COMPREHENSIVE TRANSPORTATION REVIEW

300 MORSE STREET NE PUD

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EXECUTIVE SUMMARY

The following report is a Comprehensive Transportation Review (CTR) for the 300 Morse Street NE project. This report reviews the transportation aspects of the Planned Unit Development (PUD) application. The Zoning Commission Case Number is 15-27.

The purpose of this study is to evaluate whether the PUD will generate a detrimental impact to the surrounding transportation network. This evaluation is based on a technical comparison of two future conditions: one with the PUD constructed and one without. This report concludes that **the PUD will not have a detrimental impact** to the surrounding transportation network assuming that all background improvements are executed, all planned site design elements are implemented, and all mitigation measures are incorporated into the PUD application.

Proposed PUD

The 300 Morse Street site is currently occupied by a series of industrial buildings surrounding a large parking lot. The site is generally bound by the railroad to the west and north, adjacent developments (with 4th Street immediately beyond) to the east, and adjacent developments (with Florida Avenue immediately beyond) to the south. The resulting development will be a mixed-use development constructed in multiple phases and consisting of approximately 63,055 square feet (sf) of retail space, 1,238 residential units, and 217,558 sf of office space supplemented by approximately 691 below grade parking spaces.

As part of the PUD, pedestrian facilities throughout the site will be constructed to meet DDOT and ADA standards. This includes sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings, and additional design elements such as curb extensions and room for outdoor seating.

The development will extend the existing Morse Street to the west which will connect with a newly constructed 3rd Street which will bisect the project. Neal Place will be extended to the west also connecting with 3rd Street. The alley along the eastern edge of the PUD will be enhanced to include a cycle track separated from the vehicular cartpath of the alley and will also include a pedestrian flex zone between the cycle track and the development itself. Vehicular and loading access for the project will be provided primarily 3rd Street and the multi-use alley connecting Morse Street and Neal Place.

The development will supply secure interior long-term bicycle parking within the buildings of the development and short-term bicycle parking along sidewalks and public areas throughout the site.

Multi-Modal Impacts and Recommendations

Transit

The site is served by regional and local transit services such as Metrorail and Metrobus. The site is 0.3 miles from the NoMa-Gallaudet U Metrorail Station portal at 2nd Street and N Street, and many Metrobus stops are located within near the site along Florida Avenue.

Although the development will be generating new transit trips, existing facilities have enough capacity to handle the new trips.

Pedestrian

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

As a result of the development pedestrian facilities within the perimeter of the site will be improved with the addition of 3rd Street, the extensions of Neal Place and Morse Street, the construction of the pedestrian plaza between Buildings A-1 and B, and the enhancement of the alley on the eastern edge of the site. The development will improve sidewalks with the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

Bicycle

The site is very well served by existing bicycle infrastructure. The site is just blocks away from trails and bike lanes, such as the Metropolitan Branch Trail to the west and bike lanes along 4th Street and 6th Street which run near the proposed development. In addition, the site will extend the existing 4th Street cycle track through the development along the alley in order to provide a connection for DDOT's future bicycle facilities planned north and east of the site along New York Avenue.

The development will provide short-term bicycle parking within the site and on-site secure long-term bicycle parking for residents and employees of the development.

Vehicular

The site is well-connected to regional roadways such as I-395 and US-50, principal and minor arterials such as Florida Avenue and 6th Street, and an existing network of collector and local roadways.

In order to determine impacts that the proposed development will have on the transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays and queues. These 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.

The analysis concluded that the surrounding roadway infrastructure would operate within acceptable levels at buildout of the development with the following recommended improvements:

- Traffic management cameras at the following intersections:
    - Florida Avenue & 5th Street NE
    - New York Avenue & 4th Street NE
- A new traffic signal at the Morse Street & 4th Street NE intersection.
- A modification to the existing traffic signal at the Florida Avenue & 4th Street intersection to include an eastbound left turn phase.

Summary and Recommendations

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

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

- The site's close proximity to Metrorail.
- The inclusion of secure long-term bicycle parking spaces within the development that exceed zoning requirements.
- The installation of short-term bicycle parking spaces around the perimeter of each parcel that meet or exceed zoning and DDOT requirements.
- The construction of new roadways within the development and multi-modal enhancements to the alley adjacent to the development providing better circulation to the area surrounding the PUD.
- The creation of wide pedestrian paths which will meet or exceed DDOT and ADA requirements.
- A robust Transportation Demand Management (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 reviews the transportation elements of the 300 Morse Street PUD, Zoning Case number 15-27. The site, shown in Figure 1, is located within the Florida Avenue Market, also known as the Union Market district, in Northeast DC.

The purpose of this report is to:

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

PROJECT SUMMARY

The 300 Morse Street PUD project will redevelop the existing buildings within Lots 805, 814, and 817 in Square 3587 into four buildings which will include residential, retail, and office uses.

The project will be constructed in two phases:

- Phase 1 will consist of Buildings A-1, B, and C-1 as well as the first phase of Building A-2. Building A-1 is proposed to include up to 442 residential units and 15,835 square feet of retail space. Building B is proposed to include up to 110 residential units and 9,550 square feet of retail space. Building C-1 is proposed to include up to 217,558 square feet of office space and 10,563 square feet of retail space. The first phased of Building A-2 is proposed to include up to 160 residential units and 2,900 square feet of retail space. (It should be noted that while only Stage 1 PUD approval is being sought for Building A-2 with this applications, it is expected to have a separate Stage 2 PUD application and the first phase of Building A-2 is expected to be constructed concurrent with Phase 1 of the remainder of the development. As such the first phase of Building A-2 is assumed as a part of Phase 1 for this analysis.) Phase 1 will also include a park and pedestrian plaza connecting the site to Florida Avenue and creating an enhanced pedestrian environment. Morse Street, 3rd Street, and the adjacent alley will be improved and amended to better fit with the surrounding urban fabric and comprehensive plans for the Union Market District. There will be a temporary roadway connection during Phase 1 between 3rd Street and the alley to create additional porosity throughout the site.

  Phase 1 will supply a total of approximately 484 parking spaces within two parking structures. A parking structure in the A-1 building will supply approximately 364 parking spaces and serve the parking needs of Buildings A-1, phase one of A-2, and B. The remaining approximately 120 parking spaces will be located in a below-grade parking structure in Building C-1. There will also be approximately 50-60 on-street parking spaces in conjunction with the roadway alterations and improvements of Phase 1. Phase 1 will exceed current bicycle parking requirements by supplying a total of 555 secure long-term bicycle parking spaces. Additional short-term bicycle parking will be supplied within the interior and perimeter of the site.

  Loading for Building A-1 and the first phase of Building A-2 will be from an alley off of 3rd Street and consist of three (3) 30' loading berths and three (3) 20' service/delivery spaces. As a result of the Building B footprint, and to avoid backing maneuvers along Morse Street, there will be an on-street loading space (large enough to accommodate a 30' truck) along Morse Street in lieu of an on-site loading area. Loading for Building C-1 will be off of the alley and consist of one (1) 30' loading berth and one (1) 20' service and delivery space.

- Phase 2 will consist of the remainder of Building A-2, and Buildings C-2 and D. The remainder of Building A-2 is proposed to include up to 147 residential units and 4,600 square feet of retail space. Building C-2 is proposed to include up to 236 residential units and 13,607 square feet of retail space. Building D is proposed to include up to 143 residential units and 6,000 square feet of retail space. As part

of Phase 2, Neal Place will be permanently extended between the alley and 3rd Street to create additional porosity throughout the site.

Phase 2 will supply a total of approximately 207 parking spaces. The parking structure constructed as part of Building A-1 will be expanded to include an additional approximately 57 parking spaces for the remainder of Building A-2. A below-grade parking structure with a total of approximately 150 spaces will be constructed below Buildings C-2 and D and the extension of Neal Pace. Approximately 94 spaces will be designated to Building C-2 and approximately 56 spaces will be designated to Building D. As a part of Phase 2, approximately 5-6 additional on-street parking spaces will be added along Neal Place. Phase 2 will comply with the bicycle parking requirements by supplying a total of 360 secure long-term bicycle parking spaces. Additional short-term bicycle parking spaces will be supplied within the interior and perimeter of the site.

Loading access for Building A-1 will change slightly as part of Phase 2, at which point Building A-1 and A-2 will have a shared access off of 3rd Street. Loading for Building A-2 will consist of one (1) 20' service/delivery space, with the remaining of its loading needs shared with Building A-1. Loading for Building C-2 will be off of the alley and consist of two (2) 30' loading berths and two (2) 20' service/delivery spaces. Loading for Building D will be off of the alley and consist of one (1) 30' loading berth.

CONTENTS OF STUDY

This report contains nine sections as follows:

- *Study Area Overview*
  This section reviews the area near and adjacent to the proposed project and includes an overview of the site location.
- *Project Design*
  This section reviews the transportation components of the PUD, including the site plan and access. This chapter also contains the proposed Transportation Demand Management (TDM) plan for the site.
- *Trip Generation*
  This section outlines the travel demand of the proposed PUD. It summarizes the proposed trip generation of the project
- *Traffic Operations*
  This section provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project, including presenting mitigation measures for minimizing impacts.
- *Transit*
  This section summarizes the existing and future transit service adjacent to the site, reviews how the project's transit demand will be accommodated, outlines impacts, and presents recommendations as needed.
- *Pedestrian Facilities*
  This section summarizes existing and future pedestrian access to the site, reviews walking routes to and from the project site, outlines impacts, and presents recommendations as needed.
- *Bicycle Facilities*
  This section summarizes existing and future bicycle access to the site, reviews the quality of cycling routes to and from the project site, outlines impacts, and presents recommendations as needed.
- *Safety/Crash Analysis*
  This section reviews the potential impacts that development of the project would have on safety. This includes a review of crash data at intersections in the study area and a qualitative discussion on how the Ingleside expansion will influence safety.
- *Summary and Conclusions*
  This section presents a summary of the recommended mitigation measures by mode and presents overall report findings and conclusions.

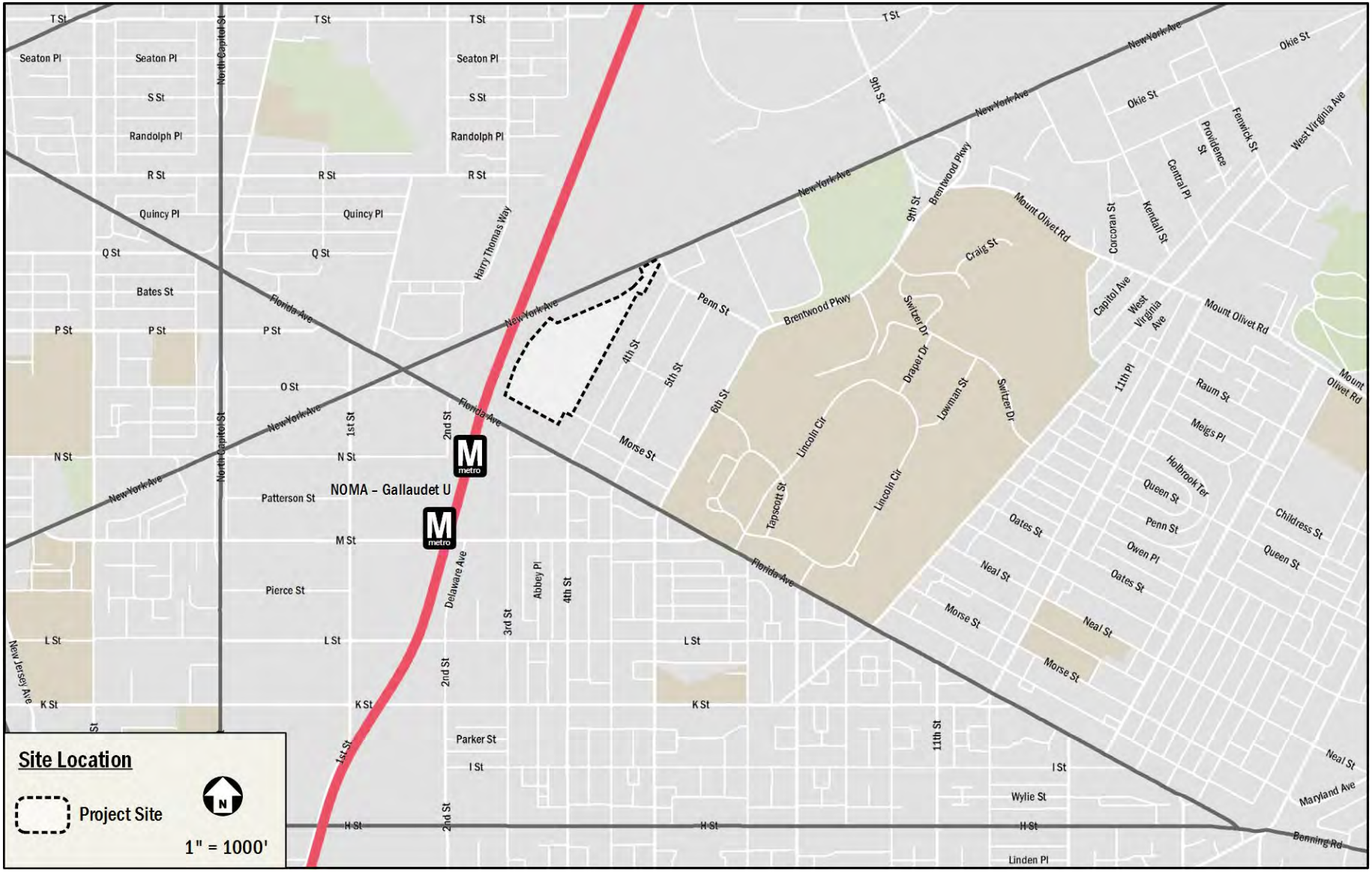

Figure 1: Site Location

STUDY AREA OVERVIEW

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

The following conclusions are reached within this chapter:

- The site is surrounded by an extensive regional and local transportation system that accommodates the multi-modal vision of the development.
- Pedestrian facilities within the market itself reflect its historic use as an industrial wholesale market place. This development, in addition to background developments and improvements, will greatly improve the streetscape surrounding the site to allow safer travel for all modes of transportation, while retaining the industrial atmosphere.
- Outside of the market area, walking and cycling conditions are very good. There are some gaps in the network; however, these gaps are recognized and District initiatives have been implemented to alleviate some of these issues.
- Florida Avenue and the market area itself have been studied in depth to determine the best ways to improve and build upon the area given anticipated development.

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

Under existing conditions, the 300 Morse Street site has ample access to regional vehicular- and transit-based transportation options, as shown in Figure 3, that connect the site to destinations within the District, Virginia, and Maryland.

The site is accessible from several principal arterials such as New York Avenue, Florida Avenue, and North Capitol Street. These arterials create connections to I-395, I-695, I-295 and ultimately the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within a quarter-mile of the site, at which point minor arterials, collectors, and local roads can be used to access the site directly.

The site has access to the Red Line which provides connections to areas in the District and Maryland. The Red Line connects Rockville, MD with Glenmont, MD while providing access to the District core. Of particular importance, the Red Line provides a connection to Union Station, which is a hub for commuter rail – such as Amtrak, MARC, and VRE – in addition to Metrorail. The Red Line also provides connections to all additional Metrorail lines allowing for access to much of the DC Metropolitan area.

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

Overview of Local Access

There are several local transportation options near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 4. The site is served by a local vehicular network that includes several minor arterials and collectors such as 6th Street, 4th Street, Mount Olivet Road, West Virginia Avenue, and M Street. In addition, there is an existing network of local roadways that provide access to the site. The Metrobus system provides local transit service in the vicinity of the site. As shown in Figure 4, there are two bus lines traveling along the Florida Avenue corridor. Of the four nearest bus stops, one provides a shelter. These bus lines connect the site to many areas of the District including several Metrorail stations serving all Metrorail lines.

There are several existing bike facilities that connect the site to areas within the District, including the pair of one-way bicycle lanes along 4th and 6th Streets that provide north-south connectivity south of Florida Avenue, a two-way cycle track along 6th Street between Florida Avenue and Penn Street, a two-way cycle track on 1st Street that leads to Union Station, bike lanes along R Street, Q Street, I Street, and G Street that provide east-west connectivity, and the Metropolitan Branch Trail that provides an exclusive off-road facility. Although there are some high-volume roadways near the site, such as Florida Avenue, the majority of the bike facilities can be accessed via local and residential roadways that facilitate cycling.

The site is situated within the historic Florida Avenue Market, which is one of DC's primary locations for industrial wholesale distribution. Given the industrial nature of the site, pedestrian facilities within the market area itself do not meet typical DDOT standards. The majority of the roadways have sidewalks, but they are typically narrow and sometimes double as loading/unloading areas for vendors. Although the development plans to preserve the industrial feel of the site, pedestrian facilities will be updated to accommodate a multi-modal atmosphere. Outside of the market, a pedestrian network consisting of sidewalks, crosswalks, and curb ramps

connects the site to residential, office, and retail destinations within the nearby neighborhoods in addition to Gallaudet University and the NoMa Metrorail station. A detailed review of existing and proposed pedestrian access and infrastructure is provided in a later section of this report.

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

Overview of Internal Roadways

Within the Union Market district itself, the roadways take on a unique character within the District. Instead of following the traditional public space design of the rest of the District, the market roadways have a distinct industrial character, with a mixture of vehicle types, activities, and pedestrian/bicycle traffic.

The roadways within the markets—Penn Street, Neal Place, Morse Street, 4th Street, and 5th Street—have minimal lane markings or striping, wide vehicular travel areas that accommodate car and truck parking, and minimal dedicated pedestrian and bicycle facilities.

4th Street and 5th Street between Penn Street and Morse Street are designated as one-way streets; 4th Street is one-way southbound, and 5th Street is one-way northbound. However, observations, backed by the data collection results, show that many drivers ignore or are unaware of these designations due to the lack of existing signage and striping within the Market.

CAR-SHARING

Three car-sharing companies provide service in the District: Zipcar, Enterprise Carshare, and Car2Go. All three services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar and Enterprise Carshare have designated spaces for their vehicles. Carshare locations located within a half-mile of the site are listed in Table 1.

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

Table 1: Summary of Carshare Locations

Carshare Location	Number of Vehicles
Zipcar	
NoMa/Gallaudet Metro @ Elevation	1 vehicle
3rd/M St. NE (Tag B Lot)	2 vehicles
66 New York Ave NE (Tag B Lot)	4 vehicles
Enterprise Carshare	
DC-66 NY Ave NE	6 vehicles
Total	**13 vehicles**

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 development is located in the Trinidad-Langston neighborhood. This neighborhood has a walk score of 78, a transit score of 59, and a bike score of 65. Within the neighborhood, the PUD address itself (300 Morse Street NE) has a walk score of 92, transit score of 71, and a bike score of 94. Figure 2 shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

As represented in Figure 2 the site is situated in a neighborhood that encompasses some good and some average walk scores. However, the site is in an area that provides a better walking environment than areas to the north and east. In addition, the more likely walking destinations are south of the site where the walk score tends to be higher.

Similar to the walking destinations, the majority of biking destinations are also south and west of the site, where there are plentiful on and off-street bicycle facilities which are easily accessible from the site. This is reflected in how the PUD's address has a significantly better bike score than the neighborhood as a whole.

Overall, the Trinidad-Langston neighborhood has more average walk, transit, and bike scores; however, the site location itself is located in a part of the neighborhood that has better

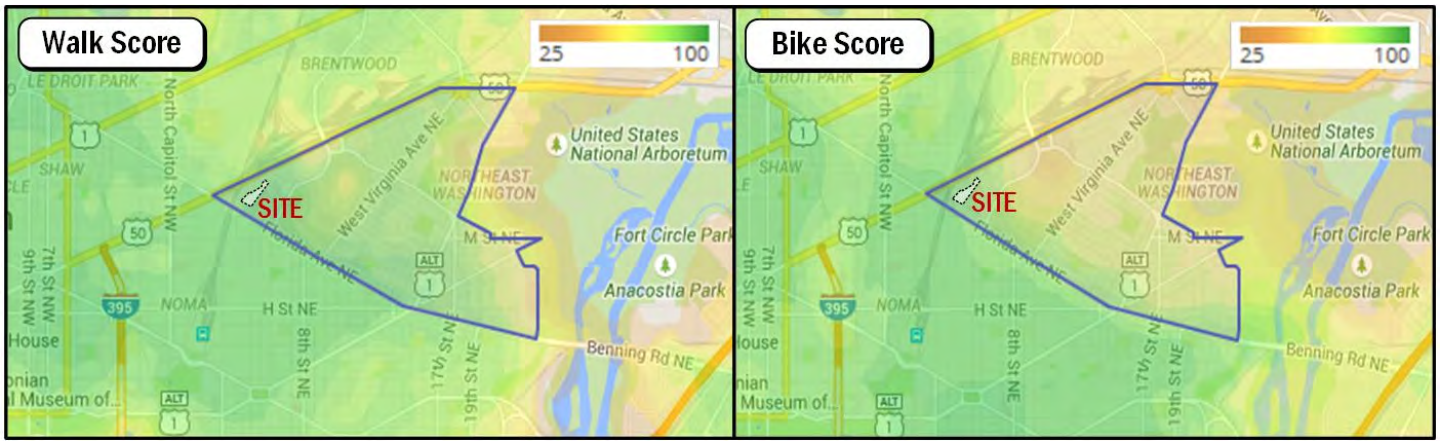

Figure 2: Summary of Walkscore and Bikescore

connectivity to pedestrian facilities, on- and off-street bicycle facilities, and transit. Additionally, several planned developments will help increase the walk and bike scores in the neighborhood.

Future Regional Projects

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

Local Initiatives

Florida Avenue Market Study – Small Area Plan

The Florida Avenue Market Study analyzes the unique area that is the Florida Avenue Market, which encompasses 45 acres near the intersections of Florida Avenue and New York Avenue, between Penn Street and 6th Street. Currently the Florida Avenue Market study area houses several industrial and wholesale markets, a few small restaurants, and the recently redeveloped Union Market. Overall, the area is isolated and under-developed thus this study develops a framework for development that will help achieve the following:

- Provide opportunities, guidance, and direction for developers and property owners as they propose redevelopment solutions
- Provide the Office of Planning, the Zoning Commission, and the community with a comprehensive basis on which to evaluate proposed developments within the Study Area.

This CTR took into account the recommendations and guidelines laid out in this report while evaluating the proposed development plan.

Florida Avenue Multimodal Transportation Study

The Florida Avenue Multimodal Transportation Study is currently in progress and evaluates safety, streetscape, and operational enhancements to improve safety for pedestrians and bicyclists along the Florida Avenue, NE corridor between New York Avenue and H Street/Benning Road.

Currently there are multiple lane configuration and streetscape alternatives along Florida Avenue and 6th Street. Although no single alternative has been narrowed down as most favorable, each alternative greatly improves the pedestrian and bicycle conditions along Florida Avenue. Potential improvements include widened sidewalks and buffer zones, bike lanes or cycle tracks, and dedicated turn lanes on Florida Avenue.

MoveDC: Multimodal Long-Range Transportation Plan

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

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

- 70 miles of high-capacity transit (streetcar of 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

This report also included an update to the Bicycle Master Plan and Pedestrian Plan, which was used to determine improvements within the study area not covered by the previously discussed studies.

Planned Developments

There are 22 projects planned, approved or under construction located in the vicinity of the proposed development. Figure 5 shows the location of these developments in relation to the proposed development. The proposed background developments considered for inclusion are as follows:

1270 4th Street NE

Phase 1 of this development calls for an 11-story, 408,000 sq. ft., 420 to 520-unit residential building with 33,600 sq. ft. of retail space and four to five levels of underground parking providing up to 550 spaces. Phase 2 of the development calls for 11,000 square feet of ground-floor retail and 144 residential units. Phase 1 of the development has an expected delivery date of 2017 and Phase 2 of the development has an expected delivery date of 2020.

Gateway Market Residence

Gateway Market at 340 Florida Avenue will be a six-story, 188-unit apartment building (153,000 sq. ft.) with 30,000 sq. ft. of ground floor retail space. Construction began in 2015 with an expected delivery date in 2017.

300 M Street NE

The proposed six-story, mixed-use project will have 401 new apartments, 9,000 to 12,900 sq. ft. of retail space and 175 parking spaces in a two-level underground garage. The developer submitted plans to the Zoning Commission in October 2014 and has an expected delivery date of 2018.

Uline Arena

The Uline Arena project will include the adaptive re-use of the existing 110,000 sq. ft. masonry arena building and adjacent Ice House. The current redevelopment calls for 146,000 to 170,000 sq. ft. of office space and 68,000 sq. ft. of retail. This development is currently under construction with an expected delivery date in Fall of 2016.

Central Armature Works

The new 110-foot building would have two to three levels of underground parking totaling 354 spaces, 52,735 square feet of ground-level retail, a hotel with 196 rooms, and 636 dwelling units. The development is expected to be complete in 2019.

The Highline at Union Market

The Highline at Union Market project will feature 313 dwelling units and 10,000 sf of retail. This development has an expected delivery date in 2018.

911 2nd Street NE

The project will consist of approximately 42 dwelling units in a residential building of approximately 41,500 sq. ft. This development is under construction with an expected delivery date in 2016.

Camden NoMa (Phase II)

60 L Street will contain two high-rise residential buildings totaling approximately 730 units. Construction on the first phase consisting of a 306,647 sq. ft., 321-unit building with 200 parking spaces started in 2011 and was completed in 2013 Phase II will include a 375,535 sq. ft., 406-unit building with 2,454 sq. ft. of retail and 250 parking spaces. This development has an expected delivery date in 2016.

AVA 55M

AVA 55M is the second phase of Archstone 1st + M development which includes 436 apartment units. This site was previously owned by Archstone as part of the Archstone at 1st + M Project, but was later purchased by AvalonBay. A building permit was issued in October 2013 and construction is underway with an expected delivery date in 2017.

22 M Street NE

Skanska plans to build a market-rate apartment building on three recently acquired lots. The development, once completed, will include 329 units in around 242,500 sq. ft. with approximately 9,500 sq. ft. of retail. The development has a target delivery date in 2017.

100 K Street

This site will be developed into a 222-unit residential building. This development is currently in planning stages.

Storey Park

This development is located at 1005 First Street NE, and will include 712,000 square feet of office, residential and retail development. The land use breakdown is expected to be 350,000 square feet of office space, 65,000 square feet of

retail, and 300 residential units. The development has an anticipated delivery date in 2017.

Union Place (Phase II)

The Union Place Phase II plan calls for a 14-story, 525-unit residential apartment building with 15,000 sq. ft. of retail. Phase I included a 212-unit apartment building that was completed in May of 2010. This project is part of the 850,000 sq. ft. mixed-use Union Place development. The development is expected to be completed in the near term.

Angelika (Phase I)

The Angelika Phase 1 development is located within Union Market and includes a 1,250-seat multi-screen theater, 62,000 square feet of retail space, and 115,000 square feet of office space OR 100 residential units. Phase 1 has an expected delivery date of 2017. Phase 2 includes 35,000 square feet of retail space, and either 290,000 square feet of office space or 368 dwelling units. Phase 2 has an expected delivery date of 2020.

Capitol Plaza

The Capitol Plaza development, once completed will include 900,000 sq. ft. of development in three buildings. Capitol Plaza I was completed in early 2007 and is a 12-story, 291,800 sq. ft. office building. 88 M Street (Capitol Plaza II) is planned to be a 315,000 sq. ft. office building with 6,500 sq. ft. of retail space and is currently under construction. 44 M Street (Capitol Plaza III) will include approximately 235,000 square feet of office space and 11,000 square feet of retail space. This development has an expected delivery date of 2017.

411 New York Avenue

The development calls for an 11-story hotel with up to 178 rooms with a restaurant on the ground-floor. The development was recently approved.

Elevation at Washington Gateway

The Washington Gateway development includes 400 dwelling units, 5,200 square feet or retail, and 630,000 square feet of office space. This development was completed in 2015.

501 New York Avenue

501 New York Avenue will include 220 to 240 hotel rooms. This development has an expected delivery date in 2016.

301 Florida Avenue NE

Plans call for a mixed-use retail (4,837 sf) and residential (56 units) building. This development has an expected delivery date of 2018.

301-331 N Street NE

This development will be a mixed-use (retail, office, hotel, and residential) development with a final build-out date of 2019. The development program consists of the following land uses:

- Retail –Approximately 26,585 sf of ground-floor retail
- Office – Approximately 25,407 sf of office space
- Hotel – Approximately 175 rooms
- Residential – Approximately 367 multi-family residential dwelling units

500 Morse Street NE

This development calls for 270 residential units and up to 19,800 square feet of retail space. The underground parking area will accommodate 160 to 245 parking spaces. This development is expected to be complete in 2020.

Gallaudet/JBG Union Market Development

The project site consists of four parcels of land. Parcel 1 is currently home to a surface lot and the Appleby Building, which houses transportation facilities for Gallaudet University. Parcel 1 will be redeveloped to include 37,902 square feet of institutional space, 82,093 square feet of office space, and 12,969 square feet of retail space with 137 parking spaces. Parcel 2 is currently home to a 290 parking space above ground parking facility that is used by the University. Parcel 2 will be redeveloped to include 133 residential units, 7,880 square feet of institutional space, and 11,174 square feet of retail space with 103 parking spaces. Parcel 3 is currently used as a surface parking lot and will be redeveloped to include 548 residential units, 158,236 square feet of office space, and 44,698 square feet of retail space with 437 parking spaces. Parcel 4 is primary vacant and will be redeveloped to include 455 residential units, 162,376 square feet of office space, and 50,331 square feet of retail with 412 parking spaces. Parcel 3 is expected to complete by 2019 with the remainder of the development expected to be complete in 2021.

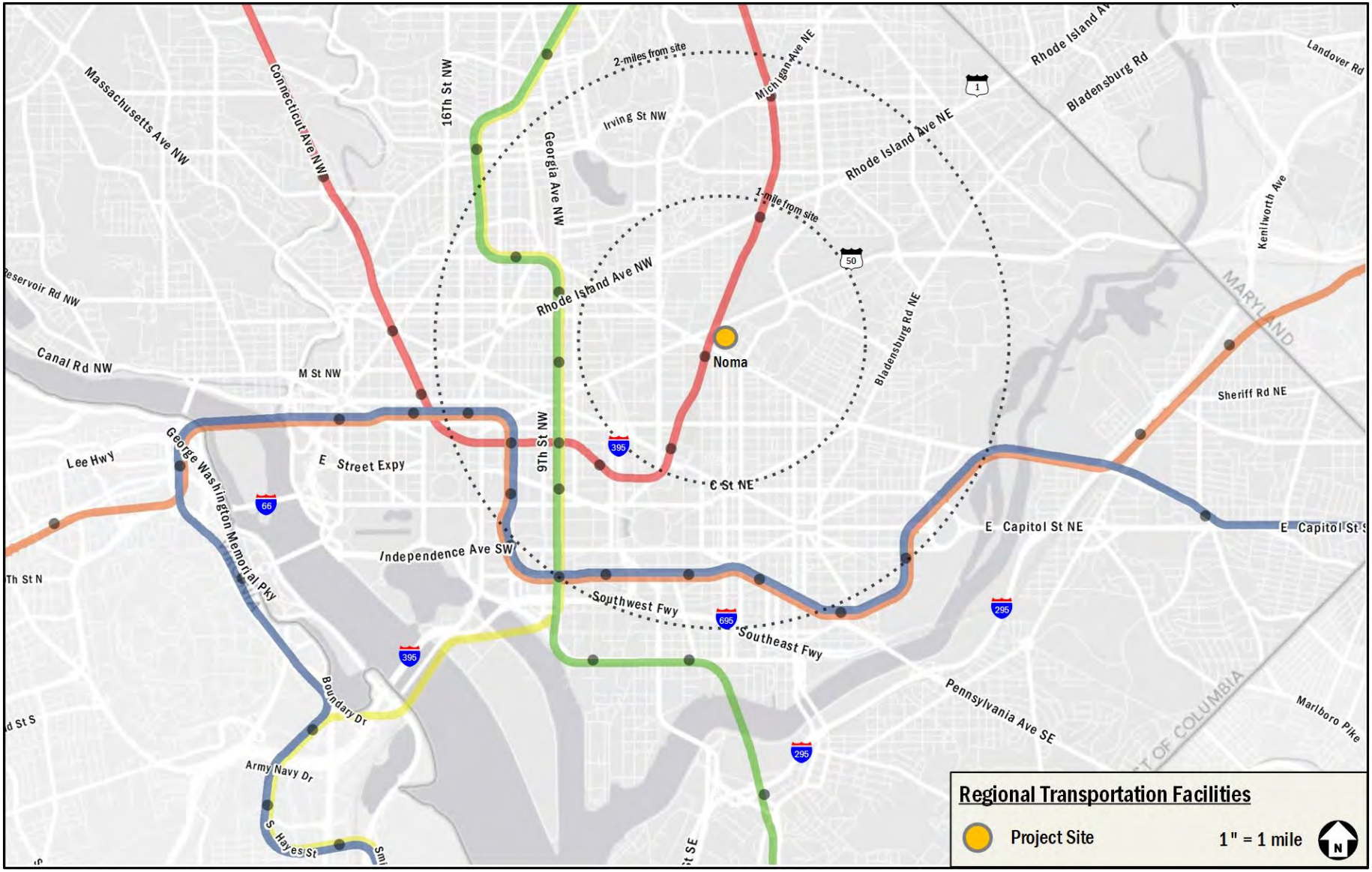

Figure 3: Major Regional Transportation Facilities

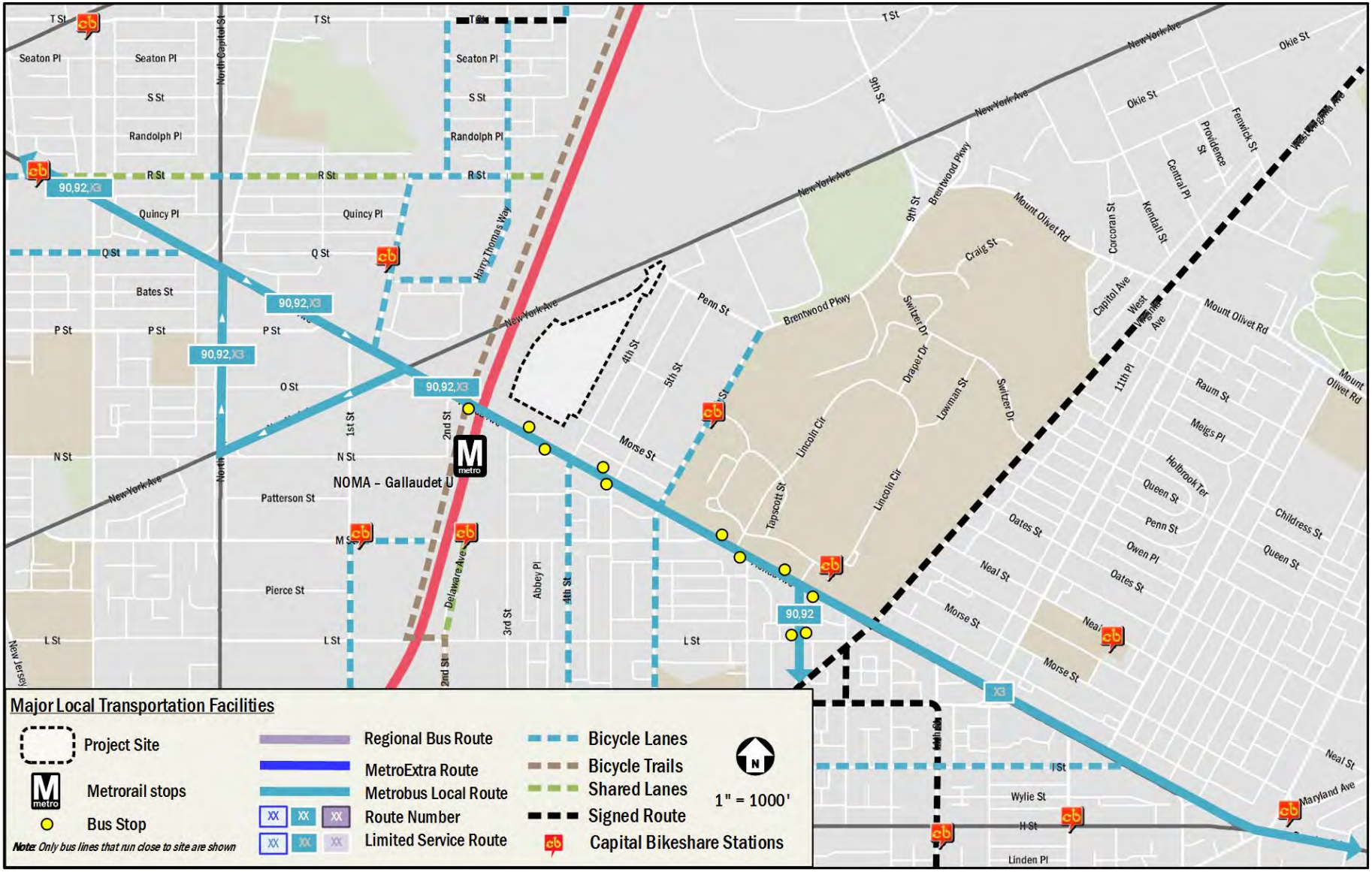

Figure 4: Major Local Transportation Facilities

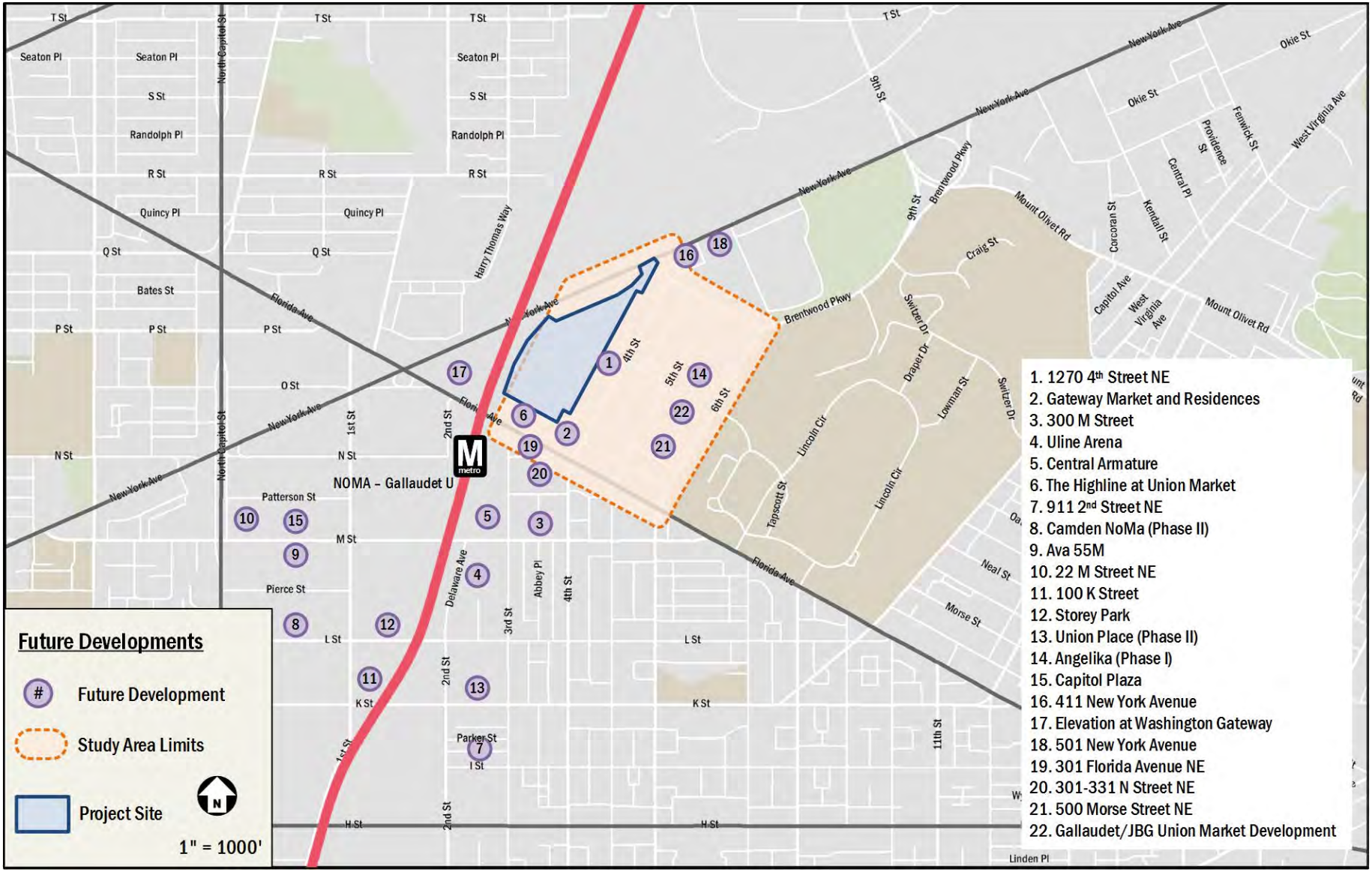

Figure 5: Planned Development Map

PROJECT DESIGN

This section reviews the transportation components of the 300 Morse Street project, including the proposed site plan and access. It includes descriptions of the site's vehicular access, loading, and parking. This chapter also includes the project's Transportation Demand Management (TDM) plan.

PROJECT OVERVIEW

The 300 Morse Street PUD project will redevelop the existing buildings within Lots 805, 814, and 817 in Square 3587 into four buildings which will include residential, retail, and office uses.

The project will be constructed in two phases:

- Phase 1 will consist of Buildings A-1, B, and C-1 as well as the first phase of Building A-2. Building A-1 is proposed to include up to 442 residential units and 15,835 square feet of retail space. Building B is proposed to include up to 110 residential units and 9,550 square feet of retail space. Building C-1 is proposed to include up to 217,558 square feet of office space and 10,563 square feet of retail space. The first phased of Building A-2 is proposed to include up to 160 residential units and 2,900 square feet of retail space. (It should be noted that while only Stage 1 PUD approval is being sought for Building A-2 with this applications, it is expected to have a separate Stage 2 PUD application and the first phase of Building A-2 is expected to be constructed concurrent with Phase 1 of the remainder of the development. As such the first phase of Building A-2 is assumed as a part of Phase 1 for this analysis.) Phase 1 will also include a park and pedestrian plaza connecting the site to Florida Avenue and creating an enhanced pedestrian environment. Morse Street, 3rd Street, and the adjacent alley will be improved and amended to better fit with the surrounding urban fabric and comprehensive plans for the Union Market District. There will be a temporary roadway connection during Phase 1 between 3rd Street and the alley to create additional porosity throughout the site.

  Phase 1 will supply a total of approximately 484 parking spaces within two parking structures. A parking structure in the A-1 building will supply approximately 364 parking spaces and serve the parking needs of Buildings A-1, phase one of A-2, and B. The remaining approximately 120 parking spaces will be located in a below-grade parking structure in Building C-1. There will also be approximately 50-60 on-street parking spaces in conjunction with the roadway alterations and improvements of Phase 1. Phase 1 will exceed current bicycle parking requirements by supplying a total of 555 secure long-term bicycle parking spaces. Additional short-term bicycle parking will be supplied within the interior and perimeter of the site.

  Loading for Building A-1 and the first phase of Building A-2 will be from an alley off of 3rd Street and consist of three (3) 30' loading berths and three (3) 20' service/delivery spaces. As a result of the Building B footprint, and to avoid backing maneuvers along Morse Street, there will be an on-street loading space (large enough to accommodate a 30' truck) along Morse Street in lieu of an on-site loading area. Loading for Building C-1 will be off of the alley and consist of one (1) 30' loading berth and one (1) 20' service and delivery space.

- Phase 2 will consist of the remainder of Building A-2, and Buildings C-2 and D. The remainder of Building A-2 is proposed to include up to 147 residential units and 4,600 square feet of retail space. Building C-2 is proposed to include up to 236 residential units and 13,607 square feet of retail space. Building D is proposed to include up to 143 residential units and 6,000 square feet of retail space. As part of Phase 2, Neal Place will be permanently extended between the alley and 3rd Street to create additional porosity throughout the site.

  Phase 2 will supply a total of approximately 207 parking spaces. The parking structure constructed as part of Building A-1 will be expanded to include an additional approximately 57 parking spaces for the remainder of Building A-2. A below-grade parking structure with a total of approximately 150 spaces will be constructed below Buildings C-2 and D and the extension of Neal Pace. Approximately 94 spaces will be designated to Building C-2 and approximately 56 spaces will be designated to Building D. As a part of Phase 2, approximately 5-6 additional on-street parking spaces will be added along Neal Place. Phase 2 will comply with the bicycle parking requirements by supplying a total of 360 secure long-term bicycle parking spaces. Additional short-term bicycle parking spaces will be supplied within the interior and perimeter of the site.

  Loading access for Building A-1 will change slightly as part of Phase 2, at which point Building A-1 and A-2 will have a shared access off of 3rd Street. Loading for Building A-2 will

consist of one (1) 20' service/delivery space, with the remaining of its loading needs shared with Building A-1. Loading for Building C-2 will be off of the alley and consist of two (2) 30' loading berths and two (2) 20' service/delivery spaces. Loading for Building D will be off of the alley and consist of one (1) 30' loading berth.

PARKING

As stated above, Phase 1 of the development will include approximately 484 parking spaces in two below-grade parking garages. The parking garage for Building A will be accessible from 3rd Street and the parking garage for Building C will be accessible from the alley.

Phase 2 of the development will include approximately 360 parking spaces. The parking garage for Building A will be expanded as part of Phase 2 with access continuing to be from the same curb cut along 3rd Street. A new below-grade parking garage will be built to serve Buildings C and D and will be accessible from the alley.

In addition, approximately 50-60 on-street parking spaces will be available along the streets internal to the development. Also, EV charging stations are planned throughout the development.

LOADING

As stated previously, the development will be broken down into two phases, each with multiple buildings. Each building will supply loading berths sufficient to serve the proposed development plan.

Truck routing to and from the site will be focused on designated primary truck routes, such as Florida Avenue, New York Avenue, and 6th Street. The majority of truck restricted routes are to the south of the site on 3rd Street, 4th Street, and 5th Street, all south of Florida Avenue.

The amount of loading expected at the site is estimated as follows:

- As a baseline, it is expected that there will be three (3) daily truck deliveries at each loading area (covering trash, general shared delivery, and mail).
- Residential loading activity is estimated assuming an expected rental turnover of 18 months, with (2) trucks per move – one move in and one move out.
- Although the exact nature of individual retail spaces is unknown at this time, it is expected that general retail stores will generated an additional (2) delivers per day in addition to the baseline shared deliveries.
- Office loading activity is estimated assuming 15 van/UPS delivers and three (3) 30' truck delivers per week, per building.

Using these estimates, the anticipated loading activity for each loading areas is as follows:

- Building A (including Buildings A-1 and A-2) is expected to generate a loading demand of 15 trucks per day (of these 16 deliveries approximately 9 are expected to be 30' trucks and 6 are expected to be 20' service vehicles)
- Building B is expected to generate a loading demand of 7 trucks per day (of these 7 deliveries approximately 3 are expected to be 30' trucks and 4 are expected to be 20' service vehicles).
- Building C-1 is expected to generate a loading demand of 11 trucks per day (of these 11 deliveries approximately 7 are expected to be 30' trucks and 4 are expected to be 20' service vehicles).
- Building C-2 is expected to generate a loading demand of 10 trucks per day (of these 10 deliveries approximately 5 are expected to be 30' trucks and 5 are expected to be 20' service vehicles).
- Building D is expected to generate a loading demand of 6 trucks per day (of these 6 deliveries 3 are expected to be 30' trucks and 3 are expected to be 20' service vehicles).

Figure 6, shows the proposed locations of loading areas for each building. Under the current development plan, the planned loading facilities provided by each building in the development will be sufficient to accommodate the demand generated by all uses.

BICYCLE FACILITIES

The PUD will meet the existing requirements to provide bicycle parking for the site (combination of the DC Zoning Regulations and the Bicycle Commuter and Parking Expansion Act of 2007). Retail and office components are required to provide long-term bicycle parking equating to 5 percent of the required vehicular parking and residential components are required to provide one long-term bicycle per every three residential units.

Based on these estimates the development plans to provide the following long-term bicycle parking:

- Building A-1 – 330 spaces
- Building A-2 (phase one) – 80 spaces
- Building B – 95 spaces
- Building C-1 – 50 spaces
- Building A-2 (phase two) – 80 spaces
- Building C-2 – 200 spaces
- Building D – 80 spaces

In addition to long term bicycle parking, the development will also supply short-term bicycle parking in the form of U-racks or other similar structures along the perimeter of the building. In conjunction with the proposed improvements along the alley, the development will be providing a two-way cycle track which will act as a connection along the New York Avenue Trail-with-Rail bicycle infrastructure plan.

Pedestrian Facilities

As part of the PUD, pedestrian facilities throughout the site will be constructed to meet DDOT and ADA standards. Primarily, an extensive pedestrian plaza will be constructed with the first phase of the development between Buildings A-1 and B providing connectivity from Florida Avenue and the extended neighborhood and facilities south of the development to not only the 300 Morse Street PUD, but the entire Union Market area. The pedestrian plaza will connect the western corner of the Morse Street/3rd Street intersection to the pedestrian facilities planned as a part of the Highline at Union Market development which provides a direct connection to Florida Avenue adjacent to its intersection with 3rd Street.

The pedestrian facilities planned for the development includes sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings, and additional design elements such as curb extensions and room for outdoor seating. The inclusion of permeable pavers, planting beds, additional streetlights, and outdoor seating areas will also contribute to an enhanced pedestrian experience. Figure 6 shows the planned streetscape and pedestrian improvements to the area surrounding the project.

Site Circulation

The development plans to extend Morse Street from its existing location, construct a new north/south 3rd Street at the western end of Morse Street, and extend Neal Place from its planned terminus west of 4th Street to meet the new 3rd Street in the northern portion of the site. All of the streets noted above will include on-street parking for the use of patrons to the development. As discussed previously, parking and loading access to Buildings A-1 and A-2 are planned from 3rd Street and parking and on-street loading access for Building B is planned from Morse Street. Cross sections of these roadways are included in the Appendix.

In addition, the development plans to expand a previously approved alley that extends along the eastern border of the site to include a cycle track, a vehicular cartpath, and a flexible zone that could be used by pedestrians alongside Buildings C-1 and C-2. Loading and parking access for Buildings C-1, C-2, and D are planned from the alley as well as loading for the adjacent development west of the site.

It should be noted that Neal Place is planned to be constructed in a temporary state but in its final location with the completion of the first phase of development. Since the garage for Buildings C-2 and D would be shared and beneath the final Neal Place, it is expected that a temporary alignment of Neal Place may be necessary when Building D and/or C-2 is under construction. As a worst-case scenario, an analysis of the capacity impacts of a short-term closure of this portion of Neal Place with the buildout of Phase 1 is examined further in this study.

Transportation Demand Management (TDM)

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

The PUD will include a TDM plan in order to help minimize its potential traffic impacts to the surrounding neighborhood. The following TDM plan is based on the DDOT expectations for TDM programs, modified to fit the specific needs of the PUD and transportation network. The Applicant proposes that upon construction, the project incorporate several TDM measures, including the following:

- The Applicant shall designate a TDM coordinator, who is responsible for organizing and marketing the TDM plan and who will act as a point of contact with DDOT.
- All parking on site will be priced at market rates at minimum, defined as the average cost for parking in a 0.25 mile radius from the site.
- All residential parking will be unbundled from the costs of leasing apartments or purchasing condos.
- The Applicant will install Transportation Information Center Displays (electronic screens) within the residential and office lobbies, containing information related to local transportation alternatives.
- The Applicant will provide TDM materials to new residents in the Residential Welcome Package materials.
- The Applicant will exceed Zoning requirements to provide bicycle parking/storage facilities at the proposed development. This includes secure parking located within each building's garage and short-term bicycle parking around the perimeter of the site.
- The Applicant will provide bicycle repair stations, 4 stations total, to be located within the bicycle storage rooms within each garage and adjacent to the public plaza.
- The Applicant will offer either a one-year membership to Capital Bikeshare or a one-year membership to a Carsharing service to each residential unit for the initial lease up of each unit.

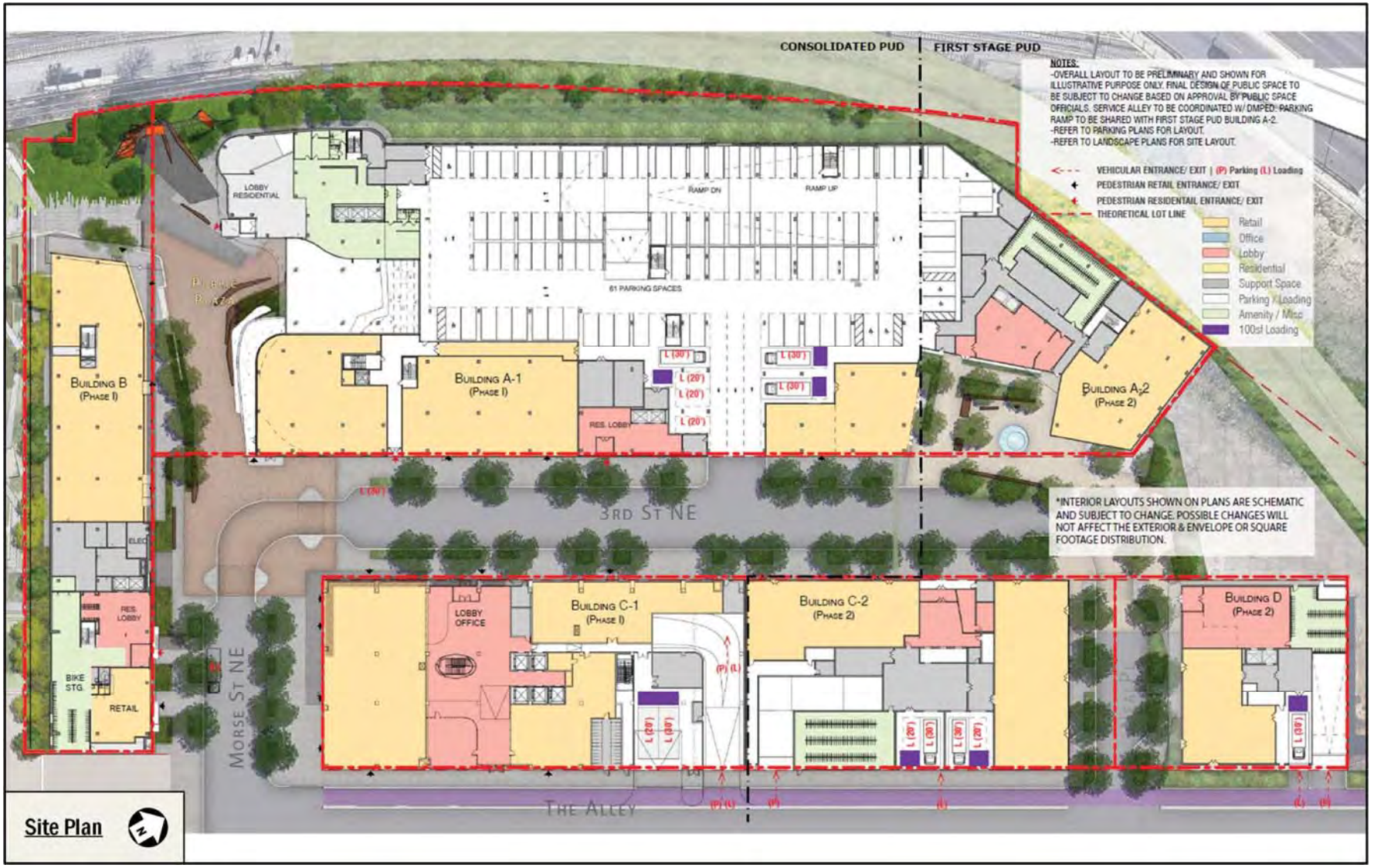

Figure 6: Site Plan

TRIP GENERATION

This section outlines the transportation demand of the proposed PUD. It summarizes the projected trip generation of the site by building, by land use and by mode, which forms the basis for the chapters that follow.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition. This methodology was supplemented to account for the urban nature of the site (the *Trip Generation Manual* provides data for non-urban, low transit use sites) and to generate trips for multiple modes. Of note, Saturday peak hour trip generation was reviewed, but it was determined to be lower than the weekday peak hours thus not included in the analysis.

Residential trip generation was calculated based on ITE land use 220, Apartment, splitting trips into different modes using assumptions derived from census data for the residents that currently live near the site. The vehicular mode split was then adjusted to reflect the parking supply and other developments in the area with similar proximity to Metrorail.

Retail trip generation was calculated based on ITE land use 820, Shopping Center. Mode splits for the retail portion of the site were based on information contained in WMATA's 2005 Development-Related Ridership Survey and mode splits used for retail uses of nearby developments that have recently been studied.

Office trip generation was calculated based on ITE land use 710, General Office. Mode splits for the office component were based on census data for employees that travel to the site and data for office sites from WMATA's Development-Related Ridership Study. Mode splits were further adjusted to reflect the proposed parking supply.

The mode split assumptions for all land uses within the development is summarized in Table 2. A summary of the multimodal trip generation for Phase 1 and Phase 2 is shown in Table 4 and Table 5, respectively, for both peak hours. A summary of the multimodal trip generation for the overall development is provided in Table 6. Detailed calculations are included in the Technical Attachments.

Table 2: Mode Split Summary by Land Use

Land Use	Mode			
	Auto	Transit	Bike	Walk
Residential	39%	40%	4%	17%
Retail	35%	35%	5%	25%
Office	35%	50%	5%	10%

Existing vehicular trips at the site were also determined based on traffic counts at the intersection of 4th Street and Morse Street. Under existing conditions, this is the only access point into and out of the site and high traffic counts are observed, primarily due to the consistent deliveries at the wholesale markets and grocers currently located at the site. In order to accurately depict the impacts of the proposed development, the existing trips were removed from the network. A summary of existing trip generation is provided in Table 3.

Table 3: Existing Trip Generation

Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto	105	86	191	15	46	61

Table 4: Phase 1 Multimodal Trip Generation Summary

Mode	Building	Land Use	AM Peak Hour			PM Peak Hour		
			In	*Out*	*Total*	*In*	*Out*	*Total*
Auto	Building A-1	*Residential*	18 veh/hr	68 veh/hr	86 veh/hr	66 veh/hr	36 veh/hr	102 veh/hr
		Retail	3 veh/hr	2 veh/hr	5 veh/hr	10 veh/hr	11 veh/hr	21 veh/hr
	Building A-2 Phase 1	*Residential*	6 veh/hr	26 veh/hr	32 veh/hr	27 veh/hr	15 veh/hr	42 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	2 veh/hr	4 veh/hr
	Building B	*Residential*	4 veh/hr	19 veh/hr	23 veh/hr	20 veh/hr	10 veh/hr	30 veh/hr
		Retail	2 veh/hr	1 veh/hr	3 veh/hr	6 veh/hr	6 veh/hr	12 veh/hr
	Building C-1	*Office*	110 veh/hr	15 veh/hr	125 veh/hr	19 veh/hr	93 veh/hr	112 veh/hr
		Retail	2 veh/hr	1 veh/hr	3 veh/hr	7 veh/hr	6 veh/hr	13 veh/hr
	Total		**146 veh/hr**	**132 veh/hr**	**278 veh/hr**	**157 veh/hr**	**179 veh/hr**	**336 veh/hr**
Transit	Building A-1	*Residential*	20 ppl/hr	80 ppl/hr	100 ppl/hr	77 ppl/hr	41 ppl/hr	118 ppl/hr
		Retail	6 ppl/hr	3 ppl/hr	9 ppl/hr	18 ppl/hr	19 ppl/hr	37 ppl/hr
	Building A-2 Phase 1	*Residential*	7 ppl/hr	30 ppl/hr	37 ppl/hr	31 ppl/hr	17 ppl/hr	48 ppl/hr
		Retail	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	4 ppl/hr	7 ppl/hr
	Building B	*Residential*	6 ppl/hr	20 ppl/hr	26 ppl/hr	23 ppl/hr	12 ppl/hr	35 ppl/hr
		Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	11 ppl/hr	22 ppl/hr
	Building C-1	*Office*	177 ppl/hr	24 ppl/hr	201 ppl/hr	31 ppl/hr	151 ppl/hr	182 ppl/hr
		Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	12 ppl/hr	12 ppl/hr	24 ppl/hr
	Total		**225 ppl/hr**	**162 ppl/hr**	**387 ppl/hr**	**206 ppl/hr**	**267 ppl/hr**	**473 ppl/hr**
Bike	Building A-1	*Residential*	2 veh/hr	8 veh/hr	10 veh/hr	8 veh/hr	4 veh/hr	12 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	3 veh/hr	2 veh/hr	5 veh/hr
	Building A-2 Phase 1	*Residential*	1 veh/hr	3 veh/hr	4 veh/hr	3 veh/hr	2 veh/hr	5 veh/hr
		Retail	0 veh/hr	0 veh/hr	0 veh/hr	0 veh/hr	1 veh/hr	1 veh/hr
	Building B	*Residential*	1 veh/hr	2 veh/hr	3 veh/hr	2 veh/hr	2 veh/hr	4 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr
	Building C-1	*Office*	18 veh/hr	2 veh/hr	20 veh/hr	3 veh/hr	15 veh/hr	18 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr
	Total		**25 veh/hr**	**15 veh/hr**	**40 veh/hr**	**23 veh/hr**	**28 veh/hr**	**51 veh/hr**
Walk	Building A-1	*Residential*	9 ppl/hr	33 ppl/hr	42 ppl/hr	33 ppl/hr	17 ppl/hr	50 ppl/hr
		Retail	4 ppl/hr	3 ppl/hr	7 ppl/hr	13 ppl/hr	13 ppl/hr	26 ppl/hr
	Building A-2 Phase 1	*Residential*	3 ppl/hr	13 ppl/hr	16 ppl/hr	13 ppl/hr	7 ppl/hr	20 ppl/hr
		Retail	1 ppl/hr	0 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	5 ppl/hr
	Building B	*Residential*	2 ppl/hr	9 ppl/hr	11 ppl/hr	10 ppl/hr	5 ppl/hr	15 ppl/hr
		Retail	3 ppl/hr	1 ppl/hr	4 ppl/hr	8 ppl/hr	8 ppl/hr	16 ppl/hr
	Building C-1	*Office*	35 ppl/hr	5 ppl/hr	40 ppl/hr	6 ppl/hr	30 ppl/hr	36 ppl/hr
		Retail	3 ppl/hr	2 ppl/hr	5 ppl/hr	9 ppl/hr	8 ppl/hr	17 ppl/hr
	Total		**60 ppl/hr**	**66 ppl/hr**	**126 ppl/hr**	**94 ppl/hr**	**91 ppl/hr**	**185 ppl/hr**

Table 5: Phase 2 Multimodal Trip Generation Summary

Mode	Building	Land Use	AM Peak Hour			PM Peak Hour		
			In	*Out*	*Total*	*In*	*Out*	*Total*
Auto	Building A-2 Phase 2	*Residential*	6 veh/hr	24 veh/hr	30 veh/hr	25 veh/hr	14 veh/hr	39 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr
	Building C-2	*Residential*	10 veh/hr	36 veh/hr	46 veh/hr	37 veh/hr	21 veh/hr	58 veh/hr
		Retail	3 veh/hr	1 veh/hr	4 veh/hr	8 veh/hr	9 veh/hr	17 veh/hr
	Building D	*Residential*	6 veh/hr	23 veh/hr	29 veh/hr	24 veh/hr	13 veh/hr	37 veh/hr
		Retail	1 veh/hr	1 veh/hr	2 veh/hr	4 veh/hr	4 veh/hr	8 veh/hr
	Total		**27 veh/hr**	**85 veh/hr**	**112 veh/hr**	**101 veh/hr**	**64 veh/hr**	**165 veh/hr**
Transit	Building A-2 Phase 2	*Residential*	7 ppl/hr	27 ppl/hr	34 ppl/hr	29 ppl/hr	16 ppl/hr	45 ppl/hr
		Retail	1 ppl/hr	1 ppl/hr	2 ppl/hr	5 ppl/hr	6 ppl/hr	11 ppl/hr
	Building C-2	*Residential*	11 ppl/hr	43 ppl/hr	54 ppl/hr	43 ppl/hr	23 ppl/hr	66 ppl/hr
		Retail	5 ppl/hr	3 ppl/hr	8 ppl/hr	15 ppl/hr	16 ppl/hr	31 ppl/hr
	Building D	*Residential*	7 ppl/hr	27 ppl/hr	34 ppl/hr	28 ppl/hr	15 ppl/hr	43 ppl/hr
		Retail	2 ppl/hr	2 ppl/hr	4 ppl/hr	7 ppl/hr	7 ppl/hr	14 ppl/hr
	Total		**33 ppl/hr**	**103 ppl/hr**	**136 ppl/hr**	**127 ppl/hr**	**83 ppl/hr**	**210 ppl/hr**
Bike	Building A-2 Phase 2	*Residential*	1 veh/hr	2 veh/hr	3 veh/hr	3 veh/hr	1 veh/hr	4 veh/hr
		Retail	0 veh/hr	0 veh/hr	0 veh/hr	1 veh/hr	1 veh/hr	2 veh/hr
	Building C-2	*Residential*	1 veh/hr	4 veh/hr	5 veh/hr	4 veh/hr	3 veh/hr	7 veh/hr
		Retail	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	2 veh/hr	4 veh/hr
	Building D	*Residential*	1 veh/hr	2 veh/hr	3 veh/hr	3 veh/hr	1 veh/hr	4 veh/hr
		Retail	0 veh/hr	1 veh/hr	1 veh/hr	1 veh/hr	1 veh/hr	2 veh/hr
	Total		**4 veh/hr**	**9 veh/hr**	**13 veh/hr**	**14 veh/hr**	**9 veh/hr**	**23 veh/hr**
Walk	Building A-2 Phase 2	*Residential*	3 ppl/hr	12 ppl/hr	15 ppl/hr	12 ppl/hr	7 ppl/hr	19 ppl/hr
		Retail	1 ppl/hr	1 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr
	Building C-2	*Residential*	5 ppl/hr	18 ppl/hr	23 ppl/hr	18 ppl/hr	10 ppl/hr	28 ppl/hr
		Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	11 ppl/hr	22 ppl/hr
	Building D	*Residential*	3 ppl/hr	11 ppl/hr	14 ppl/hr	12 ppl/hr	6 ppl/hr	18 ppl/hr
		Retail	2 ppl/hr	1 ppl/hr	3 ppl/hr	5 ppl/hr	5 ppl/hr	10 ppl/hr
	Total		**18 ppl/hr**	**45 ppl/hr**	**63 ppl/hr**	**62 ppl/hr**	**43 ppl/hr**	**105 ppl/hr**

Table 6: Overall Development Multimodal Trip Generation Summary

Mode	Building	AM Peak Hour			PM Peak Hour		
		In	*Out*	*Total*	*In*	*Out*	*Total*
Auto	Building A-1	21 veh/hr	70 veh/hr	91 veh/hr	76 veh/hr	47 veh/hr	123 veh/hr
	Building A-2 Ph 1	7 veh/hr	26 veh/hr	33 veh/hr	29 veh/hr	17 veh/hr	46 veh/hr
	Building A-2 Ph 2	7 veh/hr	24 veh/hr	31 veh/hr	28 veh/hr	17 veh/hr	45 veh/hr
	Building B	6 veh/hr	20 veh/hr	26 veh/hr	26 veh/hr	16 veh/hr	42 veh/hr
	Building C-1	112 veh/hr	16 veh/hr	128 veh/hr	26 veh/hr	99 veh/hr	125 veh/hr
	Building C-2	13 veh/hr	37 veh/hr	50 veh/hr	45 veh/hr	30 veh/hr	75 veh/hr
	Building D	7 veh/hr	24 veh/hr	31 veh/hr	28 veh/hr	17 veh/hr	45 veh/hr
	Total	**173 veh/hr**	**217 veh/hr**	**390 veh/hr**	**258 veh/hr**	**243 veh/hr**	**501 veh/hr**
Transit	Building A-1	26 ppl/hr	83 ppl/hr	109 ppl/hr	95 ppl/hr	60 ppl/hr	155 ppl/hr
	Building A-2 Ph 1	8 ppl/hr	31 ppl/hr	39 ppl/hr	34 ppl/hr	21 ppl/hr	55 ppl/hr
	Building A-2 Ph 2	8 ppl/hr	28 ppl/hr	36 ppl/hr	34 ppl/hr	22 ppl/hr	56 ppl/hr
	Building B	10 ppl/hr	22 ppl/hr	32 ppl/hr	34 ppl/hr	23 ppl/hr	57 ppl/hr
	Building C-1	181 ppl/hr	26 ppl/hr	207 ppl/hr	43 ppl/hr	163 ppl/hr	206 ppl/hr
	Building C-2	16 ppl/hr	46 ppl/hr	62 ppl/hr	58 ppl/hr	39 ppl/hr	97 ppl/hr
	Building D	9 ppl/hr	29 ppl/hr	38 ppl/hr	35 ppl/hr	22 ppl/hr	57 ppl/hr
	Total	**258 ppl/hr**	**265 ppl/hr**	**523 ppl/hr**	**333 ppl/hr**	**350 ppl/hr**	**683 ppl/hr**
Bike	Building A-1	3 veh/hr	8 veh/hr	11 veh/hr	11 veh/hr	6 veh/hr	17 veh/hr
	Building A-2 Ph 1	1 veh/hr	3 veh/hr	4 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr
	Building A-2 Ph 2	1 veh/hr	2 veh/hr	3 veh/hr	4 veh/hr	2 veh/hr	6 veh/hr
	Building B	2 veh/hr	2 veh/hr	4 veh/hr	4 veh/hr	3 veh/hr	7 veh/hr
	Building C-1	19 veh/hr	2 veh/hr	21 veh/hr	5 veh/hr	16 veh/hr	21 veh/hr
	Building C-2	2 veh/hr	4 veh/hr	6 veh/hr	6 veh/hr	5 veh/hr	11 veh/hr
	Building D	1 veh/hr	3 veh/hr	4 veh/hr	4 veh/hr	2 veh/hr	6 veh/hr
	Total	**29 veh/hr**	**24 veh/hr**	**53 veh/hr**	**37 veh/hr**	**37 veh/hr**	**74 veh/hr**
Walk	Building A-1	13 ppl/hr	36 ppl/hr	49 ppl/hr	46 ppl/hr	30 ppl/hr	76 ppl/hr
	Building A-2 Ph 1	4 ppl/hr	13 ppl/hr	17 ppl/hr	15 ppl/hr	10 ppl/hr	25 ppl/hr
	Building A-2 Ph 2	4 ppl/hr	13 ppl/hr	17 ppl/hr	16 ppl/hr	11 ppl/hr	27 ppl/hr
	Building B	5 ppl/hr	10 ppl/hr	15 ppl/hr	18 ppl/hr	13 ppl/hr	31 ppl/hr
	Building C-1	38 ppl/hr	7 ppl/hr	45 ppl/hr	15 ppl/hr	38 ppl/hr	53 ppl/hr
	Building C-2	9 ppl/hr	20 ppl/hr	29 ppl/hr	29 ppl/hr	21 ppl/hr	50 ppl/hr
	Building D	5 ppl/hr	12 ppl/hr	17 ppl/hr	17 ppl/hr	11 ppl/hr	28 ppl/hr
	Total	**78 ppl/hr**	**111 ppl/hr**	**189 ppl/hr**	**156 ppl/hr**	**134 ppl/hr**	**290 ppl/hr**

TRAFFIC OPERATIONS

This section provides a summary of the existing roadway facilities, as well as an analysis of the existing and future roadway capacity in the study area. Included is an analysis of potential vehicular impacts of the PUD and recommendations for improvements and mitigation measures.

The purpose of the capacity analysis is to:

- Determine the existing capacity of the study area roadways;
- Determine the overall impact of the PUD on the study area roadways;
- Discuss potential improvements and mitigation measures to accommodate the additional vehicular trips; and
- Evaluate the proposed roadway network to determine if adequate capacity is provided in the future.

This analysis was accomplished by comparing the traffic volumes and roadway capacity for the existing, background, and future scenarios. The capacity analysis focuses on the morning and afternoon commuter peak hours, as determined by the existing traffic volumes in the study area.

The following conclusions are reached within this chapter:

- The existing study area intersections generally operate at an acceptable overall level of service during all analysis scenarios for both the morning and afternoon peak hours.
- Existing areas of concern for roadway capacity are primarily focused along the heavily trafficked commuter routes such as Florida Avenue and New York Avenue.
- The addition of trips generated by background developments and inherent growth on the study area roadways causes a number of intersection to experience unacceptable levels of delay and queuing.
- With recommended mitigations, intersections within the study area can continue to operate within acceptable levels of service. Mitigations are recommended at the following intersections:
    - New York Avenue & 4th Street NE
    - Morse Street & 4th Street NE
    - Florida Avenue & 4th Street NE
    - Florida Avenue & 5th Street NE
- The potential temporary closure of Neal Place to accommodate construction of Parcels C-2 and/or D would not generate significant additional impacts beyond those seen with Neal Place. It is noted, however, that the connectivity benefits of Neal Place would be displaced should a temporary closure be necessary.
- Overall, this report concludes that the project will not have a detrimental impact to the surrounding transportation network.

STUDY AREA, SCOPE, & METHODOLOGY

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

The scope of the analysis contained within this report was discussed with and agreed to with the District Department of Transportation (DDOT). The general methodology of the analysis follows national and DDOT guidelines on the preparation of transportation impact evaluations of site development, unless explicitly stated otherwise.

Capacity Analysis Scenarios

The vehicular analyses are performed to determine if the proposed development of the PUD will lead to adverse impacts on traffic operations. (A review of impacts to each of the other modes is outlined later in this report.) This is accomplished by comparing future scenarios: (1) without the proposed application (referred to as the Background conditions) and (2) with construction of the development (referred to as the Future conditions). Due to the phased nature of this PUD, there are multiple background and future conditions.

Specifically, the roadway capacity analysis examined the following scenarios:

- Existing Conditions
- 2019 Future Conditions without the development (2019 Background)
- 2019 Future Conditions with Phase 1 of the development (2019 Future)
- 2021 Future Conditions without the development (2021 Background)
- 2021 Future Conditions with Phase 1 and Phase 2 of the development (2021 Future)

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses are performed for the scenarios listed above. The set of intersections decided upon during the study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the proposed development. Although it is possible that impacts will occur outside of the study area, those impacts are not significant enough to be considered a detrimental impact nor worthy of mitigation measures.

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

1. New York Avenue & 4th Street NE
2. Penn Street & 4th Street NE
3. Neal Place & 4th Street NE
4. Morse Street & 4th Street NE
5. Penn Street & 5th Street NE
6. Neal Place & 5th Street NE
7. Morse Street & 5th Street NE
8. Brentwood Parkway/6th Street NE & Penn Street NE
9. Morse Street & 6th Street NE
10. Florida Avenue & 3rd Street NE
11. Florida Avenue & N Street NE
12. Florida Avenue & 4th Street NE
13. Florida Avenue & 5th Street NE
14. Florida Avenue & 6th Street NE

Error! Reference source not found. shows a map of the study area intersections.

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 in the Technical Attachments.

2019 Background Geometry and Operations Assumptions (without the PUD)

Following national and DDOT methodologies, a background improvement must meet the following criteria to be incorporated into the analysis:

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

Based on this criteria, improvements associated with the ongoing *Florida Avenue Safety Study* as well as those associated with the approved background developments expected to be complete prior to 2019 will be included in the 2019 Background conditions. Improvements associated with the *Florida Avenue Safety Study* along the study area intersections are described below:

- Florida Avenue and 3rd Street NE
  - Three eastbound lanes (shared left-thru lane, thru lane, and shared thru-right lane)
  - Two westbound lanes (thru lane and shared thru-right lane)
  - Westbound left turns restricted
- Florida Avenue and 4th Street NE
  - Five-lane cross-section (two lanes east- and westbound, with left-turn lanes)
  - Signal timing optimization (removal of EB-WB split phase and the addition of a WB left-turn phase)
- Florida Avenue and 5th Street NE
  - Four lane cross-section (two lanes east- and westbound)
  - Eastbound and westbound left turns restricted
- Florida Avenue and 6th Street NE
  - Northbound approach converted to one-way northbound
  - Five-lane cross-section (two lanes east- and westbound, with an eastbound left-turn lane)
  - Southbound thru lane eliminated from the southbound approach resulting in one right turn lane and one left turn lane.
  - Signal timing optimization

Of note, these future improvements are still under development as the *Florida Avenue Safety Study* has not yet

been published. The cross-sections above represent Alternative 4 and were agreed to by Gorove/Slade and DDOT.

In addition to the improvements outlined in the *Florida Avenue Safety Study*, several approved developments within the Union Market and NoMa neighborhoods will result in modified roadway geometry and operations. These background improvements are as follows:

- The conversion of 4th Street NE from one-way southbound to two-way following the construction of the 1270 4th Street Phase 1 PUD.
- The conversion of 5th Street NE from one-way northbound to two-way following the construction of the Angelika Phase 1 PUD.
- Conversion of the intersection of 4th Street and Morse Street to all-way stop-controlled from two-way stop-controlled following the construction of the 1270 4th Street Phase 1 PUD.
- The extension of Neal Place westward between 4th Street and the alley following the construction of the 1270 4th Street Phase 1 PUD.

The lane configurations and traffic controls for the Background conditions are shown in the Technical Attachments.

2019 Future Geometry and Operations Assumptions (with Phase 1 of the PUD)

The lane configurations for the 2019 Future conditions are based on the lane configurations for the 2019 Background conditions. However, as part of the development an interim Neal Place connection between 3rd Street and the alley, slightly offset from the permanent alignment of Neal Place will be constructed. The lane configurations and traffic controls for the 2019 Future conditions are shown in the Technical Attachments.

2021 Background Geometry and Operations Assumptions (without the PUD)

The lane configurations for the 2021 Background conditions are based on the lane configurations for the 2019 Background conditions. There are no additional background-related roadway and operations improvements as a result of the background improvements and background developments.

2021 Future Geometry and Operations Assumptions (with Phase 1 and Phase 2 of the PUD)

The lane configurations for the 2021 Future conditions are based on the lane configurations for the 2021 Background conditions. However, as part of the development a permanent Neal Place connection between 3rd Street and the alley will be contructed, resulting in a four-legged intersection at Neal Place and the alley. The lane configurations and traffic controls for the 2021 Future conditions are shown in the Technical Attachments.

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. For this study, a mix of new counts and data on record were used to assemble existing traffic volumes. Data collection dates include Thursday, May 1, 2014, Tuesday, May 6, 2014, Wednesday, June 17, 2014, Thursday, March 26, 2015, Wednesday, April 13, 2016, and Thursday, April 21, 2016.

The results of the traffic counts, including the peak hour traffic volumes, are shown in the Technical Attachments. The traffic volumes for the existing conditions are shown in the Technical Attachments.

2019 Background Traffic Volumes (without the PUD)

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

- Traffic generated by developments expected to be completed prior to the project (known as background developments);
- Traffic rerouted to/from roadways within the study area due to background-related roadway improvements; and
- Inherent growth on the roadway (representing regional traffic growth).

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

- Be located in the study area, defined as having an origin or destination point within the cluster of study area intersections;
- Have entitlements; and

- Have a construction completion date prior or close to the proposed development.

As discussed previously, several developments were considered for inclusion in the analysis. Of the developments, the following are expected to meet the above criteria for the 2019 Background conditions:

- 1270 4th Street (Phase 1)
- Gateway Market
- The Highline at Union Market
- Angelika (Phase 1)
- 411 New York Avenue NE
- 301 Florida Avenue NE
- Gallaudet/JBG Union Market Development (Parcel 3)

Available background development traffic studies were used to determine the number of trips added for the background developments as well as assignment and distribution of trips through the roadway network. These studies include the *1270 4th Street NE Comprehensive Transportation Review* performed by Gorove/Slade in January of 2015, the *Gateway Market Comprehensive Transportation Review* performed by Wells + Associates in October 2013, the *Highline at Union Market Comprehensive Transportation Review* performed by Gorove/Slade in May of 2015, the *1309-1329 5th Street NE (Angelika) Comprehensive Transportation Review* performed by Gorove/Slade in December of 2014, the *411 New York Avenue Traffic Impact Study* performed by O. R. George & Associates in January of 2016, the *301 Florida Avenue Comprehensive Transportation Review* performed by Gorove/Slade in January of 2016, and the *Gallaudet 6th Street Development Comprehensive Transportation Review* performed by Gorove/Slade in May of 2016. A summary of development trip generation for the 2019 Background conditions is shown in Table 8.

In addition to traffic generated by background developments, the 2019 Background developments are also impacted by rerouted trips associated with background-related roadway improvements. Trips were rerouted throughout the network as a result of several improvements as follows:

- At the intersection of Florida Avenue and 6th Street, existing southbound thru volumes, eastbound right-turn volumes, and westbound left-turn volumes were rerouted through the network as a result of the one-way northbound conversion of 6th Street south of Florida Avenue.
- Existing westbound left-turn volumes at Florida Avenue and 3rd Street, and existing eastbound and westbound left-turn volumes at Florida Avenue and 6th Street were rerouted through the network as a result of the Florida Avenue improvements.
- Existing volumes traveling along 4th Street, 5th Street, and 6th Street were rerouted through the network to account for

Table 7: Summary of 2019 Applied Growth Rates

Roadway (Direction)	Proposed Annual Growth Rate		Total Applied Growth between 2015 and 2019	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
New York Avenue (Eastbound)	0.50%	0.50%	2.02%	2.02%
New York Avenue (Westbound)	0.50%	0.50%	2.02%	2.02%
Florida Avenue (Eastbound)	0.10%	1.60%	0.40%	6.53%
Florida Avenue (Westbound)	2.50%	0.10%	10.38%	0.40%
6th Street (Northbound)	0.10%	0.10%	0.40%	0.40%
6th Street (Southbound)	0.70%	0.30%	2.83%	1.21%

Table 8: 2019 Background Trip Generation Summary

Highline	14 ppl/hr	46 ppl/hr	60 ppl/hr	48 ppl/hr	30 ppl/hr	78 ppl/hr
Angelika (Phase 1)	93 veh/hr	12 veh/hr	105 veh/hr	71 veh/hr	120 veh/hr	191 veh/hr
411 New York Avenue	26 veh/hr	20 veh/hr	46 veh/hr	26 veh/hr	26 veh/hr	52 veh/hr
301 Florida Avenue	6 ppl/hr	26 ppl/hr	32 ppl/hr	14 ppl/hr	8 ppl/hr	22 ppl/hr
Gallaudet University 6th St (Parcel 3)	152 veh/hr	111 veh/hr	263 veh/hr	133 veh/hr	178 veh/hr	311 veh/hr
Total 2019 Background Trips	**426 veh/hr**	**407 veh/hr**	**833 veh/hr**	**687 veh/hr**	**719 veh/hr**	**1406 veh/hr**

the conversion of 4th Street and 5th Street to two-way operations.

While the background developments and rerouted trips represent local traffic changes, regional traffic growth is typically accounted for using percentage growth rates. The growth rates used in this analysis are derived using the Metropolitan Washington Council of Government's (MWCOG) currently adopted regional transportation model. The growth rates served as a basis for analysis assumptions, and where negative growth was observed, a conservative 0.10 percent growth rate was applied to the roadway. The applied growth rates are shown in Table 7.

The traffic volumes generated by background developments, background roadway improvements, and inherent growth along the network were added to the existing traffic volumes in order to establish the 2019 Background traffic volumes. The traffic volumes for the 2019 Background conditions are shown in the Technical Attachments.

2019 Future Traffic Volumes (with Phase 1 of the PUD)

The 2019 Total Future traffic volumes consist of the 2019 Background volumes with the addition of the traffic volumes generated by Phase 1 of the proposed development (2019 site-generated trips) and removal of existing trips at the site location. Thus, the 2019 Total Future volumes include traffic generated by: the existing volumes, background developments, background roadway improvements, inherent growth on the study area roadways, removal of existing trips, and Phase 1 of the development.

Existing site trips, shown previously in Table 3, were removed from the network based on existing travel patterns, focusing the removal of traffic along truck routes as a large portion of the traffic accessing the site under existing conditions is truck traffic serving the wholesale retail establishments.

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

The residential trip distribution was significantly influenced by the CTPP TAZ data for drivers commuting from the site's TAZ, and adjusted based on traffic volumes and patterns. The origin of outbound and destination of inbound residential vehicle trips was the below-grade parking garage for each building.

The retail distribution was mostly based on locations and proximity of nearby residential neighborhoods and other retail centers, with some influence on the CTPP TAZ flow data for drivers commuting to the site's TAZ (representing retail employees that drive). Thus, the retail trip distribution is weighted more towards nearby residential areas and less on regional origins. The origin of outbound and destination of inbound retail vehicular trips was the below-grade parking garage for each building and the on-street parking within the development.

The office distribution was significantly influenced by the CTPP flow data for drivers commuting to the site's TAZ and adjusted based on traffic volumes and patterns. The origin of outbound and destination of inbound trips was the below-grade parking garage for the office building.

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. A summary of trip distribution assumptions is provided on Figure 7.

The traffic volumes for the 2019 Total Future conditions were calculated by adding the development-generated traffic volumes to the 2019 Background traffic volumes. The 2019 site-generated volumes and 2019 Total Future traffic volumes are included in the Technical Attachments.

2021 Background Traffic Volumes (without the PUD)

The traffic projections for the 2021 Background conditions are based off of the 2019 Background volumes with the addition of trips generated by additional background developments expected to be complete between 2019 and 2021 and inherent growth on the network. The additional developments include the following:

- 1270 4th Street (Phase 2)
- Angelika (Phase 2)
- 301-331 N Street NE
- 500 Morse Street NE
- Gallaudet/JBG Union Market Development (Parcels 1, 2, and 4)

Available background development traffic studies were used to determine the number of trips added for the background developments as well as assignment and distribution of trips through the roadway network. These studies include the *1270 4th Street NE Comprehensive Transportation Review* performed

by Gorove/Slade in January of 2015, the *1309-1329 5th Street NE (Angelika) Comprehensive Transportation Review* performed by Gorove/Slade in December 2014, the *301-331 N Street NE Comprehensive Transportation Review* performed by Gorove/Slade in May of 2016, and the *Gallaudet 6th Street Development Comprehensive Transportation Review* performed by Gorove/Slade in May of 2016.

For the 500 Morse Street development, mode split, trip generation, and trip distribution assumptions were based off of those used for the Gallaudet/JBG Union Market development as it is the nearest adjacent development. A summary of development trip generation for the 2021 Background conditions is shown in Table 10.

While background developments represent local traffic changes, regional traffic growth is typically accounted for using percentage growth rates. As stated previously, the growth rates used in this analysis were derived using the MWCOG's currently adopted regional transportation model. The growth rates served as a basis for analysis assumptions, and where negative growth was observed, a conservative 0.10 percent growth rate was applied to the roadway. The applied growth rates are shown in Table 9.

The traffic volumes generated by the additional background developments and inherent growth along the network were added the 2019 Background traffic volumes in order to establish the 2021 Background traffic volumes. The traffic volumes for the 2021 Background conditions are shown in the Technical Attachments.

Table 10: 2021 Background Trip Generation Summary

Development	AM Peak Hour			PM Peak Hour		
	In	*Out*	*Total*	*In*	*Out*	*Total*
1270 4th Street (Phase 1)	101 veh/hr	135 veh/hr	236 veh/hr	308 veh/hr	286 veh/hr	594 veh/hr
1270 4th Street (Phase 2)	12 ppl/hr	33 ppl/hr	45 ppl/hr	46 ppl/hr	32 ppl/hr	78 ppl/hr
Gateway Market	34 veh/hr	57 veh/hr	91 veh/hr	87 veh/hr	71 veh/hr	158 veh/hr
Highline	14 ppl/hr	46 ppl/hr	60 ppl/hr	48 ppl/hr	30 ppl/hr	78 ppl/hr
Angelika (Phase 1)	93 veh/hr	12 veh/hr	105 veh/hr	71 veh/hr	120 veh/hr	191 veh/hr
Angelika (Phase 2)	212 ppl/hr	36 ppl/hr	248 ppl/hr	78 ppl/hr	215 ppl/hr	293 ppl/hr
411 New York Avenue	26 veh/hr	20 veh/hr	46 veh/hr	26 veh/hr	26 veh/hr	52 veh/hr
301 Florida Avenue	6 ppl/hr	26 ppl/hr	32 ppl/hr	14 ppl/hr	8 ppl/hr	22 ppl/hr
301-331 N Street	55 veh/hr	78 veh/hr	133 veh/hr	95 veh/hr	75 veh/hr	170 veh/hr
500 Morse Street	12 ppl/hr	34 ppl/hr	46 ppl/hr	43 ppl/hr	26 ppl/hr	69 ppl/hr
Gallaudet University 6th St (Parcel 3)	152 veh/hr	111 veh/hr	263 veh/hr	133 veh/hr	178 veh/hr	311 veh/hr
Gallaudet University 6th St (Parcels 1, 2, and 4)	235 ppl/hr	136 ppl/hr	371 ppl/hr	171 ppl/hr	261 ppl/hr	432 ppl/hr
Total 2021 Background Trips	**952 ppl/hr**	**724 ppl/hr**	**1676 ppl/hr**	**1120 ppl/hr**	**1328 ppl/hr**	**2448 ppl/hr**

Table 9: Summary of 2021 Supplied Growth Rates

Roadway (Direction)	Proposed Annual Growth Rate		Total Applied Growth between 2015 and 2021	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
New York Avenue (Eastbound)	0.50%	0.50%	3.04%	3.04%
New York Avenue (Westbound)	0.50%	0.50%	3.04%	3.04%
Florida Avenue (Eastbound)	0.10%	1.60%	0.60%	9.99%
Florida Avenue (Westbound)	2.50%	0.10%	15.97%	0.60%
6th Street (Northbound)	0.10%	0.10%	0.60%	0.60%
6th Street (Southbound)	0.70%	0.30%	4.27%	1.81%

2021 Future Traffic Volumes (with Phase 1 and Phase 2 of the PUD)

The 2021 Total Future traffic volumes consist of the 2021 Background volumes with the addition of the traffic volumes generated by Phase 1 and Phase 2 of the proposed development (2021 site-generated trips) and the removal of existing trips at the site.

The methodology associated with removal of existing trips and distribution of site-generated trips was based on that described for the 2019 Future traffic volumes. However, it should be noted that trips associated with Phase 2 were iteratively distributed throughout the network as there was excess capacity at intersections within the study area that were able to help alleviate delay at more congested intersections. It is expected that drivers will take the path of least resistance and thereby learn to take alternative routes to and from the site to decrease delay.

The 2021 Total Future volumes include traffic generated by: the existing volumes, background developments, background roadway improvements, inherent growth on the study area roadways, removal of existing trips, and Phase 1 and 2 of the development. The 2021 site-generated volumes and the 2021 Total Future traffic volumes are included in the Technical Attachments.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the five 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 Highway Capacity Manual (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 the safety of non-auto modes of transportation.

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

Table 11 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2019 Background, 2019 Total Future, 2021 Background, and 2021 Total Future scenarios. The capacity analysis results for the AM and PM peak hours are shown in the Technical Attachments.

Study intersections generally operate at acceptable conditions during the morning and afternoon peak hours for the all scenarios. However, eight intersections (or approaches of intersections) operate under unacceptable conditions during one or more scenario:

1. New York Avenue & 4th Street NE
2. Morse Street & 4th Street NE
3. Morse Street & 5th Street NE
4. Penn Street & 6th Street/Brentwood Place NE
5. Morse Street & 6th Street NE
6. 4th Street & Florida Avenue NE
7. 5th Street & Florida Avenue NE
8. 6th Street & Florida Avenue NE

Queuing Analysis

In addition to the capacity analysis presented above, a queuing analysis was performed at the study intersections. The queuing analysis was performed using Synchro software. The 50th percentile and 95th percentile queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile queue is the maximum back of queue on a median cycle. The 95th percentile queue is the maximum back of queue that is exceeded 5 percent of the time. For two-way stop-controlled intersections, only the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Table 12 shows the queuing results for the study area intersections. Results of the queuing analysis generally align with those determined in the capacity analysis.

Mitigations

Generally speaking, the proposed development 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 where one does not exist in the existing or background conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than 5 seconds when compared to the background scenario; or
- There is an increase in the 95th percentile queue length of greater than 150 feet, when compared to the background scenario.

Phase 1 Mitigations (2019)

Following these guidelines there are impacts to three intersections as a result of Phase 1 of the development. Mitigation measures were tested at these intersections, with results shown on Table 13, and detailed Synchro reports included in the Technical Attachments. The following conclusions were made.

- *New York Avenue & 4th Street NE*

  The northbound approach of 4th Street operates at LOS E or LOS F during both peak hours under all study scenarios. The addition of site-generated traffic further exacerbates the delay such that it increases by more than 5 seconds.

  As discussed in the transportation studies for 1270 4th Street and Gallaudet 6th Street, shifting more green time from the eastbound and westbound approaches of New York Avenue to the northbound approach of 4th Street would allow the intersection to operate at acceptable levels in the Future scenario along all approaches.

  Due to the heavy traffic along New York Avenue, shifting more green to the northbound movements could create capacity concerns along New York Avenue. As such, this report does not recommend shifting the full amount of time needed to improve delay for the northbound approach to LOS D or better, but instead defers to DDOT to consider that LOS E is sometimes accepted within an urban context. As a result, it is recommended that a traffic management camera will be installed at this location that will allow this intersection will be integrated into the DDOT traffic management program and real-time traffic signal updates can be made.

- *Morse Street NE & 4th Street NE*

  As a result of Phase 1 of the proposed development, the northbound approach operates under unacceptable conditions during the PM peak hour.

  It is proposed that a traffic signal be installed at this intersection to mitigate these concerns. Based on MUTCD methodologies, a traffic signal is warranted at this location based on projected volumes during the PM peak hour. The signal warrants are included in the Technical Attachments. Due to the proposed cycle track at this location, the large number of pedestrians expected, and the high amount of northbound left turns and eastbound right turns, the signal should operate such that an exclusive pedestrian/bicycle phase is incorporated into the signal timing. The signal must also be carefully timed and offset given the distance between the adjacent signal at 4th Street and Florida Avenue. As such, it is suggested that this signal be operated as actuated coordinated with the pedestrian/bicycle phase actuated.

- *6th Street & Florida Avenue NE*

  During the PM peak hour of the 2019 Future conditions, the southbound approach of 6th Street operates at unacceptable conditions.

  Under this scenario, the delay is only slightly above the threshold of LOS E therefore small shifts to the signal timings will suffice to improve operations at the intersection without degrading the operations along Florida Avenue. As part of the Gallaudet 6th Street development, a traffic management camera will be installed at this location. Therefore, this intersection will be integrated into the DDOT traffic management program and real-time traffic signal updates can be made. For this reason, no additional improvements are proposed at this location as part of Phase 1 of the development.

Full Build-Out Mitigations (2021)

At full build-out of the development there are impacts to six intersections. Mitigations measures were tested at these intersections, with results shown on Table 13, and detailed

Synchro reports included in the Technical Attachments. The following conclusions were made:

- *New York Avenue & 4th Street NE*
  Similar to the Phase 1 conditions, the addition of site-generated traffic exacerbates the delay observed along the northbound approach such that it increases by more than 5 seconds during the AM and PM peak hours.

  As was the case for the Phase 1 mitigations, shifting more green time from the eastbound and westbound approaches of New York Avenue to the northbound approach of 4th Street would allow the intersection to operate at acceptable levels in the Future scenario.

  Due to the heavy traffic along New York Avenue, shifting more green to the northbound movements could create capacity concerns along New York Avenue. As such, this report does not recommend shifting the full amount of time needed to improve delay for the northbound approach to LOS D or better, but instead defers to DDOT to consider that LOS E is sometimes accepted within an urban context with the ability to monitor traffic performance via CCTV capabilities.

- *Morse Street & 4th Street NE*
  As a result of Phase 1 of the proposed development, it is proposed that a traffic signal be installed at this intersection. Due to a large increase in northbound left turns and eastbound right turns at this intersection as a result of Phase 2, additional mitigations are necessary during the PM peak hour.

  Supplementing the installation of the traffic signal, it is proposed that parking along the eastbound approach of Morse Street be restricted during the PM peak hour to function as an exclusive right-turn lane. This right-turn lane increases the amount of eastbound traffic processed and thus allows more time to be allocated to the north- and southbound approaches. This report recommends that the development coordinate with the surrounding developments to ensure that a PM peak period right-turn can be accommodated within the Morse Street cross-section at completion of Phase 2 of the 300 Morse Street development.

- *Morse Street & 5th Street NE*
  Under the 2021 Future conditions, delay along the east- and westbound approaches is projected to increase by more than 5 seconds over the 2021 Background conditions during PM peak hour.

  This report recommends the conversion of this intersection from two-way stop controlled to all-way stop controlled as was recommended as part of the Gallaudet 6th Street development. Projected volumes at this intersection trigger the 8-hour warrant for an all-way stop. By converting the intersection to all-way stop controlled, delay is improved to acceptable levels in the Future conditions for the east- and westbound approaches while maintaining a LOS C along the north- and southbound approaches.

  Converting this intersection from two-way stop controlled to all-way stop controlled will also improve pedestrian safety by reducing speed and increasing the frequency at which pedestrians can cross. For these reasons, this report recommends that further study of the all-way stop is completed as part of the Stage 2 approvals associated with the Gallaudet 6th Street development. This report does not recommend any further mitigations beyond the conversion to an all-way stop as a result of the proposed 300 Morse Street development.

- *Florida Avenue NE & 4th Street NE*
  Under the 2021 Future conditions, the eastbound approach of Florida Avenue and the southbound approach of 4th Street operate at unacceptable conditions during the AM peak hour and the overall intersection and eastbound approach of Florida Avenue operate at unacceptable conditions during the PM peak hour.

  Due to the increase in eastbound left turning vehicles as a result of Phase 2 of the development, it is recommended that an eastbound left-turn phase be added to the signal in order to process these trips as part of Phase 2 of the development.

- *Florida Avenue NE & 5th Street NE*

During the PM peak hour of the 2021 Future conditions, the southbound approach of 5th Street operates at unacceptable conditions.

Under this scenario, the delay is only slightly above the threshold of LOS E therefore shifting a small amount of green time from the east- and westbound approaches to the north- and southbound approaches will suffice to improve operations at the intersection without degrading the operations along Florida Avenue. Because such a slight shift is required, this report proposes that a traffic management camera is installed at this location as part of Phase 2 of the development.

- *Florida Avenue NE & 6th Street NE*
  Similar to the 2019 conditions, the addition of site-generated traffic exacerbates the delay observed along the southbound approach during the PM peak hour.

  As discussed previously, a traffic management camera will be installed at this location as part of the Gallaudet 6th Street development. Thus, no additional improvements are proposed as part of Phase 2 of the development.

Two other intersections observe unacceptable levels of service outside of the scope of the development: Penn Street & 6th Street and Morse Street & 6th Street. However, both intersections are expected to be improved as a result of the Gallaudet 6th Street development. A traffic management camera will be installed at the intersection of Penn Street and 6th Street and a traffic signal will be installed at the intersection of Morse Street and 6th Street.

Interim Analysis

In order to evaluate the potential effects of a temporary closure of Neal Place along the northern portion of the site to facilitate construction of Parcels C-2 and/or D, a review of several intersections that might be impacted by this closure was performed that assumed the completion of Phase 1 of the development and without Neal Place. It should be noted that while the Applicant intends to provide an alternative alignment of Neal Place during construction, temporary closures may become necessary in order to facilitate construction of Parcels C-2 and/or D.

This scenario evaluated the capacity impacts of the removal of site-related traffic from Neal Place along the northern portion of the site and assumed that all of the traffic would use Morse Street to access the site. The results were then compared to the results described above that assumed completion of Phase 1 of the development and Neal Place providing a connection between the development and 4th Street. The following intersections were reviewed with results shown on Table 14:

- Penn Street & 4th Street NE
- Neal Place & 4th Street NE
- Morse Street & 4th Street NE
- Florida Avenue & 4th Street NE

The results show that the impacts of the temporary removal of Neal Place would be generally similar to those that would be seen were Neal Place to be in place. These results indicate that the value of Neal Place lies more in the connectivity that it provides than the capacity benefits that it provides. In addition, the installation of a traffic signal at the Morse Street/4th Street intersection with Phase 1 of the development, any impacts would be further addressed. While it is recognized that a temporary closure of Neal Place would limit the connectivity associated with the closure, the nearby roadway infrastructure would adequately accommodate the vehicular traffic associated with the development were a temporary alternative alignment be provided or should it be determined that a complete closure of Neal Place would be necessary to facilitate construction of Parcels C-2 and/or D.

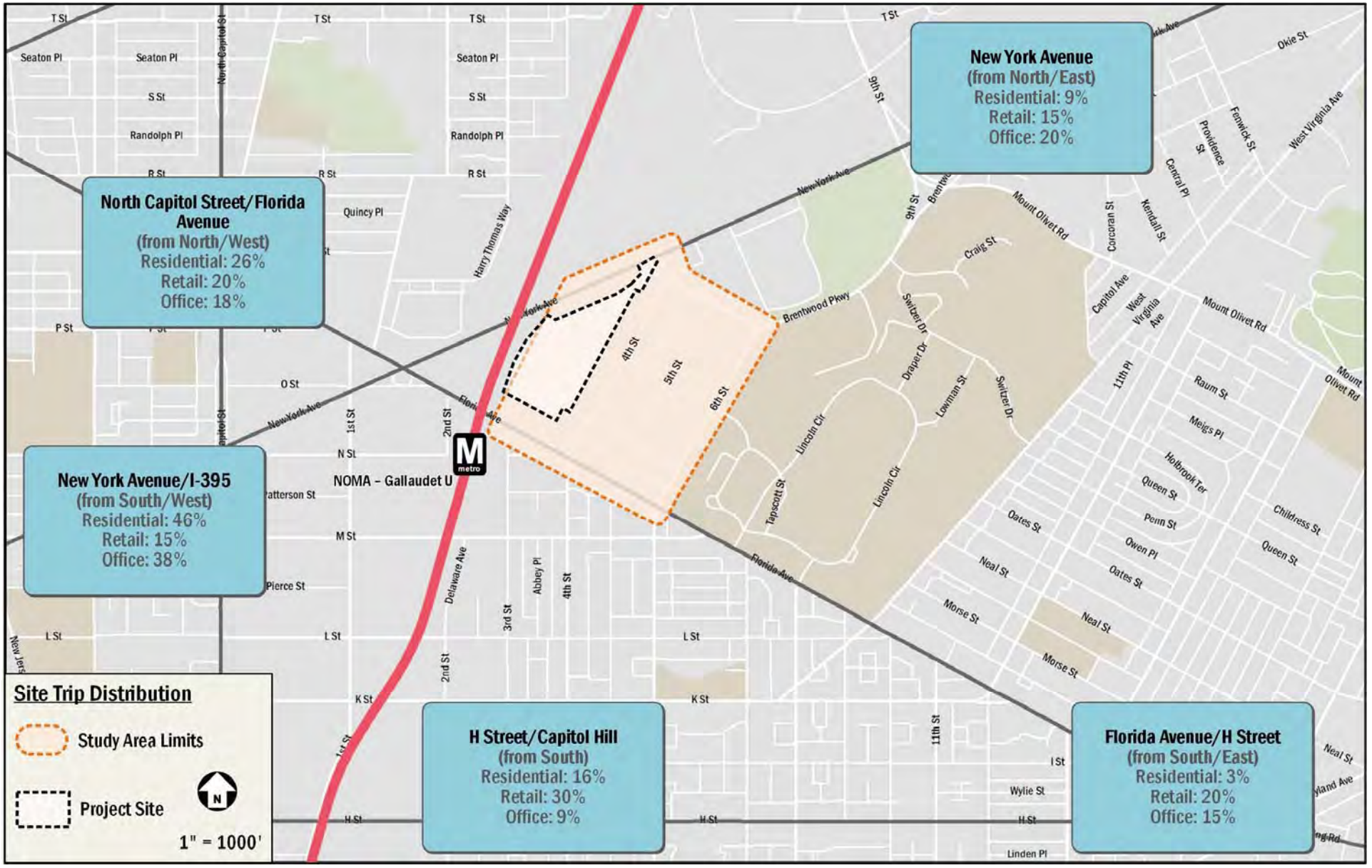

Figure 7: Site Trip Distribution

Table 11: Vehicular Capacity Analysis Results

Intersection	Approach	Existing Conditions (2016)				Background Conditions (2019) without the development				Future Conditions (2019) with Phase 1 of the development				Background Conditions (2021) without the development				Future Conditions (2021) with Phase 1 and Phase 2 of the development			
		AM Peak Hour		*PM Peak Hour*		*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	Delay	LOS	Delay	LOS
New York Avenue & 4th Street NE	**Overall**	**11.2**	**B**	**9.7**	**A**	**14.9**	**B**	**13.9**	**B**	**15.5**	**B**	**15.3**	**B**	**25.4**	**C**	**27.1**	**D**	**29.3**	**C**	**34.8**	**C**
	Eastbound	11.5	B	7.8	A	11.9	B	8.3	A	12.0	B	8.5	A	12.7	B	8.9	A	12.8	B	9.1	A
	Westbound	6.2	A	3.7	A	8.6	A	4.3	A	8.3	A	4.4	A	10.6	B	4.5	A	10.1	B	4.5	A
	Northbound	66.0	E	66.8	E	74.3	E	83.3	F	79.6	E	91.4	F	151.7	F	161.2	F	178.5	F	205.0	F
Penn Street & 4th Street NE **Intersection Sign Configuration not allowed in HCM analysis*	**Overall**	**--***	**--***	**--***	**--***	**11.2**	**B**	**10.8**	**B**	**11.5**	**B**	**11.5**	**B**	**16.8**	**C**	**17.9**	**C**	**18.2**	**C**	**22.2**	**C**
	Eastbound	--*	--*	--*	--*	9.6	A	9.5	A	9.8	A	10.2	B	15.1	C	12.7	B	16.4	C	15.7	B
	Westbound	--*	--*	--*	--*	14.0	B	12.9	B	14.5	B	13.7	B	21.4	C	26.5	D	23.7	C	34.8	D
	Northbound	--*	--*	--*	--*	10.0	A	10.4	B	10.4	B	11.3	B	11.4	B	12.4	B	12.5	B	15.0	B
	Southbound	--*	--*	--*	--*	8.9	A	9.0	A	9.1	A	9.3	A	9.8	A	10.2	B	10.1	B	10.8	B
Neal Place & 4th Street NE	Eastbound	--	--	--	--	15.9	C	15.3	C	16.3	C	17.0	C	17.3	C	17.0	C	18.7	C	30.0	D
	Westbound	13.0	B	11.0	B	20.0	C	16.2	C	19.3	C	16.7	C	22.9	C	18.1	C	22.2	C	27.6	D
	Northbound Left	--	--	--	--	0.5	A	1.4	A	0.5	A	1.4	A	0.3	A	1.2	A	0.3	A	3.5	A
	Southbound Left	1.9	A	1.9	A	1.9	A	1.3	A	2.0	A	1.3	A	1.9	A	1.3	A	1.9	A	1.2	A
Morse Street & 4th Street NE	**Overall**	**--**	**--**	**--**	**--**	**13.8**	**B**	**14.3**	**B**	**13.9**	**B**	**27.6**	**C**	**16.9**	**C**	**20.6**	**C**	**22.6**	**C**	**53.0**	**F**
	Eastbound	15.7	C	12.2	B	12.1	B	13.1	B	12.6	B	24.4	C	14.1	B	17.1	C	21.5	C	46.3	E
	Westbound	16.5	C	12.3	B	11.1	B	11.6	B	11.2	B	14.8	B	12.5	B	14.6	B	14.1	B	27.4	D
	Northbound (Left)	3.7	A	0.7	A	11.8	B	16.1	C	13.8	B	39.7	E	14.6	B	26.8	D	24.3	C	73.0	F
	Southbound (Left)	1.1	A	1.7	A	16.6	C	14.5	B	15.6	C	19.8	C	21.5	C	19.3	C	25.0	C	49.0	E
Penn Street & 5th Street NE	**Overall**	**9.3**	**A**	**8.4**	**A**	**12.6**	**B**	**11.3**	**B**	**12.2**	**B**	**11.1**	**B**	**22.5**	**C**	**19.6**	**C**	**21.0**	**C**	**18.9**	**C**
	Eastbound	8.8	A	8.8	A	10.7	B	10.5	B	10.4	B	10.4	B	24.7	C	17.3	C	23.3	C	17.2	C
	Westbound	9.7	A	8.7	A	13.5	B	11.1	B	13.3	B	11.0	B	20.6	C	17.0	C	19.8	C	17.0	C
	Northbound	9.2	A	8.2	A	12.9	B	12.0	B	12.2	B	11.7	B	21.7	C	23.4	C	19.1	C	21.9	C
Neal Place & 5th Street NE	Eastbound	11.2	B	11.3	B	14.8	B	14.0	B	14.2	B	13.8	B	16.6	C	15.9	C	15.8	C	15.7	C
	Northbound Left	2.3	A	2.0	A	2.5	A	2.2	A	2.9	A	2.3	A	2.2	A	2.0	A	2.5	A	2.3	A
Morse Street & 5th Street NE	Eastbound	13.3	B	11.6	B	37.4	E	21.0	C	25.9	D	21.5	C	71.0	F	46.3	E	41.8	E	147.7	F
	Westbound	10.9	B	10.1	B	20.7	C	15.5	C	19.9	C	17.0	C	29.1	D	27.4	D	29.0	D	103.8	F
	Northbound (Left)	0.6	A	0.8	A	1.1	A	2.1	A	1.3	A	2.5	A	1.0	A	2.0	A	1.2	A	3.1	A
	Southbound (Left)	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.1	A
Penn Street & 6th Street NE	**Overall**	**17.4**	**B**	**19.6**	**B**	**15.1**	**B**	**21.8**	**C**	**13.4**	**B**	**21.0**	**C**	**21.1**	**C**	**34.9**	**C**	**17.8**	**B**	**32.9**	**C**
	Eastbound	33.4	C	39.3	D	36.9	D	45.5	D	33.9	C	43.2	D	57.9	E	62.6	E	45.3	D	57.3	E
	Northbound	15.5	B	18.6	B	10.2	B	19.7	B	7.6	A	19.4	B	8.7	A	36.6	D	8.2	A	35.4	D
	Southbound	15.4	B	9.3	A	11.9	B	8.4	A	11.7	B	8.4	A	12.9	B	8.6	A	12.6	B	8.6	A
Morse Street & 6th Street NE	Eastbound	31.8	D	25.5	D	21.0	C	29.8	D	18.3	C	29.0	D	25.8	D	48.8	E	22.2	C	53.4	F
	Northbound Left	0.9	A	0.5	A	0.7	A	0.5	A	0.8	A	0.8	A	0.7	A	0.6	A	0.8	A	1.7	A
3rd Street & Florida Avenue NE	**Overall**	**6.0**	**A**	**15.3**	**B**	**10.4**	**A**	**11.2**	**B**	**10.8**	**B**	**11.6**	**B**	**11.5**	**B**	**13.3**	**B**	**12.6**	**C**	**13.8**	**B**
	Eastbound	6.7	A	7.3	B	7.1	A	8.0	A	7.2	A	8.2	A	7.3	A	8.4	A	7.4	A	8.9	A
	Westbound	1.5	A	20.8	C	8.0	A	6.9	A	9.1	A	8.2	A	8.7	A	8.6	A	11.2	C	11.1	B

Intersection	Approach	Existing Conditions (2016)				Background Conditions (2019) without the development				Future Conditions (2019) with Phase 1 of the development				Background Conditions (2021) without the development				Future Conditions (2021) with Phase 1 and Phase 2 of the development			
		AM Peak Hour		*PM Peak Hour*		*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	Delay	LOS	Delay	LOS
	Northbound	32.8	C	38.5	D	34.8	C	43.2	D	34.8	C	43.2	D	39.4	D	53.9	D	39.4	D	52.1	D
	Southbound	31.3	C	31.2	C	32.7	C	32.0	C	32.7	C	32.0	C	32.8	C	32.0	C	32.8	C	32.0	C
N Street & Florida Avenue NE	Eastbound	10.2	B	9.6	A	10.9	B	15.2	C	11.2	B	16.9	C	11.4	B	16.0	C	11.9	B	19.2	C
4th Street & Florida Avenue NE	**Overall**	**29.4**	**C**	**39.0**	**D**	**23.3**	**C**	**18.4**	**B**	**27.7**	**C**	**23.9**	**B**	**28.3**	**C**	**32.3**	**C**	**47.2**	**D**	**63.9**	**E**
	Eastbound	61.0	E	24.0	C	22.4	C	20.1	C	35.1	D	27.3	B	42.0	D	47.6	D	90.4	F	111.2	F
	Westbound	11.3	B	63.8	E	17.5	B	6.1	A	17.4	A	5.6	A	14.3	B	7.8	A	14.3	B	8.5	A
	Southbound	29.2	C	27.4	C	39.5	D	33.9	C	41.2	D	41.1	D	42.7	D	37.7	D	58.6	E	41.0	D
5th Street & Florida Avenue NE	**Overall**	**10.4**	**B**	**24.9**	**A**	**16.8**	**B**	**17.3**	**B**	**17.1**	**B**	**18.5**	**C**	**20.6**	**C**	**20.1**	**C**	**21.2**	**C**	**26.4**	**C**
	Eastbound	17.9	B	39.8	A	12.7	B	16.6	B	12.6	B	18.7	C	13.2	B	17.5	B	13.0	B	18.4	B
	Westbound	5.8	A	5.8	A	14.3	B	10.9	B	14.5	B	11.1	B	19.7	B	12.4	B	20.2	B	12.9	B
	Northbound	21.5	C	23.6	C	24.2	C	28.3	C	24.5	C	28.9	C	25.5	C	32.0	C	25.9	C	35.6	C
	Southbound	19.9	B	20.9	C	27.8	C	26.4	C	28.4	C	27.2	C	30.8	C	32.8	C	32.2	C	58.7	E
6th Street & Florida Avenue NE	**Overall**	**27.7**	**C**	**36.4**	**D**	**24.2**	**C**	**23.0**	**C**	**24.7**	**C**	**25.3**	**C**	**34.2**	**C**	**31.1**	**C**	**35.5**	**D**	**37.6**	**D**
	Eastbound	30.0	C	62.3	E	5.9	A	12.7	B	6.0	A	14.3	B	39.5	D	15.4	B	39.2	D	17.1	B
	Westbound	38.3	D	33.0	C	26.5	C	26.0	C	26.5	C	26.2	C	29.6	C	26.6	C	29.7	C	27.0	C
	Northbound	9.7	A	12.1	B	17.0	B	15.0	B	17.0	B	15.1	B	17.4	B	15.2	B	17.5	B	15.5	B
	Southbound	20.7	C	22.3	C	36.0	D	48.1	D	37.9	D	58.0	E	47.4	D	79.5	E	52.7	D	108.4	F
Neal Place & Alley NE	Eastbound Left	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	A	0.0	A
	Westbound Left	--	--	--	--	7.3	A	7.4	A	7.3	A	7.5	A	7.3	A	7.5	A	6.8	A	6.5	A
	Northbound	--	--	--	--	8.5	A	8.6	A	8.6	A	8.8	A	8.5	A	8.7	A	8.7	A	9.3	A
	Southbound	--	--	--	--	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
Morse Street & Alley NE	Eastbound Left	--	--	--	--	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Southbound	--	--	--	--	10.6	B	10.3	B	10.4	B	14.1	B	10.8	A	11.3	B	11.6	B	14.8	B

Table 12: Queuing Analysis Results

Intersection	Approach	Existing Conditions (2016)				Background Conditions (2019) without the development				Future Conditions (2019) with Phase 1 of the development				Background Conditions (2021) without the development				Future Conditions (2021) with Phase 1 and Phase 2 of the development			
		AM Peak Hour		*PM Peak Hour*		*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	Delay	LOS	Delay	LOS
New York Avenue & 4th Street NE	**Overall**	**11.2**	**B**	**9.7**	**A**	**14.9**	**B**	**13.9**	**B**	**15.5**	**B**	**15.3**	**B**	**25.4**	**C**	**27.1**	**D**	**29.3**	**C**	**34.8**	**C**
	Eastbound	11.5	B	7.8	A	11.9	B	8.3	A	12.0	B	8.5	A	12.7	B	8.9	A	12.8	B	9.1	A
	Westbound	6.2	A	3.7	A	8.6	A	4.3	A	8.3	A	4.4	A	10.6	B	4.5	A	10.1	B	4.5	A
	Northbound	66.0	E	66.8	E	74.3	E	83.3	F	79.6	E	91.4	F	151.7	F	161.2	F	178.5	F	205.0	F
Penn Street & 4th Street NE **Intersection Sign Configuration not allowed in HCM analysis*	**Overall**	**--***	**--***	**--***	**--***	**11.2**	**B**	**10.8**	**B**	**11.5**	**B**	**11.5**	**B**	**16.8**	**C**	**17.9**	**C**	**18.2**	**C**	**22.2**	**C**
	Eastbound	--*	--*	--*	--*	9.6	A	9.5	A	9.8	A	10.2	B	15.1	C	12.7	B	16.4	C	15.7	B
	Westbound	--*	--*	--*	--*	14.0	B	12.9	B	14.5	B	13.7	B	21.4	C	26.5	D	23.7	C	34.8	D
	Northbound	--*	--*	--*	--*	10.0	A	10.4	B	10.4	B	11.3	B	11.4	B	12.4	B	12.5	B	15.0	B
	Southbound	--*	--*	--*	--*	8.9	A	9.0	A	9.1	A	9.3	A	9.8	A	10.2	B	10.1	B	10.8	B
Neal Place & 4th Street NE	Eastbound	--	--	--	--	15.9	C	15.3	C	16.3	C	17.0	C	17.3	C	17.0	C	18.7	C	30.0	D
	Westbound	13.0	B	11.0	B	20.0	C	16.2	C	19.3	C	16.7	C	22.9	C	18.1	C	22.2	C	27.6	D
	Northbound Left	--	--	--	--	0.5	A	1.4	A	0.5	A	1.4	A	0.3	A	1.2	A	0.3	A	3.5	A
	Southbound Left	1.9	A	1.9	A	1.9	A	1.3	A	2.0	A	1.3	A	1.9	A	1.3	A	1.9	A	1.2	A
Morse Street & 4th Street NE	**Overall**	**--**	**--**	**--**	**--**	**13.8**	**B**	**14.3**	**B**	**13.9**	**B**	**27.6**	**C**	**16.9**	**C**	**20.6**	**C**	**22.6**	**C**	**53.0**	**F**
	Eastbound	15.7	C	12.2	B	12.1	B	13.1	B	12.6	B	24.4	C	14.1	B	17.1	C	21.5	C	46.3	E
	Westbound	16.5	C	12.3	B	11.1	B	11.6	B	11.2	B	14.8	B	12.5	B	14.6	B	14.1	B	27.4	D
	Northbound (Left)	3.7	A	0.7	A	11.8	B	16.1	C	13.8	B	39.7	E	14.6	B	26.8	D	24.3	C	73.0	F
	Southbound (Left)	1.1	A	1.7	A	16.6	C	14.5	B	15.6	C	19.8	C	21.5	C	19.3	C	25.0	C	49.0	E
Penn Street & 5th Street NE	**Overall**	**9.3**	**A**	**8.4**	**A**	**12.6**	**B**	**11.3**	**B**	**12.2**	**B**	**11.1**	**B**	**22.5**	**C**	**19.6**	**C**	**21.0**	**C**	**18.9**	**C**
	Eastbound	8.8	A	8.8	A	10.7	B	10.5	B	10.4	B	10.4	B	24.7	C	17.3	C	23.3	C	17.2	C
	Westbound	9.7	A	8.7	A	13.5	B	11.1	B	13.3	B	11.0	B	20.6	C	17.0	C	19.8	C	17.0	C
	Northbound	9.2	A	8.2	A	12.9	B	12.0	B	12.2	B	11.7	B	21.7	C	23.4	C	19.1	C	21.9	C
Neal Place & 5th Street NE	Eastbound	11.2	B	11.3	B	14.8	B	14.0	B	14.2	B	13.8	B	16.6	C	15.9	C	15.8	C	15.7	C
	Northbound Left	2.3	A	2.0	A	2.5	A	2.2	A	2.9	A	2.3	A	2.2	A	2.0	A	2.5	A	2.3	A
Morse Street & 5th Street NE	Eastbound	13.3	B	11.6	B	37.4	E	21.0	C	25.9	D	21.5	C	71.0	F	46.3	E	41.8	E	147.7	F
	Westbound	10.9	B	10.1	B	20.7	C	15.5	C	19.9	C	17.0	C	29.1	D	27.4	D	29.0	D	103.8	F
	Northbound (Left)	0.6	A	0.8	A	1.1	A	2.1	A	1.3	A	2.5	A	1.0	A	2.0	A	1.2	A	3.1	A
	Southbound (Left)	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.1	A
Penn Street & 6th Street NE	**Overall**	**17.4**	**B**	**19.6**	**B**	**15.1**	**B**	**21.8**	**C**	**13.4**	**B**	**21.0**	**C**	**21.1**	**C**	**34.9**	**C**	**17.8**	**B**	**32.9**	**C**
	Eastbound	33.4	C	39.3	D	36.9	D	45.5	D	33.9	C	43.2	D	57.9	E	62.6	E	45.3	D	57.3	E
	Northbound	15.5	B	18.6	B	10.2	B	19.7	B	7.6	A	19.4	B	8.7	A	36.6	D	8.2	A	35.4	D
	Southbound	15.4	B	9.3	A	11.9	B	8.4	A	11.7	B	8.4	A	12.9	B	8.6	A	12.6	B	8.6	A
Morse Street & 6th Street NE	Eastbound	31.8	D	25.5	D	21.0	C	29.8	D	18.3	C	29.0	D	25.8	D	48.8	E	22.2	C	53.4	F
	Northbound Left	0.9	A	0.5	A	0.7	A	0.5	A	0.8	A	0.8	A	0.7	A	0.6	A	0.8	A	1.7	A
3rd Street & Florida Avenue NE	**Overall**	**6.0**	**A**	**15.3**	**B**	**10.4**	**A**	**11.2**	**B**	**10.8**	**B**	**11.6**	**B**	**11.5**	**B**	**13.3**	**B**	**12.6**	**C**	**13.8**	**B**
	Eastbound	6.7	A	7.3	B	7.1	A	8.0	A	7.2	A	8.2	A	7.3	A	8.4	A	7.4	A	8.9	A
	Westbound	1.5	A	20.8	C	8.0	A	6.9	A	9.1	A	8.2	A	8.7	A	8.6	A	11.2	C	11.1	B
	Northbound	32.8	C	38.5	D	34.8	C	43.2	D	34.8	C	43.2	D	39.4	D	53.9	D	39.4	D	52.1	D

Intersection	Approach	Existing Conditions (2016)				Background Conditions (2019) without the development				Future Conditions (2019) with Phase 1 of the development				Background Conditions (2021) without the development				Future Conditions (2021) with Phase 1 and Phase 2 of the development			
		AM Peak Hour		*PM Peak Hour*		*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	Delay	LOS	Delay	LOS
	Southbound	31.3	C	31.2	C	32.7	C	32.0	C	32.7	C	32.0	C	32.8	C	32.0	C	32.8	C	32.0	C
N Street & Florida Avenue NE	Eastbound	10.2	B	9.6	A	10.9	B	15.2	C	11.2	B	16.9	C	11.4	B	16.0	C	11.9	B	19.2	C
4th Street & Florida Avenue NE	**Overall**	**29.4**	**C**	**39.0**	**D**	**23.3**	**C**	**18.4**	**B**	**27.7**	**C**	**23.9**	**B**	**28.3**	**C**	**32.3**	**C**	**47.2**	**D**	**63.9**	**E**
	Eastbound	61.0	E	24.0	C	22.4	C	20.1	C	35.1	D	27.3	B	42.0	D	47.6	D	90.4	F	111.2	F
	Westbound	11.3	B	63.8	E	17.5	B	6.1	A	17.4	A	5.6	A	14.3	B	7.8	A	14.3	B	8.5	A
	Southbound	29.2	C	27.4	C	39.5	D	33.9	C	41.2	D	41.1	D	42.7	D	37.7	D	58.6	E	41.0	D
5th Street & Florida Avenue NE	**Overall**	**10.4**	**B**	**24.9**	**A**	**16.8**	**B**	**17.3**	**B**	**17.1**	**B**	**18.5**	**C**	**20.6**	**C**	**20.1**	**C**	**21.2**	**C**	**26.4**	**C**
	Eastbound	17.9	B	39.8	A	12.7	B	16.6	B	12.6	B	18.7	C	13.2	B	17.5	B	13.0	B	18.4	B
	Westbound	5.8	A	5.8	A	14.3	B	10.9	B	14.5	B	11.1	B	19.7	B	12.4	B	20.2	B	12.9	B
	Northbound	21.5	C	23.6	C	24.2	C	28.3	C	24.5	C	28.9	C	25.5	C	32.0	C	25.9	C	35.6	C
	Southbound	19.9	B	20.9	C	27.8	C	26.4	C	28.4	C	27.2	C	30.8	C	32.8	C	32.2	C	58.7	E
6th Street & Florida Avenue NE	**Overall**	**27.7**	**C**	**36.4**	**D**	**24.2**	**C**	**23.0**	**C**	**24.7**	**C**	**25.3**	**C**	**34.2**	**C**	**31.1**	**C**	**35.5**	**D**	**37.6**	**D**
	Eastbound	30.0	C	62.3	E	5.9	A	12.7	B	6.0	A	14.3	B	39.5	D	15.4	B	39.2	D	17.1	B
	Westbound	38.3	D	33.0	C	26.5	C	26.0	C	26.5	C	26.2	C	29.6	C	26.6	C	29.7	C	27.0	C
	Northbound	9.7	A	12.1	B	17.0	B	15.0	B	17.0	B	15.1	B	17.4	B	15.2	B	17.5	B	15.5	B
	Southbound	20.7	C	22.3	C	36.0	D	48.1	D	37.9	D	58.0	E	47.4	D	79.5	E	52.7	D	108.4	F
Neal Place & Alley NE	Eastbound Left	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	A	0.0	A
	Westbound Left	--	--	--	--	7.3	A	7.4	A	7.3	A	7.5	A	7.3	A	7.5	A	6.8	A	6.5	A
	Northbound	--	--	--	--	8.5	A	8.6	A	8.6	A	8.8	A	8.5	A	8.7	A	8.7	A	9.3	A
	Southbound	--	--	--	--	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
Morse Street & Alley NE	Eastbound Left	--	--	--	--	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Southbound	--	--	--	--	10.6	B	10.3	B	10.4	B	14.1	B	10.8	A	11.3	B	11.6	B	14.8	B

Table 13: Capacity Analysis Results with Mitigations

Intersection	Approach	Future Conditions (2019) with Phase 1 of the development				Future Conditions (2019) with Phase 1 of the development (with Mitigations)				Future Conditions (2021) with Phase 1 and Phase 2 of the development				Future Conditions (2021) with Phase 1 and Phase 2 of the development (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
New York Avenue & 4th Street NE **Signal timing adjustments*	**Overall**	**15.5**	**B**	**15.3**	**B**	**18.9**	**B**	**20.2**	**C**	**29.3**	**C**	**34.8**	**C**	**27.9**	**C**	**24.4**	**C**
	Eastbound	12.0	B	8.5	A	16.6	B	22.8	C	12.8	B	9.1	A	20.8	C	23.0	C
	Westbound	8.3	A	4.4	A	15.1	B	7.7	A	10.1	B	4.5	A	26.9	C	14.6	B
	Northbound	79.6	E	91.4	F	54.1	D	53.9	D	178.5	F	205.0	F	54.3	D	54.7	D
Morse Street & 4th Street NE **Addition of a traffic signal*	**Overall**	**13.9**	**B**	**27.6**	**C**	**19.4**	**B**	**29.8**	**C**	**22.6**	**C**	**53.0**	**F**	**26.1**	**C**	**33.7**	**C**
	Eastbound	12.6	B	24.4	C	28.2	C	30.4	C	21.5	C	46.3	E	31.3	C	33.0	C
	Westbound	11.2	B	14.8	B	33.4	C	54.8	D	14.1	B	27.4	D	50.8	D	54.4	D
	Northbound (Left)	13.8	B	39.7	E	8.2	A	29.1	C	24.3	C	73.0	F	20.8	C	37.8	D
	Southbound (Left)	15.6	C	19.8	C	19.3	B	17.4	B	25.0	C	49.0	E	18.1	B	14.3	B
Morse Street & 5th Street NE **Conversion from a two-way stop to an all-way stop*	**Overall**	**--**	**--**	--	--	**--**	**--**	**--**	**--**	**--**	**--**	--	--	**14.5**	**B**	19.7	C
	Eastbound	25.9	D	21.5	C	--	--	--	--	41.8	E	147.7	F	13.8	B	19.5	C
	Westbound	19.9	C	17.0	C	--	--	--	--	29.0	D	103.8	F	13.7	B	16.2	C
	Northbound (Left)	1.3	A	2.5	A	--	--	--	--	1.2	A	3.1	A	14.0	B	23.3	C
	Southbound (Left)	0.0	A	0.0	A	--	--	--	--	0.0	A	0.1	A	15.9	C	18.3	C
4th Street & Florida Avenue NE **Addition of a westbound left-turn phase*	**Overall**	**27.7**	**C**	**23.9**	**B**	**--**	**--**	**--**	**--**	**47.2**	**D**	**63.9**	**E**	**31.1**	**C**	**29.8**	**C**
	Eastbound	35.1	D	27.3	B	--	--	--	--	90.4	F	111.2	F	25.8	C	24.6	C
	Westbound	17.4	A	5.6	A	--	--	--	--	14.3	B	8.5	A	26.4	C	19.1	B
	Southbound	41.2	D	41.1	D	--	--	--	--	58.6	E	41.0	D	46.6	D	55.0	D
5th Street & Florida Avenue NE **Signal timing adjustments*	**Overall**	**17.1**	**B**	**18.5**	**C**	**--**	**--**	**--**	**--**	**21.2**	**C**	**26.4**	**C**	**--**	**--**	**27.9**	**C**
	Eastbound	12.6	B	18.7	C	--	--	--	--	13.0	B	18.4	B	--	--	26.0	C
	Westbound	14.5	B	11.1	B	--	--	--	--	20.2	B	12.9	B	--	--	14.1	B
	Northbound	24.5	C	28.9	C	--	--	--	--	25.9	C	35.6	C	--	--	33.6	C
	Southbound	28.4	C	27.2	C	--	--	--	--	32.2	C	58.7	E	--	--	51.9	D
6th Street & Florida Avenue NE **Signal timing adjustments*	**Overall**	**24.7**	**C**	**25.3**	**C**	**--**	**--**	**24.8**	**C**	**35.5**	**D**	**37.6**	**D**	**--**	**--**	**35.7**	**D**
	Eastbound	6.0	A	14.3	B	--	--	15.5	B	39.2	D	17.1	B	--	--	29.3	C
	Westbound	26.5	C	26.2	C	--	--	27.2	C	29.7	C	27.0	C	--	--	31.5	C
	Northbound	17.0	B	15.1	B	--	--	15.4	B	17.5	B	15.5	B	--	--	13.1	B
	Southbound	37.9	D	58.0	E	--	--	51.7	D	52.7	D	108.4	F	--	--	74.4	E

Table 14: Interim Analysis with No Access to Neal Place

Intersection	Approach	Future Conditions (2019) with Phase 1 of the development				Total Future Conditions (2019) with Phase 1 of the development and no Neal Place connection			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2. Penn Street & 4th Street NE **Intersection Sign Configuration not allowed in HCM analysis*	**Overall**	**11.5**	**B**	**11.5**	**B**	**11.5**	**B**	**11.5**	**B**
	Eastbound	9.8	A	10.2	B	9.8	A	10.2	B
	Westbound	14.5	B	13.7	B	14.5	B	13.7	B
	Northbound	10.4	B	11.3	B	10.4	B	11.3	B
	Southbound	9.1	A	9.3	A	9.1	A	9.3	A
3. Neal Place & 4th Street NE	Eastbound	16.3	C	17.0	C	16.1	C	17.2	C
	Westbound	19.3	C	16.7	C	20.0	C	17.2	C
	Northbound Left	0.5	A	1.4	A	0.4	A	1.2	A
	Southbound Left	2.0	A	1.3	A	2.0	A	1.3	A
4. Morse Street & 4th Street NE	**Overall**	**13.9**	**B**	**27.6**	**C**	**14.6**	**B**	**30.9**	**D**
	Eastbound	12.6	B	24.4	C	13.5	B	28.2	D
	Westbound	11.2	B	14.8	B	11.5	B	15.4	C
	Northbound (Left)	13.8	B	39.7	E	14.4	B	44.4	E
	Southbound (Left)	15.6	C	19.8	C	16.5	C	22.4	C
12. 4th Street & Florida Avenue NE	**Overall**	**27.7**	**C**	**23.9**	**B**	**27.7**	**C**	**23.9**	**C**
	Eastbound	35.1	D	27.3	B	35.1	D	27.3	C
	Westbound	17.4	A	5.6	A	17.4	B	5.6	A
	Southbound	41.2	D	41.1	D	41.2	D	41.1	D

TRANSIT

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

The following conclusions are reached within this chapter:

- The site is served by the Metrorail Red Line via the NoMa Station and two Metrobus routes that travel along Florida Avenue.
- The Metrobus routes along Florida Avenue have been studied with proposed recommendations for improved service including a Metro Express route with limited-stop service.
- Although transit trips are expected to be substantial, these new transit trips are not expected to have a detrimental impact on the surrounding transit system.

EXISTING TRANSIT SERVICE

The study area is well served by Metrorail and Metrobus. Combined, these transit services provide local, city wide, and regional transit connections and link the site with major cultural, residential, employment, and commercial destinations throughout the region. Figure 8 identifies the major transit routes, stations, and stops in the study area.

The NoMa-Gallaudet U Metrorail station is located approximately one-third of a mile walking distance from the development site and is served by the Red Line. The Red Line travels south from Shady Grove, travels through downtown DC, and continues north to Glenmont. Trains run approximately every three minutes during the morning and afternoon peak hours. They run about every 5 to 6 minutes during weekday non-peak hours, every 10 to 15 minutes on weekday evenings after 7:00 pm and 6 to 15 minutes on the weekends.

The site is also serviced by Metrobus along Florida Avenue. The routes serving this area connect the site to many stations in the Metrorail system and with various locations throughout all quadrants of the District. Table 15 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

The nearest westbound bus stops are located on Florida Avenue at 3rd Street NE and Florida at 5th Street NE. Both are less than 0.25 miles to the site; however, the bus stop at 5th Street offers a bus shelter. The nearest eastbound stops are located on Florida Avenue at N Street and Florida Avenue at 5th Street NE. Neither of these bus stops provides a shelter. The adequacy of all bus stops located within a quarter-mile of the site is shown in Figure 8 and a detailed inventory is included in the Technical Attachments.

PROPOSED TRANSIT SERVICE

Due to growth of population, jobs, and retail in several neighborhoods in the District and the potential for growth in other neighborhoods, the District's infrastructure is challenged with the need for transportation investments to support the recent growth and to further strengthen neighborhoods. In order to meet these challenges and capitalize on future opportunities, DDOT has developed a plan to identify transit challenges and opportunities and to recommend investments. This is outlined in the *MoveDC Plan*, DC's Multimodal Long-Range Transportation Plan published by DDOT in October 2014, which includes the reestablishment of streetcar service in the District.

Construction of the initial Streetcar Line, which runs along H Street and Benning Road, is complete and currently serving passengers at 10 to 15 minute headways. This line will be extended to the west in the future and ultimately connect with the Georgetown neighborhood. The nearest streetcar stop is located just over half a mile from the site at H Street and 3rd Street.

In addition to Streetcar service, the *MoveDC Plan* also includes a recommendation for high-capacity transit service connecting Navy Yard and Woodley Park via 8th Street NE and U

Table 15: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
90,92	U Street-Garfield Line	Weekdays: 4:05AM – 2:04 AM Weekends: 4:05AM – 2:18 AM	7-15 min	<0.1 miles, 1 minute
X3	Benning Road Line	Weekdays: Westbound 6:00AM-8:39AM Eastbound 3:31PM-5:37PM	20-30 min	<0.1 miles, 1 minute

Street/Florida Avenue. Although this service is not yet funded, WMATA performed a study on the Metrobus lines along this corridor in March of 2011 and recommended a new Metro Express Route (99) with limited-stop service. In its initial implementation it would run bi-directionally with 15-minute headways during peak periods only. However, based on demand, service would have the potential of including weekday midday service, weekday evening service, and weekend service in the future.

Site-Generated Transit Impacts

The trip generation estimates for the development show that a substantial amount of new transit trips will be generated. The proposed development is projected to generate 523 transit trips (258 inbound, 265 outbound) during the morning peak hour and 683 transit trips (333 inbound, 350 outbound) during the afternoon peak hour.

US Census data was used to determine the distribution of those taking Metrorail and those taking Metrobus. The site lies near the border of two census tracts: census tract 88.03 and census tract 106. Based on data from these two census tracts, it is expected that about half of the transit trips will be attributed to Metrorail and the other half to Metrobus.

WMATA studied capacity of Metrorail stations in its *Station Access & Capacity Study.* 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, high volume-to-capacity ratios were not observed at the NoMa Station in 2005 nor are they expected by 2030. Therefore, the station can accommodate the additional riders generated by the development.

WMATA also studied capacity along Metrobus routes. DC's *Transit Future System Plan* 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 both Metrobus routes near the site exceed these load factors: The U Street-Garfield Line with an all-day load factor of 1.06 and the Benning Road Line with a peak period load factor of 1.34.

Based on this load factor data, route specific studies were completed for both lines. The Benning Road Line report determined that a Metro Express route would help ease the capacity issues and thus the X9 Limited-Stop route was implemented. Over the coming years it is anticipated that this line will increase its frequency and expend service to midday rather than strictly peak hours. The U Street-Garfield Line report, as discussed above, also determined that a Metro Express route would the best option for remedying capacity concerns, but this route has not yet been implemented.

Overall, Metrobus service is constrained along the Florida Avenue corridor; however, DDOT and WMATA are aware of these issues and have implemented or have plans to implement improvements to all routes with capacity concerns. Although the development is expected to generate a significant amount of bus trips, enhancements to the Florida Avenue corridor routes will support the additional trips.

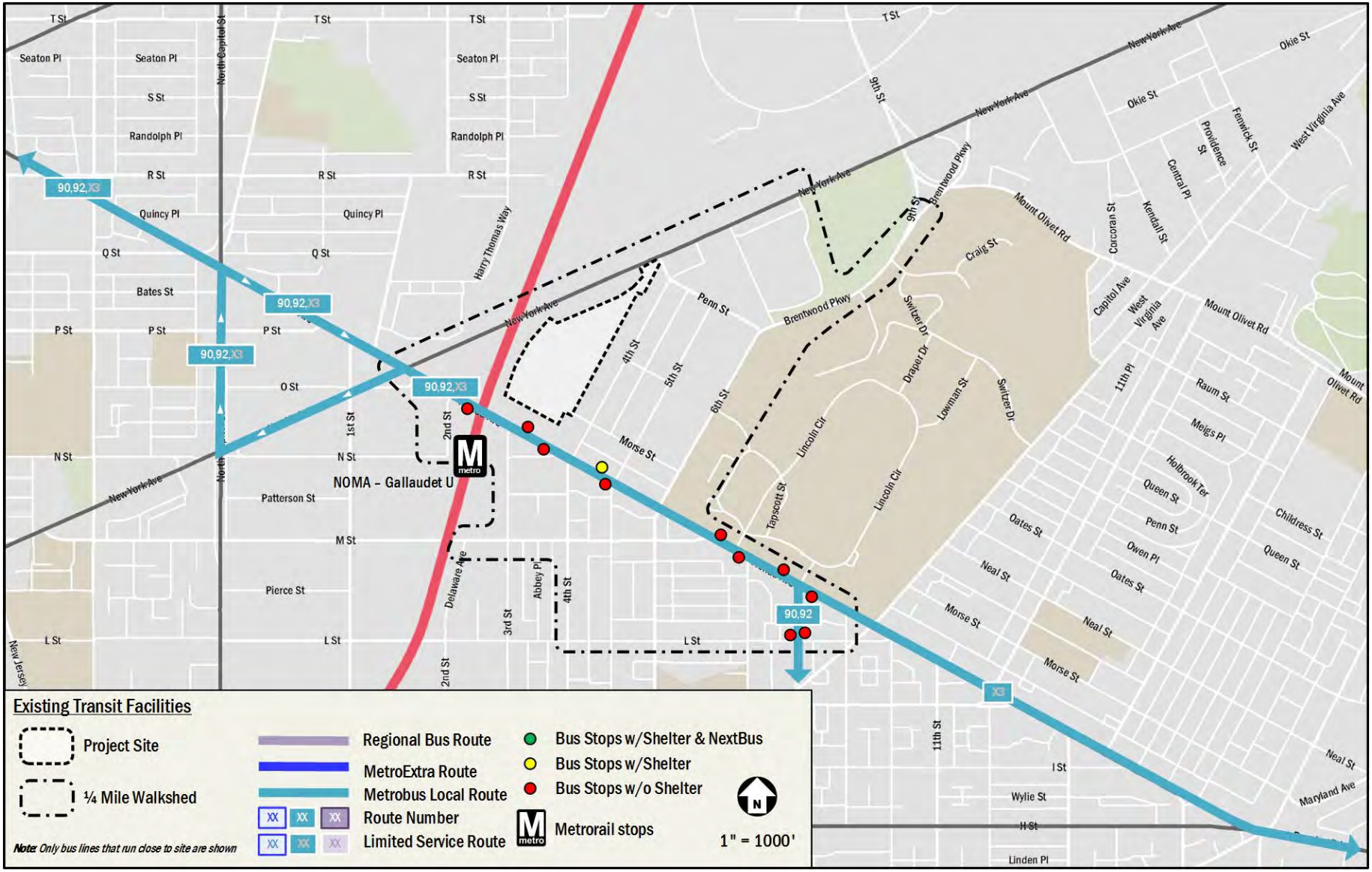

Figure 8: Existing Transit Service

PEDESTRIAN FACILITIES

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

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the site provides an adequate walking environment. There are some gaps in the system, but there are sidewalks along all primary routes to pedestrian destinations.
- The site is expected to generate a manageable number of pedestrian trips; however, the pedestrian trips generated by walking to and from transit will be more substantial, particularly along Florida Avenue.

PEDESTRIAN STUDY AREA

Facilities within a quarter-mile of the site were evaluated as well as routes to nearby transit facilities and prominent retail and neighborhood destinations. The site is easily accessible to transit options such as bus stops along Florida Avenue and the NoMa-Gallaudet U Metro Station. There are some barriers and areas of concern within the study area that negatively impact the quality and attractiveness of the walking environment. This includes roadway conditions, narrow or nonexistent sidewalks, incomplete or insufficient crossings at busy intersections, and rail tracks that limit connectivity to the west. Figure 9 shows suggested pedestrian pathways, including walking times and distances.

PEDESTRIAN INFRASTRUCTURE

This section outlines the existing and proposed pedestrian infrastructure surrounding the Union Market district.

Existing Conditions

A review of pedestrian facilities surrounding the Market shows that many facilities meet DDOT standards and provide a quality walking environment. Figure 10 shows a detailed inventory of the existing pedestrian infrastructure outside of the Market study area. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT's *Public Realm Design Manual* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 16.

Within the area shown, most roadways are considered residential with a low to moderate density. Most of the sidewalks surrounding the site comply with these standards; however, there are some areas, which have inadequate sidewalks or no sidewalks at all. The area of poor quality, which is expected to have the greatest effect on residents and patrons of the development, are the sidewalks along Florida Avenue. As discussed later in this section, however, pedestrian conditions are expected to improve along Florida Avenue. DDOT is aware of the safety concerns associated with Florida Avenue and has initiated the *Florida Avenue Multimodal Transportation Study* which will evaluate safety, streetscape, and operational enhancements along the roadway between New York Avenue and H Street with the vision of improving safety for pedestrian and bicyclists while ensuring all users have safe access within and through the corridor.

ADA standards require that all curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks is not desired. As shown in the figure, under existing conditions there are some issues with crosswalks and curb ramps near the site; however, several of these issues will be remedied through improvements from the *Florida Avenue Multimodal Transportation Study*.

Pedestrian Infrastructure Improvements

As part of the PUD, pedestrian facilities throughout the site will be constructed to meet DDOT and ADA standards. Primarily, an extensive pedestrian plaza will be constructed with the first phase of the development between Buildings A-1 and B providing connectivity from Florida Avenue and the extended neighborhood and facilities south of the development to not

Table 16: Sidewalk Requirements

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

only the 300 Morse Street PUD, but the entire Union Market area. The pedestrian plaza will connect the western corner of the Morse Street/3rd Street intersection to the pedestrian facilities planned as a part of the Highline at Union Market development which provides a direct connection to Florida Avenue adjacent to its intersection with 3rd Street.

The pedestrian facilities planned for the development includes sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings, and additional design elements such as curb extensions and room for outdoor seating. The inclusion of permeable pavers, planting beds, additional streetlights, and outdoor seating areas will also contribute to an enhanced pedestrian experience.

In addition, pedestrian facilities along the perimeter of the site will be improved by way of increased pedestrian connectivity and sidewalk infrastructure and improved crossings. The development will improve sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

As a result of the other planned developments and roadway improvements in the area, it is expected that pedestrian infrastructure bordering developments will be improved to meet DDOT and ADA standards.

Union Market District Pedestrian Infrastructure

This section evaluates the existing and proposed pedestrian infrastructure within the Union Market district.

Existing Conditions

As mentioned, the Union Market district study area consists of an industrial wholesale marketplace. Under existing conditions, the area is not very pedestrian friendly, with large vehicles blocking sight lines, loading/unloading activity taking place across sidewalks, and a lack of activity at night which creates safety concerns.

Most streets within the Market have very wide cross sections, which do very little to encourage safe vehicular speeds and creates unnecessarily long distances for pedestrian to cross. 5th Street functions as one-way northbound and 4th Street functions as one-way southbound under existing conditions with enough room for two-way traffic. Vehicles are occasionally seen traveling the wrong way down the roadway, which creates unsafe conditions for vehicular and pedestrian traffic alike. Given that the existing sidewalks often double as loading/unloading areas, the majority of sidewalks are approximately 8 to 10 feet. Although the sidewalks may be wide in many areas of the Market, the sidewalks are in poor condition and there are very few crosswalks or curb ramps within the Market.

Proposed Improvements

Although the Market plans to maintain the industrial feel of the area, it will be necessary to improve the facilities in the direct vicinity of the site to ensure accessible routes to and from nearby destinations. It is expected that as the Union Market district is developed, pedestrian facilities will be replaced and improved on a parcel by parcel basis. As part of the development, 3rd Street will be converted from a wide roadway/existing parking lot with multiple rows of parking to a two-lane roadway with pedestrian facilities and more distinct signage to provide some much-needed organizational structure to the roadway. Similar improvements are planned along existing Morse Street and with the extension of Neal Place from east of the development to the future alignment of 3rd Street with accompanying pedestrian facilities. In addition, a pedestrian flex zone is proposed abutting Buildings C-1 and C-2 along the alley that borders the site to the east. This will be flanked by a cycle track that will be between the pedestrian flex zone and the cartpath of the alley.

In addition, the previously mentioned plaza between Buildings A-1 and B will connect the western corner of the Morse Street/3rd Street intersection to the pedestrian facilities planned as a part of the Highline at Union Market development which provides a direct connection to Florida Avenue adjacent to its intersection with 3rd Street.

This design also allows the Market to grow over time. As more parcels continue to develop, this same design principle can be easily incorporated into future designs. Pedestrian-specific improvements of this design include the following:

- Café seating outside of restaurants;
- Additional pedestrian amenity space including sidewalks, tree boxes, bicycle parking, and built-in outdoor furniture;
- A shared parking and planter lane as an added buffer between pedestrian space and travel lanes

SITE IMPACTS

This section summarizes the impacts of the development on the overall pedestrian operations within and surrounding the Market.

Pedestrian Trip Generation

The development is expected to generate 189 walking trips (78 inbound, 111 outbound) during the morning peak hour and 290 walking trips (156 inbound, 134 outbound) during the afternoon peak hour. The origins and destinations of these trips are likely to be:

- Employment opportunities where residents can walk to work
- Retail locations, such as other locations within the Market, within NoMa, and along H Street

In addition to these trips, the transit trips generated by the site will also generated pedestrian demand between the site and nearby transit stops. The majority of these transit riders will be walking to Florida Avenue to access Metrobus Service or to 2nd and N Street, NE, the nearest portal of the NoMa Metrorail station. Based on these origins/destinations, most pedestrians generated by the development will be traveling south of the site, along Florida Avenue, 3rd Street and 4th Street, with a small portion of pedestrians traveling within the Market itself.

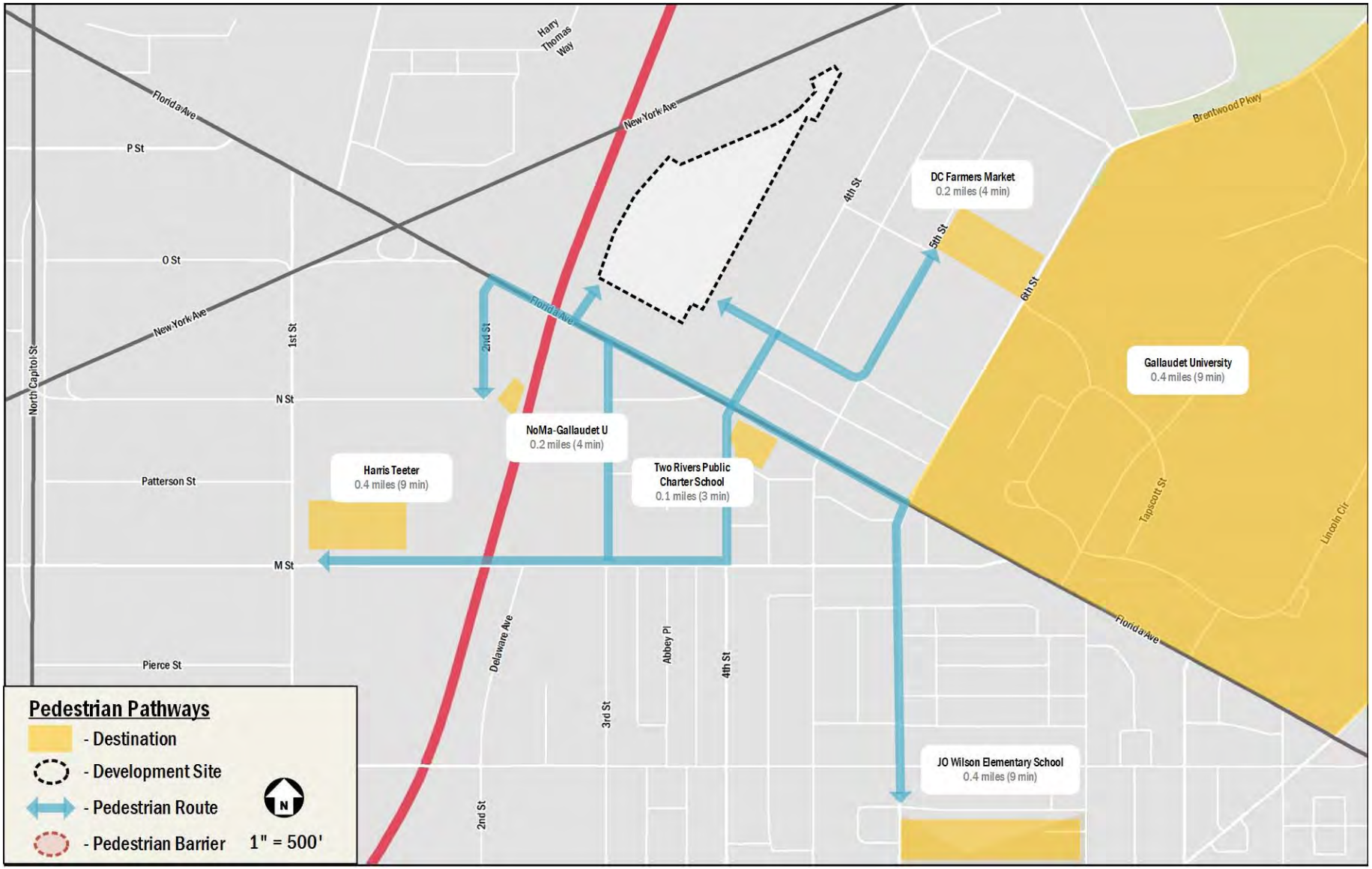

Figure 9: Pedestrian Pathways

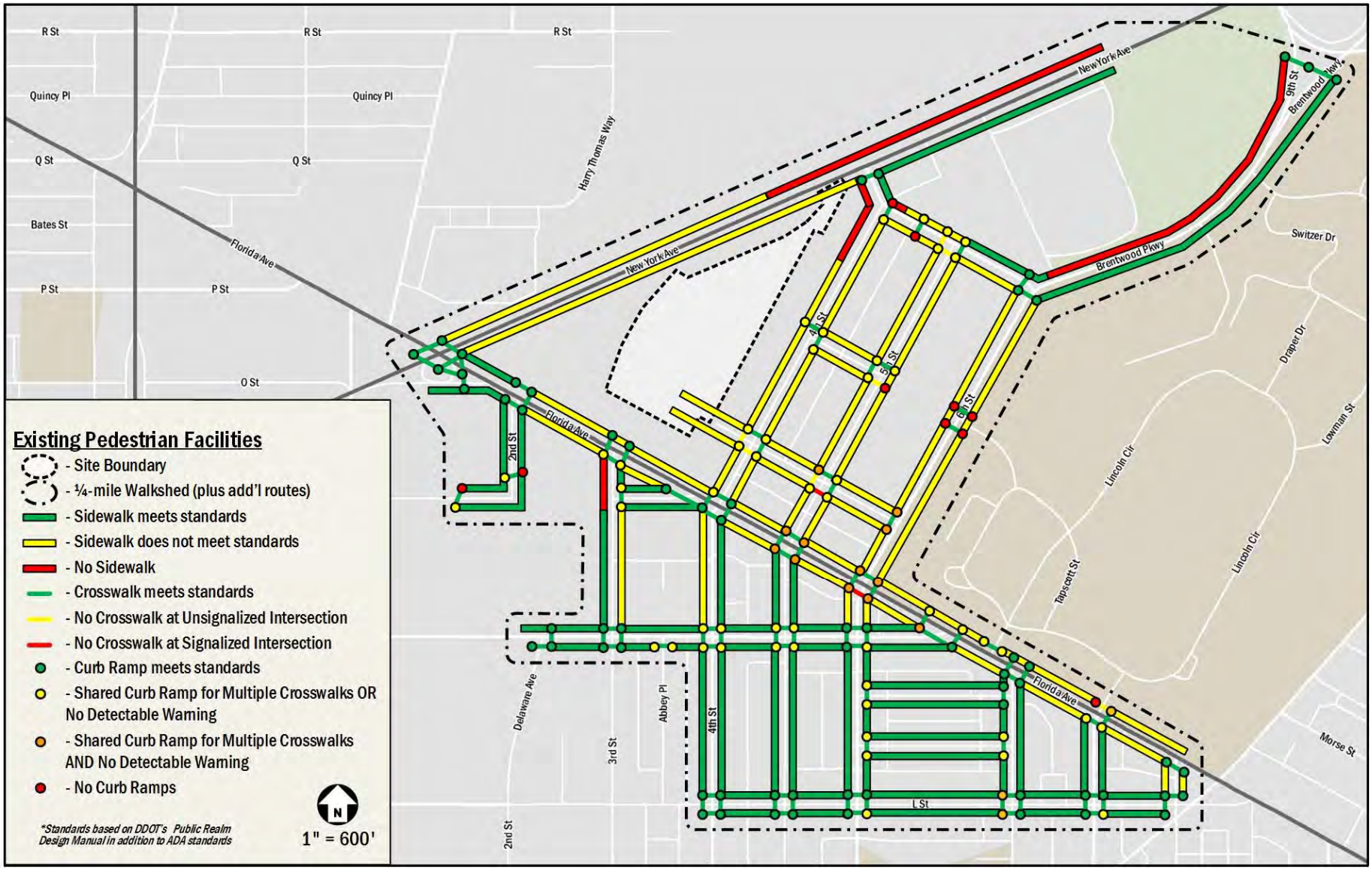

Figure 10: Existing Pedestrian Infrastructure

BICYCLE FACILITIES

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

The following conclusions are reached within this chapter:

- There are multiple high-quality bicycle facilities within the vicinity of the site.
- New protected bicycle infrastructure will be implemented near the site in the coming years that will further improve the cycling conditions in the area.
- There are several bicycle-focused elements of the development plan that will encourage cycling as a safe and effective transportation option for residents and patrons of the development.
- Given the existing and proposed bicycle infrastructure in the study area, the site-generated bicycle trips will not result in detrimental impacts to the bicycle system.

EXISTING BICYCLE FACILITIES

The site has excellent connectivity to existing on- and off-street bicycle facilities. Northbound bicycle lanes along 6th Street NE and southbound bicycle lanes along 4th Street NE provide two-way bicycle circulation between the site and the Navy Yard neighborhood in addition to providing a connection to the bicycle facilities on I Street and G Street. In addition, bicycle facilities along 6th Street have been extended to include a two-way cycle track between Florida Avenue and Penn Street. The site is located just a few blocks from the Metropolitan Branch Trail which provides on- and off-street bike facilities along the Red Line between Union Station and Silver Spring. The Metropolitan Branch Trail also provides connections to many east-west bicycle connections such as the R and Q Street bike lanes which run eastbound and westbound, respectively. Additionally, south of the site, the Metropolitan Branch Trail connections the site to the E Street bike lane. Figure 11 illustrates existing and planned bicycle facilities in the area.

In addition to personal bicycles, the Capital Bikeshare program provides an additional cycling option for residents and patrons of the development. The Bikeshare program has placed over 300 bicycle-share stations across Washington, DC, Arlington and Alexandria, VA, and most recently Montgomery County, MD with over 2,500 bicycles provided. Although there are no Capital Bikeshare stations within a quarter mile of the site, there are three stations within a half mile: 8th Street & Florida Avenue at Gallaudet University, M Street & Delaware Avenue at the NoMa Metrorail station, and 1st Street & M Street supplying a total of 58 docks. **Error! Reference source not found.** identifies existing station locations in the study area.

PROPOSED BICYCLE FACILITIES

As discussed previously, the Florida Avenue Multimodal Transportation Study is currently in the process of being completed by DDOT. This study focuses on the Florida Avenue corridor between New York Avenue and H Street and will evaluate safety, streetscape, and operational improvements for all users of the corridor. Three alternatives have been conceived for Florida Avenue and 6th Street and one, or a combination of multiple, will be implemented.

Along Florida Avenue, some of the improvements involve adding bicycle facilities along Florida Avenue; however, the potential inclusion of bicycle facilities is still undecided. As a result of the Florida Avenue Study, a two-way cycle track was recently installed along the east side of 6th Street, and more extensive improvements may be possible in the future. These additional improvements could include further narrowing the travel lanes to encourage slower vehicular speeds and widening the two-way cycle track. DDOT recently placed a Capital Bikeshare station near the intersection of 6th Street and Neal Place in space made available through the temporary improvements.

Separately, the New York Avenue Rail-with-Trail is expected to stretch from L Street and 2nd Street, NE, to the U.S. National Arboretum as a combination of on- and off-street bicycle facilities. In the vicinity of the site, a cycle track is expected to extend along the alley, wrap around Morse Street, and continue down along 4th Street.

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

- *Tier 1*
  Investments should be considered as part of DDOT's 6-year TIP and annual work program development, if they are not already included. Some projects may be able to move directly into construction, while others become high

priorities for advancement through the Project Development Process.

- *Tier 2*
  Investments within this tier are not high priorities in the early years of moveDC implementation. They could begin moving through the Project Development Process if there are compelling reasons for their advancement.

- *Tier 3*
  Investments within this tier are not priorities for DDOT-led advancement in the early years of moveDC's implementation. They could move forward earlier under circumstances such as real estate development initiatives and non-DDOT partnerships providing the opportunity for non-District-led completion of specific funding.

- *Tier 4*
  Generally, investments within this tier are not priorities for DDOT-led advancement and are lower priority for additional project development in the early years of implementation.

Due to the timeline of the development, this report will focus on the Tier 1 recommendations within the vicinity of the site. These include the extension of the M Street cycle track from Thomas Circle to Florida Avenue and a bike trail along New York Avenue.

Given the existing alignment of the M Street cycle track between Thomas Circle and 28th Street NW, this extension (ultimately connecting Georgetown with NoMa) would provide a safer and more convenient east-west connection through the heart of downtown. The existing east-west bicycle connections are further from the site, do not typically provide protected facilities, and do not provide as extensive of a connection.

Under existing connections New York Avenue serves as a vehicle-centric roadway, but provides convenient access to many residential, office, and retail destinations in neighborhoods to the east. A multi-use trail along New York Avenue would open up these areas to more modes of transportation.

SITE IMPACTS

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

Bicycle Trip Generation

The project is expected to generate 53 bicycle trips (29 inbound, 24 outbound) during the morning peak hour and 74 bicycle trips (37 inbound, 37 outbound) during the afternoon peak hour. Although bicycling will be an important mode for getting to and from the site, with significant bicycle facilities located on site and quality routes to and from the site, the impacts from bicycling will be relatively less than impacts to other modes. Overall, development-related bicycle trips are not expected to have a negative impact on bicycle facilities in the area.

On-Site Bicycle Elements

As previously noted in this report, the development will provide numerous interior secure bicycle parking for residents and employees of the development as well as exterior U-shaped racks incorporated into the streetscape. In addition, bicycle repair stations are planned for the bicycle rooms as well as in public areas to further facilitate cycling as an option.

Most notably, the development plans to incorporate an extension of the 4th Street cycle track that will enter the site from 4th Street via Morse Street before turning north along the alley which is oriented to allow connections to DDOT's planned future extensions of the track along New York Avenue northeast of the site. The cycle track within the alley will include a curbed buffer separating it from the vehicular cartpath of the alley. The proposed layout of the alley is presented below on Figure 12.

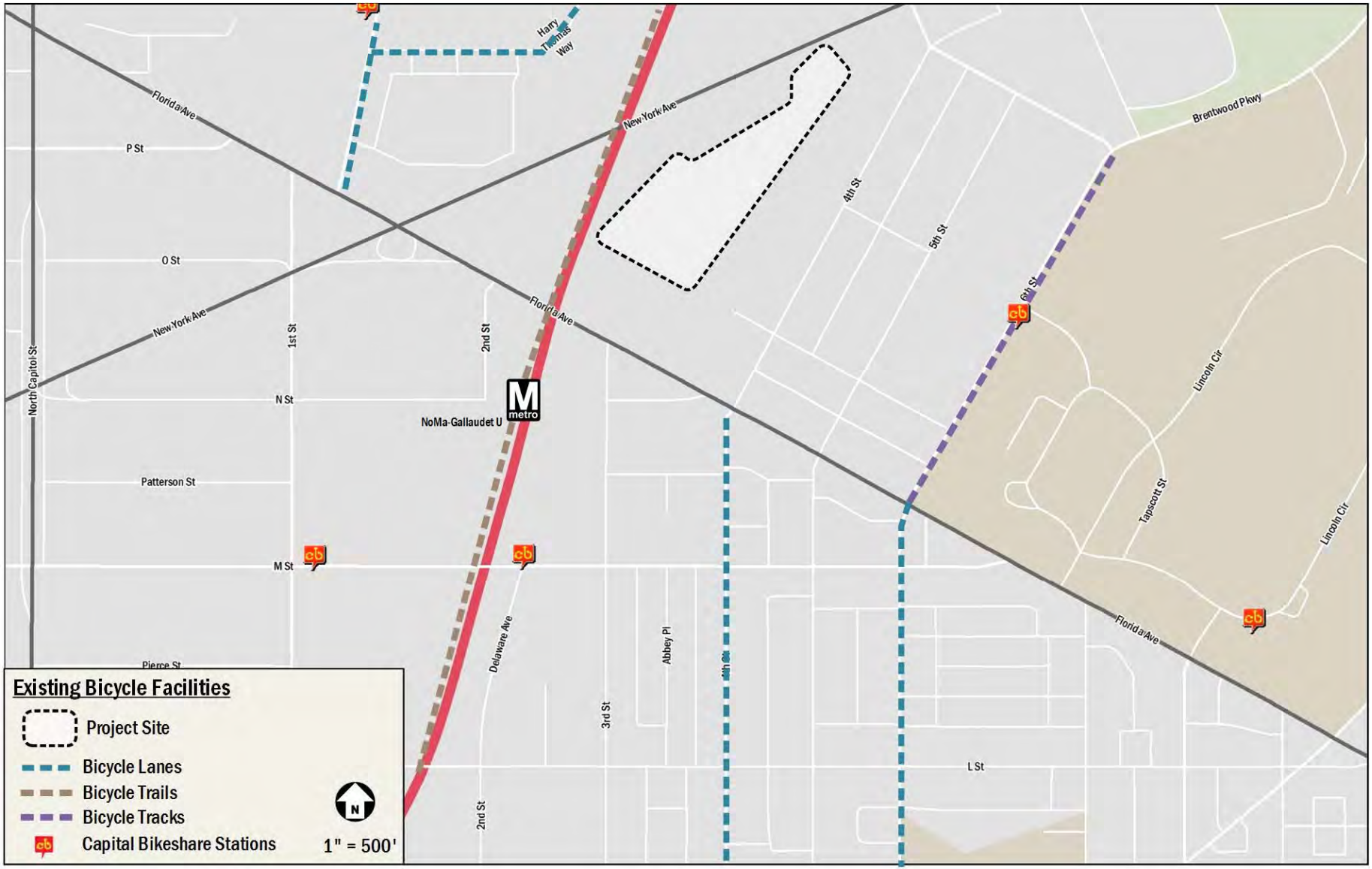

Figure 11: Existing Bicycle Facilities

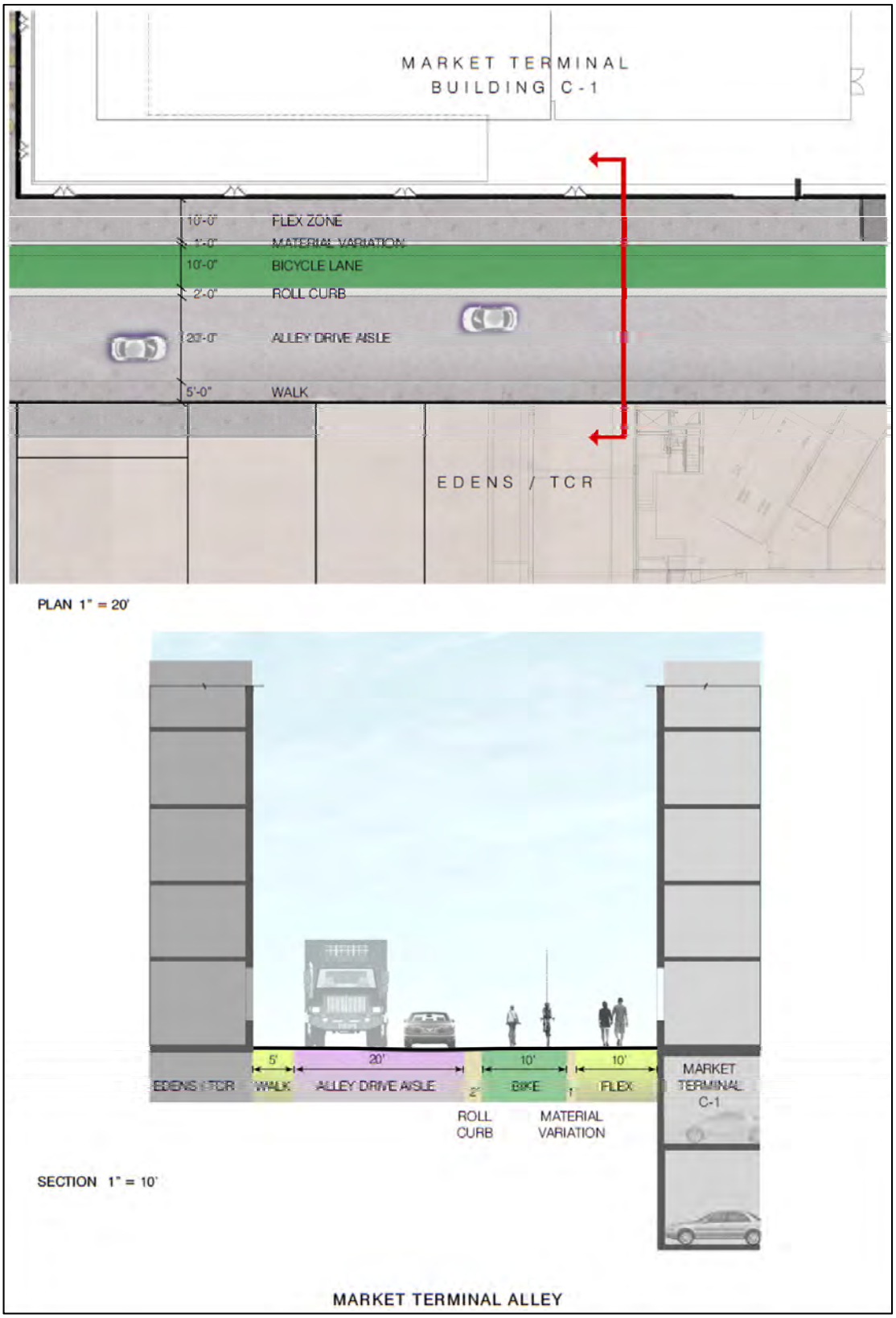

Figure 12: Alley Layout

CRASH DATA ANALYSIS

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

SUMMARY OF AVAILABLE CRASH DATA

A crash analysis was performed to determine if there was an abnormally elevated crash rate at study area intersections. DDOT provided the last three years of intersection crash data, from 2013 to 2015 for the study area. This data was reviewed and analyzed to determine the crash rate at each location. For intersections, the crash rate is measured in crashes per million-entering vehicles (MEV). The crash rates per intersection are shown in Table 17.

According to the Institute of Transportation Engineer's *Transportation Impact Analysis for Site Development*, a crash rate of 1.0 or higher is an indication that further study is required. Seven intersections in this study area meet this criterion (as shown in red in Table 17 and detailed in Table 18). The development should be developed in a manner to help alleviate, or at minimum not add to, the conflicts at these intersections.

The crash summary data in Table 17 shows seven intersections with a crash rate over 1.0 crashes per million entering vehicles – the rate which is considered a threshold for further analysis.

A rate over 1.0 does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have elevated crash rates due to operational, geometric, or other issues. Additionally, the crash data does not provide detailed location information. In some cases, the crashes were located near the intersections and not necessarily within the intersection.

For these seven intersections, the crash type information from the DDOT crash data was reviewed to see if there is an elevated percentage of certain crash types. Generally, the reasons for why an intersection has an elevated crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes. Table 18 contains a breakdown of crash types reported for the seven intersections with a crash rate over 1.0 per MEV.

POTENTIAL IMPACTS

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

- *New York Avenue & 4th Street*
  This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.59 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection are either rear end or side swiped vehicles. These types of crashes are likely due to the lack of an exclusive westbound left turn lane along

Table 17: Intersection Crash Rates (2011 to 2013)

Intersection	Total Crashes	Ped Crashes	Bike Crashes	Rate per MEV*
New York Avenue & 4th Street NE	78	2	0	**1.59**
Penn Street & 4th Street NE	1	0	0	0.13
Neal Place & 4th Street NE	23	1	0	**5.07**
Morse Street & 4th Street NE	42	2	1	**6.80**
Penn Street & 5th Street NE	5	0	0	0.76
Neal Place & 5th Street NE	10	0	0	**2.43**
Morse Street & 5th Street NE	8	0	0	**1.57**
Brentwood Parkway/6th Street & Penn Street NE	14	0	0	0.68
Morse Street & 6th Street NE	4	0	0	0.23
Florida Avenue & 3rd Street NE	41	0	1	**2.13**
Florida Avenue & N Street NE	9	2	1	0.47
Florida Avenue & 4th Street NE	16	2	0	0.66
Florida Avenue & 5th Street NE	29	2	1	**1.29**
Florida Avenue & 6th Street NE	23	0	0	0.63

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

Table 18: Elevated Crash Rate Intersections by Crash Type

Intersection	Rate per MEV	Right Angle	Left Turn	Right Turn	Rear End	Side Swiped	Head On	Parked	Fixed Object	Ran Off Road	Ped. Involved	Backing	Non-Collision	Under/Over Ride	Unspecified	Total
New York Avenue & 4th Street NE	1.59	5	6	5	23	18	4	0	1	4	1	0	1	0	10	78
		6%	*8%*	*6%*	*29%*	*23%*	*5%*	*0%*	*1%*	*5%*	*1%*	*0%*	*1%*	*0%*	*13%*	
Neal Place & 4th Street NE	5.07	0	1	0	2	6	0	5	0	1	0	7	0	0	1	23
		0%	*4%*	*0%*	*9%*	*26%*	*0%*	*22%*	*0%*	*4%*	*0%*	*30%*	*0%*	*0%*	*4%*	
Morse Street & 4th Street NE	6.80	2	1	1	3	11	0	8	1	1	2	10	0	0	2	42
		5%	*2%*	*2%*	*7%*	*26%*	*0%*	*19%*	*2%*	*2%*	*5%*	*24%*	*0%*	*0%*	*5%*	
Neal Place & 5th Street NE	2.43	0	0	0	1	6	1	1	0	0	0	1	0	0	0	10
		0%	*0%*	*0%*	*10%*	*60%*	*10%*	*10%*	*0%*	*0%*	*0%*	*10%*	*0%*	*0%*	*0%*	
Morse Street & 5th Street NE	1.57	1	0	0	0	3	1	0	0	0	0	3	0	0	0	8
		13%	*0%*	*0%*	*0%*	*38%*	*13%*	*0%*	*0%*	*0%*	*0%*	*38%*	*0%*	*0%*	*0%*	
Florida Avenue & 3rd Street NE	2.13	0	2	1	13	22	1	0	0	0	0	1	0	0	1	41
		0%	*5%*	*2%*	*32%*	*54%*	*2%*	*0%*	*0%*	*0%*	*0%*	*2%*	*0%*	*0%*	*2%*	
Florida Avenue & 5th Street NE	1.29	5	0	1	6	4	3	2	1	0	1	2	0	0	4	29
		17%	*0%*	*3%*	*21%*	*14%*	*10%*	*7%*	*3%*	*0%*	*3%*	*7%*	*0%*	*0%*	*14%*	

New York Avenue. Those traveling through the intersection may rear end or side swipe vehicles wating to turn left. The recent improvements near Mt. Olivet Road, which provide a more conducive route for left-turning traffic, will likely have a positive impact at this intersection by creating additional porosity throughout the network. No further mitigations are recommended at this intersection as a result of the proposed development.

- *Neal Place & 4th Street*

  This intersection is significantly over the threshold of 1.0 crashes per MEV, with a rate of approximately 5.07 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection are either side swiped or backing vehicles. The high crash rate is partially due to the very low vehicular traffic observed at this intersection, but more heavily attributed to the general operations of 4th Street and the intersection itself. 4th Street is wide enough to facilitate two-way traffic; however it is restricted to one-way southbound traffic. Signage in regards to the one-way nature of the roadway is infrequent and unintuitive. In addition, the prevalence of truck traffic and implementation of back-in parking creates additional obstacles along the roadway.

  The majority of these operational issues are expected to be improved as part of the 1270 4th Street PUD. 4th Street will be converted to two-way circulation and more signage will be implemented to eliminate confusion. The streetscape will create better definition and organization within the roadway and the west side of 4th Street will eliminate back-in parking in favor of parallel parking. An additional advantage is the decrease in truck traffic as a result of new developments in the area. Although crash data is not organized by vehicle type, trucks generally have less visibility and have a higher risk of crashes. Overall, the improvements will encourage slower speeds along 4th Street and all the new design elements will likely reduce the number of crashes. As such, this report does not recommend mitigations measures at this intersection.

- *Morse Street & 4th Street NE*

  This intersection is significantly over the threshold of 1.0 crashes per MEV, with a rate of approximately 6.80 crashes per MEV over the course of the 3-year study period. The predominant type of crashes at this intersection were right angle crashes. This intersection suffers from the same operational issues as Neal Place and 4th Street, discussed above and will therefore benefit from the same planned roadway improvements. In addition to the improvements listed above, Morse Street and 4th Street will become

signalized as a result of the proposed development which may further reduce the confusion at this intersection and result in slower vehicular speeds.

- *Neal Place & 5th Street*
  This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.43 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection were side swiped vehicles. Similar to the intersection of Neal Place and 4th Street, the high crash rate is partially due to the very low vehicular traffic observed at this intersection, but more heavily attributed to the general operations of 5th Street and the intersection itself. 5th Street is wide enough to facilitate two-way traffic; however it is restricted to one-way northbound traffic. Signage in regards to the one-way nature of the roadway is infrequent and unintuitive. In addition, the prevalence of truck traffic and implementation of back-in parking creates additional obstacles along the roadway.

  The majority of these operational issues are expected to be improved as part of the Angelika PUD. 5th Street will be converted to two-way circulation and more signage will be implemented to eliminate confusion. The streetscape will create better definition and organization within the roadway. An additional advantage is the decrease in truck traffic as a result of new developments in the area. Although crash data is not organized by vehicle type, trucks generally have less visibility and have a higher risk of crashes. Overall, the improvements will encourage slower speeds along 5th Street and all the new design elements will likely reduce the number of crashes. As such, this report does not recommend mitigations measures at this intersection.

- *Morse Street & 5th Street*
  This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.57 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection were side swiped and backing vehicles. This intersection suffers from the same operational issues as Neal Place and 5th Street, discussed above and will therefore benefit from the same planned roadway improvements. In addition to the improvements listed above, Morse Street and 5th Street is proposed to be converted from two-way stop-controlled to all-way stop-controlled which will further reduce the confusion at this intersection and result in slower vehicular speeds.

- *Florida Avenue & 3rd Street NE*
  This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.13 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection were rear end and side swiped vehicles. This report defers to the *Florida Avenue Multimodal Transportation Study*, which examined safety along the Florida Avenue corridor between New York Avenue and H Street. It is expected that more in depth crash analyses along the corridor associated with DDOT's study will result in improved safety at this intersection, and thus decrease the number of crashes. It should be noted that crash data provided by DDOT does not contain the level of detail to determine the impact that the confined lanes created by the Florida Avenue underpass have on the crash rate.

- *Florida Avenue & 5th Street NE*
  This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.29 crashes per MEV. The majority of crashes at this intersection were rear end, right angle, or side swiped vehicles. A high number of rear end crashes are more typical at signalized intersections. The elevated right angle crashes might be a result of the angle parking along 5th Street.

  The safety concerns at this intersection are primarily due to the existing lane configurations and operations. The site-generated traffic at this intersection is minimal and not expected to degrade the safety; thus no improvements are recommended as part of the PUD.

  This report defers to the *Florida Avenue Multimodal Transportation Study*, which examined safety along the Florida Avenue corridor between New York Avenue and H Street. It is expected that more in depth crash analyses along the corridor associated with DDOT's study will result in improved safety at this intersection, and thus decrease the number of crashes.

Overall, the combination of thoughtful site design elements and the *Florida Avenue Multimodal Transportation Study* provide the opportunity to greatly improve the overall transportation operations in the area.

SUMMARY AND CONCLUSIONS

This report has presented a Comprehensive Transportation Review (CTR) for the 300 Morse Street NE project and reviewed the transportation aspects of the Planned Unit Development (PUD) application. The Zoning Commission Case Number is 15-27.

The purpose of this study has been to evaluate whether the PUD will generate a detrimental impact to the surrounding transportation network. This evaluation is based on a technical comparison of two future conditions: one with the PUD constructed and one without. This report concludes that **the PUD will not have a detrimental impact** to the surrounding transportation network assuming that all background improvements are executed, all planned site design elements are implemented, and all mitigation measures are incorporated into the PUD application.

Proposed PUD

The 300 Morse Street site is currently occupied by a series of industrial buildings surrounding a large parking lot. The site is generally bound by the railroad to the west and north, adjacent developments (with 4th Street immediately beyond) to the east, and adjacent developments (with Florida Avenue immediately beyond) to the south. The resulting development will be a mixed-use development constructed in multiple phases and consisting of approximately 63,055 square feet (sf) of retail space, 1,238 residential units, and 217,558 sf of office space supplemented by approximately 691 below grade parking spaces.

As part of the PUD, pedestrian facilities throughout the site will be constructed to meet DDOT and ADA standards. This includes sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings, and additional design elements such as curb extensions and room for outdoor seating.

The development will extend the existing Morse Street to the west which will connect with a newly constructed 3rd Street which will bisect the project. Neal Place will be extended to the west also connecting with 3rd Street. The alley along the eastern edge of the PUD will be enhanced to include a cycle track separated from the vehicular cartpath of the alley and will also include a pedestrian flex zone between the cycle track and the development itself. Vehicular and loading access for the project will be provided primarily 3rd Street and the multi-use alley connecting Morse Street and Neal Place.

The development will supply secure interior long-term bicycle parking within the buildings of the development and short-term bicycle parking along sidewalks and public areas throughout the site.

Multi-Modal Impacts and Recommendations

Transit

The site is served by regional and local transit services such as Metrorail and Metrobus. The site is 0.3 miles from the NoMa-Gallaudet U Metrorail Station portal at 2nd Street and N Street, and many Metrobus stops are located within near the site along Florida Avenue.

Although the development will be generating new transit trips, existing facilities have enough capacity to handle the new trips.

Pedestrian

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

As a result of the development pedestrian facilities within the perimeter of the site will be improved with the addition of 3rd Street, the extensions of Neal Place and Morse Street, the construction of the pedestrian plaza between Buildings A-1 and B, and the enhancement of the alley on the eastern edge of the site. The development will improve sidewalks with the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

Bicycle

The site is very well served by existing bicycle infrastructure. The site is just blocks away from trails and bike lanes, such as the Metropolitan Branch Trail to the west and bike lanes along 4th Street and 6th Street which run near the proposed development. In addition, the site will extend the existing 4th Street cycle track through the development along the alley in order to provide a connection for DDOT's future bicycle facilities planned north and east of the site along New York Avenue.

The development will provide short-term bicycle parking within the site and on-site secure long-term bicycle parking for residents and employees of the development.

Vehicular

The site is well-connected to regional roadways such as I-395 and US-50, principal and minor arterials such as Florida Avenue and 6th Street, and an existing network of collector and local roadways.

In order to determine impacts that the proposed development will have on the transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays and queues. These 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.

The analysis concluded that the surrounding roadway infrastructure would operate within acceptable levels at buildout of the development with the following recommended improvements:

- Traffic management cameras at the following intersections:
    - Florida Avenue & 5th Street NE
    - New York Avenue & 4th Street NE
- A new traffic signal at the Morse Street & 4th Street NE intersection.
- A modification to the existing traffic signal at the Florida Avenue & 4th Street intersection to include an eastbound left turn phase.

Summary and Recommendations

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

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

- The site's close proximity to Metrorail.
- The inclusion of secure long-term bicycle parking spaces within the development that exceed zoning requirements.
- The installation of short-term bicycle parking spaces around the perimeter of each parcel that meet or exceed zoning and DDOT requirements.
- The construction of new roadways within the development and multi-modal enhancements to the alley adjacent to the development providing better circulation to the area surrounding the PUD.
- The creation of wide pedestrian paths which will meet or exceed DDOT and ADA requirements.

A robust Transportation Demand Management (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.