

Comprehensive Transportation Review

Cotton Annex Redevelopment

Washington, DC

February 8, 2021

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Executive Summary

The following report is a Comprehensive Transportation Review (CTR) on behalf of Douglas Development Corporation (the “Applicant”) to request special exception relief from the Zoning Commission for a new structure or exterior renovations to an existing structure in the D-8 zone per Subtitle I § 581.

The project proposes to redevelop the existing Cotton Annex site, including removing the surface parking lot, rehabilitating the existing building, and adding a connected new building to form a residential and retail mixed-use development.

The purpose of this CTR is to evaluate whether the Cotton Annex development will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the existing conditions, background conditions, and total future conditions.

This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements, intersection mitigation measures, and TDM measures are implemented.

This report also concludes that the project will help achieve the transportation-related objectives of the Maryland Avenue Southwest Plan, as stipulated in Subtitle I § 581 as a requirement for the special exception the project seeks.

Proposed Project

The site location is generally bounded by the terminus of C Street SW to the north, D Street SW to the south, the 12th Street Expressway to the east, and 12th Street SW to the west. The site is currently occupied by a vacant 68,779 square foot office building with approximately 120 parking spaces that serve as a public surface parking lot.

The proposed project will remove the surface parking lot, rehabilitate the existing building, and add a connected new building to form a mixed-use development including approximately 610 residential dwelling units, 1,368 square feet of retail, and 93 parking spaces.

Multimodal Overview

Trip Generation

The Cotton Annex project is expected to generate new trips on the surrounding transportation network across all modes during the morning and afternoon peak hours. However, the new trips generated by the project will not have a detrimental impact on

the transportation network due to the minor level of increased vehicular trips, as well as mitigation measures and a Transportation Demand Management (TDM) plan that will be implemented as part of the redevelopment. The multimodal trip generation for the proposed project is as follows:

The projected AM peak hour trip generation is 56 vehicles/hour, 99 transit riders/hour, 22 bicycle trips/hour, and 32 walking trips/hour. The projected PM peak hour trip generation is 67 vehicles/hour, 120 transit riders/hour, 26 bicycle trips/hour, and 38 walking trips/hour.

Transit

The site is located 0.1 miles from the Smithsonian Metro station, 0.5 miles from the L’Enfant Plaza Metro station, and is served by local and regional bus routes.

Proposed transit projects including high-capacity transit service along Maine Avenue SW will improve transit access to the site.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a well-connected pedestrian network. Despite some incidences of missing crosswalks or sidewalks that do not meet width standards, there is generally an excellent, well-connected pedestrian network surrounding the site.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site has access to several on- and off-street bicycle facilities.

Several planned and proposed bicycle projects will improve bicycle access to the site, including a planned cycle track along 15th Street/Raoul Wallenberg Place SW.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

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

Vehicular

The site is accessible via local streets from principal arterials such as Independence Avenue SW and 14th Street SW. These roadways connect the site to expressways within the District such as the 12th Street Expressway, the 9th Street Expressway, the Anacostia Freeway (DC-295), the Southwest Freeway (I-395), and the Southeast Freeway (I-695). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To determine the project's impact on the transportation network, future conditions were analyzed with and without the development based on the number of trips the site is expected to generate. Intersection analyses were performed to obtain the average delay and queue a vehicle will experience. These average delays and queues were compared to the acceptable levels of delay set by DDOT standards as well as existing and background queues to determine if the project will negatively impact the study area.

The analysis concluded that two (2) intersections require mitigation because of the minor impacts to delay and queues created by the project in the Total Future conditions.

In addition to Total Future conditions, this report analyzed an additional scenario requested by the Advisory Neighborhood Commission (ANC) which included curbside management modifications that would change the lane configuration of 12th Street SW adjacent to the project site. In this scenario, the same two (2) intersections required mitigation because of the minor impacts to delay and queues created by the project.

Mitigation measures expected to reduce impacts to delay caused by the project are recommended as follows:

Project Impact and Recommendations

Future Conditions

13th Street & C Street SW

Because the increase in delay at this intersection is minor and does not exceed five (5) seconds, and because the site-generated trips make up a very small proportion of overall trips at this intersection, this report recommends mitigations in the form of additional Transportation Demand Management (TDM) measures to address impact at this intersection and reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

12th Street & C Street SW

Signal timing and phasing adjustments will be coordinated with DDOT in the afternoon peak hour to ensure the most efficient future operation, following construction of the Cotton Annex project.

Recommendations for Additional Analysis Scenario Considered

Future Conditions with Curbside Management Modifications

13th Street & C Street SW

The delay impact at this intersection is the identical to that of the Future Conditions due to the increase in traffic volumes generated by the project. Therefore, the recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

12th Street & C Street SW

The delay impact at this intersection is similar, to that of the Future Conditions due to the increase in traffic volumes generated by the project, as well as the reduction of three (3) to two (2) northbound travel lanes in this scenario. The recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

Queuing issues in the afternoon peak hour at this intersection cannot be mitigated with signal timing adjustments due to the reduced capacity resulting from the reduction from three (3) to two (2) northbound travel lanes in this scenario. Therefore, this report recommends mitigations in the form of additional Transportation Demand Management (TDM) measures to reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

Safety

A qualitative review of study area intersections was performed to identify areas of concern due to vehicular, pedestrian, and bicycle interactions.

The analysis concluded that one (1) of the study intersections had comparatively high crash rates based on DDOT's most recent *Traffic Safety Statistics Report (2015-2017)* and was therefore identified for further evaluation to enhance the multimodal network surrounding the site. This evaluation produced the following recommendations, which are for DDOT's

consideration and not for the Applicant to complete as part of the proposed project:

12th Street and Independence Avenue SW

Implement the *MoveDC*-recommended cycle track along Independence Avenue SW, introduce a Leading Pedestrian Interval (LPI) to the east-west phases, and add a crosswalk to the eastern leg of the intersection.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in their CTR guidelines, and this project has proposed a TDM plan based on these guidelines, which is set forth in Project Design chapter of this report.

Summary and Recommendations

This report concludes that the project will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements, mitigation measures, and TDM measures are implemented.

The Cotton Annex development has several positive design elements that minimize potential transportation impacts, including:

- The site's proximity to transit and existing bicycle infrastructure;
- The site's location within in a well-connected pedestrian network;
- The site's loading facilities, which maintain loading activity within private property and provide loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;
- The inclusion of short-term bicycle parking spaces along the frontage of the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.

Introduction

This report is a CTR reviewing the transportation aspects of the Cotton Annex development. The site, shown in Figure 1 and Figure 2, is located at Square 326 and Lots 806 in Southwest Washington, DC. The site is currently zoned D-8.

The proposed project will remove the surface parking lot, rehabilitate the existing building, and add a connected new building to form a mixed-use development.

As such, per Subtitle I § 581, special exception relief from the Zoning Commission is required for a new structure or exterior renovations to an existing structure in the D-8 zone. This application is in support of the Applicant's request for a special exception.

Purpose of Study

The purpose of this report is to:

- Review the transportation elements of the proposed project and demonstrate that it conforms to DDOT's general policies of promoting non-automobile modes of travel and sustainability;
- Provide information to DDOT and other agencies on how the proposed project will impact the local transportation network, accomplishing this by identifying the potential trips generated by the proposed project on all major modes of travel and where these trips will be distributed on the network;
- Determine whether the proposed project will lead to adverse impacts on the local transportation network;
- Propose design elements and TDM measures that will mitigate any potential adverse impacts to the transportation network, and minimize adverse effects; and
- Demonstrate that the project will help achieve the transportation-related objectives of the Maryland Avenue Southwest Plan, as stipulated in Subtitle I § 581 as a requirement for the special exception the project seeks.

Project Summary

The site location is generally bounded by the terminus of C Street SW to the north, D Street SW to the south, the 12th Street Expressway to the east, and 12th Street SW to the west. The site

is currently occupied by a vacant 68,779 square foot office building with approximately 120 parking spaces that serve as a public surface parking lot.

The proposed project will remove the surface parking lot, rehabilitate the existing building, and add a connected new building to form a mixed-use development including approximately 610 residential dwelling units, 1,368 square feet of retail, and 93 parking spaces.

Pedestrian access to the residential portion of the development is proposed to be located at an entrance on the northwest corner of site near the intersection of 12th Street and C Street SW, with a secondary residential entrance at the loading access location off of 12th Street SW. Pedestrian access to the retail portion of the development is proposed to be located at an entrance on the southwest corner of site near the intersection of 12th Street and D Street SW.

Bicycle access will be provided from C Street SW. The site is located approximately 0.2 miles south of the bicycle trails along Jefferson Drive SW on the National Mall, and 0.3 miles north of the cycle track on Maine Avenue SW. The project will meet zoning requirements by providing 127 long-term bicycle parking spaces on the Lower Level (parking garage level) and 31 short-term bicycle parking spaces on exterior racks around the perimeter of the site. The nearest Capital Bikeshare station is located across the street from the site at 12th Street and C Street SW.

Vehicular access to the proposed garage will be via a driveway on the northeast corner of the site, accessed from the terminus of C Street SW, which is a private right-of-way and not controlled by the Applicant. The entrance to this driveway will be in the same approximate location as an existing vehicular entrance to a public parking lot on the site. A curbside pick-up/drop-off area is also proposed for the building's entire frontage on C Street SW.

Loading and deliveries will occur in an internal loading area accessed from the same driveway that serves the parking garage, located on the terminus of C Street SW. The project's loading facilities will consist of one (1) 30-foot loading berth and one (1) 20-foot service delivery space. The proposed loading facilities will accommodate the loading needs of the Cotton Annex development, maintain loading activity within private property, and provide loading circulation that ensures head-

in/head-out truck movements are performed from the public roadway network.

There is one (1) curb cut on the site under existing conditions, located on 12th Street SW approximately 70' north of D Street SW. This curb cut will be removed as part of the project.

Contents of Study

This report contains nine (9) chapters as follows:

- Study Area Overview
This chapter reviews the area surrounding the proposed project and includes an overview of the site.
- Project Design
This chapter reviews the transportation components of the proposed project, including the site plan and access. This chapter also contains the proposed Transportation Demand Management (TDM) plan for the Project.
- Travel Demand Assumptions
This chapter outlines the travel demand of the proposed project. It summarizes the projected trip generation of the project.
- Traffic Operations
This chapter provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project, including presenting mitigation measures for minimizing impacts as needed.
- Transit
This chapter summarizes the existing and future transit service adjacent to the site and reviews how the project's transit demand will be accommodated.
- Pedestrian Facilities
This chapter summarizes existing pedestrian access to the site, reviews walking routes to and from the proposed project, and reviews how the project's pedestrian demand will be accommodated.
- Bicycle Facilities
This chapter summarizes existing and future bicycle access to the site, reviews the quality of cycling routes to and from the proposed project, and reviews how the project's bicycle demand will be accommodated.
- Safety Analysis
This chapter summarizes the potential safety impacts of the project. This includes a qualitative review of existing and proposed safety features surrounding the site.
- Summary and Conclusions
This chapter presents a summary of the recommended

mitigation measures by mode and presents overall findings and conclusions.



Figure 1: Site Location



Figure 2: Site Aerial

Study Area Overview

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

This chapter concludes:

- The site is surrounded by an extensive regional and local transportation system that connects residents, retail employees, and patrons to the rest of the District and surrounding areas;
- The site is well-served by bus and rail transit providing service to local and regional destinations;
- The site is accessible to several shared mobility options, including car-sharing, Capital Bikeshare, and personal mobility devices;
- There are several on-street bicycle facilities near the site, with several nearby bicycle improvements planned or proposed;
- The existing pedestrian infrastructure surrounding the site provides a mostly adequate walking environment, particularly along anticipated major walking routes;
- There are several nearby District-wide and local planning initiatives whose goals are supported by the proposed project; and
- The proposed project supports the transportation-related items in Subtitle I § 581.2, which requires proposed projects to facilitate greater pedestrian and vehicular connectivity and minimize conflicts between vehicles and pedestrians.

Major Transportation Features

Overview of Regional Access

As shown in Figure 4, the site has ample access to regional vehicular and transit-based transportation options that connect the site to destinations within the District, Virginia, and Maryland.

The site is accessible via local streets from principal arterials such as Independence Avenue SW and 14th Street SW. These roadways connect the site to expressways within the District such as the 12th Street Expressway, the 9th Street Expressway, the Anacostia Freeway (DC-295), the Southwest Freeway (I-395), and the Southeast Freeway (I-695). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

The site is located 0.1 miles from the Smithsonian Metro station, which is served by the Blue, Orange, and Silver Lines, and 0.5 miles from the L'Enfant Plaza Metro station, which is served by the Blue, Orange, Silver, Green, and Yellow Lines. The Blue Line travels between the Franconia-Springfield and Largo Town Center stations. The Orange Line travels between the Vienna and New Carrollton stations. The Silver Line travels between the Wiehle-Reston East and Largo Town Center stations. The Green Line travels between the Greenbelt and Branch Avenue stations. The Yellow Line travels between the Greenbelt and Huntington stations.

The site is also located 0.5 miles from the L'Enfant station of the Virginia Railway Express (VRE) system, which provides commuter rail service from the Northern Virginia suburbs to downtown Washington, DC along the I-66 and I-95 corridors.

Overall, the site has ample access to regional roadways and transit options, allowing convenient travel between the site and regional destinations.

Overview of Local Access

There are a variety of major local transportation facilities near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 5.

For vehicular trips, the site is directly served by 12th Street SW and C Street SW, which connect to the principal arterials of Independence Avenue SW and 14th Street SW.

For transit trips, the Metrobus, DC Circulator, and Southwest Neighborhood Shuttle services provide extensive bus transit service in the vicinity of the site, including connections to several neighborhoods within the District and additional Metro stations. As shown in Figure 5, there are several major bus routes serving the site. Multiple bus stops serving these routes are located within a half-mile of the site. These bus routes connect the site to many areas of downtown DC, including several Metro stations where transfers can be made to reach areas in the District, Virginia, and Maryland. A detailed review of all bus routes and transit stops within a quarter-mile walk of the site is provided in a later chapter of this report.

For bicycle trips, the site is located in an area with several major bicycle facilities. Existing major facilities consist of off-street bicycle trails on Jefferson Drive and the National Mall, located 0.2 miles north of the site, as well as a cycle track on Maine

Avenue, located 0.3 miles south of the site. Using these facilities, bicyclists have access to several other regional bicycle facilities. To accommodate bicyclists, the project will provide on-site bicycle facilities as discussed in detail in the Project Design chapter. A detailed review of existing and proposed bicycle facilities and connectivity is provided in the Bicycle Facilities chapter of this report.

Anticipated pedestrian routes such as those to transit stops, schools, and community amenities, provide adequate pedestrian facilities; however, there are a few sidewalks nearby that do not meet DDOT width standards, as well as several curb ramps which do not meet ADA standards. Nearly all primary pedestrian destinations are accessible via routes with a sidewalk meeting DDOT standards on at least one side of the street. There are a few barriers to pedestrian connectivity within the study area. A detailed review of existing and future pedestrian access and infrastructure is provided in the Pedestrian Facilities chapter of this report.

Carsharing

Two (2) carsharing companies provide service in the District: Zipcar and Free2Move. Both services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar has designated spaces for their vehicles. Currently, there are no Zipcar locations within a quarter-mile of the site. The nearest Zipcar location is near the intersection of Maine Avenue and Sutton Square SW, 0.5 miles south of the site, containing two (2) spaces.

Carsharing is also provided by Free2Move, which provides point-to-point carsharing. Free2Move currently has a fleet located within areas of the District and Arlington County. Free2Move vehicles may park in any non-restricted metered curbside parking space or Residential Parking Permit (RPP) location in any zone throughout the defined “Home Area”. Members do not have to pay the meters or pay stations. Free2Move does not have permanent designated spaces for their vehicles; however, availability is tracked through their website and mobile phone application, which provides an additional option for car-sharing patrons.

Bikeshare and Shared Mobility

The Capital Bikeshare program provides additional cycle options for residents, employees, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet.

In addition to Capital Bikeshare, eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies provide Personal Mobility Device (PMD) service in the District: Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and JUMP. These PMDs are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where you’ll find other street signs, street furniture, trees, parking meters, etc.). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Walk Score and Bike Score

Walkscore.com is a website that provides scores and rankings for walking, biking, and transit conditions within neighborhoods of the District. Based on this website, the site has a walk score of 61 (or “Somewhat Walkable”), a transit score of 83 (or “Excellent Transit”), and a bike score of 66 (or “Bikeable”). Figure 3 shows the site’s location within a heat map for walkability and bikeability. The following conclusions can be made based on the data obtained from Walkscore.com:

- The site is situated in a somewhat walkable location where some errands can be accomplished on foot;
- The site is situated in an area with excellent transit due to its proximity to a high number of bus routes and Metrorail; and
- The site is situated in a bikeable area due to its proximity to bike facilities and flat topography.

Overall, the site and surrounding neighborhood have pedestrian, transit, and bike accessibility. The Cotton Annex development will directly improve the neighborhood’s pedestrian and bike accessibility by improving sidewalks on the project site, including ground floor retail in the development program, and providing new short- and long-term bicycle parking facilities. The Cotton Annex project will support the transportation-related items in Subtitle I § 581.2 by ensuring the site contains a safe and inviting pedestrian realm, including sidewalks and curb ramps that meet DDOT and ADA standards, as well as ground-floor retail and landscaped areas that activate the site’s frontage.

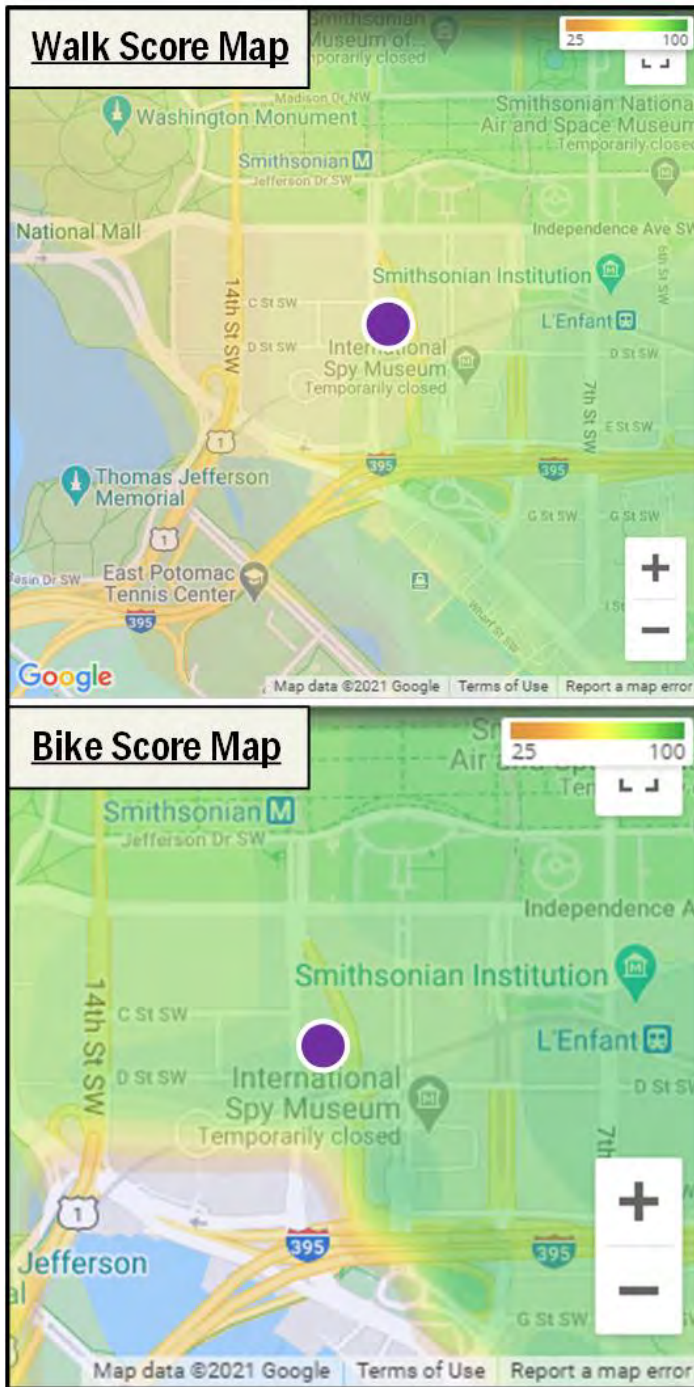


Figure 3: Summary of Site Walk Score and Bike Score

Future Projects

There are several District initiatives located in the vicinity of the site. These planned and proposed projects are summarized below.

Planning Documents

The following is a review of District-wide or neighborhood-level planning documents which relate to the proposed project.

DDOT Bikeways Expansion

The DDOT bikeways expansion is a plan to build 20 miles of new protected bikeways (also called cycle tracks) by 2022.

In the direct vicinity of the proposed development, DDOT plans to build protected bikeways along the following streets:

- The alignment of 15th Street NW/SW, Raoul Wallenberg Place SW, Ohio Drive SW, and East Basin Drive SW between Pennsylvania Avenue NW and the Jefferson Memorial.

MoveDC

MoveDC is a long-range transportation plan that provides a vision for the future of DC’s transportation system. As the District grows, so must the transportation system, specifically in a way that expands transportation choices while improving the reliability of all transportation modes. The *MoveDC* plan was released in 2014 and is currently undergoing an update. The updated plan is scheduled to be completed in summer 2021.

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

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

In the direct vicinity of the proposed development, the *MoveDC* plan recommends the following:

- High-capacity transit service along Maine Avenue SW;
- An off-street bike-pedestrian trail across the new Long Bridge;
- A cycle track along Independence Avenue SW between 15th Street SW and South Capitol Street; and
- Bicycle lanes along a new alignment of Maryland Avenue SW between 12th Street SW and 9th Street SW.

Maryland Avenue Southwest Plan

The Maryland Avenue Southwest Plan is a DC Office of Planning initiative which studies the feasibility of reconstructing Maryland Avenue SW between 6th Street and 12th Street SW to repair a missing link in the L'Enfant street grid. The plan explores redevelopment opportunities, open space improvements, zoning tools, and next steps to create a vibrant, mixed-use corridor.

The Special Exception this CTR seeks, as outlined in Subtitle I § 581, stipulates a proposed project must help achieve the objectives of the Maryland Avenue Southwest Plan. The key transportation-related objectives of this plan include:

- Greater connectivity for pedestrians and vehicles based on historic street rights-of-way, particularly along Maryland Avenue SW between 6th and 12th Streets SW, C Street SW between 7th and 12th Street SW, and 12th Street SW, 11th Street SW, and the L'Enfant Promenade/10th Street SW between Independence Avenue SW and D Street SW; and.
- Minimization of conflicts between vehicles and pedestrians.

The Cotton Annex project helps achieve both of these objectives. By maintaining and/or improving pedestrian facilities along the site's C Street SW and 12th Street SW frontages, the project will enhance pedestrian connectivity along these two corridors identified in the Maryland Avenue Southwest Plan. If an alignment of C Street SW between 7th and 12th Streets SW is eventually constructed, the project's C Street SW pedestrian accommodations will already be in place to facilitate pedestrian access along this alignment.

The project also helps minimize conflicts between vehicles and pedestrians by eliminating the existing curb cut on 12th Street SW approximately 70' north of D Street SW, and by consolidating parking access and loading/deliveries into one (1) driveway accessed from the eastern terminus of C Street SW, beyond which there is already no pedestrian access.

DC Comprehensive Plan

The *DC Comprehensive Plan* is a high-level guiding document that sets a positive, long-term vision for the District through the lens of its physical growth and change. The existing Comprehensive Plan was enacted in 2006, updated in 2011, and as of December 2020 is currently being updated.

The April 2020 proposed amendments to the *Comprehensive Plan's* Central Washington Area Element, which includes the proposed project, contains the following policies and actions which are supported by the proposed project:

- "Policy CW-1.1.1: Promoting Mixed-Use Development. Expand the mix of land uses in Central Washington to attract a broader variety of activities and sustain the area as the hub of the metropolitan area. Central Washington should be strengthened as a dynamic employment center, a high-quality regional retail center, an internationally renowned cultural center, a world-class visitor and convention destination, a vibrant urban neighborhood, and the focus of the regional transportation network. New office and retail space, hotels, arts and entertainment uses, housing, and open space should be encouraged through strategic incentives and preservation so that the area remains attractive, exciting, and economically productive."
 - The proposed project supports this policy by adding residential and ground floor retail uses to an area with predominately office uses currently.
- "Policy CW-1.1.4: New Housing Development in Central Washington. Continue to encourage the development of new high-density housing in Central Washington, particularly in NoMa and east of Mount Vernon Square, including Mount Vernon Triangle, Northwest One, and the L'Enfant Plaza/Near Southwest areas. Ground floor retail space and similar uses should be strongly encouraged within these areas to create street life and provide neighborhood services for residents. A strong downtown residential community can create pedestrian traffic, meet local -housing needs, support local businesses in the evenings and on weekends, and increase neighborhood safety and security."
 - The proposed project supports this policy by adding residential units with ground floor retail to the downtown area.
- "Policy CW-1.1.1312: Creating Active Street Life and Public Spaces. Promote active street life throughout Central Washington through the design of buildings, streets, and public spaces. This should include discouraging second-level pedestrian bridges, underground walkways, and underground or privatized

cafeterias that drain activity from Central Washington streets; encouraging multiple entrances in large projects to increase street-level activity; managing certain streets so they can be easily closed to traffic on special occasions for pedestrians; providing streetscape improvements that make downtown streets more comfortable and attractive; encouraging active ground floor uses, and discouraging wide building entrances, large internal lobbies, and street-facing garage entrances and loading areas; creating and managing well-designed public spaces that provide space for spontaneous performances, programmed entertainment, social interaction, and activities like farmers markets; supporting collaboration with NPS to accommodate national and local needs at federally-owned parks in the heart of the central business district, such as Pershing and John Marshall Parks, Freedom Plaza, and Franklin, McPherson, Lafayette and Farragut Squares, while emphasizing the need for federal agencies to maintain their open spaces, parks, and monuments in a timely and proper manner; and making Pennsylvania Avenue NW a destination showcasing Washington, DC's economic, cultural, and civic strength on local and national levels."

- The proposed project supports this policy by transforming the current Cotton Annex site, much of which is occupied by a surface parking lot, into a development that engages the street with generous sidewalks and streetscape elements, as well as minimizing curb cuts to foster a more seamless pedestrian network.
- "Policy CW-1.1.1716: Making Central Washington's Streets More Pedestrian Friendly. Enhance Central Washington's pedestrian network and improve pedestrian safety. This should be achieved through such measures as improving certain streets for pedestrian use; providing safe and accessible pedestrian waiting space on the widest thoroughfares; maintaining sufficiently wide sidewalks and regulating sidewalk obstructions; restricting curb cuts and parking garage access along major streets; providing safe and accessible pedestrian detours at construction sites; encouraging sidewalk widening within private

development; and enforcing traffic and parking laws, such as no parking zones."

- The proposed project supports this policy by providing sufficiently wide sidewalks and minimizing curb cuts.
- "Policy CW-1.1.1918: Goods Movement and Service Delivery within Central Washington. Strongly discourage the obstruction of public rights-of-way by goods and service delivery activities, including delivery robots. Provide for the efficient and convenient movement of goods and delivery of services within Central Washington by maintaining and improving interior alleys, where needed, to provide for off-street loading facilities and minimize curb cuts on streets; encouraging the consolidation of loading areas within new development and limiting on-street service deliveries; encouraging adequate off-street or below-grade loading and service parking areas; converting on-street loading facilities to off-street facilities whenever possible; and managing goods and service delivery times."
 - The proposed project supports this policy by providing an off-street loading facility within the development that will limit on-street service deliveries. The proposed curb cut for the parking garage is located at the terminus of C Street where there will be no pedestrian activity.
- "Policy CW-2.7.5: Create a Vibrant, Mixed-Use Neighborhood in the Southwest Rectangle. Establish a mix of uses that will ultimately include at least 1,000 new residential units as federal properties are redeveloped in the future. Support a mix of residential, commercial, and cultural development throughout the area to achieve a more balanced mix of uses to complement the office presence. Encourage ground floor retail uses, with a goal of up to 100,000 square feet of retail at full build-out to encourage lively street-level activity."
 - The proposed project supports this policy by adding residential and ground floor retail uses to an area with predominately office uses currently.

- “Policy CW-2.7.11:Redevelopment of Maryland Avenue SW and Surrounding Lands. Encourage residential uses and neighborhood livability standards for the creation of a new mixed-use neighborhood as part of any redevelopment of the Maryland Avenue SW area. Provide for the reconstruction of Maryland Avenue SW, including cultural use and public space, as appropriate.
 - The proposed project supports this policy by adding residential and ground floor retail uses to the area surrounding Maryland Avenue SW.
- “BE2.3. Locate affordable, high-density housing close to commercial zones and high capacity transit.”
 - The proposed development supports this action by being located near the Smithsonian and L'Enfant Plaza Metro stations, as well as commercial areas such as the Southwest Employment Area and The Wharf.

Vision Zero Action Plan

DDOT's *Vision Zero Action Plan* is the implementation strategy of DC's Vision Zero Initiative, which commits to reaching zero fatalities and serious injuries to travelers of DC's transportation system by the year 2024. The *Action Plan* is based on DC interagency workgroups, public input, local transportation data and crash statistics, and national and international best practices. Workgroups identified the guiding themes for the *Vision Zero Action Plan* and the goals of the DC government.

The *Action Plan* focuses on the following themes:

- Create Safe Streets
- Protect Vulnerable Users
- Prevent Dangerous Driving
- Be Transparent and Responsive

Strategies within each theme assign lead and supporting agencies responsible for the planning and implementation of each program. The plan also calls for partners external to District government to ensure accountability and aid in implementation.

While the *Vision Zero Action Plan* does not propose any location-specific actions that relate to the proposed project, the proposed project supports DC's overall Vision Zero goals by providing quality pedestrian facilities and not proposing any new curb cuts on site.

Sustainable DC 2.0 Plan

Sustainable DC is the District of Columbia's major planning effort to make DC the most sustainable city in the nation. It proposes a variety of sustainability goals, targets, and actions related to the built environment, transportation, and other topics.

The 2019 iteration of the plan, the *Sustainable DC 2.0 Plan*, includes the following proposed action which is supported by the proposed project:

Capital Bikeshare Development Plan

DDOT's Capital Bikeshare Development Plan was originally released in 2016 to guide the continued growth of Capital Bikeshare in the District of Columbia. The most recent update of the Development Plan was released in 2020 and proposes several new Capital Bikeshare stations in the vicinity of the project, including at the following intersections:

- 14th Street and Jefferson Drive SW (0.4 miles northwest of the project site);
- 7th Street and C Street SW (0.5 miles east of the project site); and
- East Basin Drive and Maine Avenue SW (0.9 miles southwest of the project site).

SW Ecodistrict Plan

The SW Ecodistrict Plan is a framework produced by the National Capital Planning Commission (NCPCC) to transform the 10th Street and Maryland Avenue SW corridors into livable, sustainable, mixed-use communities.

In direct relation to the proposed project, the SW Ecodistrict Plan proposes:

- Restoring the street grid to improve multimodal connectivity, including extending C Street eastward from its current terminus just east of 12th Street to connect with 10th Street; and
- Redeveloping the area bounded by C Street SW, the Southwest Freeway, 14th Street SW, and 4th Street SW into mixed-use development.

The proposed project supports these proposals by providing sufficiently wide sidewalks and minimizing curb cuts, enhancing pedestrian connectivity, as well as bringing residential and retail uses to the area the Ecodistrict Plan proposes for mixed-use development.

Planned Developments

There is one (1) planned development project in the vicinity of the site. For this analysis and consistent with DDOT and industry standards, only approved developments expected to be completed prior to the planned development with an origin/destination within the study should be included. This project was included given its proximity to the Cotton Annex site, as well as its site-generated volumes which impact the study area intersections. The development is described below.

12th Street Development

This planned development, located at 280 12th Street SW, proposes a 12-story hotel with 131 rooms. The expected opening year of this development has not yet been announced, but this report assumes it will open before the Cotton Annex project.

Figure 6 shows the location of this development.

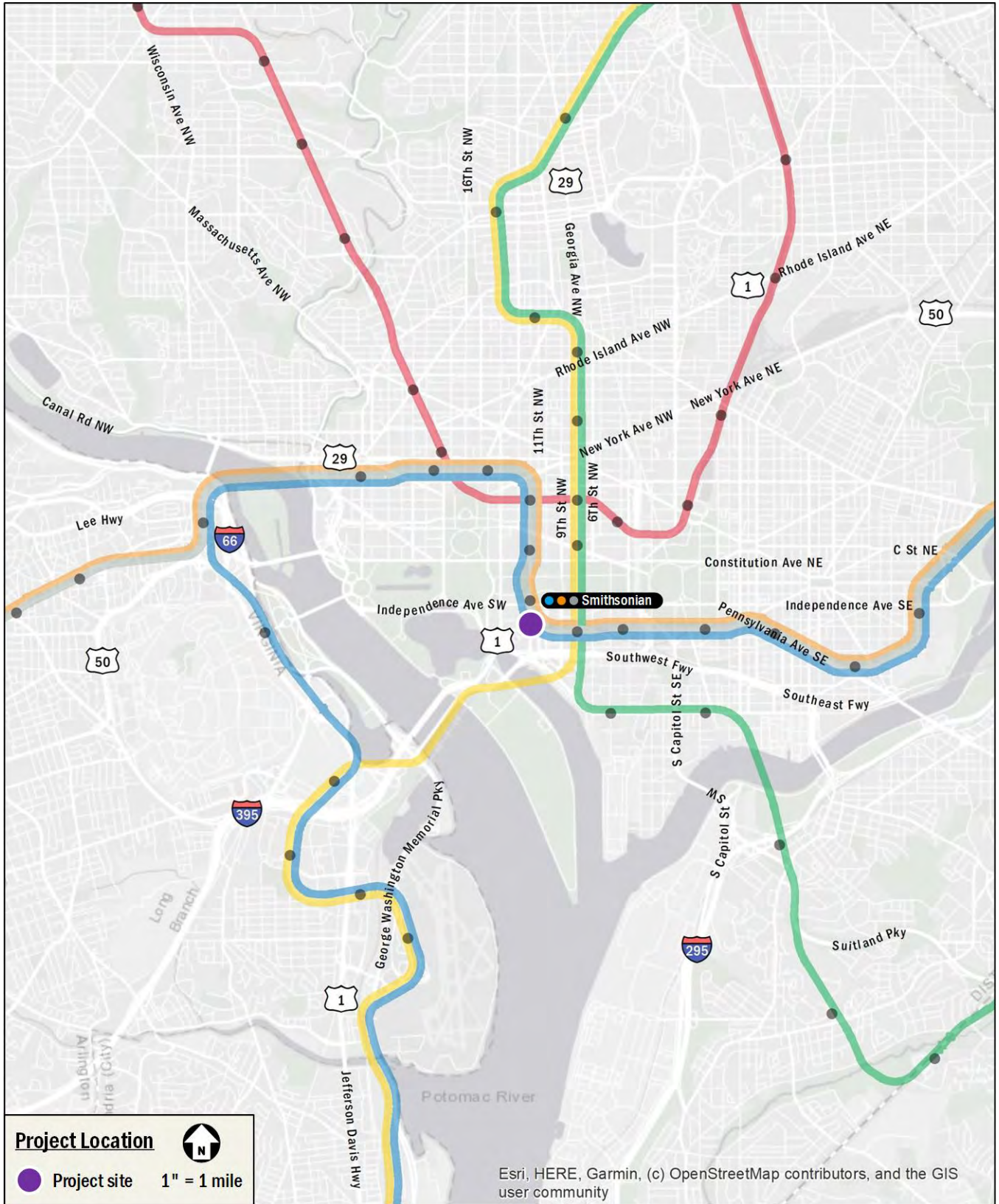


Figure 4: Major Regional Transportation Facilities

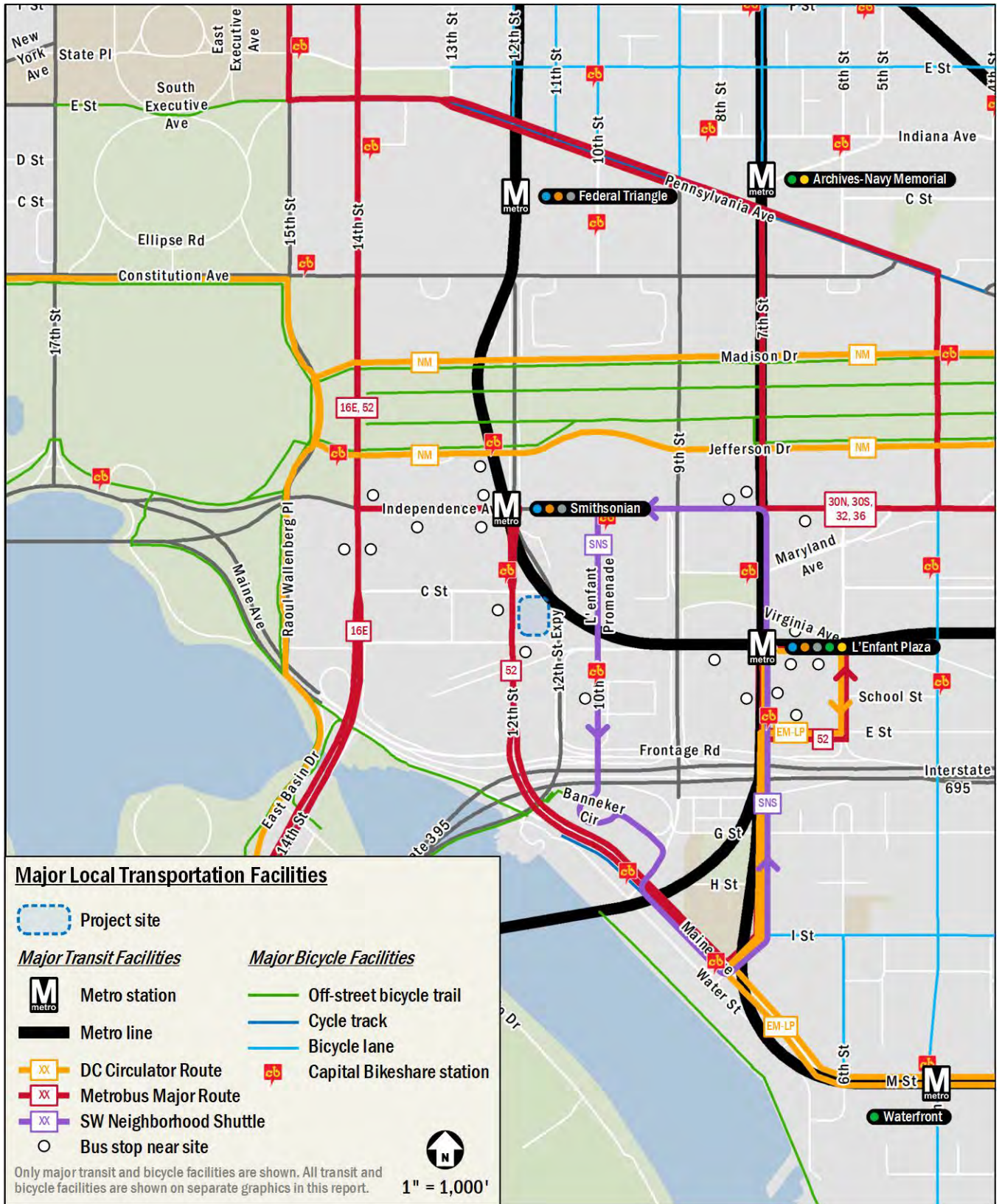


Figure 5: Major Local Transportation Facilities

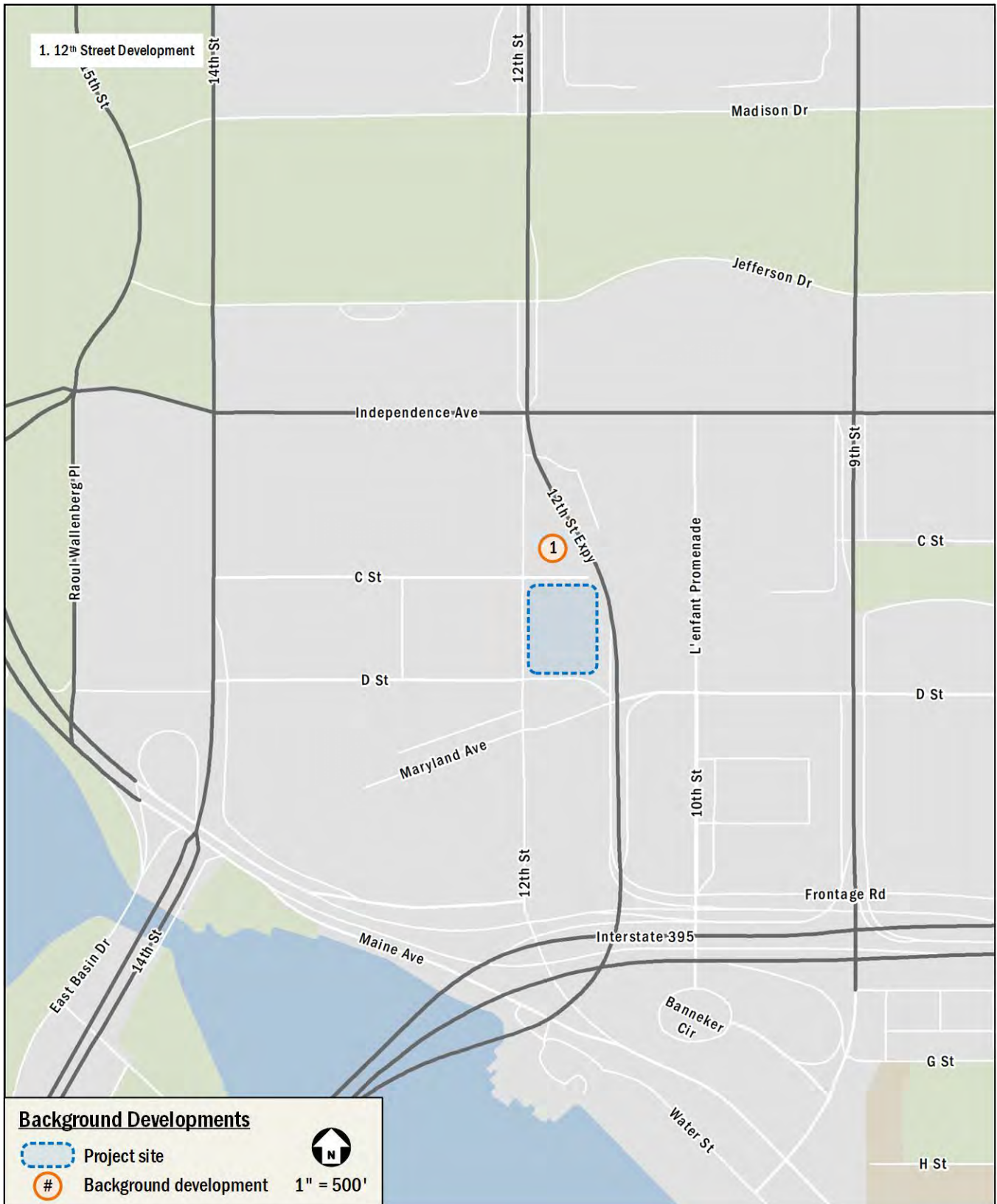


Figure 6: Background Developments

Project Design

This chapter reviews the transportation components of the Cotton Annex development, including the proposed site plan and access points. It includes descriptions of the project's vehicular access, loading facilities, parking, bicycle, and pedestrian facilities, and the proposed Transportation Demand Management (TDM) plan.

The site location is bounded by the terminus of C Street SW to the north, D Street SW to the south, the 12th Street Expressway to the east, and 12th Street SW to the west. The site is currently occupied by a vacant 68,779 square foot office building with approximately 120 parking spaces that serve as a public surface parking lot. The proposed project will remove the surface parking lot, rehabilitate the existing building, and add a connected new building to form a mixed-use development including approximately 610 residential dwelling units, 1,368 square feet of retail, and 93 parking spaces.

Figure 7 shows the site plan and overview of the development program.

Site Access and Circulation

Pedestrian Access

Pedestrian access to the residential portion of the development is proposed to be located at an entrance on the northwest corner of site near the intersection of 12th Street and C Street SW, as well as a secondary residential entrance at the loading access location off of 12th Street SW. Pedestrian access to the retail portion of the development is proposed to be located at an entrance on the southwest corner of site near the intersection of 12th Street and D Street SW.

Pedestrian access to the site is shown on Figure 7.

Bicycle Access

Bicycle access will be provided from C Street SW. The site is located approximately 0.2 miles south of the bicycle trails along Jefferson Drive SW on the National Mall. 127 long-term bicycle parking spaces will be located in a secure bicycle parking room on the Lower Level (parking garage level). 31 short-term bicycle parking spaces will be located on exterior racks along 12th Street SW. The locations of these facilities are shown on Figure 7.

Vehicular and Loading Access

Vehicular access to the proposed garage will be via a driveway on the northeast corner of the site, accessed from the terminus

of C Street SW. The entrance to this driveway will be in the same approximate location as an existing vehicular entrance to a public parking lot on the site. A curbside pick-up/drop-off area is also proposed for the building's entire frontage on C Street SW.

A vehicle turn-around area is also proposed at the terminus of C Street SW at the location of the Cotton Annex driveway entrance. This area is intended to serve the pick-up/drop-off area proposed on the northern curb of C Street SW as part of the 12th Street Development directly north of the Cotton Annex project. This turn-around area is noted on Figure 7.

Loading and deliveries will occur in an internal loading area accessed from the same driveway that serves the parking garage, located on the terminus of C Street SW.

There is one (1) curb cut on the site under existing conditions, located on 12th Street SW approximately 70' north of D Street SW. This curb cut will be removed as part of the project.

Figure 7 shows the location of the site access points for parking garage access and loading facilities.

Loading and Trash

Loading

The proposed loading facilities will accommodate all loading activity and delivery demand for the residential and retail uses of the proposed project without any detrimental impact to the surrounding transportation network. DDOT standards stipulate that truck movements for a development be accommodated without back-in movements through public space. The Cotton Annex development has been designed to accommodate all loading activity and associated backing maneuvers within the site. Truck turning diagrams using AutoTURN are provided in the Technical Attachments.

The proposed project will provide one (1) 30' x 12' loading berth and one (1) 20' x 10' service/delivery space. Per 2016 Zoning Regulations, the Cotton Annex development is required to provide one (1) 30-foot loading berth and one (1) 20-foot service/delivery space for the residential portion of the development. Based on the proposed retail square footage, no loading facilities are required for the retail portion of the development. The proposed loading facilities satisfy the zoning requirements.

The site is expected to generate up to six (6) loading trips per day. Table 1 summarizes the site’s anticipated loading activity based on similar projects analyzed by Gorove Slade and truck trip generation methodology outlined in the newly released supplement to the Institute of Transportation Engineers’ (ITE) *Trip Generation*, 10th Edition.

Table 1: Site Daily Loading Activity

Land use/truck generator	Loading trips
Retail	1
Residential	2
General	3
Total	5

The daily loading trip generation and assumptions for each use include the following:

- Retail: one (1) delivery per ITE Trip Generation 10th Edition supplement, based on 1,368 square foot size;
- Residential: two (2) residential loading trips, calculated based on an average unit turnover of 18 months; and
- General: three (3) general deliveries consisting of trash removal, mail, and parcel delivery shared among the entire site.

Trash

Trash for the Cotton Annex development will be accommodated using trash receptacles within the loading areas. No trash will be stored in public space.

Truck routing to and from the site will be focused on designated primary truck routes, such as Independence Avenue SW, Maine Avenue SW, and 12th Street SW. Loading access and circulation is shown on Figure 7.

Based on the expected truck deliveries, the loading facilities for the Cotton Annex development are adequate and vehicles accessing the loading facilities will not adversely affect the local roadway network.

Parking

The site is located within a downtown zone, zoned D-8, and as such is exempt from the ZR16 parking requirements. However, to meet the parking needs of the proposed project, 93 parking spaces are proposed. These vehicular parking spaces will be provided in a below-grade parking garage.

Bicycle Facilities

The Cotton Annex development will meet 2016 Zoning Regulations requirements for long-term and short-term bicycle parking. Per the Zoning Regulations, the development is required to provide the following bicycle facilities:

- Long-Term Bicycle Parking Spaces (127 required)
 - Residential: One (1) space for every three (3) residential units applied at 50% after the first 50 spaces; 127 spaces are required.
 - Retail: One (1) space for every 10,000 square feet; no spaces are required.
- Short-Term Bicycle Parking Spaces (31 required)
 - Residential: One (1) space for every 20 residential units; 31 spaces are required.
 - Retail: One (1) spaces for every 3,500 square feet; no spaces are required.

The Cotton Annex development will meet requirements by providing 127 long-term bicycle parking spaces on the Lower Level (parking garage level) and 31 short-term bicycle parking spaces on exterior racks around the perimeter of the site. The long-term bicycle spaces will adhere to DDOT’s Bike Parking Guide, which stipulates that long-term spaces be located indoors in a parking garage or bike storage room, and that at least 50% of required long-term spaces be placed horizontally on the floor or ground, without bicycles being suspended.

Pedestrian Facilities

The Cotton Annex development will provide improved pedestrian facilities around the perimeter of the site that meet DDOT and ADA standards. Sidewalks will be maintained and/or installed as needed along the 12th Street SW and C Street SW frontages of the site that meet or exceed width requirements, as well as curb ramps with detectable warnings and crosswalks at the new site entrances as needed.

Transportation Demand Management

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

The TDM plan for the proposed project is based on DDOT expectations for TDM programs for developments of this type

and size. As such, the applicant proposes the following TDM measures for the entire development and each of its individual uses:

Site-Wide TDM Plan

The following Transportation Demand Management (TDM) strategies are proposed for the project site as a whole:

- Unbundle the cost of vehicle parking from the lease or purchase or lease agreement for each residential and retail unit and charge a minimum rate above the average market rate within a quarter mile. Free parking or discounted rates will not be provided.
- Identify Transportation Coordinators for the planning, construction, and operations phases for each retail tenant and the entire residential component/building. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year. All employer tenants must survey their employees and report back to the Transportation Coordinator.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the employees, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Transportation Coordinator will subscribe to the applicable goDCgo's newsletters.
- Transportation Coordinator will notify goDCgo each time a new retail tenant moves in and provide TDM information to each tenant as they move in.
- Transportation Coordinator will provide links to CommuterConnections.com and goDCgo.com on property websites.
- Transportation Coordinator will post all TDM commitments on property websites, publicize availability, and allow the public to see what commitments have been promised.
- Transportation Coordinators will implement a carpooling system such that individuals working in the building who wish to carpool can easily locate other employees who live nearby.
- Distribute information on the Commuter Connections Guaranteed Ride Home (GRH) program, which provides commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a free and reliable ride home in an emergency.
- Provide residents and employees who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOC) or other comparable service if MWCOC does not offer this in the future.
- Following the issuance of a certificate of occupancy for the project, the Transportation Coordinator will coordinate with DDOT and goDCgo every five (5) years (as measured from the final certificate of occupancy for the project) summarizing continued compliance with the transportation and TDM conditions in the Order, unless no longer applicable as confirmed by DDOT.
- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle space will be provided free of charge to residents and retail employees.
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids bikes.

Residential TDM Plan

The following baseline Transportation Demand Management (TDM) strategies are proposed for the residential portion of the project:

- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures

can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.

- Provide a FREE SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.

The following additional residential TDM strategies are proposed as mitigations for vehicular impacts at study intersections for which other mitigation options were not available, as noted in the Traffic Operations chapter of this report:

- Will not lease unused parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events).
- Install a Transportation Information Center Display (electronic screen) containing information related to local transportation alternatives. At a minimum the display should include information about nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.
- Provide a bicycle repair station in the bicycle parking storage rooms.

Retail TDM Plan

The following Transportation Demand Management (TDM) strategies are proposed for the retail portion of the project:

- Will post "getting here" information in a visible and prominent location on the website with a focus on non-automotive travel modes. Also, links will be provided to godcgo.com, CommuterConnections.com, transit agencies around the metropolitan area, and instructions for customers discouraging parking on-street in Residential Permit Parking (RPP) zones.

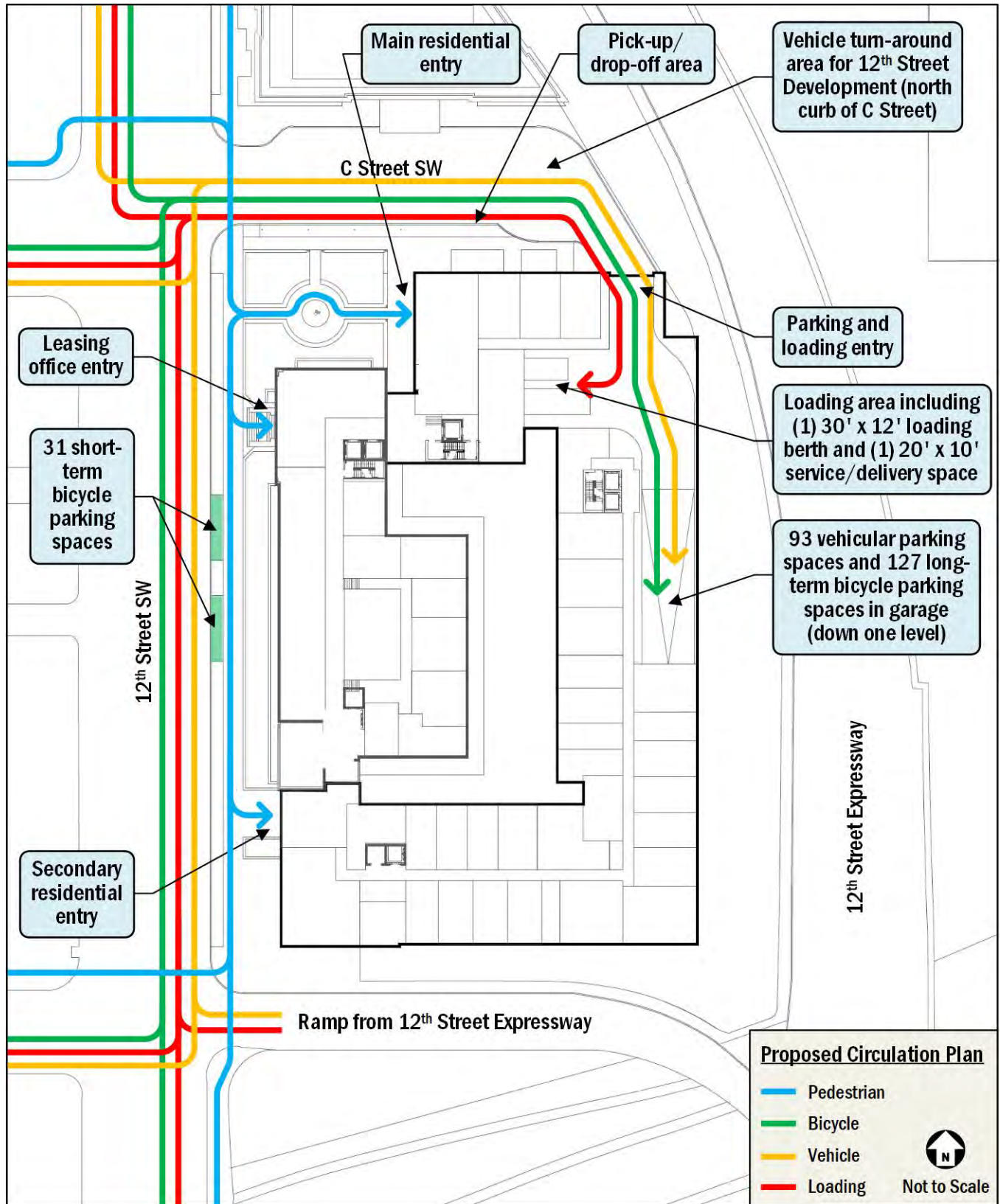


Figure 7: Proposed Site Circulation Plan

Travel Demand Assumptions

This chapter outlines the Cotton Annex project’s travel demand assumptions. It summarizes the projected trip generation of the proposed project by mode, which forms the basis for the chapters that follow. These assumptions were vetted and approved by DDOT as a part of the scoping process for the study. The approved scoping form is included in the Technical Attachments.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers’ (ITE) *Trip Generation*, 10th Edition. To account for the urban nature of the project, this methodology was supplemented with mode split assumptions as vetted and approved by DDOT.

Existing Site Trip Generation

The development site is currently occupied by a vacant 68,779 square foot office building and a 120-space public surface parking lot. Under existing conditions, the parking lot operates as a commercial pay-to-park lot open to the general public.

In order to present a trip generation comparison between the proposed project and existing conditions, and to analyze future conditions without the trips generated by commercial parking lot, the commercial parking lot’s trip generation was established using turning movement counts collected on Tuesday, May 19, 2019 at the parking lot’s entrance at the westbound approach of 12th Street and C Street SW. These turning movement counts were then adjusted to remove trips that entered and exited the westbound approach without entering or exiting the parking lot itself (i.e., vehicles using the approach to make a U-turn), which accounted for approximately 69% of the total trips entering or exiting the westbound approach. These turning movement counts are included in the Technical Attachments. Table 2 presents the existing site’s trip generation generated by the commercial parking lot.

As detailed in the Traffic Operations chapter of this report, these trips were removed from the network in future conditions to properly analyze conditions with the approved office and with the proposed project.

Table 2: Existing Commercial Parking Lot Trip Generation

Description	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
TMCs	41	4	45	114	142	256
69% reduction to account for non-parking lot trips	-26	-1	-27	-77	-97	-174
Adjusted auto trips	15	3	18	37	45	82

Approved Site Trip Generation

As the site is currently approved with an office building, this report also compares the proposed project’s trip generation to the approved office’s trip generation assuming the office building is fully occupied with the parking lot serving the office use.

The existing office building trip generation was calculated based on ITE land use 710, *General Office Building*. Trips were split into auto and non-auto modes using assumptions derived from census data for the commuters that currently work near the site, as well as WMATA ridership survey data. As such, a 40% auto/60% non-auto mode split was assumed for the existing office building. A summary of the mode split assumptions is provided in Table 3. Detailed mode split assumptions are included in the Technical Attachments. Table 4 shows the vehicular trip generation for the approved office.

Table 3: Mode Split Assumptions

Land Use	Mode			
	Drive	Transit	Bike	Walk
Existing Office	40%	55%	2%	3%
Proposed Residential	30%	45%	10%	15%
Proposed Retail	30%	50%	5%	15%

Table 4: Approved Office Vehicular Trip Generation

Land Use	AM Peak Hour			PM Peak Hour			Week-day Total
	In	Out	Total	In	Out	Total	
Approved Office	31	5	36	5	27	32	295

Proposed Site Trip Generation

For the proposed project, residential trip generation was calculated based on ITE land use 222, *Multifamily Housing*

(High-Rise). Trip generation for the retail components of the site was calculated based on ITE land use 820, *Shopping Center*.

Trips were split into different modes using assumptions derived from census data for the residents that currently live near the site, census data for the commuters that currently work near the site, WMATA ridership survey data, and the proposed parking supply. A summary of the mode split assumptions is provided in Table 3.

A summary of the multimodal trip generation for the proposed development based on ITE *Trip Generation*, 10th Edition is provided in Table 5 for the AM peak hour, PM peak hour, and weekday total. Detailed calculations are included in the Technical Attachments.

As shown in Table 5, the development is expected to generate trips on the surrounding transportation network across all modes. The AM peak hour trip generation is projected to include 56 vehicles/hour, 99 transit riders/hour, 22 bicycle trips/hour, and 32

walking trips/hour. The PM peak hour trip generation is projected to include 67 vehicles/hour, 120 transit riders/hour, 26 bicycle trips/hour, and 38 walking trips/hour. The weekday total trip generation is projected to include 801 vehicles, 1,437 transit riders, 314 bicycle trips, and 477 walking trips.

A comparison summary of the vehicle trip generation between the existing site and the proposed development is presented in Table 6. The proposed development results in a net increase in vehicular trip generation during the morning peak hour as compared to both the existing commercial parking lot and the approved office use, with 38 and 20 additional vehicle trips, respectively. The proposed development results in a reduction of 15 vehicle trips during the afternoon peak hour as compared to the commercial parking lot, and 35 additional vehicle trips as compared to the approved office use. The difference in net auto trips is attributed to travel patterns associated with office, residential, and retail uses.

Table 5: Multimodal Trip Generation Summary

Mode	Land Use	AM Peak Hour			PM Peak Hour			Weekday Total
		In	Out	Total	In	Out	Total	
Auto (veh/hr)	Residential	14	41	55	40	25	65	785
	Retail	1	0	1	1	1	2	16
	Total	15	41	56	41	26	67	801
Transit (ppl/hr)	Residential	24	74	98	70	45	115	1,389
	Retail	1	0	1	2	3	5	48
	Total	25	74	99	72	48	120	1,437
Bike (ppl/hr)	Residential	5	17	22	16	10	26	309
	Retail	0	0	0	0	0	0	5
	Total	5	17	22	16	10	26	314
Walk (ppl/hr)	Residential	7	25	32	23	14	37	463
	Retail	0	0	0	1	0	1	14
	Total	7	25	32	24	14	38	477

Table 6: Net Vehicular Trip Generation Comparisons

Land Use	AM Peak Hour (veh/hr)			PM Peak Hour (veh/hr)		
	In	Out	Total	In	Out	Total
Proposed Project Trip Generation Compared to Existing Commercial Parking Lot Trip Generation						
Existing Commercial Parking Lot	15	3	18	37	45	82
Proposed Project	15	41	56	41	26	67
Net Auto Trips	0	38	38	4	-19	-15
Proposed Project Trip Generation Compared to Approved Office Trip Generation						
Approved Office	31	5	36	5	27	32
Proposed Project	15	41	56	41	26	67
Net Auto Trips	-16	36	20	36	-1	35

Traffic Operations

This chapter provides a summary of an analysis of the existing and future roadway capacity surrounding the site. Included is an analysis of potential vehicular impacts of the Cotton Annex development and a discussion of potential improvements.

The purpose of the capacity analysis is to:

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

This analysis was accomplished by determining the traffic volumes and roadway capacity for Existing conditions, Background conditions, and Total Future conditions. The scope of the capacity analysis was developed based on DDOT guidelines and agreed to by DDOT staff.

The capacity analysis focuses on the weekday AM and PM commuter peak hours.

This chapter concludes:

- Under Existing Conditions, two (2) study intersections operate at unacceptable levels of service.
- The addition of trips generated by background developments and inherent growth on the study area roadways slightly increase the levels of delay and queueing, but only to unacceptable levels at intersections which were already operating at unacceptable levels under Existing Conditions.
- The addition of site generated trips does not significantly affect the delays or queueing at most intersections.
- Two (2) intersections meet DDOT's threshold for mitigation measures because of minor impacts to delay created by the proposed development, in both the Total Future and Total Future with Curbside Management Modifications scenarios.
- Mitigations in the form of minor signal timing adjustments and additional Transportation Demand Management (TDM) measures are recommended at selected intersections.
- Overall, this report concludes that the proposed project will not have a detrimental impact to the surrounding

vehicular network, with the implementation of all recommended site design elements, TDM, and mitigation measures.

Study Area, Scope, & Methodology

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

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

Capacity Analysis Scenarios

The vehicular capacity analyses were performed to determine whether the project will lead to adverse impacts on traffic operations. A review of potential impacts to each of the other modes is outlined later in this report. This is accomplished by comparing two future scenarios: (1) without the project (referred to as the "Background conditions" and (2) with the project approved and constructed (referred to as the "Total Future" conditions). The Total Future conditions scenario includes two alternatives: one in which existing curbside management remains the same, and one in which modifications to curbside management are made.

Specifically, the roadway capacity analysis examines the following scenarios:

- Existing Conditions (2021 Existing Conditions);
- Future Conditions without the Project (2024 Background Conditions);
- Future Conditions with the Project (2024 Total Future Conditions) and
- Future Conditions with the Project and Curbside Management Modifications (2024 Total Future Conditions with Curbside Management Modifications).

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses were performed for the scenarios listed above. The set of intersections decided upon during the study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic

operations to accommodate the project. Although it is possible that impacts will occur outside of the study area, those impacts are neither significant enough to be considered a material adverse impact nor worthy of mitigation measures.

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

1. 12th St & Independence Ave SW
2. 12th St & Forrestal Building Driveway SW
3. 14th St & C St SW
4. 13th St & C St SW
5. 12th St & C St SW
6. 12th St & D St SW
7. 12th St & Maryland Ave/D St SW
8. 12th St/Maine Ave & westbound Maine Ave SW

Figure 8 shows a map of the study area intersections.

Geometry and Operations Assumptions

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

2021 Existing Geometry and Operations Assumptions

Gorove Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT.

The lane configurations and traffic controls for the Existing Conditions are shown on Figure 9.

2024 Background Geometry and Operations Assumptions

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

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

Based on these criteria, the following improvements were assumed:

- Rehabilitation of approach bridges to the 14th Street bridge, including the bridges over Maine Avenue, the Outlet Channel, and Hains Point Park.
 - This project does not include any geometric or operational changes to the roadways within the study area.

The lane configurations and traffic controls for the Background Conditions are shown on Figure 10.

2024 Total Future Geometry and Operations Assumptions

The configurations and traffic controls for the 2024 Total Future Conditions were based on those for the 2024 Background Conditions with the addition of the proposed project. No roadway geometric or operational changes are included as part of the proposed project, notwithstanding the potential alternative described below which proposes a version of the project that includes curbside management modifications.

The lane configurations and traffic controls for the Total Future Conditions are shown on Figure 10.

Additional Analysis Scenario Considered

2024 Total Future with Curbside Management Modifications Geometry and Operations Assumptions

The 2024 Total Future Conditions with Curbside Management Modifications scenario was requested to be considered by the Advisory Neighborhood Commission (ANC) in which the Cotton Annex project sits. It is presented here to showcase the potential impacts of such a scenario.

This scenario includes an alternative in which the existing curbside management along the east side of 12th Street SW, adjacent to the site, is modified. Under current conditions, parking along this block face is prohibited between 7:00 and 9:30am and between 4:00 and 6:30pm, making it a travel lane during the AM and PM peak hours. Under this proposed scenario, the peak hour parking restriction would be removed, allowing either curbside parking or some other curbside use, which would result in a reduction from three (3) to two (2) northbound travel lanes along 12th Street SW during the AM and PM peak hours.

The lane configurations and traffic controls for the Total Future with Curbside Management Modifications Conditions are shown on Figure 11.

Traffic Volume Assumptions

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

2021 Existing Traffic Volumes

Data collection was not possible during Winter 2020-2021 as traffic volumes were not representative of typical traffic conditions due to District-wide restrictions in response to the COVID-19 public health crisis. To establish baseline conditions, the study analyzed 2021 traffic volumes comprised of turning movement count data collected between 2017 and 2018, with applied growth based on the data collection year. The traffic volume sources for each study intersection are summarized below.

DDOT's Traffic Engineering and Signals Division (TESD) Volumes

DDOT's Traffic Engineering and Signals Division (TESD) collected turning movement counts in the vicinity of the project site over a 10-month period between 2017 and 2018 for traffic signal timing optimization purposes. For a conservative approach, a 2017 data collection year was assumed and growth rates were applied accordingly. Volumes at the following intersections are based on TESD data:

- 12th Street and Independence Avenue SW
- 12th Street and Forrestal Building Driveway SW

Historical Turning Movement Counts

Turning movement counts collected in 2018 were available from a transportation data collection vendor for the following intersections:

- 14th Street and C Street SW
- 12th Street and C Street SW
- 12th Street and D Street SW
- 12th Street and Maryland Avenue/D Street SW
- 12th Street/Maine Avenue and westbound Maine Avenue SW

Turning movement counts collected in 2017 were also available from the Howard University Transportation Safety Data Center (HUTRC) for the following intersection:

- 13th Street and C Street SW

The unadjusted 2017 and 2018 peak hour traffic volumes are shown in Figure 12.

The traffic growth applied to these 2017 and 2018 volumes based on their respective data collection year to establish 2021 existing volumes are shown in Figure 13. The growth rates assumed for this traffic growth are the same as those assumed for traffic growth between 2021 existing volumes and 2024 background volumes. These growth rates are based on the Metropolitan Washington Council of Government's (MWCOC) currently adopted regional transportation model and are shown on Table 9.

The existing 2021 peak hour traffic volumes are shown in Figure 14.

2024 Background Traffic Volumes (without the Project)

The traffic projections for the 2024 Background Conditions consist of the existing volumes with the following additions and removals:

- The addition of traffic generated by developments expected to be completed prior to the project (known as background developments);
- The addition of traffic generated by the existing/approved office building which is currently vacant;
- The removal of traffic generated by the existing commercial public parking lot on site; and
- The addition of inherent growth on the roadway (representing regional traffic growth).

Volumes Generated by Background Developments

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

- Be located in the study area, defined as having an origin or destination point within the cluster of study area intersections;
- Have entitlements; and
- Have a construction completion date prior or close to the future analysis year of 2024.

Based on these criteria, and as discussed with and agreed upon by DDOT, one (1) development was considered and determined to meet the above criteria. This development is:

- 12th Street Development (hotel)

Trip generation for this background development is based on ITE *Trip Generation*, 10th Edition. Detailed trip generation for this

background development is included in the Technical Attachments.

Mode split assumptions for this development were based on census data for the commuters that currently work near the site, as well as WMATA ridership survey data. As such, a 45% auto/55% non-auto mode split was assumed for the background development.

Trip distribution for the background development was determined based on Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data.

Based on this review and the site access location, the trips generated by the background development were distributed through the study area intersections. Trip distribution assumptions and specific routing was analyzed for inbound and outbound trips. Distribution assumptions are provided in Figure 20 and Figure 21 for inbound and outbound trips, respectively. Detailed inbound and outbound distributions at each study intersection are shown in Figure 22 and Figure 23, respectively.

Because the background development shares the same vehicular access location as the existing office building and the proposed project (i.e., the westbound approach of the 12th Street and C Street SW intersection), the distribution assumptions shown in Figure 20, Figure 21, Figure 22, and Figure 23 apply to the background development, the existing office building, the commercial parking lot on site, and the proposed development.

A summary of the trip generation for the background development is shown in Table 7. The background project's peak hour volumes are shown in Figure 15. Detailed mode split and trip generation information is included in the Technical Attachments.

Table 7: Background Development Trip Generation

Background Development	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
12 th Street Development (hotel)	16	11	27	17	15	32

Volumes Generated by Existing/Approved Office Building

These are the traffic volumes generated by the existing/approved office building. As outlined in the Travel Demand Assumptions chapter, this trip generation was calculated based on ITE *Trip Generation* methodology using mode split assumptions derived

from census data for the commuters that currently work near the site, as well as WMATA ridership survey data.

Peak hour traffic volumes generated by the existing/approved office building are shown on Figure 16.

Volumes Removed from Public Surface Parking Lot

These are the traffic volumes to be removed from the 120-space public surface parking lot on the project site, which is currently in operation. As outlined in the Travel Demand Assumptions chapter, this trip generation was established using turning movement counts from the parking lot's entrance and exit, which were then adjusted to remove the approximately 69% of trips that were captured in the counts but did not enter or exit the parking lot.

Peak hour traffic volumes removed from the public surface parking lot are shown on Figure 17.

Table 8: Trips Removed from Public Surface Parking Lot

Description	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Turning movement counts	-41	-4	-45	-114	-142	-256
69% reduction to account for non-parking lot trips	26	1	27	77	97	174
Adjusted auto trips removed	-15	-3	-18	-37	-45	-82

Volumes Generated by Regional Traffic Growth

While background developments, the existing/approved office, and the public surface parking lot represent local traffic changes, regional traffic growth is typically accounted for using growth rates. The growth rates used in this analysis are based on the Metropolitan Washington Council of Government's (MWCOG) currently adopted regional transportation model, comparing the difference between the year 2019 and 2025 model scenarios as vetted and agreed to by DDOT. The growth rates observed in this model served as a basis for analysis assumptions, and a conservative 0.10 percent annual growth rate was applied to roadways where negative growth was observed. The applied growth rates are shown in Table 9. The traffic volumes generated by the inherent growth along the network are shown in Figure 18.

Table 9: Applied Annual and Total Growth Rates

Roadway	Dir.	Proposed Annual Growth Rate ¹		Proposed Total Growth Between 2021 and 2024	
		AM	PM	AM	PM
Independence Ave SW btwn 14th St & L'Enfant Plaza	EB	0.10%	0.30%	0.30%	0.90%
	WB	0.10%	0.10%	0.30%	0.30%
C St SW btwn 14th St & 12th St	EB	2.00%	1.10%	6.12%	3.34%
	WB	0.10%	0.10%	0.30%	0.30%
D St SW btwn 14th St & 12th St	EB	1.00%	1.00%	3.03%	3.03%
	WB	1.00%	1.00%	3.03%	3.03%
WB Maine Ave SW west of 12th St	WB	0.10%	0.50%	0.30%	1.51%
	NB	0.10%	0.50%	0.30%	1.51%
12th St SW btwn Jefferson Dr & Maine Ave	NB	0.10%	0.50%	0.30%	1.51%
	SB	0.10%	2.00%	0.30%	6.12%
14th St SW btwn Independence Ave & Maine Ave	NB	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.30%	0.30%

¹ This rate is to be applied to volumes grown from 2021 existing conditions, as well as volumes recorded in previous years that were used to establish 2021 existing conditions. For the latter, these growth rates will be applied from the data collection year through 2021.

The existing peak hour volumes presented in Figure 14 were combined with the background project's peak hour volumes shown in Figure 15, the existing/approved office building peak hour volumes shown in Figure 16, the peak hour volumes removed from the public surface parking lot shown in Figure 17, and the background growth peak hour volumes shown in Figure 18 in order to establish the 2024 Background traffic volumes. The traffic volumes for the 2024 Background conditions are shown in Figure 19.

2024 Total Future Traffic Volumes (with the Project)

The 2024 Total Future traffic volumes consist of the following:

- Existing volumes, shown on Figure 14;
- Traffic generated by background developments, shown on Figure 15;
- Removed site-generated volumes for the existing/approved office building, shown on Figure 16;
- Traffic removed from the public surface parking lot; shown on Figure 17;
- Inherent growth on study area roadways, shown on Figure 18; and
- Site-generated volumes, shown on Figure 24.

Trip distribution for the site-generated trips was determined based on Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data.

Based on this review and the site access location, the site-generated trips were distributed through the study area intersections. Trip distribution assumptions and specific routing was analyzed for inbound and outbound trips for the residential and non-residential (retail) portions of the development. Distribution assumptions are provided in Figure 20 and Figure 21 for inbound and outbound trips, respectively. Detailed inbound and outbound distributions at each study intersection are shown in Figure 22 and Figure 23, respectively.

Site-generated peak hour volumes are presented in Figure 24.

The traffic volumes for the 2024 Total Future conditions are shown on Figure 25.

Additional Analysis Scenario Considered

2024 Total Future with Curbside Management Modifications Traffic Volumes (with the Project)

The 2024 Total Future with Curbside Management Modifications traffic volumes are the same as the 2024 Total Future volumes, which are shown on Figure 25.

As noted earlier in this report, the 2024 Total Future Conditions with Curbside Management Modifications scenario was requested by the Advisory Neighborhood Commission (ANC) in which the Cotton Annex project sits. It is presented here to showcase the potential impacts of reducing the number of travel lanes along 12th street along the site frontage.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the four (4) scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. *Synchro* version 10 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) 2000 methodology.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. A LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from "A" being the best to "F" being the worst. LOS D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes

accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

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

Table 10 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the 2021 Existing, 2024 Background, 2024 Total Future, and 2024 Total Future with Curbside Management Modifications scenarios. Table 11 shows a comparison of the volume to capacity (v/c) ratios.

Intersection Capacity Under Existing Conditions

As shown in Table 10, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Existing conditions:

- 13th Street & C Street SW
 - Northbound (PM)
- 12th Street & C Street SW
 - Eastbound (PM)

Intersection Capacity Under Background Conditions

As shown in Table 10, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Background conditions:

- 13th Street & C Street SW
 - Northbound (PM)
- 12th Street & C Street SW
 - Eastbound (PM)

Intersection Capacity Under Future Conditions

As shown in Table 10, under Future conditions, there are additional delays that meet DDOT's mitigation threshold at two (2) study intersections where an approach delay was increased to unacceptable levels or an unacceptable delay increased by over five (5) percent as compared to Background conditions:

- 13th Street & C Street SW
 - Northbound (PM)

- 12th Street & C Street SW
 - Eastbound (PM)

Measures mitigating vehicular capacity concerns at these intersections are discussed below.

Intersection Capacity Under Additional Analysis Scenario Considered

Intersection Capacity Under Future Conditions with Curbside Management Modifications

As shown in Table 10, under the Future Conditions with Curbside Management Modifications scenario, there are additional delays that meet DDOT's mitigation threshold at two (2) study intersections where an approach delay was increased to unacceptable levels or an unacceptable delay increased by over five (5) percent as compared to Background conditions:

- 13th Street & C Street SW
 - Northbound (PM)
- 12th Street & C Street SW
 - Eastbound (PM)

Measures mitigating vehicular capacity concerns at these intersections are discussed below.

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at each of the study intersections. The queuing analysis was performed using *Synchro* software. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. For unsignalized intersections, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Queuing Under Existing Conditions

Table 12 shows the queuing results for the study area intersections. Three (3) of the study intersections exhibit one or more lane group that exceeds the given storage length during Existing conditions:

- 12th Street and Independence Avenue SW
 - Northbound left (AM/PM)
 - Northbound thru/right (AM/PM)
- 14th Street & C Street SW

- Northbound thru (AM/PM)
- Southbound thru left/thru (PM)
- 12th Street & D Street SW
 - Eastbound right (PM)

Queuing Under Background Conditions

As shown in Table 12, four (4) study intersections exhibit one or more lane group that exceeds the given storage length during Background conditions:

- 12th Street and Independence Avenue SW
 - Northbound left (AM/PM)
 - Northbound thru/right (AM/PM)
- 14th Street & C Street SW
 - Northbound thru (AM/PM)
 - Southbound left/thru (PM)
- 12th Street & C Street SW
 - Eastbound left/thru (PM)
- 12th Street & D Street SW
 - Westbound left/thru (AM)
 - Eastbound right (PM)

Queuing Under Future Conditions

As shown in Table 12, under the Future Conditions scenario, there are no study intersections where queues meet queuing-related mitigation thresholds, whether by exceeding storage along an approach in the Future Conditions where it does not in the Background Conditions, or by exceeding the storage length or increasing a queue exceeding storage in the Background Conditions by 150 feet.

Queuing Under Additional Analysis Scenario Considered

Queuing Under Future Conditions with Curbside Management Modifications

As shown in Table 12, under the Future Conditions with Curbside Management Modifications scenario, there is one (1) additional study intersection that exhibits a queue which exceeds the storage length or increases a queue exceeding storage in Background conditions by 150 feet:

- 12th Street and C Street SW
 - Northbound left/thru/right (PM)

Mitigation Measures

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

- The capacity analyses show a LOS E or F at an intersection or along an approach in Future conditions with the project where one does not exist in Background conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than five (5) percent when compared to Background conditions;
- A 95th percentile queue exceeds storage along an approach in Future conditions with the project where it does not in Background conditions; or
- There is an increase in the 95th percentile queue by more than 150 feet along an approach in that exceeds storage in Background conditions.

Based on these criteria, the following intersections are impacted by the proposed project without curbside management modifications:

- 13th Street & C Street SW
- 12th Street & C Street SW

Based on these criteria, the following intersections are impacted by the proposed project with curbside management modifications:

- 13th Street & C Street SW
- 12th Street & C Street SW

Project Impact and Recommendations

This section summarizes the results of the capacity analyses for the intersections with movements or approaches that operate at unacceptable conditions and lists the scenarios for which this occurs. Impacts associated with the Cotton Annex development are noted wherever any of the above qualifying conditions for impact are met.

Future Conditions

13th Street & C Street SW

During the afternoon peak hour, the northbound approach experiences unacceptable delays in the Existing, Background, and Future conditions. The northbound delay increases by over five (5) percent between Background and Future conditions as a result of the project's traffic volumes. This increase equals a relatively insignificant additional delay of approximately 4.5 seconds over Background conditions.

Additionally, the site-generated volumes at this intersection make up only 2% of the intersection's overall volumes in the AM and PM peak hours, with 28 site-generated trips and 1,206 total trips in Future Conditions.

Lane configuration modifications such as increasing the length of the northbound right turn lane were tested in *Synchro* and did not yield improved results for the northbound movement.

As the increase in delay is minor and does not exceed five (5) seconds, and because the site-generated trips make up such a small proportion of overall trips at this intersection, this report recommends mitigations in the form of additional Transportation Demand Management (TDM) measures to address impact at this intersection and reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

12th Street & C Street SW

During the afternoon peak hour, the eastbound approach experiences unacceptable delays in the Existing, Background, and Future conditions. The eastbound delay increases by over five (5) percent between Background and Future conditions as a result of the project's traffic volumes.

Delays in the eastbound direction can be reduced to levels comparable to those seen in Background conditions through minor signal timing adjustments to increase the green time for the eastbound and westbound phases without detrimental impact to the other intersection's approaches. This report recommends coordination with DDOT to optimize signal timings at this intersection to ensure the most efficient operation in the future following the construction of the Cotton Annex development.

Recommendations for Additional Analysis Scenario Considered

This section summarizes the results of the capacity analyses for the intersections with movements or approaches that operate at unacceptable conditions and lists the scenarios for which this occurs under the 2024 Total Future Conditions with Curbside Management Modifications scenario.

Impacts associated with the Cotton Annex development including curbside management modifications are noted wherever any of the above qualifying conditions for impact are met.

Future Conditions with Curbside Management Modifications

13th Street & C Street SW

The delay impact at this intersection is the identical to that of the Future Conditions due to the increase in traffic volumes generated by the project. Therefore, the recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

12th Street & C Street SW

The delay impact at this intersection is similar to that of the Future Conditions due to the increase in traffic volumes generated by the project, as well as the reduction of three (3) to two (2) northbound travel lanes in this scenario. The recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

Additionally, during the afternoon peak hour, the 95th percentile queue length for the northbound left/thru/right movement exceeds the storage length in this scenario where it does not in Background conditions. The 50th percentile queue of this same movement also exceeds the storage length, but by a very minimal amount of 31 feet, or less than two (2) vehicle lengths.

Due to the reduced capacity resulting from the reduction from three (3) to two (2) northbound travel lanes in this scenario, queuing in the northbound direction cannot be reduced to levels comparable to those seen in Background conditions. Therefore, were this scenario to proceed, this report would recommend mitigations in the form of additional Transportation Demand Management (TDM) measures to reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

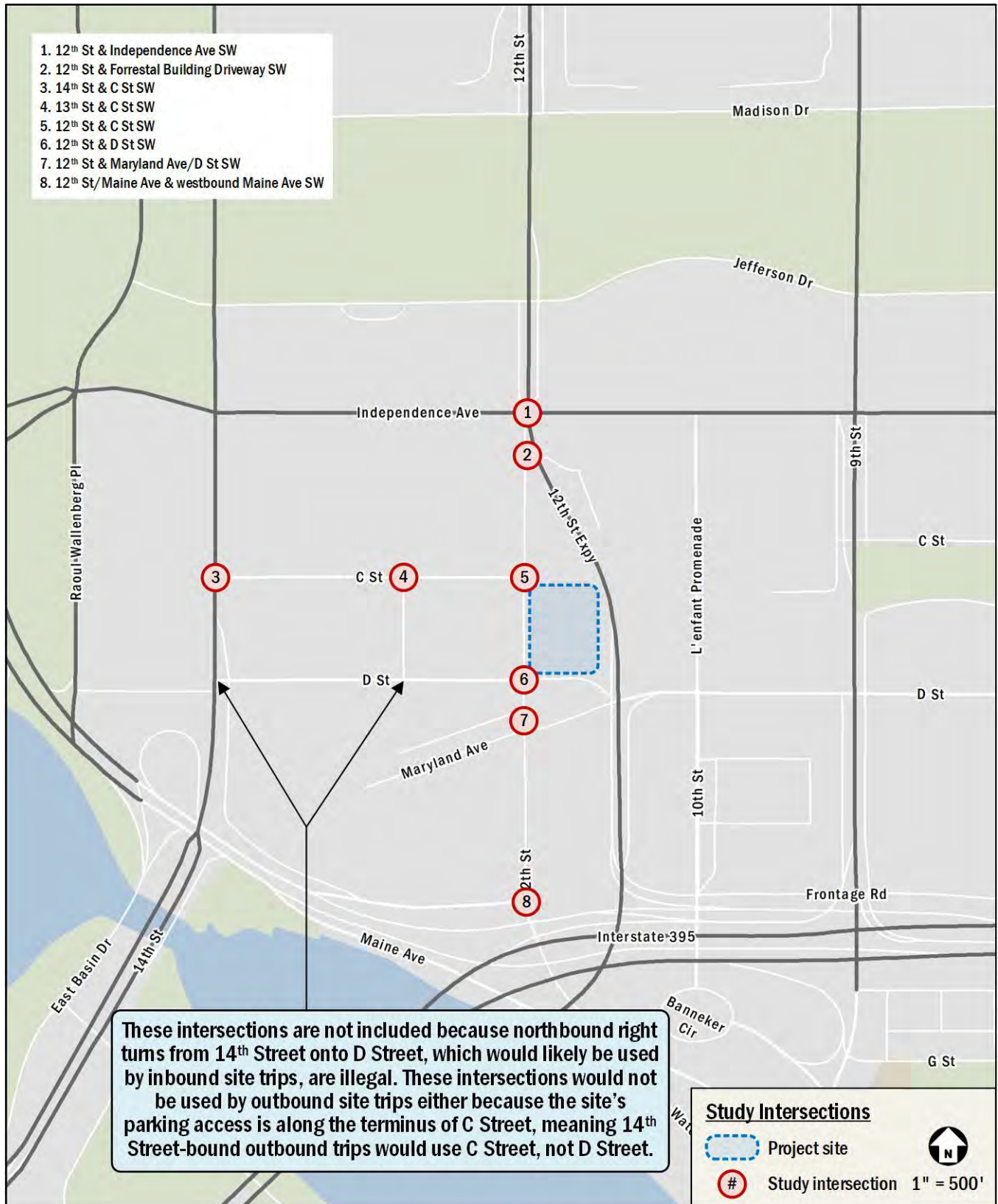


Figure 8: Study Intersections

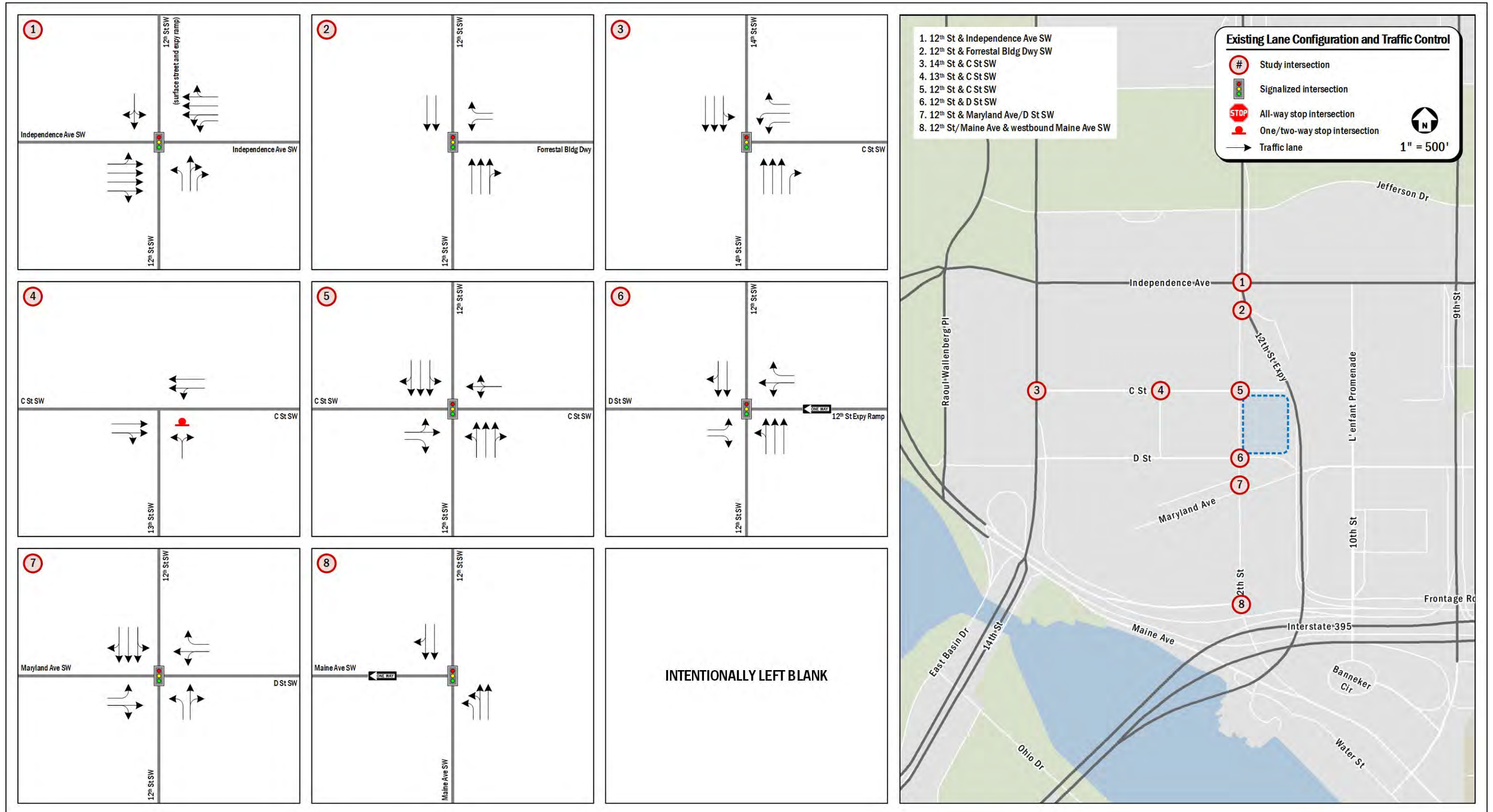


Figure 9: Existing Lane Configuration and Traffic Control

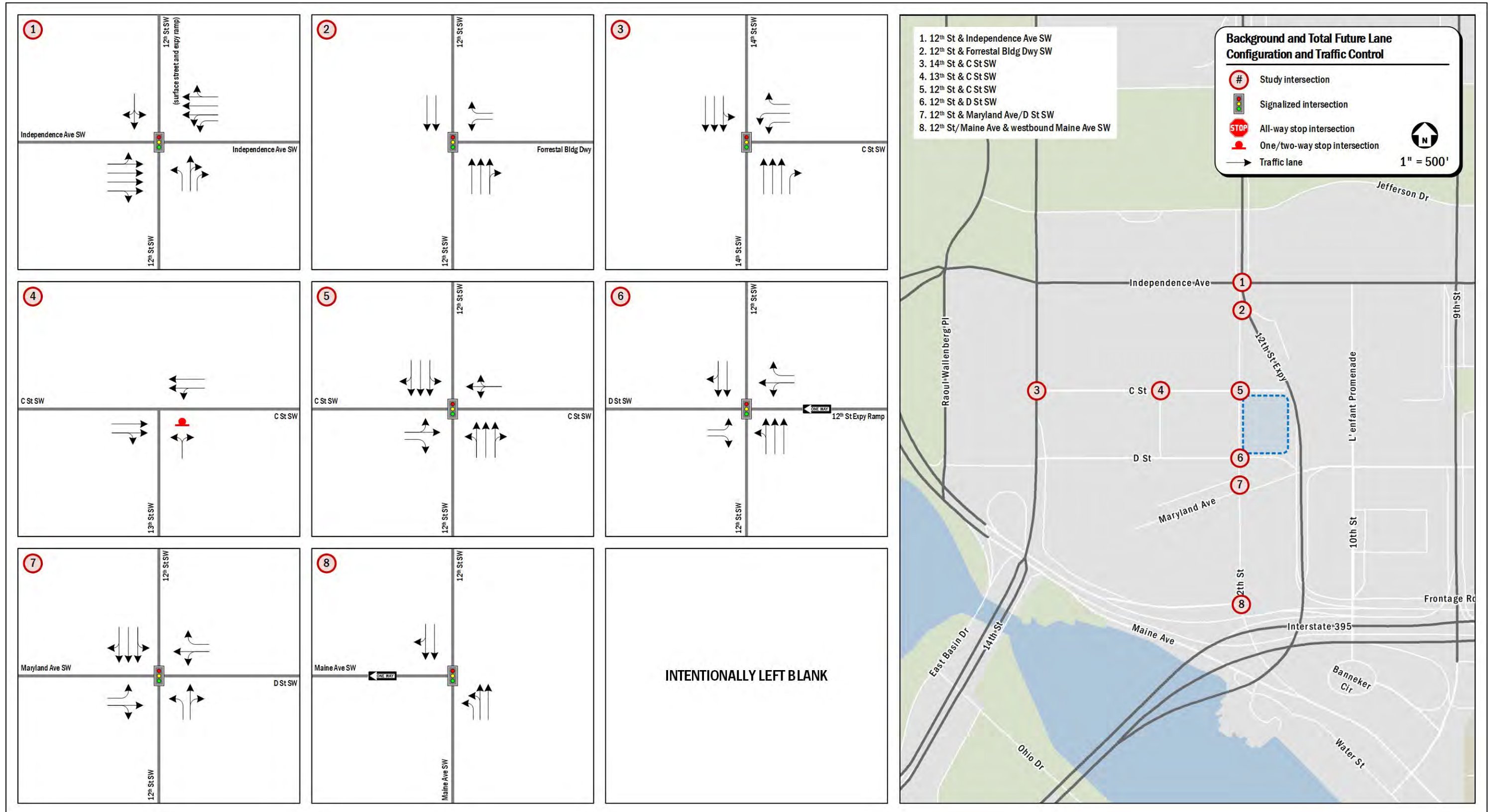


Figure 10: Background and Total Future Lane Configuration and Traffic Control

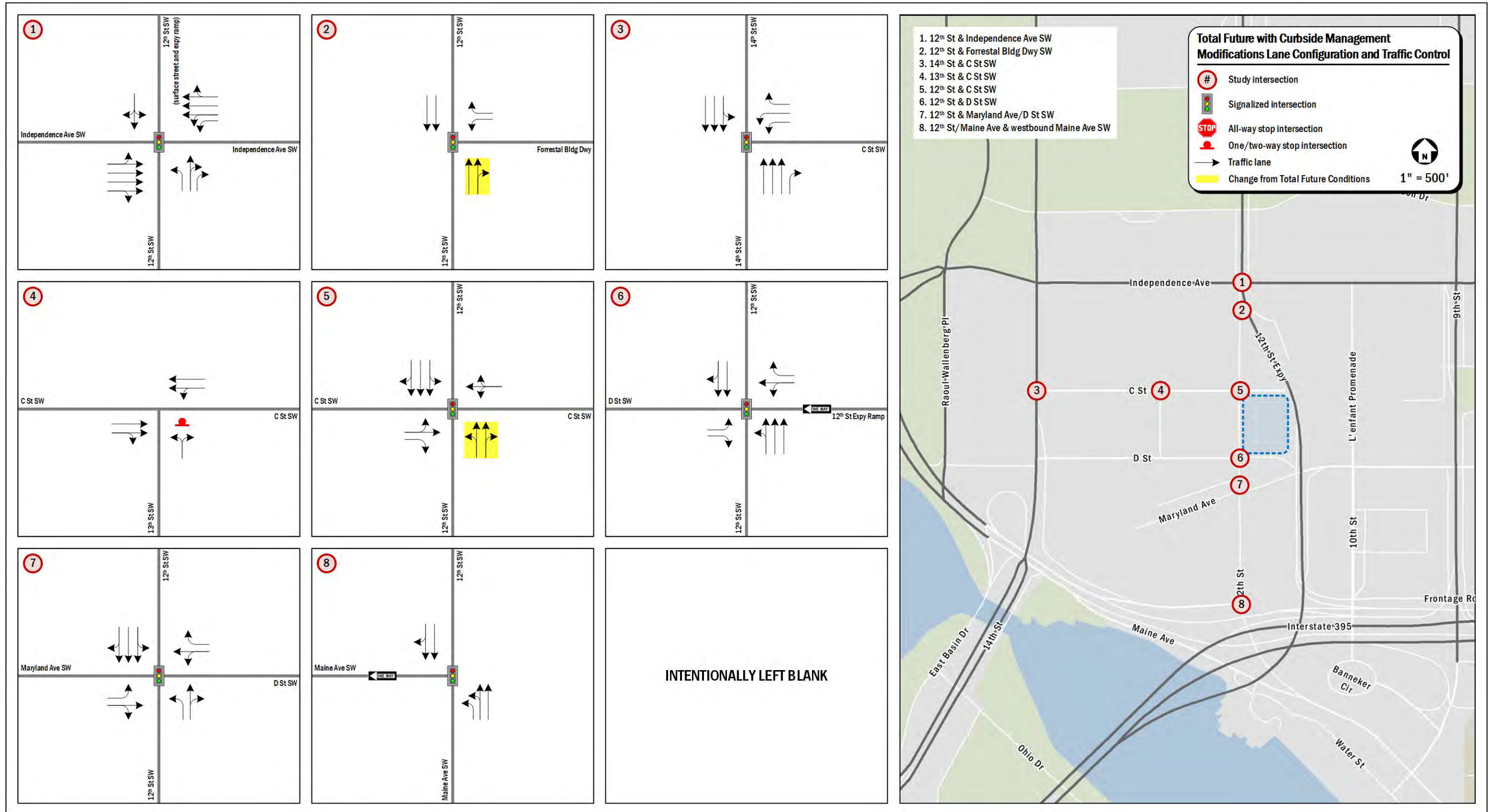


Figure 11: Total Future with Curbside Management Modifications Lane Configuration and Traffic Control

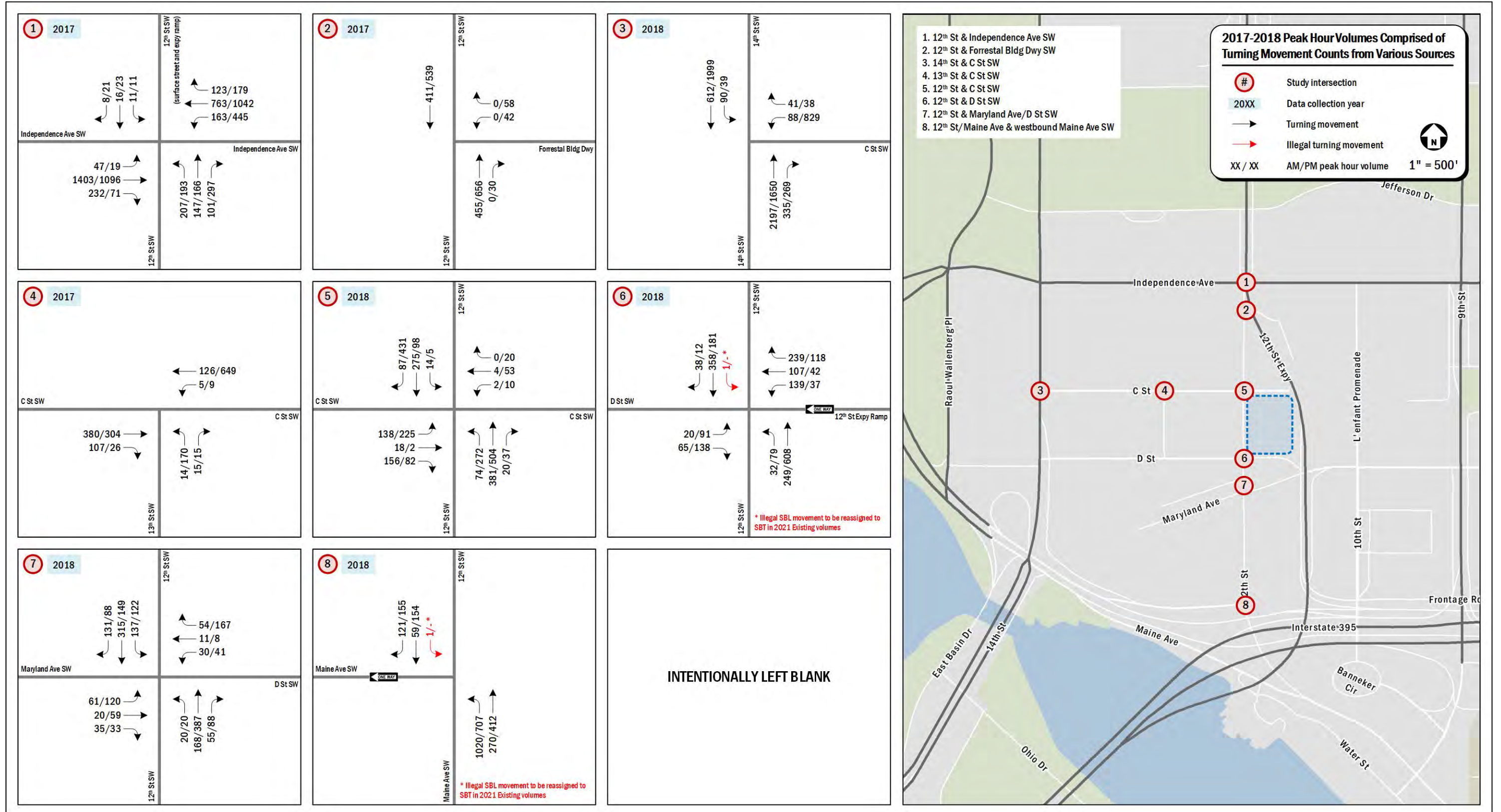


Figure 12: 2017-2018 Peak Hour Volumes Comprised of Turning Movement Counts from Various Sources

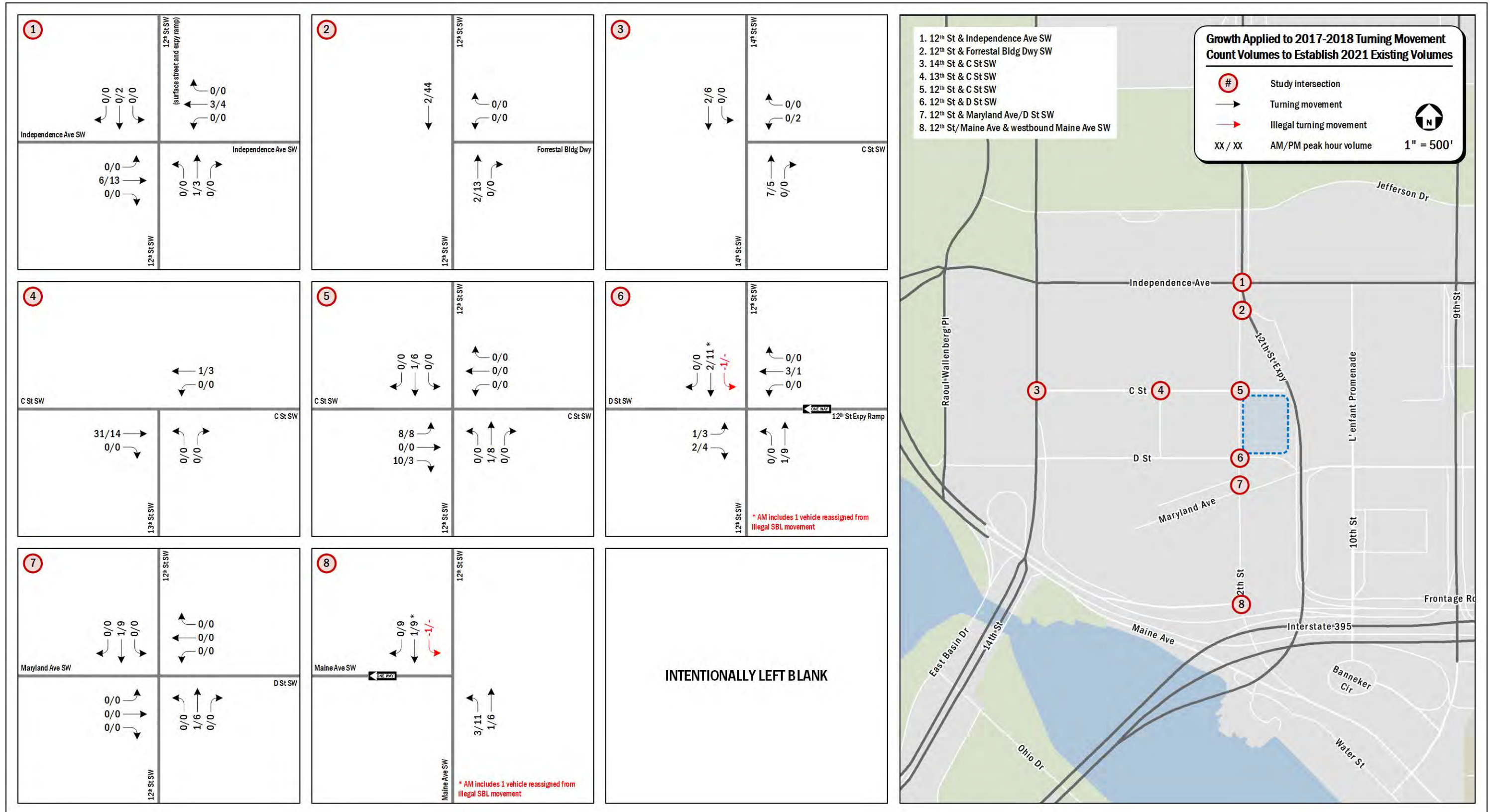


Figure 13: Growth Applied to 2017-2018 Peak Hour Volumes to Establish Existing Peak Hour Volumes



Figure 14: Existing Peak Hour Volumes



Figure 15: Background Projects Peak Hour Volumes

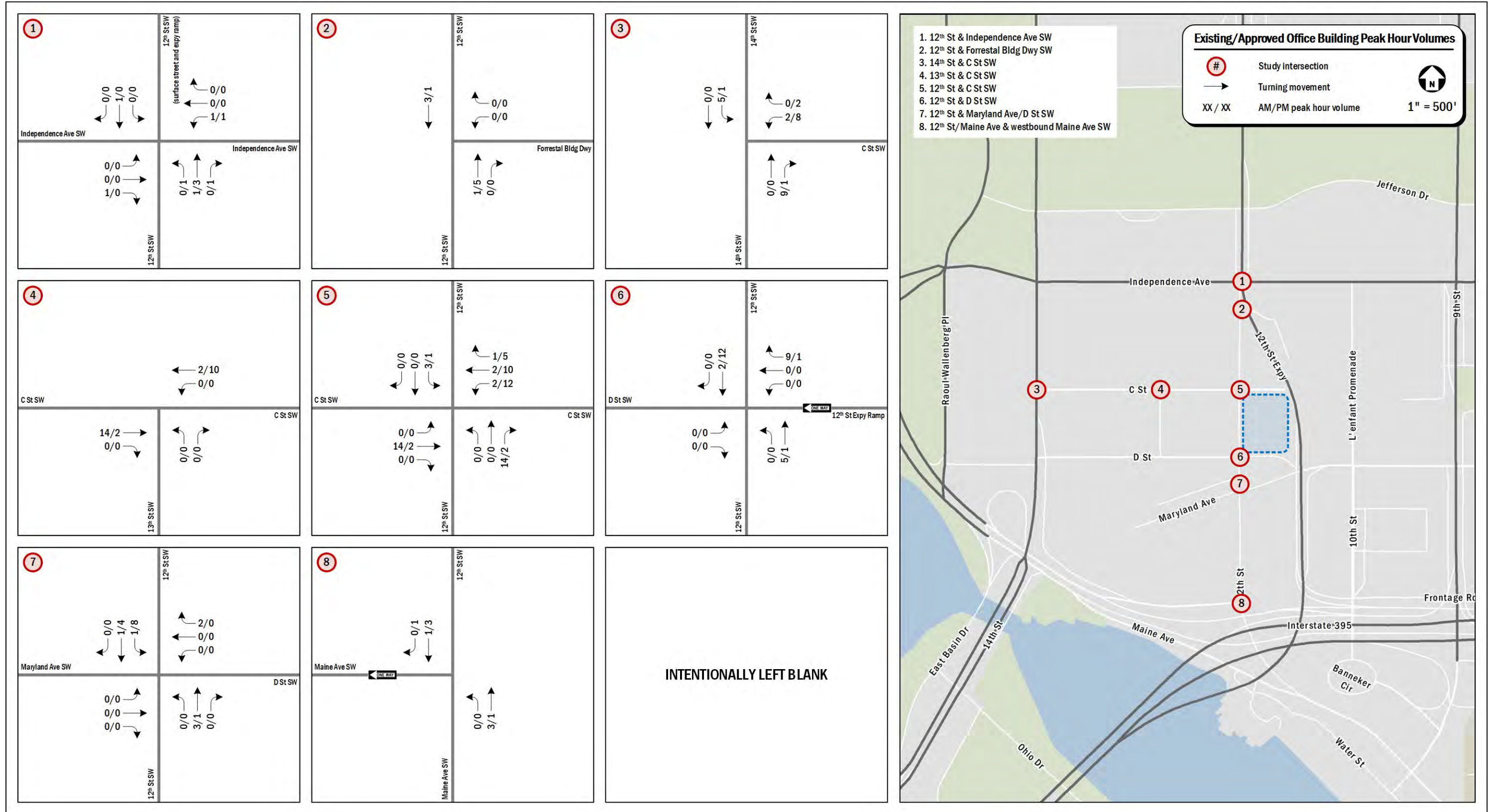


Figure 16: Existing/Approved Office Building Peak Hour Volumes

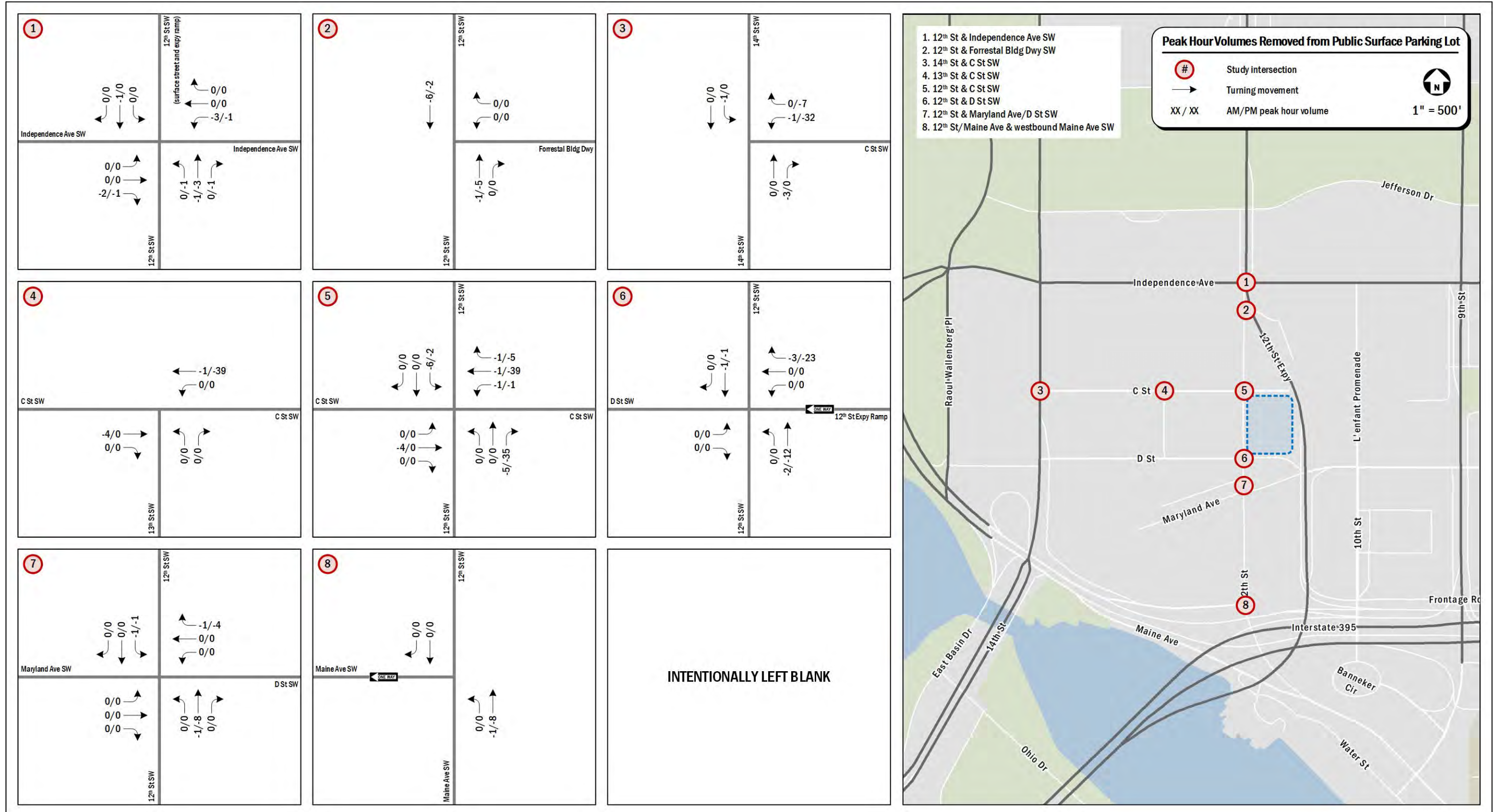


Figure 17: Peak Hour Volumes Removed from Public Surface Parking Lot



Figure 18: Background Growth Peak Hour Volumes

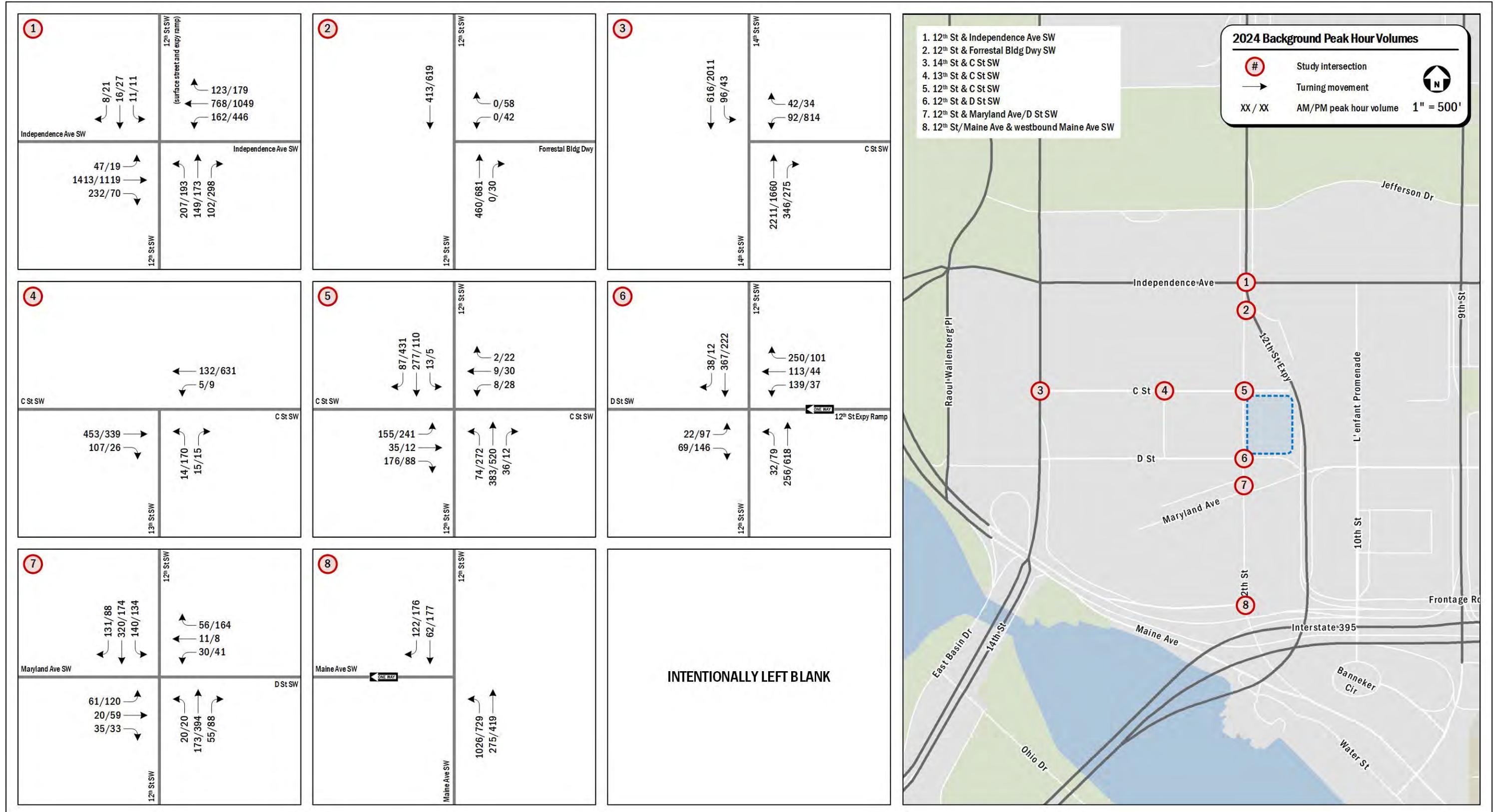


Figure 19: Background Peak Hour Traffic Volumes



Figure 20: Inbound Distribution



Figure 21: Outbound Distribution

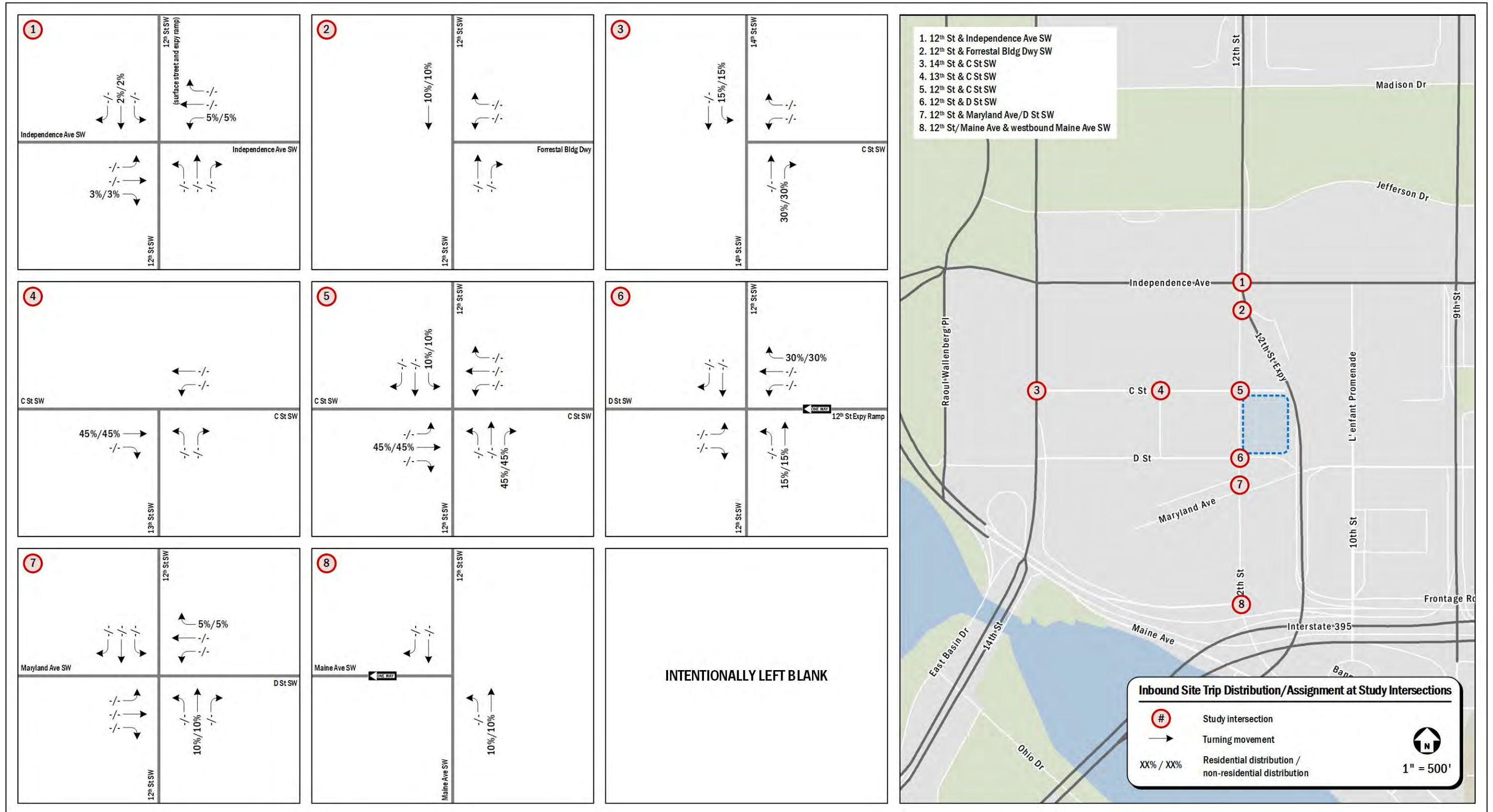


Figure 22: Inbound Distribution at Study Intersections

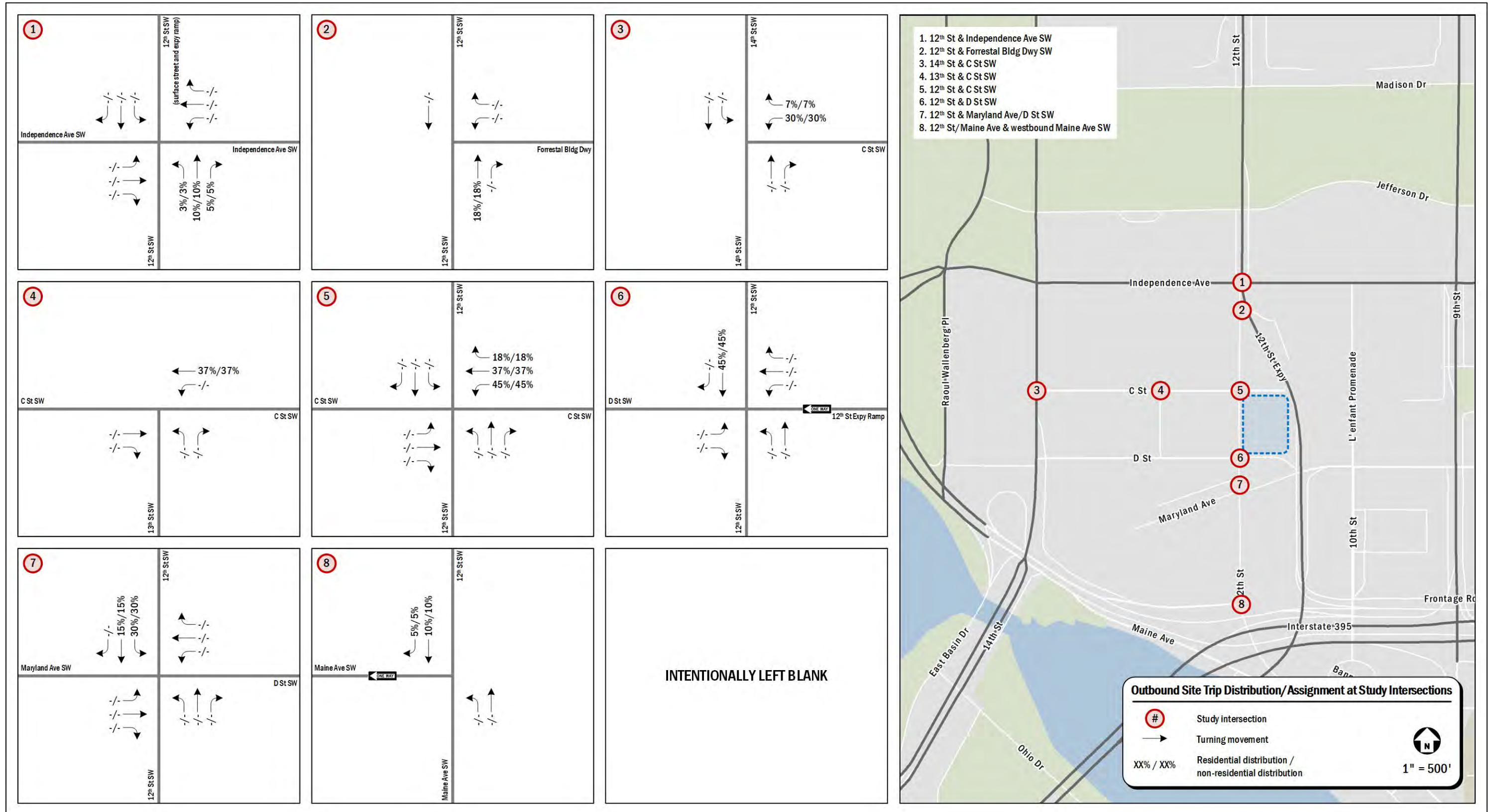


Figure 23: Outbound Distribution at Study Intersections

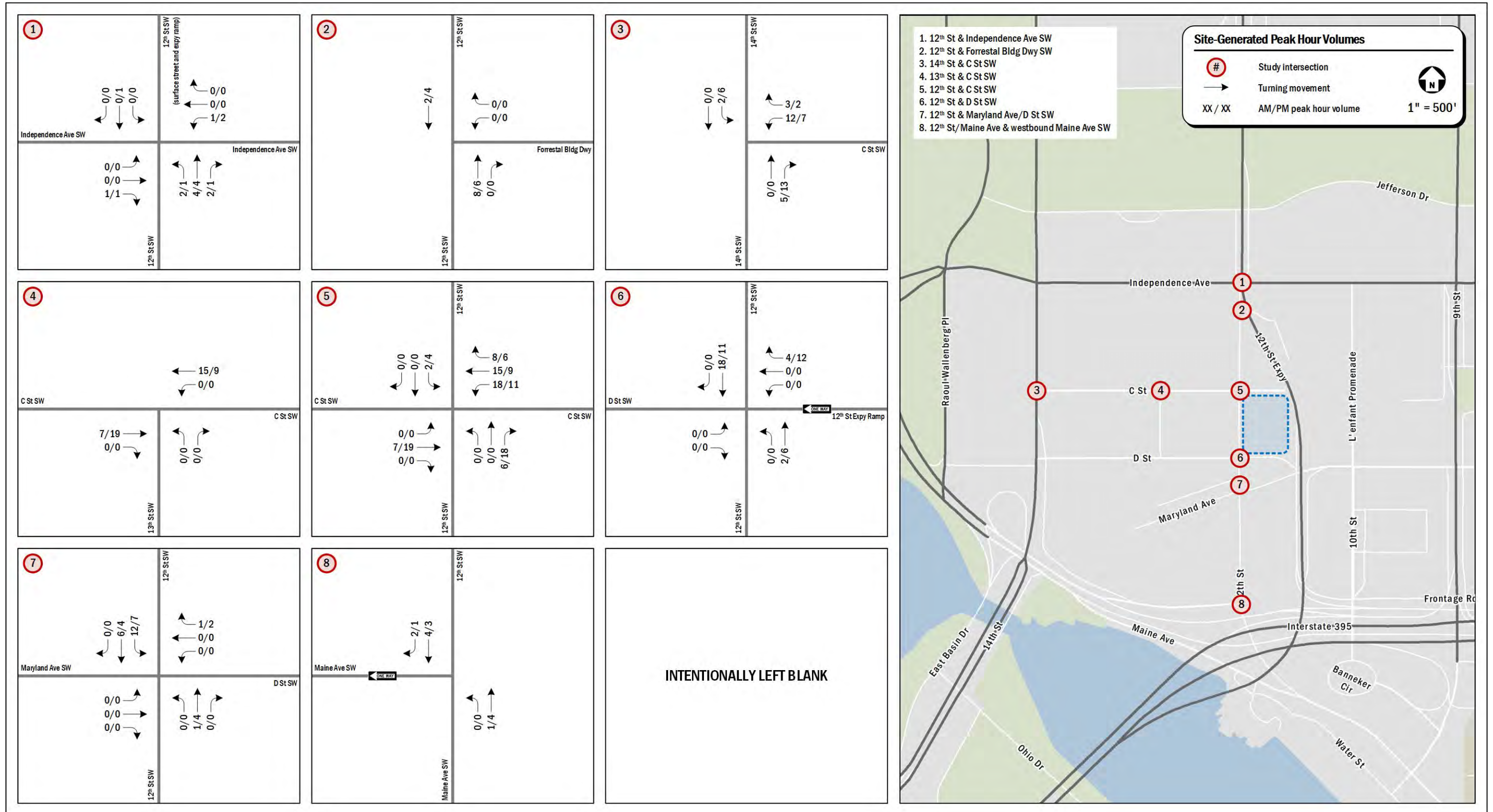


Figure 24: Site-Generated Peak Hour Volumes



Figure 25: Total Future Peak Hour Volumes

Table 10: LOS Results

Intersection and Approach	Existing (2021)				Background (2024)				Proposed Project								Additional Scenario with Curbside Management Modifications							
	AM Peak		PM Peak		AM Peak		PM Peak		Future (2024)				Future (2024) with Mitigations				Future w/ Curbside Management Modifications (2024)				Future w/ Curbside Management Modifications (2024) with Mitigations			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.12th St & Independence Ave SW																								
Overall	33.0	C	33.9	C	33.1	C	34.1	C	33.2	C	34.3	C	-	-	-	-	33.1	C	35.0	D	-	-	-	-
Eastbound	45.2	D	43.2	D	45.6	D	43.7	D	45.6	D	43.8	D	-	-	-	-	45.6	D	43.8	D	-	-	-	-
Westbound	18.4	B	33.2	C	18.3	B	33.5	C	18.3	B	33.6	C	-	-	-	-	18.3	B	33.6	C	-	-	-	-
Northbound	21.6	C	19.1	B	21.6	C	18.7	B	21.9	C	19.1	B	-	-	-	-	21.5	C	23.4	C	-	-	-	-
Southbound	29.5	C	29.1	C	29.5	C	29.1	C	29.4	C	29.2	C	-	-	-	-	29.4	C	29.2	C	-	-	-	-
2.12th St & Forrestal Bldg Dwy SW																								
Overall	1.5	A	11.2	B	1.5	A	11.1	B	1.5	A	11.0	B	-	-	-	-	1.6	A	12.3	B	-	-	-	-
Westbound	0.0	A	26.4	C	0.0	A	26.4	C	0.0	A	26.4	C	-	-	-	-	0.0	A	26.4	C	-	-	-	-
Northbound	2.8	A	18.3	B	2.8	A	18.5	B	2.8	A	18.4	B	-	-	-	-	2.9	A	21.0	C	-	-	-	-
Southbound	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	-	-	-	-	0.1	A	0.1	A	-	-	-	-
3.14th St & C St SW																								
Overall	20.4	C	39.4	D	20.4	C	40.4	D	20.5	C	41.7	D	-	-	-	-	20.5	C	42.3	D	-	-	-	-
Westbound	13.5	B	25.8	C	13.9	B	23.6	C	15.5	B	23.7	C	-	-	-	-	14.6	B	27.2	C	-	-	-	-
Northbound	24.0	C	53.9	D	24.1	C	54.5	D	24.1	C	54.2	D	-	-	-	-	24.1	C	54.2	D	-	-	-	-
Southbound	8.6	A	31.5	C	8.7	A	34.1	C	8.7	A	37.3	D	-	-	-	-	8.7	A	37.3	D	-	-	-	-
4.13th St & C St SW																								
Eastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	-	-	0.0	A	0.0	A	0.0	A	-	-	0.0	A
Westbound	0.4	A	0.2	A	0.4	A	0.2	A	0.4	A	0.2	A	-	-	0.2	A	0.4	A	0.2	A	-	-	0.2	A
Northbound	13.0	B	56.1	F	13.5	B	58.9	F	13.5	B	63.4	F	-	-	63.4	F	13.5	B	63.4	F	-	-	63.4	F
5.12th St & C St SW																								
Overall	23.3	C	32.9	C	24.7	C	35.1	D	24.5	C	37.7	D	-	-	35.9	D	25.3	C	43.3	D	-	-	43.0	D
Eastbound	44.1	D	86.3	F	47.1	D	93.4	F	46.0	D	103.4	F	-	-	84.3	F	46.0	D	103.4	F	-	-	69.6	E
Westbound	30.0	C	31.0	C	30.4	C	31.5	C	31.9	C	31.6	C	-	-	29.7	C	31.9	C	31.6	C	-	-	28.0	C
Northbound	8.0	A	7.9	A	8.1	A	7.6	A	8.1	A	7.9	A	-	-	9.3	A	10.2	B	20.2	C	-	-	27.0	C
Southbound	24.3	C	39.6	D	24.2	C	39.8	D	24.2	C	40.3	D	-	-	44.9	D	24.2	C	40.3	D	-	-	51.6	D
6.12th St & D St SW																								
Overall	22.8	C	16.4	B	23.0	C	16.4	B	22.9	C	16.5	B	-	-	-	-	22.9	C	16.5	B	-	-	-	-
Eastbound	32.6	C	30.8	C	32.7	C	31.0	C	32.7	C	31.0	C	-	-	-	-	32.7	C	31.0	C	-	-	-	-
Westbound	43.2	D	28.3	C	43.5	D	28.3	C	43.5	D	28.3	C	-	-	-	-	43.5	D	28.3	C	-	-	-	-
Northbound	8.4	A	9.9	A	8.4	A	9.8	A	8.4	A	9.8	A	-	-	-	-	8.4	A	9.8	A	-	-	-	-
Southbound	5.7	A	10.7	B	5.9	A	11.3	B	6.2	A	11.5	B	-	-	-	-	6.2	A	11.5	B	-	-	-	-
7.12th St & Maryland Ave/D St SW																								
Overall	18.0	B	26.0	C	18.0	B	25.6	C	17.8	B	25.7	C	-	-	-	-	17.8	B	25.7	C	-	-	-	-
Eastbound	34.6	C	37.2	D	34.6	C	37.2	D	34.6	C	37.2	D	-	-	-	-	34.6	C	37.2	D	-	-	-	-
Westbound	26.9	C	28.1	C	26.7	C	28.1	C	26.8	C	28.1	C	-	-	-	-	26.8	C	28.1	C	-	-	-	-
Northbound	24.8	C	29.3	C	24.9	C	29.4	C	24.9	C	29.6	C	-	-	-	-	24.9	C	29.6	C	-	-	-	-
Southbound	10.3	B	13.8	B	10.3	B	13.2	B	10.2	B	13.3	B	-	-	-	-	10.2	B	13.3	B	-	-	-	-
8.12th St/Maine Ave & WB Maine Ave SW																								
Overall	10.7	B	16.0	B	10.8	B	16.4	B	11.0	B	16.4	B	-	-	-	-	11.0	B	16.4	B	-	-	-	-
Northbound	5.7	A	9.9	A	5.8	A	10.0	A	5.8	A	10.0	A	-	-	-	-	5.8	A	10.0	A	-	-	-	-
Southbound	46.5	D	37.0	D	46.6	D	37.4	D	46.7	D	37.4	D	-	-	-	-	46.7	D	37.4	D	-	-	-	-

Table 11: v/c Comparison

Intersection and Movement	Existing (2021)		Background (2024)		Proposed Project				Additional Scenario with Curbside Management Modifications			
					Future (2024)		Future (2024) with Mitigations		Future w/ Curbside Management Modifications (2024)		Future w/ Curbside Management Modifications (2024) with Mitigations	
	AM Peak v/c	PM Peak v/c	AM Peak v/c	PM Peak v/c	AM Peak v/c	PM Peak v/c	AM Peak v/c	PM Peak v/c	AM Peak v/c	PM Peak v/c	AM Peak v/c	PM Peak v/c
1. 12th St & Independence Ave SW												
Eastbound LTR	0.97	0.88	0.97	0.89	0.97	0.89	-	-	0.97	0.89	-	-
Westbound L	0.78	0.90	0.77	0.90	0.77	0.90	-	-	0.77	0.90	-	-
Westbound LTR	0.45	0.87	0.45	0.87	0.45	0.87	-	-	0.45	0.87	-	-
Northbound L	0.64	0.82	0.64	0.82	0.64	0.82	-	-	0.64	0.82	-	-
Northbound TR	0.38	0.62	0.38	0.62	0.39	0.63	-	-	0.39	0.63	-	-
Northbound R	0.16	0.34	0.16	0.34	0.17	0.34	-	-	0.17	0.34	-	-
Southbound LTR	0.08	0.14	0.08	0.14	0.08	0.15	-	-	0.08	0.15	-	-
2. 12th St & Forrestal Bldg Dwy SW												
Northbound TR	0.15	0.32	0.15	0.32	0.15	0.32	-	-	0.22	0.47	-	-
Southbound T	0.14	0.20	0.14	0.22	0.14	0.22	-	-	0.14	0.22	-	-
3. 14th St & C St SW												
Westbound L	0.14	0.89	0.15	0.87	0.16	0.87	-	-	0.16	0.87	-	-
Westbound R	0.15	0.10	0.16	0.09	0.17	0.09	-	-	0.17	0.09	-	-
Northbound T	0.89	1.02	0.90	1.02	0.90	1.02	-	-	0.90	1.02	-	-
Northbound TR	0.31	0.26	0.32	0.27	0.31	0.28	-	-	0.31	0.28	-	-
Southbound LT	0.35	0.94	0.36	0.96	0.36	0.98	-	-	0.36	0.98	-	-
4. 13th St & C St SW												
Eastbound T	0.18	0.14	0.20	0.15	0.19	0.16	-	0.16	0.19	0.16	-	0.16
Eastbound TR	0.16	0.09	0.17	0.09	0.17	0.09	-	0.09	0.17	0.09	-	0.09
Westbound LT	0.01	0.01	0.01	0.01	0.01	0.01	-	0.01	0.01	0.01	-	0.01
Westbound T	0.06	0.28	0.06	0.27	0.06	0.27	-	0.27	0.06	0.27	-	0.27
Northbound L	0.04	0.79	0.05	0.81	0.05	0.83	-	0.83	0.05	0.83	-	0.83
Northbound R	0.03	0.03	0.03	0.03	0.03	0.03	-	0.03	0.03	0.03	-	0.03
5. 12th St & C St SW												
Eastbound LT	0.64	1.03	0.72	1.07	0.70	1.10	-	1.03	0.70	1.10	-	0.97
Eastbound R	0.41	0.24	0.42	0.25	0.42	0.25	-	0.24	0.42	0.25	-	0.23
Westbound LTR	0.01	0.21	0.05	0.24	0.16	0.24	-	0.22	0.16	0.24	-	0.20
Northbound LTR	0.25	0.52	0.26	0.50	0.25	0.52	-	0.53	0.36	0.82	-	0.88
Southbound LTR	0.34	1.51dr	0.34	1.50dr	0.34	1.50dr	-	1.60dr	0.34	1.50dr	-	1.72dr
6. 12th St & D St SW												
Eastbound L	0.20	0.34	0.21	0.35	0.21	0.35	-	-	0.21	0.35	-	-
Eastbound R	0.20	0.38	0.20	0.39	0.20	0.39	-	-	0.20	0.39	-	-
Westbound LT	0.76	0.21	0.77	0.21	0.77	0.21	-	-	0.77	0.21	-	-
Westbound R	0.54	0.30	0.55	0.26	0.54	0.28	-	-	0.54	0.28	-	-
Northbound LT	0.16	0.41	0.16	0.41	0.16	0.42	-	-	0.16	0.42	-	-
Southbound TR	0.36	0.21	0.36	0.24	0.38	0.24	-	-	0.38	0.24	-	-
7. 12th St & Maryland Ave/D St SW												
Eastbound L	0.22	0.43	0.22	0.43	0.22	0.43	-	-	0.22	0.43	-	-
Eastbound TR	0.19	0.27	0.19	0.27	0.19	0.27	-	-	0.19	0.27	-	-
Westbound LT	0.23	0.27	0.23	0.27	0.23	0.27	-	-	0.23	0.27	-	-
Westbound R	0.11	0.34	0.12	0.33	0.12	0.34	-	-	0.12	0.34	-	-
Northbound L	0.18	0.19	0.18	0.19	0.18	0.19	-	-	0.18	0.19	-	-
Northbound TR	0.41	0.76	0.42	0.76	0.42	0.77	-	-	0.42	0.77	-	-
Southbound LTR	0.36	0.28	0.36	0.30	0.37	0.30	-	-	0.37	0.30	-	-
8. 12th St/Maine Ave & WB Maine Ave SW												
Northbound L	0.55	0.42	0.55	0.43	0.55	0.43	-	-	0.55	0.43	-	-
Northbound LT	0.42	0.43	0.43	0.44	0.43	0.44	-	-	0.43	0.44	-	-
Southbound TR	0.42	0.41	0.43	0.44	0.43	0.44	-	-	0.43	0.44	-	-

Table 12: 50th and 95th Percentile Queueing Results (in feet)

Intersection and Lane Group	Storage Length (ft)	Existing (2021)		Background (2024)				Proposed Project								Additional Scenario with Curbside Management Modifications									
		Existing (2021)		Background (2024)				Future (2024)				Future (2024) with Mitigations				Future w/ Curbside Management Modifications (2024)				Future w/ Curbside Management Modifications (2024) with Mitigations					
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak		
		50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th		
1. 12th St & Independence Ave SW																									
Eastbound LTR	950	334	#432	236	#288	335	#433	239	#294	335	#433	239	#295	-	-	-	-	335	#433	239	#295	-	-	-	-
Westbound L	450	77	#203	182	#373	76	#201	183	#375	76	#201	184	#376	-	-	-	-	76	#201	184	#376	-	-	-	-
Westbound LTR	450	115	145	235	291	115	146	236	293	115	146	236	293	-	-	-	-	115	146	236	293	-	-	-	-
Northbound L	50	76	229	29	#258	78	228	29	#258	80	232	29	#258	-	-	-	-	79	158	51	#263	-	-	-	-
Northbound TR	50	58	80	27	63	61	82	27	60	63	85	27	62	-	-	-	-	62	85	56	89	-	-	-	-
Southbound R	50	7	20	4	23	8	21	5	25	9	23	4	24	-	-	-	-	9	25	0	0	-	-	-	-
Southbound LTR	300	18	44	19	52	18	44	20	53	18	43	21	54	-	-	-	-	18	43	21	54	-	-	-	-
2. 12th St & Forrestal Bldg Dwy SW																									
Northbound TR	300	9	9	78	m89	9	9	80	m91	9	9	80	m90	-	-	-	-	14	14	116	m163	-	-	-	-
Southbound T	130	0	m0	0	m0	0	m0	0	m0	0	m0	0	m0	-	-	-	-	0	m0	0	m0	-	-	-	-
3. 14th St & C St SW																									
Westbound L	550	20	31	92	#391	21	34	84	#282	25	40	84	#281	-	-	-	-	23	37	107	#378	-	-	-	-
Westbound R	550	9	20	0	m1	9	20	0	m1	9	20	0	m0	-	-	-	-	7	16	0	m2	-	-	-	-
Northbound T	250	483	566	-469	#566	486	569	-471	#568	486	569	-471	#568	-	-	-	-	486	569	-471	#568	-	-	-	-
Northbound TR	250	0	8	0	16	0	9	0	17	0	8	0	17	-	-	-	-	0	8	0	17	-	-	-	-
Southbound LT	450	67	84	407	#500	67	86	411	#525	67	85	412	#545	-	-	-	-	67	85	412	#545	-	-	-	-
4. 13th St & C St SW																									
Eastbound T	550	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-	0	-	0	-	0	-	-	-	0
Eastbound TR	550	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-	0	-	0	-	0	-	-	-	0
Westbound LT	350	-	1	-	1	-	1	-	1	-	1	-	1	-	-	-	1	-	1	-	1	-	-	-	1
Westbound T	350	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-	0	-	0	-	0	-	-	-	0
Northbound L	250	-	3	-	146	-	4	-	151	-	4	-	158	-	-	-	158	-	4	-	158	-	-	-	158
Northbound R	20	-	2	-	3	-	2	-	3	-	2	-	3	-	-	-	3	-	2	-	3	-	-	-	3
5. 12th St & C St SW																									
Eastbound LT	350	106	182	-191	m#343	126	#236	-213	m#364	119	#224	-234	m#389	-	-	-220	m#375	119	#224	-234	m#389	-	-	199	m#361
Eastbound R	350	3	57	3	m37	3	59	3	m36	0	58	2	m36	-	-	2	m35	0	58	2	m36	-	-	2	m34
Westbound LTR	100	3	14	40	82	9	28	37	79	27	61	35	78	-	-	34	76	27	61	35	78	-	-	33	73
Northbound LTR	270	26	100	134	175	27	104	128	167	27	102	133	173	-	-	144	182	112	181	302	390	-	-	318	#415
Southbound LTR	450	86	120	154	195	85	120	155	197	85	120	156	198	-	-	158	#204	85	120	156	198	-	-	158	#218
6. 12th St & D St SW																									
Eastbound L	350	13	38	60	105	14	38	62	107	14	38	62	107	-	-	-	-	14	38	62	107	-	-	-	-
Eastbound R	350	0	11	24	72	0	12	27	75	0	12	27	75	-	-	-	-	0	12	27	75	-	-	-	-
Westbound LT	300	186	#299	49	87	188	#304	50	87	188	#304	50	87	-	-	-	-	188	#304	50	87	-	-	-	-
Westbound R	300	0	64	0	38	0	65	0	36	0	64	0	37	-	-	-	-	0	64	0	37	-	-	-	-
Northbound LT	100	26	35	69	92	27	35	69	91	26	35	70	92	-	-	-	-	26	35	70	92	-	-	-	-
Southbound TR	250	28	50	27	m54	32	55	36	67	37	62	35	m67	-	-	-	-	37	62	35	m67	-	-	-	-
7. 12th St & Maryland Ave/D St SW																									
Eastbound L	350	38	77	81	139	38	77	81	139	38	77	81	139	-	-	-	-	38	77	81	139	-	-	-	-
Eastbound TR	350	12	48	45	91	12	48	45	91	12	48	45	91	-	-	-	-	12	48	45	91	-	-	-	-
Westbound LT	550	26	60	32	68	26	60	32	68	26	60	32	68	-	-	-	-	26	60	32	68	-	-	-	-
Westbound R	550	0	7	0	41	0	8	0	40	0	8	0	40	-	-	-	-	0	8	0	40	-	-	-	-
Northbound L	550	14	40	15	41	14	40	15	41	14	40	15	41	-	-	-	-	14	40	15	41	-	-	-	-
Northbound TR	550	105	174	288	422	107	176	289	423	106	176	291	427	-	-	-	-	106	176	291	427	-	-	-	-
Southbound LTR	100	59	90	27	57	59	90	27	55	61	91	27	55	-	-	-	-	61	91	27	55	-	-	-	-
8. 12th St/Maine Ave & WB Maine Ave SW																									
Northbound L	600	152	232	134	202	153	234	137	206	153	234	137	206	-	-	-	-	153	234	137	206	-	-	-	-
Northbound LT	600	100	128	138	179	100	129	140	180	100	128	140	181	-	-	-	-	100	128	140	181	-	-	-	-
Southbound TR	500	24	61	53	97	24	62	58	106	25	64	58	106	-	-	-	-	25	64	58	106	-	-	-	-

"#" = 95th percentile volume exceeds capacity, queue may be longer; "M" = Volume for 95th percentile queue is metered by upstream signal; "-" = Volumes exceeds capacity, queue is theoretically infinite

Transit Facilities

This chapter discusses the existing and proposed transit facilities near the site, accessibility to transit, and evaluates the overall transit impacts of the site.

This chapter concludes that:

- The development site is well-served by existing transit;
- The development site is approximately 0.1 miles from the Smithsonian Metro station, approximately 0.5 miles from the L'Enfant Plaza Metro station, and approximately 0.5 miles from the L'Enfant VRE station;
- The development site is surrounded by six (6) Metrobus routes, two (2) DC Circulator routes, and a neighborhood shuttle route that travel along multiple primary corridors;
- A proposed transit project will improve transit access to the site; and
- The project is expected to generate a manageable amount of transit trips that the existing transit service is capable of handling.

Existing Transit Service

The study area is well-served by Metrorail, VRE commuter rail, and the Metrobus, DC Circulator, and Southwest Neighborhood Shuttle bus systems. Combined, these transit services provide local and regional transit connections and link the site with major cultural, residential, employment, and commercial destinations throughout the region. Figure 26 identifies the major transit routes, stations, and stops in the study area.

The site is located 0.1 miles from the Smithsonian Metro station, which is served by the Blue, Orange, and Silver Lines, and 0.5 miles from the L'Enfant Plaza Metro station, which is served by the Blue, Orange, Silver, Green, and Yellow Lines. The Blue Line travels between the Franconia-Springfield and Largo Town Center stations. The Orange Line travels between the Vienna and New Carrollton stations. The Silver Line travels between the Wiehle-Reston East and Largo Town Center stations. The Green Line travels between the Greenbelt and Branch Avenue stations. The Yellow Line travels between the Greenbelt and Huntington stations.

The site is located 0.5 miles from the L'Enfant station of the Virginia Railway Express (VRE) system, which provides peak hour commuter rail service between the Northern Virginia suburbs and downtown Washington, DC along the I-66 and I-95

corridors. Both the VRE Manassas and Fredericksburg Lines serve L'Enfant station.

The site is also served by six (6) Metrobus routes, two (2) DC Circulator routes, and the Southwest Neighborhood Shuttle along multiple primary corridors. These bus routes connect the site to many areas of the region, as well as several Metro stations serving all six (6) Metrorail lines. Table 13 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

Table 14 shows WMATA's recommended amenities for each type of bus stop. Table 15 shows a detailed inventory of the amenities appearing at each of the existing bus stop within the transit study area.

Several peak-only commuter bus lines also stop near the site, but they are not reviewed in this report.

Proposed Transit Service

MoveDC Transit Element

The transit element of *MoveDC*, the District's multimodal long-range transportation plan, proposes the following transit service improvements near the proposed project:

- High-capacity transit service along Maine Avenue SW

This improvement is proposed as part of the long-range plan, but not yet funded or planned.

Site-Generated Transit Impacts

The proposed development is projected to generate 99 transit trips (25 inbound, 74 outbound) during the AM peak hour and 120 transit trips (72 inbound, 48 outbound) during the PM peak hour.

It is expected that existing transit service can accommodate these new site-generated trips.

Table 13: Local Bus Route Information

Route No.	Route Name	Service Hours at Stop Closest to Site ¹			Headway (minutes)	Walking Distance to Nearest Stop
		Weekdays	Saturdays	Sundays		
5A	DC-Dulles Line	5:30am-12:17am	5:30am-12:17am	5:30am-12:17am	42 - 79	0.4 mi (8 min)
16E	Columbia Pike Line	10:36pm-12:17am	5:47am-7:17am; 10:36pm-12:17am	6:06am-8:18am; 10:36pm-12:18am	30	0.3 mi (5 min)
30N, 30S ²	Friendship Heights- Southeast Line	4:50am-12:29am	-	-	30	0.5 mi (10 min)
32, 36 ²	Pennsylvania Avenue Line	5:14am-11:57pm	4:51am-12:17am	4:45am-12:13am	1 - 15	0.5 mi (10 min)
52	14th Street Line	4:50am-12:12am	4:50am-12:37am	4:50am-12:26am	6 - 30	100 ft (1 min)
74	Convention Center- Southwest Waterfront Line	6:44am-10:39pm	6:43am-10:42pm	6:44am-10:37pm	30	0.5 mi (10 min)
EM-LP	DC Circulator Eastern Market-L'Enfant Plaza Route	6:00am-9:00pm	7:00am-9:00pm	7:00am-9:00pm	10	0.5 mi (10 min)
NM	DC Circulator National Mall Route	7:00am-7:00pm ³ 7:00am-8:00pm ⁴	9:00am-7:00pm ³ 9:00am-8:00pm ⁴	9:00am-7:00pm ³ 9:00am-8:00pm ⁴	10	0.2 mi (4 min)
SNS	Southwest Neighborhood Shuttle	-	-	-	10	0.2 mi (4 min)

¹ This chart reflects current service as of January 2021 during WMATA's ongoing COVID-19 recovery plan, not regular service. The 5A, 16E, 30N, 30S, 32, 36, 52, 74 are all on modified schedules, weekend service is temporarily suspended for the 30N and 30S lines, and the Southwest Neighborhood Shuttle is temporarily suspended.

² Only the eastbound direction stops within ½ mile of the project site.

³ October to March

⁴ April to September

Table 14: WMATA Recommended Bus Stop Amenities

Amenity	Basic Stop		Enhanced Stop	Transit Center Stop
	< 50 daily boardings	≥ 50 daily boardings		
Bus stop flag	●	●	●	●
Route map and schedule	●	●	●	●
5' x 8' landing pad	●	●	●	●
40'/60' x 8' landing pad			●	●
4' sidewalk	●	●	●	●
Bench		●	●	●
Shelter		●	●	●
Lighting (on shelter or within 30' if overhead)	Recommended for stops with early morning and evening service		●	●
Dynamic information signage	Contingent on presence of shelter			
Trash and recycling receptacles	Recommended where surrounding uses may generate trash			

Source: 2019 WMATA *Bus Stop Amenity Reference Guide*

Table 15: Bus Stop Inventory

Location	Stop ID	Routes Served	Amenities								
			Bus stop flag	Route map & schedule	Landing pad	Sidewalk	Bench	Shelter	Dynamic info sign	Lighting	Trash Recp.
14th St & Independence Ave SW (SB)	1000712	16E	●	●	●	●				●	●
14th St & C St SW (NB)	1000710	16E	●		●	●					●
7th St & E St SW (NB)	1000644	74	●	●	●	●	●	●		●	●
7th St & E St SW (SB)	1000648	74	●	●	●	●	●	●		●	●
12th St & C St SW (SB)	1000679	52	●		●	●				●	
7th St & Maryland Ave SW (NB)	1000694	74	●	●	●	●	●	●		●	●
Independence Ave & 12th St SW (EB)	1000721	52	●	●	●	●	●	●		●	●
Independence Ave & 6th St SW (EB)	1000723	30N, 30S, 32, 36	●	●	●	●	●	●	●	●	●
Independence Ave & 14th St SW (WB)	1000733	52	●	●	●	●				●	●
Independence Ave & 12th St SW (WB)	1000742	52	●	●	●	●				●	
7th St & Independence Ave SW (SB)	1000748	74	●	●	●	●	●	●		●	●
Independence Ave & 14th St SW (EB)	1002966	52	●	●	●	●				●	
D St & 9th St SW tunnel entr (EB)	1003424	5A	●	●	●	●				●	
D St & 7th St SW (WB)	1003599	52	●		●	●				●	
D St & 7th St SW (EB)	1003665	5A	●		●	●	●			●	
D St & 7th St SW (EB)	1003665	EM-LP	●		●	●				●	
E St & 7th St SW (WB)	1003666	5A	●	●	●	●	●	●		●	●
7th St & C St SW (SB)	1003674	74	●	●	●	●				●	●
Jefferson Dr & 12th St SW (EB)	1003853	NM	●		●	●					●
Maine Ave & 9th St SW (SB)	1003905	52	●	●	●	●	●			●	●
Maine Ave & 9th St SW (NB)	1003906	52	●		●	●				●	●
12th St & D St SW (NB)	1003916	52	●	●	●	●				●	
Independence Ave & 7th St SW (WB)	N/A	SNS	●	●	●	●				●	
L'Enfant Plaza & 10th St SW (SB)	N/A	SNS	●	●						●	



Figure 26: Existing Transit Facilities

Pedestrian Facilities

This chapter summarizes existing pedestrian access to the site and reviews the impacts of the site on the pedestrian network.

The following conclusions are reached within this chapter:

- Despite some incidences of missing crosswalks or sidewalks that do not meet width standards, there is generally an excellent, well-connected pedestrian network surrounding the site;
- The area surrounding the site is mostly free of significant barriers to pedestrian connectivity, with minor exceptions; and
- The project is expected to generate pedestrian trips to and from nearby destinations, and the pedestrian facilities surrounding the project can accommodate these new trips.

Pedestrian Study Area

Pedestrian facilities within a quarter-mile of the site were evaluated, as well as walking routes to major destinations including the Smithsonian Metro station. There are several sidewalks within the study area do not meet minimum sidewalk width, as well as several curb ramps that do not meet ADA requirements. Despite these shortcomings, there is generally an excellent, well-connected pedestrian network surrounding the site.

Figure 27 shows suggested pedestrian pathways to nearby destinations, including walking time and distances, and any areas of concern or barriers to pedestrian connectivity.

Existing Pedestrian Infrastructure

A review of pedestrian facilities surrounding the proposed development shows that most facilities meet DDOT standards, provide a quality walking environment, and provide excellent connectivity to major local destinations. A detailed inventory of the existing pedestrian facilities within the study area is shown on Figure 28. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT's *Design and Engineering Manual (2019)* in addition to Americans with Disabilities Act (ADA) standards. These facilities are shown within their respective land use types based on DC's Zoning Regulations of 2016, which determines which of DDOT's sidewalk width requirements apply to them. These sidewalk width requirements are shown in Table 16.

All streets within the study area are within the Central DC and Commercial Area category of land uses, which have the highest sidewalk width requirements. Most sidewalks surrounding the site comply with these requirements. However, there are some sidewalks that do not meet DDOT's minimum width requirements. In most of these cases, the sidewalk meets the width requirement of low- or moderate-density areas, but not the Central DC area. However, all streets within the study area have a sidewalk meeting width requirements on at least one side of the street.

ADA standards require that all curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired but where they are present, a 48" clear space is required outside active vehicle traffic lanes and within marked crossings. As shown in Figure 28, most existing curb ramps near the site meet ADA standards, including every curb ramp directly adjacent to the site. However, some intersections lack a crosswalk and curb ramp on one leg or have curb ramps that do not meet ADA standards.

As shown in Figure 27, there are a few barriers to pedestrian connectivity within the study area. Although Interstate 395 runs through the study area, there is sufficient surface street porosity across or under the Interstate to mitigate the pedestrian barriers it would otherwise create. However, the approximately 300-foot tunnel carrying 12th Street/Maine Avenue under Interstate 395 has narrow sidewalks without buffers next to multiple traffic lanes within the confined tunnel space, creating generally uncomfortable conditions for pedestrians.

The 12th Street Expressway directly east of the site also forms a pedestrian barrier. However, the SW Ecodistrict Plan calls for restoring the street grid to improve multimodal connectivity, including extending C Street eastward from its current terminus just east of 12th Street to connect with 10th Street. This action would substantially improve pedestrian connectivity to and from the project site, even if the 12th Street Expressway itself remains.

Site-Generated Pedestrian Impacts

The proposed development is projected to generate 32 pedestrian trips (7 inbound, 25 outbound) during the AM peak hour and 38 pedestrian trips (24 inbound, 14 outbound) during the PM peak hour.

The origins and destinations of these pedestrian trips are likely to be:

- Nearby residential areas that allow employees the opportunity to walk to work;
- Retail locations outside of the site; and
- Neighborhood destinations such as schools, libraries, and parking in the vicinity of the site.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the site and nearby bus stops and Metro stations. It is expected that existing pedestrian facilities can accommodate these new site-generated trips.

In addition to the pedestrian trips the proposed project will add, the project will also improve pedestrian facilities on the site itself. These improved facilities are shown on Figure 29.

Table 16: DDOT Sidewalk Width Requirements

Street Type	Curb Walk	Tree/Furnishing Zone	Sidewalk Unobstructed Clear Width	Total Minimum Sidewalk Width
Low to Moderate Density Residential	None	4 - 6 feet	6 feet	10 feet
High Density Residential or Light Commercial	1 foot	4 - 8 feet	8 feet	13 feet
Central DC and Commercial Areas	1 - 2 feet	4 - 10 feet	10 feet	16 feet

Source: DDOT *Design and Engineering Manual*

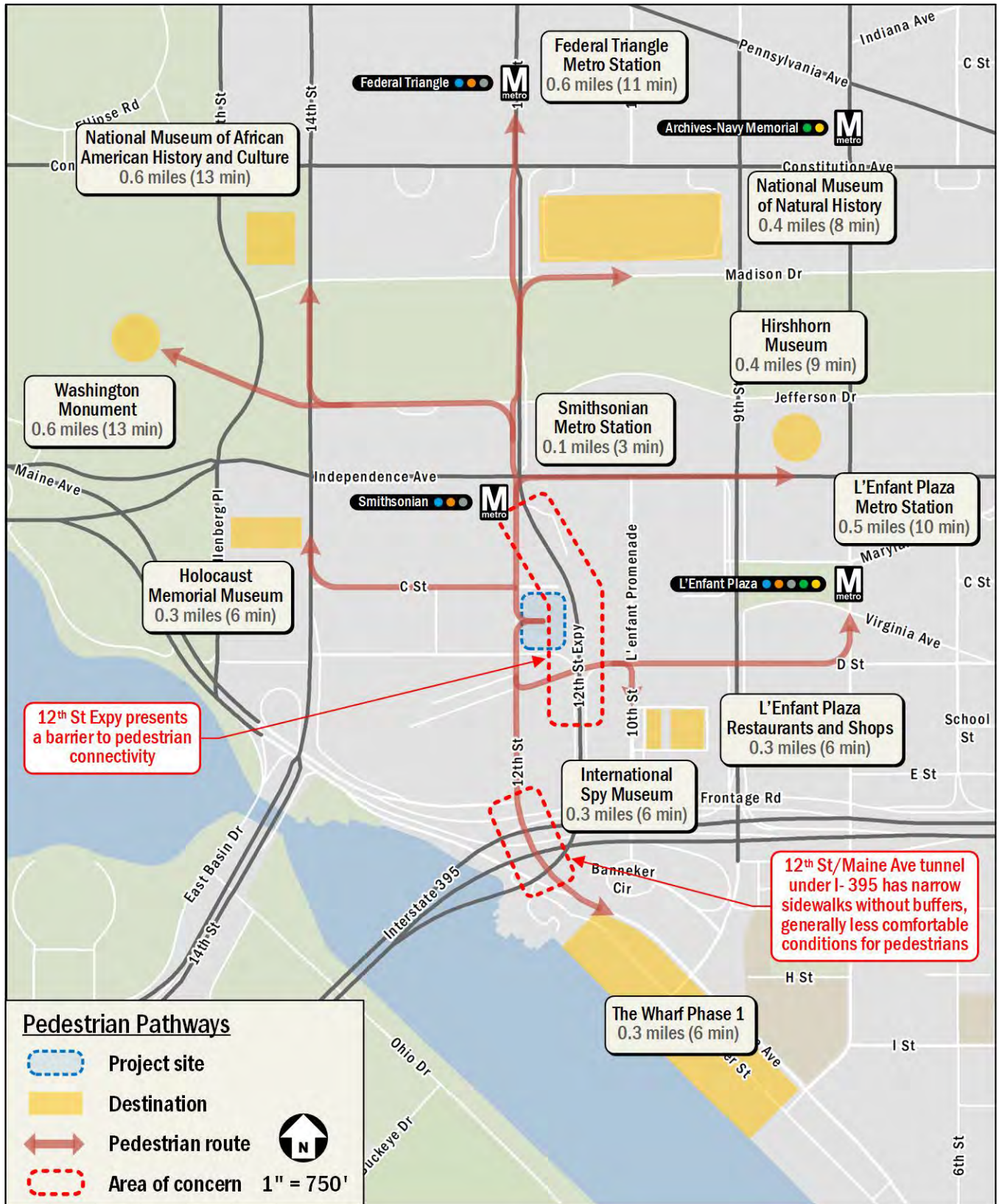


Figure 27: Pedestrian Pathways

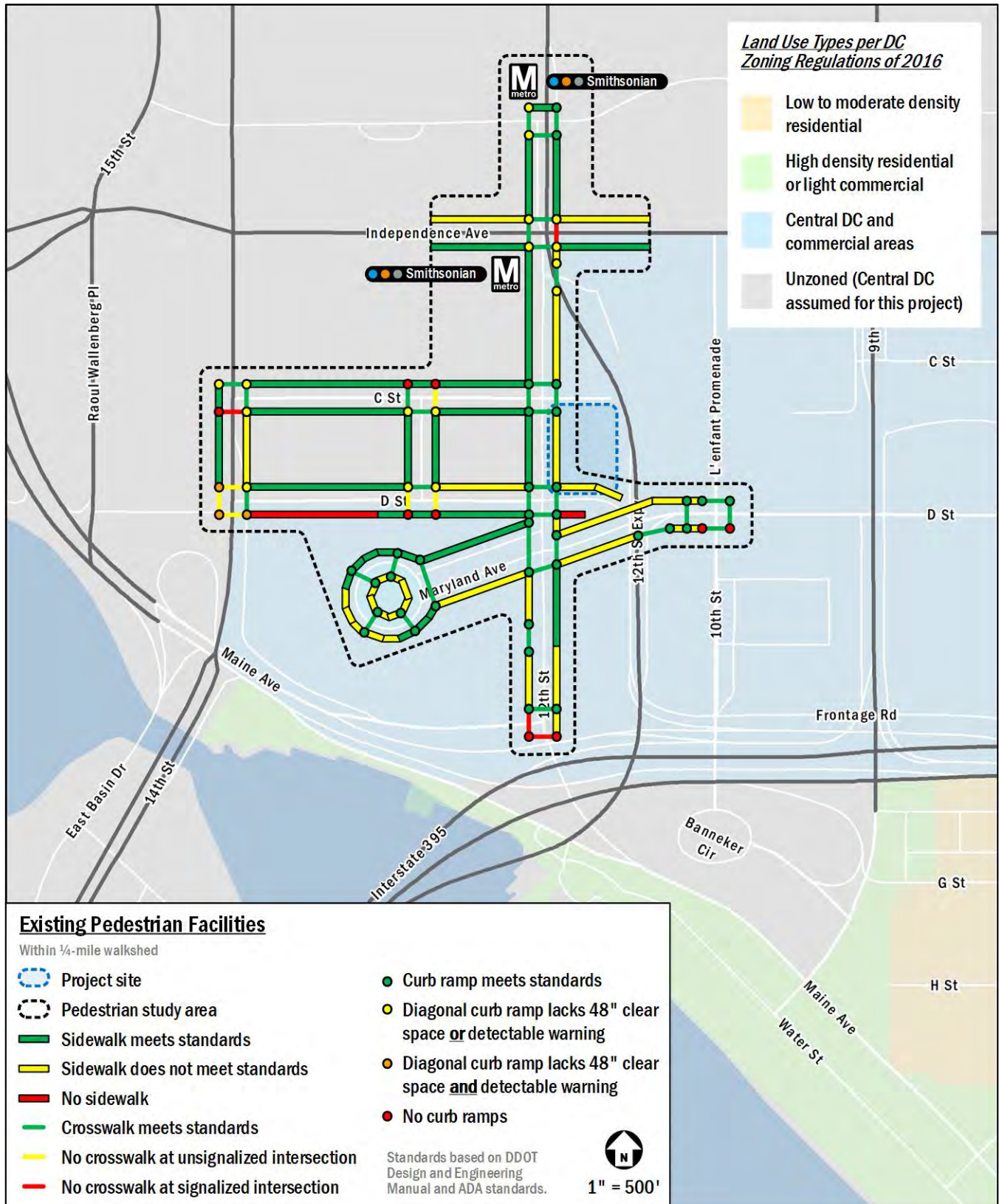


Figure 28: Existing Pedestrian Facilities

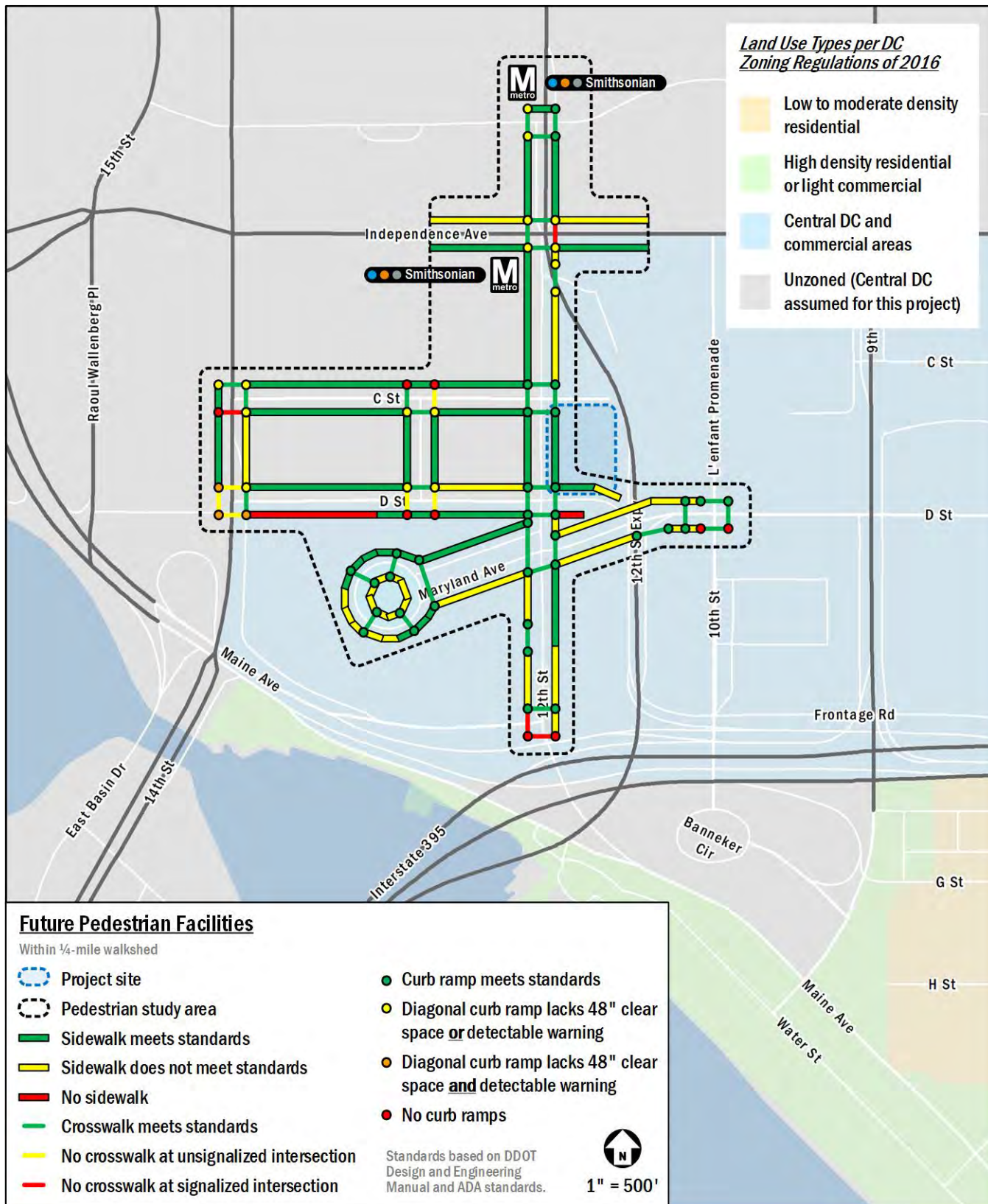


Figure 29: Future Pedestrian Facilities

Bicycle Facilities

This chapter summarizes existing bicycle access to the site and reviews the impacts of the site on the bicycle network.

The following conclusions are reached within this chapter:

- The site has access to several on- and off-street bicycle facilities within the study area;
- Several planned and proposed bicycle projects will improve bicycle access to the site;
- The project is expected to generate a manageable number of bicycle trips; therefore, site-generated bicycle trips can be accommodated on existing infrastructure;
- The development site will include long-term bicycle parking in the parking garage that meets zoning requirements; and
- The development will include short-term bicycle parking along the perimeter of the site that meets zoning requirements.

Existing Bicycle Facilities

The site has access to existing on- and off-street bicycle facilities. Existing major facilities consist of off-street bicycle trails on Jefferson Drive SW and the National Mall, located 0.2 miles north of the site, as well as a cycle track on Maine Avenue SW, located 0.3 miles south of the site. Using these facilities, bicyclists have access to several other regional bicycle facilities.

Existing bicycle facilities are shown on Figure 30.

Capital Bikeshare

In addition to personal bicycles, the Capital Bikeshare program provides an additional cycling options for residents, employees, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet. The following Capital Bikeshare stations are within a quarter-mile of the site:

- A 39-dock station at 12th Street and C Street SW, across the street from the site;
- A 35-dock station at Jefferson Drive and 12th Street SW, 0.2 miles from the site;
- A 15-dock station at Independence Avenue and L'Enfant Plaza SW, 0.2 miles from the site;

- A 23-dock station at 10th Street and L'Enfant Plaza SW, 0.2 miles from the site.

Figure 30 illustrates these and other Capital Bikeshare locations in the area.

Demand analysis was conducted to assess the existing stations' capacity during both the peak and off-peak seasons. Pre-COVID-19 ridership data was collected and compared for the month of January between 2018 and 2019 as the off-peak season to evaluate off-peak season demand and for the month of May between 2018 and 2019 to evaluate peak season demand.

Table 17 shows the total trips originating from and ending at the listed stations and the percent change between 2018 and 2019. As shown in Table 17, demand has decreased at three (3) of the four (4) stations within a quarter-mile of the site, with the percent decrease in demand ranging from 38% to 48% during the off-peak season and between 24% and 34% during the peak season.

Table 17: Nearby Capital Bikeshare Station Ridership Data

Station Location	Off-peak Season Trips			Peak Season Trips		
	1/2018	1/2019	Δ	5/2018	5/2019	Δ
12th St & C St SW	1250	697	-44%	2702	1957	-28%
Jefferson Dr & 12th St SW	1679	1103	-34%	11010	7271	-34%
Independence Ave & L'Enfant Plaza SW	886	459	-48%	2189	1667	-24%
10th St & L'Enfant Plaza SW	400	416	+4%	1317	1609	+22%

Based on this analysis, the nearby stations have capacity to accommodate additional trips that will be generated by the project.

Furthermore, a location for a new or expanded station at 14th Street and Jefferson Drive SW, 0.4 miles from the site, was proposed in the April 2020 Capital Bikeshare Development Plan Update as part of the constrained expansion plan. This station would further increase bikeshare capacity and non-vehicular mobility in the area.

Shared Mobility

Shared mobility service in the District is provided by eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies including Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and JUMP. These Personal Mobility Devices (PMDs) are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where you’ll find other street signs, street furniture, trees, parking meters, etc.). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Planned Bicycle Improvements

Several bicycle improvements are planned near the site. These are shown on Figure 31.

DDOT Bikeways Expansion

The DDOT bikeways expansion is a plan to build 20 miles of new protected bikeways (also called cycle tracks) by 2022.

In the direct vicinity of the proposed development, DDOT plans to build protected bikeways along the following streets:

- 15th Street NW/SW, Raoul Wallenberg Place SW, Ohio Drive SW, and East Basin Drive SW between Pennsylvania Avenue NW and the Jefferson Memorial.

Proposed Bicycle Improvements

Several bicycle improvements are proposed near the site but are not yet funded or planned. These are shown on Figure 31.

MoveDC Bicycle Element

The bicycle element of *MoveDC*, the District’s multimodal long-range transportation plan, includes the following bicycle improvements near the development that are proposed but not yet funded or planned:

- An off-street bike-pedestrian trail across the new Long Bridge;
- A cycle track along Independence Avenue SW between 15th Street SW and South Capitol Street; and
- Bicycle lanes along a new alignment of Maryland Avenue SW between 12th Street SW and 9th Street SW.

Capital Bikeshare Expansion

Capital Bikeshare’s 2019 development plan guides the expansion of the Capital Bikeshare system. While there are no planned or funded stations near the site, the plan includes the following proposed station near the site:

- Either a new station or an expansion of the existing station at 14th Street and Jefferson Drive SW, 0.4 miles from the site;
- A new station at Maine Avenue and Ohio Drive SW; 0.5 miles from the site; and
- Either a new station or an expansion of the existing station at 7th Street and C Street SW, 0.5 miles from the site.

Site-Generated Bicycle Impacts

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

On-site Bicycle Infrastructure

The Cotton Annex development will meet zoning requirements by providing 127 long-term bicycle parking spaces on the Lower Level (parking garage level) and 31 short-term bicycle parking spaces on exterior racks around the perimeter of the site.

Bicycle Trip Generation

The proposed project is projected to generate 22 bicycle trips (5 inbound, 17 outbound) during the AM peak hour and 26 bicycle trips (16 inbound, 10 outbound) during the PM peak hour.

It is expected that existing bicycle facilities can accommodate these new site-generated trips.

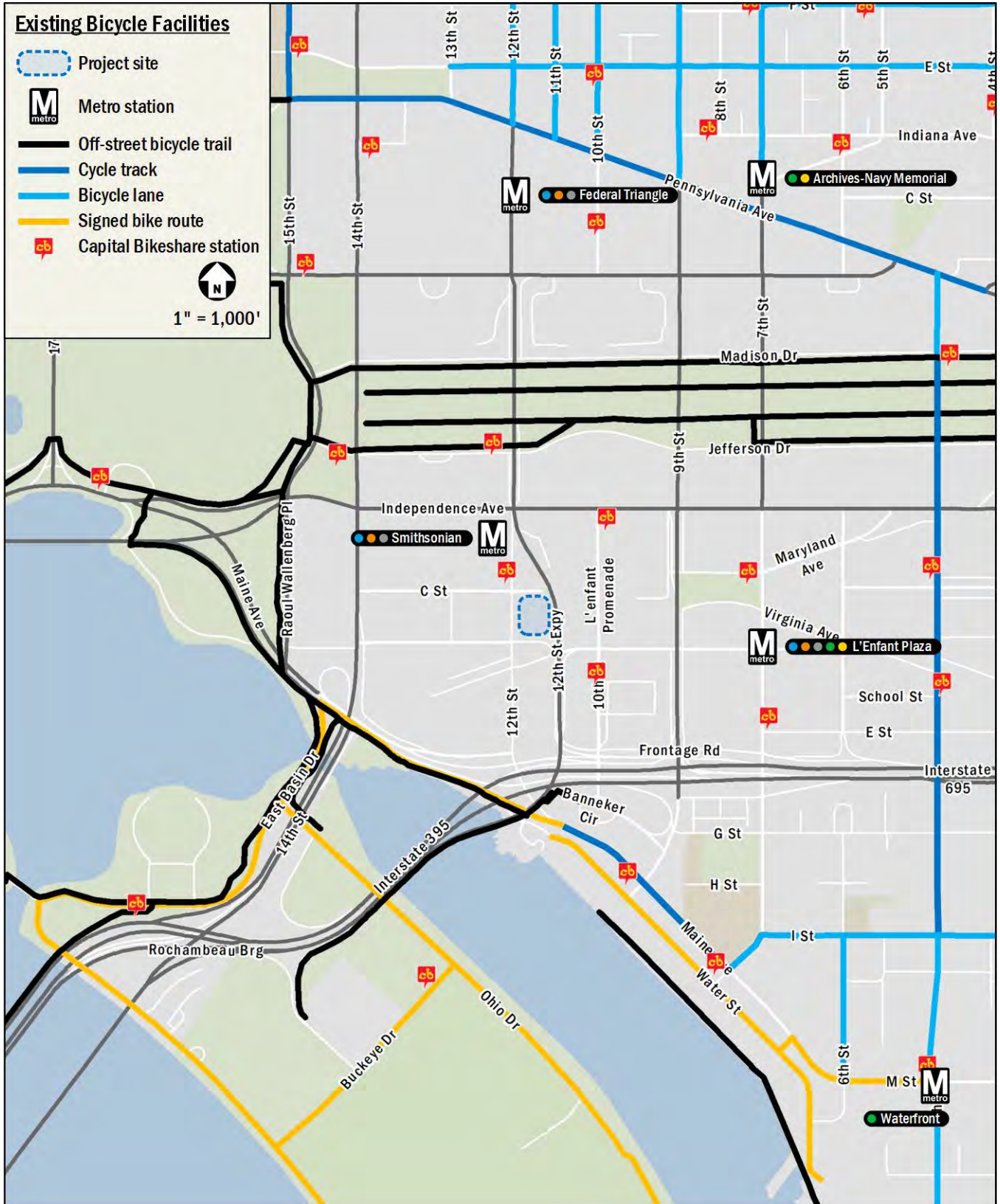


Figure 30: Existing Bicycle Facilities



Figure 31: Existing, Planned, and Proposed Bicycle Facilities

Safety Analysis

This chapter qualitatively reviews any vehicle, pedestrian, or bicycle conflicts at the study area intersections or street links within the study area. This review notes any intersections within the study area that have been identified by DDOT as high crash locations and makes recommendations to improve safety conditions. These recommendations are presented for DDOT's consideration, not for the Applicant to complete as part of the proposed project.

Summary of Safety Analysis

A safety analysis was performed to determine if there are any intersections that pose obvious conflicts with vehicles, pedestrians, or bicyclists. This was determined based on data included in DDOT's most recent *Traffic Safety Statistics Report* (2015-2017), *Vision Zero Action Plan*, and Open Data DC Vision Zero Safety data.

Based on available data, the intersection of 12th Street and Independence Avenue SW ranked 66th in the District for crash frequency in 2017, as well as 60th for crash cost in 2017. No other intersections in the study area were identified by DDOT as hazardous/high crash intersections. However, a qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections in which conditions for vehicles, pedestrians, and bicyclists can be improved.

Based on a review of facilities the area, in addition to crash data, one (1) intersection was identified for further evaluation. The following section details the potential conflicts at the identified study area intersections.

Potential Impacts

This section reviews the intersection that was identified to pose potential conflicts to vehicles, pedestrians, or bicyclists.

12th Street and Independence Avenue SW

This intersection was identified in DDOT's *Traffic Safety Statistics Report* (2015-2017) as having comparatively high rates of crash frequency and crash cost. In addition to being identified in the *Traffic Safety Report*, six (6) vehicle crashes that have involved either pedestrians or bicyclists have taken place at or near this intersection since 2016 according to the DDOT-maintained "Crashes in DC" database, as shown on Figure 32.

This intersection operates as a five-legged intersection. Crosswalks are currently provided on every leg of the intersection except the eastern leg. Curb ramps that include detectable warnings per ADA standards are provided on every corner. Pedestrian refuge islands are provided in medians on the southern and northern legs of the intersection. This intersection also includes a 3-second leading pedestrian interval (LPI) for the north-south phases.

This intersection provides a gateway into downtown DC from the south and a connection to major highways in the area in every direction, which is reflected by the high volumes of vehicle traffic travel through this intersection daily. Accounting for existing traffic volumes and traffic volumes generated by regional growth and background projects, trips generated by the proposed Cotton Annex project make up only 0.3% of total intersection trips in the morning peak hour and only 0.2% in the afternoon peak hour.

As shown in Figure 31, *MoveDC* identified a cycle track along Independence Avenue SW that would improve conditions for bicyclists at this intersection. Additional improvements DDOT should consider to improve conditions for non-vehicular users include extending the existing LPI and introducing an LPI to the east-west phases along with adding a crosswalk to the eastern leg of the intersection.



Figure 32: Crashes in DC Data

Summary and Conclusions

This report has evaluated whether the Cotton Annex development will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the existing conditions, background conditions, and total future conditions.

This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements, intersection mitigation measures, and TDM measures are implemented.

This report also concludes that the project will help achieve the transportation-related objectives of the Maryland Avenue Southwest Plan, as stipulated in Subtitle I § 581 as a requirement for the special exception the project seeks.

Proposed Project

The site location is generally bounded by the terminus of C Street SW to the north, D Street SW to the south, the 12th Street Expressway to the east, and 12th Street SW to the west. The site is currently occupied by a vacant 68,779 square foot office building with approximately 120 parking spaces that serve as a public surface parking lot.

The proposed project will remove the surface parking lot, rehabilitate the existing building, and add a connected new building to form a mixed-use development including approximately 610 residential dwelling units, 1,368 square feet of retail, and 93 parking spaces.

Multimodal Overview

Trip Generation

The Cotton Annex project is expected to generate new trips on the surrounding transportation network across all modes during the morning and afternoon peak hours. However, the new trips generated by the project will not have a detrimental impact on the transportation network due to the minor level of increased vehicular trips, as well as mitigation measures and a Transportation Demand Management (TDM) plan that will be implemented as part of the redevelopment. The multimodal trip generation for the proposed project is as follows:

The projected AM peak hour trip generation is 56 vehicles/hour, 99 transit riders/hour, 22 bicycle trips/hour, and 32 walking trips/hour. The projected PM peak hour trip generation is 67

vehicles/hour, 120 transit riders/hour, 26 bicycle trips/hour, and 38 walking trips/hour.

Transit

The site is located 0.1 miles from the Smithsonian Metro station, 0.5 miles from the L'Enfant Plaza Metro station, and is served by local and regional bus routes.

Proposed transit projects including high-capacity transit service along Maine Avenue SW will improve transit access to the site.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a well-connected pedestrian network. Despite some incidences of missing crosswalks or sidewalks that do not meet width standards, there is generally an excellent, well-connected pedestrian network surrounding the site.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site has access to several on- and off-street bicycle facilities.

Several planned and proposed bicycle projects will improve bicycle access to the site, including a planned cycle track along 15th Street/Raoul Wallenberg Place SW.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

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

Vehicular

The site is accessible via local streets from principal arterials such as Independence Avenue SW and 14th Street SW. These roadways connect the site to expressways within the District such as the 12th Street Expressway, the 9th Street Expressway, the Anacostia Freeway (DC-295), the Southwest Freeway (I-395), and the Southeast Freeway (I-695). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To determine the project's impact on the transportation network, future conditions were analyzed with and without the development based on the number of trips the site is expected to generate. Intersection analyses were performed to obtain the average delay and queue a vehicle will experience. These average delays and queues were compared to the acceptable levels of delay set by DDOT standards as well as existing and background queues to determine if the project will negatively impact the study area.

The analysis concluded that two (2) intersections require mitigation because of the minor impacts to delay and queues created by the project in the Total Future conditions.

In addition to Total Future conditions, this report analyzed an additional scenario requested by the Advisory Neighborhood Commission (ANC) which included curbside management modifications that would change the lane configuration of 12th Street SW adjacent to the project site. In this scenario, the same two (2) intersections required mitigation because of the minor impacts to delay and queues created by the project.

Mitigation measures expected to reduce impacts to delay caused by the project are recommended as follows:

Project Impact and Recommendations

Future Conditions

13th Street & C Street SW

Because the increase in delay at this intersection is minor and does not exceed five (5) seconds, and because the site-generated trips make up a very small proportion of overall trips at this intersection, this report recommends mitigations in the form of additional Transportation Demand Management (TDM) measures to address impact at this intersection and reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

12th Street & C Street SW

Signal timing and phasing adjustments will be coordinated with DDOT in the afternoon peak hour to ensure the most efficient future operation, following construction of the Cotton Annex project.

Recommendations for Additional Analysis Scenario Considered

Future Conditions with Curbside Management Modifications

13th Street & C Street SW

The delay impact at this intersection is the identical to that of the Future Conditions due to the increase in traffic volumes generated by the project. Therefore, the recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

12th Street & C Street SW

The delay impact at this intersection is similar, to that of the Future Conditions due to the increase in traffic volumes generated by the project, as well as the reduction of three (3) to two (2) northbound travel lanes in this scenario. The recommendations for this intersection under Future Conditions would also satisfactorily mitigate delay impacts under this scenario.

Queuing issues in the afternoon peak hour at this intersection cannot be mitigated with signal timing adjustments due to the reduced capacity resulting from the reduction from three (3) to two (2) northbound travel lanes in this scenario. Therefore, this report recommends mitigations in the form of additional Transportation Demand Management (TDM) measures to reduce single-occupant vehicle travel. These additional TDM measures intended to serve as mitigations are noted as such in the Transportation Demand Management section of the Project Design chapter of this report.

Safety

A qualitative review of study area intersections was performed to identify areas of concern due to vehicular, pedestrian, and bicycle interactions.

The analysis concluded that one (1) of the study intersections had comparatively high crash rates based on DDOT's most recent *Traffic Safety Statistics Report* (2015-2017) and was therefore identified for further evaluation to enhance the multimodal network surrounding the site. This evaluation produced the following recommendations, which are for DDOT's consideration and not for the Applicant to complete as part of the proposed project:

12th Street and Independence Avenue SW

Implement the *MoveDC*-recommended cycle track along Independence Avenue SW, introduce a Leading Pedestrian

Interval (LPI) to the east-west phases, and add a crosswalk to the eastern leg of the intersection.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in their CTR guidelines, and this project has proposed a TDM plan based on these guidelines, which is set forth in Project Design chapter of this report.

Summary and Recommendations

This report concludes that the project will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements, mitigation measures, and TDM measures are implemented.

The Cotton Annex development has several positive design elements that minimize potential transportation impacts, including:

- The site's proximity to transit and existing bicycle infrastructure;
- The site's location within in a well-connected pedestrian network;
- The site's loading facilities, which maintain loading activity within private property and provide loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;
- The inclusion of short-term bicycle parking spaces along the frontage of the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.