

COMPREHENSIVE TRANSPORTATION REVIEW

3450 EADS STREET NE PUD

WASHINGTON, DC

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EXECUTIVE SUMMARY

The following report is a Comprehensive Transportation Review for the 3450 Eads Street NE Planned Unit Development (PUD). This report reviews the transportation aspects of the project. The Zoning Commission Case Number is 16-20.

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

Proposed Project

The 3450 Eads Street NE site currently serves as a vacant lot just east of the Anacostia River. The site is generally bound by public alleys to the north and west, Eads Street to the south, and a vacant lot to the east. The application plans to develop the site into a five-story residential building containing approximately 70 dwelling units (of which approximately 60 percent are intended to serve seniors of age 55 and over) with 17 parking spaces for residents located along the alley north of the site. Loading will be accessed through the alley west of the site.

Pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. The parking garage will supply 20 secure bicycle parking spaces which exceeds the current zoning requirements. Furthermore, eight short-term bicycle parking spaces will be provided around the perimeter of the site.

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

Multi-Modal Impacts and Recommendations

Transit

The site is served by regional and local transit services such as Metrorail and Metrobus. The site is approximately one mile from the Minnesota Avenue Metrorail Station, and many Metrobus stops are located within a block of the site along Benning Road and 34th Street. Although the development will

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

Pedestrian

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

Bicycle

Capital Bikeshare stations can be found within a block of the site; for example there is a station west of the site near the intersection of Anacostia Avenue and Benning Road. The site is also just blocks away from trails and bike lanes, such as the Anacostia River Trail to the west and signed routes along Dix Street and Benning Road to the south and north of the site, respectively. On site, the development will provide short-term bicycle parking along the perimeter of the site and on-site secure long-term bicycle parking for residents.

Vehicular

The site is well-connected to regional roadways such as I-295, primary and minor arterials such as Benning Road and Minnesota Avenue, and an existing network of collector and local roadways.

In order to determine if the proposed development will have a negative impact on this transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays and queues. 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. Minor delays were found at one intersection under all study scenarios. However, this impact was not a result of the development and can be found under the existing and background conditions. Thus, no additional mitigations are recommended. The analyses concluded that the planned development will not have adverse impacts on the surrounding transportation network.

Summary and Recommendations

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



INTRODUCTION

PURPOSE OF STUDY

This report reviews the transportation elements of the project, supplementing material provided in the Planned Unit Development (PUD) Application submitted to the Zoning Commission for the 3450 Eads Street NE development on September 13, 2016.

The 3450 Eads Street NE residential development will contain 70 dwelling units with 17 below-grade parking spaces. The site, shown in Figure 1 and Figure 2, is located in the River Terrace – Lily Ponds – Mayfair neighborhood in southeast DC.

The purpose of this report is to:

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

CONTENTS OF STUDY

This report contains nine sections as follows:

- Study Area Overview

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

- Project Design

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

- Trip Generation

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

- Traffic Operations

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

- Transit

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

- Pedestrian Facilities

This section summarizes existing and future pedestrian access to the site, reviews walking routes to and from the project site, outlines impacts, and presents recommendations as needed.

- Bicycle Facilities

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

- Safety/Crash Analysis

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

- Summary and Conclusions

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

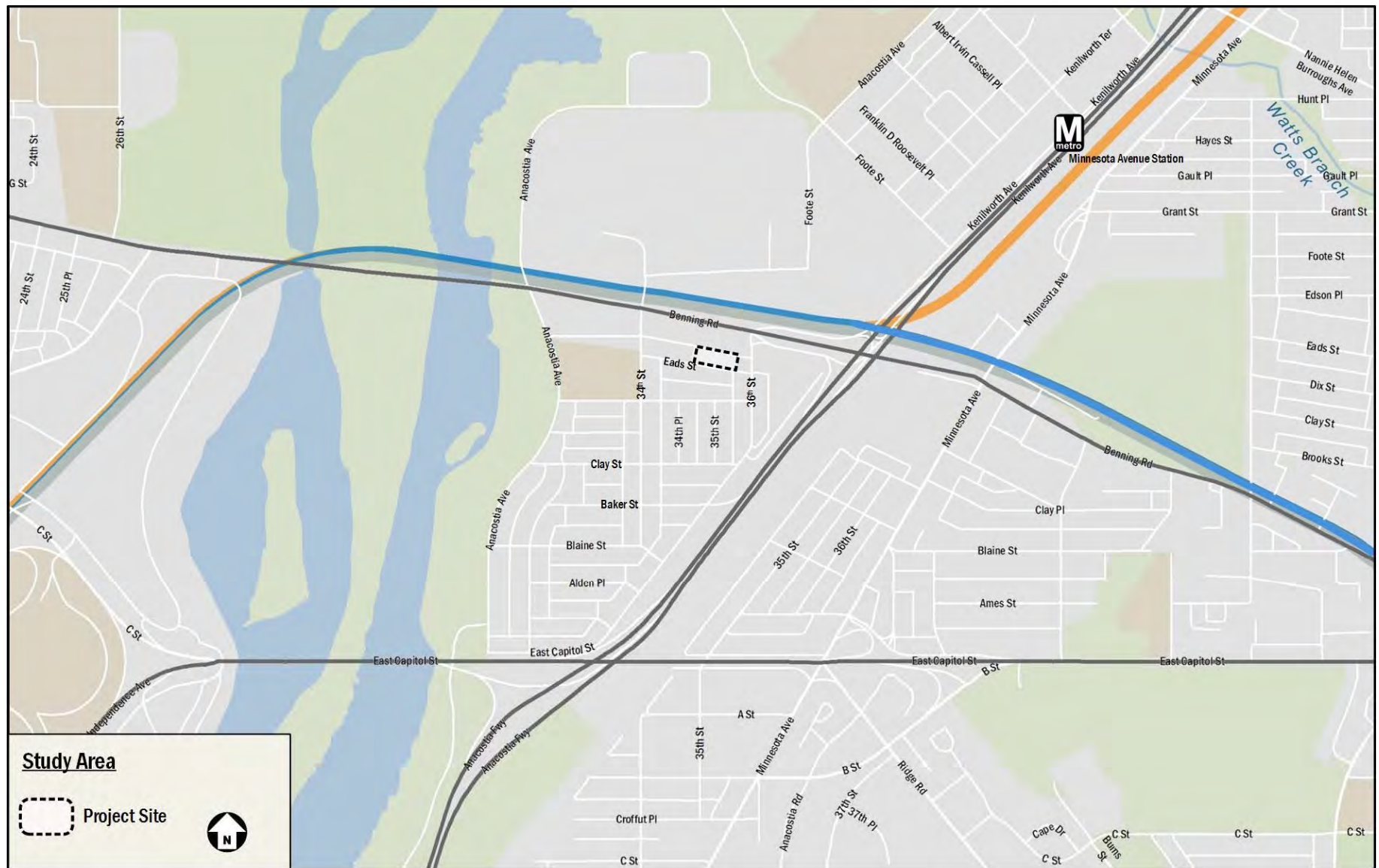


Figure 1: Site Location

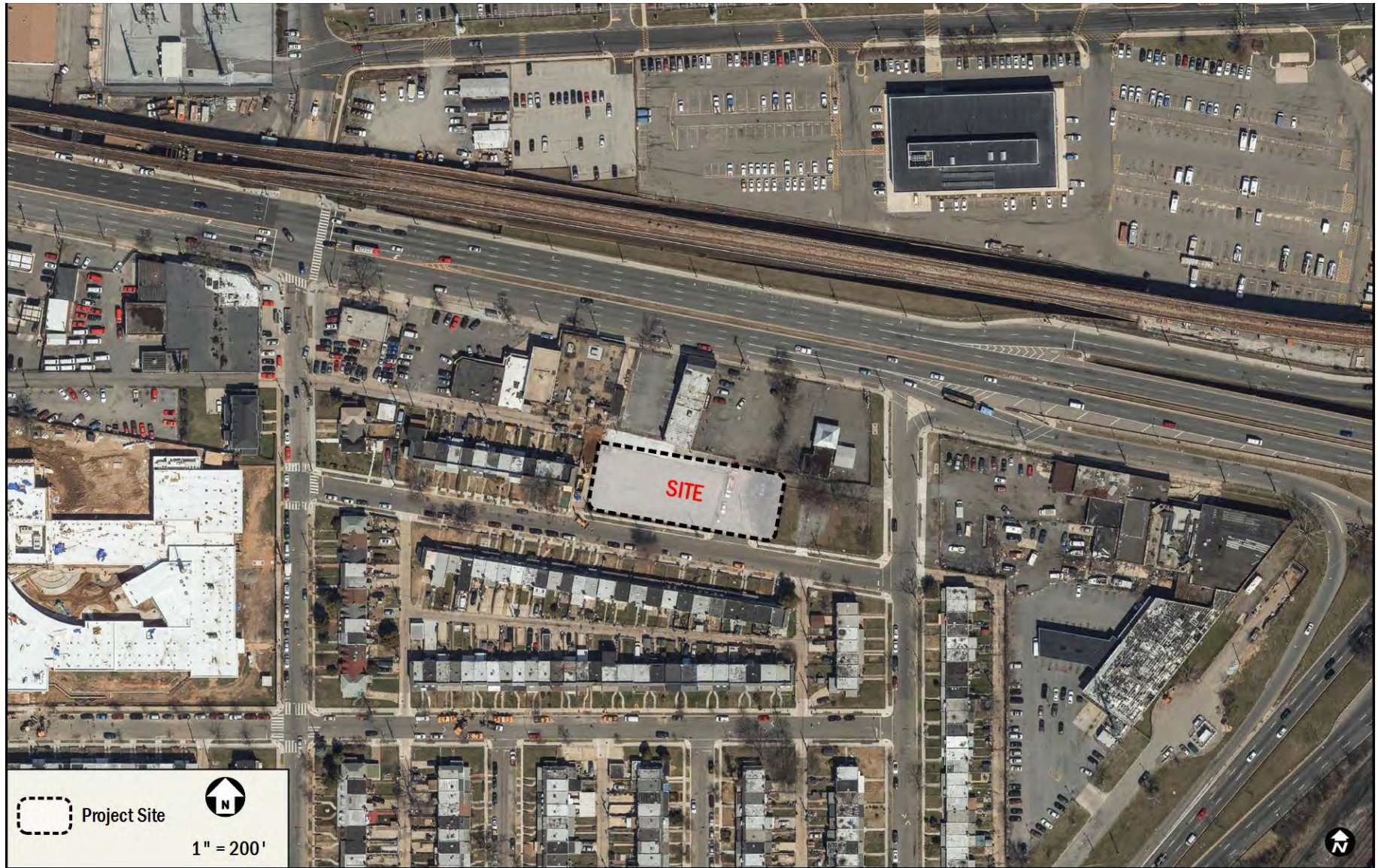


Figure 2: Site Aerial



STUDY AREA OVERVIEW

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

The following conclusions are reached within this chapter:

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

MAJOR TRANSPORTATION FEATURES

Overview of Regional Access

The 3450 Eads Street NE site has ample access to regional vehicular- and transit-based transportation options, as shown in Figure 4, that connect the site to destinations within the District, Virginia, and Maryland.

The site is accessible from I-295 and I-695. These interstates connect to several US highways such as US-50 (New York Avenue) and US-1, as well as I-395. The highways and interstates create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within half-mile of the site, at which point arterials and local roads can be used to access the site directly.

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

The 3450 Eads Street NE site is located relatively close to the Minnesota Avenue Metrorail station. The proposed development has access to the Orange line which provides

connections to areas in the District, Maryland, and Virginia. The Orange Line connects Vienna with New Carrollton while providing access to the District core. In addition, the Orange Line provides connections to all additional Metrorail lines allowing for access to much of the DC Metropolitan area.

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

Overview of Local Access

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

The site is served by a local vehicular network that includes several primary and minor arterials such as Benning Road and Minnesota Avenue. In addition, there is an existing network of connector and local roadways that provide access to the site.

The Metrobus system provides local transit service in the vicinity of the site, including a connection to Union Station which acts as a primary hub for Amtrak, VRE, and MARC services. As shown in Figure 5, there are four bus routes that service the site. In the vicinity of the site, the majority of bus routes travel along Benning Road and Minnesota Avenue. These bus routes connect the site to many areas of the District.

There are existing bicycle facilities that connect the site to areas within the District, most notably the Anacostia River Trail and the Benning Road signed routes, as shown in Figure 20. East of the site, the Minnesota Avenue signed routes provide further connections.

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

Overall, the 3450 Eads Street NE site is surrounded by an expansive local transportation network that allows for efficient



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

Car-sharing

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

Car-sharing is also provided by Car2Go, which provides point-to-point car sharing. Unlike Enterprise Carshare and Zipcar, which require two-way trips, Car2Go can be used for one-way rentals. 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.

Walkscore

Walkscore.com is a website that provides scores and rankings for the walking, biking, and transit conditions within neighborhoods of the District. Based on this website, the planned development is located in the River – Terrace Lily Ponds - Mayfair neighborhood. The project location itself has a walk score of 64 (or “Somewhat Walkable”), a transit score of 69 (or “Good Transit”), and a bike score of 68 (or “Bikeable”). Figure 3 shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

The site is situated in an area with good bike scores due to its proximity to bike facilities and flat topography. The good transit score was based on the proximity to the Minnesota Avenue Metrorail station, car share, and multiple bus lines. Overall, the River – Terrace Lily Ponds - Mayfair neighborhood has good transit and good bike scores. Additionally, other planned developments and roadway improvements will help increase the walk and bike scores in the neighborhood.

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

Carshare Location	Number of Vehicles
Zipcar	
3830 Minnesota Ave NE (Shell Gas Station)	1 vehicle
Dix & Minnesota NE (On Street)	2 vehicles
Park 7 Apartments	2 vehicles
Enterprise Carshare	
Minnesota Ave Metro	7 vehicles
Total	12 vehicles

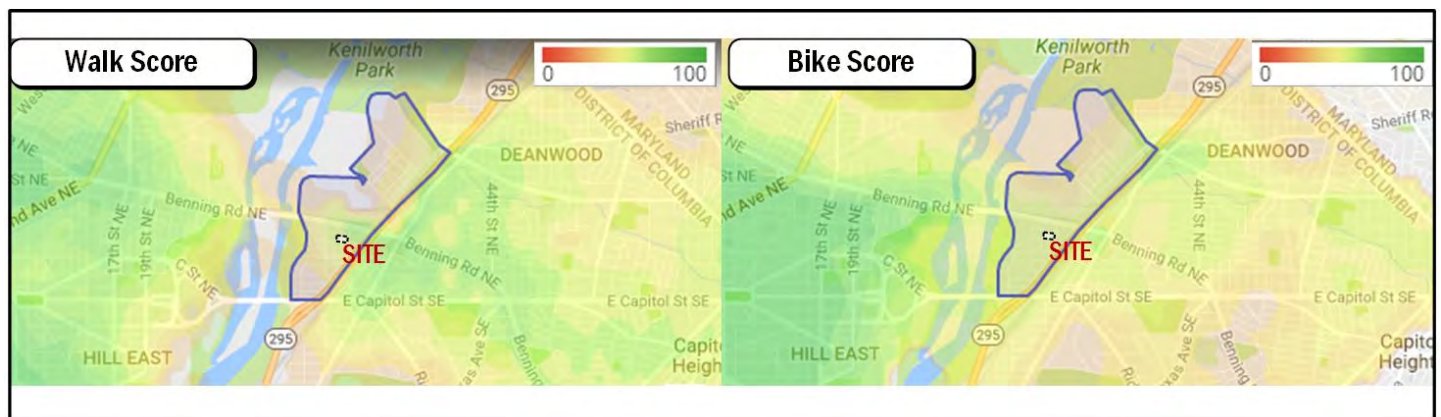


Figure 3: Summary of Walkscore and Bikescore

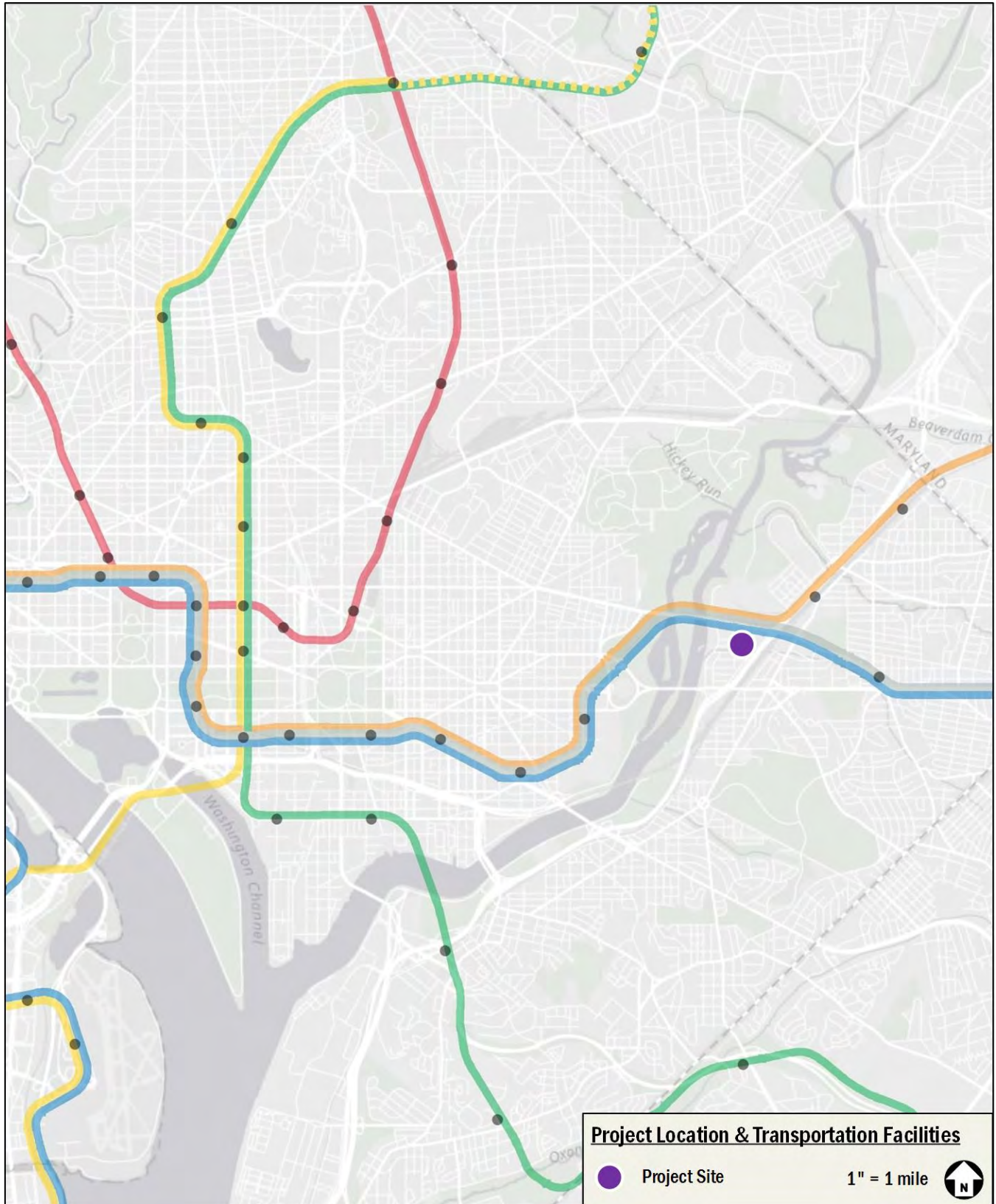


Figure 4: Major Regional Transportation Facilities



Figure 5: Major Local Transportation Facilities



PROJECT DESIGN

This section reviews the transportation components of 3450 Eads Street NE, including the proposed site plan and access points. It includes descriptions of the site's vehicular access, loading, parking, and Transportation Demand Management (TDM) plan.

The planned development will replace a vacant lot while closing the existing alley east of the site. There are currently no curb cuts that access the existing site, however, the public alley west of the site will provide access to parking and loading. The site is surrounded by the public alleys to the west and north, a vacant lot to the east, and Eads Street to the south.

The 3450 Eads Street NE project will include approximately 70 residential dwelling units (of which approximately 60 percent are intended to serve seniors of age 55 and over), and 17 parking spaces for residents along the alley north of the site. Figure 6 shows an overview of the development program and site plan elements.

ACCESS AND LOADING

Pedestrian Access

There will be three pedestrian access points to the residential component of the development via Eads Street south of the site. Pedestrian access points are outlined on the site plan in Figure 6.

Vehicular Access

Vehicular access to the site will be off the north and west alleys. Access to the loading facilities will be along the west alley and access to the 17 parking spaces will be provided separately along the north alley.

Bicycle Access

Bicycle access to the site will be off the north alley to the long-term secure bicycle parking room. Short-term bicycle parking will be found along Eads Street.

Loading and Trash Facilities

According to *DC Zoning Regulations (2016)*, the site use is required to provide one 30-foot loading bay. The proposed development will meet the practical loading requirements by providing one 30-foot loading bay. It should be noted that a clearance of 12 feet is proposed within the loading bay due to the design of the building. This will be adequate to

accommodate the largest moving trucks that can be rented, which are a maximum of 11 feet in height. This is expected to be the largest vehicle that will need to be accommodated in the loading bay. In the unlikely event that a larger vehicle would need to service or unload at the development, they will be required to obtain temporary parking restrictions along Eads Street from the District.

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

Trash operations will also occur from the western alley, next to the loading area, with trash trucks entering the alley, picking up, and leaving via the alley system. Trash facilities are located adjacent to the loading areas. Trash bins will be rolled out to the trash truck for pickup along the alley. This is similar to trash pick-up for other similar developments abutting alleys.

Truck routing to and from the site will be focused on Benning Road, a DDOT designated primary truck route, which is 0.3 miles from the site. The existing width of the public alley west of the site proves to serve as an adequate amount of space for trucks to maneuver in and out of the site in a safe manner. The truck turning diagrams illustrating the accessible inbound and outbound paths for 3450 Eads Street NE can be found in the Technical Appendix.

This report concludes that since loading operations occur on-site, because there are sufficient loading bays, and because the building is close to several major truck routes, an extensive loading management plan is not required for this PUD. However, the loading management plan for the development should include the following elements:

- A designated loading facility manager. The loading facility manager will coordinate with residents to schedule deliveries and to ensure conflicts with pedestrians who may be in the alley will be minimized.
- Scheduled deliveries. All residents will be required to schedule deliveries that utilize the loading docks – defined



here as any loading operation conducted using a truck 20 feet in length or larger.

- Should a truck that requires a clearance of greater than 12 feet need to service the development, they will be required to obtain temporary parking restrictions along Eads Street from the District.

PARKING

On-Site Parking

Based on the current zoning of the property, one parking space for each six dwelling units planned to serve seniors of age 55 and over and one parking space for each three standard dwelling units is required, meaning 16 parking spaces are required for the residential component of the development. The development exceeds this requirement, providing 17 parking spaces along the alley north of the site.

BICYCLE AND PEDESTRIAN FACILITIES

The project will include eight short-term public bicycle spaces at street level along Eads Street. These short term spaces will include inverted U-racks placed in high-visibility areas. The Applicant will work in conjunction with DDOT in selecting locations for the racks in public space.

The project will also include secure long-term bicycle parking. The plans identify 20 spaces in the proposed development. According to the *DC Zoning Regulations (2016)*, all residential developments must provide at least one secure bicycle parking space for each 3 residential units. Based on these regulations the development should provide a total of 20 long-term bicycle parking spaces. The development will provide 20 bicycle parking spaces for the residential component, meeting the zoning requirements.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

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

The Transportation Demand Management (TDM) plan for the 3450 Eads Street NE development is based on the DDOT expectations for TDM programs. The Applicant proposes the following TDM measures:

- The Applicant will meet the Zoning requirements to provide bicycle parking/storage facilities at the proposed development. This includes secure parking located on-site, short-term bicycle parking around the perimeter of the site that meet DC Zoning requirements.
- The Applicant will unbundle the cost of residential parking from the cost of lease or purchase of the unit.
- The Applicant will identify TDM Leaders (for planning, construction, and operations). The TDM Leaders will work with residents and employees in the building to distribute and market various transportation alternatives and options.
- The Applicant will provide TDM materials to new residents in the Residential Welcome Package materials.
- The Applicant will install a Transportation Information Center Display (electronic screen) within the residential lobby, containing real-time information related to local transportation alternatives.
- The Applicant will offer the first tenant of each residential unit a one-time annual car sharing membership, a one-time annual Capitol Bikeshare membership, or credits for use on Bridj commuter shuttles to help alleviate the reliance on personal vehicles. These incentives will be included in a move-in transportation package that includes brochures for transit facilities as well as bicycle and car sharing services for the initial tenant of each residential unit.
- The Applicant will offer a one-time \$50 SmarTrip card to each initial residential tenant and employee in the building to encourage non-auto mode usage.
- The Applicant will provide a bicycle repair station.

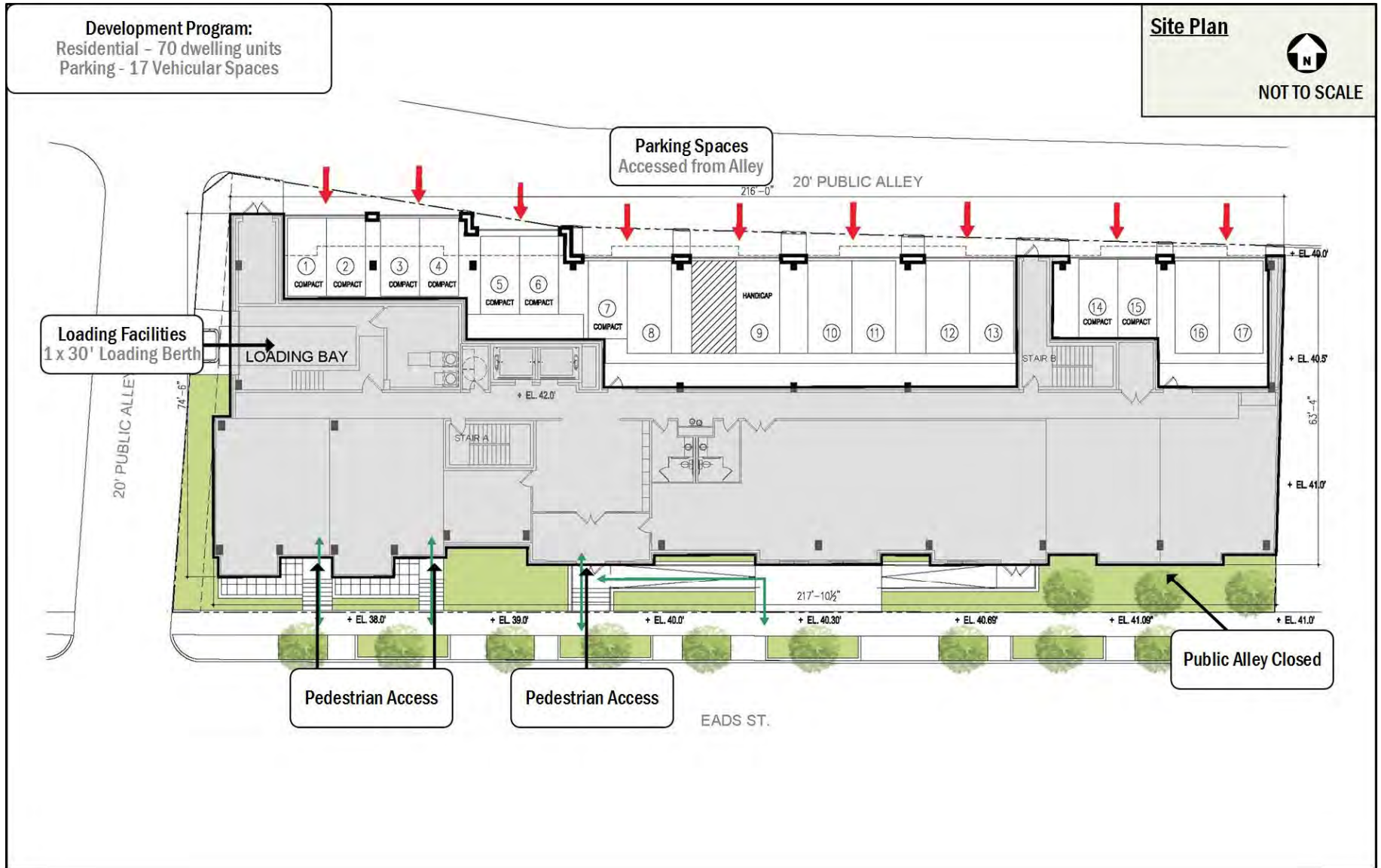


Figure 6: Site Plan



TRIP GENERATION

This section outlines the transportation demand of the proposed 3450 Eads Street NE project. It summarizes the projected trip generation of the site by mode, which forms the basis for the chapters that follow. Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition. This methodology was supplemented to account for the urban nature of the site (the *Trip Generation Manual* provides data for non-urban, low transit use sites) and to generate trips for multiple modes.

While approximately 60 percent of units planned for the site will be designed to accommodate seniors of age 55 and over residents, in order to provide a conservative analysis, residential trip generation was calculated based on ITE land use 220, Apartment, splitting trips into different modes using assumptions derived from census data for the residents that currently live near the site. The vehicular mode split was then adjusted to reflect the parking supply and other developments with similar proximity to Metrorail.

A summary of the multimodal trip generation for the development is provided in Table 3 for the morning and afternoon peak hours. The mode split assumptions for all land uses within the development is summarized in **Error! Reference source not found.** Detailed calculations are included in the Technical Appendix.

Table 3: Summary of Mode Split Assumptions

Land Use	Mode			
	Auto	Transit	Bike	Walk
Residential	65%	30%	3%	2%

Table 2: Multi-Modal Trip Generation Summary

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Residential	5 veh/hr	19 veh/hr	24 veh/hr	19 veh/hr	10 veh/hr	29 veh/hr
	Total	5 veh/hr	19 veh/hr	24 veh/hr	19 veh/hr	10 veh/hr	29 veh/hr
Transit	Residential	3 ppl/hr	10 ppl/hr	13 ppl/hr	10 ppl/hr	5 ppl/hr	15 ppl/hr
	Total	3 ppl/hr	10 ppl/hr	13 ppl/hr	10 ppl/hr	5 ppl/hr	15 ppl/hr
Bike	Residential	1 ppl/hr	1 ppl/hr	2 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr
	Total	1 ppl/hr	1 ppl/hr	2 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr
Walk	Residential	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	0 ppl/hr	1 ppl/hr
	Total	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	0 ppl/hr	1 ppl/hr



TRAFFIC OPERATIONS

This section provides a summary of an analysis of the existing and future roadway capacity in the study area. Included is an analysis of potential vehicular impacts of the 3450 Eads Street NE project and a discussion of potential improvements.

The purpose of the capacity analysis is to:

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

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

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

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

The following conclusions are reached within this chapter:

- All of the intersections operate at an overall acceptable level of service during all analysis scenarios for both the morning and afternoon peak hours. However, the southbound approach to the 34th Street/Benning Road intersection operates at an unacceptable level of service during the afternoon peak hour under existing and background conditions.
- There are no study intersections that operate at an unacceptable level of service as a result of the proposed development.
- Overall, this report concludes that the project will not have a detrimental impact to the surrounding transportation network.

STUDY AREA, SCOPE, & METHODOLOGY

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

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

Capacity Analysis Scenarios

The vehicular analyses are performed to determine if the proposed development of the 3450 Eads Street NE development will lead to adverse impacts on traffic operations. (A review of impacts to each of the other modes is outlined later in this report). This is accomplished by comparing future scenarios: (1) without the proposed development (referred to as the Background condition) and (2) with the development approved and constructed (referred to as the Future condition).

Specifically, the roadway capacity analysis examined the following scenarios:

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

Study Area

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

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



1. 34th Street NE and Benning Road, NE
2. 36th Street NE and Benning Road, NE
3. 34th Street NE and Eads Street, NE
4. 36th Street NE and Eads Street, NE

Figure 7 shows a map of the study area intersections.

Traffic Volume Assumptions

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

Existing Traffic Volumes

The existing traffic volumes are comprised of turning movement count data, which was collected on Wednesday, May 25, 2016. The results of the traffic counts are included in the Technical Attachments. The existing peak hour traffic volumes are shown on Figure 8. For all intersections, the individual morning and afternoon peak hours were used.

2019 Background Traffic Volumes (without the project)

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

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

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

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

Based on these criteria, and as discussed previously, no developments were included in the 2019 Background scenario.

While the background developments typically 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 2015 and 2020 model scenarios. The growth rates observed in this model served as a basis for analysis assumptions. The applied growth rates are shown in Table 4.

The inherent growth along the network were added to the existing traffic volumes in order to establish the 2019 Background traffic volumes. The traffic volumes for the 2019 Background conditions are shown on Figure 9.

2019 Total Future Traffic Volumes (with the project)

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

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

The residential trip distribution was significantly influenced by the CTPP TAZ flow data for drivers commuting from the site's TAZ, and adjusted based on traffic volumes and patterns. The origin of outbound and destination of inbound residential vehicular trips was the 17 parking spaces accessed from the public alley on the north side of the development.

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. A summary of trip distribution assumptions and specific routing is provided on Figure 10 for outbound trips and on Figure 11 for inbound trips.

The traffic volumes for the 2019 Total Future conditions were calculated by adding the development-generated traffic volumes to the 2019 Background traffic volumes. Thus, the future condition with the proposed development scenario includes traffic generated by: existing volumes, inherent growth on the network, and the proposed 3450 Eads Street NE development. The site-generated traffic volumes are shown on Figure 12 and the 2019 Total Future traffic volumes are shown on Figure 13.



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 14.

Future Geometry and Operations Assumptions

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

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

Based on these criteria, no background improvements were included in the future scenario.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the three scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. Synchro version 9.1 was used to analyze the study intersections based on the *Highway Capacity Manual* (HCM) 2000 methodology.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. A LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from “A” being the best to “F” being the worst. LOS D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

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

Table 5 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2019 Background, and 2019 Future scenarios. The capacity analysis results are shown on Figure 15 for the morning peak hour and Figure 16 for the afternoon peak hour.

The majority of study intersections operate at acceptable conditions during the morning and afternoon peak hours for the Existing, 2019 Background, and 2019 Future scenarios. However, the southbound movement at the intersection of 34th Street NE and Benning Road NE operates under unacceptable conditions during the afternoon peak hour for all scenarios.

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 calculations. Table 7 shows the queuing results for the study area intersections. There are no study intersections with a lane group that exceeds its storage length during a peak hour in any of the study scenarios.

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



Mitigations

Generally speaking, the proposed development is considered to have an impact at an intersection within the study area if the capacity analyses show an LOS E or F, or where the 95th percentile queues increase 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 existing or background conditions. The development is also considered to have an impact if there is an increase in delay at any approach or the overall intersection operating under LOS E or F of greater than 5 seconds, when compared to the background condition. Following these guidelines there are impacts to none of the intersections as a result of the development.

Table 4: Applied Annual and Total Growth Rates

Roadway	AM Modeled Volumes		PM Modeled Volumes	
	<i>Applied Growth</i>	<i>Total Growth</i>	<i>Applied Growth</i>	<i>Total Growth</i>
Benning Road - Eastbound	2.50%	10.40%	1.00%	4.10%
Benning Road - Westbound	0.75%	3.00%	2.00%	8.20%

*Conservative 0.25% growth rate applied.

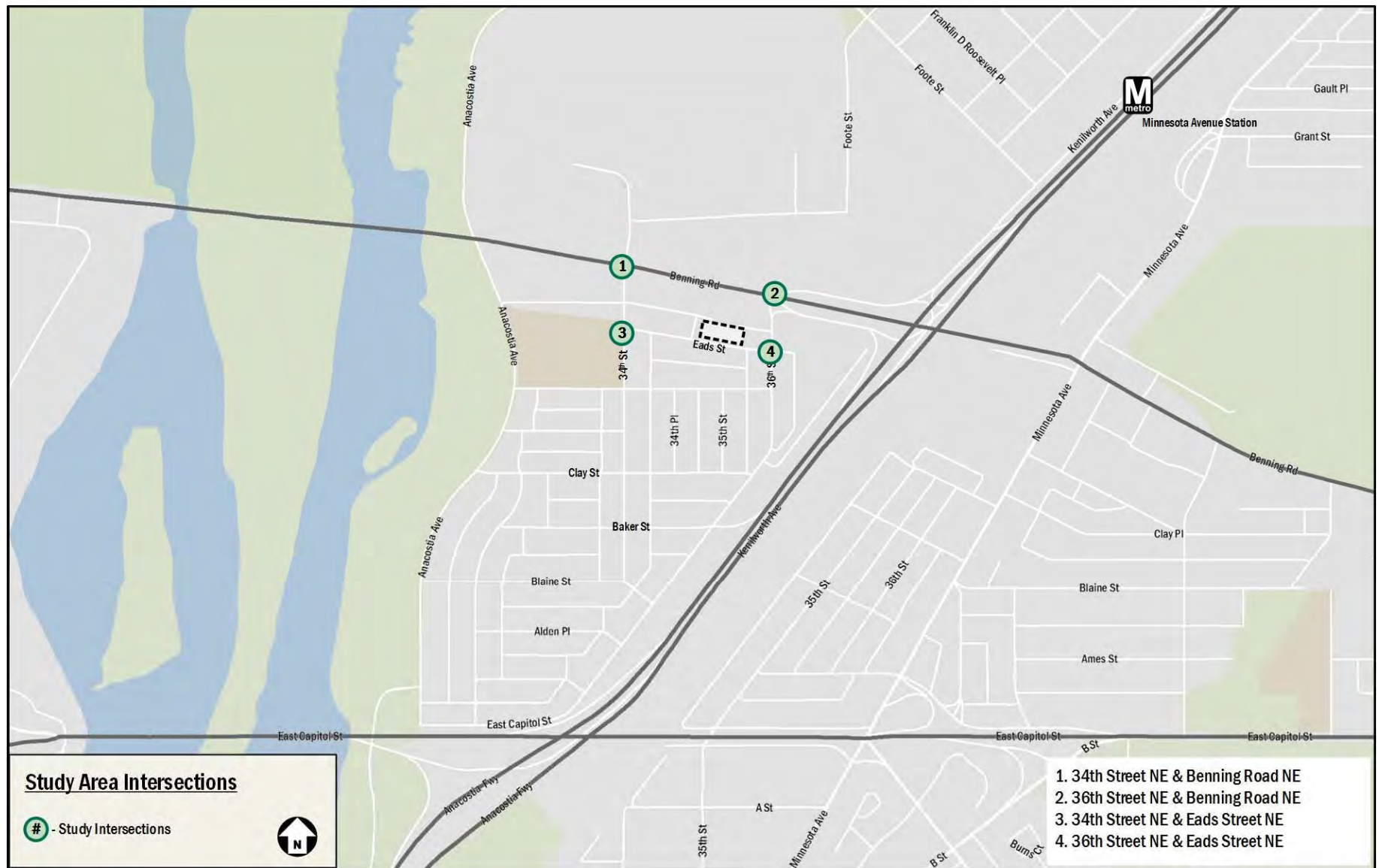


Figure 7: Study Area

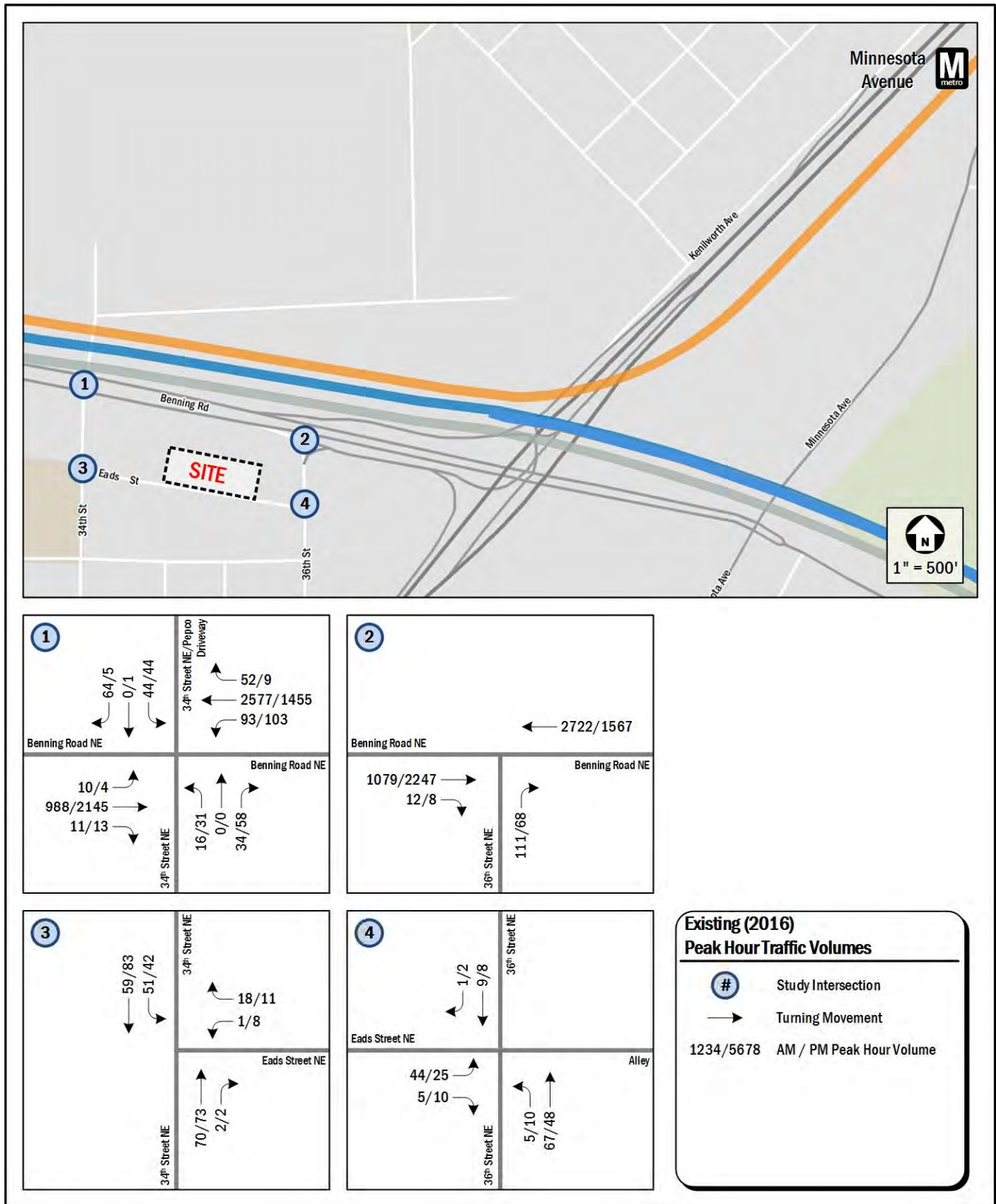


Figure 8: Existing Peak Hour Traffic Volumes

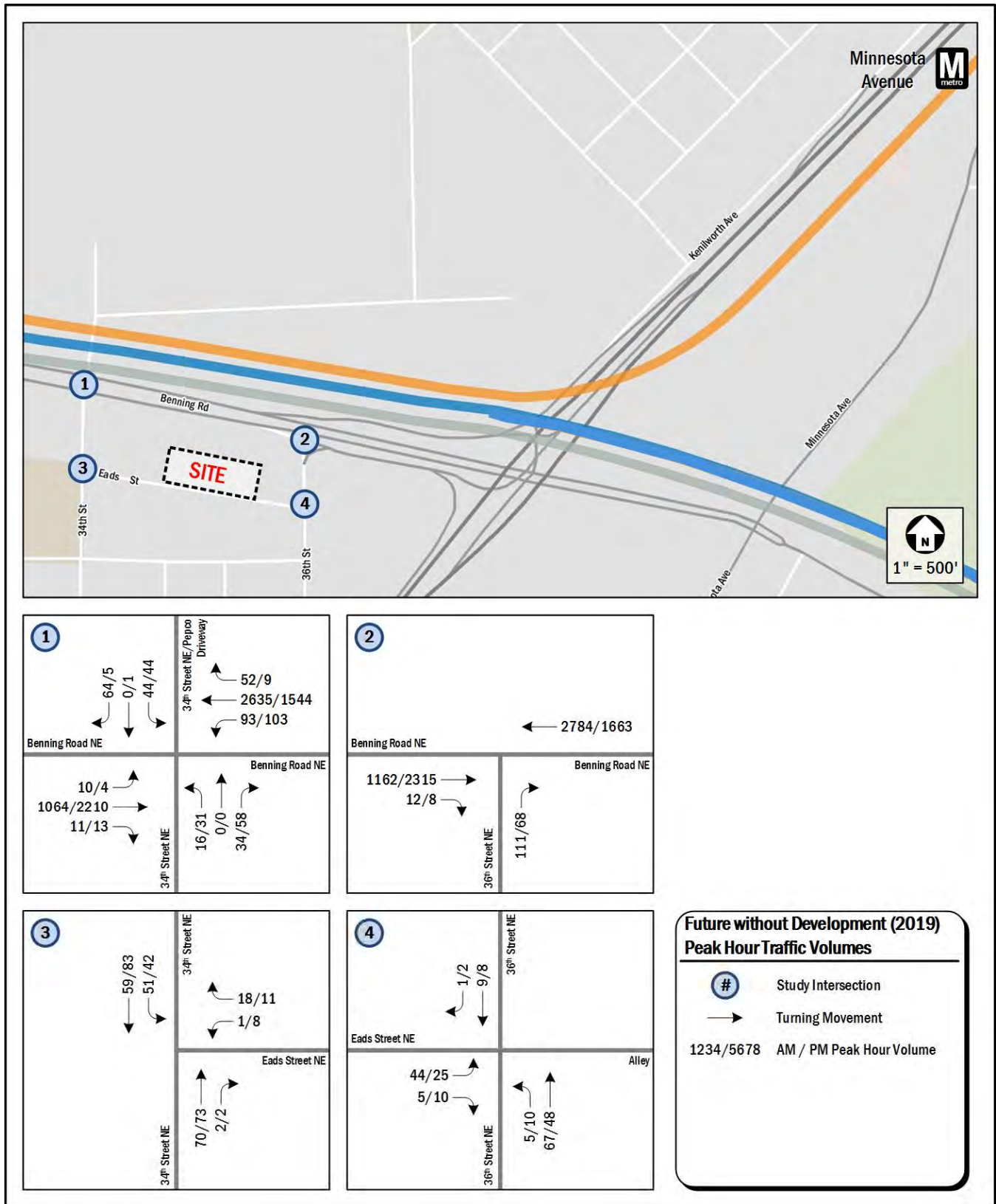


Figure 9: Background Peak Hour Traffic Volumes



Figure 10: Outbound Trip Distribution and Routing



Figure 11: Inbound Trip Distribution and Routing

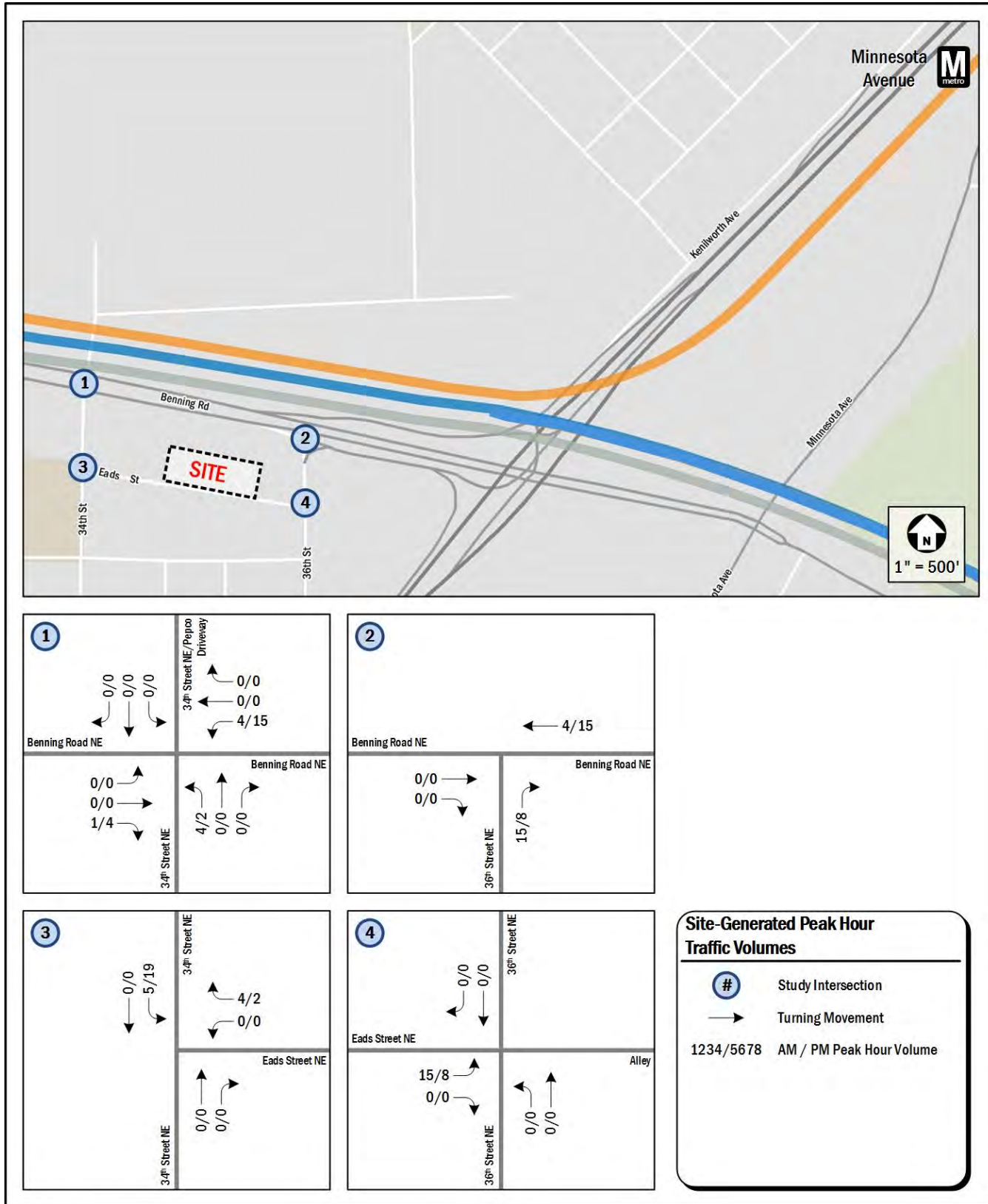
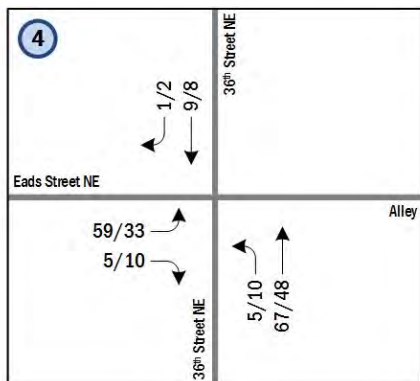
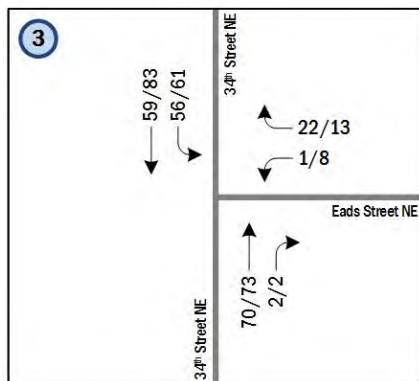
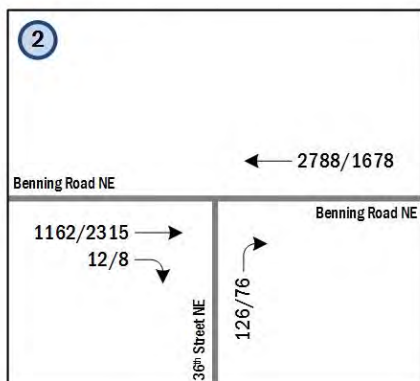
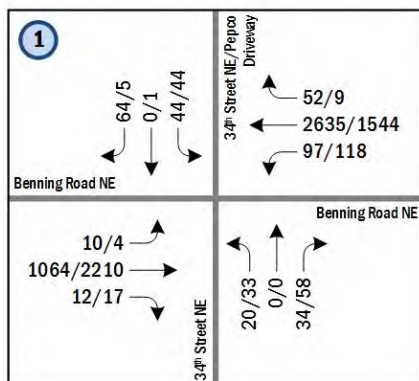
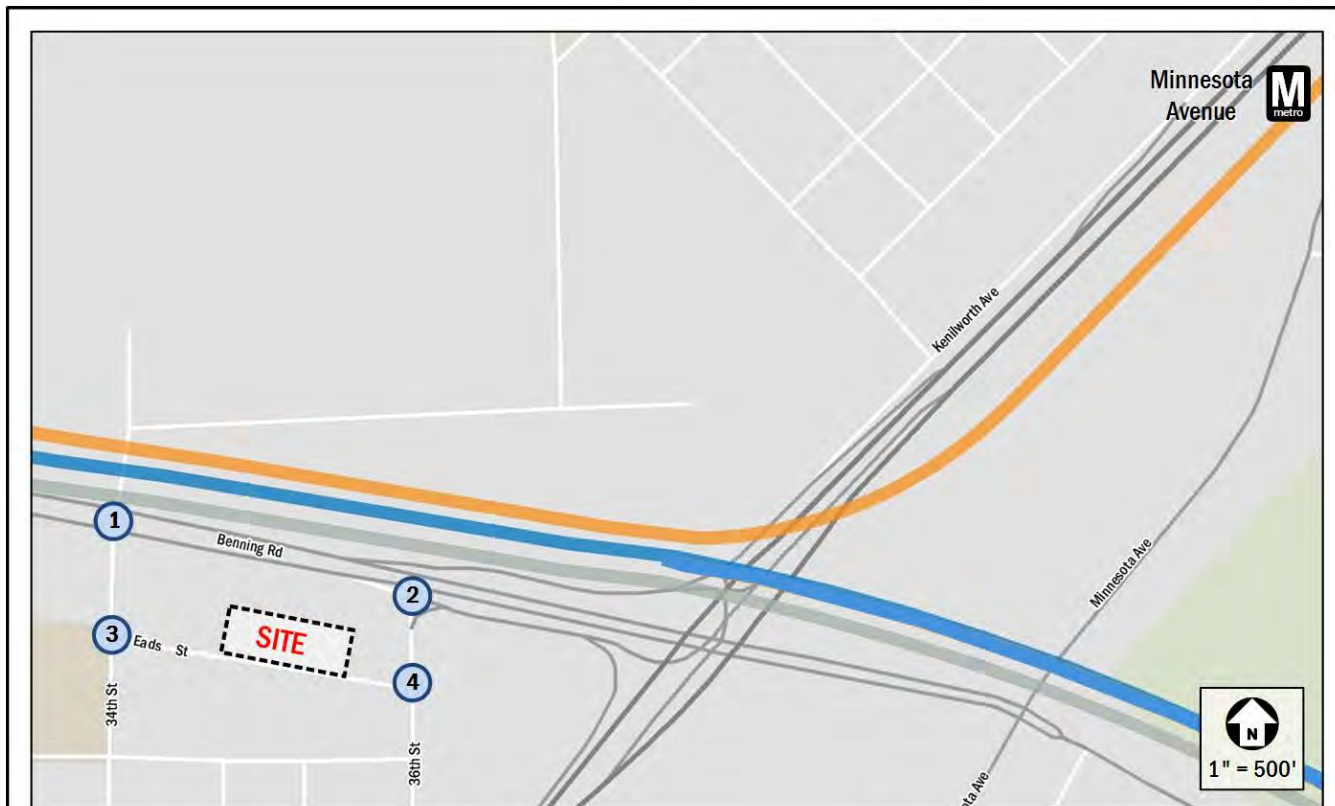


Figure 12: Site-Generated Peak Hour Traffic Volumes



**Future with Development (2019)
Peak Hour Traffic Volumes**

Study Intersection

→ Turning Movement

1234/5678 AM / PM Peak Hour Volume

Figure 13: Total Future Peak Hour Traffic Volumes

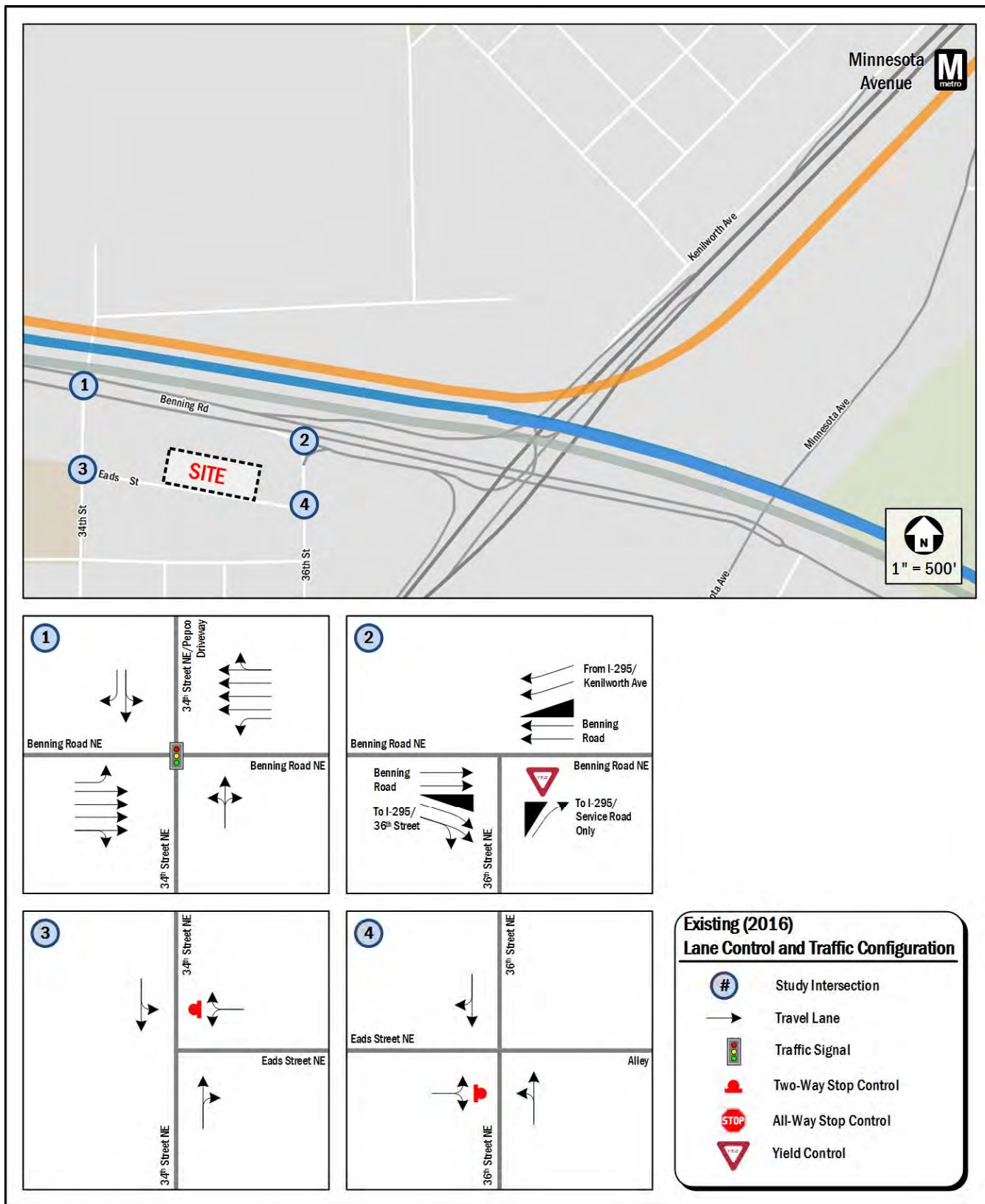


Figure 14: Current Lane Configuration and Traffic Control



Table 5: LOS Results

Intersection	Approach	Existing Conditions (2016)				Background Conditions (2019)				Total Future Conditions (2019)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. 34th Street and Benning Road, NE	Overall	8.5	A	9.6	A	8.4	A	9.6	A	8.5	A	10.1	B
	Eastbound	6.2	A	9.2	A	6.3	A	9.4	A	6.3	A	9.9	A
	Westbound	6.5	A	6.0	A	6.4	A	6.0	A	6.4	A	6.5	A
	Northbound	49.9	D	52.3	D	49.9	D	52.3	D	49.9	D	52.6	D
	Southbound	54.1	D	57.1	E	54.1	D	57.1	E	54.2	D	57.8	E
2. 36th Street and Benning Road, NE	Northbound	10.4	B	9.5	A	10.3	B	9.6	A	10.4	B	9.7	A
3. 34th Street and Eads Street, NE	Westbound	9.0	A	9.5	A	9.0	A	9.5	A	9.0	A	9.7	A
	Southbound	3.6	A	2.7	A	3.6	A	2.7	A	3.8	A	3.4	A
4. 36th Street and Eads Street, NE	Eastbound	9.3	A	9.0	A	9.3	A	9.0	A	9.4	A	9.1	A
	Northbound	0.6	A	1.3	A	0.6	A	1.3	A	0.6	A	1.3	A



Table 6: Queueing Results (in Feet)

Intersection	Lane Group	Storage Length (ft)	Existing Conditions (2016)				Background Conditions (2019)				Total Future Conditions (2019)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %	50th %	95th %
1. 34th Street and Benning Road, NE	Eastbound Left	125	1	6	1	3	1	6	1	3	1	6	1	3
	Eastbound TR	700	73	113	220	325	80	123	231	340	81	123	239	351
	Westbound Left	125	11	29	32	93	11	29	32	93	12	30	43	108
	Westbound TR	700	154	355	70	154	161	363	76	165	161	364	75	164
	Northbound LTR	215	0	28	24	75	0	28	24	75	0	34	25	78
	Southbound LTR	125	43	97	41	78	43	97	41	78	43	97	41	79
2. 36th Street and Benning Road, NE	Eastbound Thru	725	--	0	--	0	--	0	--	0	--	0	--	0
	Eastbound Right	180	--	0	--	0	--	0	--	0	--	0	--	0
	Northbound Right	180	--	15	--	8	--	14	--	8	--	16	--	9
3. 34th Street and Eads Street, NE	Westbound LR	700	--	2	--	2	--	2	--	2	--	2	--	2
	Northbound TR	250	--	0	--	0	--	0	--	0	--	0	--	0
	Southbound LT	215	--	3	--	3	--	3	--	3	--	3	--	4
4. 36th Street and Eads Street, NE	Eastbound LR	700	--	5	--	3	--	5	--	3	--	7	--	4
	Northbound LT	150	--	0	--	1	--	0	--	1	--	0	--	1
	Southbound TR	200	--	0	--	0	--	0	--	0	--	0	--	0

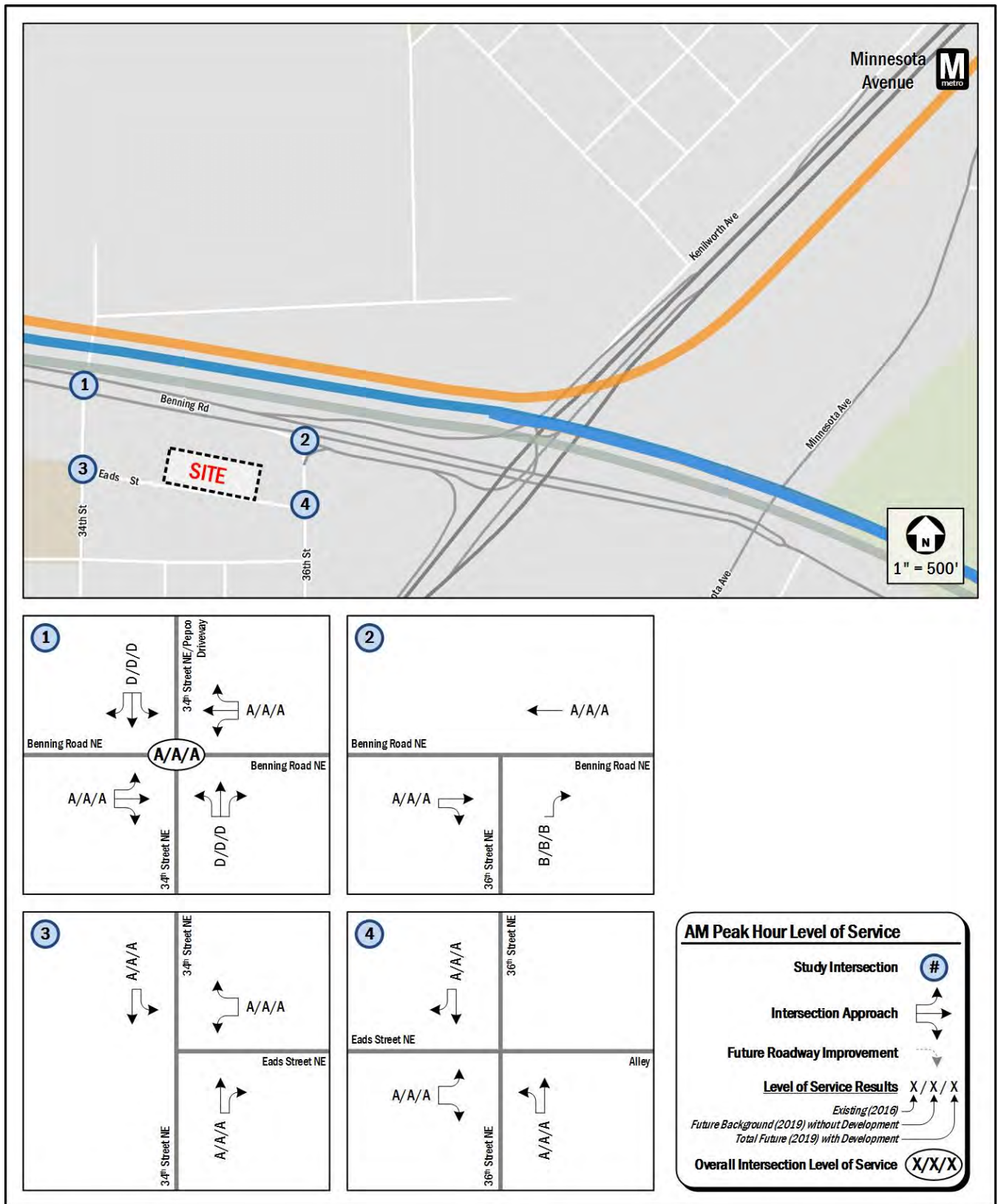


Figure 15: Morning Peak Hour Capacity Analysis Results

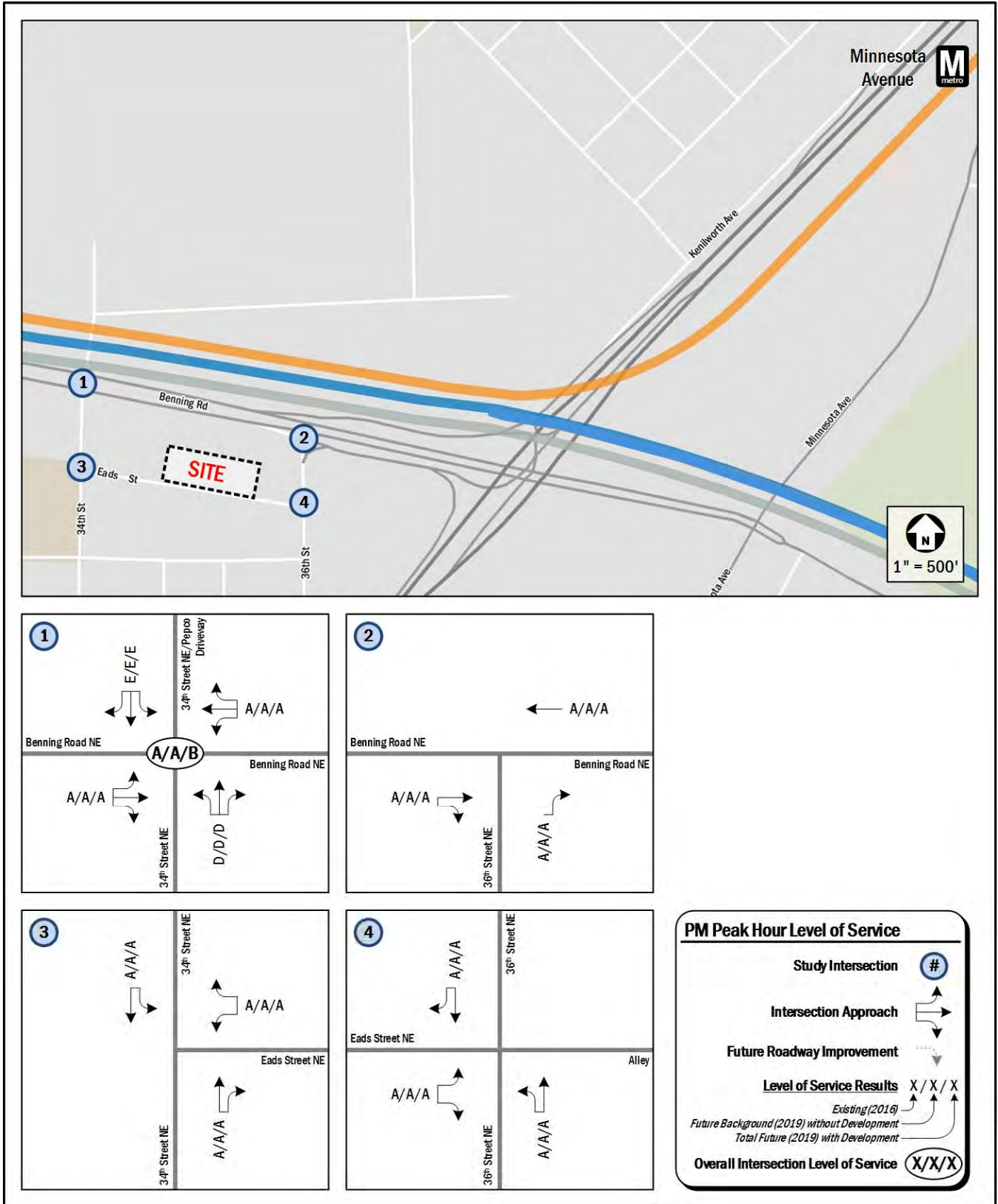


Figure 16: Afternoon Peak Hour Capacity Analysis Results



TRANSIT

This section discusses the existing and proposed transit facilities in the vicinity of the site, accessibility to transit, and evaluates the overall transit impacts due to the 3450 Eads Street NE project.

The following conclusions are reached within this chapter:

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

EXISTING TRANSIT SERVICE

The study area is well served by Metrobus, DC Circulator, and Metrorail. Combined, these transit services provide local, city-wide, and regional transit connections and link the site with major cultural, residential, employment, and commercial destinations throughout the region. Figure 17 identifies the major transit routes, stations, and stops in the study area.

The Minnesota Avenue station is located approximately one mile from the development site and is served by the Orange Line which provides connections to areas in the District, Maryland, Virginia, and all additional Metrorail lines. The Orange Line connects Vienna with New Carrollton while providing access to the District core. Trains run approximately every three to six minutes during the morning and afternoon peak hours, every 12 minutes during weekday non-peak hours, every 20 minutes on weekday evenings after 9:30 PM, and 12 to 20 minutes on the weekends.

The site is also serviced by Metrobus along multiple primary corridors. These bus lines connect the site to many areas of the District, Maryland and Virginia, including several Metrorail stations. Table 7 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.

An assessment on the existing conditions of the bus stops servicing the site was conducted using criteria that can be found in the Technical Appendix. The assessment included

whether or not the bus stop had a sign, acceptable sidewalk clearance, seating, shelter, and other features.

PROPOSED TRANSIT SERVICE

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

A streetcar line from Georgetown to Benning Road has been identified as a route by the *Transit Future System Plan* report. This line would travel along K Street, H Street, and Benning Road until finally reaching the Benning Road Metrorail Station. The plan provides the route service as an additional mode of travel to and from the 3450 Eads Street NE development.

Additionally, WMATA and local transportation agencies in the District, Maryland, and Virginia have been reviewing Metrobus lines and system wide facilities for service improvements since 2009. In direct relation to this development, routes U4, X1, X2, and X3 were studied.

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



WMATA and DDOT published the service recommendations section of the *Metrobus Service Evaluation Study: U-V Lines* in March 2015, which discusses route changes and improvements to Metrobus Routes U2, U4, U5/6, U8 and V7, 8, 9. Issues regarding reliability and overcrowding were cited as potential areas of concern. In June 2015 changes to the U and V lines were made, which were designed to improve service and better match the travel needs of riders. These changes included the elimination of routes U2, V7, V8, shortening the U8, extending the V9, and the establishment of new routes U7, V1, V2, and V4.

SITE-GENERATED TRANSIT IMPACTS

The proposed development is projected to generate 13 transit trips (3 inbound, 10 outbound) during the morning peak hour and 15 transit trips (10 inbound, 5 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 10309. This TAZ show that approximately 45 percent of residential transit riders use Metrorail and the remainder use Metrobus. That said, approximately 6 people will use Metrorail and 6 will use Metrobus during the morning peak hour; approximately 7 people will use Metrorail and 8 will use Metrobus during the afternoon peak hour.

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

Avenue station can currently accommodate future growth at all access points.

WMATA released its *Minnesota Avenue Metrorail Station Access Improvement Study* in January 2006. The study discusses improving access to and from Metro in order to meet ridership goals and serving customer needs. The study also highlights ways of improving station access by enhancing the pedestrian experience with a safer and more attractive walking environment; maintaining a good level of service for transit access to the site, which includes buses and other transit vehicles; accommodating future access needs, which include vehicular traffic growth; and making transit use more convenient and attractive as a travel mode. Improvement alternatives included a pedestrian bridge, bus facility, Kiss & Ride enhancements, and additional station amenities. These improvements are expected to accommodate future transit passengers.

WMATA studied capacity along Metrobus routes. DC's *Transit Future System Plan (2010)* lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). A load factor is considered unacceptable if it is over 1.2 during peak periods or over 1.0 during off-peak or weekend periods. According to this study, Metrobus routes that travel near the site operate at an acceptable load factor during all periods of the day. Based on this information and the extensive Metrobus and Metrorail service surrounding the site, site-generated transit trips will not cause detrimental impacts to Metrobus or Metrorail service.

Table 7: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
U4	Sheriff Road-River Terrace	Weekdays: 4:54AM – 1:43AM Weekends: 6:11AM – 11:11PM	12-30 min	0.7 miles, 7 minutes
X1, X3	Benning Road Line	Westbound 6:00AM-8:39AM Eastbound 3:31PM-5:37PM	20-30 min	0.2 miles, 3 minute
X2	Benning Road-H Street Line	Weekdays: 4:00AM – 3:25AM Weekends: 4:15AM – 3:29AM	6-20 min	0.2 miles, 3 minutes

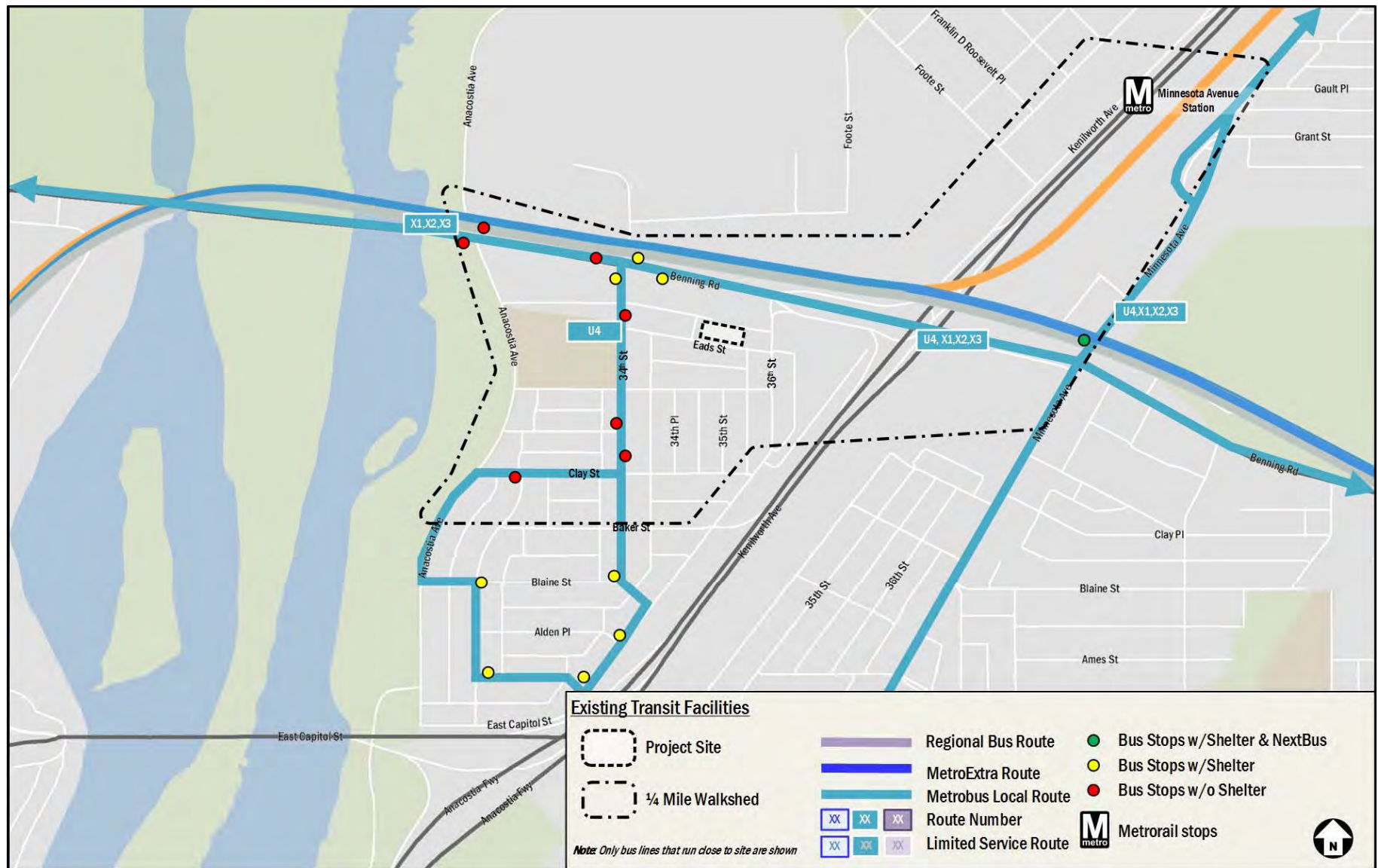


Figure 17: Existing Transit Service



PEDESTRIAN FACILITIES

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

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the site provides a good walking environment. There are some gaps in the system, but there are sidewalks along all primary routes to pedestrian destinations.
- The site is not expected to generate a significant amount of pedestrian trips; however, the pedestrian trips generated by walking to and from transit will be more substantial, particularly along Benning Road.

PEDESTRIAN STUDY AREA

Facilities within a quarter-mile of the site were evaluated as well as routes to nearby transit facilities and prominent retail and neighborhood destinations. The site is easily accessible to transit options such as bus stops along Benning Road and the Minnesota Avenue Metro Station. There are some existing barriers and areas of concern within the study area that negatively impact the quality of and attractiveness of the walking environment. This includes roadway conditions that reduce the quality of walking conditions, narrow or nonexistent sidewalks, incomplete or insufficient crossings at busy intersections, and Interstate 295 which limits connectivity to the East. Figure 18 shows suggested pedestrian pathways, walking time and distances, and barriers and areas of concern.

PEDESTRIAN INFRASTRUCTURE

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

Existing Conditions

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

and provide a quality walking environment. Figure 19 shows a detailed inventory of the existing pedestrian infrastructure surrounding the site. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT’s *Public Realm Design Manual* in addition to ADA standards. Sidewalk widths and requirements for the District are shown below in Table 8.

Within the area shown, most roadways such as Eads Street and 34th Street are considered residential with a low to moderate density. Most of the sidewalks surrounding the site comply with DDOT standards; however there are some existing areas which have inadequate sidewalks or no sidewalks at all that are located directly north and west of the site. All primary pedestrian destinations are accessible via routes with sidewalks, most of which met DDOT standards.

ADA standards require that all curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks is not desired. As shown in the figure, under existing conditions most crosswalks and curb ramps are present near the site.

Pedestrian Infrastructure Improvements

Pedestrian facilities along the perimeter of the site will be improved. The development will improve sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

SITE IMPACTS

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

Pedestrian Trip Generation

The 3450 Eads Street NE development is expected to generate 1 walking trip (1 inbound, 0 outbound) during the morning peak hour and 1 walking trip (1 inbound, 0 outbound) during the afternoon peak hour. The origins and destinations of these trips are likely to be:

Table 8: 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



- 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 the existing pedestrian trips, the newly generated pedestrian trips will not have detrimental impacts to the transportation network. The transit trips generated by the site will also generate pedestrian demand between the site and nearby transit stops. Currently the existing pedestrian network has the capacity to absorb the newly generated trips from the site.



Figure 18: Pedestrian Pathways

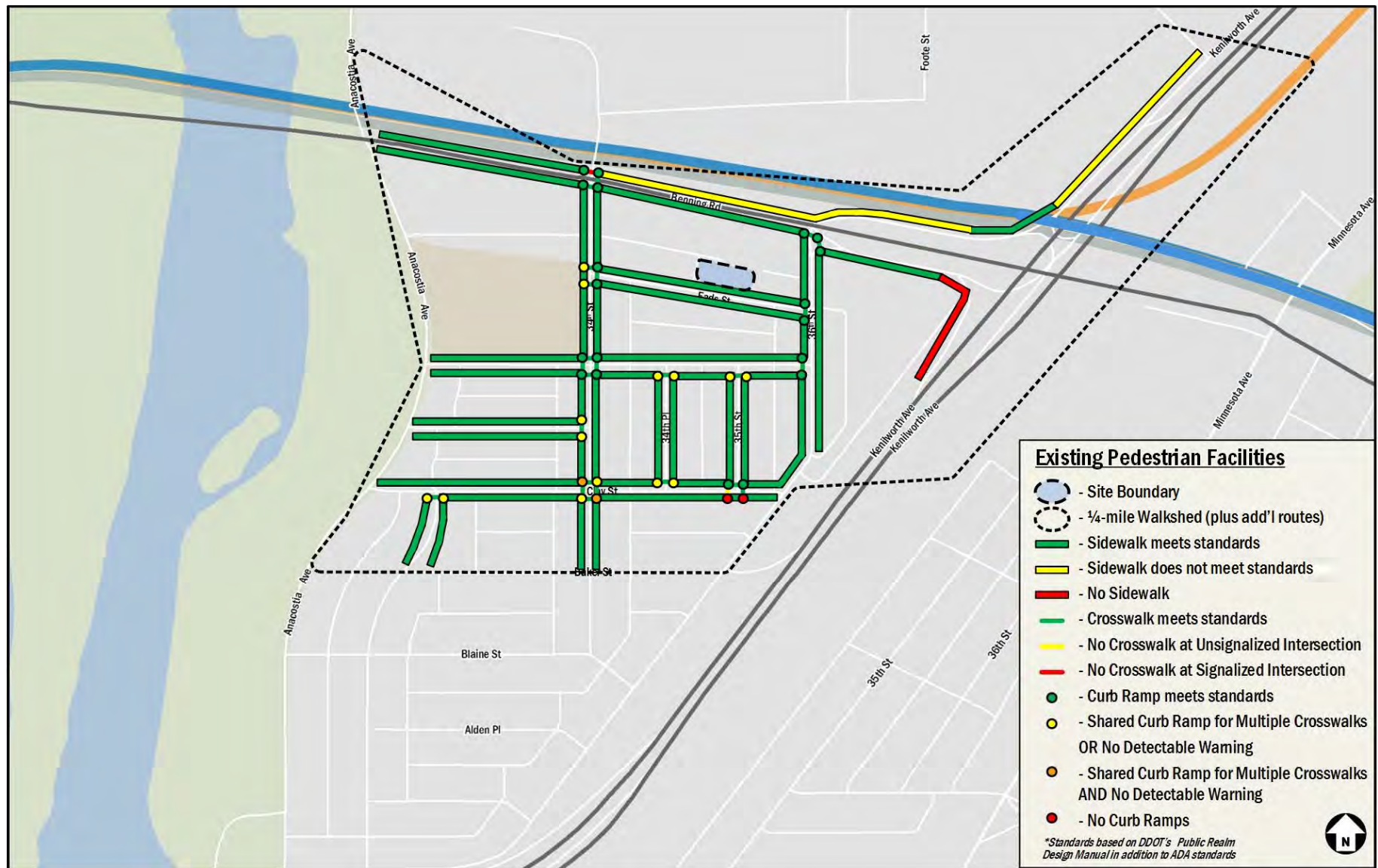


Figure 19: Existing Pedestrian Infrastructure



BICYCLE FACILITIES

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

The following conclusions are reached within this chapter:

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

EXISTING BICYCLE FACILITIES

The site is adequately connected to existing on- and off-street bicycle facilities. Connectivity to the west is provided along the Anacostia River Trail. There are bicycle lanes located to the east of the site along 36th Street, Benning Road, and Minnesota Avenue, which also provide connectivity to the north. Figure 20 illustrates the existing bicycle facilities in the area.

In addition to personal bicycles, the Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the planned development. The Bikeshare program has placed over 350 Bikeshare stations across Washington DC, Arlington, and Alexandria, VA, and most recently Montgomery County, MD, with over 3,000 bicycles provided. Within a quarter-mile of the site, there is one Bikeshare station that houses a total of 15 bicycles. Figure 20 illustrates the existing Capital Bikeshare facilities in the area.

PROPOSED BICYCLE FACILITIES

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

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

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

The Eastern Avenue trail is a bicycle trail planned from Anacostia Avenue NE to Minnesota Avenue NE. This will greatly improve the bicycle connectivity near the site.

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

There are expected improvements along the Anacostia Rail Trail from South Capitol Street to East Capitol Street. This will greatly improve the bicycle connectivity near the site.

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

There are no tier 3 improvements planned in the vicinity of the site.

- 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.

There are no tier 4 improvements planned in the vicinity of the site.

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

SITE IMPACTS

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

Bicycle Trip Generation

The 3450 Eads Street NE development is expected to generate 2 bicycle trips (1 inbound, 1 outbound) during the morning



peak hour and 2 bicycle trips (1 inbound, 1 outbound) during the afternoon peak hour. Although bicycling is an important mode for getting to and from the site, with significant facilities located on site, and existing and planned routes to and from the site, the project is well positioned to take full advantage of the future expansion of bicycle infrastructure in the area. In the meantime, the surrounding low volume neighborhood streets provide suitable interim connectivity for bicycles.

On-Site Bicycle Elements

The project will provide amenities that cater to cyclists, including four short-term bicycle racks for eight bicycles along the perimeter of the site on Eads Street near the primary pedestrian access point as well as 20 on-site secure long-term bicycle parking spaces, which will increase the attractiveness of cycling to the site.

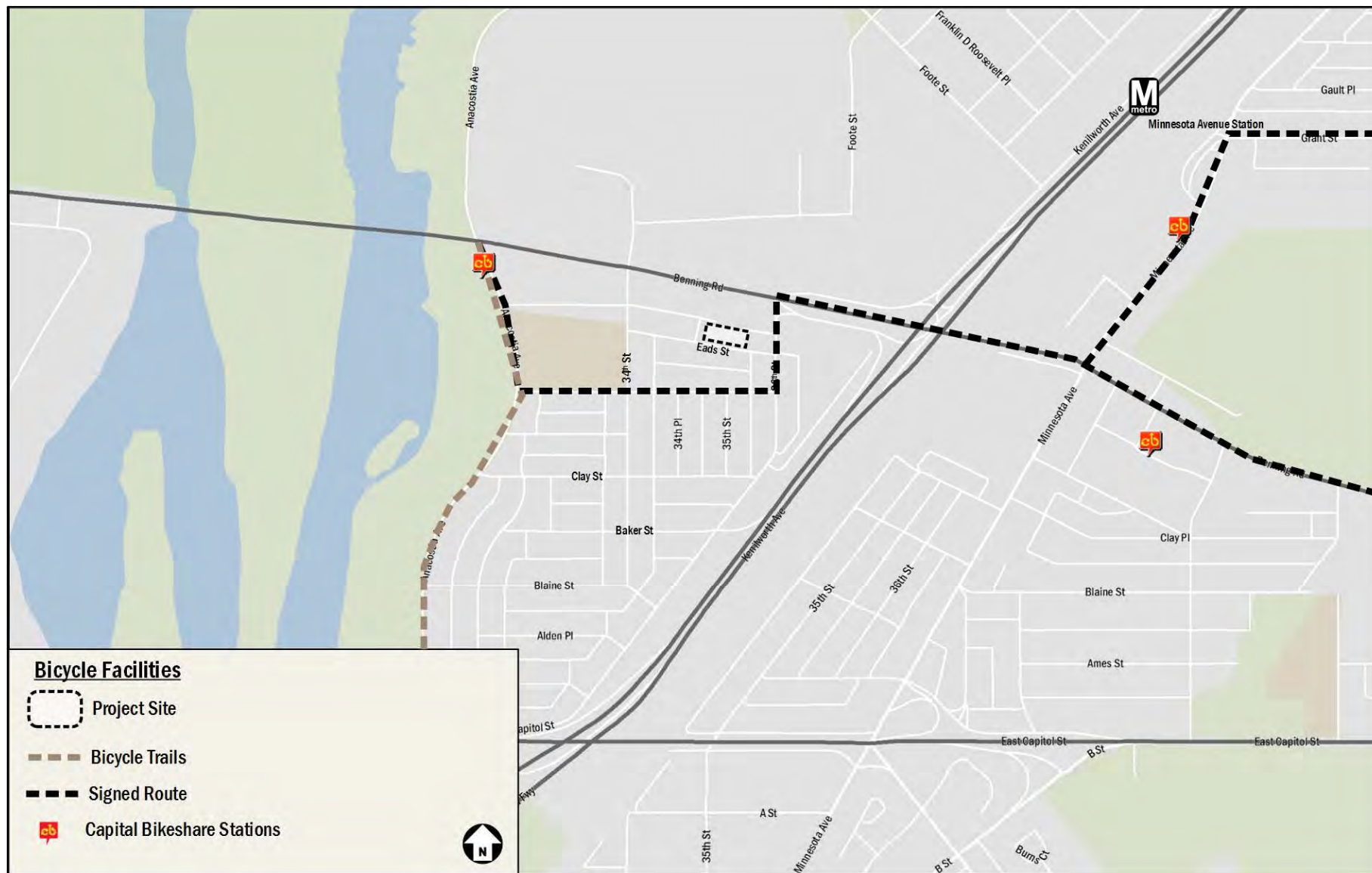


Figure 20: Existing Bicycle Facilities



CRASH DATA ANALYSIS

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

SUMMARY OF AVAILABLE CRASH DATA

A crash analysis was performed to determine if there was an abnormally high crash rate at any study area intersection. DDOT provided the last three years of intersection crash data, from 2013 through 2015 for the study area. This data was reviewed and analyzed to determine the crash rate at each location. For intersections, the crash rate is measured in crash per million-entering vehicles (MEV). The crash rates per intersections are shown in Table 9.

According to the Institute of Transportation Engineer's *Transportation Impact Analysis for Site Development*, a crash rate of 1.0 or higher is an indication that further study is required. Three intersections in this study area meet this criterion (as shown in detail in Table 10 and in red in Table 9). A rate over 1.0 does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have higher crash rates due to operational, geometric, or other issues. Additionally, the crash data does not provide detailed location information. In some cases, the crashes were located near the intersections and not necessarily within the intersection.

For these three intersections, the crash type information from the DDOT crash data was reviewed to see if there is a high percentage of certain crash types. Generally, the reasons for why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes. Table 10 contains a breakdown of crash types reported for the three intersections with a crash rate over 1.0 per MEV.

POTENTIAL IMPACTS

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

- *36th Street & Benning Road*
This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.15 crashes per MEV over the course of the 3-year study period. A majority of the crashes at this intersection were rear end and side swipes. Rear end crashes are generally more typical at signalized intersections but can also be attributed to the existing traffic operations of the intersection. Side swiped instances may be particularly high due to the lane width of 36th Street and high traffic volume along Benning Road. This report does not recommend mitigation measures at this intersection as the proposed development is not projected to make changes to the commuting patterns, operations, or geometry of this intersection that could negatively influence safety.
- *34th Street & Eads Street*
This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.01 crashes per MEV. The majority crashes at this intersection were side swiped vehicles. These side swiped crashes could be attributed to on-street parking along both sides of 34th Street and Eads Street. This report does not recommend mitigation measures at this intersection as the proposed development is not projected to make changes to the commuting patterns, operations, or geometry of this intersection that could negatively influence safety.
- *36th Street & Eads Street*
This intersection is over the threshold of 1.0 crashes per MEV, with a rate of approximately 2.40 crashes per MEV. The majority crashes at this intersection were from vehicles attempting to make a left turn maneuver. Causes for left turn crashes can include obstruction of the driver's view, blind spots, misjudging the speed of oncoming traffic, illegal maneuvers, and more. Overall, the distribution of crash types at the intersection does not lead to a specific safety issue at the intersection. This report does not recommend mitigation measures at this intersection as the proposed development is not projected to make changes to the commuting patterns, operations, or geometry of this intersection that could negatively influence safety.



Table 9: Intersection Crash Rates

Intersection	Total Crashes	Ped Crashes	Bike Crashes	Rate per MEV*
34th Street NE & Benning Road NE	31	1	1	0.61
36th Street NE & Benning Road NE	64	0	4	1.15
34th Street NE & Eads Street NE	6	0	0	2.01
36th Street NE & Eads Street NE	4	0	1	2.40

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

Table 10: 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
36th Street NE & Benning Road NE	1.15	3	2	1	18	17	3	1	2	1	0	4	0	0	12	64
		5%	3%	2%	28%	27%	5%	2%	3%	2%	0%	6%	0%	0%	19%	
34th Street NE & Eads Street NE	2.01	1	0	0	0	2	0	0	1	0	0	0	0	0	2	6
		17%	0%	0%	0%	33%	0%	0%	17%	0%	0%	0%	0%	0%	33%	
36th Street NE & Eads Street NE	2.40	0	2	0	1	0	0	0	0	0	0	0	0	0	1	4
		0%	50%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	



SUMMARY AND CONCLUSIONS

This report presents the findings of a Comprehensive Transportation Review (CTR) for the 3450 Eads Street NE development. 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 future conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming that all planned site design elements are implemented.

Proposed Project

The 3450 Eads Street NE site currently serves as a vacant lot just east of the Anacostia River. The site is generally bound by public alleys to the north and west, Eads Street to the south, and a vacant lot to the east. The application plans to develop the site into a five-story residential building containing approximately 70 dwelling units (of which approximately 60 percent are intended to serve seniors of age 55 and over) with 17 parking spaces for residents located along the alley north of the site. Loading will be accessed through the alley west of the site.

Pedestrian facilities along the perimeter of the site will be improved to include sidewalk and buffer widths that meet or exceed DDOT requirements. The parking garage will supply 20 secure bicycle parking spaces which exceeds the current zoning requirements. Furthermore, eight short-term bicycle parking spaces will be provided around the perimeter of the site.

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

Multi-Modal Impacts and Recommendations

Transit

The site is served by regional and local transit services such as Metrorail and Metrobus. The site is approximately one mile from the Minnesota Avenue Metrorail Station, and many Metrobus stops are located within a block of the site along Benning Road and 34th Street. Although the development will be generating new transit trips, existing facilities have enough capacity to handle the new trips.

Pedestrian

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

Bicycle

Capital Bikeshare stations can be found within a block of the site; for example there is a station west of the site near the intersection of Anacostia Avenue and Benning Road. The site is also just blocks away from trails and bike lanes, such as the Anacostia River Trail to the west and signed routes along Dix Street and Benning Road to the south and north of the site, respectively. On site, the development will provide short-term bicycle parking along the perimeter of the site and on-site secure long-term bicycle parking for residents.

Vehicular

The site is well-connected to regional roadways such as I-295, primary and minor arterials such as Benning Road and Minnesota Avenue, and an existing network of collector and local roadways.

In order to determine if the proposed development will have a negative impact on this transportation network, this report projects future conditions with and without the development of the site and performs analyses of intersection delays and queues. 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. Minor delays were found at one intersection under all study scenarios. However, this impact was not a result of the development and can be found under the existing and background conditions. Thus, no additional mitigations are recommended. The analyses concluded that the planned development will not have adverse impacts on the surrounding transportation network.

Summary and Recommendations

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