

Preliminary Traffic Impact Assessment

Square 700 Development

Washington, D.C.

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INTRODUCTION

This report presents the findings of a preliminary traffic impact study conducted for the Square 700 Development in support of its application for Zoning Commission Design Review. The proposed site plan consists of a mixed-use development (office, retail, and residential uses) located near the Washington Nationals Ballpark between N Street and M Street, SE along the west side of Half Street, SE. Figure 1 shows a map of the site location.

The primary objectives of this study are to evaluate the transportation conditions near the Square 700 Development and to identify impacts to the transportation network due to the proposed development. The study area encompasses 11 intersections near the site. This preliminary report focuses on documenting the existing transportation network within the vicinity of the site. The final report, to be finalized for the pre-hearing submittal, will detail the transportation elements of the proposed development and evaluate the possible impacts to the transportation network.

Gorove/Slade Associates, Inc. (G/SA) undertook the following steps while preparing the preliminary study.

- Performed field reconnaissance of existing roadway and intersection geometrics, traffic controls, speed limits, and operations.
- Calculated the trip generation based on the Institute of Transportation Engineers' (ITE) Trip Generation, 7th Edition.

G/SA plans to undertake the following steps for the final report.

- Observe traffic conditions during the morning and afternoon peak periods on a typical weekday;
- Observe traffic conditions before, during, and after a typical event at the Washington Nationals Baseball Stadium located south of the proposed development;
- Conduct peak hour turning movement counts at study intersections;
- Describe and quantify impacts of other (non-Square 700 Development) development and infrastructure changes nearby on the future transportation network;
- Detail the transportation elements of the proposed Square 700 Development, including pedestrian and vehicular access, truck loading/unloading activity, and bicycle and vehicular parking;
- Estimate the difference in peak hour traffic with and without the proposed Square 700 Development;
- Forecast future traffic volumes with and without the proposed development;
- Calculate future levels of service at the study intersections with and without the proposed



development; and

- Recommend mitigation measures, if necessary, based on the future transportation analysis.

Sources of data for this study include traffic counts and observations conducted by G/SA, plans from HOK, and the files/library of G/SA.

Scope of Traffic Study

This traffic impact study was conducted in accordance with national and DDOT standards. The scope of this traffic impact analysis was based on the scope of the adjacent Monument Ballpark Site Traffic Study performed by Wells & Associates. The study intersections were based on those selected for the Monument Ballpark Site with the addition of South Capitol Street and Potomac Avenue. The following intersections were identified for this study, shown on Figure 2.

- South Capitol Street and Eye Street, SE
- South Capitol Street and M Street, SE
- M Street and Van Street, SE
- M Street and Half Street, SE
- M Street and Cushing Place, SE
- M Street and 1st Street, SE
- South Capitol Street and N Street, SE
- N Street and Van Street, SE
- N Street and Half Street, SE
- N Street and 1st Street, SE
- South Capitol Street and Potomac Avenue, SE

Levels of Service (LOS) will be calculated for intersections in the study area using the Highway Capacity Manual (HCM) methodology using the *Synchro, Version 6* software.

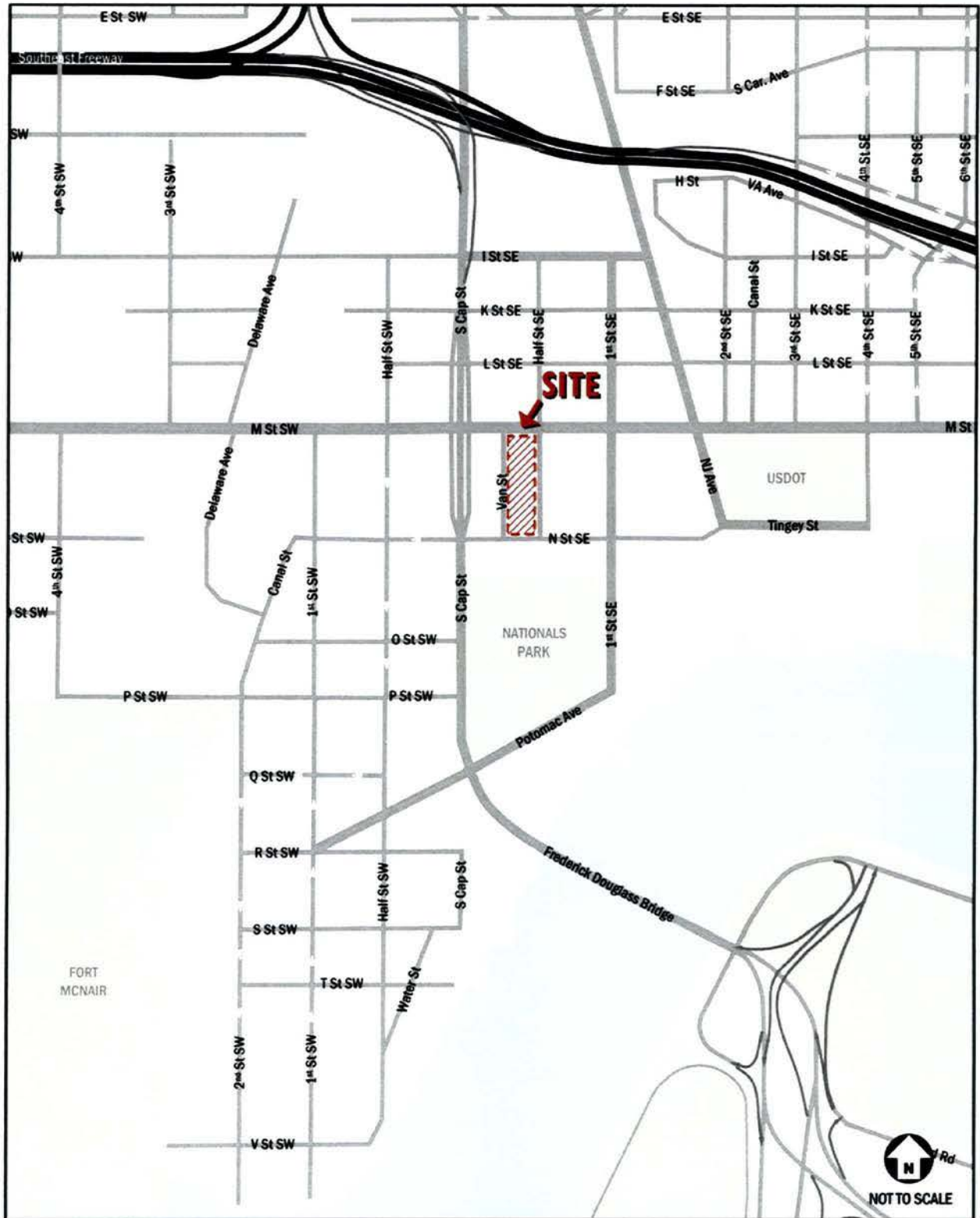


Figure 1 - Location Map

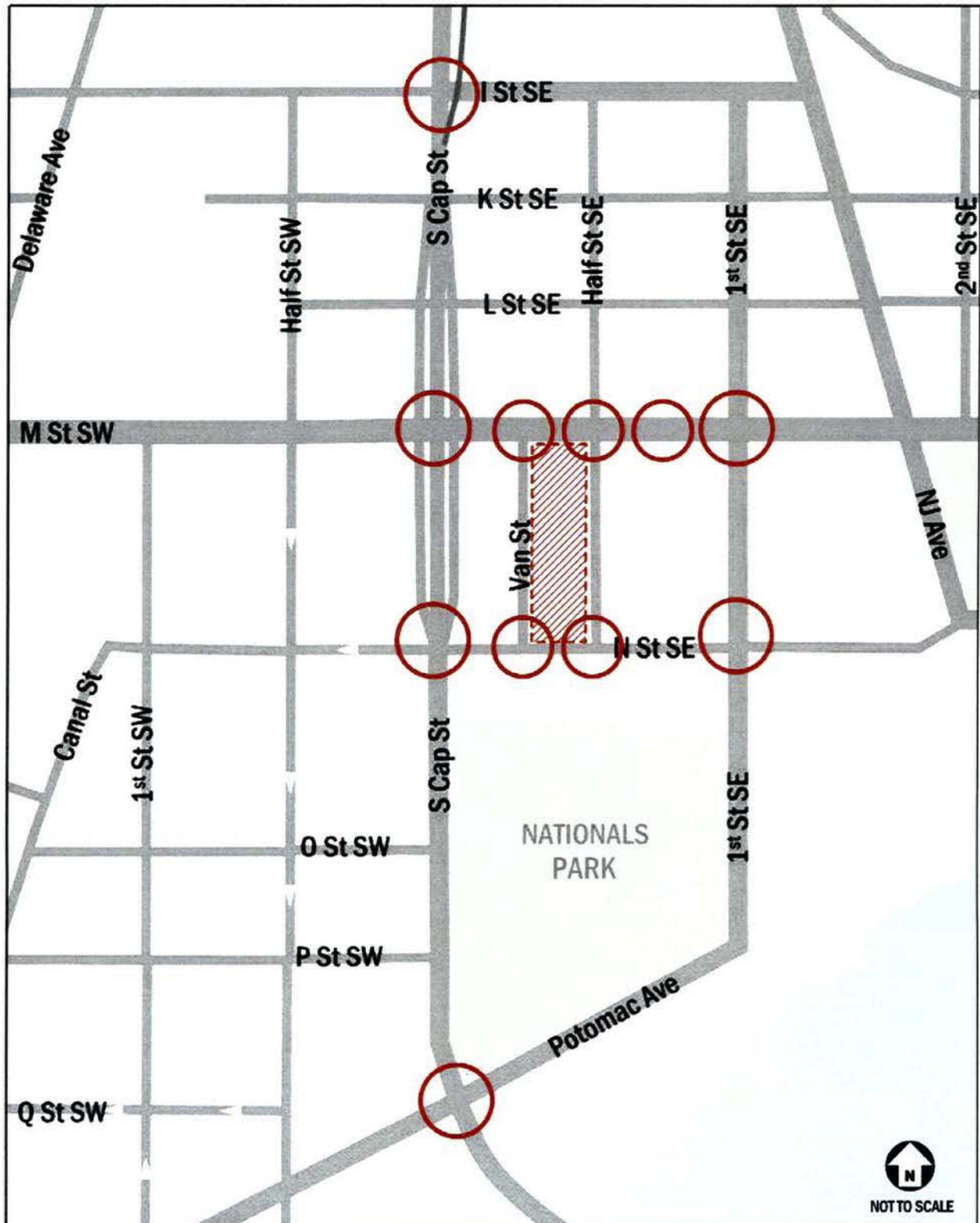


Figure 2 - Study Intersections



EXISTING CONDITIONS

The existing conditions of the study will be analyzed to determine if any existing areas of concern or opportunity exist within the transportation network and to establish a point of reference for the analysis of future traffic conditions.

Existing Roadway Network

The proposed site is bordered by M Street on the north, N Street on the south, Van Street on the west, and Half Street on the east. Heavily trafficked streets in the area include South Capitol Street, M Street, Potomac Avenue, and 1st Street. Figure 3 shows the street network hierarchy for the study area. Figure 4 shows the annual daily traffic volumes for the heavily travelled roadways.

The immediate study area of the Square 700 Development has several key local access roads. These include:

- *South Capitol Street*

South Capitol Street is a 4-lane arterial with two local lanes provided at the intersection with M Street that runs north-south in the vicinity of the site. The roadway is classified by DDOT as a major arterial north of M Street, with an average daily traffic of 53,300 vehicles. South of M Street, South Capitol Street is classified as a freeway/expressway, with an average daily traffic of 54,600 vehicles. Within the limits of the study area, South Capitol Street runs from Eye Street to Potomac Avenue.

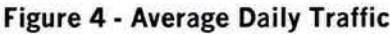
- *Eye Street*

Eye Street is a 2-lane roadway that runs east-west in the vicinity of the site. The roadway is classified by DDOT as a minor arterial west of South Capitol Street, with an average daily traffic of 4,700 vehicles. East of South Capitol Street, Eye Street is classified as a collector, with an average daily traffic of 5,300 vehicles. Within the limits of the study area, Eye Street intersects South Capitol Street north of the site.

- *M Street*

M Street is a 6-lane roadway that runs east-west in the vicinity of the site. The roadway is classified by DDOT as a minor arterial with an average daily traffic of 20,000 vehicles west of and 12,700 vehicles east of South Capitol Street. Within the limits of the study area, M Street runs from South Capitol Street to 1st Street.







- *N Street*
N Street is a 2-lane roadway that runs east-west in the vicinity of the site. The roadway is classified by DDOT as a local road, with no average daily traffic provided. Within the limits of the study area, N Street runs from South Capitol Street to 1st Street.
- *Potomac Avenue*
Potomac Avenue is a 4-lane roadway that runs northeast-southwest in the vicinity of the site. The roadway is classified by DDOT as a collector. Within the limits of the study area, Potomac Avenue intersects South Capitol Street south of the site.
- *Van Street*
Van Street is a 2-lane roadway that runs north-south in the vicinity of the site. The roadway is classified by DDOT as local road. Within the limits of the study area, Van Street runs from M Street to N Street.
- *Half Street*
Half Street is a 2-lane roadway that runs north-south in the vicinity of the site. The roadway is classified by DDOT as local road. Within the limits of the study area, Half Street runs from M Street to N Street. The construction of the Washington Nationals Ballpark closed Half Street south of N Street, where it terminates at a T-intersection.
- *Cushing Place*
Cushing Place is a 2-lane alley that runs north-south in the vicinity of the site. Within the limits of the study area, Cushing Place intersects M Street northeast of the site.
- *1st Street*
1st Street is a 4-lane roadway that runs north-south in the vicinity of the site. The roadway is classified by DDOT as a minor arterial. Within the limits of the study area, 1st Street runs from M Street to Potomac Avenue.

G/SA will conduct field reconnaissance to obtain the existing lane configuration and traffic controls at the intersections within the study area.

Existing Transit Network

Existing public transportation access to the Square 700 Development is provided via Metrorail and Metrobus systems. The nearest Metrorail station is Navy Yard, which is located adjacent to the site at the corner of M Street and Half Street. The Navy Yard Station is served by the green line. The site is approximately 0.9 miles from the Capitol South Metrorail Station, which is served by the orange and blue lines. The L'Enfant Plaza Station is located approximately 1.3 miles away, which provides connection to the yellow, orange, and blue lines from the green line. Each line runs approximately



every 6 minutes during the morning and afternoon weekday peak periods and approximately every 15 to 20 minutes during the weekday off-peak periods and on weekends.

Metrobus service is also accessible from the Square 700 Development. Metrobus service travels along M Street, South Capitol Street, and New Jersey Avenue near the Navy Yard station. These various Metrobus lines provide service to other Metrorail stations, as well as to locations in Virginia, Maryland, and downtown Washington, D.C.

The DC Circulator also provides service near the proposed development. The Convention Center/SW Waterfront Route can be accessed from the intersection of M Street and 6th Street, SW, which is approximately 0.6 miles from the site. The Smithsonian/National Gallery of Art Loop can be accessed from the intersection of Independence Avenue and 4th Street, SW, which is approximately 1.3 miles from the site.

Figure 5 shows the existing bus and rail service available for the site.

Existing Pedestrian Facilities

The Square 700 Development study area provides satisfactory pedestrian facilities and connectivity. Sidewalks are located along the roadway network with crosswalks linking segments at intersections within the study area. Adequate crosswalks are provided at the study intersections, although pedestrian activity is limited to specific approaches at intersections with protected turns. Due to the proximity of the site to the Washington Nationals Ballpark, extensive pedestrian paths are provided.

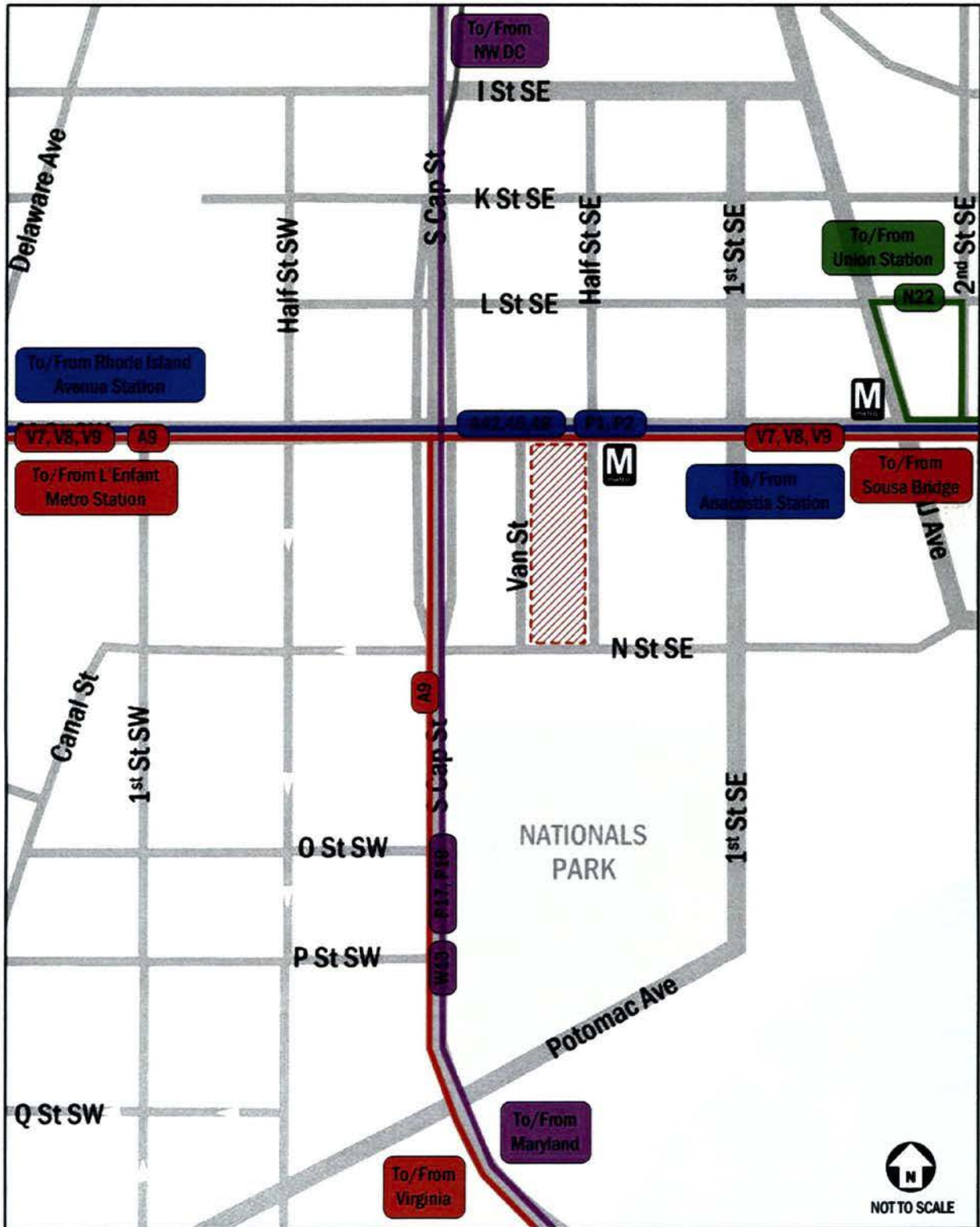


Figure 5 - Existing Transit Service



DESCRIPTION OF DEVELOPMENT

Trip Generation

The proposed site consists of a mixed use of residential and office development. The development will contain approximately 280 residential units, as well as 2 office buildings, with street-level retail. There are approximately 580 parking spaces proposed. Trip generation for the proposed development was calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation, 7th Edition. This was used to determine the trips into and out of the proposed development during the morning and afternoon peak hours. Table 1 shows the trips generated by the proposed development.

Table 1 - Site Trip Generation

Land Use	ITE Code	Size	Units	Weekday Trip Generation						Daily	
				AM Peak Hour			PM Peak Hour				Total
				In	Out	Total	In	Out	Total		
Office Building #1	710	240	kSF	333	45	378	59	289	348	2,618	
Office Building #2	710	119	kSF	190	26	216	36	176	212	1,528	
Transit Reduction				-261	-36	-297	-48	-232	-280	-2,073	
Shopping Center #1	820	22	kSF	39	25	64	111	121	232	2,559	
Shopping Center #2	820	11	kSF	26	16	42	70	75	145	1,612	
Shopping Center #3	820	26	kSF	43	27	70	125	135	260	2,853	
Transit Reduction				-75	-48	-123	-214	-232	-446	-4,917	
Internal Capture				--	--	--	-22	-24	-46	-512	
Residential Apartments	220	280	Units	28	113	141	112	60	172	1,833	
Transit Reduction				-17	-68	-85	-67	-36	-103	-1,100	
Total Primary Trips				306	100	406	162	332	494	4,401	

Due to the combination of street-level retail with both office and residential land uses, a 20% internal capture reduction was applied for trips originating from within the proposed development. The WMATA Ridership Survey was used to determine transit reduction rates. Due to the close proximity of the Navy Yard Metrorail Station, a transit reduction (50% for office, 70% for retail, and 60% for residential) was applied in order to account for the high amount of non-auto trips.

Site Traffic Distribution and Assignment

The nature of the proposed development and regional traffic patterns will be analyzed in order to determine the trip distribution for vehicles accessing the site. In addition, an assessment of future roadway conditions will be used to determine the routes that will provide the most convenient access to the development.



Site Access and Circulation

Site access for the proposed development will be provided from Van Street. This includes all access to parking and loading facilities. Major roadways used to access the site are M Street, N Street, South Capitol Street, and 1st Street. Half Street will be designed with the proposed development as a pedestrian friendly street with no access to parking or loading.

Pedestrian access will be provided from Half Street, Van Street, M Street, and N Street. The proposed development includes the construction of an east-west corridor between Half Street and Van Street to provide pedestrian connectivity within the site.



SCOPE OF ANALYSIS

Existing Conditions

In order to determine the existing conditions at the study intersections, traffic counts will be conducted between the hours of 6:00 am to 9:00 am and 4:00 pm to 7:00 pm. These turning movement counts will be used to determine the morning and afternoon peak hours.

Capacity analyses will be performed to determine the existing Level of Service (LOS) for the morning and afternoon peak hours for the study intersections. The analysis will be performed using the software package *Synchro, Version 6* based on the Highway Capacity Manual (HCM) methodology. A LOS grade is a letter grade based on the average delay experienced by motorists travelling through an intersection. LOS results range from A to F, with a rating of A corresponding to a low amount of delay and F to a high amount of delay. LOS E is typically used as the acceptable threshold in the District of Columbia in urban areas.

Future Conditions without Development

Traffic volumes for the future without development will be generated using the following information.

- *The existing turning movement counts performed by G/SA;*
- *Traffic generated by nearby development;*
Trip generation and distribution will be performed for nearby developments in order to assess their impact to the surrounding roadway network. These background developments will be determined from the list provided in the Monument Ballpark Traffic Study performed by Wells & Associates with updates from G/SA files.
- *Inherent background growth on the roadways within the study area; and*
Increases in background traffic will be accounted for with a growth rate applied to all study intersections. This value will be determined using the existing turning movement counts performed by G/SA, as well as other historical counts performed in the area.
- *Changes to roadway infrastructure.*
Planned improvements to the roadway infrastructure will be analyzed for the future conditions. This may include the construction of an at-grade intersection at South Capitol Street and M Street, as well as any improvements made to South Capitol Street to make the street more locally oriented.

The future background growth will be added to the existing volumes in order to establish the future traffic volumes without the proposed development.



Intersection capacity analyses will be performed at the intersections contained within the study area to determine the LOS for the morning and afternoon peak hours. *Synchro, Version 6* will be used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology. The LOS capacity analyses will be based on the existing lane use and traffic controls and the peak hour traffic volumes of the study intersections.

Future Conditions with Development

Site generated traffic will be distributed through the roadway network based on regional traffic patterns and the nature of the proposed development. In order to determine traffic volumes present on the roadways in the vicinity of the development site, the site generated traffic volumes will be added to the future background traffic volumes.

Intersection capacity analyses will be performed at the intersections contained within the study area to determine the LOS for the morning and afternoon peak hours. *Synchro, Version 6* will be used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology. The LOS capacity analyses will be based on the existing lane use and traffic controls and the peak hour traffic volumes of the study intersections.

The future with development and future without development scenarios will be compared in order to assess the impact made by the site generated traffic. Based on this comparison, recommendations will be made to mitigate any significant traffic impacts created by the proposed Square 700 Development.