

**New York City Department of Transportation
Office of School Safety Engineering**



School Safety Engineering Project

FINAL REPORT: St. Charles School, Staten Island



**Prepared by
The RBA Group/Urbitran Associates**



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**School Safety Engineering Project
Final Report: Saint Charles School, Staten Island**

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 PROJECT DESCRIPTION	1
2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS	2
	
2.2 NEIGHBORHOOD DESCRIPTION	2
2.3 MEETING WITH SCHOOL REPRESENTATIVES	2
	
2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL.....	4
2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS	5
2.8 CROSSING GUARD LOCATIONS.....	5
3. TRAFFIC OPERATIONS	10
3.1 SCHOOL BUS OPERATIONS	10
3.2 PARENT DROP-OFF OPERATIONS	10
3.3 PARKING REGULATIONS	10
3.4 EXISTING SCHOOL SIGNS AND MARKINGS	11
3.5 ACCIDENT SUMMARY	11
3.6 TRAFFIC OPERATIONS AND ISSUES.....	12
3.6.1 Hylan Boulevard and Penn Avenue	12
3.6.2 Penn Avenue and Clawson Street	13
3.6.3 Hylan Boulevard and Peter Avenue.....	16
3.6.4 Peter Avenue and Clawson Street.....	17
3.6.5 Hylan Boulevard and Tysens Lane	17
3.6.6 Tysens Lane and Clawson Street	19
3.7 SIGNAL TIMING	19
3.8 PHYSICAL CONDITIONS.....	20
3.8.1 Roadways and Sidewalks	20
3.8.2 Pedestrian Ramps	20

4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY. 23

4.1 SHORT-TERM MEASURES 23
4.2 LONG-TERM MEASURES..... 24

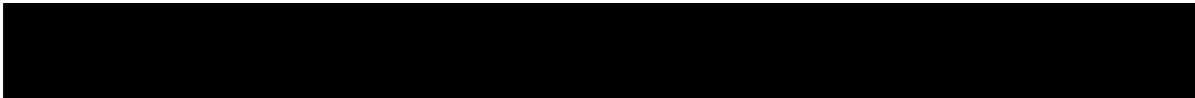
EXHIBITS

EXHIBIT 1 - AERIAL PHOTOGRAPH 7
EXHIBIT 2 - SCHOOL TRAFFIC SAFETY MAP..... 8
EXHIBIT 3 - CROSSING GUARD LOCATIONS 9
EXHIBIT 4 - EXISTING PARKING REGULATIONS 21
EXHIBIT 5 - ACCIDENT SUMMARY (1998-2000)..... 22
EXHIBIT 6 - PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY 26

TABLES

TABLE 1: MODE OF TRAVEL 4
TABLE 2: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000) 12
TABLE 3: ACCIDENT SUMMARY OF NYCPD (2001-2004) 12
TABLE 4: VEHICLE VOLUMES (7:30-8:30 AM) 14
TABLE 5: PEDESTRIAN VOLUMES (7:30-8:30 AM) 14
TABLE 6: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS 20

APPENDIX



1. INTRODUCTION

1.1 PROJECT DESCRIPTION

The Department of Transportation (DOT) 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, crash 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). Saint Charles School in Staten Island is one of the 135 “priority” schools identified by the New York City Department of Transportation, Office of School Safety Engineering.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS

2.2 NEIGHBORHOOD DESCRIPTION

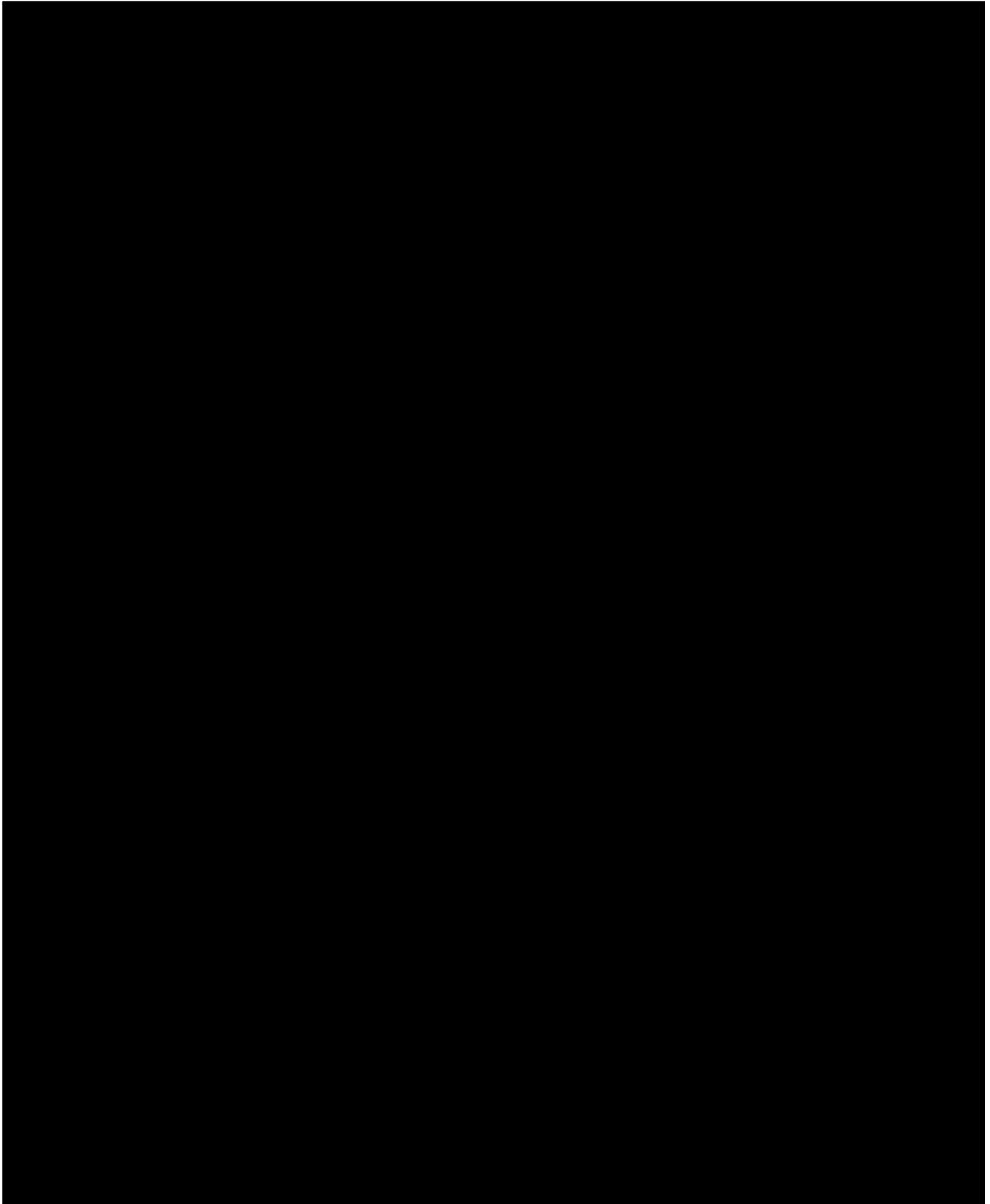
Exhibit 1, at the end of this section, shows an aerial view of the neighborhood surrounding Saint Charles School, which is generally residential in character. The school is bounded by Penn Avenue to the north, Hylan Boulevard to the east, Peter Avenue to the south, and Clawson Street to the west. Hylan Boulevard is a major, north-south, arterial in the borough of Staten Island. Tysens Lane, a major east-west connector street, is located one block to the north of Hylan Boulevard. The intersection of Tysens Lane and Hylan Boulevard is consequently a busy intersection.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant staff, the Principal and the home-school associate president from Saint Charles School met at the school on the afternoon of Wednesday, March 22, 2006. According to representatives of the school, the problems facing Saint Charles students are as follows:

- The school officials reported double-parking on Peter Avenue and Penn Avenue that generally occurs at both arrival and dismissal times. Parents double-parking on Peter Street while dropping-off and/or picking-up students disrupts school bus operations.
- Parents drop-off students on the street which creates an unsafe environment for students walking between cars to get to school.
- There is a parking lot on Penn Avenue across from school. The parking lot entrance is just west of Hylan Boulevard. The school officials reported cars making illegal right-turn from Hylan Boulevard onto Penn Avenue to get to the parking lot. (It should be noted that Penn Avenue is a one-way eastbound street.)
- The schools officials reported that there is not enough green time for Clawson Street traffic at its intersection with Tysens Lane which creates congestion and results in long queue on Clawson Street in the morning rush hours. The queue on Clawson Street sometimes extends all the way to Guyon Avenue which is four-block south of Tysens Lane.
- The school officials reported that there should be an exclusive left-turn phase for the westbound vehicles on Tysens Lane turning left onto Hylan Boulevard southbound. (The westbound left-turn is very difficult because of heavy opposing flow during the morning and evening rush hours.)

(See Appendix for the school's survey response).





2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL

The school’s catchment area is typically defined by the Department of Education and normally shown in an Exhibit at the end of this section. Since Saint Charles School is a private parochial school, the actual “catchment area” is dependent upon other factors, determined by the school administrators.

Table 1 presents the mode of travel for Saint Charles School as estimated by school representatives.

TABLE 1: MODE OF TRAVEL	STUDENTS (Percentage)
Walk	6%
Driven by car	64%
School bus	30%
Bus/Subway	0%
Bicycle	0%
TOTAL	100%



Figure 3: School busses on Peter Avenue at dismissal time

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There were no student pedestrian traffic generators observed in the immediate area of Saint Charles School. However, there are several pedestrian traffic generators north of the school along Hylan Boulevard, which is a commercial corridor containing strip malls, fast-food stores, and restaurants.

2.8 CROSSING GUARD LOCATIONS

According to school officials, there are four (4) school crossing guards assigned to the school (See Figure 4):

- Clawson Street and Penn Avenue
- Clawson Street and Peter Avenue
- Clawson Street and Tysens Lane
- Hylan Boulevard and Tysens Lane

The crossing guard locations are shown in Exhibit 3 at the end of this section.



Figure 4: School crossing guard at the intersection of Peter Avenue and Clawson Street



0 250 500 1,000 Feet

EXHIBIT 1
ST. CHARLES SCHOOL
STATEN ISLAND
AERIAL PHOTOGRAPH

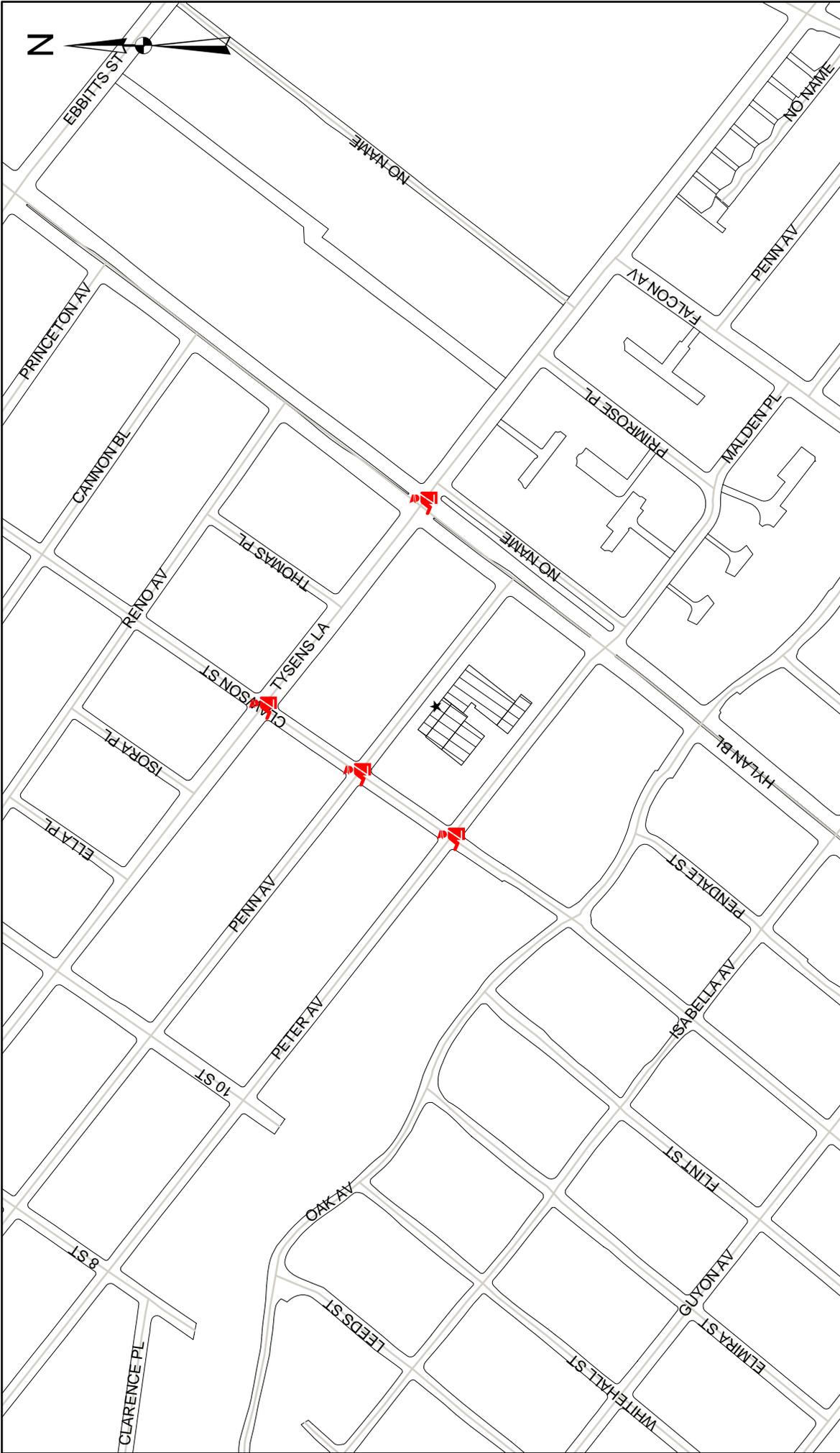


EXHIBIT 3
ST. CHARLES SCHOOL
STATEN ISLAND

LEGEND:
 CROSSING GUARD LOCATION

0 250 500 1,000
 Feet

CROSSING GUARDS LOCATION

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to school representatives, there are only three (3) students who ride a city (MTA) bus to school, and approximately 221 students who ride a yellow school bus to school. Bus transportation for the students consists of seven (7) yellow school buses. The yellow buses stop on Peter Avenue in front of the school's back entrance (see Figure 3). According to the school officials, buses usually arrive around 7:40 am and usually two buses come together. According to school representatives, double parking on Peter Avenue during the arrival and dismissal time disrupts bus operations.

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives, about 64 percent (64%) of the students are dropped-off by cars. Parents drop-off and pick-up students at two main locations: the main entrance on Penn Avenue and the back entrance on Peter Avenue. In the morning, parents also drop-off students at schoolyard located east of the school building when weather is good. Parents use Penn Avenue to access the yard and leave via Peter Avenue (see Figure 5). In the afternoon, at the dismissal time, Penn Avenue is closed for traffic between 2:00 and 2:20 pm. During the dismissal time, when Penn Avenue is closed for traffic, parents park on the surrounding streets or arrive earlier (before 2:00 pm) and park on Penn Avenue and in the school parking lot (see Figure 6).



Figure 5: Schoolyard connecting between Penn Avenue and Peter Avenue



Figure 6: Parish parking lot used by parents, on Penn Avenue in front of the school's main entrance

3.3 PARKING REGULATIONS

Parking regulations around the school are shown in Exhibit 4 at the end of this section.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 2, at the end of Section 2, shows the existing school signs, signals, and pavement markings around Saint Charles School. It should be noted that a citywide signage program is currently underway to upgrade school signage to current Federal Manual on Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 6.

3.5 ACCIDENT SUMMARY

The number and severity of accidents at a location are typical indicators used to help determine the existence and severity of any potentially safety-related situations. Such situations are then examined for possible solutions and/or remedies.

Exhibit 5, at the end of this section, and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (NYS DMV) in the vicinity of Saint Charles School for a three-year period from January 1, 1998 through December 1, 2000. The NYS DMV data provides some detail relating to the cause of an accident. Table 3 is a summary of more recent accident data obtained from the New York City Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the NYS DMV data.

Further discussions on accidents are included in Section 3.6, Traffic Operations and Issues.

TABLE 2: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Penn Ave. and Hylan Blvd.	3	0	0	0
Penn Ave. and Clawson St.	1	0	0	0
Peter Ave. and Hylan Blvd.	11	2	1	0
Peter Ave. and Clawson St.	0	0	0	0
Tysens Ln. and Hylan Blvd.	70	6	1	1
Tysens Ln. and Clawson St.	10	0	0	0
TOTAL	95	8	2	1

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

TABLE 3: ACCIDENT SUMMARY OF NYCPD (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Penn Ave. and Hylan Blvd.	7	0	0	0
Penn Ave. and Clawson St.	2	0	0	0
Peter Ave. and Hylan Blvd.	12	0	0	0
Peter Ave. and Clawson St.	2	0	0	0
Tysens Ln. and Hylan Blvd.	108	5	0	0
Tysens Ln. and Clawson St.	11	1	0	0
TOTAL	142	6	0	0

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

3.6 TRAFFIC OPERATIONS AND ISSUES

The specific roadway-related physical conditions for each location within the school’s vicinity directly affect the safety and efficiency of operations for both pedestrians and vehicular traffic. These specific conditions are required information when analyzing a location, and are the starting point for any revisions that may be considered to improve safety and/or efficiency.

The following sub-sections outline the physical conditions and issues concerning traffic operations and accidents at the intersections in the vicinity of Saint Charles School.

3.6.1 Hylan Boulevard and Penn Avenue

This is an unsignalized T-intersection with a school crosswalk located across the west leg of Penn Avenue (see Figure 7). The eastbound approach of Penn Avenue is stop-controlled. Hylan Boulevard is a two-way street with two travel lanes and a parking lane on each side of the roadway. A four-foot wide raised concrete median divides the north and southbound roadways. Monday through Friday, on-street parking is prohibited from

7:00 am to 10:00 am in the northbound direction and 4:00 pm to 7:00 pm in the southbound direction to allow for a third travel lane during the morning and evening peak periods, respectively. Penn Avenue is a one-way eastbound street, toward Hylan Boulevard. It has one travel lane with parking on both sides of the roadway.

The NYS DMV accident data (Table 1) shows that there were three (3) accidents at this intersection between 1998 and 2000; none of which were pedestrian accidents. There were no school-related accidents during the same three-year period. The NYPD accident data (Table 2) shows that there were seven (7) accidents at this intersection between 2001 and 2004; none were pedestrian accidents.



Figure 7: Looking north along west side of Hylan Boulevard across its intersection with Penn Avenue (school is off to the left)

3.6.2 Penn Avenue and Clawson Street

This is an unsignalized, four-leg intersection with school crosswalks located across the east, west, and south legs (see Figure 8). A stop sign is located on the eastbound approach of Penn Avenue. Penn Avenue is a one-way eastbound street, toward Clawson Street. It has one travel lane with parking on both sides of the roadway. Penn Avenue is closed for traffic between 12:00 noon and 1:00 pm during the lunch time and also between 2:00 and 2:20 pm during the dismissal time.

Clawson Street is a two-way street with one travel lane and a parking lane on each side of the roadway. There is an existing speed reducer (hump) located across Clawson Street, south of this intersection, between Penn Avenue and Peter Avenue (see Figure 9).

The NYS DMV accident data (Table 1) shows that there was one accident at this intersection between 1998 and 2000. It was not a pedestrian accident. The NYPD

accident data (Table 2) shows that there were two (2) accidents at this intersection between 2001 and 2004; neither were pedestrian accidents.

There is an uncontrolled school crosswalk located across the south leg of Clawson Street at the Penn Avenue intersection. In order to determine the appropriate traffic control for the uncontrolled school crosswalk, a preliminary traffic signal warrant assessment was performed to assess the traffic situation and to determine what type of traffic control devices would be appropriate. A vehicular traffic count and a pedestrian count were conducted at the intersection from 7:30 to 9:00 am on Wednesday, September 21, 2005. The results of the peak hour (7:30 to 8:30 am) counts are shown in Tables 4 and 5, and in Exhibit 5 at the end of this section.

The vehicular volume count determined there were 419 vehicles on Clawson Street (352 northbound and 67 southbound) and 114 vehicles eastbound on Penn Avenue. The pedestrian volume count determined there were 12 pedestrians (8 adults and 4 students) utilizing the north leg of Clawson Street that does not have any pedestrian crosswalk, and 53 pedestrians (23 adults and 30 students) utilizing the school crosswalk located across the south leg of Clawson Street. This is a total of 65 pedestrians crossing Clawson Street at Penn Avenue (31 adults and 34 students) during the 7:30-8:30 a.m. time period.

TABLE 4: VEHICLE VOLUMES (7:30-8:30 AM)			
INTERSECTION	Clawson Street NORTHBOUND	Clawson Street SOUTHBOUND	Penn Avenue EASTBOUND
Clawson Street & Penn Avenue	352	67	114

TABLE 5: PEDESTRIAN VOLUMES (7:30-8:30 AM)				
INTERSECTION	Crossing Clawson Street NORTH-LEG CROSSWALK	Crossing Clawson Street SOUTH-LEG CROSSWALK	Crossing Penn Avenue EAST-LEG CROSSWALK	Crossing Penn Avenue WEST-LEG CROSSWALK
Clawson Street & Penn Avenue	12 (8 / 4) *	53 (23 / 30) *	37 (15 / 22) *	11 (5 / 6) *



Figure 8: Looking west along Penn Avenue toward its intersection with Clawson Street



Figure 9: Looking north along Clawson Street at speed hump between Peter and Penn Avenues

3.6.3 Hylan Boulevard and Peter Avenue

This is an unsignalized T-intersection with a school crosswalk located across the west leg of Peter Avenue (see Figure 10). Hylan Boulevard is a two-way street with two travel lanes and a parking lane on each side of the roadway. A four-foot wide raised concrete median divides the north and southbound roadways. Monday through Friday, on-street parking is prohibited from 7:00 am to 10:00 am in the northbound direction and 4:00 pm to 7:00 pm in the southbound direction to allow for a third travel lane during the morning and evening peak periods, respectively. Peter Avenue is a one-way westbound street, away from Hylan Boulevard. It has one travel lane with parking on both sides of the roadway.

The NYS DMV accident data (Table 1) shows that there were eleven (11) accidents at this intersection between 1998 and 2000, which included two (2) pedestrian accidents. One of the pedestrian accidents was reported as a fatality. There were no school-related accidents during the same three-year period. The pedestrian fatality occurred about 3:00 pm on April 26, 1999. It was reported that the eighty-one year old individual was struck and killed by a vehicle while crossing at the intersection, but not within the designated crosswalk. The accident location was on a straight and level segment, and the roadway and weather conditions were dry and clear, respectively. The NYPD accident data (Table 2) shows that there were twelve (12) accidents at this intersection between 2001 and 2004; none were pedestrian accidents.



Figure 10: Looking south along west side of Hylan Boulevard across its intersection with Peter Avenue (school off is to the right)

3.6.4 Peter Avenue and Clawson Street

This is a four-leg all-way stop-controlled intersection with school crosswalks located across the north, east, and west legs of the intersection (see Figure 11). There is a pedestrian crosswalk across the south leg of Clawson Street. Clawson Street is a two-way street with one travel lane and a parking lane on each side of the roadway. Peter Avenue is a one-way westbound street. It has one travel lane with parking on both sides of the roadway.

The NYS DMV accident data (Table 1) shows that there were no accidents at this intersection between 1998 and 2000. The NYPD accident data (Table 2) shows that there were two (2) accidents at this intersection between 2001 and 2004; neither of these was a pedestrian accident.



Figure 11: Looking east along Peter Avenue across its intersection with Clawson Street (school is up and to the left)

3.6.5 Hylan Boulevard and Tysens Lane

This is a signalized four-leg intersection with school crosswalks located across the south, east, and west legs (see Figure 12). Hylan Boulevard is a two-way street that has two shared through/right-turn lanes, a left turn lane, and a parking lane on each side of the roadway. A four-foot wide raised concrete median divides the northbound and southbound roadways. Monday through Friday, on-street parking is prohibited from 7:00 am to 10:00 am in the northbound direction and 4:00 pm to 7:00 pm in the southbound direction to allow for a third travel lane during the morning and evening peak periods, respectively. Tysens Lane has three approach lanes on each side of the roadway with the eastbound approach consisting of a left turn lane and two shared through/right-turn lanes.

The three westbound approach lanes consist of exclusive left-turn, through, and right-turn lanes.

Additionally, there is a service road situated along the east side of Hylan Boulevard between Tysens Lane and Malden Place, which is a one-way southbound street, away from Tysens Lane. The service road has one traffic lane and parking on both sides of the roadway.

There is a Leading Pedestrian Interval (LPI) of ten seconds for the Hylan Boulevard pedestrian crossing.

The NYS DMV accident data (Table 1) shows that there were seventy (70) accidents at this intersection between 1998 and 2000; this includes six (6) pedestrian accidents, one of which was a fatality. One of the pedestrian accidents was a school-related accident. The school-related accident occurred at the intersection around 4:00 pm on Wednesday, June 16, 1999. The accident involved a twelve-year old pedestrian who was reported as using a designated crosswalk while crossing the street. The extent of injuries was reported as “possible injury”. The accident location was on a straight and level segment, and the roadway and weather conditions were dry and clear, respectively. The pedestrian fatality accident occurred around 10:00 am on Friday, September 1, 2000. The eighty-two year old individual was struck and killed by a vehicle at the intersection. It was reported that the individual emerged from behind a parked vehicle. The accident location was on a straight and level segment, and the roadway and weather conditions were dry and cloudy, respectively. The NYPD accident data (Table 2) shows that there were one hundred and eight (108) accidents at this intersection between 2001 and 2004; which included five pedestrian accidents. None of the pedestrian accidents was school-related, and there were no pedestrian fatalities reported during the same four-year period.



*Figure 12:
Looking northeast
across the Tysens
Lane and Hylan
Boulevard
intersection*

3.6.6 Tysens Lane and Clawson Street

This is a signalized four-leg intersection with school crosswalks located across the north, south, and east legs (see Figure 13). Tysens Lane is a two-way street with one travel lane and a parking lane on each side of the roadway. South of the intersection, Clawson Street is a two-way street with one travel lane and a parking lane on each side of the roadway. North of the intersection, Clawson Street is a one-way northbound street, with one travel lane and parking on both sides of the roadway.

The NYS DMV accident data (Table 1) shows that there were ten (10) accidents at this intersection between 1998 and 2000, none were pedestrian accidents. The NYPD accident data (Table 2) shows that there were eleven (11) accidents at this intersection between 2001 and 2004, which included two pedestrian accidents. None of the pedestrian accidents were school-related or a fatality.



Figure 13: Looking north along Clawson Street across its intersection with Tysens Lane

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at the signalized intersections, discussed above, and were found to be adequate based upon a child pedestrian walking at the rate of three feet per second. Signal timings are shown in Table 6.

TABLE 6: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
Tysens Lane and Hylan Blvd.				
crossing Tysens Lane	52	112	21	NO
crossing Hylan Blvd.	80	37	30	NO
Tysens Lane and Clawson Street				
crossing Tysens Lane	52	27	21	NO*
crossing Clawson Street	37	57	16	NO

Note: A rate of 3 ft/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate.

** The current 27 seconds (8 seconds Walk, 12 seconds flashing Don't Walk, and 7 seconds steady Don't Walk clearance) provided for pedestrians to cross Tysens Lane at Clawson Street is adequate for a safe pedestrian crossing.*

3.8 PHYSICAL CONDITIONS

3.8.1 Roadways and Sidewalks

The roadways in the vicinity of Saint Charles School were observed to be in generally good condition. Sidewalks are about 4 to 8 feet wide on the school block face and were observed to be in fair condition.

3.8.2 Pedestrian Ramps

Overall, the pedestrian ramps in the vicinity of the school were observed to be standard.

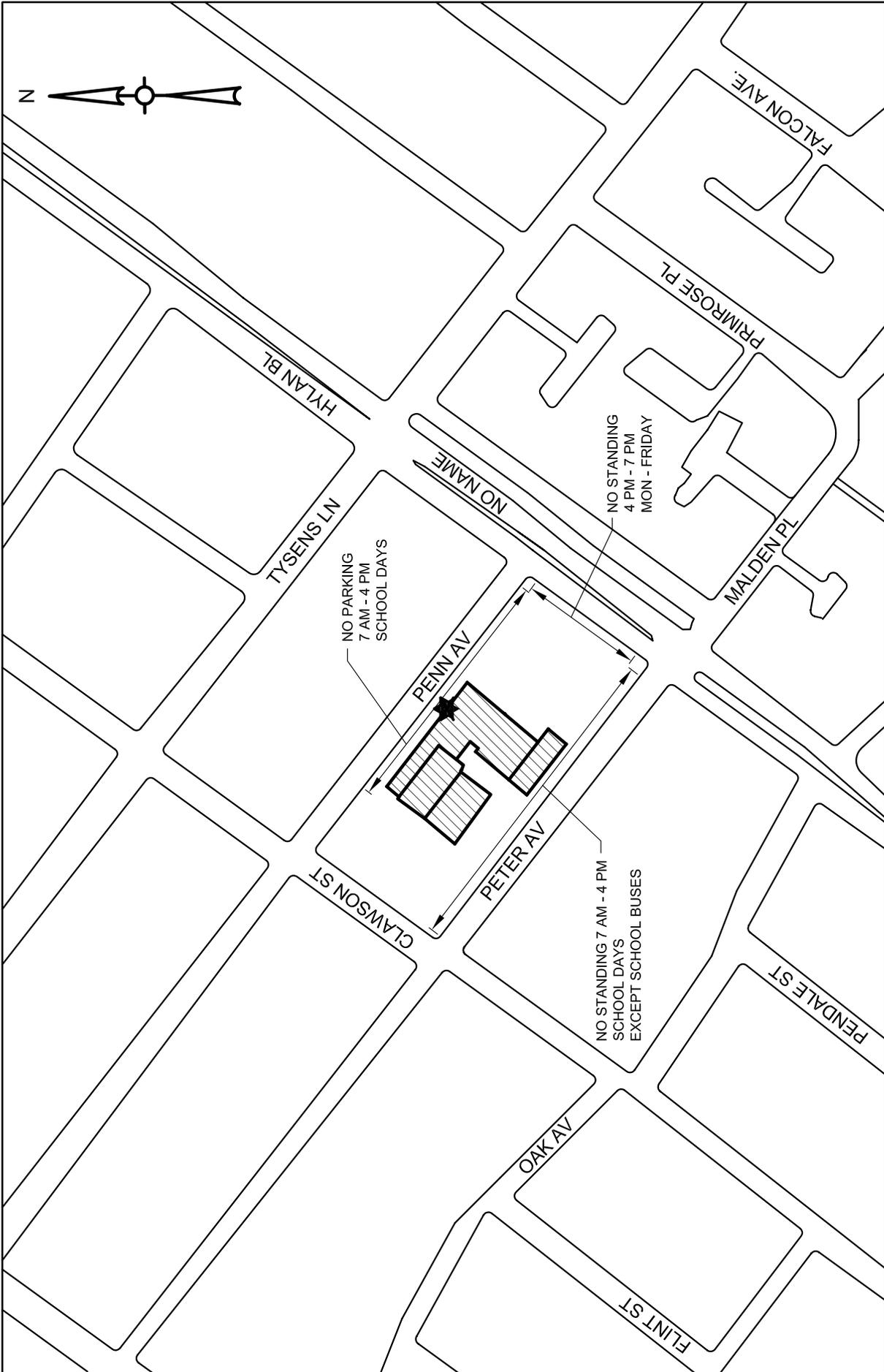
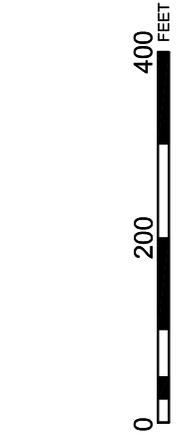


EXHIBIT 4
 ST. CHARLES SCHOOL
 STATEN ISLAND
 EXISTING PARKING REGULATIONS



- LEGEND:**
- ★ MAIN ENTRANCE
 - ENTRANCE

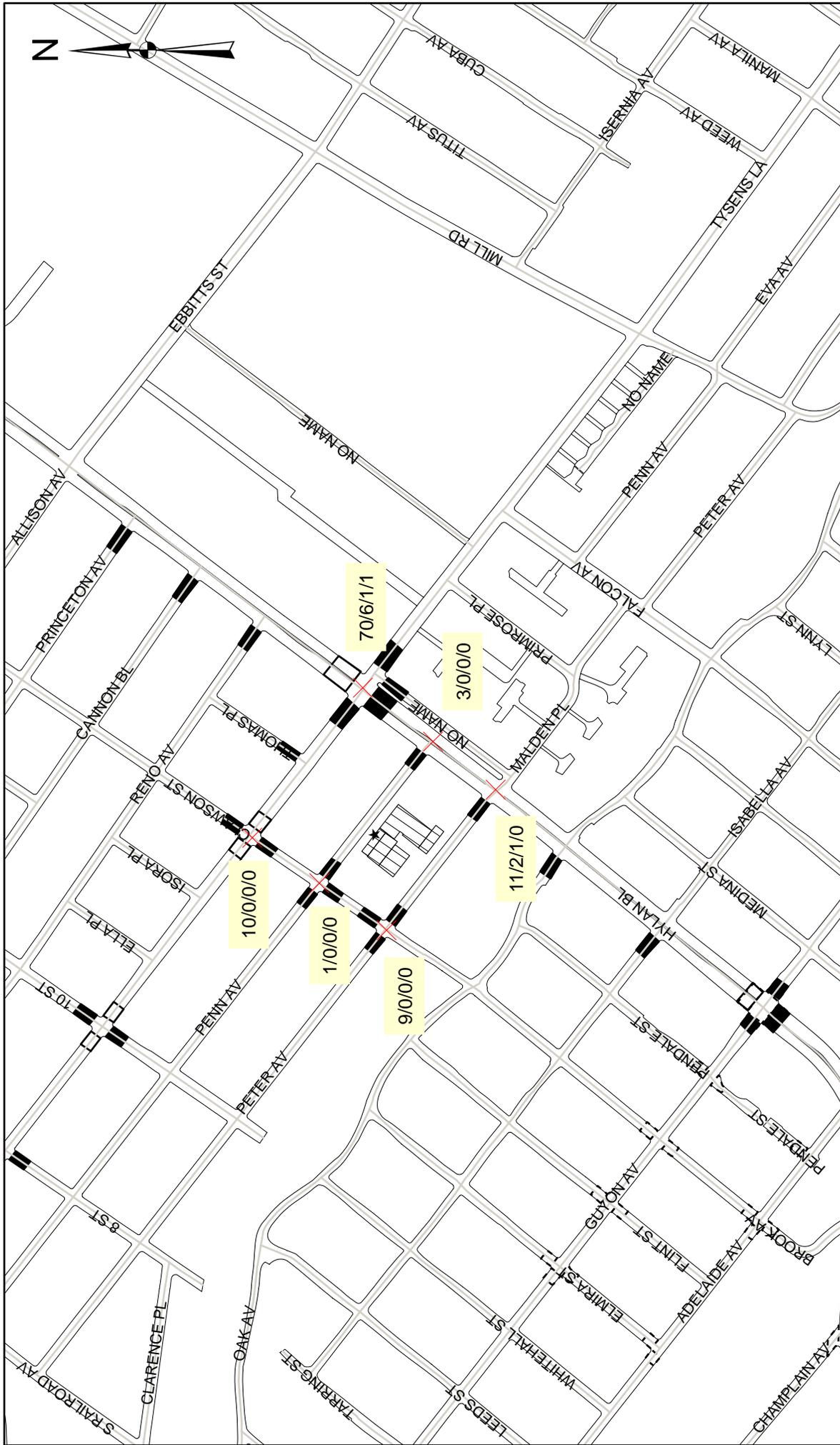
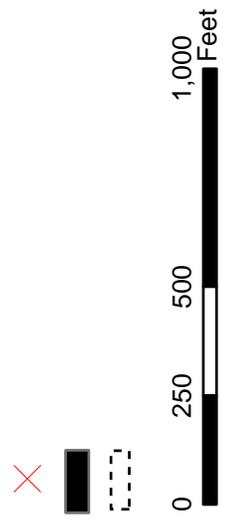


EXHIBIT 5
ST. CHARLES SCHOOL
STATEN ISLAND
ACCIDENT SUMMARY (1998-2000)



LEGEND:
 ACCIDENT LOCATION
 SCHOOL CROSSWALK
 SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
 X/X/X/X TOTAL ACCD / PED ACCD / PED FATAL / SCHOOL_PED ACCD

4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes the proposed measures to improve student pedestrian safety around Saint Charles School. The proposed recommendations are divided into short-term and long-term measures. Short-term measures are those that potentially can be performed in-house. Long-term measures involve capital improvements. Each of the short- and long-term measures recommended for Saint Charles School is discussed as follows, and is shown in more detail in Exhibit 6 at the end of this section.

4.1 SHORT-TERM MEASURES

➤ *Install “No Standing 7AM-4PM School Days” sign*

There are existing “No Parking 7AM-4PM School Days” signs in front the school at the main entrance of the school. Replace the existing signs with “No Standing 7AM-4PM School Days” signs for thirty feet (30’). (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

➤ *Install graphic “Yield to Pedestrian” Sign*

Install “YIELD TO PEDESTRIAN” signs at intersection approaches with substantial vehicle–student pedestrian volumes at intersections assigned to this school. “YIELD TO PEDESTRIAN” signs are recommended on the following approaches of signalized intersections around Saint Charles School:

- Southbound approach of Hylan Boulevard at Tysens Lane
- Eastbound approach of Tysens Lane at Clawson Street

These signs are suggested to improve driver awareness and the visibility and safety of student-pedestrians.

➤ *Designate pedestrian crosswalks as school crosswalks*

The crosswalks on the east and west legs of Tysens Lane at its intersection with Clawson Street are marked as pedestrian crosswalks. Since students were observed crossing Tysens Lane, particularly the east leg, and the school is situated on this side of the intersection, the crosswalk located across the east leg of Tysens Lane should be designated as a school crosswalk.

The crosswalks on the north leg of Ella Place and Isora Place at their intersections with Tysens Lane are marked as pedestrian crosswalks. The three adjacent intersections to the west and the adjacent intersection to the east are all designated school crosswalk on the north leg of the intersection. To create a continuous path for students walking along the north side of Tysens Lane, the two crosswalks located across the north legs of Ella Place and Isora Place at the their intersections with Tysens Lane should be marked as school crosswalks.

The following is therefore recommended to:

- Designate the pedestrian crosswalks along the east side of Clawson Street across the east leg of Tysens Lane as a school crosswalk.

- Designate the pedestrian crosswalks along the north side of Tysens Lane across Ella Place, and across Isora Place, as school crosswalks.

➤ Place advanced stop bar before school crosswalk

The MUTCD and New York City Department of Transportation (NYCDOT) standard for placement of a stop bar is four feet (4') in advance of a marked crosswalk. At signalized intersections and mid-block crossings, the vehicle stop line can be moved farther back from the pedestrian crosswalk.

For school crosswalks with significant potential for vehicular / pedestrian conflicts, it is recommended that the advance stop bar be placed ten feet (10') in advance of the crosswalk 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.)

The following is therefore recommended to:

- Relocate stop bars 10 feet in advance of the school crosswalks at the signalized intersection of Hylan Boulevard and Tysens Lane.
- Provide stop bar 10 feet in advance of the school crosswalk at the northbound and westbound approaches of Tysens Lane and Clawson Street intersection.
- Relocate stop bars 10 feet in advance of the school crosswalk at the southbound approach of Hylan Boulevard at its intersection with Guyon Avenue.

➤ Prohibit parking on Clawson Avenue to provide additional travel lane

The schools officials reported that there is not enough green time for Clawson Street traffic at its intersection with Tysens Lane which creates congestion and results in long queue on Clawson Street in the morning rush hours. The queue on Clawson Street sometimes extends all the way to Guyon Avenue which is four-block south of Tysens Lane.

It is therefore recommended to:

- Prohibit parking on the east side of Clawson Street for 100 feet to provide two northbound approach lanes (one shared through/left-turn and one exclusive right-turn lane). In addition, prohibit parking on the west side of Clawson Avenue for 25 feet to provide enough clear space for vehicles turning left or right from Tysens Lane onto Clawson Street.

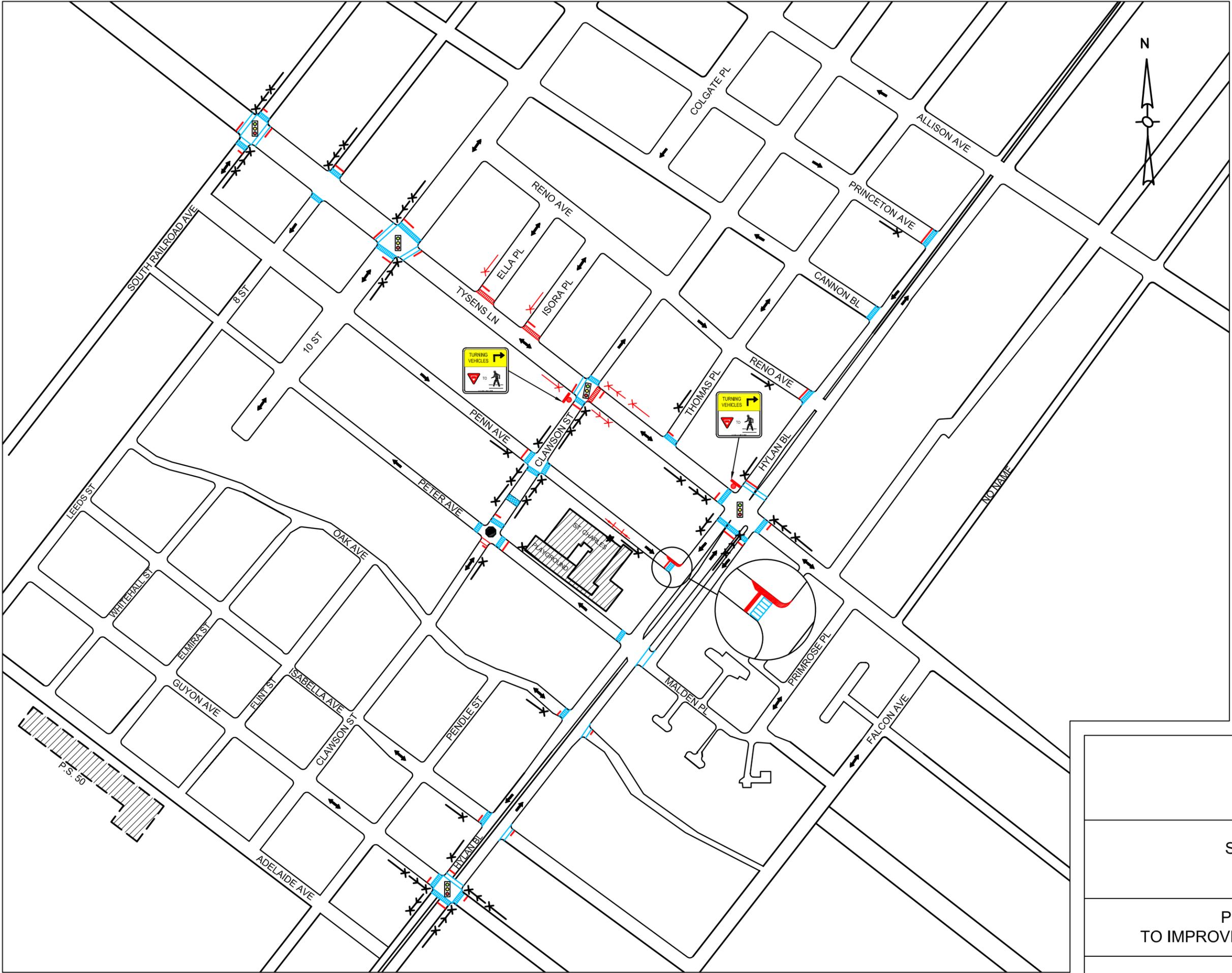
4.2 LONG-TERM MEASURES

➤ Provide curb extension

There is a parking lot on Penn Avenue across from the school. The parking lot entrance is just west of Hylan Boulevard. The school officials reported cars making illegal right-turn from Hylan Boulevard onto Penn Avenue to get to the parking lot. (It should be noted that Penn Avenue is a one-way eastbound street.)

- Provide curb extension at the northwest corner of Penn Avenue at its intersection with Hylan Boulevard, as shown in Exhibit 6. In addition, provide “No Right Turn” sign for southbound vehicles approaching at Penn Avenue.

The purpose of the curb extension is to prohibit illegal right turns from southbound Hyland Boulevard onto Penn Avenue. The curb extension will not eliminate or reduce the width of the travel lane on Penn Avenue. Curb extension is not proposed where it would hinder the ability of a vehicle to turn.



- LEGEND**
-  MAIN ENTRANCE
 -  EXISTING TRAVEL DIRECTION
 -  EXISTING ADVANCE WARNING SIGN OR SCHEDULED TO BE INSTALLED
 -  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY OR SCHEDULED TO BE INSTALLED
 -  EXISTING SCHOOL CROSSWALK
 -  EXISTING PEDESTRIAN CROSSWALK
 -  EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
 -  EXISTING SPEED REDUCER
 -  SIGNALIZED LOCATION
 -  EXISTING ALL WAY STOP LOCATION
 -  PROPOSED SCHOOL CROSSWALK
 -  PROPOSED PEDESTRIAN CROSSWALK
 -  PROPOSED SCHOOL ADVANCE WARNING SIGN
 -  PROPOSED SCHOOL CROSSWALK WARNING ASSEMBLY
 -  PROPOSED TRAFFIC SIGN
 -  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
 -  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
 -  PROPOSED CURB EXTENSION (NECKDOWN)

EXHIBIT 6

**ST. CHARLES SCHOOL
STATEN ISLAND**

**PROPOSED MEASURES
TO IMPROVE SCHOOL PEDESTRIAN SAFETY**

APPENDIX

