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March 10, 2006

Ms. Carol Mitten
Chairperson, DC Zoning Commission
441 4th Street, N.W., Room 210
Washington, DC 20001

**Re: Z.C. Case No. 04-36 – PUD and Zoning Map Amendment –
Dorchester House Associates, LLC and Kalorama West, LLC
(the “Applicant”) – Resumes of Expert Witnesses and Updated
Traffic and Parking Impact Study**

Dear Chairperson Mitten and Members of the Commission:

In preparation for the March 30, 2006 public hearing in the above-mentioned case, enclosed please find 20 copies of the following documents:

- Resumes of proposed expert witnesses;
Dan VanPelt – Traffic and Parking,
Eric Colbert – Architecture; and
- An updated Traffic and Parking Impact Study prepared by Gorove/Slade Associates.

Please feel free to contact the undersigned if you have any additional questions or comments.

Sincerely yours,

Phil Feola

Paul A. Tummonds, Jr.

Enclosures

cc: Joel Lawson, OP
Alan Roth, ANC 1C
Stephen Gewirz
John Hoskinson

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Daniel B. VanPelt, PE

Director of Engineering Services

Mr. VanPelt possesses a broad background strong in project management, analysis, design and research experience. He has extensive project experience with both public and private sector clients in a variety of transportation and traffic engineering arenas. His experience includes projects such as traffic impact studies, corridor needs assessments, traffic operational studies, due diligence studies, traffic forecasting, conceptual design, site planning design, garage planning, capacity analysis, queuing analysis, parking studies, traffic signal designs, origin-destination studies, cost-benefit analyses, and long term and large scale data collection efforts.

Mr. VanPelt has worked on projects throughout the United States and has also had the opportunity to work internationally on projects in China, Brazil, Mexico and Venezuela.

Professional Registration

Virginia

Education

Washington University; St. Louis, MO

M.S. in Civil Engineering

B.S. in Civil Engineering

Bethany College; Bethany, WV

B.S. in Physics

Professional Associations

Institute of Transportation Engineers

Transportation Research Board

International Council of Shopping Centers

Representative Projects

MIXED-USE AND COMMERCIAL DEVELOPMENTS

Mr. VanPelt has managed a number of mixed-used developments both nationally and internationally including local projects in the Washington Metropolitan area and international projects in Central and South America as well as the Middle East. Typically, the analysis addresses the existing traffic conditions, future traffic conditions without development, future traffic conditions with development and future traffic conditions plus ten & twenty years conditions.

A number of mixed-use developments included a variety of components to create a multi-trip sharing between the restaurant, hotel, bank and retail center uses. Principal tasks of these projects included the trip and parking generation on an hourly basis, the development of a parking demand profiles, the design of the entrances to allow for large vehicle circulation access, and the identification of general street traffic conditions around the site.

Projects include: Dubai International Finance Center, Dubai, UAE, 5th & K Streets NW - Washington, DC, Journal Square Centre - Jersey City, NJ, Harbourside - Washington, DC, Oaklawn at Leesburg - Leesburg, VA, Hacienda Santa Cruz - Caracas, Venezuela, Tysons Dulles Plaza - Tysons Corner, VA, Cedar Green - Dulles, VA

SHOPPING CENTERS AND MALLS

Mr. VanPelt has provided traffic and transportation analyses for over 50 retail projects throughout the United States. Projects include regional retail facilities in both urban and suburban areas. Examples include:



DC USA – Washington, DC, North Georgia Premium Outlets – Dawsonville, GA, Belmont Executive Center – Loudoun County, VA, Skyline Place Shopping Mall – Baileys Crossroads, VA, Park Meadows Mall – Denver, CO, Owings Mills Mall – Owings Mills, MD, Kittery Premium Outlets – Kittery, ME

HOSPITALITY AND ENTERTAINMENT

Mr. VanPelt has worked on numerous hospitality and entertainment sites throughout North and South America. Projects include: Turning Stone Casino Resort – Verona, NY, Gaylord Texan – Grapevine, TX, Mohegan Sun Resort – Uncasville, CT, W Mexico City – Polanco, Mexico D.F., Meskwaki Casino – Tama, IA, Marriott Orlando World Center – Orlando, FL, Connecticut Convention Center – Hartford, CT

CAMPUSES, SCHOOLS AND INSTITUTIONS

Mr. VanPelt has developed demand management plans, construction management plans, circulation studies, parking studies and transportation master plans for a number of universities, schools and institutions including: The Architect of the Capitol Area Master Plan – Washington, DC, Yale University Medical District – New Haven, CT, The National Cathedral Campus Plan – Washington, DC, FDA White Oak Campus Master Plan – White Oak, MD, The George Washington University-Loudoun – Loudoun County, VA, The Bullis School – Potomac, MD, Alexandria Country Day School – Alexandria, VA, The Phillips Collection – Washington, DC

PUBLIC AGENCIES AND SIGNAL DESIGNS

Projects include: U Street Area Parking Study – Washington, DC, Hoosier Highway Industrial Corridor – Logansport, IN, Lee Highway Corridor Analysis – Arlington, VA, TC Williams High School Signal Design – Alexandria, VA, Inigo's Crossing Signal Design – Montgomery County, MD, Skyline Signal Design – Fairfax County, Freedom Park – Leesburg, VA

RESIDENTIAL DEVELOPMENTS

Mr. VanPelt worked on several office and residential development projects located in the Washington D.C. area. Several projects involved site planning and access planning as well as the design of both traffic signals and parking garage facilities. Projects Include: Westmoreland House at Huntington Metro – Alexandria, VA, Balmoral Residential – Prince William County, VA, Red Cedar – Loudoun County, VA, Cooke Inlet Property – Pohick, VA

ERIC COLBERT & ASSOCIATES, P.C.

COMPANY PROFILE

After graduating from Cornell University with a professional degree in Architecture in 1975, Eric Colbert moved to Washington, D.C. to accept a position with the noted architectural firm Arthur Cotton Moore Associates. His work there included production of design and construction documents for numerous apartment and office building projects throughout the metropolitan area, including the historic Old Post Office Pavilion on Pennsylvania Avenue. Mr. Colbert was registered as an architect in 1978 and worked as a consultant until 1981, when he founded Eric Colbert & Associates. The firm has extensive experience with all building types, including apartment and office buildings, retail establishments, restaurants, hotels, and single family homes, and has built an impressive reputation in all aspects of historic preservation and new construction.

Eric Colbert & Associates maintains excellent working relationships with all divisions of the D.C. Department of Consumer and Regulatory Affairs, as well as building departments throughout other local jurisdictions. Challenging projects requiring approval from the D.C. Board of Zoning Adjustment, the United States Commission on Fine Arts, the D.C. Historic Preservation Review Board, and Advisory Neighborhood Commissions are their specialty. Mr. Colbert and his staff are licensed to practice architecture in the District of Columbia, Maryland and Virginia and are active in local professional associations including The Real Estate Group, Commercial Real Estate Women, The District of Columbia Building Industry Association, and The American Institute of Architects. In addition to being NCARB certified, Mr. Colbert is a member of the Mayor's Building Code Advisory Committee.

The firm's residential achievements include the design of new single family homes set in both rural and urban settings, new apartment building construction, renovation of small and large scale historic residential properties, and a wide range of affordable income housing. With a reputation for being design oriented, the firm's accomplishments have been recognized on a national level as "innovative" (*Architecture*, Leap of Faith, March 1997). Locally Eric Colbert & Associates has been praised as representing "the design attitudes of 1998" (*TheInTowner*, Design Excellence Along 16th Street, May 1998). Noted *Washington Post* architecture critic, Benjamin Forgey, has reviewed the firm's work on several occasions, most recently recognizing "a maturing vision" in its work. He described the firm's award-winning renovation of 1520 16th Street, N.W. (Church Place Condominiums) as offering "a spirited answer to Washington's age-old contextual question-how do you design new pieces to fit into the splendid quilt of the city's existing architecture?" Highlights of the firm's commercial projects include historic structure renovations, new office building construction, as well as a variety of retail and restaurant commissions.

The outstanding reputation Eric Colbert & Associates now holds in the design, development, and preservation communities has resulted from a company-wide commitment to ensuring a successful, well-designed product regardless of project size, type, or location. Consistent quality efforts of new construction and renovation have proven highly beneficial to the firm, allowing it to maintain long-term associations while also attracting a new and challenging clientele.

Revised Traffic Impact Study

Dorchester Apartments

Washington, D.C.

March 9, 2006

Prepared For:
Potomac Investment Properties, Inc.
Washington, D.C.

Prepared By:
Gorove/Slade
Associates, Inc.





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EXECUTIVE SUMMARY

The following report presents revised traffic impact analysis findings and additional studies for the expanded development of Dorchester Apartments located in the Reed Cooke neighborhood of Washington, D.C. Significant study has been performed for the neighborhood as part of the application for the Citadel project, which is adjacent to the Dorchester Apartments and will include a grocery store, office and retail. In response, the ANC has recommended and DDOT has concurred with changing portions of the street network to one-way operation and installing a traffic signal at the intersection of 16th Street and Kalorama Road, if warranted.

Based on the analysis, the following major conclusions were determined:

Existing (2005) Traffic Conditions

The capacity analyses show that the intersections currently operate at acceptable levels of service during peak hours with the following exceptions: the side street approaches of Euclid Street to 16th Street in AM and PM peak periods and the northbound approach of 16th Street and Kalorama Road during AM.

Future Background (2008) Conditions

The Future Background capacity analyses show that the intersections are expected to operate at acceptable levels of service during peak hours with the exception of the side street approaches to the intersections on 16th Street from Euclid Street that experience excessive delays in the existing condition. These impacts can be mitigated with signal timing optimization.

Build Year (2008) Conditions

The Total Future capacity analyses show that the intersections in the total build conditions will continue to operate at same levels of service during peak hours as the future background conditions. The traffic generated by new Dorchester expansion will not significantly impact the roadway network and there will be no additional mitigation measures necessary to accommodate the site generated traffic.

Signal Analysis

Based on the analysis, a traffic signal at the intersection of 16th Street and Kalorama Road is not warranted and new traffic created by the Dorchester Apartments does not exacerbate any need that DDOT may determine requires a signal.



Parking

The proposed parking garage will contain 307 parking spaces with 8 in tandem. The garage will provide one parking space per unit for the new apartments and will replace the 120 parking spaces in the existing surface lot. The remaining spaces will be provided for other users. The proposed parking supply is expected to adequately serve the existing building and the future expansion with no adverse impacts to street parking in the neighborhood.

Loading Dock

The existing loading dock with access from Kalorama Road will operate as it does today. A second loading dock is proposed in the expansion to be located adjacent to the upper level parking garage entrance and to be accessed from 17th Street. This dock will accommodate trucks up to 40 feet in length. No on-street parking spaces will need to be removed in order to accommodate the maneuvering of the truck into and out of the loading dock.



INTRODUCTION

This report presents the results of a revised traffic impact analysis conducted for the planned expansion of the Dorchester Apartments located in the Reed Cooke neighborhood of Washington, D.C. The site is bounded by Euclid Street to the north, Kalorama Road to the south, 17th Street to the west and 16th Street to the east. The site location and regional roadway network are shown in Figure 1.

The site currently contains a 395-unit apartment building and a 120-space surface parking lot. The planned expansion includes a second apartment building composed of 145 to 151 units and a 307-space parking garage. Access to the new parking garage will be provided by an existing entrance on Kalorama Road and a new entrance on 17th Street. In total, upon build-out in 2008, there will be about 538 units and 307 parking spaces.

This revised traffic impact analysis serves as an update to a previous report prepared by Gorove/Slade Associates, Inc. (G/SA) submitted June 3, 2005 as part of the site approval process. An update is necessary to reflect the impending one-way roadway alterations to both Kalorama Road and 17th Street, NW.

The Citadel project is adjacent to the Dorchester Apartments and is an adaptive reuse of the structure located at 17th Street and Kalorama Road, directly south of the proposed Dorchester expansion. The Citadel will include a grocery store, office, and retail. Significant study has been performed for the neighborhood in response to ANC concerns about increased vehicular and truck traffic resulting from redevelopment of the Citadel. The ANC has stipulated changes to the street network must be made and the Board of Zoning Adjustment ruling on the Citadel application required that changes to the network be made. DDOT has recommended changing, and will soon be implementing, Kalorama one-way westbound from 16th Street to 17th Street and making 17th Street one-way northbound from Kalorama Road to Columbia Road. DDOT has also recommended the installation of a traffic signal at 16th Street and Kalorama Road, if warranted. These changes to the network were reflected in the Future Background and Total Future conditions of the analysis.

Before starting the revised traffic analysis, G/SA interacted with the District Department of Transportation (DDOT) staff to establish the scope, assumptions, and analysis methodologies of this report, outlined below.

- The study area was set as the following seven intersections (four are the same as the 2005 report): Euclid Street and 16th Street; Euclid Street and 17th Street; Kalorama Road and 16th Street; Kalorama Road and 17th Street; Kalorama Road and 18th Street; Kalorama Road and Champlain Street; and Kalorama Road and Ontario Road.
- The traffic counts from the 2005 report were used for new Future Background and Total Future analysis. However, three study intersections are included in this update that were not in



the 2005 report. For this reason, traffic counts from the Citadel traffic report were used for the following intersections: Kalorama Road and 18th Street; Kalorama Road and Champlain Street; and Kalorama Road and Ontario Road.

- Future traffic in the area was projected using a regional growth percentage of 1% per year for three years in addition to the expected traffic that will be generated by local approved developments. The local developments whose traffic is expected to pass through the study intersections are: the Citadel, 1700 Kalorama Lofts; Adam's Alley; Jemal's Wheel (1701 Kalorama); Meridian Crescent; Il Palazzo; and Adams Row.
- Traffic generated by the Dorchester Apartments expansion was estimated based on the existing traffic volumes related to the number of parking spaces.

The following tasks were completed as part of this study:

- A site visit was performed to record lane configurations, traffic controls, and signal timings.
- Peak hour traffic volumes were compiled for three scenarios: Existing; Future Background; and Total Future. The scenarios are defined as follows:
 - Existing: represents current conditions in the study area and is based on the turning movement counts and the existing roadway configuration.
 - Future Background: represents future (2008) conditions in the study area without the Dorchester Apartments expansion and is based on the existing conditions plus regional, local growth (approved local developments), and roadway improvements.
 - Total Future: represents future (2008) conditions with the Dorchester Apartments expansion and is based on the Future Background conditions with the inclusion of traffic generated by the Dorchester Apartments expansion.
- Capacity analyses of the three scenarios were analyzed with Highway Capacity Manual methodology using the Highway Capacity Software 2000 (HCS 4.1e).
- The results of the capacity analyses were used to recommend measures, if necessary, to mitigate the impacts of assumed background development and the Dorchester Apartments expansion.
- On-site parking conditions for the pre-expansion and post-expansion scenarios were reviewed.
- Truck maneuvering analysis was performed for the new loading dock using AutoTURN truck maneuvering simulation software.

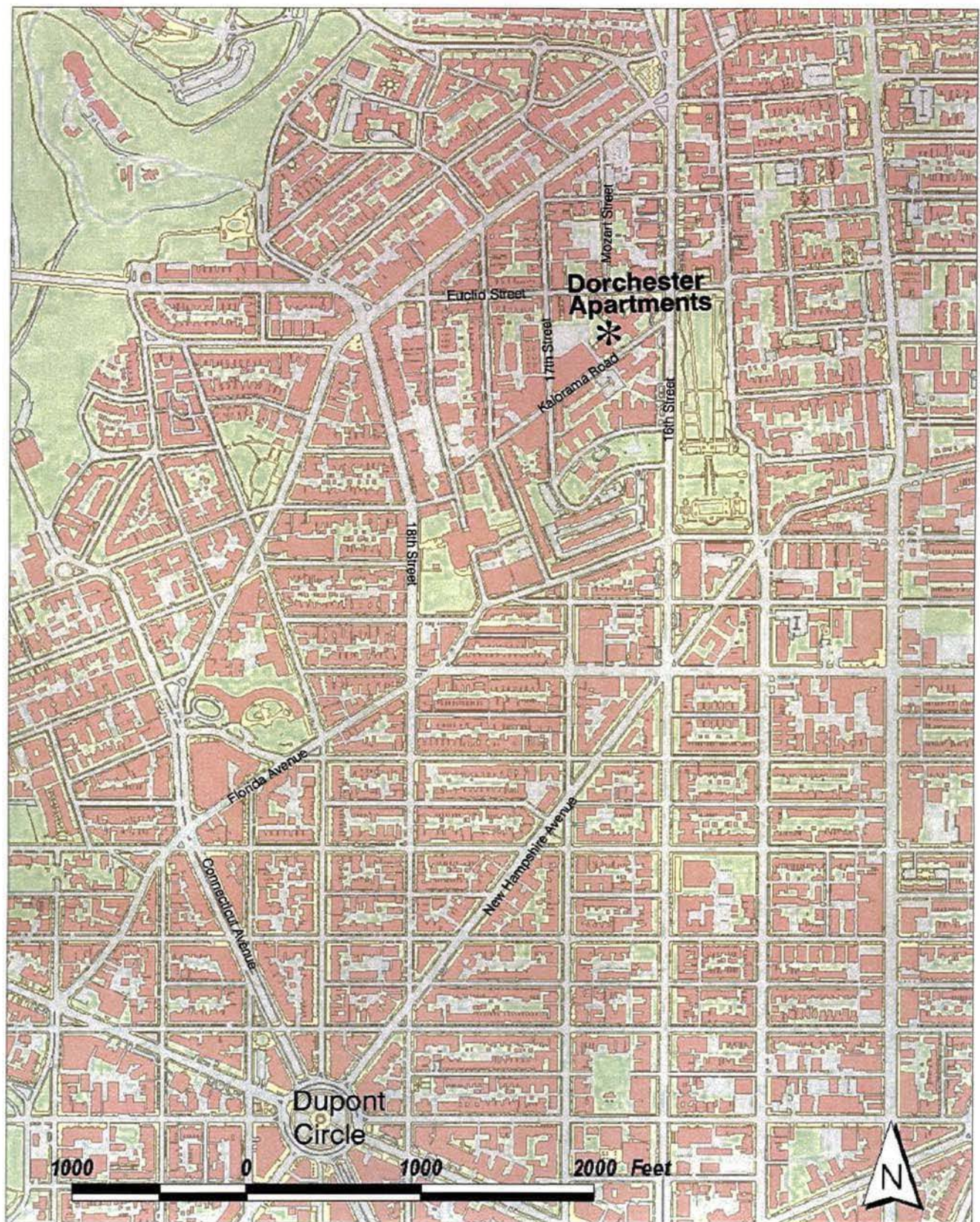


Figure 1 – Site Location Map

EXISTING ROADWAY NETWORK

The following is a description of roadways within the study area (see Figure 2 for existing lane configurations and traffic control):

- **16th Street, NW**

16th Street, NW is a major north-south corridor in northwest Washington, D.C. In the vicinity of the site, the roadway consists of two northbound and three southbound travel lanes. This street provides access to the Capital Beltway to the north and Massachusetts Avenue to the south and is served by Metrobus routes S1, S2, and S4. 16th Street is classified as a major arterial according to the District of Columbia's Functional Classification map.

- **Kalorama Road**

Kalorama Road is a neighborhood roadway with a 30-foot pavement width that serves traffic in both directions with parking on both sides of the street. Plans are underway to convert Kalorama Road to one-way westbound from 16th Street to 17th Street. Kalorama Road intersects 17th Street with an all-way stop-controlled intersection and creates a "T" intersection at 16th Street with stop control on Kalorama. Kalorama Road is functionally classified as a local street.

- **17th Street, NW**

17th Street, NW is a 30-foot roadway with parking on both sides of the street. North of Kalorama Road, this neighborhood roadway operates in both directions and intersects Euclid Street with an all-way stop-controlled intersection and creates a "T" intersection at Columbia Road with stop control on 17th. Plans are underway to convert 17th Street to one-way northbound from Kalorama Road to Columbia Road. South of Kalorama Road, 17th Street currently operates as one-way northbound. 17th Street is functionally classified as a local street.

- **Euclid Street**

Euclid Street to the north of the site is a two-way, east-west neighborhood street that intersects Columbia Road to the west and 16th Street to the east of the site. Its intersection with 16th is controlled by a traffic signal. Euclid Street is functionally classified as a collector street, meaning it is intended to carry more traffic than a local street.

- **18th Street, NW**

18th Street is classified as a minor arterial by the District of Columbia and runs north-south. At its signalized intersection with Kalorama Road, 18th Street consists of one lane in each direction with parking on either side of the street. 18th Street is a heavily traveled roadway in late evenings and on weekends due to the concentration of restaurants, bars, and late night venues



on this street to the north of its intersection with Kalorama Road.

- **Ontario Road**

Ontario Road is a 30-foot local street with parking on both sides. This roadway operates one-way northbound between Euclid Street and Columbia Road and operates in both directions between Euclid and Florida Avenue. Its “T” intersection with Columbia Road is signalized while the remaining intersections are stop controlled.

- **Champlain Street**

Champlain Street is a 30-foot wide local street with parking on both sides and stretches from Columbia Road to a dead-end at the Marie Reed Learning Center. The re-opening of Champlain Street to provide direct access to Florida Avenue is a possibility in the future. However, for the purposes of this analysis, its existing status was assumed to remain in the build year. Kalorama Road jogs at Champlain creating two unsignalized “T” intersections.

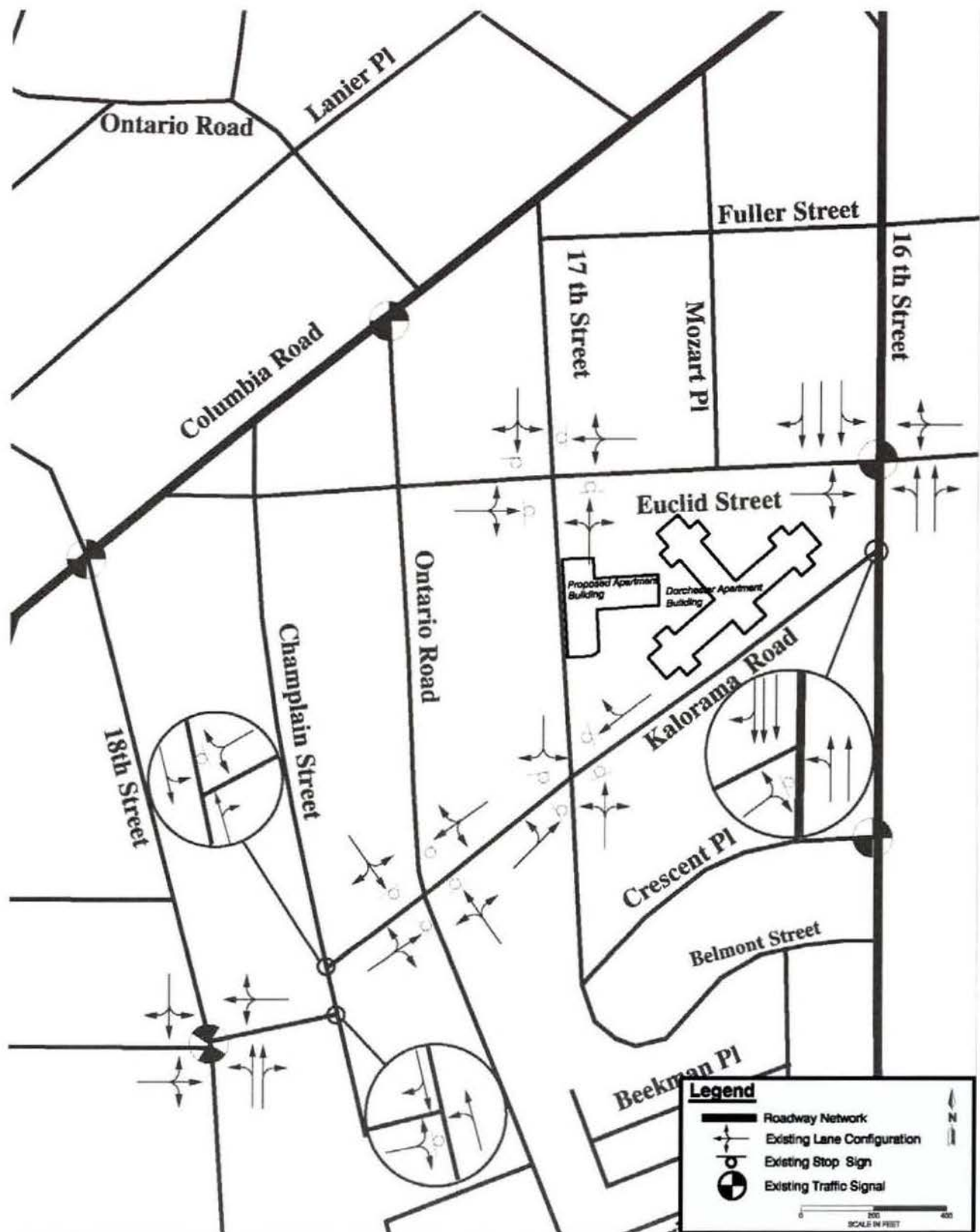


Figure 2 – Existing Lane Configuration and Traffic Control

TRAFFIC VOLUMES

This section of the report describes the methodology used to compile the peak hour traffic volumes for the three scenarios analyzed: (1) Existing; (2) Future Background; and (3) Total Future.

Existing Volumes

Turning movement traffic counts at the study intersections were collected on Thursday, March 24, 2005 from 7:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m. Based on these counts, the commuter peak hours of the study area were determined to be from 8:00 a.m. to 9:00 a.m. and 5:30 p.m. to 6:30 p.m. Turning movement counts were conducted at the existing site drive on Wednesday, March 16, 2005. Kalorama Road and 18th Street; Kalorama Road and Champlain Street; and Kalorama Road and Ontario Road. This data indicated that on a typical weekday about 18 vehicles arrive and 23 depart during the AM peak hour and 27 vehicles arrive and 19 depart during the PM peak hour. This low volume of traffic is an indication of the convenience of public transportation. The existing peak hour traffic volumes are shown in Figure 3 and count summary sheets are included in the Appendix. Existing peak hour counts for Kalorama Road and Ontario, Kalorama Road and Champlain and Kalorama and 18th Street study intersections were obtained from The Citadel TIA & Neighborhood Transportation Study, February 2005 report.

Future Background (2008) Volumes

The Future Background volumes represent the amount of future traffic the study area should expect without the Dorchester Apartments expansion. The construction of the proposed development is anticipated to be complete in 2008. This neighborhood is currently experiencing a high level of development activity, which will have an impact on traffic volumes in the neighborhood. Some developments were identified in the vicinity of the site that do not currently exist but which are expected to be occupied by 2008. This has been taken in to account for the analysis. The traffic associated with these background developments was determined using the Institute of Transportation Engineers (ITE) *Trip Generation*, 7th Edition for land uses #220 (Apartment), #230 (Residential Condominium/Townhouse), #850 (Supermarket), #814 (Specialty Retail Center) and #710 (General Office Building). Table 1 lists the trip generation for future background developments.

The trips were reduced to reflect the use of public transportation according to the Columbia Heights/Mount Pleasant Transportation Study prepared for DDOT by Cambridge Systematic, Inc. dated July 2003. This study found that within the study area, 44% of residents used public transportation to commute to and from work while the average use of public transit in the District is 33%. The background developments are located outside the report's study area by approximately one block to the south and one block to the west. While the proximity of the developments to the study area of the Cambridge report may warrant a transit reduction of 44%, the District average of 33% was used as a conservative assumption.

Supermarket and specialty retail trips, specifically related to the Citadel development, were reduced 60% to account for a large number of residents within walking distance. This reduction is based on observations made by G/SA staff at the existing Whole Foods Market grocery store on P Street near Logan Circle. On three separate occasions, the arrival patterns of customers at the P Street Whole Foods store were monitored to determine an appropriate ratio of vehicle to non-vehicle arrivals. These observations found that on a typical weekday, the average percentage of patrons that arrived either on foot or by public transit ranged between 57% and 68%. The remaining patrons arrived by either taxi or personal vehicle. To avoid overestimating the proportion of non-automobile arrivals to the background development, a value at the lower end of the range, 60%, was used in our calculations.

An inherent traffic growth of 1% per year was also assumed to account for other developments in the area that may be completed by the anticipated build year of 2008. The inherent traffic growth and background development trips were added to the existing volumes in order to establish Future Background 2008 traffic volumes without the Dorchester Apartments expansion site trips. The Future Background traffic volumes are shown in Figure 4.



Figure 3 – Peak Hour Traffic Volumes for Existing Conditions (AM Peak/PM Peak)



Table 1 – Background Development Trip Generation

Land Use	Quantity	Trip Generation					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Citadel							
Harris Teeter	43,312 SF	89	57	146	246	236	482
Transit Reduction (60%)		(53)	(34)	(87)	(148)	(142)	(290)
Subtotal		36	23	59	98	94	192
Other Retail	7,458 SF	3	3	6	17	22	39
Transit Reduction (60%)		(2)	(2)	(4)	(10)	(13)	(23)
Subtotal		1	1	2	7	9	16
Office	31,182 SF	65	9	74	19	95	114
Transit Reduction (33%)		(22)	(3)	(25)	(6)	(32)	(38)
Subtotal		43	6	49	13	63	76
Subtotal		80	30	110	118	166	284
1700 Kalorama Lofts	36 units	4	19	23	17	9	26
Transit Reduction (33%)		(1)	(6)	(7)	(6)	(3)	(9)
Subtotal		3	13	16	11	6	17
Adams Alley	22 units	3	12	15	11	6	17
Transit Reduction (33%)		(1)	(4)	(5)	(4)	(2)	(6)
Subtotal		2	8	10	7	4	11
Jemal's Wheel (1701 Kalorama)	48 units	5	24	29	22	11	33
Transit Reduction (33%)		(2)	(8)	(10)	(7)	(4)	(11)
Subtotal		3	16	19	15	7	22
Meridian Crescent	29 units	3	16	19	15	7	22
Transit Reduction (33%)		(1)	(5)	(6)	(5)	(2)	(7)
Subtotal		2	11	13	10	5	15
IL Palazzo	75 units	7	34	41	31	16	47
Transit Reduction (33%)		(2)	(11)	(13)	(10)	(5)	(15)
Subtotal		5	23	28	21	11	32
1654 Euclid Street	22 units	3	12	15	11	6	17
Transit Reduction (33%)		(1)	(4)	(5)	(4)	(2)	(6)
Subtotal		2	8	10	7	4	11
Adams Row	68 units	6	32	38	29	15	44
Transit Reduction (33%)		(2)	(11)	(13)	(10)	(5)	(15)
Subtotal		4	21	25	19	10	29
Total Proposed Trips		101	130			208	421

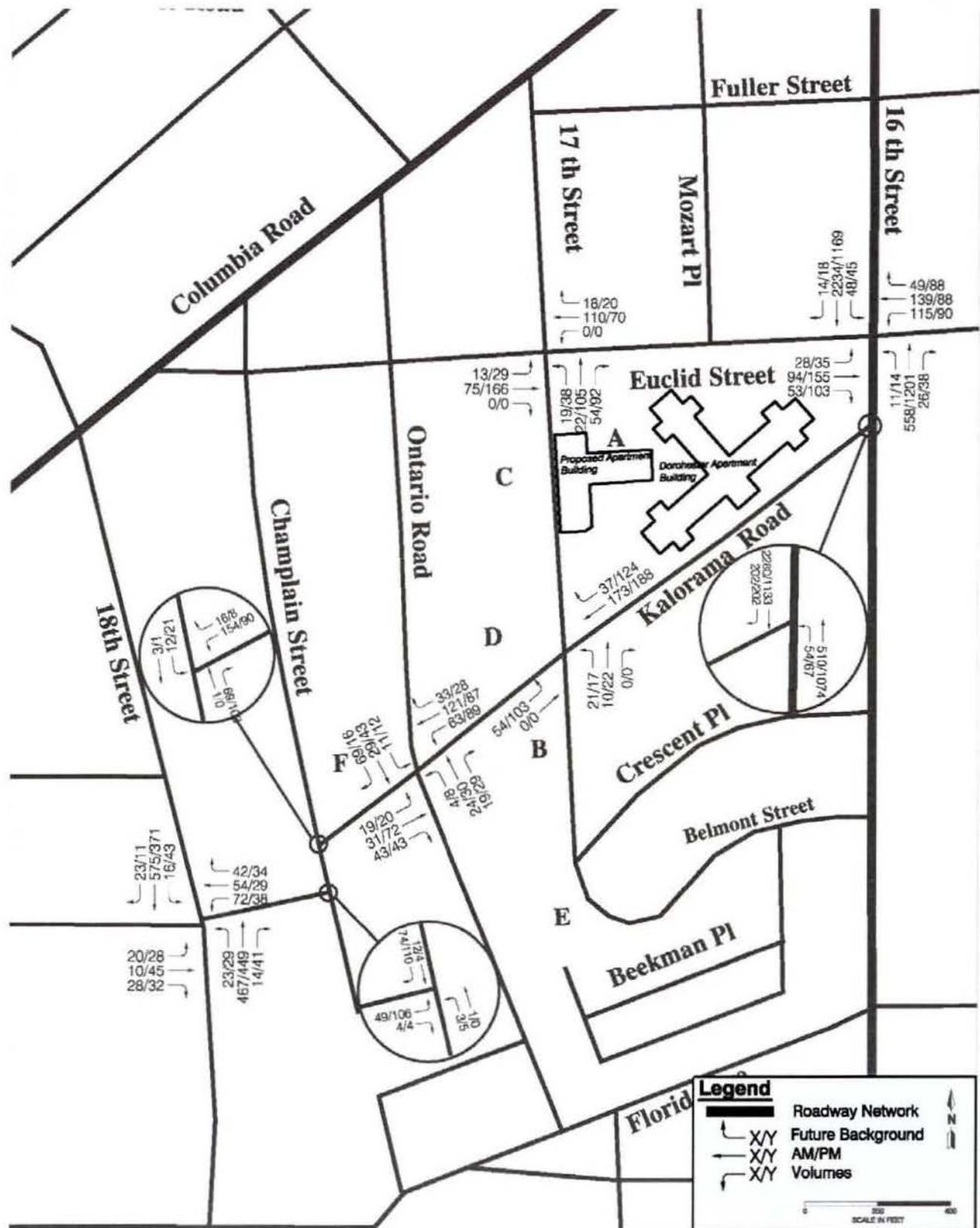


Figure 4 – Peak Hour Traffic Volumes for Future Background Conditions (AM Peak/PM Peak)

Total Future (2008) Volumes

The Total Future volumes represent the traffic expected to pass through the study area upon completion of the proposed development. They are based upon the Future Background volumes with the addition of traffic generated by the Dorchester Apartments expansion.

Trip Generation and Distribution of Trips

Typically, vehicle trips are generated based on trip generation data compiled from the ITE *Trip Generation*, 7th Edition. If significant non-vehicular transportation modes are expected, as it is in this case, a trip reduction factor may be applied. In the Traffic Volumes section of this report, it was established that a 33% reduction of calculated trips using ITE methodology is a reasonable reduction for this location. Using ITE, the new trips are calculated to be 50 and 65 in the AM and PM, respectively, with the 33% transit reduction.

For the purposes of comparison, trips were generated using the existing traffic produced by the Dorchester Apartments. A proportional relationship was established between the existing number of parking spaces and the observed traffic volumes. This relationship was used to generate new projected volumes. This method resulted in a new trip generation of 63 AM and 71 PM new trips for the Dorchester with the expansion. These volumes are greater than the volumes calculated using the ITE methodology. Therefore, the methodology based on existing traffic patterns is more conservative than using the ITE values and assuming a 33% reduction. The more conservative volumes were used in this analysis. Table 2 shows how the G/SA method contrasts with the values obtained using the ITE *Trip Generation*, 7th Edition. A summary of the trip generation calculations are included in the Appendix.

The existing vehicle trips were redistributed between the two future garage access points and propagated through the roadway network. The new projected trips were similarly distributed. The distribution of these trips for the Dorchester after its expansion is shown in Figure 5 as percentages of the total. Projected volumes for the Dorchester after expansion, including the redistributed existing trips and new trips, are shown in Figure 6. Future projections of traffic for the Total Future condition are shown in Figure 7.

Table 2 – Comparison of Trip Generation with ITE

Description	Trip Generation					
	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
ITE New Trips for 148 Dwelling Units (approximate)	15	61	76	64	35	99
(33% transit reduction)	(5)	(20)	(25)	(21)	(12)	(33)
Total New Trips per ITE Methodology	10	41	51	43	23	66
Total New Trips using Existing Pattern	28	35	63	42	29	71
Difference	+18	-6	+12	-1	+6	+5

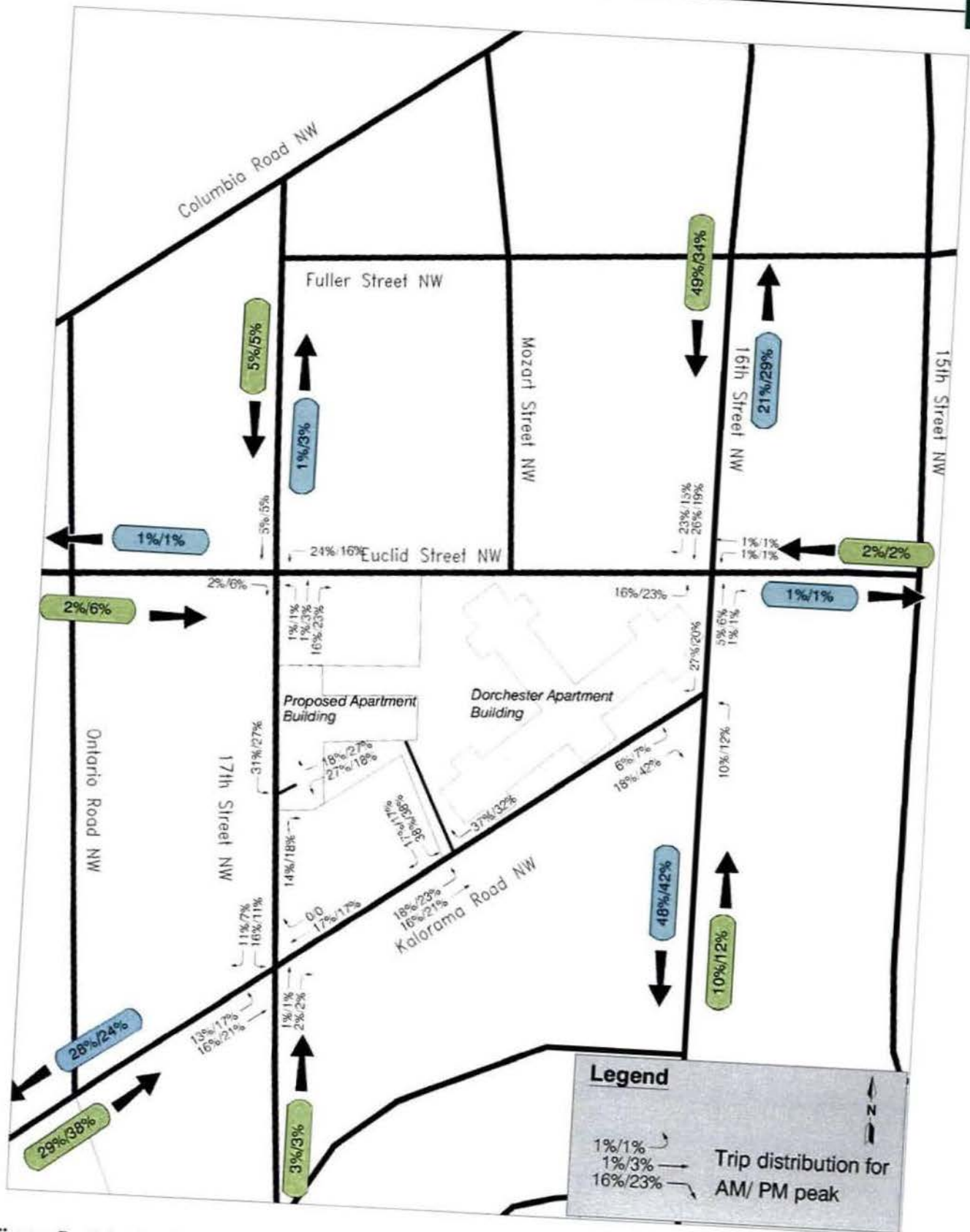


Figure 5 – Distribution of Trips for Dorchester Apartments

March 9, 2006



Figure 6 – Peak Hour Traffic Generated by Dorchester Apartments (AM Peak/PM Peak)



Figure 7 – Peak Hour Traffic Volumes for Total Future Build Conditions (AM Peak/PM Peak)

CAPACITY ANALYSIS

G/SA performed a capacity analysis comparing traffic conditions within the study area for the three scenarios studied: (1) Existing; (2) Future Background; and (3) Total Future conditions. These analyses were performed for all of the study intersections for both the AM and PM peak hours. The Highway Capacity Software 2000 (HCS 4.1e) and methodology contained in the Highway Capacity Manual (HCM) was used for the analysis. The HCM methodology calculates the average delay (in seconds per vehicles) for vehicles passing through an intersection. The average delay is then equated to a letter grade of A through F, called a Level of Service (LOS). DDOT considers a LOS D to be acceptable during peak conditions, although in highly urbanized areas, LOS E can also be acceptable. Table 3 presents the results of the capacity analyses including LOS and average delay results for each intersection and approach. Worksheets containing details of the capacity analyses are included in the Appendix.

The results found in the Table 3 show:

- **Existing (2005) Conditions**

The results of the Existing capacity analysis indicate that all of the intersections operate at an acceptable level of service during the AM and PM commuter peak hours with the exception of the eastbound approach of Euclid Street and 16th Street in the PM, the westbound approach of Euclid and 16th Street during the AM and PM peak hours and the northbound approach of Kalorama and 16th Street during the AM peak hour. These approaches operate with very high delay. The signal timing at the intersection of Euclid and 16th Streets could be modified to decrease the delay on the side street approaches. Since 16th Street is a major north-south corridor, the District Department of Transportation has timed the signal to give priority to the traffic on 16th Street. The results of the existing conditions capacity analysis are displayed graphically in Figure 8.

- **Future Background (2008) Conditions**

The results of the Future Background (2008) capacity analysis indicate that all of the intersections continue to operate at acceptable levels of service during commuter peak hours with the exception of the side street approaches of Euclid at its intersection with 16th Street and the northbound approach of Kalorama Road and 16th Street. The intersection approaches to 16th Street that experience excessive delay presently will increase with background traffic growth. These impacts can be mitigated by signal time optimization of 16th Street and Euclid Street intersection during AM and PM peak periods and with a traffic signal installation at the intersection of 16th Street and Kalorama Road. This new signal, should it be determined necessary by DDOT, will need to be timed and coordinated with the existing signals at the intersections of 16th Street with Euclid Street to the north and Crescent Place to the south. Proper timing and coordination so that these signals work together will help maintain the



current traffic progression that motorists experience today on this major corridor. The results of the capacity analysis of this intersection with a traffic signal are included in Table 3. The results of the future background capacity analysis are illustrated in Figure 9.

- **Total Future (2008) Conditions**

The results of the total future (2008) capacity analysis indicate that all of the intersections operate at the same levels of service that can be expected in the future background scenario without the Dorchester expansion in the AM and PM peak hours. The total future analysis shows that no additional mitigation is required to accommodate the Dorchester trips. Hence the site generated traffic will not cause any additional impact on the future roadway network. Table 3 shows the capacity analysis results for both the unmitigated and mitigated scenarios as discussed above. The results of the total future capacity analyses with mitigation are shown in Figure 10.

The complete HCS analysis is included in the Appendix.

Table 3 – Capacity Analysis Results

		EX	FB	TF	EX	FB	TF
Intersection	Movement	LOS (Delay)			LOS (Delay)		
		AM			PM		
18 th Street and Kalorama Road							
Signalized	Eastbound Approach	D (35.5)	D (35.4)	D (35.9)	D (37.1)	D (38.7)	D (39.9)
	Westbound Approach	D (40.1)	D (49.3)	D (51.1)	D (35.9)	D (38.9)	D (39.6)
	Northbound Approach	A (5.8)	A (5.8)	A (5.8)	A (5.8)	A (5.9)	A (5.9)
	Southbound Approach	A (9.1)	A (9.5)	A (9.5)	A (7.4)	A (8.0)	A (8.0)
	Overall	B (11.9)	B (14.3)	B (14.9)	B (10.8)	B (12.5)	B (13.2)
17 th Street and Euclid Street							
Unsignalized	Eastbound Approach	A (7.6)	A (7.8)	A (7.8)	A (8.1)	A (9.1)	A (9.1)
	Westbound Approach	A (7.8)	A (7.8)	A (7.9)	A (7.7)	A (8.1)	A (8.2)
	Northbound Approach	A (7.3)	A (7.6)	A (7.8)	A (7.6)	A (9.1)	B (9.3)
	Southbound Approach	A (7.8)	A (7.5)	A (7.5)	A (7.8)	A (7.9)	A (7.9)
	Overall	A (7.7)	A (7.7)	A (7.8)	A (7.9)	A (9.0)	A (9.0)
17 th Street and Kalorama Road							
Unsignalized	Eastbound Approach	A (7.5)	A (7.7)	A (7.7)	A (7.8)	A (8.2)	A (8.3)
	Westbound Approach	A (7.8)	A (8.1)	A (8.2)	A (7.6)	A (8.8)	A (9.0)
	Northbound Approach	A (7.4)	A (7.8)	A (7.8)	A (7.5)	A (8.1)	A (8.2)
	Southbound Approach	A (7.1)	-	-	A (7.4)	-	-
	Overall	A (7.6)	A (8.0)	A (8.1)	A (7.6)	A (8.6)	A (8.8)
16 th Street and Euclid Street							
Signalized	Eastbound Approach	D (45.3)	D (50.0)	D (50.0)	E (63.4)	F (135.2)	F (135.2)
	Westbound Approach	F (196.4)	F (287.0)	F (288.9)	F (160.1)	F (461.5)	F (461.5)
	Northbound Approach	A (6.3)	A (6.4)	A (6.4)	A (9.6)	B (10.1)	B (10.1)
	Southbound Approach	B (13.0)	B (17.0)	B (15.3)	A (7.2)	A (7.7)	A (7.8)
	Overall	C (29.7)	D (40.9)	D (40.1)	C (25.7)	E (60.7)	E (60.5)
16 th Street and Euclid Street							
Signalized	Eastbound Approach	-	D (37.3)	D (37.3)	-	D (42.8)	D (42.8)
	Westbound Approach	-	D (43.4)	D (43.5)	-	D (41.4)	D (41.4)
	Northbound Approach	-	A (7.2)	A (7.2)	-	B (13.7)	B (13.2)
	Southbound Approach	-	B (17.7)	B (18.0)	-	B (10.6)	B (11.3)
	Overall	-	B (19.2)	B (19.4)	-	B (17.6)	C (21.7)
16 th Street and Kalorama Road							
Unsignalized	Eastbound Approach	E (49.7)	-	-	D (29.1)	-	-
	Northbound Approach	C (18.2)	E (36.3)	E (38.8)	B (10.4)	B (12.0)	B (12.2)
16 th Street and Kalorama Road							
Signalized	Northbound Approach	-	A (0.8)	A (0.8)	-	A (1.7)	A (1.8)
	Southbound Approach	-	A (6.4)	A (6.5)	-	A (3.3)	A (3.3)
	Overall	-	A (5.4)	A (5.4)	-	A (2.5)	A (2.6)
17 th Street and Site's Driveway							
Unsignalized	Westbound Approach	-	-	A (8.8)	-	-	A (9.6)
	Southbound Approach	-	-	A (9.2)	-	-	A (10.4)
Kalorama Road and Site's Driveway							
Unsignalized	Southbound Approach	A (9.5)	A (9.7)	A (9.8)	A (9.4)	A (9.5)	A (9.6)
Kalorama (EB) Road and Champlain Street							
Unsignalized	Eastbound Approach	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)
	Northbound Approach	B (10.2)	B (10.5)	B (10.9)	A (9.9)	B (11.2)	B (11.7)
	Southbound Approach	A (8.9)	A (9.1)	A (9.2)	A (8.6)	A (8.8)	A (8.8)
Kalorama (WB) Road and Champlain Street							
Unsignalized	Westbound Approach	A (7.4)	A (7.4)	A (7.4)	A (7.3)	A (7.3)	A (7.3)
	Northbound Approach	A (8.5)	A (8.6)	A (8.6)	A (8.5)	A (8.6)	A (8.7)



Southbound Approach		B (10.8)	B (12.0)	B (12.3)	A (9.8)	B (10.9)	B (11.2)
Ontario Road and Kalorama Road							
<i>Unsignalized</i>	Eastbound Approach	A (7.6)	A (7.8)	A (7.9)	A (7.7)	A (8.1)	A (8.3)
	Westbound Approach	A (8.1)	A (8.9)	A (9.1)	A (7.6)	A (8.8)	A (9.0)
	Northbound Approach	A (7.5)	A (7.8)	A (7.9)	A (7.5)	A (7.9)	A (8.0)
	Southbound Approach	A (7.5)	A (7.9)	A (8.2)	A (7.5)	A (8.1)	A (8.2)
	<i>Overall</i>	A (7.8)	A (8.3)	A (8.5)	A (7.6)	A (8.4)	A (8.6)

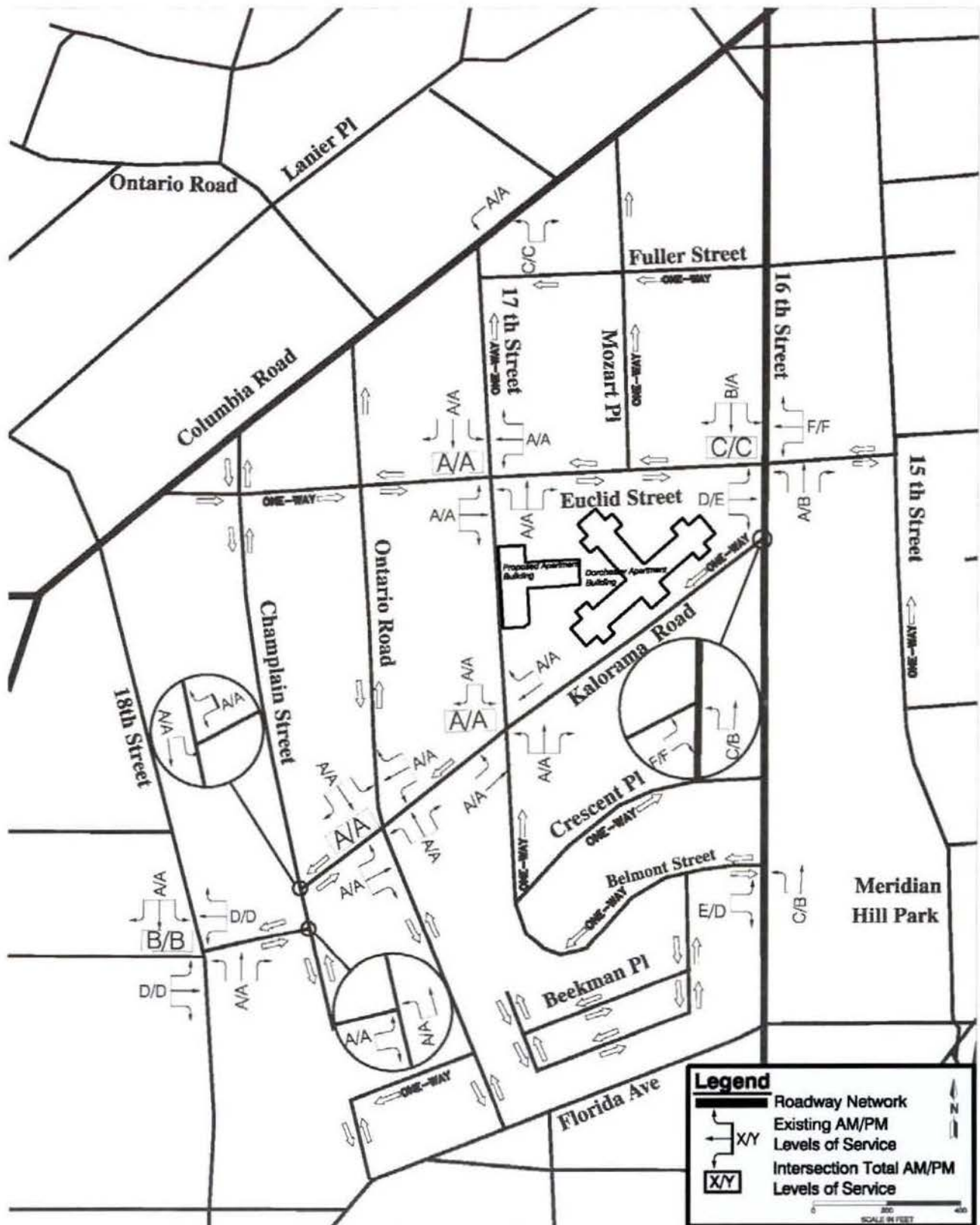


Figure 8 – Peak Hour Level of Service for Existing Conditions (AM Peak/PM Peak)



Figure 9 – Peak Hour Level of Service for Future Background Conditions (AM Peak/PM Peak)

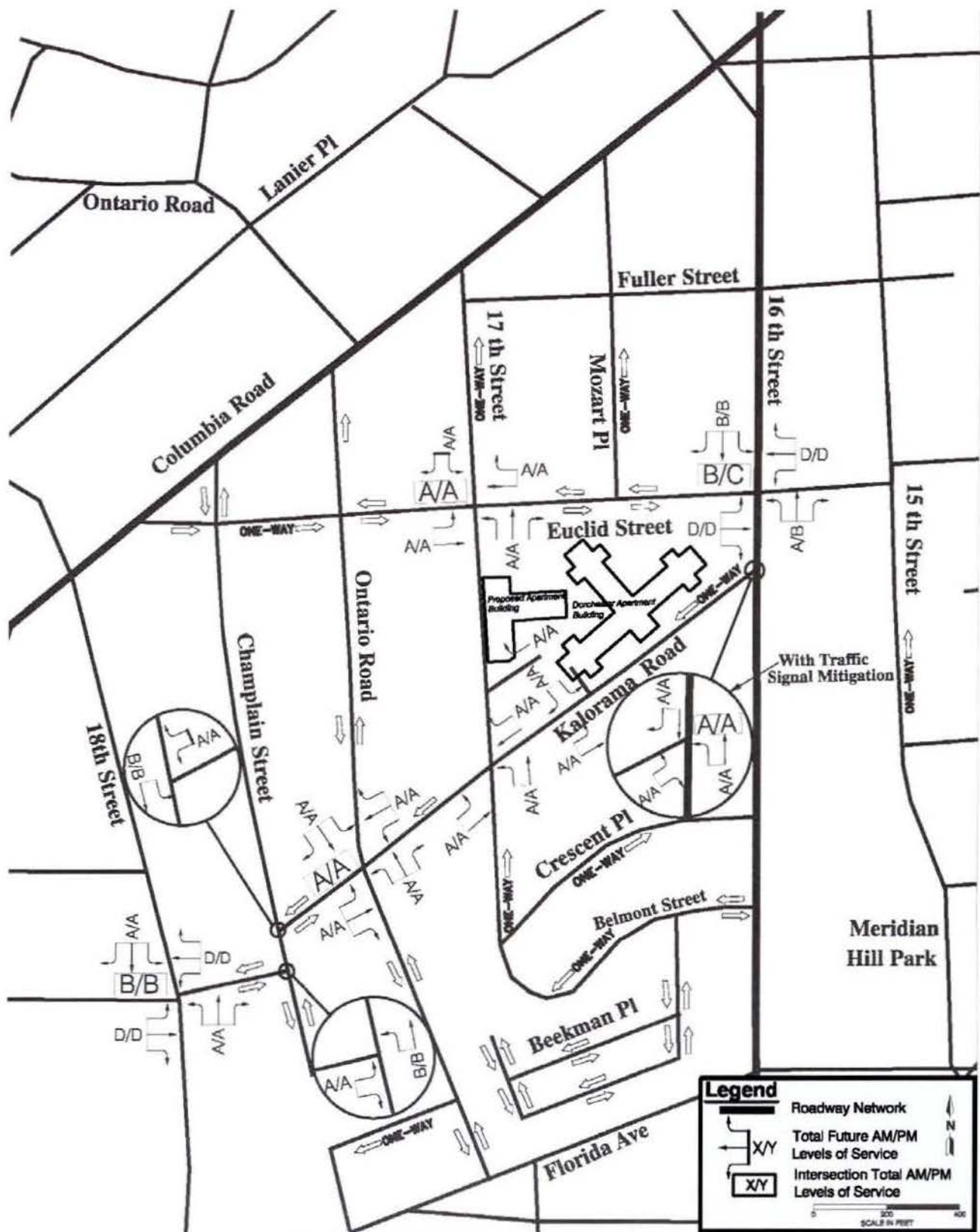


Figure 10 – Peak Hour Level of Service for Total Future Conditions (AM Peak/PM Peak)

SIGNAL ANALYSIS

A new traffic signal at the intersection of 16th Street and Kalorama Road was identified as a need during the Citadel PUD interaction with the ANC. With the change of Kalorama Road to one-way westbound, all eastbound traffic is removed from the intersection leaving a signal at this location to serve only northbound left turns. The signal warrant criteria listed in the MUTCD (Manual for Uniform Traffic Control Devices) do not apply in this scenario since the intersection no longer has a minor approach. Based on the MUTCD guidelines a signal is not warranted.

As shown in Table 4, there are 57 and 71 total future northbound left-turn movements for the intersection of 16th Street and Kalorama Road during the AM and PM peak hours, respectively. The analysis shows that 5 and 8 of those left-turns will be added by Dorchester future traffic for the AM and PM peak hours, respectively. The Citadel project, however, is forecasted to add 26 and 33 left-turns during the AM and PM peak hours, respectively. Therefore, if DDOT determines a traffic signal at the intersection of 16th Street and Kalorama Road should be installed, it should be noted that the Dorchester traffic is not driving the signal need.

Table 4 – Traffic Signal Warrant Comparison

	Total Future Left Turns	Dorchester-Generated Traffic			Citadel-Generated Traffic	
		New Left Turns	Existing :Left Turns	% of Left Turns	New Left Turns	% of Left Turns
AM Peak Hour	57	5	6	19 %	26	46%
PM Peak Hour	71	8	9	24%	33	46%

PARKING

The Dorchester site currently contains 395 dwelling units and 120 surface parking spaces. Of these 120 spaces, some are reserved, but the majority are unreserved. This allows for the time sharing of spaces – a daytime user occupies a space that would later be occupied by an evening user. Sample daytime users include: property employees; contractors; guests of residents; and commercial users including Children’s Hospital employees. With this shared parking arrangement, more vehicles park at the Dorchester site in a 24 hour period than there are parking spaces.

The expansion is to be constructed partially on the existing surface parking lot and will include 145 to 151, or about 148, apartments and a two-level, 307-space parking garage with 8 of the 307 spaces in tandem. The lower level of this garage will be accessed via the existing surface lot access point on Kalorama Road. The upper level will be accessed from a new access point on 17th Street at the southern end of the property frontage on 17th Street. Approximately 40 feet of curbside parking, or two parking spaces, will need to be removed on the east side of 17th Street in order to establish this access.

The majority of the parking spaces in the garage will be reserved. The projected parking space use is as follows:

- 120 spaces for the existing building
- approximately 143 spaces for the new building
- 14 spaces for commercial users including Children's Hospital
- 2 or 3 short-term rental car spaces (ie., Zipcar)
- 7 to 10 spaces for property employees, contractors, and guests of residents
- The remaining parking spaces could be used as neighborhood residential parking

The existing building's parking needs will be accommodated in the new parking garage as they are today – with 120 parking spaces. The expansion will be accommodated with approximately one space per dwelling unit. Since these spaces will be reserved in the new garage, additional parking will be provided for daytime users who, today, share parking with residents. The remaining parking will be used for property employees, contractors, and guests of residents. The proposed parking supply of 307 spaces is expected to be sufficient for accommodating all of the future users of the expansion. Therefore, the expansion is not expected to exacerbate the current neighborhood on-street parking situation. Once in operation, it may be found that there is a surplus of parking. In that case, the surplus may be offered to local residents or to the tenants of the neighboring Citadel building for their use. This may, in fact, improve the on-street parking situation in this neighborhood.

LOADING DOCK

The Dorchester currently operates a loading dock that is accessed from Kalorama Road and is adjacent to and east of the existing site drive. This dock will operate as it does today to serve the loading and trash collection needs of the residents. Therefore, the existing dock was not analyzed in this report. A 45-foot loading dock will be constructed with the expansion. This dock will be accessed from 17th Street and will be located adjacent to and south of the proposed upper level garage entrance.

Residential moving trucks, garbage trucks, and delivery/contractor vans are expected to use the proposed loading dock. The frequency of truck arrivals will dictate how well the dock operates and the impact that its operation may have on the neighborhood. On average, approximately 25% of the apartments turn over each year. Also, refuse can be expected to be collected about twice per week. Based on these assumptions, an average of seven trucks per week can be expected with the new dock. This frequency of trucks will not have a noticeable impact on traffic operations in the neighborhood.

A second measure of operation is the size of trucks that can be expected and the maneuvering space needed to access the dock. The majority of moving vans, garbage trucks and delivery/contractor vans are expected to be single unit (SU) trucks that are no longer than 30 feet. The AASHTO SU design



vehicle, a 30-foot long single unit truck, was used to simulate the maneuvering necessary to access the proposed loading dock from 17th Street. This analysis is shown in Figure 11. The analysis found that no on-street parking spaces will need to be removed on the west side of 17th Street in order to provide the necessary maneuvering space for the truck to access the dock.

Occasionally, larger articulated trucks may be expected to use this loading dock. The size of these trucks is limited by two factors: 1) the geometry of the neighborhood streets and 2) the size of the existing and proposed dwelling units. Preliminary analysis has shown that articulated trucks longer than 45 feet are not able to negotiate turns at the intersections in this neighborhood given that there is typically parking on either side of the street and internal neighborhood streets are 30 feet curb-to-curb. The Dorchester will stipulate that tenants must use a 40-foot or less truck to move in/out. The dwelling units of the Dorchester are efficiency, one-bedroom and two-bedroom apartments. It is unlikely that a truck longer than 40 feet will be needed to move the belongings that could fit within a two-bedroom unit. Therefore, the largest truck that could be expected at the proposed loading dock was determined to most resemble the WB-40 AASHTO design vehicle, a 40-foot long articulated truck. The maneuvering analysis of this truck can be seen in Figure 12. This analysis shows that on-street parking spaces will need affected by the truck's maneuvering into and out of the dock.

In all of the analysis, the two existing parking spaces directly across from the Citadel building loading dock were assumed to have been removed to accommodate truck maneuvering for that loading dock. Also, the analysis assumes that two parking spaces on the east side of 17th Street will be removed in order to establish the access to the parking garage and loading dock.

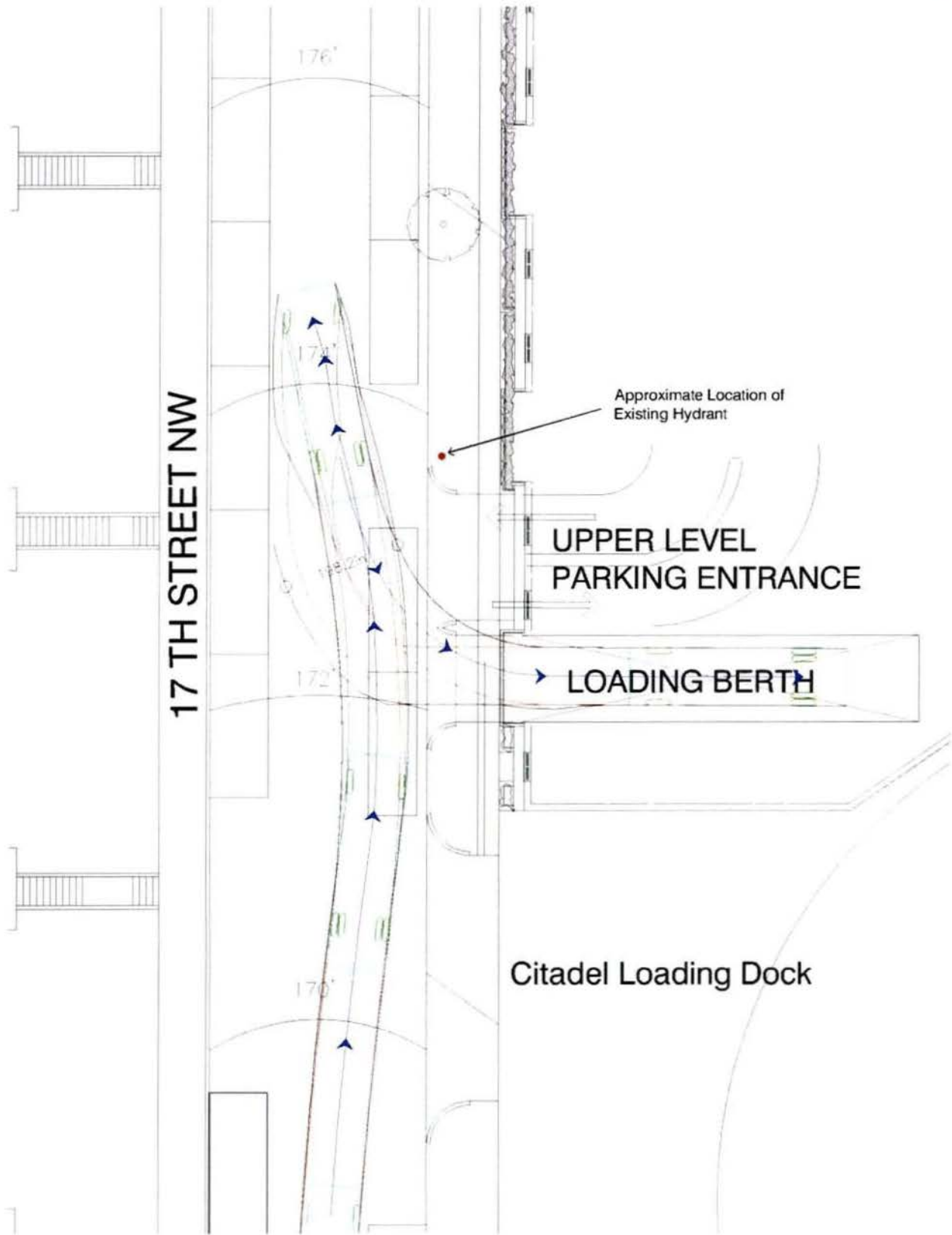


Figure 11 – Loading Dock Analysis for Single Unit (SU) Trucks

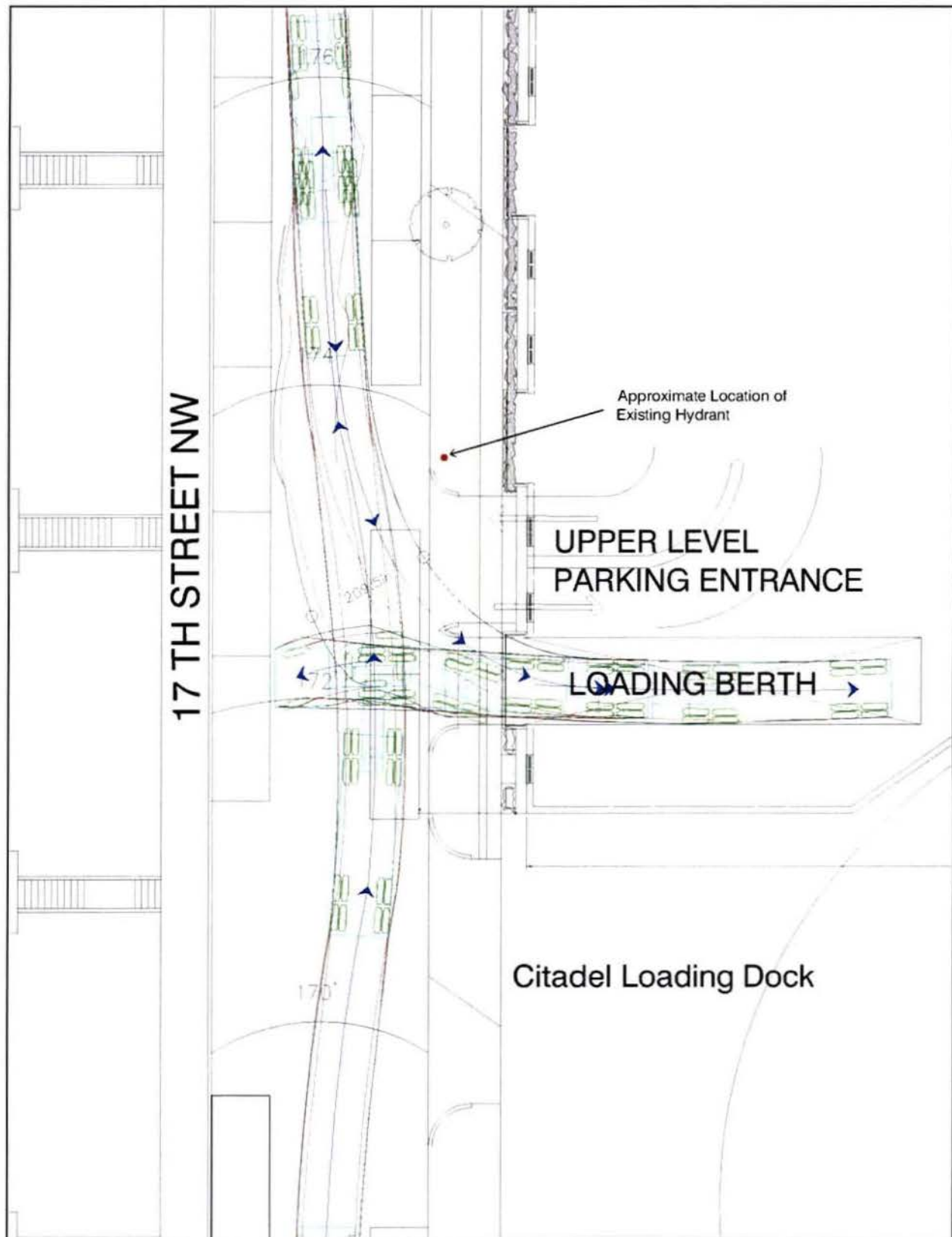


Figure 12 – Loading Dock Analysis for WB-40 Trucks



CONCLUSION

The analyses presented in this report resulted in the following conclusions:

Existing (2005) Traffic Conditions

- Existing traffic conditions at the study area intersections show mostly acceptable Levels of Service except 16th Street and Euclid Street and 16th Street and Kalorama Road.
- The Existing traffic generated by Dorchester Apartments is relatively small at 41 AM peak hour and 46 PM peak hour trips.

Future Background (2008) Conditions

- The intersections in the study area are expected to operate at acceptable levels of service during peak hours with the exception of the side street approaches to the intersections on 16th Street and Euclid Street intersection and northbound approach of 16th Street and Kalorama Road that already experience delays in the existing condition.
- Traffic impacts could be mitigated by signal time optimization at the intersection of Euclid Street and 16th Street during AM and PM peak. And with a traffic signal at the intersection of Kalorama Road and 16th Street the northbound approach delays will also be mitigated.

Build Year (2008) Conditions

- The expanded Dorchester Apartments will generate approximately 63 and 71 new vehicle trips in the AM and PM peak hours, respectively for a total of 104 AM and 117 PM trips.
- The capacity analysis shows that all study intersections will continue to operate at same LOS and will experience similar delays in total future traffic scenario compared to future background traffic scenario. Hence additional trips generated by the expansion of Dorchester Apartments will not have any additional impact on future roadway network and no additional mitigations will be necessary.

Signal Analysis

- Based on the analysis, a traffic signal at the intersection of 16th Street and Kalorama Road is not warranted and new traffic created by the Dorchester Apartments does not exacerbate any need that DDOT may determine requires a signal.

Parking

- The parking garage will sufficiently accommodate all vehicles currently parking in the 120-



space surface lot, as well as one vehicle for each of the new apartments.

Loading Dock

- A proposed loading dock accessible from 17th Street can accommodate trucks up to 40 feet in length without causing any impact on the on street parking.



APPENDIX