Transportation Impact Study

Southwest Waterfront Stage 1 PUD

Washington, DC

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GOROVE / SLADE
Transportation Planners and Engineers

Prepared by:

GOROVE / SLADE

Transportation Planners and Engineers

1140 Connecticut Avenue
Suite 600
Washington, DC20036
Tel: 202.296.8625
Fax: 202.785.1276

3914 Centreville Road
Suite 330
Chantilly, VA20151
Tel: 703.787.9595
Fax: 703.787.9905

7001 Heritage Village Plaza
Suite 220
Gainesville, VA20155
Tel: 703.787.9595
Fax: 703.787.9905

www.goroveslade.com

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EXECUTIVE SUMMARY

Introduction

Gorove/Slade Associates was retained by Hoffman-Struever Waterfront, L.L.C., to prepare a transportation impact study for the Southwest Waterfront (SWW) Stage 1 Planned Unit Development (PUD) application pending before the District of Columbia Zoning Commission. The proposed PUD site is generally bounded by the Washington Channel of the Potomac River and Maine Avenue, between 11th Street on the west to 6th Street on the east, all in Southwest Washington. The traffic study area extended from 14th Street and C Street SW to M Street and Half Street SW. This report presents the findings of that assessment. The purpose of the assessment was to:

1. Determine if development of 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 capacity analyses of pedestrian and vehicular traffic. These delays are compared to the acceptable levels of delay set by the District's Department of Transportation (DDOT) standards to determine if the site will negatively impact the study area. The report describes what improvements to the transportation network are needed to mitigate any adverse impacts identified.
2. Provide information to DDOT and other agencies on how the development of the site will influence the local transportation network. This report accomplishes this by identifying the potential trips generated by the site on all major modes of travel and where these trips will be distributed on the network.
3. Review the transportation elements of the site plan, supplementing the material provided in the site plans that accompanied the PUD application, and evaluate the site's conformance with DDOT's stated polices of promoting non-automobile modes of travel and sustainability.

Conclusions and Recommendations

Based on the analyses outlined below, this report concludes that the proposed Stage 1 PUD will not have an adverse impact on the local transportation network and conforms with the District's stated goals of promoting multi-modal transportation and environmental sustainability. The report provides (i) trip projections and distributions for the transit, bicycle, pedestrian, and vehicle networks; (ii) a detailed analysis of pedestrian and vehicular delays; and (iii) general recommendations.

The analyses show that no unacceptable levels of vehicular delay occur in future conditions with the SWW site as long as the following improvements are in place:

- Traffic signal timing is updated as developments occur throughout the area;
- Three traffic signal operational changes to phasing, including potential traffic signal modifications (detailed in the report); and
- The future cross-section of Maine Avenue adjacent to the SWW site consists of one of the following:
  - *Eastbound*: two travel lanes and one permanent parking lane, and
  - *Westbound*: two travel lanes between 6th Street and 7th Street SW and three travel lanes between 7th Street SW and 9th Street SW. If the future streetcar lanes do not extent west beyond 7th Street, the rightmost travel lane on the northern side of Maine Avenue can operate with peak hour restricted on-street parking (between 7th and 9th Streets).

- This cross-section represents a very similar configuration of travel lanes onto existing operations, with only slight modifications to accommodate planned streetcar routes (where westbound Maine Avenue approaches 7th Street SW).

The analyses contained within this report also examined a scenario with the following cross-section on Maine Avenue:

- *Eastbound*: two travel lanes and one permanent parking lane,
- *Westbound*: two travel lanes and one permanent parking lane.

This analysis was performed to test if this cross-section would also lead to no objectionable impacts to roadway capacity because of the multi-model benefits of this cross-section, notably the curb extensions it would provide from the permanent parking lane on westbound Maine Avenue. The analysis of this alternatives shows that showed that one intersection within the study area will operate at an unacceptable levels of vehicular delay occur in future conditions with the SWW development (Maine Avenue and 9th Street SW).

Although DDOT will make the ultimate decision on the cross-section of Maine Avenue adjacent to the proposed PUD, the SWW applicant recommends the cross-section with two travel lanes eastbound, and two travel lanes between 6th Street and 7th Street SW and three travel lanes between 7th Street SW and 9th Street SW westbound. The traffic study results show that this cross section will accommodate future volumes without objectionable impacts. The applicant also recommends that DDOT maintain flexibility in the future plans for Maine Avenue to allow for the alternate cross-section with only two travel lanes in each direction, so it can be implemented if in the future traffic volumes do not meet this study's projections, or other variables change that would make the alternative cross-section viable for all modes.

Existing Conditions

- *Transit*

  The study area is served by commuter rail, heavy rail, commuter bus, DC Circulator, and local bus service 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.

- *Bicycle*

  Within the study area, bicyclists have access to multi-use trails, on-street bike lanes, signed bike routes, and local and residential streets that facilitate cycling. The site itself is directly served by multi-use trails, signed bicycle routes, and local streets that accommodate cycling. The bicycle network provides good local connections and some quality regional connections, but there are a number of barriers and roadway corridors with poor cycling conditions that reduce utilization and limit the number of routes that directly link the site with destinations throughout the District and surrounding region. Issues identified by this study that affect the quality of cycling include the following:

  - High traffic volumes and speeds along routes that provide the most direct access between the site and destinations to the east (M Street SW), north (7th Street SW), and northwest (Maine Avenue SW);
  - Man-made and natural barriers, such as the 395 cross-section and access ramps, Washington Channel, Tidal Basin, and Potomac River, which increase the distance between origins and destinations or block access;

- Roadway conditions and intersection geometries that create conflicting bicycle, vehicle and pedestrian desire lines along routes designated for bicycle traffic, including I Street at South Capitol Street, Maine Avenue between the Southwest Freeway and 15th Street SW, and at Benjamin Banneker Circle; and
- Missing links in the existing on-street and multi-use trail network.

The newly formed Capital Bikeshare was launched in late September 2010 to replace the DC SmartBike program. The program has approximately 110 bicycle-share stations located across Washington, DC and Arlington, VA with approximately 1,100 bicycles provided. In the vicinity of the proposed development, Capital Bikeshare stations are located at 7th and Water Streets SW, 4th and M Streets SW, and 7th & C Streets SW. These stations provide links between the site and major transit stations and commercial and employment nodes located in the study area.

- *Pedestrian*

The existing network of pedestrian facilities provides good walking connections throughout the study area. There are sidewalks along all block faces; major crossings are signalized and have crosswalks, and pedestrian countdown signals, and curb ramps with ADA detectable warnings. Sidewalks and crossings provide access between the site and major transit stations and stops, as well as residential, commercial, and cultural uses located throughout the study area. There are no major impediments to walking in the study area, but some locations could be improved to enhance the walking experience.

Nearly all streets in the study area have adequate sidewalks, planted buffers between sidewalks and the curb, and on-street parking that provides an additional buffer between pedestrians and vehicular traffic.

There are some barriers and areas of concern outside the PUD site beyond the control of the applicant, but within the study area, that limit the ease of walking. Issues identified by this study include the following:

- Man-made and natural barriers, such as the 395 cross-section and access ramps, Washington Channel, Tidal Basin, and Potomac River, which increase the distance between origins and destinations or block access; and
- Sidewalk and crossing conditions that create conflicting bicycle, vehicle and pedestrian desire lines along preferred walking routes, including I Street at South Capitol Street, Maine Avenue between the Southwest Freeway and 15th Street SW, and at Benjamin Banneker Circle.

- *Roadways*

The section of Maine Avenue adjacent to the PUD site operates at a very good level of service in the existing conditions. Based on average daily traffic volumes for major roadways collected by the District Department of Transportation (DDOT), Maine Avenue adjacent to the PUD carries significantly fewer cars per day than other arterials of the same size or those with fewer lanes. Driving on Maine Avenue shows similar results, with little or no congestion observed directly in front of the PUD site. An analysis of existing roadway capacity confirmed these observations, with all but a few intersections within the study area operating near the threshold between acceptable and unacceptable conditions. That is, the overall current Level of Service (LOS) for Maine Avenue at the various intersections adjacent to the PUD site ranges from A to C.

Although this is the case, Maine Avenue can experience significant congestion and queuing in the PUD project area, generally to and east and west of the SWW site, during the morning and afternoon peak hours. Based

on observations performed during peak hour, the traffic report concludes that this congestion and queuing occurs from choke points on the edge of the study area due to the significant amount of commuter traffic traveling along the corridor. These choke points are:

- On the eastern edge of the study area at the intersection of M Street and South Capitol Street, and other intersections south of M Street on South Capitol Street; and
- On the western edge of the study area from back-ups associated with ramps connecting local streets and arterials with I-395.

In addition to these choke points, it was observed that illegally parked cars and other disruptions to roadway conditions generate congestion. The Maine Avenue/M Street corridor can be described as a sensitive system, where unexpected activity or situations can lead to significant levels of congestion. This congestion is primarily generated from the observed illegally parked cars, stopped buses, turning vehicles, which cause temporary decreases in capacity and increases in delay along the corridor.

Site Plan Review

Based on a review of the PUD site plans and the details listed above, this report concludes that the PUD design conforms to DDOTs general polices of promoting non-automobile modes of travel and sustainability. The site promotes sustainable transportation initiatives in several ways, notably though site location. The site is a re-development parcel, located close to the District core and near many high-quality facilities for all modes of travel. The impacts to the transportation network from the people who will work, live, and visit the PUD will be minimized compared to other sites, notably a suburban location.

Although many details will be provided in the Stage 2 applications, the Stage 1 plans show a commitment to alternative modes. The proposed streetcar lines adjacent to the site have been incorporated in the design. The site recommendations to Maine Avenue, including the addition of store fronts, curb extensions, a wide sidewalk, and a two-way bicycle facility on the southern side of the roadway will help transform Maine Avenue to an urban boulevard that will facilitate and encourage pedestrian travel and bicycling. The project plans to construct between 2,100 and 2,650 parking spaces, which is sufficient given the urban location, projected alternative mode split, and mix of uses. If the project was located in a suburban location the parking demand would be three to four times as high. The bicycle plan shows how the SWW development will provide on-site bicycle facilities that connect to ones existing and planned by the District and outlines a plan to provide ample bicycle parking, both short- and long-term. The additional traffic signals on Maine Avenue will provide more locations for pedestrians to safely cross to and from the PUD.

Site Transportation Demand

The multi-modal trip generation and assignment calculations provided in this report show how a potential of 52,635 vehicle- and person-trips (trips associated with walking, cycling and transit) will be generated on a typical day by the SWW PUD and how they will influence the local transportation network. Based on these projections, this report reached the following conclusions and general recommendations:

- SWW transit riders will primarily use the two Metrorail stations in walking distance, along with bus service and/or future streetcar service. Based on the entirety of developments planned for the SWW-area and the Capitol

Riverfront, DDOT and WMATA will need to coordinate closely to ensure a high quality of service is provided to these riders.

- Pedestrian and bicycle accommodations that serve the SWW development are generally of high quality. However, some mobility barriers exist, notably traveling east-west across South Capitol Street at the eastern edge of the study area and traveling east-west under the freeway at the western edge of the site. Current DDOT initiatives, including the Bike and Pedestrian Master Plans, already address these concerns to an extent. Future District planning initiatives for the study area should investigate additional ways to solve these mobility barriers.
- The 7th Street corridor was shown as a potential multi-modal corridor used by many SWW trips, including transit, bicycles, and pedestrians. It is a very direct route for these three essential modes. DDOT should consider a future planning study of the corridor anticipating changes due to the implantation and installation of streetcar service, tracks, and stations. Pedestrian and bicycle improvements should be incorporated into the future design of the corridor.

Roadway Analysis

Future Conditions without SWW PUD

The transportation study projected conditions in the future with many planned developments near the SWW PUD including many developments planned along M Street SE near the Washington Navy Yard. Before adding traffic generated by the PUD, the study projected and assigned traffic for approximately 4.7 million square feet of office development; 810,000 square feet of commercial development; 6,600 residential units; 1,000 hotel rooms; and a 17,000-square foot church. An additional 2.6 million square feet of office development; 120,000 square feet of commercial development; 1,250 residential units; and 1,000 hotel rooms are included in the future horizon year scenario. These background developments were added to the existing traffic volumes in the study area in order to project the future conditions with the SWW PUD. The list of background developments was approved by DDOT in a scoping meeting held on Tuesday, August 24, 2010.

While performing analyses on future traffic, several things become evident. Traffic patterns and roadway use will be dramatically different if all of the planned developments are constructed. Traffic generated by these developments will tend to use roadways and routes not heavily used by existing commuting vehicles. The Maine Avenue/M Street corridor will become less of a commuter based roadway with volumes generally flowing in one-direction during peak hours, as traffic traveling to and from the corridor joins the existing commuter traffic driving through the corridor.

Several roadways will experience significant growth in traffic, such as M Street SE, which will need to be carefully planned to handle future growth, especially turns to and from north-south side streets. In addition, roadways that accommodate east-west movements through the study area may experience growth in traffic volumes, such as I Street, Independence Avenue via New Jersey Avenue, and other streets that provide connections to M Street.

Traffic models of future conditions without the PUD show that, at intersections within the study area, traffic levels rise significantly but do not generate any capacity analysis results that exceed the threshold of acceptable conditions.

Future Conditions with SWW PUD

The transportation planning for the PUD site is directly affected by the District's plans to introduce a planned streetcar line, which will travel along Maine Avenue. The streetcar will likely operate in the right-most travel lanes on either side of the roadway. Streetcars cannot operate in the same lanes as peak hour restricted on-street parking; currently, the on-street parking on the north side of Maine Avenue adjacent to the PUD operates as peak-hour restricted (west of Arena Stage).

Thus, it is likely that the on-street parking lanes on Maine Avenue (where future streetcar routes are planned) will need to be converted to either permanent parking lanes without peak-hour restrictions (as they are currently on the southern side of Maine Avenue adjacent to the PUD or permanent travel lanes). Although DDOT will make the final decision on the cross-section of Maine Avenue adjacent to the PUD, this study made the following assumptions in order to proceed with its assessment of future traffic impacts generated by the PUD project:

- *Eastbound*: two travel lanes and one permanent parking lane, and
- *Westbound*: two travel lanes between 6th Street and 7th Street SW and three travel lanes between 7th Street SW and 9th Street SW. If the future streetcar lanes do not extent west beyond 7th Street, the rightmost travel lane on the northern side of Maine Avenue can operate with peak hour restricted on-street parking (between 7th and 9th Streets).
- This cross-section represents a very similar configuration of travel lanes onto existing operations, with only slight modifications to accommodate planned streetcar routes (where westbound Maine Avenue approaches 7th Street SW).

Based on these assumptions, and traffic models for this site and other planned developments, this study shows that no unacceptable levels of roadway congestion exist in study area intersections. These results are contingent on a set of traffic signal operations mitigation measures, which include future updates to signal timings, modifications to phasings, and potential signal upgrades at three locations. These mitigation measures are detailed in the main body of the report.

The traffic study used to generate these results used a traditional methodology, where all traffic was added in layers, without adjustments for future conditions. Thus, the existing commuter traffic was assumed to be the same in the future as it was the day of the traffic counts. For instance, it is infeasible to assume that traffic going to and from the Navy Yard or Fort MacNair will keep to the same travel patterns in the future once the surrounding planned developments are built out. In addition, this traditional methodology does not take into account a reduction in traffic volumes based on the use of the new streetcar system, expansion of the Circulator system, projected increases in bicycle commuting, improved pedestrian access to the Metrorail system, other growth in non-automobile modes, and/or the future roadway infrastructure projects planning in the study area.

Considering these factors, the traffic study performed a second analysis of future traffic conditions with SWW traffic to account for changes in commuting patterns of existing traffic and use of the streetcar. For this second study, the following cross-section of Maine Avenue adjacent to the SWW PUD was assumed:

- Eastbound: 2 travel lanes and one permanent parking lane; and
- Westbound: 2 travel lanes and one permanent parking lane.

One purpose for this alternative analysis was to test if this cross-section would also lead to no objectionable impacts to roadway capacity because of the multi-model benefits of this cross-section, notably the curb extensions it would provide from the permanent parking lane on westbound Maine Avenue. The analysis of this alternatives shows that showed that one intersection within the study area will operate at an unacceptable levels of vehicular delay occur in future conditions with the SWW development (Maine Avenue and 9th Street SW).

1: INTRODUCTION & SITE REVIEW

This report presents the findings of a Transportation Impact Study (TIS) performed for the Southwest Waterfront (SWW) Development Stage 1 PUD. The development is located in Ward 6 in Southwest Washington, DC, southwest of Maine Avenue SW between the I-395 Freeway and 6th Street SW. The proposed site plan consists of a mixed-use development (retail, residential, office, hotel, church, cultural, and marina), with over three million square feet of overall development. The exact development program will be developed in future Stage 2 PUD applications for each phase and parcel of the SWW. The Stage 1 application and site plans identify potential uses and square foot ranges for each parcel.

The purpose of this report is to:

1. Review the transportation elements of the PUD site plan, supplementing the material provided in the site plans that accompanied the PUD application, and demonstrate that the site conforms to DDOT's general polices of promoting non-automobile modes of travel and sustainability. The Design Review section of the report covers this topic.
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. The Impacts Review section of the report contains this analysis.
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 analysis of pedestrian and 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 describes what improvements to the transportation network are needed to mitigate adverse impacts. The Impacts Review section of the report contains this analysis.

This report contains three sections as follows:

- *Introduction & Site Review*
  This section provides a summary of major transportation features near and adjacent to the SWW PUD site. This includes reviewing roadways, transit facilities, bicycle facilities, and future developments and District initiatives. This section contains information on the site to help establish a reference for the following sections.

- *Design Review*
  This section provides a summary of the internal transportation features of the SWW PUD. This section is meant to supplement the details provided in the site plan package contained in the PUD application. Although many of the on-site details will be determined in the Stage 2 applications, this section reviews such items as the general parking strategy of the site and the plan for accommodating bicycles throughout the PUD.

- *Impacts Review*
  This section provides a review of the impacts development of the SWW could have to each mode within the transportation network. For each mode, and where necessary, a list of recommendations and mitigation measures are compiled.

1.1 Site Location and Major Transportation Features

The Southwest Waterfront development is located in the Southwest portion of Washington, DC, in Ward 6. The proposed development is located in an area of the District near several major private and public developments and roadway infrastructure projects, including the Waterfront Station Development, and the South Capitol Street infrastructure project.

The project site, as shown in Figure 1, is bounded by Maine Avenue SW to the north/northeast, the Washington Channel to the south/southwest, I-395 to the west/northwest, and 6th Street SW to the east/southeast. The site is served by many regional roadways including Interstate 395 (I-395), Interstate 295 (I-295), and several interchanges and bridges. Arterials near the site include M Street/Maine Avenue SW, I Street SW, 14th Street SW, 9th Street SW, 7th Street SW, and 4th Street SW. Major collector roadways include D Street SW, C Street SW, and L'Enfant Promenade. The site is also served by several public transportation sources, including Metrorail, Metrobus, and the DC Circulator bus system.

The project site also features a pedestrian network consisting of sidewalks and crosswalks along the local streets surrounding the project site and the new Anacostia Riverwalk trail, which will connect the site and other locations along the Anacostia River and Washington Channel waterfronts. In addition to pedestrian accommodations, the site is also served by the on- and off-street bicycle network, which consists of bike lanes and signed bicycle routes along local roadways.

1.2 Roadways

As stated previously, the site is accessible via arterials, collector, and local streets. Figure 2 shows the roadway network hierarchy and the average annual daily traffic volumes for the roadways in the vicinity of the proposed development. The immediate study area of the proposed development has several key local access roads. These include the following:

- *Maine Avenue SW*

  Maine Avenue, which is immediately adjacent to the PUD site, extends from M Street SW to 17th Street NW and serves as a connection between the Southwest Waterfront and the National Mall. DDOT classifies Maine Avenue as a minor arterial. It has an average daily traffic volume of 16,300 vehicles per day. Maine Avenue has a six lane cross-section with a median, which is converted into center turn lanes at several intersections. Four-hour restricted residential parking is available along the southern side of the roadway, as well as metered parking. An area of on-street parking is also currently provided for tour bus parking along the northern side of the roadway. Some of the on-street parking is prohibited in these locations during peak hours. The posted speed limit in the vicinity of the site is 25 mph.

- *M Street SW*

  M Street is a six-lane east-west minor arterial that connects Maine Avenue SW to 11th Street SE. It has an average daily traffic volume of 27,200 vehicles per day east of 6th Street SW. M Street has a six-lane cross-section with a median, which is converted into center turn lanes at several intersections. Limited parking is available along both sides of the street, but parking is generally prohibited at these locations during peak hours. The posted speed limit in the vicinity of the site is 25 mph.

Figure 1: Site Location

Figure 2: Roadway Classification and Average Daily Volumes

- *I (Eye) Street SW*

  DDOT classifies I (Eye) Street as a minor arterial with average daily traffic volumes of 4,600 vehicles per day. I (Eye) Street has a four-lane cross-section and operates east-west between 7th Street SW to New Jersey Avenue SE. Restricted residential parking and limited public parking line both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *G Street SW*

  DDOT classifies G Street as a local east-west roadway. It has a four-lane cross-section and connects 7th Street SW to 3rd Street SW. Average daily traffic volumes are not available for G Street. Restricted residential parking and limited public parking line both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *E Street SW*

  DDOT classifies E Street as a local east-west roadway. It has a four-lane cross-section and connects 7th Street SW to 2nd Street SW. Average daily traffic volumes are not available for E Street. Metered parking and limited free parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *D Street SW*

  DDOT classifies D Street as an east-west collector street. It has a four-lane cross-section and average daily traffic volume of 2,900 vehicles per day. There are segments of D Street between 14th Street and 2nd Street SW, but it is disconnected and traffic cannot travel the length of D Street. This is due to the 12th Street Tunnel and the alignment of Virginia Avenue. Metered parking and limited free parking line both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *C Street SW*

  DDOT classifies C Street as an east-west collector street. It has a four-lane cross-section. It has an average daily traffic volume of 15,600 vehicles per day between 12th and 14th Streets SW. There are segments of C Street between 14th Street and 2nd Street SW, but it is disconnected. Traffic cannot travel the length of C Street because of the 12th Street Tunnel and the alignment of Virginia Avenue. Metered parking and limited free parking line both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *14th Street SW*

  Fourteenth Street SW is classified as a principal arterial with an average daily traffic volume of 45,500 vehicles per day north of Independence Avenue. 14th Street has a seven-lane cross-section that connects the 14th Street Bridge and Virginia with the National Mall, downtown Washington, and beyond. No on-street parking is permitted along 14th Street in the study area. The posted speed limit in the vicinity of the site is 25 mph.

- *12th Street Tunnel*

  The 12th Street Tunnel is classified as a freeway in the study area and has an average daily traffic volume of 16,900 vehicles per day. The 12th Street Tunnel has a two-lane cross-section that connects the Southwest Freeway with Constitution Avenue beneath the National Mall. No on-street parking is permitted along the 12th Street Tunnel in the study area. The posted speed limit in the vicinity of the site is 25-30 mph.

- *L'Enfant Promenade*

  L'Enfant Promenade is classified as a collector street that operates between Benjamin Banneker Park and Independence Avenue. Average daily traffic volumes are not available for L'Enfant Promenade. The L'Enfant Promenade has a four-lane cross-section with one lane of on-street parking along both curb lanes. The posted speed limit in the vicinity of the site is 25 mph.

- *9th Street Tunnel*

  The 9th Street Tunnel is classified as a freeway in the study area and has an average daily traffic volume of 20,700 vehicles per day. The 9th Street Tunnel has a three-lane cross-section that connects the Southwest Freeway with Constitution Avenue beneath the National Mall. No on-street parking is permitted along the 9th Street Tunnel in the study area.

- *9th Street SW*

  Ninth Street SW is classified as a principal arterial with an average daily traffic volume of 8,800 vehicles per day between Maine Avenue and the Southwest Freeway. This segment of 9th Street has five-lane cross-section that connects Maine Avenue with the 9th Street Tunnel. No on-street parking is permitted along the segment of 9th Street in the study area. The posted speed limit in the vicinity of the site is 25 mph.

- *7th Street SW*

  Seventh Street SW is a minor arterial with an average daily traffic volume of 15,900 vehicles per day north of Independence Avenue. 7th Street has a four-lane cross-section and connects Maine Avenue with the National Mall, downtown Washington, and beyond. Metered parking and limited free parking line both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *6th Street SW*

  DDOT classifies 6th Street SW as a local roadway. Average daily traffic volumes are not available for 6th Street. It has four-lane cross-section between Water Street and G Street and between the Southwest Freeway and Independence Avenue. 6th Street is not continuous between Water Street and Independence Avenue because of the Southwest Freeway. 6th Street has a four-lane cross-section with two on-street parking lanes that provide residential parking south of the freeway and commercial parking north of the freeway. The posted speed limit in the vicinity of the site is 25 mph.

- *4th Street SW*

  DDOT classifies 4th Street SW as a minor arterial with an average daily traffic volume of 5,400 vehicles per day south of M Street. 4th Street has a two- to four-lane cross-section and operates continuously between P Street SW and Pennsylvania Avenue NW. Restricted residential parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *3rd Street SW*

  Third Street is a local street that has a four-lane cross-section and operates between M Street and G Street and between E Street and Independence Avenue. Average daily traffic volumes are not available for 3rd Street. 3rd Street is not continuous between M Street and Independence Avenue because of the Southwest Freeway. Restricted residential parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *Delaware Avenue*

  Delaware Avenue is a local street/collector roadway that operates between I Street SW and Canal Street. Average daily traffic volumes are not available for 3rd Street. Restricted residential parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *1st Street SW*

  First Street is a local street that is one-way northbound from V Street SW to Q Street SW. North of Q Street, 1st Street becomes a two-way roadway as it extends to M Street where it terminates. Restricted residential parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *Half SW*

  Half Street is a local street that is one-way southbound from M Street SW to P Street SW. Beyond M Street, Half Street Street becomes a two-way roadway as it extends to I Street northbound and V Street southbound where it terminates. Restricted residential parking lines both sides of the roadway. The posted speed limit in the vicinity of the site is 25 mph.

- *South Capitol Street SW*

  South Capitol Street is a principal arterial between the Southwest/Southeast Freeway Potomac Avenue. Between I (Eye) Street and N Street the center four lanes of South Capitol Street are grade separate, which allows north-south traffic to pass beneath M Street. One northbound and one southbound travel lane are provide between I (Eye) Street and N Street for local traffic and provides access between South Capitol Street and K, L, and M Streets. Between M Street and I (Eye) Street, South Capitol Street has an average daily traffic volume of 49,300 vehicles per day. No parking is permitted along South Capitol Street. The posted speed limit is 25 mph.

  A South Capitol Street Improvement project is currently underway that will improve safety, mobility, and accessibility along this corridor. Build Alternatives proposed include the reconstruction of South Capitol Street between Independence Avenue and Martin Luther King, Jr. Avenue SE as a grand, urban boulevard. The project also includes the replacement of the Frederick Douglass Memorial Bridge across the Anacostia River. For Build Alternative 2, the intersections of South Capitol Street with K, L, and M Streets will be reconfigured to create at-grade intersections and allow cross-traffic.

Two major infrastructure projects are located near the proposed development: the 11th Street Bridges Improvement Project and the South Capitol Street Improvement Project. The majority of the future roadway changes outlined by these projects will not affect the roadway network immediately surrounding the project site. However, both projects will improve access to the proposed development by reducing congestion on the roadway network and providing additional mobility in the study area.

1.3 Car-Sharing

Car-sharing is provided in DC and the vicinity of the study area by Zipcar. Zipcar is a private company that allows registered users to reserve cars for a minimum of 30 minutes or for longer periods (up to several days) and provides individual access to a variety automobiles for trips made easier by car. Table 1 lists the car-sharing locations in the study area and the number of vehicles available.

Table 1: Carshare Location and Vehicles

Carshare Location	Number of Vehicles
1101 3rd Street, SW	2 vehicles
1201 Maryland Avenue, SW	2 vehicles
3rd/M Street SW	4 vehicles
6th/I Street SW - On Street	1 vehicle
L'Enfant Metro - On Street	1 vehicles
L'Enfant Metro at 6th/D Street SW	3 vehicles
SW Waterfront/I Street - On Street	1 vehicle
The View (1100 6th Street, SW)	2 vehicles
Total Number of Carshare Vehicles in Study Area	**16 vehicles**

1.4 Transit

The study area is served by commuter rail, heavy rail, commuter bus, DC Circulator bus and local bus service. 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 3 identifies the major transit routes, stations, and stops in the study area.

Commuter rail service is provided by Virginia Railway Express (VRE) and links Union Station, L'Enfant Plaza, and destinations in Virginia. There are two VRE routes that provide weekday service between the District and Manassas and the District and Fredericksburg. Trains operate on twenty to thirty minute headways during the morning and afternoon commuter peak periods, have limited mid-day service, and have no service after 7:00 PM. The commuter rail station is located at the intersection of 7th Street and Virginia Avenue and is a half-mile walk from the intersection of 7th Street and Maine Avenue.

The nearest multi-modal transit hub in the study area is located at the intersection of 4th and M Streets. Metrorail service, commuter bus service, local bus service, carshare, and Bikeshare are provided at this location. Rail and local bus service are provided by the Washington Metropolitan Area Transit Authority (WMATA), which operates the second largest heavy rail transit system (Metrorail) and the fifth largest bus network (Metrobus) in the United States[1]. Commuter bus service is provided by the Maryland Transit Administration (MTA) and the Potomac and Rappahannock Transportation Commission (PRTC).

WMATA's Southwest Waterfront-SEU Metrorail Green Line station is located at 4th and M Streets. The Green Line connects the study area with L'Enfant Plaza and Gallery Place/Chinatown to the north and Anacostia and suburban Maryland to the south. Trains run frequently during the morning and afternoon peak hours. Trains run approximately every 5-6 minutes during weekday non-peak hour, every 10-15 minutes on weekday evenings after 7:00 PM and 6-15 minutes on the weekends.

A number of bus routes stop at 4th and M Streets that do not stop closer to the site, including commuter bus routes operated by the MTA and PRTC. The intersection has good bike and pedestrian connectivity and a number of retail outlets that serve the adjacent neighborhood, including a grocery store, convenience store, and pharmacy. The station is within comfortable walking and cycling distance of the site and access routes provide good walking and cycling conditions.

[1] American Public Transportation Association Ridership Report for the fourth quarter of 2009

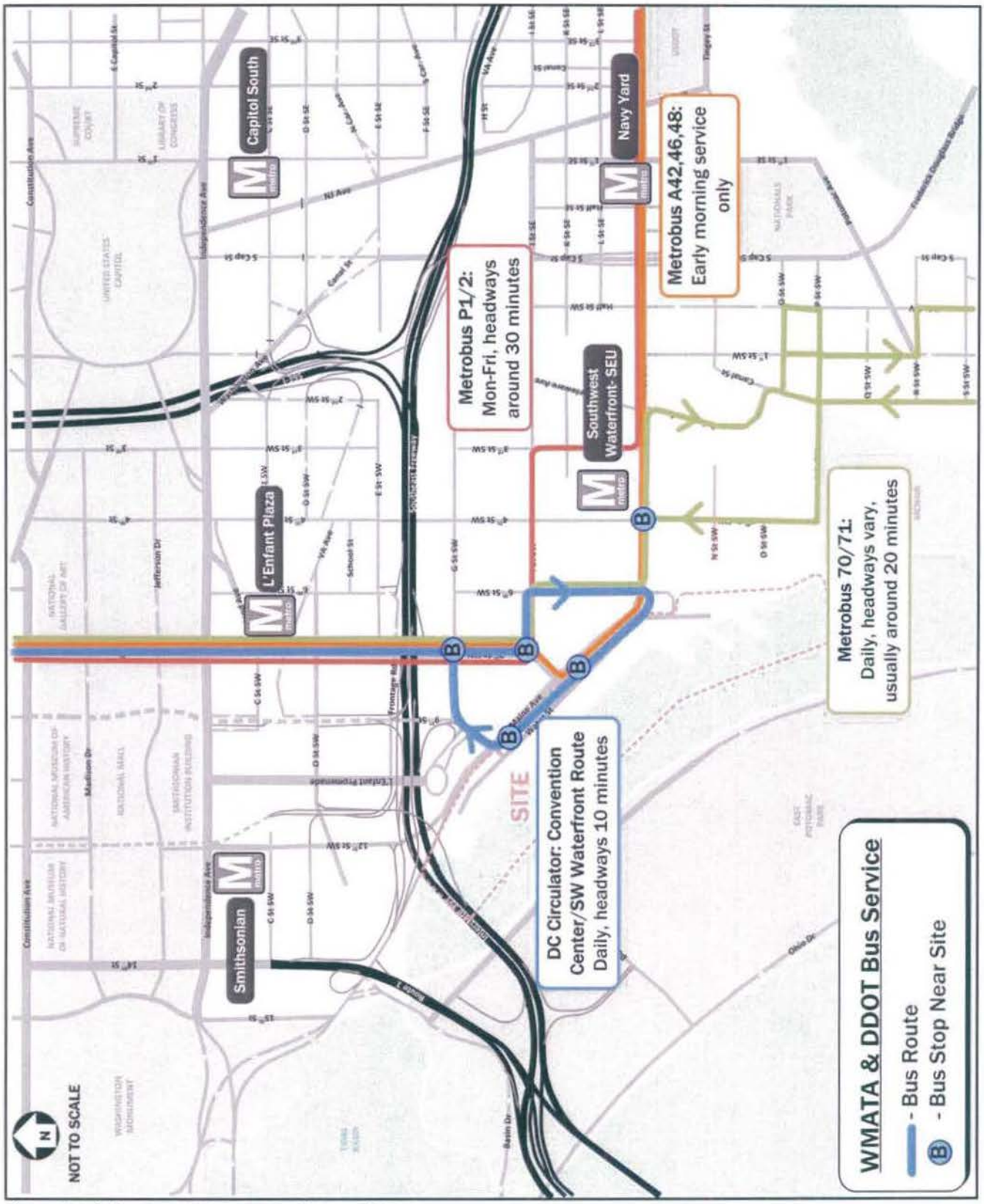


Figure 3: Existing Transit Routes, Stations and Stops

The Southwest-SEU Station is located approximately 1,800 feet walking distance from the intersection of 7th Street and Maine Avenue. The station portal is located on the northeastern corner of the intersection of 4th and M Street. This requires pedestrians walking between the site and the Metrorail station to cross either Maine Avenue or M Street. Controlled crossings are provided at all signalized crossings and crossing facilities include crosswalks, curb ramps with detectable warnings, and pedestrian countdown signals.

Additional Metrorail stations are located to the north at 7th Street and D Street and 9th Street and D Street (L'Enfant Plaza Station with Blue, Orange, Green, and Yellow Lines), to the north at Independence Avenue and 12th Street (Smithsonian Station with Blue and Orange Lines), and to the west along M Street at Half Street and M Street SE (Navy Yard Station with Green Line). These stations are located further from the site than the Southwest Waterfront station located at 4th and M Streets , but remain pedestrian accessible from the site and within comfortable cycling distance. Of all four stations within the study area, L'Enfant Plaza has the greatest concentration of transportation services, including commuter rail, four Metrorail Lines with frequent service, and multiple bus routes with frequent service. Additionally, walking to L'Enfant Plaza may be a more attractive option for those transferring between the Green Line and the Blue, Orange, and Yellow Lines or between various bus routes, because walking between the site and L'Enfant Plaza may be quicker and more convenient for some passengers than transferring. L'Enfant Plaza is within walking and cycling distance of the site and access routes generally provide good walking and cycling conditions There are Capital Bikeshare Stations located at or near all four of the stations within the study area which further increases their multi-modal accessibility..

The site is directly served by WMATA's local bus service and the DC Circulator. Stops for these bus services are located along Maine Avenue between 9th and 6th Streets and along 7th Street north of Maine Avenue. There are some bus stops with shelters in the study area that provide rider amenities, such as shelter, benches, route maps, and schedules, while those without shelters are designated by a WMATA or DDOT sign and do not have additional amenities. Some bus stops near the site are equipped with Next Bus technology, which allows customers to determine bus arrival times. Next Bus technology uses global positioning satellites and advanced computer modeling to track buses on their routes every 120 seconds. Customers can obtain bus information using desktop computers, wireless devices, phones calls to Metro Customer Service, and electronic message signs, though no electronic signs are located in the study area.

Table 2 summarizes the bus route information for the lines that serve the study area, including service hours and headways. Only the routes with frequent service or directly serving the site listed in Table 2 are shown in Figure 3.

Table 2: Bus Route Information

Route Number	Route Name	Service Hours	Headway
70, 71	Georgia Ave – 7th Street Line	Weekdays 5 AM – 3 AM Weekends 5 AM – 1 AM	15-20 min for each route
A9	South Capitol Street Line	Weekdays 6:00 – 9:30 AM, 3:00 – 7:00 PM	15 min
A42, 46, 48	Anacostia-Congress Heights Line	Early morning service only Weekdays 12:17 AM – 5:33 AM Weekends 12:15 AM – 7:43 AM	10-30 min for each route
P1, 2, 6	Anacostia-Eckington Line	Primarily provides northbound service Weekdays 6:35 AM – 12:01 AM Weekends 8:30 AM – 2:37 AM	20-30 min for each route
V7, 8, 9	Minnesota Ave-M Street Line	4:30 AM – 1:30 AM	15-30 min for each route
DC Circulator	Convention Center/SW Waterfront	Weekdays 9 AM – 9 PM	10 min
MTA 903	Charlotte Hall – Washington, DC	Weekdays 5:00 – 9:30 AM, 3:00 – 5:00 PM	20 min
PRTC – OmniRide	Dale City-Washington Navy Yard	Weekdays 5:00 – 8:00 AM, 12:00 – 8:00 PM	30 min

DDOT has indicated that the Circulator line that currently serves SW will be discontinued at the end of their current Fiscal year and that it is expected to be reinstituted and expanded to a line that serves Dupont Circle upon delivery of the first phase of the SWW PUD.

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

The streetcar system element of the plan, as shown on Figure 4, includes one route that travels adjacent to the project along Maine Avenue between 6th and 7th Streets. The streetcar system will consist of modern low-floor vehicles that operate on surface tracks embedded in the roadways, which will mostly operate in travel lanes that are shared with automobiles. Stops will generally be located every ¼- to ½-mile along the routes. The future planned route serving the study area, named the Takoma Metrorail Station to Buzzard Point Line, will connect the site to several areas in the District including Buzzard Point, Southwest Waterfront, Chinatown, Metro Center, U Street, and the Georgia Avenue corridor. The Takoma Metrorail Station to Buzzard Point Line is currently projected to be completed during phase three of the streetcar plan, which is currently scheduled to be completed in 2020. A second streetcar route will serve the study area, but current plans do not indicate that the route will directly service the site. The Congress Heights –Buzzard Point line will be constructed during the first phase of the project, which is currently scheduled to be completed by 2015. In the study area, this route will operate along 2nd Street SW, M Street SW, M Street SE, the 11th Street Bridge, and Martin Luther King Jr. Avenue. Stops for this route located along 2nd Street and M Street will be pedestrian and bicycle accessible from the site.

As part of the SWW planning process, the development team is coordinating with the DDOT to incorporate streetcar routes and stops into the development plan to maximize the benefits of the new streetcar lines on site mobility and accessibly. The following section of this report contains more detail on the transit accommodations of the SWW development.

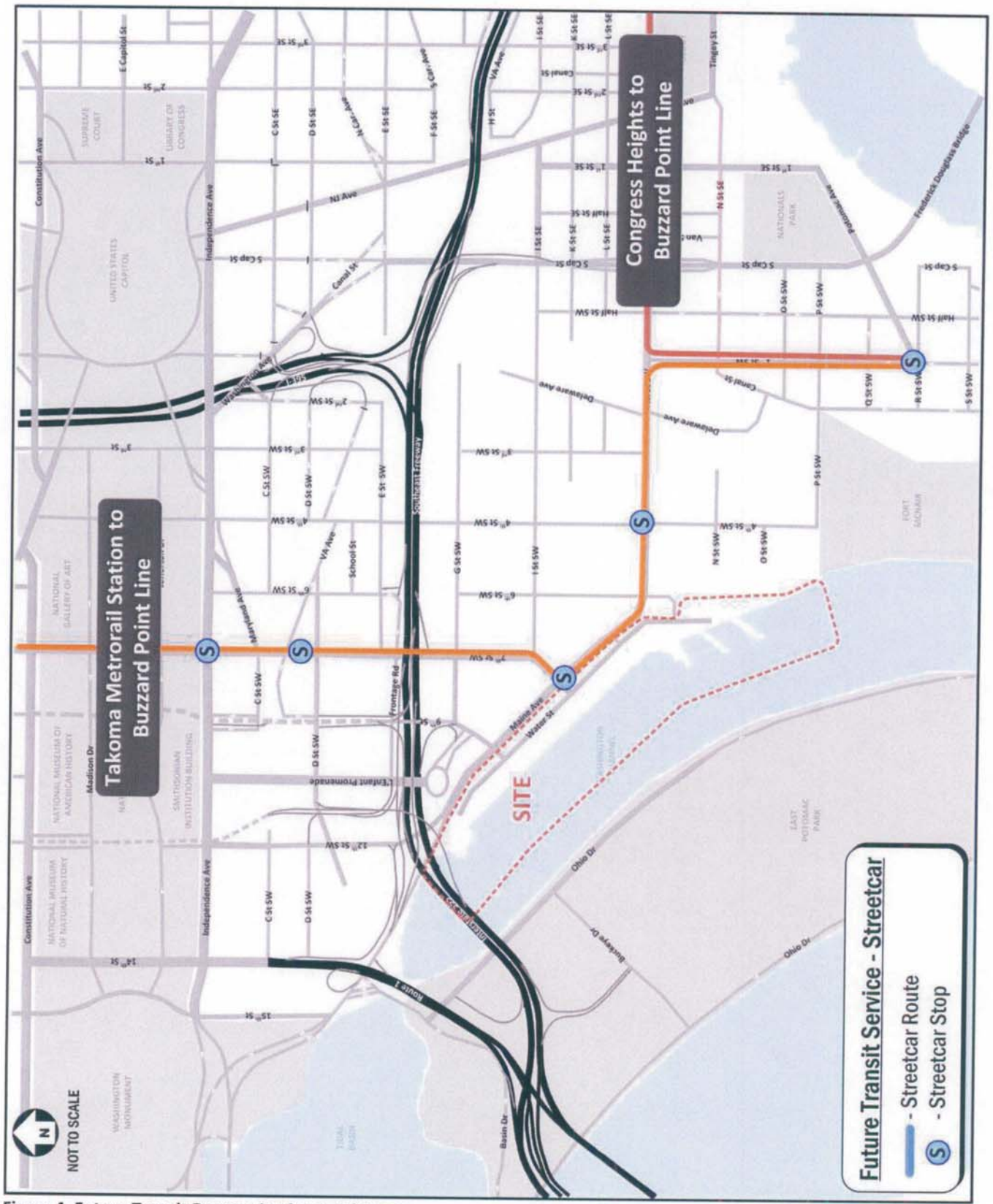


Figure 4: Future Transit Routes, Stations and Stops

(*Source: DC's Transit Future System Plan report published by DDOT in April 2010*)

1.5 Bicycle Facilities

This section provides an inventory and review of existing bicycle facilities. Within the study area, bicyclists have access to multi-use trails, on-street bike lanes, signed bike routes, and local and residential streets that facilitate cycling. The site is directly served by multi-use trails, signed bicycle routes, and local streets that accommodate cycling. The bicycle network generally provides good conditions for local trips and there are several routes for trips between the study area and Northern Virginia, Northwest Washington DC, and destinations south of the Anacostia River.

For cyclists, the most attractive routes are those that have good cycling conditions and provide direct routing between origins and destinations. Conditions in the study area that contribute to good cycling conditions includes minimal changes in topography, multi-use trails that separate bicycle traffic from vehicle traffic, on-street bicycle lanes that designate bicycle rights-of-way, multiple Bikeshare stations, local and collector streets with low traffic volumes and speeds, sidewalks that permit bicycle traffic and provide routing through barriers, and bicycle parking.

In the study area, the most direct routes between the site and destinations to the north, east, and south are provided along Maine Avenue, 7th Street, I (Eye) Street, M Street, and P Street. Maine Avenue and 7th Street provide the most direct access between the site and destinations to the west and north, such as Georgetown, downtown, and the 14th Street Bridge, which has a sidewalk along the northern side of the bridge that is designated as a multi-use trail and connects the District with Northern Virginia. Both of these routes have some segments with poor cycling conditions that diminish the attractiveness of these routes. Poor cycling conditions prevail due to roadway conditions that include high vehicular volumes and speeds, narrow lanes widths, and freeway access ramps that are uncontrolled and difficult for cyclists to cross. DDOT is currently developing plans, discussed in this report below, to upgrade conditions along Maine Avenue and 7th Street that will address several of the major deficiencies identified along these routes. For cyclists not comfortable cycling along Maine Avenue or 7th Street for north-south connectivity, 4th Street provides an alternative. 4th Street has fair cycling conditions, including wide travel lanes and low traffic volumes and speeds, but this route adds several additional blocks to each trip for those traveling to north and northwest of 7th Street. The conditions reduce the attractiveness of cycling between the site and destinations to the west and north under existing conditions, which will mainly impact commuters and recreational riders traveling to downtown, Northern Virginia, and the National Mall.

I (Eye), M, and P Streets provide east-west mobility in the study area. I (Eye) Street is a signed bicycle route and has some segments with on-street bicycle lanes. I (Eye) Street generally provides good conditions for cycling, but there are some locations along the route that may prove challenging for novice cyclists, including the intersection of I (Eye) Street and South Capitol Street and the segment of I (Eye) Street where there are no bike lanes and the travel lane narrows between 3rd Street SE and South Capitol Street. M Street is a signed bicycle route and cycling conditions along it are fair according to DDOT. Traffic volumes and speeds along M Street may discourage novice cyclists from using this route for east-west trips. To the south, the site is linked to an existing multi-use trail that operates between the south end of the site and P Street SW. P Street provides good cycling conditions and connects the site to destinations to the east and south, such as the Ballpark, The Yards, Fort MacNair, the Navy Yard, and Anacostia via the Fredrick Douglas Memorial Bridge. P Street is a local street and cycling conditions along it are generally good due to low traffic volumes and speeds. P Street is also a key component of the Anacostia Riverwalk trail system.

Within the existing SWW, cycling conditions are good and provide attractive conditions for commuters and recreational riders alike. The existing conditions provide a good environment for cycling include low traffic volumes and speeds, wide travel lanes along Water Street, a multi-use trail along the Washington Channel, a Capitol Bikeshare station, and ample bicycle parking.

There are some routes with barriers to cycling along them and entire roadway corridors that have poor cycling conditions that reduce the overall quality of cycling conditions and limit the number of routes that directly link the site with destinations throughout the District and region. Figure 5 illustrates bicycle facilities in the study area and identifies street corridors with poor cycling conditions and the specific locations where there are barriers to cycling. As noted above, Maine Avenue, 7th Street, and M Street have some barriers at specific locations and/or conditions along the entire route that reduce the quality of cycling conditions.

This portion of the District has several major roads with high traffic volumes and speeds, man-made and natural barriers, and a lack of existing bicycle facilities. Generally, poor cycling conditions in the study area result when bicycle routes use or cross streets with high traffic volumes and speeds, barriers that increase the distance between origins and destinations or block access, intersection geometries that create conflicting bicycle, vehicle and pedestrian desire lines, freeway access ramps, and gaps in the bicycle network. These conditions reduce the attractiveness of cycling in the study area and may discourage people from using bicycles.

Some bicycle parking was observed in the study area though most cyclists typically use street signs, parking meters, or similar objects to secure their bicycles. This indicates that there is demand for additional bicycle parking facilities in the study area.

As shown in the *DC Bicycle Master Plan* from April 2005, DDOT's proposed bicycle infrastructure for the roadways in the vicinity of the proposed development includes several multi-use trails, on-street bike lanes, and signed bicycle routes. The facilities will significantly improve bicycling conditions in the study area and may lead to higher rates of cycling. They also link the site with major residential and commercial destination in near Southeast, DC and beyond. The planned sidewalk widening on Maine Ave/traffic signal at Fishmarket will rebuild and widen the south sidewalk along Maine Avenue SW, from 14th Street ramp to 12th St., SW and will provide for safe crossings to the L'Enfant promenade at the Fishmarket. The sidewalk/trail widening will connect the Anacostia Riverwalk Trail with East Potomac Park. This project will significantly improve bicycle connections to the north and northwest along this route.

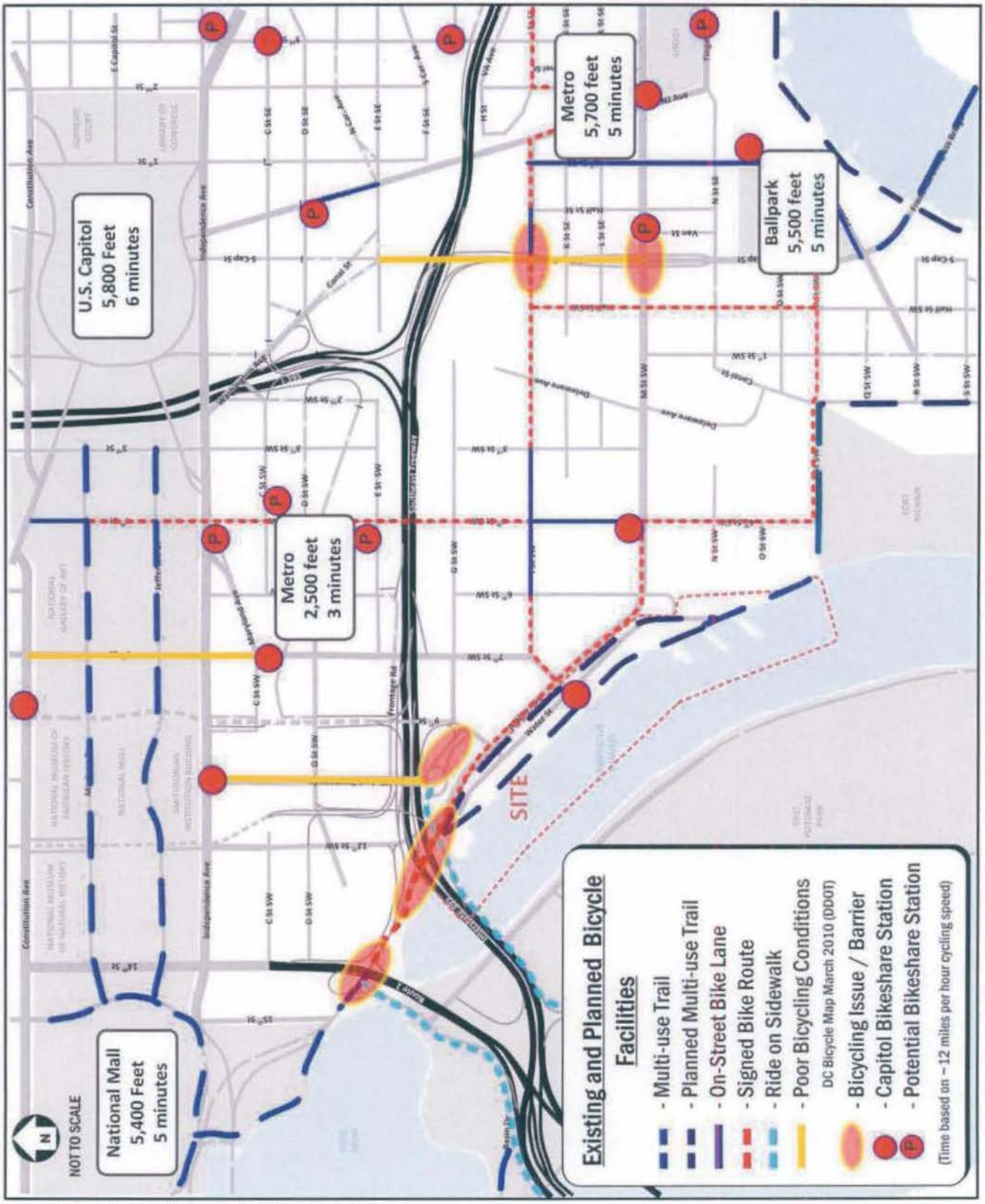


Figure 5: Existing and Planned Bicycle Facilities

The newly formed Capital Bikeshare was launched in late September 2010 to replace the DC SmartBike program. This program has placed 110 bicycle-share stations across Washington, DC and Arlington, VA with approximately 1,100 bicycles provided. In the vicinity of the proposed development, Capital Bikeshare stations have been placed at 7th Street and Water Street, 4th Street and M Street, and L'Enfant Plaza / 7th Street & C Street SW[2], as shown in Table 3. In conjunction with the improvements proposed in the *Bicycle Master Plan*, the Capital Bikeshare program will increase accessibility of bicycles to the proposed development. Bikeshare makes bicycling between the site and the multimodal hubs at 4th and M Streets and at L'Enfant Plaza an attractive and convenient option. Capitol Bikeshare has plans to expand the system and potential new station locations have been identified throughout the study area. The public comment phase has ended, and Capitol Bikeshare is currently selecting stations locations. There is not an official timeline for when potential stations will be installed, but Figure 5 identifies existing and potential station locations in the study area. DDOT has plans to expand the docking capacity of the Bikeshare station at 7th and Water Street SW to accommodate anticipated demand from the temporary use stadium that has been constructed by the Deputy Mayor for Planning and Economic Development at 800 Water Street SW.

Table 3: Bikeshare Location and Docking Stations

Bikeshare Location	Number of Docking Stations
7th Street & Water Street SW / SW Waterfront	11 docking stations
4th Street & M Street SW	15 docking stations
1st Street & N Street SE	19 docking stations
M Street & New Jersey Avenue SE	17 docking stations
L'Enfant Plaza / 7th Street & C Street SW	15 docking stations
USDA / 12th Street & Independence Avenue SW	39 docking stations
Total Number of Bikeshare Docking Stations Study Area	**124 docking stations**

1.6 Pedestrian Facilities

This section provides an inventory of the existing site access facilities and deficiencies. Overall, the pedestrian facilities within the study area provide a good walking environment. Pedestrian access to the site is provided along all adjacent streets, including Maine Avenue, M Street, 7th Street, and 6th Street. Sidewalks, crosswalks, and curb ramps with detectable warnings are provided along the length of Maine Avenue and M Street for most crossings. Pedestrian activity within the study area occurs along transit access routes, in the vicinity of transit stops, at commercial nodes along Water Street and M Street, and, to a lesser extent, between residential neighborhoods and transit and commercial nodes. Nearly all streets in the study area have adequate sidewalks, planted buffers between sidewalks and the curb, and on-street parking that provides an additional buffer between pedestrians and vehicular traffic. Figure 6 shows primary and secondary pathways, walking time and distances, and barriers and areas of concern.

The bus stops located along Maine Avenue and M Street serve bus routes that provide local and commuter service between the study area and destinations to the north, east, and south. Pedestrians access these bus stops along the local pedestrian network at the site and within the residential neighborhoods located adjacent to the site. There is some pedestrian activity between transit stops and residential areas throughout the day.

There are some barriers and areas of concern within the study area that negatively impact the quality and attractiveness of walking, including walking distances between the site and some major destinations, manmade and natural barriers that

[2] Capital Bikeshare: www.capitalbikeshare.com

increase walking distances, and roadway conditions that reduce the quality of walking conditions, including narrow sidewalks along several streets, lengthy freeway underpasses, and lengthy crossings at some intersections. Walking distances between the site and major transit and commercial destinations in the area, such as 4th and M Streets and L'Enfant Plaza, will not have a significant impact on the pedestrian activity because access routes generally provide good walking conditions and walking is a convenient and quick option as compared to other modes.

Manmade barriers are an issue along north-south routes. Where Maine Avenue crosses under the interstate, sidewalks are narrow, there are narrow or no buffers between sidewalks and through traffic, and there is a sense of isolation and enclosure due to the overpass. The conditions negatively impact conditions along this walking route, though destinations to the north and west are primarily cultural, and are not expected to the generate significant pedestrian traffic along this route. Conditions between the site and L'Enfant Plaza along 12th Street are negatively impacted due to the change in topography and the indirect routing of the sidewalk between Maine Avenue and Benjamin Banneker Park. This may discourage some from walking between the site and destinations to the north, such as the National Mall. 7th Street generally provides good pedestrian conditions and will be attractive option for those traveling between L'Enfant Plaza transit services and the site. The planned sidewalk widening on Maine Ave/Light at Fishmarket will rebuild and widen the south sidewalk along Maine Avenue SW, from 14th Street ramp to 12th St., SW. The sidewalk/trail widening will connect the Anacostia Riverwalk Trail with East Potomac Park. This project will significantly improve bicycle connections to the north and northwest along this route.

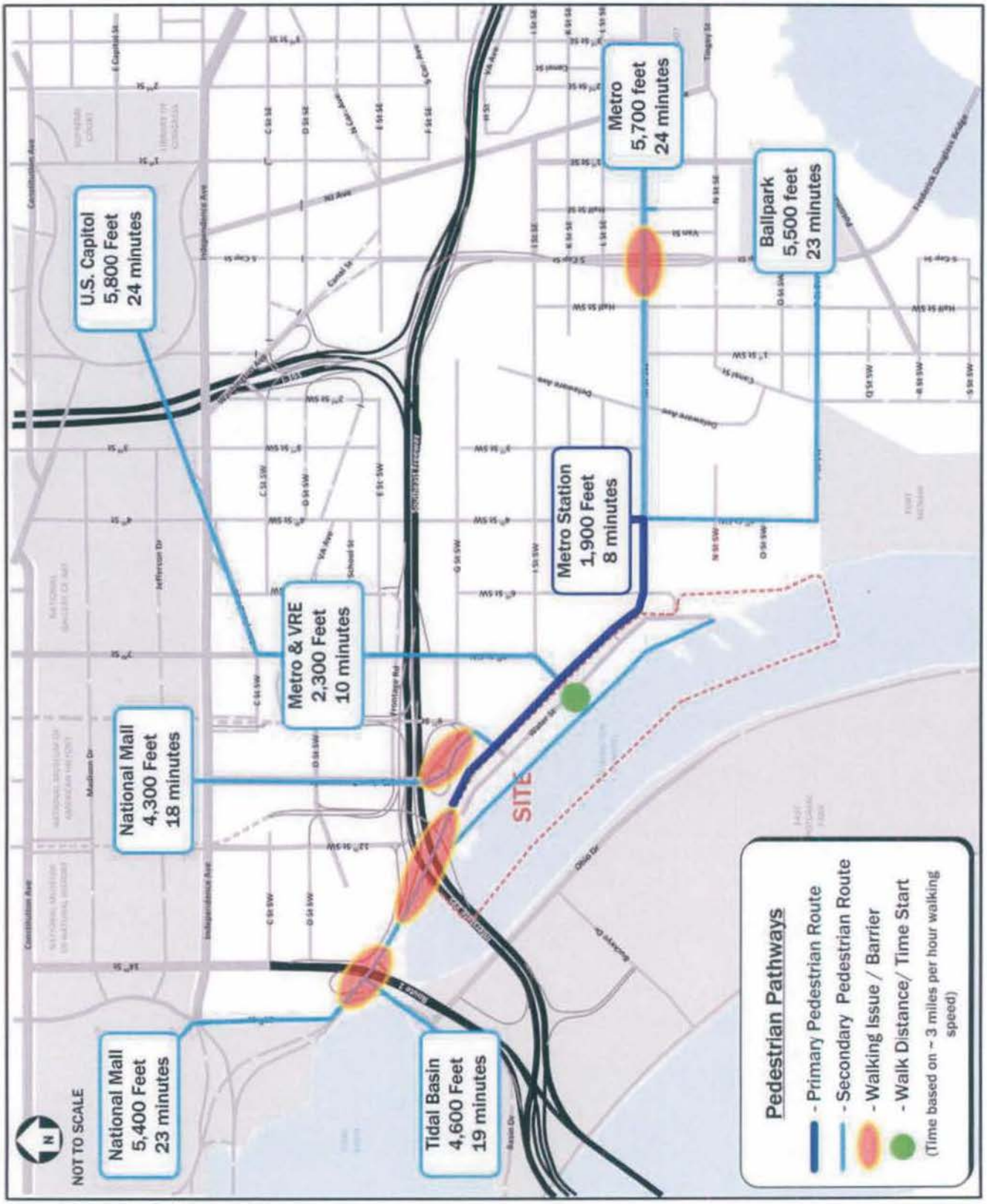


Figure 6: Existing Pedestrian Pathways

1.7 Future Projects & Developments

1.7.1 District Initiatives

Both the 14th Street Bridge Rehabilitation project and the South Capitol Street Improvement project are currently underway in the vicinity of the project site. Both of these projects are summarized below.

The purpose of the 14th Street Bridge Rehabilitation project is to improve the general condition of the bridge, including the bridge deck, the structural steel, and the bridge piers. The currently-underway project includes major repairs to the northbound bridge and minor repairs to the southbound bridge; there are no modifications to the high-occupancy vehicle (HOV) bridge. The multi-phase project began in May 2009 and is expected to be completed in 2011.

The project was undertaken in order to repair the northbound bridge deck, which was showing surface distress from the wear and tear of large traffic volumes. Additional work must be performed to correct to deterioration of the structural steel on the girders and supports, which made work on the bascule span a priority for DDOT. During initial construction, cracks in the bridge piers were investigated, which lead to subsequent recommendations for pier work to repair these cracks. Repairs to the southbound bridge include cleaning and painting the superstructure steel and minor structural repairs.

The purpose of the South Capitol Street project is to improve safety, mobility, and accessibility and to support economic development in the vicinity of the project. The project will: (1) correct the design and deteriorating condition of the transportation infrastructure which creates safety concerns for vehicular, pedestrian, and bicycle traffic and transit riders; (2) construct missing critical regional roadway connections for vehicles, pedestrians, and bicycles; (3) correct mobility barriers that limit access to activity centers in the study area; and (4) support economic growth in order to improve the density of employment and residential development. The two Build Alternatives proposed include the reconstruction of South Capitol Street between Independence Avenue and Martin Luther King, Jr. Avenue SE as a grand, urban boulevard, which will provide a scenic gateway to the US Capitol and Monumental Core. The project also includes the replacement of the Frederick Douglass Memorial Bridge across the Anacostia River. Build Alternative 2 also includes the construction of a signalized interchange to allow all movements between Suitland Parkway and Martin Luther King Jr. Avenue SE. The two build alternatives are similar in scope for the construction of South Capitol Street and vary mostly in terms of reconfigurations of existing intersections. For Build Alternative 2, the intersections of South Capitol Street with K, L, and M Streets will be reconfigured to create at-grade intersections and allow cross-traffic.

In addition to vehicular improvements, streetscape design features will be added to project area streets, including South Capitol Street, New Jersey Avenue, and Suitland Parkway. The reconstruction of South Capitol Street will also include pedestrian and bicycle facilities, which will consist of widened sidewalks, widened curbside lanes on some streets for bicycle travel, and increased pedestrian- and bicycle-oriented elements such as street trees, benches, and decorative streetlights. The proposed bicycle routes through the project area will consist primarily of signed bicycle routes that connect to local activity centers, as well as other area facilities such as the Anacostia Riverwalk Trail. Build Alternative 2 also includes the reconstruction of the existing pedestrian bridge over Suitland Parkway south of Martin Luther King, Jr. Avenue to accommodate the proposed interchange.

The South Capitol Street project will also improve access to transit already in the corridor by providing additional pedestrian and bicycle facilities, streetscape, and pedestrian-friendly amenities. The Build Alternatives will also provide linkages between transit nodes and the local and regional bicycle network. The two Build Alternatives will also support future transit (streetcar and bus service) throughout the corridor. The Build Alternatives will be better equipped to accommodate

the proposed future Anacostia Line of the streetcar transit system due to the proposed wide sidewalks, streetlights, signed bike routes, and multi-use trails.

Another project that that will change conditions in the study area is the Sidewalk Widening on Maine Ave. As part of this project, the south sidewalk along Maine Avenue SW, from 14th Street ramp to 12th St., SW will be this project will be rebuilt and widened. The sidewalk/trail widening will connect the Anacostia Riverwalk Trail with East Potomac Park. This project will significantly improve bicycle and pedestrian connections to the north and northwest along this route.

1.7.2 Developments

There are several other projects proposed, approved, or under construction located in the vicinity of the proposed development. The majority of these projects are mixed-use, consisting of office, residential, and retail development, as outlined below. A map of the locations of the background developments is included as Figure 7. The background developments included were approved by DDOT for inclusion in this traffic study in a scoping meeting held on Tuesday, August 24, 2010.

- *1015 Half Street*
  The 1015 Half Street development consists of a mix of office and retail uses located north of K Street SE between South Capitol Street and Half Street SE. The development is projected to be completed in 2011.

- *Waterfront Station*
  The Waterfront Station development is currently under construction and partially completed, located north of M Street SW between 3rd Street SW and 5th Street SW. The remaining development consists of a residential building from Phase I, which is projected to be completed in 2011. The future phases of Waterfront Station, consisting of office and residential uses, are projected to be completed in 2020.

- *The Yards at Southeast Federal Center*
  The Yards at Southeast Federal Center development is currently under construction and partially completed. It consists of a mix of office, residential, and retail sites located south of M Street SE between 1st Street SE and 5th Street SE. The development is projected to be completed between 2011 and 2020.

- *Akridge Half Street/Square 700*
  The Akridge Half Street development is currently approved and awaiting construction. It consists of a mix of office, residential, and retail uses located south of M Street SE between Van Street SE and Half Street SE. The development is projected to be completed in 2013.

- *Florida Rock/RiverFront on the Anacostia*
  The Florida Rock development consists of a mix of office, residential, retail, and hotel uses located along Potomac Avenue east of South Capitol Street. The first phase of the development, which includes the residential and a portion of the office uses, is expected to be completed in 2012. The second phase of the development, which includes the remainder of the office, hotel, and retail uses, is expected to be completed in 2017.

- *Half Street Phase II/Monumental Properties*

  The Half Street Phase II development is currently approved and awaiting construction, following the construction of Phase I of the development. Phase II consists of a mix of residential, retail, and hotel uses located north of N Street SE at Half Street SE, which is projected to be completed by 2012.

- *Marina Place*

  The Marina Place development consists of a mix of residential and retail uses located west of South Capitol Street near Buzzard Point. The development is anticipated to be completed by 2012.

- *225 Virginia Avenue*

  The 225 Virginia Avenue development is an office building located south of Virginia Avenue between 2nd Street SE and 3rd Street SE. The development is anticipated to be completed by 2012.

- *Maritime Plaza Phases III, IV, & V*

  The Maritime Plaza development consists of a mix of office and hotel uses located south of M Street SE east of 12th Street SE. The development is currently under construction, with the remaining phases of the development projected to be completed in 2012.

- *Arthur Capper/Carrollsburg and Capitol Quarter*

  The Arthur Capper/Carrollsburg development is currently under construction and a significant portion of the project has been completed. It consists of a mix of residential sites located north of M Street SE and office sites located along M Street SE between 2nd Street SE and 7th Street SE. The development is projected to be fully completed between 2013 and 2016.

- *The Plaza on K*

  The Place on K development consists of a mix of office and retail uses located north of K Street SE between Half Street SE and 1st Street SE. The first phase of the development is expected to be completed by 2013.

- *1111 New Jersey Avenue*

  The 1111 New Jersey Avenue development consists of a mix of office and retail uses located along New Jersey Avenue north of M Street SE. The development is projected to be completed by 2013. The second phase of development is expected to be completed by 2020.

- *1100 South Capitol Street*

  The 1100 South Capitol Street development is an office building located north of M Street SE between South Capitol Street and Half Street SE. The development is anticipated to be completed by 2013.

- *WMATA Chiller Plant Apartments*

  The WMATA Chiller Plant Apartments are a mix of residential and retail uses located north of M Street SE between South Capitol Street and Half Street SE. The development is anticipated to be completed by 2013.

- *Admiral at Barracks Row*

  The Admiral at Barracks Row development consists of a mix of office and retail uses located north of M Street SE east of 9th Street SE. The development is projected to be completed by 2013.

- *Historic Car Barn*

  The Historic Car Barn development is a renovated retail building located north of M Street SE between 7th Street SE and 8th Street SE. The development is anticipated to be completed by 2013.

- *50 M Street*

  The 50 M Street development is a mix of office and retail uses located north of M Street SE between Half Street SE and 1st Street SE. The development is anticipated to be completed by 2014.

- *1 M Street*

  The 1 M Street development is a mix of office and retail uses located south of M Street SE between South Capitol Street and Van Street SE. The development is anticipated to be completed by 2014.

- *St. Matthew's Church and Community Center*

  The St. Matthew's Church and Community Center development is a mix of church and residential uses located south of M Street SW at the intersection with Delaware Avenue SW. The development is anticipated to be completed by 2014.

- *Square 699/Velocity*

  The Square 699N/Velocity development is a hotel building located north of L Street SE between Half Street SE and 1st Street SE. The development is anticipated to be completed by 2015. A second phase of development, which consists of office and retail uses, is expected to be completed by 2020.

- *Square 737*

  The Square 737 development is a mix of residential, and retail uses located between H Street SE and I Street SE, west of 2nd Street SE. The first phase of development is anticipated to be completed in 2014, with a final completion in 2020.

- *Square 701*

  The Square 701 development is an office building located south of M Street SE between Half Street SE and 1st Street SE. The development is anticipated to be completed by 2015.

- *1100 South Capitol Street*

  The 1100 South Capitol Street development is an office building located north of K Street SE between South Capitol Street and Half Street SE. The development is anticipated to be completed by 2015.

- *The Randall School*

  The Randall School development is a renovated building consisting of a mix of residential and hotel uses located north of I Street SW at Half Street SW. The development is anticipated to be completed by 2015.

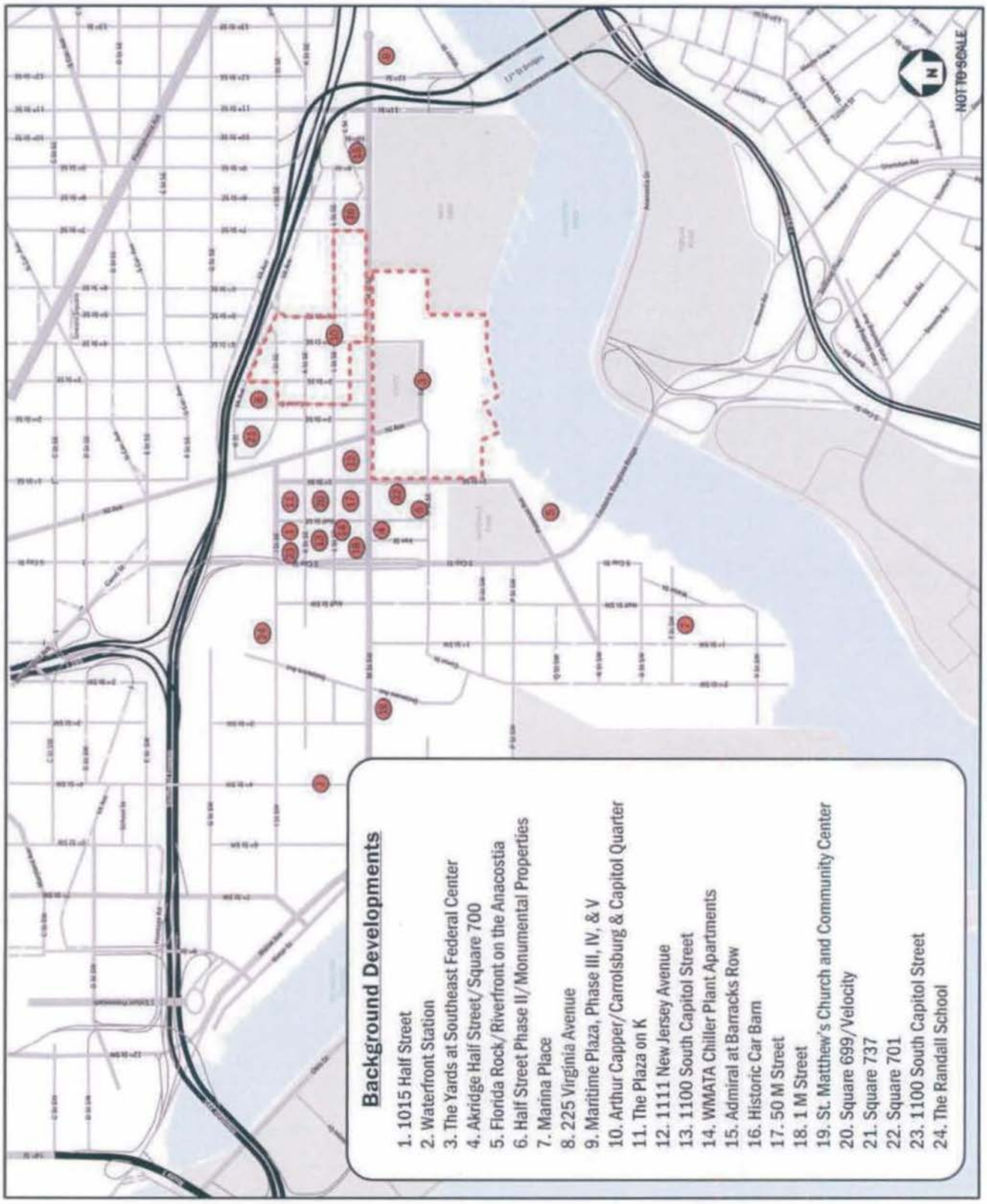


Figure 7: Location of Future Developments

2: DESIGN REVIEW

This report section provides an overview of the on-site transportation features of the proposed SWW PUD. It is meant to supplement the information provided in the site plans presented in the Stage 1 PUD application, which includes several illustrations of site circulation and layout.

The SWW PUD contains over 3 million square feet of mixed-use development and 2,100 to 2,650 parking spaces. The 11 parcels contained in the Stage 1 PUD will be developed over several phases. Details on square footages of development, parking quantities, and other transportation features will be developed alongside and submitted with the Stage 2 applications for each parcel.

This section of the report provides an overview of the entire SWW PUD and examines the plans for on-site transportation accommodations. After presenting this overview, a list of details to be presented in the Stage 2 applications is provided, setting a scope for future transportation reports.

2.1 Transportation Goals

The SWW is a major redevelopment project near the center of the District of Columbia. The transportation goals set forth by the development team during the project planning process should reflect those of the District itself. The District's current transportation goals are best summarized in the District Department of Transportation's (DDOT) *2010 Action Agenda.* The *Action Agenda* lists DDOT's mission statement as:

> "Develop and maintain a cohesive, sustainable transportation system that delivers safe, affordable, and convenient ways to move people and goods — while protecting and enhancing the natural, environmental, and cultural resources of the District."

The same document also contains a vision statement:

> "DDOT is committed to achieving an exceptional quality of life in the nation's capital through more sustainable travel practices, safer streets, and outstanding access to goods and services. Central to this vision is improving energy efficiency and modern mobility by providing next generation alternatives to single occupancy driving in the city."

Using these statements as a starting point, the SWW planning team assembled the following guiding principles for the transportation aspects of the SWW plan. They are as follows:

- Enhance Safety through Site Design
- Promote Non-Automobile Use
- Employ Sustainable Practices

The Stage 1 SWW plan developed has met these principles through a variety of measures, including the following:

- Enhance Safety through Site Design
  - The site design's treatment of Maine Avenue was heavily influenced by this goal. One of the main initiatives of the SWW design is to help transform Maine Avenue from the commuter-based corridor it is today into an urban boulevard that fits the future context of a vibrant waterfront neighborhood. To accomplish this, the site has designed its frontage on Maine Avenue to face the streets and create more activity between the street and the site. Secondly, the PUD recommends that Maine Avenue

add curb extensions to the on-street metered parking on Maine Avenue to help shorten pedestrian crossings, provide enhanced sight distance between vehicles and pedestrians, and assist in decreasing speeds along Maine Avenue. Third, the proposed circle feature between the SWW site and Arena Stage contains many traffic calming elements that will slow speeds along Maine Avenue and create a safer environment for all modes. Although the circle feature contains traffic calming elements, it is not expected to generate objectionable delays or queuing along Maine Avenue.

- The PUD application includes three new traffic signals along Maine Avenue, which will assist in pedestrian and bicycle crossings along Maine Avenue, as well as spread out vehicular trips accessing site and help in the transformation of Maine Avenue into an urban boulevard.
- The site design includes several ways for pedestrians and bicycles to traverse the site that will help form a natural hierarchy to the internal circulation of the site, and will lead to fewer conflicts between modes.
- The internal streets within the site have been designed to operate at very low speeds, which will allow for better interaction between modes, reduces the potential for crashes and crash severity, and enhances safety for all users. Wharf Street will be designed using the transportation planning concept of Shared Space, a concept consistently shown to provide a safe environment for all users (Wharf Street is discussed in more detail later in this report).

- Promote Non-Automobile Use
  - The SWW site includes a dedicated grade-separated bi-directional, cycle track along Maine Avenue, which will connect on either end of the site to District planned bicycle facilities.
  - The site includes ample bicycle parking and proposes new Capital Bikeshare stations.
  - The site will incorporate Transportation Demand Management (TDM) policies and programs, which will be updated and revised with the construction of each phase of the development.
  - The site will evaluate performance-based pricing strategies for the vehicular parking garage, as well as encourage unbundling the parking costs from residential units (additional TDM strategies are discussed below).
- Employ Sustainable Practices
  - The location of the site, as a redevelopment near the center of the District, adjacent to many excellent transportation facilities, is a significant sustainable transportation feature in itself. The site location provides an excellent opportunity for non-automobile use, short trip lengths and a low impact to regional vehicle-miles-travelled.
  - The mixed-use nature of the site will help reduce overall transportation demand as some trips will happen internally.
  - The SWW development will be LEED-ND Gold certified.
  - The development includes many design features that promote flexibility in transportation spaces, so they can provide multiple functions, and shared resources among transportation facilities, to reduce

the overall amount of site dedicated to transportation needs. This includes an extensive shared parking plan to help the site meets its projected parking demands.

2.2 Major Infrastructure Recommendations

The SWW PUD is a large development site contained within an evolving section of the District. The transportation planning for the SWW site needs to fit within the changes taking place in the neighborhood through public and private development nearby and construction of the planned streetcar system.

2.2.1 Streetcar

As mentioned in the prior section of this report, the District has planned to construct a network of Streetcar lines to improve transit access. Two of the planned lines are adjacent to, or near the SWW site. Figure 8, shows the planned system, as presented in *DC's Transit Future System Plan Final Report*, issued by DDOT in April 2010. The "Takoma Metrorail Station to Buzzard Point" line passes along Maine Avenue adjacent to the site, and is part of Phase 3 of the plan, expected to be operational by 2020. The "Congress Heights to Buzzard Point" line terminates in Buzzard Point, near the SWW site, and the section of line near the site is included in Phase 1 of the plan, expected to be operational by 2015.

When planning the SWW site the design team desired to accommodate and expand upon these streetcar plans as the lines and routes presented in the plan were conceptual. Two factors significantly influenced the recommendation developed by the SWW team. First, the two lines passing near the site terminated at Buzzard Point without a clear turn-around plan. Second, alternate routing for Buzzard Point streetcars was proposed by the American Planning Association's Planning Assistance Team in *"Buzzard Point: A Southwest Waterfront Community"* presentation. Taking these two factors into account, the SWW design team included two turn-around options for streetcars into the SWW plans, and accommodated the proposed new routing concept. The SWW plans allow for the turn-around of streetcars by routing through the site on the Wharf Street and Maine Avenue, or alternatively via the feature in front of Arena Stage.

The SWW design team strongly supports first turn-around option which utilized the full length of Wharf Street and Maine Avenue because it will provide for greater accessibility to the northern edge of the development which will help to encourage enhance vitality along the entirety Wharf Street and Maine Avenue, will create enhanced access to the historic Maine Avenue Fish Market, will help to create a true shared-space environment along Wharf Street, and will help to encourage multi-modal (bicycle to streetcar or streetcar to bicycle) commuting and trips to Virginia by-way-of the 14th Street bridge. The alternative turn-around option, which utilizes the feature in front of Arena Stage, will provide flexibility and options to turn the streetcar around without utilizing Wharf Street at times when there are major events along the waterfront, for example: 4th of July Fireworks. Additionally, the project intends to install the streetcar tracks along Wharf Street and Maine Avenue as part of the project infrastructure development. The most significant change in the proposed streetcar plans from these recommendations would be the location of the terminus of these two lines, which would shift from Buzzard Point to the SWW. The existing plan and PUD recommended changes are summarized on Figure 9.

2.2.2 Maine Avenue Cross-Section

When planning the transportation elements of the PUD, it became clear that the cross-section of Maine Avenue will change in the future. This is due to the introduction of streetcar to the corridor, which will likely operate in the right-most travel lanes on either side of the street. Streetcars cannot operate in the same lanes as peak hour restricted on-street parking, and currently, the on-street parking on the north side of Maine Avenue adjacent to the PUD operates as peak-hour restricted west of Arena State.

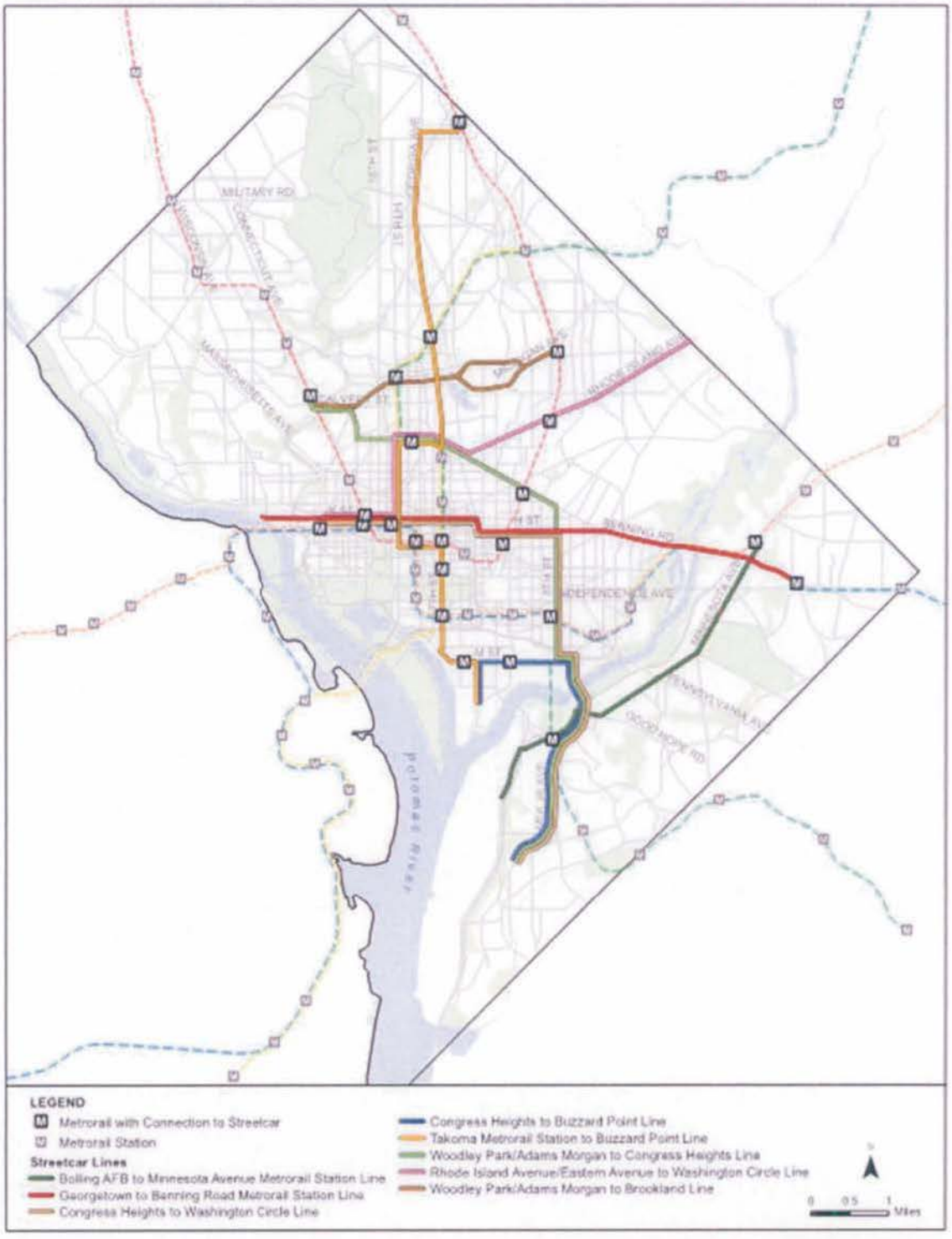
Thus, it is likely that the on-street parking lanes on Maine Avenue (where future streetcar routes are planned) will need to be converted to either permanent parking lanes without peak-hour restrictions (as they are currently on the southern side of Maine Avenue adjacent to the PUD or permanent travel lanes). Although DDOT will make the final decision on the cross-section of Maine Avenue adjacent to the PUD, this study made the following assumptions in order to proceed with its assessment of future traffic impacts generated by the PUD project:

- *Eastbound*: two travel lanes and one permanent parking lane, and
- *Westbound*: two travel lanes between 6th Street and 7th Street SW and three travel lanes between 7th Street SW and 9th Street SW. If the future streetcar lanes do not extent west beyond 7th Street, the rightmost travel lane on the northern side of Maine Avenue can operate with peak hour restricted on-street parking (between 7th and 9th Streets).

After reviewing the transportation impacts of the PUD, detailed in the next section of the report, the SWW PUD planning team recommends that the District proceed with a Maine Avenue cross-section of two travel lanes eastbound, and two travel lanes between 6th Street and 7th Street SW and three travel lanes between 7th Street SW and 9th Street SW westbound. The traffic study results show that this cross section will accommodate future volumes without objectionable impacts. Figure 10 summarizes the existing and proposed on-street parking operations and travel lanes on Maine Avenue adjacent to the SWW site.

In addition to the cross-section recommendations, the SWW PUD recommends three new traffic signals along Maine Avenue to help pedestrian crossings and turning movements into and out of the site. The current distance between controlled crosswalks along Maine Avenue is too large for a high quality multi-modal development, and without additional signals to facilitate crossings, the site will feel disconnected from adjacent developments.

Figure 4-2: System Plan-Streetcar Element



Source: DC's Transit Future System Plan Final Report, DDOT, April 2010

Figure 8: DC's Transit Future - Streetcar Routes

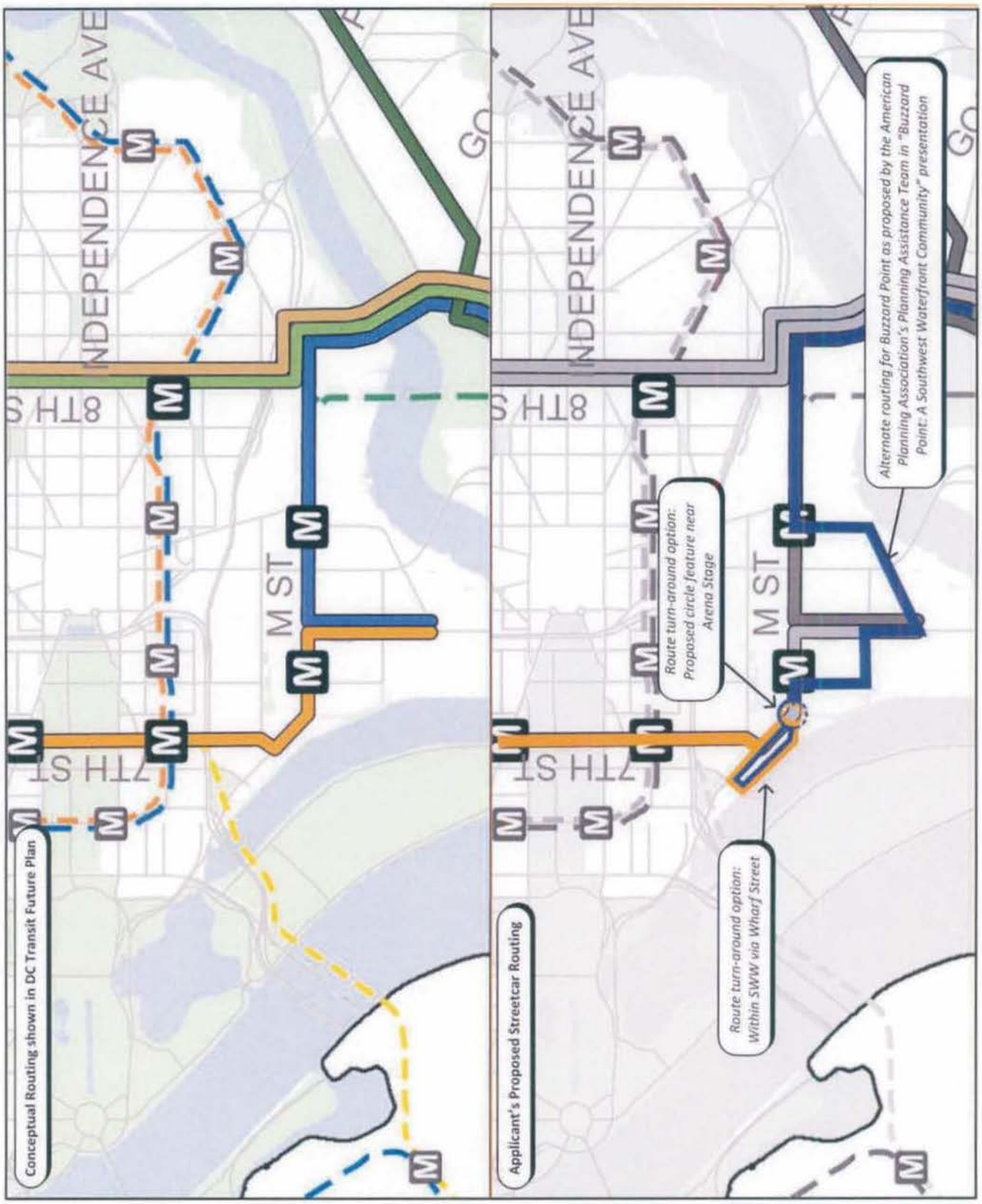


Figure 9: Streetcar Routing Recommendations

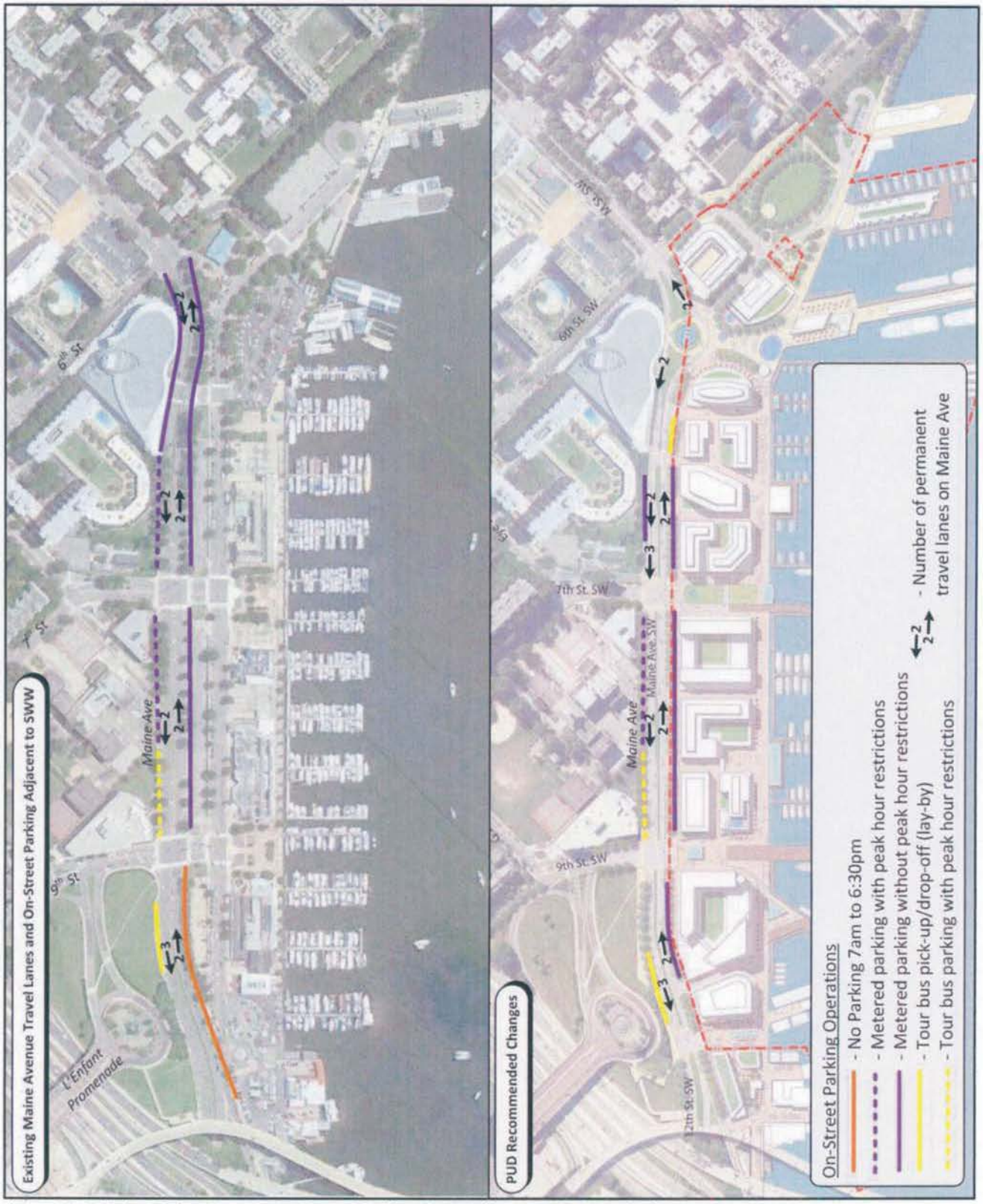


Figure 10: Existing Maine Avenue On-Street Parking & Travel Lane Recommendations

2.2.3 Circle Feature

The site plan includes a circle feature along Maine Avenue in front of Arena Stage. This feature accomplishes several goals, as follows:

- Traffic Calming: As stated above, one of the goals of the SWW design is to help convert Maine Avenue from a commuter-based arterial roadway to an urban boulevard that fits better within the context of a waterfront neighborhood. The circle feature helps meet this goal by providing traffic calming elements, including roadway curves and visual elements.
- Traffic Control: The circle feature will provide access to two site drives, to Wharf Street and the roadway between Parcels 10 and 11.
- Pedestrian Crossing: The circle feature will include pedestrian crosswalks on either side to allow for pedestrians crossings between Arena Stage and the SWW site. In addition, the crosswalks will be in a direct walking path from the Waterfront Metrorail Station to many points within the SWW site.
- Streetcar Operations: As described above, the circle feature will accommodate the turn-around of streetcar routes.

The circle feature has been designed at a conceptual level during the Stage 1 PUD process. This included designing the geometry of the circle to allow for safe passage of two vehicles side-by-side within the through lanes of Maine Avenue, for all turns and maneuvers needed for transit and charter buses within the circle while staying in their lane, and for streetcar track turns and switches. Figure 11 shows some of the key vehicular maneuvering tests performed to help create the conceptual design for the circle feature.

The operations of the circle have also been designed to mimic those of a traditional T-intersection. The circle is proposed to operate with two signal phases, one for the mainline traffic, and one for the side-street traffic and crosswalks. The lanes of the circle within the Maine Avenue median are designed to operate much like left-turn pockets, with the added ability to process U-turns. Figure 12 shows the conceptual traffic signal operations.

These geometrical and operational design considerations provide confidence that the circle feature can accomplish its intended purpose without a detrimental impacts to vehicular operations in the corridor. The next section of this report on external impacts of the SWW PUD contains details on the traffic modeling performed as part of the review of PUD impacts. These analyses model the operations of the circle feature as a T-Intersection with U-turn movements, mimicking the expected operations of the traffic signal that will control the circle (the circle feature is represented as intersections 31 and 32 in section 3.5).

At a future date, possibly during streetcar implementation or during the planning for the later phases of the SWW development, the circle feature will need to be designed in full, as part of the roadway changes needed to support the streetcar and/or final phases of the SWW development.

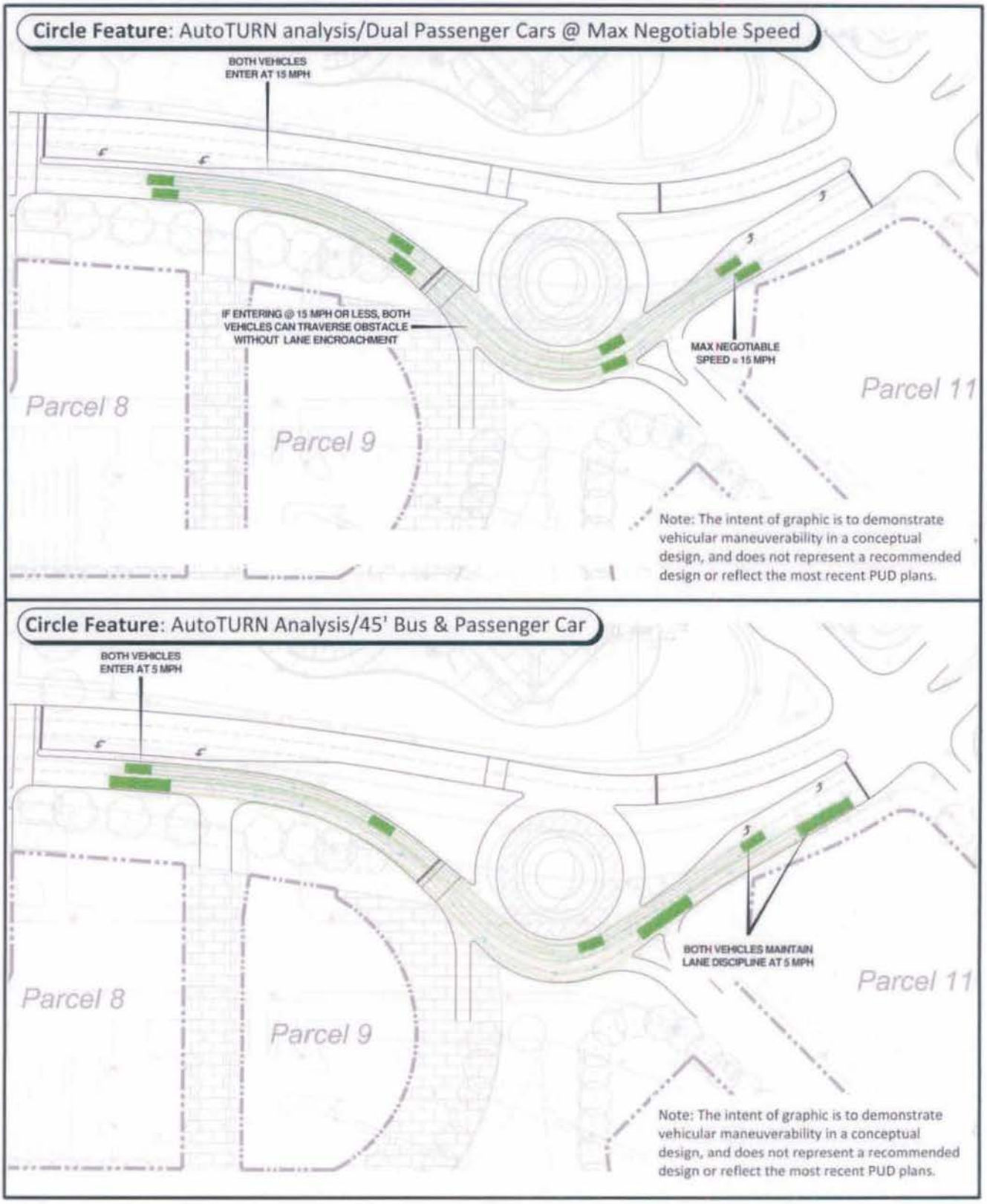


Figure 11: Conceptual Circle Feature Maneuvering Diagrams

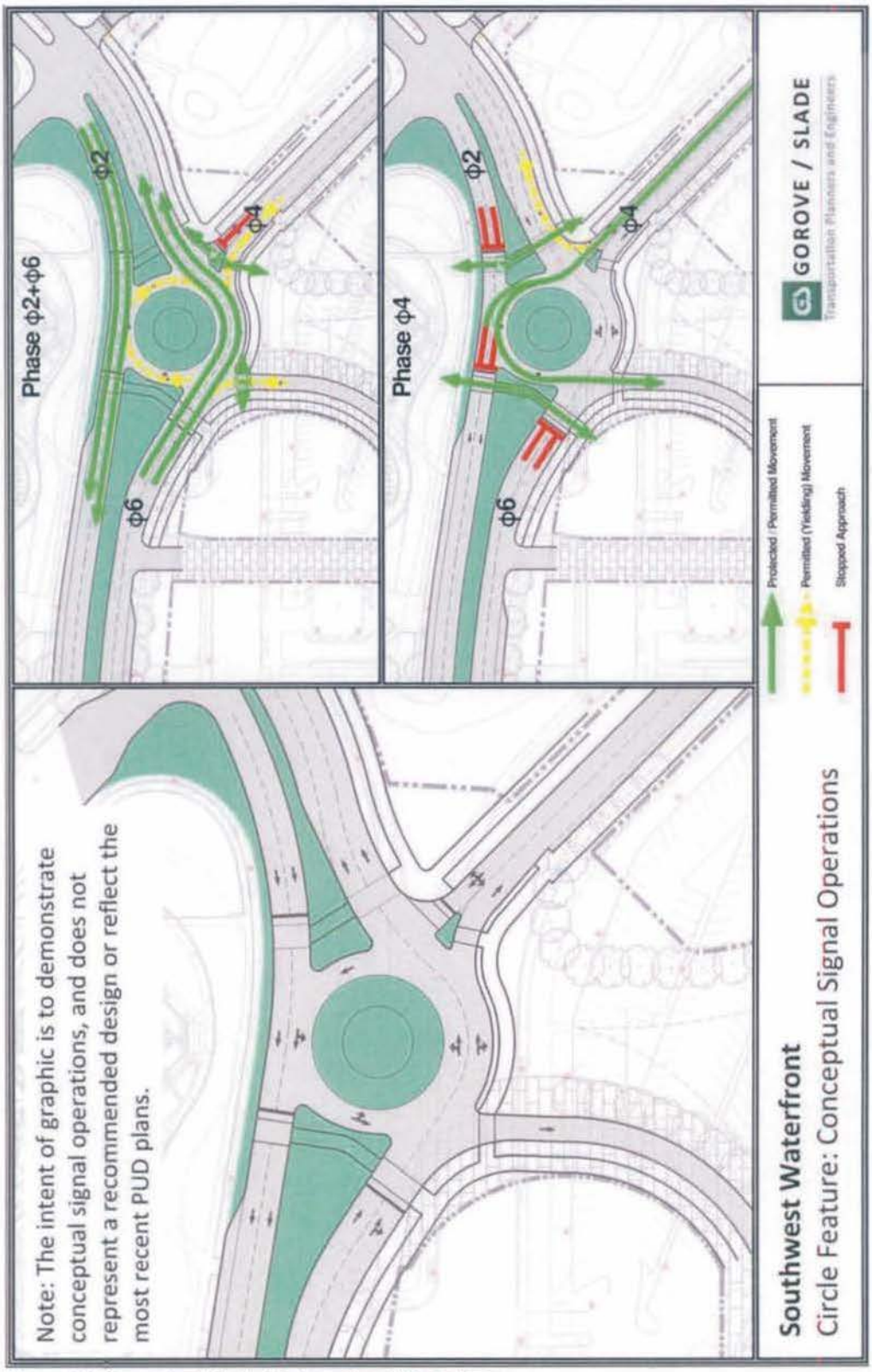


Figure 12: Conceptual Circle Feature Signal Operations

2.3 Site Access and Internal Circulation

The following section provides an overview of site features. The schematics in Figure 13 identify the major circulation features. The site planning package submitted with the application contains more detail.

2.3.1 Vehicular Access

The internal vehicular circulation of SWW is designed to keep vehicles away from public spaces and to provide the flexibility to close Wharf Street for public events when desired. As previously stated, the SWW PUD recommends three new traffic signals along Maine Avenue to aid pedestrian crossings and turning movements into and out of the site. The internal street layout, locations of access points to parking and pick-up/drop-off points were designed to align with the access points to Maine Avenue. All loading and parking activity on site will be located off the internal street network. Recommendations for the configurations and traffic controls to site driveways at their intersections with Maine Avenue are contained in the following section of this report. Figure 13 identifies the locations of the internal streets, garage access points and pick-up/drop-off areas. Further details on site access per parcel will be included in their individual State 2 applications.

2.3.2 Loading

The number of loading docks for each parcel is shown on the site plans contained in the Stage 1 submittal; details for the loading docks, including maneuvering diagrams, will be provided in all Stage 2 applications. The loading plan as proposed in the Stage 1 application is consistent with the intent of the District's new proposed General Loading Regulations, DCMR 11 - Chapter 17. Consistent with the intent of Section 1703 "Rules of Measurement and Interpretation" from the proposed regulations, the proposed mixed-use project will utilize shared loading bays that are used by different use categories within the same building. The proposed project loading and service facilities will be designed and located to not create conflicts with the pedestrian environment or vehicular and bicycle traffic and will be consistent with the intent of Section 1704 "Location Restrictions" from the proposed regulations. Loading and service entrances are located on the internal streets and not on Maine Avenue, Wharf Street, and the main public spaces of the project which is also consistent with the intent of Section 1704 "Location Restrictions" from the proposed regulations. Exact number, location, and sizes of loading and service areas will be submitted with each Stage 2 PUD submission.

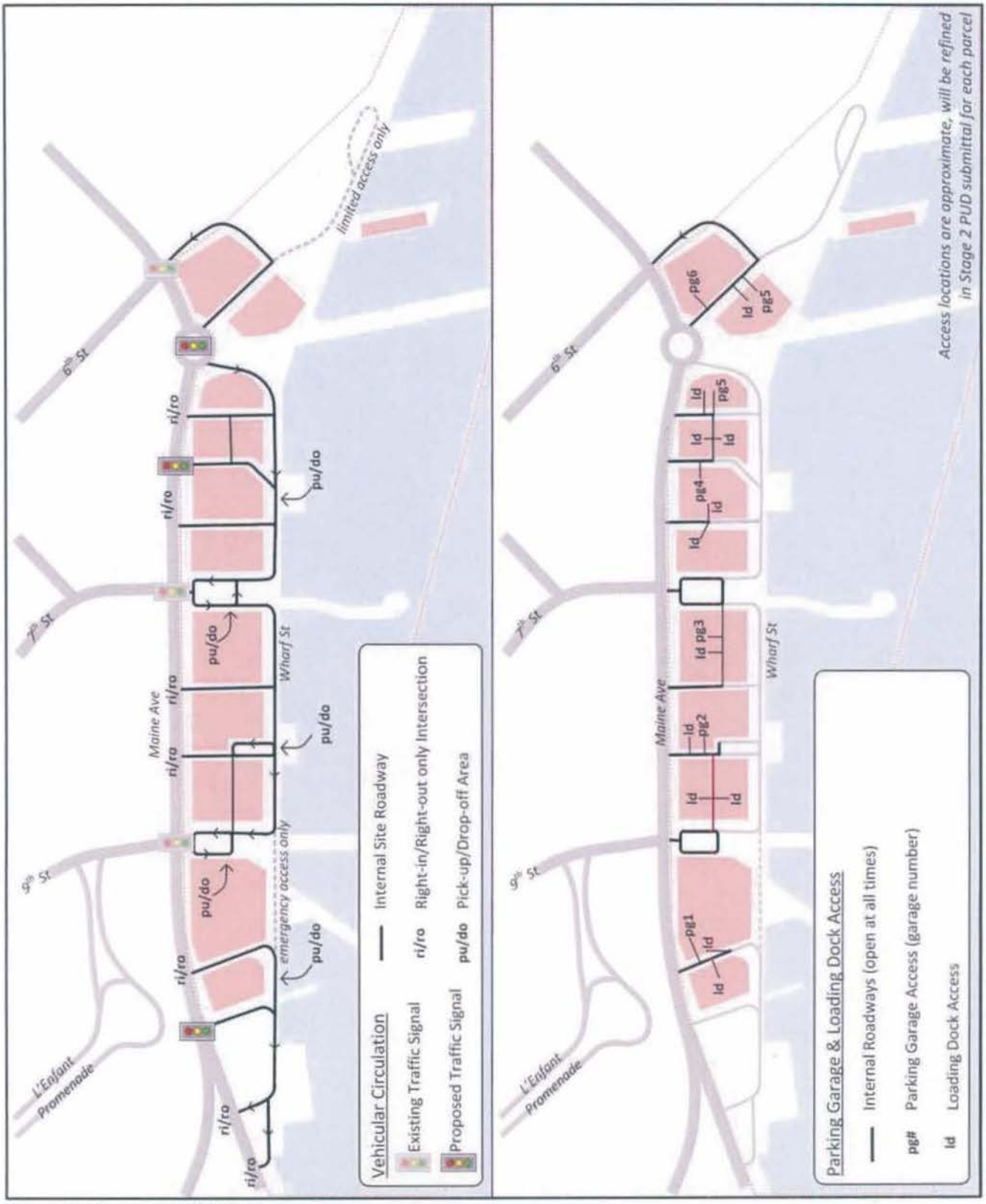


Figure 13: Summary of Vehicular Access

2.3.3 Parking

This section summarizes a review of parking supply and demand for the SWW PUD. First, an examination of potential parking demand is presented, followed by recommendations on how the demand can be accommodated within the SWW PUD.

In summary, the development proposes a parking supply of 2,100 to 2,650 spaces. This parking range was derived from a shared parking analysis. The parking is consistent with the District's new parking regulations DCMR 11 - Chapter 15 in that it emphasizes and supports a balanced mix of transit modes, utilizes shared parking methodology to ensure an adequate supply of off-street parking while preventing an over-supply, and provides for ample car-share parking spaces. Parking may be provided in one or more garages per phase with access from internal streets. Exact parking counts, location and number of garage ramps, and below grade layout will be submitted with each Stage 2 PUD submission.

Parking Demand

Determining the parking demand of individual land uses in an urban environment can be difficult for several reasons, including shared parking and synergy between uses. While working on various projects in the District, Gorove/Slade has observed that parking demand in the District is much lower than national standards for demand. For commercial uses, demand is usually between 25 to 50% of standard and between 40 to 65% of standard for residential uses. Residential uses have a relatively higher demand in urban areas because, while people may take alternate modes to work, they still may own and store a car at home. The range in rates represents areas of the District ranging from typical conditions with some transit and alternate mode use to dense Central Business District (CBD) areas of the District with high quality alternate mode service.

Table 4 summarizes a range of potential parking demand rates, starting with national standards and showing a range of what Gorove/Slade considers 'Non-CBD' District rates and 'CBD' District rates.

Table 4: Range of Potential Parking Demand Rates

Land Use	Standard Parking Demand Rate[1]	Range of Parking Demand Rates Observed in District			
		Non-CBD location		*CBD location*	
		Percent of Standard	*Rate*	*Percent of Standard*	*Rate*
General Retail	3 spaces / thousand SF [2]	50%	1.5	25%	0.75
Restaurant/Bar	16 spaces / thousand SF	50%	8.0	25%	4.0
Residential	1.4 spaces / dwelling unit [3]	65%	0.90	40%	0.55
Office	2.8 spaces / thousand SF	50%	1.4	25%	0.70
Hotel	1.2 spaces / thousand SF	50%	0.60	25%	0.30
Theatre	0.33 spaces / seats	50%	0.17	25%	0.08

[1] – ITE, *Parking Demand*, 4th Edition
[2] – Highest non-December rate
[3] – High-rise apartments

The SWW development, due to its location adjacent to quality transportation facilities for all modes, is anticipated to reach parking demand levels in the range of the CBD rates. Using these rates, the parking demand for SWW was calculated. Since the development program will only be defined in later applications, an assumed build out of the SWW PUD was used, corresponding to the Stage 1 site plans:

- 500,000 gross square feet of office;
- 2,125 residential units;
- 276,100 leasable square feet of retail, with 60% of retail assumed to be restaurants;
- 625 hotel rooms;
- 2,500-seat capacity theatre (although the standing-room capacity is higher, the seating capacity was considered the more appropriate assumption for calculating parking demand); and
- 383 marina berths

Based on these assumptions and methodologies contained in the Urban Land Institute's (ULI) *Shared Parking* manual, second edition, Table 5 shows the resulting peak parking demand.

Table 5: Peak Parking Demand

Scenario	Peak Parking Demand, per set of Demand Rates Used		
	Standard Rates	*District Non-CBD Rates*	*District CBD Rates*
Without Shared Parking	9,000	5,000	2,700
With Shared Parking	7,300	4,100	2,300

In addition to looking at the entire SWW program, parking demand estimates were also calculated Phase 1. This was done to compare Phase 1 parking supply and demand independent of the remainder of the PUD. The assumed build out for Phase 1 was as follows:

- 210,000 gross square feet of office;
- 824 residential units;
- 165,700 leasable square feet of retail, with 60% of retail assumed to be restaurants;
- 625 hotel rooms;
- 2,500-seat capacity theatre (although the standing-room capacity is higher, the seating capacity was considered the more appropriate assumption for calculating parking demand); and
- 91 marina berths

Based on these assumptions and methodologies contained in the Urban Land Institute's (ULI) *Shared Parking* manual, second edition, Table 6 shows the resulting peak parking demand for Phase 1.

Table 6: Peak Parking Demand for Phase 1

Scenario	Peak Parking Demand, per set of Demand Rates Used		
	Standard Rates	*District Non-CBD Rates*	*District CBD Rates*
Without Shared Parking	5,100	2,800	1,500
With Shared Parking	4,300	2,300	1,200

Parking Supply

Based on the analysis presented in Table 5, the parking supply of 2,100 to 2,650 spaces identified in the SWW PUD will be able to accommodate the expected demand. At full-build out of SWW, a parking supply of around 2,300 will be appropriate, depending on the exact development program constructed.

Phase 1 is anticipated to have a parking supply of 1,275 to 1,450 spaces. Thus, the anticipated demand of 1,200 will be accommodated by the proposed parking supply.

Based on these calculations, this report reaches the following conclusions on SWW parking:

- Parking for the SWW development should be built towards the ultimate goal that the total amount of spaces be around 2,300 spaces, depending on the actual development program;
- To the highest extent possible, parking should be shared across all uses and garages; and
- Parking costs should generally be unbundled from leases and condominium purchases to keep residential parking demand to a minimum.
- Performance pricing measures should be incorporated to help balance demand.

2.3.4 Bicycle Facilities

The SWW PUD is specifically designed to encourage and facilitate bicycling as a favored transportation mode. It includes a significant bicycle facility along the southern edge of Maine Avenue: a two-way off-street bicycle track. The track will connect to DDOT's off-street bicycle lane at the western edge of the site and to M Street and the Riverfront Trail system (at P Street) at the eastern edge of the site. Bicycles will also be accommodated on the internal streets, which although will be designed principally as pedestrian thoroughfares, will contain a flexible design that accommodate bicycles. At some times of the day and/or week, cyclists may find it easier to park their bike and walk through the site, and at other times it may be easier to cycle all of the way to their destination and park.

The range of bicycle parking spaces provided on site will be between 1,500 to 2,200. The bicycle parking will be refined in conjunction with the LEED-ND requirements for Smart Location and Linkage Credit 4 "Bicycle Network and Storage" and will be consistent with the intent with the District's new proposed bicycle parking regulations DCMR 11 – Chapter 16. Exact bicycle parking counts, location and number will be submitted with each Stage 2 PUD submission.

Consistent with the intent of Section 1605 "Short-Term Bicycle Parking Space Requirements" from the proposed regulations, the project will include short-term public bicycle spaces on streets, near building entrances, public spaces, and parks. These short term spaces will include inverted U-racks between tree plantings adjacent to the two-way bike lane. This will place racks in a high-visibility area and to encourage cyclists to park and walk via the internal streets to their destination. Alternatively, these racks and stations can be placed in the on-street parking lane if the lane is made permanent per the applicant's recommendation. Some short-term street level parking will be provided within each parcel, to provide cyclists the option of travelling all of the way to their destination. As stated above, the site design is flexible and includes various types of accommodations that will work for different types of cyclists and at different times of the day/week. Additionally, the project will provide some provisions for covered short-term bicycle parking spaces throughout the project in order to promote all-weather and all-season bicycle access.

Consistent with the intent of Section 1606 "Long-Term Bicycle Parking Space Requirements" from the proposed regulations, the project will include secured long-term bicycle parking and changing facilities for project employees, residents, and other building occupants within each building or parking garage.

In addition, Capital Bikeshare stations will be placed at two or more locations on site in conjunction with DDOT. The site plan was developed with the intent that Bikeshare stations could be located between tree plantings or within the on-street parking lane along Maine Avenue, similar to the short-term spaces planned for those locations.

2.3.5 Wharf Street

As previously stated, one of the design goals of the SWW was to provide for flexible and shared spaces that can accommodate all modes of travel and can change character depending on the time of day, week or year. The Wharf Street was designed around these goals based on the concept of a Shared Space.

Wharf Street is designed to be a flexible space, with high accessibility and low speeds for all modes. Among other things, it will serve pedestrians walking along the waterfront, access to Marinas, loading for restaurants and businesses, room for valet and taxi stands, and access for emergency vehicles. The type of actives on the Wharf Street will depend on the time of day/week and the design of the street is flexible to allow for this variability in use and sharing of resources. The site plans allow for closure of the Wharf Street for special events, while still providing access to parking garages, pick-up/drop-off points and other vehicular activity.

The transportation design of the street is based on the concept of Shared Space, a public space concept that removes the segregation of modes using traffic signals, signs, paint marking, and other controls. Instead, the design will incorporate intuitive, person-oriented visual clues to demonstrate hierarchy. When applied correctly, a shared space provides improved safety, encouraging negotiation of shared areas at appropriate speeds and with due consideration for the other users, using simple rules. The concept is partially based on how eye contact and human interaction are more effective means to achieve and maintain attractive and safe areas than signs and rules. Care will be taken to appropriately design the space for the safety of all users including the elderly, disabled, and children and will be compliant with the provisions of the Americans with Disabilities Act. These type of public spaces have been designed and implemented successfully around the world including examples in major U.S. cities such as San Francisco, Seattle, Portland, Boston, Cambridge, and Denver.

2.4 Transportation Demand Management

One of the goals of the SWW PUD is to encourage the use of non-automobile modes, and to help meet that goal, Transportation Demand Management (TDM) measures will be employed during each phase of development. Similar to how the current Stage 1 application does not go into design details for each parcel and building, as the Stage 2 applications will cover those details, the TDM planning for the development will occur mostly in the Stage 2 process. It is difficult to predict exactly what measures and policies are best applied for each building and phase at this time.

Instead, it is more appropriate at the Stage 1 PUD level to develop overall strategies and put in place the infrastructure necessary to support the future TDM plans. With this in mind, the following are the TDM measures incorporated into this Stage 1 submittal.

- Infrastructure changes to support alternative modes
    - Reduce crossing distances at certain intersections through the use of bump-outs to ease pedestrian crossings

- Install new traffic lights and crosswalks for safe pedestrian crossing
- Encourage development of active water taxi service to site through creation of Transit Pier
- Provide dedicated bi-directional grade separated cycle track along Maine Ave

- Bicycle parking
  - Provide ample bicycle parking for short term visitors and guests throughout the project, along Maine Ave, along the Wharf, near building entrances, and in all public spaces
  - Provide covered, secured parking for commuters and other long-term users.
  - Maintaining the existing Capital Bikeshare Station on-site and relocate during phase 1
- Parking strategies
  - Operate the garage using performance parking measures / price controls to regulate parking demand
  - Encourage developments to unbundle parking from residential units
  - Shared parking between Office/Theater/Retail/Residential and other site uses
  - Reserve space in garages for ample car sharing spaces and require parcels to include programs for residents, guests, employees, neighbors, and visitors

As the site becomes developed and Stage 2 applications are submitted, the applications will need to be accompanied by a detailed TDM plan that shows how the development fits into the overall strategy and accomplishes the goals set forth in the Stage 1 plan. The following contains a list of potential TDM measures and policies that will be considered for inclusion in the Stage 2 applications.

- Design elements of for future phase/parcels
  - Perform a mode split survey and parking demand/utilization analysis to help plan future phases for phases beyond the first
  - Providing funds necessary for additional Capital Bikeshare stations in later phases
  - Require secured bicycle parking for residents, and employees & shower facilities for parcels
- Transit considerations
  - Construct streetcar track infrastructure along Wharf Street and Maine Avenue in coordination with DDOT
  - Create a BID to help fund streetcar operation and capital
  - Evaluate shuttle bus service from Waterside and L'Enfant metro stations
  - Support provisions for covered bus/streetcar shelters and encourage real-time status monitors at all bus/streetcar shelters.
- Policies encouraging use of alternative modes
  - Support commuter benefit program for cycling/walking/public transit to work
  - Evaluate the support of discounted Capital Bikeshare memberships for project residents

- Evaluate the support of discounted ZipCar memberships for project residents
- Evaluate the inclusion of a bike repair station and secured parking facility for commuters and visitors (i.e. bike to the site from VA and pick up streetcar to get to work, sim. to Union Station)
- Provide way-finding signage for neighborhood (at Metro and Bus Stations) to enhance and ease the pedestrian experience coming to and navigating the site
- Promote and encourage public transportation and cycling as ways to access the site in all brochures, marketing, etc. and in the lobbies of all buildings, including electronic message boards
- Endeavor to bring a neighborhood bicycle shop to the project
- Support a Bike to Work day pit-stop
- Provide publically accessible bicycle repair, pump, and maintenance facilities to promote daily commuter and recreational cycling

2.5 Stage 2 Details

As described above, many of the on-site transportation features of the SWW parcels will be determined and detailed in the Stage 2 process. The following contains a list of elements that should be incorporated into the transportation documentation that accompanies the Stage 2 submittal:

- Summary of any changes in transportation components of site design, or deviations from overall transportation plan elements;
- For phases past the initial one, a mode split survey and parking demand/utilization analysis of the prior phases;
- Review of development program and comparison to the Stage 1 plan, and, if there are differences, list how they could impact the transportation analysis conclusions from the Stage 1 PUD;
- Details on vehicular parking access and the total number of parking spaces provided;
- Details on bicycle parking for short- and long-term spaces and identify bicycle shower locations, if provided;
- Maneuvering diagrams for loading docks and details on loading management;
- Coordination with neighborhood/ANC and DDOT to address potential overspill parking into residential areas of adjacent neighborhoods;
- Signal warrants for any proposed traffic signals to be constructed in conjunction with the phase/parcel of development; and
- A detailed Transportation Demand Management plan for each parcel.

3: IMPACTS REVIEW

This section of the report focuses on the influence and impact site generated traffic will have on the local transportation network, with the following purpose:

- To 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.
- To 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 analysis of crosswalk and intersection delays. These delays are compared to the acceptable levels of delay set by DDOT standards to determine if the site will negatively impact the study area. The report describes what improvements to the transportation network are needed to mitigate adverse impacts.

3.1 Site Transportation Demand

Traditionally, trip generation for a proposed development is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation*, 8th Edition. For this report, the methodology was supplemented to account for the urban nature of the site (*Trip Generation* provides data for non-urban, low transit use sites) and to generate trips for multiple modes. The following summarizes the methodology that was used in this study.

First, ITE *Trip Generation* was used to develop base vehicular-trip rates, not accounting for reductions due to mode split. These calculations do account for synergy between the street-level retail and the residential and office uses—a 20% internal capture reduction was applied for retail trips originating from within the proposed PUD. The Shopping Center trip rate was applied in lieu of individual trip rates, such as bank, pharmacy, and supermarket, for the retail uses because applying individual rates would not account for interaction between the retail uses (shoppers visiting more than one store). The Shopping Center trip rate does account for these uses and interactions.

Second, the vehicle-trips were converted to person-trips by assuming an average vehicle occupancy of 1.1 persons per vehicle, based on the Census Data Transportation Planning Package (CTPP) 2000. Table 7 shows the base number of trips generated by the proposed development. The base number of trips generated for each parcel of the PUD is shown in the Technical Appendix.

Table 7: Base Vehicle- and Person-Trip Generation

Land Use	Size*		Trip Generation						
			AM Peak Hour			PM Peak Hour			Weekday Total
			In	*Out*	*Total*	*In*	*Out*	*Total*	
Vehicle Trips									
Retail	276,100	Square Feet	425	273	698	1,274	1,331	2,605	28,506
(Internal Synergy)	*20%*	*Reduction*	--	--	--	*-256*	*-266*	*-522*	*-5,708*
Sub-Total			425	273	698	1,018	1,065	2,083	22,798
Residential	2,125	Dwelling Units	434	1,372	1,806	520	320	840	10,290
Office	500,000	Square Feet	721	99	820	135	662	797	5,726
Hotel	625	Rooms	248	180	428	207	215	422	5,578
Church	15,000	Square Feet	5	3	8	4	4	8	138
Marina	382	Slips	10	21	31	46	30	76	4,836
Total Vehicle-Trips			**1,801**	**1,804**	**3,605**	**2,014**	**2,342**	**4,356**	**47,598**

Land Use	Size*		Trip Generation						
			AM Peak Hour			PM Peak Hour			Weekday Total
			In	*Out*	*Total*	*In*	*Out*	*Total*	
Person-Trips									
Retail	1.1	Persons/Vehicle	462	297	759	1,106	1,157	2,263	24,766
Residential	1.1	Persons/Vehicle	477	1,510	1,987	572	353	925	11,320
Office	1.1	Persons/Vehicle	793	109	902	148	728	876	6,298
Hotel	1.1	Persons/Vehicle	273	197	470	227	237	464	6,136
Church	1.1	Persons/Vehicle	6	3	9	4	5	9	152
Marina	1.1	Persons/Vehicle	10	23	33	52	32	84	5,320
Total Person-Trips			**2,021**	**2,139**	**4,160**	**2,109**	**2,512**	**4,621**	**53,992**

*Note: The PUD requests a range of development for each parcel. At the time of the analysis, the totals above were agreed to by the team to provide a conservative analysis of the proposed development.

Third, the trips were split into each mode: transit (consisting of both Metrorail and Metrobus/DC Circulator), walking, biking, and vehicle. Each land use was analyzed by mode separately in order to account for varying mode splits.

The number of anticipated vehicle trips generated by the PUD was estimated using ITE's *Trip Generation*, 8th Edition, WMATA's *Development-Related Ridership Survey, 2005*, and past studies conducted in the area from the library of Gorove/Slade Associates, Inc.

By definition, ITE's trip generation rates were derived from data collected from single-use developments where virtually all access to the development would be by private automobile. *Trip Generation* does not account for the potential effects of Transit Demand Management (TDM) programs, transit availability, and interaction between various on-site uses (synergy), particularly when these uses are in walking distance of each other. The ITE numbers were therefore used to generate trip estimates for the proposed buildings, however reductions were made for transit use based on WMATA's *Development-Related Ridership Survey, 2005.*

The WMATA *Development-Related Ridership Survey 2005* provides an overview of automobile and transit use patterns within the Washington DC Metro region. It presents survey results from various land-uses across the Metropolitan area. Gorove/Slade used these data to help assemble mode split assumptions for the SWW development.

Gorove/Slade selected several surveyed sites from the WMATA report to develop as comparable, using several independent variables. These included:

1. The distance of the development from the closest Metro Station;
2. The location of the nearest Metro-rail station to other concentric Metro-rail stations in the system, since this offers the greater ability to access other Metro lines and connect to other areas in DC, Maryland and Virginia; and
3. The parking ratio of the PUD, since the amount of parking is a significant influence on overall TDM programs and ease of driving.

No single site from the WMATA report had the same or identical characteristics of the proposed PUD, so survey results from individual sites, each showing similarity with at least one of the independent variable were found and averaged to determine the alternate mode split reduction to be applied to the ITE trip generation for the PUD. The SWW is expected to exhibit mode split characteristics similar to developments located within the center of the District. This is because the SWW will have excellent bus, rail transit, cycling, and walking options. Although other sites surveyed in the WMATA report

may have a more similar walking distance to/from Metro, they will not have the overall quality of non-automobile mode transportation. Thus, preference was given to comparing the SWW sire to survey sites within the District core.

For the office component, the three most similar locations were determined to be 1701 Pennsylvania Avenue, The Reeves Center and 3 Ballston Plaza. These sites had automobile mode splits of 25%, 58%, and 79%, respectively, with an average of 54%. As stated above, Gorove/Slade anticipates that the SWW PUD will behave similar to sites in the District core, and thus rounded down this average to 50%.

For the residential component, the three most similar locations were determined to be the Summit Roosevelt, Highland Park West, and the Meridian at Gallery Place. These sites had automobile mode splits of 22%, 53%, and 15%, respectively, with an average of 30%. As none of these locations had characteristics very similar to the SWW PUD, in order to be conservative, Gorove/Slade rounded this average up to 35%.

For the hotel component, the closest comparable WMATA survey sites were two hotels in Crystal City and one in Friendship Heights. These hotels have an average automobile mode split of 23%. As none of these locations had characteristics very similar to the SWW PUD, in order to be conservative, Gorove/Slade rounded this average up to 35%.

The only retail site surveyed in the WMATA report with similar characteristics to the proposed retail on the SWW PUD are the U Street Main Street retails surveys, which shows an automobile mode split of 19%. In order to be conservative, this was rounded up to 25% for this report.

The mode split assumptions for the Church and Marina uses based on discussions with the SWW team regarding their expected use and comparing them to similar lane uses. For the Church, it was expected that during the rush hours, it would have a regional demand similar to the office component, and thus was assumed to have a 50% automobile use. For the Marina, it is expected that during rush hour, it would operate most similar to the residential component, and thus a 35% automobile mode split was assumed.

After the WMATA Ridership report was used to determine the percentage of automobile use, the remainder was split between transit, bicycling and walking. The transportation engineering industry does not have a significant amount of standardized research on the mode split breakdown for these modes. Thus, the mode splits for non-automobile use were developed using what information was available, using WMATA's *Development-Related Ridership Survey*, the *2010 State of the Commute Report*, available census data, engineering judgment based on the availability of quality cycling and walking routes. Thus, the mode split and estimated trip generation for non-automobile modes is presented in order to determine an order of magnitude and estimated impact to these modes.

Table 8 summarizes the mode split assumptions.

Table 8: Mode Split Assumptions

Land Use	Mode Split			
	Vehicle	*Transit*	*Walk*	*Bike*
Office	50%	35%	10%	5%
Retail/Restaurant	25%	35%	30%	10%
Residential	35%	45%	15%	5%
Hotel	35%	45%	15%	5%
Church	50%	35%	10%	5%
Marina	35%	45%	15%	5%

Finally, the vehicular-trips for the retail uses were discounted to account for pass-by traffic on M Street/Maine Avenue. Based on information contained in ITE's Trip Generation, a pass-by percentage of 20% was assumed. In addition, the persons-trips calculated for the vehicle mode were converted back to vehicle trips using the 1.1 persons per vehicle occupancy assumption.

Table 9 shows the resulting calculations by mode. The total number of trips generated for each parcel of the PUD is shown in the Technical Appendix. The proposed SWW will generate approximately 1,707 transit trips, 697 walking trips, 245 bicycle trips, and 1,384 vehicular trips during the morning peak hour; 1,778 transit trips, 1,002 walking trips, 349 bicycle trips, and 1,385 vehicular trips during the afternoon peak hour; and 21,283 transit trips, 11,505 walking trips, 3,970 bicycle trips, and 15,877 vehicular trips during a typical weekday.

Table 9: Trip Generation for Proposed Development by Mode

Land-Use/Mode	Trip Generation by Mode						
	AM Peak Hour			PM Peak Hour			Daily
	In	*Out*	*Total*	*In*	*Out*	*Total*	**Total**
Transit Person-Trips							
Retail	164	104	268	392	411	803	8,777
Residential	215	678	893	257	160	417	5,093
Office	277	39	316	51	256	307	2,204
Hotel	123	88	211	102	107	209	2,762
Church	2	1	3	1	2	3	53
Marina	3	13	16	24	15	39	2,394
Total New Transit Person-Trips	*784*	*923*	*1,707*	*827*	*951*	*1,778*	*21,283*
Walking Person-Trips							
Retail	141	89	230	336	352	688	7,524
Residential	72	226	298	86	53	139	1,699
Office	80	10	90	15	74	89	630
Hotel	41	29	70	34	36	70	920
Church	1	0	1	0	1	1	15
Marina	3	8	8	10	8	15	717
Total New Walking Person-Trips	*338*	*362*	*697*	*481*	*524*	*1,002*	*11,505*
Bicycling Person-Trips							
Retail	46	30	76	113	116	229	2,508
Residential	24	76	100	28	19	47	567
Office	39	6	45	7	37	44	315
Hotel	14	9	23	11	12	23	306
Church	0	0	0	0	0	0	8
Marina	0	1	1	1	5	6	266
Total New Bicycling Person-Trips	*123*	*122*	*245*	*160*	*189*	*349*	*3,970*
Vehicle Trips							
Retail	85	57	142	204	212	416	4,559
Retail Pass-By	22	13	35	50	54	104	1,139
Residential	152	479	631	182	111	293	3,601
Office	361	49	410	68	328	396	2,863
Hotel	86	65	151	72	75	147	1,953
Church	3	2	5	3	2	5	69
Marina	7	3	10	19	5	24	1,693
Total New Vehicle Trips	*716*	*668*	*1,384*	*598*	*787*	*1,385*	*15,877*
Total Trips*	**1,961**	**2,075**	**4,033**	**2,066**	**2,451**	**4,514**	**52,635**

** - Combination of person-trips and vehicle-trips*

3.2 Transit Impacts

This section details the person-trips for each transit mode in the study area, estimates station and stop passenger demand, reviews the condition and quality of stations and stops, and makes recommendations for improvements where needed.

3.2.1 Volumes

The transit person-trips listed in Table 9 were further subdivided to forecast person-trips for rail, streetcar, and bus. The person-trips listed in Table 10 are the basis for estimating station and stop demand and passenger volumes along station and stop access routes. As the non-automobile demand estimates are provided in this report to provide a general estimate of future demand that the transit trip numbers listed in Table 10 were rounded to simplify the table and figures contained in this section. In this study, Gorove/Slade assumed that an average of 50% of the total daily trips for all uses would be made by transit, with 65% of total transit trips made by rail, 25% by streetcar, and 15% by bus. Based on these assumptions, the PUD will generate 21,400 total transit daily passenger trips, which includes 12,800 rail trips, 5,400 streetcar trips, and 3,200 bus trips.

Table 10: Person-Trips by Transit Mode

Mode	Trip Generation by Mode						
	AM Peak Hour			PM Peak Hour			Daily
	In	*Out*	*Total*	*In*	*Out*	*Total*	Total
Transit Total	780	920	1,700	820	960	1,780	21,400
Rail (Metro & VRE)	470	550	1,020	490	580	1,070	12,800
Street Car	200	230	430	210	240	450	5,400
Bus	110	140	250	120	140	260	3,200

3.2.2 Routing and Station Condition and Quality

Person-trips listed in Table 10 were distributed among the primary stations and stops within reasonable walking distance of the site. The station and stop assignments were developed based on walking distances between the site and stations/stops, the direction of approach developed for vehicular traffic, the willingness of some rail passengers to walk greater distances to avoid transferring, the location of bus routes that do not stop adjacent to the site, and other factors. Figure 14 identifies the station and stop locations and the rail, streetcar, and bus person-trips generated daily and during peak periods. The following details trip assignment assumptions, an overview of station and stop condition and quality, and makes recommendations for improvements where needed. Station and stop access routes are described and evaluated in the Pedestrian section located below.

- *Southwest Waterfront-SEU Metrorail Station and Bus/Streetcar Stops*

  Assignment: 65% of the rail, 20% of the streetcar, and 20% of the bus person-trips were assumed to use the Southwest Waterfront-SEU station portal located at the intersection of 4th and M Streets SW. As the nearest rail station to the site, this location was assumed to attract the majority of rail passenger trips. Twenty percent of the streetcar and bus person-trips were assigned to this location because some bus routes serve this location only and not the site, some streetcar trips may be linked with trips to the commercial uses located near this stop, and some passengers traveling east may choose to walk to this stop rather than use the stop located at 7th Street SW and Maine Avenue SW. In addition to walking to transit stations, using Bikeshare to access the station will be an attractive option.

Volumes: On a typical day, this location is forecasted to generate 10,900 rail trips and 600 streetcar and bus trips.

Station Condition and Quality: The Southwest Waterfront Metrorail station is located on the northeast corner of the intersection of 4th and M Streets SW. This corner was redeveloped recently and provides a good environment for passenger ingress and egress.

Recommendations: No changes or improvements are recommended for the station or stops because the anticipated additional demand can be accommodated at these Metrorail, bus, and streetcar locations. However, the District may consider Metrorail line, bus route, Metrorail station, and bus stop upgrades to ensure the attractiveness/continued desirability of these public transportation options.

- *L'Enfant Metrorail and VRE Stations and Bus/Streetcar Stops*

  Assignment: 35% of the rail, 20% of the streetcar, and 20% of the bus person-trips were assumed to use the L'Enfant Plaza station portals located north of the site along 7th Street SW. As the second nearest rail station to the site, this station was assumed to attract some rail passenger trips because it is within reasonable walking distance of the site (approximately a 10 minute walk from 7th Street SW and Maine Avenue SW), is closer to the destination for those traveling between locations north if the site, and eliminates the need for a transfer for those using the Blue or Orange lines. In addition to walking to transit stations, using Bikeshare to access the station will be an attractive option. Some of the rail trips were assumed to be generated by the VRE Station located at 7th Street SW and Maryland Avenue SW, though pedestrian volumes between the site and the VRE station might be low given the walking distance. Some streetcar and bus passenger trips were assigned to this location because a few bus routes serve this location only and not the site, some streetcar trips may be linked with trips to the commercial uses located near this stop, and some passengers traveling north may choose to walk to this stop rather than use the stop located at 7th Street SW and Maine Avenue SW.

  Volumes: On a typical day, this location is forecasted to generate 1,900 rail trips and 1,100 streetcar and bus trips. The number of streetcar and bus passengers is higher at this location than at the 4th and M Streets SW stop because a higher percentage of site transit trips are to the north than to the east or south.

  Station Condition and Quality: Station and stop conditions are generally good at the three Metrorail station portals located at 7th and D Streets SW; 9th and D Streets SW; Maryland Avenue and 7th Streets SW; the VRE station entrance located 7th Street SW and Maryland Avenue SW; and bus stops located on 7th Street SW between I Street SW and D Street SW and along D Street between 9th Street SW And 6th Street SW. Walking conditions in this area and at station portals and bus stops are generally good; there are wide sidewalks; signalized controlled crossings; and pedestrian and stop amenities like shelters, benches, and trees that provide shade during warm summer weather.

  Recommendations: No changes or improvements are recommended for the station or stops because the anticipated additional demand can be accommodated at these Metrorail, bus, and streetcar locations. However, the District may consider Metrorail line, bus route, Metrorail station, and bus stop upgrades to ensure the attractiveness/continued desirability of these public transportation options.

- *Maine Avenue and 7th Street Bus and Streetcar Stops:*

  Assignment: 80% of the streetcar and 80% of the bus passengers. The vast majority of streetcar and bus passengers are forecasted to use the stop located at 7th Street SW and Maine Avenue SW. This stop has the

shortest walking distance from the site (within ideal walking distance of a ¼ mile or less) and provides connectivity to the north and east.

Volumes: On a typical day, this location is forecasted to generate 6900 streetcar and bus trips.

Station Condition and Quality: There is currently one bus stop located at this intersection on the north side of Maine Avenue SW south of its intersection with 7th Street SW. The stop is identified with a WMATA Metrobus sign; there are no other passenger amenities.

Recommendations: It is anticipated that transit stop conditions will be significantly improved with redevelopment of the site, realignment of Maine Avenue SW, and with the installation of the streetcar. The forecasted streetcar volumes should be taken into account when design streetcar stops and locations adjacent to the PUD.

3.2.3 Transit Recommendations

Based on the trip generation and assignment assumptions, the transit trips associated with the SWW PUD will not have an adverse impact on the transportation network. A review of the trip generation did lead to the following general recommendations:

- As background developments and the SWW site are constructed, DDOT and WMATA should review capacity and the quality of service provided along rail and bus routes and at stations and stops to determine if changes are necessary to accommodate demand;
- DDOT should incorporate the SWW trip generation forecasts into streetcar route and stop planning; and
- The SWW transit assignments, along with pedestrian and bicycle trips, show a large amount of the SWW population using 7th Street. The District should review 7th Street as a multi-modal corridor in anticipation of future streetcar use, and look for ways to enhance pedestrian and bicycle facilities coinciding with installation of streetcar.