TRAFFIC IMPACT ANALYSIS REZONING AND PLANNED UNIT DEVELOPMENT APPLICATION - ST. COLETTA "RESERVATION 13," SCHOOL SITE, WASHINGTON, DC

Prepared for:

ST. COLETTA SCHOOL OF GREATER WASHINGTON
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Alexandria, VA 22314

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April 21, 2003

ZONING COMMISSION
District of Columbia
CASE NO.03-21
EXHIBIT NO.5K

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1.0 INTRODUCTION

1.1 Project Background

St. Coletta of Greater Washington ("St. Coletta"/"the School") plans to develop a new educational facility to serve physically-challenged persons residing principally within the District of Columbia. The school would be situated within the southeast quadrant of the 19TH Street/Independence Avenue intersection, within the Southeast Sector of the City. This Traffic Impact Analysis was prepared in conjunction with the Rezoning and Planned Unit Development Application for the proposed 5.2± acre development, which would consist of the school building, its parking lot, as well as open space and other site amenities. The site is situated between the two (2) entrances to the Stadium-Armory Metrorail Station. Current plans call for the facility to accommodate a total of 250 students (children and adults) supported by a staff of up to 205 persons. The school will be operated between 8:30 AM and 3:00 PM on weekdays only.

The subject site is part of Reservation 13, a large tract of land situated between the Hill East neighborhood and the Anacostia River, and bordered by the RFK Stadium/DC Armory complex to the north. Currently, Reservation 13 houses the former DC General Hospital, the DC Central Detention Facility, and includes other vacant parcels. Based upon the Federal ownership of Reservation 13, the subject property carries no zoning classification. The District of Columbia Office of Planning is in the process of preparing a Master Plan for the Reservation, and this plan is intended to support the comprehensive "re-zoning" of the tract. This traffic study envisions that this re-zoning will likely be concurrent with the current application by St. Coletta. The use proposed by the School is recognized in the draft Master Plan as being part of the planned Independence Avenue District, which emphasizes City-wide land uses and services, including health services, education and recreation.

Use of this subject property by the School will be based on a property transfer to the City by the Federal Government and will be governed by certain use restrictions. The Applicant seeks re-zoning of the property to SP-1 *(Special Purpose District),* which will allow development of public and private schools as a matter-of-right. Access to the proposed school facility will be via four (4) entranceways off Independence Avenue, the two (2) easternmost of which are existing driveways. An exit only driveway will provide bus access form the site onto 19TH Street. Entranceways will provide partial (right-in/right-out) access to the site due to the one-way configuration of both the adjacent streets. Exhibit 1 shows the location of the site relative to the adjacent roadway network and other major public facilities located in the area. Exhibit 2 shows the site layout and proposed access situation.

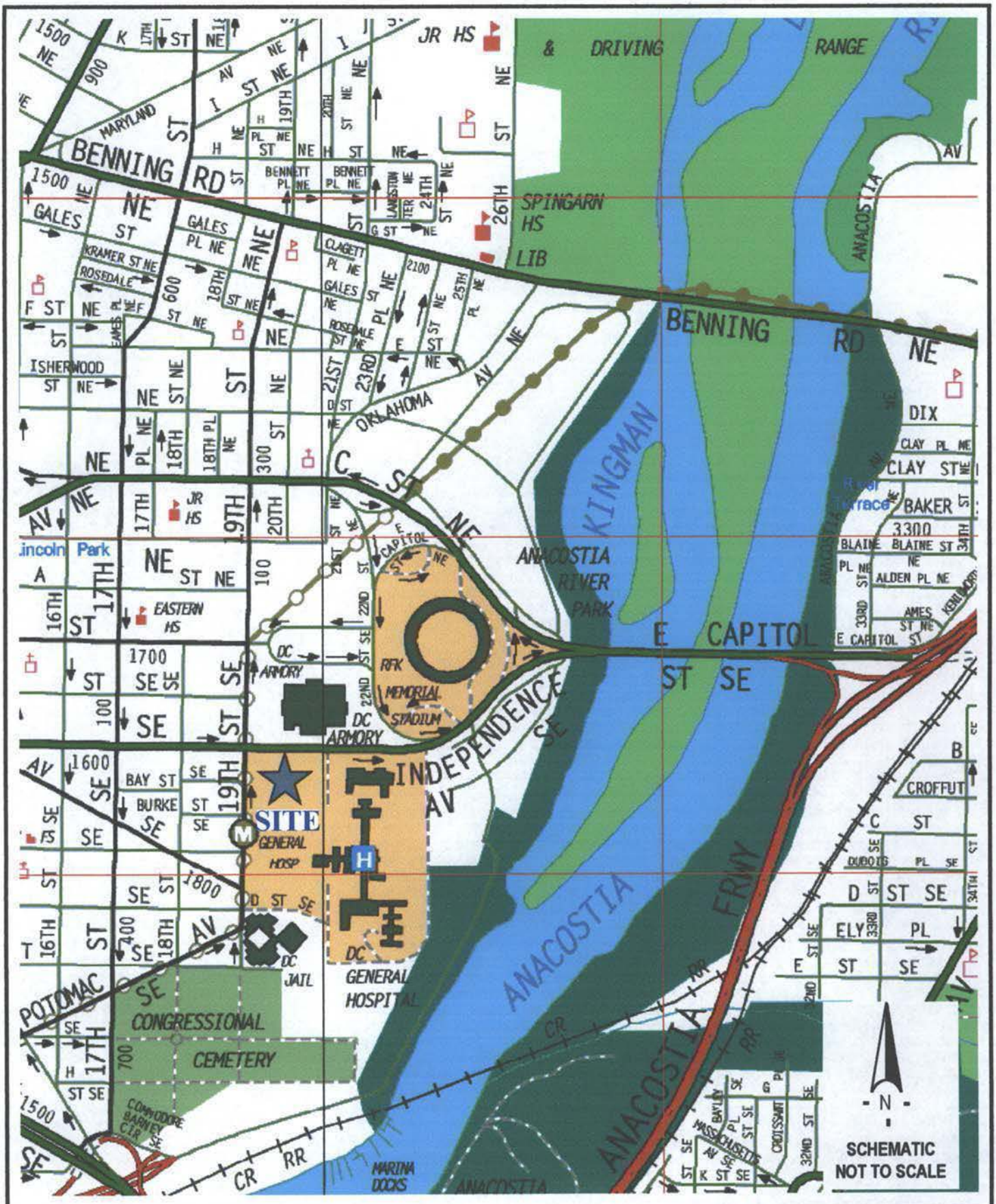
1.2 Study Purpose And Scope

As noted, this study was prepared in order to evaluate the potential access need and impacts of the School's re-zoning and site development per the current application. The purpose and key elements of this study are to assess the following:

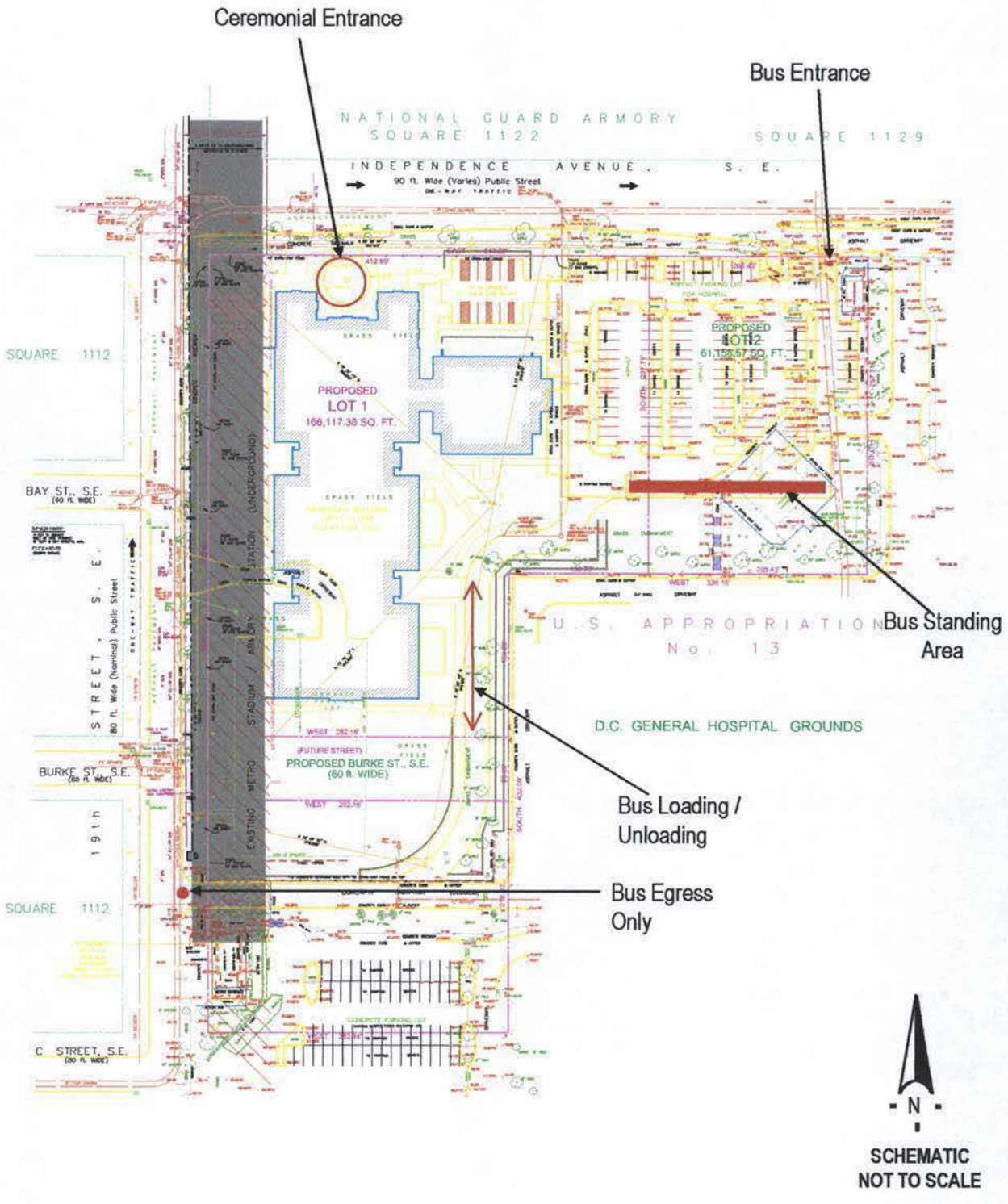
a) Existing traffic flow conditions on the roadway network adjacent to the proposed development;

b) Future "background" traffic conditions considering potential growth in through traffic, as well as planned/approved developments and programmed transportation improvements within the immediate area;

c) Projected traffic impacts of the proposed rezoning and site development considering site trip generation, modal split, access and circulation in addition to the assumed growth of the region; and



O. R. GEORGE & ASSOCIATES, INC. Transportation Engineers & Traffic Planners	**EXHIBIT 1:** SITE LOCATION MAP Saint Coletta of Greater Washington 19th St and Independence Ave, SE, Washington, DC



SOURCE: A MORTAN THOMAS AND ASSOCIATES, INC.

O. R. GEORGE &ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 2:
PROPOSED SITE LAYOUT AND ACCESS SITUATION
St. Coletta of Greater Washington
19th St & Independence Ave SE, Washington, DC

d) Capacity, safety, or operational constraints to the proposed development, as well as potential measures to mitigate such constraints where appropriate.

The methodology used in this evaluation is in accordance with the current general guidelines established by the District Department of Transportation (DDOT). The study area roadway network and other key parameters considered were defined and agreed upon with staff of DDOT Transportation Policy and Planning Administration. Appendix A presents the related correspondence with Department staff.

1.3 Report Organization And Summary

This report is organized into six (6) sections. Section 1 consists of the introduction to the study and presents a brief summary of the findings. Section 2 evaluates existing traffic conditions. Section 3 addresses the Draft Master Plan for Reservation 13 developed by the DC Office of Planning and discusses how the plan for the St. Coletta School relates to and "fits" with the City's plans. This section also discusses programmed roadway improvements within (and likely to impact) the defined study area roadway network. Section 4 discusses the traffic volume growth trends for the study area roadway network to the projected completion of the School in 2006. Section 5 assesses the Applicant's development proposal, as well as the immediate site access and on-site circulation situation. Section 6 summarizes the study findings and makes recommendations, where appropriate, to mitigate any potential adverse transportation impacts identified.

The analysis concludes that the existing roadway facilities are adequate to accommodate the proposed St. Coletta School, and that the facility can be developed as planned without appreciable adverse impacts due to its vehicular access and parking needs. Key contributing factors to this situation are the favorable location of the School relative to the study area roadway network and the commuter travel patterns, proximity to transit services, as well a the hours of operation of the School. The remainder of the report presents the background information, analysis and discussion, which form the basis for this conclusion.

2.0 EXISTING ROADWAY AND TRAFFIC CONDITION

2.1 Land Use and Zoning

As noted earlier, the subject property is located within Reservation 13, and is currently unzoned. It is bordered on the north by Independence Avenue and the DC Armory/Robert F. Kennedy Memorial Stadium complex, and to the south and east by the DC General Hospital and the DC Central Detention Facility. To the west is 19TH Street and the "Hill East" residential neighborhood, which is zoned Residential (R-4) and improved with multi-family (row) dwellings and flats. The Stadium-Armory Metrorail Station on the Washington Metropolitan Transit Authority (WMATA) Blue and Orange Lines is immediately adjacent, with two (2) entrances serving the station situated immediately north and south of the property, and easily accessible form the subject site. In addition, this area is served by three (3) Metrobus routes, the D-6 Cross-town, the No. 96 (Union Station), and the No. B-2 (Bladensburg).

2.2 Study Area Roadway Network

Based on agreement with the DDOT Policy and Planning Administration staff (as documented in Appendix A), this study focused on a study area road network defined by the following intersections:

i) Independence Avenue @ 19th Street, S.E.; and

ii) East Capitol Street @ 19th Street, S.E.

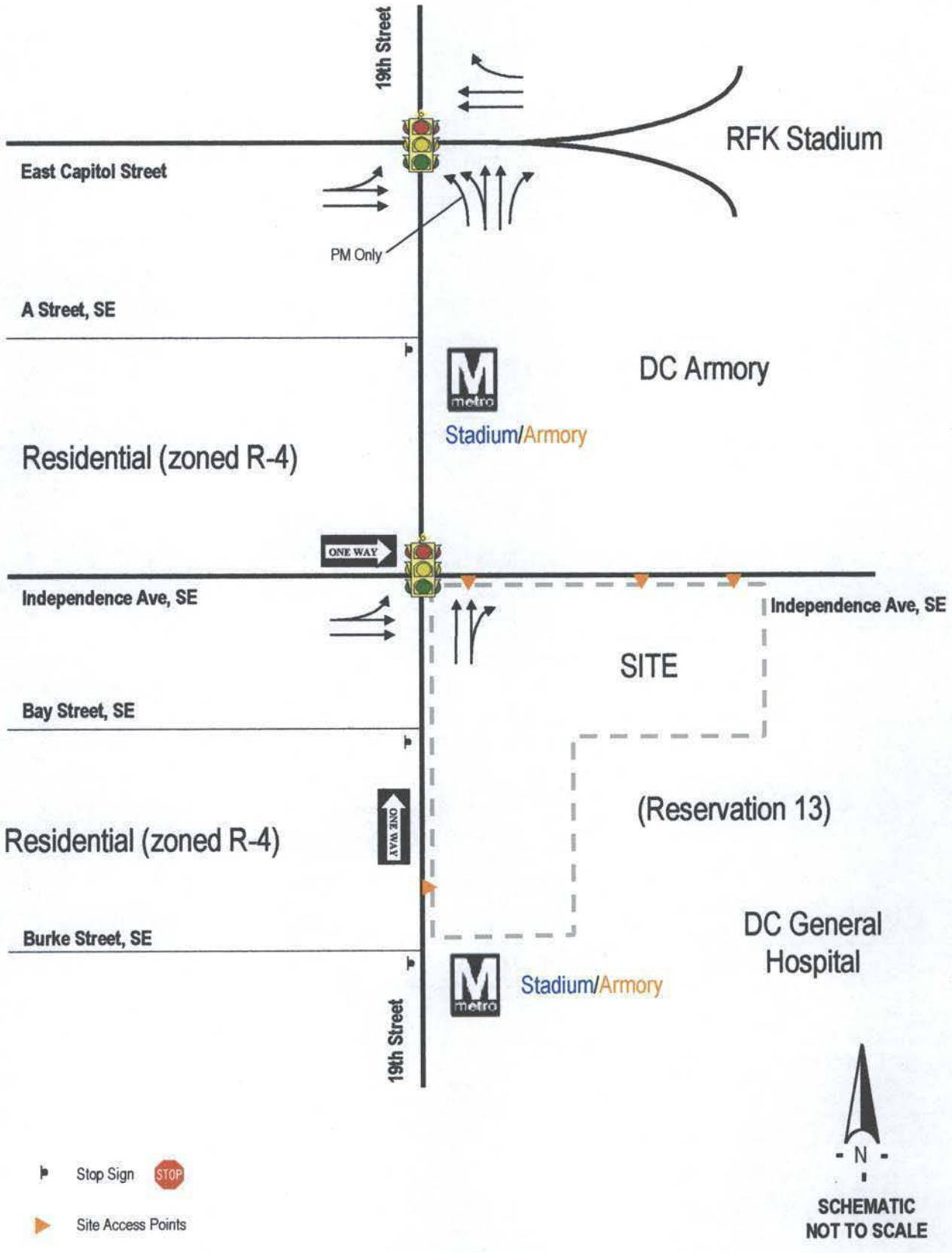
Both of the above intersections are signalized. In order to provide background and perspective to the analysis and discussions, which follow, the general physical and functional characteristics of the key roadways that will be impacted by the proposed development are presented below.

Independence Avenue, S.E. is designated a Minor Arterial on the City's Functional Roadway Classification System. This facility is one-way eastbound with four (4) travel lanes. This roadway serves significant regional/commuter traffic volumes, as well as special event travel needs of the Stadium/Armory complex. Parking is allowed on both sides of this roadway west of 19th Street, and is governed by the City's Residential Parking Permit (RPP) program, which restricts parking to two (2) hour limits between 7:00 AM to 8:30 PM, except for Ward 6 permit holders. Independence Avenue carries approximately 14,000 vehicles per average weekday; and has a posted speed limit of 25 MPH.

Nineteenth Street, S.E. is designated a Minor Arterial on the City's roadway system. This facility is one-way northbound with three (3) travel lanes. Parking is allowed on the west side only, and is governed by the City's RPP program. Average weekday traffic volumes are about 5,000 vehicles north of, and 8,000 vehicles south of, Independence Ave. The posted speed limit in this area is 25 MPH.

East Capitol Street is designated Collector on the City's Functional Roadway Classification Map. This roadway serves two-way traffic flow, with four (4) travel lanes. Parking is allowed along both sides of this roadway west of 19th Street; and is governed by the City's RPP program. Average weekday traffic volumes are about 14,000 vehicles. The posted speed limit is 25 MPH.

Exhibit 3 shows the existing roadway lane configuration and traffic control devices for the study area intersections.



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EXHIBIT 3:
STUDY AREA ROAD NETWORK
St. Coletta of Greater Washington
SE, Washington, DC

2.3 Existing Traffic Situation

In order to assess existing operating conditions, field observations were made of typical weekday traffic flow conditions within the study area during the morning and afternoon peak periods. Additionally, peak period traffic turning movement counts were conducted on December 12, 2001, February 25, 2003 and March 5, 2003 at the two (2) study area intersections on typical weekdays. Based on these field observations, the morning and afternoon peak hours for the study were determined to be 7:45-8:45 AM and 4:45- 5:45 PM.

Exhibit 4 shows the existing peak hour turning movement volumes. The count summaries are presented in Appendix B. Per DDOT requirements, the peak hour volumes were analyzed using the Highway Capacity Manual (HCM) procedures. The capacity analysis results are presented in Table 1 below. The results show that the study area intersections currently operate at acceptable levels of service[1] (LOS) during both morning and afternoon peak periods. Capacity analysis worksheets for this situation are presented in Appendix C.

TABLE 1

SUMMARY OF CAPACITY ANALYSIS RESULTS – EXISTING WEEKDAY PEAK HOUR TRAFFIC SITUATION*

Intersection	AM Peak Hour (7:45 – 8:45)		PM Peak Hour (4:45 – 5:45)	
	Level of Service	Average Delay	Level of Service	Average Delay
1) Independence Ave @ 19th St, S.E.	B	15.7 sec	D	40.7 sec
2) East Capitol Street @ 19th St, S.E.	B	18.8 sec	B	13.5 sec

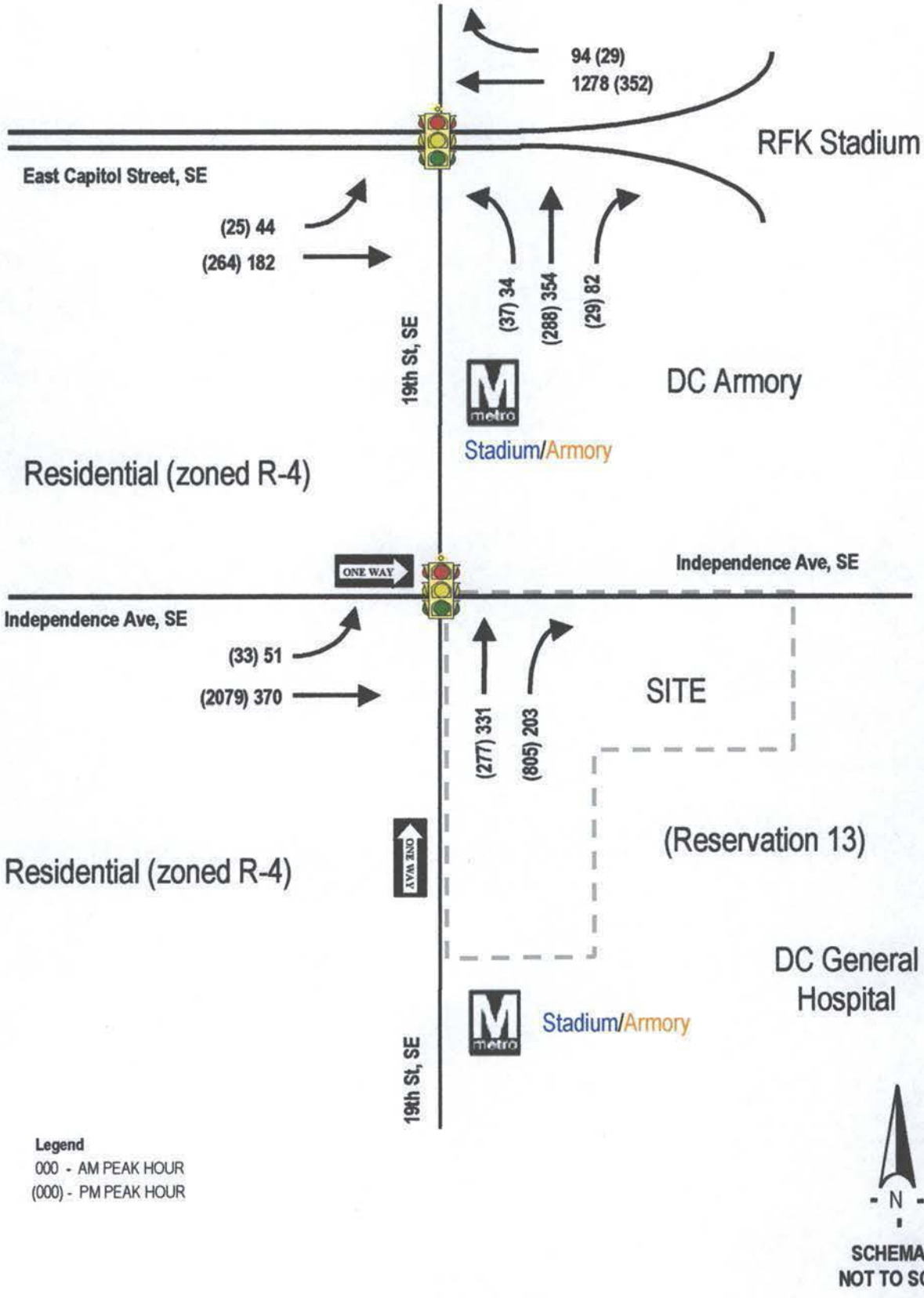
* Highway Capacity Manual (HCM) procedure for signalized intersections applied.

Source: O. R. George & Associates.

Accident data was obtained from DDOT for the study area intersections to evaluate safety. This data covered the most recent three-year period, (1999 – 2001) for which data was available. Copies of the accident data summaries are included as Appendix D. Review of this data indicates that there are currently no significant safety deficiencies at the study area intersections warranting further analysis and evaluation.

Based on the above factors, this analysis concludes that the study area roadway network currently operates without any significant operational, capacity or safety deficiencies in regards to the City's planning standards.

[1] Level of Service is a qualitative measure describing operational conditions within a traffic stream or at an intersection, and their perception by road users. Principal considerations are factors such as speed and travel time, delay, freedom to maneuver, traffic interruptions, comfort, convenience and safety. Current engineering practice defines six (6) levels of service ranging from A to F. Level of Service A represents the best (free flow) conditions where drivers are unaffected by the presence of others in the traffic stream, and are free to change speeds and maneuver, etc., at will. Level of Service F represents the worst (forced flow) conditions where road users experience considerable delay and inconvenience. The District of Columbia has adopted Level of Service D as the minimum acceptable for planning purposes.



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EXHIBIT 4:

EXISTING PEAK HOUR TRAFFIC VOLUMES
St. Coletta of Greater Washington
SE, Washington, DC

2.4 Special Event Traffic

It is relevant to note that the proposed site is located in proximity to the Stadium/Armory Complex, which is the venue for a number of sporting and other events attracting significant numbers of patrons. Events at these facilities would be expected to have some impact on traffic operations in the vicinity of the site. A review of special event schedules and signage placed in the local area pertaining to the current year indicate the following:

- Most events take place on weekends or on weekday evenings, and occur outside the school's hours of operation;
- The attractiveness of the complex to major events is due to the opportunity provided for access by transit as a mode choice; and
- The limited events that occur during the school's hours of operation generate traffic outside the area roadway network's peak hours.

Due to the program and needs of the School, it schedules a limited number of special events. One of the School's most significant events, the Special Olympics, occurs on weekends. Therefore, for the purposes of this study, special event traffic demand situations were not specifically examined.

3.0 PLANNED ROADWAY IMPROVEMENTS

As noted earlier, The Office of Planning has prepared a Draft Master Plan for Reservation 13. This plan calls for the redevelopment and some adaptive reuse of the existing facilities within Reservation, as well as for improved access to, and integration of the site within the neighborhood. The plan makes specific recommendations for improving access and circulation on the adjacent roadway network. These improvements are illustrated in Exhibit 5 and include the following:

a) Conversion of 19th Street to a two-way street in order to enhance efficiency and safety of access to adjacent neighborhoods;

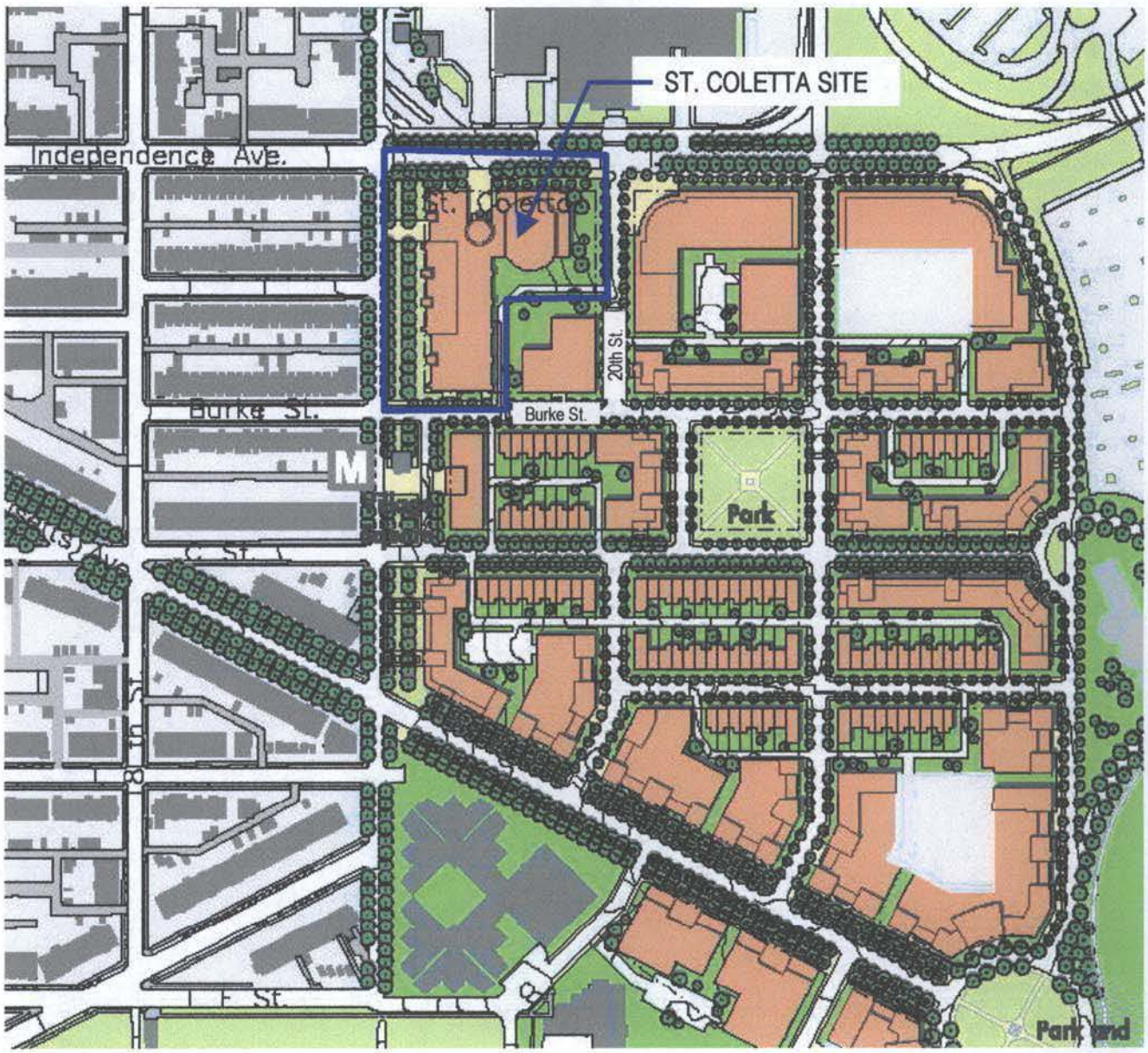
b) Reducing the number of surface parking lots by providing garages;

c) Extension of the local street network to and through Reservation 13 in order to better integrate the area roadway network; and

d) Location of major site attractions along Independence Avenue in order to reduce the potential for vehicular traffic intrusion within the adjacent neighborhoods.

This study recognizes that the roadway improvements noted above are not programmed and fully funded for construction. However, some elements of the St. Coletta plan will need to be reconciled with the DC Office of Planning as the project proceeds.

In regards to projects that are approved and funded, the section of Independence Avenue from 19th Street to a bridge located immediately east of the project location is programmed for improvement in the City's current Transportation Improvement Program. The improvements, which consist of roadway reconstruction, are funded during the fiscal years 2004 - 2005.



Source: DC Office of Planning - Public Reservation Thirteen Draft Master Plan, 2002

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Traffic Engineers - Transportation Planners

EXHIBIT 5:
RESERVATION 13 REDEVELOPMENT PLAN
St. Coletta of Greater Washington
19th St & Independence Ave SE, Washington, DC

4.0 YEAR 2006 PROJECTED TRAFFIC SITUATION

Current plans call for the proposed development to be completed and occupied by the year 2006. Therefore, for the purposes of this study, year 2006 was considered the design year. Based on the City's guidelines and procedures, the year 2006 background traffic situation would consist of the following elements:

- Potential increase in through traffic based on historical growth trends; and
- Traffic generation from approved developments within the local impact area, which are likely to be built-out by year 2006.

Review of historical Average Daily Traffic (ADT) data provided by DDOT, indicates that traffic volumes on the key study area roadways have declined at an annual rate of 2.6% over the period 1996 – 2000. However, a growth factor of two percent (2%) was applied to the existing traffic volumes, unto year 2006, in keeping with DDOT recommendations. This allows for a "factor of safety" appropriate for the planning process. The year 2006 "base" traffic volumes are included as Appendix E.

The "Economic Development Map" of the District of Columbia Office of the Deputy Mayor of Planning and Economic Development was reviewed to determine the land use developments planned or approved for the immediate study area. In addition, discussions were held with Office of Planning Staff for Ward 6 and the Strategic Neighborhood Action Plan (SNAP) for Cluster 26 was reviewed. This research concluded that no major projects are scheduled in the area other than potential redevelopment of Reservation 13. These are not likely to occur by the build-out of St. Coletta in 2006.

5.0 TRAFFIC IMPACT ANALYSIS

5.1 Proposed Development Plan

As discussed in Section 1.1 of this report, the subject application proposes the rezoning and development of the subject site with a school facility for physically and otherwise challenged students. The School will be operated between 8:30 AM and 3:00 PM on weekdays, and will accommodate a total of 250 students (i.e., 225 children and 25 adults). The supporting staff will consist of up to 205 persons. Access to the proposed development will be provided via four (4) right-in/right-out access points off Independence Avenue, and a single point of egress onto 19th Street. The St. Coletta site plan was presented as Exhibit 2 on page 3. The applicant envisions build out and occupancy of the site by 2006 and is working concurrently with the DC Office of Planning within the parameters of the Reservation 13 Master Plan.

5.2 Trip Generation – St. Coletta School

The DDOT Transportation and Planning Administration stipulates that the development of trip activities for proposed land uses be based on trip rates recommended by the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual (6th Ed., 1997) unless local survey data is available. St. Coletta currently operates a similar school facility in Alexandria, Virginia. This facility is of an appropriate size to serve as the basis for a trip generation survey and comparison. In addition, it is noted that the site is also located within walking distance of the King Street Metrorail station. These factors strongly suggest that the new facility would exhibit similar trip generation characteristics as the Alexandria campus. A survey of the Alexandria campus was therefore conducted to obtain relevant data. Key observations made during the survey are as follows:

a) The school uses smaller sized buses, taxis, and minivans to transport students.

b) The average passenger load of the twenty-eight (28) buses serving the site was four (4) students, and each of the twelve (12) taxis and minivans carried one (1) student.

c) School personnel were observed providing operational control and assistance at the entrances to the school and parking areas.

d) Approximately 30% of the staff uses public transportation or carpool.

Table 2 was developed to estimate vehicle trip generation for the future site. The process utilized data from the Alexandria survey, and relevant programming considerations for the Reservation 13 site. For purposes of comparison, trip generation based upon trip rates recommended by ITE is also presented. This table considered the following factors:

1) The special needs of the school require that staff and student arrivals be separated (i.e., staff arrive between 7:30 and 8:00 AM while students arrive between 8:00 and 8:30 AM). This allows staff to support and supervise student arrival and dismissal.

2) Approximately 30% of the Alexandria staff utilizes public transportation or car-pooling. It is therefore assumed that non-single-occupant-vehicle travel will be in the range of 40%. This considers the proximity of the site to public transportation.

3) The special needs of the school dictate a correspondence between inbound and outbound vehicles for student-generated trips (i.e., the buses and taxis that transport students do not remain at the school, and generate inbound and outbound trips.)

4) Afternoon trips generated by St. Coletta would generally occur between 3:00 and 4:00 PM, which is outside the peak hour for the adjacent street system. Therefore, the contribution of St. Coletta to PM peak hour traffic is insignificant and does not warrant detailed evaluation.

The weekday projected peak hour vehicle trips generated by the school are shown in Table 2. The values are based on the projected student and staff populations of 250 and 204, respectively. For comparison, trip rate generation based on the ITE Trip Generation Manual for Private Schools (Land Use Code 521) is also shown in Table 2.

TABLE 2
PROJECTED AM PEAK HOUR TRIP GENERATION FOR ST. COLETTA RESERVATION 13 SCHOOL SITE

Trip Generation for Proposed St. Coletta School	AM Peak Hour Trips		
	In	Out	Total
▪ Trip Generation (Per St. Coletta Program *)	155	73	228
▪ Trips per 250 Students (Per ITE Land Used Code 521 rates *)	138	92	230

* - *Trip rates and relevant data from ORGA Survey and ITE Manual included as Appendix E.*

Source: O. R. George & Associates.

Table 2 shows that the projected trip generation per the St. Coletta development and operational program compares quite favorably with the ITE data. The values presented are therefore considered acceptable and appropriate for planning and evaluation purposes

5.3 Trip Distribution and Traffic Assignment - St. Coletta School

The term trip generation refers to the assumed path of vehicular traffic accessing the subject site within the roadway network considered ion this study. The following factors were considered in projecting the trip distribution pattern for traffic accessing the proposed school site:

a) The configuration of the local street system, notably the adjacent one-way travel patterns along Independence Avenue and 19TH Street, and the connections to the regional highway system;

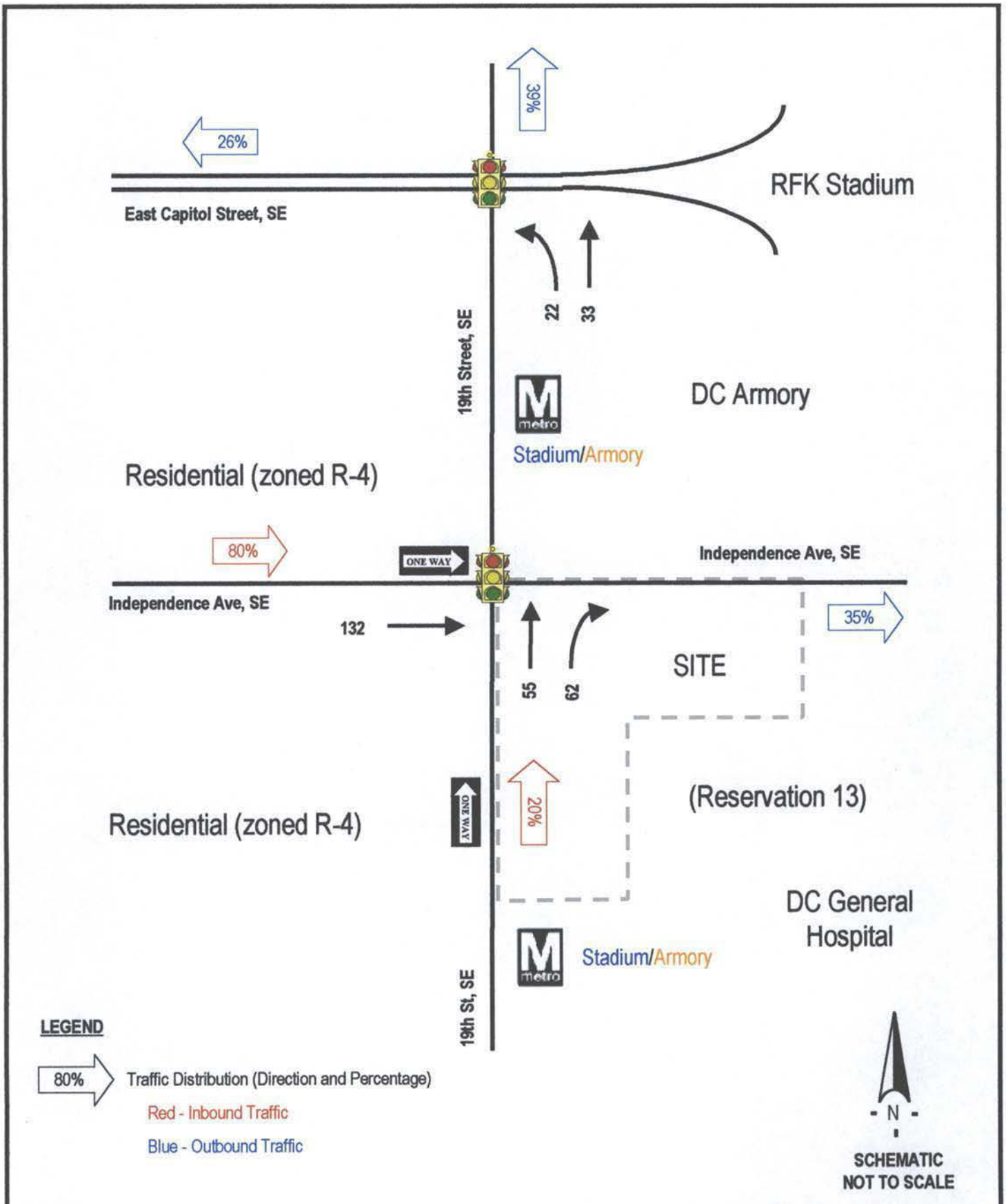
b) Trips generated by St. Coletta would be attracted from origins throughout the City and suburban Maryland (particularly Prince George's County); and

c) The proposed configuration of the subject site, notably its access points, parking layout, and drop-off locations for students.

Based on these considerations, the projected trip distribution patterns and traffic assignment were developed, and are shown in Exhibit 6.

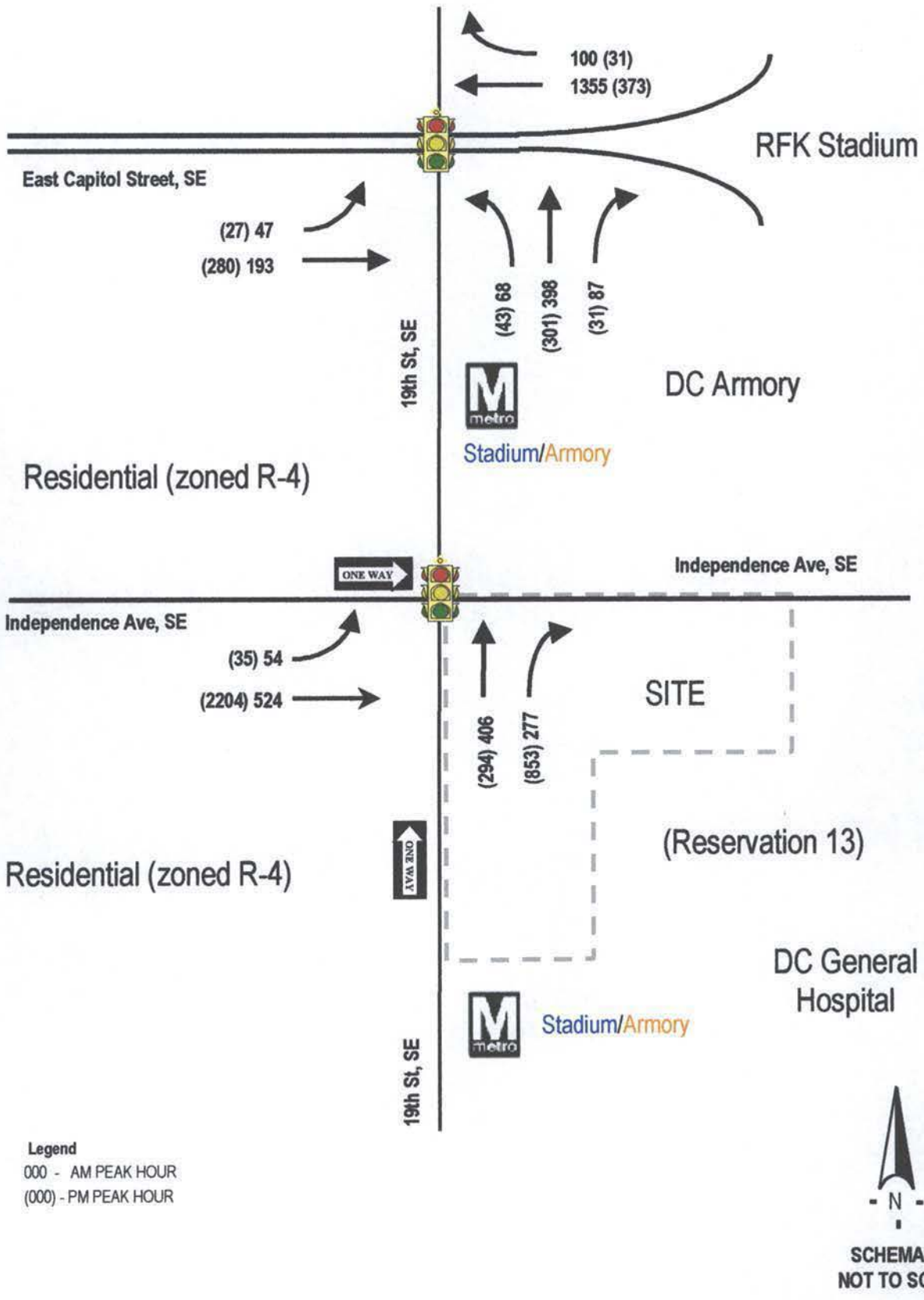
5.4 Traffic Analysis – Year 2006 Total Traffic Situation

The projected year 2006 total traffic situation was computed by combining the traffic assignment for the proposed development (Exhibit 6) with the projected year 2006 base "background" traffic situation (presented in Appendix E). The combined/total traffic situation is presented in Exhibit 7 (on page 16).



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EXHIBIT 6:
PROJECTED AM TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT
St. Coletta of Greater Washington
SE, Washington, DC



O. R. GEORGE &ASSOCIATES, INC.

Traffic Engineers - Transportation Planners

EXHIBIT 7:

PROJECTED 2006 PEAK HOUR TRAFFIC VOLUMES
St. Coletta of Greater Washington
SE, Washington, DC

The traffic volumes shown in Exhibit 7 were analyzed using the HCM capacity analysis procedures, as required by DDOT. The results presented in Table 3 show that upon build-out the study area intersections would continue to operate at acceptable levels of service during both the morning and afternoon peak periods. The capacity analysis worksheets are presented as Appendix G.

TABLE 3

SUMMARY OF CAPACITY ANALYSIS RESULTS – TOTAL YEAR 2006 PROJECTED PEAK HOUR TRAFFIC SITUATION*

Intersection	AM Peak Hour		PM Peak Hour	
	Level of Service	Average Delay (Secs)	Level of Service	Average Delay (Secs)
1) Independence Ave @ 19th St, S.E.	B	17.4	E	57.9
2) East Capitol Street @ 19th St, S.E.	C	20.4	B	13.6

* Highway Capacity Manual (HCM) procedure for signalized intersections applied.

Source: O. R. George & Associates.

It is important to note that the factors contributing to the decrease in level of service for the PM Peak Hour at the Independence Avenue/19TH Street intersection is due to the 2% per year growth rate and not the trip generation from the new school. The PM peak hour trips generated by the school would occur between 3:00 to 4:00 PM. It is quite reasonable to project that some trips would exit the site during the afternoon peak hour, which occurs between 4:45 and 5:45 PM. However, the level of trips in question would be minimal. Furthermore, in view of the one-way (eastbound) traffic flow along Independence Avenue, the trips exiting the site would not use the intersection noted. *The information is therefore presented for information and planning purposes only.*

5.5 Site Access and Parking Evaluation

The proposed site plan calls for four (4) vehicular access points to be provided off Independence Avenue, and one (1) egress point onto 19TH Street, for exclusive use by buses. The easternmost and central access points off Independence Avenue will be connected to parking areas, as well as the egress point on 19TH Street to facilitate efficient on-site circulation, as well as on the adjacent roadways. The westernmost access point along Independence Avenue will be used primarily as a "ceremonial entrance" for drop-off of prospective student, during the application phase.

As noted earlier, a significant number of buses will access the proposed school site. It is envisaged that these buses will access the site from the easternmost driveway, along the existing "service roadway." Buses would then proceed to a staging area at the southern extremity of the parking area from where they would be "dispatched" to the drop-off area abutting the site just north of the proposed Burke Street alignment extension. The driveway along this section will be 22-Ft. wide allowing for bus egress movements to occur during the off-loading operation. The pick-up operation would essentially "mirror" the drop-off arrangement.

The site plan provides for one hundred twenty-two (122) surface parking spaces [including twelve (12) handicapped spaces] within the school complex. This parking will be accessed off Independence Avenue, and will be utilized by all personal/passenger vehicles. The proposed parking supply satisfies the requirement of the City's Zoning Regulations, which calls for two (2) parking spaces for every three (3) staff members (i.e. 102 spaces for a total projection of 205 staff). This allows for an adjustment factor of twenty-five percent (25%) to reflect the location of the site relative to the Stadium-Armory Metrorail Station. Based on the above considerations, this study concludes that the proposed site access and on-site circulation, as well as parking, are adequate and should present no capacity, operational, or safety deficiencies.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Findings

This study analyzed the potential traffic impacts of the Applicant's proposed re-zoning and Planned Unit Development of the subject property. The study methodology and key parameters were in accordance with the general guidelines of the DDOT Transportation Policy and Planning Administration, regarding the evaluation of the transportation impacts of development proposal. The key findings of the study are summarized as follows:

a) The key intersections and roadways providing immediate access to the subject development currently operate well within the District's planning standards, during both morning and afternoon weekday peak periods.

b) There are no background developments planned for the immediate area that will impact the study area roadway network.

c) The City's traffic volume maps indicate a moderate decline in through traffic volumes on the study area roadway network over the period 1996 – 2000. However, an annual growth factor of two percent (2%) was applied to project base traffic by 2006, the year proposed for build-out of the School.

d) The site is in proximity to the Stadium-Armory Metrorail Station as well as bus routes and convenient stops; and this should support significant transit usage. The proposed development should generate the following AM peak hour trips:

	In	Out	Total
AM	155	73	228

The afternoon peak hour trips would be minimal in view of the hours of operation of the School (i.e., 8:30 AM – 3:00 PM).

e) Upon build-out of the school, the study area roadways would continue to operate acceptably during the AM peak period, and near capacity during the afternoon peak.

f) The proposed site access, on-site circulation and parking provisions would be adequate and should not adversely impact the adjacent residential neighborhood or adjoining properties. More specifically, the site access arrangement would preclude neighborhood traffic and parking intrusion.

As noted earlier, the current draft Master plan for Reservation 13 recognizes the use proposed for the site, and there is no conflict in terms land use and access considerations.

6.2 Proposed Mitigation Measures

The foregoing analysis has shown that the study area roadway network will continue to operate acceptably upon build-out of the proposed. However, the study has identified the following measures for consideration by the School:

1) Restrict bus access into the site via the easternmost entrance only.

2) Provide "DO NOT ENTER" signage at the egress point onto 19TH Street from the site.

3) DDOT should be made aware of the potential (minor) deficiencies at the intersection of Independence Avenue and 19TH Street during the PM peak period due to projected growth in existing traffic.

Further consideration may be given to the second item noted as part of the general planning for the area, including the infrastructure assessments that will be necessary for the implementation of the Reservation 13 Master Plan.

6.3 Conclusion

Based on the foregoing data, analysis and discussion, this study has concluded that the existing roadway facilities are adequate to accommodate the proposed St. Coletta School, in accordance with the submitted Rezoning and Development Application. Further, the analysis has shown that the proposed facility can be developed as planned, without having significant adverse impacts on the adjacent road network and vicinal properties, from the perspectives of trip generation, parking and access.

<<<<<:::::>>>>>

APPENDIX

A

RELATED CORRESPONDENCE
WITH DDOT STAFF

O. R. GEORGE & ASSOCIATES, INC.

Traffic Engineers – Transportation Planners

10210 Greenbelt Road, Suite 310 • Greenbelt, MD 20706
Tel: (301) 794-7700 • Fax: (301) 794-4400

January 2, 2003

Mr. Abdu Sleemi, Chief Engineer
Bureau of Traffic Services
District of Columbia Department of Transportation
2000 14th Street, N.W.
Washington, D.C. 20009

Re: St. Coletta of Greater Washington, Southeast, Washington, D.C. – Rezoning Application

Dear Mr. Sleemi:

Please be advised that we have been retained to prepare a transportation impact assessment for the referenced application. The subject development site is located within the southeastern quadrant of the intersection of Independence Avenue and 19th Street, S.E., and adjacent to the Stadium-Armory Metrorail Station. Current plans call for the site to be developed with a school building for physically challenged children.

Based on the above, the safety of access and circulation within the area of the subject site, would be a critical element of the study. To facilitate the safety evaluation, we hereby request accident data, for the past three years, for the following intersection locations:

a) Independence Avenue @ 19th Street; and
b) East Capitol Street @ 19th Street.

A map showing the above locations is attached for ease of reference. Thanks for your usual cooperation and assistance in this matter!

Sincerely,
O. R. GEORGE & ASSOCIATES, INC.

Cullen Elias
Vice - President

Attachments: As noted.

O. R. GEORGE & ASSOCIATES, INC.

Traffic Engineers – Transportation Planners

10210 Greenbelt Road, Suite # 310 • Lanham, Maryland 20706
Tel: (301) 794-7700 • Fax: (301) 794-4400
E-mail: orgassoc@aol.com

January 9, 2003

Mr. Abdoulaye Bah, Sr. Transportation Engineer
Transportation Policy and Planning Administration
District Department of Transportation
2000 14th Street, N.W. (7th Floor)
Washington, D.C. 20009

Re: St. Coletta of Greater Washington Inc., Southeast Washington, DC – Rezoning and Site Development Application

Dear Mr. Bah:

Please be advised that we have been retained by the Applicant, St. Coletta of Greater Washington, to prepare a traffic impact assessment in support of the referenced application. The purpose of this letter is to inform you of the project background, and to establish the parameters by which this study will be performed.

St. Coletta currently operates a school for the physically challenged within the City of Alexandria, Virginia. The School plans to expand its operations to a new campus to be developed in the District of Columbia. The proposed development site is a 3.4+ acre parcel of land located within the southeastern quadrant of the 19th Street/Independence Avenue intersection, near the D.C. General Hospital and the D.C. Armory. The proposed development will accommodate a total of 225 children and young adults, supported by a staff of up to 140 persons. Access to the proposed development would be provided via three (3) entrances off Independence Avenue.

The development site is part of Reservation 13, and is unzoned. Use of the site by the School will be based on a property transfer to the City by the Federal Government, and will be governed by restrictions as to the type of uses that could be developed. The Applicant seeks to rezone the property to SP-1 (Special Purpose District), which would allow development of schools as a matter of right. Based on these considerations, we propose the following as key parameters of the traffic study:

a) The study area road network would be defined by the following two (2) intersections:
   - Independence Avenue @ 19th Street; and
   - Independence Avenue @ 17th Street.

b) The projected site trips will be based on consideration of trip rates recommended by the Institute of Traffic Engineers in the current edition of the Institute's Trip Generation Manual for similar facilities, as well as trip rates derived from a survey of the existing school in Alexandria.

c) The assumed trip distribution pattern would be based primarily on the location of the proposed development site relative to regional roadways, as well as traffic patterns within the immediate area.

Should you have any questions, comments or further information which may be useful to our study effort, please let us know. Thanks for your usual attention and assistance in this matter.

Sincerely,
O. R. GEORGE & ASSOCIATES, INC.

C. Elias

Cullen Elias
Vice-President

CEE

APPENDIX

B

TURNING MOVEMENT COUNT SUMMARIES –
EXISTING TRAFFIC SITUATION

O.R. George & Associates, Inc.
10210 Greenbelt Road., Suite 310
Lanham, MD 20706-2218
Tel: (301) 794-7700 Fax: (301) 794-4400

Counted by :ORGA-JR
Board :D4-1607
City/County:Washington D.C.
Weather :Cold/Rain/Wet

File Name : 19TH@IND
Site Code : 28191607
Start Date : 12/11/2001
Page No : 1

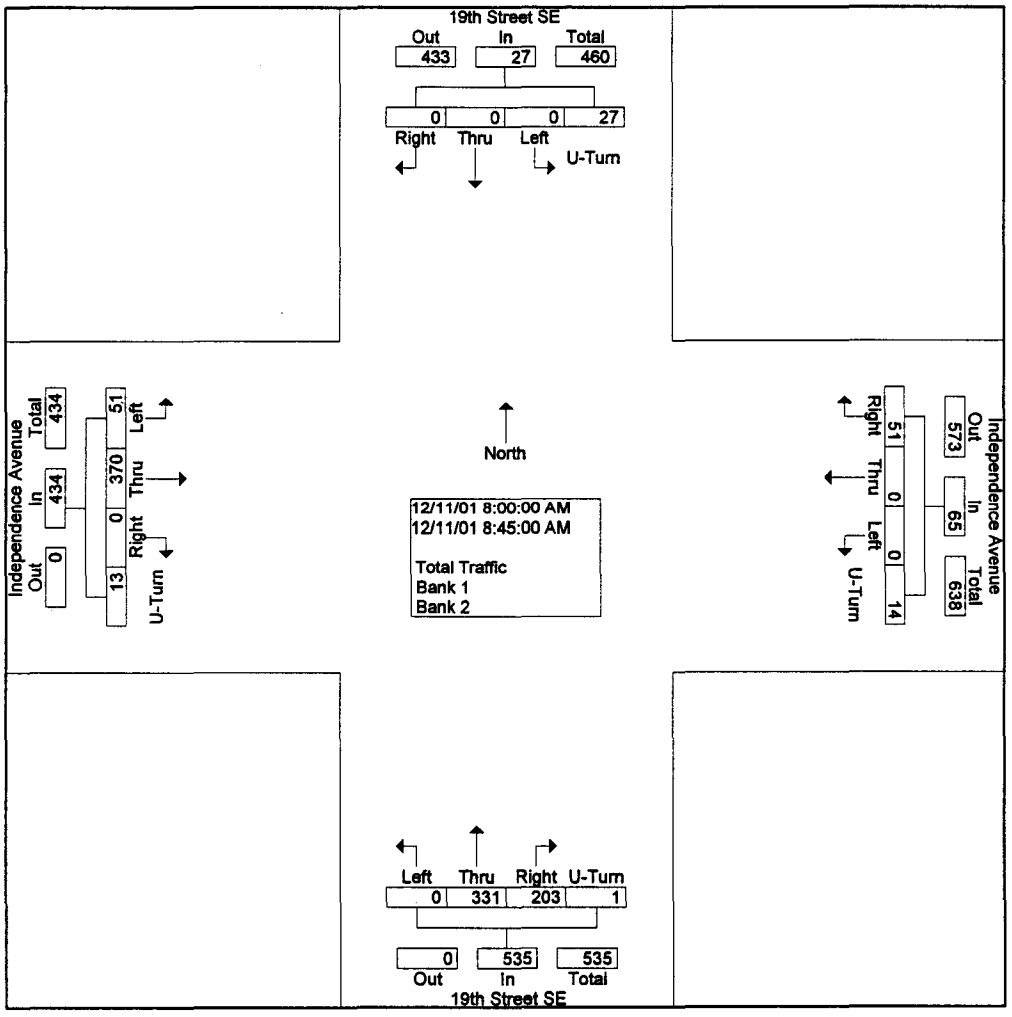
Groups Printed- Total Traffic - Bank 1 - Bank 2

	19th Street SE From North					Independence Avenue From East					19th Street SE From South					Independence Avenue From West					
End Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:15 AM	0	0	0	7	7	0	0	10	1	11	0	43	28	0	71	7	99	0	0	106	195
07:30 AM	0	0	0	2	2	0	0	6	3	9	0	58	47	0	105	10	95	0	3	108	224
07:45 AM	0	0	0	10	10	0	0	13	3	16	0	67	47	0	114	15	101	0	1	117	257
08:00 AM	0	0	0	9	9	0	0	8	5	13	0	83	44	1	128	12	93	0	1	106	256
Total	0	0	0	28	28	0	0	37	12	49	0	251	166	1	418	44	388	0	5	437	932
08:15 AM	0	0	0	3	3	0	0	13	3	16	0	83	55	0	138	12	95	0	4	111	268
08:30 AM	0	0	0	9	9	0	0	12	2	14	0	82	53	0	135	15	90	0	4	109	267
08:45 AM	0	0	0	6	6	0	0	18	4	22	0	83	51	0	134	12	92	0	4	108	270
09:00 AM	0	0	0	3	3	0	0	13	7	20	0	76	45	1	122	5	79	0	4	88	233
Total	0	0	0	21	21	0	0	56	16	72	0	324	204	1	529	44	356	0	16	416	1038
*** BREAK ***																					
04:15 PM	0	0	0	10	10	0	0	11	4	15	0	75	200	0	275	7	455	0	5	467	767
04:30 PM	0	0	0	10	10	0	0	11	7	18	0	59	184	1	244	9	500	0	2	511	783
04:45 PM	0	0	0	15	15	0	0	15	3	18	0	68	192	0	260	8	485	0	4	497	790
05:00 PM	0	0	0	10	10	0	0	5	3	8	0	67	188	0	255	12	510	0	1	523	796
Total	0	0	0	45	45	0	0	42	17	59	0	269	764	1	1034	36	1950	0	12	1998	3136
05:15 PM	0	0	0	9	9	0	0	8	2	10	0	68	203	0	271	6	525	0	0	531	821
05:30 PM	0	0	0	7	7	0	0	9	3	12	0	66	204	0	270	7	535	0	2	544	833
05:45 PM	0	0	0	5	5	0	0	12	4	16	0	76	210	0	286	8	509	0	1	518	825
06:00 PM	0	0	0	1	1	0	0	7	0	7	0	64	231	1	296	8	414	0	3	425	729
Total	0	0	0	22	22	0	0	36	9	45	0	274	848	1	1123	29	1983	0	6	2018	3208
Grand Total	0	0	0	116	116	0	0	171	54	225	0	1118	1982	4	3104	153	4677	0	39	4869	8314
Apprch %	0.0	0.0	0.0	100.0		0.0	0.0	76.0	24.0		0.0	36.0	63.9	0.1		3.1	96.1	0.0	0.8		
Total %	0.0	0.0	0.0	1.4	1.4	0.0	0.0	2.1	0.6	2.7	0.0	13.4	23.8	0.0	37.3	1.8	56.3	0.0	0.5	58.6	

O.R. George & Associates, Inc.
10210 Greenbelt Road., Suite 310
Lanham, MD 20706-2218
Tel: (301) 794-7700 Fax: (301) 794-4400

File Name : 19TH@IND
Site Code : 28191607
Start Date : 12/11/2001
Page No : 2

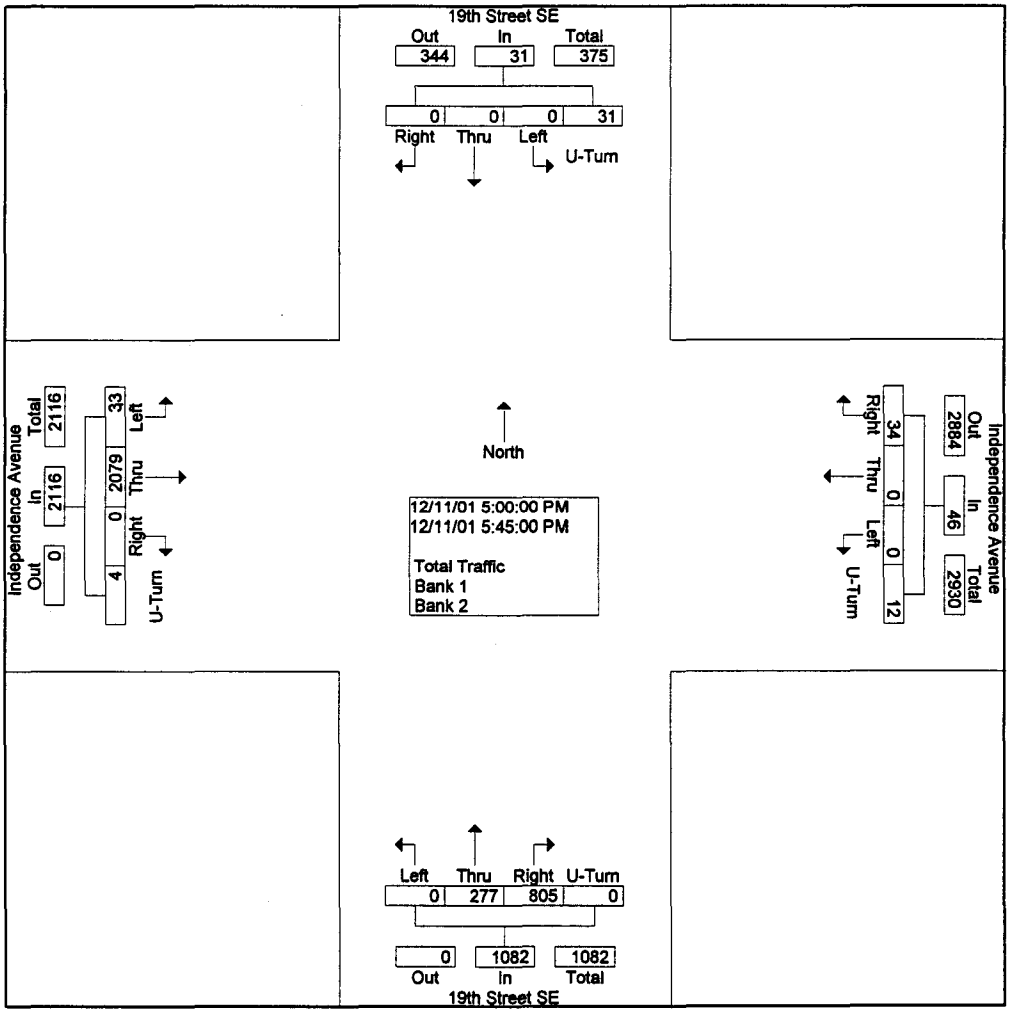
	19th Street SE From North					Independence Avenue From East					19th Street SE From South					Independence Avenue From West					
End Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour From 07:15 AM to 11:45 AM - Peak 1 of 1																					
Intersection	08:00 AM																				
Volume	0	0	0	27	27	0	0	51	14	65	0	331	203	1	535	51	370	0	13	434	1061
Percent	0.0	0.0	0.0	100.0		0.0	0.0	78.5	21.5		0.0	61.9	37.9	0.2		11.8	85.3	0.0	3.0		
08:45 Volume	0	0	0	6	6	0	0	18	4	22	0	83	51	0	134	12	92	0	4	108	270
Peak Factor																					0.982
High Int.	08:00 AM					08:45 AM					08:15 AM					08:15 AM					
Volume	0	0	0	9	9	0	0	18	4	22	0	83	55	0	138	12	95	0	4	111	
Peak Factor					0.750					0.739					0.969					0.977	



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File Name : 19TH@IND
Site Code : 28191607
Start Date : 12/11/2001
Page No : 3

	19th Street SE From North					Independence Avenue From East					19th Street SE From South					Independence Avenue From West					
End Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour From 12:00 PM to 06:00 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	0	0	0	31	31	0	0	34	12	46	0	277	805	0	1082	33	2079	0	4	2116	3275
Percent	0.0	0.0	0.0	100.0		0.0	0.0	73.9	26.1		0.0	25.6	74.4	0.0		1.6	98.3	0.0	0.2		
05:30 Volume	0	0	0	7	7	0	0	9	3	12	0	66	204	0	270	7	535	0	2	544	833
Peak Factor																					0.983
High Int.	05:00 PM					05:45 PM					05:45 PM					05:30 PM					
Volume	0	0	0	10	10	0	0	12	4	16	0	76	210	0	286	7	535	0	2	544	
Peak Factor					0.775					0.719					0.946					0.972	



APPENDIX

C

CAPACITY ANALYSIS WORKSHEETS –
EXISTING TRAFFIC SITUATION

SHORT REPORT

General Information		Site Information	
Analyst	*Robert C. Young*	Intersection	*Independence Ave & 19th St*
Agency or Co.	*ORGA*	Area Type	*All other areas*
Date Performed	*3/5/2003*	Jurisdiction	*District of Columbia*
Time Period	*AM Peak*	Analysis Year	*2003*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*0*	*0*	*0*
Lane group		*LT*						*TR*	*R*			
Volume (vph)	*51*	*370*						*331*	*203*			
% Heavy veh	*0*	*0*						*0*	*0*			
PHF	*0.71*	*0.71*						*0.97*	*0.97*			
Actuated (P/A)	*P*	*P*						*P*	*P*			
Startup lost time		*2.0*						*2.0*	*2.0*			
Ext. eff. green		*2.0*						*2.0*	*2.0*			
Arrival type		*3*						*3*	*3*			
Unit Extension		*3.0*						*3.0*	*3.0*			
Ped/Bike/RTOR Volume				*10*			*31*		*98*			
Lane Width		*12.0*						*12.0*	*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*						*8*	*0*			
Unit Extension		*3.0*						*3.0*	*3.0*			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = *36.0*	G =	G =	G =	G = *36.0*	G =	G =	G =
	Y = *3*	Y =	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *80.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		*593*						*373*	*76*			
Lane group cap.		*1615*						*817*	*727*			
v/c ratio		*0.37*						*0.46*	*0.10*			
Green ratio		*0.45*						*0.45*	*0.45*			
Unif. delay d1		*14.5*						*15.2*	*12.7*			
Delay factor k		*0.50*						*0.50*	*0.50*			
Increm. delay d2		*0.6*						*1.8*	*0.3*			
PF factor		*1.000*						*1.000*	*1.000*			
Control delay		*15.1*						*17.1*	*13.0*			
Lane group LOS		*B*						*B*	*B*			
Apprch. delay	*15.1*						*16.4*					
Approach LOS	*B*						*B*					
Intersec. delay	*15.7*			Intersection LOS						*B*		

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	Independence Ave & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	PM Peak	Analysis Year	2003

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	0	0	0	1	1	0	0	0
Lane group		LT						TR	R			
Volume (vph)	33	2079						277	805			
% Heavy veh	0	0						0	0			
PHF	0.97	0.97						0.95	0.95			
Actuated (P/A)	P	P						P	P			
Startup lost time		2.0						2.0	2.0			
Ext. eff. green		2.0						2.0	2.0			
Arrival type		3						3	3			
Unit Extension		3.0						3.0	3.0			
Ped/Bike/RTOR Volume				7			41		215			
Lane Width		12.0						12.0	12.0			
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N		N
Parking/hr												
Bus stops/hr		0						8	0			
Unit Extension		3.0						3.0	3.0			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = 48.0	G =	G =	G =	G = 24.0	G =	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		2177						478	435			
Lane group cap.		2164						520	485			
v/c ratio		1.01						0.92	0.90			
Green ratio		0.60						0.30	0.30			
Unif. delay d1		16.0						27.1	26.8			
Delay factor k		0.50						0.50	0.50			
Increm. delay d2		20.8						23.8	21.9			
PF factor		1.000						1.000	1.000			
Control delay		36.8						50.9	48.7			
Lane group LOS		D						D	D			
Apprch. delay	36.8						49.9					
Approach LOS	D						D					
Intersec. delay	40.7			Intersection LOS						D		

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	East Capitol St & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	AM Peak	Analysis Year	2003

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	2	1	0	2	1	0	0	0
Lane group		LT			T	R		LT	R			
Volume (vph)	45	181			1278	93	34	354	82			
% Heavy veh	2	2			2	2	10	10	10			
PHF	0.90	0.90			0.90	0.90	0.90	0.90	0.90			
Actuated (P/A)	P	P			P	P	P	P	P			
Startup lost time		2.0			2.0	2.0		2.0	2.0			
Ext. eff. green		2.0			2.0	2.0		2.0	2.0			
Arrival type		3			3	3		3	3			
Unit Extension		3.0			3.0	3.0		3.0	3.0			
Ped/Bike/RTOR Volume				0		0	0		0	0		
Lane Width		12.0			12.0	12.0		12.0	12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N		N
Parking/hr						20						
Bus stops/hr		0			0	0		0	0			
Unit Extension		3.0			3.0	3.0		3.0	3.0			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.50 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		251			1420	103		431	91			
Lane group cap.		1123			1770	634		1225	551			
v/c ratio		0.22			0.80	0.16		0.35	0.17			
Green ratio		0.50			0.50	0.50		0.38	0.38			
Unif. delay d1		11.3			16.7	10.9		18.0	16.7			
Delay factor k		0.50			0.50	0.50		0.50	0.50			
Increm. delay d2		0.5			4.0	0.6		0.8	0.6			
PF factor		1.000			1.000	1.000		1.000	1.000			
Control delay		11.7			20.7	11.4		18.8	17.3			
Lane group LOS		B			C	B		B	B			
Apprch. delay	11.7			20.1			18.5					
Approach LOS	B			C			B					
Intersec. delay	18.8			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	East Capitol St & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	PM Peak	Analysis Year	2003

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	2	1	1	2	1	0	0	0
Lane group		LT			T	R	L	LT	R			
Volume (vph)	25	264			352	29	37	288	29			
% Heavy veh	2	2			2	2	10	10	10			
PHF	0.91	0.91			0.91	0.91	0.91	0.91	0.91			
Actuated (P/A)	P	P			P	P	P	P	P			
Startup lost time		2.0			2.0	2.0	2.0	2.0	2.0			
Ext. eff. green		2.0			2.0	2.0	2.0	2.0	2.0			
Arrival type		3			3	3	3	3	3			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			
Ped/Bike/RTOR Volume				0		0	0		0	0		
Lane Width		12.0			12.0	12.0	12.0	12.0	12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N		N
Parking/hr						20						
Bus stops/hr		0			0	0	0	0	0			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.50 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		317			387	32	41	316	32			
Lane group cap.		1601			1770	634	615	1231	551			
v/c ratio		0.20			0.22	0.05	0.07	0.26	0.06			
Green ratio		0.50			0.50	0.50	0.38	0.38	0.38			
Unif. delay d1		11.1			11.2	10.3	16.0	17.3	16.0			
Delay factor k		0.50			0.50	0.50	0.50	0.50	0.50			
Increm. delay d2		0.3			0.3	0.2	0.2	0.5	0.2			
PF factor		1.000			1.000	1.000	1.000	1.000	1.000			
Control delay		11.4			11.5	10.4	16.2	17.8	16.2			
Lane group LOS		B			B	B	B	B	B			
Apprch. delay		11.4			11.4			17.5				
Approach LOS		B			B			B				
Intersec. delay		13.5			Intersection LOS						B	

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APPENDIX

D

ACCIDENT DATA –
STUDY AREA ROADWAY NETWORK

Government of the District of Columbia
District Department of Transportation
Traffic Services Administration

FAX: (202)671-0619

To: O. R. George Fax: 301-794-4400

From: G. Adam Date: 3-17-03

Re: Pages:

CC:

☐ Urgent ☐ For Review ☐ Please Comment

Requesting Traffic Accident.

d.

2000 14th Street NW 7th Floor Washington, DC 20009 (202)671-2710

3/17/02

(1) INDEPENDENCE & 19th ST

(2) East Capitol & 19th ST

no TRAFFIC accident Exist
@ above location.

Thanks.

APPENDIX

E

TRIP GENERATION DEVELOPMENT WORKSHEETS –
PER PROGRAMED METHOD AND ITE MANUAL

Number of Students: 250
Staff: 204

Trip Generation

- Per Programed Method

Students

- Vehicle Trips per student: 0.25
- AM Trips Generated: 250 students · 0.25 trips/student

$= 62.5 = 63$ trips

∴ Student Contribution:

63 trips in
63 trips out

Staff

Transit Usage = 40%

Vehicle Trips = 204 staff · 60% personal vehicle usage = 122 trips

Carpool Factor $\frac{122 \text{ trips}}{1.2} = 102$ trips

Directional Split of 90/10 = 92/10

∴ Staff Contribution =

92 trips in
10 trips out

Total Trips

In	Out	Total
155	73	228

- PER ITE MANUAL (ITE LAND USE CODE 521)

AVERAGE RATE: 0.92 TRIPS/STUDENT

DIRECTIONAL SPLIT 60/40

IN: 0.92 · 60% = 0.55 TRIPS

OUT: 0.92 · 40% = 0.37

PER 225 STUDENTS

IN	250	· 0.55	=	138 TRIPS
OUT	250	· 0.37	=	92 TRIPS
TOTAL	250	· 0.92	=	230 TRIPS

Private School (K-12)
(521)

Average Vehicle Trip Ends vs: Students
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

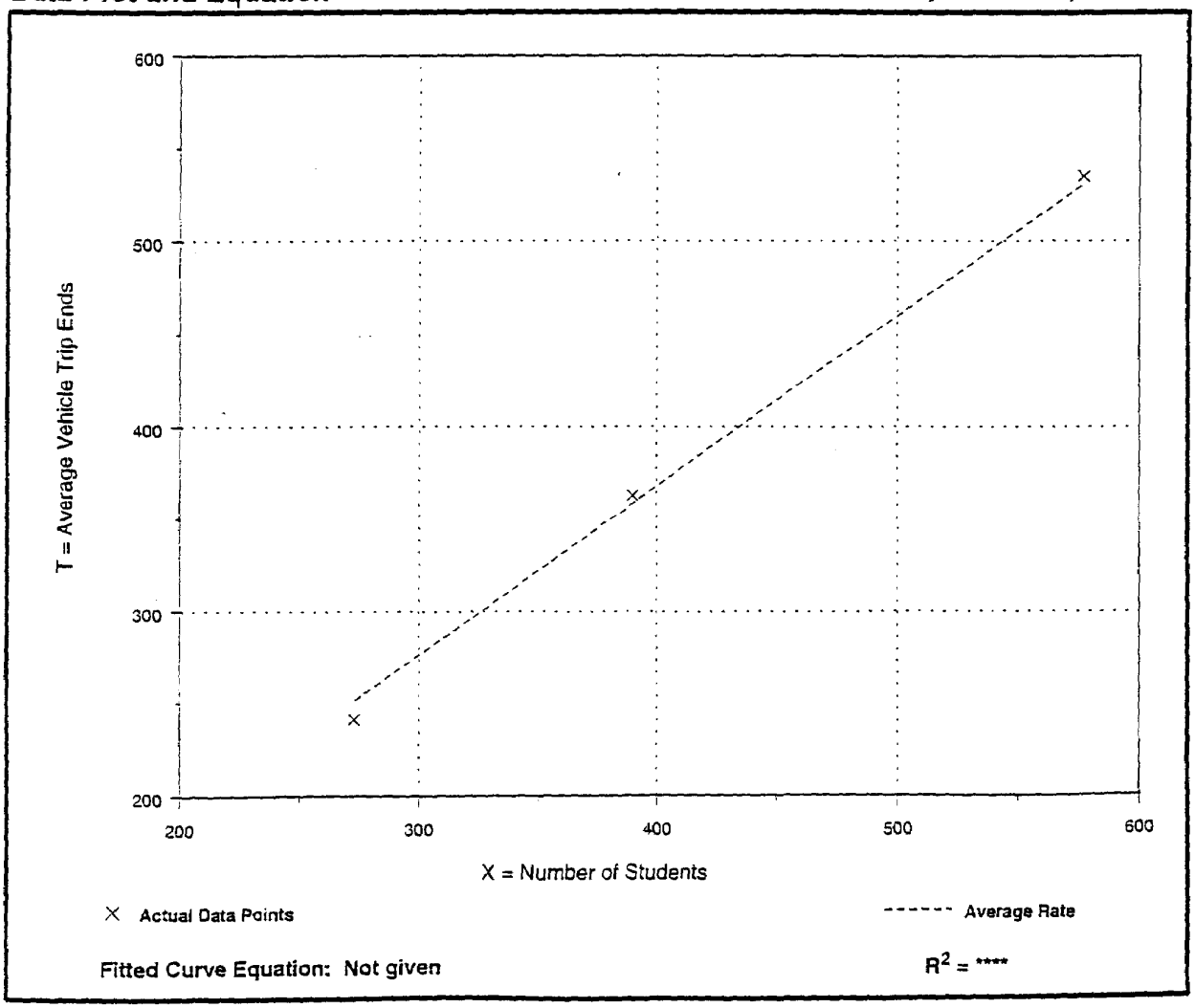
Number of Studies: 3
Average Number of Students: 413
Directional Distribution: 60% entering, 40% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.92	0.88 - 0.93	0.96

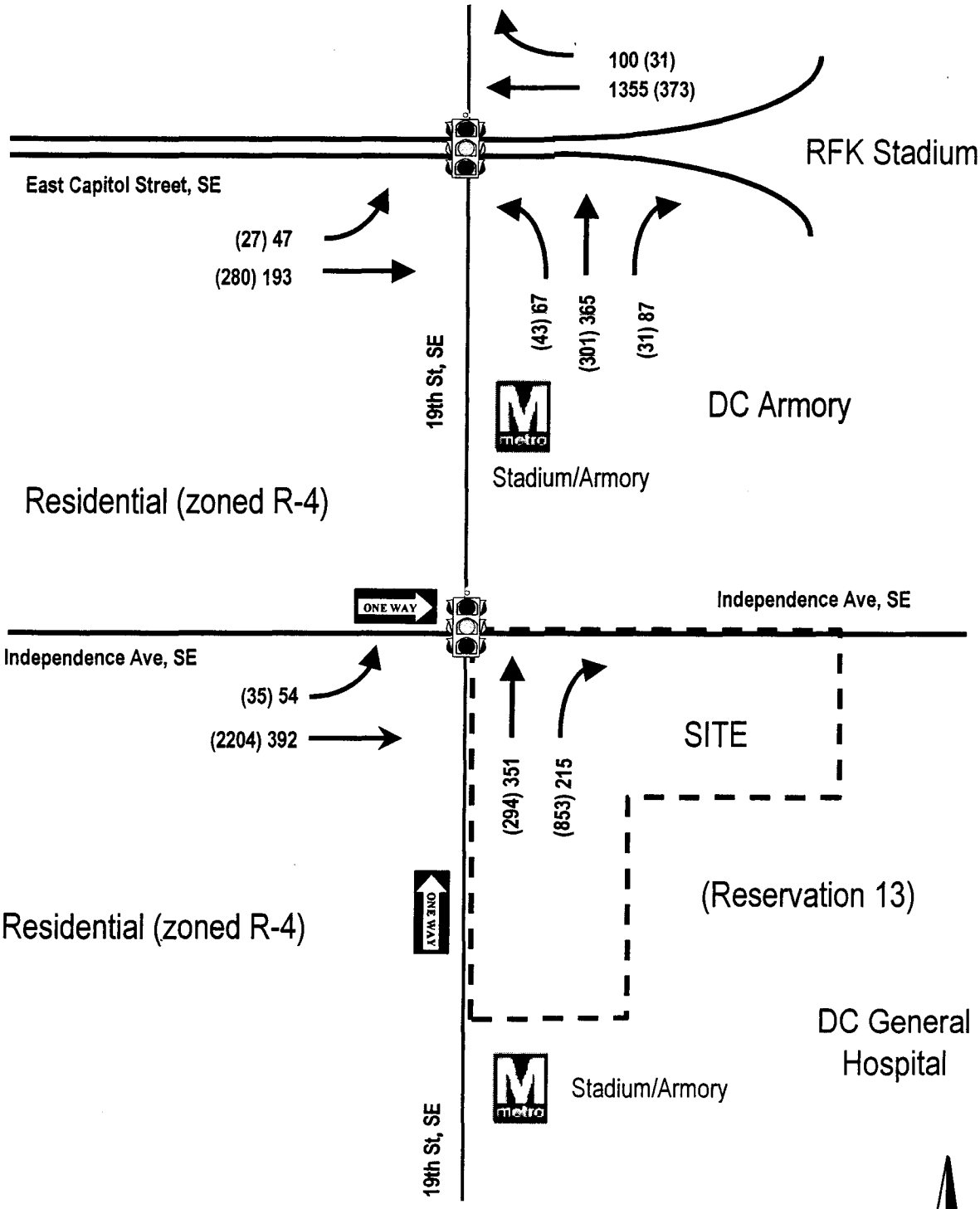
Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****



O. R. GEORGE &ASSOCIATES, INC.

Traffic Engineers - Transportation Planners

ATTACHMENT E:

PROJECTED 2006 PEAK HOUR TRAFFIC VOLUMES
St. Coletta of Greater Washington
SE, Washington, DC

APPENDIX

F

CAPACITY ANALYSIS WORKSHEETS –
YEAR 2006 PROJECTED TRAFFIC SITUATION

SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	Independence Ave & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	AM Peak	Analysis Year	2006 (Projected)

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	0	0	0	1	1	0	0	0
Lane group		LT						TR	R			
Volume (vph)	54	392						351	215			
% Heavy veh	0	0						0	0			
PHF	0.71	0.71						0.97	0.97			
Actuated (P/A)	P	P						P	P			
Startup lost time		2.0						2.0	2.0			
Ext. eff. green		2.0						2.0	2.0			
Arrival type		3						3	3			
Unit Extension		3.0						3.0	3.0			
Ped/Bike/RTOR Volume				10			31		98			
Lane Width		12.0						12.0	12.0			
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N		N
Parking/hr												
Bus stops/hr		0						8	0			
Unit Extension		3.0						3.0	3.0			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = 36.0	G =	G =	G =	G = 36.0	G =	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		628						398	85			
Lane group cap.		1615						816	727			
v/c ratio		0.39						0.49	0.12			
Green ratio		0.45						0.45	0.45			
Unif. delay d1		14.7						15.5	12.8			
Delay factor k		0.50						0.50	0.50			
Increm. delay d2		0.7						2.1	0.3			
PF factor		1.000						1.000	1.000			
Control delay		15.4						17.6	13.1			
Lane group LOS		B						B	B			
Apprch. delay	15.4						16.8					
Approach LOS	B						B					
Intersec. delay	16.0			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	*Robert C. Young*	Intersection	*Independence Ave & 19th St*
Agency or Co.	*ORGA*	Area Type	*All other areas*
Date Performed	*3/5/2003*	Jurisdiction	*District of Columbia*
Time Period	*PM Peak*	Analysis Year	*2006 (Projected)*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*0*	*0*	*0*
Lane group		*LT*						*TR*	*R*			
Volume (vph)	*35*	*2204*						*294*	*853*			
% Heavy veh	*0*	*0*						*0*	*0*			
PHF	*0.97*	*0.97*						*0.95*	*0.95*			
Actuated (P/A)	*P*	*P*						*P*	*P*			
Startup lost time		*2.0*						*2.0*	*2.0*			
Ext. eff. green		*2.0*						*2.0*	*2.0*			
Arrival type		*3*						*3*	*3*			
Unit Extension		*3.0*						*3.0*	*3.0*			
Ped/Bike/RTOR Volume				*7*			*41*		*215*			
Lane Width		*12.0*						*12.0*	*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*						*8*	*0*			
Unit Extension		*3.0*						*3.0*	*3.0*			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = *48.0*	G =	G =	G =	G = *24.0*	G =	G =	G =
	Y = *3*	Y =	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* Cycle Length C = *80.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		*2308*						*511*	*470*			
Lane group cap.		*2164*						*519*	*485*			
v/c ratio		*1.07*						*0.98*	*0.97*			
Green ratio		*0.60*						*0.30*	*0.30*			
Unif. delay d1		*16.0*						*27.8*	*27.6*			
Delay factor k		*0.50*						*0.50*	*0.50*			
Increm. delay d2		*39.9*						*35.9*	*33.9*			
PF factor		*1.000*						*1.000*	*1.000*			
Control delay		*55.9*						*63.7*	*61.5*			
Lane group LOS		*E*						*E*	*E*			
Apprch. delay	*55.9*						*62.6*					
Approach LOS	*E*						*E*					
Intersec. delay	*57.9*			Intersection LOS						*E*		

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SHORT REPORT

General Information		Site Information	
Analyst	*Robert C. Young*	Intersection	*East Capitol St & 19th St*
Agency or Co.	*ORGA*	Area Type	*All other areas*
Date Performed	*3/5/2003*	Jurisdiction	*District of Columbia*
Time Period	*AM Peak*	Analysis Year	*2006 (Projected)*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*0*	*2*	*0*	*0*	*2*	*1*	*0*	*2*	*1*	*0*	*0*	*0*
Lane group		*LT*			*T*	*R*		*LT*	*R*			
Volume (vph)	*47*	*193*			*1355*	*100*	*36*	*375*	*87*			
% Heavy veh	*2*	*2*			*2*	*2*	*10*	*10*	*10*			
PHF	*0.90*	*0.90*			*0.90*	*0.90*	*0.90*	*0.90*	*0.90*			
Actuated (P/A)	*P*	*P*			*P*	*P*	*P*	*P*	*P*			
Startup lost time		*2.0*			*2.0*	*2.0*		*2.0*	*2.0*			
Ext. eff. green		*2.0*			*2.0*	*2.0*		*2.0*	*2.0*			
Arrival type		*3*			*3*	*3*		*3*	*3*			
Unit Extension		*3.0*			*3.0*	*3.0*		*3.0*	*3.0*			
Ped/Bike/RTOR Volume				*0*		*0*	*0*		*0*	*0*		
Lane Width		*12.0*			*12.0*	*12.0*		*12.0*	*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*		*N*
Parking/hr						*20*						
Bus stops/hr		*0*			*0*	*0*		*0*	*0*			
Unit Extension		*3.0*			*3.0*	*3.0*		*3.0*	*3.0*			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = *40.0*	G =	G =	G =	G = *30.0*	G =	G =	G =
	Y = *5*	Y =	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.50* | Cycle Length C = *80.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		*266*			*1506*	*111*		*457*	*97*			
Lane group cap.		*1091*			*1770*	*634*		*1226*	*551*			
v/c ratio		*0.24*			*0.85*	*0.18*		*0.37*	*0.18*			
Green ratio		*0.50*			*0.50*	*0.50*		*0.38*	*0.38*			
Unif. delay d1		*11.4*			*17.4*	*11.0*		*18.2*	*16.7*			
Delay factor k		*0.50*			*0.50*	*0.50*		*0.50*	*0.50*			
Increm. delay d2		*0.5*			*5.6*	*0.6*		*0.9*	*0.7*			
PF factor		*1.000*			*1.000*	*1.000*		*1.000*	*1.000*			
Control delay		*11.9*			*23.0*	*11.6*		*19.0*	*17.4*			
Lane group LOS		*B*			*C*	*B*		*B*	*B*			
Apprch. delay	*11.9*			*22.2*			*18.8*					
Approach LOS	*B*			*C*			*B*					
Intersec. delay	*20.3*			Intersection LOS						*C*		

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	East Capitol St & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	PM Peak	Analysis Year	2006 (Projected)

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	2	1	1	2	1	0	0	0
Lane group		LT			T	R	L	LT	R			
Volume (vph)	27	280			373	31	39	305	31			
% Heavy veh	2	2			2	2	10	10	10			
PHF	0.91	0.91			0.91	0.91	0.91	0.91	0.91			
Actuated (P/A)	P	P			P	P	P	P	P			
Startup lost time		2.0			2.0	2.0	2.0	2.0	2.0			
Ext. eff. green		2.0			2.0	2.0	2.0	2.0	2.0			
Arrival type		3			3	3	3	3	3			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			
Ped/Bike/RTOR Volume				0		0	0		0	0		
Lane Width		12.0			12.0	12.0	12.0	12.0	12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N		N
Parking/hr						20						
Bus stops/hr		0			0	0	0	0	0			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.50 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		338			410	34	43	335	34			
Lane group cap.		1589			1770	634	615	1231	551			
v/c ratio		0.21			0.23	0.05	0.07	0.27	0.06			
Green ratio		0.50			0.50	0.50	0.38	0.38	0.38			
Unif. delay d1		11.2			11.3	10.3	16.0	17.4	16.0			
Delay factor k		0.50			0.50	0.50	0.50	0.50	0.50			
Increm. delay d2		0.3			0.3	0.2	0.2	0.5	0.2			
PF factor		1.000			1.000	1.000	1.000	1.000	1.000			
Control delay		11.5			11.6	10.4	16.3	17.9	16.2			
Lane group LOS		B			B	B	B	B	B			
Apprch. delay		11.5			11.5			17.6				
Approach LOS		B			B			B				
Intersec. delay		13.6			Intersection LOS						B	

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APPENDIX

G

CAPACITY ANALYSIS WORKSHEETS –
YEAR 2006 TOTAL TRAFFIC SITUATION
INCLUDING SUBJECT DEVELOPMENT

SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	Independence Ave & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	AM Peak	Analysis Year	2006 (Total Traffic Situation)

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	0	0	0	1	1	0	0	0
Lane group		LT						TR	R			
Volume (vph)	54	524						406	277			
% Heavy veh	0	0						0	0			
PHF	0.71	0.71						0.97	0.97			
Actuated (P/A)	P	P						P	P			
Startup lost time		2.0						2.0	2.0			
Ext. eff. green		2.0						2.0	2.0			
Arrival type		3						3	3			
Unit Extension		3.0						3.0	3.0			
Ped/Bike/RTOR Volume				10			31		98			
Lane Width		12.0						12.0	12.0			
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N		N
Parking/hr												
Bus stops/hr		0						8	0			
Unit Extension		3.0						3.0	3.0			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = 36.0	G =	G =	G =	G = 36.0	G =	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		814						474	130			
Lane group cap.		1617						813	727			
v/c ratio		0.50						0.58	0.18			
Green ratio		0.45						0.45	0.45			
Unif. delay d1		15.6						16.4	13.2			
Delay factor k		0.50						0.50	0.50			
Increm. delay d2		1.1						3.0	0.5			
PF factor		1.000						1.000	1.000			
Control delay		16.8						19.4	13.7			
Lane group LOS		B						B	B			
Apprch. delay	16.8						18.2					
Approach LOS	B						B					
Intersec. delay	17.4			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	Independence Ave & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	PM Peak	Analysis Year	2006 (Total Traffic Situation)

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	0	0	0	1	1	0	0	0
Lane group		LT						TR	R			
Volume (vph)	35	2204						294	853			
% Heavy veh	0	0						0	0			
PHF	0.97	0.97						0.95	0.95			
Actuated (P/A)	P	P						P	P			
Startup lost time		2.0						2.0	2.0			
Ext. eff. green		2.0						2.0	2.0			
Arrival type		3						3	3			
Unit Extension		3.0						3.0	3.0			
Ped/Bike/RTOR Volume				7			41		215			
Lane Width		12.0						12.0	12.0			
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N		N
Parking/hr												
Bus stops/hr		0						8	0			
Unit Extension		3.0						3.0	3.0			

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = 48.0	G =	G =	G =	G = 24.0	G =	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 — Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		2308						511	470			
Lane group cap.		2164						519	485			
v/c ratio		1.07						0.98	0.97			
Green ratio		0.60						0.30	0.30			
Unif. delay d1		16.0						27.8	27.6			
Delay factor k		0.50						0.50	0.50			
Increm. delay d2		39.9						35.9	33.9			
PF factor		1.000						1.000	1.000			
Control delay		55.9						63.7	61.5			
Lane group LOS		E						E	E			
Apprch. delay		55.9						62.6				
Approach LOS		E						E				
Intersec. delay		57.9			Intersection LOS						E	

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SHORT REPORT

General Information		Site Information	
Analyst	Robert C. Young	Intersection	East Capitol St & 19th St
Agency or Co.	ORGA	Area Type	All other areas
Date Performed	3/5/2003	Jurisdiction	District of Columbia
Time Period	AM Peak	Analysis Year	2006 (Total Traffic Situation)

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	2	1	0	2	1	0	0	0
Lane group		LT			T	R		LT	R			
Volume (vph)	47	193			1355	100	53	400	87			
% Heavy veh	2	2			2	2	10	10	10			
PHF	0.90	0.90			0.90	0.90	0.90	0.90	0.90			
Actuated (P/A)	P	P			P	P	P	P	P			
Startup lost time		2.0			2.0	2.0		2.0	2.0			
Ext. eff. green		2.0			2.0	2.0		2.0	2.0			
Arrival type		3			3	3		3	3			
Unit Extension		3.0			3.0	3.0		3.0	3.0			
Ped/Bike/RTOR Volume				0		0	0		0	0		
Lane Width		12.0			12.0	12.0		12.0	12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N		N
Parking/hr						20						
Bus stops/hr		0			0	0		0	0			
Unit Extension		3.0			3.0	3.0		3.0	3.0			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.50 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		266			1506	111		503	97			
Lane group cap.		1091			1770	634		1224	551			
v/c ratio		0.24			0.85	0.18		0.41	0.18			
Green ratio		0.50			0.50	0.50		0.38	0.38			
Unif. delay d1		11.4			17.4	11.0		18.5	16.7			
Delay factor k		0.50			0.50	0.50		0.50	0.50			
Increm. delay d2		0.5			5.6	0.6		1.0	0.7			
PF factor		1.000			1.000	1.000		1.000	1.000			
Control delay		11.9			23.0	11.6		19.5	17.4			
Lane group LOS		B			C	B		B	B			
Apprch. delay		11.9			22.2			19.2				
Approach LOS		B			C			B				
Intersec. delay		20.4			Intersection LOS						C	

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SHORT REPORT

General Information		Site Information	
Analyst	*Robert C. Young*	Intersection	*East Capitol St & 19th St*
Agency or Co.	*ORGA*	Area Type	*All other areas*
Date Performed	*3/5/2003*	Jurisdiction	*District of Columbia*
Time Period	*PM Peak*	Analysis Year	*2006 (Total Traffic Situation)*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	2	0	0	2	1	1	2	1	0	0	0
Lane group		LT			T	R	L	LT	R			
Volume (vph)	27	280			373	31	39	305	31			
% Heavy veh	2	2			2	2	10	10	10			
PHF	0.91	0.91			0.91	0.91	0.91	0.91	0.91			
Actuated (P/A)	P	P			P	P	P	P	P			
Startup lost time		2.0			2.0	2.0	2.0	2.0	2.0			
Ext. eff. green		2.0			2.0	2.0	2.0	2.0	2.0			
Arrival type		3			3	3	3	3	3			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			
Ped/Bike/RTOR Volume				0		0	0		0	0		
Lane Width		12.0			12.0	12.0	12.0	12.0	12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N		N
Parking/hr						20						
Bus stops/hr		0			0	0	0	0	0			
Unit Extension		3.0			3.0	3.0	3.0	3.0	3.0			

Phasing	EW Perm	02	03	04	NB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.50 Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		338			410	34	43	335	34			
Lane group cap.		1589			1770	634	615	1231	551			
v/c ratio		0.21			0.23	0.05	0.07	0.27	0.06			
Green ratio		0.50			0.50	0.50	0.38	0.38	0.38			
Unif. delay d1		11.2			11.3	10.3	16.0	17.4	16.0			
Delay factor k		0.50			0.50	0.50	0.50	0.50	0.50			
Increm. delay d2		0.3			0.3	0.2	0.2	0.5	0.2			
PF factor		1.000			1.000	1.000	1.000	1.000	1.000			
Control delay		11.5			11.6	10.4	16.3	17.9	16.2			
Lane group LOS		B			B	B	B	B	B			
Apprch. delay		11.5			11.5			17.6				
Approach LOS		B			B			B				
Intersec. delay		13.6			Intersection LOS						B	

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