

**TRAFFIC IMPACT ANALYSIS – BOARD
OF ZONING ADJUSTMENT APPLICATION,
ST. PAUL’S ROCK CREEK PARISH/
CHRISTIAN FAMILY MONTESSORI SCHOOL,
NORTHWEST, WASHINGTON, D.C.**

(Case No. 18138)

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BOARD OF ZONING ADJUSTMENT
District of Columbia

CASE NO. 18138

EXHIBIT NO. 8

Board of Zoning Adjustment
District of Columbia
CASE NO. 18138
EXHIBIT NO. 8

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1.0 INTRODUCTION AND BACKGROUND

1.1 Project Background

St. Paul's Rock Creek Parish Church (St. Paul's) is a large institutional site situated between New Hampshire Avenue and North Capitol Street immediately north of Rock Creek Church Road and the Soldiers' and Airmen's complex in Northwest, Washington. The site houses the church buildings and offices of the parish, as well as a large adjacent cemetery site. The Christian Family Montessori School (CFMS) is currently situated off US Route 1 (Rhode Island Avenue) in the City of Mount Rainier, Prince George's County. Under the current BZA application, CFMS would relocate its operations to the Parish Hall (St. Paul's Center), which is situated east of Allison Street, and north of Rock Creek Church Road within the Georgia-Petworth area of Northwest Washington, D.C. The future school premises would be on property owned by St. Paul's, and the building currently houses the church's administrative offices, and miscellaneous activities of the church.

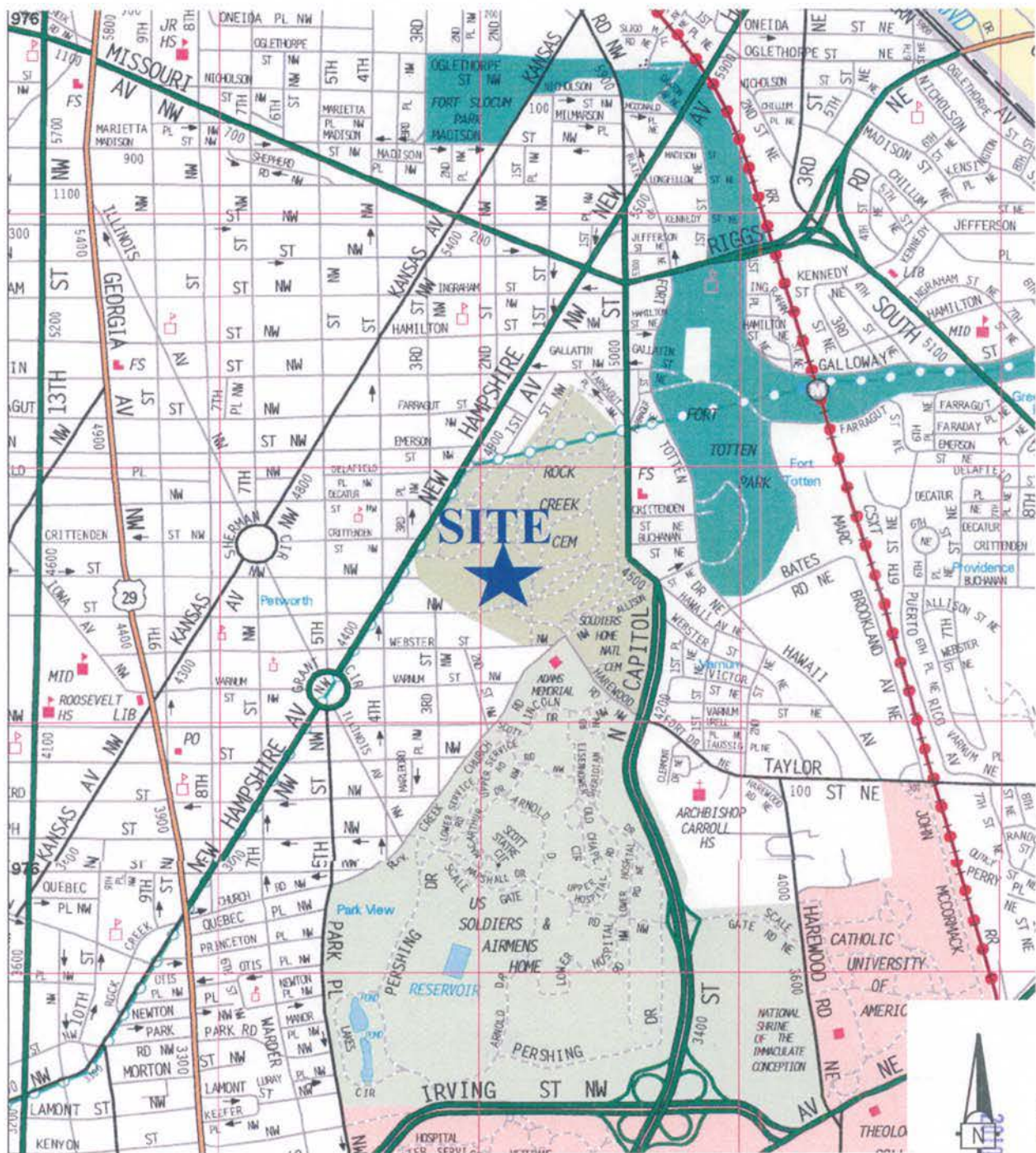
Over the most recent five-year period, CFMS has served a population of between 85 – 100 students, ranging in age from 2 to 12 years, and operating over the period 8:00 AM – 3:00 PM on weekdays. Operations at the St. Paul's site would continue to serve approximately the same number of students within the same age group. However, for planning purposes CFMS proposes a cap of 120 students, in order to allow for potential increase in demand from the adjacent residential community. Based on this assumption, operations at the site would be per the following program and schedule:

<u>Activity</u>	<u>Estimated Population</u>	<u>Activity Hours</u>
• Early-Care/Drop-Off	15 students	8:00 – 8:15 AM
• Regular Drop-Off	105 students	8:30 – 9:00 AM
• Classroom Instruction		
- Pre-School	42 students	8:30 – 11:45 AM
- Elementary School	78 students	8:30 AM – 3:00 PM
• Pre-School Pick-Up	30 students	11:30 AM – 12:00 Noon
• PM General Pick-Up	60 students	3:00 – 3:30 PM
• After-School Care	30 students	3:30 – 6:00 PM

CFMS also runs an "Atrium Program" through which it serves approximately 35 students between 4:30 and 5:30 PM *on Tuesdays only*, from mid-September to mid-May. Participants arrive between 3:45 and 4:30 PM, and depart 5:30 to 5:45 PM. Many large families are involved, and there is significant carpooling. The school's experience at its Mount Rainier site shows that about 10 vehicle trips are generated. Additionally, many parents/guardians remain on-site during the activity.

St. Paul's Center and the adjacent church is served by approximately 60 spaces, 20 of which are located next to the proposed school building, with other spaces conveniently available within the St. Paul's campus. Immediate vehicular access to the property is served via Rock Creek Church Road and via Allison Street, both of which provide for gated entry. Further details regarding the proposed access scheme is discussed in Section 4.0, which addresses the school's proposed operations, particularly as it relates to vehicle trip generation.

The BZA review process requires the Applicant to demonstrate that the proposed use will not have adverse or objectionable impacts on neighboring properties based on traffic, vehicular access, parking, and safety, and that sufficient off-street parking is available to serve the use (among other factors). This report addresses the BZA's requirements. In order to facilitate the data, analysis and discussion presented herein, the site location and local/community context is shown in Exhibit 1.



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Exhibit 1: Site Location Map

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St. Paul's/Christian Family Montessori School,
Northwest, Washington, D.C.

1.2 Study Purpose and Scope

In keeping with the BZA review process and requirements, the purpose and key elements of this study involve the following key tasks:

- a) Existing roadway and traffic flow conditions within the immediate area of the site;
- b) The traffic impact of the proposed use, considering potential growth in through traffic, planned development activity and transportation system improvements for the area; and
- c) Any capacity, safety or operational constraints to the proposed use, as well as potential measures to mitigate such constraints, where appropriate.

The methodologies used in this study are in accordance with the current guidelines stipulated by the District Department of Transportation (DDOT) for evaluation of the potential impacts associated with development proposals. The study area and other key parameters considered herein were agreed upon with the staff of the DDOT Transportation Policy and Planning Administration (TPPA). Correspondence with DDOT in this matter is presented in Appendix A. The study also presents a proposed Transportation Management Plan for reducing vehicle trip generation to and from the site. This is consistent with the City's goals and policies emphasizing transit usage and enhancing mobility and safety.

1.3 Report Organization and Summary

This report is organized into six (6) sections. The current Section provides general background information on the Applicant's proposal and the study process. Section 2 evaluates existing roadway and traffic conditions. Section 3 addresses projected growth in through traffic, and due to potential land use developments within the local area. Section 4 assesses the traffic impacts of the proposed use, as well as site access and parking provisions for the school. Section 5 outlines elements of the proposed Transportation Management Plan (TMP), which CFMS proposes to implement. Section 6 summarizes the study findings and makes recommendations to mitigate any potential transportation impacts identified, where appropriate.

The study finds that the proposed use would be adequately accommodated by the existing study area roadway network. The study area intersections currently operate at acceptable levels of service, during both the morning and afternoon peak periods. It is projected that the study area intersections would continue to operate acceptably upon occupancy of the site.

The study has presented considerable data, analysis and discussion, leading to the conclusion that the relocation of CFMS to the St. Paul's Rock Creek Parish campus should not create any significant roadway capacity, or operational deficiencies. The hours of the school operation impact only the morning peak hour of the adjacent street system. Furthermore, a significant percentage of trips to the school would be "walk trips," and vehicle trips accessing the site would be well distributed along the various roadways approaching the campus. As a result, the impact on the defined intersections would be quite insignificant.

The study shows that sufficient off-street parking exists on the site to serve the teachers and staff, as well as to facilitate demand generated during the peak drop-off and pick-up activities of the school's program. The abundance of parking and the on-site roadway network of the St. Paul's Parish campus ensure that none of the school's activities would spill-over onto the adjacent community streets, which is often one of the primary issue associated with uses of the type proposed. The proposed school should also not impact the health, safety and general welfare of the roadway users or the adjacent neighborhoods within the defined area. Accordingly, this study finds that the Applicant's proposal satisfies the stated requirements of the City's Zoning Regulations. The basis for this conclusion is provided in the remaining sections of this report.

2.0 EXISTING ROADWAY AND TRAFFIC CONDITIONS

2.1 Land Use and Zoning

The subject property is zoned R-3 (Row Dwellings). Other properties within the immediate area are dominated by the R-5-A zoning category (Low Density General Residential). Most of the area is fully developed according to this zoning designation, and the area includes small pockets of commercial/retail uses. South and east of Rock Creek Church Road is the U. S. Soldiers' and Airmen's Home. The latter property has been the subject of development proposals within recent years. However, all proposals call for access to the property to be off Irving Street and North Capitol Street. The access points off Rock Creek Church Road would continuing to serve the existing retirement housing uses on this historic property.

2.2 Study Area Road Network

As noted earlier, the school will be located within the St. Paul's Church complex, which is accessed by private on-site roadways connecting directly to Rock Creek Church Road to the south, and Allison Street to the west. Based on the study scope agreed upon with DDOT, this assessment evaluates the following four (4) roadway intersections:

- a) New Hampshire Avenue at Allison Street (Unsignalized);
- b) Rock Creek Church Road at Webster Street (Unsignalized);
- c) Rock Creek Church Road at Harewood Road (Signalized); and
- d) North Capitol Street at Hawaii Avenue/Allison Street (Signalized).

The general physical characteristics and service functions of the key study area roadways are summarized below.

- **Rock Creek Church Road, NW** is a two-lane, Collector roadway which runs in the general north-south direction. It serves approximately 8,300 vehicles per average weekday and runs from New Hampshire Avenue (to the south) to North Capitol Street (to the north). The posted speed limit is 25 MPH.
- **Webster Street, NW** This is a two-lane, east-west Collector roadway on the City's network. It serves two-way traffic between Rock Creek Church Road and 3rd Street, and one-way westbound traffic between 3rd Street and New Hampshire Avenue. The roadway provides access to the residential uses in the vicinity of the subject site and serves 2,300 vehicles per average weekday. The posted speed is 25 MPH.
- **New Hampshire Avenue, NW** is a two-lane, Minor Arterial on the City's transportation system, and runs in the general north-south direction. It serves approximately 17,500 vehicles per average weekday, and the posted speed limit in the vicinity of the site is 25 MPH.

For purposes of context, the section of the City's Functional Classification Map covering the roadways in the vicinity of the St. Paul's campus is presented in Exhibit 2. Other roadways within the immediate vicinity of the subject site are primarily local roadways, with the exception of Upshur Street, which is a significant east-west Collector roadway running west from Rock Creek Church Road, and connecting to major north-south arteries including Georgia Avenue, 14th Street, and 13th Street within the Brightwood area. The area is also served by North Capitol Street, a major arterial; and by Hawaii Avenue, a collector roadway, both of which would serve access to the site particularly during CFMS' early years at the new location.

Exhibit 2: DDOT Roadway Functional Classification Map

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Exhibit 3 presents the roadway lane configuration for the defined study area roadway network; and also shows the roadway circulation pattern for the residential community immediately adjacent to the proposed school. It is noted that this area has been the subject of recent neighborhood traffic studies and traffic pattern changes implemented by the City through coordination with the responsible Advisory Neighborhood Commission (ANC).

Two (2) aspects of the roadway network shown in Exhibit 3 warrant particular mention. First, DDOT has expressed concern regarding potential safety issues associated with increased outbound vehicular movements using the St. Paul's gate, which connects to Rock Creek Church Road just east of Webster Street. *[CFMS and St. Paul's have addressed this concern by proposing a neighborhood access plan that would be operational during the peak activity periods of the school.]* Secondly, St. Paul's has noted that the church has considered relocating its Rock Creek Church Road entrance to align with Harewood Road to the east, which is currently a signalized T-intersection. *[This study finds that this proposal would significantly benefit traffic operations within the local area, and the Applicant is pursuing the matter through discussions with the City.]*

2.3 Public Transportation Services

The local area is served by three (3) Metrobus routes: Route 64 running along New Hampshire Avenue, and Routes 60 and H-8 along Rock Creek Church Road, and connecting the site with the Georgia Avenue-Petworth, Fort Totten and Brookland-Catholic University of America Metrorail Stations. These routes run with headways of approximately 15 minutes during weekday peak commuting hours. Transit service within the area is considered further in Section 5.0, which addresses the school's prospective Transportation Management Plan.

2.4 Existing Traffic Situation

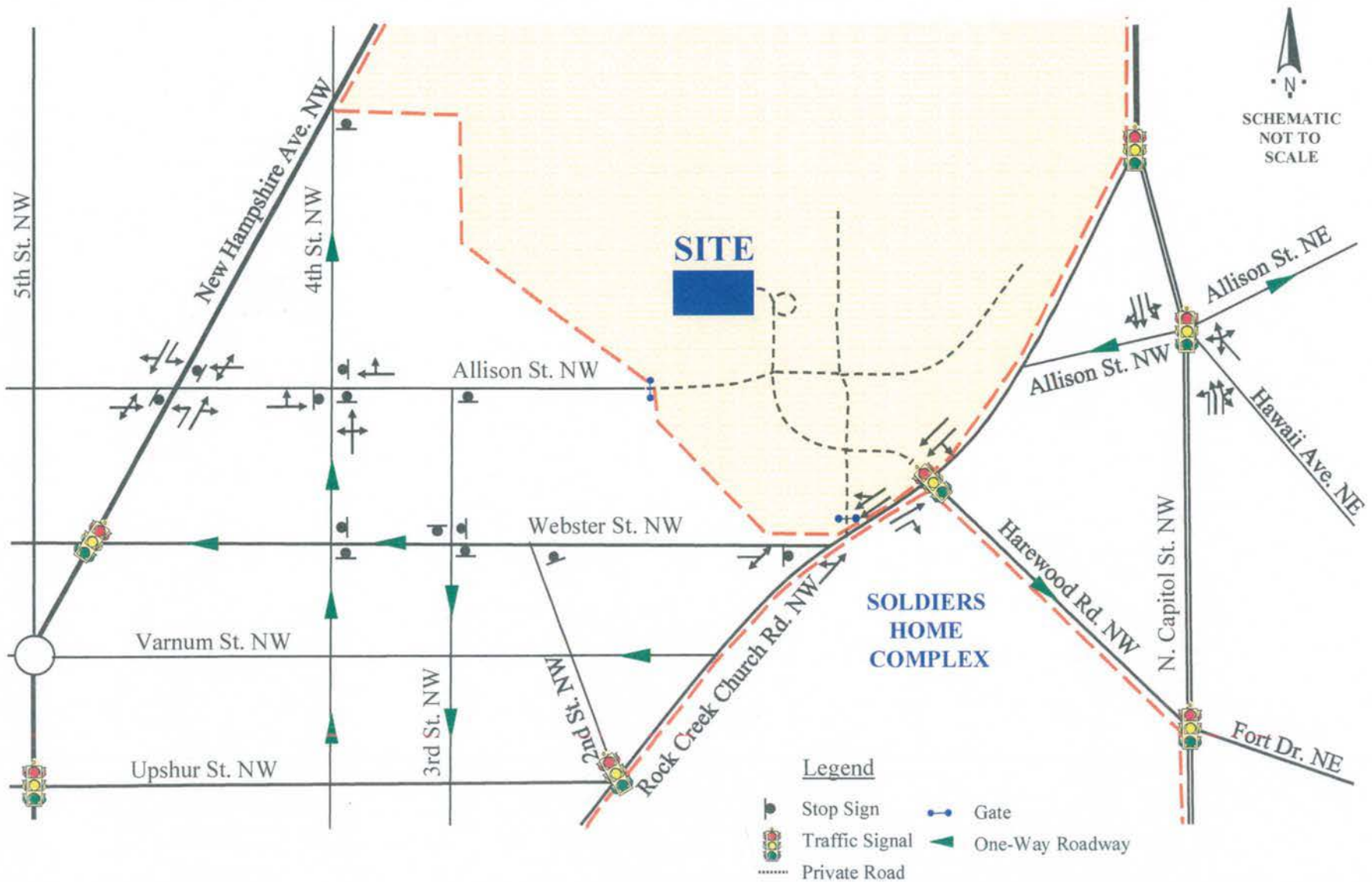
In order to assess the current traffic conditions, field observations were made of roadway geometrics and signage, along with traffic flow conditions within the defined study area during the morning and afternoon peak commuting periods. In addition, peak period turning movement counts were performed for the four (4) study area intersections over the periods 6:30 to 9:30 AM and 2:30 to 6:30 PM, according to DDOT's requirements. While the peak hours on urban roadways may vary slightly on a daily basis, the observed peak hours based on the turning movement counts are summarized in the table below to provide context for the analysis presented following on page 9. Exhibit 4 shows the morning and afternoon peak hour traffic volumes. The count summaries are included in Appendix B.

Observed Weekday Peak Hours

Intersection	Morning Peak Period	Afternoon Peak Period
1) Allison St. at 4th St., NW	7:45 – 8:45AM	5:15 – 6:15 PM
2) Allison St. at N. Hampshire Ave., NW	7:45 – 8:45AM	5:00 – 6:00 PM
3) Rock Creek Church Rd. at Webster Rd., NW	7:45 – 8:45AM	4:00 – 5:00 PM
4) Rock Creek Church Rd. at Harewood Rd., NW	7:45 – 8:45AM	4:00 – 5:00 PM
5) North Capitol St. at Hawaii Ave., NE	7:30 – 8:30AM	4:15 – 5:15 PM

Note: CFMS peak activity periods would be 8:00 – 9:00 AM, and 2:30 – 3:30 PM.

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Exhibit 3: Existing Roadway Land Configuration and Circulation Pattern

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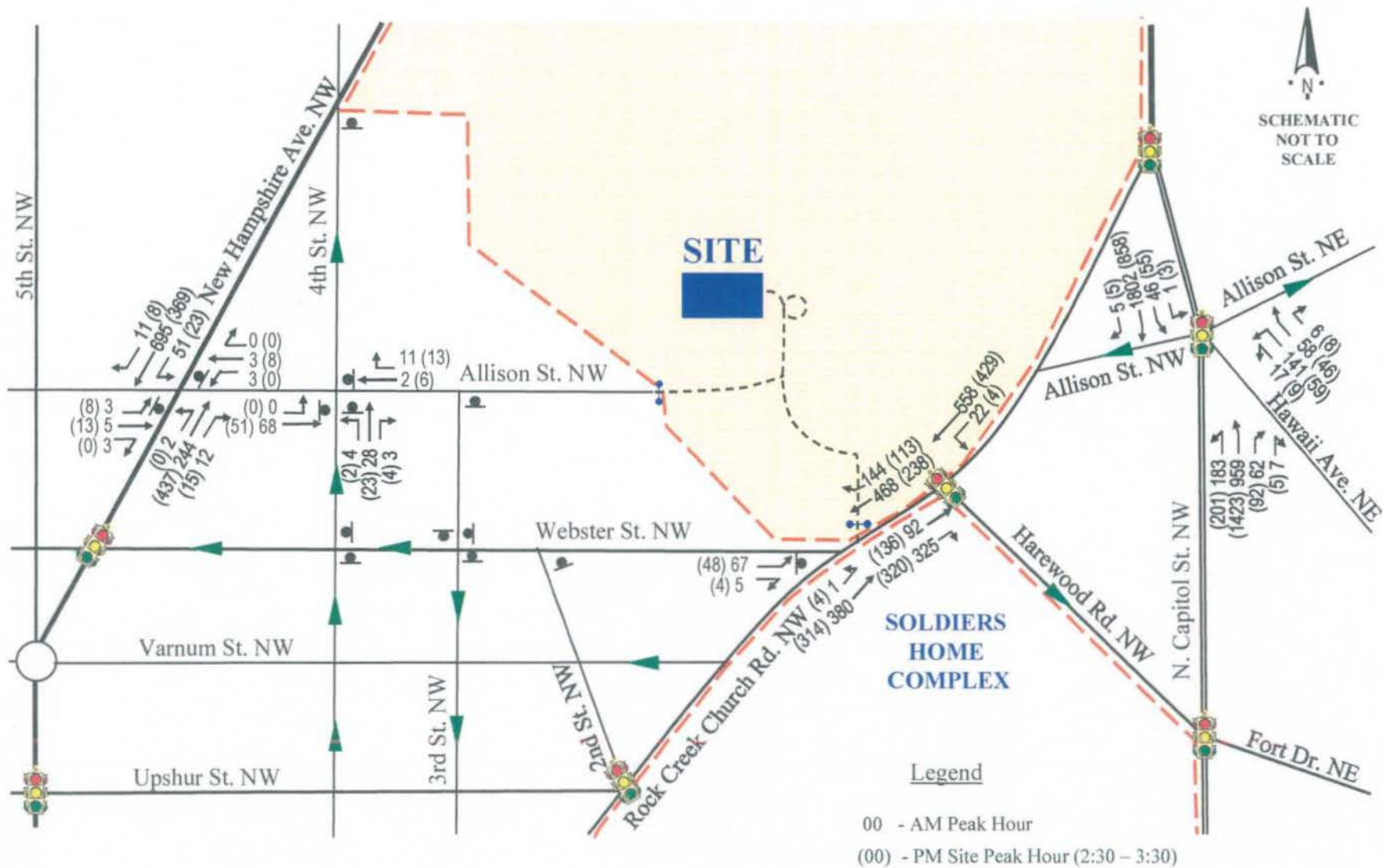


Exhibit 4: Existing Peak Hour Traffic Turning Movement Volumes

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The peak hour traffic volumes were analyzed using the Highway Capacity Manual (HCM) analysis procedures, in accordance with DDOT's requirements. The results show that the study area intersections currently operate at acceptable Levels of Service¹, during both the morning and afternoon peak hours. The level of service results are based on the average "control delay" computed for all vehicles utilizing the intersection during the peak hours (for signalized intersections). In the case of stop-sign controlled intersections, the average delay for the worst approach was considered in providing the levels of service shown in Table 1. The capacity analysis results are summarized in Table 1. Detailed capacity analysis worksheets are presented in Appendix C.

Table 1
Summary of Capacity Analysis Results
Existing Traffic Situation

Intersection	AM Peak Hour (7:45 – 8:45AM)	PM Site Peak Hour (2:30 – 3:30 PM)	PM Street System Peak Hour (5:00 – 6:00 PM)
	LOS/Delay*	LOS/Delay*	LOS/Delay*
1) Allison St. at 4th St., NW	A/7.26	A/7.10	A/7.35
2) Allison St. at N. Hampshire Ave., NW	<u>D</u> 25.6	<u>C</u> 23.0	<u>C</u> 24.7
3) Rock Creek Church Rd. at Webster Rd., NW	<u>D</u> 25.9	<u>C</u> 15.6	<u>C</u> 23.5
4) Rock Creek Church Rd. at Harewood Rd., NW	<u>A</u> 8.3	<u>A</u> 7.6	<u>A</u> 8.3
5) North Capitol St. at Hawaii Ave., NE	<u>D</u> 39.1	<u>B</u> 18.6	<u>C</u> 30.9

* Secs/Veh = Average Delay in Seconds per Vehicle.

LOS = Level of Service.

Source: O. R. George & Associates.

Based on the results presented in Table 1, it is shown that all of the intersections currently operate at levels of service within the City's planning standards. [See footnote on page 5.] In addition, it is important to note that for intersections in the immediate vicinity of the school showing Level of Service D, the results reflect the experience for the minor/stop-sign controlled approaches. In effect, all to other approaches would experience significantly better levels of service (in most cases LOS A through C). This indicates that 90.0% (and greater) of the vehicles utilizing the particular intersection would experience levels of service well above the value shown in Table 1.

¹ "Level of Service" is a qualitative measure describing operational conditions within a traffic stream or at an intersection, and reflects their perception by drivers and other roadway users. Principal considerations are factors such as speed and travel time, delay, and freedom of maneuver, traffic interruptions, comfort, convenience and safety. Current engineering practice defines six (6) Levels of Service (A - F), with "A" representing best operating conditions, and Level of Service "F" representing the worst conditions. Level of Service D is generally considered by the District of Columbia as the minimum acceptable conditions for planning and design purposes.

2.5 Existing Safety Situation

In order to assess the traffic safety situation within the study area, crash data was obtained from the District Department of Transportation, for the study area intersections. This data covered the most recent three-year period, i.e., 2006 - 2008, for which such data was available. Copies of the crash data summaries are included as Appendix D. The levels of crash occurrences are shown in Table 2.

Table 2
Crash Record Summary (2006 - 2008)
Study Area Intersections

Location	Crashes			Avg./ Year	MEV*	Crash Rate
	2006	2007	2008			
1) Allison St. at 4th St., NW	0	0	0	0.00	0.50	0.00
2) Allison St. at N. Hampshire Ave., NW	1	0	0	0.33	4.08	0.08
3) Rock Creek Church Rd. at Webster Rd., NW	0	2	3	1.67	3.93	0.42
4) Rock Creek Church Rd. at Harewood Rd., NW	3	0	0	1.00	4.21	0.24

* MEV = Million Entering Vehicles.

Source: DDOT and O. R. George & Associates.

The crash rate is defined as the number of crashes per million entering vehicles (MEV's) for intersections. The MEV's were developed by estimating average annual traffic based on the existing peak hour traffic volumes, and applying procedures recommended by the Institute of Transportation Engineers.

Typically, intersections with crash rates of 2.0 crashes per MEV (and greater) warrant further evaluation, to determine the area appropriate remedial safety measures. Based on the crash occurrences and rates indicated in Table 2, this study concludes that there are currently no significant safety deficiencies at the study area intersections.

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3.0 BACKGROUND TRAFFIC SITUATION

3.1 Projected Year 2013 Background Traffic Situation

The Traffic Impact Analysis process typically requires an examination of existing conditions, followed by an assessment of a future horizon year conditions by which the site would be built-out. Typically the background situation represents conditions by that horizon year; but without including trip generation and site access requirements generated by the subject site. If the subject application is approved, CFMS plans to commence activities beginning in the Fall of 2011. For purposes of this study, the year 2013 was considered the "horizon year" since the school employees and clients will have adjusted and settled into the new location. This section projects the background traffic situation likely to occur by the horizon year.

The projected year 2013 background traffic situation was derived by combining the following:

- a) Year 2013 "Base" traffic situation, i.e., existing traffic (Exhibit 4) factored by an annual growth rate of two percent (2.0%), to reflect the potential growth in through traffic; and
- b) Background traffic from approved developments, likely to be built-out within the immediate study area by year 2013.

With regard to growth in existing through traffic, the consultant's review of ADT volumes for key study area roadways over the most recent three-year period indicates that traffic volumes have been relatively stable, and in some cases decreasing.

Average Daily Traffic Trends

Roadway	2006	2007	2008	Average Growth (%)
1) New Hampshire Ave., NW	17,800	17,600	17,500	-0.84 %
2) Webster Rd., NW	2,300	2,300	2,300	0.00 %
3) Rock Creek Church Rd., NW	8,100	8,300	8,300	+1.20 %
4) Harewood Rd., NW	11,200	11,500	11,400	+0.91 %
5) North Capitol St.	22,150	21,850	21,650	-1.13 %
6) Hawaii Ave., NE	16,700	16,400	16,400	-0.90 %

Note: These numbers are typically rounded to the nearest 50 vehicles.

Source: District Department of Transportation and O. R. George & Associates.

The study area of the subject site is substantially built-out and developed. Based on the consultant's development activity research, as well as discussions with the District's Office of Planning Ward 4 staff, no developments are planned or projected to be built-out within the immediate area by the 2013 horizon year.

Based on the above factors and considerations, it is projected that no significant growth in existing traffic is likely to occur on the study area roadway network, by year 2013. However, in order to be conservative in estimating the future background traffic conditions, the annual growth rate recommended by DDOT (i.e., 2.0%), was applied to the existing traffic situation over three years (i.e., the horizon year 2013). *[These volumes are shown in Appendix E.]* Given the existing levels of service and the modest growth in traffic, no further analysis was performed for the background traffic situation.

4.0 FUTURE TRAFFIC SITUATION

4.1 Proposed Christian Family Montessori School

As noted in Section 1.0 – Introduction and Background, the current application proposes use of the site by the Christian Family Montessori School, serving a potential maximum enrollment of 120 students within 2 and 12 years of age. The hours of operation will be 8:00 AM to 3:00 PM (with after-school care continuing until 6:00 PM). The school would be supported by 20 – 25 teaching and administrative support staff. This staff includes a number of specialists and part-time personnel who would be on-site during limited timeframes on any one day. CFMS management anticipates a maximum of 15 – 18 staff would be on duty during any one time.

The Applicant Statement will include other relevant details of the physical and land-use elements of the proposal. However, it is noted that, based on the staff population of 15 – 18 persons, between 10 and 12 off-street parking spaces would be required. The facilities provide 20 spaces adjacent to the proposed school building, with significant additional spaces available for use during times when the school would have special events (such as graduation, back-to-school nights, etc.). In terms of site access, the school is favorably served by access off two (2) major facilities, notably New Hampshire Avenue via Allison Street from the west, and Rock Creek Church Road from the south and east. The entrances from these facilities are both gated, with on-site access roads of considerable length leading to the school premises, ensuring that no issues of stacking activity would occur along the community roadways during peak activity periods.



**Exhibit 5: Christian Family Montessori School/
St. Paul's On-Site Access and Parking.**

Given the typical weekday program of activities outlined in Section 1.0 (page 1), it is clear that traffic impacts associated with the site would occur during three (3) primary time periods. These are highlighted below:

- a) Student Drop-Off (8:00 – 9:00 AM): This coincides with the typical weekday morning peak period on the local roadways.
- b) Pre-School Pick-Up (11:30 AM – 12:00 Noon): This would have no appreciable impact on traffic conditions.
- c) General Pick-Up (2:30 – 3:30 PM): This occurs well outside of the afternoon peak hour on the adjacent roadways.
- d) After-Care Final Pick-Up (5:00 – 6:00 PM): This coincides with the street system peak. However, it is estimated that this would involve approximately 10 vehicles entering and leaving the site during this one-hour period.

As noted on page 1, CFMS would continue to run its “Atrium Program,” under which it serves approximately 35 students on Tuesdays between 3:45 and 5:45 PM. This activity involves many children from large families, and generates approximately 10 vehicles entering and leaving the site. Given the fact that the activity occur only during part of the school year, the traffic impact was not specifically considered in this study.

In order to respond to the BZA evaluation requirements, trip generation and distribution evaluations corresponding to Items (a) and (c) above are presented in the sections following. For context to the analysis and discussion which follows, it is noted that the consultant’s field observations shows that there is some site distance restriction for vehicles exiting the St. Paul’s gate onto Webster Street. CFMS has therefore accepted the recommendation that right-turn in access only be permitted at that location, with in/out movements provided via the Allison Street/New Hampshire Avenue access point. These are reflected in the analysis following.

As noted in Section 2.2 (page 6), St. Paul’s has indicated a readiness to address this situation by relocating its main entrance off Rock Creek Church Road to align with the signalized intersection at Harewood Road. This proposal could significantly benefit traffic operations within the local area, and the Applicant is pursuing the matter through discussions with the City.

In keeping with the City’s general policies, the applicant proposes to implement a Transportation Management Plan with various measures to reduce vehicular trip demand. This is presented in Section 5.0. However, for purposes of the analysis, no reductions in trip generation will be assumed, essentially resulting in an analysis of the worst-case scenario.

4.2 Trip Generation

The City’s general guidelines for conducting traffic impact studies recommends use of the Institute of Transportation Engineers (ITE) Trip Generation Manual² whenever it provides a good “fit” with the subject/proposed land use. The ITE manual includes the following use, which is generally comparable with the proposed CFMS program:

Private School (K through 8), Land Use Code 534: ITE defines this land use category as serving students kindergarten through the 8th grade, but also includes students beginning with pre-K classes. These schools may also offer extended care and day care, and students may travel long distances to get to private schools. However, ITE notes that the sizes range from just under 100 to as many as 800 students with an average of approximately 325 students.

² Institute of Transportation Engineers “Trip Generation Manual,” 8th Edition (2008).

While this description generally approximates the CFMS program, the average size and the range in grades appear to point to different transportation characteristics. In addition ITE recommends that wherever local survey opportunities are available, data from such sources are preferable. Therefore, in order to develop reasonable estimates of the trip generation for the proposed school, trip generation surveys were conducted at the existing school site in Mount Rainier. The survey focused on obtaining the following key site access characteristics:

- a) Total vehicle trip ends occurring within the site;
- b) Average vehicle occupancy (in terms of number of students per vehicle); and
- c) The modal split (i.e., students walking, using bicycles, transit, etc.).

The general trip generation data obtained from the survey is presented in Appendix F. The vehicle trip generation rates obtained are summarized in Table 3 following. For comparison, the trip generation rates recommended by ITE, for the private school described on page 13, are also included in Table 3.

Table 3
Projected Peak Hour Trip Generation –
Christian Family Montessori School

Trip Rates & Trip Generation	AM Peak Hour of Generator			PM Peak Hour of Generator		
	In	Out	Total	In	Out	Total
Trip Rates						
1) Trips per Student (CFMS Mt. Rainier Site)	0.50	0.47	0.97	0.19	0.28	0.47
2) Trips per Student (ITE Land Use Code 534)	0.49	0.41	0.90	0.28	0.32	0.60
Trip Generation						
1) Total Trips per 120 Student (CFMS Mt. Rainier Site)	60	56	116	23	33	56
2) Total Trips per 120 Student (per ITE)	59	49	108	33	39	72

Note: The trip generation shown does not include any walk trips from the immediate area.

Source: ITE Trip Generation Manual (2003), and O. R. George & Associates.

The trips shown in Table 3 confirms that using the survey data from the CFMS Mount Rainier site is appropriate, and the trip generation estimates shown for the 120 students was used in assessing the impact of the site in Section 4.3 following.

4.3 Site Impact Assessment

The site trips were assigned to the study area roadway network using the access arrangement discussed in Section 4.1 (i.e., right-turn in only off Webster Street, and full movement via Allison Street). The assignment also recognizes that some students would originate within the adjacent community to the west, north and south. This is reflected in the assignment of morning peak hour (8:00 - 9:00 AM), and afternoon peak hour (2:30 - 3:30 PM) trips, and is shown in Exhibit 6.

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In order to determine the impact of the site, the site trips shown in Exhibit 6 were added to the year 2013 “base year” traffic (Appendix E). This projected total traffic situation is shown in Exhibit 7. By observation, it can be seen that the level of trips shown in Exhibit 6 would not appreciably impact operations of the study area intersections. However, for completeness the future/total traffic situation was analyzed and the computed levels of service are summarized in Table 4, on page 15.

Table 4
Summary of Capacity Analysis Results -
Projected 2013 Total Traffic Situation
(Including the Subject Use)

Intersection	AM Peak Hour (7:45 – 8:45AM)	PM Site Peak Hour (2:30 – 3:30 PM)	PM Street System Peak Hour (5:00 – 6:00 PM)
	LOS/Delay*	LOS/Delay*	LOS/Delay*
1) Allison St at 4th St, NW	<u>A</u> 7.36	<u>A</u> 7.12	<u>A</u> 7.38
2) Allison St at N. Hampshire Ave, NW	<u>D</u> 30.0	<u>D</u> 25.3	<u>D</u> 28.7
3) Rock Creek Church Rd, NW at Webster Rd, NW	<u>D</u> 33.0	<u>C</u> 17.3	<u>D</u> 27.2
4) Rock Creek Church Rd, NW at Harewood Rd, NW	<u>A</u> 8.8	<u>A</u> 7.8	<u>A</u> 8.6
5) North Capitol St at Hawaii Ave, NE	<u>D</u> 54.5	<u>B</u> 19.8	<u>D</u> 40.7

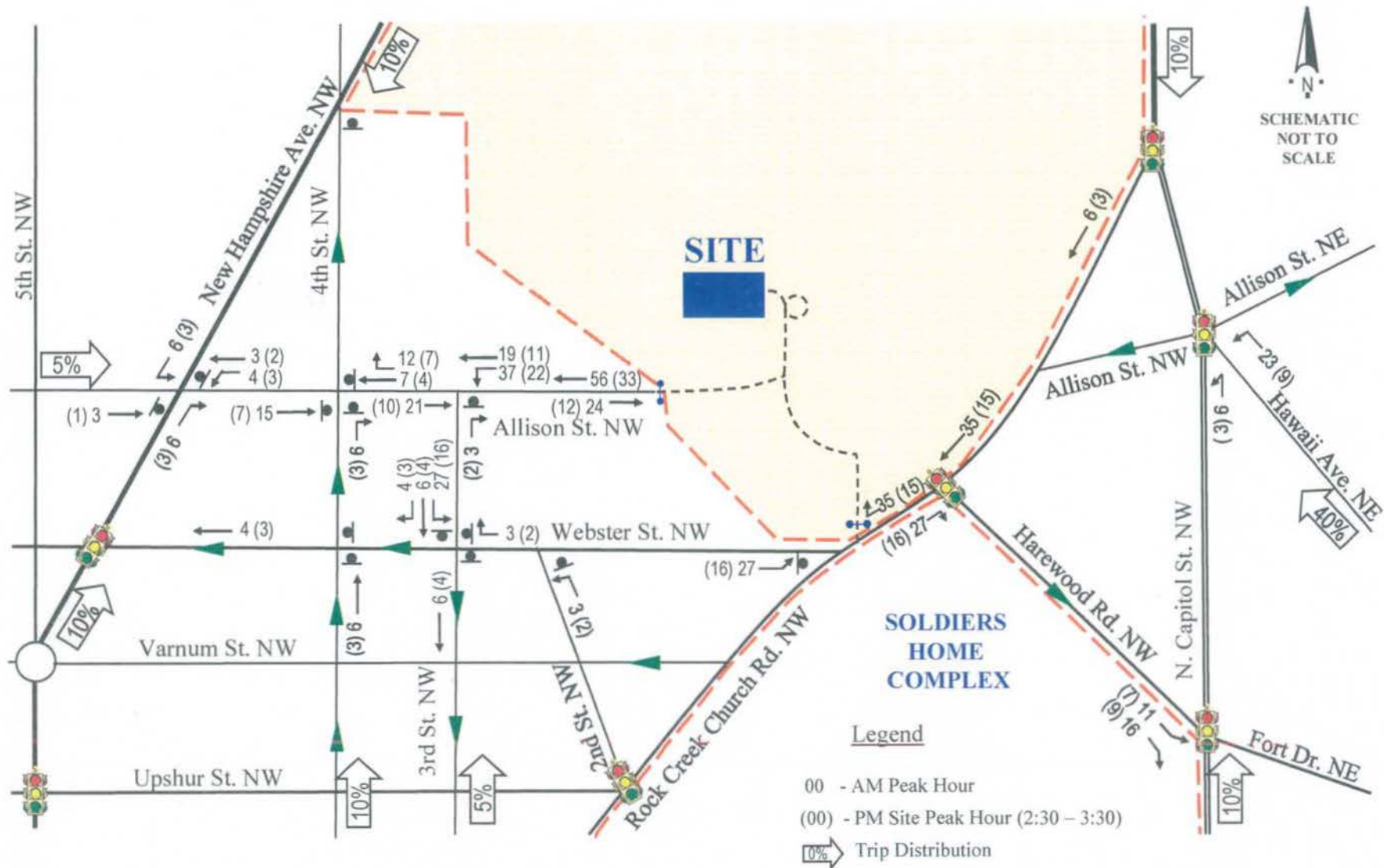
* Secs/Veh = Average Control Delay in Seconds per Vehicle

Source: O. R. George & Associates.

As discussed earlier, the traffic impacts associated with the proposed school would be significant only during the morning and afternoon peak activity periods for the school. Table 4 includes the 5:00 – 6:00 PM peak period for reference only.

With the projected vehicular trip generation from the site, the capacity analysis results indicate that, by 2013 (i.e., 2-years into the tenure at the site), the study area intersections would continue to operate acceptably. The capacity analysis worksheets for the total traffic situation are presented in Appendix G. Other more qualitative assessments pertaining to the site operations and compatibility with the neighborhood circulation plan are discussed in the Summary and Conclusion (page 19). This follows a discussion of CFMS’ Transportation Management Plan following in Section 5.0.

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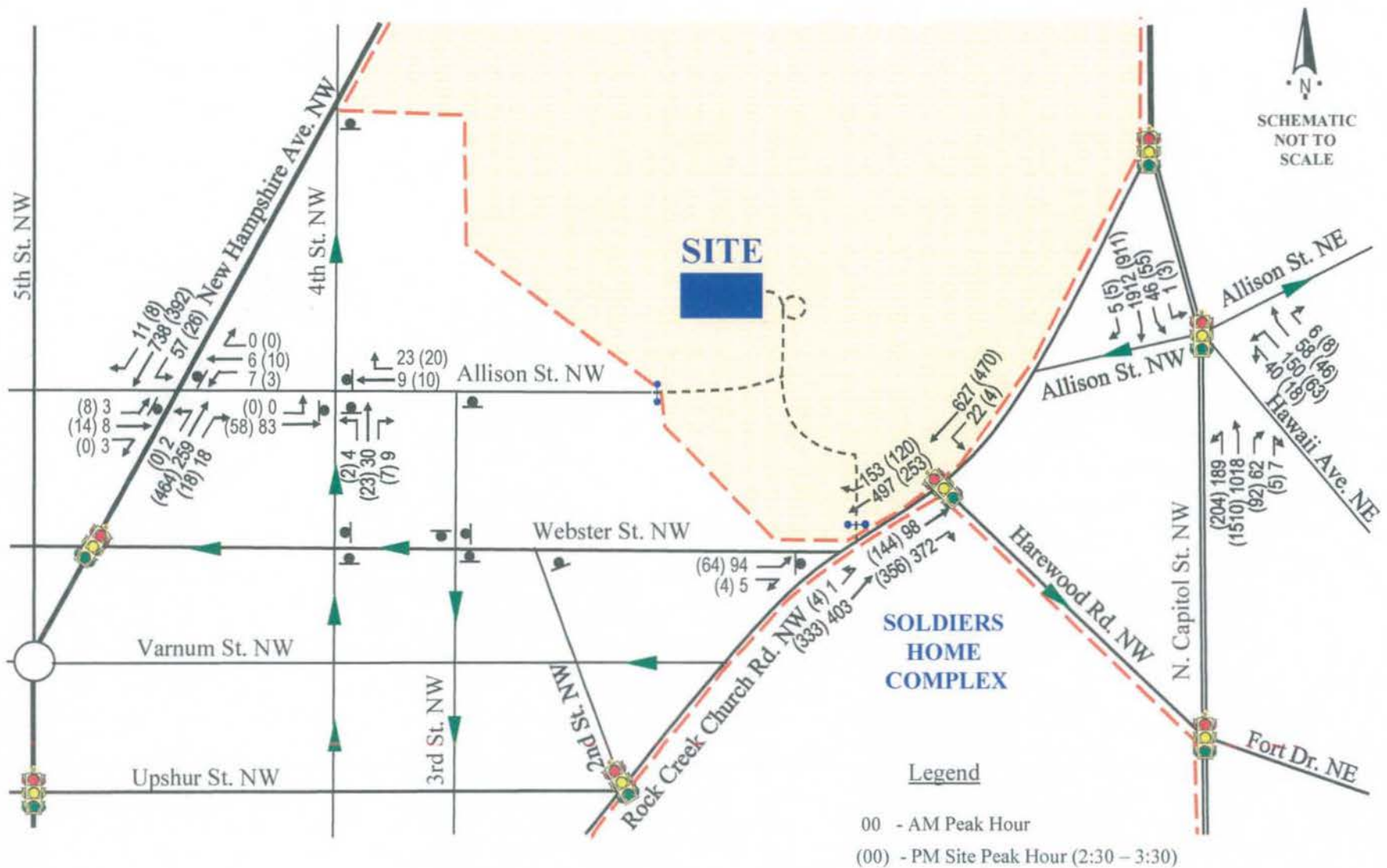


O. R. GEORGE & ASSOCIATES, INC.

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Exhibit 6: Peak Hour Site Trip Distribution and Traffic Assignment

Board of Zoning Adjustment Application for
St. Paul's/Christian Family Montessori School
Northwest, Washington, D.C.



O. R. GEORGE & ASSOCIATES, INC.

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Exhibit 7: Project Year 2013 Total Traffic Situation

Board of Zoning Adjustment Application for
St. Paul's/Christian Family Montessori School
Northwest, Washington, D.C.

5.0 CFMS TRANSPORTATION MANAGEMENT PLAN

A Transportation Management Plan (TMP) consists of the set of measures and strategies that an employer (or place of business) may institute for the purpose of reducing the number of single-occupant vehicle trips accessing a site. Typically, the emphasis is placed on trip-making activity during weekday morning and afternoon peak periods. These plans are more applicable to large employment sites, which provide “critical mass” in terms of the number of employees, visitors, etc. that would support measures such as ride-sharing, flexible work hours, etc. As an illustration of this, it is noted that DDOT’s Transportation Demand Management guidelines makes reference to employment sites serving 100 and more persons. For context, a copy of the guideline is included in Appendix H.

The analyses presented in this report shows that the CFMS school program would not significantly impact the study area road network for the following reasons: (a) Most of the activity occurs during the off-peak periods; (b) There is likely to be significant walk trips to and from the school generated by clients living within the community; and (c) Vehicle trips approaching the school would be well distributed and would result in insignificant impact on any of the intersections considered in this study. However, St. Paul’s and CFMS have been made aware of the City’s policies, and have indicated a readiness to contribute and support the City’s goals and objectives by developing a Transportation Management Plan that would consist of the following measures:

- 1) **Ride-Sharing:** CFMS would strongly encourage its employees to share rides and reduce vehicle trips coming to the site. The school notes that there is currently a significant degree on ride-sharing among parents at its Mount Rainier location, and would also promote and encourage this activity at the St. Paul’s site.
- 2) **Transit Ridership:** CFMS would promote transit ridership by publicizing bus route, fares, and scheduling information on-site and in its information packages to prospective clients. *[The school’s non-profit status, along with the limited number of employees and the variable times of arrival on-site does not make SmartBenefits a feasible option.]*
- 3) **Guaranteed Ride Home:** CFMS is aware of this program operated by the Metropolitan Washington Council of Governments and will disseminate this information to parents/guardian and staff who may be participating in the ride-sharing program under Item (1) of the schools Transportation Management Program.
- 4) **Bicycle Rack(s):** St. Paul’s and CFMS are aware of the increasing use of this mode by commuters, and the City’s provision of bicycle routes within many areas. The applicant will designate a convenient location for the provision of one or more bicycle racks that fit DDOT’s recommended design and configuration.
- 5) **Local Area Access Plan:** CFMS would develop and publicize an access plan for clients and employees who reside outside of the area, with the objective of minimizing vehicle intrusion into the neighborhood. This plan would be incorporated as an understanding/agreement as part of the enrollment process. *[The plan would stress use of Allison Street, Webster Street and 3rd Street by parents originating out of the immediate area of the school.]*

- 6) **School Transportation Coordinator:** CFMS would designate a full-time staff member to serve as the School's Transportation Coordinator (STC). The STC would monitor and promote the measures noted above through dissemination of information and periodic reminders, and would be the designated contact with the local Advisory Neighborhood Commission. *[The STC may also be designated to represent CFMS at ANC meetings, periodically.]*

As further context to the above, it is noted that the CFMS program has built-in TMP measures. These include the before- and after-care, and the staggered arrival/departure pattern. Also, the pre-school closure and pick-up activity around mid-day, and the early afternoon classroom dismissal both fall well outside the street system PM peak hour, and serve to self-mitigate potential traffic impacts. In order to give the above TPM measures due focus and emphasis, CFMS has agreed that the school's Director would serve as program coordinator with assistance from other staff and may be needed and as the program becomes fully established.

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6.0 SUMMARY OF FINDINGS AND CONCLUSION

This Traffic Impact Study has examined the site access needs and potential impacts of the proposed Christian Family Montessori School relocation to the St. Paul's Rock Creek Parish Church campus site. The focus of the assessment was to make a determination as to whether the school is likely to have adverse or objectionable impacts on the surrounding area, in keeping with the requirements of the City's Board of Zoning Adjustment application process. The study has found that the area roadway network and opportunities for access are such that CFMS should not cause any appreciable adverse impacts. This conclusion is based on the following key findings:

- a) The study area intersections currently operate at levels acceptable under DDOT's planning standards, and will continue to operate acceptably by the 2013 planning horizon, and beyond.
- b) CFMS' program of activity will impact the roadway system only during the morning peak hour (8:00 – 9:00 AM). Pre-school dismissal (between 11:45 AM and Noon), and general dismissal (between 2:30 – 3:30 PM) fall well outside the peak periods of the area roadways. In addition, arrival and departure is likely to be quite staggered.
- c) Vehicle trip generation during the morning peak hour is projected to be quite modest even during the first two years of the school's operation. This is because a number of clients from the school's Mount Rainier market area are expected to continue. Trip generation would be reduced as the school "settles" into its new location, and its capture rate from the local/community market area increases and more walk trips are generated.
- d) The St. Paul's site offers distinct advantages of ample on-site parking and an internal roadway system, which would ensure that all of the school's drop-off and pick-up activity would occur entirely on-site, with no "spill-over" or stacking along adjacent community roadways.
- e) CFMS proposes a local area access plan that would designate routes to the school from the adjacent major roadways such that impacts on the residential community would be minimized. This plan addresses concerns raised by DDOT regarding direct access from Rock Creek Church Road. In addition, St. Paul's has re-activated discussions with the City regarding the potential of relocation its main gate to coincide with the signalized Rock Creek Church Road at Harewood Road intersection.
- f) CFMS proposes to implement a Transportation Management Plan, that will further reduce vehicle trip generation, and comply with the City's goals for reducing travel demand and enhancing mobility. The TMP includes the local area access plan noted in Item (e) above.
- g) The school's Transportation Management Plan calls for on-going liaison with the local community in order to ensure effective response to any site access issues that may arise.

Based on the data, analysis and discussion presented in this report, study finds that the development proposal for the Christian Family Montessori School would not create any significant roadway capacity, or operational deficiencies. As such, the study has identified no adverse transportation related impacts on the adjacent community.

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