for the Existing conditions are shown on Figure 15.



Future Geometry and Operations Assumptions

Following national and DDOT 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, one background improvement was included in the future scenarios. As part of the One M Street development, the northbound approach of Van Street at M Street will be restricted to right-in/right-out movements only. The lane configurations and traffic controls for the 2018 Background and Total Future conditions are shown on Figure 16.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the three scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. *Synchro*, Version 8.0 was used to analyze the study intersections. Capacity analysis results were reported using Highway Capacity Manual 2010 (HCM 2010) methodologies, or HCM 2000 methodologies where nonstandard lane configurations and/or operations were in effect.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. 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 D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

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 approach 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 Attachments.

Table 11 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2018 Background, and 2018 Total Future scenarios. The capacity analysis results are shown on Figure 17 for the morning peak hour and Figure 18 for the afternoon peak hour.

The majority of study intersections operate at acceptable conditions during the morning and afternoon peak hours for the Existing, 2018 Background, and 2018 Future scenarios. However, the following intersections operate under unacceptable conditions during one or more peak hour:

- *South Capitol Street and N Street*
The westbound approach of N Street, and the southeastbound thru lane and southeastbound right turn lane of the South Capitol Street ramp operate under unacceptable conditions during the existing morning peak hour. The overall intersection, the westbound approach of N Street, and the southeastbound thru lane of the South Capitol Street ramp operate under unacceptable conditions during the existing afternoon peak hour. The addition of the background trips, inherent growth along South Capitol Street, and site-generated traffic volumes exacerbate these failing operations.
- *South Capitol Street SB Ramp and M Street*
The eastbound approach of M Street at South Capitol Street operates under unacceptable conditions during the existing morning and afternoon peak hours. The addition of the background trips and inherent growth along M Street causes the South Capitol Street southbound ramp to operate under unacceptable conditions during the morning peak hour. Site-generated traffic volumes exacerbate these failing operations.
- *South Capitol Street NB Ramp and M Street*
The westbound approach of M Street at South Capitol Street northbound operates under unacceptable conditions during the morning peak hour in the existing conditions. The addition of background trips and inherent growth along M Street causes the South Capitol Street northbound ramp to operate under unacceptable conditions during the afternoon peak hour. Site-generated traffic volumes exacerbates these failing operations.

- M Street SE and Van Street SE

The northbound approach of Van Street SE at M Street SE is projected to operate under unacceptable conditions during the afternoon peak hour in the 2018 Total Future conditions.

- M Street & Half Street SW

The southbound approach of Half Street SW at M Street operates under unacceptable conditions during the afternoon peak hour in the existing conditions. The addition of background trips, inherent growth along M Street, and site-generated traffic volumes have little impact on the operations at this approach.

Generally speaking, the proposed development is considered to have an impact at an intersection within the study area if the capacity analyses show an LOS E or LOS F at an intersection or along an approach in the future conditions with the proposed development where one does not exist in the existing or background conditions, or when delay at an intersection or approach operating under LOS E or LOS F increase by more than 5 seconds, when compared to the background conditions. Following these guidelines, only one intersection is impacted by the development.

- The northbound approach of Van Street at M Street during the PM peak hour

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at the study intersections. The queuing analysis was performed using the *Synchro* software. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. Table 12 shows the queuing results for the study area intersections.

The proposed development is considered to have an impact to queuing if the analyses show an increase in the 95th percentile queue length of greater than 150 feet, when compared to the background scenario. Based on this criteria, there are no intersections that observe queuing impacts as a result of the development.

Improvements

Mitigation measures for the impacted intersection were analyzed to determine potential improvements as follows:

- M Street SE and Van Street SE

The northbound movement of Van Street at M Street SE is projected to operate at an LOS E in the 2018 Total Future conditions. Although the unacceptable conditions do not appear until the Total Future conditions, the background developments also play a large role in the unacceptable operations.

Currently the parcels surrounding the site are relatively undeveloped and by 2018 nearly all parcels will be redeveloped into mixed-use developments with access along Van Street. The combined added volumes from the background developments and the West Half Street development cause the unacceptable delay along Van Street at M Street.

One potential improvement at this location would be the installation of a traffic signal. However, based on the capacity analysis, traffic volumes at this intersection do not warrant a signal and the proximity to adjacent signals along M Street would be challenging on an operations standpoint.

Additionally, there is vehicular capacity at the intersection of Van Street and N Street. At the point in which the northbound approach of Van Street at M Street reaches LOS E drivers are likely to change their driving patterns to avoid queues and exit to the south of the site as an alternative. For these reasons, no improvements are recommended at this intersection.

All other intersections in the study area with unacceptable levels of delay incur capacity issues regardless of the development. Although this is the case, this section of the report reviews the capacity concerns at these locations.

The majority of these intersections are studied in the South Capitol Street FEIS, with the exception of the intersection of M Street and Half Street SW, which does not show any degradations due to the proposed development. The FEIS preferred alternative contains improvements at each of these intersections, although they are expected to be in place after 2018 and are thus not incorporated into the analysis. As stated previously, the goal of the South Capitol Street FEIS is to

address the problems of the corridor in a way that both addresses the transportation issues, while also revitalizing the surrounding neighborhoods south of the National Mall and transforming the roadway into a grand urban gateway in to the District.

The future South Capitol Street corridor will correct design deficiencies, improving safety issues for all users, including drivers, transit riders, pedestrians, and bicyclists, as well as providing key connections in the local, regional, and national transportation network. Since the goals of the FEIS are not solely based on improving vehicular levels of service, the delays shown along South Capitol Street are not necessarily expected to be mitigated after construction of the preferred alternative. This report defers to the conclusions reached in the FEIS and recommends the preferred alternative be implemented in the long-term. Therefore, no improvements are recommended along the South Capitol Street corridor.

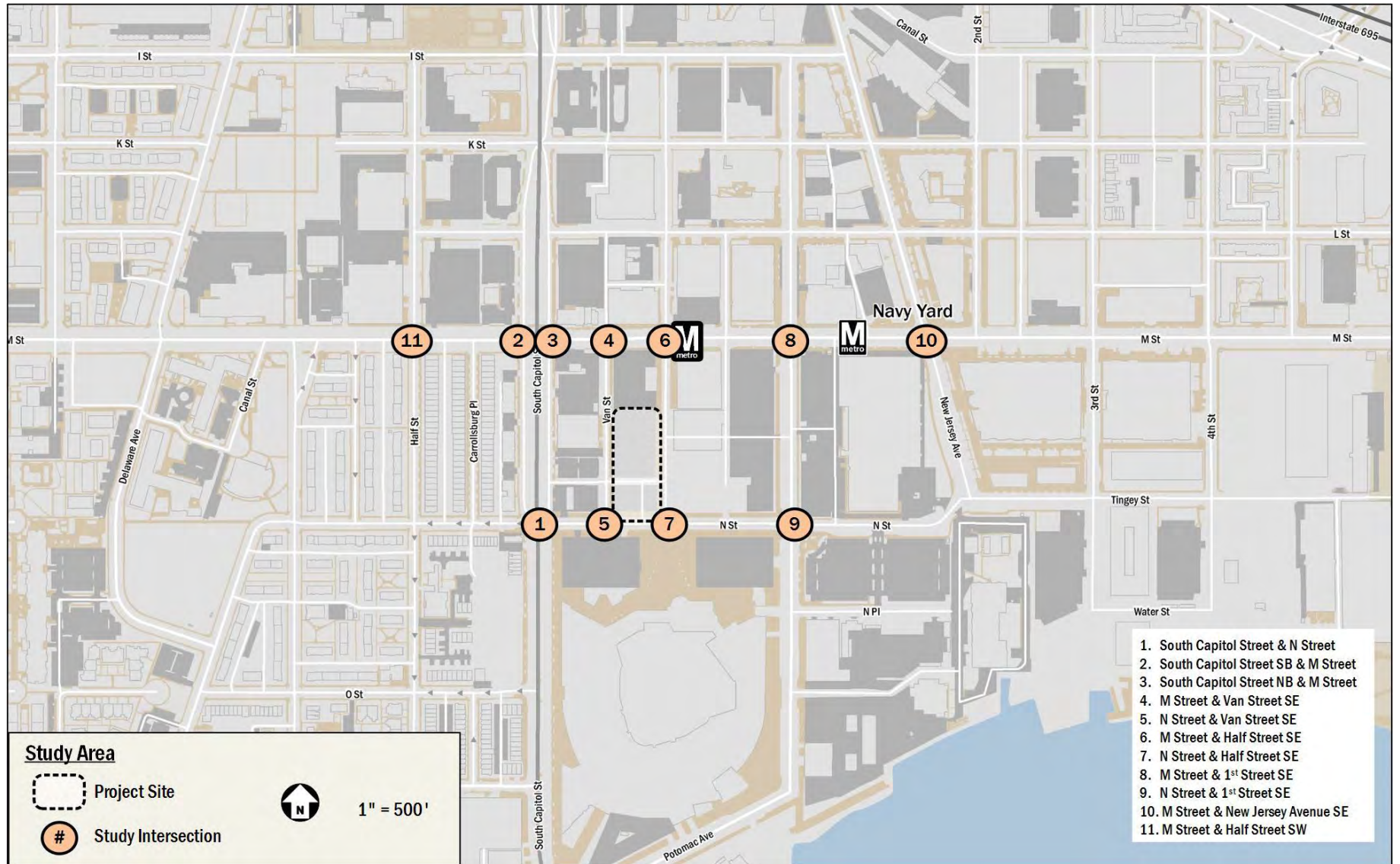


Figure 7: Study Area

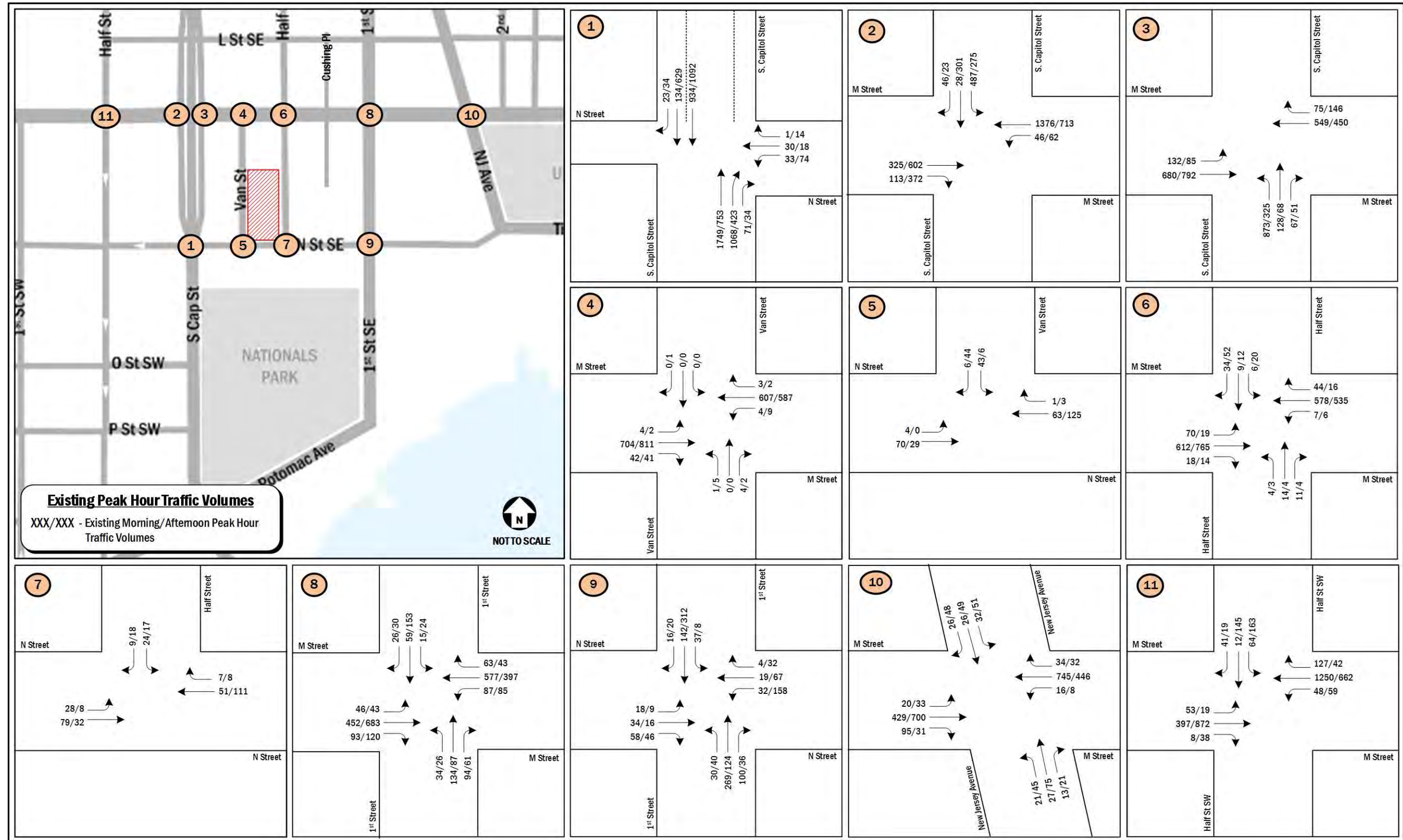


Figure 8: Existing Peak Hour Traffic Volumes

27

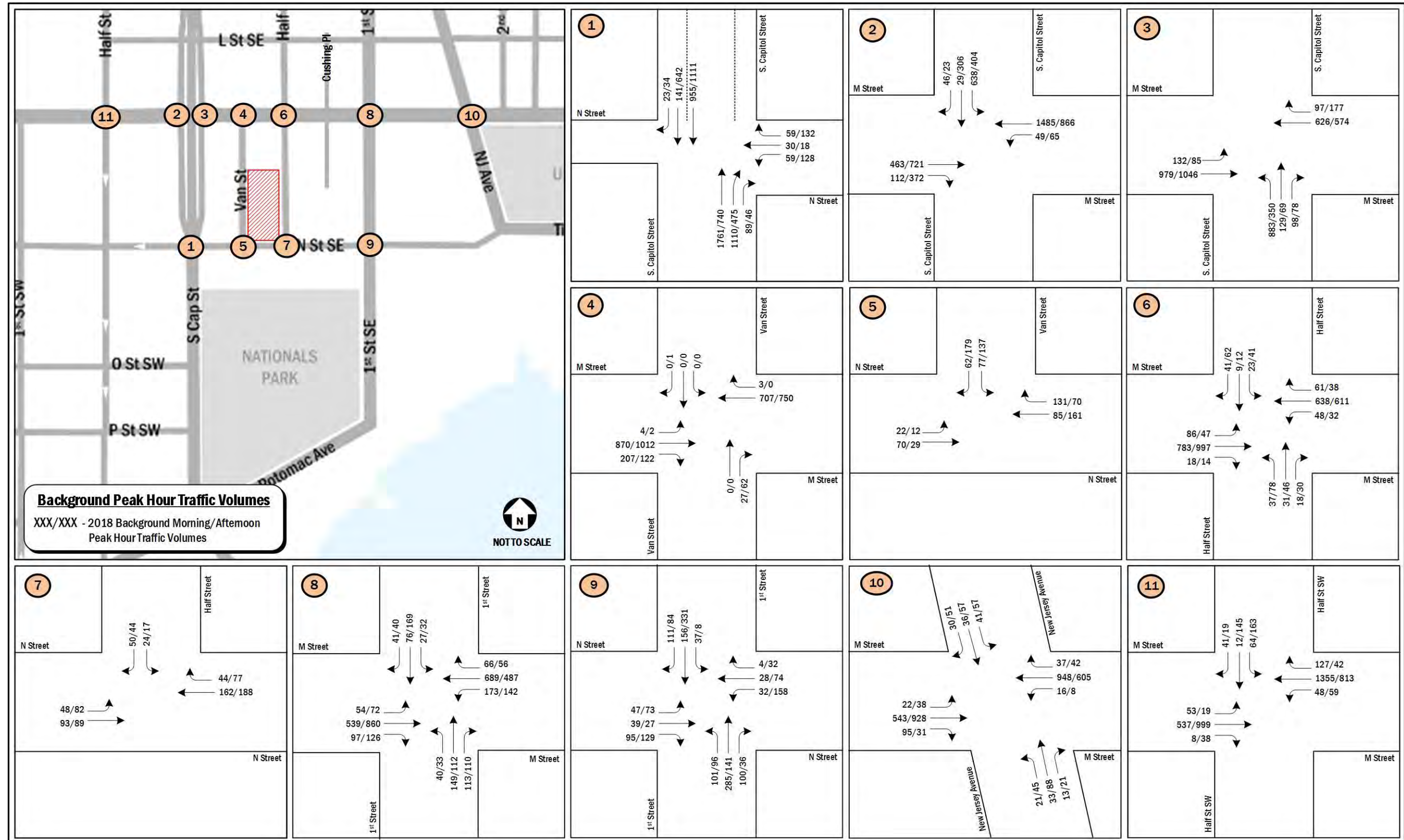


Figure 10: Background Peak Hour Traffic Volumes



Figure 11: West Half Street Trip Distribution

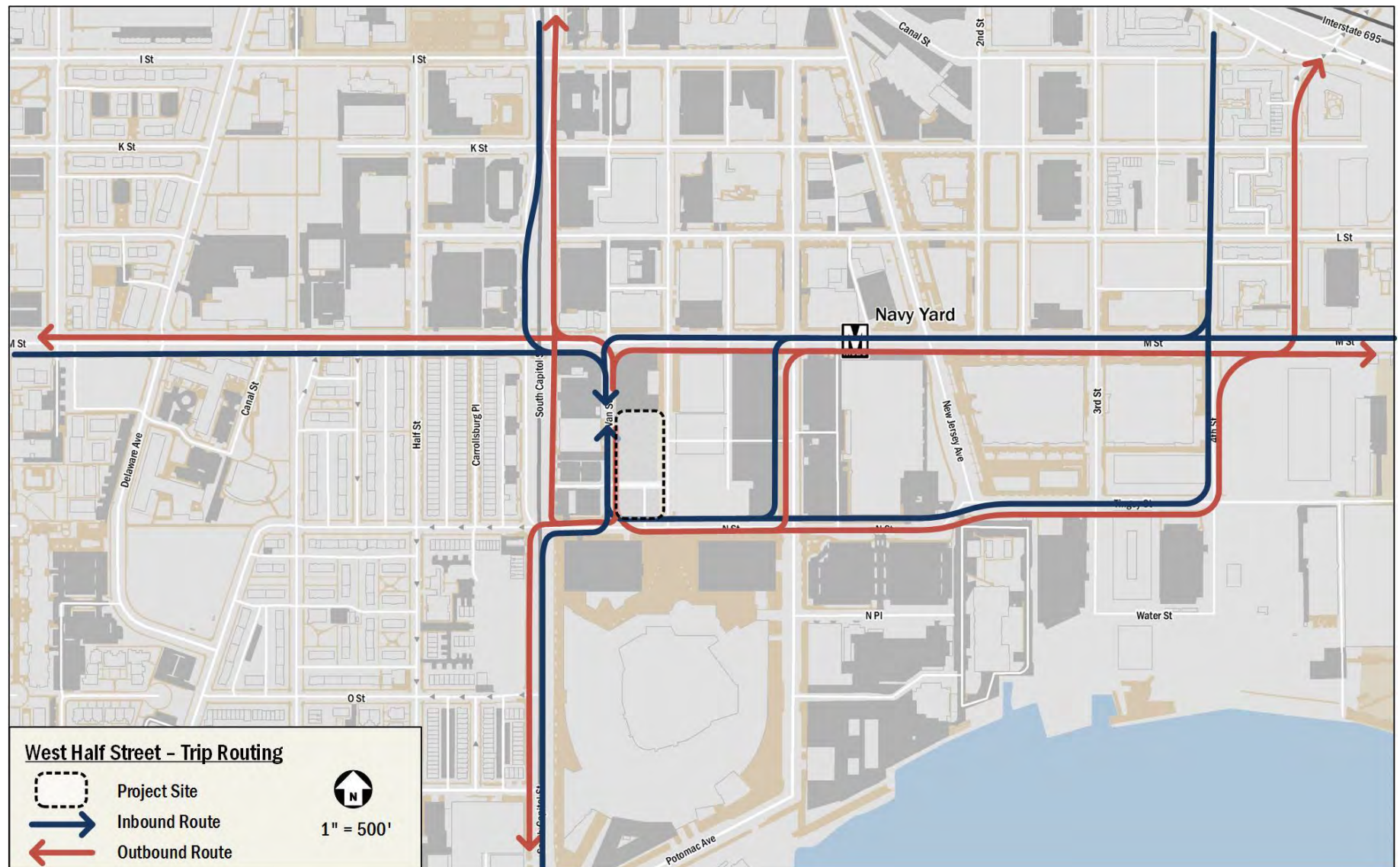


Figure 12: West Half Street Trip Routing

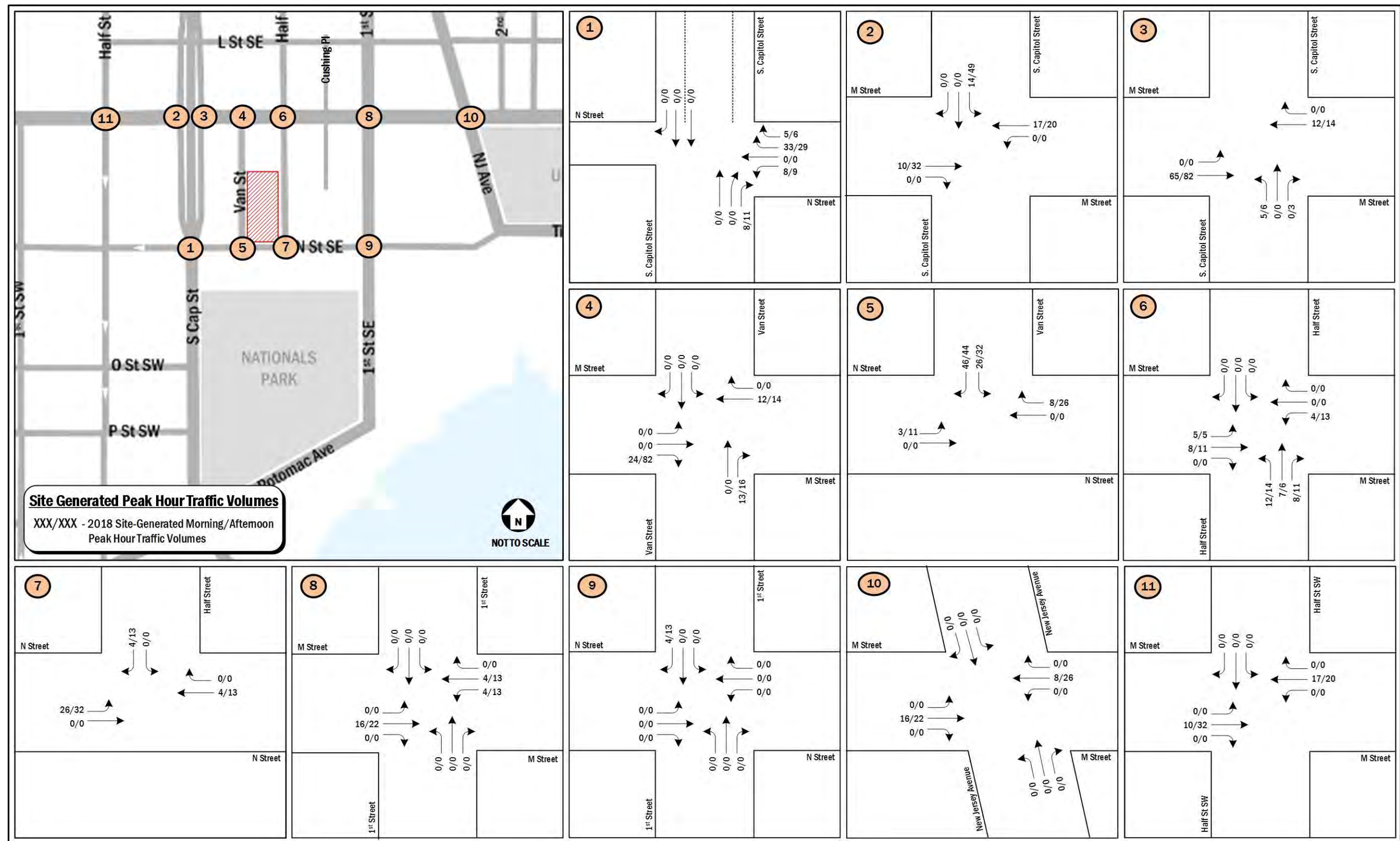


Figure 13: Site-Generated Peak Hour Traffic Volumes

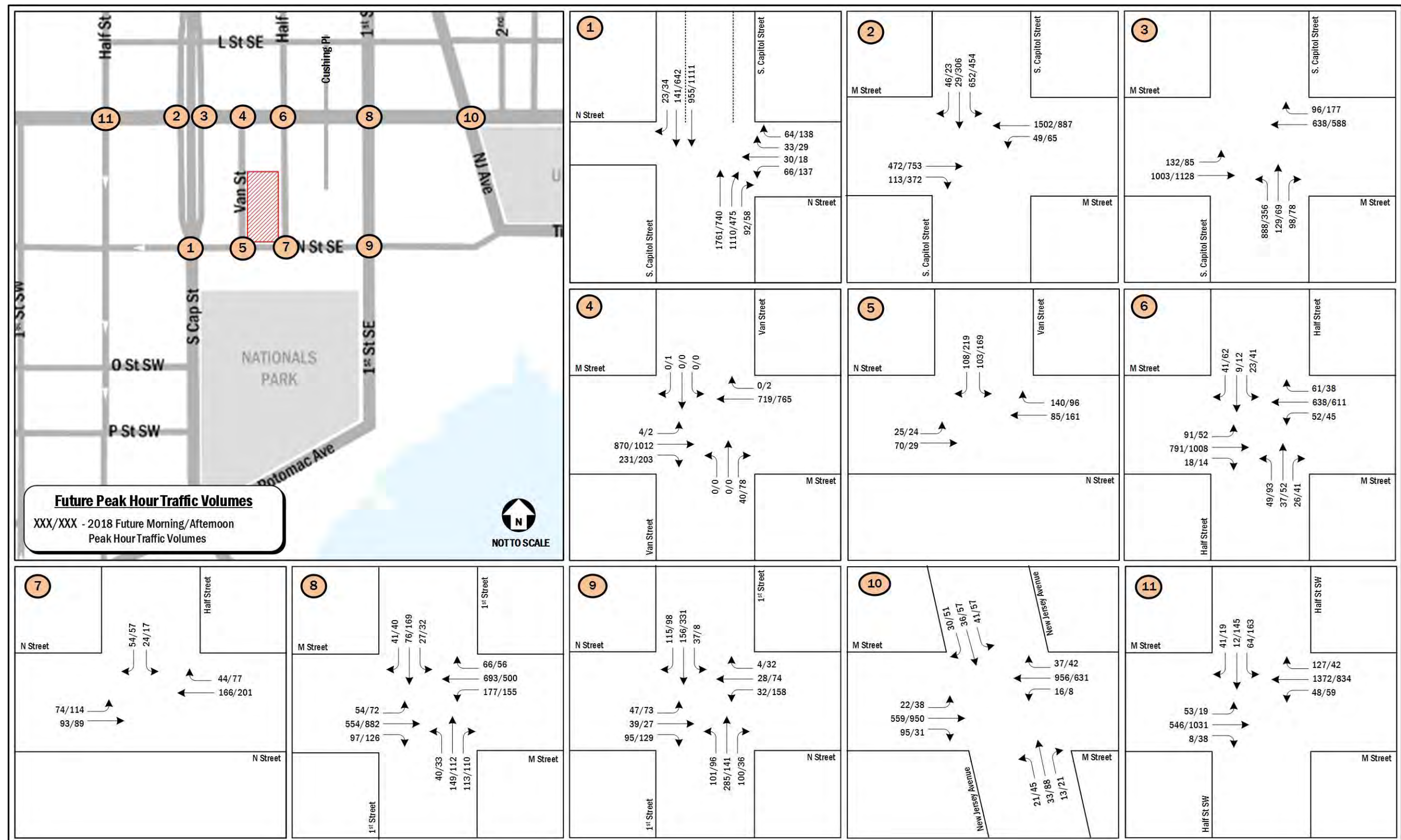


Figure 14: Total Future Peak Hour Traffic Volumes

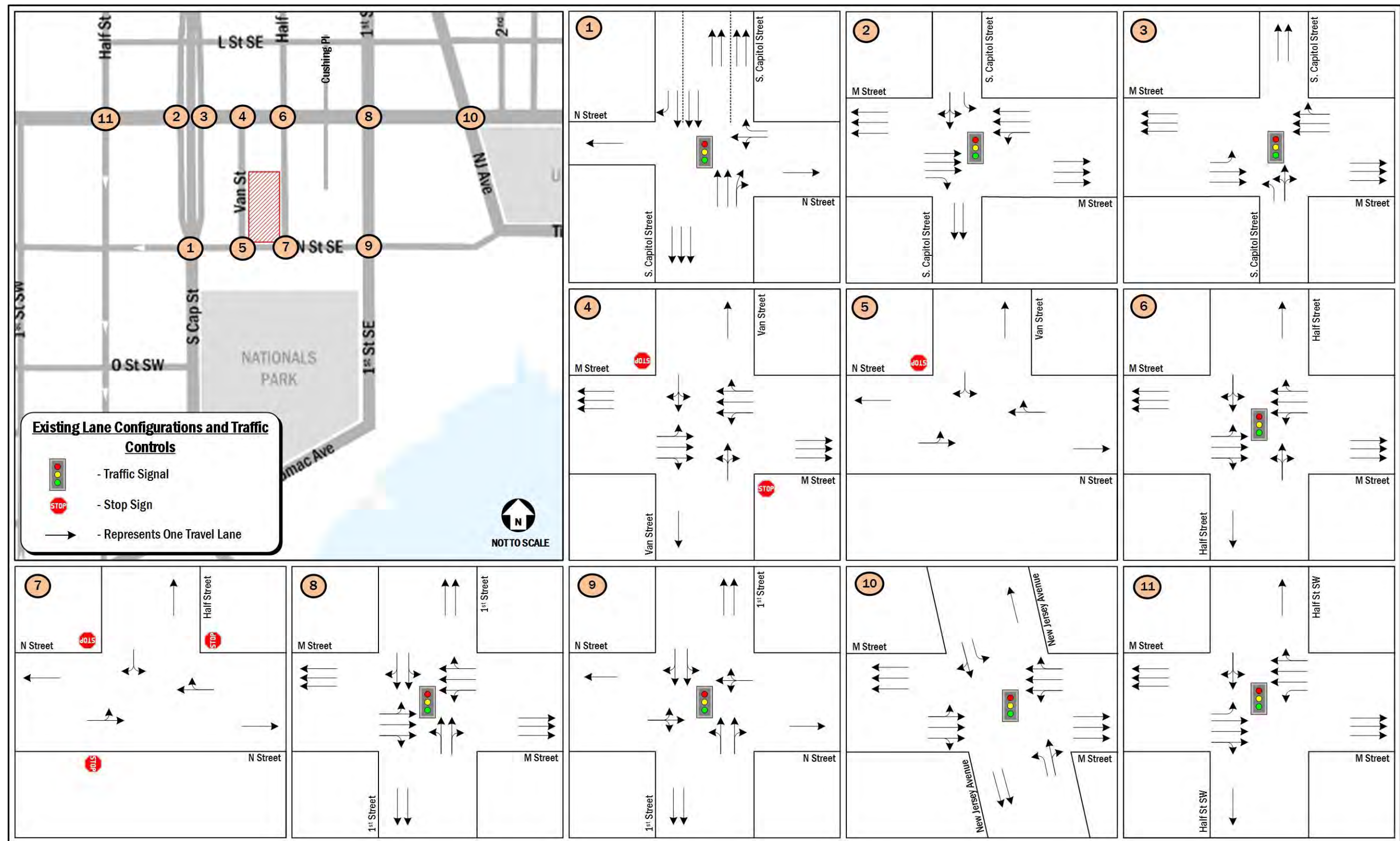


Figure 15: Existing Lane Configuration and Traffic Control

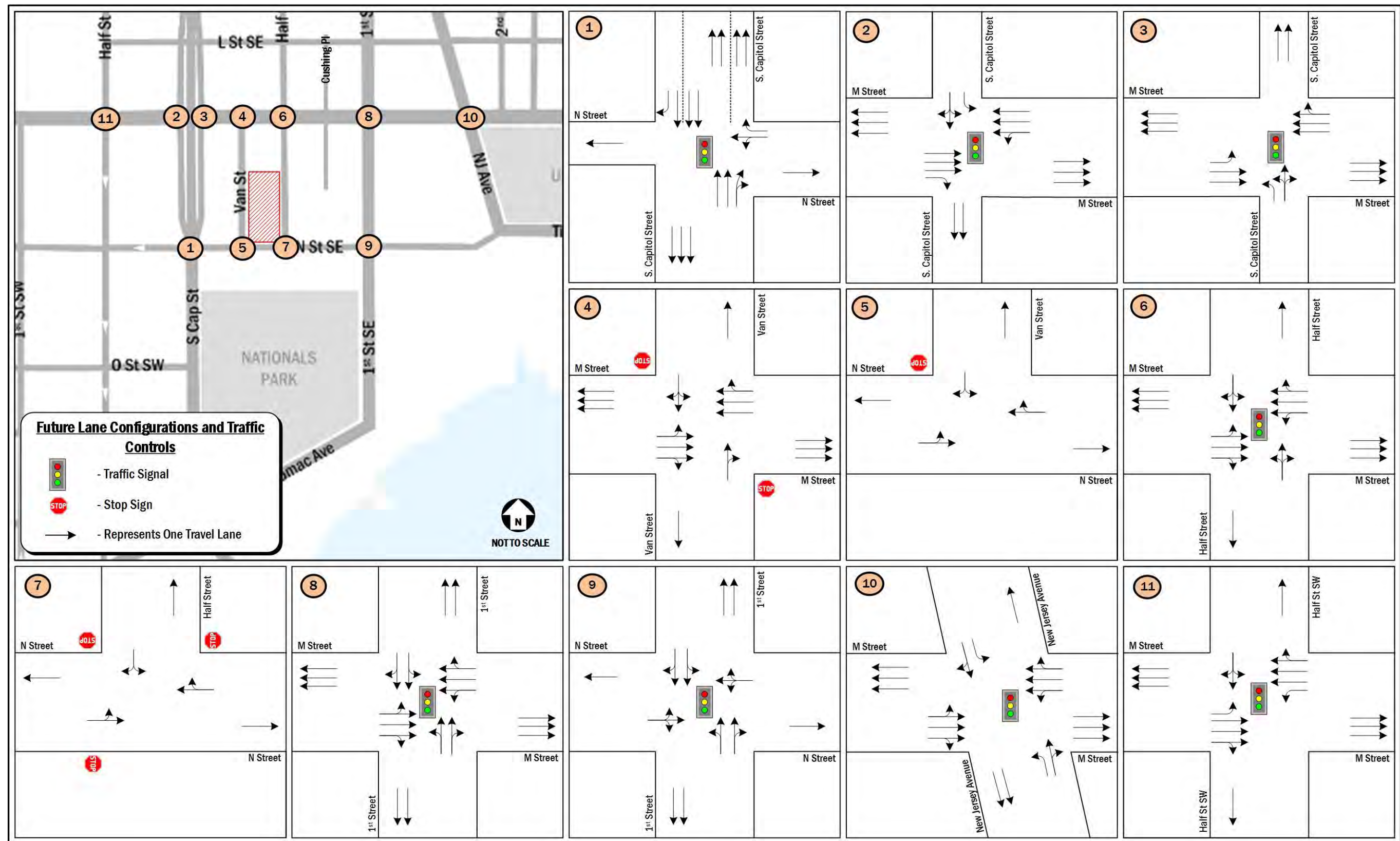


Figure 16: Future Lane Configuration and Traffic Control



Table 11: LOS Results

Intersection	Approach	Existing Conditions				Future Background Conditions (2018)				Total Future Conditions (2018)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
N Street & South Capitol Street	Overall	21.7	C	118.2	F	30.6	C	120.8	F	40.2	D	120.8	F
	Westbound	75.1	E	71.2	E	70.5	E	74.3	E	70.1	E	70.9	E
	Northbound	20.9	C	3.4	A	32.0	C	5.0	A	44.2	D	6.1	A
	Southbound	10.6	B	20.1	C	12.4	B	23.6	C	14.6	B	26.2	C
	Southeastbound Thru	83.8	F	521.6	F	87.2	F	540.7	F	87.2	F	540.7	F
	Southeastbound Right	57.5	E	47.6	D	57.5	E	47.6	D	57.5	E	47.6	D
M Street & South Capitol Street SB	Overall	29.4	C	44.2	D	36.6	D	45.1	B	38.1	D	46.3	D
	Eastbound	86.9	F	81.9	F	90.1	F	83.3	F	91.0	F	83.7	F
	Westbound	2.9	A	2.2	A	5.0	A	2.5	A	5.5	A	2.5	A
	Southbound	46.5	D	41.6	D	56.9	E	46.7	D	60.2	E	50.3	D
M Street & South Capitol Street NB	Overall	39.6	D	24.7	C	52.1	D	25.8	C	53.2	D	25.5	C
	Eastbound	1.9	A	1.6	A	2.4	A	2.3	A	2.5	A	2.4	A
	Westbound	80.4	F	36.5	D	133.2	F	38.8	D	137.3	F	39.0	D
	Northbound	43.5	D	50.8	D	45.8	D	55.5	E	47.7	D	56.1	E
M Street & Van Street SE	Eastbound Left	11.6	B	11.6	B	12.4	B	13.0	B	12.4	B	13.2	B
	Westbound Left	12.9	B	14.4	B	18.7	C	0.0	A	17.0	C	0.0	A
	Northbound	15.1	C	23.7	C	28.7	D	27.5	D	18.1	C	38.2	E
	Southbound	0.0	A	12.8	B	0.0	A	13.8	B	0.0	A	13.9	B
N Street & Van Street SE	Eastbound Left	7.5	A	0.0	A	7.8	A	7.9	A	7.9	A	8.0	A
	Southbound	9.9	A	9.6	A	12.5	B	16.5	C	14.9	B	23.7	C
M Street & Half Street SE	Overall	10.4	B	7.2	A	16.6	B	9.6	A	16.4	B	10.1	B
	Eastbound	9.9	A	9.9	A	11.9	B	11.2	B	11.9	B	11.3	B
	Westbound	9.4	A	0.5	A	20.3	C	0.7	A	20.0	B	1.0	A
	Northbound	20.5	C	20.3	C	22.3	C	23.4	C	22.4	C	24.5	C
	Southbound	20.8	C	22.0	C	21.3	C	22.6	C	21.2	C	22.6	C
N Street & Half Street SE	Overall	7.7	A	7.7	A	8.7	A	9.3	A	9.0	A	9.8	A
	Eastbound	7.8	A	7.5	A	8.9	A	9.1	A	8.9	A	9.7	A
	Westbound	7.5	A	7.8	A	8.7	A	9.7	A	9.3	A	10.2	B
	Southbound	7.6	A	7.4	A	8.1	A	8.2	A	8.3	A	8.5	A
M Street & 1st Street SE	Overall	16.5	B	5.8	A	20.9	C	6.5	A	20.1	C	6.4	A
	Eastbound	19.8	B	1.0	A	22.4	C	1.5	A	22.1	C	1.6	A
	Westbound	10.1	B	0.7	A	16.2	B	0.8	A	14.6	B	0.9	A



Intersection	Approach	Existing Conditions				Future Background Conditions (2018)				Total Future Conditions (2018)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
N Street & 1st Street SE	Northbound	23.7	C	22.7	C	30.9	C	24.1	C	31.1	C	24.1	C
	Southbound	21.8	C	22.9	C	22.8	C	23.5	C	22.9	C	23.5	C
	Overall	9.9	A	18.9	B	11.7	B	20.9	C	10.8	B	21.1	C
	Eastbound	26.6	C	14.5	B	30.3	C	18.5	B	29.8	C	18.5	B
	Westbound	25.1	C	17.6	B	25.6	C	19.4	B	25.6	C	19.4	B
	Northbound	7.3	A	14.9	B	7.9	A	19.0	B	7.9	A	19.2	B
	Southbound	0.2	A	23.7	C	0.3	A	25.0	C	0.4	A	25.2	C
M Street & New Jersey Avenue SE	Overall	15.1	B	15.4	B	16.2	B	18.7	B	16.4	B	19.0	B
	Eastbound	9.6	A	12.7	B	10.7	B	18.7	B	10.7	B	19.3	B
	Westbound	17.4	B	15.7	B	18.8	B	16.6	B	19.0	B	16.8	B
	Northbound	20.7	C	21.9	C	20.8	C	22.2	C	20.8	C	22.2	C
	Southbound	21.6	C	22.5	C	22.1	C	22.9	C	22.1	C	22.9	C
M Street & Half Street SW	Overall	4.8	A	16.9	B	5.0	A	14.7	B	5.0	A	14.5	B
	Eastbound	7.8	A	8.5	A	8.1	A	8.9	A	8.1	A	8.9	A
	Westbound	0.9	A	2.9	A	1.0	A	0.5	A	1.0	A	0.5	A
	Southbound	40.7	A	69.4	E	40.7	D	69.4	E	40.7	D	69.4	E



Table 12: Queuing Results

Intersection	Approach	Storage Length (ft)	Existing Conditions				Future Background Conditions (2018)				Total Future Conditions (2018)			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
N Street & South Capitol Street	Westbound LT	150	67	118	92	151	92	151	145	215	135	202	183	261
	Westbound Right	100	6	23	14	36	28	61	132	200	64	111	134	201
	Northbound Thru	505	260	378	72	112	303	446	88	137	363	534	102	153
	Northbound Right	505	~1305	#1619	90	159	~1416	#1736	137	243	~1509	#1839	164	282
	Southbound	1610	217	286	344	445	236	315	383	502	259	349	406	529
	Southeastbound Thru	550	140	#241	~997	#1240	147	#259	~1025	#1269	147	#259	~1025	#1269
	Southeastbound Right	550	0	0	0	13	0	0	0	13	0	0	0	13
M Street & South Capitol St SB	Eastbound Thru	300	117	142	154	m193	165	190	196	m238	172	197	206	m250
	Eastbound Right	300	4	74	74	m113	5	74	76	m126	5	75	78	m128
	Westbound LT	55	27	m32	13	12	42	m43	16	15	49	m49	16	16
	Southbound Left	300	216	324	177	269	282	#446	282	409	297	#476	311	#476
	Southbound LTR	300	206	310	270	391	278	#444	292	421	291	#467	316	#480
M Street & South Capitol St NB	Eastbound Left	55	7	m27	0	m0	7	m8	0	m0	6	m6	0	m0
	Eastbound Thru	55	8	3	33	31	26	14	58	48	31	20	66	52
	Westbound TR	365	194	#281	139	179	~263	#353	188	235	~268	#358	193	241
	Northbound Left	550	427	#644	200	276	449	#680	229	312	462	#698	230	313
	Northbound LTR	550	425	645	186	262	436	#665	208	290	449	#686	214	296
M Street & Van Street SE	Eastbound Left	150	--	0	--	0	--	0	--	0	--	0	--	0
	Westbound Left	155	--	0	--	3	--	18	--	0	--	0	--	0
	Northbound	590	--	3	--	5	--	28	--	60	--	15	--	100
	Southbound	335	--	--	--	0	--	--	--	0	--	--	--	0
N Street & Van Street SE	Eastbound LT	150	--	0	--	0	--	0	--	0	--	3	--	3
	Southbound	590	--	8	--	8	--	35	--	95	--	68	--	170
M Street & Half Street SE	Eastbound	160	28	46	35	64	57	100	86	147	58	103	99	151
	Westbound	160	118	153	13	21	150	187	21	32	142	179	22	32
	Northbound	590	11	30	4	16	61	84	88	112	63	85	107	136
	Southbound	300	8	39	20	47	15	50	33	56	15	48	32	56
N Street & Half Street SE	Eastbound	155	--	13	--	5	--	23	--	25	--	23	--	33
	Westbound	340	--	8	--	15	--	28	--	45	--	35	--	50
	Southbound	590	--	5	--	5	--	10	--	8	--	10	--	10
M Street & 1st Street SE	Eastbound	345	82	136	115	153	155	180	65	80	156	181	68	84



Intersection	Approach	Storage Length (ft)	Existing Conditions				Future Background Conditions (2018)				Total Future Conditions (2018)			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
	Westbound	380	146	184	22	30	189	230	25	32	193	235	26	33
	Northbound	590	36	67	28	58	41	76	31	67	43	78	31	67
	Southbound	280	18	32	41	69	26	40	48	80	26	41	48	80
N Street & 1st Street SE	Eastbound	370	23	65	10	25	53	118	75	97	55	117	75	97
	Westbound	500	29	50	92	160	34	57	100	181	34	57	100	181
	Northbound	230	33	53	30	50	51	77	47	74	50	75	47	74
	Southbound	590	13	23	55	89	12	24	65	110	0	20	66	111
M Street & New Jersey Avenue SE	Eastbound	380	66	110	54	90	118	150	102	154	119	151	107	159
	Westbound	525	106	139	58	82	139	180	83	113	143	185	87	117
	Northbound Left	485	11	23	19	45	11	23	19	45	11	23	19	45
	Northbound TR	485	14	29	37	73	16	32	45	85	17	33	45	85
	Southbound Left	70	16	33	21	50	21	39	24	56	21	39	24	56
	Southbound TR	290	26	46	39	79	32	54	14	87	33	54	44	87
M Street & Half Street SW	Eastbound Left	180	20	53	5	14	21	60	5	14	22	66	5	14
	Eastbound TR	300	45	55	99	120	61	72	117	141	64	75	122	146
	Westbound Left	185	16	m38	40	m86	16	m34	42	m88	16	m33	42	m88
	Westbound TR	310	287	319	176	225	304	317	226	278	311	323	232	285
	Southbound	300	74	126	284	#439	74	126	284	#439	74	126	284	#439

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

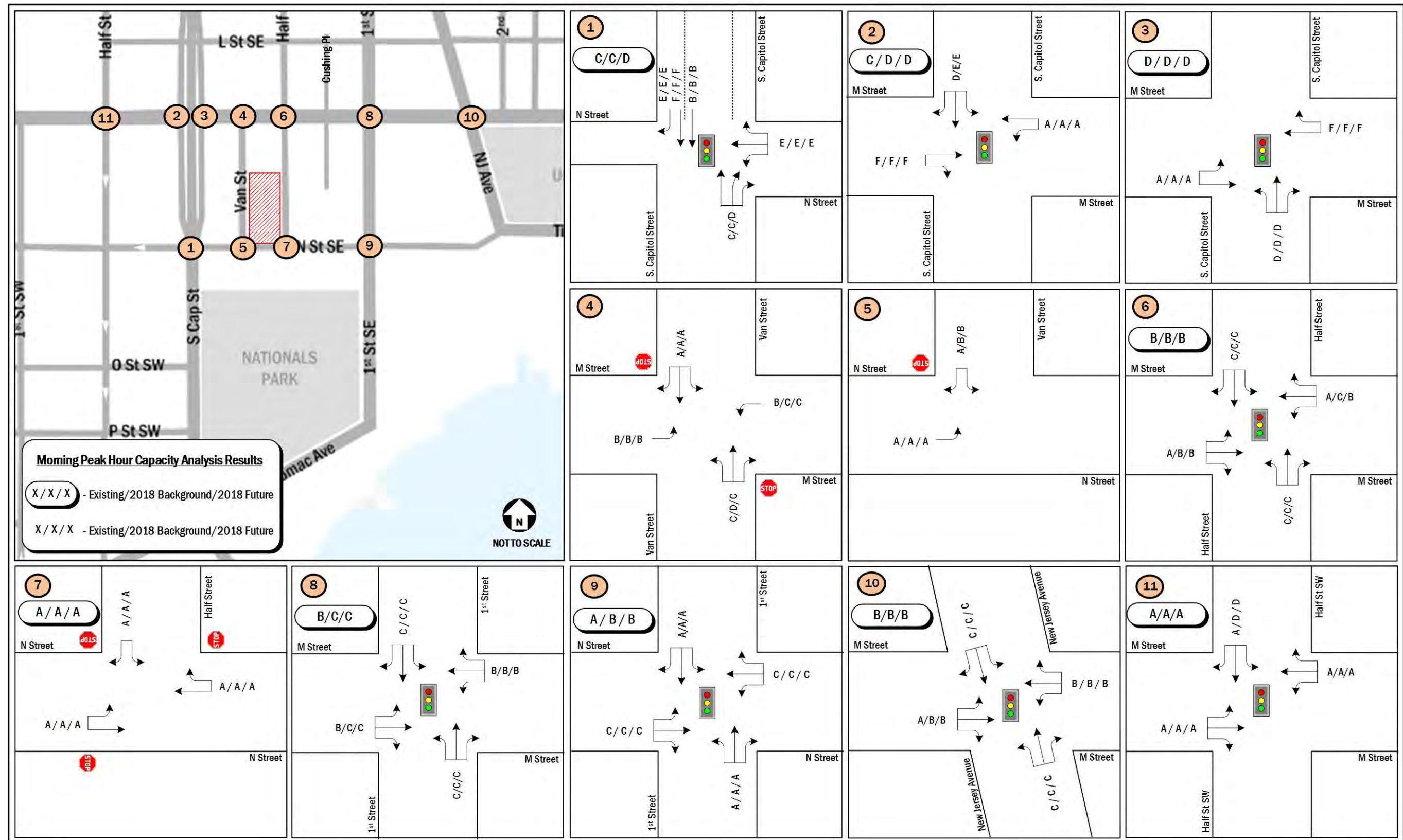


Figure 17: Morning Peak Hour Capacity Analysis Results

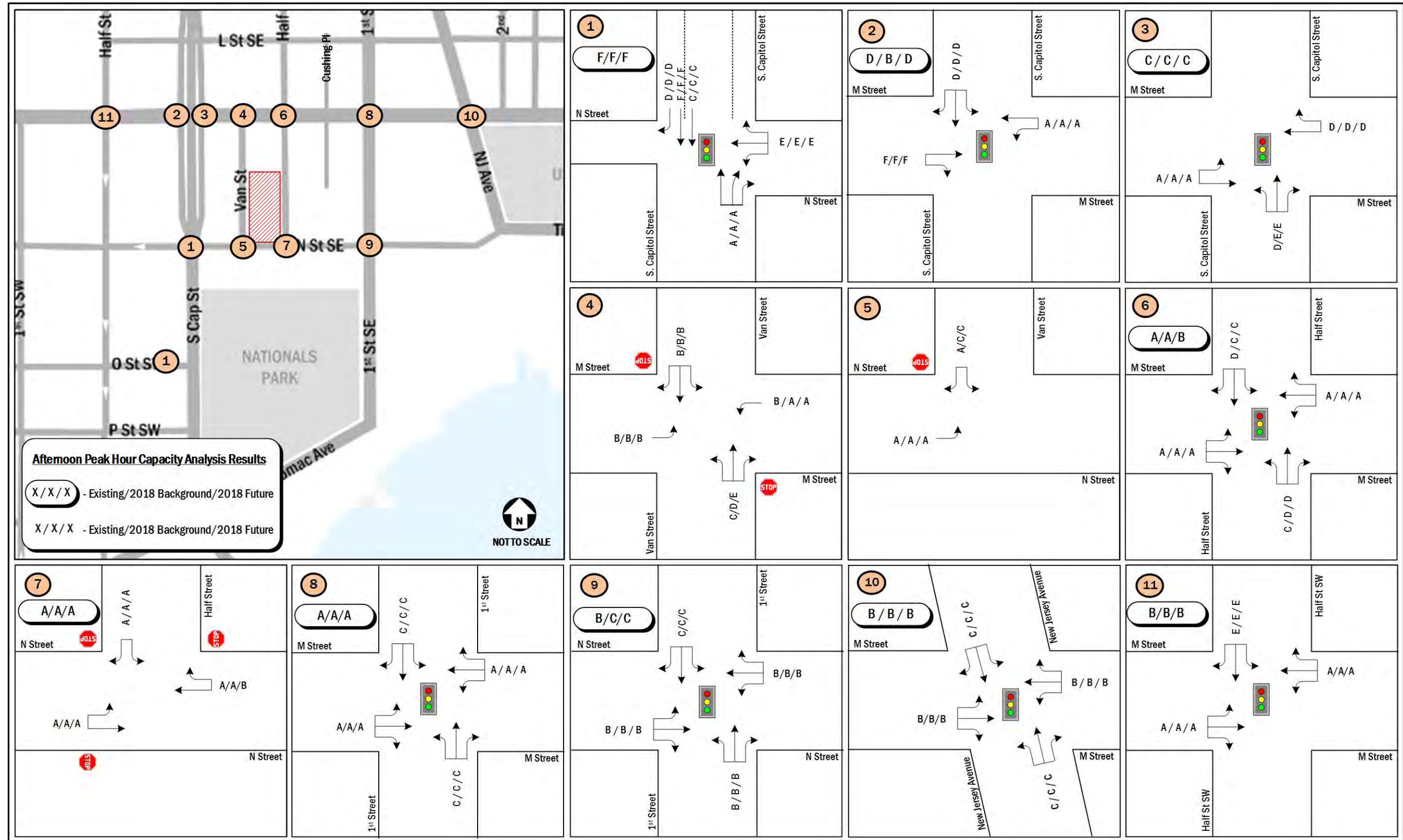


Figure 18: Afternoon Peak Hour Capacity Analysis Results

TRANSIT

This section discusses the existing and proposed transit facilities in the vicinity of the site, accessibility to transit, and evaluates the overall transit impacts due to the West Half Street project.

The following conclusions are reached within this chapter:

- The development site is near the Navy Yard Metrorail station and surrounded by several Metrobus routes that travel along multiple primary corridors
- One new Streetcar line is expected to travel along M Street in the vicinity of the site
- The site is expected to generate a manageable amount of transit trips, and the existing service is capable of handling these new trips

EXISTING TRANSIT SERVICE

The study area is well served by Metrorail and Metrobus. Combined, these transit services provide local, city wide, and regional transit connections and link the site with major cultural, residential, employment, and commercial destinations throughout the region. Figure 19 identifies the major transit routes, stations, and stops in the study area.

The Navy Yard Metrorail station is located less than 0.1 miles from the development site and is served by the Green Line. The Green Line travels south from Greenbelt, travels through downtown DC, and then continues southwards through Anacostia to Branch Avenue. Trains run approximately every six minutes during the morning and afternoon peak hours. They run about every 12 minutes during weekday non-peak hours, every 20 minutes on weekday evenings after 9:30 pm and 12 to 20 minutes on the weekends.

The site is also serviced by Metrobus along multiple primary corridors. These bus lines connect the site to many areas of the District, Maryland and Virginia, including several Metrorail stations serving five of the six Lines. Table 8 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.

PROPOSED TRANSIT SERVICE

Due to growth of population, jobs, and retail in several neighborhoods in the District and the potential for growth in other neighborhoods, the District's infrastructure is challenged with the need for transportation investments to support the recent growth and to further strengthen neighborhoods. In order to meet these challenges and capitalize on future opportunities, DDOT has developed a plan to identify transit challenges and opportunities and to recommend investments. This is outlined in DC's *Transit Future System Plan* report published by DDOT in April 2010, which includes the reestablishment of streetcar service in the District.

One streetcar route is expected to travel near the site. This route would run along M Street and connect the site with the Anacostia and Navy Yard Metrorail stations. This route is planned to be part of Phase 1.

SITE-GENERATED TRANSIT IMPACTS

The proposed development is projected to generate 159 transit trips (51 inbound, 108 outbound) during the morning peak hour and 308 transit trips (170 inbound, 138 outbound) during the afternoon peak hour.

US Census data was used to determine the distribution of those taking Metrorail and those taking Metrobus. The site lies adjacent to TAZ 20371 which shows that approximately 80 percent of transit riders used Metrorail and the remainder use Metrobus or Circulator. That said, approximately 127 people will use Metrorail and 32 will use Metrobus or Circulator during the morning peak hour; approximately 246 people will use Metrorail and 62 will use Metrobus or Circulator during the afternoon peak hour.

WMATA studied capacity of Metrorail stations in its *Station Access & Capacity Study*. The study analyzed Metrorail station capacity for their vertical transportation, for example the capacity of the station at elevators, stairs, and escalators to shuttle patrons between the street, mezzanine, and platforms. The study also analyzed stations capacity to process riders at fare card gates. For both analyses, volume-to-capacity ratios were calculated for existing data (from 2005) and projections for the year 2030. According to the study, high volume-to-capacity ratios were not observed at the Navy Yard Metrorail Station in 2005 but were expected at faregates by 2030. The above study does note that the improvements planned to



coincide with the opening of the Nationals Ballpark in 2008 would address the issue of capacity at faregates.

WMATA also studied capacity along Metrobus routes. DC's *Transit Future System Plan* (2010) lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). A load factor is considered unacceptable if it is over

1.2 during peak periods or over 1.0 during off-peak or weekend periods. According to this study Metrobus routes that travel near the site operate at an acceptable load factor during all periods of the day. Based on this information and the extensive Metrobus service surrounding the site, site-generated transit trips will not cause detrimental impacts to Metrobus service.

Table 13: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
74	Convention Center-SW Waterfront Line	Weekdays: 5:03AM – 12:03AM	15 – 20 min	0.3 miles, 6 min
315	Columbia/Silver Spring to Washington DC	Weekdays: Inbound: 4:36AM – 7:45 AM Outbound: 2:40PM – 7:53PM	20 – 30 min	0.2miles, 3 min
735	Charlotte Hall/Waldorf to Washington DC	Weekdays: Northbound 4:20AM – 7:00AM Southbound 12:15PM – 5:25PM	20 – 30 min	0.1 miles, 2 min
A9	Martin Luther King Jr. Ave. Limited Line	Weekdays: Northbound 5:55AM – 8:50AM Southbound 3:35PM – 6:52PM	15 min	0.3 miles, 5 min
A42,46,48	Anacostia-Congress Heights Line	Weekdays: 4:00AM – 12:00 AM Weekends: 4:04AM – 12:40 AM	15 – 30 min	0.1 miles, 1 min
D300	Dale City-Washington Navy Yard	Weekdays: Inbound: 4:36AM – 6:43 AM Outbound: 12:13PM – 7:42PM	30 – 90 min	0.1 miles, 1 min
DCN22	Union Station - Navy Yard Circulator	Winter: 6:00AM- 7:00PM Summer: 6:00AM - 9:00PM Sundays: 7:00AM - 9:00PM	5 – 40 min	0.2miles, 4 min
LCC	Loudoun County to Washington DC	Weekdays: Inbound: 5:00AM – 9:09 AM Outbound: 3:42PM – 5:00PM	25 – 45 min	0.1 miles, 1 min
P6	Anacostia-Eckington Line	Weekdays: 5:05AM – 2:04 AM Weekends: 8:27AM – 11:56 PM	15 – 30 min	0.1 miles, 1 min
P17,P19	Oxon Hill-Fort Washington Line	Weekdays: Northbound 4:47AM – 9:53AM Southbound 2:57PM – 7:10PM	5 – 15 min	0.3 miles, 5 min
V7, V8, V9	Minnesota Avenue-M Street Line	Weekdays: 4:38AM – 2:01 AM	30 min	0.1 miles, 1 min
W9	South Capitol Street Limited Line	Weekdays: Southbound 6:15AM – 9:07AM Norththbound 3:15PM – 6:15PM	15 – 30 min	0.1 miles, 1 min
W13	Bock Road Line	Weekdays: Northbound 4:52AM – 9:02AM Southbound 3:35PM – 7:53PM	5 – 15 min	0.3 miles, 5 min

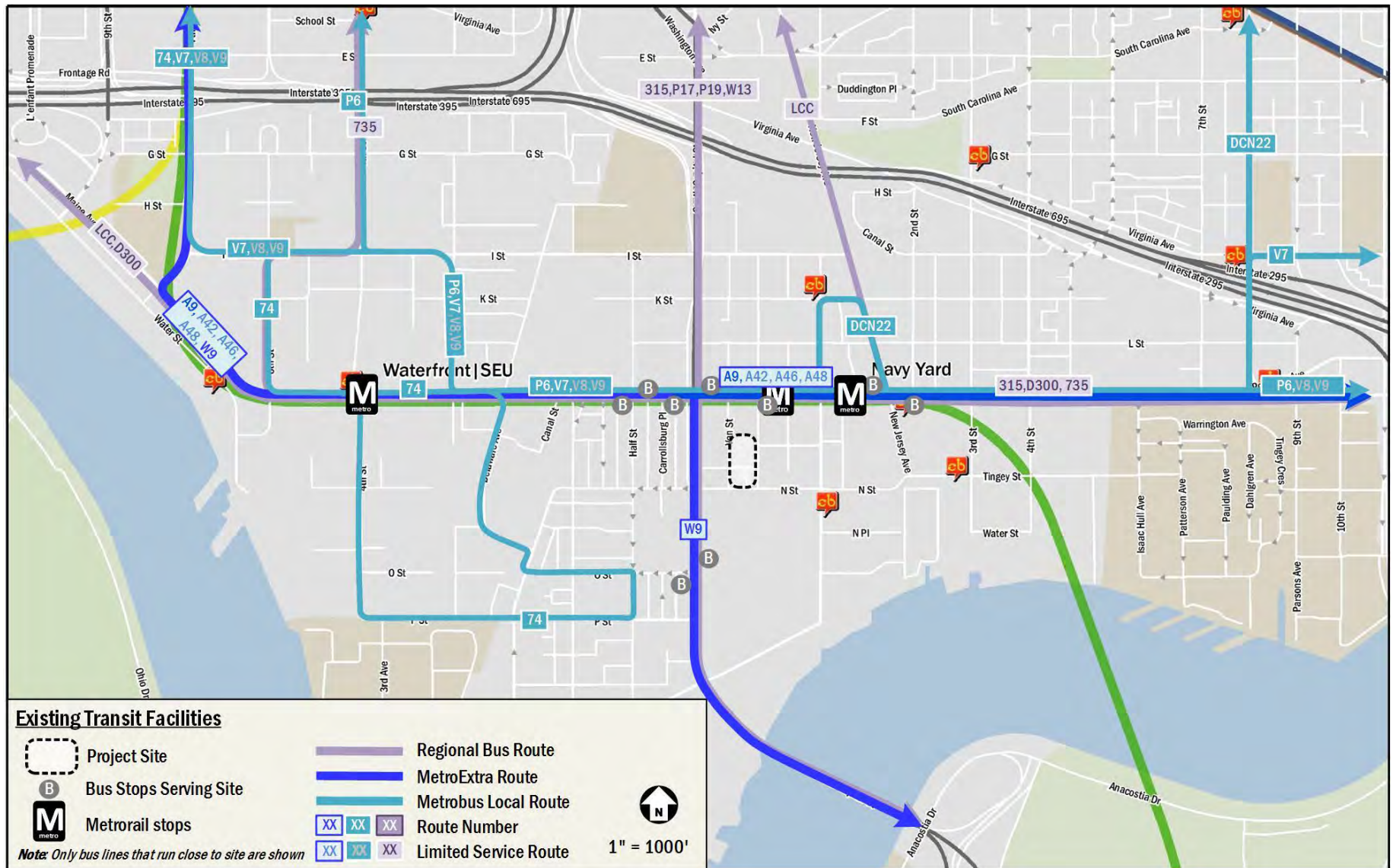


Figure 19: Existing Transit Service



PEDESTRIAN FACILITIES

This section 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 some gaps in the system, but there are sidewalks along all primary routes to pedestrian destinations.
- The site is not expected to generate a significant amount of pedestrian trips; however, the pedestrian trips generated by walking to and from transit stops will be more substantial, particularly along M Street.
- As part of the project, sidewalk facilities will be improved or added along Half Street, M Street, and Van Street.
- Continual development of nearby parcels will enhance the pedestrian facilities that currently exist.

PEDESTRIAN STUDY AREA

Facilities within a quarter-mile of the site were evaluated as well as routes to nearby transit facilities and prominent retail and neighborhood destinations. The site is easily accessible to transit options such as bus stops along M Street, South Capitol Street and the Navy Yard Metrorail Station. The site is also within walking distance of many destinations such as Yards Park and Nationals Ballpark. There are some barriers and areas of concern within the study area that negatively impact the quality of and attractiveness of the walking environment. This includes roadway conditions that reduce the quality of walking conditions, narrow or nonexistent sidewalks, incomplete or insufficient crossings at busy intersections, and the Interstate that limits connectivity to the north. Figure 20 shows suggested pedestrian pathways, walking time and distances, and barriers and areas of concern.

PEDESTRIAN INFRASTRUCTURE

This section outlines the existing and proposed pedestrian infrastructure within the pedestrian study area.

Existing Conditions

A review of pedestrian facilities surrounding the West Half Street development shows that many facilities meet DDOT standards and provide a quality walking environment. Figure 21 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 DDOT’s *Public Realm Design Manual* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 14.

Within the area shown, most roadways are considered residential with a low to moderate density. Some areas along South Capitol Street are considered commercial and thus require wider sidewalks. Most of the sidewalks surrounding the site comply with DDOT standards; however there are some areas, which have inadequate sidewalks or no sidewalks at all. All primary pedestrian destinations are accessible via routes with sidewalks, most of which meeting DDOT standards. The sidewalks that do not meet DDOT standards are typically along routes that do not provide an acceptable buffer width, but do maintain the minimum sidewalk width. Some of these issues will be remedied as part of the project or other background developments.

ADA standards require that all 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 the figure, under existing conditions there are some issues with crosswalks and curb ramps near the site.

SITE IMPACTS

This section summarizes the impacts of the development on the overall pedestrian operations in the vicinity of the site.

Table 14: Sidewalk Requirements

Street Type	Minimum Sidewalk Width	Minimum Buffer Width
Residential (Low to Moderate Density)	6 ft	4 ft (6 ft preferred for tree space)
Residential (High Density)	8 ft	4 ft (6 ft preferred for tree space)
Commercial (Non-downtown)	10 ft	4 ft
Downtown	16 ft	6 ft

Pedestrian Trip Generation

The West Half Street development is expected to generate 41 walking trips (18 inbound, 23 outbound) during the morning peak hour and 109 walking trips (56 inbound, 53 outbound) during the afternoon peak hour. The origins and destinations of these trips are likely to be:

- Employment opportunities where residents can walk to work
- Retail locations outside of the site, such as the Safeway or Harris Teeter
- Neighborhood destinations such as Yards Park, Nationals Park, the Anacostia Riverwalk Trail, etc.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the West Half Street site and nearby transit stops. About 80 percent of these will be walking to the Navy Yard Metrorail Station located less than 400 feet from the site and the other 20 percent will be walking to Metrobus stops, which are primarily located along M Street within a block of the site.

On-Site Pedestrian Infrastructure

The West Half Street project will be constructing enhanced pedestrian facilities around the perimeter of the site. As shown on Figure 21, the existing sidewalk conditions directly surrounding the site on M Street, Van Street, and Half Street do not meet DDOT standards. As part of the project sidewalks directly surrounding the site will be widened to meet DDOT standards. These facilities will improve the pedestrian environment around the site and help to create a more connected and inviting pedestrian network. This network will be further enhanced as nearby parcels are redeveloped.

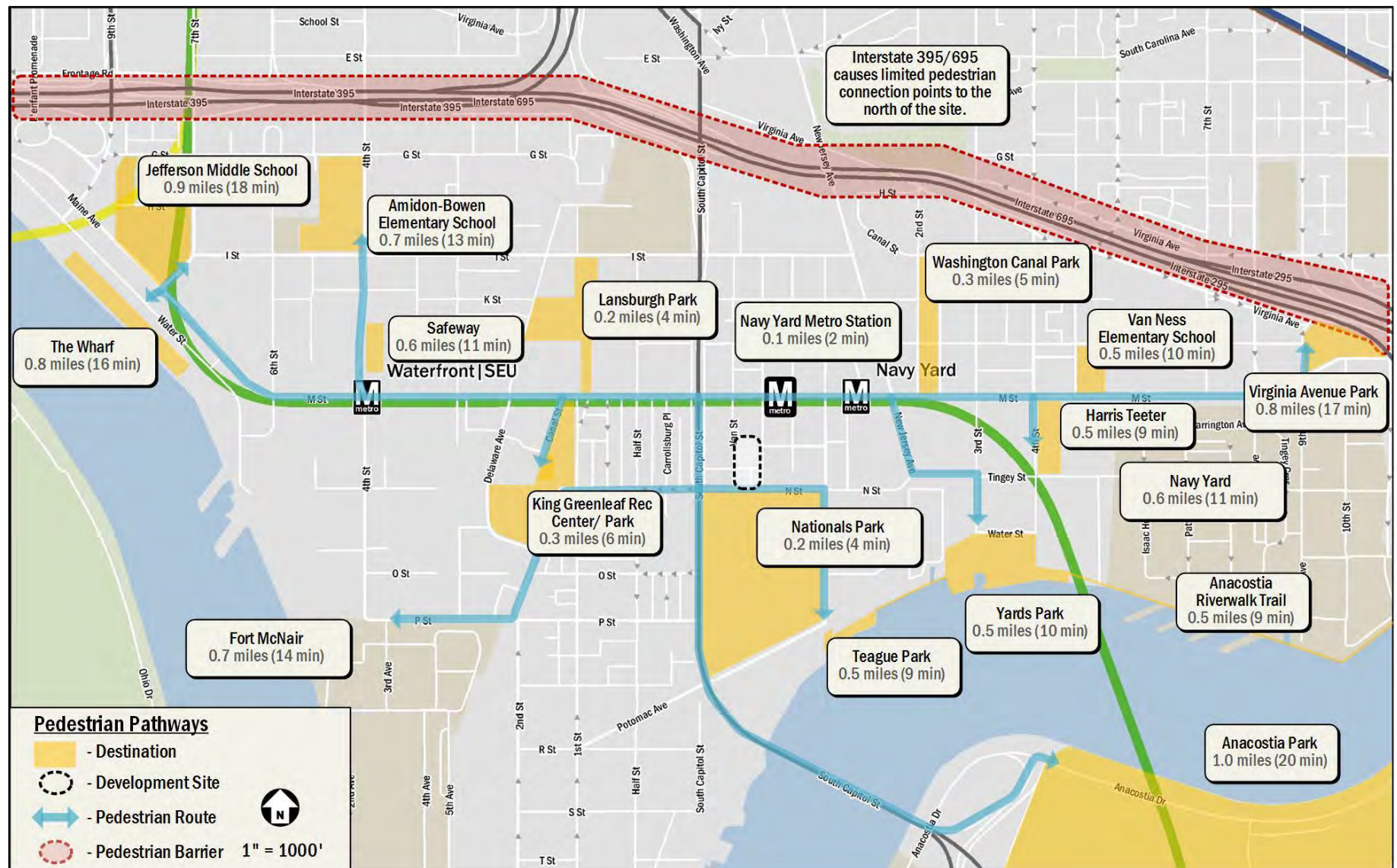


Figure 20: Pedestrian Pathways

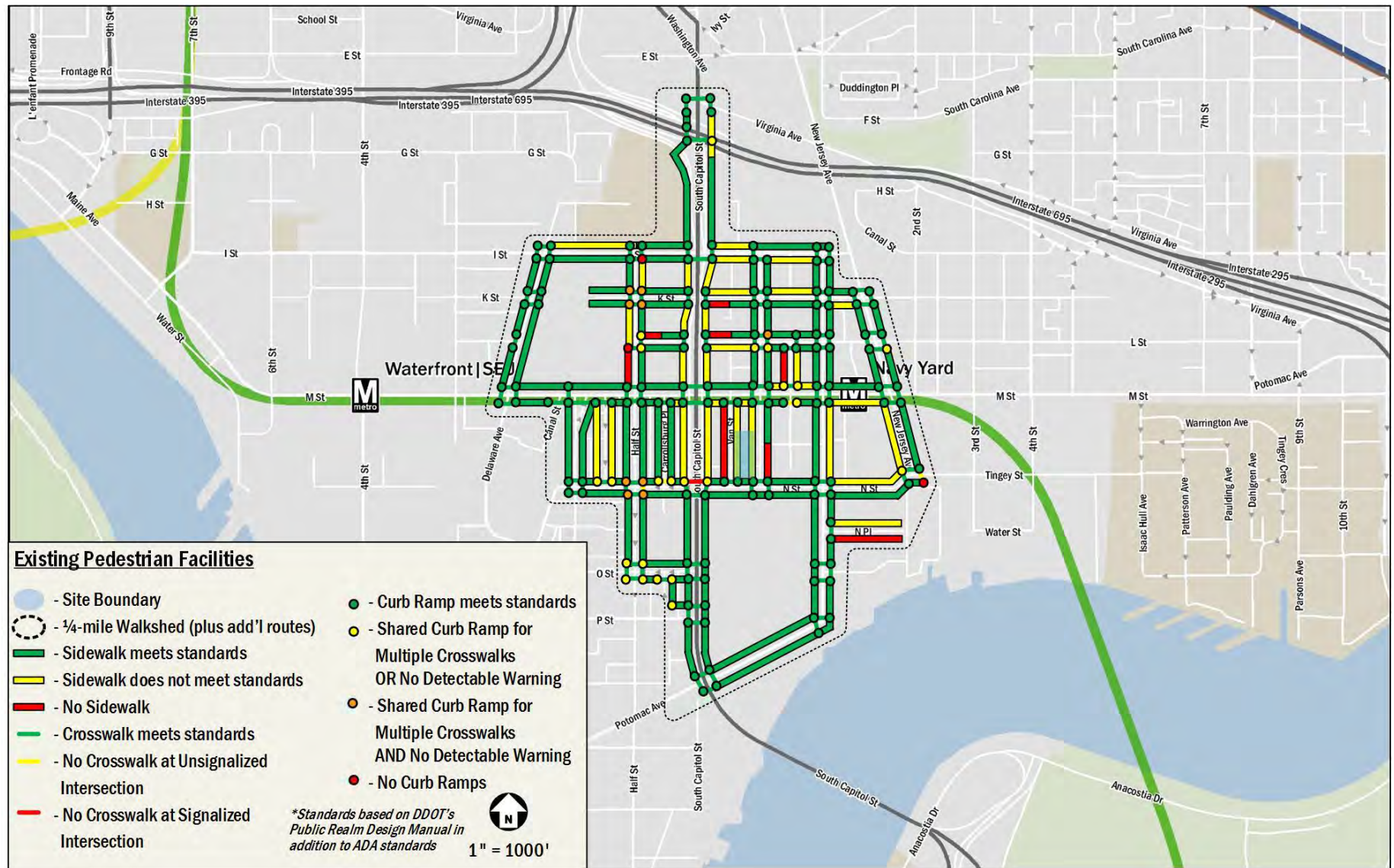


Figure 21: Existing Pedestrian Infrastructure

BICYCLE FACILITIES

This section summarizes existing and future bicycle access, reviews the quality of cycling routes to and from the site, and presents recommendations.

The following conclusions are reached within this chapter:

- The site has access to several bike trails, bike lanes, and signed bike routes in addition to multiple nearby Capital Bikeshare stations.
- The site is not expected to generate a significant amount of bicycle trips, therefore all site-generated bike trips can be accommodated on existing infrastructure.
- The development site will include secure bicycle parking in parking garage and short-term bicycle racks along the perimeter of the site.

EXISTING BICYCLE FACILITIES

The site is well-connected to existing on- and off-street bicycle facilities. North-south connectivity is provided along the along bike lanes on 4th Street SE, 1st Street SE, and 4th Street SW. East-west connectivity is provided along the Anacostia Riverwalk Trail and I Street SE/SW. Figure 31 illustrates the existing bicycle facilities in the area.

Some short-term bicycle parking exists in the vicinity of the site, particularly surrounding recently developed structures such as Nationals Park and 55 M Street SE. However, no permanent bike parking is provided along the perimeter of the site under existing conditions. There are some temporary bicycle parking racks located outside along the perimeter of the site for entertainment events that take place on site, but these will be removed when the site is redeveloped.

In addition to personal bicycles, the Capital Bikeshare program provides an additional cycling option for residents, employees, and patrons of the West Half Street development. The Bikeshare program has placed over 350 bicycle-share stations across Washington, DC, Arlington and Alexandria, VA, and most recently Montgomery County, MD with over 3,000 bicycles provided. Within a quarter-mile of the site there are three Capital Bikeshare stations that house a total of 72 docks. Figure 31 illustrates the existing bicycle facilities in the area.

PROPOSED BICYCLE FACILITIES

The MoveDC plan outlines several bicycle improvements in the vicinity of the site. These improvements are broken up into four tiers that rank the priority for implementation. The four tiers are broken down as follows:

- *Tier 1*
Investments should be considered as part of DDOT's 6-year TIP and annual work program development, if they are not already included. Some projects may be able to move directly into construction, while others become high priorities for advancement through the Project Development Process.
- *Tier 2*
Investments within this tier are not high priorities in the early years of MoveDC implementation. They could begin moving through the Project Development Process if there are compelling reasons for their advancement.
- *Tier 3*
Investments within this tier are not priorities for DDOT-led advancement in the early years of MoveDC's implementation. They could move forward earlier under circumstances such as real estate development initiatives and non-DDOT partnerships providing the opportunity for non-District-led completion of specific funding.
- *Tier 4*
Generally, investments within this tier are not priorities for DDOT-led advancement and are lower priority for project development in the early years of implementation.

Due to the timeline of the West Half Street development, this report will focus on the Tier 1 recommendations within the vicinity of the site. These include the South Capitol Street Bridge Crossing Trail between Potomac Avenue SE and First Sterling Avenue SE and a cycle track along 4th Street/P Street SW between South Capitol Street and M Street SW. These facilities would greatly improve the bicycle connectivity near the site.

Although these projects are discussed in the MoveDC plan, they are not currently funded or included in DDOT's Transportation Implementation Plan thus they will not be assumed as complete for this analysis.

SITE IMPACTS

This section summarizes the impacts of the development on the overall bicycle operations surrounding the site and develops recommendations for connectivity improvements.

Bicycle Trip Generation

The West Half Street development is expected to generate 16 bicycle trips (5 inbound, 11 outbound) during the morning peak hour and 33 bicycle trips (17 inbound, 16 outbound) during the afternoon peak hour. Although bicycling will be an important mode for getting to and from the site, with quality cycling routes available to and from the site, the impacts from bicycling will be relatively less than impacts to other modes.

On-Site Bicycle Elements

The project will provide amenities that cater to cyclists including secure long-term bicycle parking and short-term bicycle racks. There will be 145 secure bicycle parking spaces provided in the parking garage, which comply with zoning requirements.

Exact numbers and locations of bicycle racks have not yet been determined; however, it is expected that bicycle racks will be located along the perimeter of the site. The Applicant is willing to work with DDOT to determine the locations of bicycle racks within public space.

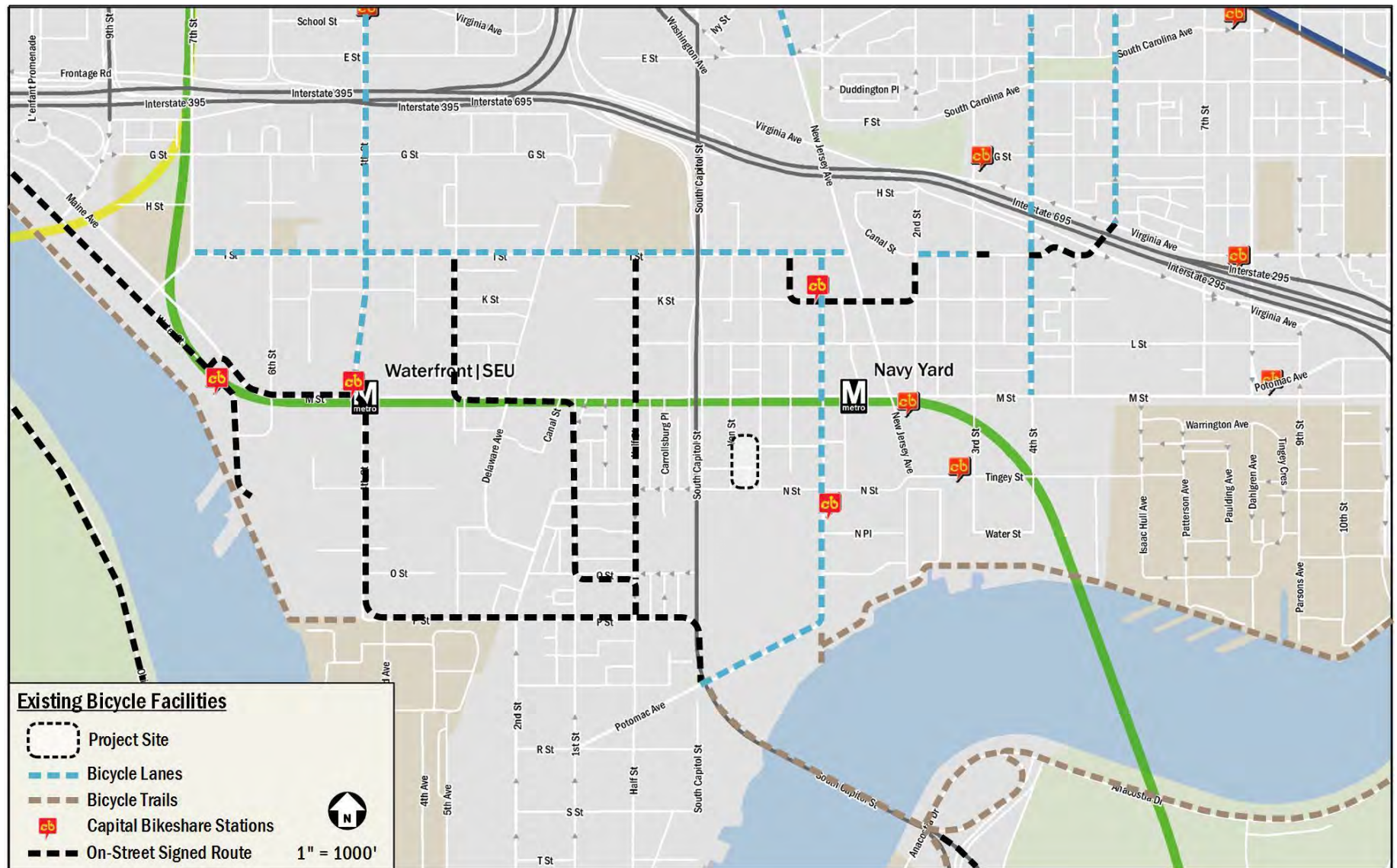


Figure 22: Existing Bicycle Facilities



CRASH DATA ANALYSIS

This section of the report reviews available crash data within the study area, reviews potential impacts of proposed development on crash rates, and makes recommendations for mitigation measures where needed.

SUMMARY OF AVAILABLE CRASH DATA

A safety analysis was performed to determine if there was an abnormally high accident rate at any study area intersection. The District Department of Transportation (DDOT) provided the last three years of intersection accident data; from 2012 to 2014.

This data set included all intersections within the study area. This data was reviewed and analyzed to determine the accident rate at each location. For intersections, the accident rate is measured in accidents per million-entering vehicles (MEV). The accident rates per intersection are shown in Table 15.

According to the Institute of Transportation Engineer's *Transportation Impact Analysis for Site Development*, a crash rate of 1.0 or higher is an indication that further study is required. Three intersections in this study area meet this criterion (as shown in red in Table 15 and detailed in Table 16). The West Half Street development should be developed in a manner to help alleviate, or at minimum not add to, the conflicts at these intersections.

A rate over 1.0 does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have higher crash rates due to operational, geometric, or other issues. Additionally, the crash

data does not provide detailed location information. In some cases, the crashes were located near the intersections and not necessarily within the intersection.

For these intersections, the crash type information from the DDOT crash data was reviewed to see if there is a high percentage of certain crash types. Generally, the reasons for why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes. Table 16 contains a breakdown of crash types reported for the intersections with a crash rate over 1.0 per MEV.

POTENTIAL IMPACTS

This section reviews the three locations with existing crash rates over 1.0 MEV and reviews potential impacts of the proposed development.

■ South Capitol Street & M Street

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.75 crashes per MEV. The majority of the crashes at this intersection were left-turn crashes, rear-end crashes, and right-angle crashes. The configuration of this intersection as a grade-separated diamond intersection leads to a high concentration of turning vehicles which could lead to an elevated number of left-turn and right angle crashes. Additionally, rear end crashes are typically elevated at signalized intersections and may be exacerbated at this intersection due to the nonstandard geometry.

However, this report does not recommend mitigation measures at this intersection due to future changes

Table 15: Intersection Crash Rates

Intersection	Total Crashes	Ped Crashes	Bike Crashes	Rate per MEV*
1. South Capitol Street & N Street	48	0	0	0.95
2. South Capitol Street & M Street	65	1	0	1.72
3. Van Street & M Street SE	6	1	0	0.30
4. Van Street & N Street SE	4	0	0	1.43
5. Half Street & M Street SE	5	1	0	0.25
6. Half Street & N Street SE	0	0	0	0.00
7. 1st Street & M Street SE	25	1	1	1.02
8. 1st Street & N Street SE	5	0	0	0.43
9. New Jersey Avenue & M Street SE	20	1	1	0.93
10. Half Street & M Street SW	22	3	0	0.77

* - Million Entering Vehicles; Volumes estimated based on turning movement count data

Table 16: Crash Type Breakdown

Intersection	Rate per MEV	Right Angle	Left Turn	Right Turn	Rear End	Side Swiped	Head On	Parked	Fixed Object	Ran Off Road	Ped. Involved	Backing	Non-Collision	Under/Over Ride	Unspecified	Total
South Capitol Street & M Street	1.72	14 22%	16 25%	4 6%	14 22%	11 17%	1 2%	0 0%	2 3%	0 0%	1 2%	1 2%	0 0%	0 0%	1 2%	65
Van Street & N Street SE	1.43	0 0%	1 25%	0 0%	0 0%	0 0%	0 0%	0 0%	1 25%	0 0%	0 0%	2 50%	0 0%	0 0%	0 0%	4
1st Street & M Street SE	1.02	2 8%	4 16%	1 4%	7 28%	3 12%	0 0%	0 0%	3 12%	0 0%	1 4%	3 12%	0 0%	0 0%	1 4%	25

proposed in the South Capitol Street FEIS. Additionally, the proposed development is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

geometry at this intersection that could negatively influence safety. Therefore, this report does not recommend mitigation measures at this intersection.

▪ *N Street & Van Street, SE*

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of 1.43 crashes per MEV. The majority of crashes at this intersection are backing collisions; however, there are only two of these types of crashes at this intersection over the course of the three year study period, with only four crashes total. The elevated crash rate is more likely generated by the low volume at the intersection. Overall, the distribution of crash types at the intersection does not lead to a likely safety issue at the intersection.

This report does not recommend mitigation measures at this intersection as the proposed development is not projected to make changes to the commuting patterns, operations, or geometry of this intersection that could negatively influence safety.

▪ *1st Street & M Street, SE*

This intersection is slightly over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.02 crashes per MEV. The majority of the crashes at this intersections were rear end crashes. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal.

Although elevated crash rates are observed at this intersection, they are only slightly over the threshold and the proposed development is not expected to make significant changes to commuting patterns, operations, or

SUMMARY AND CONCLUSIONS

This Transportation Impact Study (TIS) reviews the transportation aspects of the West Half Street projects Overlay Review Modification application. The Zoning Commission Case Number is 08-30B. The development was originally approved through ZC Order 08-30 and ZC Order 08-30A in 2009 and 2011, respectively. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming that all planned site design elements are implemented.

Proposed Project

This Capital Gateway Overlay Review Modification is for the mixed-use West Half Street Development. This development was originally approved through ZC Order 08-30 and ZC Order 08-30A in 2009 and 2011, respectively. The approved development proposed a mixed-use development consisting of 280 dwelling units, 369,292 square feet of office use, and 51,624 square feet of retail use. The footprint of the approved development consisted of the entirety of the eastern portion of Square 700, bounded by M Street, Half Street, N Street, and Van Street. The approved development was broken down into two separate portions with a pedestrian promenade running east to west in between.

The Modification Application applies only to the southern portion of the development, which is now under new ownership since the original ZC approval process. For the purpose of this study, the northern portion of the development will be included as a background development with the same development program that was originally approved.

The Applicant is proposing to develop the southern portion of the site into a mixed-use project including residential and retail uses. The site is bounded by Half Street to the east, N Street to the south, Van Street to the west, and the northern portion of the development to the north. The proposed development program includes 424 residential units and 65,175 square feet of retail space. The approved development included 119,245 square feet of office space, 37,287 square feet of retail space, and 280 residential units for the southern portion of the development.

Parking and loading access will be off of Van Street. There will be one curb cut for the parking access which leads to a 315 parking space garage. There will be another curb cut for the

loading area, which will include two (2) 30' loading bays and two (2) 20' service/delivery spaces to be shared by the residential and retail uses. Due to the configuration of the loading area, back-in/head-out maneuvers will be required to access the loading bays. For this reason, the study recommends a loading management plan.

In addition, pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. Under existing conditions sidewalks along Van Street do not meet DDOT standards directly surrounding the site. The parking garage will supply secure bicycle parking spaces that meet or exceed the current DDOT requirements.

Multi-Modal Impacts and Recommendations

Transit

The site is well-served by regional and local transit services such as Metrorail, Metrobus, and Circulator. The site is less than 0.1 miles from the nearest Navy Yard Metrorail Station portal at M Street and Half Street and many Metrobus stops are located within a block of the site along M Street.

Although the West Half Street development will be generating new transit trips on the network, the existing facilities have enough capacity to handle the new trips. The Navy Yard Metrorail station and all nearby Metrobus lines do not have existing capacity concerns and are not expected to as a result of the West Half Street development.

Pedestrian

The site is surrounded by a well-connected pedestrian network. Most roadways within a quarter-mile radius provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes. There are some pedestrian barriers surrounding the site such as limited connectivity due to the Interstate to the north and the Anacostia River to the south.

As a result of the West Half Street development, pedestrian facilities along the perimeter of the site will be improved. Under existing conditions there is no sidewalk along Van Street. The development will add or widen sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

Bicycle

Although not directly adjacent to any bike facilities, the site is just blocks away from many trails, bike lanes, and signed bike

routes such as the Anacostia Riverwalk Trail to the south, north-south bike lanes along 4th Street SE, 1st Street SE, and 4th Street SW, and east-west bike lanes along I Street SE/SW. The site is also served by the Capital Bikeshare program which provides an additional cycling option for residents, employees, and patrons of the West Half Street development.

On site, the West Half Street development will provide short-term bicycle parking along the perimeter of the site and secure long-term bicycle parking in the parking garage.

Vehicular

The West Half Street site is well-connected to regional roadways such as I-395, I-695, and I-295, primary and minor arterials such as South Capitol Street, M Street, and I Street, and an existing network of collector and local roadways.

In order to determine if the proposed development will have a negative impact on the transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area.

The analyses conclude that the West Half Street development will not have adverse impacts on the surrounding transportation network. Most of the locations in the study area with unacceptable levels of delay occur in scenarios without the development of the project. The exception to this is the intersection of M Street and Van Street SE in which the northbound approach operates at a LOS E during the afternoon peak hour under Total Future conditions.

One potential improvement at this location would be the installation of a traffic signal. However, based on the capacity analysis, traffic volumes at this intersection do not warrant a signal and the proximity to adjacent signals along M Street would provide operational challenges.

Additionally, there is vehicular capacity at the intersection of Van Street and N Street. At the point in which the northbound approach of Van Street at M Street reaches unacceptable levels drivers are likely to change their driving patterns to avoid queues and exit to the south of the site as an alternative. For these reasons, no improvements are recommended at this intersection.