

COMPREHENSIVE TRANSPORTATION REVIEW

**Z.C. CASE No. 15-27B: MARKET TERMINAL
BUILDING C2 SECOND-STAGE PUD**

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ZONING COMMISSION
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EXECUTIVE SUMMARY

The following report is a Comprehensive Transportation Review (CTR) on behalf of Carr Properties, the applicant (the “Applicant”) for a Second-Stage PUD for Building C2 of the Market Terminal development project located at 350 Morse Street NE (the “Site”). This report reviews the transportation aspects of the proposed mixed-use office building (the “Project”) on the Site, for which Project is the subject of Z.C. Case Number 15-27B. The Project’s First-Stage PUD was approved by the Zoning Commission as part of Z.C. Case Number 15-27 in March of 2017. As part of Z.C. Case Number 15-27B, the Applicant also requested a modification to permit bar/restaurant uses in the penthouse of Building C1 and C2, originally approved as office amenity space. No other changes to Building C1 are part of the application.

The purpose of this CTR is to evaluate whether the Project will generate a detrimental impact to the transportation network surrounding the Site. 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 the proposed site design elements and TDM measures are implemented.

Proposed Project

The Project is located at 350 Morse Street NE within the overall Market Terminal development project and is bordered by future Building C1, the newly constructed private section of 3rd Street, the extension of Neal Place, and an Alley.

The Project will develop the Site pursuant to the Second Stage PUD application with:

- Approximately 225,398 square feet of office space.
- Approximately 7,049 square feet of bar/restaurant use in the penthouse;
- Approximately 6,532 square feet of retail space (which includes 1,125 square feet of maker space);
- Approximately 132 below-grade vehicle parking spaces in a parking garage, an additional nine (9) non-zoning compliant tandem spaces are also being provided;
- One (1) 30-foot loading berth, with one (1) 20-foot service/delivery space; and
- 77 secure long-term and 16 short-term bicycle parking spaces.

Primary access/egress to the Project’s below-grade parking garage will be from a new curb cut in the Alley. Loading needs will be served by an adjacent curb cut in the Alley. All truck turning maneuvers will occur on the Site, allowing for head-in, head-out access to and from the public street. The curb cuts along with the number of loading berths meet all zoning and DDOT dimensional requirements.

The Project will satisfy the 2016 zoning requirements for bicycle parking by including 16 short-term bicycle parking spaces and 77 long-term bicycle parking spaces. The Project will supply long-term bicycle parking within the first level of the parking garage and short-term bicycle parking along the perimeter of the Site. The vehicular and bicycle parking will also meet the practical needs of the Project’s employees and patrons.

Multi-Modal Impacts and Recommendations

Trip Generation

The Project is transit-, pedestrian-, and bicycle-oriented. The Project is expected to generate new trips on the surrounding transportation network across all modes. The AM peak hour trip generation is projected to include 85 cars/hour, 145 transit riders/hour, 15 bicycle trips/hour, and 31 walking trips/hour. The PM peak hour trip generation is projected to include 95 cars/hour, 161 transit riders/hour, 17 bicycle trips/hour, and 41 walking trips/hour.

Transit

The Site is served by regional and local transit services via Metrobus and Metrorail. The Site is four (4) blocks (a 7-minute walk) from the NoMA-Gallaudet U Metro Station, with Metrobus stops located south of the Site at Florida Avenue and 3rd Street NE.

Although the Project will generate new transit trips, existing facilities have enough capacity to accommodate the new trips.

Pedestrian

The Site is surrounded by a quality pedestrian network. Most roadways within a quarter-mile radius of the Site provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes between Union Market and the NoMA-Gallaudet U Metro. Areas within the Union Market District are currently under construction, leading to less-than-optimal facilities.



As a result of the Project, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards as well as the Union Market Streetscape Guidelines. As construction activity of several new developments near the Site finish, more pedestrian facilities will meet standards.

The Project will generate a moderate number of pedestrian trips and the improved facilities will be able to handle the new trips. Notably, the Applicant will provide sidewalks along 3rd Street, Neal Place, and Alley frontages.

Bicycle

The Site has access to several nearby on-street bicycle facilities, including recently installed and proposed facilities. Cycle Tracks are available adjacent to the Site on Florida Avenue, M Street, First Street, and 4th Street. A Capital Bikeshare location is located 0.2 miles away from the Site along at 6th Street and Neal Place. Future bicycle tracks will run along the Alley adjacent to the site, connecting the Union Market area with New York Avenue.

As part of the first stage PUD, the Applicant committed to paying for the installation and one-year's maintenance of a future Capital Bikeshare Station to be placed on Morse Street just south of Building C1.

The Project will provide short-term bicycle parking along the perimeter of the Site. On-site secure long-term bicycle parking will be provided in the first level of the parking garage. The amount of bicycle parking provided exceeds 2016 zoning requirements. Access to the Project's long-term, secure bicycle facilities will occur via the proposed curb cut in the Alley.

The Project will generate a moderate number of new bicycle trips without burdening the existing facilities.

Vehicular

The Site is accessible from regional roadways, such as New York Avenue (Route 50) and several principal and minor arterials such as Florida Avenue NE, 4th Street NE, and 6th Street NE. These roadways create connectivity to I-395 and the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs, as well as provides connectivity to the District core.

In order to determine impacts that the Project will have on the transportation network, this report projects future conditions with and without the Project based on the number of trips the Project is expected to generate. Intersection analyses are

performed to obtain the average delay and queue a vehicle will experience. These average delays and queues are compared to the acceptable levels of delay set by DDOT standards as well as existing queues to determine if the Site will negatively impact the study area.

Gorove Slade analysis concluded that three (3) intersections require mitigation as a result of the minor impacts to delay created by the development. Mitigation measures are proposed as follows:

New York Avenue & 4th Street

Gorove Slade recommends signal timing adjustments be coordinated with DDOT in the afternoon peak hour to ensure the most efficient future operation, following construction of Building C2 and other developments slated to open by 2022.

Morse Street & 4th Street

Gorove Slade recommends implementing signal timing adjustments and peak period parking restrictions during the afternoon peak hour along the south side of Morse Street (on the eastbound approach) from the Alley to 4th Street. This will allow for a dedicated right-turn lane during the afternoon peak hour.

Florida Avenue & 4th Street

Gorove Slade recommends signal timing and phasing adjustments be coordinated with DDOT in the morning peak hour to ensure the most efficient future operation, concurrent with construction of Building C2 and other developments slated to open by 2022.

Safety

A qualitative review of study area intersections was performed to identify areas of concern due to vehicular, pedestrian, and bicycle interactions.

Gorove Slade analysis concluded that existing conditions will be improved at one (1) intersection that will further enhance the multi-modal network surrounding the Site. Improvements are planned as follows:

New York Avenue & 4th Street

Improvements at this intersection are planned at this intersection as part of the *New York Avenue Streetscape and Trail* project. Improvements include sidewalks which meet DDOT/ADA standards and the installation of a bicycle trail. These improvements will make pedestrians and bicyclists more



visible near the intersection and allow for multimodal connectivity.

Transportation Demand Management (TDM)

Per the DDOT CTR guidelines, the goal of TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in their CTR guidelines, and this project has proposed an enhanced-tier TDM plan to address the proposed parking supply and minor intersection impacts. In addition, TDM commitments made as part of the approval of the Project's First-Stage PUD Application will be honored and stated in the TDM plan.

Summary and Recommendations

This report concludes that the Project will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements and TDM measures are implemented.

The Project has several positive design elements that minimize potential transportation impacts, including:

- The Site's close proximity to transit and existing/future bicycle infrastructure;
- The inclusion of secure long-term bicycle parking;
- The installation of short-term bicycle parking spaces along the frontage of the Site that exceed zoning requirements;
- The creation of new pedestrian sidewalks that meet or exceed DDOT and ADA requirements, improving the existing pedestrian environment. This includes sidewalks along the Neal Place, Alley, and 3rd Street frontages; and,
- An enhanced-tier TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.



INTRODUCTION

This report is a CTR reviewing the transportation aspects of the Project’s Second-Stage PUD application. The Site, shown in Figure 1 and Figure 2, is located at Square 3587 and Lot 834 in Northeast, Washington, DC. The Site is currently zoned MU-9. The Project’s First-Stage PUD was approved under the 1958 Zoning Regulations; however, due to the proposed use modification, the Second-Stage application is being evaluated under the 2016 Zoning Regulations.

PURPOSE OF STUDY

The purpose of this report is to:

1. Review the transportation elements of the Project and demonstrate that it conforms to DDOT’s general policies of promoting non-automobile modes of travel and sustainability.
2. Provide information to DDOT and other agencies on how the Project will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the Project on all major modes of travel and where these trips will be distributed on such network.
3. Determine whether the Project will lead to adverse impacts on the local transportation network.

PROJECT SUMMARY

The Site is part of the larger Market Terminal development project. Building C2 is located in the central portion of the overall PUD site approved under ZC Order 15-27. The Site is bordered by Building C1, the newly constructed private section of 3rd Street, the extension of Neal Place, and a private Alley.

Building C2 is part of the second phase of the overall Market Terminal development, which was approved in March 2017 as a First-Stage PUD. The first phase included Buildings A1, B, and C1, which were collectively approved as a Consolidated PUD at the same time. In addition to Building C2, the second phase of the project includes Buildings A2 and D, which will be included under separate second-stage PUD applications.

As approved under the First-Stage PUD application, Building C2 comprised the following development program:

- Approximately 232 residential units
- Approximately 9,200 SF of office space

- Approximately 90 on-site parking spaces

The second-stage PUD development program for Building C2 is as follows:

- Approximately 226,103 SF of office space. Up to 7,049 SF of this space may be allocated as a bar/restaurant use
- Approximately 5,827 SF of retail space
- 132 on-site parking spaces with an additional nine (9) non-zoning compliant tandem spaces

Loading facilities for Building C2 will consist of one (1) 30-foot loading berth and one (1) 20-foot service/delivery space accessible from the Alley. The loading berth will discourage street loading and unloading as well as accommodate head-in/head-out movements. Additional loading exists at the future Building C1, and together Buildings C1 and C2 are considered a single building for zoning purposes. The loading facilities will be sufficient to accommodate the practical needs of the Project.

Pedestrian access to the Site will be from the future 3rd Street NE for the office use and from both the future 3rd Street and the future Neal Place extension for the retail use.

As part of the Project, pedestrian facilities surrounding the Site will be improved to meet DDOT and ADA standards. New sidewalks will be installed along the perimeter of the Site, and such sidewalks will meet or exceed the width requirements.

There are existing bicycle facilities near the Site. These include cycle tracks along M Street, First Street, 4th Street, and 6th Street to the east and the south which provide connectivity to neighborhoods including NoMA and Near Northeast. The Project will include 77 long-term bicycle parking spaces within the first floor of the garage and 16 short-term bicycle parking spaces will be provided along the perimeter of the Site. The nearest Capital Bikeshare station is located three (3) blocks east of the Site at 6th Street and Neal Place. A future Capital Bikeshare station will be installed directly south of the Site on Morse Street.

CONTENTS OF STUDY

This report contains nine (9) chapters as follows:

Study Area Overview

This chapter reviews the area near and adjacent to the Project and includes an overview of the Site.



Project Design

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

Traffic Operations

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

Transit

This chapter summarizes the existing and future transit service adjacent to the Site, reviews how the project's transit demand will be accommodated, outlines impacts, and presents recommendations as needed.

Pedestrian Facilities

This chapter summarizes existing and future pedestrian access to the Site, reviews walking routes to and from the Project, outlines impacts, and presents recommendations as needed.

Bicycle Facilities

This chapter summarizes existing and future bicycle access to the Site, reviews the quality of cycling routes to and from the Project, outlines impacts, and presents recommendations as needed.

Safety Analysis

This chapter summarizes the potential safety impacts of the project. This includes a qualitative review of existing and proposed safety features surrounding the Site.

Summary and Conclusions

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



Figure 1: Market Terminal Site Location

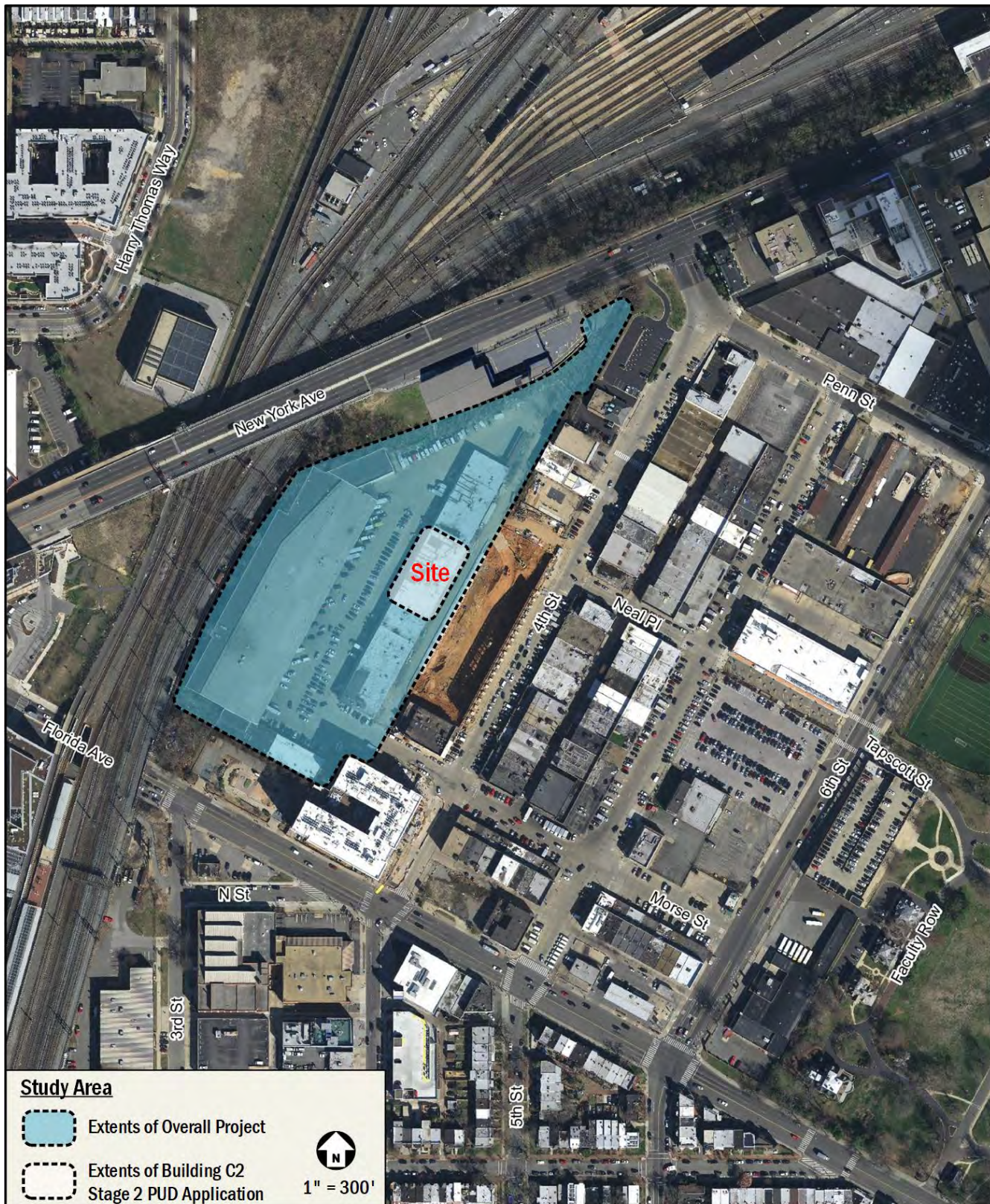


Figure 2: Site Aerial



STUDY AREA OVERVIEW

This chapter 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.

This chapter concludes:

- The Site is surrounded by an extensive regional and local transportation system that will connect the Project's residents to the rest of the District and surrounding areas.
- The Site is served by public transportation with access to local Metrobus lines and Metrorail.
- There is bicycle infrastructure in the vicinity of the Site, with connectivity to east-west and north-south bicycle facilities.
- Pedestrian conditions are generally good, particularly along anticipated major walking routes. Barriers exist north of the Site due to the Amtrak and WMATA tracks.

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

As shown in Figure 4, the Site has ample access to regional, vehicular, and transit-based transportation options that connect the Site to destinations within the District, Virginia, and Maryland.

The Site is accessible from regional roadways, such as New York Avenue (Route 50) and several principal and minor arterials such as Florida Avenue NE, 4th Street NE, and 6th Street NE. These roadways create connectivity to I-395 and the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs, as well as provides connectivity to the District core.

The Site is located four blocks (7-minute walk) from the NoMa-Gallaudet U New York Ave Metro station (served by the Red Line). The Red Line connects Rockville, MD with Glenmont, MD while providing access to the District core. Connections can be made at the Metro Center and Gallery Place-Chinatown stations to access the five (5) other Metrorail lines, allowing access to points in Virginia and Montgomery County, Maryland.

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 a variety of local transportation options near the Site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 5. The Site is directly served by a local vehicular network that includes regional roadways, such as New York Avenue (Route 50) and several principal and minor arterials such as Florida Avenue NE, 4th Street NE, and 6th Street NE.

The Metrobus system provides local transit service in the vicinity of the Site, including connections to several neighborhoods within the District and additional Metrorail stations. As shown in Figure 5, there are three (3) bus routes that service the Site. Near the Site, there are six (6) bus stops along Florida Avenue NE. These bus routes connect the Site to areas of the District along Florida Avenue NE, 8th Street NE, and Benning Road NE. A detailed review of transit stops within a quarter mile walk of the Site is provided in a later chapter of this report.

There are several existing bicycle facilities near the Site that connect to areas within the District. Bicycle lanes are available along 4th Street NE and 6th Street NE, connecting to bicycle lanes on M Street NE and Eye Street NE to the south and First Street NE to the west. The introduction of protected cycle tracks on Florida Avenue will allow bicyclists greater access to the Site. A detailed review of existing and proposed bicycle facilities and connectivity is provided in a later chapter of the report.

Anticipated pedestrian routes, such as those to public transportation stops, schools, and community amenities, provide adequate pedestrian facilities; however, there are a few sidewalks, generally located several blocks from the Site, that do not meet DDOT standards due to narrow or missing buffer widths. Barriers exist north of the Site due to the Amtrak and WMATA tracks. A detailed review of existing and proposed pedestrian access and infrastructure is provided in a later chapter of this report.

Overall, the Site is surrounded by a robust local transportation network that allows for efficient transportation options via transit, bicycle, walking, or vehicular modes.

Carsharing

Two (2) carsharing companies provide service in the District: Zipcar and Free2Move. Both services are private companies



that provide registered users access to a variety of automobiles. Of these, Zipcar has designated spaces for their vehicles. Currently, there are two (2) Zipcar locations within a quarter mile of the Site and one (1) location just beyond the quarter-mile walkshed. The locations and the number of available vehicles is listed in Table 1.

Carsharing is also provided by Free2Move, which provides point-to-point carsharing. Free2Move currently has a fleet located within select areas of the District. Free2Move 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. Free2Move does not have permanent designated spaces for their vehicles; however, availability is tracked through their website and mobile phone application, which provides an additional option for car-sharing patrons.

Table 1: Carshare Locations

Carshare Location	Number of Vehicles
Zipcar	
1285 6 th Street NE	2 Vehicles
200 Q Street NE	2 Vehicles
800 Florida Avenue NE	1 Vehicle
Total	5 vehicles

Bikeshare and Scooter Share

The Capital Bikeshare program provides an additional cycling option for residents, employees, and visitors throughout the District. The Bikeshare program has placed over 500 bicycle-share stations across Washington, DC, Arlington and Alexandria, VA, and most recently Montgomery County, MD with over 4,300 bicycles provided. A Capital Bikeshare station is located two blocks (0.2 miles) away from the Site along 6th Street NE adjacent to Gallaudet University.

In addition to Capital Bikeshare, DDOT has engaged in pilot programs with several dockless bikeshare and scooter share companies, allowing an additional option for point-to-point transportation. Bicycle and scooter availability are tracked through mobile phone applications for each company individually.

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 Site is located in the Trinidad-Langston neighborhood. The Site has a walk score of 95 (or “Walker’s Paradise”), a transit score of 71 (or “Excellent Transit”), and a bike score of 93 (or “Biker’s Paradise”). Figure 3 shows the neighborhood borders in relation to the Site and displays a heat map for walkability and bikeability. The following conclusions can be made based on the data obtained from Walkscore.com:

- The Site is situated in an area with excellent walk scores because daily errands are within walking distance;
- The Site is situated in an area with excellent transit scores due to its proximity to bus lines and a Metro station; and
- The Site is situated in an area with excellent bike scores due to its proximity to several bike facilities.

Overall, the Site and surrounding neighborhood have excellent pedestrian, transit, and bike accessibility. Additionally, other planned developments and roadway improvements will help increase the walk, transit, and bike scores in the neighborhood.

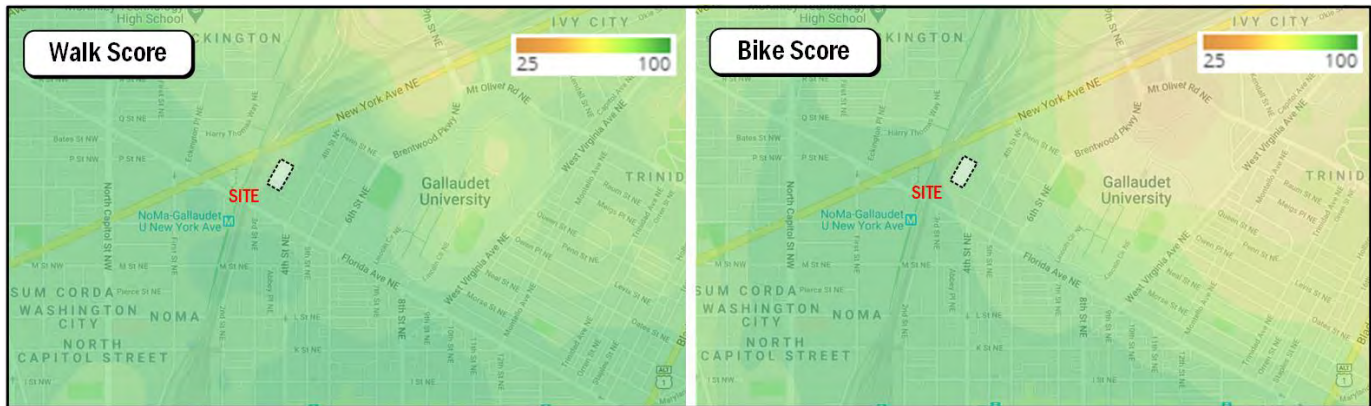


Figure 3: Summary of Walk and Bikescore

FUTURE PROJECTS

There are a few District initiatives and approved 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 a long-range 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 completed 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

Adjacent to the Project, M Street NE, 4th Street NE, 5th Street NE, and 9th Street NE have each been recommended as streets to be redesigned to include a cycle track. These cycle tracks would create greater connectivity to other bicycle facilities throughout the District.

Near the Site along Florida Avenue NE and 8th Street NE, high-capacity transit (shared lanes) is proposed that will create connectivity from the Navy Yard to the Dupont Circle.

SustainableDC: Sustainable DC Plan

SustainableDC is a planning effort initiated by the Department of Energy & Environment and the Office of Planning that provides the District with a framework of leading Washington DC to become the most sustainable city in the nation. The 2012 report proposes a 20-year timeframe to answer challenges in areas of: (1) Jobs & the economy; (2) Health & Wellness; (3) Equity & Diversity; (4) Climate & Environment; (5) Built Environment; (5) Energy; (6) Food; (7) Nature; (8) Transportation; (9) Waste; and (10) Water. With respect to transportation, the sustainability goals targeted in 20 years include:

- Improving connectivity and accessibility through efficient, integrated, and affordable transit systems;
- Expanding provision of safe, secure infrastructure for cyclists and pedestrians;
- Reducing traffic congestion to improve mobility; and
- Improving air quality along major transportation routes.

A combination of increasing public transit and decreasing vehicular mode shares has been suggested to meet the transportation targets. The transportation demand management (TDM) measures proposed in this CTR will help curtail vehicular mode share.

Planned Developments

There are 16 potential development projects in the vicinity of the Site. For the purpose of this analysis and consistent with



DDOT and industry standards, only approved developments expected to be completed prior to the planned development with an origin/destination within the study should be included. Of the background developments considered, all were ultimately included given the proximity of the developments from the Site and site generated volumes of the planned developments impacting the study area intersections. The developments are described below.

Market Terminal Building A

Building A is part of the overall Market Terminal development. Buildings A1 and A2 were analyzed using the approved *300 Morse Street PUD* CTR prepared by Gorove Slade for the following program:

- Building A1: 442 residential units, 15,835 SF of retail
- Building A2: 307 residential units, 7,500 SF of retail
- Total (A1 and A2): 749 residential units, 23,335 SF of retail

The CTR found that the overall Building A will generate 155 peak hour trips in the morning and 214 peak hour trips in the afternoon.

The building's development program slightly decreased in its Second-Stage application (ZC Case 15-27A) in (711 residential units and 22,110 SF of retail), with a slight reduction in peak hour trips (9 fewer in the morning and 18 fewer in the afternoon). A revised vehicular analysis was not required for the Second-Stage application and background trips from this development represent a conservative approach.

Market Terminal Building B

Building B is part of the overall Market Terminal development and was analyzed using the approved *300 Morse Street PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 100 residential units and 9,550 SF of retail. The CTR found that the building will generate 26 peak hour trips in the morning and 42 peak hour trips in the afternoon.

Market Terminal Building C1

Building C1 is part of the overall Market Terminal development and was analyzed using the approved *300 Morse Street PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 217,558 SF of office and 10,563 SF of retail. The CTR found that the building will generate 128 peak

hour trips in the morning and 125 peak hour trips in the afternoon.

Market Terminal Building D

Building D is part of the overall Market Terminal development and was analyzed using the approved *300 Morse Street PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 143 residential units and 6,000 SF of retail. The CTR found that the building will generate 31 peak hour trips in the morning and 45 peak hour trips in the afternoon.

The Highline

The Highline is located at 320 Florida Avenue and was analyzed using the approved *Highline at Union Market PUD* TIS prepared by Gorove Slade. The TIS analyzed a development program of 315 residential units and 9,880 SF of retail. The CTR found that the building would generate 86 peak hour trips in the morning and 118 peak hour trips in the afternoon.

The Batley

The Batley is located at 1270 4th Street and was analyzed using the approved *1270 4th Street NE PUD* TIS prepared by Gorove Slade. The TIS analyzed a development program of 520 residential units and 33,600 SF of retail. The CTR found that the building will generate 239 peak hour trips in the morning and 544 peak hour trips in the afternoon.

1300 4th Street

1300 4th Street is located adjacent to the Batley and was also analyzed using the approved *1270 4th Street NE PUD* TIS prepared by Gorove Slade. The TIS analyzed a development program of 160 residential units and 12,000 SF of retail. The CTR found that the building will generate 50 peak hour trips in the morning and 85 peak hour trips in the afternoon.

500-530 Morse Street

500-530 Morse Street was analyzed using the approved *500 Morse Street NE Consolidate PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 280 residential units and 20,290 SF of on-site retail. The CTR found that the building will generate 70 peak hour trips in the morning and 99 peak hour trips in the afternoon.

301 Florida Avenue

301 Florida Avenue was analyzed using the approved *301 Florida Avenue NE* CTR prepared by Gorove Slade. The CTR



analyzed a development program of 56 residential units, 4,500 SF of ground floor retail, and 6,100 SF of cellar floor retail. The CTR found that the building will generate 18 peak hour trips in the morning and 19 peak hour trips in the afternoon.

Press House at Union District

Press House at Union District is located at 301 N Street and was analyzed using the approved *301-331 N Street NE PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 366 residential units, 25,407 SF of office, 175 hotel rooms, and 26,029 SF of retail. The CTR found that the building will generate 143 peak hour trips in the morning and 180 peak hour trips in the afternoon.

500 Penn Street

500 Penn Street was analyzed using the approved *500 Penn Street, NE* CTR prepared by Wells + Associates. The CTR analyzed a development program of 302 residential units, and 23,660 SF of retail. The CTR found that the building will generate 122 peak hour trips in the morning and 251 peak hour trips in the afternoon.

411 New York Avenue

411 New York Avenue was analyzed using the approved *411 New York Avenue* TIA prepared by O.R. George & Associates. The TIA analyzed a development program of 178 hotel rooms. The CTR found that the building will generate 46 peak hour trips in the morning and 52 peak hour trips in the afternoon.

Gallaudet PUD

The Gallaudet PUD consists of several parcels owned by Gallaudet University along 6th Street between Florida Avenue and Penn Street. The project was analyzed using the approved *Gallaudet 6th Street Development First Stage PUD* CTR prepared by Gorove Slade. The CTR analyzed the following development program:

- Parcel 1: 23,120 SF of university support space, 113,730 SF of office, and 11,490 SF of retail
- Parcel 2: 137 residential units, 9,270 SF of university support space, and 12,415 SF of retail
- Parcel 3: 566 residential units, 186,160 SF of office, and 48,550 SF of retail
- Parcel 4: 495 residential units, 192,200 SF of office, and 58,200 SF of retail

Together, the CTR found that the PUD will generate 577 peak hour trips in the morning and 681 peak hour trips in the afternoon.

Union Market PUD

The Union Market PUD consists of a north and south building, which are located at 1309-1329 5th Street. The project was analyzed using the approved *1309-1329 5th Street PUD* CTR prepared by Gorove Slade for the south building and the *1329 5th Street, NE Second-Stage PUD EISF TIS* prepared by Gorove Slade for the north building. The studies analyzed the following development program:

- South Building: 112,000 SF of office and a 1,290-seat movie theater
- North Building: 300 residential units and 23,053 SF of retail

The CTR found that the South Building will generate 105 peak hour trips in the morning and 190 peak hour trips in the afternoon while the North Building will generate 77 peak hour trips in the morning and 141 peak hour trips in the afternoon.

400 Florida Avenue

400 Florida Avenue was analyzed using the approved *400 Florida Avenue NE PUD* CTR prepared by Gorove Slade. The CTR analyzed a development program of 110 residential units and 164 hotel rooms. The CTR found that the building will generate 61 peak hour trips in the morning and 73 peak hour trips in the afternoon.

1348 4th Street

1348 4th Street features two (2) buildings, with one located at 1348 4th Street and one located at 401 New York Avenue which may be connected via airspace rights above 4th Street. The buildings were analyzed using *ITE 10th Edition Trip Generation* with applicable mode splits and trip distribution prepared by Gorove Slade. A development program of 366 residential units, 155,900 SF of office, and 55,400 SF of retail were analyzed. The CTR found that the buildings will generate 117 peak hour trips in the morning and 164 peak hour trips in the afternoon.

Figure 6 shows the location of the developments considered in relation to the Project.

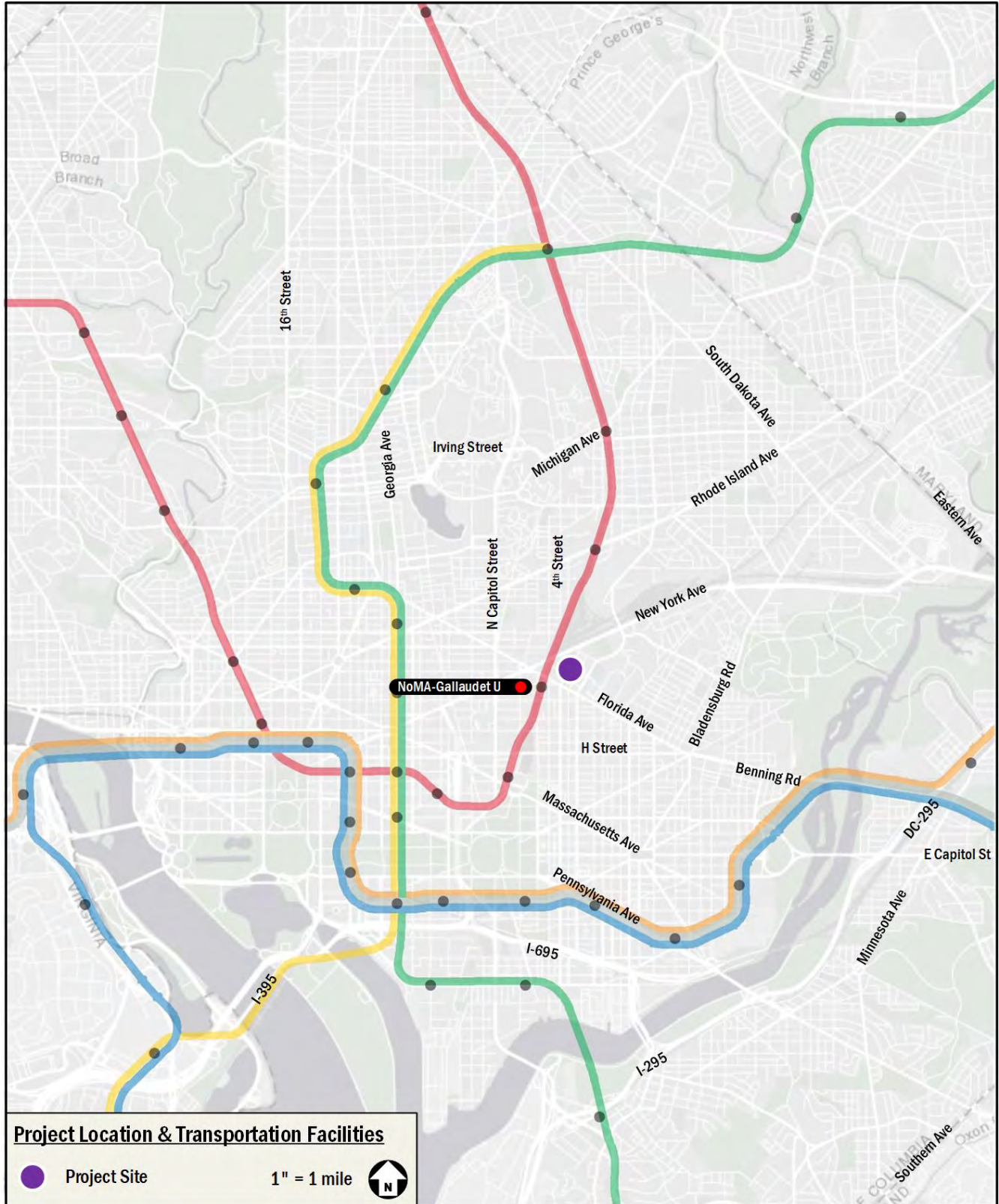


Figure 4: Major Regional Transportation Facilities

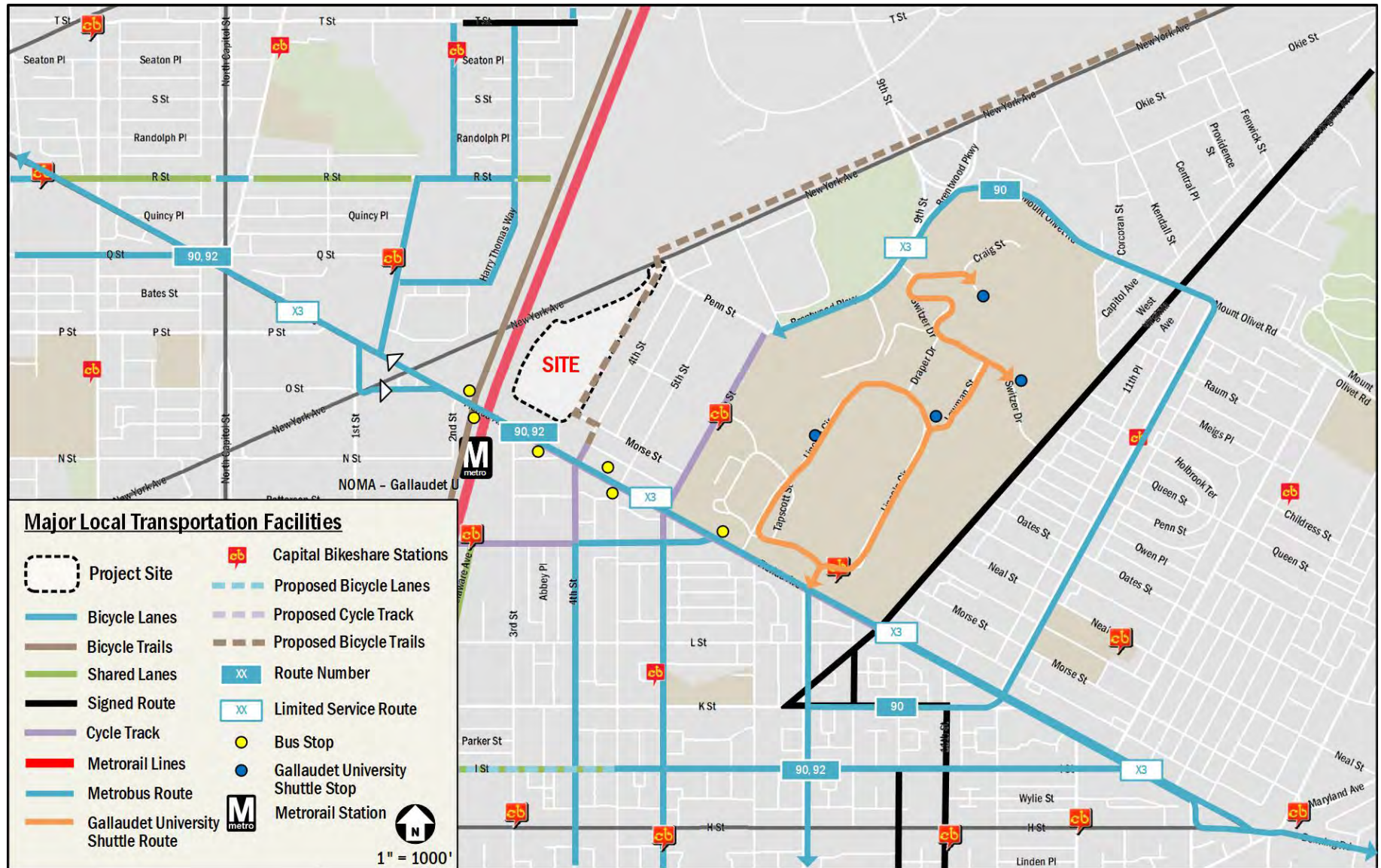


Figure 5: Major Local Transportation Facilities

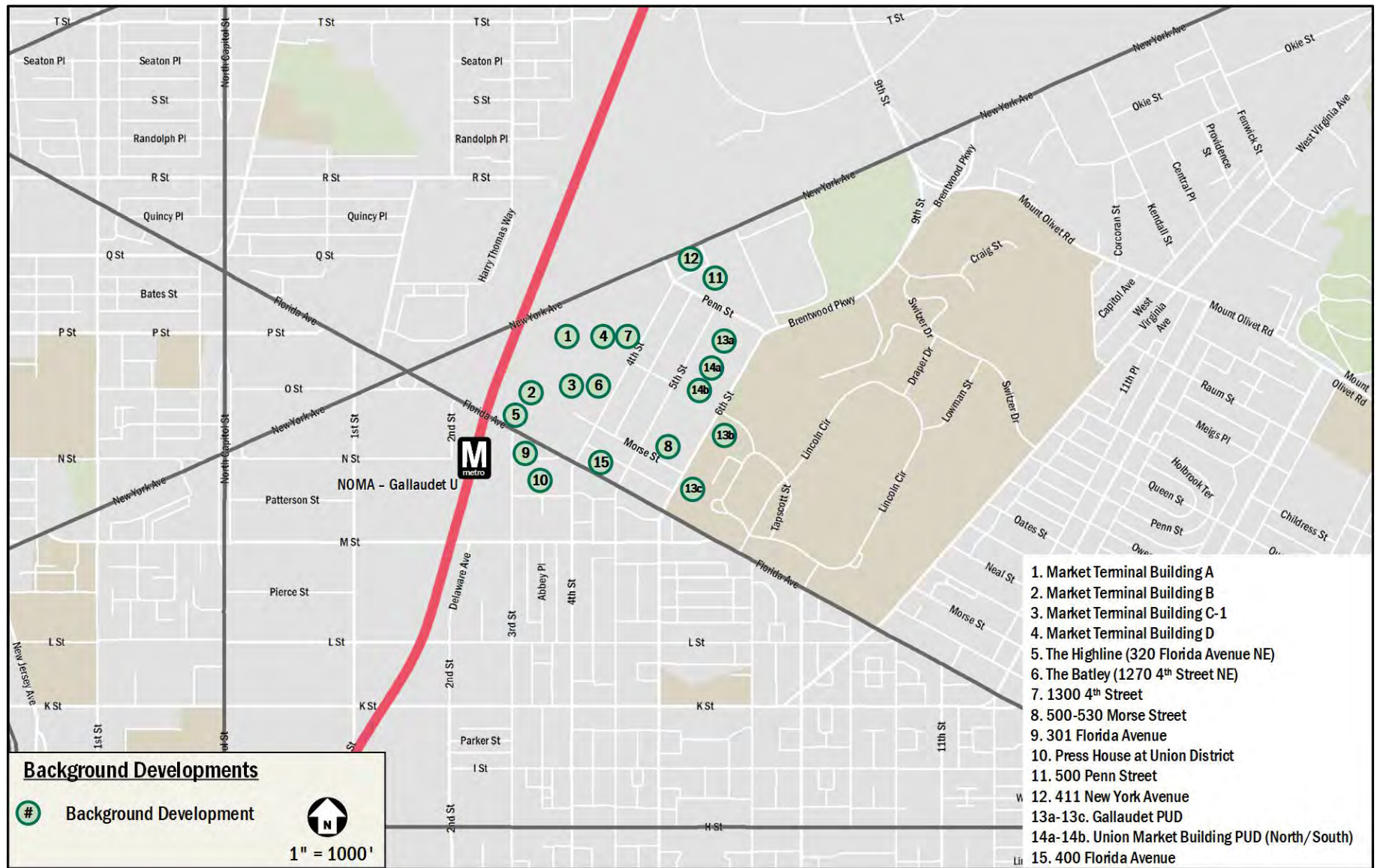


Figure 6: Background Developments



PROJECT DESIGN

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

Building C2 is part of the second phase of the overall Market Terminal development, which was approved in March 2017 as a First-Stage PUD under ZC Order 15-27. The first phase included Buildings A1, B, and C1, which were collectively approved as a Consolidated PUD at the same time. In addition to Building C2, the second phase of the project includes Buildings A2 and D, which will be filed under separate second-stage PUD applications.

Building C2 is bordered by future Building C1, the newly constructed private section of 3rd Street, the extension of Neal Place, and a private Alley.

As approved under the First-Stage PUD application, Building C2 comprised the following development program:

- Approximately 232 residential units
- Approximately 9,200 SF of office space
- Approximately 90 on-site parking spaces

The second-stage PUD development program for Building C2 is as follows:

- Approximately 7,049 square feet of bar/restaurant use in the penthouse
- Approximately 6,532 square feet of retail space (which includes 1,125 square feet of maker space)
- Approximately 132 below-grade vehicle parking spaces in a parking garage, an additional nine (9) non-zoning compliant tandem spaces are also being provided

Figure 7 shows an overview of the development program and site plan elements. Figure 8 shows an overview of the approved First-Stage and proposed Second-Stage PUD plans.

SITE ACCESS AND CIRCULATION

Pedestrian Access

Pedestrian access will be from the future 3rd Street NE, and the future private alley for the office use and from the future 3rd

Street, the future Neal Place extension, and the future private alley for the retail use.

Bicycle Access

Bicycle access will be from the proposed Alley east of the Site, with the long-term bicycle storage room located in the first level of the parking garage. The Alley will include a two-way cycle track, part of the future New York Avenue Streetscape and Trail project. The 77 long-term secure bicycle spaces will be provided in a dedicated storage room. The 16 short-term bicycle parking spaces will be provided along the frontages of 3rd Street, Neal Place, and the Alley. Figure 9 shows a circulation plan with pedestrian and bicycle routes.

Vehicular Access

Vehicular access for Building C2 is proposed off the proposed Alley. The Alley will be constructed in conjunction with the Project and with the adjacent 4th Street PUD. Two (2) curb cuts are proposed for Building C2 which will serve loading and parking access, respectively. The garage and loading berth curb cuts will be unsignalized and stop-controlled. The site plan is shown on Figure 7.

The loading facilities will consist of one (1) 30-foot loading berth and one (1) 20-foot storage/delivery space.

Truck routing to and from the Site will be focused on designated primary truck routes, such as New York Avenue, Florida Avenue, and 6th Street.

A circulation plan with vehicular and loading routes is shown on Figure 10.

Curbside Management

A curbside parking lane will be provided along the future 3rd Street NE. This parking lane will be consistent with the *Union Market Streetscape Guidelines*, with eight-foot parking lanes and 10-foot driving lanes.

The Neal Place streetscape will feature two (2) 11-foot driving lanes and curbside parking along the east side of Neal Place, adjacent to the future Building D.

The Alley streetscape will have two (2) 12-foot driving lanes and the 10-foot future cycle track that will run adjacent to the Project.



The proposed curbside conditions around the Site will be provided in the Technical Attachments and the plans filed with the Zoning Commission.

LOADING AND TRASH

Loading

The proposed loading facilities will accommodate all move-ins/move-outs for the office and retail tenants and delivery demand without any detrimental impact to the surrounding network.

The Project will provide one (1) 30-foot loading berth and one (1) 20-foot service/delivery space. Building C2 was approved as a First-Stage PUD under the 1958 Zoning Regulations but is subject to the 2016 Regulations as a result of the change in use. Under 2016 Zoning Regulations, the Project is required to provide one loading berth for the retail portion & three (3) loading berths and one (1) service/delivery space for the office portion. Although the office use requires three (3) loading berths, the Applicant proposes to provide a total of one (1) 30-foot loading berth in Building C2, with the ability to share loading space with future Building C1's loading area. Such flexibility for the office use was granted in the First-Stage approved under Z.C. 15-27. Pursuant to Subtitle C-901.8 and C-902.2, two or more uses may share loading and the building is only required to provide enough berths to meet the requirements for the use category with the highest requirement. Buildings C1 and C2 are one building for zoning purposes. Together, C1 and C2 provide the required number of loading facilities as a single building (3 total loading berths and 1 service delivery space for more than 200,000 SF of office use.

The Project is expected to generate up to three (3) loading trips per day, consisting of daily trash removal services and mail and

parcel delivery. One (1) trash removal truck, and two (2) mail and parcel delivery trucks, will service the project on a daily basis. Figure 7 shows the location of the access points, loading zone, and trash removal services. The loading facilities provided by the Project will be sufficient to accommodate this demand.

DDOT standards stipulate that truck movements for a site should be accommodated without back-in movements through public space. The Project has been designed to accommodate all loading activity and associated backing maneuvers within the building via the Alley. Head-in/head-out loading operations and trash pick-up will be via a curb-cut off of the Alley. Truck turning diagrams using AutoTURN are provided in the Technical Attachments.

Trash

Trash for the Project will be accommodated using trash receptacles within the loading area of the building. No trash will be stored in public space.

PARKING

The parking provided by the Site should accommodate all parking needs on-site. Based on the Zoning Regulations' requirements for the proposed retail use, the building is required to provide 1.33 spaces for every 1,000 square feet of gross floor area in excess of 3,000 square feet, resulting in nine (9) spaces. An additional 10 are required for the proposed penthouse bar/restaurant use, which would operate as office space during weekday business hours, resulting in 19 total spaces. In addition, based on the Zoning Regulations' requirements for the proposed office use, the building is required to provide 0.5 spaces for every 1,000 square feet of gross floor area in excess of 3,000 square feet (reduction prorated between the 3 uses), resulting in 112 spaces. As

Table 2: Proposed and Preferred Parking Supply for Building C2

Land Use	Qty	Proposed Parking Supply		DDOT Preferred Vehicle Parking Rates (1/4 to 1/2 Mile from Metrorail)	
		# of Spaces	Parking Ratio (Spaces/KSF)	Parking Ratio (Spaces/KSF)	Preferred Parking Supply
Office	225,398 SF	115	0.51	0.50	113
Retail	13,581 SF*	17	1.25	1.25	17
Total		132 Spaces			130 Spaces
<i>Proposed Parking Supply is 2% overparked</i>					

**Includes 6,532 SF of retail space and 7,049 of bar/restaurant penthouse space outside of office hours.*



allowable by 11-C DCMR § 702.1(b), a 50% reduction in required parking is warranted as the Site is within 0.5 miles of a Metrorail station, in this case the NoMa-Gallaudet U New York Ave station. With the applicable reduction, the Project is required to provide 66 parking spaces.

The Project will include 132 parking spaces with an additional nine (9) non-zoning compliant spaces. Nine (9) spaces will be allocated to the retail use and eight (8) spaces will be allocated to the bar/restaurant penthouse uses. 115 spaces are expected to be allocated to office uses with an additional nine (9) non-zoning compliant tandem spaces.

The development is between ¼ to ½ mile away from the NoMA-Gallaudet-U Metrorail Station, which necessitates a preferred parking ratio under DDOT's preferred parking supply. As seen in Table 2, the 132 spaces proposed is slightly more than DDOT's preferred supply of 130 spaces (2% overparked). To offset induced demand from the extra parking spaces, an Enhanced-Tier TDM plan has been proposed, which will be described in the *Transportation Demand Management (TDM)* section.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle Facilities

Per the Zoning Regulations, the Project is required to supply the following bicycle parking spaces:

- Long Term (70 spaces required)
 - Office: One (1) space for every 2,500 SF; After the first 50 spaces, additional spaces are calculated at one every 5,000 SF: 70 Spaces are required.
 - Retail: One (1) space for every 10,000 SF; Zero (0) Spaces are required
 - Bar/Restaurant penthouse use: One (1) space for every 10,000 SF; Zero (0) Spaces are required)
- Short Term (10 spaces required)
 - Office: One (1) space for every 40,000 SF; Six (6) spaces are required.
 - Retail: One (1) space for every 3,500 SF; Two (2) spaces are required.
 - Bar/Restaurant penthouse use: One (1) space for every 3,500 SF; Two (2) spaces are required.

Long-term bicycle parking will be accommodated on the first level of the parking garage of Building C2. The bicycle storage

room will include 77 long-term spaces which exceeds the zoning requirements of 70 long-term bicycle parking spaces.

Eight (8) bicycle racks will be provided around the perimeter of the project providing 16 short-term bicycle parking spaces, meeting the 10 short-term spaces required per zoning. 10 short term spaces are provided on the sidewalk along 3rd Street and six (6) short-term spaces are provided on the sidewalk along Neal Place.

The development will also supply the appropriate number of showers and lockers as required by ZR16.

Pedestrian Facilities

As part of the Project, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards. New sidewalks will be installed around the perimeter of the Site that will meet or exceed the width requirements, as well as curb ramps with detectable warnings and crosswalks at the new site entrance as needed.

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.

All developments within the District are expected to provide baseline TDM plan with the following measures:

- Unbundle the cost of parking from the cost to lease an office unit and only hourly, daily, or weekly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. There will be a Transportation Coordinator for each tenant and the entire site. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year. All



employer tenants must survey their employees and report back to the Transportation Coordinator.

- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the employees and customers, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Will notify goDCgo each time a new office tenant moves in and provide TDM information to each tenant as they move in.
- Will post “getting here” information in a visible and prominent location on the website with a focus on non-automotive travel modes. Also, links will be provided to goDCgo.com, CommuterConnections.com, transit agencies around the metropolitan area, and instructions for discouraging parking on-street in Residential Permit Parking (RPP) zones.
- Transportation Coordinator will implement a carpooling system such that individuals working in the building who wish to carpool can easily locate other employees who live nearby.
- Distribute information on the Commuter Connections Guaranteed Ride Home (GRH) program, which provides commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a free and reliable ride home in an emergency.
- Transportation Coordinator will demonstrate to goDCgo that tenants with 20 or more employees are in compliance with the DC Commuter Benefits Law and participate in at least one of the three transportation benefits outlined in the law (employee-paid pre-tax benefit, employer-paid direct benefit, or shuttle service), as well as any other commuter benefits related laws that may be implemented in the future.
- Provide employees who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.

- Designate a minimum of two (2) preferential carpooling spaces and one (1) vanpooling spaces in a convenient location within the parking garage for employee use.
- Offer a free SmarTrip card and one (1) complimentary Capital Bikeshare coupon good for a free ride to each new employee for the first year.
- Will meet ZR16 requirements for showers and lockers for use by employees. The Applicant will provide shower and locker facilities that meet Zoning Regulations (6 showers and 42 lockers).
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo and tandem bikes.

To supplement the baseline measures proposed, an Enhanced Tier TDM Plan is being proposed, based on DDOT’s CTR guidelines for developments of this type and size. The Applicant proposes the following Enhanced-Tier TDM measures:

- Provide a minimum of six (6) electric vehicle parking spaces in the garage.
- Install a Transportation Information Center Display (electronic screen) within the office lobby containing information related to local transportation alternative.
- Offer an annual Capital Bikeshare membership to each employee for the first year after the building opens.
- Employers will participate in the Capital Bikeshare Corporate membership program and offer discounted annual memberships to employees.
- Provide a free parking space for all vehicles that employees use to vanpool to work. Additional short and long-term bicycle parking spaces above ZR16 requirements.

In addition to the Enhanced Tier TDM plan proposed, the Applicant will honor the following TDM commitments as approved under the First Stage PUD application:

- Prior to the issuance of COO for Building C2, the building owner shall have the individual obligation to demonstrate to the Zoning Administrator that it has constructed the interior bicycle parking within Building C2.
- Prior to the issuance of COO for the first building completed within the second-stage PUD, the Applicant shall demonstrate to the Zoning Administrator that it has paid DDOT for the installation and first year’s operation expenses of a new Capital Bikeshare station to be located on Morse Street, south of Building C1.



- Prior to the issuance of a COO for Building C2, the Applicant shall demonstrate to the Zoning Administrator that it has exceeded the zoning requirements for bicycle parking for Building C2.
- Prior to the issuance of a COO for Building C2, the building owner shall have the individual obligation to demonstrate to the Zoning Administrator that it has installed a transit information screen in the lobby.

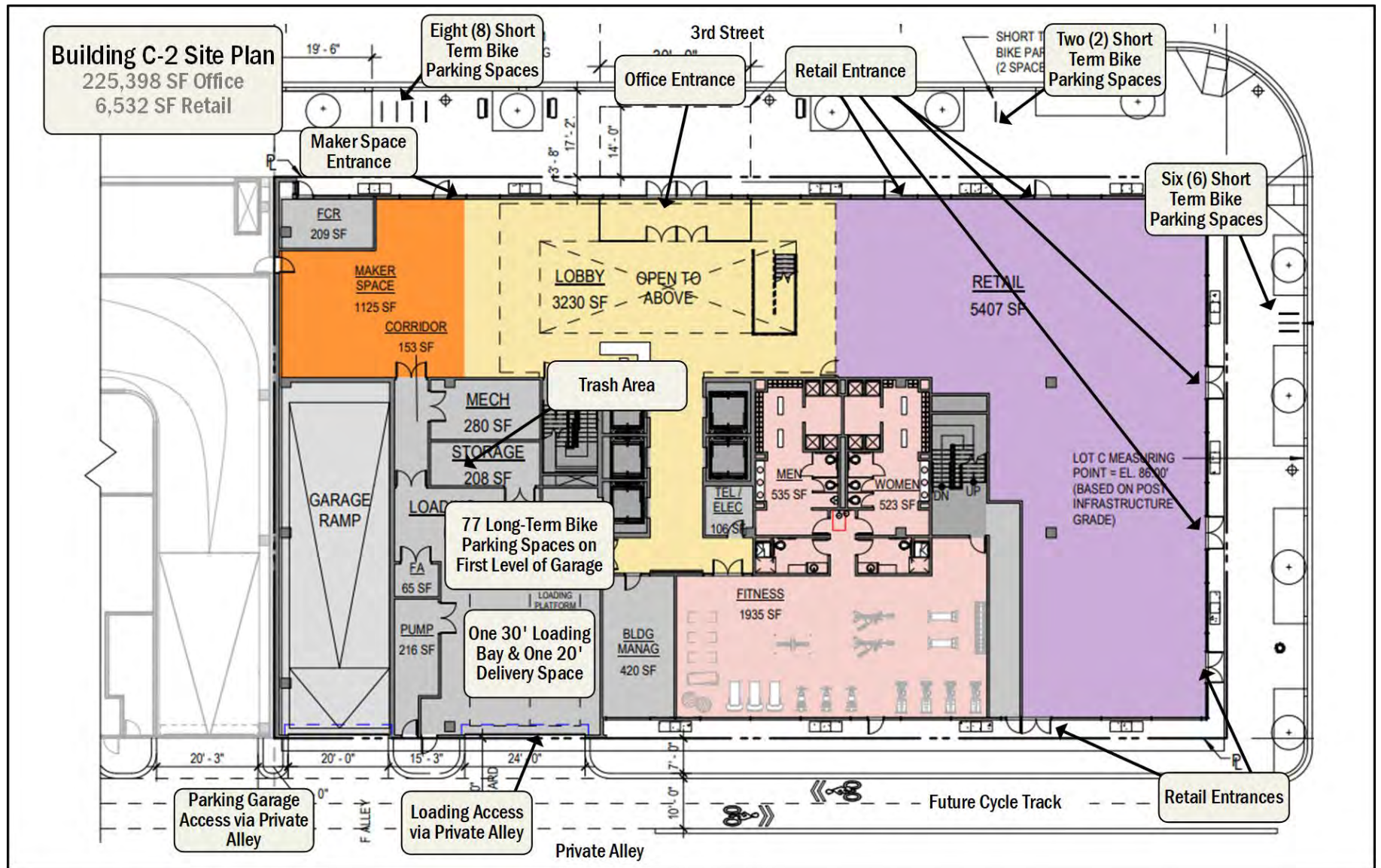


Figure 7: Site Plan

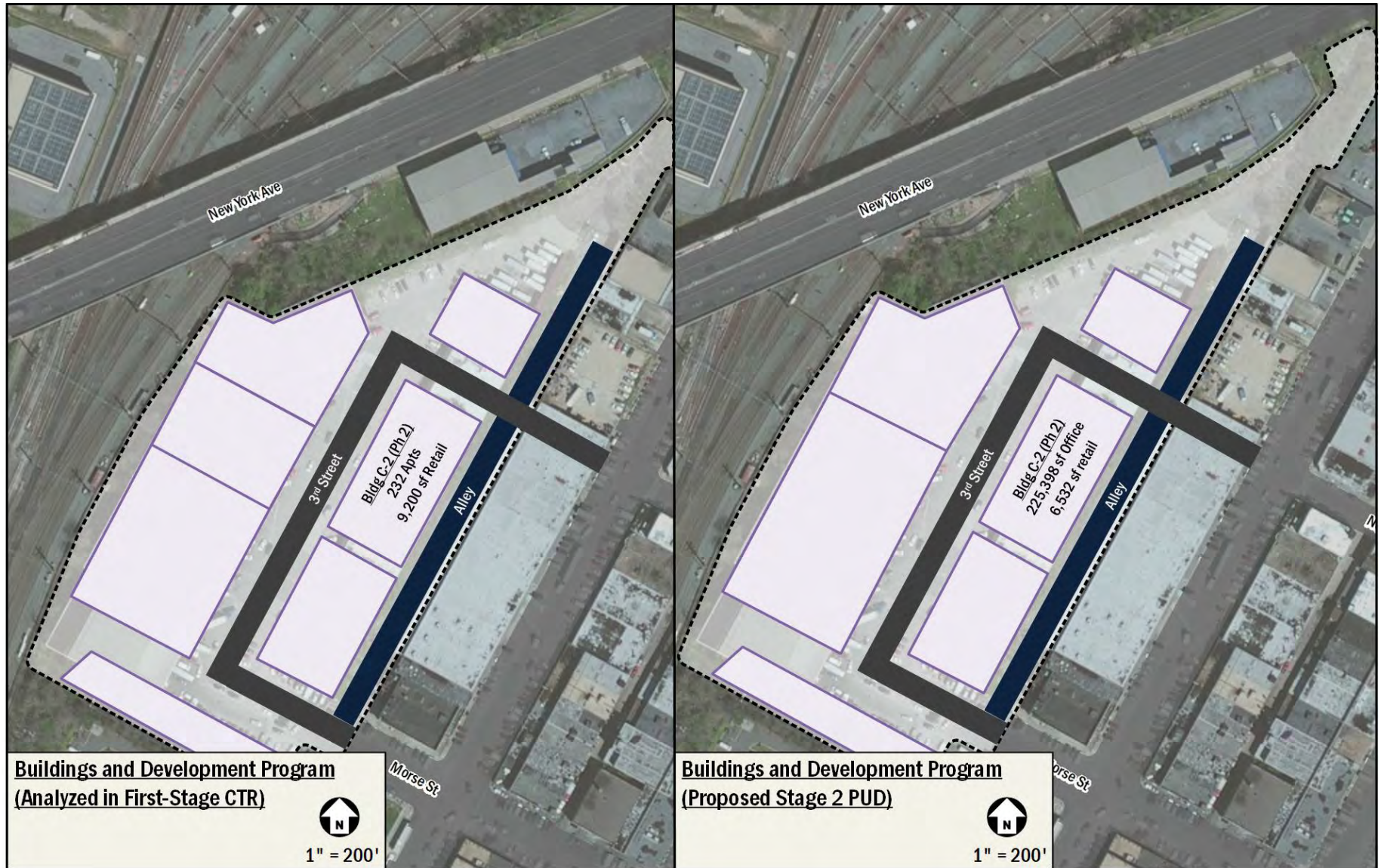


Figure 8: Comparison of Approved First-Stage and Proposed Second-Stage Development Programs for Building C2

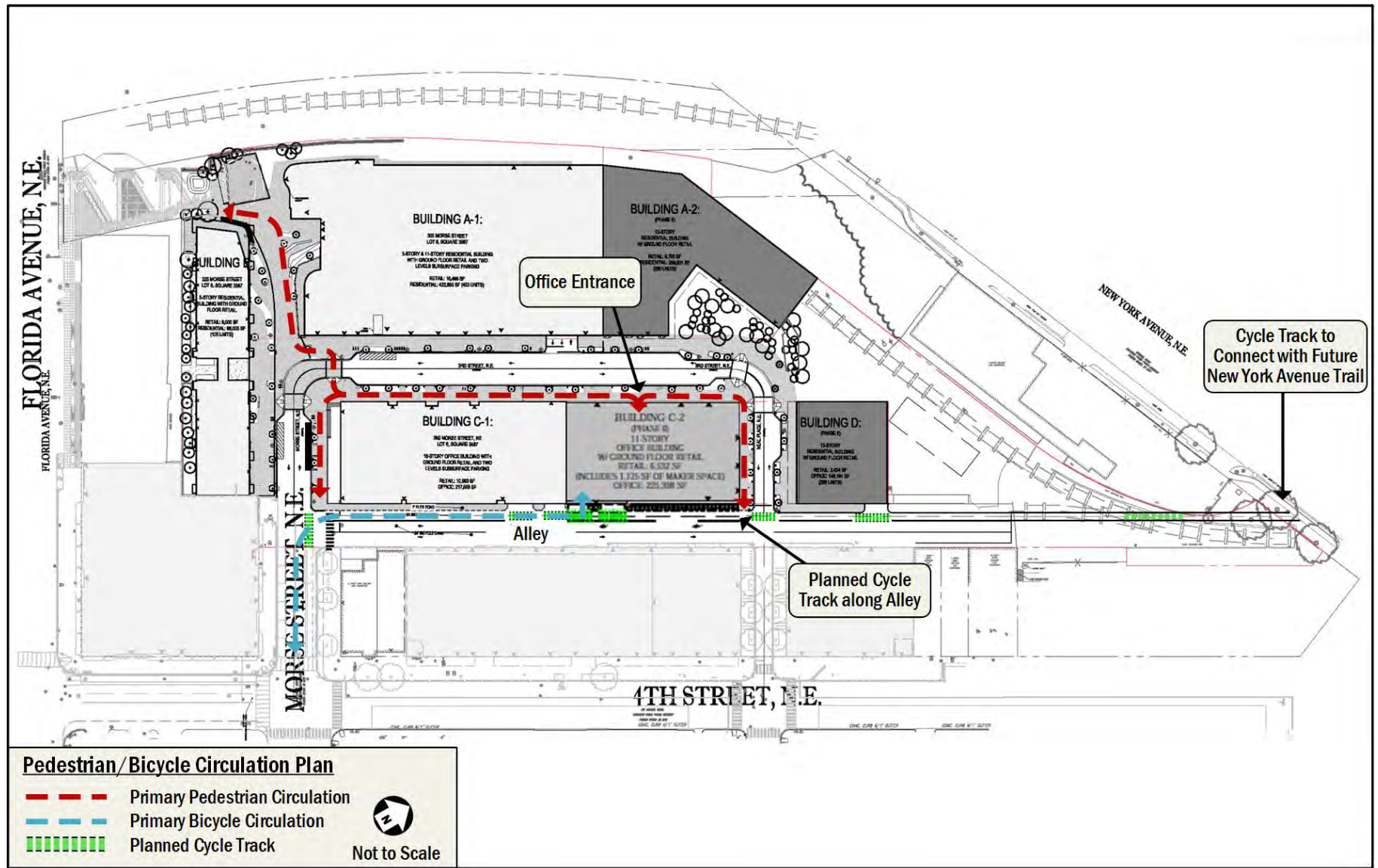


Figure 9: Pedestrian/Bicycle Access and Circulation

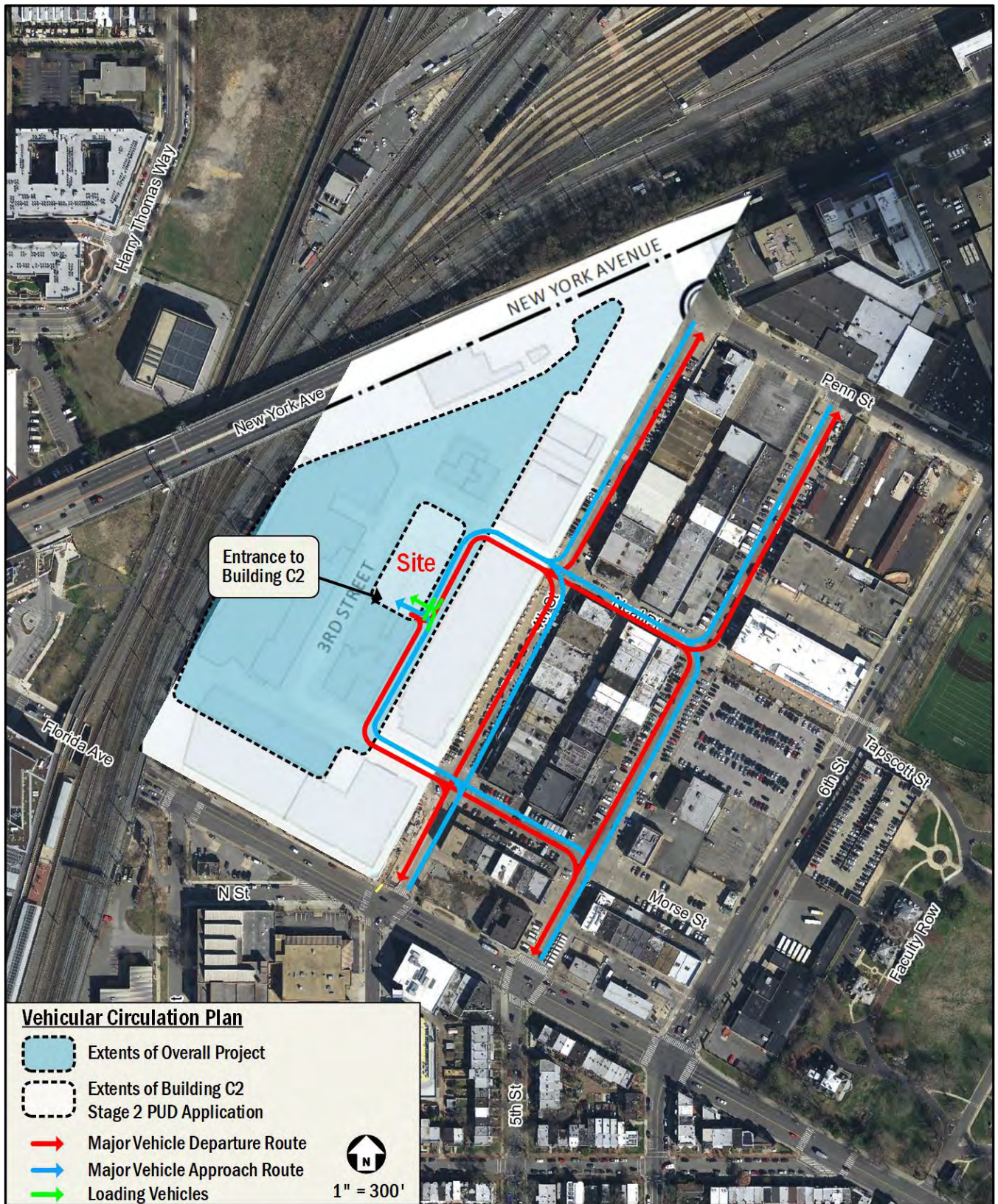


Figure 10: Vehicular Access and Circulation



TRIP GENERATION

This chapter outlines the Project’s transportation demand. It summarizes the projected trip generation of the Project by mode, which forms the basis for the chapters that follow. These assumptions were vetted and approved by DDOT as a part of the scoping process for the study. Traditional ITE rates were used to calculate trip generation for an apartment development of this type. As such, this analysis uses traditional trip generation methodologies.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual*, 10th Edition. This methodology was supplemented to account for the urban nature of the Project (the *Trip Generation Manual* provides data for non-urban, low transit use Sites) and to generate trips for multiple modes, as vetted and approved by DDOT.

Office trip generation was calculated based on ITE land use 710, General Office Building and 820, Shopping Center, splitting trips into different modes using assumptions derived from census data for the employees that currently work near the Site. Trip generation for the proposed 7,049 SF of bar/restaurant use in the penthouse was not analyzed as this use would generate trips outside of the commuter peak hours as agreed to with DDOT in the scoping process. A summary of

the multimodal trip generation for the Project, based on ITE, is provided in Table 3 for both peak

hours. Detailed calculations are included in the Technical Attachments, including the approved First-Stage PUD trip generation.

The Project is expected to generate new trips on the surrounding transportation network across all modes. The AM peak hour trip generation is projected to include 85 cars/hour, 145 transit riders/hour, 15 bicycle trips/hour, and 31 walking trips/hour. The PM peak hour trip generation is projected to include 95 cars/hour, 161 transit riders/hour, 17 bicycle trips/hour, and 41 walking trips/hour.

The Project is expected to generate 85 vehicular trips (73 in, 12 out) during the morning peak hour and 95 vehicular trips (18 in, 77 out) during the afternoon peak hour.

Table 3: ITE Multi-Modal Trip Generation Summary

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Office	72 veh/hr	11 veh/hr	83 veh/hr	14 veh/hr	72 veh/hr	86 veh/hr
	Retail	1 veh/hr	1 veh/hr	2 veh/hr	4 veh/hr	5 veh/hr	9 veh/hr
	Total	73 veh/hr	12 veh/hr	85 veh/hr	18 veh/hr	77 veh/hr	95 veh/hr
Transit	Office	121 ppl/hr	20 ppl/hr	141 ppl/hr	23 ppl/hr	122 ppl/hr	145 ppl/hr
	Retail	2 ppl/hr	2 ppl/hr	4 ppl/hr	8 ppl/hr	8 ppl/hr	16 ppl/hr
	Total	123 ppl/hr	22 ppl/hr	145 ppl/hr	31 ppl/hr	130 ppl/hr	161 ppl/hr
Bike	Office	12 ppl/hr	2 ppl/hr	14 ppl/hr	2 ppl/hr	13 ppl/hr	15 ppl/hr
	Retail	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr
	Total	12 ppl/hr	3 ppl/hr	15 ppl/hr	3 ppl/hr	14 ppl/hr	17 ppl/hr
Walk	Office	24 ppl/hr	4 ppl/hr	28 ppl/hr	5 ppl/hr	24 ppl/hr	29 ppl/hr
	Retail	2 ppl/hr	1 ppl/hr	3 ppl/hr	6 ppl/hr	6 ppl/hr	12 ppl/hr
	Total	26 ppl/hr	5 ppl/hr	31 ppl/hr	11 ppl/hr	30 ppl/hr	41 ppl/hr



TRAFFIC OPERATIONS

This chapter provides a summary of an analysis of the existing and future roadway capacity surrounding the Site. Included is an analysis of potential vehicular impacts of the 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 Project on the study area roadways; and
- Discuss any potential improvements and mitigation measures to accommodate the additional vehicular trips.

This analysis was accomplished by determining the traffic volumes and roadway capacity for Existing Conditions, Background Conditions, and Total Future Conditions.

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

This chapter concludes:

- Under Existing Conditions, most study intersections operate at acceptable levels of service.
- Background developments near the Site add a significant number of vehicles along study area roadways with some increases in delay noted.
- The addition of site generated trips does not significantly affect the delays or queuing at most intersections.
- Three (3) intersections require mitigations as a result of the minor impacts to delay create by the development.
- Mitigations in the form of signal timing adjustments and peak-period parking restrictions were proposed at selected intersections. These proposed mitigations are similar to what was proposed in the First-Stage CTR.
- The Project will not have a detrimental impact to the surrounding vehicular 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 extensively discussed with and agreed upon by 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 capacity analyses were performed to determine whether the Project will lead to adverse impacts on traffic operations. A review of potential impacts to each of the other modes is outlined later in this report. This is accomplished by comparing two future scenarios: (1) without the Project (referred to as the “Background condition” and (2) with the Project approved and constructed (referred to as the Total Future condition).

Specifically, the roadway capacity analysis examined the following scenarios:

1. 2019 Existing Conditions (Existing Conditions);
2. 2022 Future Conditions without the Project (2022 Background Conditions); and
3. 2022 Future Conditions with the Project (2022 Total Future)

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses were 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 Project. Although it is possible that impacts will occur outside of the study area, those impacts are neither significant enough to be considered a material adverse 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 and agreed upon by DDOT for analysis:

1. 4th Street & New York Avenue NE
2. Penn Street & 4th Street NE
3. Penn Street & 6th Street NE
4. Neal Place & Alley NE (Future)
5. Neal Place & 4th Street NE
6. Morse Street & Alley NE (Future)
7. Morse Street & 4th Street NE
8. Florida Avenue & 4th Street NE
9. Florida Avenue & 5th Street NE



- 10. Florida Avenue & 6th Street NE
- 11. Alley & Site Driveway (Future)

Figure 11 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: Wednesday, June 12, 2019 from 6:30 to 9:30 AM and 4:00 to 7:00 PM. The results of the traffic counts are included in the Technical Attachments. For all intersections, the intersection morning and afternoon peak hours were used. The existing intersection peak hour traffic volumes are shown on Figure 13.

2022 Background Traffic Volumes (without the project)

The traffic projections for the 2022 Background Conditions consist of the existing volumes with three (3) possible additions:

- Volume reroutes as a result of transportation network roadway projects,
- Inherent growth on the roadway (representing regional traffic growth), and
- The impacts of “background” developments, if any (none were included in this analysis).

Following the collection of traffic data in June 2019, surrounding intersections in the roadway network underwent changes, including the following:

- Rerouting of southbound 6th Street trips as a result of the permanent one-way conversion between Florida Avenue and K Street.

The volume rerouting as a result of this conversion is provided in Figure 14.

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 as discussed with and agreed upon by DDOT, 16 developments were considered and determined to meet the above criteria. These developments include the following:

- Market Terminal Building A
- Market Terminal Building B
- Market Terminal Building C1
- Market Terminal Building D
- The Highline (320 Florida Avenue)
- The Batley (1270 4th Street)
- 1300 4th Street
- 500-530 Morse Street
- 301 Florida Avenue
- Press House at Union District (301 N Street)
- 500 Penn Street
- 411 New York Avenue
- Gallaudet PUD
- Union Market Building PUD (North/South Buildings)
- 400 Florida Avenue
- 1348 4th Street

Existing studies were available most of the developments, with mode splits, trip generation, and trip distributions used from the studies wherever available. Assumptions for 1348 4th Street were derived using *ITE Trip Generation 10th Edition* with mode splits and distributions derived from the assumptions made for Building C2. It should be noted that 1270 4th Street has since opened but was still under construction at the time of data collection and is therefore considered a background development. Trip generation for Market Terminal Buildings A, B, C1, and D utilized the First Stage PUD CTR, which also included Building C2. Building C2 trips were removed from site trips for the background scenario of this study. Background trips in and around the Alley at Market Terminal were routed to provide a balance of trips traveling to and from the site along Morse Street and Neal Place. A summary of the trip generation for the background developments is shown on Table 4. Detailed mode split and trip generation information is included in the Technical Attachments.

While the background developments represent local traffic changes, regional traffic growth is typically accounted for using growth rates. The growth rates used in this analysis are derived



using the Metropolitan Washington Council of Government's (MWCOCG) currently adopted regional transportation model, comparing the difference between the year 2019 and 2022 model scenarios as vetted and agreed to by DDOT. The growth rates observed in this model served as a basis for analysis assumptions. The applied growth rates are shown in Table 5.

The background growth volumes are shown in Figure 15 and background development volumes are shown in Figure 17.

The traffic volumes generated by the inherent growth along the network were added to the existing traffic volumes in order to establish the 2022 Background traffic volumes. The traffic volumes for the 2022 Background conditions are shown on Figure 18.

2022 Total Future Traffic Volumes (with the Project)

The 2022 Total Future traffic volumes consist of the 2022 Background volumes with the addition of the traffic volumes generated by the office and retail portions of the Project. Thus, the 2022 Total Future traffic volumes include traffic generated by: the existing volumes, volume reroutes as a result of roadway projects, background developments (if any), the inherent growth on the study area roadways, and the Project.

Trip distribution for the site-generated trips was determined based on: (1) CTPP TAZ data, (2) existing and future travel patterns in the study area, and (3) the location of the parking access.

Based on this review and the Site access locations, the Project-generated trips were distributed through the study area intersections. A summary of trip distribution assumptions and specific routing is provided on Figure 19 for inbound and outbound trips.

The traffic volumes for the 2022 Total Future conditions were calculated by adding the Project-generated traffic volumes to the 2022 Background traffic volumes. The Project-generated traffic volumes include trips generated by the office and retail uses. It should be noted that the proposed bar/restaurant penthouse use as part of buildings C1 and C2 will operate outside of office hours and is not expected to generate trips during the commuter peak hours. Thus, the future condition with the Project scenario includes traffic generated by existing volumes, inherent growth on the network, and the Project. The Project generated traffic volumes are shown on Figure 21. The 2022 Total Future traffic volumes are shown on Figure 22.

Peak Hour Factors

The TRB *Highway Capacity Manual* (HCM) and the AASHTO *Policy on Geometric Design of Highways and Intersections* recommend evaluating traffic conditions during the worst 15 minutes of either a design hour or a typical weekday rush hour. Peak Hour Factor (PHF) is used to convert the hourly volume into the volume rate representing the busiest 15 minutes of the hour. The existing guidelines provide typical values of PHF and advise using the PHF calculated from vehicle counts at analyzed or similar locations. The HCM recommends a PHF of 0.88 for rural areas and 0.92 for urban areas and presumes that capacity constraints in congested areas reduce the short-term traffic fluctuation. The HCM postulates 0.95 as the typical PHF for congested roadways.

For the Existing Conditions analysis, the PHF was calculated from the turning movement data that was collected in the field, using a minimum PHF of 0.85 for each intersection. Per DDOT guidelines, the intersection PHF remained the same through all study scenarios.

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 12.

2022 Background 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 Project.



Based on these criteria, there four (4) background improvements within the vicinity of the Site.

- Reconfiguration of Florida Avenue cross-section as part of the Florida Avenue NE Intersection Project. Interim improvements along the corridor between 2nd Street and West Virginia Avenue were made in the Summer of 2019 following the collection of traffic data. The final design will reduce the number of through lanes in each direction, with dedicated left-turn storage lanes. Study intersections along Florida Avenue will be impacted (at 4th, 5th, and 6th Streets). The geometry assumed in this study uses the 65% plans prepared in December 2019.
- Conversion of 4th Street & Penn Street NE to a signalized intersection. As part of the agreement between the Applicant of the approved 500 Morse Street project, the unsignalized intersection will be converted into a signalized intersection.
- Conversion of 6th Street NE between K Street and Florida to northbound-only. The southbound approach at Florida Avenue and 6th Street will be restricted to left and right turns only.
- Conversion of 4th Street & Morse Street NE to a signalized intersection. As part of the approved Phase 1 of the overall Market Terminal, this intersection will be signalized with the opening of the first Market Terminal buildings.

The lane configurations and traffic controls for the 2022 Background Geometry is presented in Figure 16.

2022 Total Future Geometry and Operations Assumptions

The configurations and traffic controls for the 2022 Future Conditions were based on those for the 2022 Background Conditions with the addition of the Site driveway on the Private Alley as an intersection leg.

The lane configurations and traffic controls for the 2022 Total Future Conditions are shown on Figure 20.

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 9.1 was used to analyze the study intersections based on the HCM 2000 methodology.

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 intersection peak hour traffic volumes; (2) the lane use and traffic controls; and (3) the HCM methodologies (using *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 6 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2022 Background, and 2022 Total Future scenarios. Table 7 shows a comparison of the volume to capacity (v/c) ratios for each scenario.

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at each of the study intersections. The queuing analysis was performed using *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. For unsignalized intersections, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Table 8 shows the queuing results for the study area intersections. Two (2) of the study intersections exhibit one or more lane group that exceeds the given storage length during the existing conditions:

- Penn Street & 6th Street



- Eastbound Left (PM)
- Florida Avenue and 6th Street (Eastbound)
 - Westbound Thru/Right (PM)
 - Southbound Left (AM)

The introduction of trips from background developments results in seven (7) study intersections that exhibit one or more lane group that exceeds the given storage length:

- New York Avenue & 4th Street
 - Northbound Left (AM/PM)
 - Northbound Right (AM/PM)
- Penn Street & 4th Street
 - Eastbound Thru/Left (AM/PM)
 - Westbound (AM/PM)
- Penn Street & 6th Street
 - Eastbound Left (PM)
 - Southbound Thru (AM)
- Morse Street & 4th Street
 - Eastbound (AM/PM)
 - Westbound (PM)
 - Northbound (PM)
- Florida Avenue & 4th Street
 - Eastbound Left (AM/PM)
 - Southbound Thru (AM/PM)
- Florida Avenue & 5th Street
 - Eastbound Left (PM)
 - Eastbound Thru (PM)
 - Northbound (PM)
 - Southbound (AM/PM)
- Florida Avenue and 6th Street
 - Eastbound Left (AM/PM)
 - Westbound Thru (AM/PM)
 - Northbound Left (AM/PM)
 - Northbound Thru (AM/PM)
 - Southbound Left (PM)

The introduction of site-generated trips results in one (1) additional study intersections exhibiting a queue which exceeds the storage length:

- Neal Place & 4th Street
 - Eastbound Left/Right (PM)

The 95th Percentile queues at this location slightly exceed the storage length by 16 feet, or less than one (1) car length.

MITIGATION MEASURES

Based on DDOT standards, the Project is considered to have an impact at an intersection within the study area if any of the following conditions are met:

- The capacity analyses show a LOS E or F at an intersection or along an approach in the future with conditions with the Project where one does not exist in the background conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than 5 percent when compared to the background conditions; or
- There is an increase in the 95th percentile queues by more than 150 feet at an intersection or along an approach in the future conditions with the Project where one does not exist in the background scenario.

Based on these criteria, the following intersections are impacted by the Project:

- New York Avenue & 4th Street
- Morse Street & 4th Street
- Florida Avenue & 4th Street

Project Impact and Recommendations

This section summarizes the results of the capacity analyses for the intersections with movements or approaches that operate at unacceptable conditions and lists the scenarios for which this occurs. Impact associated with Building C2 is noted where delays for failing approaches or intersections increase by five percent or more or where an intersection or approach go from an acceptable LOS to an unacceptable one as compared between Background and Future conditions. Finally, recommendations for improvements at each intersection are discussed.

New York Avenue & 4th Street

During the afternoon peak hour, the northbound approach of 4th Street experiences unacceptable delays in the Existing, Background and Total Future study conditions. The northbound delay increases seven (7) percent between Background and Total Future conditions as a result of the outbound site traffic, slightly over the five (5) percent threshold. A total of 18 outbound site trips are routed through this movement, with 11 making a northbound left and seven (7) making a right.



Minor signal timing adjustments were considered, which allocated one (1) additional second of green time from the concurrent westbound/eastbound phase to the northbound phase. This decreased delays to levels below those seen in Background conditions.

While signal timing adjustments would correct impacts to this intersection, this report recommends DDOT review signal timing coordination and optimization along New York Avenue in the coming years to ensure the most efficient operation following the construction of several Union Market developments passing through the intersection. This conclusion is similar to the mitigations proposed in the First-Stage CTR.

Morse Street & 4th Street

During the afternoon peak hour, the northbound approach of 4th Street experiences unacceptable delays in the Background and Total Future study conditions. The eastbound approach of Morse Street experiences unacceptable delays in the Total Future study conditions. The northbound delays increase by over five (5) percent between Background and Total Future conditions as a result of site-generated trips. A total of 55 outbound site trips and are routed through the eastbound movement and four (4) inbound trips are routed through the westbound movement.

This intersection is currently unsignalized and will be signalized as part of Phase 1 of the Market Terminal development. Signal timing plans for this intersection have not yet been completed and were developed using best practices.

Delays in the northbound direction are a result of vehicles making a left turn to reach nearby developments rather than site-generated traffic. Across all approaches of the intersection, all movements must be made from a single travel lane. Due to the future cycle track running along Morse Street, additional capacity in the form of travel lanes cannot be added.

Delays in the eastbound direction may be reduced by restricting parking along the eastbound approach of Morse Street in the afternoon in order to function as an exclusive

right-turn lane. Approximately two (2) on-street parking spaces would be repurposed for the turn lane. The right-turn lane will allow more eastbound right vehicles to clear the intersection and allow more time to be allocated to the northbound and southbound approaches. This report recommends the Applicant coordinate with surrounding developments to make sure a PM peak period right-turn can be accommodated within the Morse Street cross-section. The peak-period right-turn storage lane was proposed as a mitigation measure in the First-Stage CTR.

Florida Avenue & 4th Street

During the morning peak hour, the eastbound approach of Florida Avenue experiences unacceptable delays in the Background and Total Future study conditions. The eastbound delay increases 32 percent between Background and Total Future conditions as a result of the inbound site traffic. A total of 30 inbound site trips make an eastbound left turn onto 4th Street, which provides the most direct and practical route from the west and north.

As a result of the pedestrian and bicycle improvements made to the Florida Avenue corridor, vehicle throughput has decreased, with fewer travel lanes. Under the First-Stage CTR, the intersection was mitigated with the introduction of an eastbound left-turn phase, which has been modeled under both background and Total Future Conditions within this CTR as it was installed as part of the Florida Avenue Improvements.

Mitigation measures were tested at this intersection in the form of signal timing optimizations which allowed for nine (9) more seconds of green time for the protected eastbound left turn phase and one (1) less second of green time for the protected westbound left turn phase.

As with New York Avenue and 4th Street, this report recommends DDOT review signal timing coordination and optimization along Florida Avenue in the coming years to ensure the most efficient operation following the construction of several Union Market developments passing through the intersection.



Table 4: Summary of Background Trip Generation

Background Development	Trip Generation Source	AM Peak Hour (veh/hr)			PM Peak Hour (veh/hr)		
		In	Out	Total	In	Out	Total
Market Terminal Building A	Approved 300 Morse Street CTR	35	120	155	133	81	214
Market Terminal Building B	Approved 300 Morse Street CTR	6	20	26	26	16	42
Market Terminal Building C1	Approved 300 Morse Street CTR	112	16	128	26	99	125
Market Terminal Building D	Approved 300 Morse Street CTR	7	24	31	28	17	45
The Highline (320 Florida Ave)	Approved 320 Florida Ave TIS	20	66	86	74	44	118
The Batley (1270 4th Street)	Approved 1270 4th Street TIS	14	36	50	50	35	85
1300 4th Street	Approved 1270 4th Street TIS	93	146	239	288	256	544
500-530 Morse Street	Approved 500 Morse Street CTR	15	55	70	61	38	99
301 Florida Avenue	Approved 301 Florida Avenue CTR	4	14	18	10	9	19
Press House (301 N Street)	Approved 301-331 N Street CTR	60	83	143	100	80	180
500 Penn Street	Approved 500 Penn Street CTR	43	79	122	136	115	251
411 New York Avenue	Approved 411 New York Avenue TIA	26	20	46	26	26	52
Gallaudet PUD	Approved Gallaudet 6th Street CTR	347	230	577	279	402	681
Union Market Building PUD	North: Approved 1329 5th Street EISF	27	50	77	77	64	141
	South: Approved 1309-1329 5th Street TIS	92	13	105	70	120	190
400 Florida Avenue	Approved 400 Florida Avenue CTR	30	31	61	41	32	73
1348 4 th Street	ITE Trip Generation, 10 th Edition	72	45	117	65	99	164
Total Background Site Trips		1003	1048	2051	1490	1533	3023

Table 5: Applied Annual and Total Growth Rates

Road	Proposed Annual Growth Rate		Proposed Total Growth Rate 2019-2022	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Florida Avenue NE - EB	1.00%	0.50%	3.03%	1.51%
Florida Avenue NE - WB	0.50%	1.00%	1.51%	3.03%
All Other Roadways	0.10%	0.10%	0.30%	0.30%

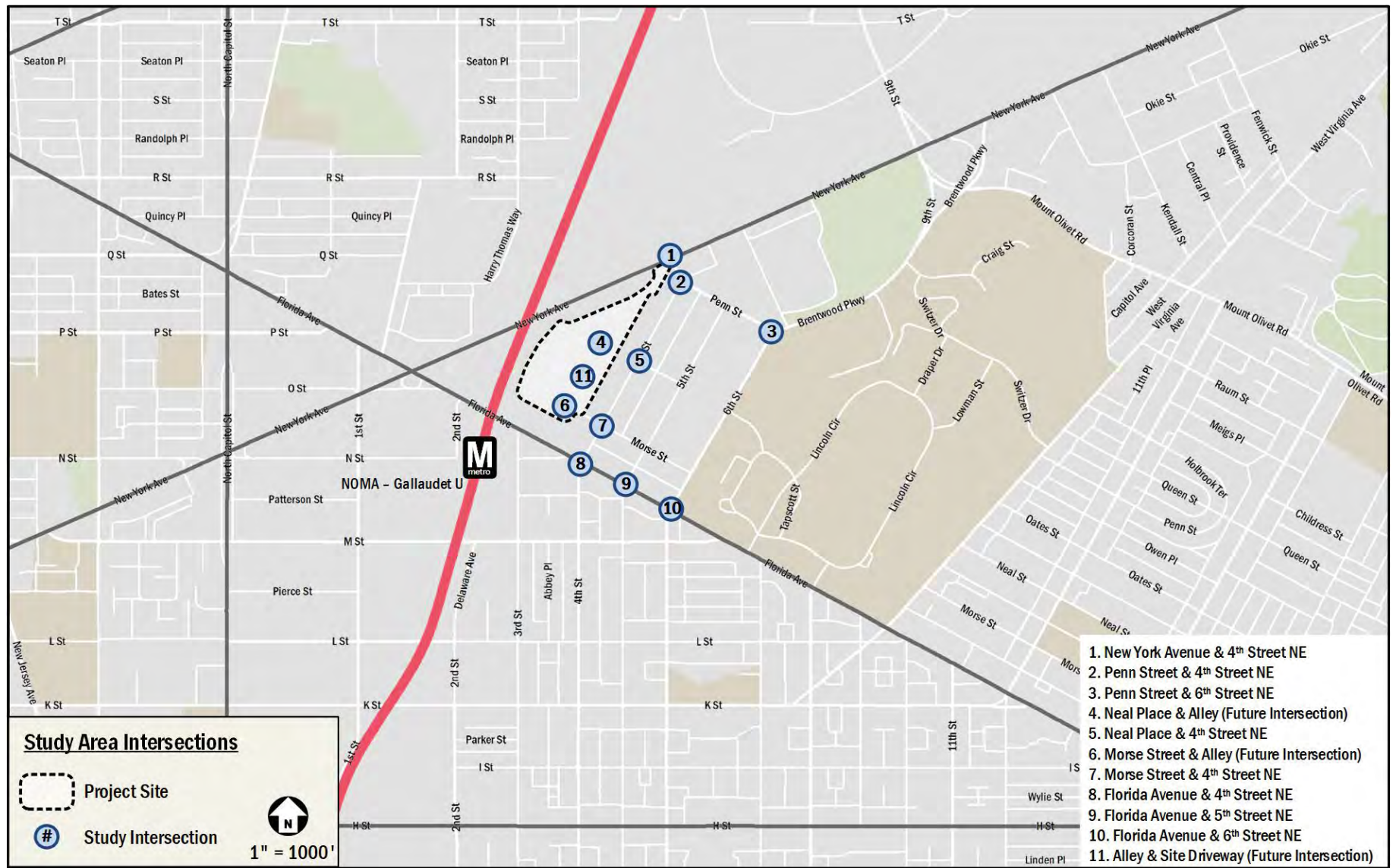


Figure 11: Study Area Intersections

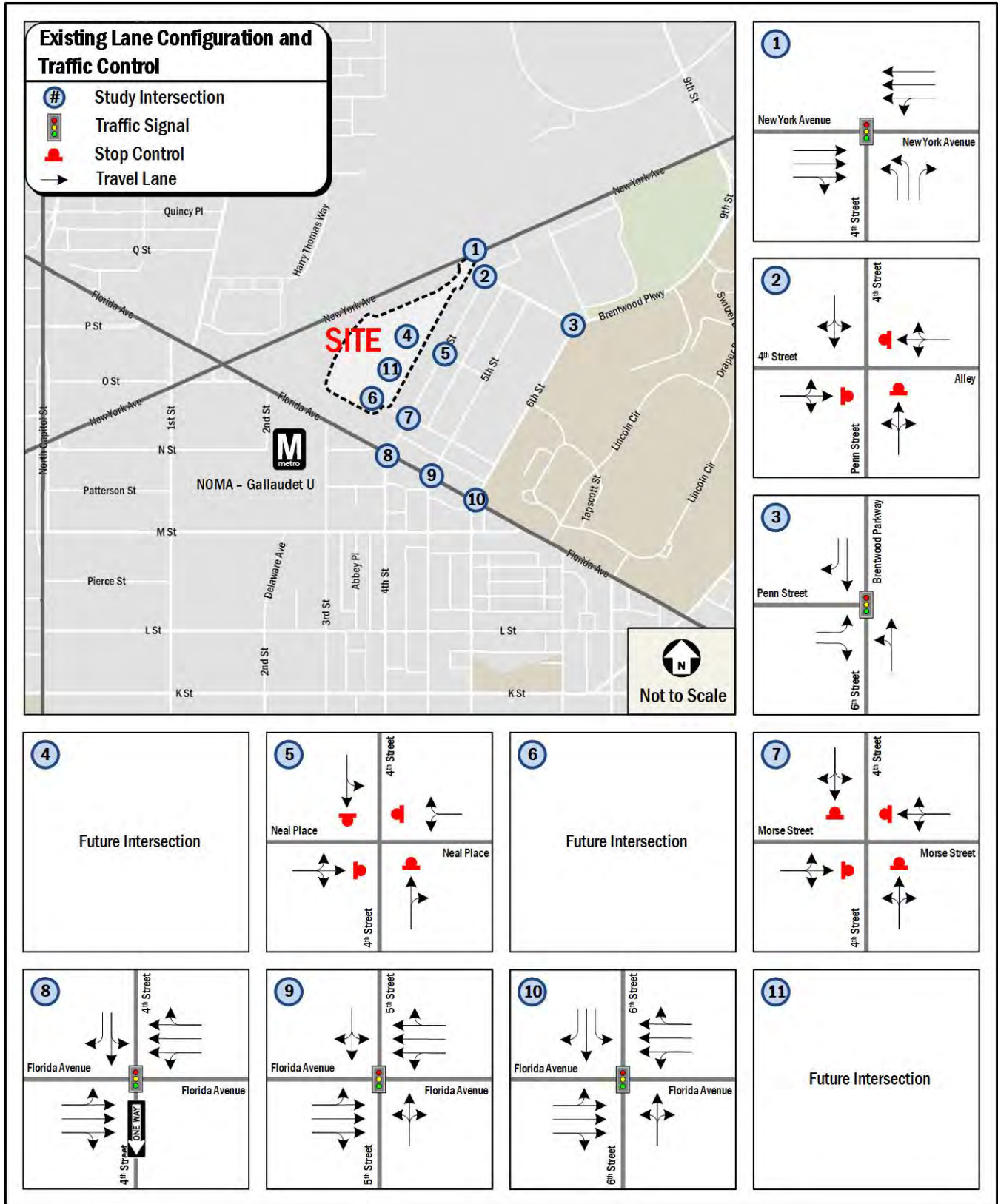


Figure 12: Existing Lane Configuration and Traffic Control

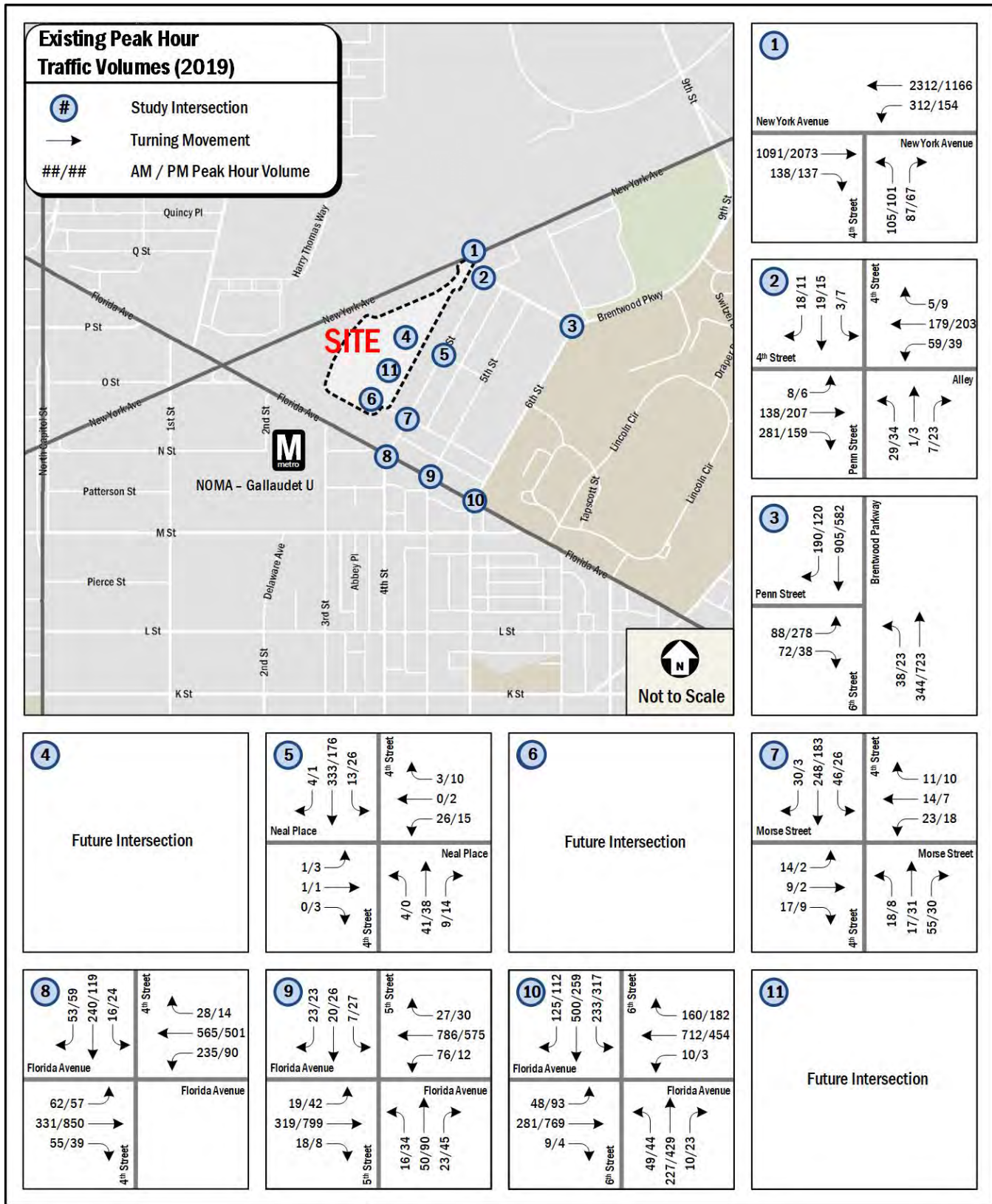


Figure 13: Existing Peak Hour Traffic Volumes

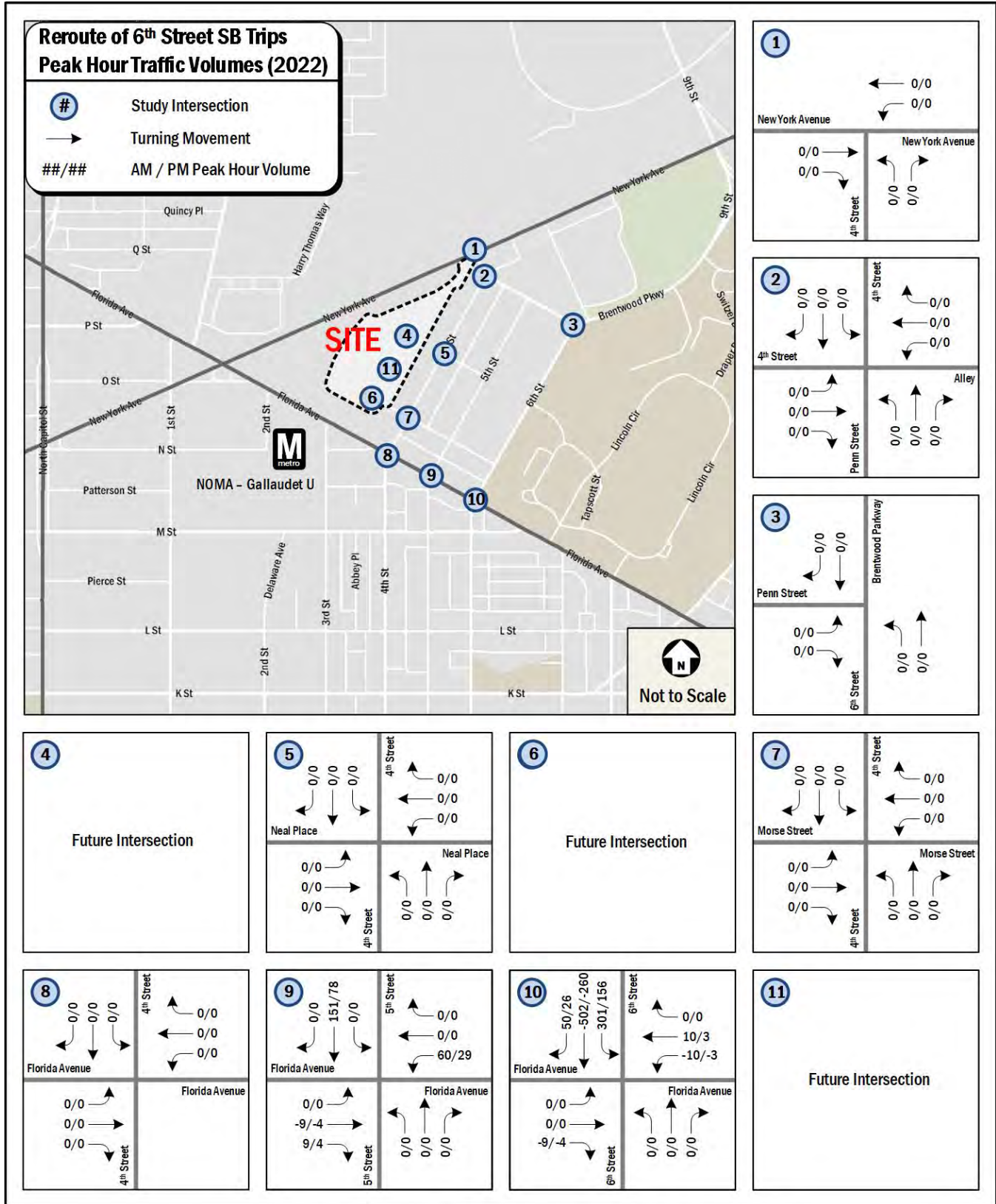


Figure 14: Reroute of 6th Street Southbound Trips

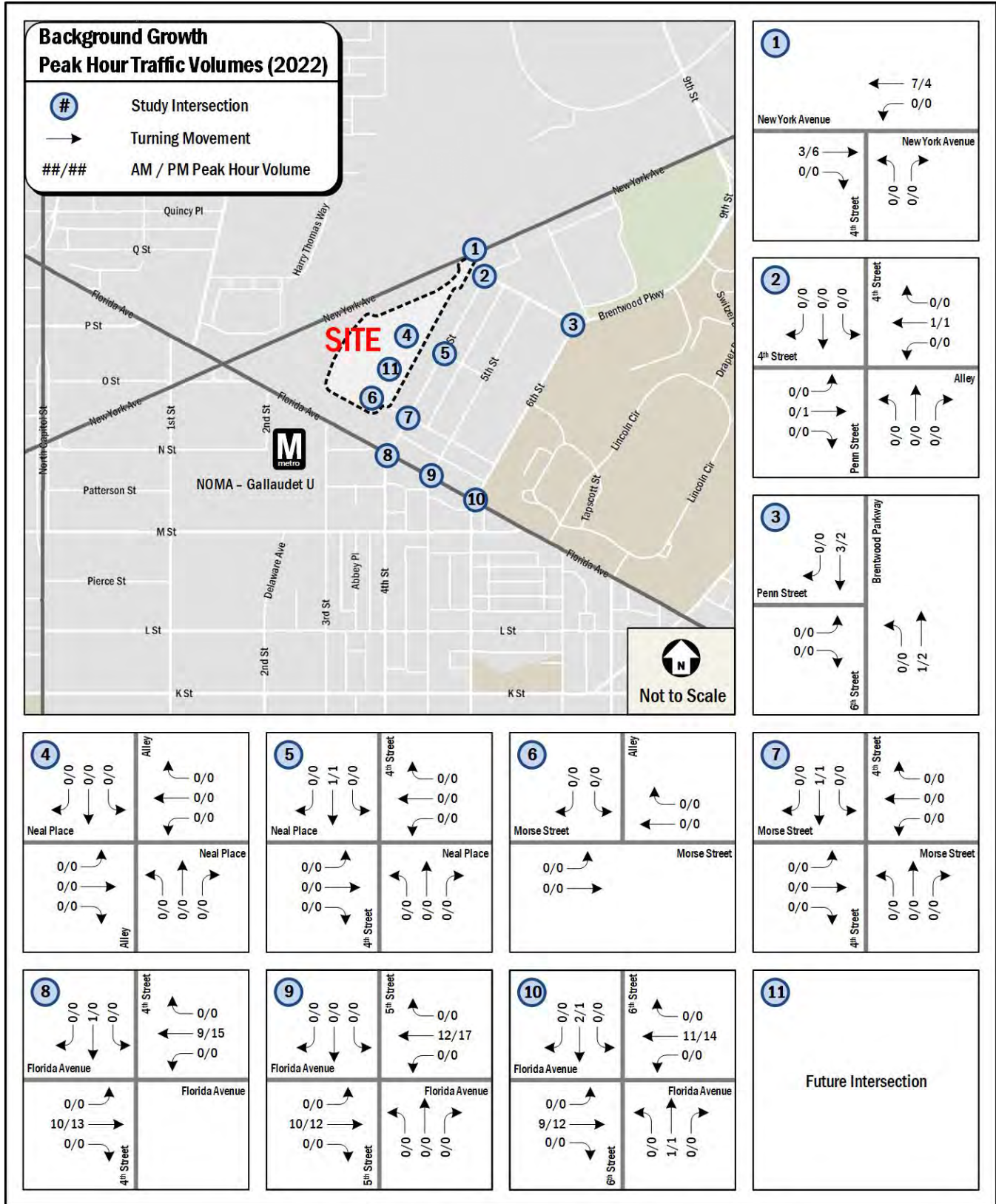


Figure 15: Background Growth Peak Hour Traffic Volumes

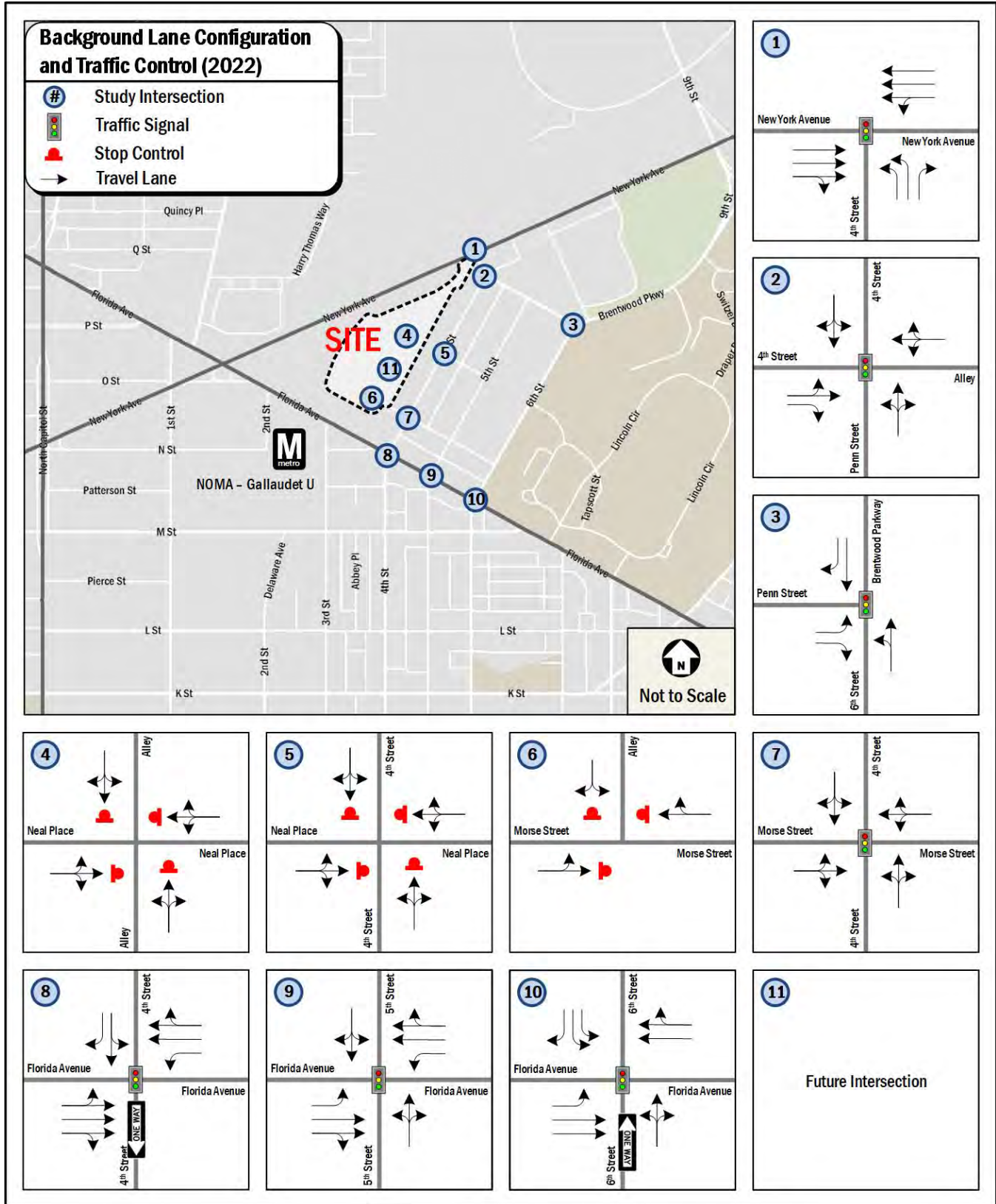


Figure 16: Background Lane Configuration and Traffic Control (2022)

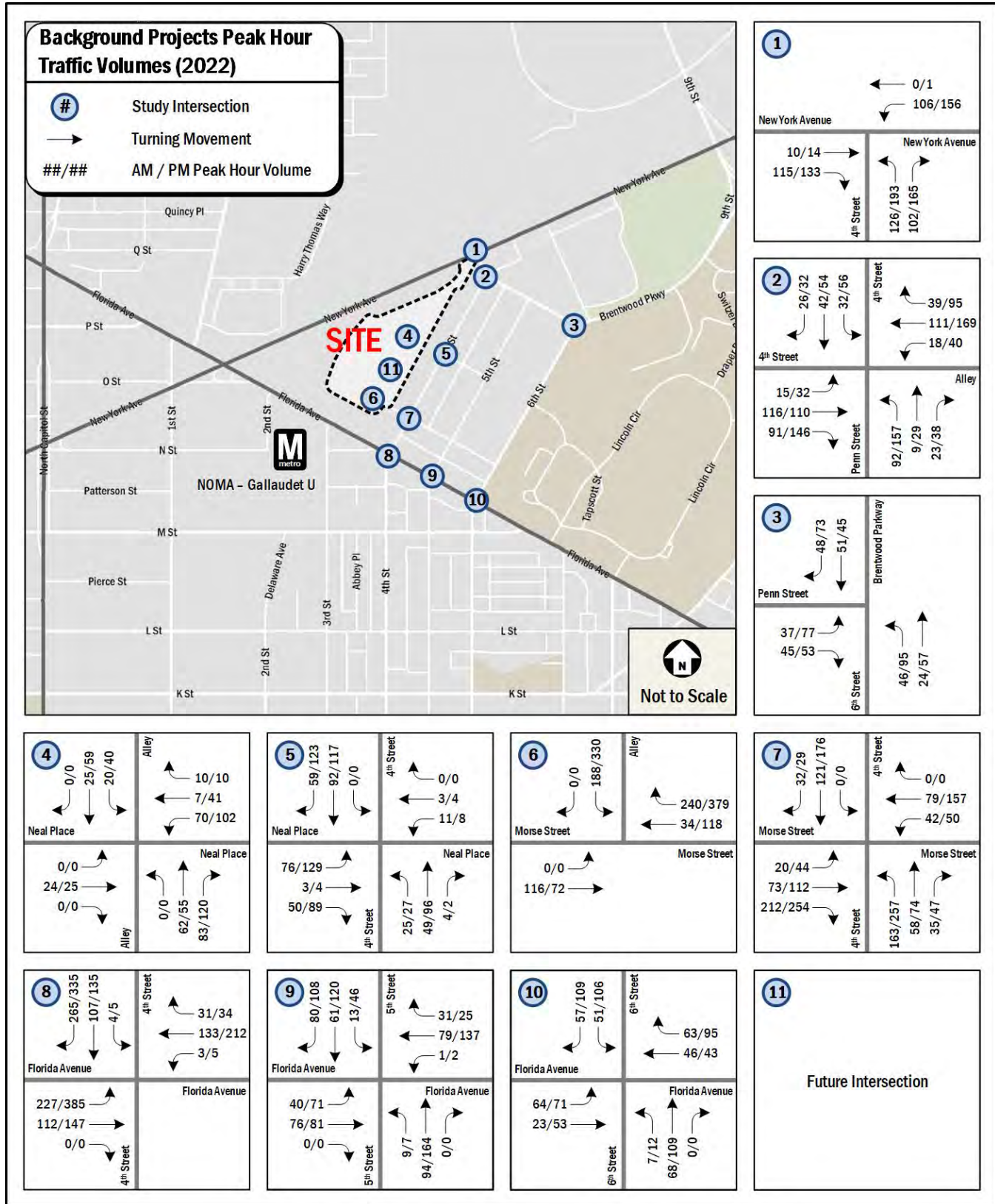


Figure 17: Background Projects Peak Hour Traffic Volumes

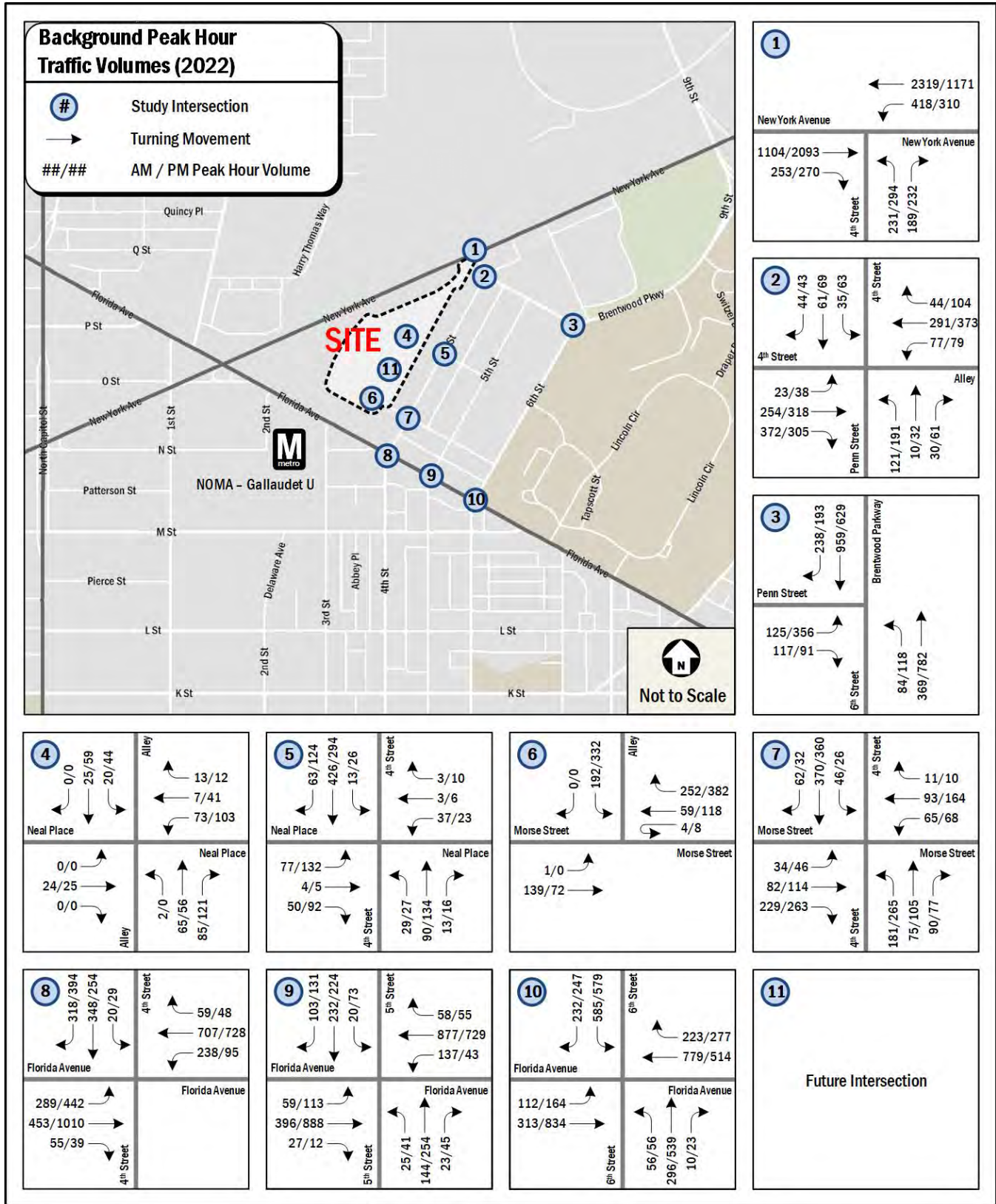


Figure 18: Future without Development Peak Hour Traffic Volumes

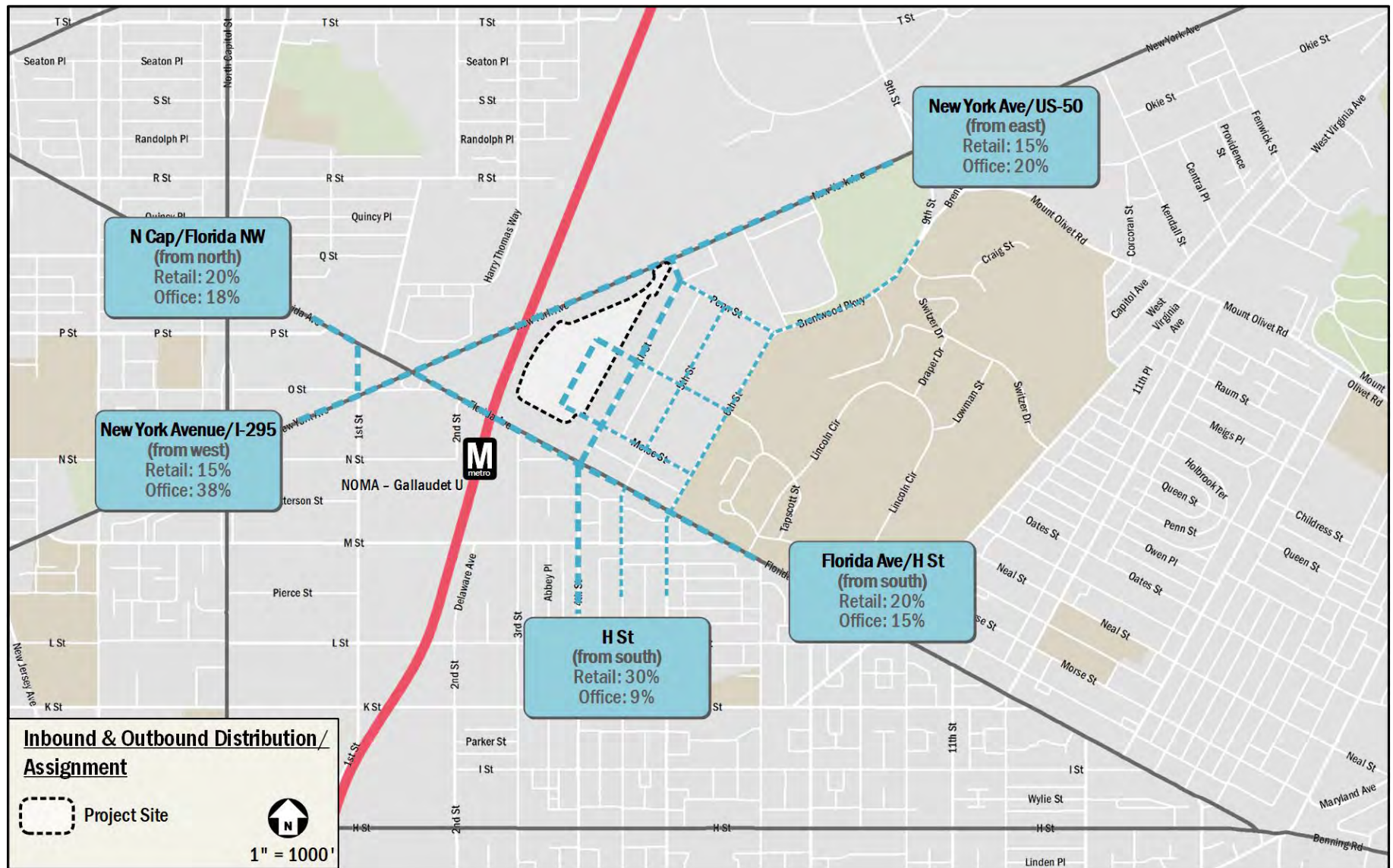


Figure 19: Outbound and Inbound Trip Distribution

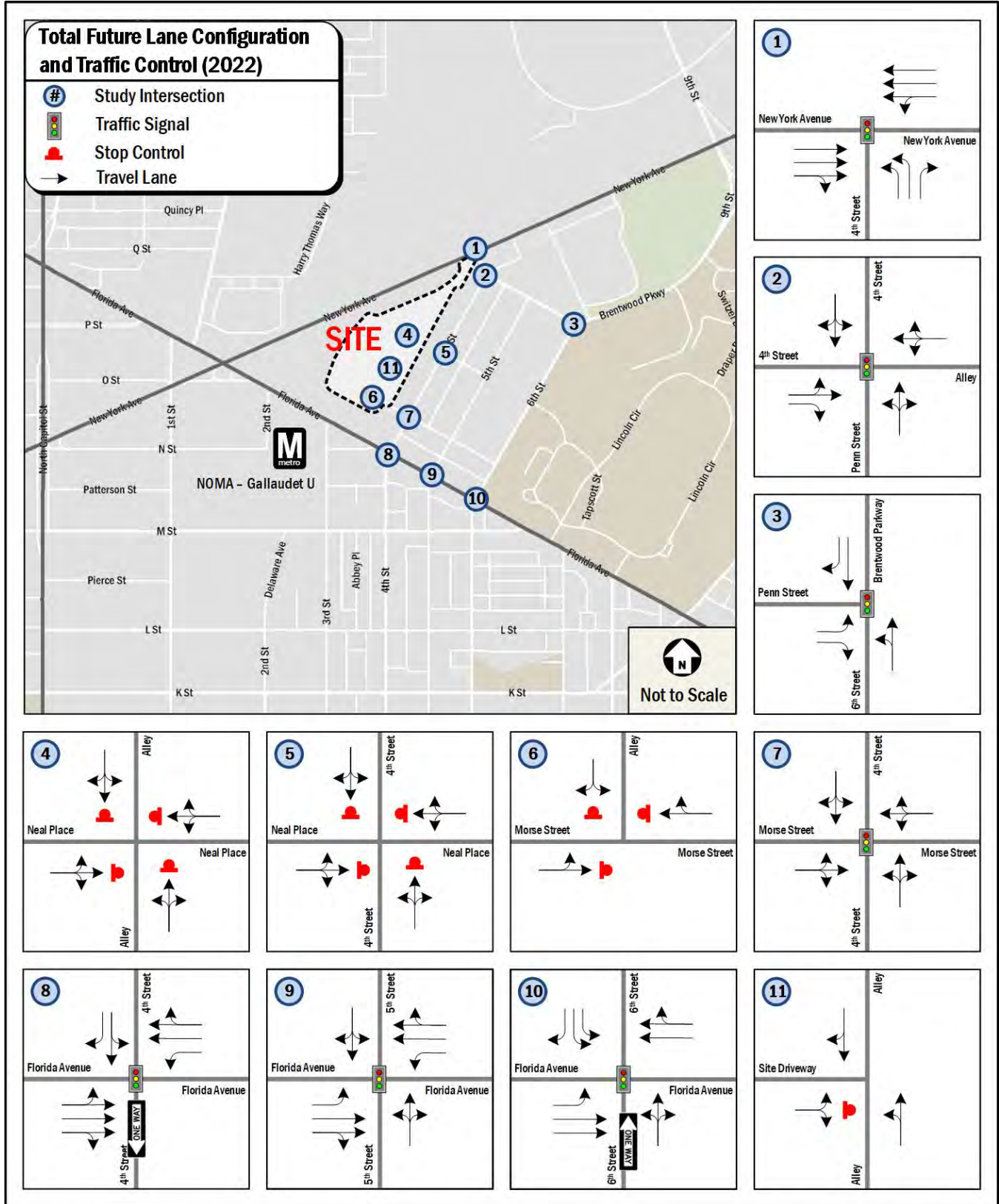


Figure 20: Total Future Lane Configuration and Traffic Control (2022)

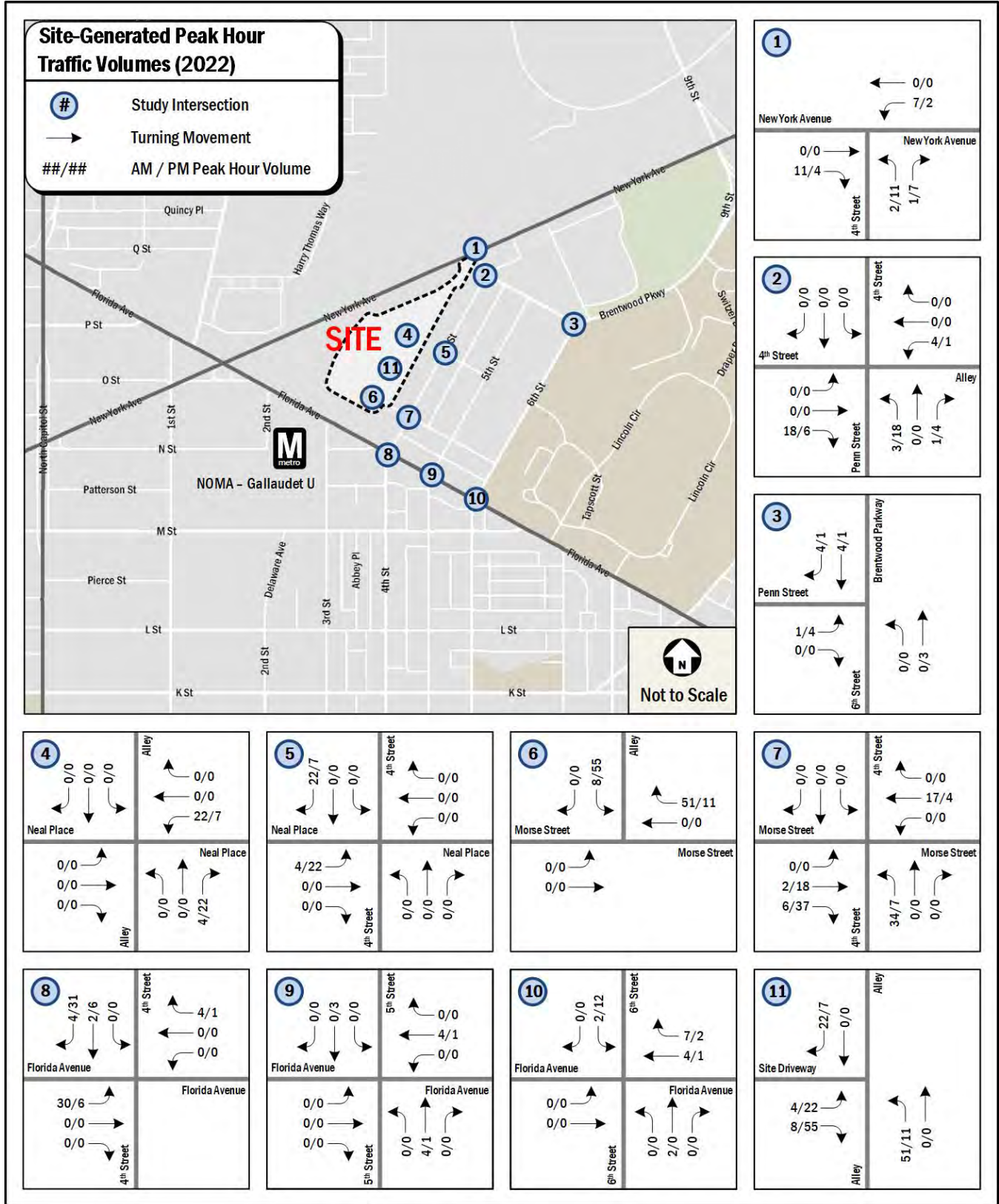


Figure 21: Project Generated Peak Hour Traffic Volumes

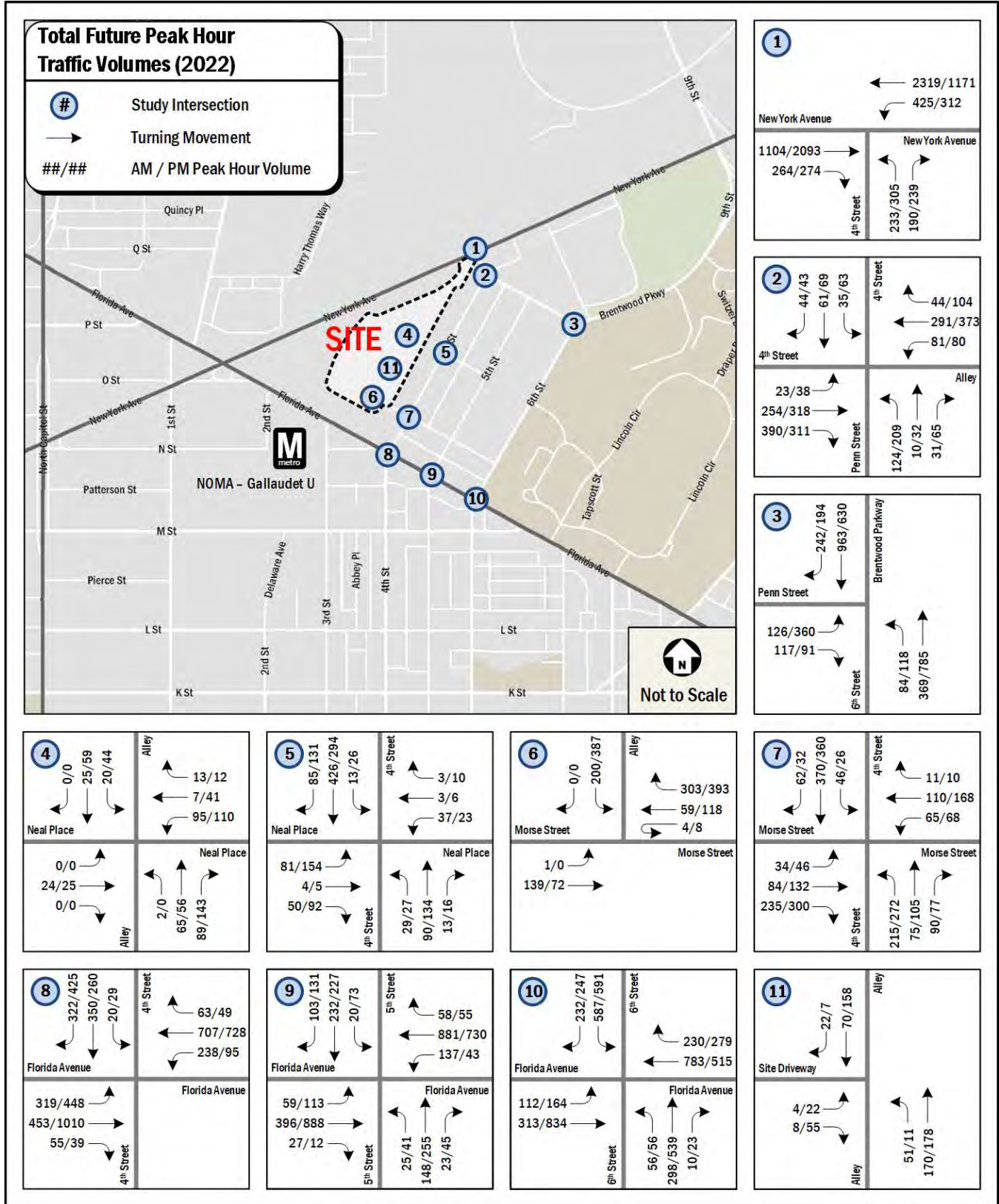


Figure 22: Future with Development Peak Hour Traffic Volumes (2022)



Table 6: LOS Results

Intersection & Approach	Existing Conditions (2019)				Future without Development Conditions (2022)				Future with Development Conditions (2022)				Future with Development Conditions (2022), with Mitigations			
	AM Peak Hour		PM Peak Hour		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	Delay	LOS	Delay	LOS
1. New York Avenue & 4th Street, NE																
Overall	14.2	B	9.4	A	22.1	C	16.3	B	22.5	C	17.3	B	--	--	16.5	B
Eastbound	11.7	B	9.2	A	12.2	B	10.0	B	12.3	B	10.0	B	--	--	10.6	B
Westbound	12.5	B	3.3	A	19.7	B	3.6	A	20.4	C	3.6	A	--	--	3.9	A
Northbound	54.8	D	60.5	E	69.4	E	80.5	F	69.3	E	86.3	F	--	--	76.4	E
2. Penn Street & 4th Street, NE																
Overall					20.1	C	32.5	C	20.2	C	33.6	C	--	--	--	--
Eastbound					11.6	B	21.4	C	11.9	B	21.6	C	--	--	--	--
Westbound	<i>HCM is unable to analyze this intersection configuration</i>				19.8	B	36.5	D	20.0	B	36.8	D	--	--	--	--
Northbound	<i>HCM is unable to analyze this intersection configuration</i>				41.1	D	49.1	D	41.5	D	53.6	D	--	--	--	--
Southbound	<i>HCM is unable to analyze this intersection configuration</i>				35.6	D	34.6	C	35.6	D	34.6	C	--	--	--	--
3. Penn Street & 6th Street/Brentwood Parkway, NE																
Overall	15.0	B	17.7	B	17.2	B	28.4	C	17.3	B	29.1	C	--	--	--	--
Eastbound	40.4	D	62.4	E	42.0	D	100.3	F	42.1	D	103.2	F	--	--	--	--
Northbound	6.1	A	6.8	A	7.3	A	9.4	A	7.3	A	9.4	A	--	--	--	--
Southbound	14.4	B	9.3	A	16.0	B	10.1	B	16.1	B	10.1	B	--	--	--	--
4. Neal Place, NE & Alley																
Overall	6.4	A	6.8	A	9.0	A	10.0	A	9.3	A	10.0	A	--	--	--	--
Eastbound	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Westbound	--	--	--	--	5.9	A	5.2	A	6.3	A	5.3	A	--	--	--	--
Northbound	9.3	A	8.7	A	11.1	B	11.0	B	11.5	B	11.1	B	--	--	--	--
Southbound	0.0	A	8.6	A	13.1	B	17.1	C	14.0	B	17.2	C	--	--	--	--
5. Neal Place & 4th Street, NE																
Overall	1.3	A	2.0	A	5.1	A	8.7	A	5.2	A	10.7	B	--	--	--	--
Eastbound	12.7	B	10.4	B	20.4	C	28.0	D	21.3	C	34.0	D	--	--	--	--
Westbound	13.6	B	10.5	B	22.9	C	19.3	C	23.4	C	19.4	C	--	--	--	--
Northbound	--	--	--	--	2.1	A	1.5	A	2.1	A	1.5	A	--	--	--	--
Southbound	--	--	--	--	0.3	A	0.7	A	0.3	A	0.7	A	--	--	--	--
6. Morse Street, NE & Alley																
Overall	0.7	A	2.9	A	4.3	A	8.2	A	4.3	A	11.7	B	--	--	--	--
Eastbound	--	--	--	--	0.1	A	--	--	0.1	A	--	--	--	--	--	--
Westbound	--	--	--	--	0.0	A	--	--	0.0	A	--	--	--	--	--	--
Southbound	8.9	A	8.6	A	14.3	B	22.4	C	15.1	C	29.5	D	--	--	--	--
7. Morse Street & 4th Street, NE																
Overall	9.6	A	8.3	A	24.2	C	50.8	D	25.9	C	61.7	E	--	--	33.9	C
Eastbound	8.2	A	7.3	A	38.5	D	51.9	D	39.7	D	74.8	E	--	--	31.4	C
Westbound	8.4	A	7.8	A	37.1	D	39.4	D	40.1	D	44.3	D	--	--	37.4	D
Northbound	7.8	A	7.4	A	12.7	B	85.0	F	16.4	B	95.8	F	--	--	49.7	C
Southbound	10.4	B	8.7	A	17.6	B	19.8	B	17.7	B	19.8	B	--	--	17.5	B
8. Florida Avenue & 4th Street, NE																
Overall	14.1	B	15.7	B	36.7	D	54.4	D	45.5	D	55.5	E	24.1	C	--	--
Eastbound	19.3	B	17.6	B	78.8	E	86.1	F	104.0	F	89.6	F	25.6	C	--	--
Westbound	8.0	A	7.6	A	13.7	B	10.4	B	13.9	B	10.4	B	22.0	C	--	--
Southbound	22.9	C	30.6	C	21.6	C	41.5	D	21.7	C	38.9	D	25.6	C	--	--
9. Florida Avenue & 5th Street, NE																
Overall	6.8	A	11.3	B	12.8	B	50.2	D	12.8	B	50.9	D	--	--	--	--
Eastbound	10.5	B	12.2	B	11.4	B	12.3	B	11.4	B	12.3	B	--	--	--	--
Westbound	3.3	A	1.8	A	5.8	A	4.8	A	5.8	A	4.8	A	--	--	--	--
Northbound	20.1	C	33.6	C	23.2	C	70.0	E	23.3	C	71.1	E	--	--	--	--
Southbound	19.0	B	29.5	C	30.3	C	212.3	F	30.3	C	214.4	F	--	--	--	--



Intersection & Approach	Existing Conditions (2019)				Future without Development Conditions (2022)				Future with Development Conditions (2022)				Future with Development Conditions (2022), with Mitigations			
	AM Peak Hour		PM Peak Hour		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	Delay	LOS	Delay	LOS
10. Florida Avenue & 6th Street, NE																
Overall	17.1	B	22.1	C	25.6	C	35.9	D	26.3	C	36.4	D	--	--	--	--
Eastbound	2.8	A	5.2	A	43.9	D	30.3	C	47.5	D	30.9	C	--	--	--	--
Westbound	17.7	B	22.6	C	23.5	C	27.7	C	23.8	C	27.8	C	--	--	--	--
Northbound	30.8	C	55.1	E	26.9	C	63.0	E	27.0	C	63.0	E	--	--	--	--
Southbound	17.6	B	19.2	B	18.1	B	30.3	C	18.2	B	31.5	C	--	--	--	--
11. Alley & Site Driveway																
Overall	--	--	--	--	--	--	--	--	1.7	A	2.1	A	--	--	--	--
Eastbound	--	--	--	--	--	--	--	--	9.7	A	10.4	B	--	--	--	--
Northbound	--	--	--	--	--	--	--	--	2.0	A	0.5	A	--	--	--	--
Southbound	--	--	--	--	--	--	--	--	0.0	A	--	--	--	--	--	--

Table 7: v/c Comparison

Intersection & Approach	Existing Conditions (2019)		Future without Development Conditions (2022)		Future with Development Conditions (2022)	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
	v/c Ratio	v/c ratio	v/c ratio	v/c ratio	v/c ratio	v/c ratio
1. New York Avenue & 4th Street, NE						
Eastbound	0.39	0.61	0.44	0.66	0.44	0.66
Westbound	0.91	0.48	0.97	1.71	0.97	1.72
Northbound L	0.36	0.33	0.80	0.97	0.81	1.00
Northbound R	0.06	0.17	0.28	0.74	0.28	0.76
2. Penn Street & 4th Street, NE						
Eastbound LT			0.32	0.45	0.32	0.45
Eastbound R			0.27	0.22	0.29	0.23
Westbound	<i>HCM is unable to analyze this intersection configuration</i>		0.50	0.82	0.51	0.83
Northbound			0.45	0.72	0.46	0.78
Southbound			0.26	0.36	0.26	0.36
3. Penn Street & 6th Street/Brentwood Parkway, NE						
Eastbound L	0.28	0.84	0.40	1.07	0.41	1.08
Eastbound R	0.06	0.09	0.11	0.23	0.11	0.23
Northbound	0.23	0.35	0.36	0.56	0.36	0.56
Southbound T	0.75	0.47	0.80	0.51	0.80	0.51
Southbound R	0.18	0.08	0.23	0.14	0.23	0.14
4. Neal Place, NE & Alley						
Eastbound	--	--	0.00	0.00	0.00	0.00
Westbound	0.00	0.00	0.05	0.08	0.07	0.08
Northbound	0.01	0.00	0.23	0.26	0.25	0.29
Southbound	0.00	0.00	0.11	0.30	0.12	0.29



Intersection & Approach	Existing Conditions (2019)		Future without Development Conditions (2022)		Future with Development Conditions (2022)	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
	v/c Ratio	v/c ratio	v/c ratio	v/c ratio	v/c ratio	v/c ratio
5. Neal Place & 4th Street, NE						
Eastbound	0.00	0.01	0.39	0.63	0.41	0.71
Westbound	0.07	0.04	0.19	0.15	0.19	0.15
Northbound	0.00	0.00	0.03	0.03	0.03	0.03
Southbound	0.01	0.02	0.01	0.02	0.01	0.02
6. Morse Street, NE & Alley						
Eastbound	0.00	0.00	0.00	0.00	0.00	0.00
Westbound	0.03	0.00	0.21	0.35	0.25	0.35
Southbound	0.01	0.00	0.37	0.66	0.40	0.78
7. Morse Street & 4th Street, NE						
Eastbound	--	--	0.74	0.88	0.76	1.00
Westbound	--	--	0.65	0.70	0.70	0.76
Northbound	--	--	0.75	1.16	0.89	1.19
Southbound	--	--	0.61	0.54	0.62	0.54
8. Florida Avenue & 4th Street, NE						
Eastbound L	--	--	1.29	1.45	1.42	1.47
Eastbound T	0.34	0.47	0.45	0.66	0.45	0.66
Westbound L	--	--	0.47	0.26	0.47	0.26
Westbound T	0.48	0.30	0.53	0.45	0.53	0.45
Southbound T	0.45	0.32	0.64	0.63	0.64	0.64
Southbound R	0.04	0.05	0.39	0.66	0.40	0.76
9. Florida Avenue & 5th Street, NE						
Eastbound L	--	--	0.32	0.33	0.32	0.33
Eastbound T	0.22	0.36	0.33	0.48	0.33	0.48
Westbound L	--	--	0.29	0.12	0.29	0.12
Westbound T	0.40	0.21	0.53	0.36	0.53	0.36
Northbound	0.18	0.41	0.40	0.94	0.41	0.95
Southbound	0.07	0.16	0.69	1.35	0.69	1.35
10. Florida Avenue & 6th Street, NE						
Eastbound L	--	--	1.16	1.24	1.19	1.25
Eastbound T	0.23	0.61	0.24	0.64	0.24	0.64
Westbound	0.49	0.39	0.76	0.66	0.77	0.66
Northbound L	--	--	0.11	0.11	0.11	0.11
Northbound T	0.65	0.92	0.60	0.99	0.60	0.99
Southbound L	0.50	0.72	0.72	0.84	0.73	0.85
Southbound T	0.62	0.28	--	--	--	--
Southbound R	0.11	0.08	0.28	0.23	0.28	0.23
11. Alley & Site Driveway						
Eastbound	--	--	--	--	0.02	0.12
Northbound	--	--	--	--	0.04	0.01
Southbound	--	--	--	--	0.06	0.11



Table 8: 50th and 95th Percentile Queuing Results (in feet)

Intersection & Approach	Storage Length (ft)	Existing Conditions (2019)				Future without Development Conditions (2022)				Future with Development Conditions (2022)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
1. New York Avenue & 4th Street, NE													
Eastbound	900	187	215	334	367	209	240	379	416	210	242	380	417
Westbound	900	249	272	77	87	276	#304	90	102	277	#314	90	102
Northbound L	90	52	85	50	82	125	#190	154	m#236	126	#191	~162	m#245
Northbound R	90	0	44	40	87	64	122	195	m280	63	121	205	m282
2. Penn Street & 4th Street, NE													
Eastbound TL	90					119	m142	229	300	119	m141	229	300
Eastbound R	90					18	m18	46	69	19	m19	46	71
Westbound	240	<i>HCM is unable to analyze this intersection configuration</i>				241	335	487	642	245	340	489	645
Northbound	560					126	203	264	373	130	208	294	414
Southbound	200					94	154	130	193	94	154	130	193
3. Penn Street & 6th Street/Brentwood Parkway, NE													
Eastbound L	260	63	114	226	#374	92	155	~332	#527	93	156	~339	#534
Eastbound R	260	0	41	15	47	4	57	43	94	5	57	43	94
Northbound	540	51	70	110	140	67	95	167	217	67	95	168	219
Southbound T	600	415	590	187	258	472	680	211	290	477	689	211	291
Southbound R	600	16	49	0	25	24	62	0	30	25	62	0	30
4. Neal Place, NE & Alley													
Eastbound	110	--	--	--	--	--	0	--	0	--	0	--	0
Westbound	120	--	--	--	--	--	4	--	6	--	6	--	7
Northbound	420	--	1	--	0	--	22	--	26	--	24	--	30
Southbound	250	--	0	--	0	--	9	--	31	--	10	--	30
5. Neal Place & 4th Street, NE													
Eastbound	120	--	0	--	1	--	45	--	106	--	48	--	136
Westbound	220	--	6	--	3	--	17	--	13	--	18	--	13
Northbound	420	--	--	--	--	--	2	--	2	--	2	--	2
Southbound	560	--	--	--	--	--	1	--	2	--	1	--	2
6. Morse Street, NE & Alley													
Eastbound	110	--	--	--	--	--	0	--	0	--	0	--	0
Westbound	120	--	--	--	--	--	0	--	0	--	0	--	0
Southbound	450	--	0	--	0	--	42	--	124	--	47	--	182
7. Morse Street & 4th Street, NE													
Eastbound	120	--	--	--	--	118	#260	237	#431	122	#269	291	#517
Westbound	220	--	--	--	--	79	#168	148	#246	90	#190	154	#283
Northbound	190	--	--	--	--	189	m175	~357	m165	215	m181	~369	m167
Southbound	420	--	--	--	--	186	296	206	305	187	296	206	305



Intersection & Approach	Storage Length (ft)	Existing Conditions (2019)				Future without Development Conditions (2022)				Future with Development Conditions (2022)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
8. Florida Avenue & 4th Street, NE													
Eastbound L	175	--	--	--	--	~139	#295	~312	#567	~175	#334	~323	#607
Eastbound T	380	58	83	142	176	102	145	267	340	102	145	267	340
Westbound L	150	--	--	--	--	46	m87	17	m38	47	m88	18	m38
Westbound T	250	36	43	38	45	76	120	85	m131	77	121	85	m132
Southbound T	190	102	169	77	133	135	m221	153	m215	138	m220	153	m201
Southbound R	190	0	0	0	0	47	m87	112	m163	48	m86	121	m#165
9. Florida Avenue & 5th Street, NE													
Eastbound L	85	--	--	--	--	30	m62	57	m105	30	m62	57	m105
Eastbound T	230	59	87	170	215	108	157	284	363	108	157	284	363
Westbound L	75	--	--	--	--	17	m26	6	m12	17	m26	6	m12
Westbound T	240	27	35	10	m20	68	88	59	85	68	88	59	85
Northbound	320	35	71	93	157	82	142	222	#398	84	144	223	#400
Southbound	190	10	35	29	67	158	259	~362	#557	158	259	~366	#561
10. Florida Avenue & 6th Street, NE													
Eastbound L	160	7	10	19	23	~50	m#176	~143	m#256	~52	m#177	~144	m#257
Eastbound T	240	119	156	110	144	11	m15	38	m44	11	m15	38	m44
Westbound	280	129	217	318	#520	227	304	225	292	231	308	226	294
Northbound L	35	--	--	--	--	21	48	26	56	21	48	26	56
Northbound T	150	69	117	114	175	135	219	371	#598	136	221	371	#598
Southbound L	190	186	288	91	141	94	131	139	#223	94	131	144	#232
Southbound R	190	10	38	0	26	48	95	30	73	48	96	30	73
11. Alley & Site Driveway													
Eastbound	100	--	--	--	--	--	--	--	--	--	1	--	10
Northbound	220	--	--	--	--	--	--	--	--	--	3	--	1
Southbound	220	--	--	--	--	--	--	--	--	--	0	--	0



TRANSIT

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

This chapter concludes:

- The Site is well served by existing transit;
- The Site is located within a 7-minute walk (0.4 miles) of the NoMA-Gallaudet U Metrorail Station;
- The Site is served by three (3) Metrobus routes within a three-minute walk that travel along Florida Avenue; and
- The Project is expected to generate a number of transit trips that the existing transit service is capable of handling.

EXISTING TRANSIT SERVICE

The study area is well served by Metrorail and has access to 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 identifies the major transit routes, stations, and stops in the study area.

The Site is located approximately four (4) blocks (7-minute walk) from the NoMA-Gallaudet U Metrorail Station (served by the Red Line). The Red Line travels south from Shady Grove, travels through downtown DC, and continues north to Glenmont. The Red Line provides a direct connection to Union Station, a hub for commuter rail – such as Amtrak, MARC, and VRE –, allowing for access to much of the DC Metropolitan area. Red Line trains run approximately every four (4) minutes during the morning and afternoon peak periods. They run about every six (6) minutes during weekday non-peak periods, every 8 to 12 minutes on weekday evenings after 7 pm and 6 to 15 minutes on the weekends. The NoMA-Gallaudet University station is accessible from the Site by foot via M Street and Florida Avenue.

The Site is also serviced by local Metrobus routes, providing the Site with additional connectivity to the downtown core and other areas of the District, Maryland, and Virginia. The 90, 92, and X3 bus routes serve the Site directly south at the intersection of Florida Avenue and 3rd Street NE, providing direct access to and from the Adams Morgan and Anacostia neighborhoods, and the Minnesota Avenue Metrorail Station. Table 9 shows a summary of the bus route information for the

route that serves the Site, including service hours, headway, and distance to the nearest bus stop.

Figure 23 details the existing Metrobus stops within a quarter-mile walkshed of the overall Market Terminal Site. A detailed breakdown of individual bus stop amenities and criteria for standards is included in the Technical Attachments.

PROPOSED TRANSIT SERVICE

MoveDC

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

The MoveDC report highlights Florida Avenue NE as a street for future shared lanes supporting a High-Capacity Transit line that would connect Woodley Park to Navy Yard along Calvert Street NW, U Street NW, Florida Avenue NW/NE, and 8th Street NE/SE. No plans that would immediately affect the connectivity of the Project are in place.

WMATA and DDOT Transit Studies

WMATA studied capacity of Metrorail stations in its *Station Access & Capacity Study (2008)*. The study analyzed the capacity of Metrorail stations 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, vertical transportation and fare card gates, volume-to-capacity ratios were calculated for existing data (from 2005) and projections for the year 2030. According to the study, the NoMA-Gallaudet University station can currently accommodate future growth at all access points.

WMATA has 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 a load factor that is at or below its capacity during peak periods of the day.

Even though it is expected that the majority of new trips will be made via Metrobus and Metrorail, site-generated transit trips will not cause detrimental impacts to Metrobus or Metrorail service.

SITE IMPACTS

Transit Trip Generation

The Site is projected to generate 83 net transit trips (107 more trips than Stage 1 in the inbound direction, 24 fewer trips than Stage 1 in the outbound direction) during the morning peak hour and 64 transit trips (27 fewer trips than Stage 1 in the inbound direction, 91 more trips than Stage 1 in the outbound direction) during the afternoon peak hour.

Table 9: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
90, 92	U Street-Garfield Line	Weekdays: 24 hours Weekends: 24 hours	Weekdays: 10-20 minutes Weekends: 15-30 minutes	0.1 miles, 3 min
X3	Benning Road Line	Weekdays: 5:56 AM - 6:30 PM	Weekdays: 20-40 minutes	0.1 miles, 3 min

Table 10: Transit Stop Requirements

Feature	Basic Stop	Enhanced Service Bus Stop	Transit Center
Bus Stop Sign	Yes	Yes	Yes
ADA 5'x8' Landing Pad - at a minimum, a clear, unobstructed, paved boarding area that is 8 feet deep (perpendicular to the curb) by 5 feet wide (parallel to the curb) and compliant with the ADA Accessibility Guidelines (ADAAG)	Yes	Yes	Yes
Sidewalk - connected by a paved sidewalk that is at least 4 feet wide	Yes	Yes	Yes
Lighting - adequate lighting either from streetlights, lights from an adjacent business, or shelter lighting (particularly stops that are served in the evenings)	Evening Service	Yes	Yes
Seating	Trip Generator Based	Yes	Yes
Information Case - detailed schedule information on services	Yes	Yes	Yes
Trash Receptacle - trash receptacle (particularly at locations that are close to fast food establishments and convenient stores)	Site Specific	Yes	Yes
Shelter(s) - shelter with interior seating if there are 50 or more boardings per day (including transfers)	1 (50+ boardings/day)	1	2+
System Map	Contingent on Shelter	Yes	Yes
Real-time Display (LED + Audio)	Optional	Yes	Yes
Interactive Phone System On-Site - real time bus arrival information through an interactive phone and push button audio system	No	No	Yes
Expanded Boarding & Alighting Area (Rear-door Access)	No	Site Specific	Yes
Bus Bay (Pull Off)	No	Site Specific	Yes

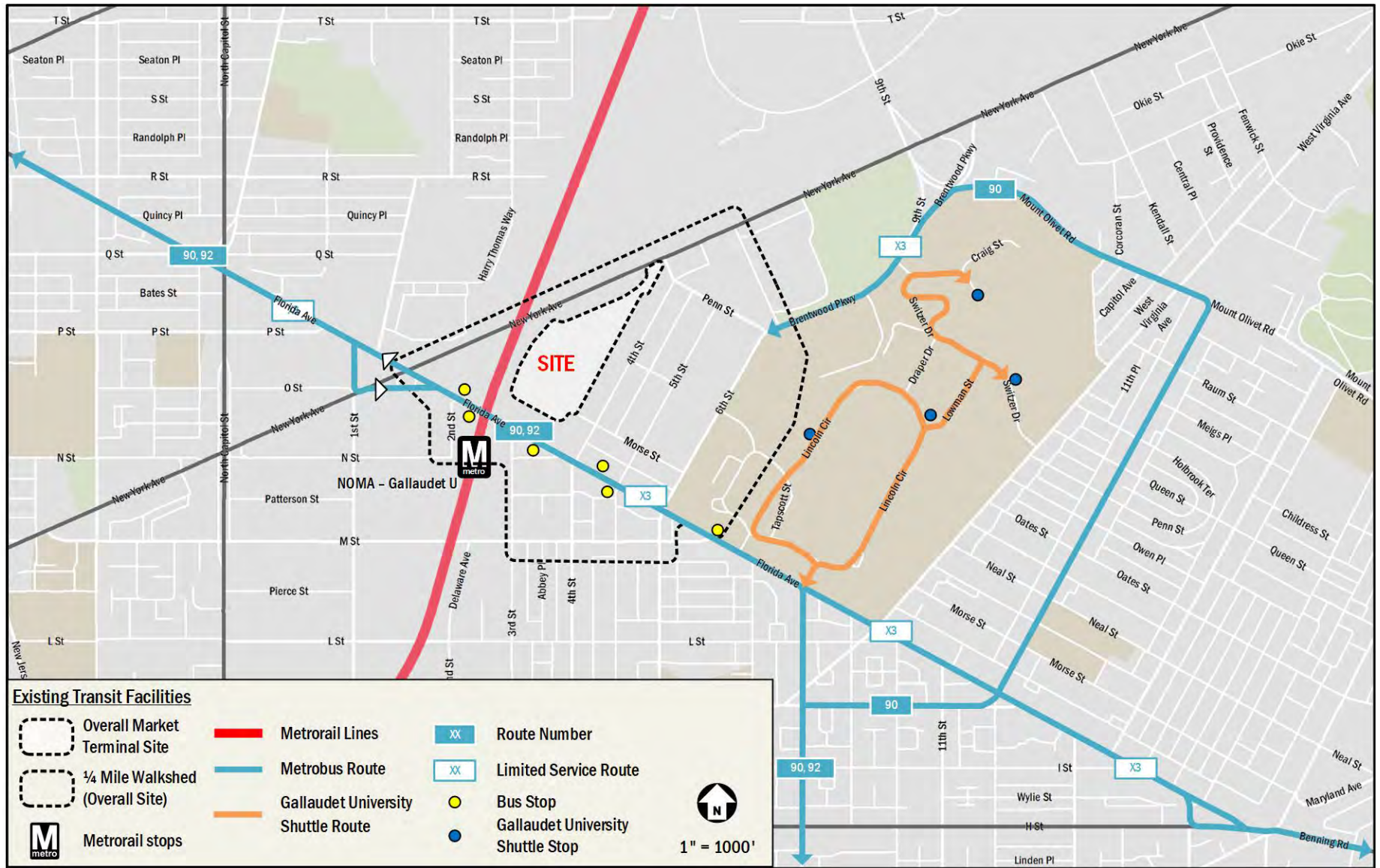


Figure 23: Existing Transit Facilities



PEDESTRIAN FACILITIES

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

This chapter concludes:

- The existing pedestrian infrastructure surrounding the Site provides a quality walking environment.
- There are sidewalks along the majority of primary routes to pedestrian destinations with a few gaps along 4th Street and New York Avenue.
- There are a few barriers that exist north of the Site due to the Amtrak and WMATA tracks; and
- The Project is expected to generate pedestrian trips to origins and destinations nearby, in addition to pedestrian trips generated by walking to and from transit stops. The pedestrian facilities surrounding the project can accommodate these new trips.

PEDESTRIAN STUDY AREA

Facilities within a quarter-mile of the Site were evaluated as well as routes to nearby transit facilities. The Site is accessible to transit options such as bus stops one block south of the Site along Florida Avenue NE and the NoMa-Gallaudet U New York Ave Metro Rail station. There are a minimal number of sidewalks, generally several blocks from the Site, that do not meet DDOT's minimum sidewalk or buffer widths along with shared curb ramps or missing detectable warnings. These few shortcomings do not overall affect the quality or attractiveness of the walking environment within the study area. Figure 24 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 Project shows that most facilities meet DDOT standards, resulting in a quality walking environment. No roadways within the study area present a challenge for pedestrians by limiting connectivity. Due to several construction activities around the Site, some portions of sidewalks along the 4th Street NE and Morse Street

are temporarily closed. Figure 25 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 *Design and Engineering Manual (2019)* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 11.

Within the area shown, roadways are classified as principal and minor arterials with collectors and local streets. Sidewalks surrounding the Site generally comply with DDOT standards, with deficiencies due to narrow or missing buffer widths. All primary pedestrian destinations are accessible via routes with sidewalks, all of which met DDOT standards. All sidewalks and most curb ramps that provide direct access to the NoMa-Gallaudet U New York Ave Metro station provide comfortable access to the station. No sidewalks within the study area limit connectivity; however, insufficient crossings exist at the intersections of 4th Street NE and Penn Street NE, 4th Street NE and Neal Place NE, 4th Street NE and Morse Street NE, 5th Street NE and Morse Street NE, and 5th Street and Neal Place NE.

ADA standards require that curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired. As shown in Figure 25, under existing conditions, a portion of the curb ramps are shared between two crosswalks and/or do not have detectable warning.

Pedestrian Infrastructure Improvements

As part of the Project, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards. New sidewalks will be installed along the perimeter of the Site that will meet or exceed the width requirements, as well as curb ramps with detectable warnings and crosswalks at the Site entrance.

In addition to site-related improvements, the completion of several roadway and development projects in the study area will lead to the completion of pedestrian facilities that meet DDOT and ADA standards. Figure 26 shows an inventory of planned pedestrian facilities.

SITE IMPACTS

Pedestrian Trip Generation

The Project is expected to generate 31 walking trips (26 inbound, 5 outbound) during the morning peak hour and 41



walking trips (11 inbound, 30 outbound) during the afternoon peak hour. The origins and destinations of these trips are likely to be:

- Nearby residential areas that allow employees the opportunity to walk to work;
- Retail locations outside of the Site; and
- Neighborhood destinations such as schools, libraries, and parks in the vicinity of the Site.

In addition to these trips, the transit trips generated by the Site will also generate pedestrian demand between the Site and nearby transit stops, including bus stops and Metrorail stations. The pedestrian network will have the capacity to absorb the newly generated trips from the Site.

Table 11: 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)	6 ft	4 ft (6 ft preferred for tree space)
Commercial	10 ft	4 ft
Downtown	16 ft	6 ft

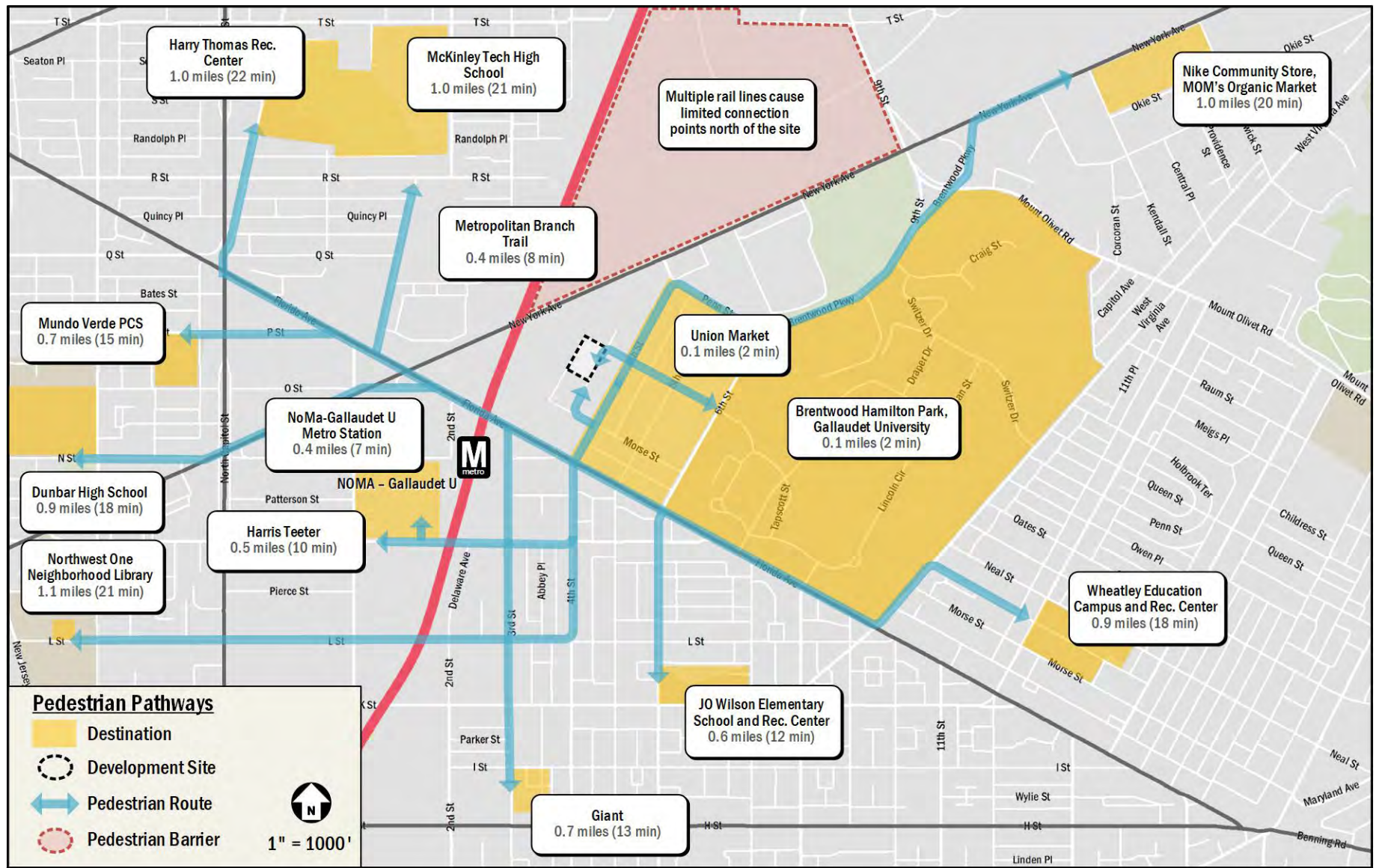


Figure 24: Pedestrian Pathways

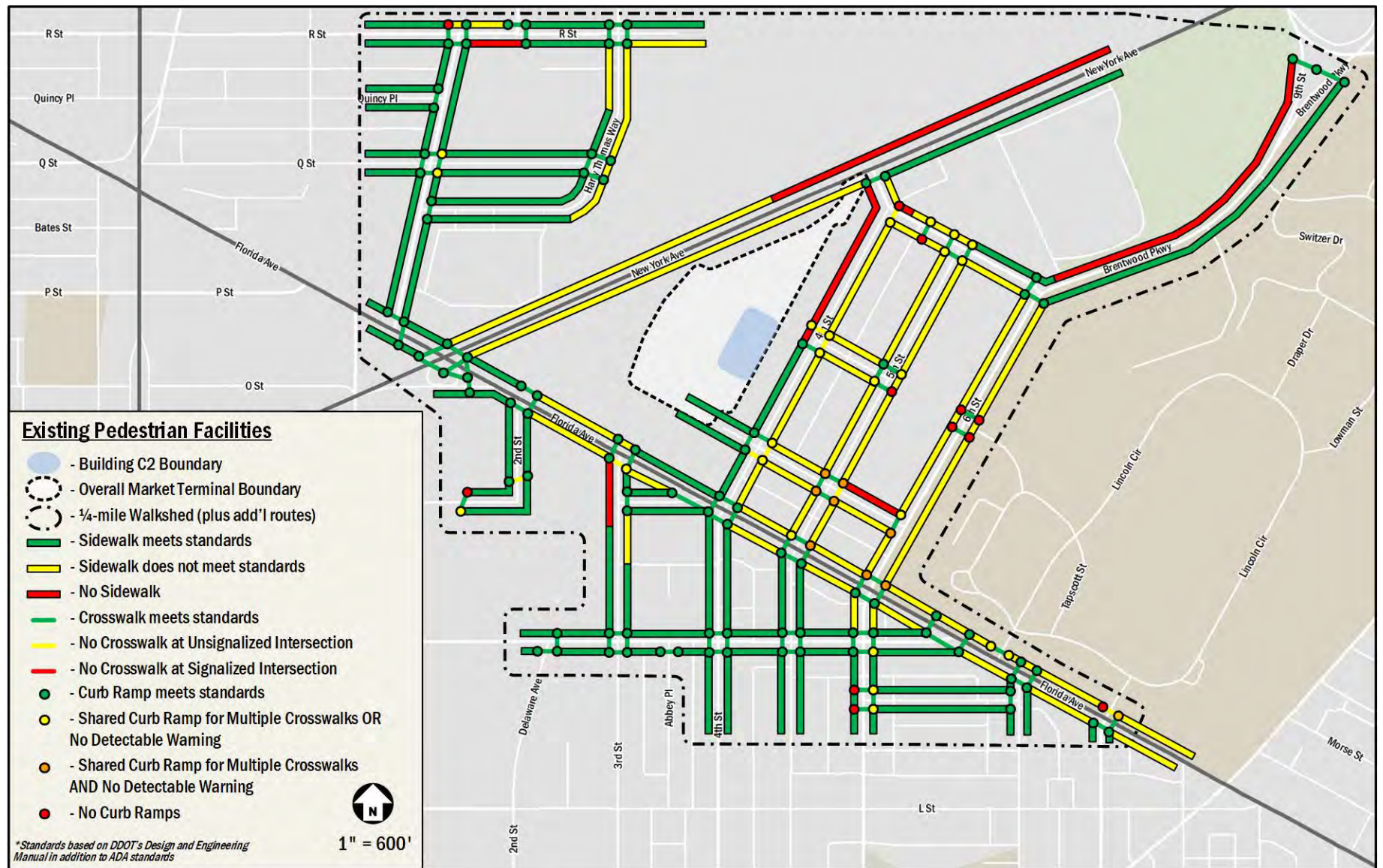


Figure 25: Existing Pedestrian Facilities

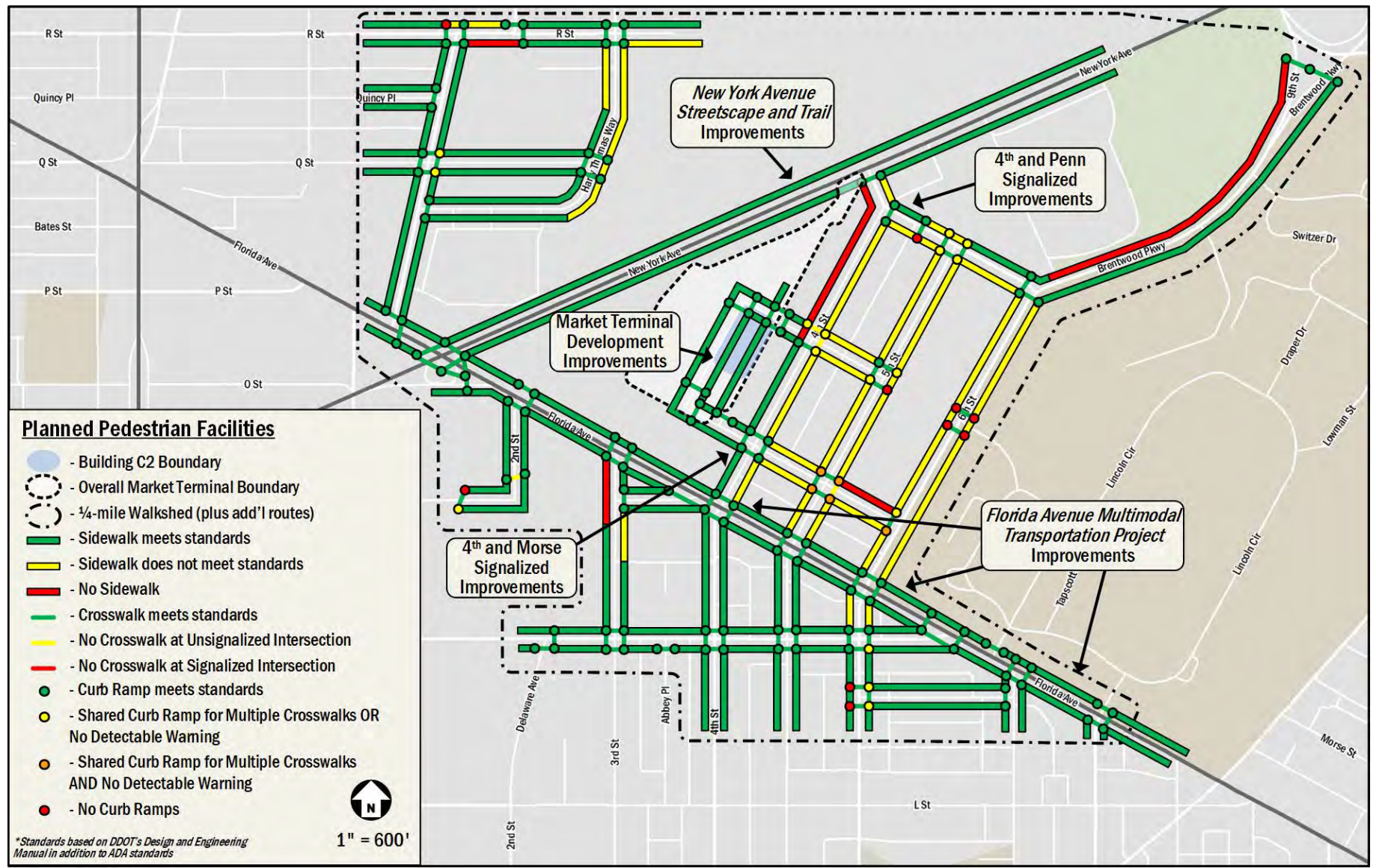


Figure 26: Planned Pedestrian Facilities



BICYCLE FACILITIES

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

This chapter concludes:

- The Site has access to several on-street bicycle facilities within the study area, including recently installed and proposed facilities.
- The Project is expected to generate a manageable number of bicycle trips; therefore, site-generated bike trips can be accommodated on existing infrastructure;
- The Project will include secure bicycle parking on-site for residents of the Project; and
- The Project will include short-term bicycle racks along the perimeter of the Site.

EXISTING BICYCLE FACILITIES

The Site area has connectivity to existing on-street bicycle facilities. Cycle tracks along M Street, First Street, 4th Street, and 6th Street to the east and the south provide connectivity to neighborhoods including NoMA and Near Northeast. The Metropolitan Branch Trail is located west of the Site, providing north-south connectivity to Silver Spring and Union Station.

Under existing conditions there is no short-term bicycle parking located around the perimeter of the Site.

Florida Avenue NE Multimodal Project

Interim improvements were made along Florida Avenue in the Summer of 2019 which aimed to provide a safe, bicycle-friendly route along Florida Avenue to the Trinidad and H Street Corridor neighborhoods.

Travel lanes along Florida Avenue were replaced in order to install a protected cycle track from 3rd Street to West Virginia Avenue and a protected bicycle lane from West Virginia Avenue to 14th Street/H Street. These interim improvements will be made permanent with the completion of the project in 2021, providing safer access to points east of the site.

New York Avenue Streetscape and Trail

As part of a proposed 4.3-mile bicycle trail running along New York Avenue from M Street NE to Eastern Avenue NE, the trail will utilize on-street segments along Morse Street and the Alley

running by the Site. These on-street segments will take on the form of protected cycle tracks until joining New York Avenue. The Site has been developed in order to accommodate the cycle track running along the west side of the Alley, providing cyclists a convenient option.

Capital Bikeshare

In addition to personal bicycles, the Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the Project. The Bikeshare program has placed over 500 Bikeshare stations across Washington, DC, Arlington, and Alexandria, VA, Montgomery County, MD, and most recently Fairfax County, VA, with 4,300 bicycles provided. There are seven (7) existing Capital Bikeshare stations within a half-mile of the Site, with one station located three (3) blocks (0.2 miles) east from the Site at 6th Street and Neal Place, providing extensive accessibility to bikeshare facilities. As part of the First-Stage PUD approval, the Applicant will pay DDOT for the installation and first year's operation expenses of a new Capital Bikeshare station to be located near the intersection of Morse Street and the Alley (south of Building C1).

Demand analysis at the 6th Street and Neal Place station from January 2020 shows approximately 432 trips made from the station and 408 trips made to the station. This marks a substantial increase from the 255 trips made from the station and 294 trips to the station in January 2019, indicating greater demand in the Union Market area. The future Bikeshare station planned south of Building C1 will boost cycling activity and make it a year-round option for employees of the office and retail portions of the Project.

These bicycle facilities connect the Site to areas within the District. Figure 27 illustrates the existing bicycle facilities in the study area.

SITE IMPACTS

On-Site Bicycle Elements

The project will include approximately 16 short-term bicycle spaces along the perimeter of the Site, with 10 spaces along the 3rd Street frontage and six (6) spaces along the Neal Place frontage. These short-term spaces will include inverted U-racks placed in high-visibility areas. Adjacent to the Alley frontage will be the future cycle track that will be part of the *New York Avenue Streetscape and Trail* project.



The project will also include secure long-term bicycle parking. The plans identify a total of approximately 77 long-term spaces, within the first level of the parking garage which exceeds the requirements of the 2016 Zoning Regulations (ZR16).

Bicycle Trip Generation

The Project is expected to generate 15 bicycle trips (12 inbound, 3 outbound) during the morning peak hour and 17 bicycle trips (3 inbound, 14 outbound) during the afternoon peak hour. The number of anticipated bicycle site trips indicates bicycling will be an important mode getting to and from the Site. With adequate facilities located on site and existing routes to and from the Site, the impacts from bicycling will be minimal.

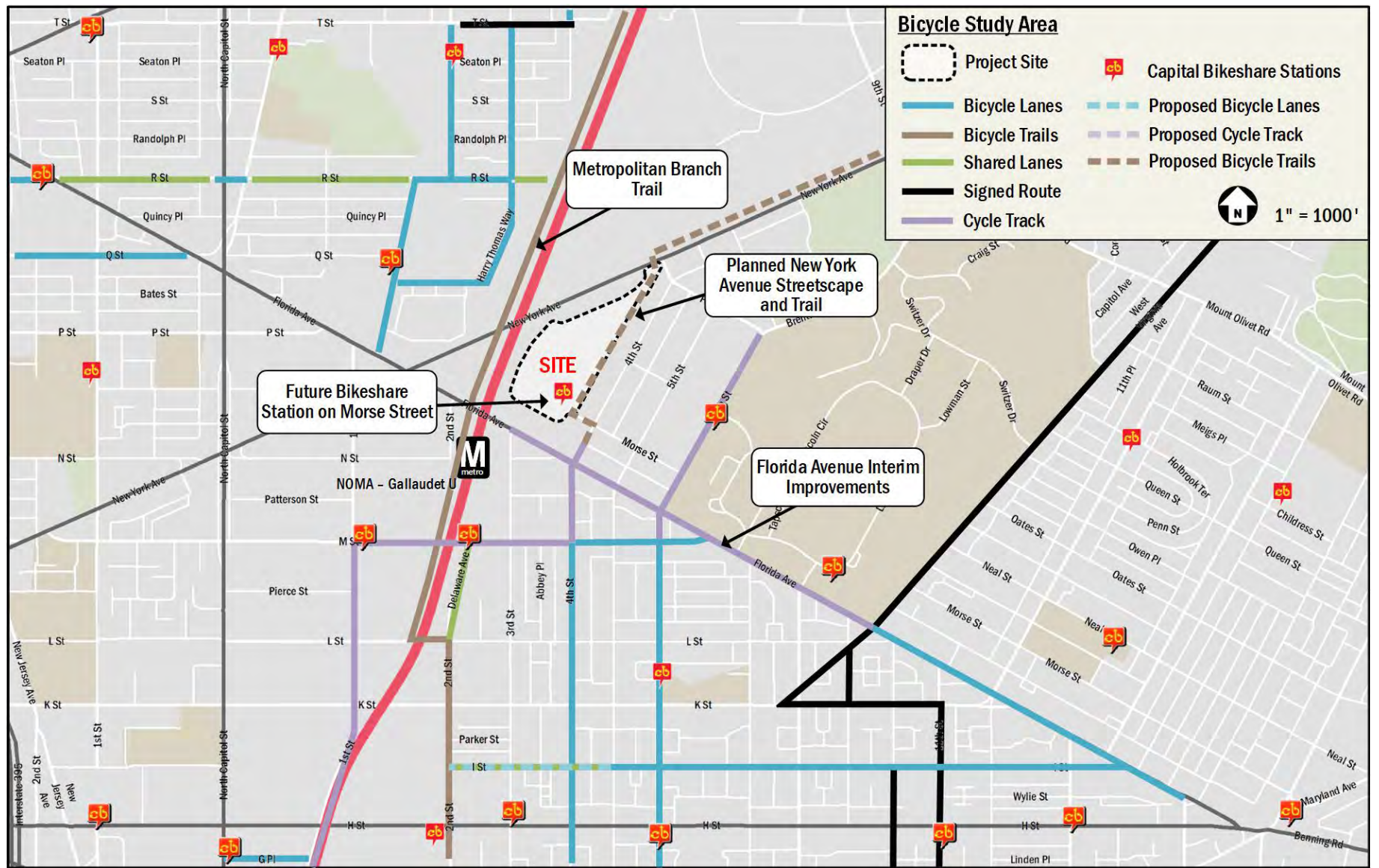


Figure 27: Existing Bicycle Facilities

SAFETY ANALYSIS

This chapter qualitatively reviews any vehicle, pedestrian, or bicycle conflicts at the study area intersections or street links within the study area. This review includes identifying any intersections within the study area that have been identified by DDOT as high crash locations.

SUMMARY OF SAFETY ANALYSIS

A safety analysis was performed to determine if there are any intersections that pose any obvious conflicts with vehicles, pedestrians, or bicyclists. Data to determine this included DDOT's most recent *Traffic Safety Statistics Report (2015-2017)* and *Vision Zero Action Plan*; Based on observations and familiarity with the area, one (1) intersection was identified with potential conflicts. The following section details the conflict at the study area intersection.

POTENTIAL IMPACTS

This section reviews the one (1) intersection that was identified to pose potential conflicts to vehicles, pedestrians, or bicyclists.

New York Avenue & 4th Street

In 2017, 40 crashes were recorded at the intersection, which ranked as the 23rd most hazardous intersection in the District, based on the *Traffic Safety Statistics Report*. This intersection operates as a three-legged intersection with 4th Street operating as the northbound approach.

New York Avenue operates as a heavily trafficked commuter route, with peak period travel in the westbound direction during the morning and eastbound during the afternoon. Volumes at the 4th Street approach will continue to grow as the Union Market area matures.

As it currently exists, pedestrian and bicycle facilities along this part of New York Avenue are subpar. Sidewalks along the south side of eastbound New York Avenue are currently not up to DDOT standards and there are no official bicycle facilities. Improvements from the *New York Avenue NE Streetscape and Trail* project will correct these deficiencies and add a bicycle trail and sidewalk on the north side of New York Avenue and crosswalks across New York Avenue. Improvements to the pedestrian and bicycle facilities in this area will allow pedestrians and bicyclists to be more visible to motorists, reducing speeds and aggressive maneuvers along this corridor.

SUMMARY AND CONCLUSIONS

This report presents the findings of a Comprehensive Transportation Review (CTR) for a Second-Stage PUD for Building C2 of the Market Terminal development project located at 350 Morse Street NE (the "Site"). This report reviews the transportation aspects of the proposed mixed-use office building (the "Project") on the Site, for which is the subject of Z.C. Case Number 15-27B.

The purpose of this CTR is to evaluate whether the Project will generate a detrimental impact to the transportation network surrounding the Site. 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 the proposed site design elements and TDM measures are implemented.

Proposed Project

The Project is located at 350 Morse Street NE within the overall Market Terminal development project and is bordered by future Building C1, the newly constructed private section of 3rd Street, the extension of Neal Place, and an Alley.

The Project will develop the Site pursuant to the Second Stage PUD application with:

- Approximately 225,398 square feet of office space. Up to 7,049 square feet of this space may be allocated as a bar/restaurant use;
- Approximately 6,532 square feet of retail space;
- Approximately 132 below-grade vehicle parking spaces in a parking garage;
- One (1) 30-foot loading berth, with one (1) 20-foot service/delivery space; and
- 77 secure long-term and 16 short-term bicycle parking spaces.

Primary access/egress to the Project's below-grade parking garage will be from a new curb cut in the Alley. Loading needs will be served by an adjacent curb cut in the Alley. All truck turning maneuvers will occur on the Site, allowing for head-in, head-out access to and from the public street. The curb cuts along with the number of loading berths meet all zoning and DDOT dimensional requirements.

The Project will satisfy the 2016 zoning requirements for bicycle parking by including 16 short-term bicycle parking spaces and 77 long-term bicycle parking spaces. The Project will supply long-term bicycle parking within the first level of the parking garage and short-term bicycle parking along the perimeter of the Site. The vehicular and bicycle parking will also meet the practical needs of the Project's employees and patrons.

Multi-Modal Impacts and Recommendations

Trip Generation

The Project is transit-, pedestrian-, and bicycle-oriented. The Project is expected to generate new trips on the surrounding transportation network across all modes. The AM peak hour trip generation is projected to include 85 cars/hour, 145 transit riders/hour, 15 bicycle trips/hour, and 31 walking trips/hour. The PM peak hour trip generation is projected to include 95 cars/hour, 161 transit riders/hour, 17 bicycle trips/hour, and 41 walking trips/hour.

Transit

The Site is served by regional and local transit services via Metrobus and Metrorail. The Site is four (4) blocks (a 7-minute walk) from the NoMA-Gallaudet U Metro Station, with Metrobus stops located south of the Site at Florida Avenue and 3rd Street NE.

Although the Project will generate new transit trips, existing facilities have enough capacity to accommodate the new trips.

Pedestrian

The Site is surrounded by a quality pedestrian network. Most roadways within a quarter-mile radius of the Site provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes between Union Market and the NoMA-Gallaudet U Metro. Areas within the Union Market District are currently under construction, leading to less-than-optimal facilities.

As a result of the Project, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards as well as the Union Market Streetscape Guidelines. As construction activity of several new developments near the Site finish, more pedestrian facilities will meet standards.

The Project will generate a moderate number of pedestrian trips and the improved facilities will be able to handle the new

trips. Notably, the Applicant will provide sidewalks along 3rd Street, Neal Place, and Alley frontages.

Bicycle

The Site has access to several nearby on-street bicycle facilities, including recently installed and proposed facilities. Cycle Tracks are available adjacent to the Site on Florida Avenue, M Street, First Street, and 4th Street. A Capital Bikeshare location is located 0.2 miles away from the Site along at 6th Street and Neal Place. Future bicycle tracks will run along the Alley adjacent to the site, connecting the Union Market area with New York Avenue.

The Applicant has committed to paying for the installation and one-year's maintenance of a future Capital Bikeshare Station to be placed on Morse Street just south of Building C1.

The Project will provide short-term bicycle parking along the perimeter of the Site. On-site secure long-term bicycle parking will be provided in the first level of the parking garage. The amount of bicycle parking provided exceeds 2016 zoning requirements. Access to the Project's long-term, secure bicycle facilities will occur via the proposed curb cut in the Alley.

The Project will generate a moderate number of new bicycle trips without burdening the existing facilities.

Vehicular

The Site is accessible from regional roadways, such as New York Avenue (Route 50) and several principal and minor arterials such as Florida Avenue NE, 4th Street NE, and 6th Street NE. These roadways create connectivity to I-395 and the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs, as well as provides connectivity to the District core.

In order to determine impacts that the Project will have on the transportation network, this report projects future conditions with and without the Project based on the number of trips the Project is expected to generate. Intersection analyses are performed to obtain the average delay and queue a vehicle will experience. These average delays and queues are compared to the acceptable levels of delay set by DDOT standards as well as existing queues to determine if the Site will negatively impact the study area.

Gorove Slade analysis concluded that three (3) intersections require mitigation as a result of the minor impacts to delay

created by the development. Mitigation measures are proposed as follows:

New York Avenue & 4th Street

Gorove Slade recommends signal timing adjustments be coordinated with DDOT in the afternoon peak hour to ensure the most efficient future operation, following construction of Building C2 and other developments slated to open by 2022.

Morse Street & 4th Street

Gorove Slade recommends implementing signal timing adjustments and peak period parking restrictions during the afternoon peak hour along the south side of Morse Street (on the eastbound approach) from the Alley to 4th Street. This will allow for a dedicated right-turn lane during the afternoon peak hour.

Florida Avenue & 4th Street

Gorove Slade recommends signal timing and phasing adjustments be coordinated with DDOT in the morning peak hour to ensure the most efficient future operation, concurrent with construction of Building C2 and other developments slated to open by 2022.

Safety

A qualitative review of study area intersections was performed to identify areas of concern due to vehicular, pedestrian, and bicycle interactions.

Gorove Slade analysis concluded that existing conditions will be improved at one (1) intersection that will further enhance the multi-modal network surrounding the Site. Improvements are planned as follows:

New York Avenue & 4th Street

Improvements at this intersection, such as sidewalks which meet DDOT/ADA standards and the installation of a bicycle trail will be made as part of the *New York Avenue Streetscape and Trail* project. These improvements will make pedestrians and bicyclists more visible near the intersection and allow for multimodal connectivity.

Transportation Demand Management (TDM)

Per the DDOT CTR guidelines, the goal of TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has

outlined expectations for TDM measures in their CTR guidelines, and this project has proposed an enhanced-tier TDM plan based on these guidelines. In addition, TDM commitments made as part of the approval of the Project's First-Stage PUD Application will be honored and stated in the TDM plan.

Summary and Recommendations

This report concludes that the Project will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements and TDM measures are implemented.

The Project has several positive design elements that minimize potential transportation impacts, including:

- The Site's close proximity to transit and existing/future bicycle infrastructure;
- The inclusion of secure long-term bicycle parking;
- The installation of short-term bicycle parking spaces along the frontage of the Site that exceed zoning requirements;
- The creation of new pedestrian sidewalks that meet or exceed DDOT and ADA requirements, improving the existing pedestrian environment. This includes sidewalks along the Neal Place, Alley, and 3rd Street frontages;

An enhanced-tier TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.