

COMPREHENSIVE TRANSPORTATION REVIEW

DEANWOOD TOWN CENTER PUD

WASHINGTON, DC

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EXECUTIVE SUMMARY

The following report is a Comprehensive Transportation Review (CTR) for the Deanwood Town Center Consolidated Planned Unit Development (PUD). The report reviews the transportation aspects of the project's Consolidated PUD application. The Zoning Commission Case Number is 17-19.

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

Proposed Project

The Deanwood Town Center site (the "Site") is situated across three parcels along Nannie Helen Burroughs (NHB) Avenue, NE: a single-story, church, single-story restaurant, and a four-story health care facility. The site is generally bounded by NHB Avenue to the south, the planned Deanwood Hills PUD to the north, Division Avenue to the east, and 51th Street to the west. The Deanwood Town Center development will consist of replacing the existing properties with two mixed-use buildings consisting of approximately 183 residential dwelling units with 151 units in Building 1 and 32 units in Building 2. There will be approximately 16,200 square feet of ground floor retail provided with the project with 10,000 sf in Building 1 and 6,200 sf in Building 2. Approximately 146 parking spaces will be provided with 143 spaces in a two-floor garage in Building 1 and three (3) surface spaces adjacent to Building 2.

Vehicular and loading access for the project will be provided via the public alley which bisects the Site. Access to the Site is available from the public alley that extends from NHB Avenue to Hayes Street. The existing 12-foot alley will be widened to 20 feet and connect with the alley that extends to Hayes Street. Loading and trash operations will be accommodated in each building.

As part of the development, sections of the roadway network surrounding the site will be improved. The construction of the development will result in the closure of existing curb cuts along Division Avenue, NHB Avenue, and 51st Street. Additionally, the curb cut located on NHB Avenue servicing the

public alley will be widened to accommodate for a 20-foot width.

Pedestrian facilities along the perimeter of the project will be improved so that they meet or exceed DDOT and ADA standards.

The development will supply long-term bicycle parking within the development and short-term bicycle parking around the perimeter of the site that meet zoning requirements.

Multi-Modal Impacts and Recommendations

Transit

The Site is served by regional and local transit services via Metrobus and Metrorail. The Site is 1.1 miles from the Deanwood, Minnesota Avenue, and Benning Road Metrorail Stations, with Metrobus stops located within walking distance of the Site along NHB Avenue and Division Avenue.

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

Pedestrian

The Site is surrounded by a pedestrian network with adequate infrastructure. Most roadways within a quarter-mile radius provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes. There are many residential streets to the north and east of the site which lack sidewalks, curb ramps, or crosswalks that meet DDOT and ADA standards. These streets are generally low-volume.

As a result of the development, pedestrian facilities along the southern, western, and eastern perimeters of the site will be improved, including the installation of sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings.

The development will generate minimal pedestrian trips and the improved facilities will be able to handle the new trips.

Bicycle

The Site has excellent connectivity to existing on- and off-street bicycle facilities. The site is adjacent to shared lanes along NHB Avenue, 0.1 miles from the Marvin Gaye Trail, and three (3) blocks from bicycle lanes along 49th Street.



The development will provide short-term bicycle parking along the perimeter of the site and a section in the rear of Building 1 for residents of the development. On-site secure long-term bicycle parking will be provided within the garage for residents of the development. The amount of bicycle parking provided exceeds zoning requirements.

The development will generate minimal bicycle trips and the existing facilities will be able to handle these new trips.

Vehicular

The Site is accessible from regional roadways, such as the Anacostia Freeway (DC Route 295) and several principal and minor arterials such as Nannie Helen Burroughs Avenue and Division Avenue, and an existing network of collector and local roadways.

In order to determine impacts that the proposed development will have on the transportation network, this report projects future conditions with and without the proposed development and performs analyses of intersection delays and queues. These are compared to the acceptable levels of delay set by DDOT standards as well as existing queues to determine if the Site will negatively impact the study area. The analysis concluded that the intersections of Nannie Helen Burroughs Avenue and 50th Street & Nannie Helen Burroughs Avenue and Division Avenue require mitigations as a result of the proposed development.

After exploring options for mitigating impacts at these intersections, this report is recommending that three (3) improvements be considered for implementation. The analyses contained in the report demonstrate that a prohibition of northbound left turns at Nannie Helen Burroughs Avenue and 50th Street and a reallocation in green signal time at the intersections of Division Avenue/Nannie Helen Burroughs Avenue and 49th Street/Nannie Helen Burroughs Avenue can reduce delay to levels seen in existing conditions. This report recommends that DDOT review and consider this change. If DDOT were to explore this idea further, this report recommends that the Applicant support their efforts and coordinate possible implementation.

Summary and Recommendations

This report concludes that the Deanwood Town Center development **will not** have a detrimental impact to the surrounding transportation network, as long as the project implements the recommendations as follows:

- All planned site design elements and mitigation measures are implemented.
- Implement a robust Transportation Demand Management (TDM) plan to curtail the demand of single-occupancy, private vehicles during peak period travel times. These include elements such as bicycle parking and carshare/bikeshare packages for new residents.
- Implement a loading management plan for residential loading uses, as detailed in this report.



INTRODUCTION

This report is a Comprehensive Transportation Review (CTR) of the Deanwood Town Center project. This report reviews the transportation aspects of the consolidated Planned Unit Development (PUD) application. The Site, shown in Figure 1 and Figure 2, is located at Square 5197, Lots 1, 64, 65, and 73 in the Deanwood neighborhood in Northeast DC. The Site is currently zoned low-density Mixed-Use (MU-3), with the Applicant requesting a change in zoning to moderate-density Mixed-Use (MU-4). This CTR will be submitted into the Zoning Commission record for this case, as an evaluation of the transportation impacts of the proposed development. The Zoning Commission Case Number is 17-19.

PURPOSE OF STUDY

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 DDOT and other agencies on how the development of the site will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the site on all major modes of travel and where these trips will be distributed on the network.
3. Determine if development of the site will lead to adverse impacts on the local transportation network. This report accomplishes this by projecting future conditions with and without development of the site and performing analyses of vehicular delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The report discusses what improvements to the transportation network are needed to mitigate adverse impacts.

PROJECT SUMMARY

The Deanwood Town Center PUD will redevelop three parcels along NHB Avenue: a one-story church, a one-story restaurant, and a four-story health care facility. The development plan proposes replacing the existing properties with two (2) mixed-use buildings consisting of approximately 183 residential dwelling units with 151 units in Building 1 and 32 units in

Building 2 and 16,200 square feet of ground floor retail (10,000 sf in Building 1 and 6,200 sf in Building 2). A total of 146 parking spaces will be provided, with 143 spaces in a two-floor garage within Building 1 and three (3) surface spaces adjacent to Building 2.

CONTENTS OF STUDY

This report contains nine (9) 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 as needed.
- *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.

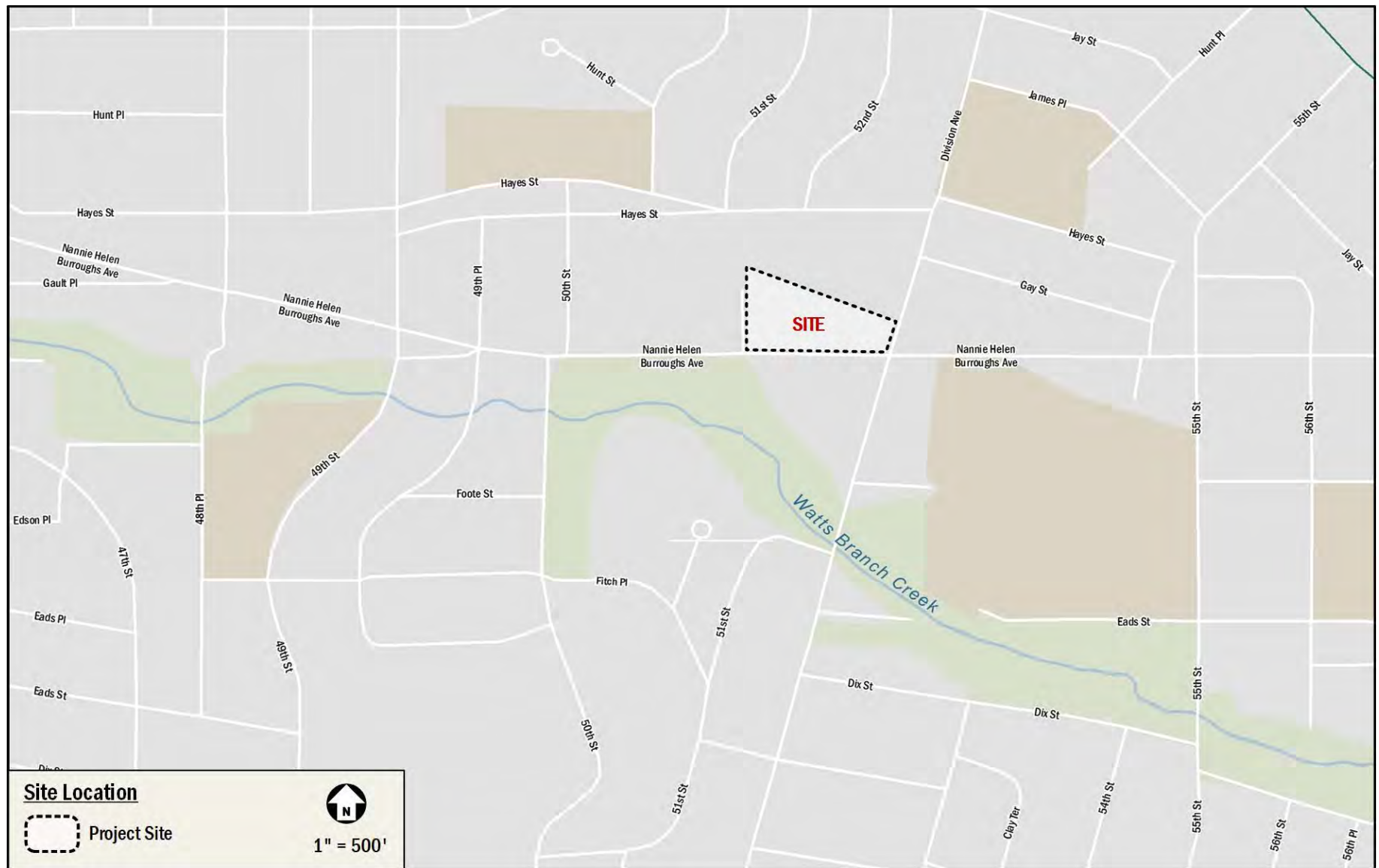


Figure 1: Site Location



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 of the proposed development to the rest of the District and surrounding areas.
- The Site is served by public transportation with access to Metrorail and local Metrobus lines and Metrorail.
- There is bicycle infrastructure in the vicinity of the Site, with connectivity to the Marvin Gaye Trail.
- Pedestrian conditions are generally good, particularly along anticipated major walking routes; however, there are gaps northeast and northwest of the Site, such as missing sidewalks, crosswalks and curb ramps.

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

As shown in Figure 3, the Deanwood Town Center Site has ample access to regional, vehicular, and transit based transportation options that connect the Site to destinations within the District, Virginia, and Maryland.

The Site is accessible from regional roadways, such as the Anacostia Freeway (DC Route 295) and several principal and minor arterials such as Nannie Helen Burroughs Avenue, NE and Division Avenue, NE. These roadways create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs, as well as providing connectivity to the District core.

The Site is located 1.1 miles from three (3) Metrorail stations: the Benning Road station (served by the Blue/Silver lines) and the Deanwood and Minnesota Avenue Metrorail stations (served by the Orange Line). The Blue and Silver lines connect Prince George's County, Maryland, Fairfax County, Virginia, and the City of Alexandria, providing access to the District core. The Orange line links Vienna in Fairfax County, Virginia with New

Carrollton in Prince George's County—a transfer point for MARC and Amtrak services. In addition, the Blue, Silver, and Orange Lines provide 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 a variety of local transportation options near the Site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 4. The Site is directly served by a local vehicular network that includes several minor arterials and collector roads such as Nannie Helen Burroughs Avenue and Division Avenue. In addition, these roads connect with regional thoroughfares, such as Minnesota Avenue and East Capitol Street.

The Metrobus system provides local transit service in the vicinity of the Site, including connections to several neighborhoods within the District and additional Metrorail stations. As shown in Figure 4, there are six (6) bus routes that service the Site. Adjacent to the Site, there are four (4) bus stops along Nannie Helen Burroughs Avenue and Division Avenue. These bus routes connect the Site to many areas of the District, including area Metrorail Stations. A detailed review of transit stops within a quarter-mile walk of the Site is provided in a later section of this report.

There are several existing bicycle facilities near the Site that connect to areas within the District. Residential low volume streets surrounding the Site provide connectivity to the Marvin Gaye bicycle trail along Watts Branch, and facilities along 49th Street and Nannie Helen Burroughs Avenue. A detailed review of existing and proposed bicycle facilities and connectivity is provided in a later section of the report.

Anticipated pedestrian routes, such as those to public transportation stops, retail zones, schools, and community amenities, provide adequate pedestrian facilities; however, there are some sidewalks and curb ramps that are missing or do not meet DDOT standards. A detailed review of existing and proposed pedestrian access and infrastructure is provided in a later section of this report. Additionally, other planned roadway improvements will help increase the walkability and bikeability in the Deanwood neighborhood.



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

Carsharing

Three carsharing companies provide service in the District: Zipcar, Maven, and Car2Go. All three services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar and Maven have designated spaces for their vehicles. There is one (1) carshare location with a total of two (2) vehicles within a quarter-mile of the Site, shown in Table 1. Additional vehicles are available at the Benning Road Metrorail station, 1.1 miles from the Site.

Carsharing is also provided by Car2Go, which provides point-to-point carsharing. Car2Go currently has a fleet of vehicles located throughout the District and Arlington. 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 and mobile phone application, which provides an additional option for car-sharing patrons.

FUTURE PROJECTS

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

Local Initiatives

MoveDC: Multimodal Long-Range Transportation Plan

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

Table 1: Summary of Carshare Locations

Carshare Location	Number of Vehicles
Zipcar	
49th Street and Nannie Helen Burroughs Avenue, NE	2 vehicles
Total	2 vehicles

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

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

In direct relation to the proposed development, the MoveDC plan outlines recommended pedestrian and bicycle improvements such as new bicycle lanes along 49th Street and Division Avenue, adjacent to the Site. These recommendations would create additional multi-modal capacity and connectivity to the proposed development and are discussed further in the Bicycle Facilities section.

SustainableDC: Sustainable DC Plan

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

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

Far Northeast Livability Study

DDOT developed the Livability Program to “Create Safe Passages, Sustainable Living, and Promote Prosperous Places”. The Far Northeast Livability Study was completed in 2011 and consisted of 12 neighborhoods east of the Anacostia River and north of East Capitol Street in Ward 7. The Deanwood Town Center Site is located in the study area. The needs identified in the study included:

- Reducing cut-through traffic for vehicles travelling to and from locations beyond the area.
- Pedestrian crossing safety particularly at intersections near libraries, community centers, churches, schools, senior housing, metro stations and bus stops.
- Filling gaps in bicycle network with links to schools and other public buildings, Metrorail stations, commercial and employment areas, parks and trail networks.
- Improving route connections by bicycle and bus within and around the Far Northeast and areas east of the Anacostia River.

Within the vicinity of the Site area, top priority was given to traffic calming and bicycle accommodations along 49th Street. Improvements recommended along this stretch included the installation of pedestrian refuges and removal of parking spaces at 49th Street and Nannie Helen Burroughs Avenue, four (4) blocks west of the Site. This recommendation had not been implemented at the time of field data collection.

Lincoln Heights/Richardson Dwellings New Communities Revitalization Small Area Plan

Part of the New Communities initiative to revitalize and reinvest into blighted communities, this Small Area Plan aims to redevelop the Lincoln Heights neighborhood, with the focal point located at the intersection of Nannie Helen Burroughs Avenue and Division Avenue. The redevelopment plan will consist of:

- Demolition of the Lincoln Heights public housing complex, to be replaced with over 1,400 units of mixed-income housing
- 30,000 square feet of retail/commercial space and community facilities

- Integrating the Lincoln Heights and Richardson Dwellings public housing properties within the larger community, rather than leaving them isolated

The Deanwood Town Center PUD will contribute directly to the plan’s goals, with the inclusion of 61 residential units replacing units from the Lincoln Heights and Richardson Dwellings and approximately 16,200 square feet of retail space, providing the community with a thriving pedestrian-friendly environment.

Planned Developments

There are several potential development projects in the vicinity of the Deanwood Town Center Site. For the purpose of this analysis and consistent with DDOT and industry standards, only approved developments expected to be completed prior to the planned development with an origin/destination within the study area were included. Of the background developments considered, three (3) were ultimately included and is described below. Figure 5 shows the location of these developments in relation to the proposed development.

Deanwood Hills PUD

The development will consist of an apartment building with 150 affordable units. This development lies within the study area immediately north of the site and is currently under construction. It is expected to be completed prior to the completion of Deanwood Town Center, and will thus be included in the analysis.

Strand Residences PUD

The mixed-use development will consist of approximately 86 residential units and 1,400 square feet of ground floor retail. The development will lie across NHB Avenue, NE from the Deanwood Town Center. It was preliminarily approved by the Zoning Commission on November 16, 2017 and is expected to open the same year (2020) as Deanwood Town Center.

PNBC Residential PUD

Located a few blocks southwest of the Deanwood Town Center is the PNBC Residential PUD, which proposes 100 mixed-income units. The development was approved by the Zoning Commission on November 27, 2017 and is expected to open in 2019.

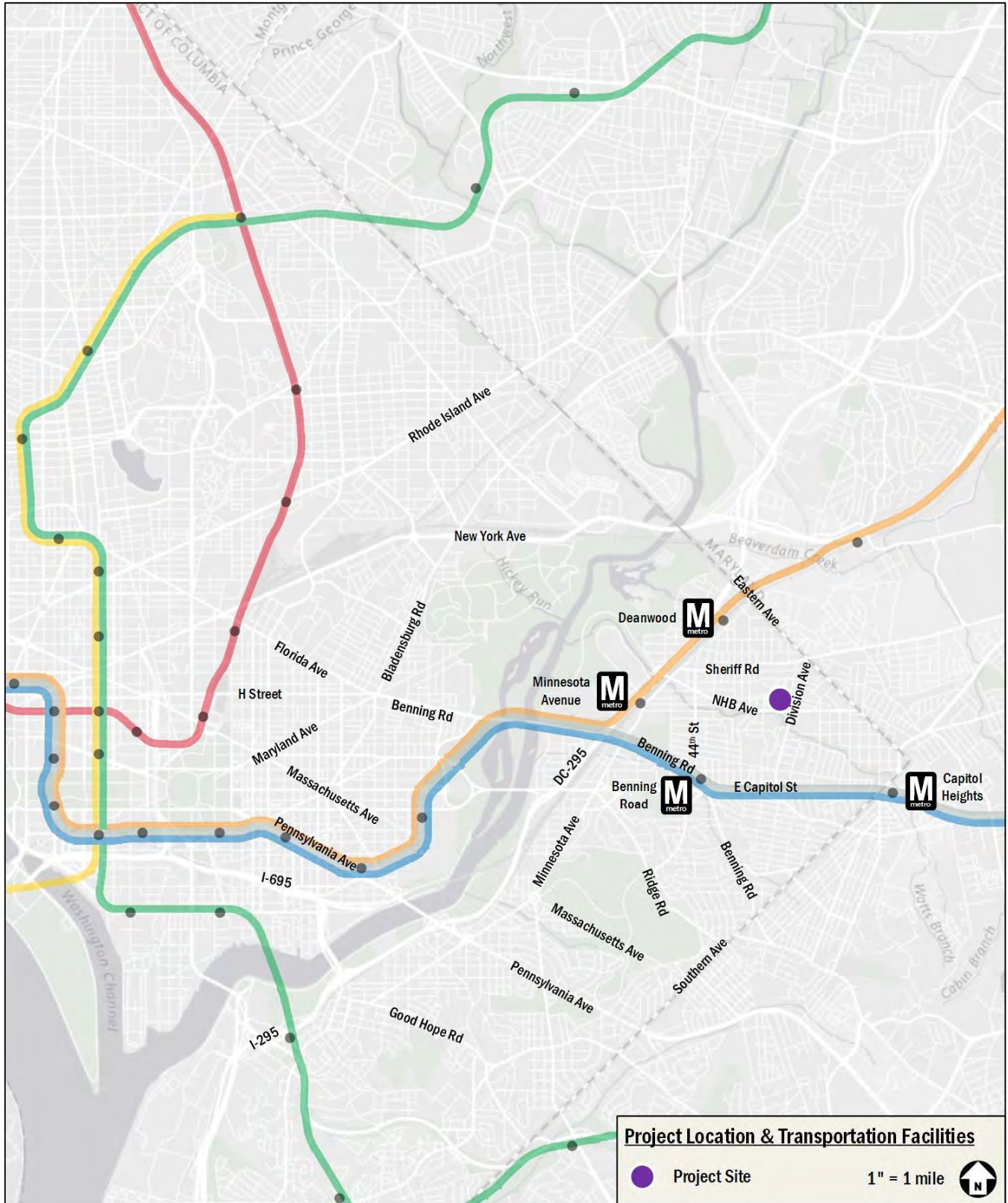


Figure 3: Major Regional Transportation Facilities

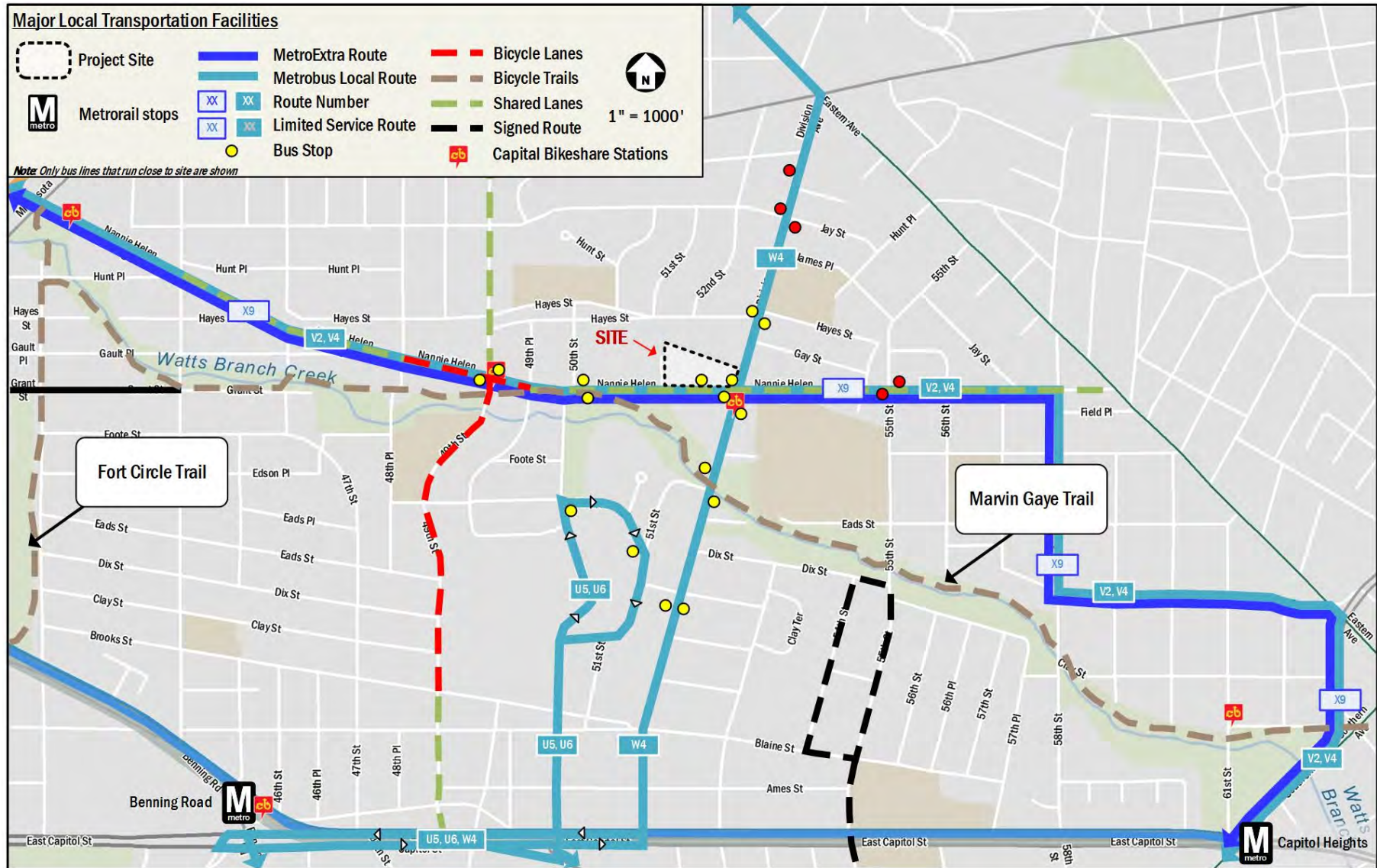


Figure 4: Major Local Transportation Facilities

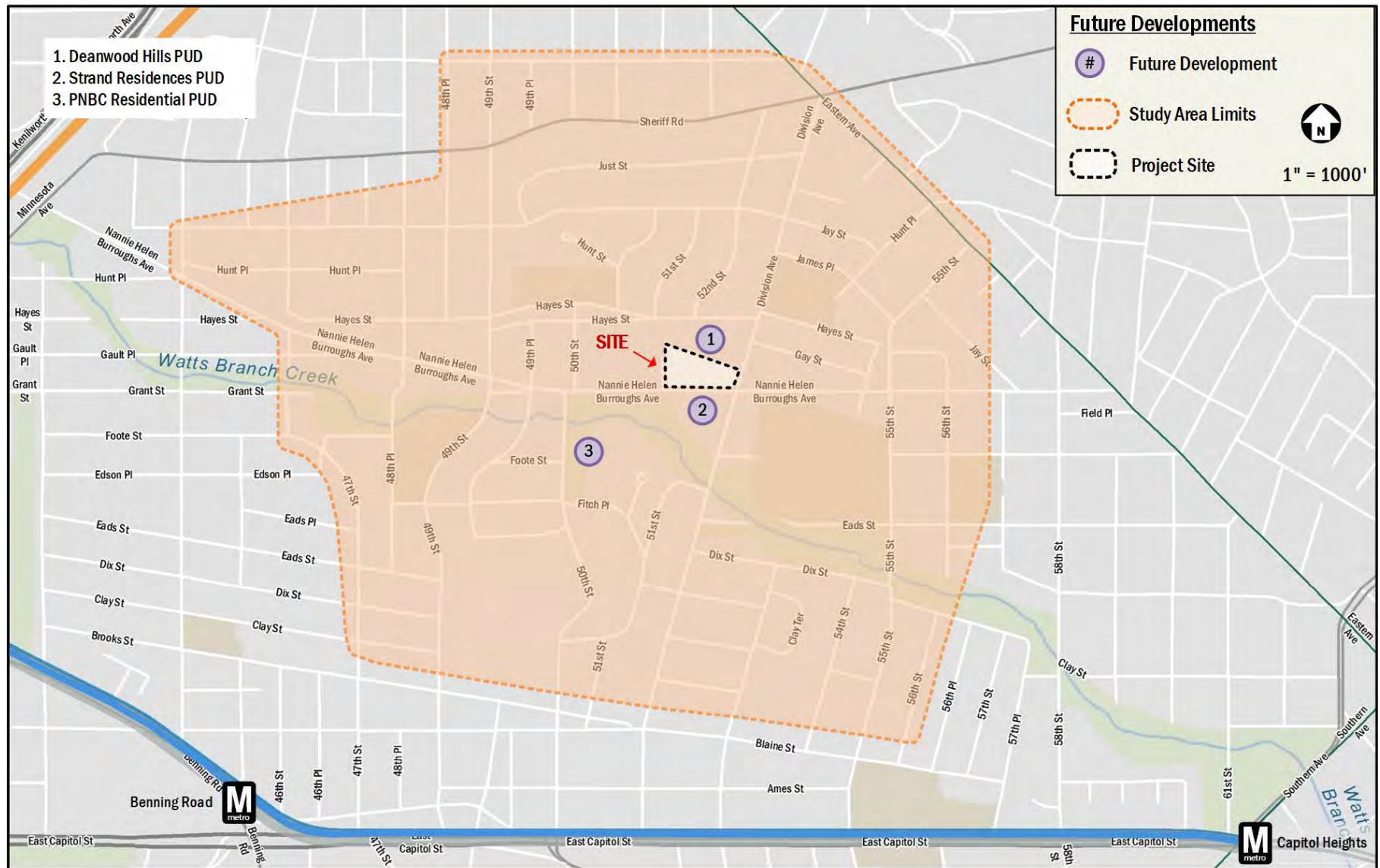


Figure 5: Planned Development Map



PROJECT DESIGN

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

The Site is currently occupied by three adjacent parcels along NHB Avenue with a single-story church, a single-story restaurant, and a four-story health care facility. The development will redevelop the parcels into two buildings, separated by a widened existing alley. The widened alley will connect NHB Avenue to the future alley included with the Deanwood Hills PUD, which will connect to Hayes Street, allowing for parking and loading access to the Site.

The Deanwood Town Center development will consist of approximately 183 residential dwelling units, with 151 units in Building 1 and 32 units in Building 2. Approximately 16,200 square feet of ground-floor retail will be included, with 10,000 square feet in Building 1 and 6,200 square feet in Building 2. The development will provide 146 parking spaces on-site with 143 spaces within a two-level garage in Building 1 and three (3) surface spaces at Building 2 for residents and retail customers/employees. 26 of these 146 spaces will be provided for retail patrons of the future Strand Theatre redevelopment, which will be located across NHB Avenue.

Figure 6 shows an overview of the development program and site plan elements.

SITE ACCESS AND CIRCULATION

Pedestrian Access

The primary pedestrian entrances for the residential and retail components will be along NHB Avenue and Division Avenue for Buildings 1 and 2, respectively. Auxiliary pedestrian access to the development is available through use of the garage entrance within Building 1. Some individual units off 51st Street will have direct access to their units.

Bicycle Access

Bicycle access to the secure long-term bicycle parking on the ground floor will be from a dedicated entrance adjacent to the garage entrance accessed from the alley. An additional entrance for bicyclists will be provided near 51st Street. The 62 long-term secure bicycle spaces will be provided in a dedicated storage room. Additional parking will be available in the rear of the property, adjacent to the Deanwood Hills PUD. Short-term spaces in the form of bicycle racks will be along the Site frontage.

Vehicular Access

Vehicular access to the development will be provided by an existing alley curb cut on NHB Avenue, separating Building 1 and Building 2. The existing alley will be widened from 12 feet to 20 feet, accomplished with a public easement.

The widened alley will connect with the future driveway constructed as part of the Deanwood Hills PUD to Hayes Street, providing additional access from the north. The future Deanwood Hills driveway is expected to open by Summer 2018.

Additionally, an existing opening in the median of NHB Avenue, NE allowing eastbound traffic to make a left turn into the existing parking lot will be closed off.

The loading zone will be adjacent to the parking garage access in Building 1 and adjacent to the surface spaces in Building 2. Truck backing maneuvers into the loading area will take place within the alley. Trash pick-up is expected to occur in the loading zone.

Truck routing to and from the Site will be focused on designated primary truck routes, such as the Anacostia Freeway, Eastern Avenue, and Benning Road, to access Nannie Helen Burroughs Avenue.

A circulation plan with vehicular and pedestrian routes is shown on Figure 7. Detailed truck-turning diagrams are available in the Technical Attachments.

LOADING

Under Zoning Regulations, a residential development of more than 50 dwelling units is required provide a minimum of one (1) 12-foot wide, 30-foot long loading berth and 20-foot service space. The retail portion of the Deanwood Town Center project is required to provide one (1) 30-foot long loading berth. As retail is being provided in both buildings, this amounts to two



(2) 30-foot berths required for retail. Three (3) 30-foot long loading berths (two (2) in Building 1 and one (1) in Building 2) are proposed, along with a 12-foot wide, 20-foot long service space within the parking garage. Back-in/head-out loading maneuvers are proposed for both the loading berth and service space. The loading berths will also service waste collection trucks for trash removal in each building. Trash services will be accomplished with the utilization of rolling dumpsters to transfer waste from the trash room to the waste collection trucks in each building. Residential loading operations will take place within the service space.

A loading management plan was developed to minimize any impacts from loading activities related to the development, with the following elements:

- A loading manager will be designated by the building management. The manager will coordinate with residents to schedule deliveries and will be on duty during delivery hours.
- Residents will be required to schedule move-in and move-outs with the loading manager through leasing regulations.
- The dock manager will coordinate with trash pick-up to help move loading expeditiously between their storage area inside the building and the curb beside the loading area to minimize the time trash trucks need to use the loading area.
- Trucks using the loading area will not be allowed to idle and must follow all District guidelines for heavy vehicle operation including but not limited to DCMR 20 – Chapter 9, Section 900 (Engine Idling), the regulations set forth in DDOT’s Freight Management and Commercial Vehicle Operations document, and the primary access routes listed in the DDOT Truck and Bus Route System.
- The loading manager will be responsible for disseminating DDOT’s Freight Management and Commercial Vehicle Operations document to drivers as needed to encourage compliance with District laws and DDOT’s truck routes. The dock manager will also post these documents in a prominent location within the service area.

The proposed development is expected to generate approximately six (6) loading trips per day. This includes three (3) general deliveries consisting of trash removal, mail, and

parcel delivery, approximately one (1) residential delivery, calculated based on an average unit turnover of 18 months with two deliveries per turnover (one move-in and one move-out), and two (2) retail deliveries. Figure 6 shows the location of the loading zone and trash removal services.

Based on the expected truck deliveries and the loading facilities provided, this report concludes that the loading plan for the Site is adequate.

PARKING

The parking provided by the PUD is projected to accommodate all parking needs on-site. Based on ZR16 requirements for the proposed MU-4 zone, the residential portion of the building is required to provide one (1) space per three (3) dwelling units in excess of four (4) units, for a total of 62 spaces. The retail portion of the development is required to provide 1.33 spaces per 1,000 square feet. The retail portion of the parking supply includes 6,000 square feet from the future Strand Theatre redevelopment, amounting to a total of 26 spaces. As allowable by 11 DCMR Subtitle C § 702.1(c)(4), a 50% reduction in required parking is warranted as the Site is within 0.25 miles of a Priority Corridor Network Metrobus Route stop, in this case the X9 MetroExtra stop at Nannie Helen Burroughs Avenue and Division Avenue. With the applicable reduction, the development is required to provide 44 parking spaces.

The Site will include a total of 146 parking spaces, including three (3) surface spaces near Building 2 and a two-level parking garage with 143 total parking spaces for residents and retail patrons. This amount includes 44 compact spaces and six (6) handicap-accessible spaces in the garage.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle Facilities

Based on ZR 2016 requirements, the residential portion is required to supply one (1) short-term bicycle parking space for every 20 dwelling units; therefore, the development is required to supply ten (10) short-term bicycle spaces. The retail portion is required to provide one (1) short-term space for every 3,500 feet, resulting in four (4) spaces. The project will meet this requirement by supplying approximately nine (9) bicycle racks to accommodate 18 bicycles. These short-term spaces will include inverted U-racks placed along the Site frontage near the building entrance. The Applicant will work with DDOT to select the exact location for the racks in public space.



Based on ZR 2016 requirements, the residential portion of the building is required to supply one (1) long-term bicycle parking space for every three (3) dwelling units, resulting in a total of 61 long-term bicycle parking spaces. The retail portion is required to provide one (1) long-term space per 3,500 square feet, resulting in four (4) long-term spaces. The project will meet the required number of secure long-term spaces for residents in the ground-floor parking garage and provide additional spaces in the rear of Building 1.

Pedestrian Facilities

Pedestrian facilities will be improved around the Site as part of the development. Under existing conditions, curb ramps around portions of the Site do not meet DDOT and ADA standards and many sidewalks are narrow or non-existent. As part of the development, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards. This includes the removal of five (5) existing curb cuts: one (1) along Division Avenue, two (2) along NHB Avenue (serving existing businesses that will be replaced by the Site), and two (2) along 51st Street. The installation of sidewalks along portions of NHB Avenue, Division Avenue, and 51st Street that will meet or exceed the width requirements, and additional design elements such as the relocation of existing bio retention planters closer to the curb along NHB Avenue to improve pedestrian circulation.

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 TDM plan for the Deanwood Town Center development is based on the DDOT expectations for TDM programs. The Applicant proposes the following TDM measures:

- The Applicant will identify a TDM Leader (for planning, construction, and operations) at the building, who will act as a point of contact with DDOT/Zoning Enforcement with annual updates. The TDM Leader will work with residents 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 work with DDOT and goDCgo (DDOT's TDM program) to implement TDM measures at the site.
- The Applicant will share the full contact information of the TDM coordinator for the site with DDOT and goDCgo.
- The Applicant will exceed Zoning requirements to provide bicycle parking facilities at the proposed development. This includes secure parking located on-site and a minimum of 18 short-term bicycle parking spaces around the perimeter of the Site (in the form of 9 bicycle racks).
- The Applicant will provide a bicycle repair station to be located in the secure long-term bicycle storage room.
- The Applicant will install a Transportation Information Center Display (electronic screen) within the residential lobby containing information related to local transportation alternatives.



TRIP GENERATION

This section outlines the transportation demand of the proposed Deanwood Town Center project. It summarizes the projected trip generation of the development by mode, which forms the basis for the chapters that follow. These assumptions were vetted and approved by DDOT as a part of the scoping process for the study.

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

Residential trip generation was calculated based on ITE land use 221, Mid-Rise 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 and Metrobus. Retail trip generation was calculated based on ITE land use 820, Shopping Center. Mode split for the retail component was primarily based on data for retail sites from the *WMATA Ridership Survey*, influenced by census data for employees that travel to the Site to take into account employees that will be arriving or departing during the peak hours. The vehicular mode split was then adjusted to reflect parking supply and the availability of on-street parking. The amount of retail space includes 6,000 square feet from the future Strand Theatre redevelopment as 26 parking spaces are reserved for retail patrons.

The mode split assumptions are summarized in Table 2. A summary of the multimodal trip generation for the overall development is provided in Table 3 for both peak hours. The development is expected to generate 49 vehicular trips (18 in, 31 out) during the morning peak hour and 98 vehicular trips (53 in, 45 out) during the afternoon peak hour. Detailed calculations are included in the Technical Attachments.

Table 2: Summary of Mode Split Assumptions

Land Use	Mode			
	Drive	Transit	Bike	Walk
Residential	60%	35%	2%	3%
Retail	60%	25%	2%	13%

Table 3: Multi-Modal Trip Generation Summary

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Apartments	10 veh/hr	27 veh/hr	37 veh/hr	28 veh/hr	19 veh/hr	47 veh/hr
	Retail	8 veh/hr	4 veh/hr	12 veh/hr	25 veh/hr	26 veh/hr	51 veh/hr
	Total	18 veh/hr	31 veh/hr	49 veh/hr	53 veh/hr	45 veh/hr	98 veh/hr
Transit	Apartments	6 ppl/hr	19 ppl/hr	25 ppl/hr	19 ppl/hr	12 ppl/hr	31 ppl/hr
	Retail	6 ppl/hr	3 ppl/hr	9 ppl/hr	18 ppl/hr	20 ppl/hr	38 ppl/hr
	Total	12 ppl/hr	22 ppl/hr	34 ppl/hr	37 ppl/hr	32 ppl/hr	69 ppl/hr
Bike	Apartments	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr
	Retail	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr
	Total	0 ppl/hr	2 ppl/hr	2 ppl/hr	2 ppl/hr	3 ppl/hr	5 ppl/hr
Walk	Apartments	1 ppl/hr	1 ppl/hr	2 ppl/hr	2 ppl/hr	1 ppl/hr	3 ppl/hr
	Retail	3 ppl/hr	2 ppl/hr	5 ppl/hr	9 ppl/hr	11 ppl/hr	20 ppl/hr
	Total	4 ppl/hr	3 ppl/hr	7 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr



TRAFFIC OPERATIONS

This section provides a summary of an analysis of the existing and future roadway capacity surrounding the Site. Included is an analysis of potential vehicular impacts of the Deanwood Town Center development and a discussion of potential improvements.

The purpose of the capacity analysis is to:

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

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

1. 2017 Existing Conditions
2. 2020 Future Conditions without the development (2020 Background)
3. 2020 Future Conditions with the development (2020 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:

- Most of the study area intersections operate at an acceptable level of service during all analysis scenarios for both the morning and afternoon peak hours, with a single approach at two different study intersections operating above capacity during the build scenario.
- Existing areas of concern for roadway capacity are primarily focused along arterial roads, such as Nannie Helen Burroughs Avenue and its intersections with 49th Street and Division Avenue.
- The addition of trips generated by background developments and inherent growth on the study area roadways slightly increase the levels of delay and queuing at all study area intersections.
- The addition of site generated trips triggered the need to explore mitigations at the intersections of

Nannie Helen Burroughs Avenue & 50th Street and Nannie Helen Burroughs Avenue & Division Avenue.

- At the intersection of Nannie Helen Burroughs Avenue and 50th Street, it was found that vehicles were making a northbound left turn despite the presence of a median which should restrict turns.
- At the intersection of Nannie Helen Burroughs Avenue and Division Avenue, it was found that the reallocation of green time to the Division Avenue approaches from the Nannie Helen Burroughs Avenue approaches would decrease delay to levels that were observed under Existing Conditions.

STUDY AREA, SCOPE, & METHODOLOGY

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

The scope of the analysis contained within this report was extensively discussed with and agreed 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 capacity analyses were performed to determine if the proposed 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. 2017 Existing Conditions
2. 2020 Future Conditions without the development (2020 Background)
3. 2020 Future Conditions with the development (2020 Future)

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses were performed for the scenarios listed above. The set of intersections decided upon during the



study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the 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 and agreed upon by DDOT for analysis:

1. 49th Street & Nannie Helen Burroughs Avenue, NE
2. 50th Street & Nannie Helen Burroughs Avenue, NE
3. Hayes Street & 50th Street, NE (Southern portion)
4. Hayes Street & 50th Street, NE (Northern portion)
5. Division Avenue & Nannie Helen Burroughs Avenue, NE
6. Division Avenue & Hayes Street, NE
7. 55th Street & Nannie Helen Burroughs Avenue, NE
8. Division Avenue & Foote Street, NE
9. Nannie Helen Burroughs Avenue & Site Driveway, NE
10. Hayes Street & Deanwood Hills Driveway, NE

Figure 8 shows a map of the study area intersections. Of note, Intersection 10 (Deanwood Hills Site Driveway) will be completed by the 2020 opening of the development.

Traffic Volume Assumptions

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

Existing Traffic Volumes

The existing traffic volumes are comprised of turning movement count data, which was collected on three days: Wednesday, March 22, 2017 from 6:30 to 9:30 AM and 3:00 to 6:00 PM, and Wednesday, June 7, 2017 and Tuesday, December 5, 2017 from 6:30 to 9:30 AM and from 4:00 to 7:00 PM. The results of the traffic counts are included in the Technical Attachments. For all intersections, the individual morning and afternoon peak hours were used. The existing peak hour traffic volumes are shown Figure 10. Typically afternoon peak hours are from 4:00 to 7:00 PM. However, in order to account for traffic generated by pick-up/drop-offs at a nearby school, the afternoon peak hour was shifted one hour earlier (3:00-6:00 PM) to capture this behavior and its effect at the NHB Avenue and 49th Street/50th Street intersections.

2020 Background Traffic Volumes (without the project)

The traffic projections for the 2020 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, three (3) developments were included in the 2020 Background scenario: the Deanwood Hills PUD, Strand Residences PUD, and PNBC Residential PUD.

Existing studies were available for all three developments. Trip generation and distribution assumptions for the background development were based on their studies and altered where necessary based on anticipated travel patterns. Mode split and trip generation assumptions for the background developments are shown in Table 4.

While the background developments represent local traffic changes, regional traffic growth is typically accounted for using growth rates. The growth rates used in this analysis are derived using the Metropolitan Washington Council of Government's (MWCOC) currently adopted regional transportation model, comparing the difference between the year 2017 and 2020 model scenarios as vetted and agreed to by DDOT. The growth rates observed in this model served as a basis for analysis assumptions, and where negative growth was observed, a conservative 0.10 percent annual growth rate was applied to the roadway. The applied growth rates are shown in Table 5.

The traffic volumes generated by background developments and by the inherent growth along the network were added to the existing traffic volumes in order to establish the 2020



Background traffic volumes. The traffic volumes for the 2020 Background conditions are shown on Figure 11.

2020 Total Future Traffic Volumes (with the project)

The 2020 Total Future traffic volumes consist of the 2020 Background volumes with the addition of the traffic volumes generated by the proposed development (site-generated trips). Thus, the 2020 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 and future travel patterns in the study area, and (3) the location of the parking access.

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 of the development.

Based on this review, the Site access locations, and the Deanwood Hills site trips, 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 2020 Total Future conditions were calculated by adding the development-generated traffic volumes to the 2020 Background traffic volumes. Thus, the future condition with the proposed development scenario includes traffic generated by: existing volumes, background developments through the year 2020, inherent growth on the network, and the proposed development. Particular attention was paid to the amount of site-generated vehicles utilizing the northern driveway (intersection 10) as the driveway width will remain at 12 feet. It was determined that the number of inbound (16 in the morning and 46 in the afternoon) and outbound (10 in the morning, 16 in the afternoon) vehicles will not cause delay or queuing conflicts at this intersection during the 2020 Future scenarios. The site-generated traffic volumes are shown on Figure 15 and the 2020 Total Future traffic volumes are shown on Figure 16.

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 9.

2020 Background Geometry and Operations Assumptions

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

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

Based on these criteria, the only background improvements within the study area are the closing of a median along NHB Avenue preventing eastbound left turns near the site and the completion of the Deanwood Hills driveway to Hayes Street (Intersection 10), which is included in the 2020 Background Conditions. The lane configurations and traffic controls for the 2020 Background Conditions are shown on Figure 14.

2020 Future Geometry and Operations Assumptions

The configurations and traffic controls for the 2020 Future Conditions were based on those for the Existing and 2020 Background Conditions with the widening of the alley along NHB Avenue to accommodate the new Site Driveway. As requested by DDOT, "No U-Turn" signs will be placed on Eastbound NHB Avenue at Division Avenue as these movements will not be allowed to access the Site.

The lane configurations and traffic controls for the 2020 Future Conditions are shown on Figure 14.



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 *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, 2020 Background, and 2020 Future scenarios. The capacity analysis results are shown on Figure 17 for the morning peak hour and Figure 18 for the afternoon peak hour.

The study intersections generally operate at acceptable conditions during the morning and afternoon peak hours for the Existing, 2020 Background, and 2020 Future scenarios. However, it was determined that two (2) intersection approaches operate above acceptable conditions during one or more peak hour:

- 50th Street and Nannie Helen Burroughs Avenue
During the afternoon peak period, the northbound 50th Street approach operates at above capacity during the

2020 Future scenario. This can be attributed to the addition of inbound site-generated traffic, making an eastbound left turn onto 49th Street. This maneuver creates fewer gaps for northbound traffic movements at this unsignalized intersection.

Mitigations at this intersection are proposed in the next section.

- Division Avenue and Nannie Helen Burroughs Avenue
During the morning peak period, the northbound approach of Division Avenue operates at above capacity during the existing, 2020 Background, and 2020 Future scenarios. This can be attributed to the lane configuration of the approach, with the left and thru movements operating from one lane. As a consequence, vehicles turning left onto westbound Nannie Helen Burroughs Avenue must wait for a gap from southbound traffic in order to make the turn, delaying northbound thru vehicles behind. As a consequence of the number of site trips added at this intersection, mitigations are warranted and proposed in the next section.

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 intersection, only the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM 2000 calculations. HCM 2000 does not calculate queuing for all-way stops. Table 7 shows the queuing results for the study area intersections. Two of the study intersections exhibits one or more lane group that exceeds the given storage length during at least one peak hour in one or all of the study scenarios:

- 50th Street and Nannie Helen Burroughs Avenue
- Division Avenue and Nannie Helen Burroughs Avenue



MITIGATION MEASURES

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

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

Following these guidelines, there are impacts to two (2) intersections as a result of the development. Mitigation measures were tested at this intersection, with results shown on Table 6 and Table 8, with detailed Synchro reports included in the Technical Attachments. The following conclusions were made:

- 50th Street and Nannie Helen Burroughs Avenue
During the afternoon peak period, the northbound approach of 50th Street is projected to degrade from LOS D to LOS E during the afternoon peak period for 2020 Future conditions; therefore, mitigation measures were evaluated. The primary factor for the delay along the northbound approach of 50th Street is the amount of vehicles making turning movements from a shared lane, with northbound left vehicles having to wait for a gap in eastbound and westbound thru traffic in order to turn. Therefore, even minor increases to traffic along this approach results in poor level of service.

The presence of an offset median should restrict northbound left turns onto westbound NHB Avenue; therefore, prohibited left turns were analyzed, requiring those vehicles to use the signalized intersection at 49th Street & NHB Avenue to make the movement. In both the morning and afternoon scenarios, this traffic pattern was applied to shift the northbound left trips (30 in morning, 21 in afternoon) to 49th Street & NHB Avenue. In both cases, a combination of prohibiting left turns and a slight signal adjustment at 49th Street & NHB Avenue (allocating

more green time to east-west traffic) reduced delays to levels seen during the Background scenarios.

Implementation of this change would require signage prohibiting northbound left turns at 50th Street and a calibration in the signal timings for the 49th Street/NHB Avenue intersection. This report recommends that DDOT review and comment on this change. If DDOT were to explore this idea further, this report recommends that the Applicant support their efforts and coordinate on a possible implementation.

The proposed signal timing plans for this intersection can be found in the Technical Attachments.

- Division Avenue and Nannie Helen Burroughs Avenue
The northbound approach of Division Avenue is projected to operate under LOS F during the morning peak period for 2020 Background Conditions and 2020 Future Conditions. The delay increases by more than 5 percent when compared to the 2020 Background scenario; therefore, mitigation measures were evaluated. Under existing conditions, the intersection operates as a signalized intersection with priority given to NHB Avenue traffic. The primary factor for the long delay along the minor approach of Division Avenue is the amount of vehicles making turning movements from a shared lane, with northbound left vehicles making a permitted turn and having to wait for a gap in southbound thru traffic in order to turn. Therefore, even minor increases to traffic along this approach results in poor level of service.

It was determined that this intersection approach can be improved by the reallocation of green time to the concurrent northbound-southbound phase from the eastbound-westbound phase that have less capacity constraints. The signal timing adjustments decrease delay by over 30 seconds, to the level which is observed under Existing Conditions, as shown in Table 6.

Implementation of this change would require a calibration in the signal timings for this intersection. This report recommends that DDOT review and comment on this change. If DDOT were to explore this idea further, this report recommends that the Applicant support their efforts and coordinate on a possible implementation. The proposed signal timing plans for this intersection can be found in the Technical Attachments.



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
Deanwood Hills PUD	220 Residential (Rate)	150 du	15	62	77	60	33	93
	Non-Auto Reduction: 45%		-6	-28	-34	-26	-15	-41
	Total Trips		9	34	43	34	18	52
Strand Residences PUD	220 Residential	86 du	9	37	46	42	23	65
	Non-Auto Reduction: 40%		-4	-15	-19	-17	-9	-26
	820 Shopping Center (Rate)	1,400 sf	1	0	1	2	3	5
	Non-Auto Reduction: 40%		-0	-0	-0	-1	-1	-2
Total Trips		6	22	28	26	16	42	
PNBC Residential PUD	220 Residential	100 du	11	42	53	47	26	73
	Non-Auto Reduction: 40%		-5	-16	-21	-19	-11	-30
	Total Trips		6	26	32	28	15	43
Net Background Site Trips			21	82	103	88	49	137

Table 5: Applied Annual and Total Growth Rates

Road & Direction of Travel	Annual Growth Rate		Total Growth between 2017 and 2020	
	AM Peak	PM Peak	AM Peak	PM Peak
49th Street, NE – Northbound	2.00%	2.00%	6.12%	6.12%
49th Street, NE – Southbound	2.00%	0.10%	6.12%	0.30%
Nannie Helen Burroughs Avenue, NE – Eastbound	2.00%	0.10%	6.12%	0.30%
Nannie Helen Burroughs Avenue, NE – Westbound	0.10%	0.10%	0.30%	0.30%
Division Avenue, NE – Northbound	2.00%	0.10%	6.12%	0.30%
Division Avenue, NE – Southbound	0.10%	0.10%	0.30%	0.30%

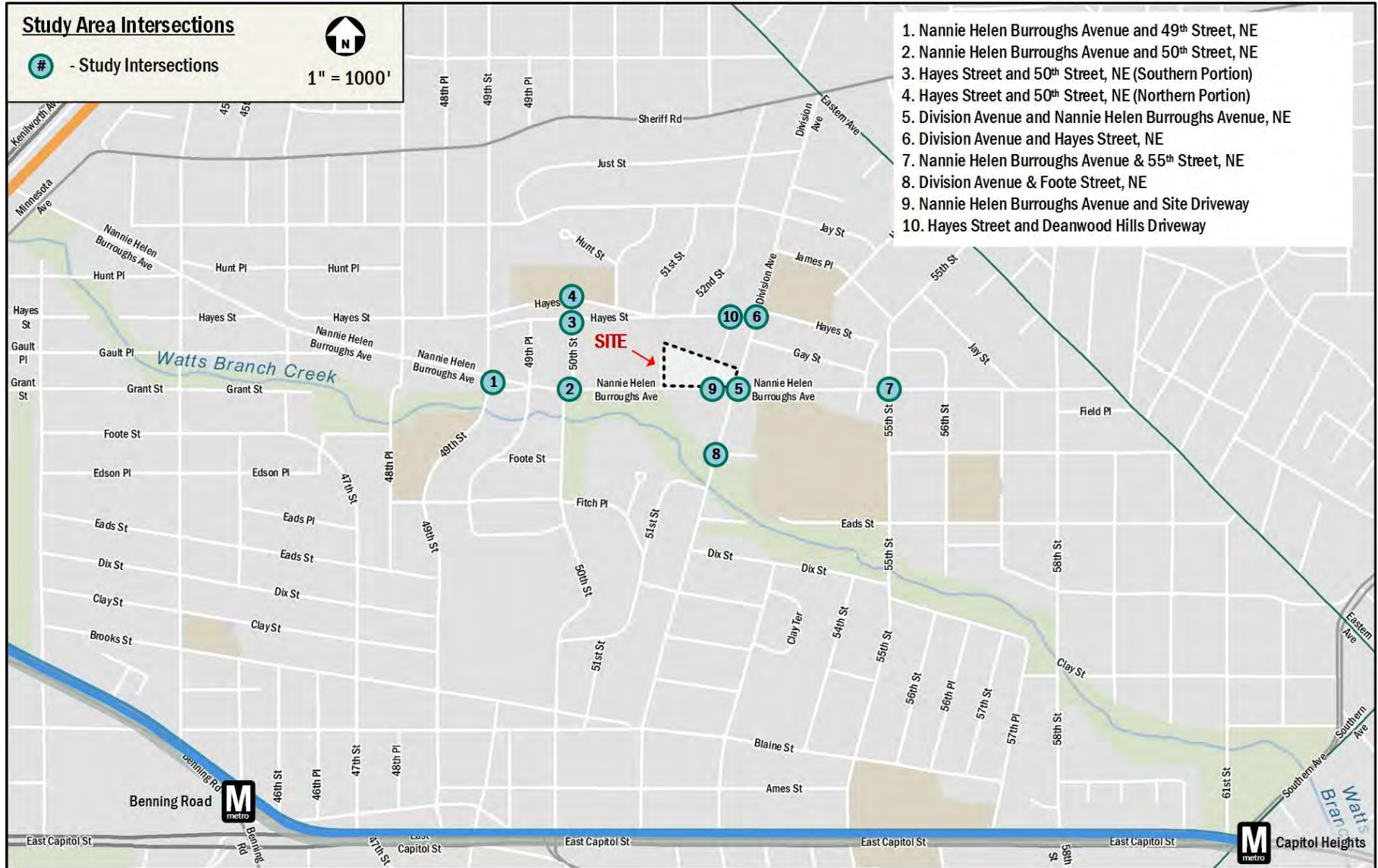


Figure 8: Study Area Intersections

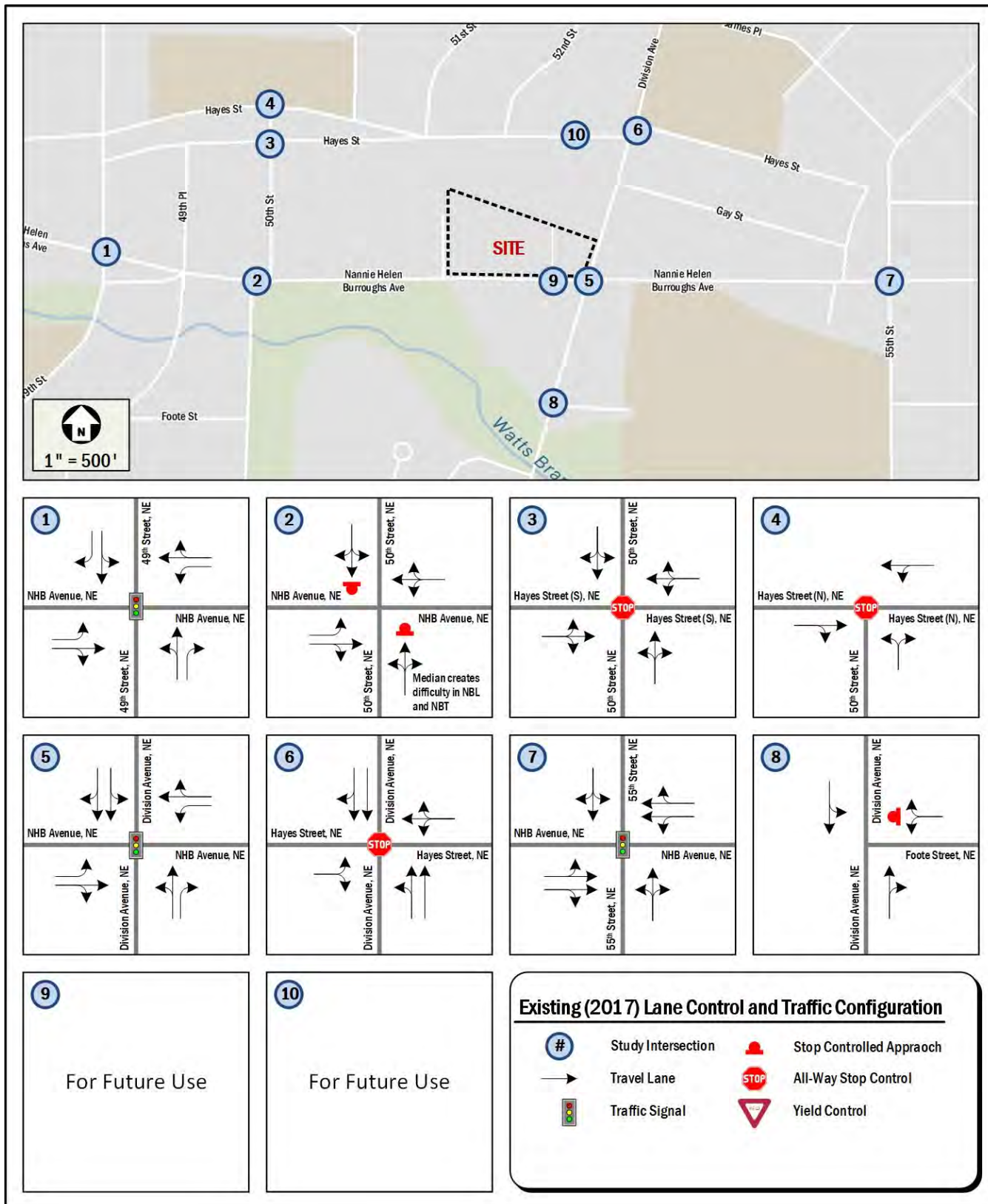


Figure 9: Existing Lane Configuration and Traffic Control

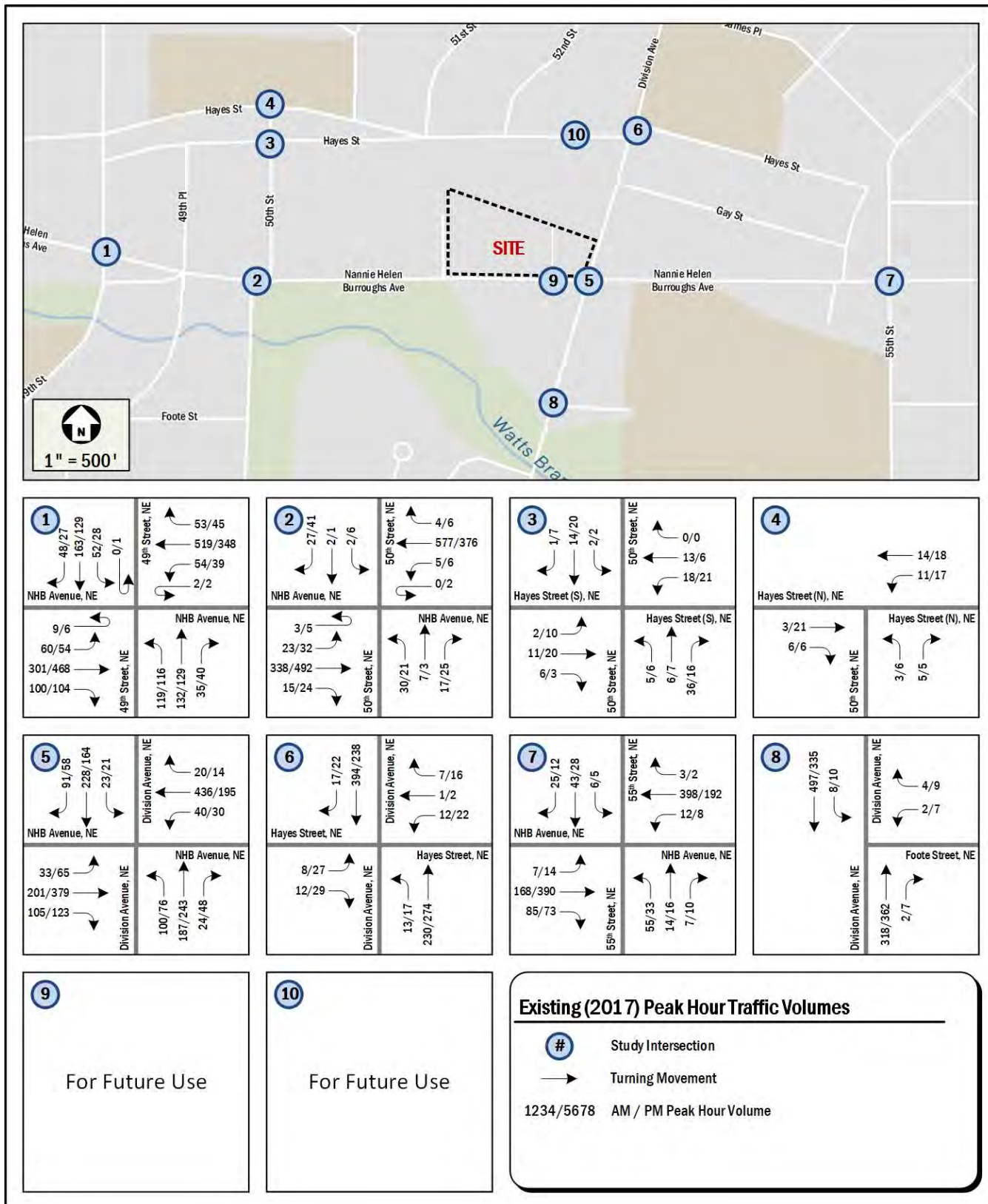


Figure 10: Existing (2017) Peak Hour Traffic Volumes

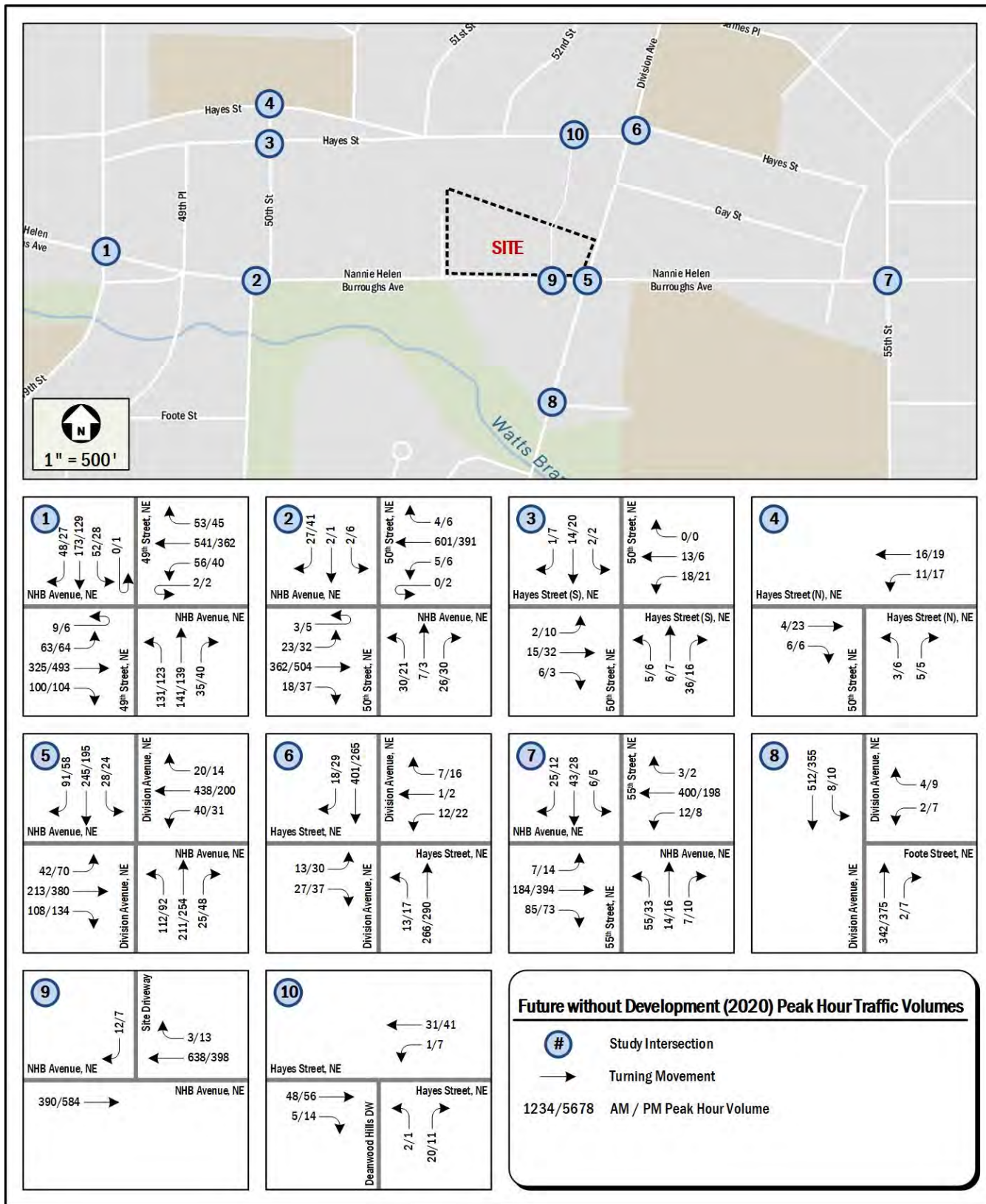


Figure 11: Future without Development (2020) Peak Hour Traffic Volumes

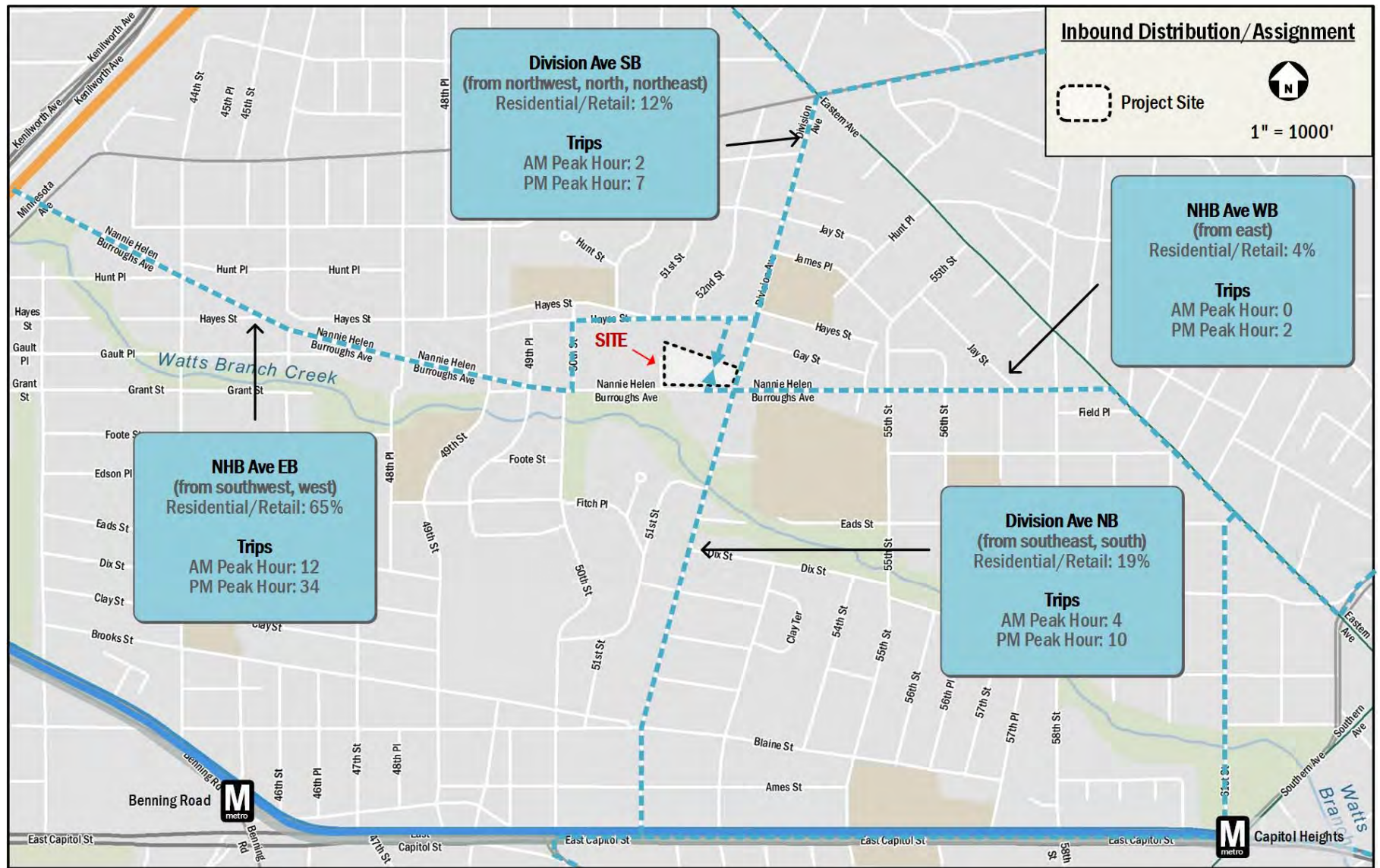


Figure 13: Inbound Trip Distribution and Routing

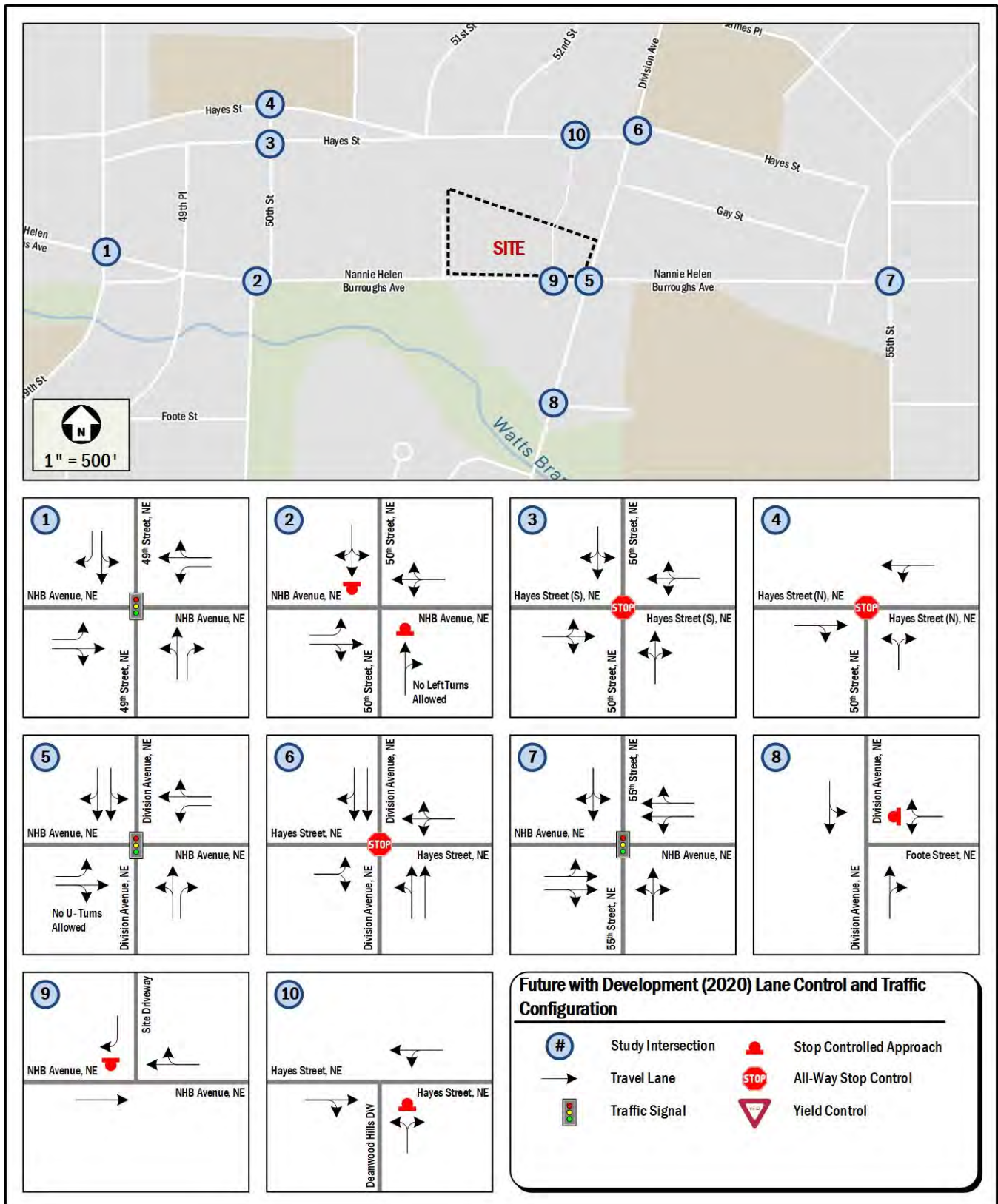


Figure 14: Future with Development (2020) Lane Configuration and Traffic Control

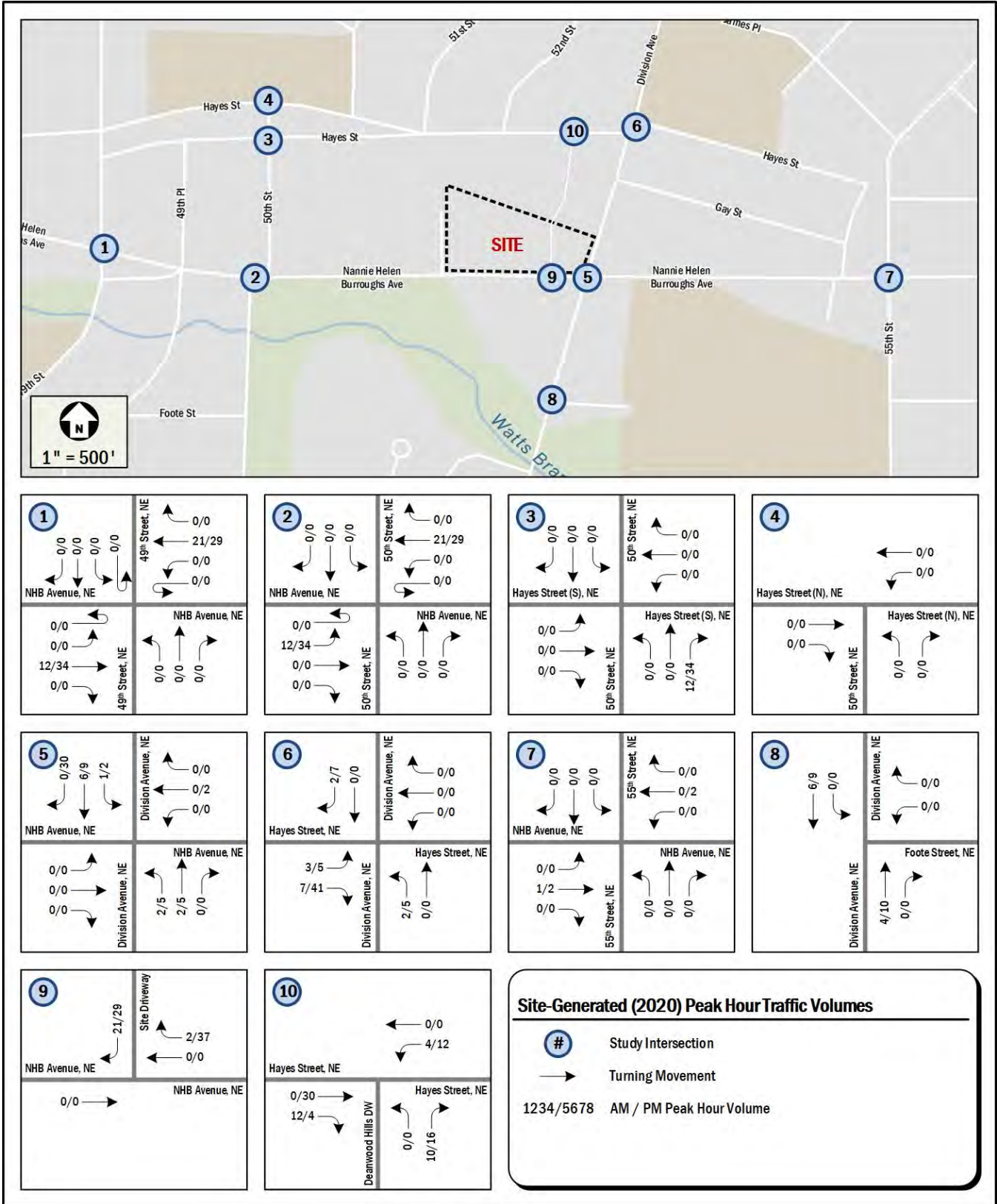


Figure 15: Site-Generated Peak Hour Traffic Volumes

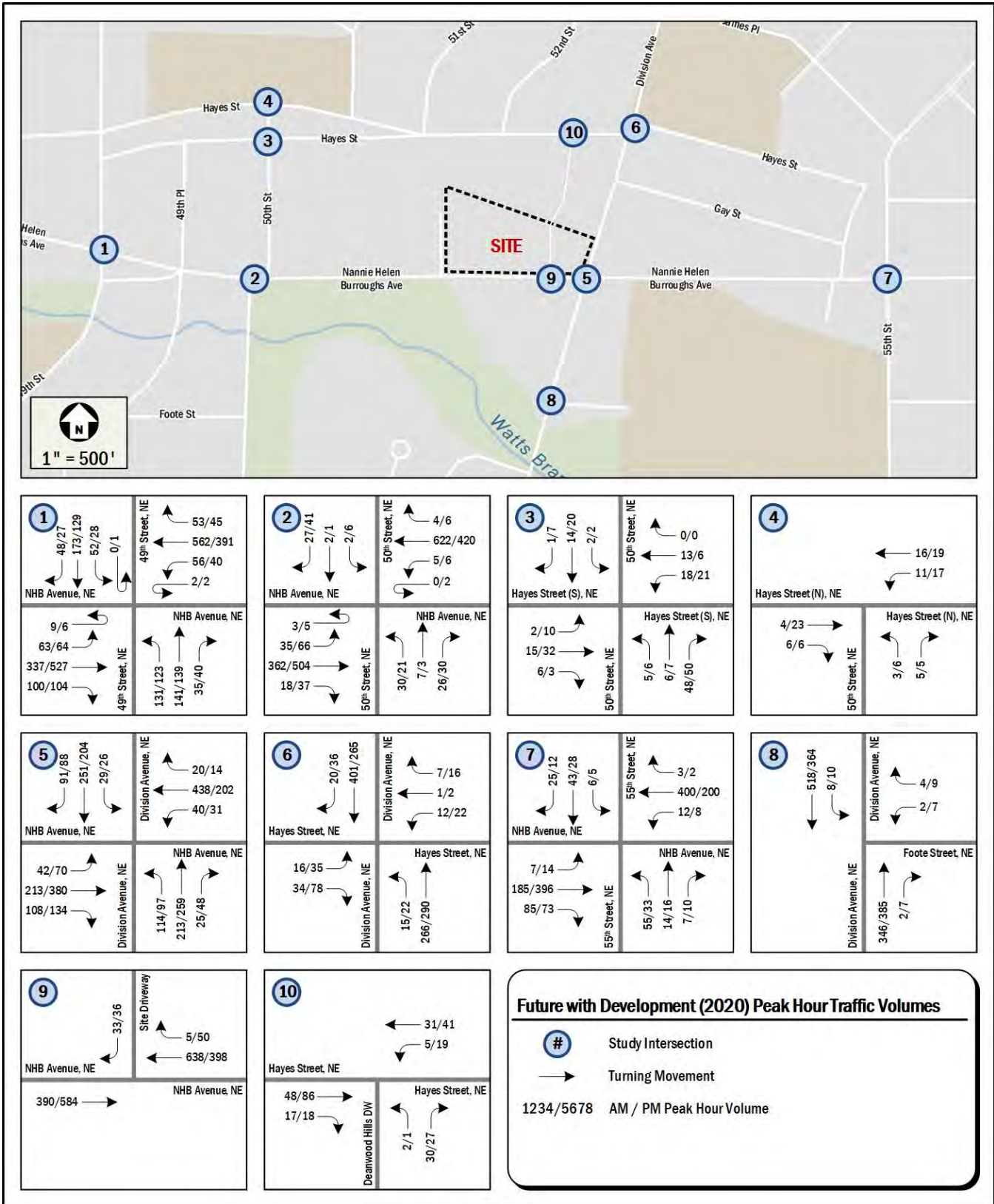


Figure 16: Future with Development (2020) Peak Hour Traffic Volumes



Table 6: LOS Results

Intersection	Approach	Existing Conditions (2017)		Background Conditions (2020)		Total Future Conditions (2020)				Total Future Conditions, Mitigations (2020)							
		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				
49th Street and Nannie Helen Burroughs Avenue, NE	Overall	20.4	C	20.1	C	23.5	C	21.2	C	23.6	C	22.0	C	21.9	C	23.4	C
	Eastbound	10.9	B	15.8	B	11.2	B	16.7	B	11.4	B	18.1	B	13.6	B	18.1	B
	Westbound	11.4	B	16.2	B	11.4	B	16.9	B	12.1	B	18.3	B	10.5	B	17.9	B
	Northbound	45.2	D	32.3	C	59.2	E	35.1	D	59.2	E	35.1	D	51.0	D	41.5	D
	Southbound	31.6	C	23.5	C	34.5	C	23.5	C	34.5	C	23.5	C	27.9	C	24.0	D
50th Street and Nannie Helen Burroughs Avenue, NE	Eastbound	0.5	A	0.5	A	0.5	A	0.5	A	0.8	A	0.9	A	0.8	A	0.9	A
	Westbound	0.1	A	0.2	A	0.1	A	0.2	A	0.1	A	0.2	A	0.1	A	0.2	A
	Northbound	28.3	D	27.0	D	24.5	C	28.4	D	27.1	D	37.1	E	13.7	B	14.6	B
	Southbound	14.6	B	15.2	C	14.5	B	15.8	C	15.0	C	17.9	C	14.9	B	17.9	C
50th Street and Hayes Street (Southern Portion), NE	Overall	7.2	A	7.2	A	7.2	A	7.3	A	7.2	A	7.3	A	--	--	--	--
	Eastbound	7.1	A	7.4	A	7.2	A	7.5	A	7.2	A	7.5	A	--	--	--	--
	Westbound	7.5	A	7.4	A	7.5	A	7.5	A	7.5	A	7.5	A	--	--	--	--
	Northbound	6.9	A	7.0	A	6.9	A	7.0	A	6.9	A	7.0	A	--	--	--	--
	Southbound	7.3	A	7.2	A	7.3	A	7.2	A	7.3	A	7.2	A	--	--	--	--
50th Street and Hayes Street (Northern Portion), NE	Overall	7.0	A	7.1	A	7.0	A	7.1	A	7.0	A	7.1	A	--	--	--	--
	Eastbound	6.6	A	7.0	A	6.7	A	7.0	A	6.7	A	7.0	A	--	--	--	--
	Westbound	7.2	A	7.3	A	7.2	A	7.3	A	7.2	A	7.3	A	--	--	--	--
	Southbound	6.8	A	7.0	A	6.8	A	7.0	A	6.8	A	7.0	A	--	--	--	--
Division Avenue and Nannie Helen Burroughs Avenue, NE	Overall	30.1	C	21.5	C	36.9	D	22.5	C	38.8	D	23.9	C	32.3	C	--	--
	Eastbound	10.1	B	11.9	B	10.1	B	11.1	B	9.8	A	11.6	B	10.5	B	--	--
	Westbound	32.4	C	26.5	C	33.7	C	28.9	C	33.7	C	29.8	C	38.6	D	--	--
	Northbound	56.2	E	33.2	C	83.9	F	36.6	D	91.6	F	40.4	D	58.4	E	--	--
	Southbound	22.2	C	19.4	B	22.0	C	18.4	B	22.1	C	18.4	B	19.9	B	--	--



Intersection	Approach	Existing Conditions (2017)		Background Conditions (2020)		Total Future Conditions (2020)				Total Future Conditions, Mitigations (2020)							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Division Avenue and Hayes Street, NE	Overall	9.0	A	8.6	A	9.4	A	8.9	A	9.5	A	9.3	A	--	--	--	--
	Eastbound	8.6	A	8.7	A	8.9	A	9.0	A	9.0	A	9.5	A	--	--	--	--
	Westbound	8.7	A	8.6	A	8.9	A	8.8	A	8.9	A	9.0	A	--	--	--	--
	Northbound	8.3	A	8.7	A	8.7	A	9.0	A	8.8	A	9.4	A	--	--	--	--
	Southbound	9.5	A	8.5	A	9.9	A	8.8	A	10.0	B	9.2	A	--	--	--	--
55th Street and Nannie Helen Burroughs Avenue, NE	Overall	30.7	C	32.0	C	31.9	C	33.5	C	31.9	C	33.6	C	--	--	--	--
	Eastbound	39.0	D	41.1	D	41.7	D	43.8	D	41.5	D	43.9	D	--	--	--	--
	Westbound	35.9	D	26.6	C	36.1	D	26.6	C	36.1	D	26.7	C	--	--	--	--
	Northbound	4.3	A	4.5	A	4.3	A	4.5	A	4.3	A	4.5	A	--	--	--	--
	Southbound	4.2	A	4.4	A	4.2	A	4.4	A	4.2	A	4.4	A	--	--	--	--
Division Avenue and Foote Street, NE	Westbound	14.8	B	16.9	C	15.3	C	17.4	C	15.4	C	17.8	C	--	--	--	--
	Northbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	--	--	--	--
	Southbound	0.3	A	0.4	A	0.3	A	0.4	A	0.3	A	0.4	A	--	--	--	--
NHB Avenue and Site Driveway, NE	Eastbound					0.0	A	0.0	A	0.0	A	0.0	A	--	--	--	--
	Westbound					For Future Use		0.0	A	0.0	A	0.0	A	--	--	--	--
	Southbound					14.9	B	11.7	B	15.7	C	12.4	B	--	--	--	--
NHB Avenue and Deanwood Hills Driveway, NE	Eastbound					0.0	A	0.0	A	0.0	A	0.0	A	--	--	--	--
	Westbound					For Future Use		0.2	A	1.1	A	1.0	A	--	--	--	--
	Northbound					8.7	A	8.7	A	8.7	A	8.9	A	--	--	--	--



Table 7: Queueing Results (in feet)

Intersection	Lane Group	Storage Length (feet)	Existing Conditions (2017)				Background Conditions (2020)				Total Future Conditions (2020)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
49th Street and Nannie Helen Burroughs Avenue, NE	Eastbound Left	250	16	39	14	34	17	41	17	39	17	42	17	40
	Eastbound TR	535	109	175	195	317	118	188	209	340	123	195	229	377
	Westbound Left	175	11	m20	10	m23	11	m19	11	m24	11	m19	12	m27
	Westbound TR	200	133	m168	190	268	137	m166	207	m285	144	m181	222	m300
	Northbound LT	925	125	#254	119	#196	140	#289	130	#229	140	#289	130	#229
	Northbound Right	50	1	23	4	24	1	23	4	24	1	23	4	24
	Southbound LT	315	101	178	69	117	108	#210	69	117	108	#210	69	117
	Southbound Right	50	20	47	11	28	20	47	11	28	20	47	11	28
50th Street and Nannie Helen Burroughs Avenue, NE	Eastbound Left	115	--	2	--	3	--	2	--	3	--	3	--	6
	Eastbound TR	225	--	0	--	0	--	0	--	0	--	0	--	0
	Westbound LTR	70	--	0	--	1	--	0	--	1	--	0	--	1
	Northbound LTR	400	--	29	--	23	--	29	--	26	--	32	--	35
	Southbound LTR	400	--	7	--	12	--	7	--	12	--	7	--	15
*50th Street and Hayes Street (Southern Portion), NE	Eastbound LTR	250	*HCM does not analyze queueing for All-Way Stop-Controlled Intersections											
	Westbound LTR	250												
	Northbound LTR	400												
	Southbound LTR	50												
50th Street and Hayes Street (Northern Portion), NE*	Eastbound TR	525	*HCM does not analyze queueing for All-Way Stop-Controlled Intersections											
	Westbound LT	250												
	Northbound LR	50												



Intersection	Lane Group	Storage Length (ft)	Existing Conditions (2017)				Background Conditions (2020)				Total Future Conditions (2020)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
Division Avenue and Nannie Helen Burroughs Avenue, NE	Eastbound Left	115	7	m17	12	m28	8	m20	11	m22	8	m20	10	m22
	Eastbound TR	200	93	144	101	227	101	152	73	173	95	143	72	m172
	Westbound Left	125	18	m33	16	42	18	m33	17	43	18	m33	17	43
	Westbound TR	975	238	334	112	176	239	335	115	179	239	335	117	182
	Northbound LT	350	160	#290	156	220	~211	#344	164	#276	~218	#352	171	#296
	Northbound Right	50	0	13	6	25	0	14	6	25	0	14	6	25
	Southbound LTR	285	77	117	50	70	84	126	53	79	86	128	61	91
Division Avenue and Hayes Street, NE*	Eastbound LR	350	*HCM does not analyze queueing for All-Way Stop-Controlled Intersections											
	Westbound LTR	800												
	Northbound LT	100												
	Southbound TR	375												
55th Street and Nannie Helen Burroughs Avenue, NE	Eastbound LTR	985	42	82	89	#162	50	91	107	#164	51	92	110	#165
	Westbound LTR	310	105	155	48	77	106	156	50	79	106	156	51	80
	Northbound LTR	375	12	24	8	19	12	24	8	19	12	24	8	19
	Southbound LTR	350	8	20	6	15	8	20	6	15	8	20	6	15
Division Avenue and Foote Street, NE	Westbound LR	175	--	1	--	5	--	1	--	5	--	2	--	5
	Northbound TR	200	--	0	--	0	--	0	--	0	--	0	--	0
	Southbound LT	350	--	1	--	1	--	1	--	1	--	1	--	1
NHB Avenue and Site Driveway, NE	Eastbound Thru	--	For Future Use		--	0	--	0	--	0	--	0	--	0
	Westbound TR	100	For Future Use		--	0	--	0	--	0	--	0	--	0
	Southbound Right	125	For Future Use		--	3	--	1	--	9	--	6	--	6
Hayes Street and Deanwood Hills Driveway, NE	Eastbound TR	200	For Future Use		--	0	--	0	--	0	--	0	--	0
	Westbound LT	135	For Future Use		--	0	--	0	--	0	--	0	--	1
	Northbound LR	125	For Future Use		--	2	--	1	--	3	--	2	--	2

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



Table 8: Queuing Results, with Mitigations (in feet)

Intersection	Lane Group	Storage Length (ft)	Background Conditions (2020)				Total Future Conditions (2020)				Total Future Conditions, Mitigations (2020)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
49th Street and Nannie Helen Burroughs Avenue, NE	Eastbound Left	250	17	41	17	39	17	42	17	40	19	47	17	39
	Eastbound TR	535	118	188	209	340	123	195	229	377	136	217	229	377
	Westbound Left	175	11	m19	11	m24	11	m19	12	m27	10	m17	12	m27
	Westbound TR	200	137	m166	207	m285	144	m181	222	m300	119	m151	212	m288
	Northbound LT	925	140	#289	130	#229	140	#289	130	#229	152	#305	145	#260
	Northbound Right	50	1	23	4	24	1	23	4	24	1	21	4	24
	Southbound LT	315	108	#210	69	117	108	#210	69	117	101	178	70	119
	Southbound Right	50	20	47	11	28	20	47	11	28	18	44	11	28
50th Street and Nannie Helen Burroughs Avenue, NE	Eastbound Left	115	--	2	--	3	--	3	--	6	--	3	--	6
	Eastbound TR	225	--	0	--	0	--	0	--	0	--	0	--	0
	Westbound LTR	70	--	0	--	1	--	0	--	1	--	0	--	1
	Northbound LTR	400	--	29	--	26	--	32	--	35	--	7	--	7
	Southbound LTR	400	--	7	--	12	--	7	--	15	--	7	--	15
Division Avenue and Nannie Helen Burroughs Avenue, NE	Eastbound Left	115	8	m20	11	m22	8	m20	10	m22	8	m19	--	--
	Eastbound TR	200	101	152	73	173	95	143	72	m172	99	148	--	--
	Westbound Left	125	18	m33	17	43	18	m33	17	43	22	m37	--	--
	Westbound TR	975	239	335	115	179	239	335	117	182	266	363	--	--
	Northbound LT	350	~211	#344	164	#276	~218	#352	171	#296	184	#327	--	--
	Northbound Right	50	0	14	6	25	0	14	6	25	0	13	--	--
	Southbound LTR	285	84	126	53	79	86	128	61	91	80	120	--	--

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

= 95th percentile volume exceeds capacity, queue may be longer

~ = Volume exceeds capacity, queue is theoretically infinite

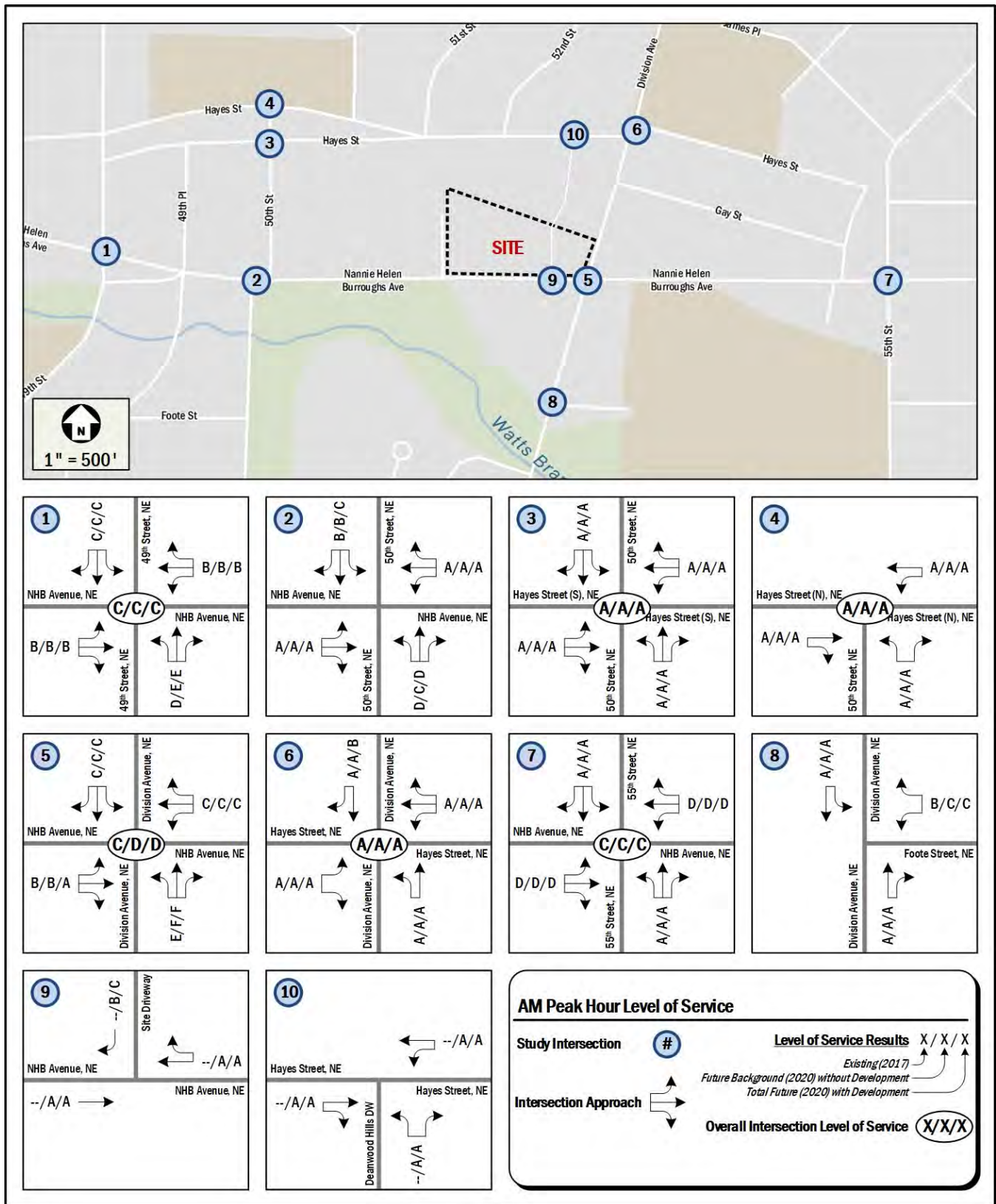


Figure 17: AM Peak Hour Level of Service Results

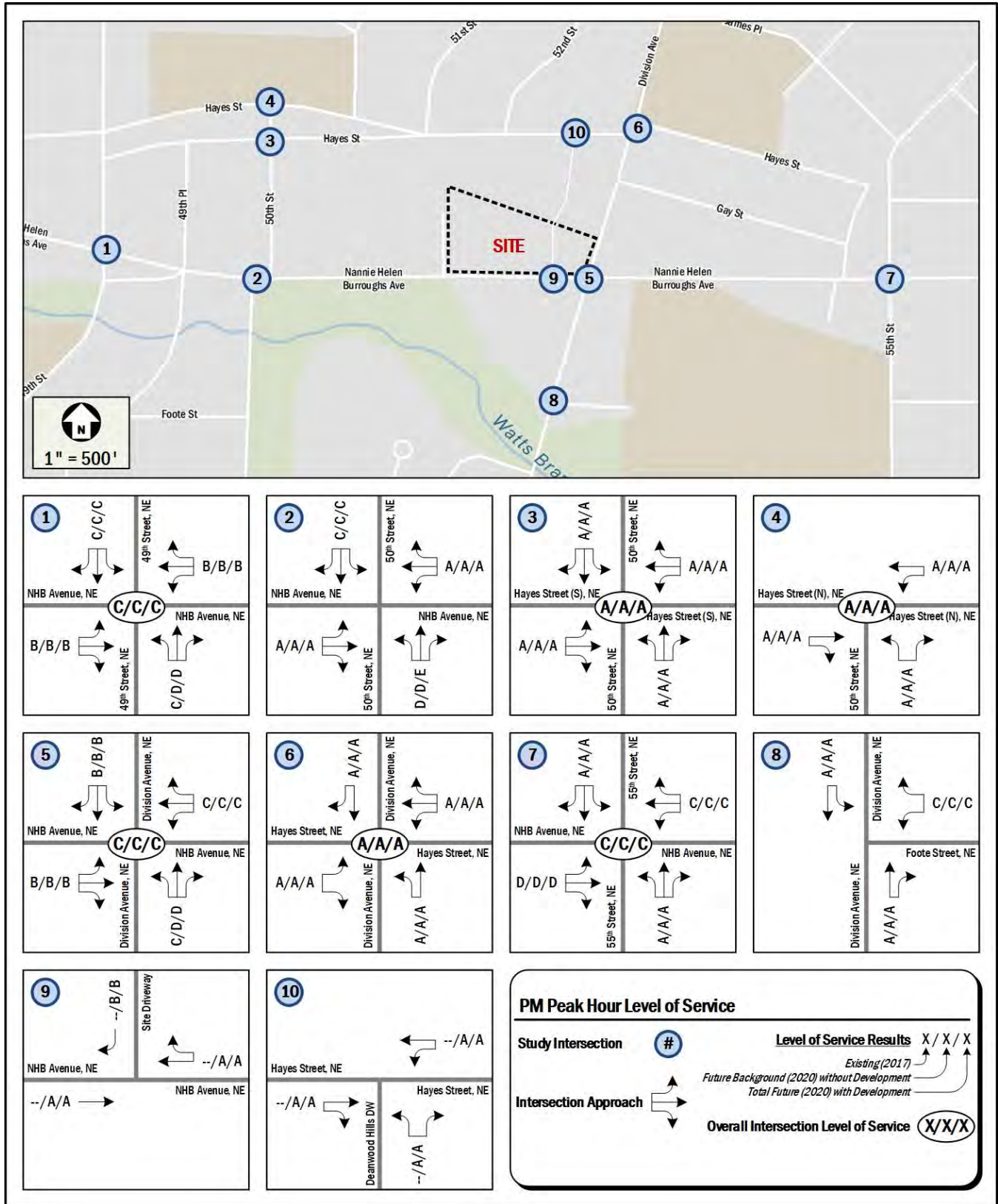


Figure 18: PM Peak Hour Level of Service Results



TRANSIT

This section discusses the existing and proposed transit facilities in the vicinity of the Site, accessibility to transit, and evaluates the overall transit impacts of the Deanwood Town Center project.

The following conclusions are reached within this chapter:

- The development has adequate access to transit.
- The development is located 1.1 miles from the Deanwood, Benning Road, and Minnesota Avenue Metrorail stations.
- The development Site is surrounded by four (4) Metrobus routes with a one-minute walk that travel along multiple primary corridors.
- The development is expected to generate a manageable number 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 has access to 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 19 identifies the major transit routes, stations, and stops in the study area.

The Site is located approximately 1.1 miles from three Metrorail stations: Deanwood, Benning Road and Minnesota Avenue. The Benning Road station is serviced by the Blue/Silver lines while the Deanwood and Minnesota Avenue stations are serviced by the Orange Line. All three lines provide direct connections to areas in the District, Maryland, and Virginia. The Benning Road station is accessible from the Site by foot via

Division Avenue and East Capitol Street or by Metrobus. The Blue and Silver Lines connects the Site to western terminals in the City of Alexandria, VA and Reston, VA respectively, extending through downtown Washington via Metro Center and L'Enfant Plaza, before ending in Largo Town Center to the east. Blue and Silver Line trains run every 8 minutes during the weekday morning and afternoon peak hours between 5:00 AM to 9:30 AM and 3:00 PM to 7:00 PM and approximately every 12 minutes during the weekday midday hours from 9:30 AM to 3:00 PM and every 12 to 20 minutes during the weekday off-peak periods and on weekends. The Deanwood station is accessible from the Site by foot via NHB Avenue and 48th Street, or by Metrobus while the Minnesota Avenue station is accessible from the Site by foot via NHB Avenue and Gault Place, or by Metrobus. The Orange Line provides overlapping service with the Blue and Silver Lines in the direction of the District core, with eastbound service to New Carrollton, where transfers can be made to MARC and Amtrak services. Orange Line trains run at the same frequency as Blue and Silver Line trains.

The Site is also serviced by local Metrobus routes, providing the Site with additional connectivity to the Capitol Heights Metrorail Station, in addition to the aforementioned stations, where transfers can be made to other bus routes and the Metrorail lines, providing connectivity to the downtown core and other areas of the District, Maryland, and Virginia. The X9 MetroExtra route serves the Site at the intersection of NHB Avenue and Division Avenue, providing direct access to and from Northwest, D.C. during peak commute hours. Table 9 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.

Figure 19 shows a detailed inventory of the existing Metrobus stops within a quarter-mile walkshed of the Site. Each stop is

Table 9: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
U5, U6	Mayfair-Marshall Heights Line	Weekdays: 4:55 AM – 1:16 AM Weekends: 5:20 AM – 2:44 AM	Weekdays: 12–36 minutes Weekends: 17–32 minutes	0.3 miles, 7 minutes
V2, V4	Capitol Heights-Minnesota Avenue Line	Weekdays: 4:15 AM – 2:50 AM Weekends: 4:35 AM – 2:46 AM	Weekdays: 3–32 minutes Weekends: 15–40 minutes	<0.1 mile, 1 minute
W4	Deanwood-Alabama Avenue Line	Weekdays: 5:06 AM – 2:18 AM Weekends: 6:05 AM – 2:08 AM	Weekdays: 10–30 minutes Weekends: 16–36 minutes	<0.1 mile, 1 minute
X9	Benning Road-H Street Limited Line	Weekdays: 6:23 AM – 7:16 PM	Weekdays: 11–20 minutes	<0.1 mile, 1 minute



evaluated based on the guidelines set forth by WMATA's *Guidelines for the Design and Placement of Transit Stops*. A detailed breakdown of individual bus stop amenities and criteria for standards is included in the Technical Attachments.

PROPOSED TRANSIT SERVICE

MoveDC

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

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

No transit related improvements were outlined in the MoveDC plan that directly affect the proposed development.

WMATA and DDOT Transit Studies

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

WMATA has also studied capacity along Metrobus routes. DC's *Transit Future System Plan (2010)* lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). A load factor is considered unacceptable if it is over 1.2 during peak periods or over 1.0 during off-peak or weekend periods. According to this study Metrobus routes that travel near the Site operate at a load factor that is at or below its capacity during peak periods of the day.

SITE IMPACTS

Transit Trip Generation

The Site is projected to generate 34 transit trips (12 inbound, 22 outbound) during the morning peak hour and 69 transit trips (37 inbound, 32 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 20254 and data shows that approximately 46 percent of transit riders used Metrobus and the remainder use Metrorail. That said, approximately 18 people will use Metrorail and 16 will use Metrobus during the morning peak hour; approximately 37 people will use Metrorail and 32 will use Metrobus during the afternoon peak hour.

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

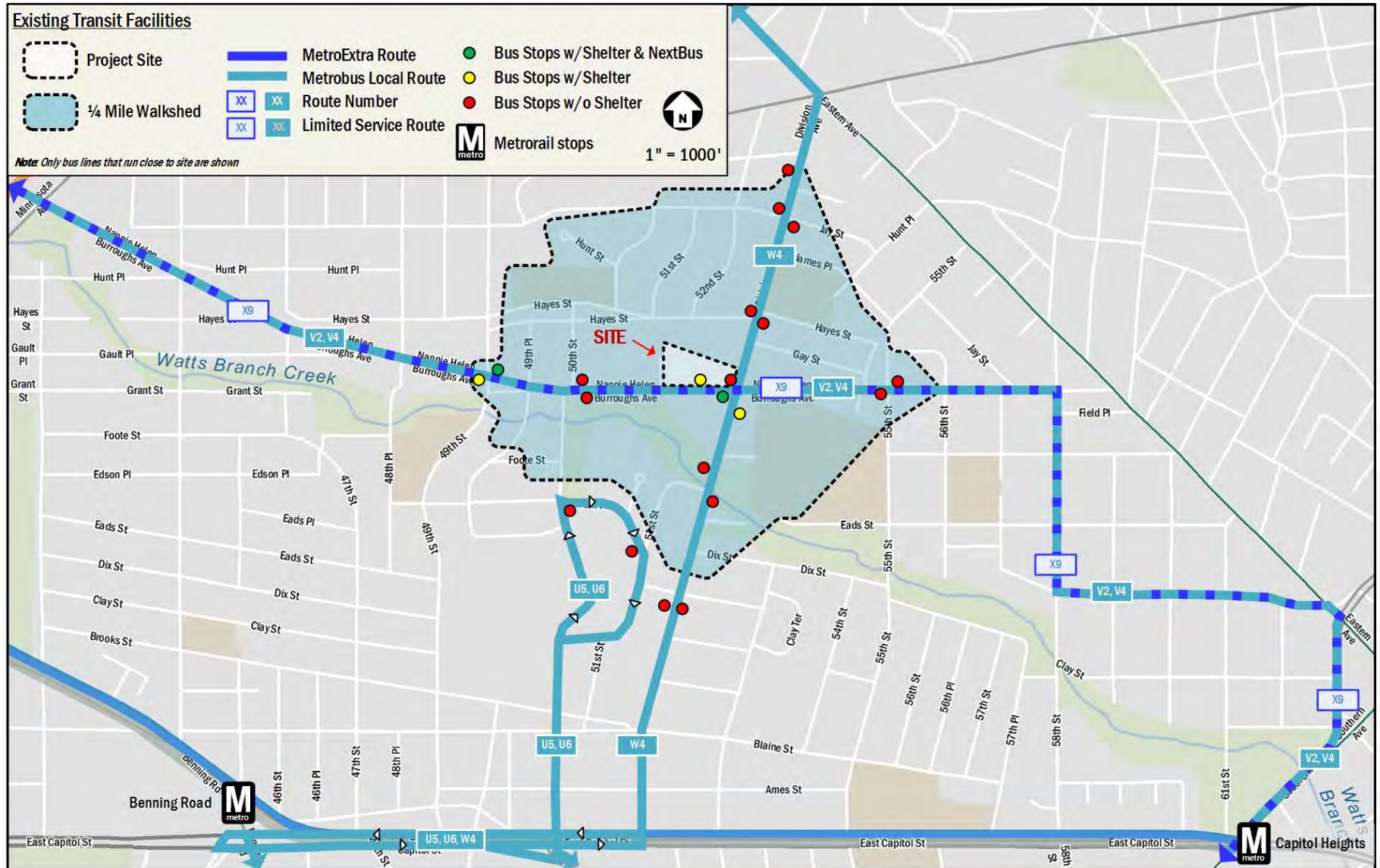


Figure 19: Existing Transit Service



PEDESTRIAN FACILITIES

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

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the Site provides an adequate walking environment. There are sidewalks along the majority of primary routes to pedestrian destinations with some gaps in the system.
- The development is expected to generate a minimal amount of pedestrian trips; however, the pedestrian trips generated by walking to and from transit stops will be more substantial, particularly bus stops within a five minute walk.

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 generally accessible to transit options such as bus stops directly adjacent to the Site along Fitch Place, Nannie Helen Burroughs Avenue, and Division Avenue. There are some 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, and incomplete or insufficient crossings at busy intersections. Figure 20 shows suggested pedestrian pathways, walking time and distances, and barriers and areas of concern.

PEDESTRIAN INFRASTRUCTURE

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

Existing Conditions

A review of pedestrian facilities surrounding the proposed development shows that few facilities meet DDOT standards, resulting in an adequate walking environment. Figure 21 shows a detailed inventory of the existing pedestrian infrastructure surrounding the Site. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT’s *Design and Engineering Manual (2017)* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 10.

Within the area shown, the majority of roadways are considered residential with a low to moderate density, with a portion of Nannie Helen Burroughs Avenue considered commercial. Although most of the sidewalks surrounding the Site (particularly along Division Avenue) do not comply with DDOT standards, this is a consequence more of insufficient sidewalk and buffer widths rather than sidewalks of poor quality. All primary pedestrian destinations are accessible via routes with sidewalks, some of which met DDOT standards. Residential streets northeast and northwest of the Site lack sidewalks. These streets are generally low-volume. Additionally, the Marvin Gaye Trail provides an alternate walking environment for east-west travel.

ADA standards require that curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired. As shown in Figure 21, under existing conditions crosswalks and curb ramps with detectable warnings are generally absent along portions of Division Avenue adjacent to the Site; however, this is generally due to a lack of detectable warning surfaces rather than a lack of curb ramp itself.

Pedestrian Infrastructure Improvements

As a result of the development, pedestrian facilities around the perimeter of the Site will be improved to meet DDOT and ADA standards. This includes the installation or reconstruction of sidewalks along NHB Avenue and Division Avenue that meet or

Table 10: 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



exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings, and additional design elements such as plantings, fencing, and streetscaping will result in improvements over existing conditions. The future pedestrian facilities included with the development and improvements from other developments is shown in Figure 22.

SITE IMPACTS

Pedestrian Trip Generation

The Deanwood Town Center development is expected to generate seven (7) walking trips (4 inbound, 3 outbound) during the morning peak hour and 23 walking trips (11 inbound, 12 outbound) during the afternoon peak hour. The origins and destinations of these trips are likely to be:

- Employment opportunities where residents can walk to work;
- Retail locations outside of the Site; and
- Neighborhood destinations such as schools, libraries, and parks in the vicinity of the Site.

In addition to these trips, the transit trips generated by the Site will also generate pedestrian demand between the Site and nearby transit stops, including bus stops within a five minute walk.

The pedestrian network will have the capacity to absorb the newly generated trips from the Site.

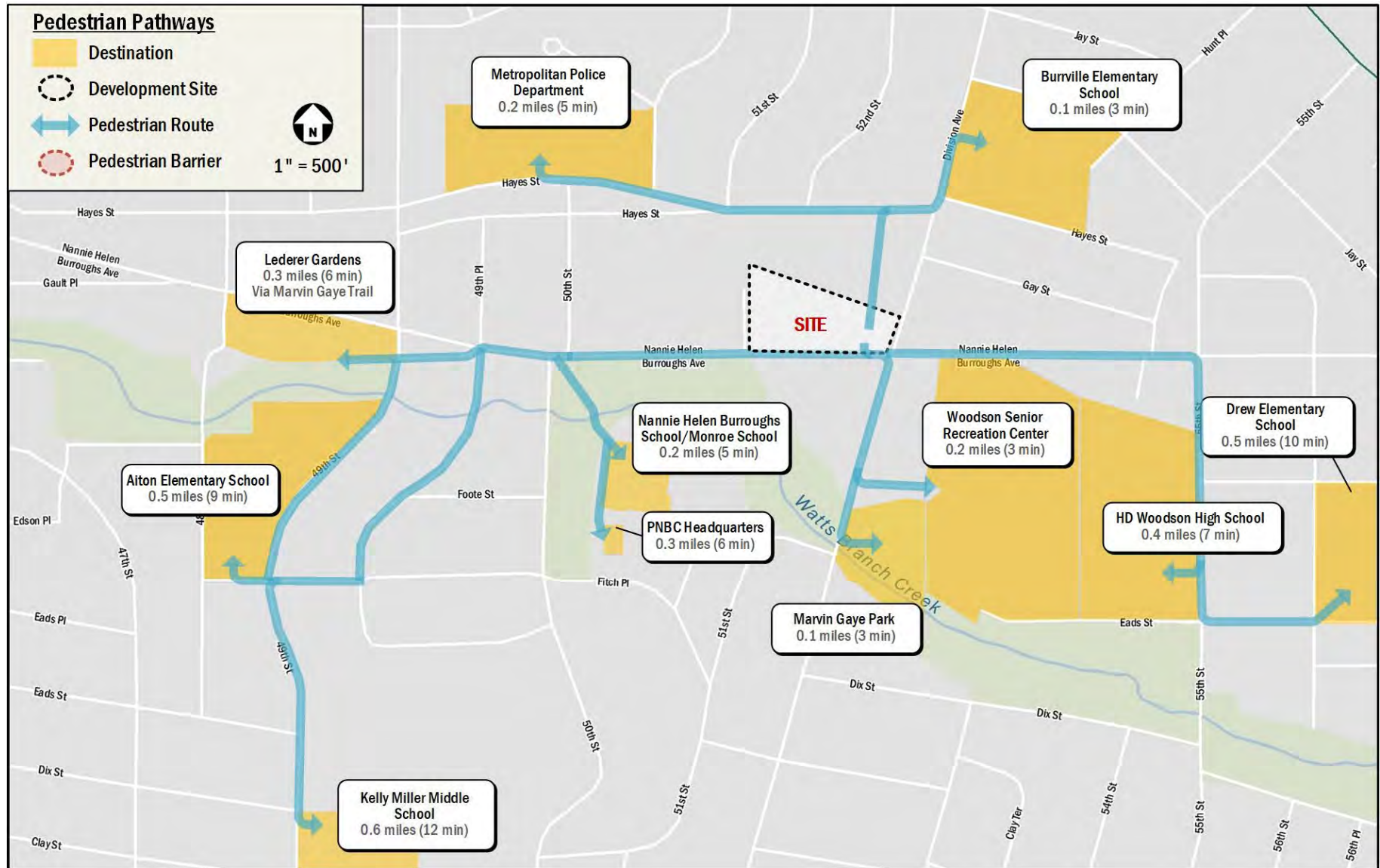


Figure 20: Pedestrian Pathways

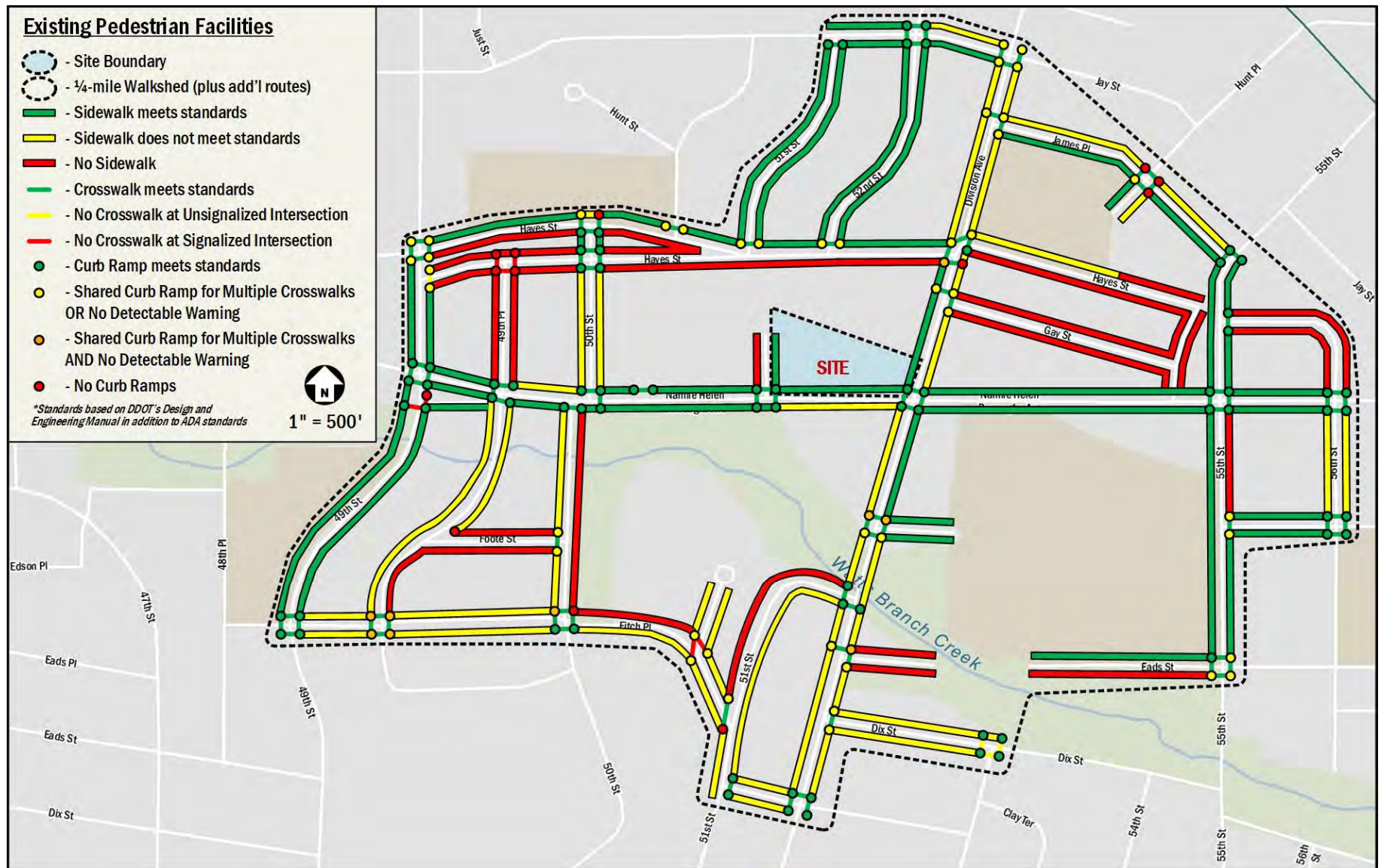


Figure 21: Existing Pedestrian Infrastructure

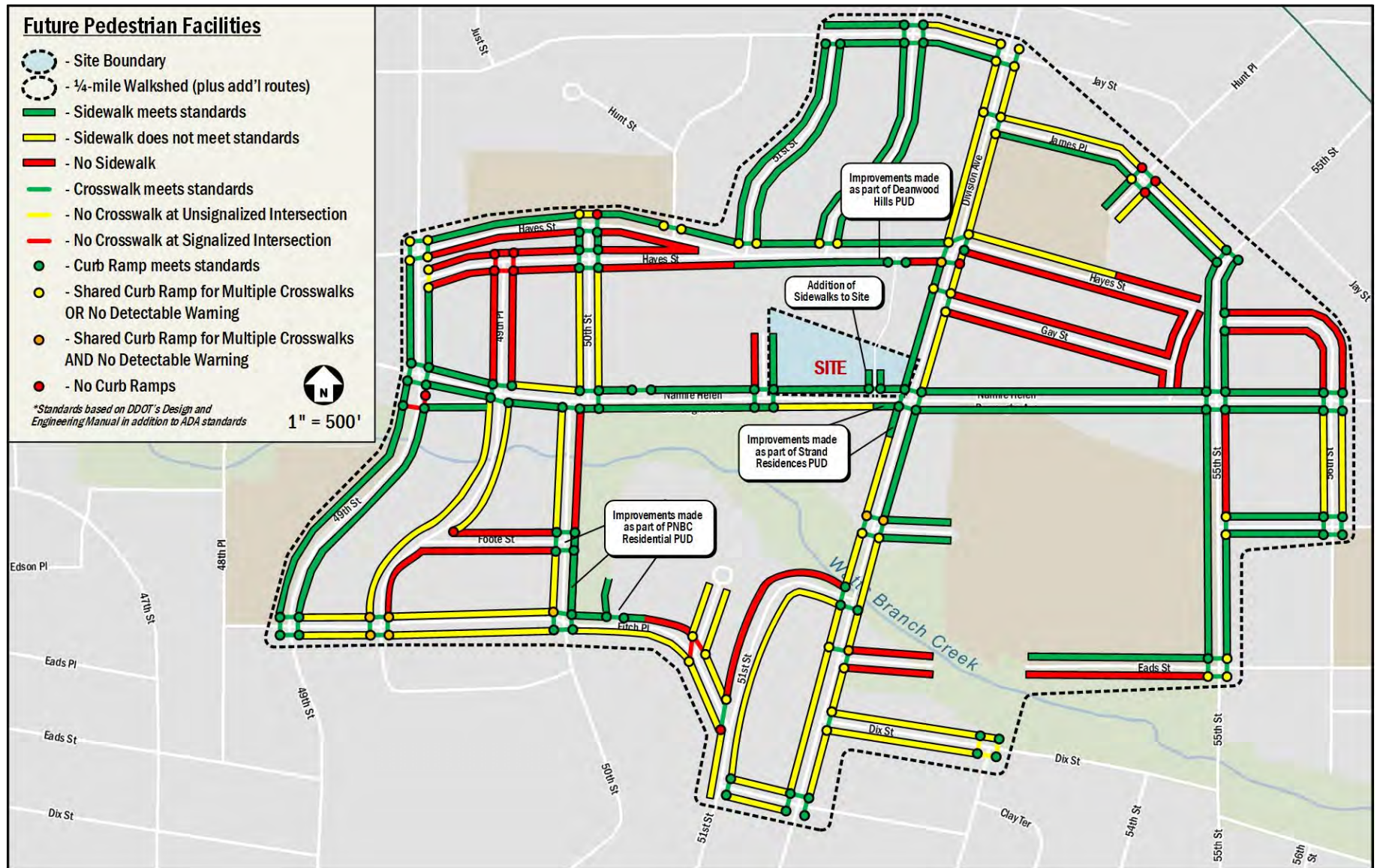


Figure 22: Future Pedestrian Infrastructure



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 several on and off street bicycle facilities including the Marvin Gaye Trail and 49th Street Bicycle Lanes.
- The development is not expected to generate a significant number of bicycle trips; therefore, all site-generated bike trips can be accommodated on existing infrastructure.
- The development will include secure bicycle parking on site for residents of the development.
- The development will include short-term bicycle racks along the perimeter of the Site.

EXISTING BICYCLE FACILITIES

The Site has excellent connectivity to existing on and off street bicycle facilities. Residential low volume streets surrounding the Site provide connectivity to existing bicycle facilities near the Site. The Marvin Gaye Trail is approximately 0.1 miles from the Site across NHB Avenue, providing connections to the Fort Circle Trail to the west and the Maryland State Line at Southern Avenue to the east. 49th Street provides a north-south link to and from the Site, utilizing a series of shared lanes and bicycle lanes from East Capitol Street to Minnesota Avenue adjacent to the Deanwood Metrorail Station. Supplementary east-west connectivity is achieved via shared lanes and bicycle lanes along NHB Avenue from 44th Street to the Maryland State Line at Southern Avenue. The Site is located approximately three blocks from the facilities on 49th Street.

These bicycle facilities connect the Site to areas within the District, Maryland and Virginia. Figure 23 illustrates the existing bicycle facilities in the study area.

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

PROPOSED BICYCLE FACILITIES

MoveDC

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 Transportation Improvement Program (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 no tier 1 additions planned for near the Site.
- Tier 2
Investments within this tier are not high priorities in the early years of MoveDC implementation. These investments could begin moving through the Project Development Process if there are compelling reasons for their advancement.
There are two tier 2 additions that will positively affect bicycle connectivity to and from the Site. A 1.4 mile bicycle lane along 49th Street between Minnesota Avenue and East Capitol Street is planned, replacing the current shared lane system in place for this portion. Additionally, a 1 mile bicycle lane along Division Avenue between Eastern Avenue and East Capitol Street is planned, which will greatly improve the north-south 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 nor included in DDOT's Transportation Improvement Plan thus they will not be assumed as complete for this report. The investments will however be shown in Figure 23.

Capital Bikeshare

The Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the planned development. The Bikeshare program has placed 440 Bikeshare stations across Washington, DC, Arlington, and Alexandria, VA, Montgomery County, MD, and most recently Fairfax County, VA, with 3,700 bicycles provided. Capital Bikeshare currently has two existing Capital Bikeshare stations with 25 available bicycle docks within a quarter-mile biking distance of the Site at the intersection of Division Avenue and Foote Street (just south of the Site), and at the intersection of NHB Avenue and 49th Street (west of the Site). Figure 23 illustrates the existing Capital Bikeshare facilities in the area.

On-Site Bicycle Elements

The project will include approximately nine (9) short-term bicycle racks for 18 bicycles at street level along the perimeter of the Site. These short-term spaces will include inverted U-racks placed in a high-visibility area. The Applicant is coordinating with DDOT to locate these racks in public space on Division Avenue or NHB Avenue.

The project will also include secure long-term bicycle parking. The plans identify a total of approximately 62 long-term spaces, split between the two-level parking garage and the section in the rear of Building 1 for residents and retail customers of the proposed development, which meets current ZR16 regulations.

SITE IMPACTS

Bicycle Trip Generation

The Deanwood Town Center development is expected to generate two (2) bicycle trips (0 inbound, 2 outbound) during the morning peak hour and five (5) bicycle trips (2 inbound, 3 outbound) during the afternoon peak hour. Despite the low number of anticipated bicycle site trips, bicycling will be an important mode getting to and from the Site. With significant facilities located on site and existing routes to and from the Site, the impacts from bicycling will be minimal when compared to the impacts of other modes.

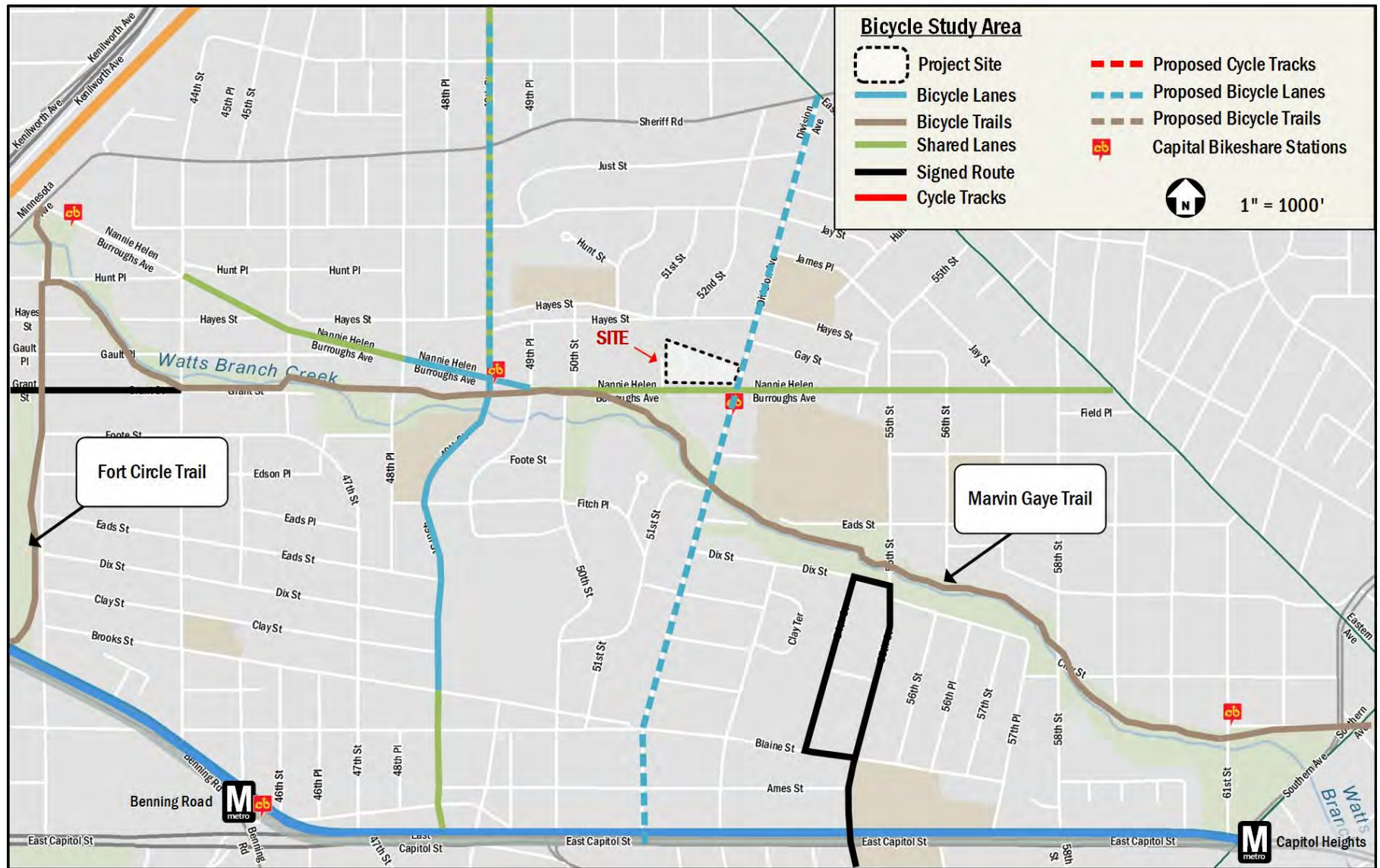


Figure 23: Existing Bicycle Facilities



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 2014 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 measured in crash per million-entering vehicles (MEV). The crash rates per intersections are shown in Table 12. Detailed crash report data is presented in the Technical Attachments.

According to the Institute of Transportation Engineers' *Transportation Impact Analysis for Site Development*, a crash rate of 1.0 or higher is an indication that further study is required. Four (4) of the ten intersections in this study area

meet this criterion (as shown in Table 12 and detailed in Table 11). The Deanwood Town Center development should be developed in a manner to help alleviate, or at minimum not add to, the conflicts at this intersection.

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 deficiencies. 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.

Generally, the reasons why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. Some summaries of crash data can be used to develop general trends or eliminate possible causes. Table 11 contains a breakdown of crash types reported for the four intersections with a crash rate over 1.0 per MEV.

Table 12: Intersection Crash Rates

Intersection [^]	Total Crashes	Ped Crashes	Bike Crashes	Rate per MEV*
1. Nannie Helen Burroughs Avenue and 49th Street, NE	22	2	2	0.97
2. Nannie Helen Burroughs Avenue and 50th Street, NE	17	0	0	1.14
3. 50th Street and Hayes Street (South), NE	13	0	0	7.87
4. 50th Street and Hayes Street (North), NE	3	0	0	3.67
5. Nannie Helen Burroughs Avenue and Division Avenue, NE	33	4	1	1.60
6. Division Avenue and Hayes Street, NE	2	1	0	0.21
7. Nannie Helen Burroughs Avenue and 55th Street, NE	7	1	0	0.61
8. Division Avenue and Foote Street, NE	12	4	0	0.53

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

[^] - Crash Data Unavailable for Site Driveways

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 Ride	Unspecified	Total
NHB Avenue and 50th Street, NE	1.14	2 12%	1 6%	0 0%	1 6%	2 12%	0 0%	2 12%	1 6%	0 0%	0 0%	0 0%	0 0%	0 0%	8 47%	17
50th Street and Hayes Street (South), NE	7.87	0 0%	0 0%	0 0%	0 0%	6 46%	1 8%	2 15%	0 0%	0 0%	0 0%	0 0%	1 8%	0 0%	3 23%	13
50th Street and Hayes Street (North), NE	3.67	0 0%	0 0%	0 0%	0 0%	1 33%	0 0%	1 33%	1 33%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	3
NHB Avenue and Division Avenue, NE	1.60	3 9%	3 9%	2 6%	2 6%	6 18%	1 3%	0 0%	1 3%	0 0%	2 6%	1 3%	1 3%	0 0%	11 33%	33



POTENTIAL IMPACTS

This section reviews the four (4) locations with existing crash rates over 1.0 MEV and reviews potential impacts of the proposed development.

▪ NHB Avenue and 50th Street, NE

This intersection was found to have a crash rate of 1.14 crashes per MEV (17 crashes) over the course of the three-year study period. It should be noted that 10 of the 17 crashes occurred in 2016, with only one (1) crash recorded the previous year. Of the 17 crashes recorded, only nine (9) were classified under a specific reason. Of these nine (9), the majority crashes specified at this intersection were parked vehicles, side-swiped vehicles, and right angle crashes. On-street parking is present on both sides of the southern approach of 50th Street. The presence of on-street parking and the narrow roadway width of two-way 50th Street may factor into the two (2) parked vehicle crashes observed. Right-angle and side-swipe crashes may occur at this unsignalized intersection due to the conflicts presented when northbound and southbound vehicles cross NHB Avenue. As recommended above, the potential mitigation strategy of preventing vehicles from making northbound left turn movement here may reduce the number of right-angle and side-swiped crashes in the future. This would be done with a no left turn sign at the northbound approach, reinforcing the purpose of the existing median.

▪ 50th Street and Hayes Street (south), NE

This intersection was found to have a high crash rate of 7.87 crashes per MEV over the course of the three-year study period. This crash rate can be attributed to the number of crashes recorded (13) and a low AADT estimated at 1,508 vehicles at the intersection. 12 of the 13 crashes occurred in 2016, with zero crashes reported in 2014 and one crash in 2015. Six (6) of the 13 crashes were attributed to side-swipes. Side-swiped vehicles may be elevated at this intersection due to the narrow roadway width of Hayes Street south. Additionally, side-swiped crashes are typical along roadways with on-street parking, such as all four approaches at this intersection. Of particular note, six (6) of the 13 crashes involved police or emergency vehicles. This condition may be attributed to the presence of the police station one block to the north.

▪ 50th Street and Hayes Street (north), NE

This intersection was found to have a high crash rate of 3.67 crashes per MEV over the course of the three-year study period. Similar to the preceding intersection, this crash rate can be attributed to the number of crashes recorded, three (3), and a low AADT estimated at the intersection (748 vehicles). All three (3) crashes occurred in 2015, with zero (0) crashes recorded 2014 or 2016. It should be noted that construction of the adjacent Police Station was underway in 2015. Another contributing factor to the high crash rate is the geometry which exists at the intersection. The T-shaped intersection includes on-street parking along both sides of Hayes Street and 50th Street. When coupled with the narrow roadway widths for these two-way streets, the possibility of a side-swipe or parked vehicle crash increases. There is no site-generated traffic projected to pass through this intersection.

▪ NHB Avenue and Division Avenue, NE

This intersection was found to have a crash rate of 1.60 crashes per MEV over the course of the three-year study period. The majority of the 33 crashes recorded at this intersection were side-swiped vehicles, six (6) crashes. Side-swiped vehicles may be elevated at this intersection due to the lack of protected left turns. Additionally, side-swiped crashes are typical along roadways with on-street parking, such as Division Avenue. The presence of bus stops along the north and south corners on Division Avenue create situations where vehicles may need to change lanes to continue onwards. A breakdown of the 33 crashes over the three-year period include eight (8) crashes in which the cause involved extenuating circumstances: three involving police and emergency vehicles, two involving drivers under the influence, and two involving excessive speed. 18 of the 33 crashes occurred between the hours of 6:30 PM and 7:30 AM, indicating nighttime conditions may have contributed to these crashes. As described above, no eastbound u-turns will be signed along NHB reducing conflicts at the intersection.



SUMMARY AND CONCLUSIONS

This report is a Comprehensive Transportation Review (CTR) for the Deanwood Town Center Consolidated Planned Unit Development (PUD). The report reviews the transportation aspects of the project's Consolidated PUD application. The Zoning Commission Case Number is 17-19. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming that all planned site design elements and potential mitigation measures are implemented.

Proposed Project

The Deanwood Town Center site (the "Site") is situated across three parcels along Nannie Helen Burroughs (NHB) Avenue, NE: a single-story, church, single-story restaurant, and a four-story health care facility. The site is generally bounded by NHB Avenue to the south, the planned Deanwood Hills PUD to the north, Division Avenue to the east, and 51th Street to the west. The Deanwood Town Center development will consist of replacing the existing properties with two mixed-use buildings consisting of approximately 183 residential dwelling units with 151 units in Building 1 and 32 units in Building 2. There will be approximately 16,200 square feet of ground floor retail provided with the project with 10,000 sf in Building 1 and 6,200 sf in Building 2. Approximately 146 parking spaces will be provided with 143 spaces in a two-floor garage in Building 1 and three (3) surface spaces adjacent to Building 2.

Vehicular and loading access for the project will be provided via the public alley which bisects the Site. Access to the Site is available from the public alley that extends from NHB Avenue to Hayes Street. The existing 12-foot alley will be widened to 20 feet and connect with the alley that extends to Hayes Street. Loading and trash operations will be accommodated in each building.

As part of the development, sections of the roadway network surrounding the site will be improved. The construction of the development will result in the closure of existing curb cuts along Division Avenue, NHB Avenue, and 51st Street. Additionally, the curb cut located on NHB Avenue servicing the public alley will be widened to accommodate for a 20-foot width.

Pedestrian facilities along the perimeter of the project will be improved so that they meet or exceed DDOT and ADA standards.

The development will supply long-term bicycle parking within the development and short-term bicycle parking around the perimeter of the site that meet zoning requirements.

Multi-Modal Impacts and Recommendations

Transit

The Site is served by regional and local transit services via Metrobus and Metrorail. The Site is 1.1 miles from the Deanwood, Minnesota Avenue, and Benning Road Metrorail Stations, with Metrobus stops located within walking distance of the Site along NHB Avenue and Division Avenue.

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

Pedestrian

The Site is surrounded by a pedestrian network with adequate infrastructure. Most roadways within a quarter-mile radius provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes. There are many residential streets to the north and east of the site which lack sidewalks, curb ramps, or crosswalks that meet DDOT and ADA standards. These streets are generally low-volume.

As a result of the development, pedestrian facilities along the southern, western, and eastern perimeters of the site will be improved, including the installation of sidewalks that meet or exceed the width requirements, crosswalks at all necessary locations, curb ramps with detectable warnings.

The development will generate minimal pedestrian trips and the improved facilities will be able to handle the new trips.

Bicycle

The Site has excellent connectivity to existing on- and off-street bicycle facilities. The site is adjacent to shared lanes along NHB Avenue, 0.1 miles from the Marvin Gaye Trail, and three (3) blocks from bicycle lanes along 49th Street.

The development will provide short-term bicycle parking along the perimeter of the site and a section in the rear of Building 1 for residents of the development. On-site secure long-term



bicycle parking will be provided within the garage for residents of the development. The amount of bicycle parking provided exceeds zoning requirements.

The development will generate minimal bicycle trips and the existing facilities will be able to handle these new trips.

Vehicular

The Site is accessible from regional roadways, such as the Anacostia Freeway (DC Route 295) and several principal and minor arterials such as Nannie Helen Burroughs Avenue and Division Avenue, and an existing network of collector and local roadways.

In order to determine impacts that the proposed development will have on the transportation network, this report projects future conditions with and without the proposed development and performs analyses of intersection delays and queues. These are compared to the acceptable levels of delay set by DDOT standards as well as existing queues to determine if the Site will negatively impact the study area. The analysis concluded that the intersections of Nannie Helen Burroughs Avenue and 50th Street & Nannie Helen Burroughs Avenue and Division Avenue require mitigations as a result of the proposed development.

After exploring options for mitigating impacts at these intersections, this report is recommending that three (3) improvements be considered for implementation. The analyses contained in the report demonstrate that a prohibition of northbound left turns at Nannie Helen Burroughs Avenue and 50th Street and a reallocation in green signal time at the intersections of Division Avenue/Nannie Helen Burroughs Avenue and 49th Street/Nannie Helen Burroughs Avenue can reduce delay to levels seen in existing conditions. This report recommends that DDOT review and consider this change. If DDOT were to explore this idea further, this report recommends that the Applicant support their efforts and coordinate possible implementation.

Summary and Recommendations

This report concludes that the Deanwood Town Center development **will not** have a detrimental impact to the surrounding transportation network, as long as the project implements the recommendations as follows:

- All planned site design elements and mitigation measures are implemented.
- Implement a robust Transportation Demand Management (TDM) plan to curtail the demand of single-occupancy, private vehicles during peak period travel times. These include elements such as bicycle parking and carshare/bikeshare packages for new residents.
- Implement a loading management plan for residential loading uses, as detailed in this report.