

COMPREHENSIVE TRANSPORTATION REVIEW

301-331 N STREET NE PUD

WASHINGTON, DC

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ZONING COMMISSION
District of Columbia
CASE NO.15-28
EXHIBIT NO.21A

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Contents

Executive Summary.....	1
Introduction	3
Purpose of Study.....	3
Contents of Study	3
Study Area Overview	6
Major Transportation Features.....	6
Future Regional Projects.....	7
Project Design	15
Access and Loading.....	15
Parking	16
Bicycle and Pedestrian Facilities	16
Transportation Demand Management (TDM).....	17
Trip Generation.....	20
Traffic Operations	22
Study Area, Scope, & Methodology.....	22
Transit	45
Existing Transit Service	45
Proposed Transit Service	45
Site-Generated Transit Impacts	46
Pedestrian Facilities	48
Pedestrian Study Area.....	48
Pedestrian Infrastructure.....	48
Site Impacts.....	49
Bicycle Facilities	53
Existing Bicycle Facilities	53
Proposed Bicycle Facilities	53
Site Impacts.....	54
Crash Data Analysis.....	56
Summary of Available Crash Data.....	56
Potential Impacts	56
Summary and Conclusions.....	60

Figures

Figure 1: Site Location.....	4
Figure 2: Site Aerial	5
Figure 3: Summary of Walkscore and Bikescore.....	8
Figure 4: Major Regional Transportation Facilities	12
Figure 5: Major Local Transportation Facilities.....	13
Figure 6: Planned Development Map	14
Figure 7: Site Plan	18
Figure 8: Circulation Plan	19
Figure 9: Study Area.....	30
Figure 10: Existing Peak Hour Traffic Volumes	31
Figure 11: Background Peak Hour Traffic Volumes.....	32
Figure 12: Outbound Trip Distribution and Routing	33
Figure 13: Inbound Trip Distribution and Routing	34
Figure 14: Site-Generated Peak Hour Traffic Volumes	35
Figure 15: Total Future Peak Hour Traffic Volumes.....	36
Figure 16: Current Lane Configuration and Traffic Controls	37
Figure 17: Future Lane Configuration and Traffic Controls.....	38
Figure 18: Morning Peak Hour Capacity Analysis Results	43
Figure 19: Afternoon Peak Hour Capacity Analysis Results (1	44
Figure 20: Existing Transit Service.....	47
Figure 21: Pedestrian Pathways.....	50
Figure 22: Existing Pedestrian Infrastructure.....	51
Figure 23: Expected Future Pedestrian Infrastructure.....	52
Figure 24: Existing Bicycle Facilities	55

Tables

Table 1: Car-share within 0.25 miles of the Site	7
Table 2: Multi-Modal Trip Generation Summary.....	20
Table 3: Summary of Mode Split Assumptions	21
Table 4: Summary of Background Development Trip Generation.....	28
Table 5: Applied Annual and Total Growth Rates.....	29
Table 6: LOS Results	39
Table 7: Queuing Results	41
Table 8: Metrobus Route Information	45
Table 9: Sidewalk Requirements.....	48
Table 10: Intersection Crash Rates	56
Table 11: Crash Type Breakdown.....	57



EXECUTIVE SUMMARY

The following report is a Comprehensive Transportation Review (CTR) for the 301-331 N Street NE Planned Unit Development (PUD). This report reviews the transportation aspects of the project's Consolidated PUD application. The Zoning Commission Case Number is 15-28.

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

Proposed Project

The 301-331 N Street NE site is currently occupied by a one-story industrial supply retail store and accompanying surface parking lot as well as a three-story self-storage building. The site is generally bounded by N Street to the north, 4th Street to the east, a public alley to the south, and 3rd Street to the west.

The application plans to develop the site into a mixed-use development including residential, retail, office, and hotel uses. The project will be four structures containing 366 residential dwelling unit, 26,029 square feet of ground floor retail, 25,407 square feet of office, and a hotel with 175 rooms. The development will be served by a total of 250 off-street parking spaces in a below-grade parking garage.

Parking and loading will be accessed through the existing public alley that links 4th Street to the east of the site with 3rd Street to the west of the site.

Pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. The development will supply a total of 230 long- and short-term bicycle parking spaces at ground level, which exceeds the current zoning requirements.

The parking and loading provided by the development will adequately serve the demands set forth by the development program.

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 a block of 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 along the perimeter of the site will be improved, most particularly by removing 11 curb cuts around the perimeter of the site, four on 3rd Street, four on N Street, and three on 4th Street. The development will improve sidewalks adjacent to 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 to the east of the site.

On site, the development will provide short-term bicycle parking along the perimeter of 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 if the proposed development will have a negative impact on this transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays. These



delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The analysis concluded that five (5) intersections required mitigation as a result of the development. Mitigation measures were proposed as follows:

- North Capitol Street & M Street
This report defers to DDOT's NoMa two-way conversion plan, which will address signal timing and roadway configuration changes for this intersection.
- First Street & M Street
This report defers to DDOT's NoMa two-way conversion plan, which will address signal timing and roadway configuration changes for this intersection.
- Florida Avenue NE/New York Avenue NE/1st Street NE/O Street NE Intersection Complex
Observations note that delays extend along most approaches to these intersections. These delays are a result of the limited throughput that the intersections can accommodate, and metering that is caused by these intersections along with other intersections up- and down-stream from the intersection complex. Given the delay and queuing present throughout the New York Avenue corridor, solutions for the delays and queuing present at these intersections should be examined through regional transportation planning efforts.
- Delaware Avenue NE & M Street NE
The future unacceptable operation of this intersection can be improved by extending the green time associated with the eastbound and westbound approaches along M Street.
- Florida Avenue NE & 3rd Street NE
The future unacceptable operation of this intersection can be improved by extending the green time associated with the northbound and southbound approaches along 3rd Street and the planned Highline at Union Market development's driveway.

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 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 on-site that greatly exceed zoning requirements, as well as a bike service area.

The PUD has several positive elements contained within its design that are publicly accessible improvements, including:

- The pedestrian facilities adjacent to the site will be greatly improved. This includes enhancing the sidewalks along N Street adjacent to the PUD, as well as the removal of a total of 11 curb cuts along 3rd Street, N Street, and 4th Street.
- The Applicant will add funding to study a new tunnel and entrance for the NoMa-Gallaudet U Metrorail station.



INTRODUCTION

PURPOSE OF STUDY

This report reviews the transportation elements of the project, supplementing material provided in the Site Plan Package that accompanied the Zoning Commission Application for the 301-331 N Street NE development. The site, shown in Figure 1 and Figure 2, is located in the NoMa/Florida Avenue Market neighborhood 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 policies of promoting non-automobile modes of travel and sustainability.
2. Provide information to the District Department of Transportation (DDOT) and other agencies on how the development of the site will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the site on all major modes of travel and where these trips will be distributed on the network.
3. Determine if development of the site will lead to adverse impacts on the local transportation network. This report accomplishes this by projecting future conditions with and without development of the site and performing analyses of vehicular delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The report discusses what improvements to the transportation network are needed to mitigate adverse impacts.

CONTENTS OF STUDY

This report contains nine sections as follows:

- Study Area Overview
This section reviews the area near and adjacent to the proposed project and includes an overview of the site location.
- Project Design
This section reviews the transportation components of the project, including the site plan and access. This chapter also contains the proposed Transportation Demand Management (TDM) plan for the site.

- Trip Generation
This section outlines the travel demand of the proposed project. It summarizes the proposed trip generation of the project.
- Traffic Operations
This section provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project, including presenting mitigation measures for minimizing impacts.
- Transit
This section summarizes the existing and future transit service adjacent to the site, reviews how the project's transit demand will be accommodated, outlines impacts, and presents recommendations as needed.
- Pedestrian Facilities
This section summarizes existing and future pedestrian access to the site, reviews walking routes to and from the project site, outlines impacts, and presents recommendations as needed.
- Bicycle Facilities
This section summarizes existing and future bicycle access to the site, reviews the quality of cycling routes to and from the project site, outlines impacts, and presents recommendations as needed.
- Safety/Crash Analysis
This section reviews the potential safety impacts of the project. This includes a review of crash data at intersections in the study area and a qualitative discussion on how the development will influence safety.
- Summary and Conclusions
This section presents a summary of the recommended mitigation measures by mode and presents overall report findings and conclusions.

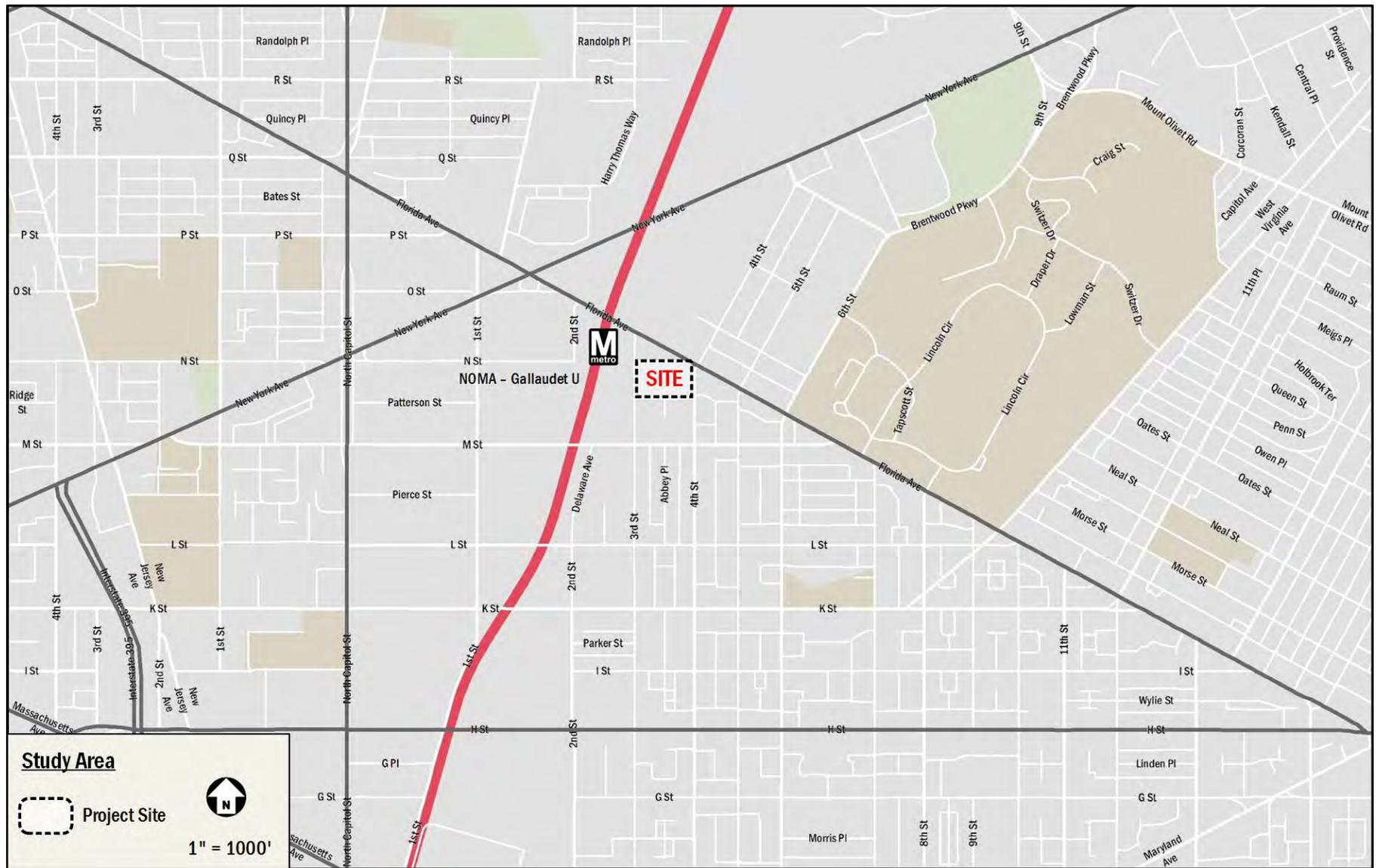


Figure 1: Site Location

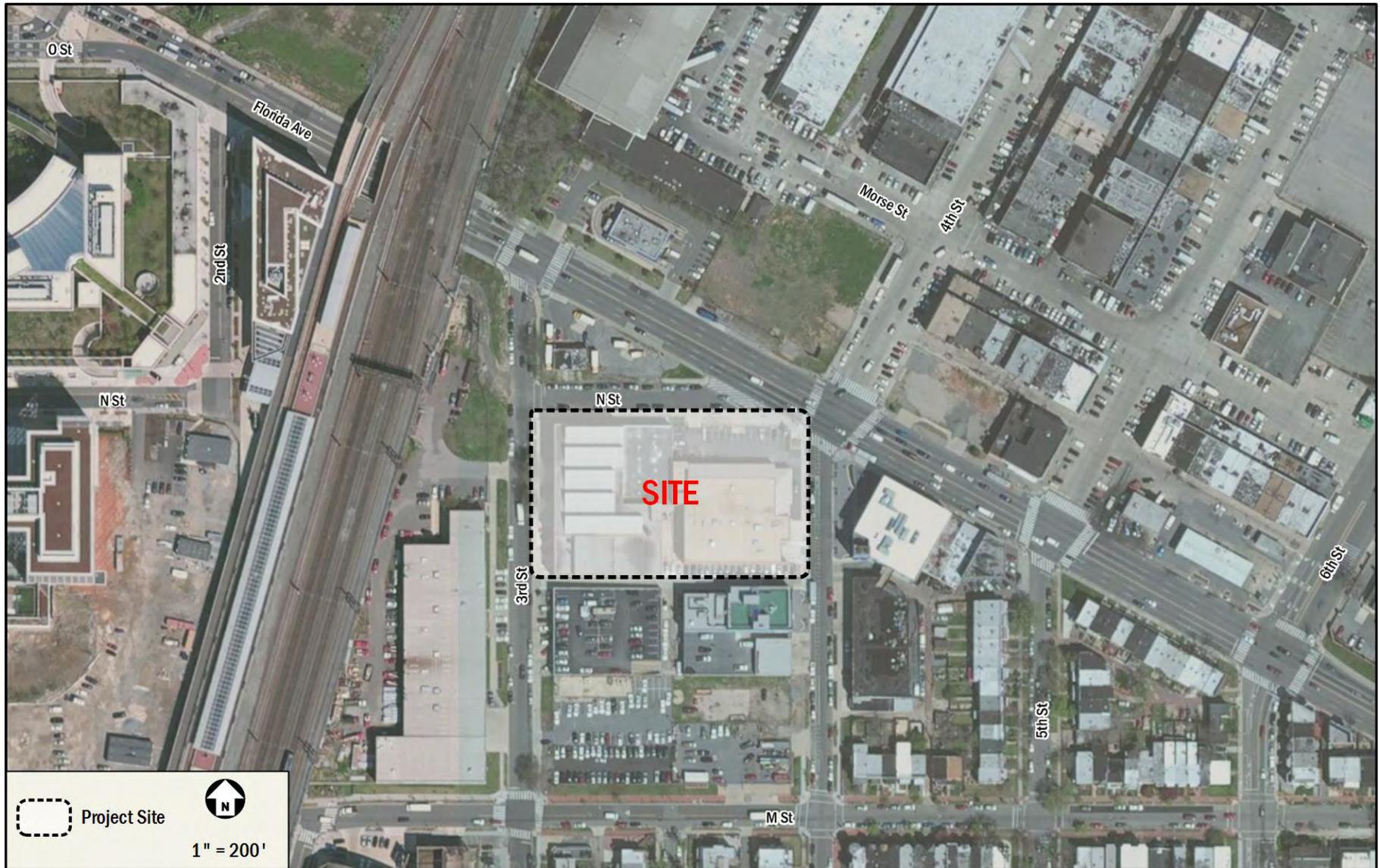


Figure 2: Site Aerial



STUDY AREA OVERVIEW

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

The following conclusions are reached within this chapter:

- The site is surrounded by an extensive regional and local transportation system that will connect the residents, employees, and patrons of the proposed development
- The site is well-served by public transportation with access to Metrorail, and several local Metro bus lines.
- There is excellent existing bicycle infrastructure including the Metropolitan Branch Trail and several bike lanes in the vicinity of the site.
- Pedestrian conditions are generally good, particularly along anticipated major walking routes.

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

The 301-331 N Street site has ample access to regional vehicular- and transit-based transportation options, as shown in Figure 4, that connect the site to destinations within the District, Virginia, and Maryland.

The site is accessible from Florida Avenue. Florida Avenue connects to several US highways such as US-50 (New York Avenue), US-29 (Georgia Avenue), and US-1 (Rhode Island Avenue), as well as Interstate-395. The highways and interstates create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within half-mile of the site, at which point arterials and local roads can be used to access the site directly.

Along this site there are several local bus stops for bus routes that connect the District limits with the innermost roads of Washington, DC. The multiple bus route options allow for more frequent bus pickups, and specified travel destination options, as shown in Figure 5.

The site is located extremely close to the NoMa-Gallaudet U Metrorail station. The proposed development has access to the Red line which provides connections to areas in the District and

Maryland. The Red Line connects Prince George's County and Montgomery County, Maryland while providing access to the District core. In addition, the Red Line provides connections to all additional Metrorail lines allowing for access to much of the DC Metropolitan area.

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

Overview of Local Access

There are several local transportation options near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 5.

The site is served by a local vehicular network that includes several primary and minor arterials such as Florida Avenue, New York Avenue, and 6th Street NE. In addition, there is an existing network of connector and local roadways that provide access to the site.

The Metrobus systems provide local transit service in the vicinity of the site, including connections to several neighborhoods within the District and additional Metrorail stations. As shown in Figure 5, there are three routes that service the site. In the vicinity of the site the majority of routes travel along Florida Avenue. These bus lines connect the site to many areas of the District.

There are existing bicycle facilities that connect the site to areas within the District, most notably the Metropolitan Branch Trail and the 4th Street bike lanes, as shown in Figure 24. East of the site the 6th Street bike lanes provide further connection to the rest of the District.

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

Overall the 301-331 N Street site is surrounded by an expansive local transportation network that allows for efficient



transportation options via transit, bicycle, walking, or vehicular modes.

Car-sharing

Three car-sharing companies provide service in the District: Zipcar, Enterprise Carshare, and Car2Go. All three services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar and Enterprise Carshare have designated spaces for their vehicles. There four Carshare location within a quarter-mile of the site, housing a total of ten vehicles. Table 1 breaks down the different location that are made available to the public.

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

Walkscore

Walkscore.com is a website that provides scores and rankings for the walking, biking, and transit conditions within neighborhoods of the District. Based on this website the planned development is located in the H Street-NoMa neighborhood. The project location itself has a walk score of 94 (or “Walker’s Paradise”), a transit score of 79 (or “Excellent Transit”), and a bike score of 91 (or “Biker’s Paradise”). Figure 3 shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

Table 1: Car-share within 0.25 miles of the Site

Carshare Location	Number of Vehicles
Zipcar	
NoMa/Gallaudet Metro (100 Florida Avenue NE)	1 vehicle
Constitution Square (130 M Street NE)	2 vehicles
5th/L Street NE (449 L Street NE)	1 vehicle
Enterprise Carshare	
66 New York Avenue NE	6 vehicles
Total	10 vehicles

The site is situated in an area with good walk score because of the abundance of neighborhood serving retail locations, where most errands can be completed by walking.

The site is situated in an area with good bike scores due to its proximity to bike facilities and flat topography. The high transit score was based on the proximity to the NoMa-Gallaudet U Metrorail station, car share, and multiple bus lines.

Overall, the H Street-NoMa neighborhood has a high walk, high transit, and high bike scores. Additionally, other planned developments and roadway improvements will help increase the walk and bike scores in the H Street-NoMa neighborhood.

FUTURE REGIONAL PROJECTS

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

Local Initiatives

MoveDC: Multimodal Long-Range Transportation Plan

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

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

- 70 miles of high-capacity transit (streetcar or bus)
- 200 miles of on-street bicycle facilities or trails
- Sidewalks on at least one side of every street
- New street connections

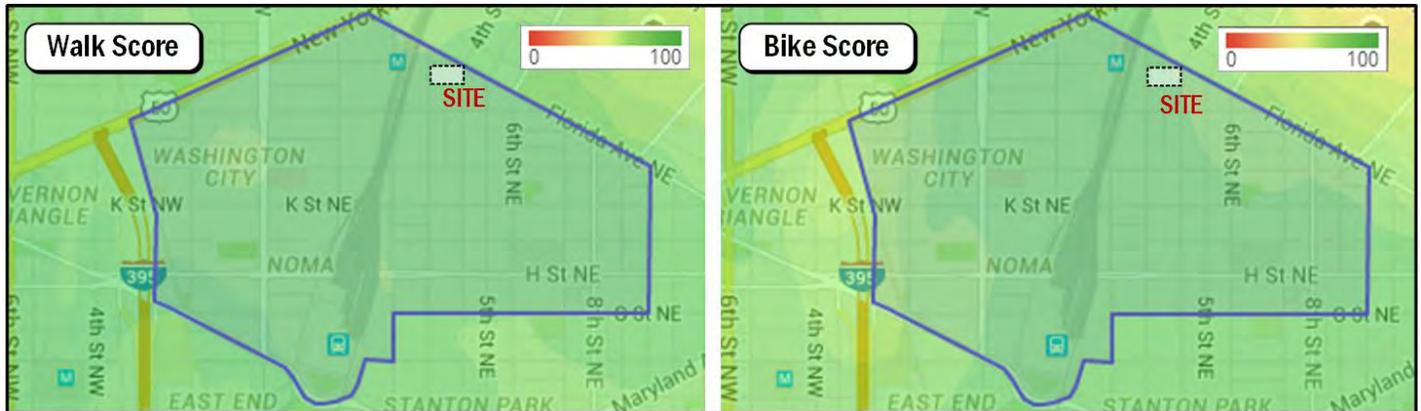


Figure 3: Summary of Walkscore and Bikescore

- Road management/pricing in key corridors and the Central Employment Area
- A new downtown Metrorail loop
- Expanded commuter rail
- Water taxis

In direct relation to the proposed development, the MoveDC plan outlines recommended pedestrian, bicycle, and transit improvements such as a new trail, new bicycle trails and cycle tracks, and a high-capacity surface transit route. These recommendations would create additional multi-modal capacity and connectivity to the proposed development and are discussed further down in the report.

SustainableDC: Sustainable DC Plan

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

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

A combination of increasing public transit and decreasing vehicular mode shares has been suggested to meet the transportation targets. The high walk and bike scores in the NoMa neighborhood are examples of the reduction in vehicle use and the need to expand safe and secure infrastructure for cyclists and pedestrians.

NoMa Neighborhood Access Study and Transportation Management Plan

Published in 2010, the purpose of this DDOT study was to provide a framework for handling expected growth and changing transportation needs in the neighborhood. By providing strategies for managing congestion and mitigating potential conflicts between multi-modal users, the Plan seeks to improve safety, comfort and efficiency of all transportation modes.

To accomplish this, the Plan identifies the following five goals:

- **Connectivity:** The NoMA neighborhood is fully connected via a multi-modal transportation system to surrounding neighborhoods, the City, and the region.
- **Multi-modal accessibility:** The transportation network functions for all modes.
- **Sustainability:** Bicycling, walking and transit represent significant proportions of all trips; green features and policies are incorporated.
- **Safety and efficiency:** The transportation network is safe and efficient for all users.
- **Coordination:** Transportation improvements are made in sync with land use changes to ensure continued mobility and accessibility; construction is coordinated so as not to diminish quality of life for residents and visitors.



The Plan identified the following recommendations in direct relation to the 301-331 N Street development:

- Short Term Recommendations (by 2015)
(1) Filling a gap in the sidewalk network on 3rd Street in between N Street and Florida Avenue; (2) Implementing a lane reduction on Florida Avenue to provide space for a wider sidewalk under the CSX tracks; (3) Provide Leading Pedestrian Intervals (LPI) at ten intersection; (4) Prohibit right turns on red at six intersections; (5) Improve bike parking facilities throughout the area; and (6) Convert Pierce, Patterson, L, and M Streets to two-way between First Street NE and North Capitol Street.
- Medium Term Recommendations (by 2020)
(1) Provide six new traffic signals throughout the area; (2) Realigning selected intersections to create more compact intersections with right-angle crossings, slow turning motor vehicles and improve visibility; (3) Altering lane configurations, for example by adding right-turn only lanes, to maximize the operation and flow of traffic at intersections throughout the study area; (4) Implementing an extension to the existing DC Circulator system to better serve NoMa; and (5) Developing a connected network of bicycle facilities throughout the study area including shared use paths, cycle tracks, bicycle lanes, and shared lane markings.
- Long Term Recommendations (by 2030)
(1) Implementing grid extensions, alternative access routes, and one-way/ two-way traffic conversions to further improve access and circulation in NoMa; and (2) Designating First Street in between Massachusetts Avenue and G Street as a pedestrian priority zone. In addition, this Plan recommends an additional north/south pedestrian priority street in between First Street and North Capitol Street. Note that the proposed pedestrian priority street in between First Street and North Capitol Street would have to be initiated by local developers as DDOT does not have regulatory authority over the required properties.

Florida Avenue Multimodal Transportation Study

Published in 2015, the purpose of the Florida Avenue Multimodal Transportation Study is to improve safety for all roadway users, particularly the most vulnerable (pedestrians and bicyclists), while ensuring safe access and maintaining mobility for all modes within and through the study area. The

study area is bordered by Gallaudet University and Florida Avenue Market to the north, H Street and Greater Capitol Hill to the south, the “Virtual Circle” and NoMa District to the west, and the “Starburst Intersection” (the intersection of Florida Avenue with H Street/Benning Road/ Maryland Avenue/Bladensburg Road) to the east.

To accomplish this, the Florida Avenue Multimodal Study identifies the following nine needs that it addresses in the report:

- History of auto and non-auto related crashes;
- High automobile speeds;
- Lack of ADA compliant pedestrian facilities;
- Maintaining automobile access, particularly for corridor-wide trips and trucks;
- Meeting specialized needs of large deaf population due to the corridor’s proximity to Gallaudet University;
- Lack of bicycle facilities within the study area;
- Need for safe access to transit;
- Florida Market access and mobility needs; and
- Resident requests for supporting multimodal access.

These identified project needs informed the specific data to collect, required analysis to perform, and appropriate stakeholders to include in the process. As a result of the supporting analysis and community feedback, three alternatives were developed for further study and evaluation. However, after detailed analysis was conducted on Alternatives 1-3 and through public and stakeholder input, a fourth alternative was developed as an additional possible option. At a minimum, all recommendations include sidewalk widening on the south side of Florida Avenue west of West Virginia Avenue, pedestrian scale lighting throughout the entire corridor, and low-impact development and trees.

In direct relation to the development, Florida Avenue will be converted to two eastbound and two westbound lanes with a center left-turn lane in certain sections. 6th Street north of Florida Avenue will be improved to include a two-way cycle-track on the east side, widened sidewalks, and curb extensions where possible. 6th Street south of Florida Avenue to K Street will be converted to one-way northbound, improved with widened sidewalks, and improved with a two-way cycle track on the east side.



Planned Developments

There are several potential development project in the vicinity of the 301-331 N Street site. For the purpose of this analysis, only approved developments expected to be complete prior to the planned development with an origin/destination within the study area were included. A detailed list of the background developments considered and a description of their applicability for incorporation in the study is included in the Technical Attachments. Of the 18 background developments considered, 12 were ultimately included and are described below. Figure 6 shows the location of these developments in relations to the proposed development.

1270 4th Street NE (Z.C. Case No. 14-07)

Phase 1 of the 1270 4th Street PUD (South Building) proposes to replace an existing building within the Union Market district with an 11-story mixed-use building containing approximately 33,600 sf of ground-floor retail space and approximately 420-520 apartments. Phase 2 of the PUD (North Building) will contain 8,000-12,000 square feet of ground-floor retail space and 130-160 apartments constructed upon an existing surface parking lot. Phase 1 of the development is planned to open in 2017 and Phase 2 of the PUD is planned for 2020.

While 1270 4th Street lies just outside the study area, Phase 1 is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

Gateway Market and Residences (Z.C. Case No. 06-40A/B/C)

The second phase of the Union Market District development plan, 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. Gateway Market Center will also include affordable units (20% of the units) and 72 bike spaces. The Joint Venture between LCOR, EDENS and Sang Oh & Company Inc. will jointly develop the project with LCOR retaining ownership in the residential piece and EDENS & Sang Oh retaining ownership in the retail piece. This development is has an expected delivery date of 2017.

Gateway Market lies in the study area and is expected to open before the 301-331 N Street and will be included in the analysis.

300 M Street NE (Z.C. Case No. 14-19)

The proposed six-story, mixed-use project will have 401 new apartments, 9,000 - 12,900 sq. ft. of retail space and 175

parking spaces in a two-level underground garage. The property is located in NoMa at 3rd and M Streets, NE, one block from the M Street entrance to the NoMa-Gallaudet Metro Station. The developer submitted plans to the Zoning Commission in October 2014. This development has an expected delivery date of 2018.

300 M Street lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

Uline Arena (BZA Case No. 18558)

The U-Line Arena project will include the adaptive re-use of the existing 110,000 sq. ft. masonry arena building and adjacent Ice House. The site is located between 3rd Street and Delaware Avenue, NE, and bounded to the north by M Street. Both structures were built in the 1930s. The U-Line Arena is most noted for hosting numerous sporting, entertainment, and political events in Washington D.C. The current redevelopment calls for 146,000 - 170,000 sq. ft. of office space and 68,000 sq. ft. of retail (potential for a large 40,000 sq. ft. user). This development has an expected delivery date of 2016.

Uline Arena lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

Central Armature Works (Z.C. Case No. 16-09)

The new 110-foot building would have two levels of underground parking totaling 175 spaces; 9,000 to 12,900 square feet of ground-level retail, and 401 dwelling units.

Central Armature Works lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

The Highline at Union Market (Z.C. Case No. 15-01)

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

Highline at Union Market lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.



Ava NoMa

AVA NoMa is the second phase of Archstone 1st + M. AVA NoMa offers 435 apartments (studio, 1, 2, and 3-bedroom units) and 6,500 sf of retail. Additional state of the art amenities include a fitness center, movie screen, bike storage and repair room, chill lounge and Social Media Feature Wall. This site was previously owned by Archstone as part of the Archstone at 1st + M Project, but was purchased by AvalonBay. A building permit was issued in October 2013. This development is under construction with an expected delivery date of 2017.

Ava NoMa lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

Skansa USA Development

Skanska USA is a mixed-use development consisting of three buildings. Building 1 (88 M Street) is planned to include 315,000 square feet of office space and 6,500 square feet of retail space. Building 2 (44 M Street) is also proposed to include 315,000 square feet of office space and 6,500 square feet of retail space. Building 3 (22 M Street) is expected to include 285 residential units and 5,000 square feet of retail space. All three buildings of this development are expected to be complete in 2017.

The Skansa USA development lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

Angelika (Phase I) (Z.C. Case No. 14-12)

The Angelika (Phase I) development is located within Union Market and includes a 1,250 multi-screen theater, 62,000 square feet of retail space, and 115,000 square feet of office space OR 100 residential units.

The Angelika (Phase I) lies in the study area, it is expected to open before the completion of the 301-331 N Street and will be included in the analysis.

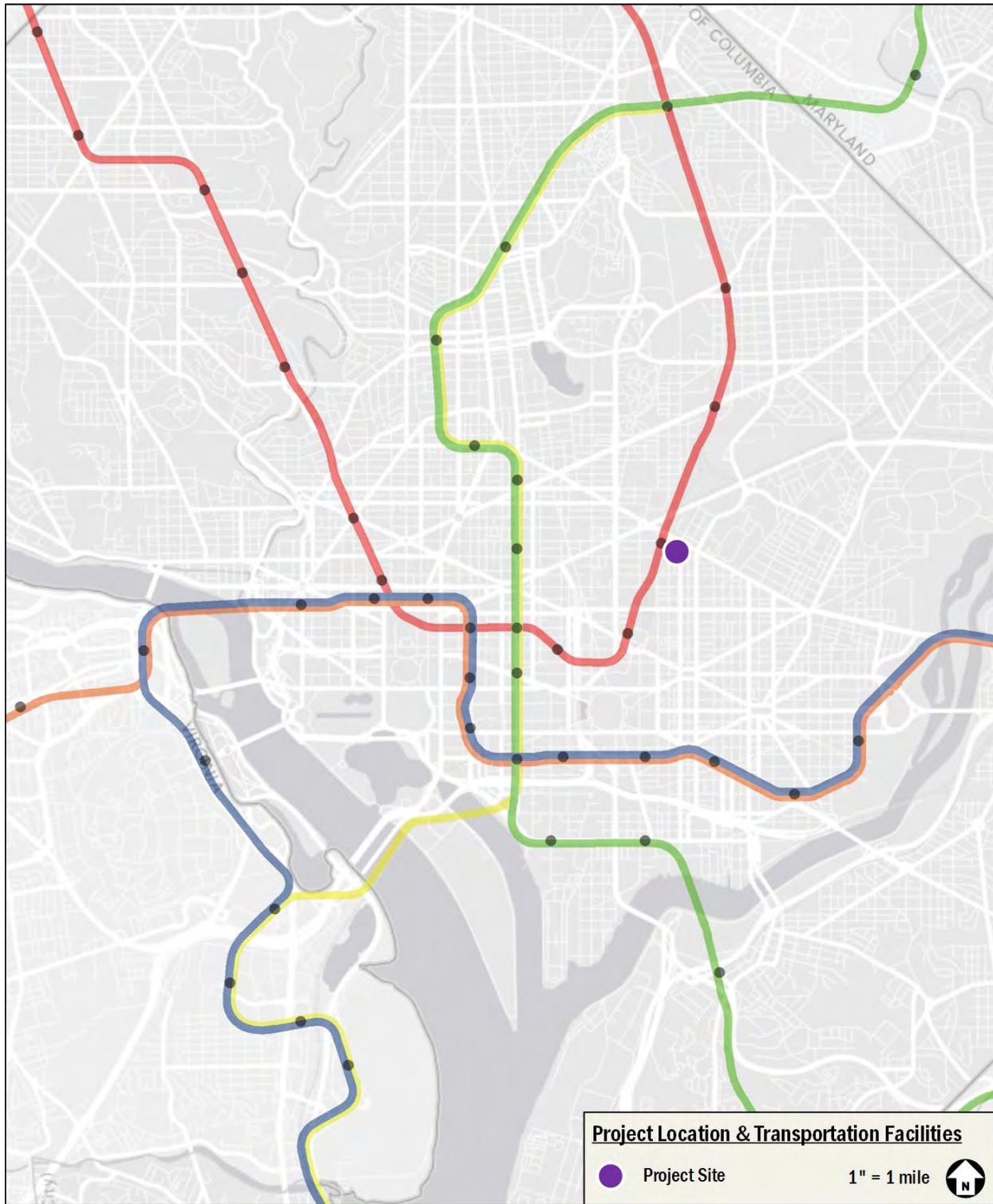


Figure 4: Major Regional Transportation Facilities



Figure 5: Major Local Transportation Facilities

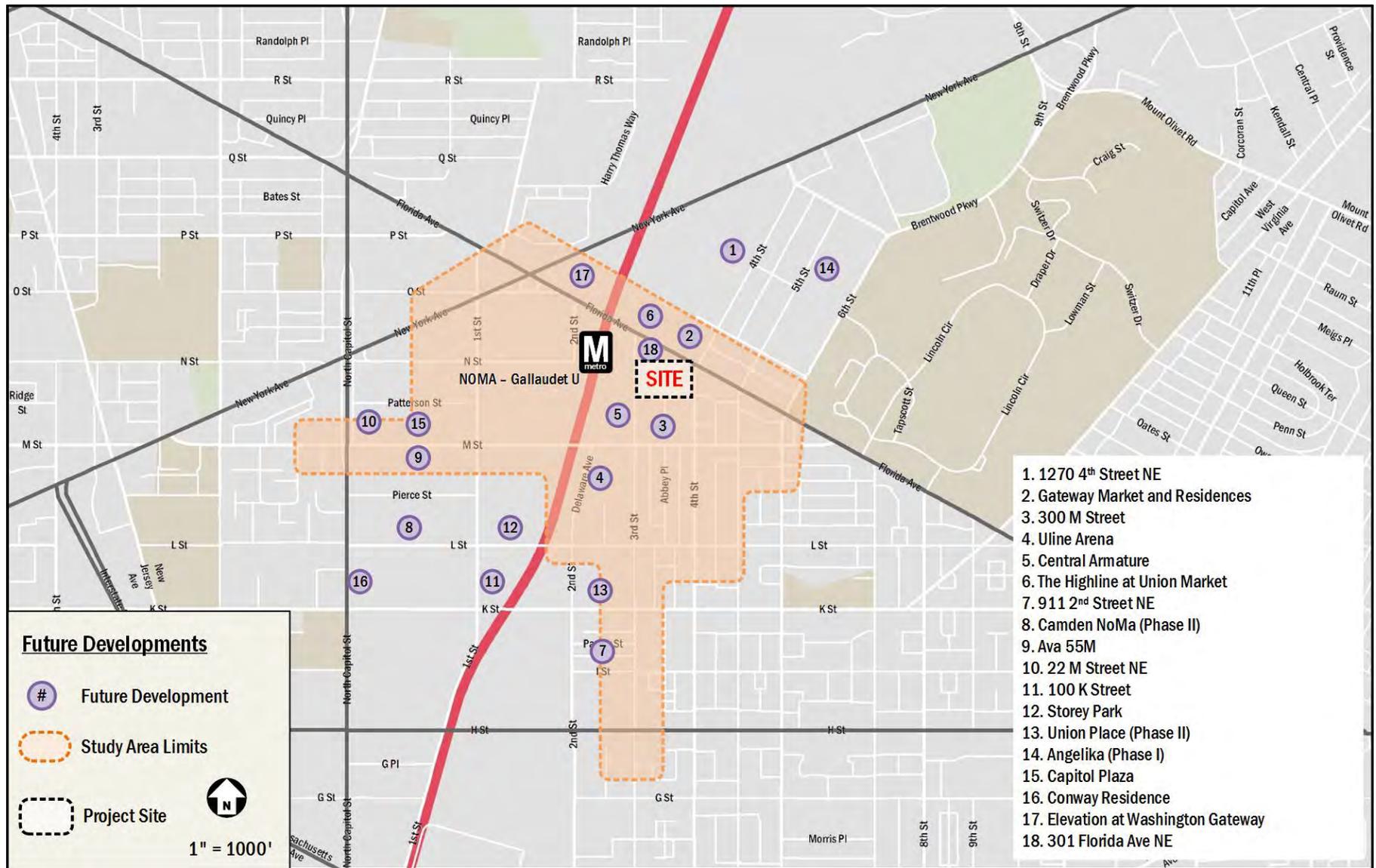


Figure 6: Planned Development Map



PROJECT DESIGN

This section reviews the transportation components of the 301-331 N Street development, including the proposed site plan and access points. It includes descriptions of the site's vehicular access, loading, parking, bicycle, and pedestrian facilities, and Transportation Demand Management (TDM) plan. It supplements the information provided in the site's plan package that accompanied the Zoning Application, which includes several illustrations of site circulation and layout.

The planned development will replace the existing buildings and surface parking lot with four mixed-use buildings that will be integrated and function as one project. There are currently 11 curb cuts that access the existing site: three along 4th Street, four along N Street, as well four curb cuts on 3rd Street. The site is primarily surrounded by a low fence along N Street and 4th Street, with a public alley bordering the southern perimeter of the site.

The 301-331 N Street project will include 366 residential dwelling units, 26,029 square feet of ground floor retail, 25,407 square feet of office, and a hotel with 175 rooms. The development will be served by a total of 250 off-street parking spaces in a below-grade parking garage accessed from the alley connecting 4th Street and 3rd Street. Figure 7 shows an overview of the development program and site plan elements.

ACCESS AND LOADING

Pedestrian Access

Pedestrian access to the residential component of the development will occur predominately via the N Street entrance. For the retail component, pedestrian access will be on 3rd Street, N Street, and 4th Street. Pedestrian access for the office component of the development will be on N Street. Pedestrian access for the hotel component will occur 3rd Street entrance. Pedestrian access points are outlined on the site plan in Figure 7.

Vehicular Access

Most vehicular access to the site will be off 3rd Street and 4th Street, which are local roadways. An existing 15-foot public alley off that links 3rd Street and 4th Street will provide access to the underground garage, the secure bicycle storage, and the loading docks. It should be noted that the Applicant plans to widen the alley by 10 feet on the north side of the alley and the

adjacent 300 M Street project plans to widen the portion of the alley along its northern edge by 10 feet. This will effectively provide for a 35-foot-wide alley along the southwestern edge of the site and a 25-foot-wide alley along the southeastern edge of the site.

Bicycle Access

Most bicycle access to the site will be off the public alley that links to the long-term secure bicycle parking and amenities. Short-term bicycle parking will be found around the perimeter of the site and will be accessed on 3rd Street, N Street, and 4th Street. The bicycle storage room will be located in the southeastern quadrant of the development at ground level and will be accessible from the alley.

A circulation plan with vehicular, bicycle, pedestrian, and loading routes is shown on Figure 8.

Loading Facilities

According to DC zoning requirements, the site use is required to provide three 30-foot and one 55-foot loading bays, as well as three 20-foot service and delivery loading spaces. The Applicant is seeking relief for the requirements set forth by District zoning laws for loading and service space. The proposed development will contain two 30-foot loading bays and one 20-foot service and delivery space, which will be sufficient to accommodate the practical loading needs of the PUD.

The proposed development is expected to generate approximately 18 truck trips per day. This includes daily trash removal services, mail and parcel delivery, retail/office/hotel pickup and delivery, and residential move-in and move-out trips. One (1) trash removal truck, two (2) mail and parcel delivery trucks, 10 retail pickup and delivery trucks, one to two (1-2) office pickup and delivery trucks, two (2) hotel pickup and delivery trucks and one to two (1-2) residential move-in and – out trucks (calculated using an average of 18 months average turnover per unit), will service the development on a daily basis. The loading facilities provided by the development will be sufficient to accommodate this demand.

Truck routing to and from the site will be focused on 3rd Street, which connects the site with Florida Avenue, a DDOT designated primary truck route. Turning maneuvers into and out of the site for each loading are included in the Technical Appendix.



This report is recommending that the PUD does not need an extensive loading management plan, because loading operations occur on-site, there are sufficient docks, and the building is close to several major truck routes. Thus, the loading management plan for the development should include the following elements:

- A loading facility manager will be designated. The loading facility manager will coordinate with residents and tenants to schedule deliveries and to ensure conflicts in the alley will be minimized.
- All residents and tenants will be required to schedule deliveries that utilize the loading docks – defined here as any loading operation conducted using a truck 20’ in length or larger.
- Loading will be prohibited curbside from 3rd Street, 4th Street, and N Street and all loading activity will be directed to utilize the loading facilities off of the alley.

PARKING

On-Site Parking

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

- Residential
1 space per 4 dwelling units, amounting to a minimum requirement of 91 parking spaces
- Retail
1 space per 750 square feet of retail space in excess of 3,000 square feet, amounting to a minimum requirement of 31 parking spaces
- Office
1 space per 1800 square feet of office space in excess of 2,000 square feet, amounting to a minimum requirement of 13 parking spaces
- Hotel
1 space per 4 hotel rooms, amounting to a minimum requirement of 44 parking spaces

250 parking spaces will be supplied in a below-grade parking garage, with 163 parking spaces being for residential use, 31 parking spaces for retail use, 13 parking spaces for office use, and 44 parking spaces for hotel use. The development will exceed the amount of parking as set forth by zoning.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle Facilities

The project will include 30 short-term public bicycle spaces at street level along the perimeter of the site on 3rd Street, N Street and 4th Street. These short term spaces will include inverted U-racks placed in high-visibility areas. The Applicant is working in conjunction with DDOT in selecting locations for the racks in public space.

The project will also include secure long-term bicycle parking. The plans identify 200 secure long-term spaces in the proposed development. According to the *DC Zoning Regulations and Bicycle Commuter and Parking Expansion Act of 2007*, all residential developments must provide at least one secure bicycle parking space for each 3 residential units. In addition the number of bicycle parking spaces for all other land uses amount to 5 percent of the automobile parking spaces required. Based on these regulations the development must provide 171 bicycle parking spaces. The development greatly exceeds these requirements.

Having direct access to the alley from an at-grade bicycle storage room as well as the quantity and quality of the on-site bicycle amenities, makes cycling an extremely attractive mode of travel to and from the site.

Pedestrian Facilities

As a result of the development, pedestrian facilities along the perimeter of the site will be improved, for example by removing 11 curb cuts, four on 3rd Street, four on N Street, and three on 4th Street. The development will improve sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

In addition, the Applicant has been meeting with stakeholders and has proffered a contribution toward a study of the potential for a new pedestrian tunnel and entrance to the NoMa-Gallaudet U Metro Station.

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.



TRANSPORTATION DEMAND MANAGEMENT (TDM)

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

The Transportation Demand Management (TDM) plan for the 301-331 N Street development is based on the DDOT expectations for TDM programs. The Applicant proposes the following TDM measures:

- The Applicant will exceed Zoning requirements to provide bicycle parking/storage facilities at the proposed development. This includes secure parking located on-site, short-term bicycle parking around the perimeter of the site, as well as a bike service area.
- The Applicant will unbundle the cost of residential parking from the cost of lease or purchase.
- The Applicant will identify TDM Leaders (for planning, construction, and operations). The TDM Leaders will work with residents in the building to distribute and market various transportation alternatives and options.
- The Applicant will provide TDM materials to new residents in the Residential Welcome Package materials.
- The Applicant will install Transportation Information Center Displays (electronic screens) within the residential, hotel, and office lobbies, containing real-time information related to local transportation alternatives.

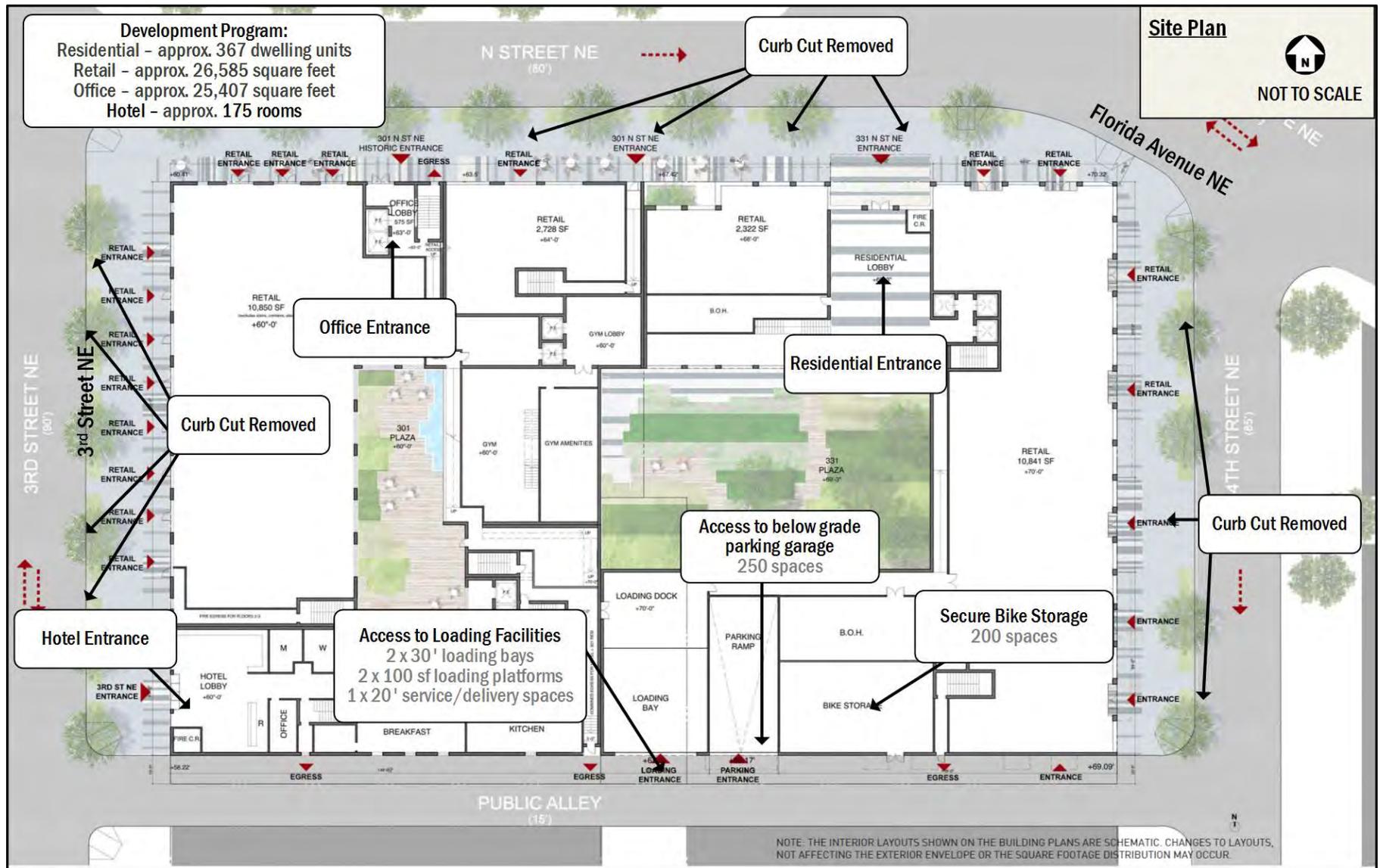


Figure 7: Site Plan

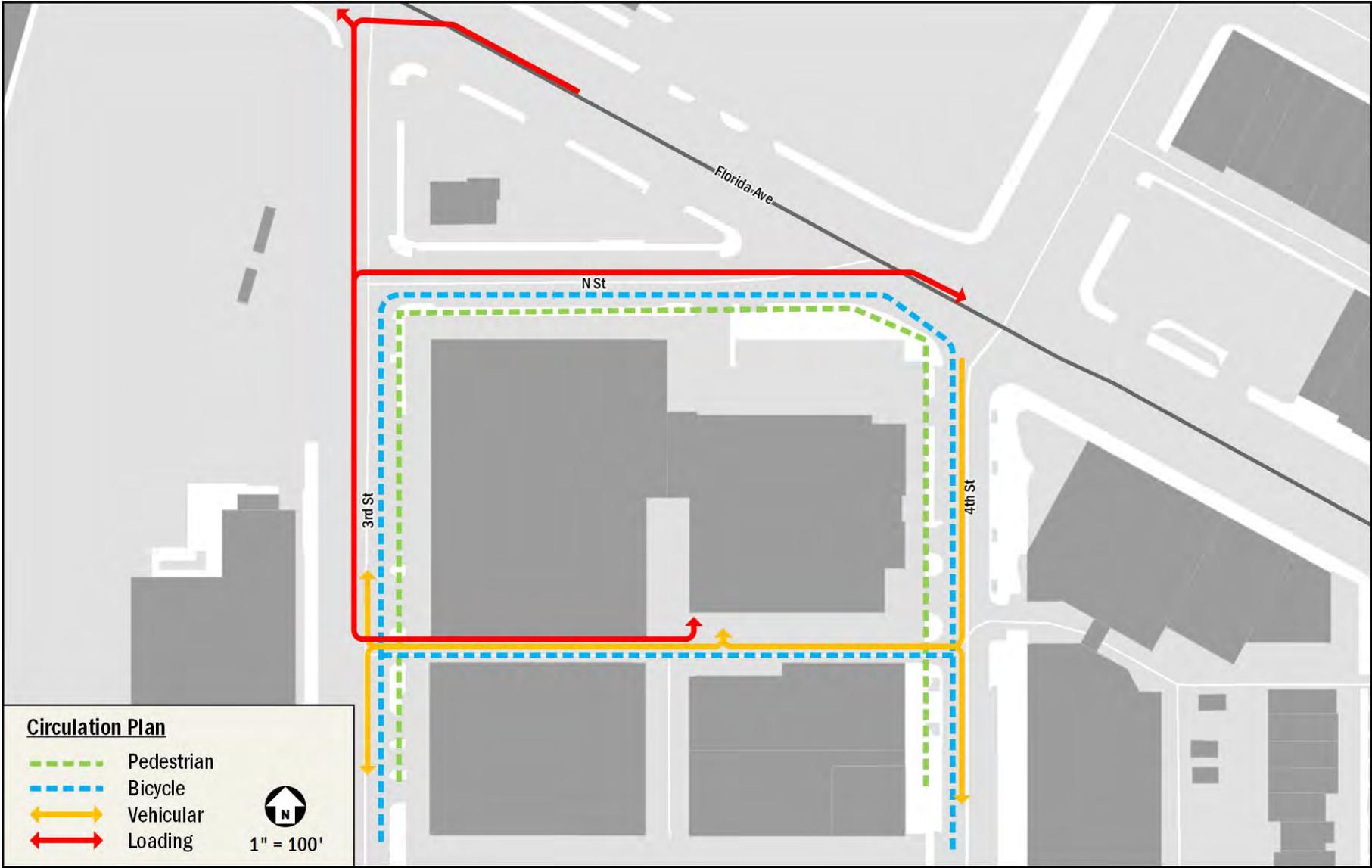


Figure 8: Circulation Plan



TRIP GENERATION

This section outlines the transportation demand of the proposed 301-331 N Street NE project. It summarizes the projected trip generation of the site 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.

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 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 Building. Due to the small scale of office space the ITE rate for General Office Building was used in lieu of the equation. Mode split for the office component was based on census data for employees that travel to the site and data for office sites from WMATA's *Development-Related Ridership Study*.

Hotel trip generation was calculated based on ITE land use 310, Hotel. 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 hotel uses of nearby developments that have recently been studied.

The mode split assumptions for all land uses within the development is summarized in Table 3. A summary of the multimodal trip generation for the development is provided in

Table 2 for the morning and afternoon peak hours. Detailed calculations are included in the Technical Appendix.

Of note, the proposed development is planned to greatly exceed the amount of bicycle parking as required by Zoning by supplying a total of 200 long-term secure on-site bicycle spaces and 30 short-term bicycle spaces around the perimeter of the site, as well as a bike service area and a shower/changing area. As such, the trip generation used for analysis is conservative in its assumptions and reflects a scenario where the abundant availability of bicycle amenities are not realized.

Table 2: Multi-Modal Trip Generation Summary

Land Use	Mode			
	Auto	Transit	Bike	Walk
Residential	40%	35%	5%	20%
Retail	25%	35%	5%	35%
Office	40%	50%	5%	5%
Hotel	40%	40%	5%	15%



Table 3: Summary of Mode Split Assumptions

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Apartments	15 veh/hr	58 veh/hr	73 veh/hr	58 veh/hr	30 veh/hr	88 veh/hr
	Retail	4 veh/hr	3 veh/hr	7 veh/hr	12 veh/hr	13 veh/hr	25 veh/hr
	Office	14 veh/hr	2 veh/hr	16 veh/hr	3 veh/hr	12 veh/hr	15 veh/hr
	Hotel	22 veh/hr	15 veh/hr	37 veh/hr	22 veh/hr	20 veh/hr	42 veh/hr
	Hotel Pass-by	5 veh/hr	5 veh/hr	10 veh/hr	5 veh/hr	5 veh/hr	10 veh/hr
	Total		60 veh/hr	83 veh/hr	143 veh/hr	100 veh/hr	80 veh/hr
Transit	Apartments	15 ppl/hr	58 ppl/hr	73 ppl/hr	57 ppl/hr	30 ppl/hr	87 ppl/hr
	Retail	10 ppl/hr	6 ppl/hr	16 ppl/hr	30 ppl/hr	32 ppl/hr	62 ppl/hr
	Office	20 ppl/hr	3 ppl/hr	23 ppl/hr	4 ppl/hr	18 ppl/hr	22 ppl/hr
	Hotel	48 ppl/hr	34 ppl/hr	82 ppl/hr	48 ppl/hr	44 ppl/hr	92 ppl/hr
	Total		93 ppl/hr	101 ppl/hr	194 ppl/hr	139 ppl/hr	124 ppl/hr
Bike	Apartments	2 ppl/hr	8 ppl/hr	10 ppl/hr	8 ppl/hr	4 ppl/hr	12 ppl/hr
	Retail	1 ppl/hr	1 ppl/hr	2 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr
	Office	2 ppl/hr	0 ppl/hr	2 ppl/hr	0 ppl/hr	2 ppl/hr	2 ppl/hr
	Hotel	6 ppl/hr	4 ppl/hr	10 ppl/hr	6 ppl/hr	6 ppl/hr	12 ppl/hr
	Total		11 ppl/hr	13 ppl/hr	24 ppl/hr	18 ppl/hr	17 ppl/hr
Walk	Apartments	8 ppl/hr	34 ppl/hr	42 ppl/hr	32 ppl/hr	18 ppl/hr	50 ppl/hr
	Retail	10 ppl/hr	6 ppl/hr	16 ppl/hr	30 ppl/hr	32 ppl/hr	62 ppl/hr
	Office	2 ppl/hr	0 ppl/hr	2 ppl/hr	0 ppl/hr	2 ppl/hr	2 ppl/hr
	Hotel	18 ppl/hr	13 ppl/hr	31 ppl/hr	18 ppl/hr	17 ppl/hr	35 ppl/hr
	Total		38 ppl/hr	53 ppl/hr	91 ppl/hr	80 ppl/hr	69 ppl/hr



TRAFFIC OPERATIONS

This section provides a summary of an analysis of the existing and future roadway capacity in the study area. Included is an analysis of potential vehicular impacts of the 301-331 N Street project and a discussion of potential improvements.

The purpose of the capacity analysis is to:

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

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

1. 2016 Existing Conditions
2. 2019 Future Conditions without the development (2019 Background)
3. 2019 Future Conditions with the development (2019 Future)

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

The following conclusions are reached within this chapter:

- The existing study area intersections generally operate at an acceptable 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: North Capitol Street, New York Avenue, and Florida 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.
- The background roadway improvements due to the NoMa two-way conversion project are projected to cause two study intersections to experience unacceptable levels of delay

- There is one approach at one study intersection that operates at an unacceptable level of service as a result of the proposed development.
- Mitigation measures were analyzed and discussed for this intersection, which greatly improve the overall operations at this intersection.
- Overall, this report concludes that the project will not have a detrimental impact to the surrounding transportation network.

STUDY AREA, SCOPE, & METHODOLOGY

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

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

Capacity Analysis Scenarios

The vehicular analyses are performed to determine if the proposed development of the 301-331 N Street development will lead to adverse impacts on traffic operations. (A review of impacts to each of the other modes is outlined later in this report.) This is accomplished by comparing future scenarios: (1) without the proposed development (referred to as the Background condition) and (2) with the development approved and constructed (referred to as the Future condition).

Specifically, the roadway capacity analysis examined the following scenarios:

1. 2016 Existing Conditions
2. 2019 Background Conditions without the development (2019 Background)
3. 2019 Future Conditions with the development (2019 Total 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. North Capitol Street & M Street
2. New York Avenue & 1st Street & O Street NE
3. First Street & M Street NE
4. Florida Avenue & New York Avenue NE
5. Florida Avenue & 2nd Street NE
6. Delaware Avenue & M Street NE
7. 3rd Street & Florida Avenue NE
8. 3rd Street & M Street NE
9. 3rd Street & L Street NE
10. 3rd Street & H Street NE
11. 4th Street & Florida Avenue NE
12. 4th Street & M Street NE
13. 4th Street & L Street NE
14. 5th Street & Florida Avenue NE
15. 5th Street & M Street NE
16. 6th Street & Florida Avenue NE

Figure 9 shows a map of the study area intersections.

Traffic Volume Assumptions

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

Existing Traffic Volumes

The existing traffic volumes are comprised of turning movement count data, which is a mix of new counts and data on record. Figure 9 includes the date at which turning movement data was collected for each study intersection. The results of the traffic counts are included in the Technical Attachments. The existing peak hour traffic volumes are shown on Figure 10. For all intersections the individual morning and afternoon peak hours were used.

2019 Background Traffic Volumes (without the project)

The traffic projections for the 2019 Background conditions consist of the existing volumes with two additions:

- Traffic generated by developments expected to be completed prior to the project (known as background developments); and

- Inherent growth on the roadway (representing regional traffic growth).

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

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

Based on these criteria, and as discussed previously, 12 developments were included in the 2019 Background scenario.

These developments are:

1. 88 M Street NE
2. 44 M Street NE
3. 22 M Street NE
4. AVA NoMa
5. 1270 4th Street
6. Gateway Market
7. 300 M Street
8. Central Armature Works
9. Uline Arena
10. Highline at Union Market
11. Gallaudet 6th Street
12. Angelika (Phase I)

Existing studies were available for all developments except the 88 M Street, 44 M Street, 22 M Street, and AVA NoMa developments. Trip generation was calculated based on the Institute of Transportation Engineers' *Trip Generation Manual*, 9th Edition, with mode splits based on those used for similar developments in the NoMa neighborhood. Trip distribution assumptions for the background developments were based on those determined for the 301-331 N Street development and altered where necessary based on anticipated travel patterns. Mode split and trip generation assumptions for the background developments are shown Table 4.

While the background developments represent local traffic changes, regional traffic growth is typically accounted for using percentage growth rates. The growth rates used in this analysis are derived using the Metropolitan Washington Council of Government's (MwCOG) currently adopted regional



transportation model, comparing the difference between the year 2015 and 2020 model scenarios. The growth rates observed in this model served as a basis for analysis assumptions, and where negative growth was observed, a conservative zero percent annual growth rate was applied to the roadway. Along roadways where no MWCOG data was available, DDOT historical Annual Average Daily Traffic (AADT) data was used to calculate growth rates. If a roadway had neither AADT nor MWCOG data, a conservative 0.25 percent growth rate was applied. The applied growth rates are shown in Table 5.

The traffic volumes generated by the 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 on Figure 11.

2019 Total Future Traffic Volumes (with the project)

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

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 various users of the development.

The residential trip distribution was significantly influenced by the CTPP TAZ flow 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 vehicular trips was the below-grade parking garage along the public alley to the south of the development.

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

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

The hotel distribution was mostly based on the locations of if major routes used by visitors to the District, the locations of major airports in the area such as BWI, DCA, and IAD, major through routes such as I-95/I-495, and the locations of popular tourist attractions, mostly located to the southwest of the site.

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 and specific routing is provided on Figure 12 for outbound trips and on Figure 13 for inbound trips.

The traffic volumes for the 2019 Total Future conditions were calculated by adding the development-generated traffic volumes to the 2019 Background traffic volumes. Thus, the future condition with the proposed development scenario includes traffic generated by: existing volumes, background developments through the year 2019, inherent growth on the network, and the proposed development. The site-generated traffic volumes are shown on Figure 14 and the 2019 Total Future traffic volumes are shown on Figure 15.

Geometry and Operations Assumptions

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

Existing Geometry and Operations Assumptions

The geometry and operations assumed in the existing conditions scenario are those present when the main data collection occurred. Gorove/Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT and confirmed during field reconnaissance.

The lane configurations and traffic controls for the Existing conditions are shown on Figure 16.



Future Geometry and Operations Assumptions

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

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

Based on these criteria, the proposed reconfiguration to Florida Avenue and 6th Street, based on the *Florida Avenue Multimodal Study*, and the NoMa two-way conversion based on the *NoMa Neighborhood Access Study and Transportation Management Plan* were included in the background scenario. Detailed plans are included in the Appendix.

Florida Avenue will be converted to two eastbound and two westbound lanes with a center left-turn lane in certain sections. 6th Street north of Florida Avenue will be improved to include a two-way cycle-track on the east side, widened sidewalks, and curb extensions where possible. 6th Street south of Florida Avenue to K Street will be converted to one-way northbound, improved with widened sidewalks, and improved with a two-way cycle track on the east side.

In NoMa, Pierce Street, Patterson Street, L Street, and M Street will be converted to two-way between First Street NE and North Capitol Street.

Lane configurations and traffic controls for the 2019 Background and Future scenarios are shown on Figure 17.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the three scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. Synchro version 9.1 was used to analyze the study intersections based on the *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 safety or non-auto modes of transportation.

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

Table 6 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2019 Background, and 2019 Future scenarios. The capacity analysis results are shown on Figure 18 for the morning peak hour, and Figure 19 for the afternoon peak hour.

Study intersections generally operate at acceptable conditions during the morning and afternoon peak hours for the Existing, 2019 Background, and 2019 Future scenarios. However, eight intersections operate under unacceptable conditions during one or more peak hours:

- North Capitol Street & M Street
- New York Avenue & 1st Street & O Street NE
- First Street & M Street NE
- Florida Avenue & New York Avenue NE
- Delaware Avenue & M Street NE
- 4th Street & Florida Avenue NE
- 4th Street & M Street NE
- 5th Street & Florida Avenue NE

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at the study intersections. The queuing analysis was performed using Synchro software. The 50th percentile and 95th percentile queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile queue is the maximum back of queue on a median cycle. The 95th percentile queue is the maximum back of queue that is exceeded 5% of the time. For unsignalized intersections, only the 95th percentile queue is reported for each



lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Table 7 shows the queuing results for the study area intersections. Several of the study intersections have a lane group that exceeds its storage length during at least one peak hour in all of the study scenarios. These intersections are as follows:

- North Capitol & M Street
- New York Avenue & 1st Street & O Street NE
- Florida Avenue & New York Avenue NE
- 6th Street & Florida Avenue NE

With the addition of the site-generated traffic, queues are slightly increased at all of the study intersections, but no major impacts are seen as a result of the development.

Mitigations

Generally speaking, the proposed development is considered to have an impact at an intersection within the study area if the capacity analyses show an LOS E or F at an intersection or along an approach in the future conditions with the proposed development where one does not exist in the existing or background conditions. The development is also considered to have an impact if there is an increase in delay at any approach or the overall intersection operating under LOS E or F of greater than 5 seconds, when compared to the background condition. Following these guidelines there are impacts to five intersections as a result of the development. Mitigation measures were tested at this intersection and the following conclusions were made:

- North Capitol Street & M Street NE
Under the 2019 Future conditions the overall delay for the intersection increases by more than the 5 second threshold over the 2019 Background conditions during both study periods.

As mentioned previously, this intersections will fall under the NoMa two-way conversion plan, which will see westbound traffic entering this intersection where none do under existing conditions. The new signal timing plan for this intersection reduces the amount of green time that eastbound traffic receives, increasing delay to unacceptable levels. As such, this intersection experiences a large enough amount of delay that an increase of 0.26%

and 0.38% vehicles in the morning and afternoon peak hours, respectively, meets the threshold for mitigation.

At the request of DDOT, an analysis was conducted to study the impacts of the two-way conversion on the operations of the study intersections that fall under the NoMa two-way conversion plan.

The results show that there is overall less delay at the study intersections under the existing one-way system than under the DDOT-proposed two-way conversion. The results of the one-way versus two-way conversion analysis are included in the Appendix.

As previously mentioned, DDOT is studying operations at this intersection as part of the NoMa two-way conversion project. This report defers to the findings of the DDOT study, as it takes into account more stakeholder input and multimodal considerations.

This report did explore short-term operational mitigations that could be implemented prior to DDOT’s full study. This includes adjusting signal timings such that the eastbound and westbound approaches receive protected left phases, and shifting more green time away from north- and southbound approaches.

- First Street & M Street
Under the 2019 Future conditions the overall delay for the westbound approach increases by more than the 5 second threshold over the 2019 Background conditions during the morning study period.

As discussed above, this intersection was analyzed to study the impact of the NoMa two-way conversion plan, and this report defers to the findings of the DDOT study.

This report did explore short term operational mitigations that could be implemented prior to DDOT’s full study. This includes adjusting signal timings such that the east- and westbound approaches receive more green time.

- New York Avenue & Florida Avenue
Under the 2019 Future conditions the overall delay for the northbound approach increases by more than the 5 second threshold over the 2019 Background conditions during the morning study period.



As discussed in transportation studies for the 300 M Street PUD (ZC No. 14-19) and the Highline at Union Market PUD (ZC No. 15-01), this intersection should be examined through a regional transportation planning effort as delays and queuing issues at this intersection area a result of the limited throughput the intersection can accommodate along with metering that is caused by issues up- and down-stream from the intersection.

- Delaware Avenue & M Street NE

Under the 2019 Future conditions the overall delay for the overall intersection increases by more than the 5 second threshold over the 2019 Background conditions during the morning study period.

As discussed in transportation study for the 300 M Street PUD (ZC No. 14-19), the addition of background trips to M Street combined with the limited green time received by the eastbound and westbound approaches does not allow for adequate capacity to accommodate the number of vehicles that are anticipated to access this intersection. This intersection can be improved by extending the green time associated with the eastbound and westbound approaches along M Street.

- 3rd Street & Florida Avenue NE

Under the 2019 Future conditions the overall delay for the southbound approach increases by more than the 5 second threshold over the 2019 Background conditions during the afternoon study period.

This intersection can be improved by adjusting signal timings to that the northbound and southbound approaches receive more green time. Due to the heavy traffic along Florida Avenue, shifting more green time to the northbound and southbound movements will create capacity concerns along Florida Avenue, but will not deteriorate conditions to an unacceptable level.



Table 4: Summary of Background Development Trip Generation

Background Development	ITE Land Use Code Trip Generation, 9th Ed.	Quantity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
88 M Street NE	710 General Office Building	315,000 sf	422	57	479	73	358	431
		Non-Auto Reduction: 50%	-211	-29	-240	-37	-179	-216
	820 Shopping Center (Rate)	6,500 sf	4	2	6	12	12	24
		Non-Auto Reduction: 50%	-2	-1	-3	-6	-6	-12
		Total Trips	213	30	243	43	185	228
44 M Street NE	710 General Office Building	315,000 sf	422	57	479	73	358	431
		Non-Auto Reduction: 50%	-211	-29	-240	-37	-179	-216
	820 Shopping Center (Rate)	6,500 sf	4	2	6	12	12	24
		Non-Auto Reduction: 50%	-2	-1	-3	-6	-6	-12
		Total Trips	213	30	243	43	185	228
22 M Street NE	220 Apartment	285 dwelling units	29	114	143	113	61	174
		Non-Auto Reduction: 50%	-15	-57	-72	-57	-31	-87
	820 Shopping Center (Rate)	5,000 sf	3	2	5	9	10	19
		Non-Auto Reduction: 50%	-2	-1	-3	-5	-5	-10
		Total Trips	16	58	74	61	36	97
AVA NoMa	220 Apartment	435 dwelling units	43	174	217	167	90	257
		Non-Auto Reduction: 50%	-22	-87	-109	-84	-45	-129
	820 Shopping Center (Rate)	6,500 sf	4	2	6	12	12	24
		Non-Auto Reduction: 50%	-2	-1	-3	-6	-6	-12
		Total Trips	24	88	112	90	51	141
1270 4th Street	Based on Approved TIS							
		Total Trips	93	145	238	288	256	544
Gateway Market	Based on Approved TIS							
		Total Trips	43	42	85	54	63	117
300M	Based on Approved TIS							
		Total Trips	26	90	116	97	57	154
Central Armature Works	Based on Pending TIS							
		Total Trips	55	111	166	132	92	224
Uline Arena	Based on Approved TIS							
		Total Trips	135	26	161	70	156	226
Highline at Union Market	Based on Approved TIS							
		Total Trips	20	66	86	74	44	118
Gallaudet 6th Street	Based on Pending TIS							
		Total Trips	347	230	577	279	402	681
Angelika (Phase I)	Based on Approved TIS							
		Total Trips	303	41	344	148	335	483
Net Background Site Trips			1,488	956	2,444	1,378	1,862	3,239



Table 5: Applied Annual and Total Growth Rates

Road & Direction	Proposed Annual Growth Rate		Total Growth between 2016 and 2019	
	AM Peak	PM Peak	AM Peak	PM Peak
North Capitol Street – Northbound	1.25%	0.25%	5.1%	1.0%
North Capitol Street – Southbound	0.25%	0.50%	1.0%	2.0%
New York Avenue NE – Northeastbound	1.25%	0.25%	5.1%	1.0%
New York Avenue NE – Southwestbound	0.25%	0.50%	1.0%	2.0%
Florida Avenue NE – Northwestbound	0.25%	1.00%	1.0%	4.1%
Florida Avenue NE – Southeastbound	1.50%	0.25%	6.1%	1.0%
First Street NE – Northbound	0.00%	0.50%	0.0%	2.0%
First Street NE – Southbound	2.00%	0.00%	8.2%	0.0%
3rd Street NE – Northbound	9.00%	7.50%	41.2%	33.6%
3rd Street NE – Southbound	6.50%a	5.00%	28.7%	21.6%
4th Street NE – Southbound	1.50%	1.25%	6.1%	5.1%
6th Street NE – Northbound	0.00%	0.00%	0.0%	0.0%
6th Street NE – Southbound	0.50%	0.00%	2.0%	0.0%
M Street NE – Eastbound*	9.00%	9.00%	41.2%	41.2%
M Street NE – Westbound*	9.00%	9.00%	41.2%	41.2%

* based on DDOT AADTs

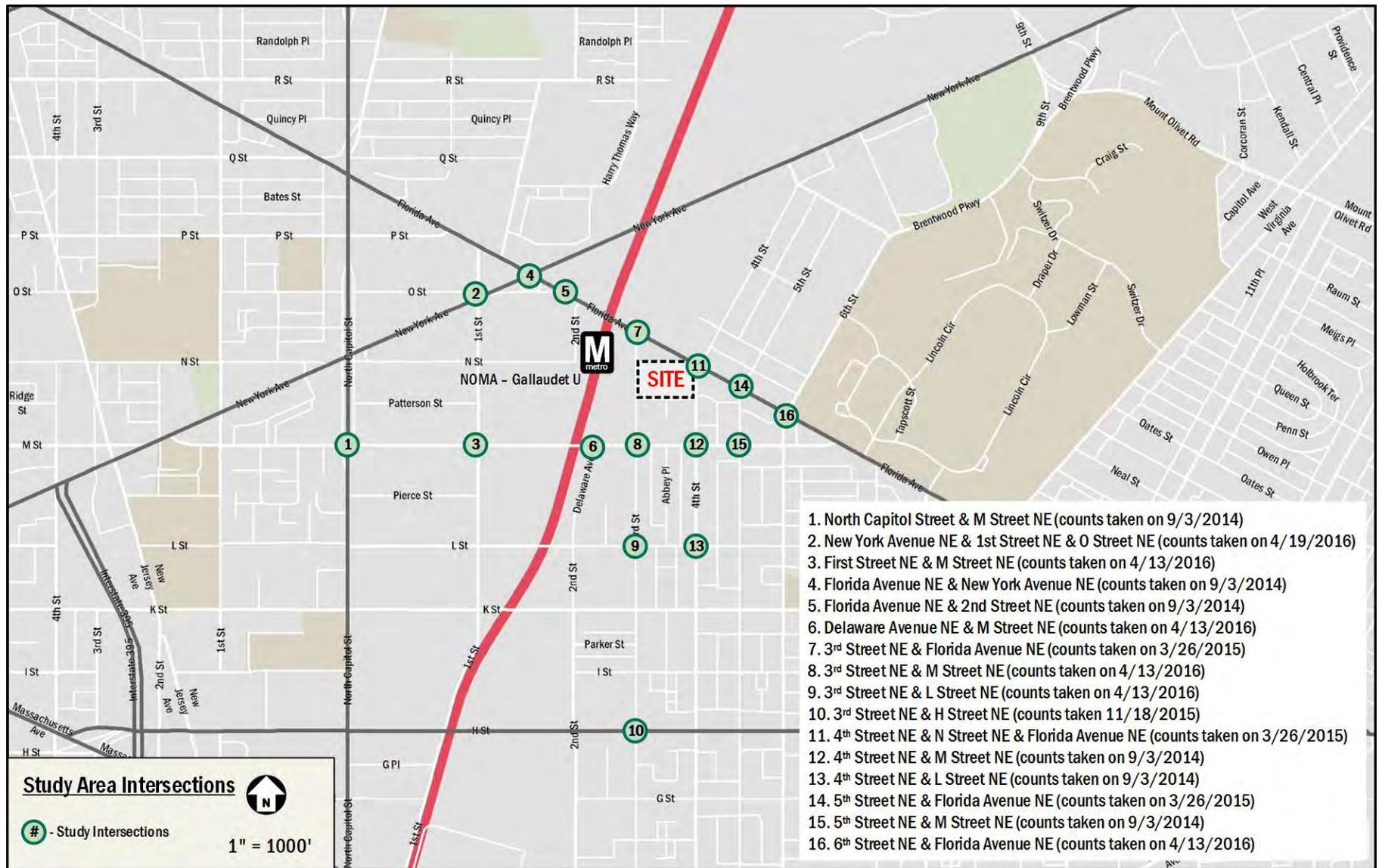


Figure 9: Study Area

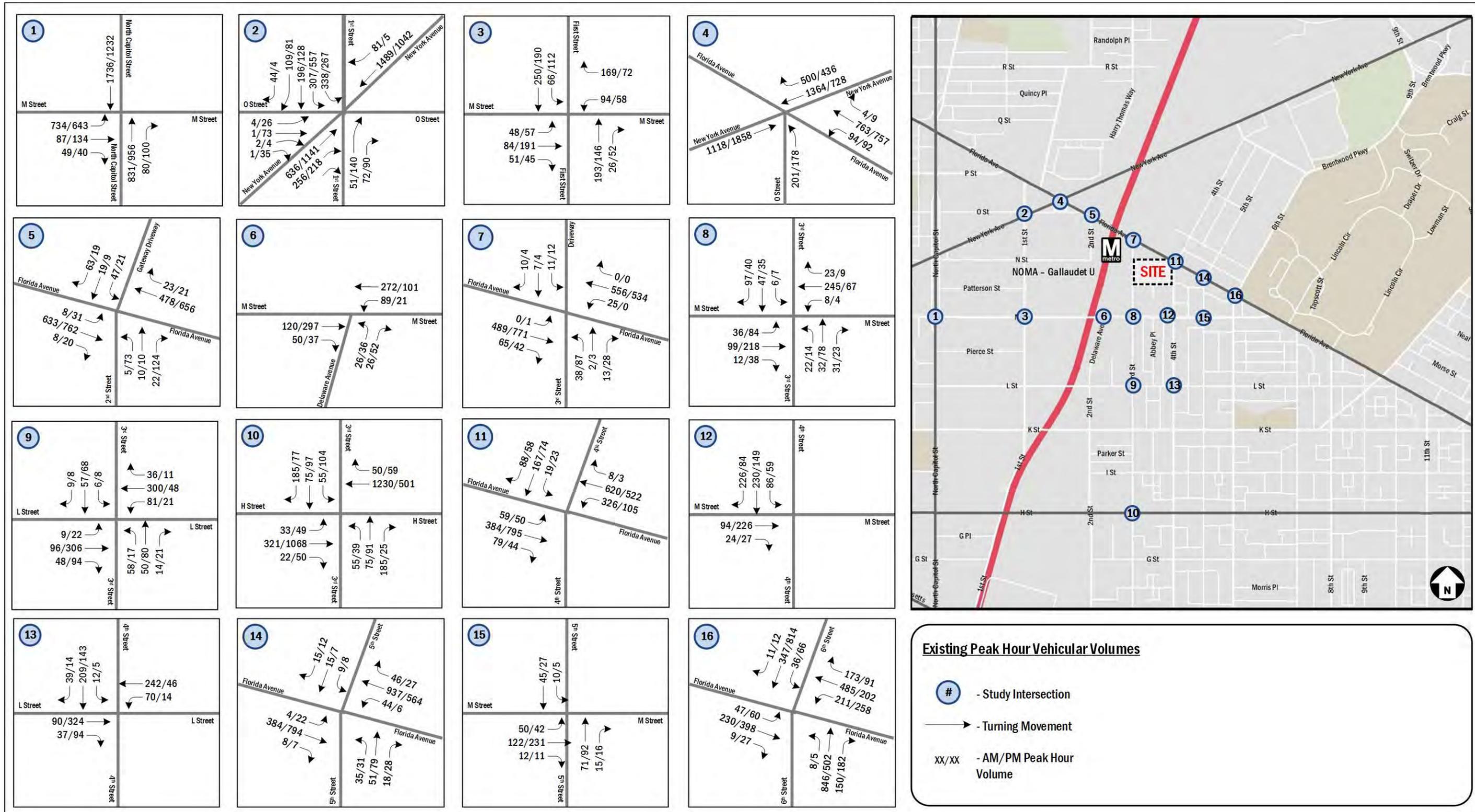


Figure 10: Existing Peak Hour Traffic Volumes

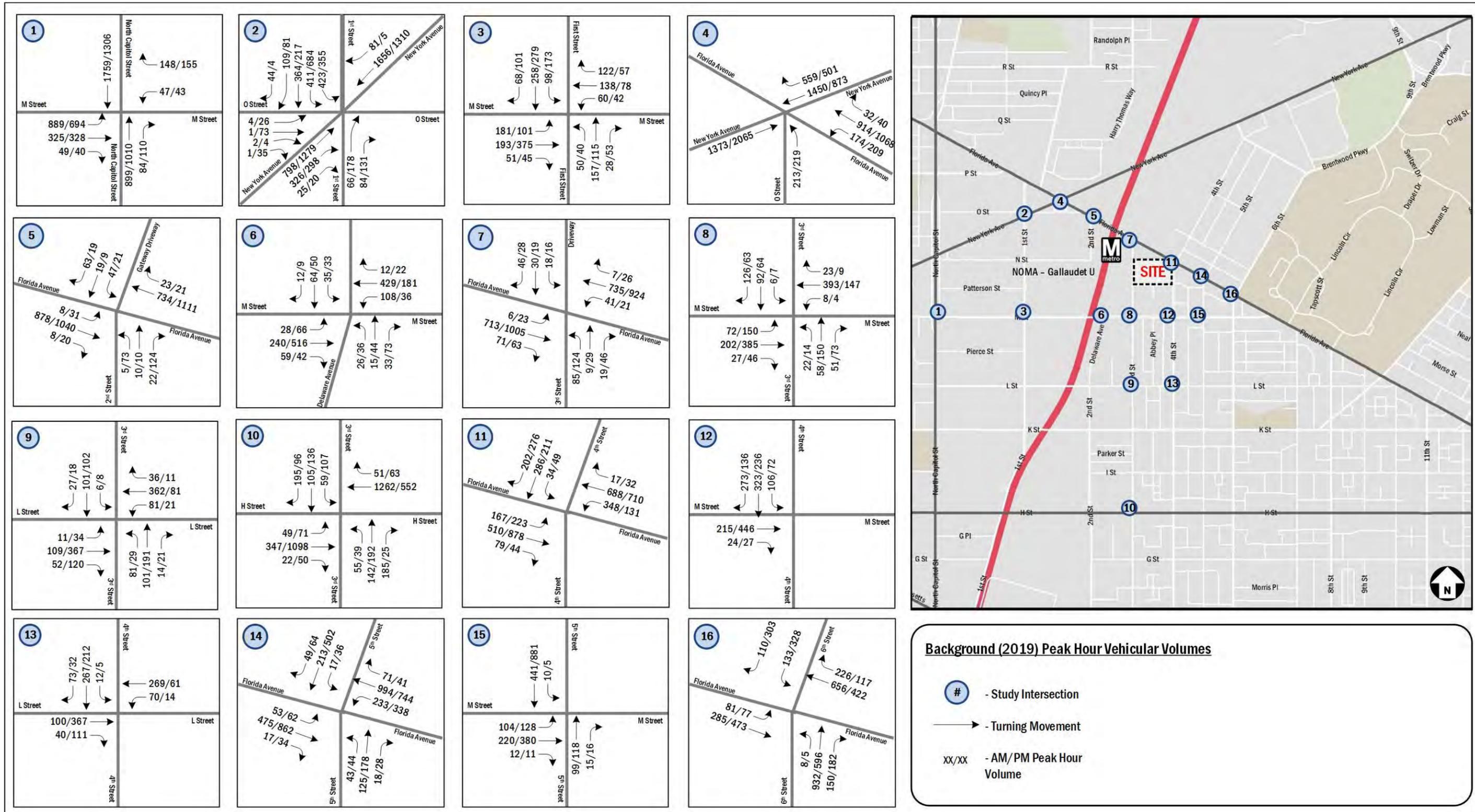


Figure 11: Background Peak Hour Traffic Volumes



Figure 12: Outbound Trip Distribution and Routing

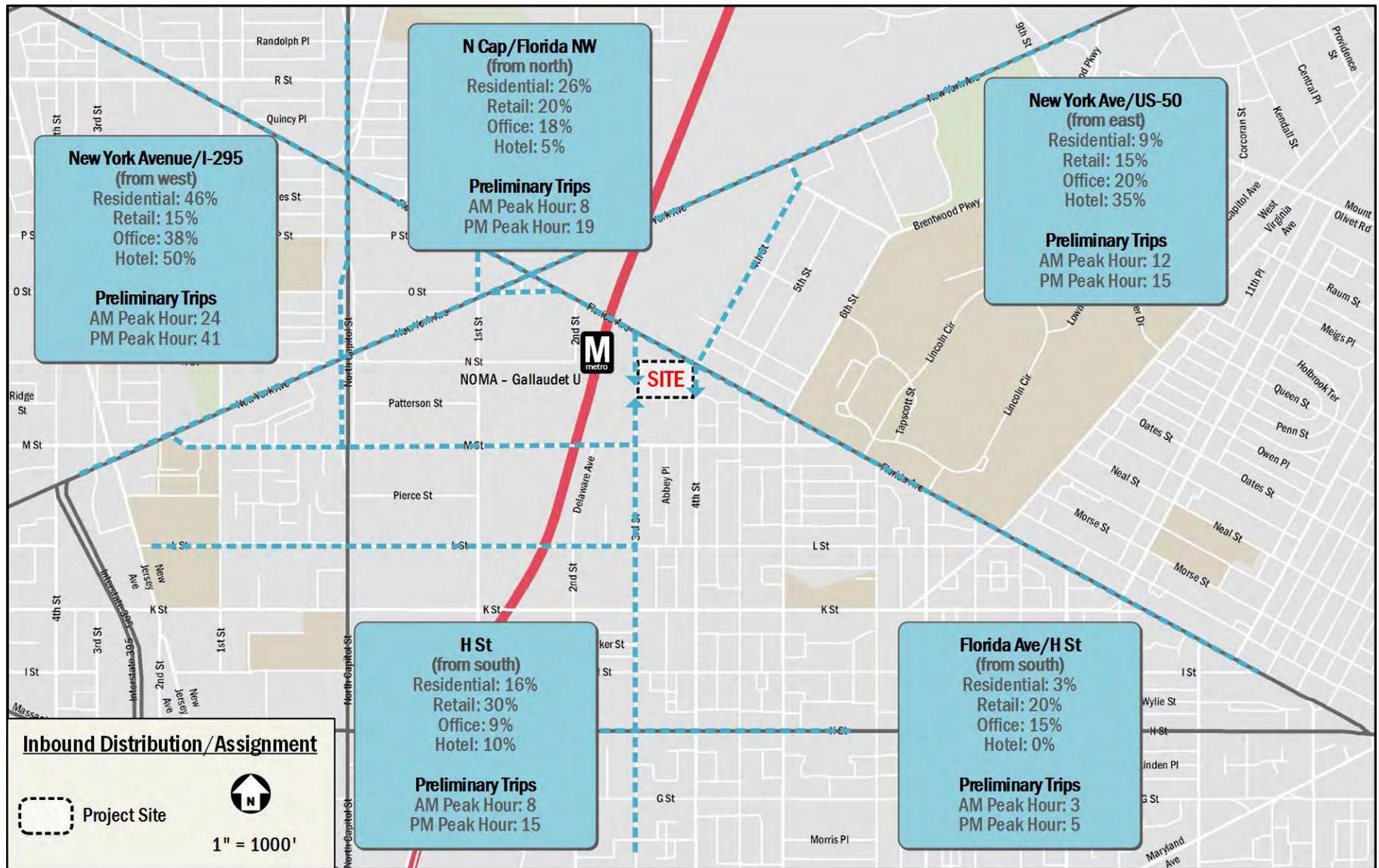


Figure 13: Inbound Trip Distribution and Routing

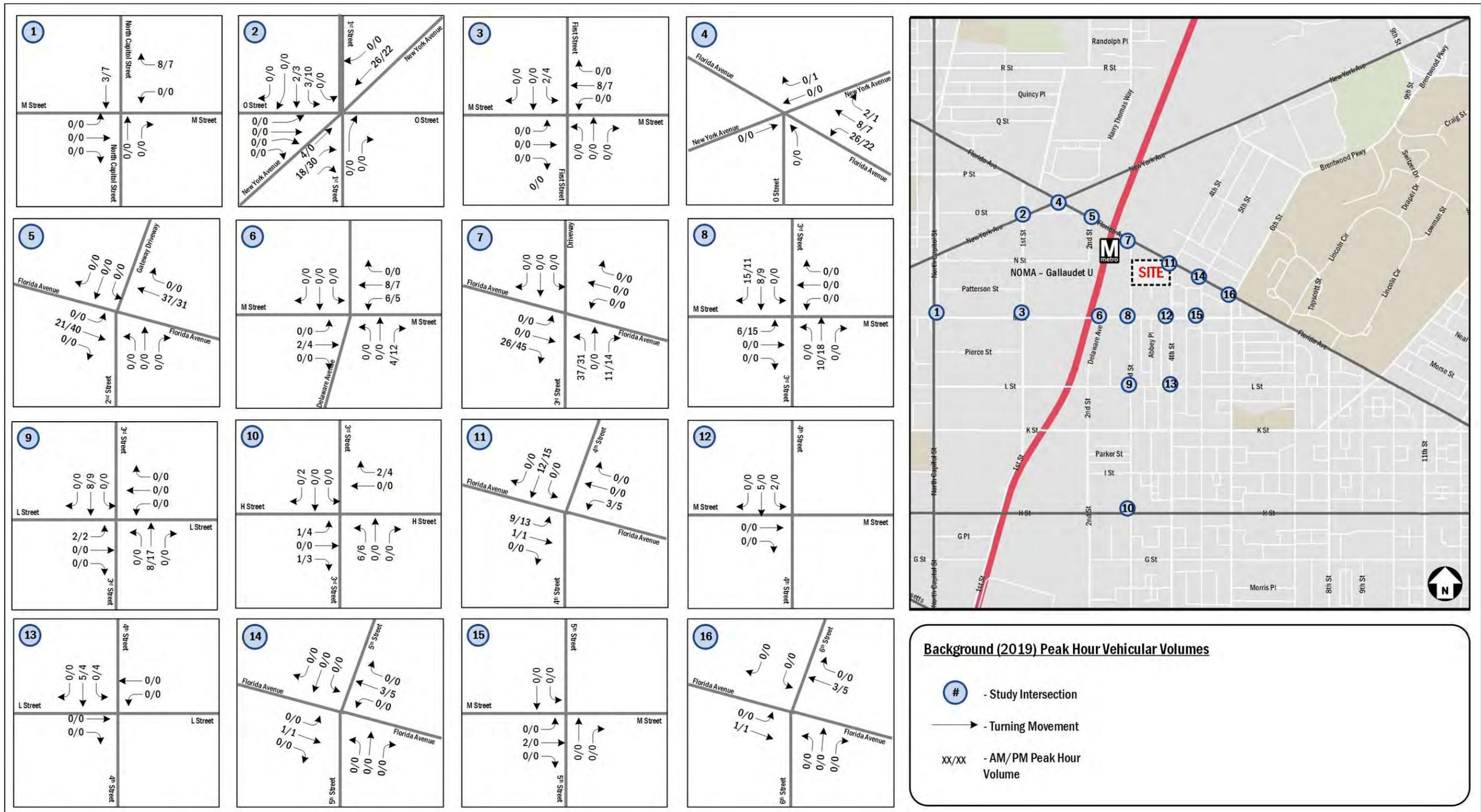


Figure 14: Site-Generated Peak Hour Traffic Volumes

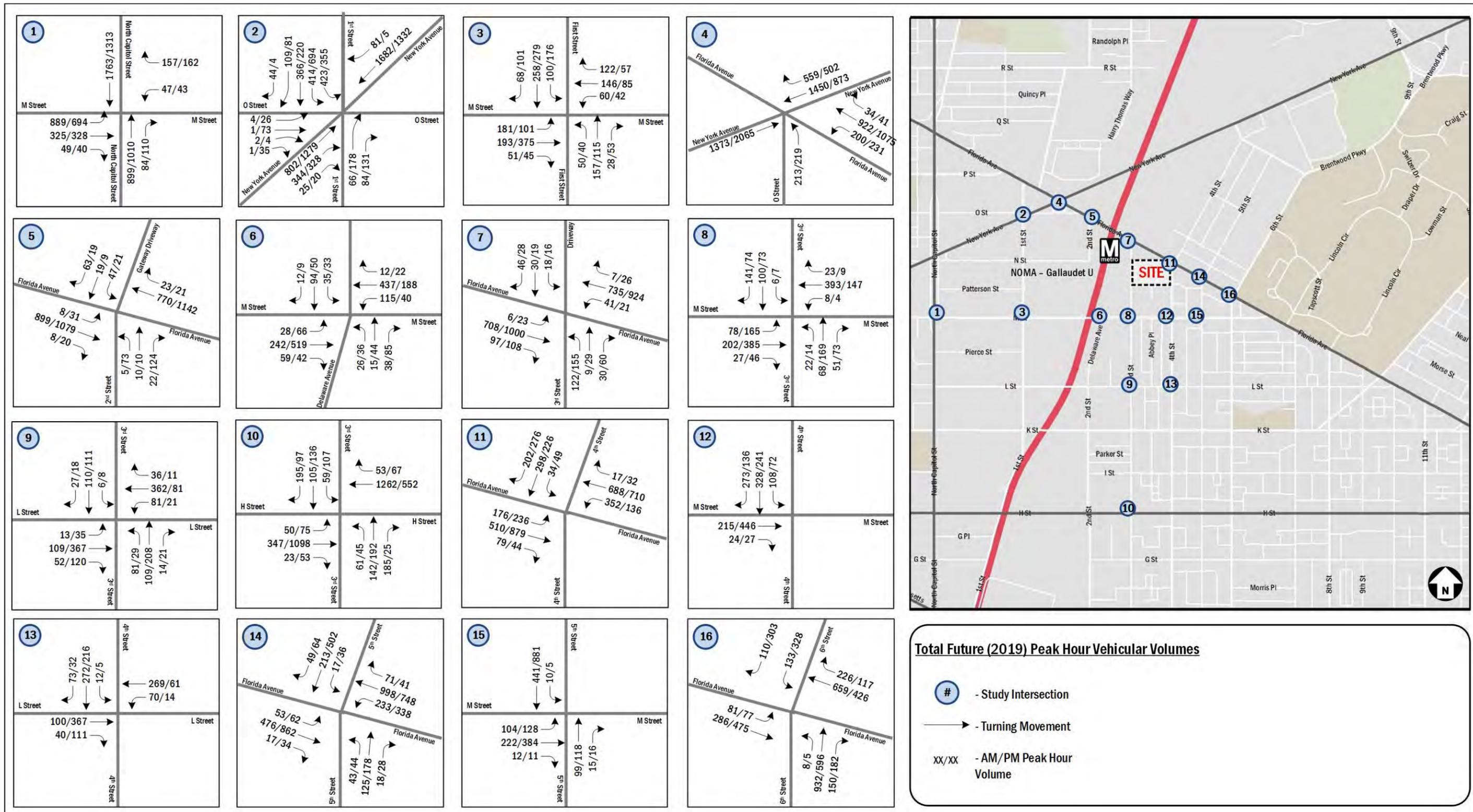


Figure 15: Total Future Peak Hour Traffic Volumes

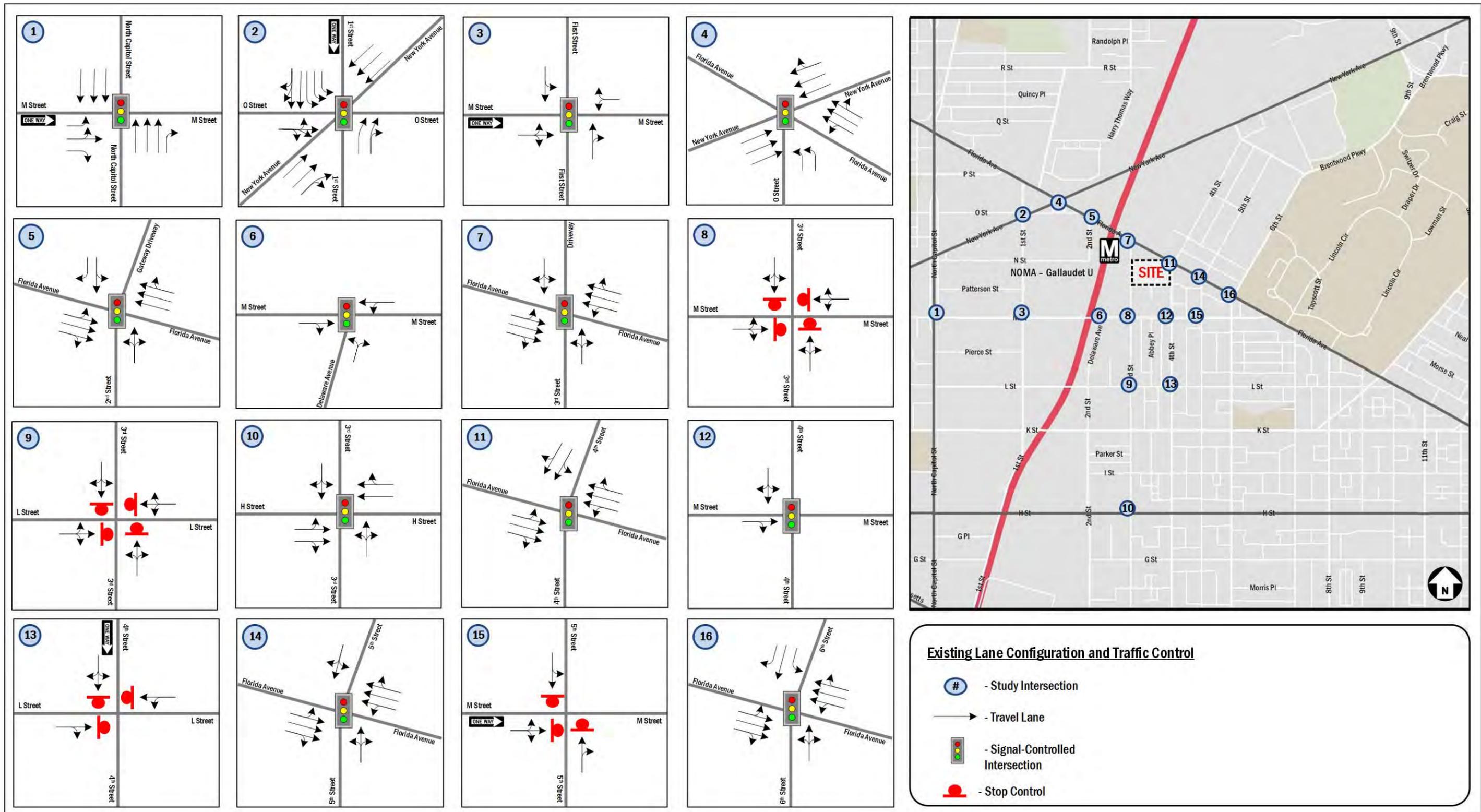


Figure 16: Current Lane Configuration and Traffic Controls

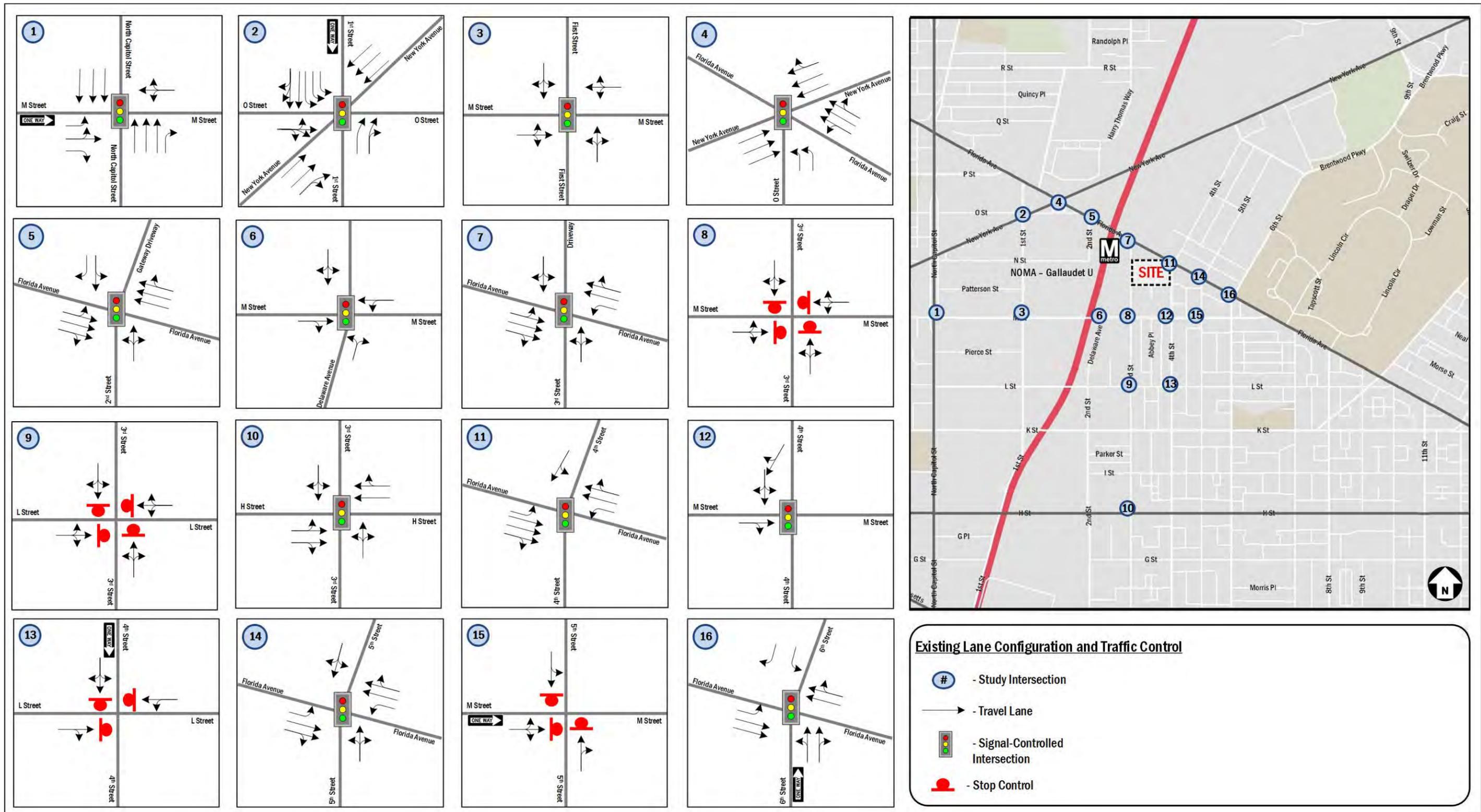


Figure 17: Future Lane Configuration and Traffic Controls



Table 6: LOS Results

Intersection	Approach	Existing Conditions (2016)				Future Background Conditions (2019)				Total Future Conditions (2019)			
		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
1. North Capitol Street & M Street	Overall	24.0	C	22.9	C	517.1	F	403.3	F	542.4	F	420.8	F
	Eastbound	44.3	D	53.2	D	1577.0	F	1225.2	F	1653.0	F	1278.4	F
	Westbound	--	--	--	--	371.8	F	765.9	F	424.3	F	810.0	F
	Northbound	13.9	B	11.4	B	17.4	B	17.6	B	17.4	B	17.6	B
	Southbound	18.8	B	12.9	B	24.1	C	20.4	C	24.2	C	20.5	C
2. New York Avenue & 1st Street & O Street NE	Overall	86.5	F	63.2	E	99.8	F	76.8	E	99.2	F	77.5	F
	Eastbound	22.0	C	27.7	C	24.2	C	30.6	C	24.5	C	31.2	C
	Westbound	19.0	B	15.9	B	20.3	C	17.3	B	20.5	C	17.4	B
	Northbound to NY	71.4	E	103.8	F	77.0	E	161.4	F	77.0	E	161.4	F
	Northbound to O	61.7	E	60.1	E	61.8	E	60.6	E	61.8	E	60.6	E
	Southbound	250.4	F	78.3	E	265.2	F	123.5	F	264.9	F	126.5	F
	O Street Eastbound	72.1	E	616.4	F	72.1	E	616.4	F	72.1	E	616.4	F
3. First Street & M Street NE	Overall	59.5	E	26.2	C	146.8	F	63.2	E	127.4	F	64.3	E
	Eastbound	33.9	C	22.9	C	399.8	F	46.6	D	334.1	F	46.6	D
	Westbound	166.4	F	46.7	D	59.7	E	10.6	B	67.2	E	11.5	B
	Northbound	10.9	B	19.2	B	12.0	B	20.9	C	12.0	B	20.9	C
	Southbound	12.8	B	25.0	C	18.1	B	115.9	F	18.3	B	119.0	F
4. Florida Avenue & New York Avenue NE	Overall	32.7	C	28.8	C	39.2	D	58.7	E	41.3	D	62.6	E
	Eastbound	18.5	B	21.4	C	20.2	C	23.7	C	20.2	C	23.7	C
	Westbound	25.8	C	17.3	B	28.5	C	18.7	B	28.5	C	18.7	B
	Northbound	43.7	D	47.2	D	60.8	E	141.7	F	68.3	E	154.5	F
	Northbound O Street	123.1	F	92.8	F	141.3	F	143.2	F	141.3	F	143.2	F
5. Florida Avenue & 2nd Street NE	Overall	19.1	B	18.6	B	24.7	C	21.0	C	27.0	C	21.0	C
	Eastbound	6.6	A	6.9	A	7.1	A	7.6	A	7.2	A	7.7	A
	Westbound	33.4	C	27.6	C	45.1	D	31.3	C	49.8	D	31.1	C
	Northbound	30.2	C	35.8	D	30.2	C	38.1	D	30.2	C	38.5	D
	Southbound	20.3	C	24.8	C	20.3	C	24.8	C	20.3	C	24.8	C
6. Delaware Avenue & M Street NE	Overall	35.5	D	25.0	C	126.3	F	92.2	F	138.9	F	94.7	F
	Eastbound	27.4	C	28.7	C	41.1	D	146.5	F	41.1	D	152.3	F
	Westbound	42.9	D	25.1	C	214.4	F	34.0	C	237.4	F	36.8	D
	Southbound	--	--	--	--	11.3	B	12.1	B	11.4	B	12.2	B
	Northbound	11.0	B	11.3	B	11.7	B	11.5	B	11.7	B	11.5	B



7.	3rd Street & Florida Avenue NE	Overall	8.3	A	13.6	B	10.9	B	16.5	B	12.5	B	19.8	B
		Eastbound	5.7	A	13.7	B	6.1	A	15.5	B	6.1	A	16.0	B
		Westbound	7.0	A	6.6	A	8.1	A	8.7	A	8.1	A	8.7	A
		Southbound	32.8	C	38.5	D	39.2	D	51.0	D	47.7	D	72.1	E
		Northbound	31.3	C	31.2	C	33.7	C	32.3	D	33.7	C	32.3	C
8	3rd Street & M Street NE	Eastbound	9.7	A	11.8	B	18.0	C	60.3	F	20.1	C	61.4	F
		Westbound	11.0	B	8.8	A	26.1	D	13.2	B	30.1	D	13.8	B
		Northbound	9.1	A	9.3	A	12.6	B	16.0	C	13.6	B	17.6	C
		Southbound	9.5	A	8.8	A	15.2	C	12.7	B	17.3	C	13.6	B
9.	3rd Street & L Street NE	Eastbound	9.9	A	13.7	B	12.3	B	31.7	D	12.7	B	34.9	D
		Westbound	15.6	C	8.9	A	30.0	D	11.2	B	31.9	D	11.5	B
		Northbound	10.5	B	9.7	A	14.2	B	14.9	B	14.7	B	16.0	C
		Southbound	9.8	A	9.4	A	12.4	B	11.7	B	12.9	B	12.2	B
10.	3rd Street & H Street NE	Overall	37.8	D	26.2	C	41.4	D	31.1	C	41.9	D	32.1	C
		Eastbound	18.2	B	25.7	C	20.0	B	32.5	C	20.1	C	34.5	C
		Westbound	45.6	D	24.5	C	49.6	D	25.2	C	50.0	D	25.3	C
		Northbound	34.9	C	25.8	C	39.9	D	28.9	C	41.8	D	29.3	C
		Southbound	35.2	D	31.4	C	40.5	D	38.1	D	40.5	D	38.3	D
11.	4th Street & Florida Avenue NE	Overall	25.3	C	78.2	E	71.3	E	155.1	F	71.3	F	154.5	F
		Eastbound	49.7	D	125.0	F	168.0	F	312.6	F	167.3	F	311.4	F
		Westbound	10.0	A	24.6	C	17.8	B	27.6	C	18.0	B	27.6	C
		Southbound	29.2	C	27.4	C	34.0	C	32.1	C	34.6	C	32.6	C
12.	4th Street & M Street NE	Overall	15.6	B	22.2	C	23.1	C	70.5	E	23.2	C	69.9	E
		Eastbound	34.0	C	41.3	D	42.5	D	135.2	F	42.5	D	135.2	F
		Southbound	11.9	B	7.4	A	17.0	B	8.9	A	17.2	B	9.0	A
13.	4th Street & L Street NE	Eastbound	9.4	A	12.6	B	10.4	B	17.1	C	10.4	B	17.3	C
		Westbound	12.4	B	8.6	A	14.9	B	9.4	A	15.0	B	9.4	A
		Southbound	12.0	B	9.9	A	16.2	C	12.5	B	16.6	C	12.6	B
14.	5th Street & Florida Avenue NE	Overall	14.8	B	7.3	A	20.0	B	68.5	E	20.0	B	68.8	E
		Eastbound	17.7	B	1.4	A	20.8	C	6.7	A	20.8	C	6.7	A
		Westbound	12.7	B	10.4	B	17.2	B	105.2	F	17.3	B	105.9	F
		Northbound	21.5	C	23.6	C	24.4	C	34.7	C	24.4	C	34.7	C
		Southbound	19.9	B	20.9	C	27.3	C	106.4	F	27.3	C	106.4	F
15.	5th Street & M Street NE	Eastbound	8.9	A	10.0	B	18.4	C	62.1	F	18.6	C	62.0	F
		Northbound	8.0	A	8.5	A	10.6	B	12.8	B	10.6	B	12.8	B
		Southbound	8.0	A	8.1	A	26.3	D	61.8	F	26.4	D	61.8	F
16.	6th Street & Florida Avenue NE	Overall	32.3	C	26.3	C	39.7	D	34.2	C	40.0	D	34.2	C
		Eastbound	31.8	C	49.2	D	89.4	F	44.7	D	89.4	F	44.7	D
		Westbound	43.0	D	34.9	C	59.5	E	34.4	C	60.4	E	34.6	C
		Northbound	32.7	C	16.6	B	11.3	B	10.0	A	11.3	B	10.0	A
		Southbound	9.3	A	17.1	B	16.9	B	56.5	E	16.9	B	56.5	E



Table 7: Queuing Results

Intersection	Lane Group	Storage Length (ft)	Existing Conditions (2016)				Background Conditions (2019)				Future Conditions (2019)			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
1. North Capitol Street & M Street	Eastbound Left	230	307	#484	288	#472	~864	#1104	~674	#898	~871	#1111	~680	#904
	Eastbound Thru	230	306	#481	291	#469	~914	#1035	~694	#917	~803	#1046	~698	#922
	Eastbound Right	100	14	42	9	37	0	17	0	8	0	17	0	8
	Westbound	780	--	--	--	--	~128	#281	~153	#307	~143	#299	~165	#322
	Northbound Thru	335	122	150	120	146	152	186	164	199	152	186	164	199
	Northbound Right	100	4	29	4	27	0	23	5	35	0	23	5	35
	Southbound Thru	1375	316	368	186	217	373	433	258	299	374	435	259	301
2. New York Avenue & 1st Street & O Street NE	Eastbound Thru	870	219	253	368	417	298	338	461	519	306	346	477	535
	Westbound Thru	175	359	405	208	239	421	472	282	320	432	484	289	327
	Northbound R to NY	330	52	100	151	#283	69	126	~216	#382	69	126	~216	#382
	Northbound R to O	330	0	25	0	57	0	40	0	68	0	40	0	68
	Southbound L to NY	175	~472	#681	280	#438	~662	#887	~442	#653	~662	#887	~442	#653
	Southbound L to O	175	161	215	305	#411	225	#300	~434	#563	226	#304	~445	#575
	Southbound Thru	175	183	268	111	175	383	#568	199	288	387	#576	203	292
	Southbound Right	175	~128	#289	5	141	~128	#289	5	#141	~128	#289	5	#141
3. First Street & M Street NE	O St Eastbound	750	7	26	~223	#376	7	26	~223	#376	7	26	~223	#376
	Eastbound	785	102	167	146	218	~481	#635	349	#535	~464	#618	350	#535
	Westbound	730	~90	m#199	71	125	~89	m58	21	54	~246	m58	22	67
	Northbound	600	66	108	84	131	75	125	93	147	75	125	93	147
4. Florida Avenue & New York Avenue NE	Southbound	270	112	174	150	243	180	291	~444	#658	182	294	~449	#663
	Eastbound	190	197	235	381	438	261	306	456	522	261	306	456	522
	Westbound	1840	415	481	208	246	475	549	264	308	475	549	264	309
	Northbound	220	234	285	236	289	329	#427	~472	#570	345	#453	~492	#590
5. Florida Avenue & 2nd Street NE	O Street Northbound	155	~88	#171	76	#145	~101	#187	~104	#188	~101	#183	~104	#188
	Eastbound	185	56	72	75	97	82	102	109	138	84	106	115	144
	Westbound	345	120	157	78	206	197	#262	131	#449	209	#283	131	m#458
	Northbound	240	9	35	86	166	9	35	104	185	9	35	106	188
	Southbound LT	65	40	76	18	42	40	76	18	42	40	76	18	42
6. Delaware Avenue & M Street NE	Southbound Right	65	13	25	4	10	13	25	4	10	13	25	4	10
	Eastbound	730	70	140	185	281	210	m179	~553	m#597	212	m188	~561	m#603
	Westbound	200	236	#377	66	108	~533	#727	145	218	~560	#755	156	235
	Northbound	640	9	26	12	33	14	37	30	64	14	37	31	66
7. 3rd Street & Florida Avenue NE	Southbound	100	--	--	--	--	33	63	27	53	33	63	27	53
	Eastbound	345	32	33	120	150	54	64	182	223	54	64	191	234
	Westbound Left	115	--	--	--	--	10	24	5	14	10	25	5	14
	Westbound	380	54	70	45	60	111	144	145	185	111	144	145	185



	Northbound	690	24	56	69	121	69	120	132	#220	106	171	171	#300	
	Southbound	100	11	34	10	29	34	76	21	55	34	76	21	55	
8	3rd Street & M Street NE	Eastbound	200	--	--	--	--	--	--	--	--	--	--	--	
		Westbound	350	--	--	--	--	--	--	--	--	--	--	--	
		Northbound	650	--	--	--	--	--	--	--	--	--	--	--	
		Southbound	690	--	--	--	--	--	--	--	--	--	--	--	
9.	3rd Street & L Street NE	Eastbound	360	--	--	--	--	--	--	--	--	--	--	--	
		Westbound	340	--	--	--	--	--	--	--	--	--	--	--	
		Northbound	360	--	--	--	--	--	--	--	--	--	--	--	
		Southbound	650	--	--	--	--	--	--	--	--	--	--	--	
10.	3rd Street & H Street NE	Eastbound	920	~238	#321	~633	#846	~362	#443	~821	#958	~363	#445	~838	#976
		Westbound	320	521	#680	169	218	544	#709	189	243	545	#710	191	245
		Northbound	370	141	250	27	69	203	338	96	157	212	354	101	165
		Southbound	310	137	247	116	191	180	313	178	277	180	314	179	279
11.	4th Street & Florida Avenue NE	Eastbound Left	380	--	--	--	--	117	#199	150	#274	124	#215	161	#298
		Eastbound	380	130	166	~267	#356	~292	#390	~503	#633	~292	#390	~504	#633
		Westbound Left	250	--	--	--	--	82	159	77	m127	84	161	81	m133
		Westbound	250	49	70	143	182	87	151	261	m324	87	152	261	m324
		Southbound	200	63	93	28	51	138	182	102	144	147	192	112	155
12.	4th Street & M Street NE	Eastbound	350	61	115	150	235	148	234	~378	#580	148	234	~378	#580
		Southbound	450	~829	#990	~440	m#553	~1099	m#1190	~689	m#804	~1110	m#1199	~703	m#822
13.	4th Street & L Street NE	Eastbound	340	--	--	--	--	--	--	--	--	--	--	--	
		Westbound	250	--	--	--	--	--	--	--	--	--	--	--	
		Southbound	630	--	--	--	--	--	--	--	--	--	--	--	
14.	5th Street & Florida Avenue NE	Eastbound Left	230	--	--	--	--	41	m33	1	m0	41	m33	1	m0
		Eastbound	230	107	m133	6	m2	196	m155	102	m2	196	m156	102	m2
		Westbound Left	240	--	--	--	--	144	m198	~315	#480	143	m197	~317	#480
		Westbound	240	163	201	67	86	339	m381	196	240	342	m382	198	242
		Northbound	320	46	81	66	109	97	149	152	231	97	149	152	231
		Southbound	200	12	33	7	25	155	223	~522	#681	155	223	~522	#681
15.	5th Street & M Street NE	Eastbound	230	--	--	--	--	--	--	--	--	--	--	--	
		Northbound	630	--	--	--	--	--	--	--	--	--	--	--	
		Southbound	310	--	--	--	--	--	--	--	--	--	--	--	
16.	6th Street & Florida Avenue NE	Eastbound Left	110	--	--	--	--	~61	#160	53	#m100	~61	#160	53	m#101
		Eastbound	240	36	67	123	160	77	121	171	m191	77	121	171	m192
		Westbound	280	182	#241	108	148	284	#418	152	208	284	#418	153	211
		Northbound	150	539	#880	308	435	190	242	137	172	190	242	137	172
		Southbound Left	190	9	25	18	39	52	#164	~260	#436	52	#164	~260	#436
		Southbound Thru	190	101	153	367	538	--	--	--	--	--	--	--	--
		Southbound Right	190	0	4	0	5	19	41	60	106	19	41	61	107

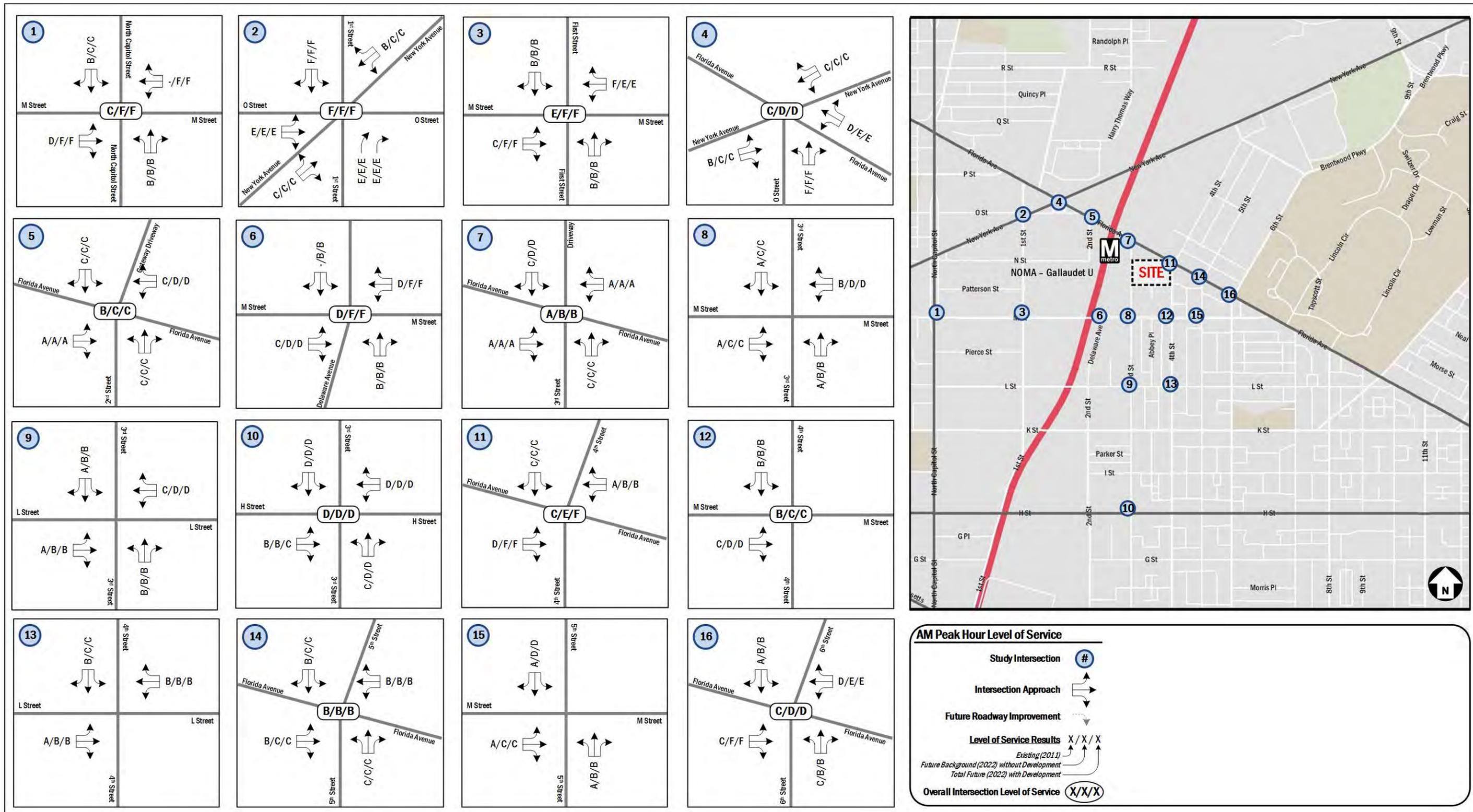


Figure 18: Morning Peak Hour Capacity Analysis Results

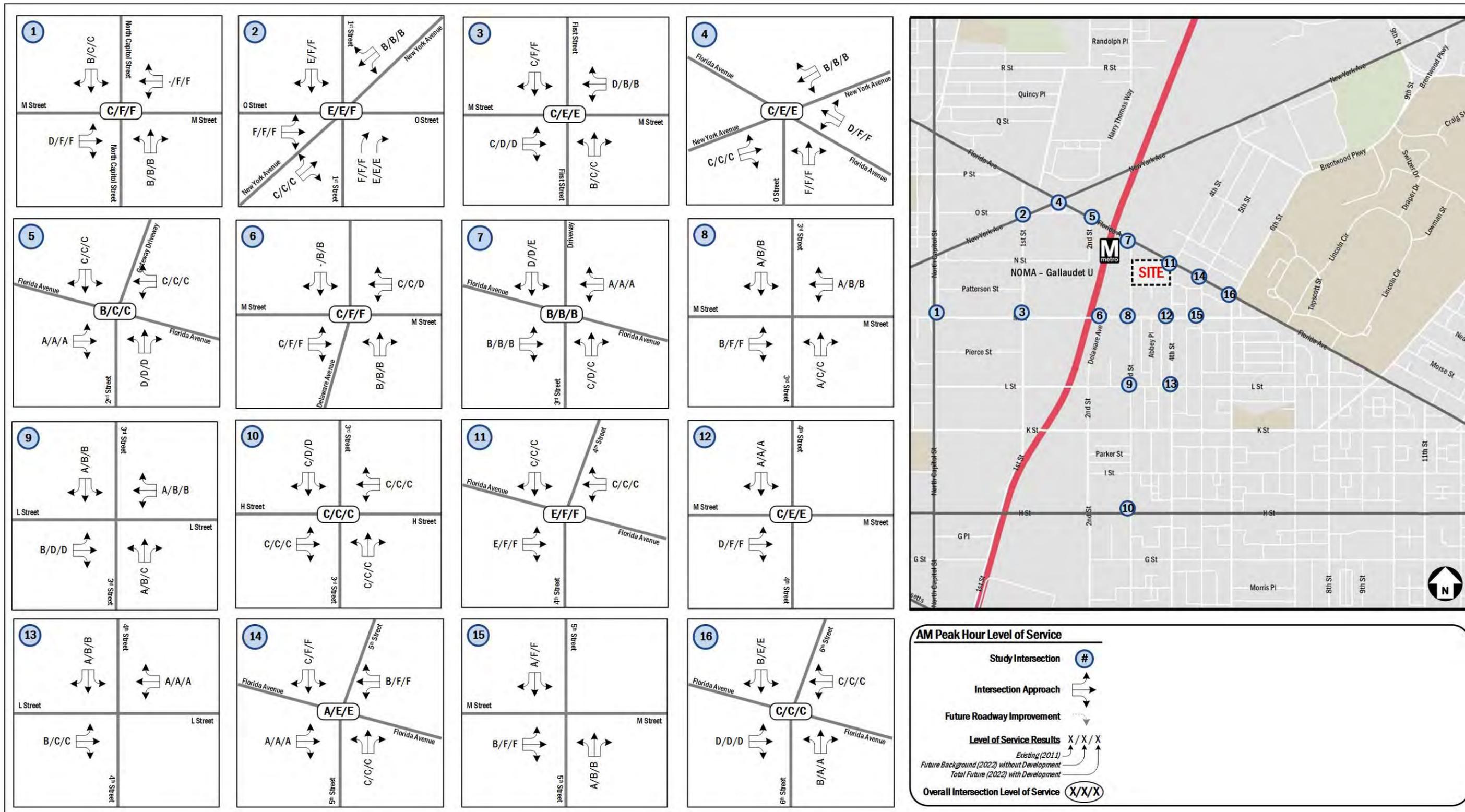


Figure 19: Afternoon Peak Hour Capacity Analysis Results (1)



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 301-331 N Street project.

The following conclusions are reached within this chapter:

- The development has excellent access to transit
- The development site is surrounded by several Metrobus routes that travel along multiple primary corridors
- The site is expected to generate a manageable amount of transit trips, and the existing service is capable of handling these new trips

EXISTING TRANSIT SERVICE

The study area is well served by Metrobus and Metrorail. 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 20 identifies the major transit routes, stations, and stops in the study area.

The NoMa-Gallaudet U Metrorail station is located 0.3 miles from the development site and is served by the Red Line, which provides direct connections to areas in the District and Maryland along with interchanges to Virginia. The Red Line connects Shady Grove with Glenmont while providing access to the District core in a “U” shape. Red Line trains run approximately every three to six minutes during the morning and afternoon peak hours. The Red Line runs about every 12 minutes during weekday non-peak hours, every 15-18 minutes on weekday evenings after 9:30 pm and 12 to 15 minutes on the weekends.

The site is also serviced by Metrobus along multiple primary corridors. These bus lines connect the site to many areas of the

District, including several Metrorail stations which provide further connections to Virginia and Maryland. Table 8 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

A detailed inventory of Metrobus stops within a quarter-mile walkshed of the site, detailing individual bus stop amenities and conditions is included in the Technical Appendix.

PROPOSED TRANSIT SERVICE

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

One street car route is expected to travel near the site. The Woodley Park/Adams Morgan to Congress Heights line would run along Florida Avenue and connect the site to several commercial districts including Woodley Park, Adams Morgan, U Street NW, NoMa, H Street NE, Barracks Row, Anacostia Waterfront, and Historic Anacostia. The line also will have direct connections to all five Metrorail lines and serve Gallaudet University and the National Zoo. Additionally, Florida Avenue was identified as a corridor in need of a Metro Express by the *Transit Future System Plan* report.

Additionally, WMATA and local transportation agencies in the District, Maryland, and Virginia have begun reviewing Metrobus lines and system wide facilities for service improvements since 2007. In direct relation to this development, routes 90, 92, 93, and X3 were studied.

Table 8: 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



WMATA and DDOT published the *90-92-93 Metrobus U Street-Garfield Line Study* in March 2011. At the time of the report (2011), the 90s line had one of highest ridership of any Metrobus line at almost 14,700 daily riders. The report cites the need for improved customer experience, updating services and operating plans, improved reliability and travel times, and reducing passenger crowding. As possible solutions the report proposes a new Metro Express limited-stop service, increased supervision and bus operator training, traffic operation enhancements, improved bus facilities, consolidation and relocation of bus stops, and improved safety and security. In March 2016, the 93 line was discontinued due to low ridership, and additional trips were reallocated to the 90 and 92 lines. As of this report the recommendations outlined in the WMATA report for the potential Metro Express 99 Line have not been enacted.

WMATA and DDOT published the *X1-X2-X3 Metrobus Benning Road/H Street Line Study* in January 2010. At the time of the report (2010) the “X” line had one of the highest ridership of any Metrobus line at almost 14,000 daily riders. Overcrowding, delays, and other reliability issues prompted WMATA and DDOT to explore potential improvements. The report lists service recommendations such as increased frequency, the addition of articulated buses, and the creation of the X9 Metro Express route. Additionally, improved scheduling, increased supervision, improved bus stop facilities, better customer information, improved safety measures, and prioritized signals are proposed as potential recommendations. Specifically related to the proposed development, the X3 was recommended to be eliminated by the WMATA report to help cover the cost of operating the proposed X9 Metro Express route. As of this report, the X3 has not been eliminated.

SITE-GENERATED TRANSIT IMPACTS

The proposed development is projected to generate 194 transit trips (93 inbound, 101 outbound) during the morning peak hour and 263 transit trips (139 inbound, 124 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 in TAZ 20282 which shows that approximately 71 percent of transit riders used Metrorail and the remainder use Metrobus. That said, approximately 138 people will use Metrorail and 56 will use Metrobus during the morning peak hour; approximately

187 people will use Metrorail and 76 will use Metrobus during the afternoon peak hour.

WMATA studied capacity of Metrorail stations in its *Station Access & Capacity Study (2008)*. The study analyzed the capacity of Metrorail stations for their vertical transportation, for example the capacity of the station at elevators, stairs, and escalators to shuttle patrons between the street, mezzanine, and platforms. The study also analyzed stations capacity to process riders at fare card gates. For both analyses, vertical transportation and fare card gates, volume-to-capacity ratios were calculated for existing data (from 2005) and projections for the year 2030. According to the study, the NoMa-Gallaudet U station can currently accommodate future growth at all access points, being one.

Additionally, the *New York Avenue – Florida Avenue – Gallaudet University Station Access Improvement Study* report was published in June 2010. The purpose of the Study was to (1) identify access needs and deficiencies; (2) define ways to enhance accessibility for pedestrians and bicyclists; (3) improve the pedestrian environment; and (4) improve the connectivity and flow of Metrobuses, shuttle buses, and private automobiles at the station. The report recommended improvements to pedestrian infrastructure and bicycle facilities, increased safety through the use of staff, lighting and cameras, improved wayfinding, and repairs to the rail overpass on Florida Avenue. The majority of recommendations were deferred to the *NoMa Neighborhood Access Study and Transportation Management Plan*.

WMATA studied capacity along Metrobus routes. DC’s *Transit Future System Plan (2010)* lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). A load factor is considered unacceptable if it is over 1.2 during peak periods or over 1.0 during off-peak or weekend periods. According to this study Metrobus routes that travel near the site operate at a load factor that greatly exceeds its capacity during peak periods of the day. As it is expected that the majority of new trips will be made via the Metrorail, and the improvements to Metrobus service discussed above, site-generated transit trips will not cause detrimental impacts to Metrobus or Metrorail service.



Figure 20: Existing Transit Service



PEDESTRIAN FACILITIES

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

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the site provides a good walking environment. There are some gaps in the system, but there are sidewalks along all primary routes to pedestrian destinations.
- The site is not expected to generate a significant amount of pedestrian trips; however, the pedestrian trips generated by walking to and from transit 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 of and attractiveness of the walking environment. This includes roadway conditions that reduce the quality of walking conditions, narrow or nonexistent sidewalks, incomplete or insufficient crossings at busy intersections, and the rail tracks that limits connectivity to the west. Figure 21 shows suggested pedestrian pathways, walking time and distances, and barriers and areas of concern.

PEDESTRIAN INFRASTRUCTURE

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

Existing Conditions

A review of pedestrian facilities surrounding the proposed development shows that most facilities meet DDOT standards

and provide a quality walking environment. Figure 22 shows a detailed inventory of the existing pedestrian infrastructure surrounding the site. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT’s *Public Realm Design Manual* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 9.

Within the area shown, roadways in the southern portion of the study area are considered residential with a low to moderate density, while the northern portion of the study area covering the Florida Avenue Market is considered commercial (non-Downtown) and thus require wider sidewalks. Most of the sidewalks surrounding the site to the south comply with DDOT standards; however to the north there are areas which have inadequate sidewalks or no sidewalks at all, with insufficient or no buffer. All primary pedestrian destinations are accessible via routes with sidewalks, most of which met DDOT standards.

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.

Pedestrian Infrastructure Improvements

As a result of the development, pedestrian facilities along the perimeter of the site will be improved, for example by removing 11 curb cuts, four on 3rd Street, four on N Street, and three on 4th Street. The development will improve sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

In addition, the Applicant has been meeting with stakeholders and has proffered a contribution toward a study of the potential for a new pedestrian tunnel and entrance to the NoMa-Gallaudet U Metro Station.

Table 9: 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



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. As such, Figure 23 shows the expected detailed inventory of future pedestrian infrastructure surrounding the site.

SITE IMPACTS

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

Pedestrian Trip Generation

The 301-331 N Street development is expected to generate 91 walking trips (38 inbound, 53 outbound) during the morning peak hour and 149 walking trips (80 inbound, 69 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;
- Employees and patrons of the development;
- Retail locations outside of the site; and
- Neighborhood destinations such as schools, libraries, and parks in the vicinity of the site.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the site and nearby transit stops.

Currently the existing pedestrian network has the capacity to absorb the newly generated trips from the site. The planned sidewalk and pedestrian landscape improvements on Florida Avenue, N Street, 3rd Street, and 4th Street will further improve and expand the pedestrian network in the vicinity of the site.

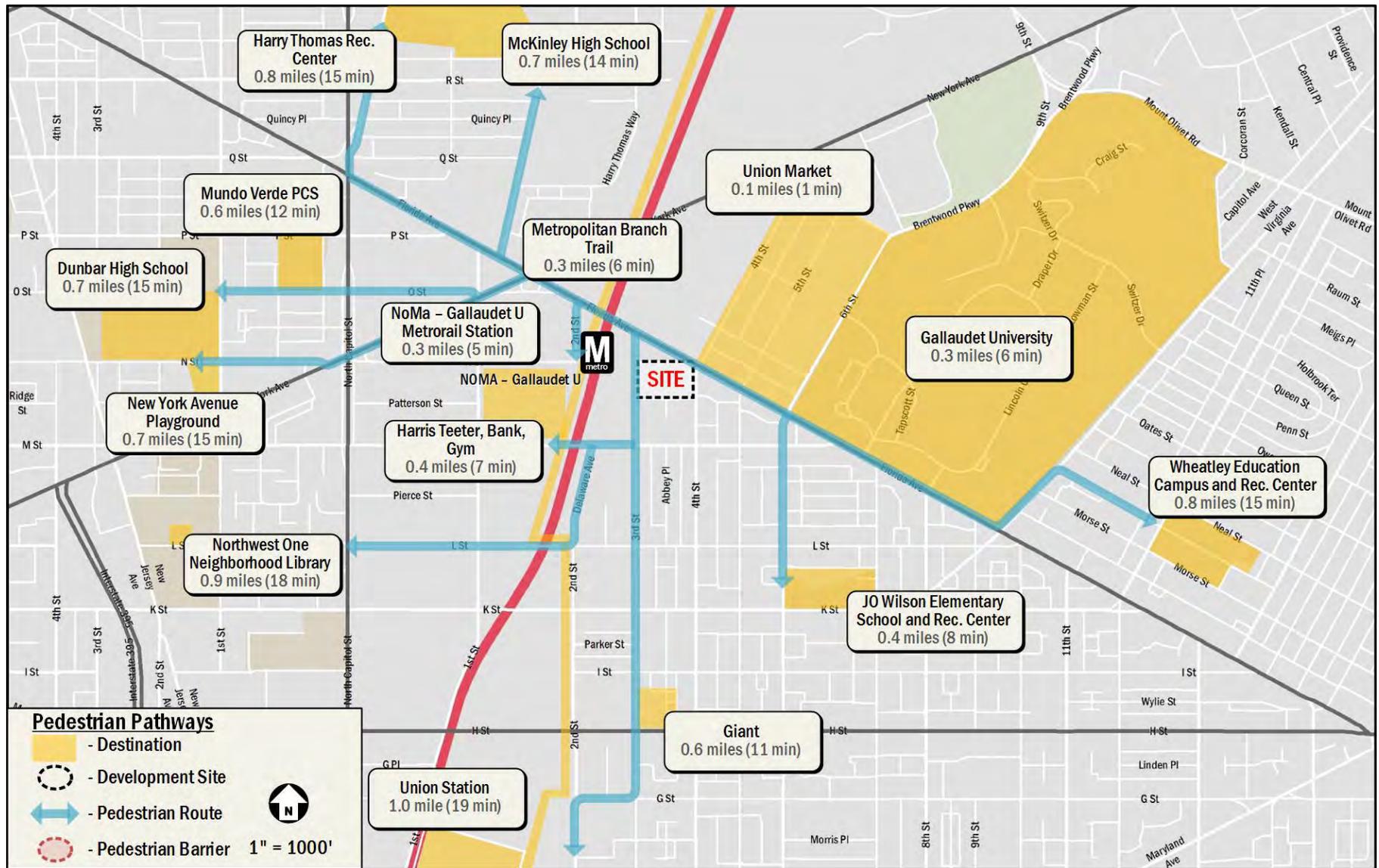


Figure 21: Pedestrian Pathways

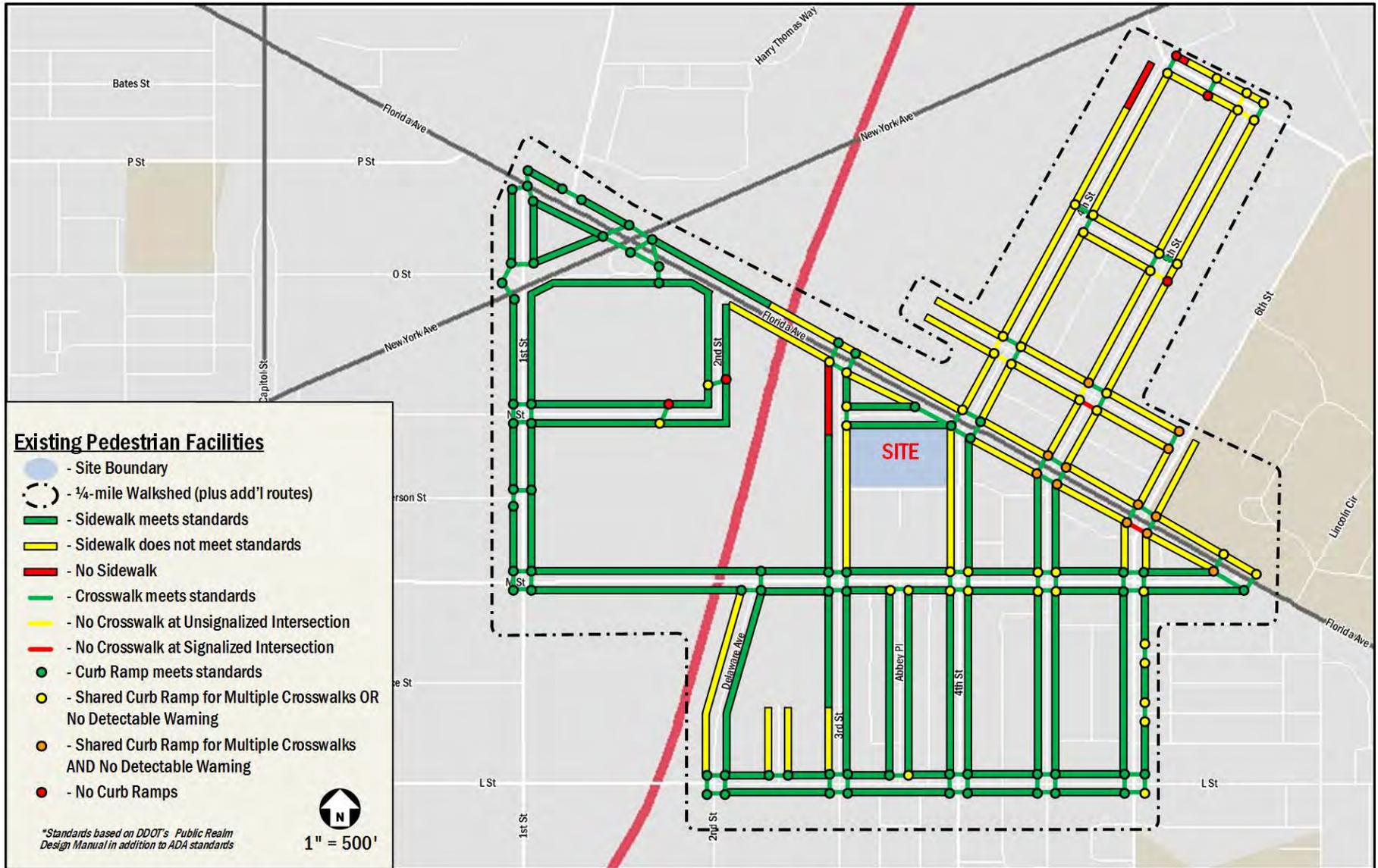


Figure 22: Existing Pedestrian Infrastructure

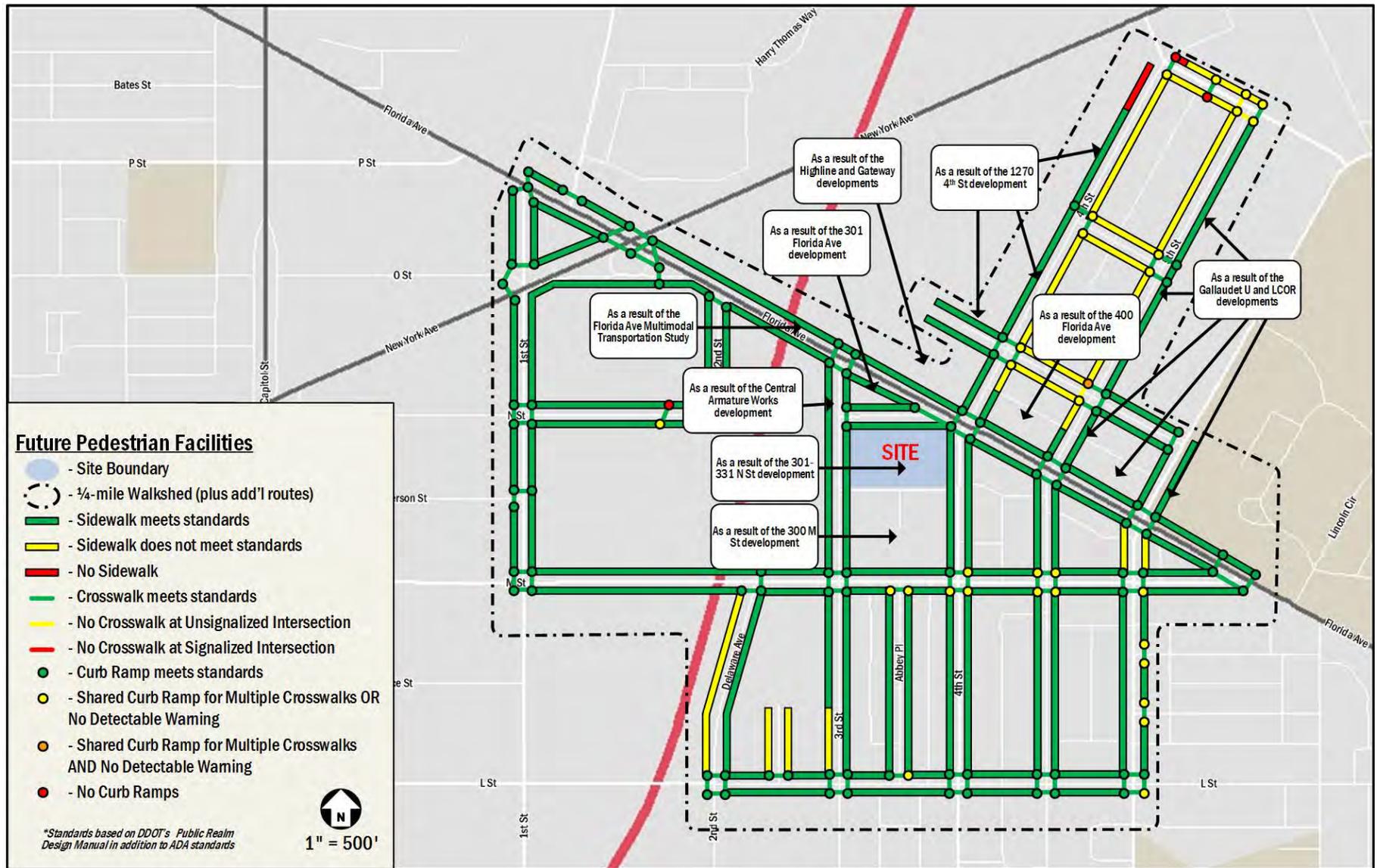


Figure 23: Expected Future Pedestrian Infrastructure



BICYCLE FACILITIES

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

The following conclusions are reached within this chapter:

- The site has access to one bike trail located to the west of the site, as well as bike lanes to the east and west.
- The site is not expected to generate a significant amount of bicycle trips, therefore all site-generated bike trips can be accommodated on existing infrastructure.
- The development will include secure bicycle parking on site, and short-term bicycle racks along the perimeter of the site.

EXISTING BICYCLE FACILITIES

The site is well connected to existing on- and off-street bicycle facilities. East-west connectivity is provided via bike lanes along M Street, K Street, Q Street, R Street, and I Street. North-south connectivity will be primarily provided via the Metropolitan Branch Trail, which is located extremely close to the site. Figure 24 illustrates the existing bicycle facilities in the area.

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

In addition to personal bicycles, the Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the planned development. The Bikeshare program has placed over 350 Bikeshare stations across Washington DC, Arlington, and Alexandria, VA, and most recently Montgomery County, MD, with over 3000 bicycles provided. Within a quarter-mile of the site, there are three Bikeshare stations that house a total of 55 bikes. Figure 24 illustrates the existing Capital Bikeshare facilities in the area.

PROPOSED BICYCLE FACILITIES

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

- Tier 1
Investments should be considered as part of DDOT's 6-year TIP and annual work program development, if they are not

already included. Some projects may be able to move directly into construction, while others become high priorities for advancement through the Project Development Process.

There are a couple tier 1 additions that will positively affect bicycle connectivity to and from the site. A cycle track extending from Thomas Circle NW to Florida Avenue NE along M Street, and a trail from Kirby Street NW to the Maryland/District boundary along New York Avenue are planned. These facilities will greatly improve the bicycle connectivity near the site.

- 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.

There is one tier 2 addition that will positively affect bicycle connectivity to and from the site. A cycle track extending from T Street NE to Florida Avenue NE along 6th Street is planned. This facility will greatly improve the bicycle connectivity near the site.

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

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

Due to the timeline of the proposed development, this report will focus on the Tier 1 and Tier 2 recommendations within the vicinity of the site.

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

As previously discussed earlier in the report, there are planned bicycle infrastructure improvements along M Street, 4th Street, and 6th Street near the site. Along M Street, the existing two-way cycle track will be extended to 4th Street NE from Delaware



Avenue NE, with Shared Lane Markings from 4th Street NE to Florida Avenue NE. Along 4th Street, a two-way cycle track will replace the one-way southbound bike lane that is there under existing conditions in between Florida Avenue NE and M Street NE. Along 6th Street, a two-way cycle track will replace the existing one-way northbound and southbound bike lanes between K Street NE and Florida Avenue NE. This will be in conjunction with the planned improvements laid forth in the *Florida Avenue Multimodal Transportation Study*. Detailed plans for each of these planned bicycle infrastructure improvements are included in the Technical Appendix. All of these planned improvement are planned to be completed before the proposed development opens.

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 301-331 N Street development is expected to generate 24 bicycle trip (11 inbound, 13 outbound) during the morning peak hour and 35 bicycle trips (18 inbound, 17 outbound) during the afternoon peak hour. Although bicycling will be an important mode for getting to and from the site, with significant facilities located on site and existing and planned routes to and from the site, the impacts from bicycling will be relatively less than impacts to other modes.

On-Site Bicycle Elements

The project will provide amenities that cater to cyclists including short-term bicycle racks around the perimeter of the site, on-site secure long-term bicycle parking as which will increase the attractiveness of cycling to the site.

The development will provide 200secure bicycle parking spaces within a ground-level secure bicycle parking room accessible from the alley. 30 exterior bicycle parking spaces will be provided by the applicant in the public space. Each inverted "U" shaped bicycle rack will comply with DDOT's *Bicycle Rack Design and Placement Guidelines*. The Applicant is working in conjunction with DDOT to determine the exact locations of bicycle racks within public space.

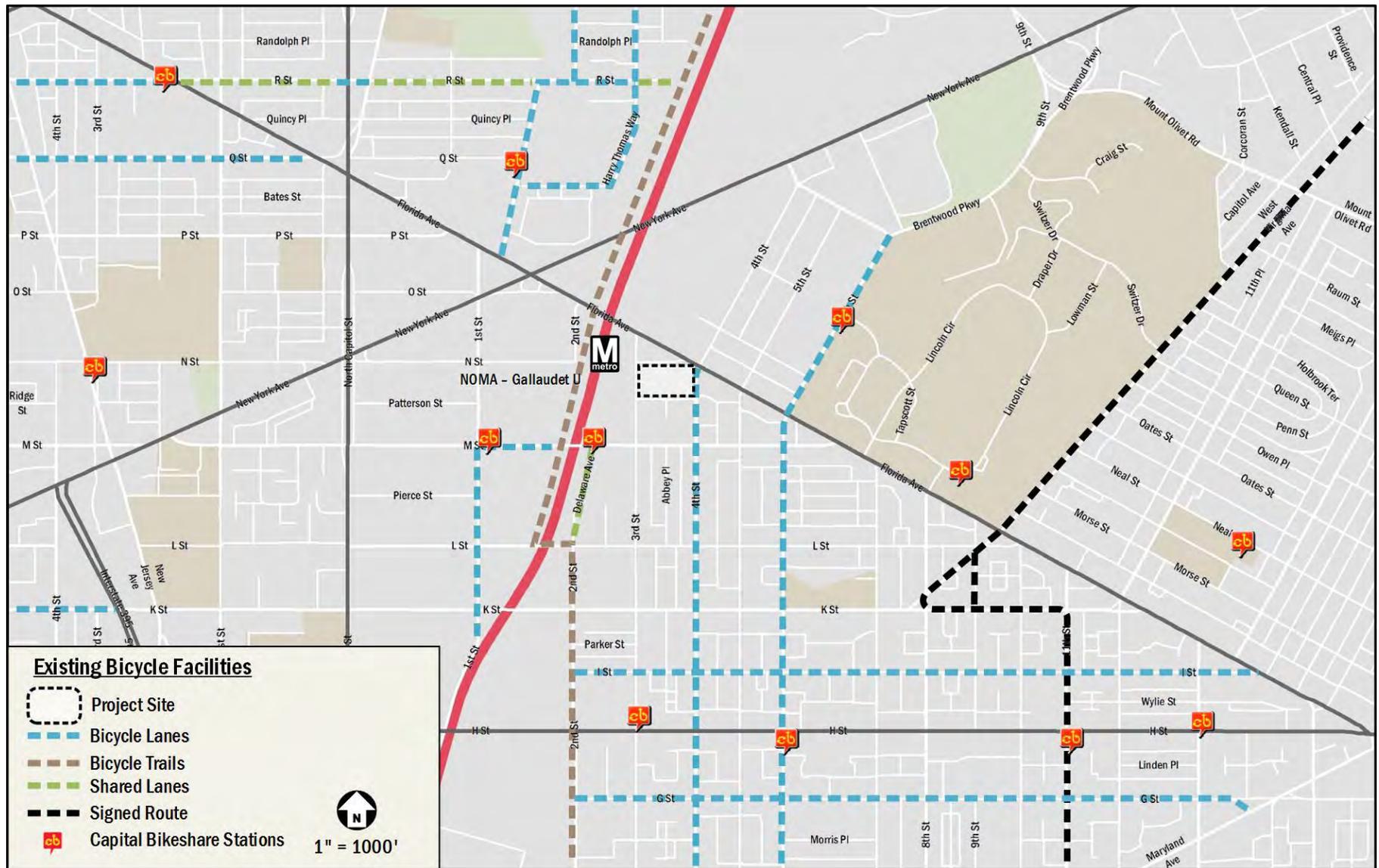


Figure 24: Existing Bicycle Facilities



CRASH DATA ANALYSIS

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

SUMMARY OF AVAILABLE CRASH DATA

A crash analysis was performed to determine if there was an abnormally high crash rate at any study area intersection. DDOT provided the last three years of intersection crash data, from 2013 to 2016 for the study area. This data was reviewed and analyzed to determine the crash rate at each location. For intersections, the crash rate is measure in crash per million-entering vehicles (MEV). The crash rates per intersections are shown in Table 10.

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. Nine (9) intersections in this study area meet this criterion (as shown in red in Table 10 and detailed in Table 11). The 301-331 N Street development should be developed in a manner to help alleviate, or at minimum not add to, the conflicts at these intersections.

A rate over 1.0 does not necessarily mean there is a significant

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

For these nine intersections, the crash type information from the DDOT crash data was reviewed to see if there is a high percentage of certain crash types. Generally, the reasons for why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes. Table 11 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 five locations with existing crash rates over 1.0 MEV and reviews potential impacts of the proposed development.

- ***North Capitol Street & M Street***

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.12 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. High rear end crashes are more typical at

Table 10: Intersection Crash Rates

Intersection	Total Crashes	Ped Crashes	Bike Crashes	Rate per MEV*
North Capitol Street & M Street	53	4	2	1.12
New York Avenue & 1st Street & O Street NE	145	3	2	2.75
First Street & M Street NE	47	5	4	3.30
Florida Avenue & New York Avenue NE	171	0	1	2.97
Florida Avenue & 2nd Street NE	0	0	0	0.00
Delaware Avenue & M Street NE	2	0	0	0.25
3rd Street & Florida Avenue NE	41	0	1	2.13
3rd Street & M Street NE	7	1	1	0.77
3rd Street & L Street NE	9	1	0	0.86
3rd Street & H Street NE	44	3	1	1.18
4th Street & Florida Avenue NE	16	2	0	0.66
4th Street & M Street NE	11	1	0	1.28
4th Street & L Street NE	1	0	0	0.10
5th Street & Florida Avenue NE	29	2	1	1.29
5th Street & M Street NE	7	0	0	1.31
6th Street & Florida Avenue NE	23	0	0	0.63

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



signalized intersections and may be elevated due to the atypical geometry of the intersection. Side swiped vehicles may be particularly high due to the southbound merge at North Capitol Street just past the intersection and last minute left-turning decisions from M Street to the North Capitol Street underpass or ramp.

The safety concerns at this intersection are primarily due to this existing geometry. Site-generated traffic is not expected to degrade the safety at this intersection; thus no improvements are recommended as part of the PUD.

▪ **New York Avenue & 1st Street & O Street NE**

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.75 crashes per MEV. The majority of crashes at this intersection were rear-ended and side-swiped vehicles, which are consistent with crashes that could occur at intersections such as this one with the high number of turning vehicles continuing through on Florida Avenue and on to New York Avenue. It should be noted that crash data provided by DDOT does not contain the level of detail to determine the impact that the crash rate is more a byproduct of traffic along Florida Avenue or 1st Street. As with the Florida Avenue/New York Avenue intersection, regional traffic planning solutions

outside of the scope of this study are necessary to address the overall capacity and safety constraints of the Florida Avenue/1st Street intersection.

▪ **First Street & M Street NE**

This intersection was found to have a high crash rate of 3.30 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. Elevated rear end and side swiped crashes may be as a result of on-street parking along M Street and the existing traffic operations. Under existing conditions there is one lane for westbound right and left turning vehicles, which might result in vehicles attempting to maneuver past other vehicles in tight confines.

As mentioned previously, the crash reports provided by DDOT do not provide enough information about each crash to derive what the exact causes of the high crash rate is, but a possible solution could be removing parking along the western leg of M Street near the intersection could improve visibility and reduce the instances of sideswiped vehicles.

Table 11: Crash Type Breakdown

Intersection	Rate per MEV	Right Angle	Left Turn	Right Turn	Rear End	Side Swiped	Head On	Parked	Fixed Object	Ran Off Road	Ped. Involved	Backing	Non-Collision	Under/Over	Unspecified	Total
North Capitol Street & M Street	1.12	7 13%	5 9%	0 0%	11 21%	16 30%	0 0%	2 4%	3 6%	0 0%	4 8%	1 2%	0 0%	0 0%	4 8%	53
New York Avenue & 1st Street & O Street NE	2.75	11 8%	11 8%	9 6%	29 20%	51 35%	2 1%	2 1%	5 3%	0 0%	3 2%	7 5%	0 0%	0 0%	15 10%	145
First Street & M Street NE	3.30	2 4%	1 2%	2 4%	6 13%	19 40%	0 0%	4 9%	1 2%	1 2%	2 4%	4 9%	1 2%	0 0%	4 9%	47
Florida Avenue & New York Avenue NE	2.97	9 5%	7 4%	7 4%	45 26%	79 46%	1 1%	0 0%	2 1%	1 1%	0 0%	1 1%	1 1%	0 0%	18 11%	171
3rd Street & Florida Avenue NE	2.13	0 0%	2 5%	1 2%	13 32%	22 54%	1 2%	0 0%	0 0%	0 0%	0 0%	1 2%	0 0%	0 0%	1 2%	41
3rd Street & H Street NE	1.18	1 2%	4 9%	1 2%	8 18%	13 30%	0 0%	4 9%	1 2%	3 7%	4 9%	1 2%	0 0%	0 0%	4 9%	44
4th Street & M Street NE	1.28	1 9%	1 9%	0 0%	1 9%	3 27%	0 0%	1 9%	1 9%	0 0%	1 9%	1 9%	0 0%	0 0%	1 9%	11
5th Street & Florida Avenue NE	1.29	5 17%	0 0%	1 3%	6 21%	4 14%	3 10%	2 7%	1 3%	0 0%	1 3%	2 7%	0 0%	0 0%	4 14%	29
5th Street & M Street NE	1.31	0 0%	0 0%	0 0%	0 0%	3 43%	0 0%	1 14%	0 0%	0 0%	0 0%	2 29%	0 0%	0 0%	1 14%	7



This report defers to DDOT's NoMa two-way conversion plan, as it is expected to address some the safety concerns that currently exist at this intersection.

▪ *Florida Avenue & New York Avenue NE*

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.97 crashes per MEV over the course of the 3-year study period. The majority of crashes at this intersection were side swipes. The majority of crashes at this intersection were rear-ended and side-swiped vehicles, which are consistent with crashes that could occur at intersections such as this one with the high number of through vehicles along New York Avenue and Florida Avenue through the intersection. It should be noted that crash data provided by DDOT does not contain the level of detail to determine the impact that the crash rate is more a byproduct of traffic along Florida Avenue or New York Avenue. Regional traffic planning solutions outside of the scope of this study are necessary to address the overall capacity and safety constraints of the Florida Avenue/New York Avenue intersection.

▪ *3rd Street & Florida Avenue NE*

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.13 crashes per MEV. The majority of crashes at this intersection were rear-ended 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 the 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.

▪ *3rd Street & H Street NE*

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.18 crashes per MEV. The majority of crashes at this intersection were rear-ended and side-swiped vehicles. Elevated rear end and side swiped crashes may be as a result of irregular roadway alignment along H Street and the existing signal operations. There is currently an exclusive eastbound left turn phase without an exclusive southbound left turn lane.

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.

▪ *4th Street & M Street NE*

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.28 crashes per MEV. The majority of crashes at this intersection were side-swiped vehicles. Elevated side-swiped crashes could be the result of on-street parking on both sides of the northern, eastern, and southern legs of the intersection. Side-swipe crashes can often occur when a parked vehicle attempts to merge into the travel lane. Overall, the distribution of crash types at this intersection does not lead to a likely safety issue at the intersection.

It should be noted that this intersections is planned to be improved by DDOT as part of the M Street, NE Cycle Track plan. It is expected that the planned intersection improvements will address the safety concerns that currently exist at this intersection.

▪ *5th Street & Florida Avenue 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-ended, right-angle, and side-swiped vehicles. High number of rear-end crashes are more typical at signalized intersections. The elevated right-angle crashes might be as a result of the angled parking on 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 the 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.



- 5th Street & M Street NE

This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.31 crashes per MEV. The majority of crashes at this intersection were side-swiped or backing vehicles. Elevated side-swiped crashes could be the result of on-street parking on both sides of the all legs of the intersection. Side-swipe crashes can often occur when a parked vehicle attempts to merger into the travel lane. Elevated backing crashes are most likely the result of the abundant amount of on-street parking at the intersection. Overall, the distribution of crash types at this intersection does not lead to a likely safety issue at the intersection.

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.

It should be noted that this intersections is planned to be improved by DDOT as part of the M Street, NE Cycle Track plan. It is expected that the planned intersection improvements will address the safety concerns that currently exist at this intersection.



SUMMARY AND CONCLUSIONS

This report is a Comprehensive Transportation Review (CTR) for the 301-331 N Street NE Planned Unit Development (PUD). This report reviews the transportation aspects of the project's Consolidated PUD application. The Zoning Commission Case Number is 15-28.

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

Proposed Project

The 301-331 N Street NE site is currently occupied by a one-story industrial supply retail store and accompanying surface parking lot as well as a three-story self-storage building. The site is generally bounded by N Street to the north, 4th Street to the east, a public alley to the south, and 3rd Street to the west.

The application plans to develop the site into a mixed-use development including residential, retail, office, and hotel uses. The project will be four structures containing 366 residential dwelling unit, 26,029 square feet of ground floor retail, 25,407 square feet of office, and a hotel with 175 rooms. The development will be served by a total of 250 off-street parking spaces in a below-grade parking garage.

Parking and loading will be accessed through the existing public alley that links 4th Street to the east of the site with 3rd Street to the west of the site.

Pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. The development will supply a total of 230 long- and short-term bicycle parking spaces at ground level, which exceeds the current zoning requirements.

The parking and loading provided by the development will adequately serve the demands set forth by the development program.

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 a block of 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 along the perimeter of the site will be improved, most particularly by removing 11 curb cuts around the perimeter of the site, four on 3rd Street, four on N Street, and three on 4th Street. The development will improve sidewalks adjacent to 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 to the east of the site.

On site, the development will provide short-term bicycle parking along the perimeter of 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 if the proposed development will have a negative impact on this transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays. These



delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The analysis concluded that five (5) intersections required mitigation as a result of the development. Mitigation measures were proposed as follows:

- North Capitol Street & M Street
This report defers to DDOT's NoMa two-way conversion plan, which will address signal timing and roadway configuration changes for this intersection.
- First Street & M Street
This report defers to DDOT's NoMa two-way conversion plan, which will address signal timing and roadway configuration changes for this intersection.
- Florida Avenue NE/New York Avenue NE/1st Street NE/O Street NE Intersection Complex
Observations note that delays extend along most approaches to these intersections. These delays are a result of the limited throughput that the intersections can accommodate, and metering that is caused by these intersections along with other intersections up- and down-stream from the intersection complex. Given the delay and queuing present throughout the New York Avenue corridor, solutions for the delays and queuing present at these intersections should be examined through regional transportation planning efforts.
- Delaware Avenue NE & M Street NE
The future unacceptable operation of this intersection can be improved by extending the green time associated with the eastbound and westbound approaches along M Street.
- Florida Avenue NE & 3rd Street NE
The future unacceptable operation of this intersection can be improved by extending the green time associated with the northbound and southbound approaches along 3rd Street and the planned Highline at Union Market development's driveway.

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 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 on-site that greatly exceed zoning requirements, as well as a bike service area.

The PUD has several positive elements contained within its design that are publicly accessible improvements, including:

- The pedestrian facilities adjacent to the site will be greatly improved. This includes enhancing the sidewalks along N Street adjacent to the PUD, as well as the removal of a total of 11 curb cuts along 3rd Street, N Street, and 4th Street.
- The Applicant will add funding to study a new tunnel and entrance for the NoMa-Gallaudet U Metrorail station.