

NEW YORK CITY DEPARTMENT OF TRANSPORTATION
Office of School Safety Engineering



School Safety Engineering Project
FINAL REPORT: P.S. 59, William Floyd School, Brooklyn



Prepared by
The RBA Group/Urbitran Associates



JUNE 8, 2006

School Safety Engineering Project
P.S. 59, William Floyd School, Brooklyn
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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

The Department of Transportation has developed school safety maps for 1,471 schools throughout the City. Schools currently in the program are primarily elementary and intermediate schools with an enrollment of at least 250 students. The safety plans include the designation of official school crosswalks, identified by prominent warning signs and roadway markings. DOT also designates curbside locations for school bus loading and unloading and other parking controls to improve conditions for students. In addition, nearly 350 speed reducers (humps) have been installed in the immediate vicinity of schools.

Under this consultant study, the School Safety Engineering Project, accident data in the vicinity of all program schools was reviewed. As a result, schools were ranked in terms of pedestrian safety, and 135 “priority” schools were identified Citywide. At each of these priority schools safety improvements are being recommended (e.g., new school crosswalks, new traffic signals and signal timing modifications, new speed reducers). In addition, 32 of these schools will receive further investigation to design physical improvements (e.g., raised center medians, widened sidewalks, “neckdowns” or “bulbouts” at intersections). P.S. 59 (William Floyd School) in Brooklyn is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Located at 211 Throop Avenue in Brooklyn, P.S. 59 is situated on Throop Avenue, between Park Avenue and Myrtle Avenue (Exhibit 1, Aerial Photograph and Exhibit 2, Catchment Area). The school's main entrance is on Throop Avenue.



Figure 1: Looking south on Throop Avenue: P.S.59 is on left

The surrounding land use is residential with mixed use commercial. There are high-rise apartment buildings on Throop Avenue, Marcus Garvey Boulevard, and Myrtle Avenue, to the west, east, and south of P.S. 59 (Figure 1). Woodhull Hospital is located on Park Avenue, to the north of P.S. 59.

There are three bus routes operating in the vicinity of P.S. 59: B43, B15 and B54. In addition, there is a subway station located on Broadway at Flushing Avenue, two blocks from P.S. 59.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Representatives from the consultant team and the principal of P.S. 59 met at the school on the afternoon of May 12, 2004 (See the Appendix for a list of attendees).

According to the school principal, the identifiable problems that student pedestrians encounter on a regular basis include the following:

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- Vehicles speeding on Throop Avenue;
- Students crossing mid-block on Throop Avenue;
- Lack of curb space for school bus loading and unloading;
- Difficult crossing conditions at the intersection of Throop Avenue and Park Avenue, drivers do not yield to pedestrians.

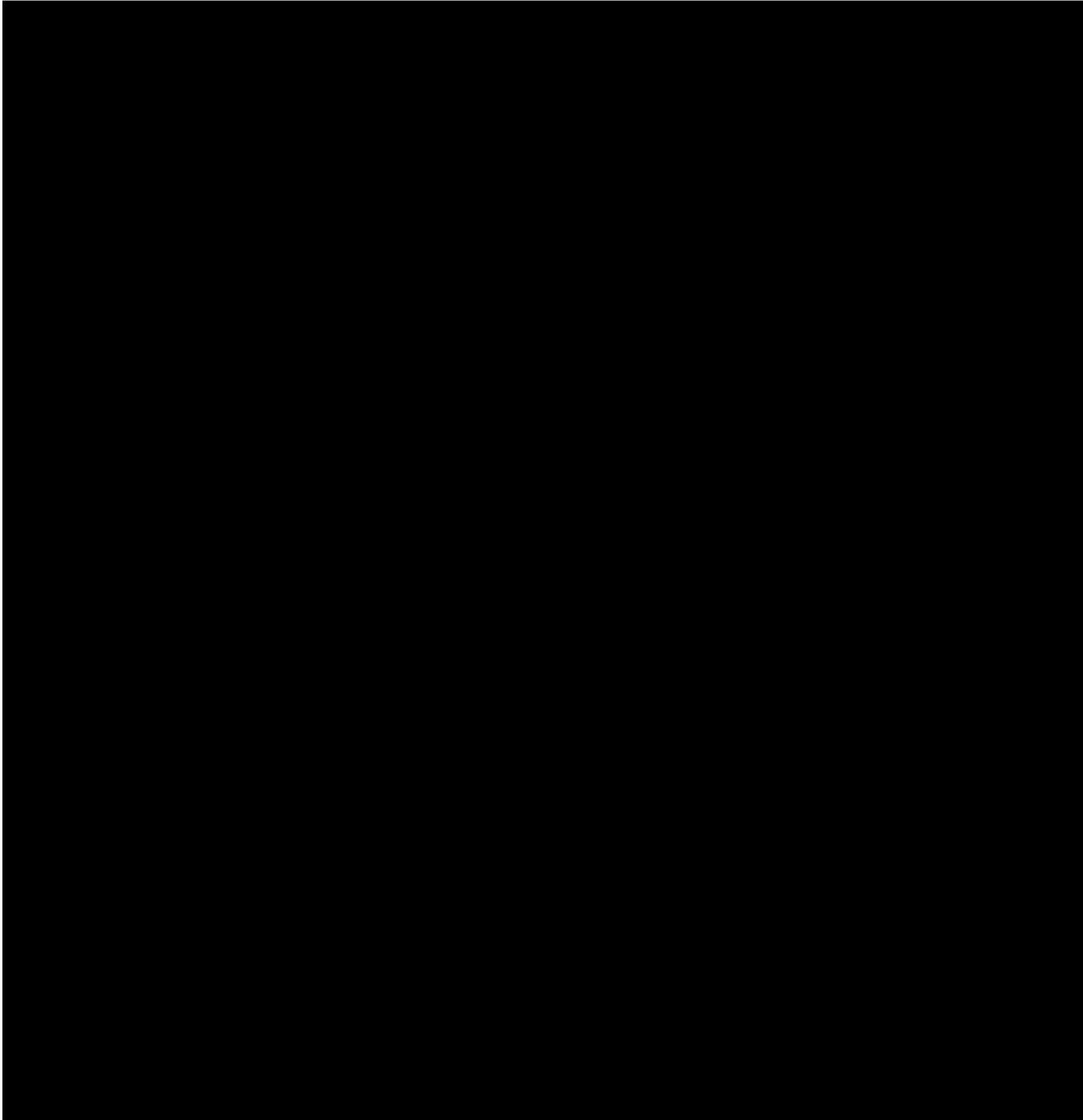
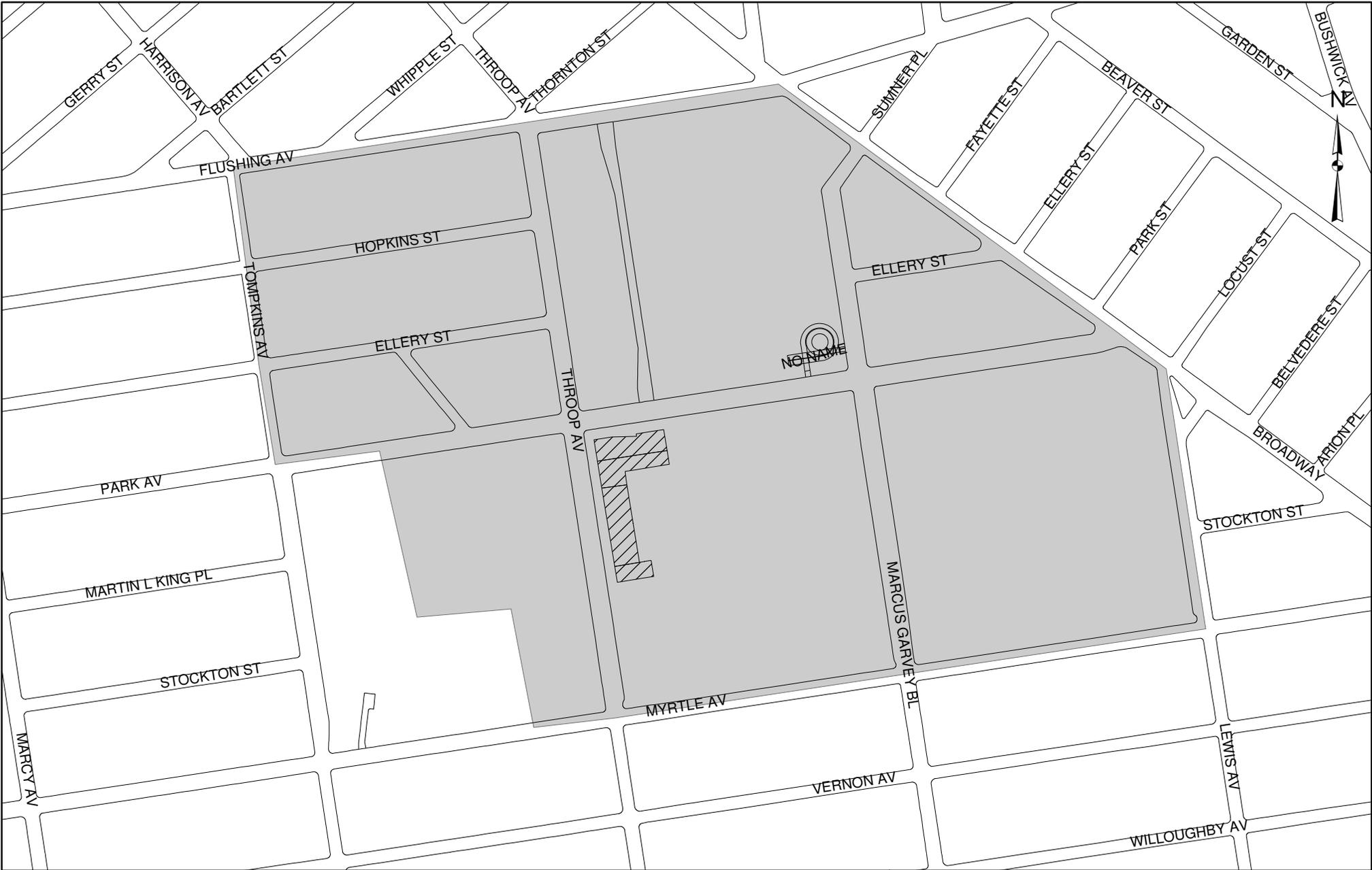




EXHIBIT 1
WILLIAM FLOYD SCHOOL
P.S. 59, BROOKLYN
AERIAL PHOTOGRAPH



 CATCHMENT AREA

1 inch equals 350 feet

EXHIBIT 2
P.S. 59, BROOKLYN
WILLIAM FLOYD SCHOOL

CATCHMENT AREA

2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL

According to the principal, the majority, approximately 90% of students walk to P.S. 59, 6% of the students are driven by parents or guardians, 2% of them utilize the MTA bus or subway system, and the remaining 2% take school buses. See Table 1 for the school’s estimate of modal split.

TABLE 1- MODE OF TRAVEL	
(AS ESTIMATED BY SCHOOL OFFICIALS)	
DESCRIPTION	PERCENTAGE
Walk	90%
Driven by parents or guardians	6%
School bus	2%
MTA bus or subway	2%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There are three other public schools in the vicinity of P.S. 59: P.S. 373, P.S. 297, and I.S. 33. P.S. 373 is on Ellery Street between Throop Avenue and Tompkins Avenue, one block away from P.S. 59. P.S. 297 is on Park Avenue, west of Tompkins Avenue. I.S. 33 is on Tompkins Avenue, between Park Avenue and Myrtle Avenue. In addition, a private school, Brooklyn Temple School, is also in the area, located on Lewis Avenue (two blocks east) between Park Avenue and Myrtle Avenue.

A grocery store is located on the northwest corner of Throop Avenue and Park Avenue. There are bus stops for the B54 route along Park Avenue, B43 route along Throop Avenue, and B17 route along Marcus Garvey Boulevard. There is also a subway station for the J, M, and Z lines on Broadway at Flushing Avenue, two blocks north of P.S. 59.

2.8 CROSSING GUARD LOCATIONS

According to field observations, there are four crossing guards assigned to P.S. 59. They are stationed at the following intersections:

- Throop Avenue and Park Avenue
- Throop Avenue and Myrtle Avenue
- Marcus Garvey Boulevard and Park Avenue
- Marcus Garvey Boulevard and Myrtle Avenue

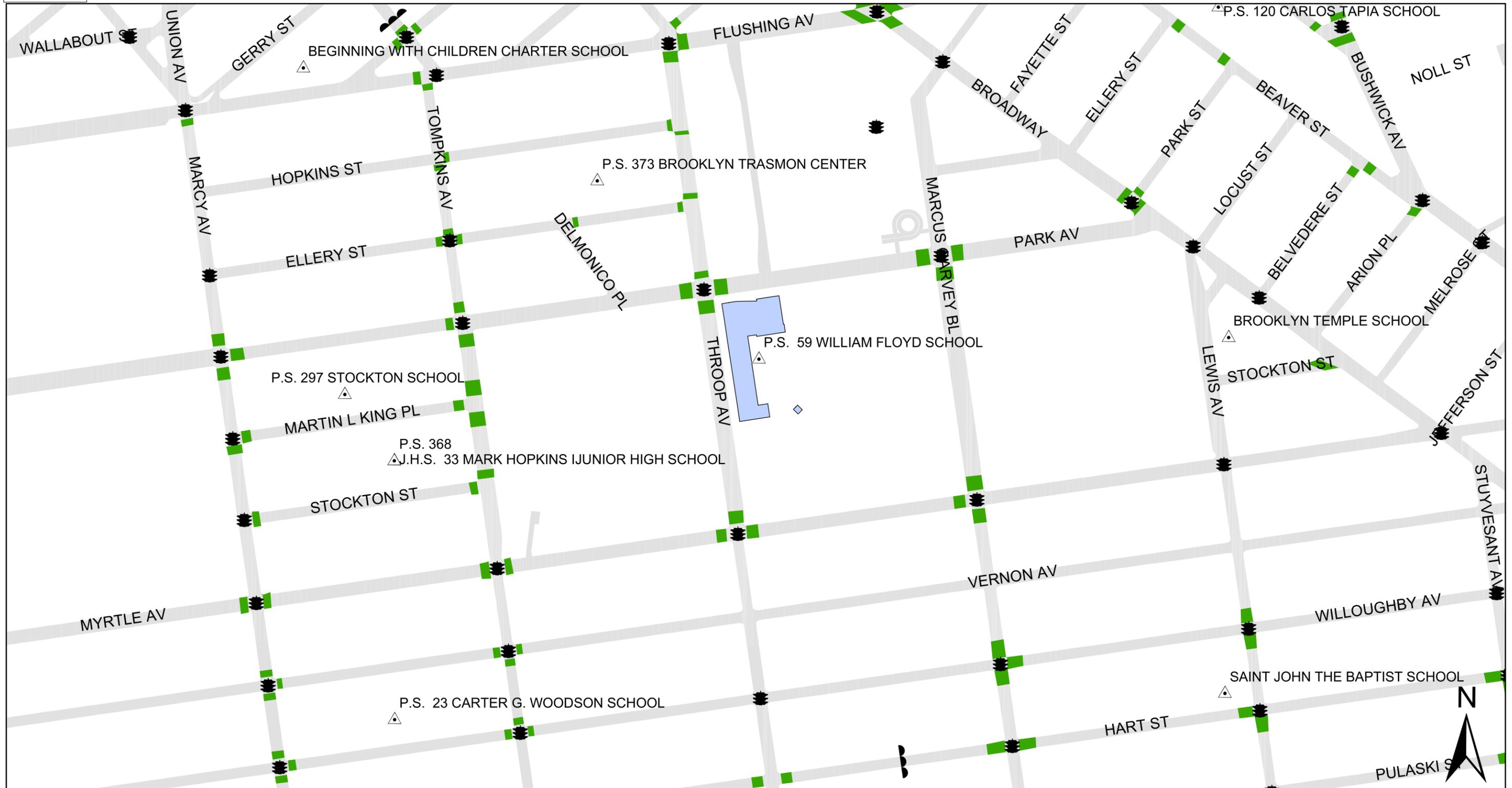
See Exhibit 4 for the crossing guard locations observed in the vicinity of the school.



Figure 3: School crossing guard at Throop Avenue and Park Avenue



School Traffic Safety Map



The School Traffic Safety Map was established to help provide the maximum degree of safety for children going to and from school - by indicating the location of speed reducers, school crosswalks and some traffic control devices. (While virtually all intersections in NYC benefit from traffic control devices - such as stop signs, traffic signals, yield signs, and all way stop signs - this map shows only traffic signals and all way stop signs.) The school crosswalks that are shown are ladder striped and make the crosswalk more visible to drivers and help make the intersection safer. These crosswalks are where school children are recommended to cross.

Note: Every attempt has been made to provide complete and accurate information that is updated regularly. The City's streets are constantly changing and it is not always possible to present information without error.

LEGEND:

- SCHOOL LOCATION
- SCHOOL CROSSWALK
- TRAFFIC SIGNAL
- ALL - WAY STOP
- SPEED REDUCER

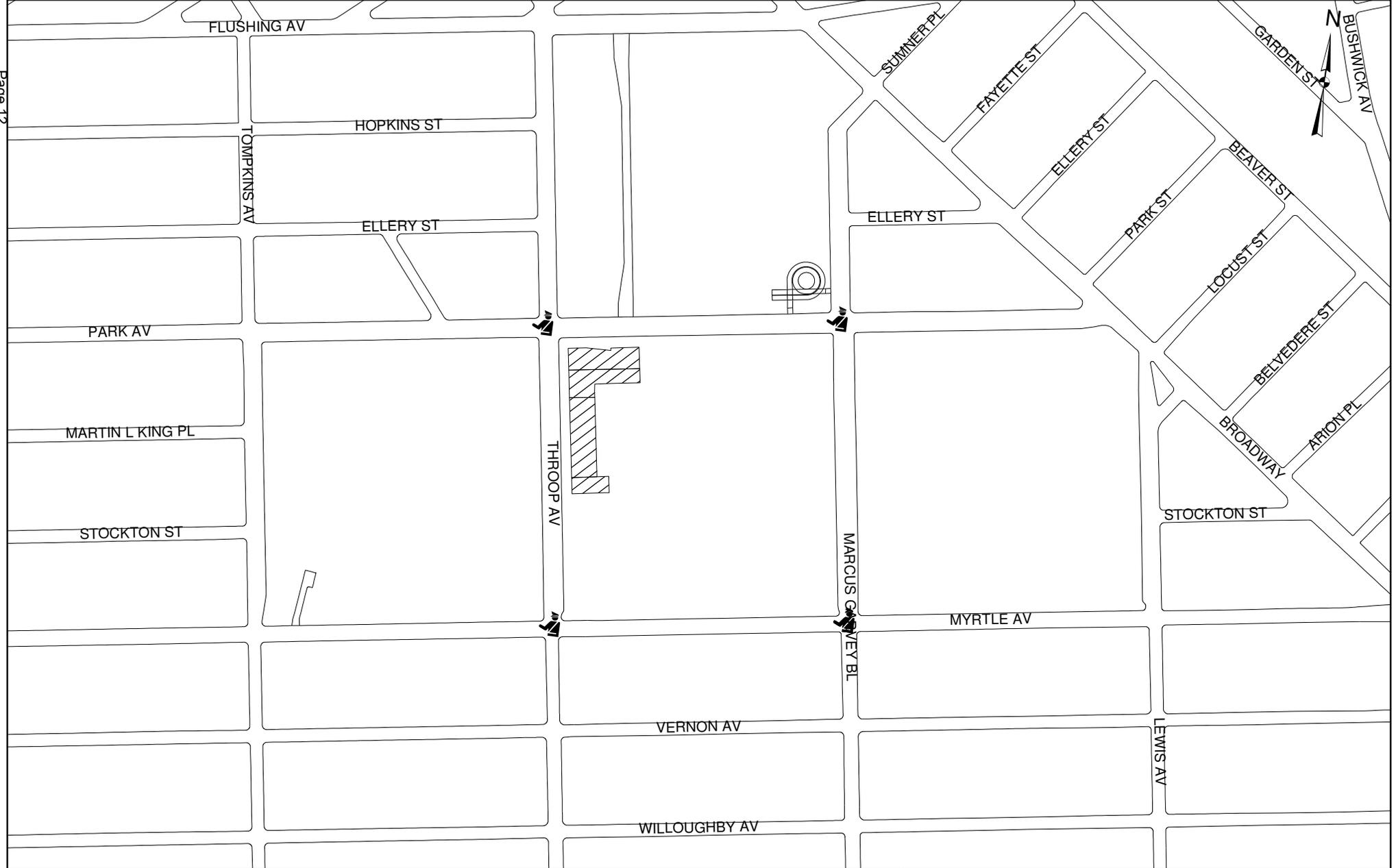
**PS 59 Brooklyn
WILLIAM FLOYD SCHOOL**

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION, Iris Weinsall, COMMISSIONER.

Map created on 11/16/2006

EXHIBIT 3

COMM. BOARD: 303
PRECINCT: 79



1 inch equals 350 feet



Crossing guard assigned to P.S. 59

EXHIBIT 4
P.S. 59, BROOKLYN
WILLIAM FLOYD SCHOOL

CROSSING GUARDS

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to the principal, three school buses drop-off and pick-up students at P.S. 59. All three buses transport special education students. All of the school buses pick up and drop off students on Throop Avenue, at the school's main entrance (Figure 4). School buses will park or double-park, depending on traffic conditions while dropping off or picking up students.



Figure 4: Double-parked school bus on Throop Avenue in front of P.S. 59

3.2 PARENT DROP-OFF OPERATIONS

The school's principal indicated that approximately six percent of P.S. 59 students are driven to and from school by parents or guardians. The number of students driven to school increases significantly during inclement weather. Based on field observations taken on May 12, 2004, almost all parents stop on Throop Avenue to drop off students. Parents typically park their vehicles in available spots, or they double-park their vehicles. While parents were double-parked, Throop Avenue is reduced to one moving lane for northbound traffic (Figure 5).



Figure 5: Parents drop off students on Throop Avenue in front of P.S. 59

3.3 PARKING REGULATIONS

Exhibit 5 shows the parking regulations on the roadways surrounding the school.

“NO PARKING 7:00 AM – 4:00 PM SCHOOL DAYS EXCEPT BOARD OF EDUCATION” parking signs are posted on Throop Avenue and Park Avenue. Teacher parking is allowed along the east curb of Throop Avenue, and south curb of Park Avenue (Figure 6).

Street cleaning regulations, which prohibit parking on alternating sides of the roadway, are in place near the school.



Figure 6: Parking regulation sign on Throop Avenue

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 3, shows existing signals and pavement markings as of June 2004. It is noted that a citywide signage program is currently underway to upgrade school signage to current MUTCD standards of fluorescent yellow-green and downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” on Exhibit 8.



Figure 7: School X-ing on Throop Avenue, looking north

3.5 ACCIDENT SUMMARY

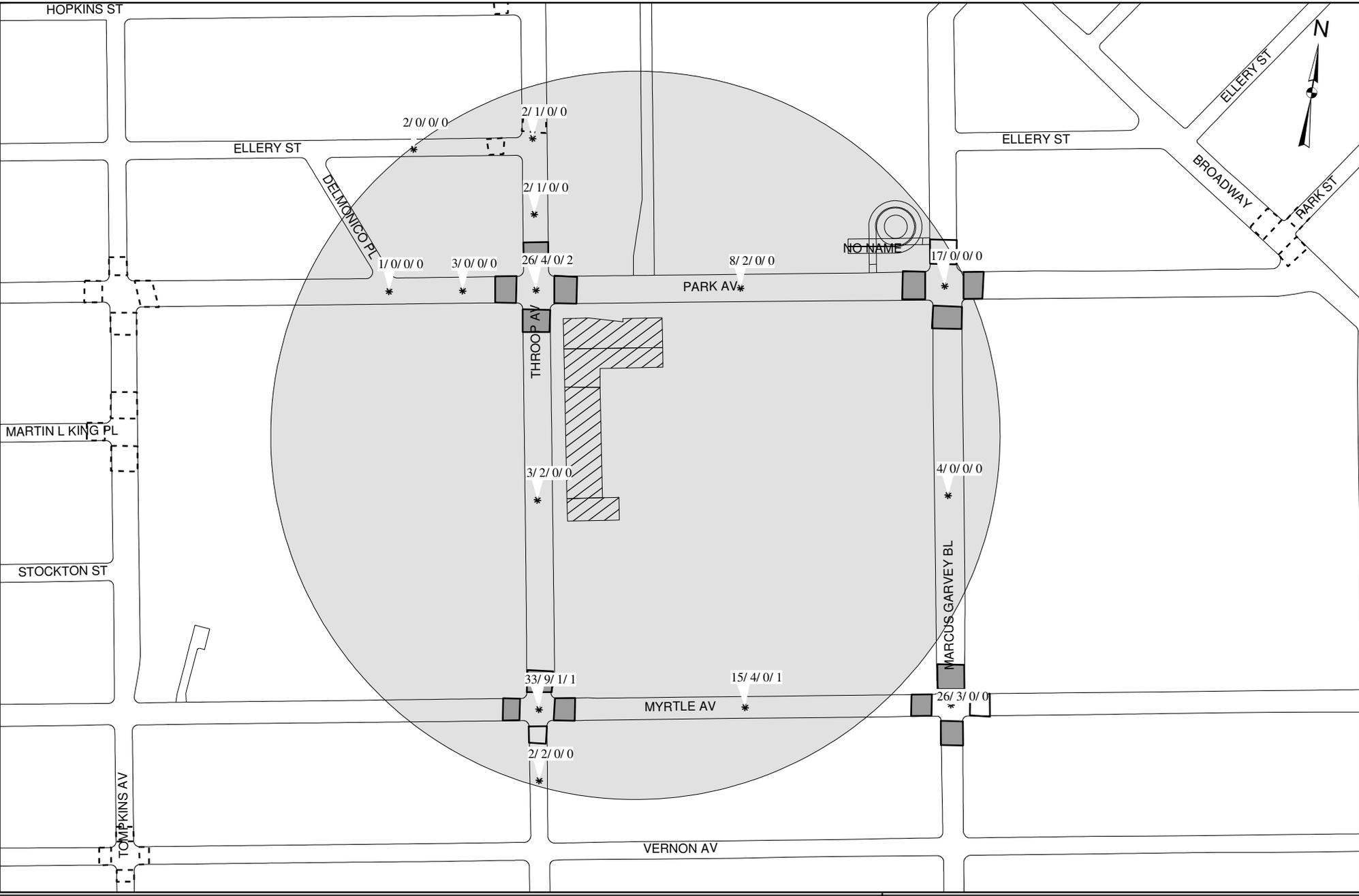
Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of P.S. 59 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of the accident. Table 3 is a summary of more recent accident data obtained from the NYC Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the DMV data.

This report targets intersections closest to the school where the highest concentration of student pedestrians occurs. Intersections farther from the school and locations for which detailed data was not available at the time of this study will be addressed with the ongoing work of DOT's School Safety Engineering Program. DMV Accident data is discussed in Section 3.6, Traffic Operations and Issues.

TABLE 2- DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED* ACCIDENTS
Park Avenue and Throop Avenue	26	4	0	2
Myrtle Avenue and Throop Avenue	33	9	1	1
Ellery Street and Throop Avenue	2	1	0	0
Myrtle Avenue and Marcus Garvey Boulevard	26	3	0	0
Park Avenue and Marcus Garvey Boulevard	17	0	0	0
Park Avenue and Delmonico Place	1	0	0	0
TOTAL	105	17	1	3

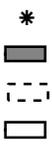
TABLE 3- NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED* ACCIDENTS
Park Avenue and Throop Avenue	41	6	0	0
Myrtle Avenue and Throop Avenue	65	7	0	2
Ellery Street and Throop Avenue	6	0	0	0
Myrtle Avenue and Marcus Garvey Boulevard	54	8	0	0
Park Avenue and Marcus Garvey Boulevard	31	8	0	2
Park Avenue and Delmonico Place	6	1	0	0
TOTAL	203	30	0	4

* - School-Related Accidents are defined as accidents involving school-age pedestrians (age 4 – 14), occurring weekdays during the school year



ACCIDENT LOCATION

- SCHOOL CROSSWALK ASSIGNED TO P.S. 59
- SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
- CROSSWALK



1 inch equals 250 feet

TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL_PED ACCIDENTS
X	X	X	X

EXHIBIT 6

**P.S. 59, BROOKLYN
WILLIAM FLOYD SCHOOL
ACCIDENT SUMMARY
THREE YEAR PERIOD
1998-2000**

3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines the traffic accidents and operations issues at the intersections in the vicinity of P.S. 59.

3.6.1 Park Avenue and Throop Avenue

Park Avenue is a 50-foot wide, two-way roadway with one travel lane in each direction and parking along both sides of the roadway. Throop Avenue is a 53-foot wide, one-way northbound roadway with two moving lanes, a bicycle lane separated by a buffer zone (Figure 1) and parking along both sides of the roadway. A bus stop for route B43 is located on Throop Avenue, north of the intersection. In addition, there is a parking lot for Woodhull Memorial Hospital at the northeast corner of this intersection (Figure 8). School crosswalks are striped at all four legs.

Twenty-six accidents occurred at this location during the three-year period, from 1998 to 2000. Four were pedestrian accidents, two of which involved school age children. A 12-year old child and an 8-year old child were crossing the intersection against the signal when struck. The third pedestrian was crossing the street with the signal when struck by a vehicle making a left turn. The last accident involved a pedestrian who emerged from behind a parked vehicle and was struck by a northbound vehicle.

In addition, a total of three accidents occurred in the mid-block of Throop Avenue between Park Avenue and Myrtle Avenue. Two pedestrians were involved- none were school related.



Figure 8: looking north on Throop Avenue, at the intersection of Throop Avenue and Park Avenue

This signalized intersection was identified as an area of concern by the school. The principal noted that vehicles turning onto Park Avenue from Throop Avenue do not yield to school pedestrians crossing Park Avenue.

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An LPI (Leading Pedestrian Interval) was considered to mitigate the pedestrian-vehicle conflict. To determine the level of this conflict, a one-hour traffic count was performed at this intersection between the hours of 7:30 am to 8:30 am on Friday, March 24, 2006. However, the moderate turning vehicle volumes from Throop Avenue to Park Avenue, which are 87 vehicles per hour turning left onto westbound Park Avenue and 64 vehicles per hour turning right onto eastbound Park Avenue, do not meet DOT requirements for installation of an LPI (Exhibit 7A).

3.6.2 Myrtle Avenue and Throop Avenue

Myrtle Avenue is a 45-foot wide, two-way roadway with one travel lane in each direction and parking along both sides of the roadway. Throop Avenue has two moving lanes north of the intersection but only one moving lane south of the intersection.



Figure 9: Throop Avenue at Myrtle Avenue, looking west on Myrtle Avenue

Thirty-three accidents occurred at this signalized intersection between 1998 and 2000. Nine accidents included pedestrians, with one fatality and one school related accident. The fatality involved a 31-year-old pedestrian, who was attempting to cross the intersection with the traffic signal when struck by a vehicle making a right turn. The school-related accident occurred when a 9-year-old student was crossing the street outside of the crosswalk when struck by a vehicle traveling west. In addition, one school related accident occurred on Myrtle Avenue in the mid-block between Throop Avenue and Marcus Garvey Boulevard. According to accident data, a nine-year old pedestrian was struck while emerging from behind a parked vehicle. This accident was attributed to pedestrian error.

For the other seven pedestrian accidents, one occurred when a driver backed up a vehicle and struck a pedestrian crossing the street with the signal. Two accidents occurred when a driver attempting to make a left or right turn failed to yield to the pedestrian. Four more accidents were due to pedestrian's error, crossing against the signal, or crossing outside

of the crosswalk, or playing on the roadway (18-year-old). The details for the last accident were not reported.

There is only one apex pedestrian ramp at the northeast corner of this intersection due to the position of a fire alarm and a traffic signal pole. This corner has a curb extension. (Figure 10). In addition, there are two bus stops at this location, one on Throop Avenue for route B43, north of the intersection; and the other one on Myrtle Avenue for route B54, east of the intersection.



Figure 10: northeast corner of Throop Avenue and Myrtle Avenue, looking north on Throop Avenue

3.6.3 Myrtle Avenue and Marcus Garvey Boulevard

Marcus Garvey Boulevard is a 56-foot wide, one-way southbound roadway with two moving lanes and parking permitted on both sides of the street. The intersection of Myrtle Avenue and Marcus Garvey Boulevard is controlled by a two-phase signal. School crosswalks are striped at north, south, and west legs.

Twenty-six accidents occurred at this intersection between 1998 and 2000. Three were pedestrian accidents, but none of them were school related. A pedestrian was crossing Myrtle Avenue against the signal when struck by a vehicle traveling westbound. The details for the other two pedestrian accidents were not reported.



Figure 11: looking south on Marcus Garvey Boulevard, at the intersection of Marcus Garvey Boulevard and Myrtle Avenue, curb extension at northwest corner

On Marcus Garvey Boulevard, there is a curb extension at the northwest corner, (Figure 11), and day-lighting at the northeast corner. Only one apex pedestrian ramp is located at the northeast corner due to the presence of a traffic signal pole.

There are two bus stops at this location, one on Marcus Garvey Boulevard for route B15, north of the intersection; and the other one on Myrtle Avenue for route B54, west of the intersection. Angle parking is provided along the east side of Marcus Garvey Boulevard between Park Avenue and Myrtle Avenue (Figure 12).



Figure 12: Angle parking along Marcus Garvey Boulevard, looking south

3.6.4 Park Avenue at Marcus Garvey Boulevard

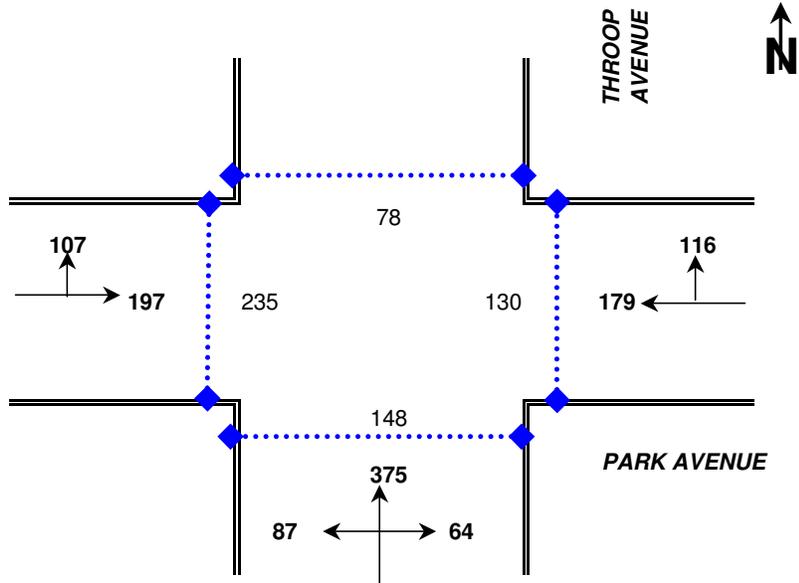
The intersection of Park Avenue and Marcus Garvey Boulevard is controlled by a two-phase signal. School crosswalks are striped at the west, east, and south legs. At the northwest corner, there is an entrance to the parking garage for the Woodhull Memorial Hospital. A bus shelter is located on the west side of Marcus Garvey Boulevard, south of the intersection. In addition, a day-lighting is provided on Marcus Garvey Boulevard, at the south east corner of this intersection.

Seventeen accidents occurred at this intersection between 1998 and 2000. None of them were pedestrian accidents or school-related accidents.

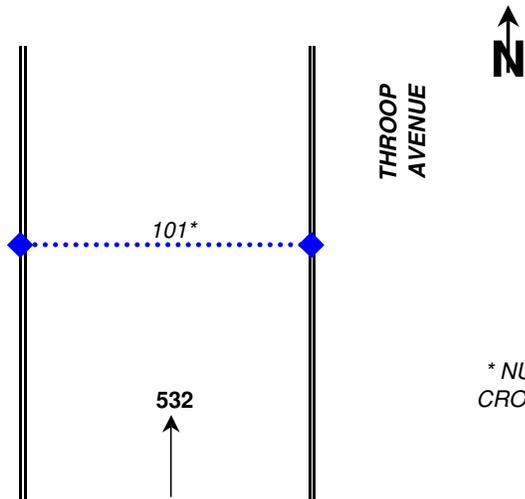


Figure 13: Looking north on Marcus Garvey Boulevard, at the intersection of Park Avenue and Marcus Garvey Boulevard

One Hour Traffic Count Volumes



Intersection of Throop Avenue and Park Avenue
(7:30 AM - 8:30 AM MARCH 24, 2005)



* NUMBER OF PEDESTRIANS CROSSING IN THE MID-BLOCK

Throop Avenue mid-block crossing
(7:30 PM - 8:30 AM MARCH 22, 2006)

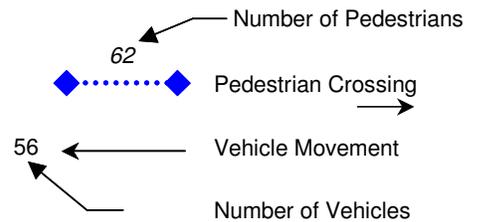
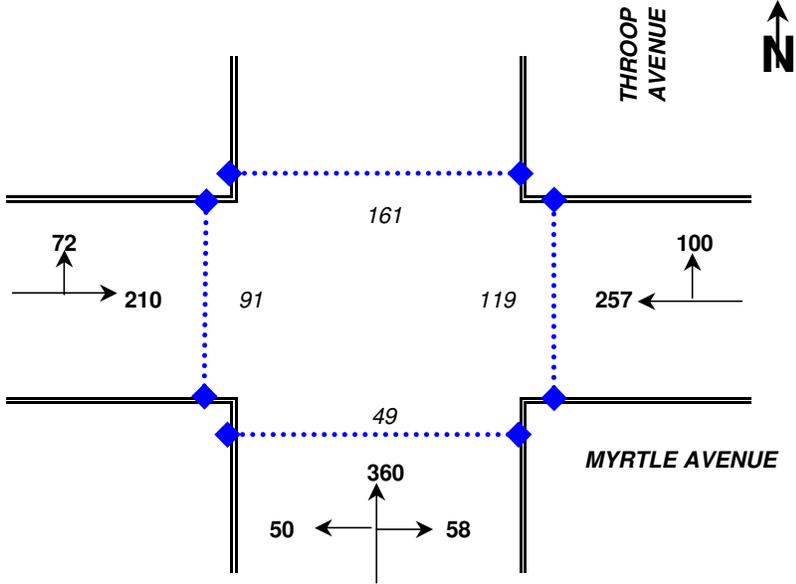


EXHIBIT 7A
P.S 59 , BROOKLYN WILLIAM FLOYD SCHOOL
TRAFFIC COUNTS

One Hour Traffic Count Volumes



Intersection of Throop Avenue and Myrtle Avenue
(7:30 AM - 8:30 AM MARCH 22, 2005)

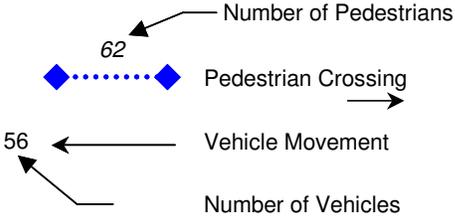


EXHIBIT 7B
P.S 59 , BROOKLYN WILLIAM FLOYD SCHOOL
TRAFFIC COUNTS

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 59 and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches (Table 4).

TABLE 4- PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)*	Timing Adjustment? (Yes/No)
Park Avenue and Throop Ave.				
Crossing Park Avenue	50	47	20	NO
Crossing Throop Avenue	53	36	21	NO
Myrtle Avenue and Throop Ave.				
Crossing Myrtle Avenue	45	53	18	NO
Crossing Throop Avenue	53	55	21	NO
Myrtle Avenue and Marcus Garvey Boulevard				
Crossing Myrtle Avenue	45	52	18	NO
Crossing Marcus Garvey Boulevard	56	54	22	NO
Park Avenue and Marcus Garvey Boulevard				
Crossing Park Avenue	50	58	20	NO
Crossing Marcus Garvey Boulevard	56	32	22	NO

Note:

* A rate of 3 feet per second plus 3 seconds reaction time was utilized as the child pedestrian walking rate

3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK)

The roadways in the vicinity of P.S. 59 were generally observed to be in good condition with the exception of the following:

- On Throop Avenue at Park Avenue, there are potholes and depressed asphalt on the west and east crosswalk (Figure 14)
- At the northeast corner of Myrtle Avenue and Marcus Garvey Boulevard, the roadway is cracked in the vicinity of the sidewalk
- On Park Avenue and Marcus Garvey Boulevard, there is depressed asphalt at the west crosswalk, and there are potholes and depressed asphalt at the east crosswalk



Figure 14: Pothole at the intersection of Throop Avenue and Park Avenue

4. POTENTIAL MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes potential countermeasures. These countermeasures are divided into short-term and long-term measures. Short-term measures are those that potentially can be performed in-house, long term measures are proposed capital improvements.

4.1 SHORT-TERM RECOMMENDATIONS

- *No Standing Zone on Throop Avenue*

“NO STANDING 7:00AM-4:00 PM, SCHOOL DAYS” on Throop Avenue from the main school entrance to the corner of Throop Avenue and Park Avenue should be considered. This will allow school buses and private vehicles to load and unload students at the curb, and also provide sufficient clear visibility of students arriving and leaving the school.

Parking regulation “NO PARKING 7:00AM-4:00 PM SCHOOL DAYS, EXCEPT BOARD OF EDUCATION” on Throop Avenue should be also extended further south to compensate for the lost teachers parking and preserve the existing teacher parking capacity.

- *Install/replace pedestrian ramps*

Consideration should be given for installation and/or replacement of pedestrian ramps per NYCDOT standards at the following locations:

- Myrtle Avenue and Throop Avenue at the northeast corner
- Myrtle Avenue and Marcus Garvey Boulevard at northeast corner

- *Place advance stop bar ten feet before school crosswalk on Throop Avenue at the intersection with Park Avenue*

It is recommended that an advance stop bar be placed ten feet in advance of the crosswalks on Throop Avenue and Park Avenue to maximize the safety benefit for school-aged pedestrians. This would improve visibility of pedestrians to motorists, and allow pedestrians to proceed in a crosswalk before motor vehicles turn.

- *Administer student pedestrian safety education program*

It is recommended that the NYCDOT, Safety Education Program work with the school to educate the students not to cross mid-block locations.

4.2 LONG-TERM OPTIONS

- Consider curb extensions at the following intersections
 - Throop Avenue and Park Avenue
 - Throop Avenue and Myrtle Avenue

Curb extensions should be installed at the corners as shown in Exhibit 8.

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at school crosswalks.

These curb extensions will not eliminate or reduce the width of any moving lanes. Curb extensions are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to curb extensions will be developed during the Final Design/Contract Document preparation.

Curb extensions should be designed in accordance with design guidelines for bike lanes.

- Install raised concrete medians on Park Avenue

As reported in Section 2.3 school officials noted that pedestrians have difficulties crossing Park Avenue at the intersection with Throop Avenue. To mitigate this condition a raised median is proposed at the east and west leg of the intersection (See Exhibit 8).

The proposed 6-foot wide raised medians will extend through the crosswalk to provide refuge for pedestrians (See Exhibit 8). The median should have an ADA compliant at-grade cut-through.

- Consider narrowing of Throop Avenue between Myrtle Avenue and Park Avenue

As noted in Section 3.6.4 many pedestrians cross Throop Avenue mid-block between Myrtle Avenue and Park Avenue. During the morning arrival and the afternoon dismissal time most mid-block crossing pedestrians are school students and parents with students coming from the large Housing Development located across Throop Avenue. In addition, school officials noted that vehicles traveling on Throop Avenue travel at excessive speeds.

To verify the vehicle speeds on Throop Avenue a spot speed study was conducted on Monday, August 22, 2005 between 1:30 pm and 2:30 pm. The results confirmed that the 85th percentile speed exceeds the statutory speed limit of 30 mph. See Table 5 for a summary of the results and the Appendix for further detail.

TABLE 5- SPOT SPEED STUDIES		
(Monday, August 22, 2005 1:30 pm – 2:30 pm)		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
Throop Avenue between Park Avenue and Myrtle Avenue	29	34

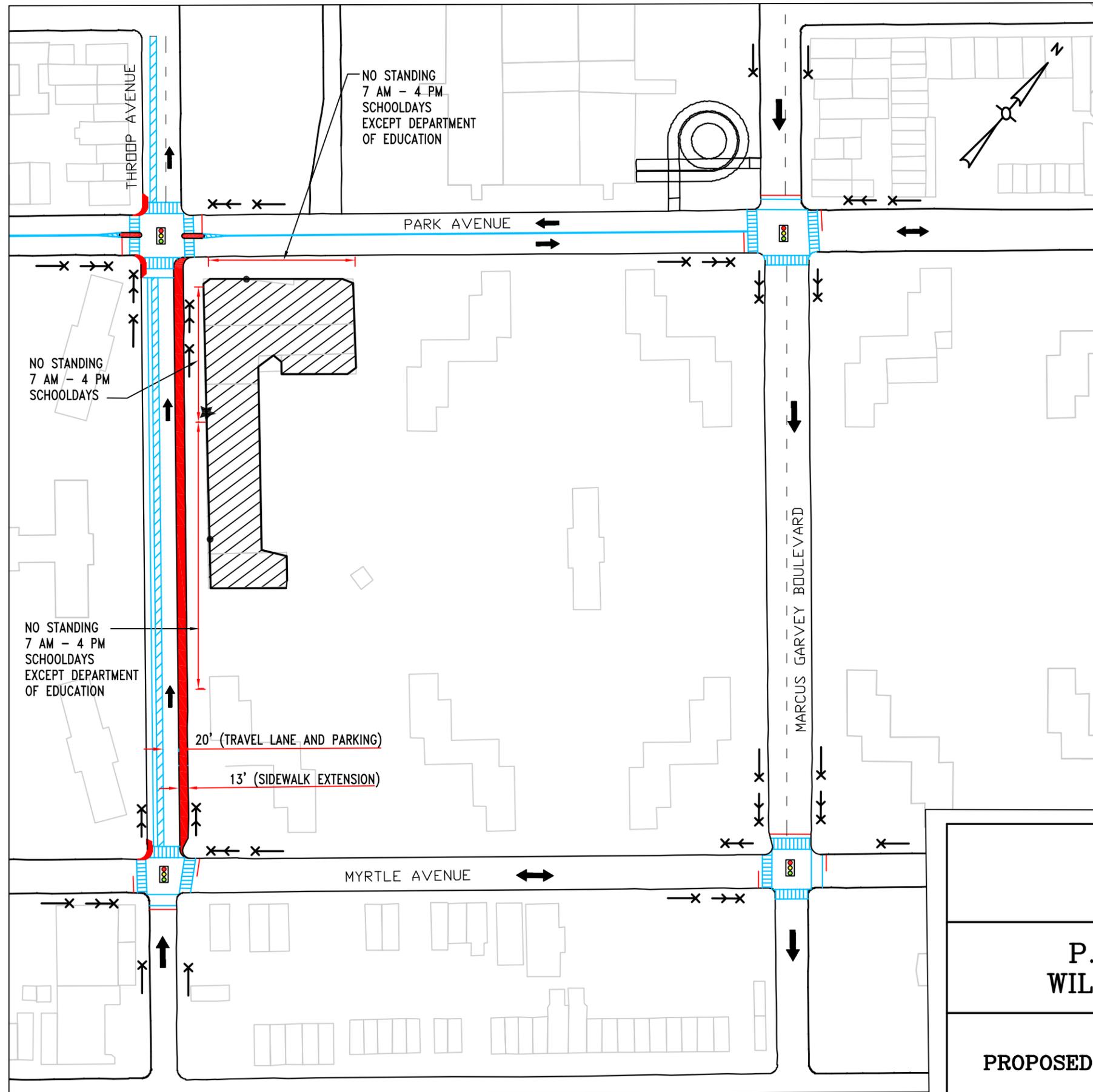
In addition, to determine the number of pedestrians crossing in the mid-block, a traffic count was conducted on Throop Avenue on Thursday March 22, 2006 between 7:30 am and 8:30 am. The total number of pedestrians crossing in the mid-block was 101 pedestrians during the one-hour count (Exhibit 7a).

Installation of a speed reducer (hump) on Throop Avenue was considered to reduce the vehicle speeds. However, Throop Avenue is 53-foot wide and also a bus route, which is not in compliance with the NYCDOT criteria for speed reducer (hump) installation.

As an alternative, it is recommended that the east sidewalk of Throop Street be widened by 13 feet, which would make Throop Avenue a 40-foot wide street (from existing 53 feet). Highway Capacity Analysis was performed for the intersection of Throop Avenue and Park Avenue for existing and proposed conditions to determine the impact of the lane reduction (from two lanes to one in the northbound approach). It was found that this intersection currently operates at a Level of Service C, and will continue to operate at this Level of Service with the proposed reduction to one travel lane on Throop Avenue (see Appendix for detailed HCS Analysis).

Under this alternative Throop Avenue between Myrtle Avenue and Park Avenue would have one 12-foot travel lane, two 8-foot parking lanes (one along each curb), a 5-foot bike lane and a 8-foot striped buffer separating the travel lane from the bike lane.

This will encourage reduced operating speeds on Throop Avenue and shortens the crossing distance at the intersections.



LEGEND

- ★ MAIN ENTRANCE
- OTHER ENTRANCES
- X (OR SCHEDULED TO BE INSTALLED BY DOT) ADVANCE WARNING SIGN WITH ARROW
- X EXISTING ADVANCE WARNING SIGN
- ↔ EXISTING TRAVEL DIRECTION
- 🚦 SIGNALIZED INTERSECTION
- ▬ EXISTING SCHOOL CROSSWALK
- ▬ EXISTING STANDARD (NON-SCHOOL) CROSSWALK
- ▬ EXISTING BIKE LANE AND CHANNELIZATION
- PROPOSED STOP LINE
- ⤴ PROPOSED CURB EXTENSION (NECKDOWN)
- ▬ PROPOSED PEDESTRAIN REFUGE ISLAND
- ↔ PROPOSED PARKING REGULATIONS

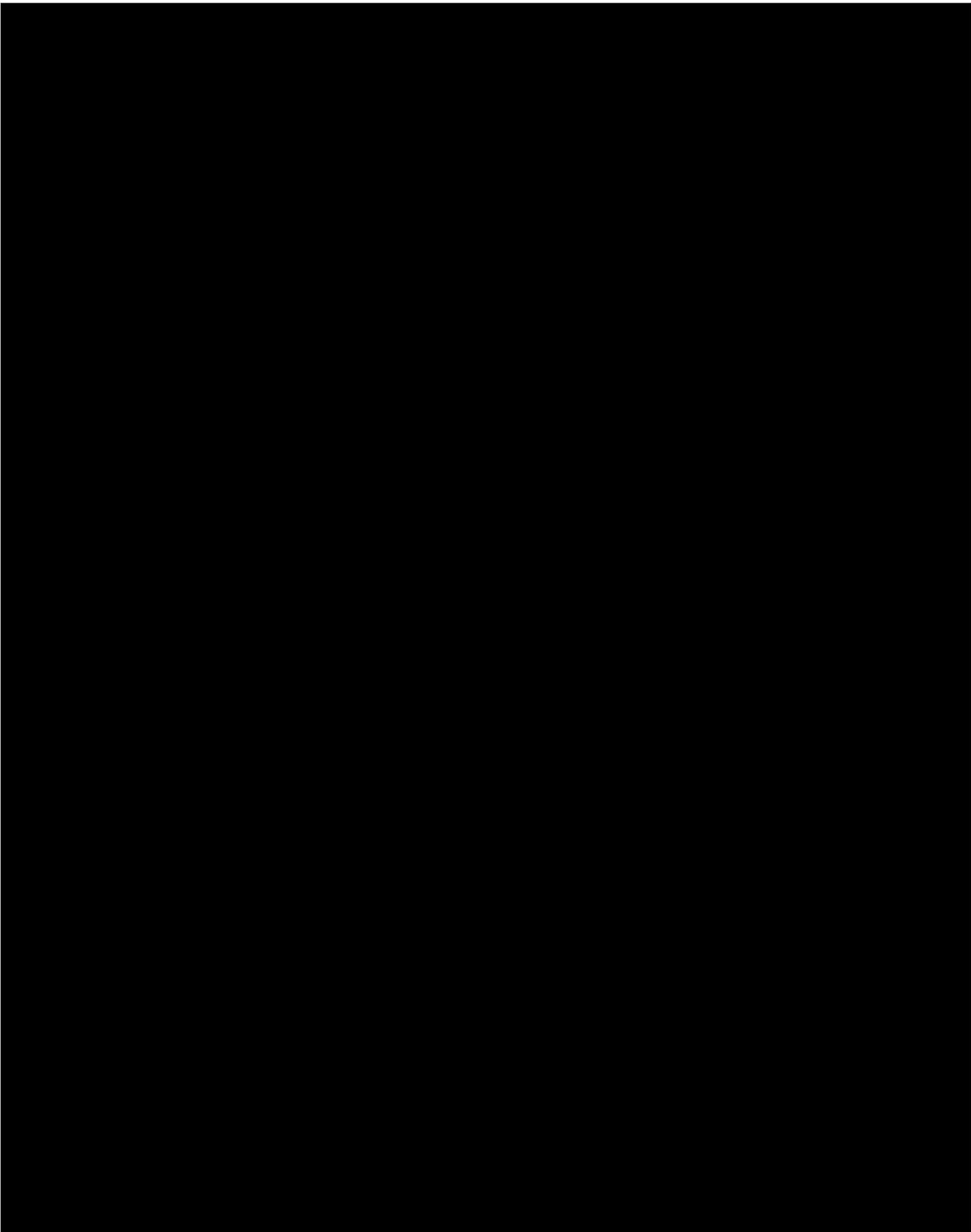
SCALE: 1" : 150'

EXHIBIT 8

**P.S. 59, BROOKLYN
WILLIAM FLOYD SCHOOL**

PROPOSED MEASURES TO IMPROVE SAFETY

APPENDIX



SPOT SPEED STUDY

Date: **August 22, 2005** Time: **1:30 am - 2:30 am**
 Location: **Throop Avenue between Park Avenue and Myrtle Avenue**
 Surveyor:

School: **P.S. 59**
 Direction:
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS ²
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	3	3.8%	3.8%	60	1200
21	3	3.8%	7.5%	63	1323
22	0	0.0%	7.5%	0	0
23	8	10.0%	17.5%	184	4232
24	2	2.5%	20.0%	48	1152
25	4	5.0%	25.0%	100	2500
26	3	3.8%	28.8%	78	2028
27	14	17.5%	46.3%	378	10206
28	4	5.0%	51.3%	112	3136
29	6	7.5%	58.8%	174	5046
30	12	15.0%	73.8%	360	10800
31	8	10.0%	83.8%	248	7688
32	4	5.0%	88.8%	128	4096
33	2	2.5%	91.3%	66	2178
34	0	0.0%	91.3%	0	0
35	0	0.0%	91.3%	0	0
36	4	5.0%	96.3%	144	5184
37	0	0.0%	96.3%	0	0
38	0	0.0%	96.3%	0	0
39	0	0.0%	96.3%	0	0
40	0	0.0%	96.3%	0	0
41	0	0.0%	96.3%	0	0
42	0	0.0%	96.3%	0	0
43	0	0.0%	96.3%	0	0
44	1	1.3%	97.5%	44	1936
45	0	0.0%	97.5%	0	0
46	0	0.0%	97.5%	0	0
47	2	2.5%	100.0%	94	4418
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	80	100.0%		2281	67123

Mean Speed = 28.5 mph Median Speed = 28.5 mph
 Standard Deviation = 5.1 mph 15th Percentile Speed = 23.2 mph
 Margin of Error (95% Confidence) = ± 1.1 mph 85th Percentile Speed = 33.8 mph

SPOT SPEED STUDY

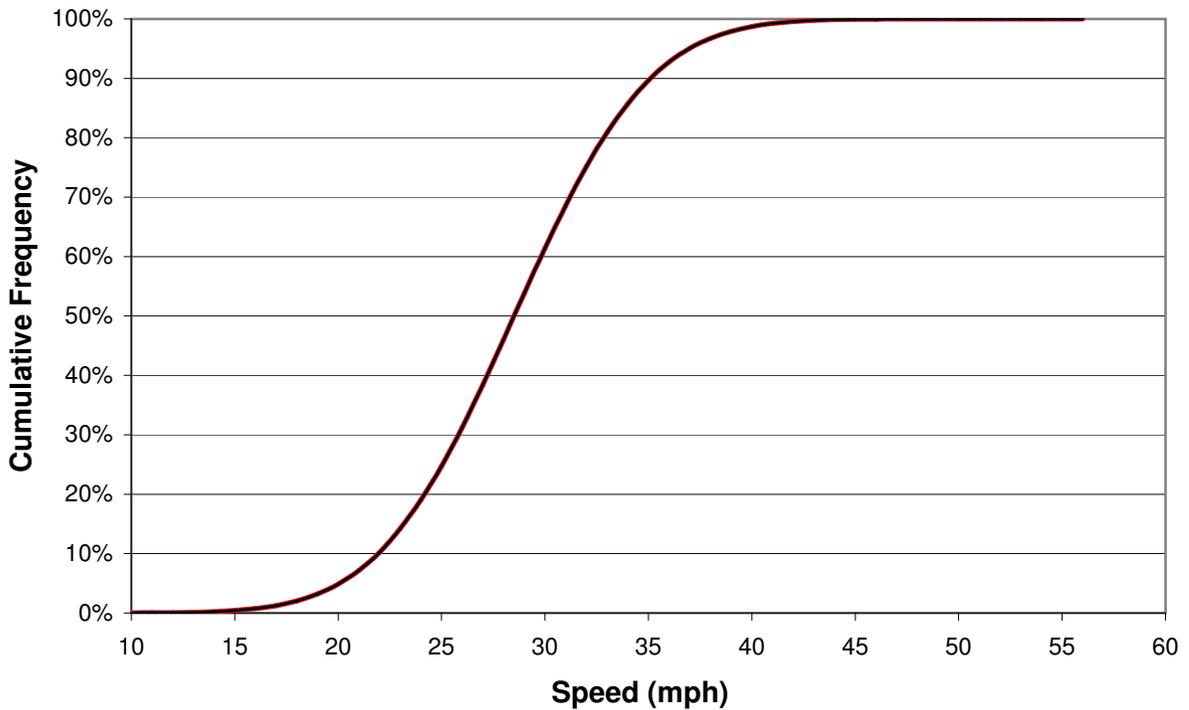
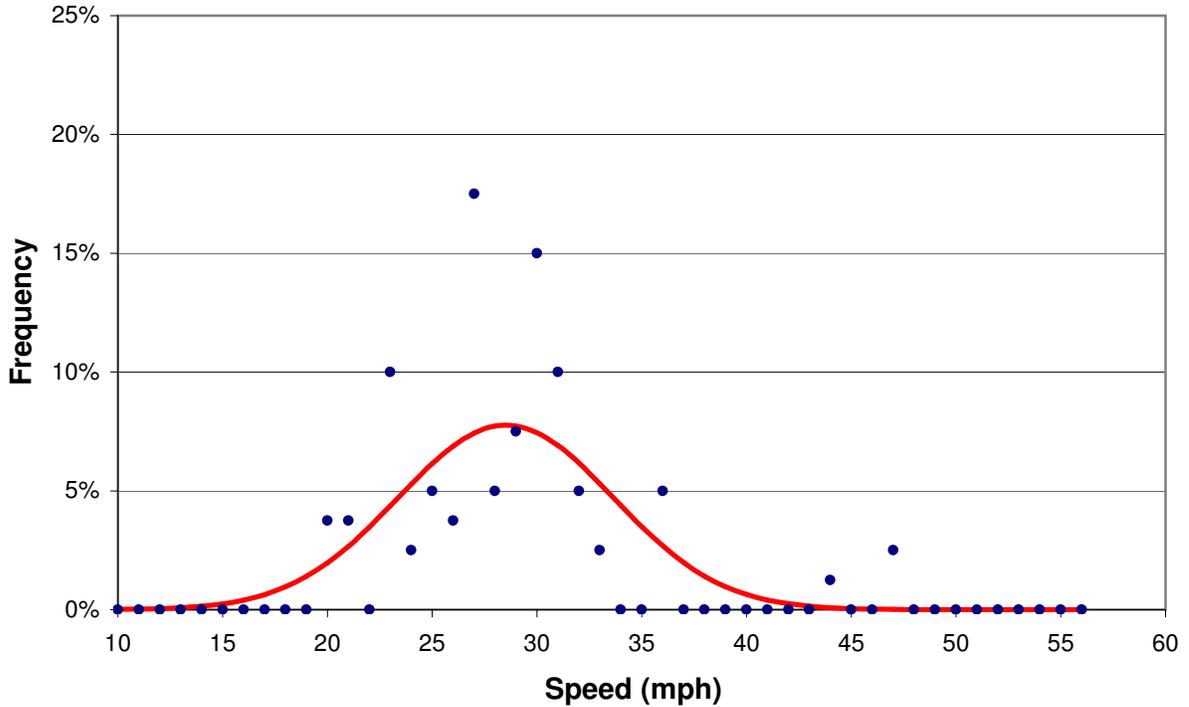
Date: **August 22, 2005**
 Location: **Throop Avenue between Park Avenue and Myrtle Avenue**
 Surveyor:

Time: **1:30 am - 2:30 am**

School: **P.S. 59**
 Direction:
 Comments:

Mean Speed = 28.5 mph
 Standard Deviation = 5.1 mph
 Margin of Error (95% Confidence) = ± 1.1 mph

Median Speed = 28.5 mph
 15th Percentile Speed = 23.2 mph
 85th Percentile Speed = 33.8 mph



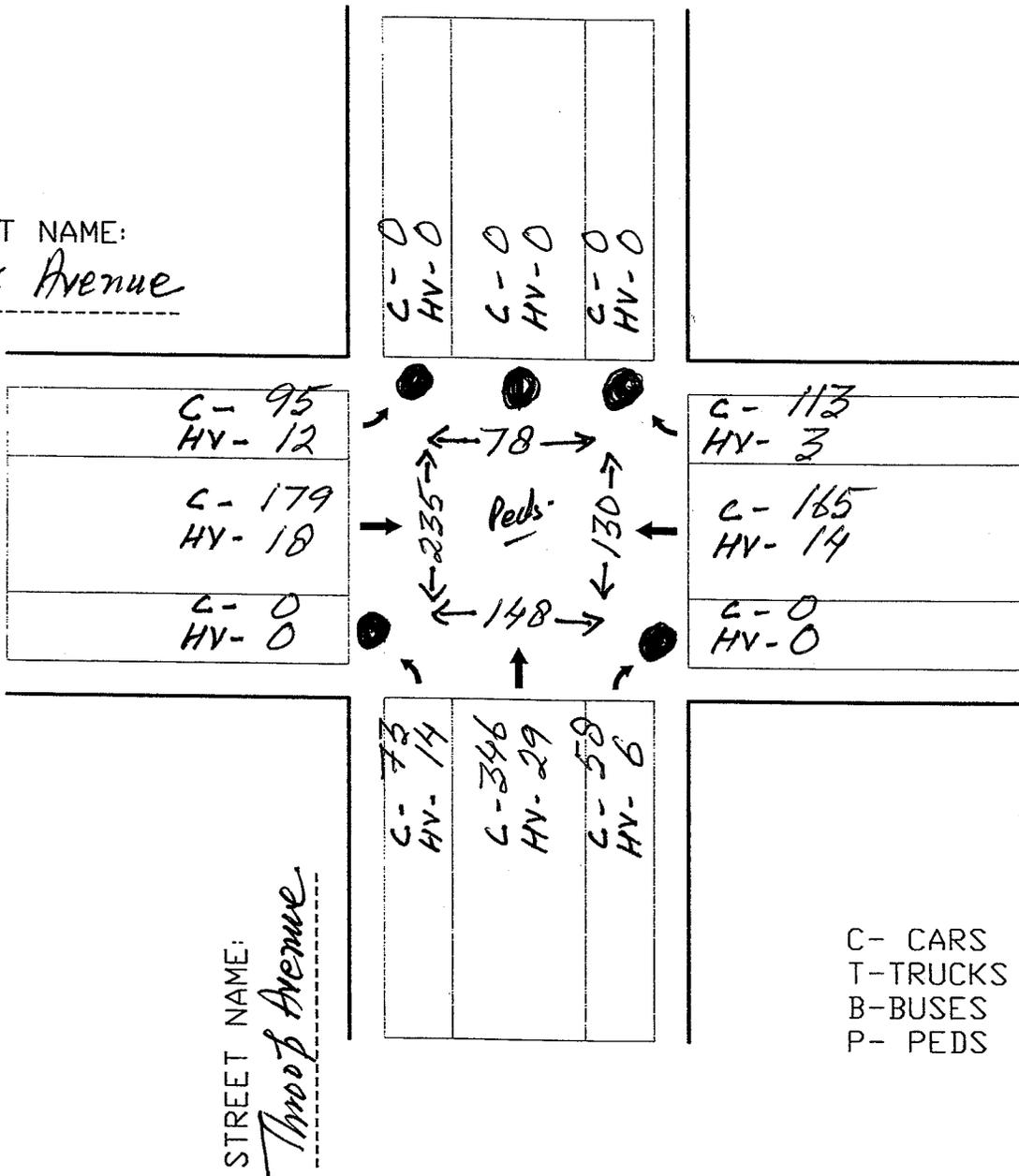
INTERSECTION: Parks & Throop Avenue

TIME : 730-830

DATE : 3/24/06

Traffic Total

STREET NAME:
Park Avenue

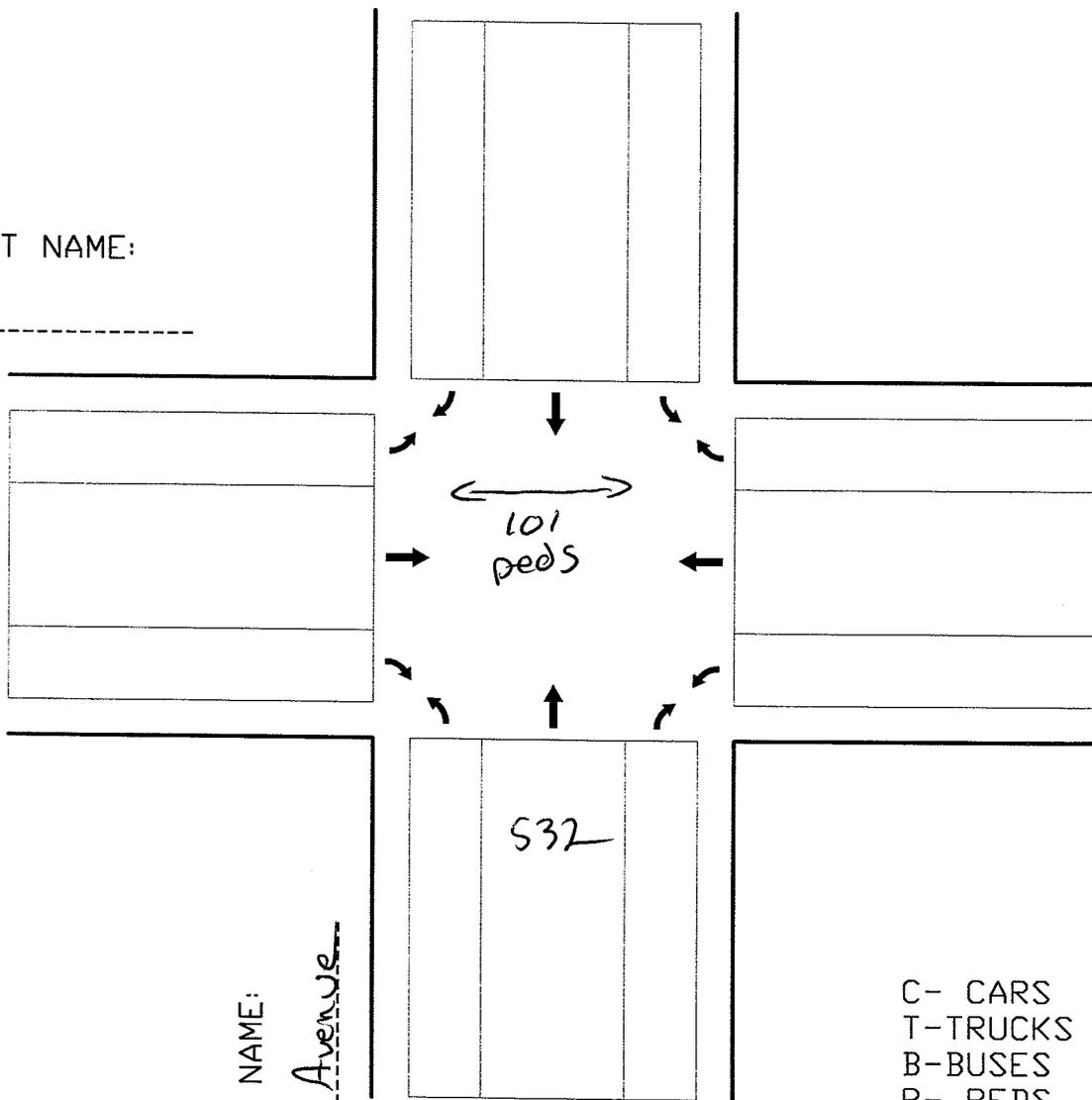


INTERSECTION: Throop Avenue (Mid-block)

TIME : 7:30-8:30

DATE : March 22, 2006

STREET NAME:



STREET NAME:

Throop Avenue

532

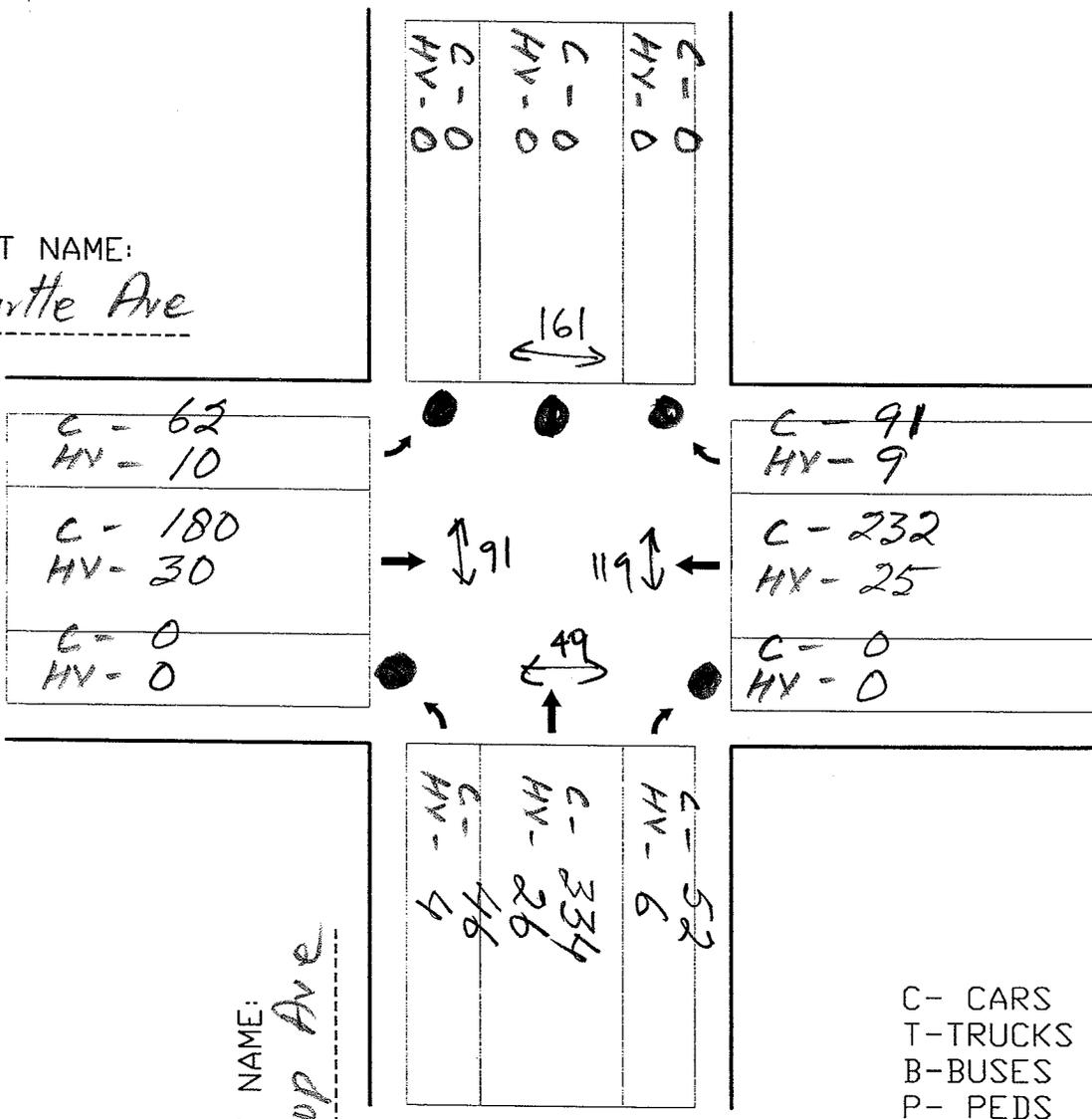
101 peds

- C- CARS
- T- TRUCKS
- B- BUSES
- P- PEDS

INTERSECTION: Myrtle & Throop Avenue
 TIME : 730 - 830
 DATE : 3/23/06

Total

STREET NAME:
Myrtle Ave



STREET NAME:
Throop Ave

C- CARS
 T- TRUCKS
 B- BUSES
 P- PEDS

Analyst: THE RBA GROUP Inter.:
 Agency: NYC-DOT Area Type: All other areas
 Date: 3/27/2006 Jurisd:
 Period: AM Year : EXISTING- 2 LANES ON THROOP
 Project ID: SCHOOL SAFETY ENGINEERING PROJECT
 E/W St: PARK AVENUE N/S St: THROOP AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	0	0
LGConfig	LT			TR			LTR					
Volume	107	197		179	116		87	375	64			
Lane Width	16.0			16.0			12.0					
RTOR Vol				0			0					

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		P			NB Left	P		
Thru		P			Thru	P		
Right					Right	P		
Peds		X			Peds	X		
WB Left					SB Left			
Thru		P			Thru			
Right		P			Right			
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				35.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LT 764 1527 0.44 0.50 16.3 B 16.3 B

Westbound

TR 1020 2039 0.32 0.50 14.2 B 14.2 B

Northbound

LTR 1370 3523 0.43 0.39 21.1 C 21.1 C

Southbound

Intersection Delay = 18.0 (sec/veh) Intersection LOS = B

Analyst: THE RBA GROUP Inter.:
 Agency: NYC-DOT Area Type: All other areas
 Date: 3/27/2006 Jurisd:
 Period: AM Year : EXISTING- 1 LANE ON THROOP
 Project ID: SCHOOL SAFETY ENGINEERING PROJECT
 E/W St: PARK AVENUE N/S St: THROOP AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	0	0
LGConfig	LT			TR			LTR					
Volume	107	197		179	116		87	375	64			
Lane Width	16.0			16.0			12.0					
RTOR Vol				0			0					

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		P			NB Left	P		
Thru		P			Thru	P		
Right					Right	P		
Peds		X			Peds	X		
WB Left					SB Left			
Thru		P			Thru			
Right		P			Right			
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				35.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LT 764 1527 0.44 0.50 16.3 B 16.3 B

Westbound

TR 1020 2039 0.32 0.50 14.2 B 14.2 B

Northbound

LTR 721 1854 0.81 0.39 34.2 C 34.2 C

Southbound

Intersection Delay = 24.1 (sec/veh) Intersection LOS = C