

Traffic Impact Study

1000 Connecticut Avenue

Washington, D.C.

December 20, 2005

RECEIVED

D.C. OFFICE OF ZONING

2006 FEB 21 PM 12:36

ZONING COMMISSION

CASE No. 06-13

EXHIBIT No. 4

Prepared For:
1000 Connecticut LLC

Prepared By:

Gorove/Slade
Associates, Inc.



ZONING COMMISSION

District of Columbia

CASE NO.06-13

EXHIBIT NO.4A1



GOROVE/SLADE ASSOCIATES, INC.
Transportation, Traffic and Parking

PREPARED BY:

Gorove/Slade Associates, Inc.
1140 Connecticut Avenue
Suite 700
Washington, D.C. 20036

Tel: 202.296.8625
Fax: 202.785.1276

ADDITIONAL OFFICES:

3914 Centreville Road
Suite 330
Chantilly, VA 20151

Tel: 703.787.9595
Fax: 703.787.9905

www.goroveslade.com

This document, together with the concepts and designs presented herein, as an instrument of services, is intended for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization by Gorove/Slade Associates, Inc., shall be without liability to Gorove/Slade Associates, Inc.



TABLE OF CONTENTS

List of Figures	iii
List of Tables	iii
Executive Summary	iv
Introduction	1
Project Scope	3
Existing Conditions	4
Site Access and Existing Road Network	4
Existing Transit	7
Existing Traffic Volumes	7
Existing Capacity Analysis	7
Future Background Conditions	12
Traffic Growth	12
Future Background Developments	12
Future Transportation Improvements	14
Future Background Traffic Forecast	14
Future Background Capacity Analysis	14
Total Future Traffic Conditions	17
Trip Generation	17
Trip Reduction	17
Trip Distribution	17
Total Future Traffic Forecast	19
Total Future Capacity Analysis	19
Site Access	21
Physical Characteristics of the Alley vs. Direct Access from K Street	21
Conflicts in the Alley with Delivery Trucks and Other Vehicles	24
Alley Congestion	25
Alley Volumes	25
Insufficient Alley Width	27
Garage User Security	27
Operational Issues	27



Parking Demand	29
Conclusion	30
Appendix	31



LIST OF FIGURES

Figure 1 – Site Location and Study Area Intersections	2
Figure 2 – Existing Lane Use and Traffic Control	6
Figure 3 – Study Intersections Existing Peak Hour Traffic Volumes	8
Figure 4 – Study Intersections Existing Peak Hour Pedestrian Volumes.....	9
Figure 5 – Study Intersections Existing Peak Hour Bicycle Volumes.....	10
Figure 6 – Background Development Locations	13
Figure 7 – Background Traffic Forecast 2008 (without 1000 Connecticut Avenue).....	16
Figure 8 – Site-Generated Traffic Volumes and Directions of Approach	18
Figure 9 – Total Future Traffic Forecast 2008 (with 1000 Connecticut Avenue).....	20
Figure 10 – Architectural Plan for Garage Access off K Street	22
Figure 11 – Alternate Plan for Garage Access off the Alley	23
Figure 12 – Photographs of the Alley.....	24
Figure 13 – Accumulation of Truck Traffic	26
Figure 14 – Photographs along the Block Faces	27

LIST OF TABLES

Table 1 – Existing Levels of Service	7
Table 2 – Background Trip Generation	14
Table 3 – Future Background Levels of Service.....	15
Table 4 – Total Future Levels of Service.....	19
Table 5 – Existing and Future Alley Volumes.....	26



EXECUTIVE SUMMARY

The following report presents the findings of a traffic impact study prepared for the 1000 Connecticut Avenue development in downtown Washington, D.C. The owners propose to demolish the two office buildings presently occupying the site and construct a new 12-story Class A office building of approximately 354,000 rentable square feet (RSF) and 15,000 RSF of retail to be complete in 2008. Architectural plans also show 229 underground parking spaces with garage access from K Street.

The traffic capacity analyses detailed in the study found the following conditions:

- *Existing*

The study intersections currently operate at an overall Level of Service (LOS) of C or better. The LOS is not wholly reflective of operation. For instance, the intersections can become congested especially during peak travel times. This is due to the vehicle delays experienced at adjacent intersections, as well as other factors such as pedestrians, delivery vehicles, and bus services that can momentarily impact the effective travel lanes.

- *Future Background (2008) – without 1000 Connecticut Avenue development*

The study intersections under Future Background conditions will continue to operate at a LOS of C or better and without considerable change in delay.

- *Total Future (2008) – with 1000 Connecticut Avenue development*

The study intersections under Total Future conditions with new site trips will continue to operate at a LOS of C or better and without considerable change in delay.

Based on these results, the proposed 1000 Connecticut Avenue development will not have a negative impact on the surrounding roadway network. The addition of the 1000 Connecticut Avenue traffic does not have significant impact as these additional trips can be accommodated by the current roadway configuration and capacity.

The underground parking garage will be accessed from the K Street limited access roadway, the only viable location in light of pedestrian and safety concerns. If the garage access were located off the Connecticut Avenue alley, this approach would increase traffic volumes in the alley by more than 4 times the current totals and would adversely affect pedestrian and vehicular safety and circulation.



INTRODUCTION

This report presents the findings of a traffic impact study conducted in conjunction with a Planned Unit Development (PUD) application for the proposed development of 1000 Connecticut Avenue. The Site is located on the northwest quadrant of the intersection of Connecticut Avenue NW and K Street NW, and further bounded by an alley and its accesses from Connecticut Avenue and K Street as shown in Figure 1.

The applicants, 1000 Connecticut LLC and PNC Bank, Trustee, are proposing the demolition of the two office buildings presently occupying the Site. The proposed development contemplates the construction of a 12-story Class A office building of approximately 354,000 rentable square feet (RSF), 15,000 RSF of retail, and 229 parking spaces.

The primary purpose of this report is to evaluate the traffic impacts of the proposed new development at three study intersections located around the site and identify any necessary transportation improvements needed to mitigate impacts.

The following list summarizes the tasks performed by Gorove/Slade Associates as part of this study:

- Field reconnaissance to collect existing roadway and intersection geometrics, traffic controls, signal operations, alley operations at both approaches, and truck activity;
- Meeting with the District Department of Transportation (DDOT) staff to set up the study parameters and discuss the scope;
- Vehicle, pedestrian, and bicycle turning movement counts collected at study area intersections;
- Existing Levels of Service calculated at the study intersections;
- Background traffic forecasts for project build-out in 2008 based on existing counts, traffic growth, and traffic generated by other pending/future developments;
- Background Levels of Service at study intersections based on background traffic forecasts and existing traffic controls;
- AM and PM peak hour and daily trip generation of the new development, including mode split assumptions;
- Total future traffic volume forecasts for project build-out in 2008 based on background future traffic forecasts and site traffic assignments; and
- Total future Levels of Service of the study intersections based on total future traffic forecasts, existing and future traffic controls, and existing and future intersection geometrics.

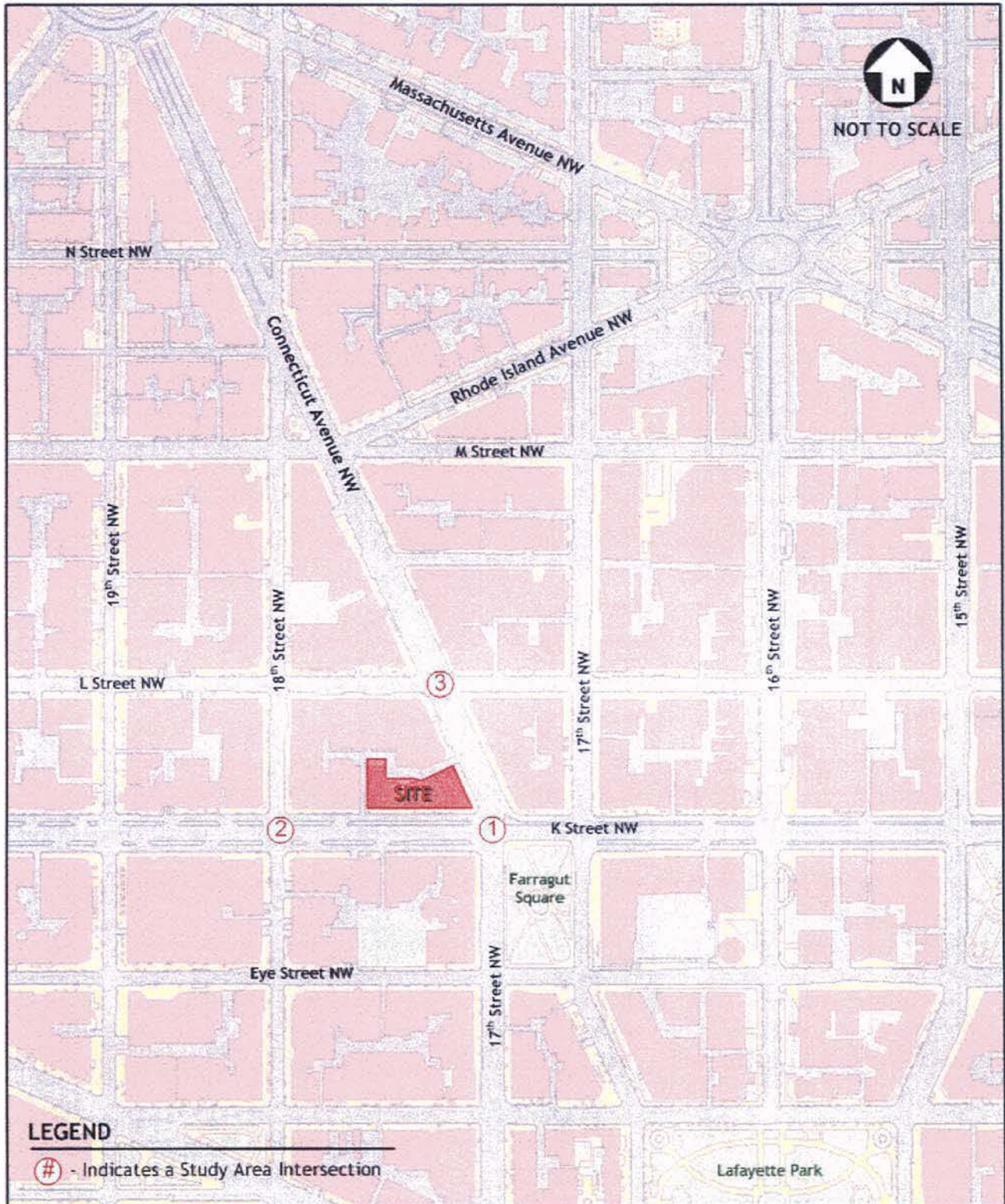


Figure 1 – Site Location and Study Area Intersections

Sources of data for this study include traffic counts conducted by Gorove/Slade Associates, the Institute of Transportation Engineer's (ITE) *Trip Generation*, 7th Edition, 1000 Connecticut LLC, Pei Cobb Freed & Partners LLP, the District Department of Transportation (DDOT), the *K Street Transitway* alternatives presented in the June 2004 DMJM Harris report, the "Development-Related Ridership Survey II" prepared by WMATA, and the files/library of Gorove/Slade Associates.

Project Scope

This traffic impact study was conducted in general accordance with parameters agreed to at a scoping meeting held with DDOT staff on Wednesday, July 27, 2005. A copy of the scoping letter is contained in the Appendix. The following study intersections were agreed to be analyzed (see Figure 1):

- 1) K Street, NW and Connecticut Avenue, NW/17th Street, NW
- 2) K Street, NW and 18th Street, NW
- 3) L Street, NW and Connecticut Avenue, NW

Two developments, one of which is currently under construction near the 1000 Connecticut Avenue site, were used as background development for the traffic study: 1601 K Street (formerly known as 1000 16th Street) and 1700-1730 K Street. The 1601 K Street project will be a Class A office building with 215,000 square feet rentable space and 150 parking spaces. The completed 1700-1730 K Street office building consists of 372,000 square foot of office and 10,000 square foot of retail space. The office building is presently about 50% occupied. To account for traffic generation for other nearby development, a 1% growth rate was applied to the traffic volumes in addition to the trips generated by the aforementioned background developments.

Capacity analyses were performed to determine the existing Levels of Service (LOS) for the AM and PM peak hours for the study intersections. A Level of Service (LOS) equates a letter grade to the average delay in seconds experienced by motorists at an intersection. LOS results range from A being the best to F being the worst. A LOS of D or better is typically used as the acceptable LOS threshold in the District; although a LOS E is acceptable in highly urbanized areas. The *Highway Capacity Manual 2000* methodology and Synchro software, version 6.0, was used for analysis.

For purposes of this study, it was assumed that the 1000 Connecticut development will be complete and fully occupied by 2008.



EXISTING CONDITIONS

Site Access and Existing Road Network

The following is a description of the local access roads included as part of the study area:

- *Connecticut Avenue/17th Street*

The District Department of Transportation (DDOT) classifies Connecticut Avenue as a principal arterial with an average daily traffic (ADT) volume of 36,900 vehicle trips (near the intersection of Connecticut Avenue and K Street). In the vicinity of the site, Connecticut Avenue is a bi-directional, six-lane roadway with on-street parking and parking restrictions during peak periods, bus drop-off locations, and a taxi curb stand along one side of the roadway.

South of K Street, NW, Connecticut Avenue becomes 17th Street, NW. DDOT classifies 17th Street as a principal arterial with an ADT volume of 30,000 vehicle trips (near the intersection of 17th Street and K Street). In the vicinity of the site, 17th Street is a bi-directional, six-lane roadway with on-street parking and parking restrictions during peak periods.

Connecticut Avenue and 17th Street connect the Northwest quadrant of the District and points in Maryland with downtown Washington D.C.

- *K Street*

DDOT classifies K Street as a principal arterial extending from the Whitehurst Freeway and Water Street in Georgetown to Florida Avenue, NE. The road carries an ADT volume of 28,000 vehicle trips (near the intersection of K Street and Connecticut Avenue). In the vicinity of the site, K Street is a four-lane roadway with divided limited access lanes on either side. These limited access lanes are used primarily as right-turn lanes for both the eastbound and westbound movements, but also provide access to parking garages and alleys. The limited access lane accommodates one lane of parking. Commuters use K Street to connect to the Whitehurst Freeway and Canal Road through Georgetown and it forms a major corridor to Northern Virginia via the Key Bridge and Chain Bridge, the Maryland suburbs in the Bethesda/Potomac corridor, and the western portion of Washington, D.C.

Plans to reconfigure K Street as part of a Transitway project are being considered by DDOT. However, plans are still undetermined and the timing is not known, so for purposes of this analysis, K Street was assumed to function as it does today.

- *L Street*

DDOT classifies L Street as a minor arterial with an ADT volume of 16,400 vehicle trips (near the intersection of L Street and 18th Street). L Street is a four-lane roadway, one-way



eastbound with parking restrictions during peak periods along both sides of the roadway.

- *18th Street*

DDOT classifies 18th Street as a minor arterial with an ADT volume of 14,000 vehicle trips (near the intersection of K Street and 18th Street). 18th Street is a four-lane roadway, one-way northbound with parking restrictions during peak periods along both sides of the roadway.

Gorove/Slade Associates conducted field reconnaissance to obtain the existing lane usage and traffic controls at the intersections within the study area. Figure 2 presents the local roadway network of the study area, as well as existing lane use configurations.

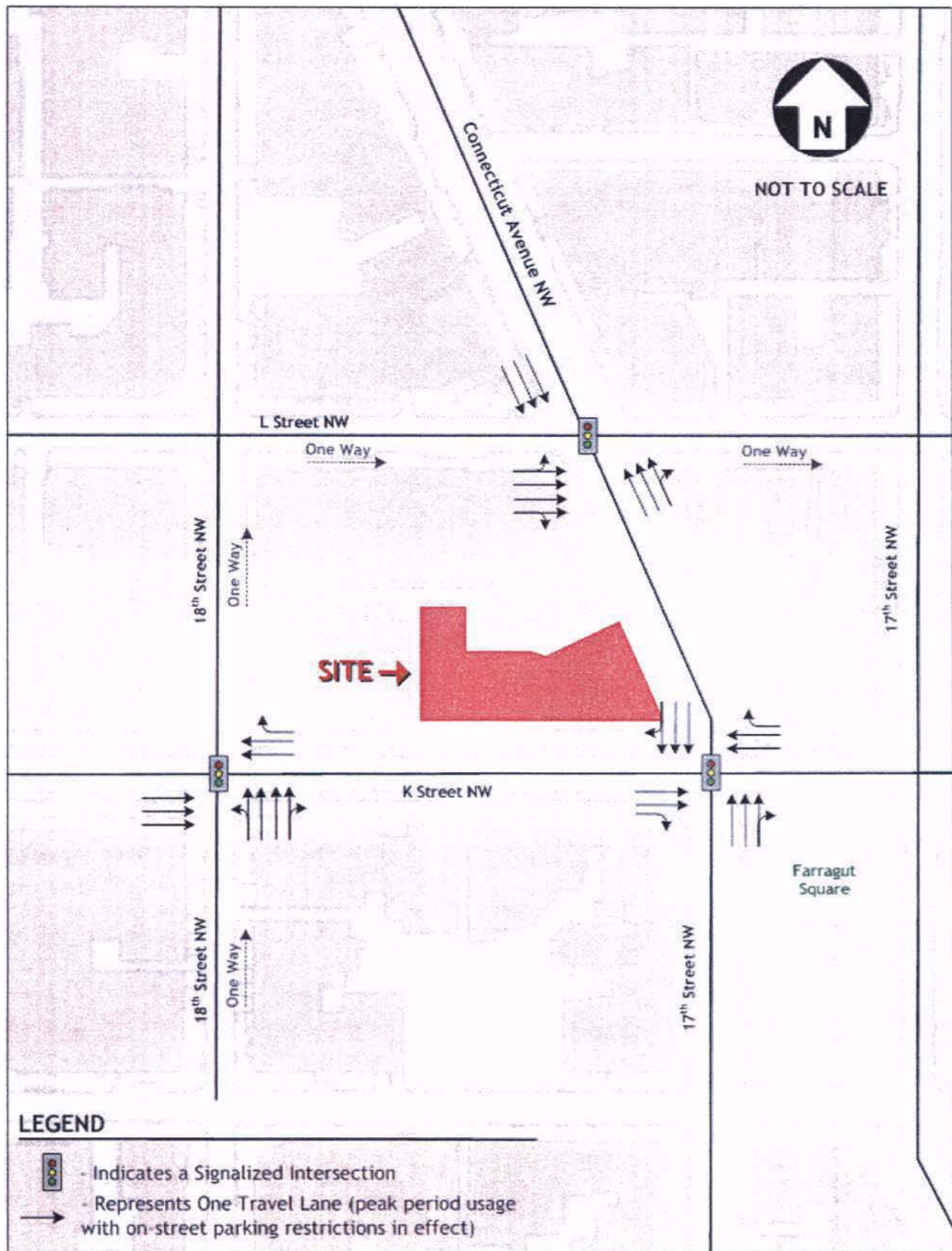


Figure 2 – Existing Lane Use and Traffic Control



Existing Transit

The 1000 Connecticut Avenue site is accessible to numerous transit options. The site is located directly across the street from the Farragut North (Red Line) Metrorail station and within one block of the Farragut West (Blue and Orange Lines) Metrorail station. The site is also serviced by numerous Metrobus lines, as well as the new DC Circulator bus. New transit service upgrades, including bus rapid transit and streetcars, are being considered for the area along K Street in the near and long term.

Existing Traffic Volumes

Vehicular turning movement and pedestrian counts for the 1000 Connecticut Avenue study intersections were conducted on Wednesday, September 7, 2005. From the counts, the system peak hours were found to be from 7:15 to 8:15 a.m. and 3:30 to 4:30 p.m. The turning movement count summary sheets are included in the Appendix and the peak hour traffic volumes for all three study intersections are summarized in Figure 3. The peak hour pedestrian volumes are shown in Figure 4.

Bicycle counts were collected on Tuesday, September 20, 2005. The peak hour bicycle volumes are shown in Figure 5.

Existing Capacity Analysis

The average delay and overall LOS for each study intersection was analyzed and the results are presented in Table 1. Existing peak hour Levels of Service were calculated based on: the existing lane use and traffic controls; the peak hour traffic volumes for the study intersections; the peak hour pedestrian volumes; the peak hour bicycle volumes; *Highway Capacity Manual 2000* methodology; and Synchro version 6 software. The LOS calculation worksheets are included in the Appendix.

Table 1 – Existing Levels of Service

Intersection (Approach)	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
K Street and Connecticut Avenue, NW				
Overall	16.9	B	17.0	B
Eastbound	12.4	B	10.8	B
Westbound	12.8	B	11.4	B
Northbound	26.8	C	26.1	C
Southbound	15.1	B	16.3	B
K Street and 18 th Street, NW				
Overall	21.5	C	18.3	B
Eastbound	23.2	C	17.6	B
Westbound	25.9	C	21.5	C
Northbound	16.1	B	15.9	B
L Street and Connecticut Avenue, NW				
Overall	16.4	B	20.0	C
Eastbound	25.0	C	31.4	C
Northbound	7.1	A	7.0	A
Southbound	15.6	B	15.3	B

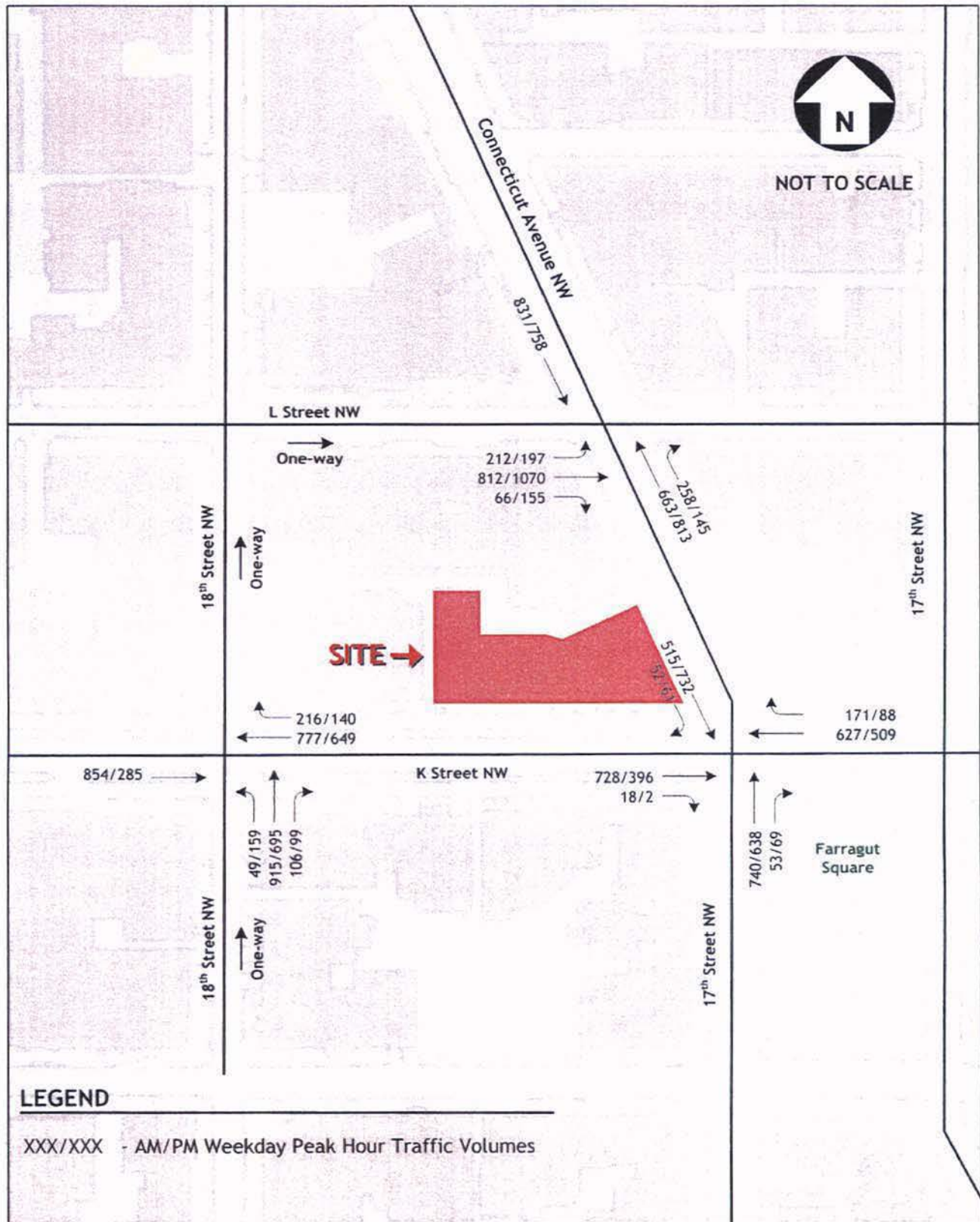


Figure 3 – Study Intersections Existing Peak Hour Traffic Volumes

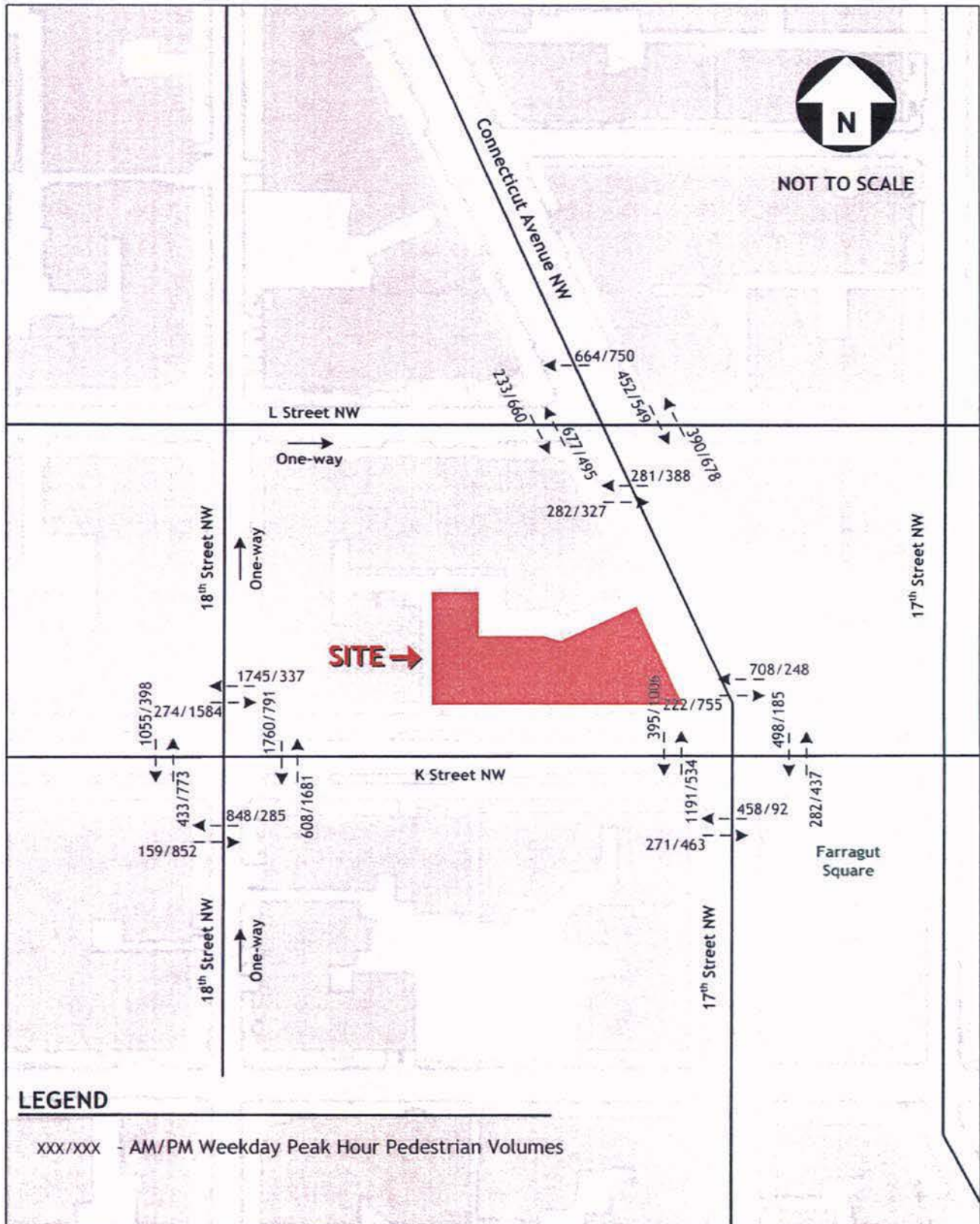


Figure 4 – Study Intersections Existing Peak Hour Pedestrian Volumes

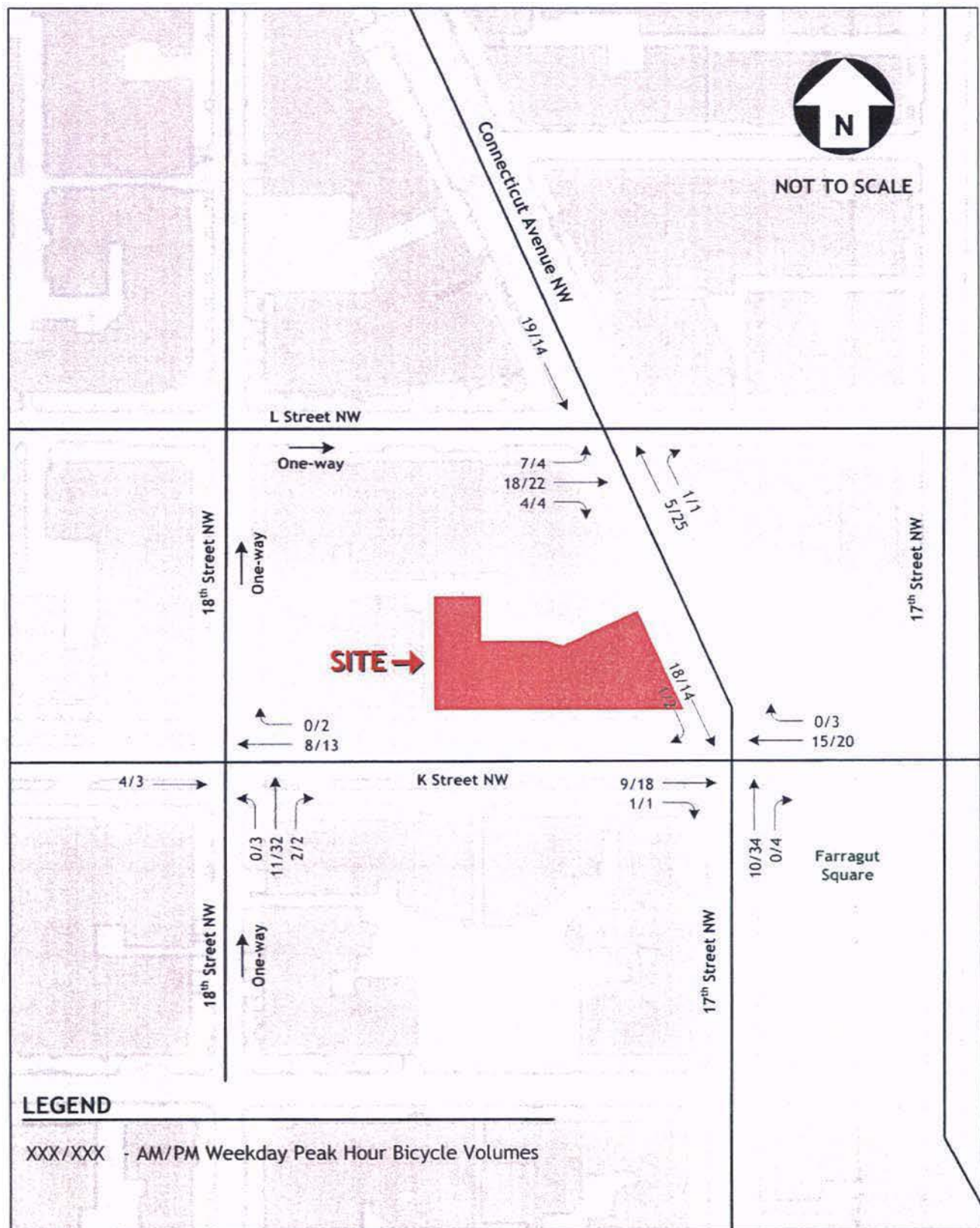


Figure 5 – Study Intersections Existing Peak Hour Bicycle Volumes



The capacity analysis shows that all study area intersections operate at acceptable conditions. The Connecticut Avenue/K Street intersection, which is in the immediate vicinity of the site, operates at LOS B overall and for all approaches except for the northbound approach, which operates at LOS C. The 18th Street/K Street intersection operates at overall LOS C for both the morning and afternoon peaks, while the Connecticut Avenue/L Street intersection operates at LOS B and LOS C in the morning and afternoon peak, respectively. The intersections can become congested, however, especially during peak travel times. This is due to the vehicle delays experienced at adjacent intersections, as well as other factors such as pedestrians, delivery vehicles, and bus services that can momentarily impact the effective travel lanes.



FUTURE BACKGROUND CONDITIONS

Future Background conditions represent future traffic levels in 2008 if the 1000 Connecticut Avenue development was not built. These conditions are the basis for comparative evaluation to Total Future conditions, which will include traffic generated by the proposed 1000 Connecticut Avenue. In order to develop background traffic forecasts, a composite of existing traffic, traffic growth, and traffic from other area developments was used.

Traffic Growth

To account for an increase in traffic that may result from developments that are not specifically included in this study (see below) or any other factor such as roadway improvements around the study area, a one-percent ambient growth rate was applied to all through movements along K Street and Connecticut Avenue, and to all movements at the Connecticut Avenue/K Street intersection.

Future Background Developments

The 1601 K Street project and the 1700-1730 K Street project were included as background developments. The locations of these developments relative to 1000 Connecticut are shown in Figure 6 and a summary of the trips generated by each development are summarized in Table 2.

The 1601 K Street project is in its final stages of construction. The development program includes a Class-A office building with 215,000 square feet of office space, limited retail, and 150 underground parking spaces. This building replaces a 158,000 square foot office building. According to the 1000 16th Street (now known as 1601 K Street) traffic study prepared by G/SA, 55% of the development traffic will pass through the 1000 Connecticut Avenue study area. The study estimated that 25% of traffic would use K Street and 30% inbound would use L Street for access to the 1000 16th Street site. These volumes were accounted for in the analysis.

The completed 1700-1730 K Street office building at the southwest corner of the K Street/Connecticut Avenue intersection (Figure 6) consists of 372,000 square foot of office and 10,000 square foot of retail. The office building is presently about 50% occupied. According to the rates and equations of (ITE) *Trip Generation*, 7th Edition, the development would generate approximately 537 AM peak hour (473 in and 64 out) and 495 PM peak hour (84 in and 411 out) new vehicle trips without any reductions. Since it is expected that many of the employees of the office building will utilize the easily accessible transit options available (including Metrorail and Metrobus), a 60% reduction in trips was applied. This reduction is in accordance with recommendations of the "Development-Related Ridership Survey II" prepared by WMATA.

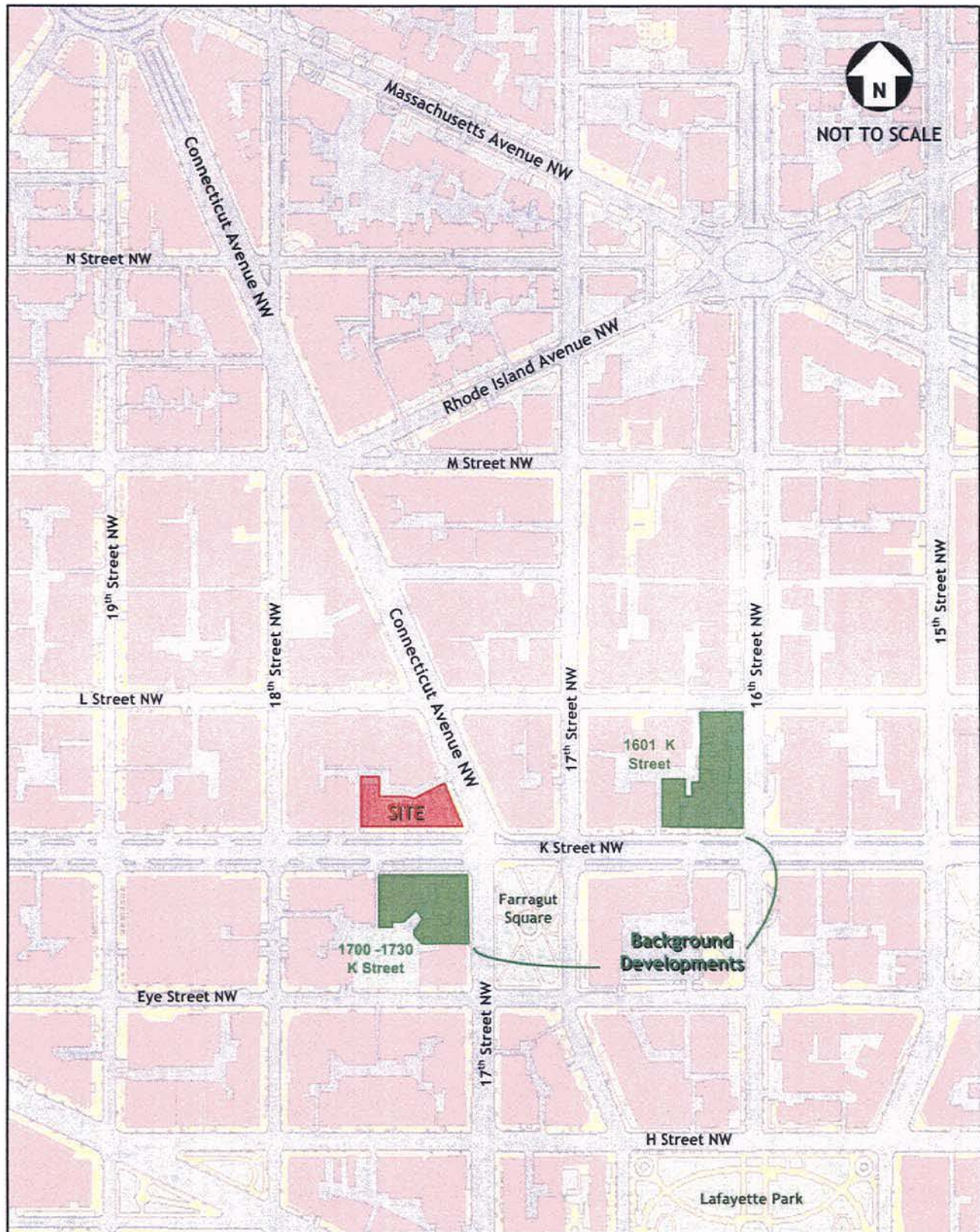


Figure 6 – Background Development Locations

**Table 2 – Background Trip Generation**

Background Component	ITE Code	Amount	Trip Generation						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
<u>1700-1730 K Street</u>									
General Office	710	372,000 SF	473	64	537	84	411	495	3,670
Transit Reduction		60%	(284)	(21)	(25)	(50)	(247)	(297)	(2,202)
Retail	814	10,000 SF	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1700-1730 K Street Subtotal			189	26	215	34	164	198	1,468
Occupancy Reduction		50%	(95)	(13)	(107)	(17)	(82)	(99)	(734)
1700-1730 K Street Trips			95	13	108	17	82	99	734
<u>1601 K Street</u>									
General Office (new SF only)	710	32,900 SF	28	4	32	4	23	27	320
Total Background Reductions			123	17	140	21	105	126	1,054

Future Transportation Improvements

Alternatives for the *K Street Transitway* project were presented in a June 2004 DMJM Harris report. However, according to DDOT, plans are still undetermined and no firm timeline for implementation has been identified. For this reason, it was assumed for purposes of this analysis that K Street will function in 2008 as it does today.

Future Background Traffic Forecast

Background traffic forecasts were developed based on a composite of existing traffic counts, traffic growth along Connecticut Avenue and K Street, and trip generations from the two developments. Figure 7 shows the Future Background traffic volumes with the applicable traffic growth factor applied to the existing traffic.

Future Background Capacity Analysis

Future Background peak hour Levels of Service (without the 1000 Connecticut Avenue development) were calculated based on the following: existing lane use and traffic controls; the Future Background traffic volumes; and the *Highway Capacity Manual* (HCM) 2000 methodologies using the Synchro 6 traffic software. Table 3 displays the results of the capacity analysis including the Level of Service and average delay per vehicle in seconds. Copies of the LOS calculation worksheets can be found in the Appendix.

The capacity analysis shows that all study area intersections will continue to operate at acceptable conditions. There will be no considerable change in the delays that will be experienced at each intersection, and the levels of service will be maintained. The intersections can become congested,



however, especially during peak travel times. This is due to the vehicle delays experienced at adjacent intersections, as well as other factors such as pedestrians, delivery vehicles, and bus services that can momentarily impact the effective travel lanes.

Table 3 – Future Background Levels of Service

Intersection (Approach)	Future Background Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
K Street and Connecticut Avenue, NW				
Overall	17.1	B	17.0	B
Eastbound	12.6	B	10.9	B
Westbound	12.9	B	11.4	B
Northbound	27.0	C	26.3	C
Southbound	15.1	B	16.3	B
K Street and 18 th Street, NW				
Overall	22.0	C	18.4	B
Eastbound	24.3	C	17.7	B
Westbound	26.0	C	21.7	C
Northbound	16.4	B	15.9	B
L Street and Connecticut Avenue, NW				
Overall	16.4	B	20.0	C
Eastbound	25.1	C	31.4	C
Northbound	6.9	A	7.0	A
Southbound	15.8	B	15.4	B

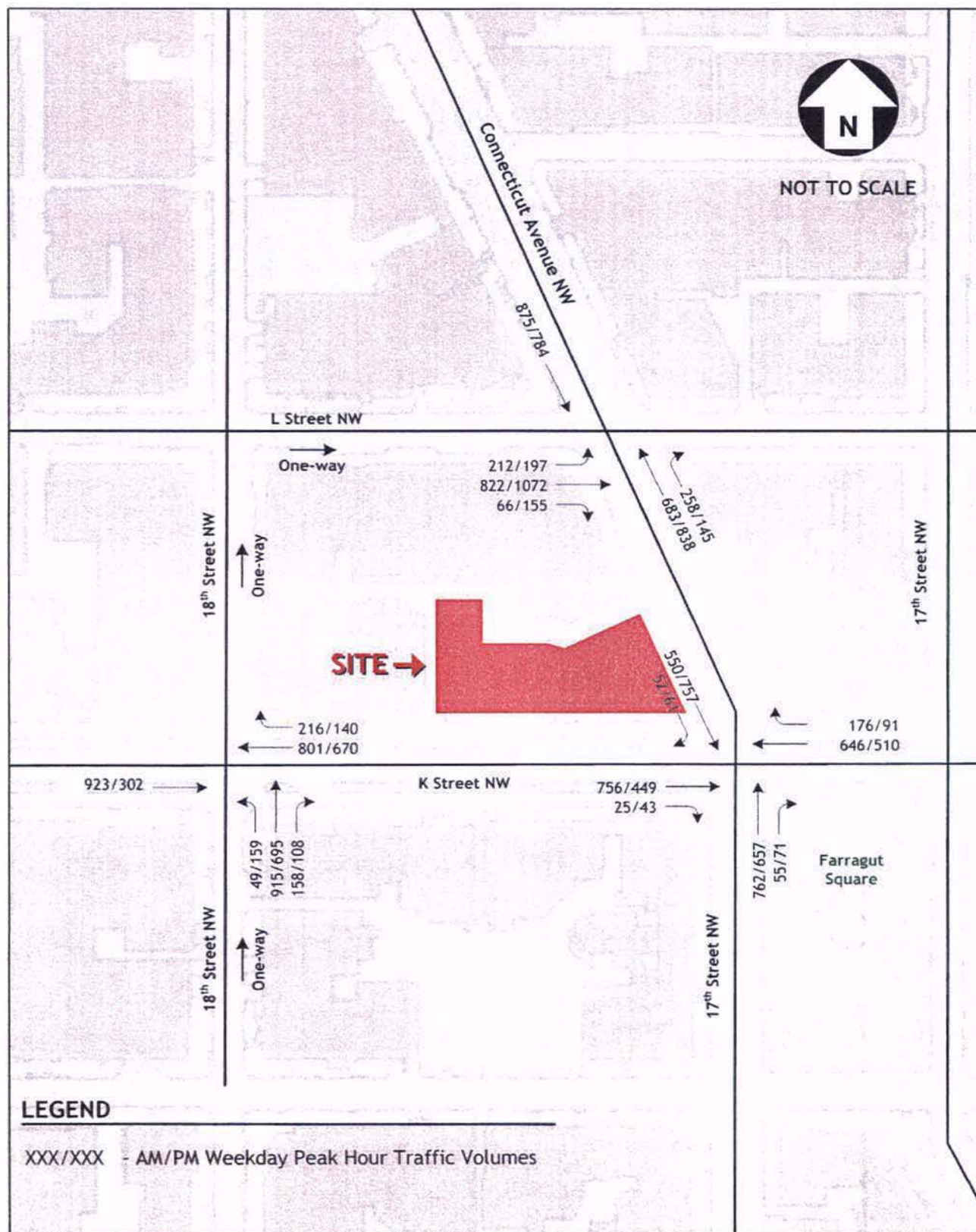


Figure 7 – Background Traffic Forecast 2008 (without 1000 Connecticut Avenue)



TOTAL FUTURE TRAFFIC CONDITIONS

The Total Future traffic conditions represent future traffic in the study area including existing traffic, background growth, and traffic generated by the 1000 Connecticut Avenue development.

Trip Generation

The number of anticipated vehicle trips generated by the 1000 Connecticut Avenue development was estimated based on data provided in ITE's Trip Generation, 7th Edition, WMATA's "Development-Related Ridership Survey II", and from the library/files of Gorove/Slade Associates.

Trip Reduction

According to the WMATA "Development-Related Ridership Survey II," the mode choice for trips is significantly influenced by the location of the site within Metropolitan Washington, D.C. and the proximity of the site to Metrorail stations. This study was prepared to model the travel patterns of people traveling to and from office buildings, residential developments, and commercial entities close to Metrorail stations, and "to establish relationships among travel characteristics, distance, and the nature of development at each site."

The WMATA transit mode share for a building directly adjacent to a Metrorail station portal will be slightly over 60 percent. The 1000 Connecticut Avenue site is located a block away from the Farragut West Metrorail station and across the street from the Farragut North Metrorail station. Based on the estimated distance from these Metrorail stations and the mode split equations provided in the study, the reduction as a result of transit share will be approximately 62%. A more conservative 60% reduction was applied.

After an adjustment to the trip generation based on the reductions described, the 1000 Connecticut Avenue development will generate a total of approximately 207 AM peak hour trips (182 in and 25 out) and 190 PM peak hour trips (32 in and 158 out).

It is important to note that although the proposed 1000 Connecticut Avenue development will replace an existing office building, that the existing building does not have parking facilities. Therefore, it was assumed that the traffic generated by the development will be new to the network.

Trip Distribution

The site-generated traffic volumes were assigned to the roadway network based on existing travel patterns identified during data collection. Figure 8 shows the site generated traffic volumes, as well as the directions of approach for vehicles accessing the building to/from K Street as proposed.

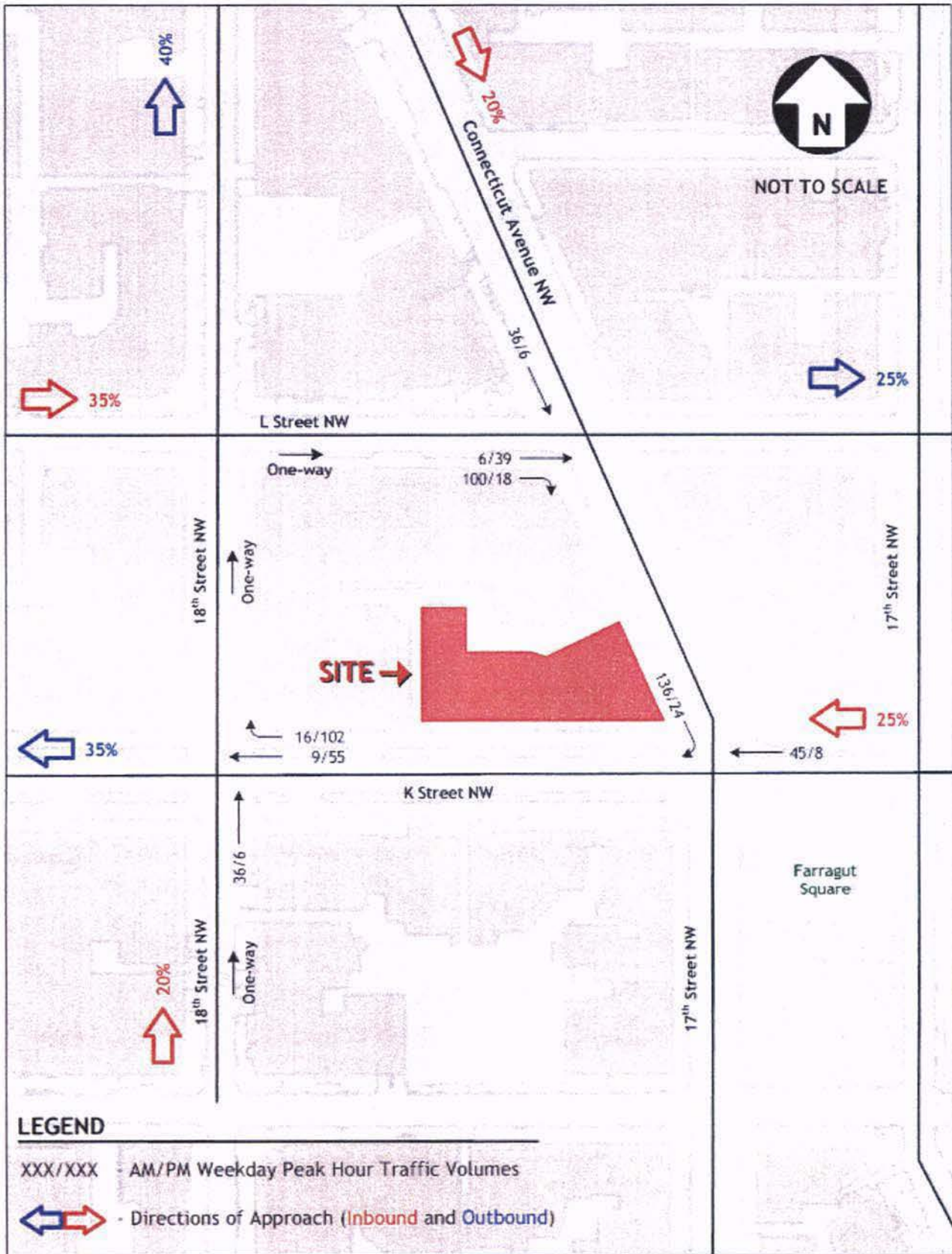


Figure 8 – Site-Generated Traffic Volumes and Directions of Approach



Total Future Traffic Forecast

The site-generated traffic assignments were combined with the Future Background traffic forecasts to yield the Total Future traffic forecasts associated with the complete build-out of the 1000 Connecticut Avenue development. Figure 9 shows the Total Future traffic for build-year 2008 with the 1000 Connecticut Avenue development.

Total Future Capacity Analysis

Total Future peak hour Levels of Service (including the build-out of the 1000 Connecticut Avenue development) were calculated based on the following: existing lane use and traffic controls; the Total Future traffic volumes; and the *Highway Capacity Manual* (HCM) 2000 methodologies using the Synchro 6 traffic software. Table 4 displays the results of the capacity analysis including the Level of Service and average delay per vehicle in seconds. Copies of the LOS calculation worksheets can be found in the Appendix.

The capacity analysis shows that with the 1000 Connecticut Avenue development, all study area intersections will continue to operate at acceptable conditions. There will be no considerable change in the delays that will be experienced at each intersection and the levels of service will be maintained. The intersections can become congested, however, especially during peak travel times. This is due to the vehicle delays experienced at adjacent intersections, as well as other factors such as pedestrians, delivery vehicles, and bus services that can momentarily impact the effective travel lanes.

Table 4 – Total Future Levels of Service

Intersection (Approach)	Total Future Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
K Street and Connecticut Avenue, NW				
Overall	17.4	B	17.0	B
Eastbound	12.6	B	10.9	B
Westbound	13.1	B	11.4	B
Northbound	27.0	C	26.3	C
Southbound	16.8	B	16.6	B
K Street and 18 th Street, NW				
Overall	22.5	C	21.5	C
Eastbound	24.3	C	17.7	B
Westbound	27.5	C	28.2	C
Northbound	16.6	B	16.0	B
L Street and Connecticut Avenue, NW				
Overall	17.8	B	21.2	C
Eastbound	27.7	C	33.8	C
Northbound	6.9	A	7.0	A
Southbound	16.0	B	15.4	B

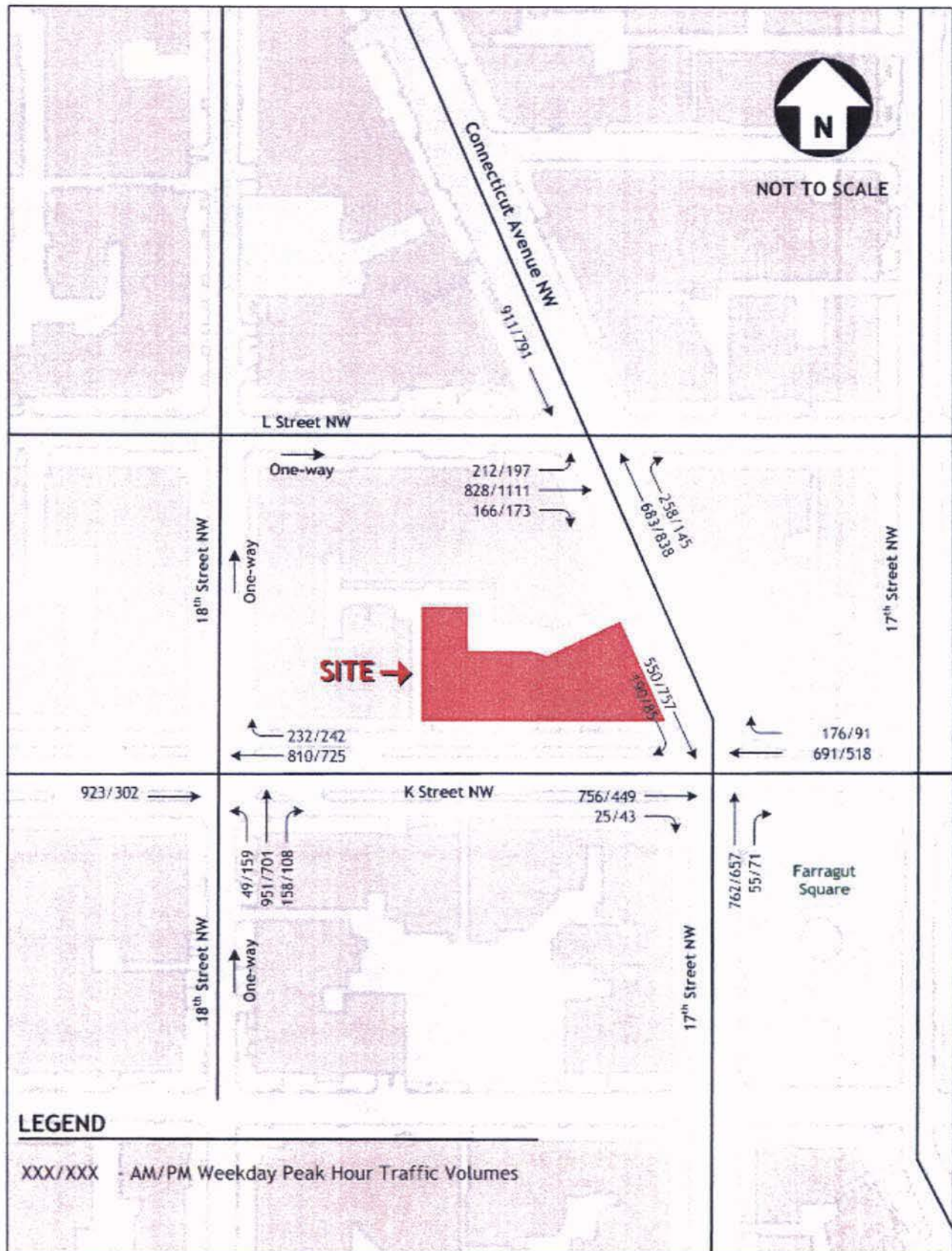


Figure 9 – Total Future Traffic Forecast 2008 (with 1000 Connecticut Avenue)

SITE ACCESS

Architectural plans for 1000 Connecticut Avenue show 229 underground parking spaces with garage access off K Street as shown in Figure 10. In a meeting with the District Department of Transportation (DDOT) on July 27, 2005, DDOT expressed some concerns about the K Street garage access and DDOT requested that the applicant consider garage access from the Connecticut Avenue alley. However, from a traffic circulation and pedestrian safety standpoint, the K Street garage access as proposed, is preferable to access from the alley for the following reasons.

Physical Characteristics of the Alley vs. Direct Access from K Street

As presently configured, the garage access proposed from the westbound limited access lane on K Street provides a direct connection to the parking facilities in the building to facilitate efficient traffic circulation and pedestrian safety. The parking facility entry has been designed with a long ramp to allow vehicles to enter the garage, form a queue as necessary during rush hour without blocking the sidewalks and roadway, pass through the attendant booth areas, and continue to the parking spaces. The driver of a vehicle will immediately understand the entry process and design program.

In contrast, the access through the alley off of Connecticut Avenue, as suggested by DDOT, creates several challenges that would result in an unusual and confusing configuration, not readily understandable by the driver. Based on information provided by Pei Cobb Freed & Partners Architects, site constraints for the new building dictate that loading berths and service spaces can be physically positioned only within the northwest “leg” of the property footprint where they can access the 30-foot wide alley at the interior of the square. As a result, the only possible location for the garage entrance is at the southwest end of the 20-foot wide alley off Connecticut Avenue, at the narrowest point in the property. Because vehicles would not be able to negotiate a u-turn from this location and exit onto K Street, all vehicle activity would be concentrated at one point along Connecticut Avenue, as shown in Figure 11, and without providing any benefit to pedestrian safety over the preferred location. The low visibility of the garage entrance at this location, coupled with the difficult circulation pattern, would create confusion for pedestrians. Visitors to the building, especially those coming for retail purposes only, would find this access point circuitous from a pedestrian and vehicular standpoint. For example, a retail patron desiring to utilize K Street retail or access farther to the south would have to return by way of the principal lobby of the building or walk through the alley. This access also has significant undesirable impacts to the internal efficiency of the building’s functional layout. This will be discussed in more detail in later paragraphs.

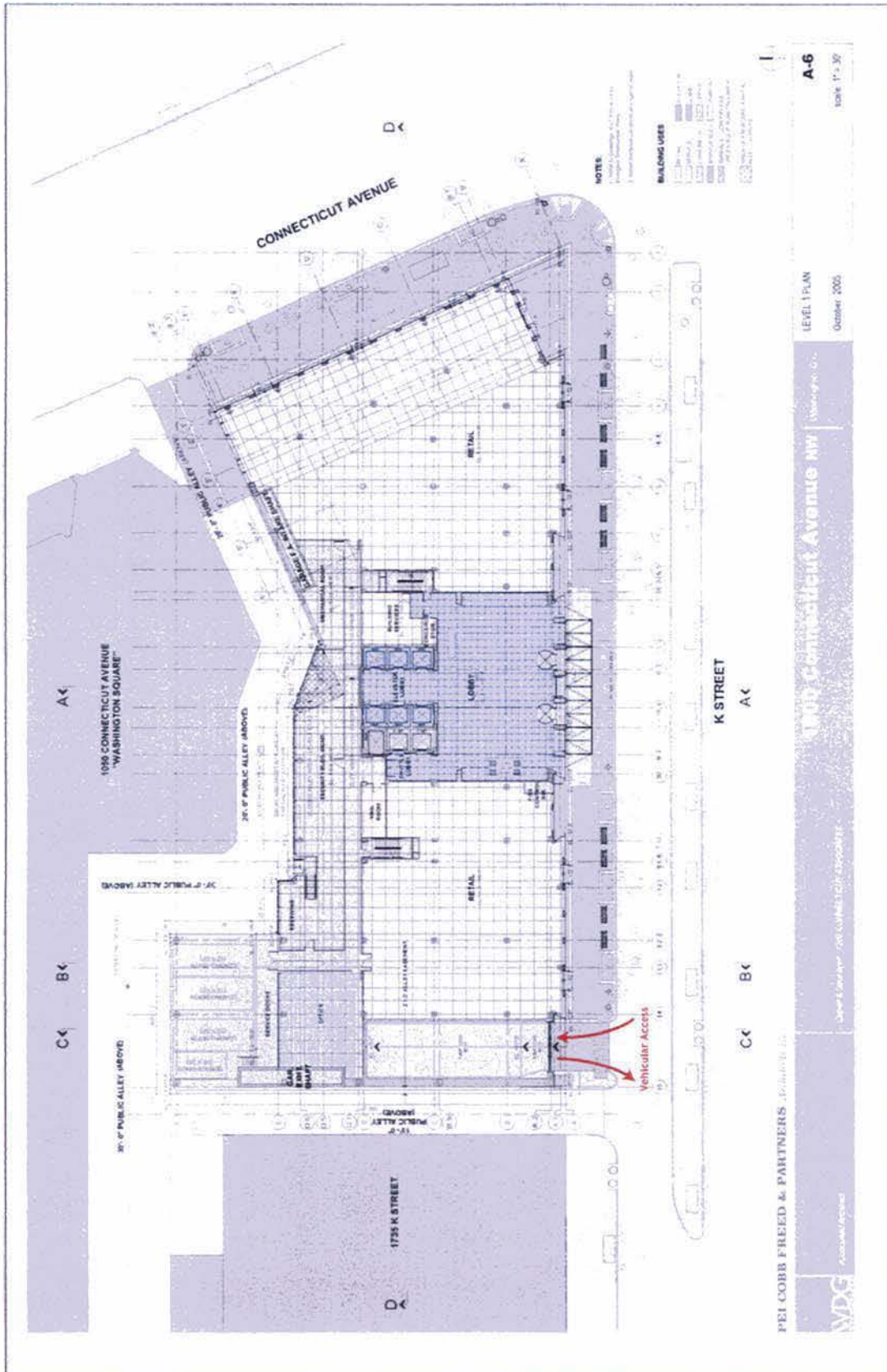


Figure 10 – Architectural Plan for Garage Access off K Street

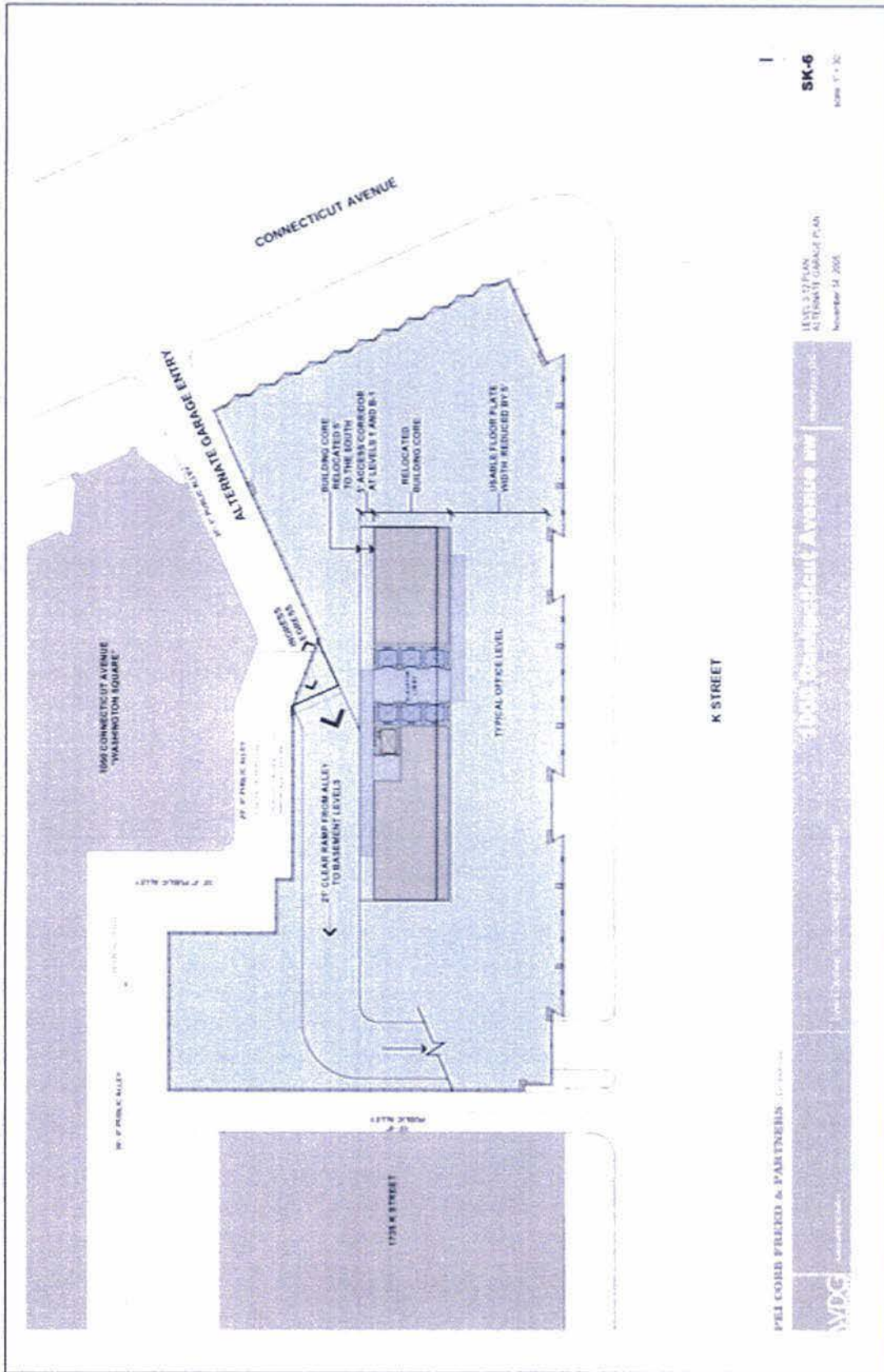


Figure 11 – Alternate Plan for Garage Access off the Alley

Conflicts in the Alley with Delivery Trucks and Other Vehicles

The alley from Connecticut Avenue serves as a major access for loading and unloading the large office and retail building located on L Street from Connecticut Avenue to 18th Street (Washington Square), as well as other buildings. Trucks and other vehicles also enter from the narrow K Street Access Alley. These traffic movements result in direct conflicts with oncoming traffic from Connecticut Avenue that would enter a potential access point of the building. Photographs from field observations of the congested alley are shown in Figure 12. Field observations were conducted on Tuesday, November 8 through Thursday, November 10 from the hours of 9:00 a.m. to 10:00 a.m., 11:00 a.m. to 1:00 p.m., 2:00 p.m. to 3:00 p.m., and 4:00 p.m. to 5:00 p.m.

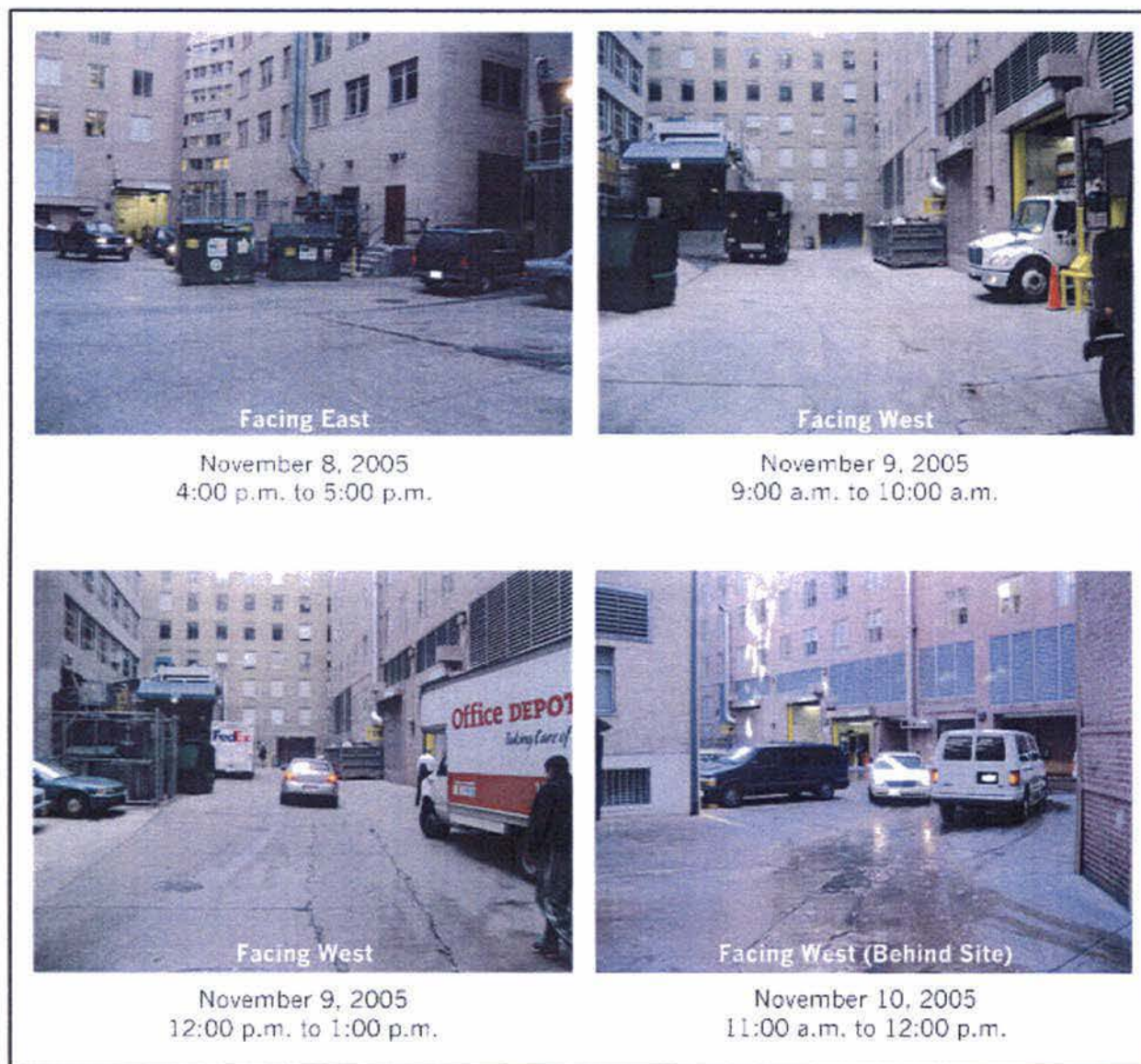


Figure 12 – Photographs of the Alley



Alley Congestion

Providing alley access to a parking garage at 1000 Connecticut Avenue would not eliminate the vehicle/pedestrian conflicts on K Street, given the continued existence of the north-south alley. Such conflicts would be increased on Connecticut Avenue if access were from the alley. Also, given the level of pedestrian and traffic volumes that occur in this area during the peak hours, this concentration of vehicles would lead to severe congestion in the alley with potential spillover to the sidewalk and street.

According to survey documents assessed by the Architect (Pei Cobb Freed & Partners LLP), up until the construction of Washington Square, there were two additional alley branches in addition to the alleys today. These branches were both north-south running and provided connection from L Street to the existing alley. The four known alley branches prior to the construction of Washington Square included the following:

- Fifteen-foot legal alley width (existing) leading from K Street to mid-block;
- Nine-foot effective alley width (six-foot legal plus three-foot setback of 1000 Connecticut Avenue side wall) leading to Connecticut Avenue. This alley was widened with the dedication of fourteen feet by Washington Square to create a twenty-foot legal alley width;
- Fifteen-foot legal alley width leading from L Street to mid-block, but is now closed; and
- Six-foot legal alley width leading from L Street at the western part of the block, but is now closed.

The existing condition provides less alley space and connection with external streets thus making service deliveries to the businesses in this block more difficult.

Alley Volumes

If the access to the garage is off the alley as shown in Figure 11, the new office building would significantly increase traffic on the Connecticut Avenue alley approach. Table 5 shows the existing AM and PM peak hour volumes for Connecticut Avenue and the trip generation of the new office building as per estimates obtained from ITE, 7th edition, *Trip Generation* rates/equations with a 60% transit reduction applied.

Table 5 shows that if the proposed garage access located off the alley, traffic using the Connecticut Avenue approach would increase by more than four-times that of the existing traffic volumes. Because of the configuration of the garage access off the alley, it will not be possible for vehicles to enter or exit from the K Street alley. Therefore, all of the garage traffic will use the Connecticut Avenue alley approach.

If the access to the garage is off the K Street service road this will eliminate the new garage traffic from

the alley, and will therefore not add to alley congestion and safety concerns at these areas.

Table 5 – Existing and Future Alley Volumes

	Alley at Connecticut Avenue	
	AM Peak Hour	PM Peak Hour
	Number of Vehicles	
Existing Volume	47	42
Total Trips with 60% Mode Split Applied	207	190
Total Alley Trips at Build out	254	232
% Increase in Alley Volume	440%	452%

If all of the service delivery/truck traffic for the buildings in this block also used the alley instead of the block faces, then the alley would become too congested to support all of this activity. The truck activity along the block faces (K Street, 18th Street, L Street, and Connecticut Avenue) was observed on Thursday, November 3 from 9:00 a.m. to 5:00 p.m. and the field data sheets are included in the Appendix. The accumulated truck activity along the block faces is shown in Figure 13. From the analysis, the highest truck traffic accumulation for this block was found to be at 3:00 p.m. and was observed to be consistently heavy around mid-day. Photographs of the truck activity along the block faces are shown in Figure 14.



Figure 13 – Accumulation of Truck Traffic



Figure 14 – Photographs along the Block Faces

Insufficient Alley Width

With the proposed reconstruction, the alley on the west side of the site (K Street) will be widened from 15 to 17.5 feet. While wider, this alley will not be wide enough for two-way truck traffic. If the parking garage entrance off the alley will add more than four-times the amount of vehicular traffic, other traffic will attempt to increase use of the K Street alley access. The K Street alley access will not be able to support this activity because of the increased truck and vehicle conflicts.

Garage User Security

The purpose of the garage is to support office and retail tenants, as well as provide public parking to retail and restaurant patrons, particularly in the evening. To maintain building security, garage patrons will not have access to the building after hours. Therefore, garage patrons who are not tenants will need to access the garage from the alley. Providing access from the alley is inconsistent with what makes a garage user feel safe, particularly after hours. The perception of personal safety is significantly reduced once a person leaves the high visibility and high activity of the street to retrieve his/her car from the garage via the alley.

Operational Issues

The Architects for the 1000 Connecticut Avenue development also reviewed the impact of changing vehicular access from K Street to the alley from Connecticut Avenue as was shown in Figure 11. The architectural concerns are:

1. *Required Adjustment to Location of Building Core*

A north alley entrance would lead immediately into a two-way ramp of minimum 21 feet clear width wall-to-wall, oriented east-west on the northern side of the building core. At Levels 1 and B-1 there must remain north of the core a 5-foot wide access corridor for tenant services to these levels. The cumulative widths of the ramp and corridor will require the relocation of the building core approximately 5 feet to the south. This would negatively impact the functionality of the building in two important ways:

- a. At the office levels, the most valuable portion of the typical floor plate, located south of the core along the K Street frontage, would reduce in north-south width by 5 feet. Presently the core is situated to allow a standard tenant layout south of the core consisting of: 5-foot wide inner (core) corridor + 12-foot wide inner office/conference room + 8-foot wide administrative stations + 5-foot wide outer corridor + 10-foot (minimum) wide perimeter office. Reducing the available width by 5 feet would be extremely detrimental to the utility of the floor plates for this project.
- b. At the basement parking levels, the drive aisle south of the elevator core would reduce to the 20-foot D.C. minimum, reducing the Level of Service.

2. Deletion of B-1 Level Parking

There is insufficient space for the necessary length of a ramp leading from the north alley that would allow a parking control station followed by a turn-out into a parking deck at Level B-1. Therefore the entrance ramp would likely by-pass Level B-1 altogether. This would impact the basement design in several ways:

- a. Vehicular headroom for at least a portion of Level B-2 would need to increase from 7'-2" to 8'-2" in order to accommodate the ADA required van space. The increased height requirement would likely suppress the floor plate elevations for all the basement levels, therefore increasing total depth and cost of excavation.
- b. Total garage parking count would be reduced by 6 or 7 spaces.
- c. Service access to the major utility rooms (fire pump room, switchgear room) presently located at Level B-1 would become difficult to provide. The location of these spaces might need to change, pending judgment of the engineers.



PARKING DEMAND

The proposed parking supply for the underground parking garage at 1000 Connecticut Avenue is at the approximate rate of 1 space per 1,500 square feet of office space, or 229 total spaces. The D.C. Zoning Code for a general office building in the C-4 District states that the building is to have 1 parking space for each 1,800 square foot of gross floor area. Based on the Code, approximately 202 parking spaces would satisfy the parking needs of the building. Because the retail component is less than 30,000 square feet, a parking requirement is only applicable for the office component. Therefore, the site fully accommodates its peak need from a parking standpoint per zoning ordinance, and will also include approximately 20% additional parking for the benefit of surrounding retail, office workers, and guests.



CONCLUSION

The traffic capacity analyses detailed in the study found the following conditions:

- *Existing*

The study intersections currently operate at an overall Level of Service (LOS) of C or better. The intersections can become congested however, especially during peak travel times. This is due to the vehicle delays experienced at adjacent intersections, as well as other factors such as pedestrians, delivery vehicles, and bus services that can momentarily impact the effective travel lanes.

- *Future Background (2008) – without 1000 Connecticut Avenue development*

The study intersections under Future Background conditions will continue to operate at a LOS of C or better and without considerable change in delay.

- *Total Future (2008) – with 1000 Connecticut Avenue development*

The study intersections under Total Future conditions with new site trips will continue to operate at a LOS of C or better and without considerable change in delay.

Based on these results, the traffic attributed to the 1000 Connecticut Avenue development will not have a significant impact and these additional trips can be accommodated by the current roadway configuration.

The best option for site access for the 1000 Connecticut Avenue development is off the K Street limited access roadway. If the garage access was off the Connecticut Avenue alley approach, this would increase traffic volumes in the alley by more than 4 times the current totals and would adversely affect pedestrian and vehicular safety and circulation. It also has significant impacts to the internal efficiency of the building, including the parking garage.