TRANSPORTATION IMPACT STUDY

1401 PENNSYLVANIA AVENUE SE PUD

WASHINGTON, DC

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EXECUTIVE SUMMARY

The following report is a Transportation Impact Study (TIS) for the 1401 Pennsylvania Avenue SE Planned Unit Development (PUD). This report reviews the transportation aspects of the project's Consolidated PUD application. The Zoning Commission Case Number is 15-12.

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 1401 Pennsylvania Avenue SE site is currently occupied by a pizzeria, a parking lot, four vacant parcels, and a single two story multi-unit residential building. The site is generally bound by Pennsylvania Avenue to the north, residential row houses to the east, an alley to the south, and 14th Street to the west.

The application plans to develop the site into a mixed-use development including residential and retail uses. The project will be one structure containing 174 dwelling units with 58 below-grade parking spaces and 23,502 square feet of ground-floor retail.

Parking and loading will be accessed through an expanded existing alley that links 14th Street to the west of the site with Ives Place to the south 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 residential garage will supply 218 secure bicycle parking spaces as well as a bike service area and a shower/changing area which exceeds the current zoning requirements. Furthermore, 20 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, Circulator, and Metrobus. The site is 0.1 miles from the Potomac Avenue Metrorail Station portal at Pennsylvania Avenue SE and 14th Street SE, and many Metrobus stops are located within a block of the site along Pennsylvania Avenue SE.

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 Interstate to the south.

As a result of the development, pedestrian facilities along the perimeter of the site will be improved, for example by removing three curb cuts, two on Pennsylvania Avenue, and one on 14th Street. The development will improve sidewalks adjacent to the site such that they meet or exceed DDOT requirements and provide an improved pedestrian environment.

Bicycle

Although not directly adjacent to any bike facilities, the site is just blocks away from trails and bike lanes, such as the Anacostia River Trail to the east and bike routes along 11th Street and 15th Street to the east and west of the site.

On site, the development will provide short-term bicycle parking along the perimeter of the site and on-site secure long-term bicycle parking for residents.

Vehicular

The site is well-connected to regional roadways such as I-295 and I-695, primary and minor arterials such as Pennsylvania Avenue and 17th Street, and an existing network of collector and local roadways.

In order to determine if the proposed development will have a negative impact on this transportation network, this report

projects future conditions with and without the development of the site and performs analyses of intersection delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. Minor impacts were found at one intersection. Operational improvements to mitigate the impacts are discussed in the report.

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.

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

- The site's close proximity to Metrorail
- The inclusion of secure long-term bicycle parking spaces on-site that greatly exceed zoning requirements, as well as a bike service area and a shower/changing area.
- The expansion of the public alley to accommodate access to the site

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

- The pedestrian facilities adjacent and within the site will be greatly improved. This includes enhancing the sidewalks along 14th Street and Pennsylvania Avenue adjacent to the PUD, as well as the removal of two curb cuts on Pennsylvania Avenue and one curb cut on 14th Street.
- Exceeding the required amount of short-term on-street bicycle racks as set forth by zoning.

INTRODUCTION

PURPOSE OF STUDY

This report reviews the transportation elements of the project, supplementing material provided in the Site Plan Package that accompanied the Zoning Commission Application for the 1401 Pennsylvania Avenue SE development.

The 1401 Pennsylvania Avenue SE mixed-use development will contain a residential building with ground-floor retail. The site, shown in Figure 1 and Figure 2, is located in the Capitol Hill 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 polices of promoting non-automobile modes of travel and sustainability.
2. Provide information to the District Department of Transportation (DDOT) and other agencies on how the development of the site will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the site on all major modes of travel and where these trips will be distributed on the network.
3. Determine if development of the site will lead to adverse impacts on the local transportation network. This report accomplishes this by projecting future conditions with and without development of the site and performing analyses of vehicular delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The report discusses what improvements to the transportation network are needed to mitigate adverse impacts.

CONTENTS OF STUDY

This report contains nine sections as follows:

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

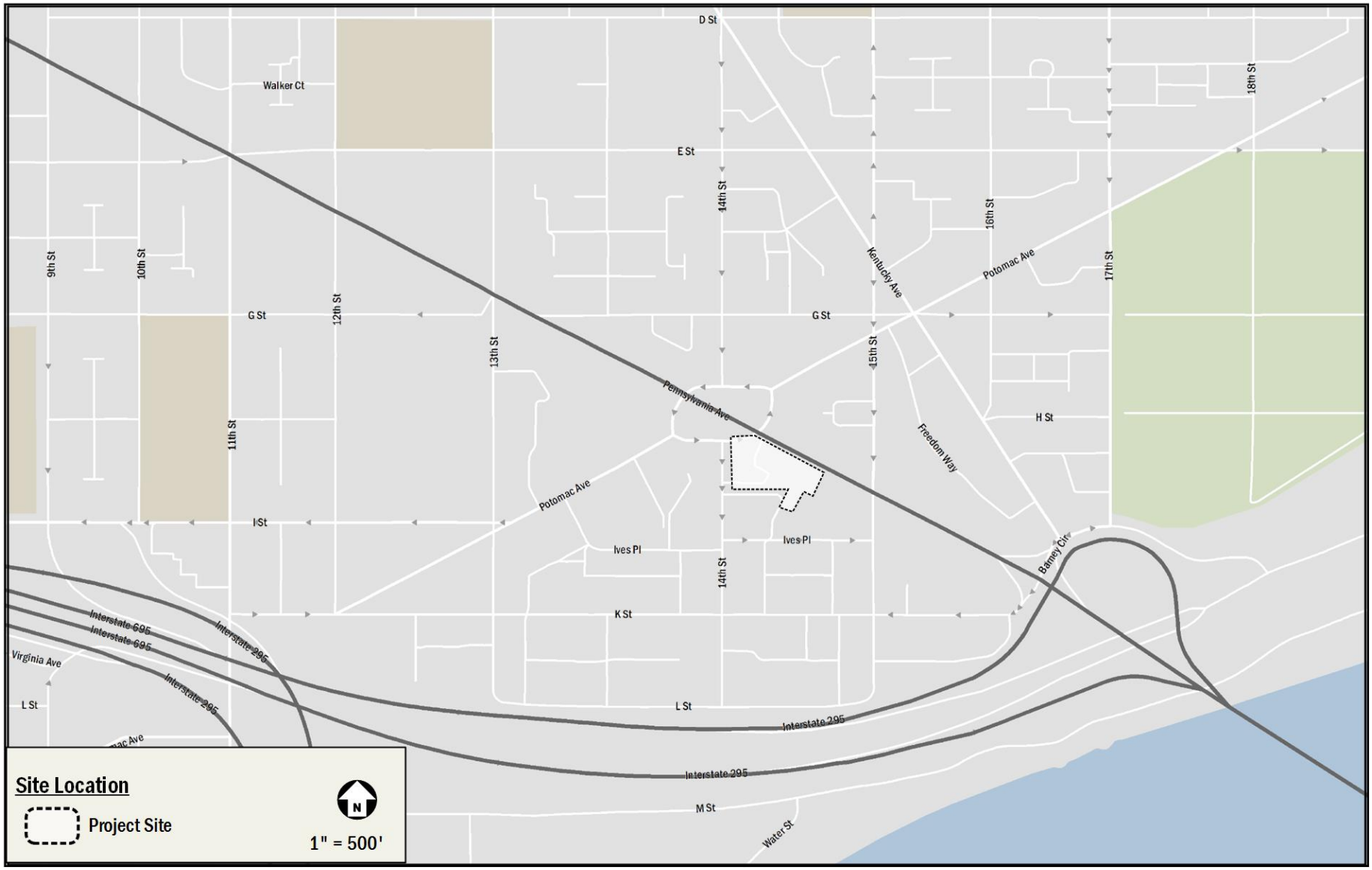

Figure 1: Site Location

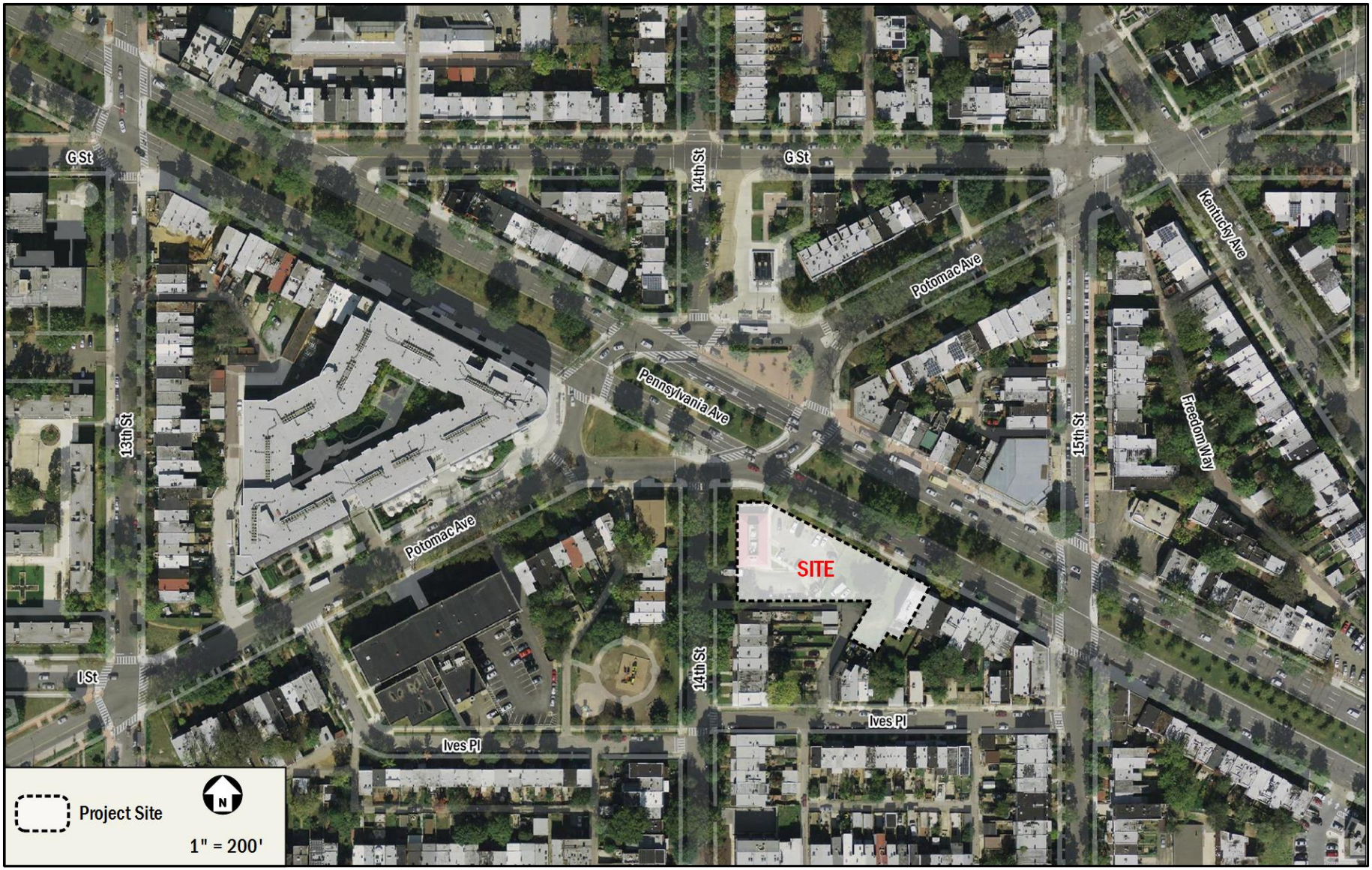

Figure 2: Site Aerial

STUDY AREA OVERVIEW

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

The following conclusions are reached within this chapter:

- The site is surrounded by an extensive regional and local transportation system that will connect the residents, employees, and patrons of the proposed development
- The site is well-served by public transportation with access to Metrorail, and several local 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 1401 Pennsylvania Avenue SE 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 the 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 Interstate 395. The highways and interstates create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within half-mile of the site, at which point arterials and local roads can be used to access the site directly.

Along this site there are several local 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 1401 Pennsylvania Avenue SE site is located extremely close to the Potomac Avenue Metorail station. The proposed development has access to the Blue, Silver, and Orange lines which provide connections to areas in the District, Virginia, and Maryland. The Blue Line connects Largo Town Center with Franconia-Springfield while providing access to the District core. The Silver Line connects Largo Town Center with Whiele Reston East while providing access to the District core. The Orange Line connects New Carrollton with Vienna Fairfax-GMU while providing access to the District core. 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 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 Pennsylvania Avenue, 11th Street, and 17th Street. In addition, there is an existing network of connector and local roadways that provide access to the site.

The Metrobus systems provide local transit service in the vicinity of the site, including a connection to Union Station which acts as a primary hub for Amtrak, VRE, and Marc services. As shown in Figure 5, there are 11 routes that service the site. In the vicinity of the site the majority of routes travel along Pennsylvania Avenue. These bus lines connect the site to many areas of the District.

There are existing bicycle facilities that connect the site to areas within the District, most notably the Anacostia River Trail and the 15th Street bike lanes, as shown in Figure 37. West of the site the 11th Street bike lanes provide further connection to the rest of the District, but it require users to travel along signed routes throughout the roadway network until reached.

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.

Although there are some minor issues, overall the 1401 Pennsylvania Avenue SE 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 five Carshare location within a quarter-mile of the site. Table 1 breaks down the different location that are made available to the public.

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

Walkscore

Walkscore.com is a website that provides scores and rankings for the walking, biking, and transit conditions within neighborhoods of the District. Based on this website the planned development is located in the SW Ballpark – Navy Yard neighborhood. The project location itself has a walk score of 89 (or "Very Walkable"), a transit score of 81 (or "Excellent Transit"), and a bike score of 92 (or "Biker's Paradise"). Figure 3 shows the neighborhood borders in relation to the site location and displays a heat map for walkability and bikeability.

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

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

Overall, the SW Ballpark – Navy Yard neighborhood has a high walk, high transit, and high bike scores. Additionally, other planned developments and roadway improvements will help increase the walk and bike scores in the SW Ballpark – Navy Yard neighborhood.

Future Regional Projects

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

Local Initiatives

MoveDC: Multimodal Long-Range Transportation Plan

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

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

Carshare Location	Number of Vehicles
Zipcar	
12th Street SE / E Street SE	2 vehicles
735 12th Street SE	1 vehicle
Enterprise Carshare	
14th Street SE / Potomac Avenue SE	2 vehicles
Potomac Avenue Metro	4 Vehicles
1310 K Street SE / Alley	4 vehicles
Total	13 vehicles

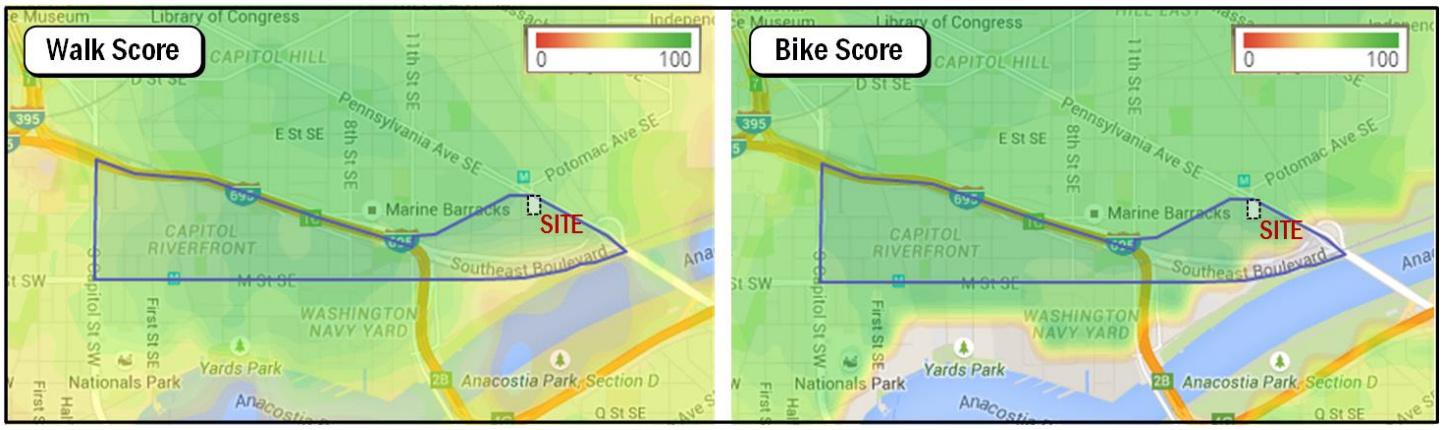

Figure 3: Summary of Walkscore and Bikescore

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

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

Pennsylvania and Potomac Avenues Intersection Improvement Project

The Pennsylvania and Potomac Avenues Intersection Improvement Project proposes to enhance safety at the street intersections for neighborhood pedestrians and transit users of the Potomac Avenue Metrorail Station and the numerous area bus stops.

Despite numerous crosswalk locations, pedestrians traverse the intersection through the grassed median of Pennsylvania Avenue SE. The proposed project would remove some of the current conflicting pedestrian crossings and replace them with more direct routes for pedestrians and transit users.

Currently, three alternatives are being assessed, but no alternative has been selected as of this report.

Planned Developments

There are several potential development project in the vicinity of the 1401 Pennsylvania Avenue SE site. For the purpose of this analysis, only approved developments expected to be complete prior to the planned development with an origin/destination within the study area were included. A detailed list of the background developments considered and a description of their applicability for incorporation in the study is included in the Technical Attachments. Of the background developments considered, two were ultimately included and are described below. Figure 6 shows the location of these developments in relations to the proposed development.

1442 Pennsylvania Avenue SE

A two-story 13,000 sf retail building with a green roof and no on-site parking on the former KFC site.

Since 1442 Pennsylvania Avenue SE was open when counts were taken, but unoccupied, it will be included in the analysis.

1500 Pennsylvania Avenue SE

The proposed new construction 4-story multi-family residential building is designed to a height of approximately 46 feet measured from the lobby floor to the roof. The 41,348 square foot structure will contain 41 residential units 5 of which will be inclusionary zoning units. The project includes a below-grade parking garage for the residents, backyard style terraces for the

ground floor, alley-side units, and amenity space on a roof terrace. Planned delivery date of spring 2015.

1500 Pennsylvania Avenue SE lies in the study area and is expected to open before the completion of 1401 Pennsylvania Avenue SE and will be included in the analysis.

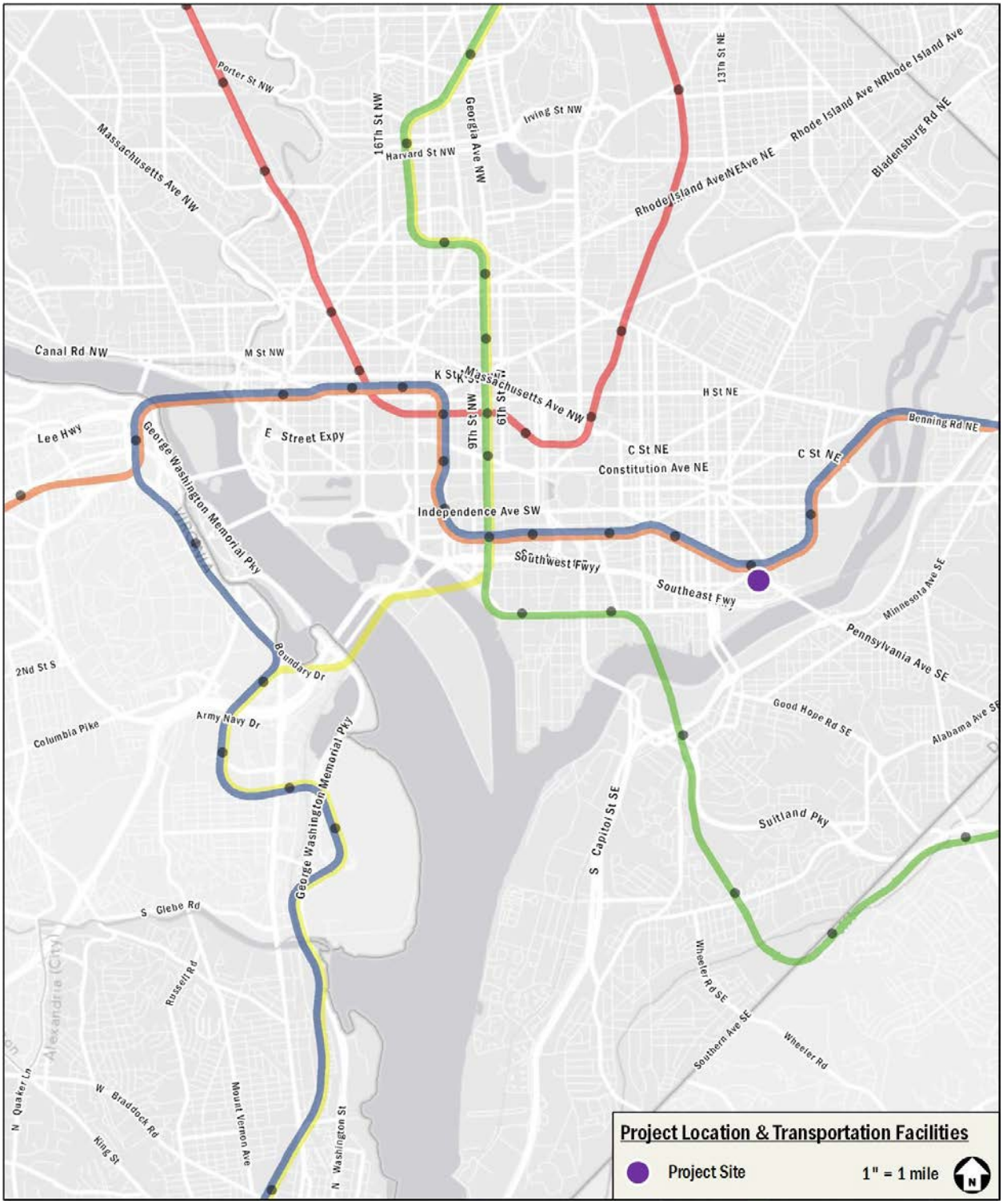

Figure 4: Major Regional Transportation Facilities

Figure 5: Major Local Transportation Facilities

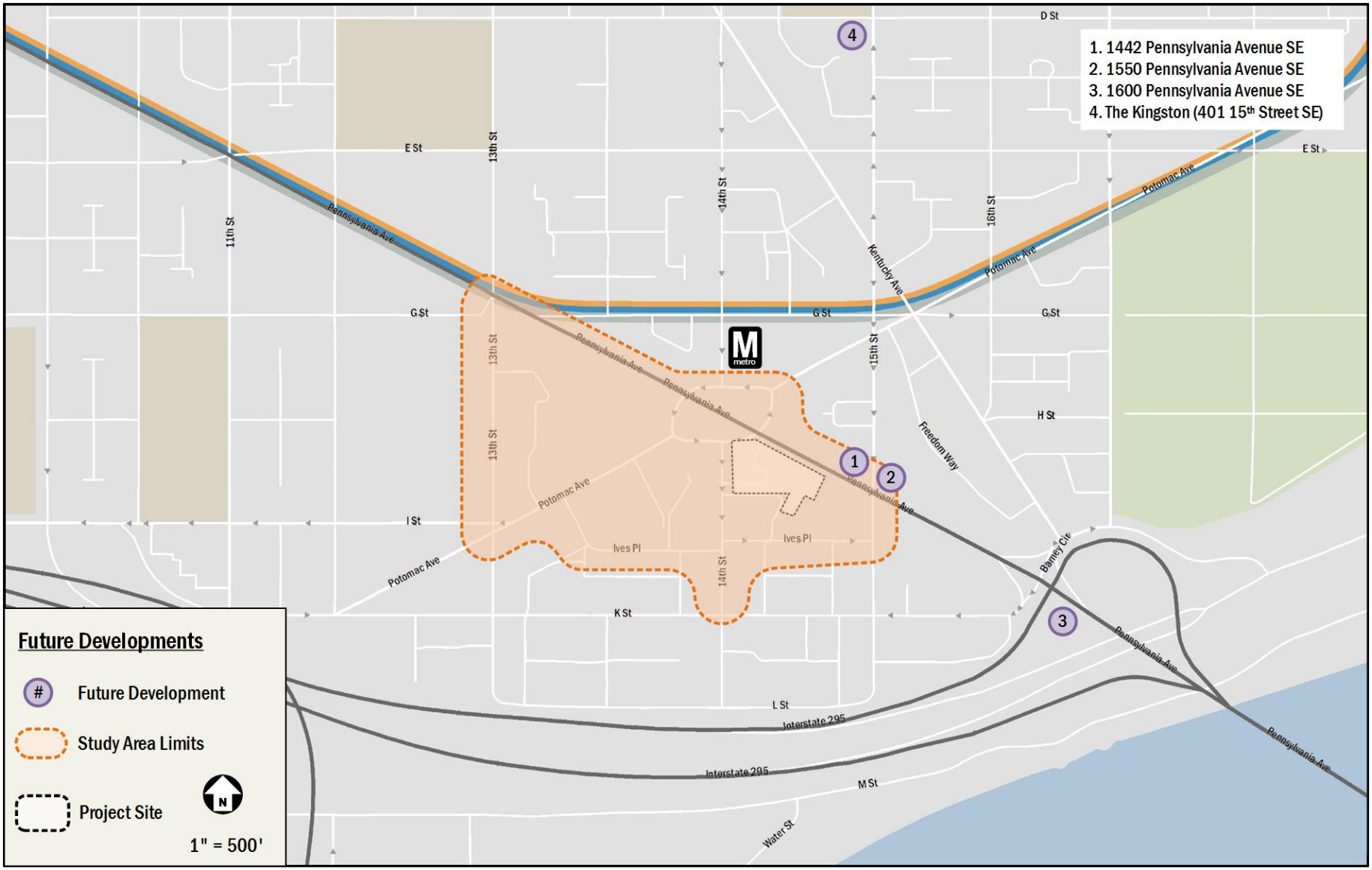

Figure 6: Planned Development Map

PROJECT DESIGN

This section reviews the transportation components of 1401 Pennsylvania Avenue SE, 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 the existing buildings and surface parking lot with one mixed-use building. There are currently two curb cuts that access the existing site: one along Pennsylvania Avenue and one along 14th Street that provide access to the surface parking lot, as well one more abandoned curb cut on Pennsylvania Avenue. The site is primarily surrounded by a low fence along Pennsylvania Avenue and 14th Street, with a public alley bordering the southern perimeter of the site.

The 1401 Pennsylvania Avenue SE project will include 23,502 square feet of ground floor retail, 174 residential dwelling units, and a residential underground parking facility containing 58 spaces. Figure 7 shows an overview of the development program and site plan elements.

ACCESS AND LOADING

Pedestrian Access

Pedestrian access to the residential component of the development will occur predominately via the Pennsylvania Avenue entrance. For the retail component, pedestrian access will be on Pennsylvania Avenue and 14th Street. Pedestrian access points are outlined on the site plan in Figure 7.

Vehicular Access

Most vehicular access to the site will be off 14th Street and Ives Place, which are local roadways. An existing ten-foot public alley off 14th street that is adjacent to the site will be expanded to 20-feet. The expanded alley off 14th Street will provide access to the underground garage, the secure bicycle storage, and the loading docks. The expanded alley provides access to the site from 14th Street to the west and Ives Street to the south.

Bicycle Access

Most bicycle access to the side will be off the expanded alley that links to the long-term secure bicycle parking and amenities. Short-term bicycle parking will be found around the perimeter of the site and will be accessed on 14th Street and Pennsylvania Avenue.

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

Loading Facilities

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

The proposed development is expected to generate 15.6 truck trips per day. This includes daily trash removal services, mail and parcel delivery, retail pickup and delivery, and residential move-in and move-out trips. One (1) trash removal truck, two (2) mail and parcel delivery trucks, 12 retail pickup and delivery trucks, and 0.6 residential move-in and –out trucks (calculated using an average of 18 months average turnover per unit), will service the development on a daily basis. The loading facilities provided by the development will be sufficient to accommodate this demand.

Truck routing to and from the site will be focused on 14th Street, which connects the site with Pennsylvania Avenue, a DDOT designated primary truck route. Figure 15 shows the inbound and outbound paths of a truck accessing the site. As can be seen, the narrow width of 14th Street combined with parking on both the east and west sides of the street, limits the ability of trucks and vehicles to pass alongside each other in a safe manner. As a result, four (4) alternatives were considered as a solution.

- *Alternative 1: Remove Parking on East Blockface*
  The first alternative considered to remedy the narrow drive lanes along 14th Street between Potomac Avenue and the alley to the south of the site is to remove the parking from the eastern blockface of 14th Street that runs along the site. Under existing conditions there are a total of four (4) designated parking spaces, of which two (2) are metered spaces and two (2) are reserved car-sharing spaces. While increasing the widening the road along 14th Street, this alternative would remove parking from an area that is already sensitive to changes in parking demand,

which is not recommended. Additionally, the District's contractual agreement with Enterprise Carshare, which currently utilizes two spaces as reserved parking spaces or "homes" for their vehicles would further complicate the removal of those parking spots.

- *Alternative 2: Remove Parking on West Blockface*
  The second alternative considered to remedy the narrow drive lanes along 14th Street between Potomac Avenue and the alley to the south of the site is to remove the parking from the western blockface of 14th Street that runs across 14th Street from the site. Under existing conditions the 130-feet of curbside along the western blockface of 14th Street to the north of the alley operates under the Residential Permit Parking (RPP) program. The removal of 130-feet of parking would equate to the loss of approximately five (5) to seven (7) parking spaces. While widening the road width along 14th Street, this alternative would remove parking from an area that is already sensitive to changes in parking demand, which is not recommended.

- *Alternative 3: Move Eastern Curbside*
  The third alternative considered to remedy the narrow drive lanes along 14th Street between Potomac Avenue and the alley to the south of the site is to move the curb of the eastern blockface of 14th Street north of the alley along the site inwards, and thus create the additional road width necessary for truck and local traffic to operate safety. Unfortunately, this alternative would have high costs associated with moving an entire section of the curb inwards, as well the loss of old-growth trees that are there under existing conditions, and a reduction in quality of pedestrian connectivity due to narrower sidewalks. As such, this alternative is not recommended.

- *Alternative 4: Place Restrictions on Existing Parking*
  The fourth alternative considered to remedy the narrow drive lanes along 14th Street between Potomac Avenue and the alley to the south of the site is to place restrictions on parking on the eastern blockface of 14th Street to the north of the alley during specific times of the day. This alternative would remove parking during times of the day where traffic volumes are heaviest on 14th Street to ensure that there is enough roadway width to allow trucks and vehicles to operate safely. Pending discussions between DDOT and Enterprise Carshare, this alternative would relocate the two (2) Car-share spaces to the western blockface of 14th Street as to allow the vehicles there to maintain their presence, while placing multi-space metered spaces on the eastern blockface along the site on 14th Street. As shown in Figure 16, this alternative would minimize the impact on on-street parking in the vicinity of the site while allowing for a roadway width that is wide enough for trucks and vehicles to operate safely.

Based on an analysis of the four alternatives, this report recommends using time restrictions on metered parking along 14th Street as the least impactful alternative.

PARKING

On-Site Parking

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

- *Residential*
  1 space per 3 dwelling units, amounting to a minimum requirement of 58 parking spaces

- *Retail*
  1 space per 750 square feet of retail space in excess of 3,000 square feet, amounting to a minimum requirement of 28 parking spaces

58 parking spaces will be supplied in a below-grade parking garage. The development will be 28 parking spaces short of satisfying zoning requirements. The Applicant is seeking relief for the requirements set forth by current District zoning laws for on-site parking.

Typically, developments adjacent to Metrorail stations generate a parking demand in the range of 0.25 to 0.50 spaces per residential unit, and 0.25 to 1.00 spaces per thousand square feet. Based on these ranges the 1401 Pennsylvania Avenue development will generate around 49 to 111 spaces of demand. The proposed supply of 58 spaces falls within this range.

It should be noted that the Zoning Regulations, which govern minimum parking requirements, are being rewritten. Under § C-701.5 of the proposed zoning regulations, the parking requirements would be 72 total parking spaces based on the proposed new rate of one space per three dwelling units in excess of four dwelling units and 1.33 spaces per 1,000 square feet of retail in excess of 3,000 square feet. However, under §

C-702.1 of the proposed zoning regulations, this parking requirement would be further reduced to 36 parking spaces. Under § C-702.1, parking requirements for any site located within one-half mile of a Metrorail Station or within one-quarter mile of a Priority Corridor Network Metrobus Route shall be reduced by half (50%). Given that the site is located within 0.1 miles of the Potomac Avenue Metrorail station, the parking requirement under the proposed Zoning Regulations would be 36 spaces, which the current development plan exceeds. Table 2 shows the minimum parking requirements under the proposed Zoning Regulations Review (ZRR).

This report concludes that with appropriate TDM strategies, including exceeding bicycle parking requirements and providing transit information, the development is providing enough parking supply to accommodate all demand on site.

On-Street Parking

Since the development is providing 58 on-site parking spaces, a parking inventory and occupancy study was conducted within a two-block radius of the proposed development to assess the potential impacts of higher parking demand. The study was conducted on a "typical weekday" when DC Public Schools and Congress were in session between the hours of 2:00PM and 11:00PM. Parking inventory was calculated at 20 feet per space (rounded up) for all non-metered parking and at one parking meter per space for all metered parking in the study area. Parking occupancy percentages were then calculated for each blockface in the study area by dividing the observed number of parked vehicles by the observed parking inventory. Figure 9 displays the study area for the parking inventory and occupancy study.

The parking analysis was divided into three time periods: Afternoon (2:00PM-4:00PM), Evening (4:00PM-7:00PM), and Night (7:00PM-11:00PM). Figure 10 shows the average parking occupancy in the study area over the Afternoon (2:00PM-4:00PM) period. The results show relatively high demand for parking in the vicinity of Chamberlain Elementary School, presumably for after-school pickup, with an overall parking occupancy in the study area of 59%. Figure 11 shows the average parking occupancy for the Evening (4:00PM-7:00PM) period. The results show an increase in parking demand on residential blocks, with a decrease in the parking demand in the vicinity of Chamberlain Elementary School, with an overall occupancy in the study area of 59%. Figure 12 shows the average parking occupancy during the Night (7:00PM-11:00PM) period. As can be seen, parking demand in the residential areas peaks, while parking utilization on Pennsylvania Avenue remains low. During the Night period there is an average occupancy in the study area of 65%.

Traditionally, an 85% occupancy rate is considered an ideal level of parking utilization. At a rate of 85% utilization, a blockface is considered "full" while having space to accommodate demand from incoming vehicles. In the study area there was a 62% overall utilization level for the entire study period. Peak parking demand of 69% in the study area occurred between 10:00PM and 11:00PM and can be seen on Figure 13.

Concern regarding parking availability for residents along 14th Street and Ives Place in the vicinity of the site was addressed by conducting additional field observations. The additional observations showed that parking along 14th Street and Ives Place was utilized at a rate similar to what was found in the parking study. On the eastern blockface of 14th Street, between Pennsylvania Avenue and Ives Place, it was observed that the metered parking spaces, which function as available un-metered parking starting from 6:30PM were unoccupied, while parking in the Residential Permit Parking (RPP) section of the eastern blockface was highly utilized. As a result, the average occupancy of this blockface across the study period might seem

Table 2: ZRR Parking Requirements

Use Requirement (under ZRR)	Ratio	Parking Spaces
Residential	1 per 3 dwelling units, in excess of 4 units	57
Retail	1.33 per 1,000 sq. ft. in excess of 3,000 sq. ft.	15
Total Required (Base)		72
50% Reduction for Metro Proximity		-36
Total Required (under ZRR)		36

lower than what is perceived by residents which seek to park only in the RPP section of the blockface.

On Ives Place, between 14th Street and 15th Street, it was observed that parking demand was high on the western portion of the block near 14th Street and low on the eastern portion of Ives Place near 15th Street. Since data collected for the parking study was aggregated by blockface, parking demand for Ives Place is represented as an aggregate of the entire blockface without differentiation between the east and west portions of the blocks which might be utilized differently. As a result, there might be a perception of higher levels of parking utilization at on the eastern portion of Ives Place than may actually exist along the entire block.

Table 3 shows the analysis breakdown for on-street parking facilities in the immediate vicinity of the site. Figure 14 shows the existing curbside management for on-street parking in the immediate vicinity of the site. A detailed breakdown of parking utilization for each blockface in the study area can be found in the Technical Appendix.

The results of the analysis of on-street parking facilities for the area in the vicinity of the site indicate that there is the ability to absorb any additional parking demand that may be generated by the proposed development in excess of the 58 parking spaces provided on-site.

Bicycle and Pedestrian Facilities

The project will include 20 short-term public bicycle spaces at street level along the perimeter of the site on Pennsylvania Avenue. These short term spaces will include inverted U-racks placed in high-visibility areas. The Applicant is working in conjunction with DDOT in selecting locations for the racks in public space.

The project will also include secure long-term bicycle parking. The plans identify 218 spaces in the proposed development as well as a bike service area and a shower/changing area. According to the *DC Zoning Regulations and Bicycle Commuter and Parking Expansion Act of 2007*, all residential developments must provide at least one secure bicycle parking space for each 3 residential units. In addition the number of bicycle parking spaces for all other land uses amount to 5 percent of the automobile parking spaces required. Based on these regulations the development must provide 67 bicycle parking spaces. The development greatly exceeds these requirements.

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

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 1401 Pennsylvania Avenue SE development is based on the DDOT expectations for TDM programs. The Applicant proposes the following TDM measures:

- The Applicant will exceed Zoning requirements to provide bicycle parking/storage facilities at the proposed development. This includes secure parking located in the on-site, short-term bicycle parking around the perimeter

Table 3: Parking Inventory and Occupancy in Vicinity of Site (analysis period of 2:00PM-11:00PM)

Street	From	To	Side of Street	Parking Type	Available Spaces	Average Occupancy of Analysis Period	Average Percent Occupancy of Analysis Period
14th Street SE	Pennsylvania Avenue SE	Ives Place SE	E	RPP, 2hr, 7:00AM-8:30PM, M-F	9	5.4	60%
14th Street SE	Pennsylvania Avenue SE	Ives Place SE	W	RPP, 2hr, 7:00AM-8:30PM, M-F	14	9.2	66%
Ives Place SE	14th Street SE	15th Street SE	N	RPP, 2hr, 7:00AM-8:30PM, M-F	16	10.0	63%
Ives Place SE	14th Street SE	15th Street SE	S	RPP, 2hr, 7:00AM-8:30PM, M-F	19	12.7	67%
Pennsylvania Avenue SE	15th Street SE	Potomac Avenue SE	S	Unrestricted	14	5.5	39%

of the site, as well as a bike service area and a shower/changing area.

- The Applicant will unbundle the cost of residential parking from the cost of lease or purchase.
- The Applicant will identify TDM Leaders (for planning, construction, and operations) at the residential and office buildings. The TDM Leaders will work with residents in the building to distribute and market various transportation alternatives and options.
- The Applicant will provide TDM materials to new residents in the Residential Welcome Package materials.
- The Applicant will install Transportation Information Center Displays (kiosks or screens) within the lobbies of the residential multi-family buildings and the community serving buildings, containing information related to local transportation alternatives.
- The Applicant will provide each unit's incoming residents for the first three years with either (1) one-year membership to Capital Bikeshare or (2) one-year membership to a Carsharing service.

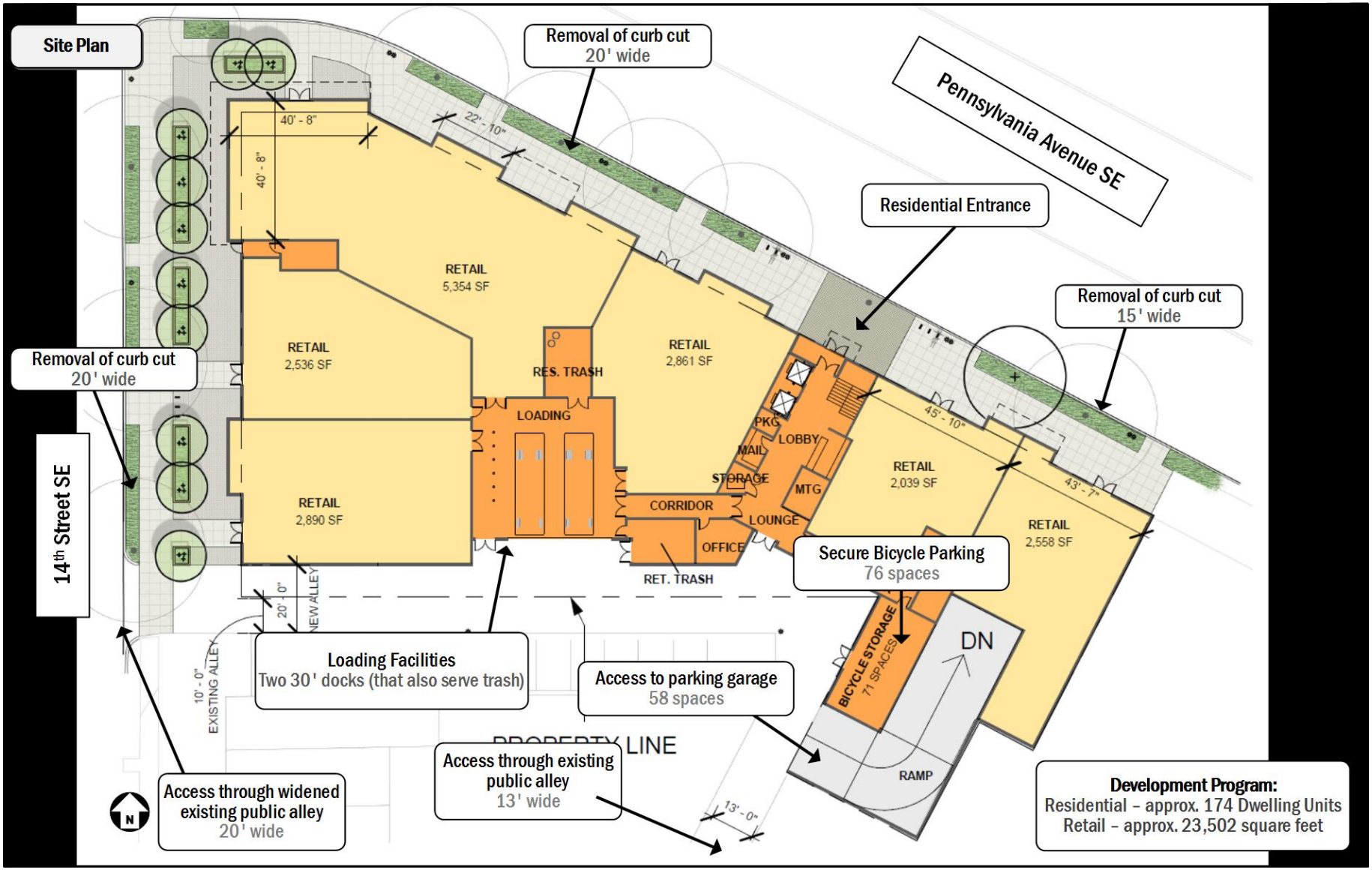

Figure 7: Site Plan

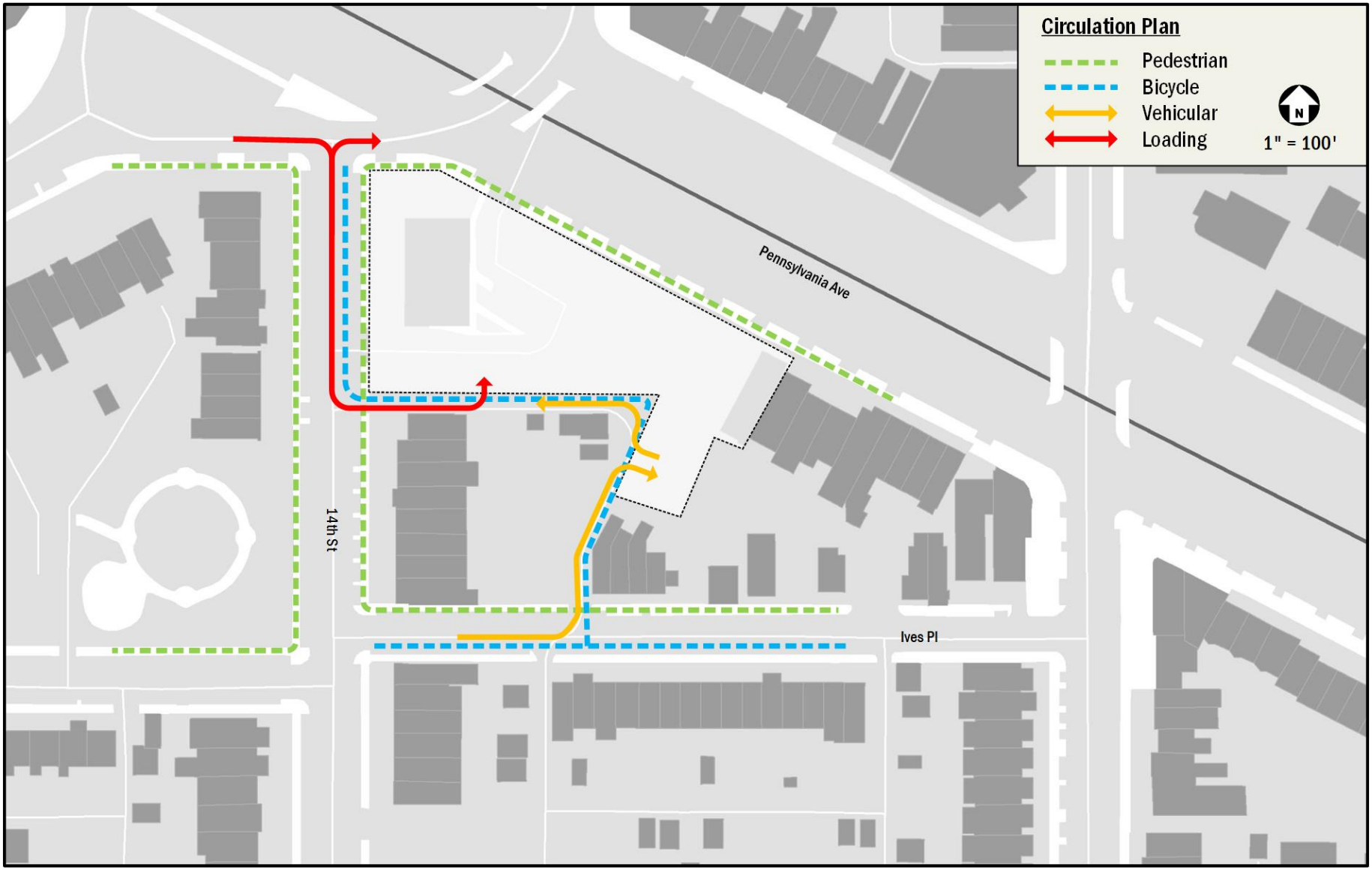

Figure 8: Circulation Plan

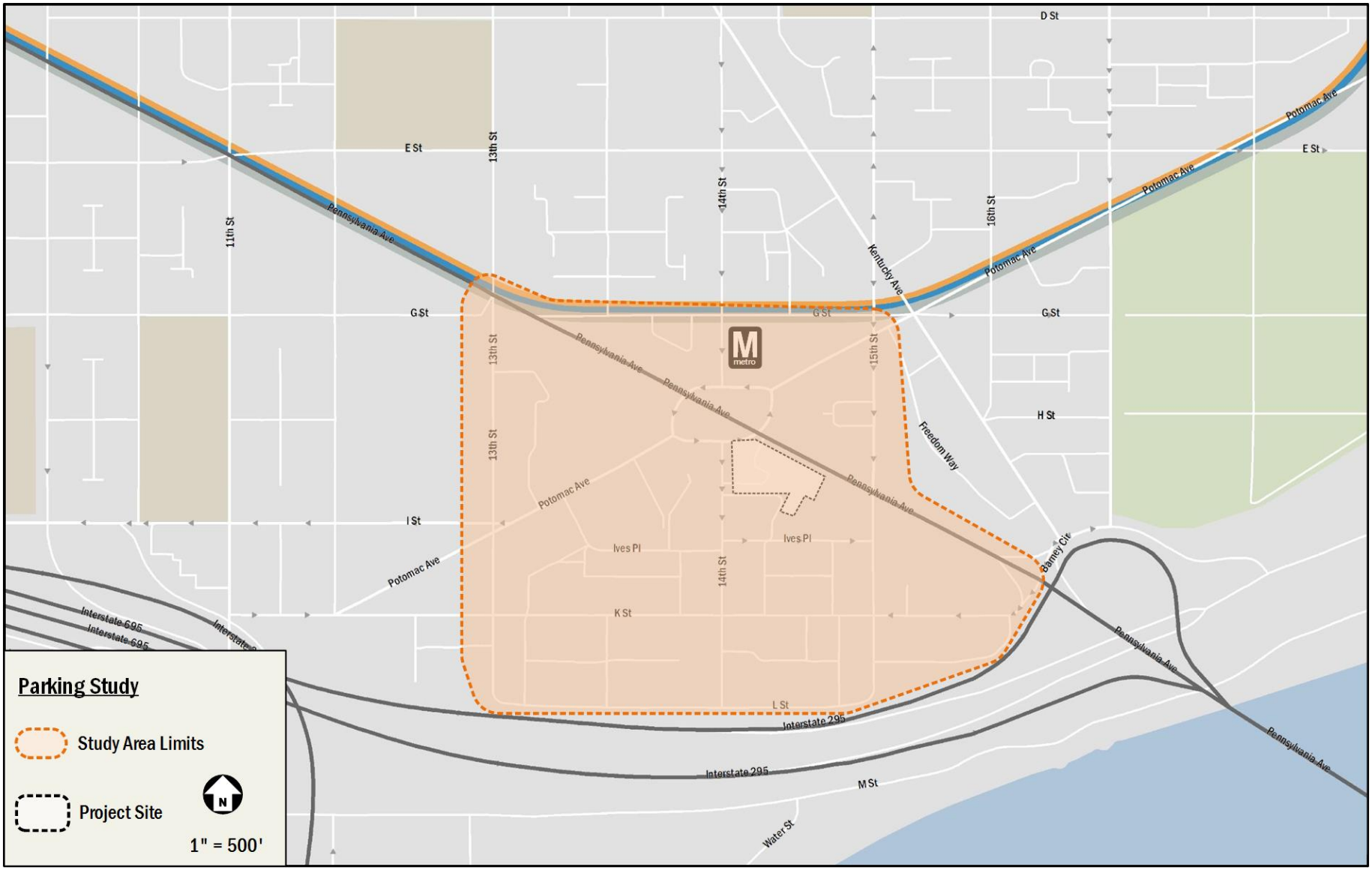

Figure 9: Parking Study Area

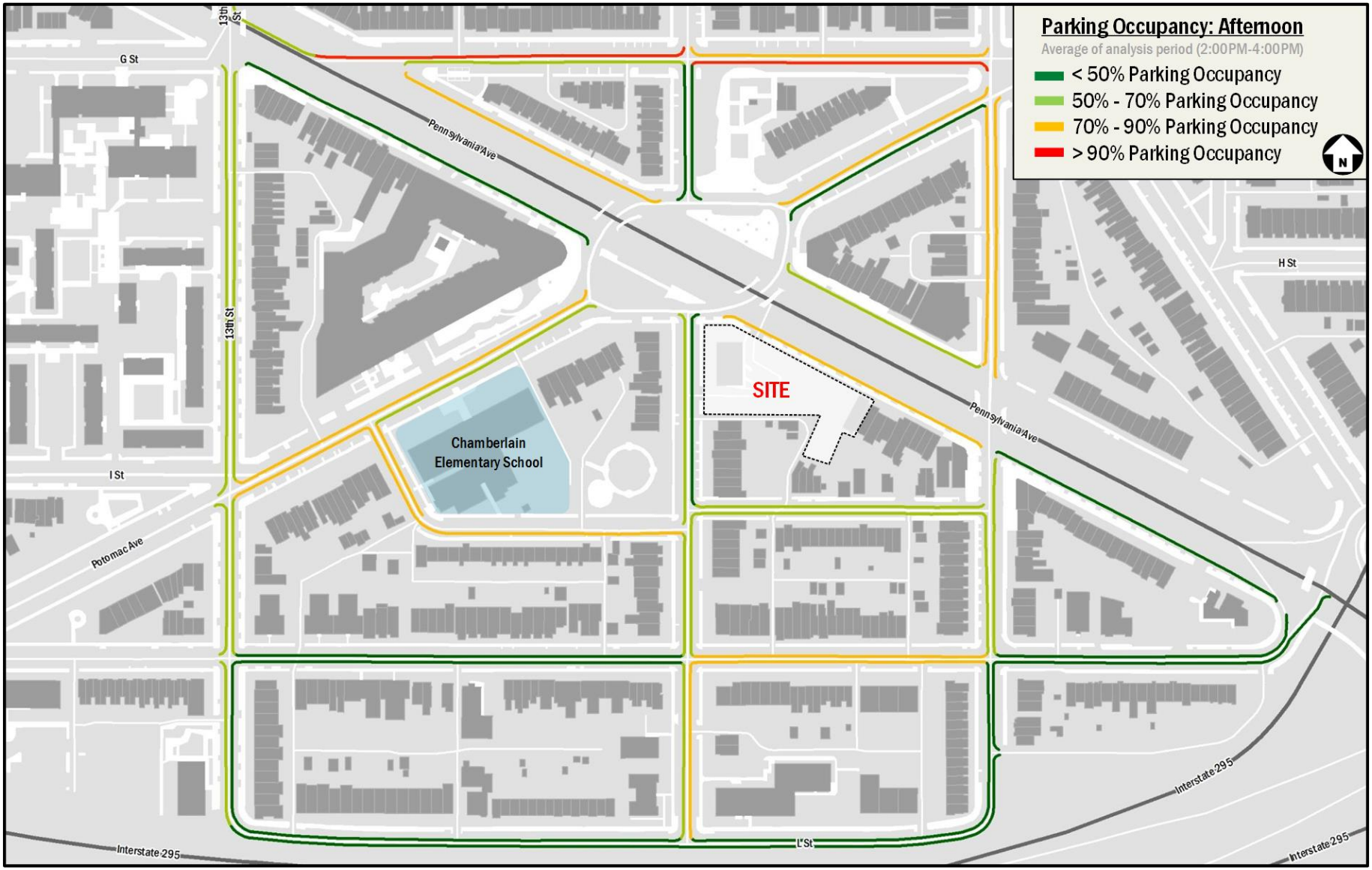

Figure 10: Parking Occupancy (Afternoon)

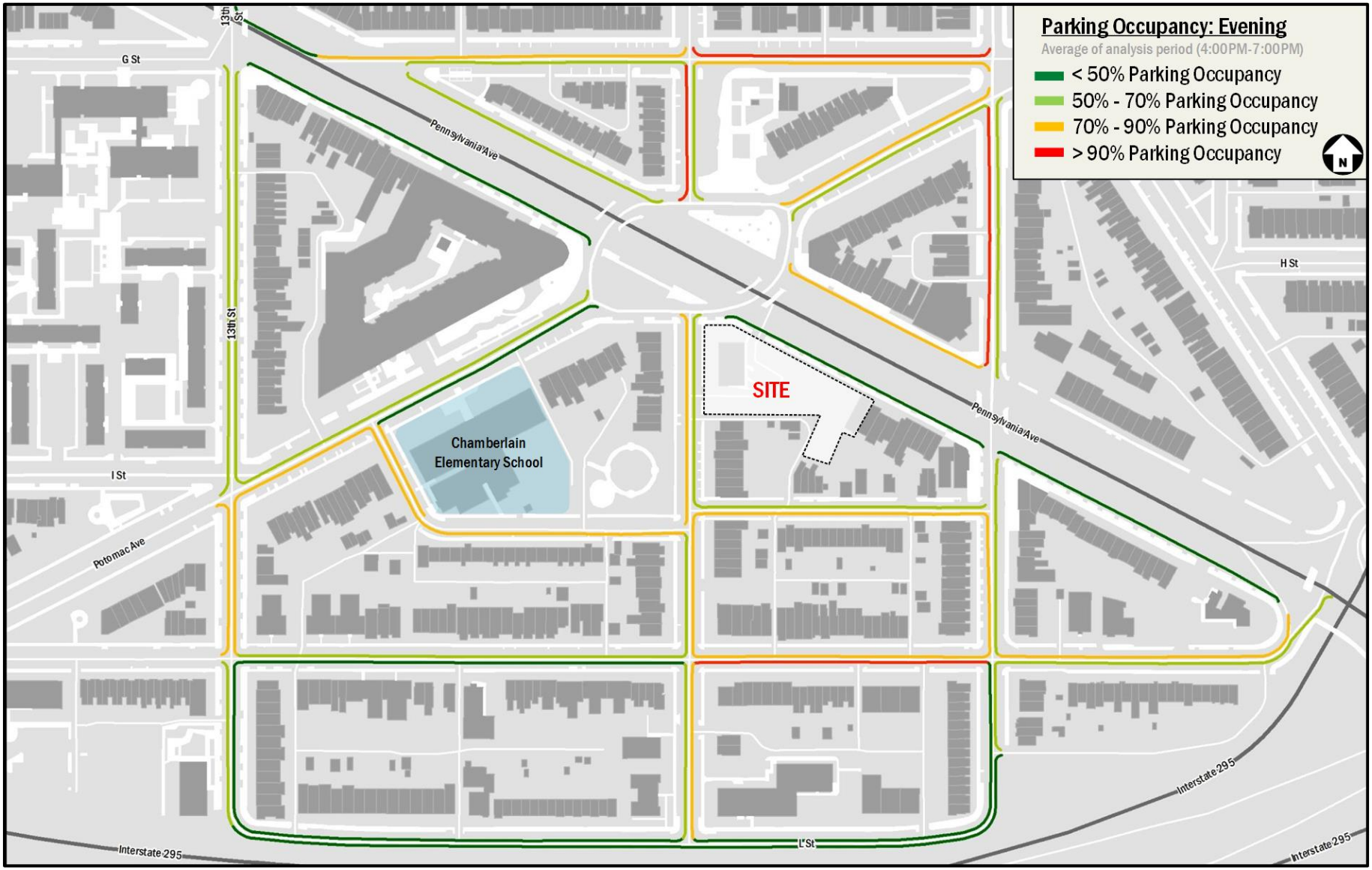

Figure 11: Parking Occupancy (Evening)

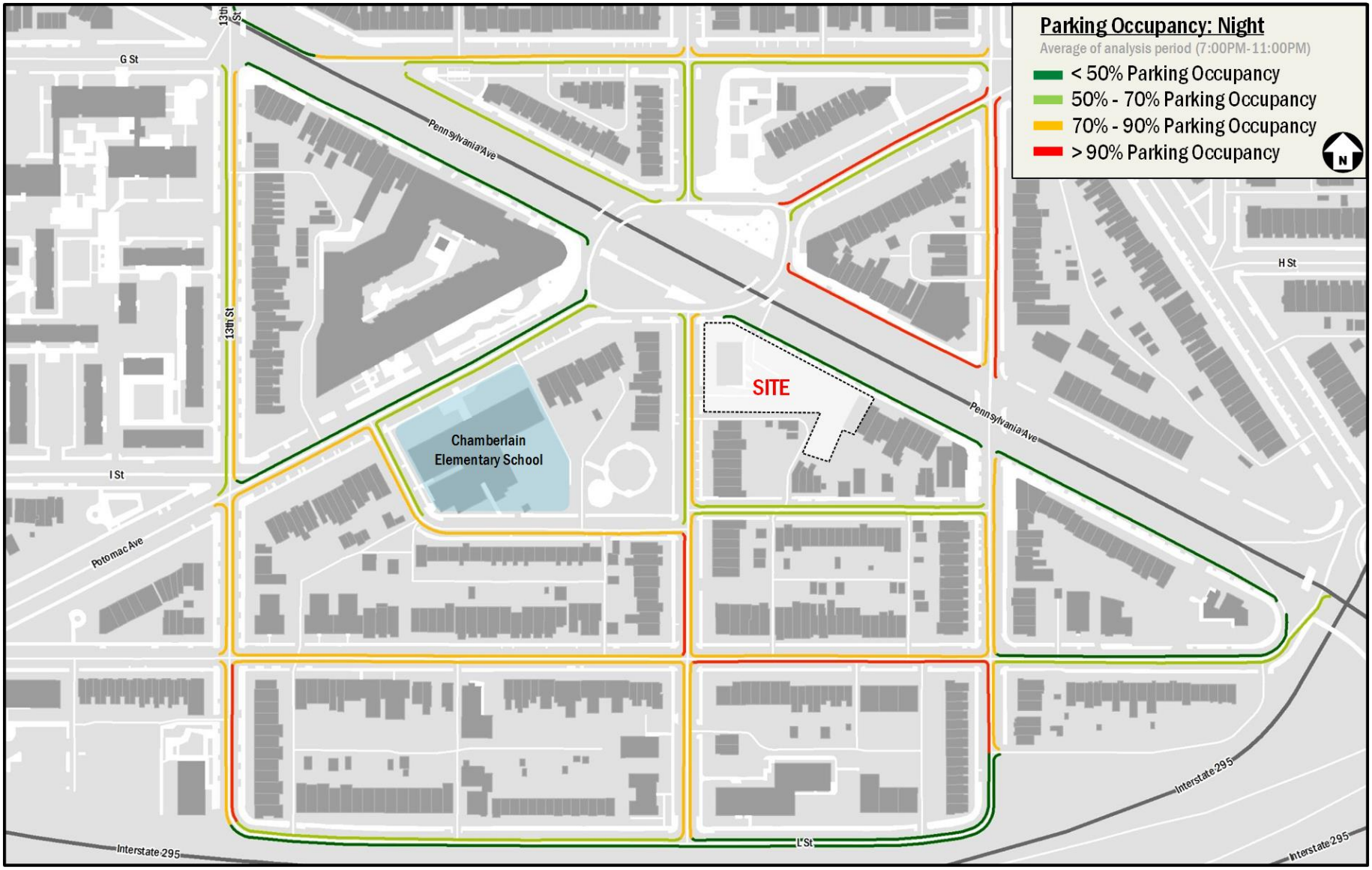

Figure 12: Parking Occupancy (Night)

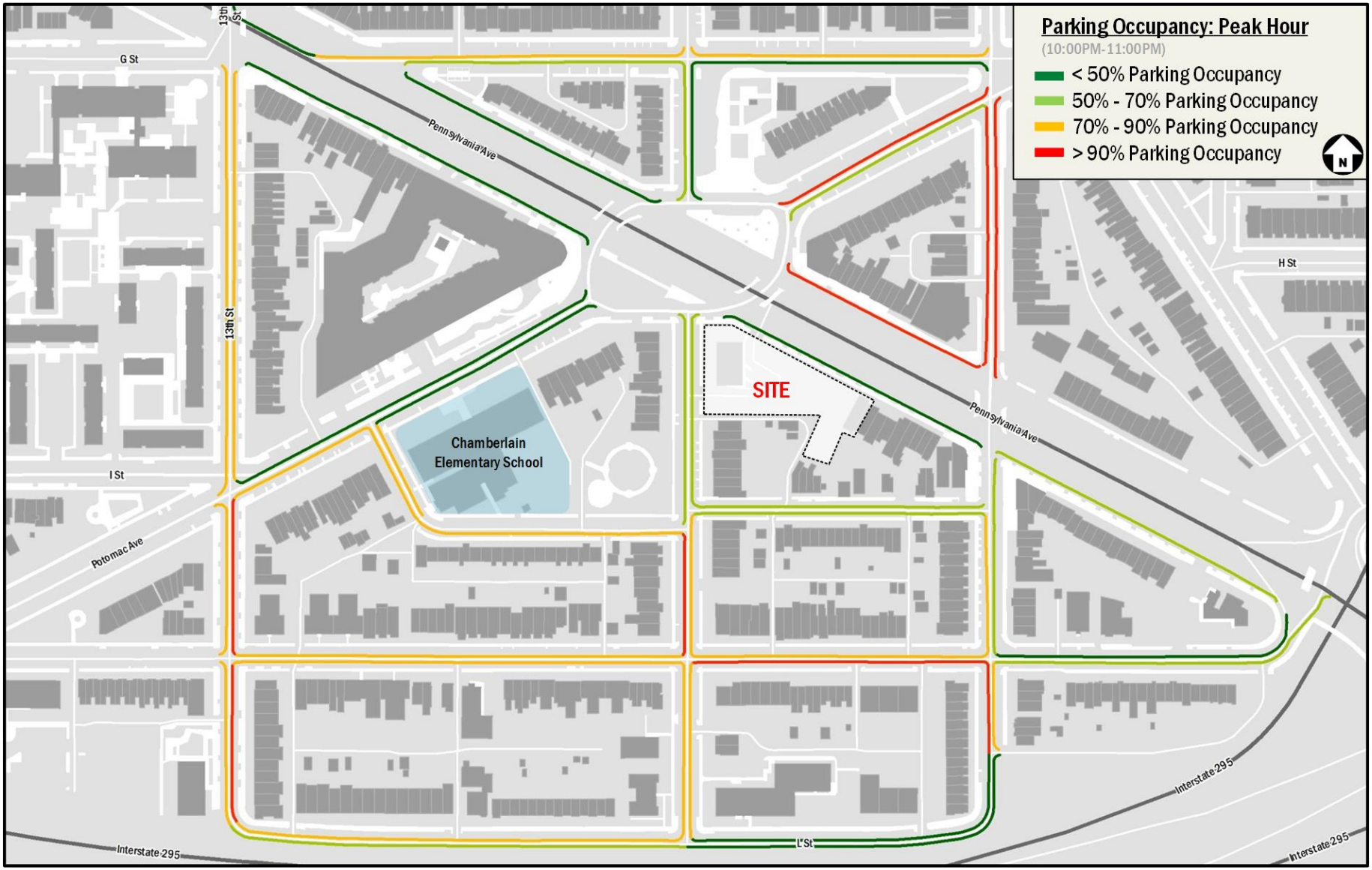

Figure 13: Parking Occupancy (Peak Hourly Demand)

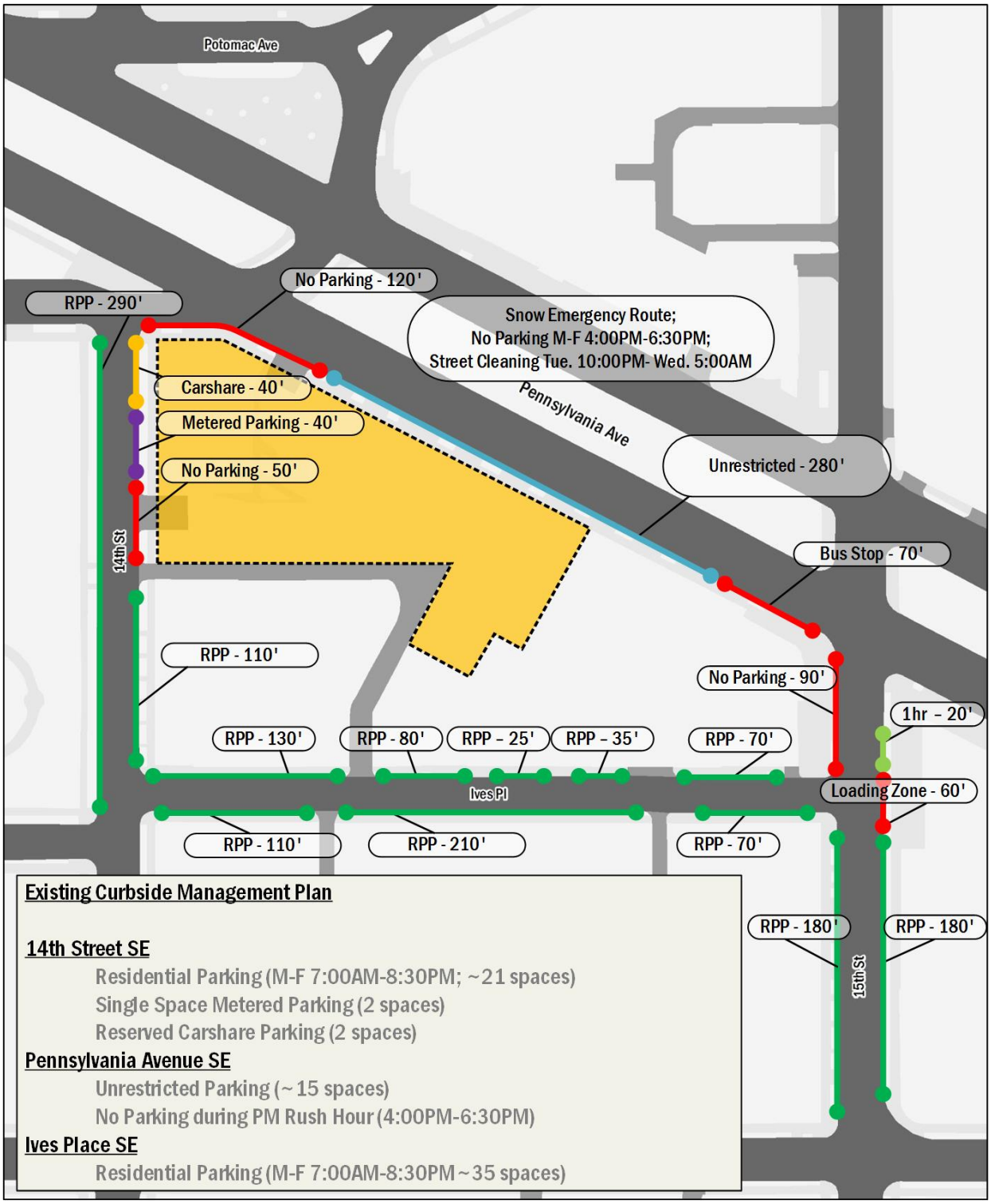

Figure 14: Existing Curbside Management

Figure 15: Truck Turning Maneuvers (Inbound and Outbound) Under Existing Conditions

Figure 16: Truck Turning Maneuvers (Inbound and Outbound) Under Proposed Conditions

TRIP GENERATION

This section outlines the transportation demand of the proposed 1401 Pennsylvania Avenue SE project. It summarizes the projected trip generation of the site by mode, which forms the basis for the chapters that follow.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition. This methodology was supplemented to account for the urban nature of the site (the *Trip Generation Manual* provides data for non-urban, low transit use sites) and to generate trips for multiple modes.

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

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

The mode split assumptions for all land uses within the development is summarized in Table 5. A summary of the multimodal trip generation for the development is provided in Table 4 for the morning and afternoon peak hours. Detailed calculations are included in the Technical Appendix.

Of note, the proposed development is planned to greatly exceed the amount of bicycle parking as required by Zoning by supplying a total of 218 long-term secure on-site bicycle spaces and 20 short-term bicycle spaces around the perimeter of the site, as well as a bike service area and a shower/changing area. As such, the trip generation used for analysis is conservative in its assumptions and reflects a scenario where the abundant availability of bicycle amenities are not realized.

Table 5: Summary of Mode Split Assumptions

Land Use	Mode			
	Auto	Transit	Bike	Walk
Residential	33%	50%	5%	12%
Retail	30%	30%	5%	35%

Table 4: Multi-Modal Trip Generation Summary

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto	Residential	6 veh/hr	23 veh/hr	29 veh/hr	24 veh/hr	13 veh/hr	37 veh/hr
	Retail	4 veh/hr	3 veh/hr	7 veh/hr	13 veh/hr	13 veh/hr	26 veh/hr
	Total	**10 veh/hr**	**26 veh/hr**	**36 veh/hr**	**37 veh/hr**	**26 veh/hr**	**63 veh/hr**
Transit	Residential	10 ppl/hr	41 ppl/hr	51 ppl/hr	41 ppl/hr	23 ppl/hr	64 ppl/hr
	Retail	8 ppl/hr	4 ppl/hr	12 ppl/hr	23 ppl/hr	24 ppl/hr	47 ppl/hr
	Total	**18 ppl/hr**	**45 ppl/hr**	**63 ppl/hr**	**64 ppl/hr**	**47 ppl/hr**	**111 ppl/hr**
Bike	Residential	1 ppl/hr	4 ppl/hr	5 ppl/hr	4 ppl/hr	2 ppl/hr	6 ppl/hr
	Retail	1 ppl/hr	1 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr
	Total	**2 ppl/hr**	**5 ppl/hr**	**7 ppl/hr**	**8 ppl/hr**	**6 ppl/hr**	**14 ppl/hr**
Walk	Residential	2 ppl/hr	10 ppl/hr	12 ppl/hr	10 ppl/hr	5 ppl/hr	15 ppl/hr
	Retail	9 ppl/hr	5 ppl/hr	14 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr
	Total	**11 ppl/hr**	**15 ppl/hr**	**26 ppl/hr**	**36 ppl/hr**	**33 ppl/hr**	**69 ppl/hr**