

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



School Safety Engineering Project

FINAL REPORT: P.S. 18 (John Greenleaf Whittier School), Staten Island



Prepared by
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School Safety Engineering Project Final Report: P.S. 18, Staten Island

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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, 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. 18 (John Greenleaf Whittier 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

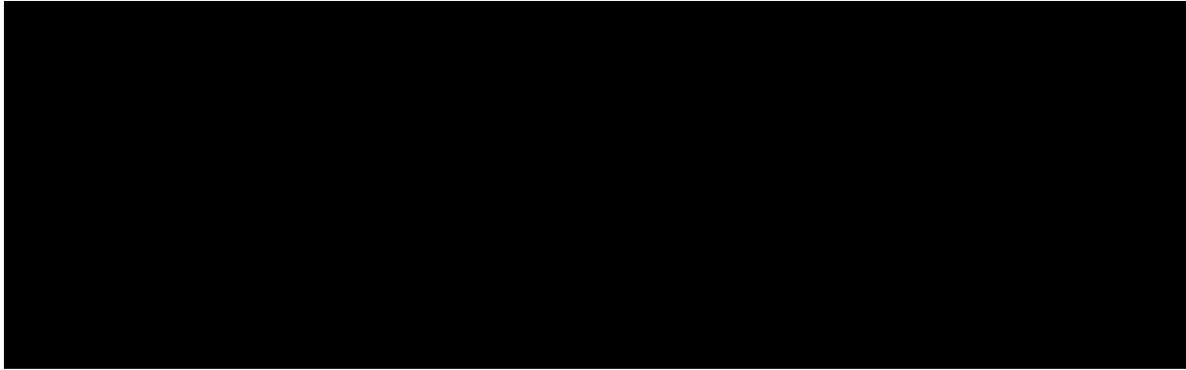
Exhibit 1 shows an aerial view of the neighborhood surrounding the school. P.S. 18 is bounded by Henderson Avenue to the north, Market Street to the south, Campbell Avenue to the east, and Broadway to the west. The neighborhood surrounding the school is comprised of predominately high-density residential land uses with commercial uses along Henderson Avenue and Castleton Avenue (see Figure 4). Lawrence C. Thompson Memorial Park--located northwest of the school, diagonally across the intersection of Henderson Avenue and Broadway Avenue—provides a variety of sports facilities. P.S. 18 is located between two predominately commercial roadways: Henderson Avenue to the north of the school, and Castleton Avenue to the south. These two roadways, along with Broadway, generally carry high traffic volumes.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant team members met with the principal, assistant principal, custodian, and the PTA (Parent Teacher Association) president from P.S. 18 at the school on the afternoon of April 14, 2004. According to representatives of the school, P.S. 18 students face the following problems:

- Speeding vehicles pose a safety problem on Henderson Avenue between Bement Avenue and Broadway.
- Vehicles on the northbound approach to the intersection of Campbell Avenue and Henderson Avenue have limited sight distance to the east, due to vans that are frequently parked on the southeast corner.
- A lack of available parking spaces is a general problem in the vicinity of the school.

(See the Appendix at the end of this document for the school's survey response.)



2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

The school’s catchment area as defined by the Department of Education is shown in Exhibit 2. The catchment area is generally bounded by Richmond Terrace to the north, Castleton Avenue to the south, Davis Avenue to the east, and Taylor Street to the west.

According to school officials, approximately 72 percent of the students walk to school, 10 percent arrive by private vehicles and 18 percent arrive by yellow buses.

Table 1 presents the modes of travel for P.S. 18, as identified by school officials.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	STUDENTS (Percentage)
Walk	72%
Driven by car	10%
School bus	18%
Bus/Subway	0%
Bicycle	0%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

Henderson Avenue and Castleton Avenue are primarily commercial corridors that generate both pedestrian and vehicular traffic in the vicinity of the school. In addition, a New York City Housing Project is located on the west side of Broadway opposite P.S. 18. During the field visit, children were observed crossing mid-block on Broadway between Market Street and Henderson Avenue to walk to school.

2.8 CROSSING GUARD LOCATIONS

There are two crossing guards assigned to P.S. 18. According to the school officials, the crossing guards are located at the intersections of Castleton Avenue and Broadway, and Henderson Avenue and Broadway. Exhibit 4 shows the crossing guard locations.

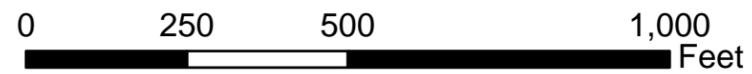
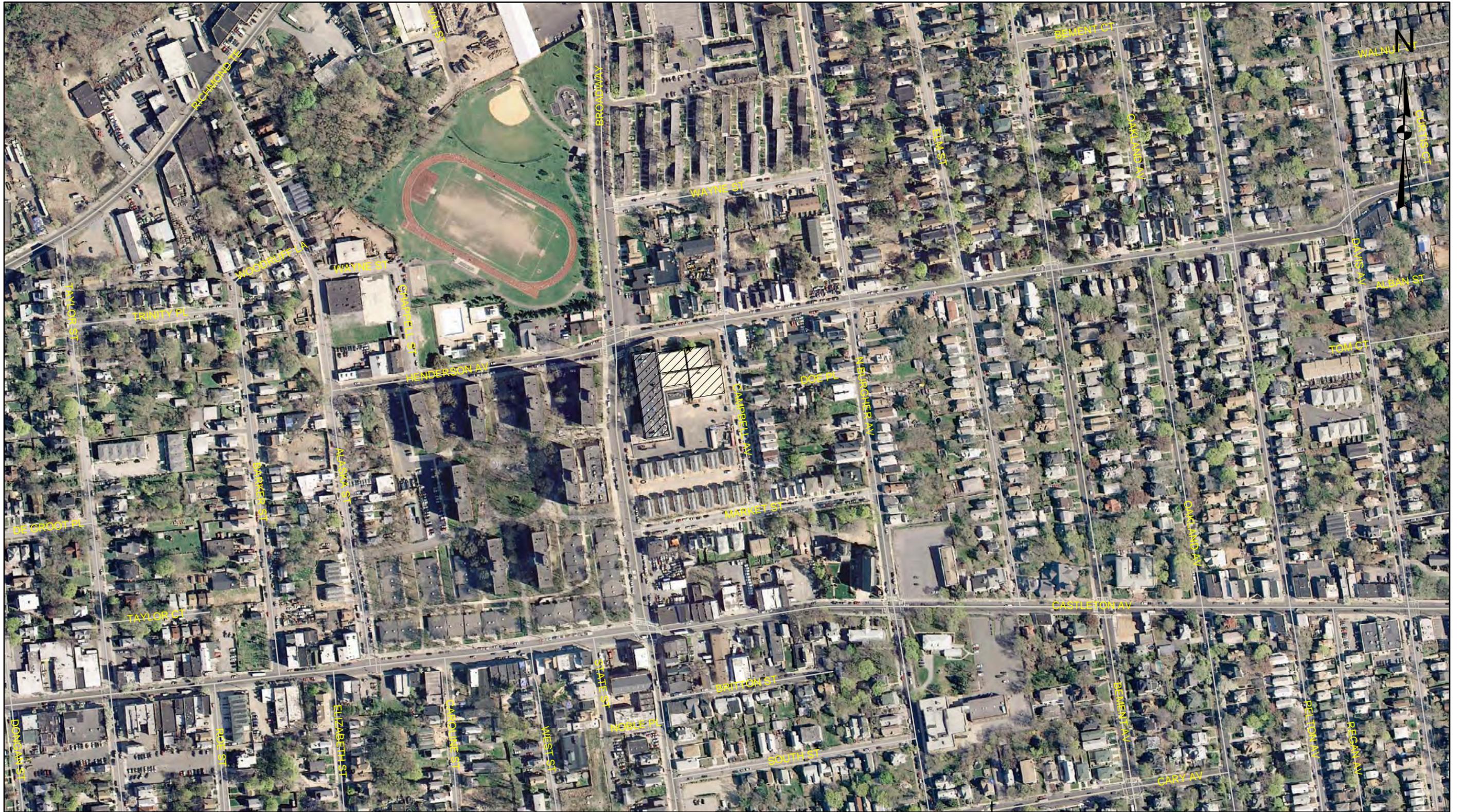


EXHIBIT 1
P.S. 18 STATEN ISLAND
J. GREENLEAF WHITTER SCHOOL
AERIAL PHOTOGRAPH



EXHIBIT 2

P.S. 18 STATEN ISLAND

J. GREENLEAF WHITTIER SCHOOL

CATCHMENT AREA



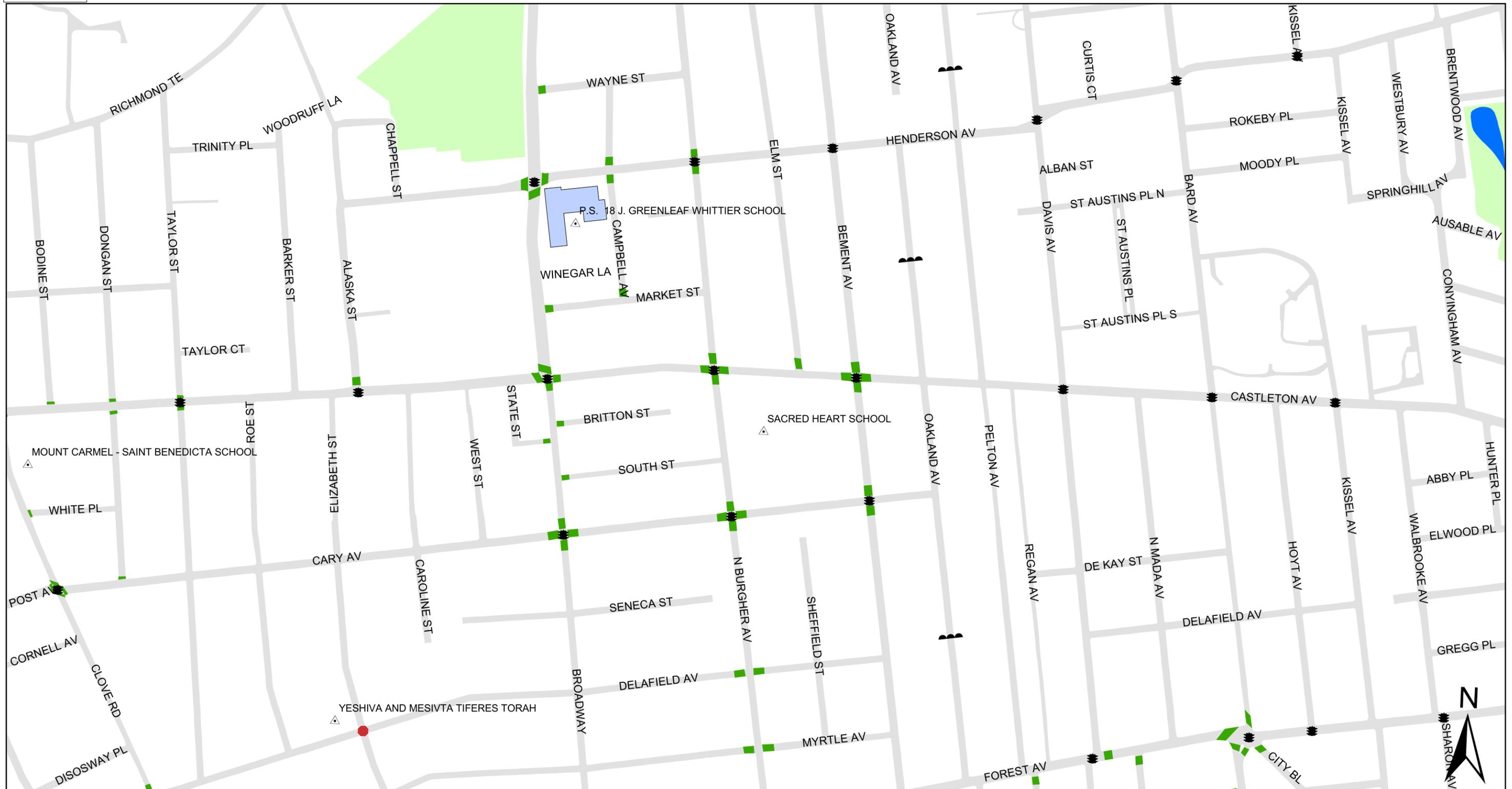
LEGEND:

CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND P.S. 18)





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 	TRAFFIC SIGNAL 
SCHOOL CROSSWALK 	ALL - WAY STOP 
	SPEED REDUCER 

PS 18 Staten Island
J. GREENLEAF WHITTIER SCHOOL

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

Map created on 11/16/2006

EXHIBIT 3

1.5.1

COMM. BOARD:	501
PRECINCT:	120

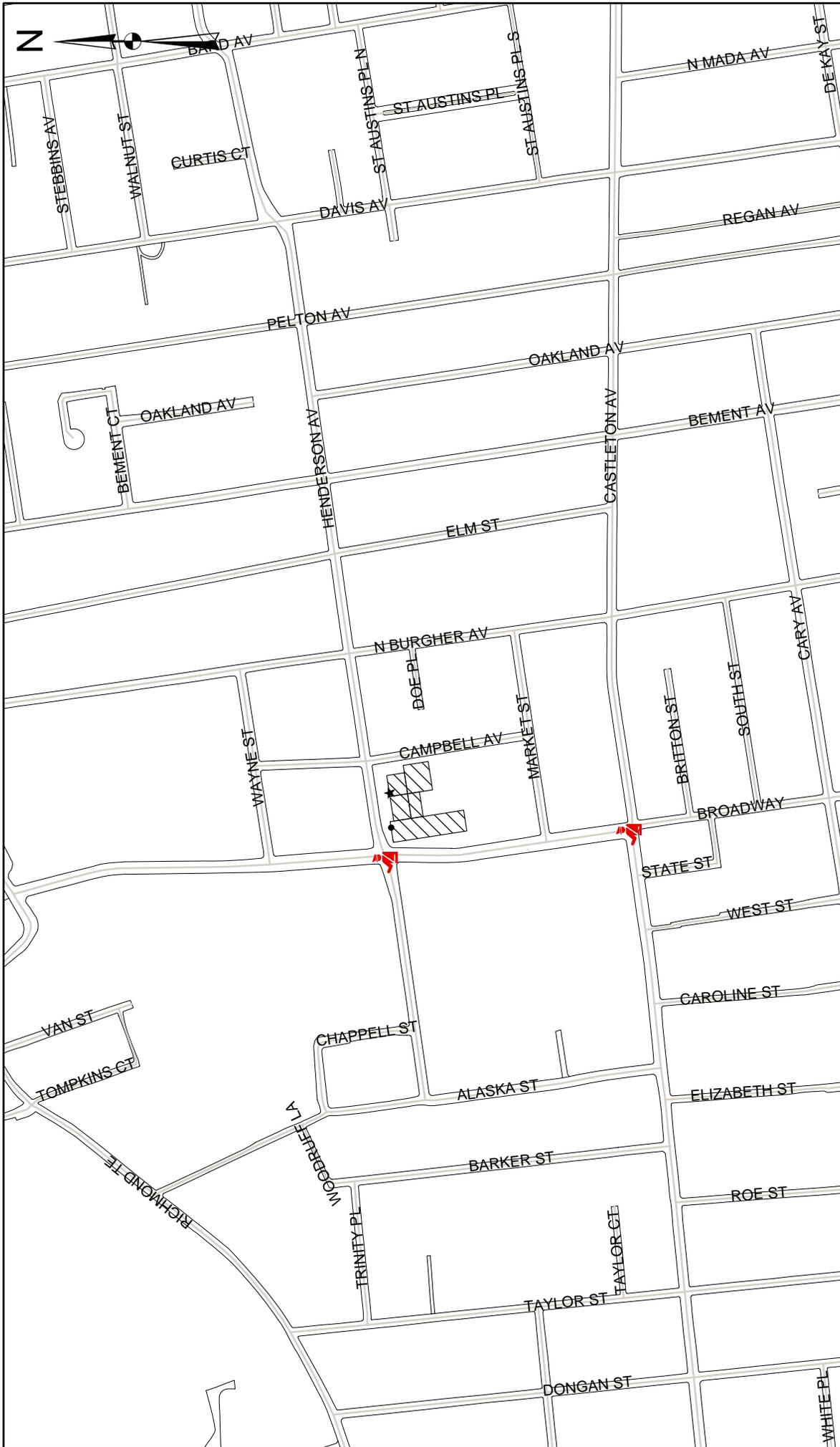
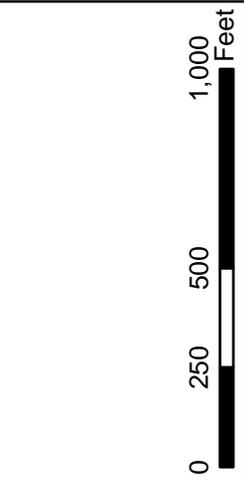


EXHIBIT 4
P.S. 18 STATEN ISLAND
J. GREENLEAF WHITTIER SCHOOL
CROSSING GUARD LOCATIONS



LEGEND:

CROSSING GUARD LOCATION 

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to school representatives approximately 100 students ride a yellow school bus to school. Bus transportation for the students consists of two yellow school buses, as well as two small and five large special buses, for a total of seven special buses. The yellow buses drop off students on Henderson Avenue near the corner of Broadway (see Figure 1).



Figure 1: Looking east on Henderson Avenue across the intersection with Broadway at school bus activity (P.S. 18 is shown to the right)

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives, approximately nine percent of the students are being dropped off. Parents typically double park across from the school entrances on Henderson Avenue and Broadway while dropping off students in the morning, or awaiting the afternoon student dismissal. The double parking results in slower traffic movements on Henderson Avenue, but did not appear to have a significant impact on the speed of traffic on Broadway, because Broadway has sufficient width to accommodate double parking (see Figure 2).

3.3 PARKING REGULATIONS

Parking regulations around the school are shown in Exhibit 5.



*Figure 2: Looking south on Broadway from across the intersection with Henderson Avenue
(P.S. 18 is shown to the left)*

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3 shows existing signals and pavement markings around P.S. 18. It should be noted that a citywide signage program is currently underway to upgrade school signage to the current edition of the Federal Manual of Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green signs accompanied by downward pointing arrows. (Signs scheduled to be installed under this program are shown as “existing” in Exhibit 7.)



Figure 3: Looking north along Campbell Avenue from across the intersection with Henderson Avenue

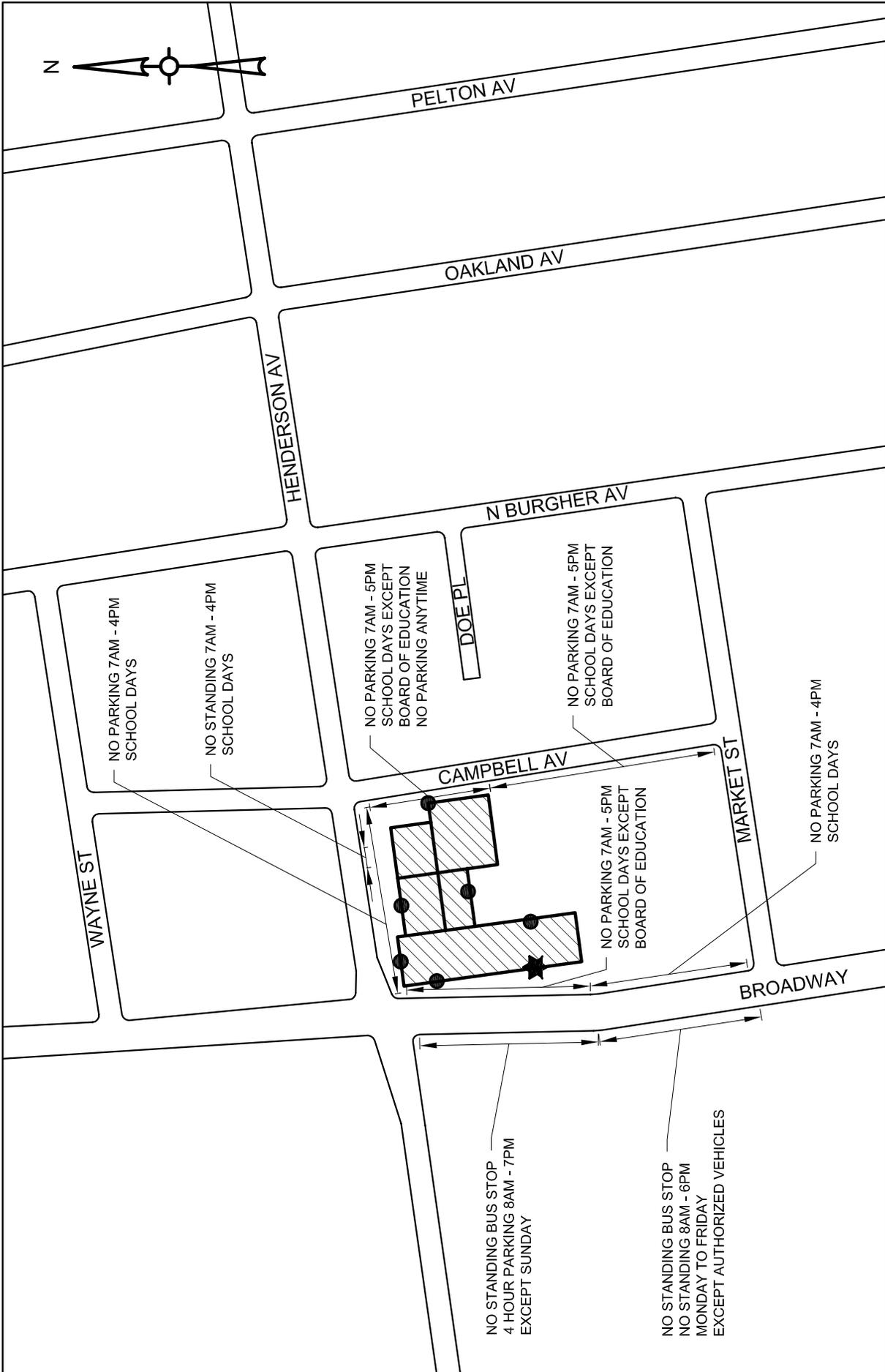


EXHIBIT 5
 P.S. 18 STATEN ISLAND
 J. GREENLEAF WHITTIER SCHOOL
 EXISTING PARKING REGULATIONS

LEGEND:

- ★ MAIN ENTRANCE
- ENTRANCE

0 200 400 FEET

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. 18 for a three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of an 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.

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Henderson Avenue and Broadway	4	0	0	0
Henderson Avenue and Campbell Avenue	8	1	0	1
Henderson Avenue and North Burgher Avenue	9	0	0	0
Campbell Avenue and Market Street	2	0	0	0
Castleton Avenue and Broadway	20	1	0	0
Castleton Avenue and Alaska Street	13	0	0	0
Broadway and Market Street	0	0	0	0
Broadway and Wayne Street	1	0	0	0
Broadway and Britton Street	1	0	0	0
Broadway and South Street	1	0	0	0
TOTAL	59	2	0	1

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

TABLE 3: ACCIDENT SUMMARY OF NYPD DATA (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS *
Henderson Avenue and Broadway	29	9	0	1
Henderson Avenue and Campbell Avenue	9	2	0	0
Henderson Avenue and North Burgher Avenue	15	1	0	0
Campbell Avenue and Market Street	0	0	0	0
Castleton Ave and Broadway	31	5	0	1
Castleton Avenue and Alaska Street	23	1	0	1
Broadway and Market Street	0	0	0	0
Broadway and Wayne Street	2	0	0	0
Broadway and Britton Street	0	0	0	0
Broadway and South Street	7	0	0	0
TOTAL	116	18	0	3

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

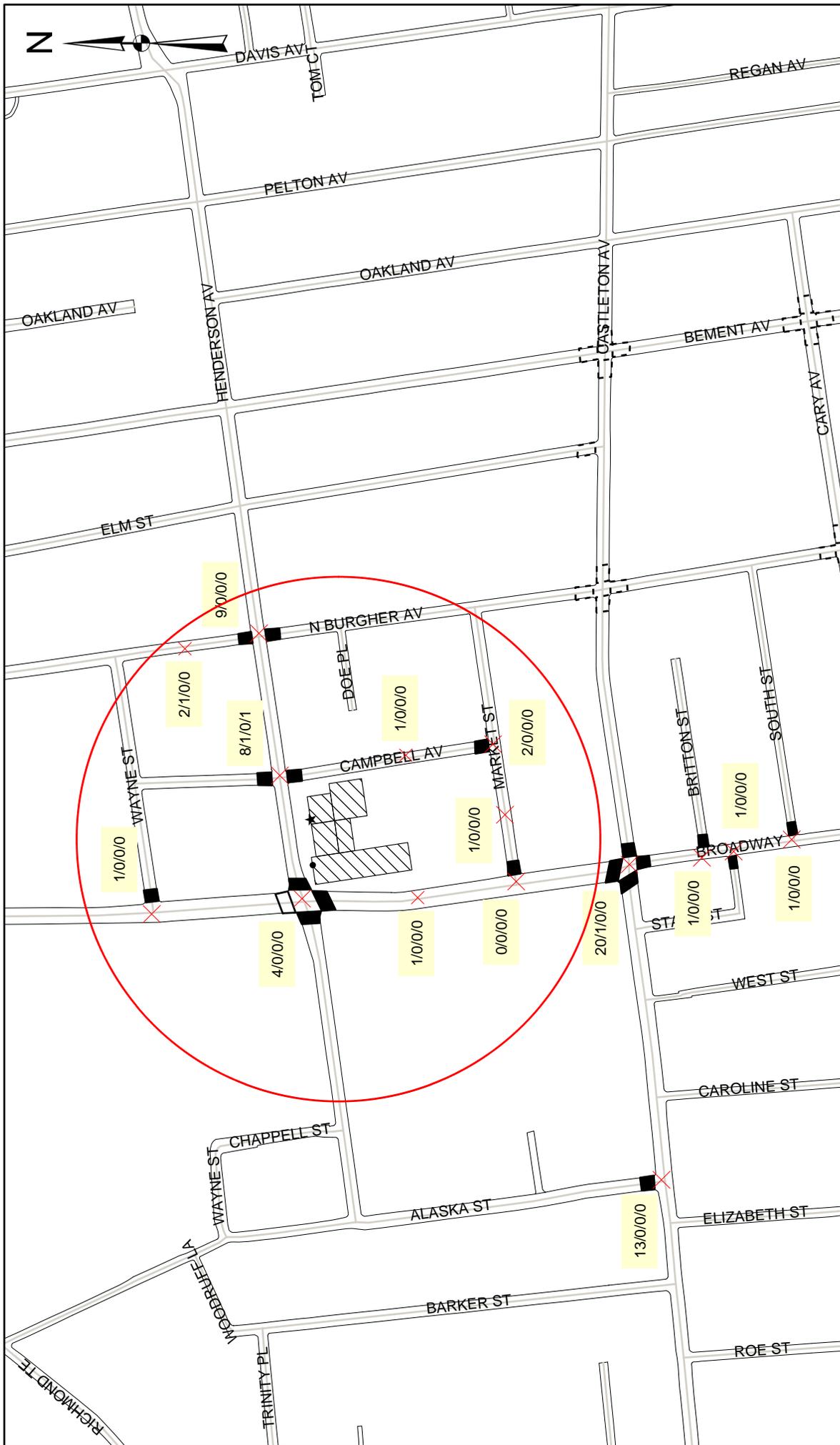
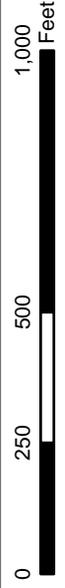


EXHIBIT 6

**P.S. 18 STATEN ISLAND
J. GREENLEAF WHITTIER SCHOOL
ACCIDENT SUMMARY (1998-2000)**



LEGEND:

- ACCIDENT LOCATION
- SCHOOL CROSSWALK
- SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
- BORDER OF 700 FEET

X / X / X
 TOTAL ACCD / PED ACCD / PED FATAL / SCHOOL_PED ACCD

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 pedestrian 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 P.S. 18.

3.6.1 Henderson Avenue and Broadway

This is a four-leg signalized intersection with school crosswalks located across the south, east, and west legs, and a pedestrian crosswalk located across the north leg. Henderson Avenue and Broadway are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway (see Figures 1, 2, and 3).

There were a total of four accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these were pedestrian accidents. No pedestrian fatalities were reported at this intersection during this time period.



Figure 4: Looking west along Henderson Avenue from across the intersection with Broadway

3.6.2 Henderson Avenue and Campbell Avenue

This is a four-leg unsignalized intersection with “STOP” signs located on both of the Campbell Avenue approaches. School crosswalks are located across both of the stop-controlled north and south legs of the intersection. Campbell Avenue and Henderson Avenue are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway (see Figures 5 and 6).

There were a total of eight accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident, which was also school-related. This particular accident occurred at approximately 5:00 pm on June 14, 1999 when a five-year-old pedestrian sustained a non-incapacitating injury at the intersection. The pedestrian’s actions were reported as “other actions in roadway.” At the time of the accident, weather conditions were clear and the road surface was dry. The accident occurred during daylight conditions. No pedestrian fatalities were reported at this intersection during this time period.

School officials reported a speeding problem on Henderson Avenue between Bement Avenue and Broadway. Therefore, a speed survey was conducted on Henderson Avenue in the vicinity of P.S. 18, in order to verify the existence of a speeding problem and to determine its extent.

Westbound vehicles on Henderson Avenue were found to be traveling at an 85th percentile speed of 33 mph. Eastbound vehicles on Henderson Avenue were found to be traveling at an 85th percentile speed of 32 mph. The 85th percentile speed is considered to be the representative speed for the street segment. Speeds above a 30 mph threshold indicate a speeding problem that may require appropriate traffic calming measures.

The detailed results of the spot speed surveys on Henderson Avenue are shown in the Appendix at the end of this document.



Figure 5: Looking south along Campbell Avenue from across the intersection with Henderson Avenue



*Figure 6: Looking west along Henderson Avenue from the intersection with Campbell Avenue
(P.S. 18 is shown to the left)*

3.6.3 Henderson Avenue and North Burgher Avenue

This is a four-leg signalized intersection with school crosswalks located across the north and south legs of the intersection. Henderson Avenue is a two-way street with one travel lane and one on-street parking lane on each side of the roadway. North Burgher Avenue is a one-way northbound roadway with one travel lane and on-street parking on both sides of the roadway.

There were a total of nine accidents reported at this intersection between 1998 and 2000 (Table 2), but no pedestrian accidents. No pedestrian fatalities were reported at this intersection during this time period.

3.6.4 Castleton Avenue and Broadway

This is a four-leg signalized intersection with school crosswalks located across all four legs. Castleton Avenue and Broadway are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway (see Figure 7).

There were a total of 20 accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident that was not school-related. No pedestrian fatalities were reported at this intersection during this time period.



Figure 7: Looking south on Broadway across the intersection with Castleton Avenue

3.6.5 Broadway and Market Street

This is an unsignalized “T”-intersection with a school crosswalk located across the east (Market Street) leg of the intersection. Market Street is stop-controlled at its intersection with Broadway. Both Market Street and Broadway are two-way streets with one travel lane and one on-street parking lane on each side of the roadway (see Figure 8).

There were no accidents reported at this intersection between 1998 and 2000 (Table 2).



Figure 8: Looking north along Broadway toward the intersection with Market Street

3.6.6 Campbell Avenue and Market Street

This is an unsignalized “T”-intersection with a school crosswalk located across the north (Campbell Avenue) leg of the intersection. Campbell Avenue is stop-controlled at its intersection with Market Street. Both Campbell Avenue and Market Street are two-way streets with one travel lane and one on-street parking lane on each side of the roadway.

There were two accidents reported at this intersection between 1998 and 2000 (Table 2), but neither were pedestrian accidents.

3.6.7 Castleton Avenue and Alaska Street

This is a signalized “T”-intersection with a school crosswalk located across the north (Alaska Street) leg of the intersection, and a pedestrian crosswalk located across the east leg of the intersection. Castleton Avenue and Alaska Street are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway.

There were a total of 13 accidents reported at this intersection between 1998 and 2000 (Table 2), but no pedestrian accidents. No pedestrian fatalities were reported at this intersection during this time period.

3.6.8 Broadway and Wayne Street

This is an unsignalized “T”-intersection with a school crosswalk located across the east (Wayne Street) leg of the intersection. Wayne Street is stop-controlled at its intersection with Broadway. Broadway and Wayne Street are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway.

There was one accident reported at this intersection between 1998 and 2000 (Table 2), but it was not a pedestrian accident.

3.6.9 Broadway and Britton Street

This is an unsignalized “T”-intersection with a school crosswalk located across the east (Britton Street) leg of the intersection. Britton Street is stop-controlled at its intersection with Broadway. Broadway and Britton Street are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway. Britton Street dead-ends several hundred feet east of Broadway.

There was one accident reported at this intersection between 1998 and 2000 (Table 2), but it was not a pedestrian accident.

3.6.10 Broadway and South Street

This is an unsignalized “T”-intersection with a school crosswalk located across the east (South Street) leg of the intersection. South Street is stop-controlled at its intersection with Broadway. Broadway and South Street are both two-way streets with one travel lane and one on-street parking lane on each side of the roadway.

There was one accident reported at this intersection between 1998 and 2000 (Table 2), but it was not a pedestrian accident.

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of P.S. 18, and were found to be adequate based upon a child pedestrian walking at the rate of 3 feet per second. The signal timings are shown in Table 4.

TABLE 4: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK WIDTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
Broadway and Henderson Avenue				
crossing Broadway	57	49	22	NO
crossing Henderson Avenue	55	29	22	NO
Broadway and Castleton Avenue				
crossing Broadway	55	49	22	NO
crossing Castleton Avenue	50	29	20	NO

Note: A child pedestrian walking rate of 3 ft/sec, plus 3 seconds reaction time, was used to calculate the required pedestrian crossing times.

3.8 PHYSICAL CONDITIONS

3.8.1 Roadways and Sidewalks

The roadways and sidewalks in the vicinity of P.S. 18 were found to be in good condition with the exception of one sidewalk location on the east side of Broadway, south of Market Street which is cracked and broken (see Figure 8). Sidewalk widths range between 10 and 15 feet on the block faces surrounding P.S. 18.

3.8.2 Pedestrian Ramps

Pedestrian ramps in the vicinity of P.S. 18 were found to be standard except at the following locations:

- A pedestrian ramp is missing on the southeast corner of the Broadway and Henderson Avenue intersection (see Figures 2 and 9).
- Pedestrian ramps are missing on the northeast, southeast, and southwest corners of the Campbell Avenue and Henderson Avenue intersection (see Figures 3 and 5).



Figure 9: Missing pedestrian ramp on the southeast corner of the Broadway and Henderson Avenue intersection

4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY

This section describes the proposed measures to improve student pedestrian safety around P.S. 18. 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 P.S. 18 is discussed as follows, and is shown in more detail in Exhibit 7 at the end of this section. See Section 4.3 for additional recommendations for this area from the report for Sacred Heart School, a nearby priority school.

4.1 SHORT-TERM MEASURES

➤ *Install “NO STANDING 7AM – 4PM SCHOOL DAYS” signs*

Install “NO STANDING 7AM - 4PM SCHOOL DAYS” signs for 30 feet in front of the main entrance to the school. (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

➤ *Daylighting at the intersection of Henderson Avenue and Campbell Avenue*

During the meeting with the consultant team, school officials reported a sight distance problem on the southeast corner of the Henderson Avenue and Campbell Avenue intersection. Field observations of this area determined that vehicles (especially vans) parking on east side of Campbell Avenue, south of Henderson Avenue, were obstructing sight lines for northbound drivers approaching the intersection. Therefore, the following action is recommended:

- Improve sight distance at the intersection by installing “NO STANDING ANYTIME” signs on the east side of Campbell Avenue. The signs should be placed approximately 20 feet set back from building/property line, excluding the area designated for the crosswalk (marked or unmarked). These signs should face northbound traffic on Campbell Avenue approaching Henderson Avenue. The installation of daylighting will be subject to review by NYCDOT.

➤ *Place advance stop bars before school crosswalks*

The MUTCD and New York City DOT standard for placement of a stop bar is four feet in advance of a marked crosswalk. At signalized (or stop controlled) crosswalks, the vehicle stop line can be placed farther back from the crosswalk in order to maximize visibility of pedestrians and to minimize the potential for pedestrian/vehicle conflicts. Therefore, it is recommended that stop bars be placed ten feet in advance of all school crosswalks.

➤ Install crosswalks at the intersection of Henderson Avenue and North Burgher Avenue

A new signal was installed at the intersection of Henderson Avenue and North Burger. The intersection has school crosswalks at the north and south legs.

Therefore, the following action is recommended:

- Install a school cross walk at the west leg of the intersection and install all appropriate advance warning devices.
- Install a pedestrian crosswalk at the east side of the intersection and install all appropriate advance warning devices.

4.2 LONG-TERM MEASURES

➤ Install pedestrian ramps

Pedestrian ramps were found to be missing at several locations identified in Section 3.8.2. Therefore, it is recommended to:

- Install a pedestrian ramp on the southeast corner of the Broadway and Henderson Avenue intersection for the crosswalk located across the south leg.
- Install a pedestrian ramp on the northeast corner of the Broadway and Henderson Avenue intersection for the crosswalk located across the north leg.
- Install a pedestrian ramp on the southeast and southwest corners of the Campbell Avenue and Henderson Avenue intersection for the crosswalk located across the south leg.

➤ Install a speed reducer (hump) on Henderson Avenue

School officials reported a speeding problem along Henderson Avenue in the vicinity of the school. The speed survey conducted along Henderson Avenue between Broadway and North Burgher Avenue showed that 85th percentile speeds in both directions exceeded the 30 mph threshold speed limit. Westbound vehicles on Henderson Avenue were found to be traveling at an 85th percentile speed of 33 mph, and eastbound vehicles on Henderson Avenue were found to be traveling at an 85th percentile speed of 32 mph (see Section 3.6.1 and the Appendix). Therefore, the following action is recommended:

- Install one speed reducer (hump) on Henderson Avenue between Broadway and Campbell Avenue.

➤ Replace sidewalk

The sidewalk along the east side of Broadway, south of Market Street, is cracked and broken (see Section 3.8.1 and Figure 8) and should be replaced. Therefore, the following action is recommended:

- Replace the broken and cracked section of sidewalk along the east side of Broadway, south of Market Street.

➤ Install curb extensions at the following locations:

Consideration should be given to installing curb extensions at the following locations, provided that the Final Design confirms that construction of the recommended curb extensions would be feasible and not interfere with traffic operations. Final details pertaining to the number, location and geometry of curb extensions will be developed during the Final Design/Contract Document preparation

- On the northeast, northwest, and southwest corners of the Broadway and Henderson Avenue intersection.
- On the northwest and southwest corners of the North Burger Avenue and Henderson Avenue intersection.

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks. These curb extensions would not eliminate or reduce the width of any moving lanes.

4.3 ADDITIONAL RECOMMENDATIONS FROM PRIORITY SCHOOLS IN THE VICINITY OF P.S. 18

4.3.1 Recommendations for Sacred Heart School:

The following recommendations are proposed as part of the proposed measures to improve school pedestrian safety around Sacred Heart School, which is also a priority school. All references in Section 4.3, refer to the Sacred Heart School Report.

➤ Remove “M.I.U. vehicle” restriction on existing “NO STANDING 7AM – 4PM SCHOOL DAYS” signs

The existing parking regulation along the east side of North Burgher Avenue in front of the main entrance to Sacred Heart School currently restricts standing between 7:00 am and 4:00 pm on school days, but allows standing for “M.I.U. vehicles”. This allowance should be removed for 30 feet in front of the school’s main entrance. (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” signs

Install graphic “YIELD TO PEDESTRIAN” signs on the following intersection approaches with substantial vehicle–student volumes:

- The eastbound and westbound approaches to the Cary Avenue and Bement Avenue intersection.

➤ Place advance stop bars before school crosswalks

The MUTCD and New York City DOT standard for placement of a stop bar is four feet in advance of a marked crosswalk. At signalized (or stop controlled) crosswalks, the vehicle stop line can be placed farther back from the crosswalk in order to maximize visibility of pedestrians and to minimize the potential for pedestrian/vehicle conflicts. Therefore, it is recommended that stop bars be placed ten feet in advance of all school crosswalks.

➤ Establish Drop-Off Circulation Plan within Schoolyard/Parking Lot

Sacred Heart School has attempted to maintain a circulation pattern within the schoolyard/parking lot for parent drop-off operations, but the parents do not always follow it. In addition, pavement markings in this area are faded and may not be visible. Therefore, it is recommended that a parent drop-off circulation pattern be formally established for the schoolyard/parking lot in order to reduce congestion during arrival and dismissal times.

This plan could be accomplished by the following actions:

- Remove the existing bollards from the school access driveway on the north side of Cary Avenue to permit the driveway to be used by vehicles exiting the schoolyard.
- Convert the school’s driveway on the south side of Castleton Avenue to a one-way driveway into the schoolyard (the driveway currently also accommodates exiting vehicles).
- Install “do not enter” signs at the Castleton Avenue driveway facing into the schoolyard, in conjunction with signs reading “no exit.”
- Install “do not enter” signs at the Cary Avenue driveway facing Cary Avenue. Mount “one-way” signs at the top of the signposts, pointing out (to the south) towards Cary Avenue. Additional advisory signs could be added if needed stating “vehicular entrance to schoolyard on castleton avenue”.
- Delineate a travel path for parent drop-offs through the schoolyard/parking lot with pavement markings, including directional arrows in the center of the intended travel path.

➤ Administer student pedestrian safety education program

School officials requested that student participate in a Safety Education Program. It is therefore recommended that:

- The school should participate in the NYCDOT Safety Education Program to educate students to use designated school crosswalks while crossing the street, not to cross mid-block, not to cross against signals, and not to run out between cars.

➤ Pedestrian Ramps

The following actions are recommended to address the deficiencies described in Section 3.8.2:

- A pedestrian ramp should be installed on the southeast corner of the North Burgher Avenue and Castleton Avenue intersection.
- The pedestrian signal pole on the southeast corner of the North Burgher Avenue and Castleton Avenue intersection should be relocated.
- The catch basin on the northeast corner of the Cary Avenue and North Burgher Avenue intersection should be relocated outside the easterly crosswalk.
- The pedestrian signal pole on the northeast corner of the Cary Avenue and North Burgher Avenue intersection should be relocated.
- A pedestrian ramp should be installed on the northeast corner of the Cary Avenue and Broadway intersection.
- The utility pole on the northeast corner of the Cary Avenue and Broadway intersection should be relocated.

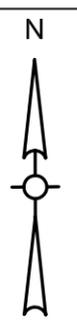
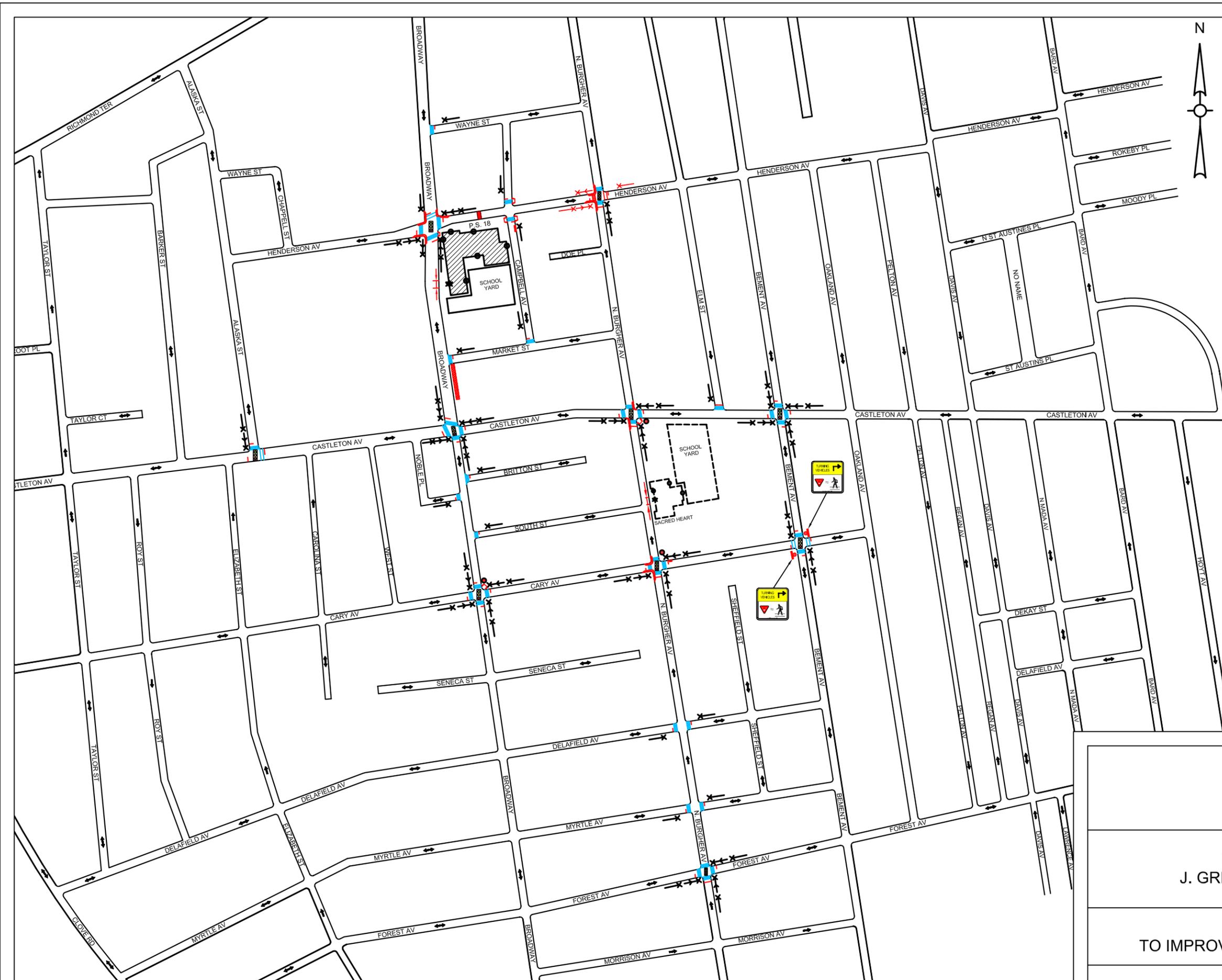
➤ Install curb extensions at the following locations:

Consideration should be given to installing curb extensions at the following locations, provided that the Final Design confirms that construction of the recommended curb extensions would be feasible and not interfere with traffic operations. Final details pertaining to the number, location and geometry of curb extensions will be developed during the Final Design/Contract Document preparation.

- On the northwest and southwest corners of the Cary Avenue and North Burgher Avenue intersection.

- On the east side of North Burger Avenue, north of Castleton Avenue, for the northerly crosswalk, and on the west side of North Burgher Avenue, south of Castleton Avenue, for the southerly crosswalk.

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks. These curb extensions would not eliminate or reduce the width of any moving lanes.



LEGEND

-  MAIN ENTRANCE
-  OTHER ENTRANCES
-  EXISTING TRAVEL DIRECTION
-  EXISTING ADVANCE WARNING SIGN OR SCHEDULED TO BE INSTALLED
-  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY OR SCHEDULED TO BE INSTALLED
-  EXISTING SIGNALIZED LOCATION
-  EXISTING SCHOOL CROSSWALK
-  EXISTING PEDESTRIAN CROSSWALK
-  PROPOSED SPEED REDUCER
-  AREA OF SIDEWALK TO BE RECONSTRUCTED
-  PROPOSED SCHOOL CROSSWALK
-  PROPOSED PEDESTRIAN CROSSWALK
-  PROPOSED TRAFFIC SIGN
-  PROPOSED PEDESTRIAN RAMP
-  EXISTING STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
-  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
-  PROPOSED "NO STANDING"
-  POLE TO BE RELOCATED
-  DRAINAGE INLET TO BE RELOCATED
-  PROPOSED CURB EXTENSION (NECKDOWN)

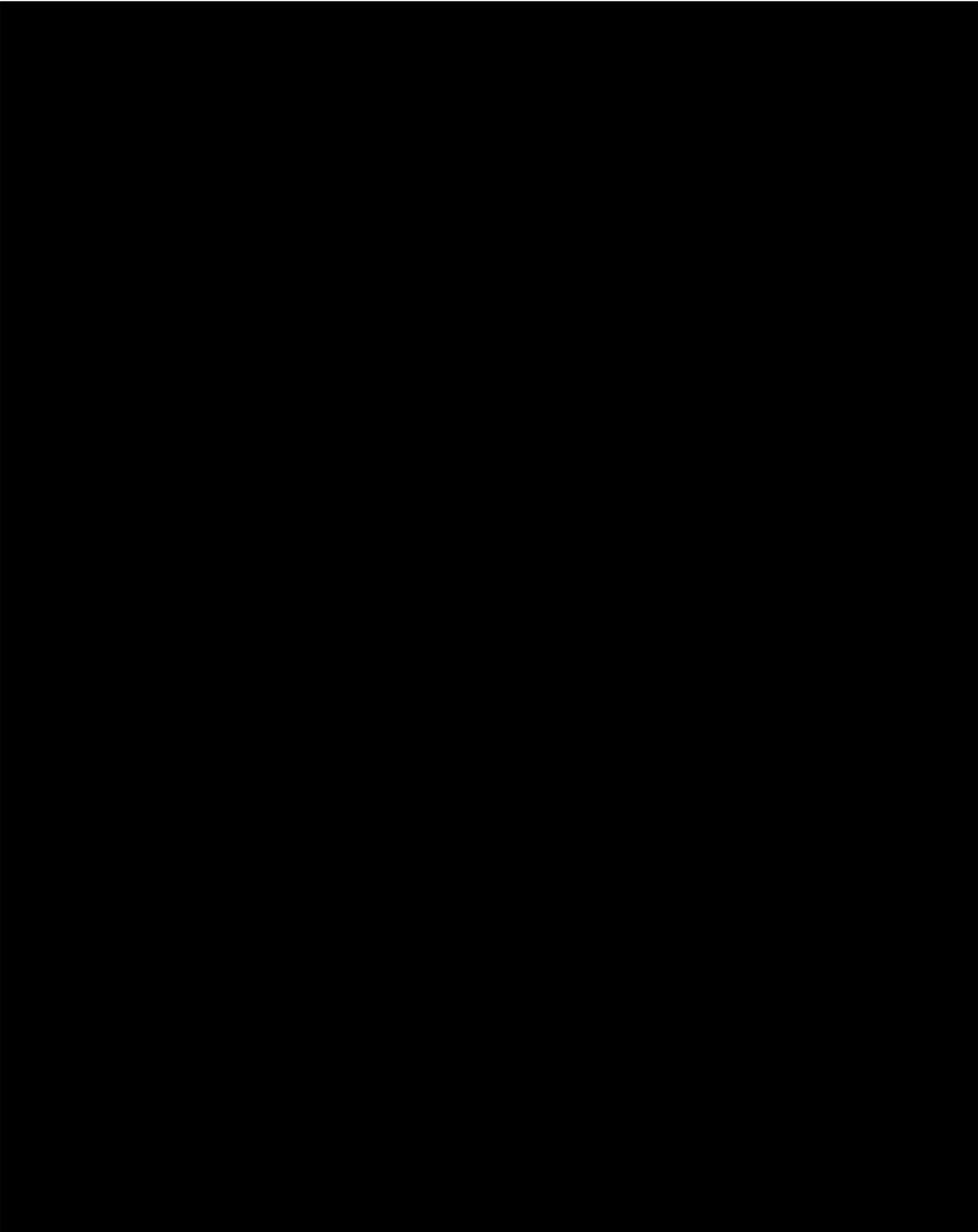
1" = 400'

EXHIBIT 7

P.S. 18 STATEN ISLAND
J. GREENLEAF WHITTIER SCHOOL

POTENTIAL MEASURES
TO IMPROVE STUDENT PEDESTRIAN SAFETY

APPENDIX



SPOT SPEED STUDY

Date: **May 9, 2005** Time: **11:15AM**
 Location: **Hunderson Ave between Broadway & Bemont Ave**
 Surveyor: **Richard Calvache & Keren Mor**

School: **P.S. 18**
 Direction: **Eastbound**
 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	1	1.0%	1.0%	14	196
15	0	0.0%	1.0%	0	0
16	0	0.0%	1.0%	0	0
17	0	0.0%	1.0%	0	0
18	3	3.0%	4.0%	54	972
19	0	0.0%	4.0%	0	0
20	4	4.0%	7.9%	80	1600
21	3	3.0%	10.9%	63	1323
22	8	7.9%	18.8%	176	3872
23	12	11.9%	30.7%	276	6348
24	9	8.9%	39.6%	216	5184
25	11	10.9%	50.5%	275	6875
26	3	3.0%	53.5%	78	2028
27	6	5.9%	59.4%	162	4374
28	6	5.9%	65.3%	168	4704
29	6	5.9%	71.3%	174	5046
30	2	2.0%	73.3%	60	1800
31	7	6.9%	80.2%	217	6727
32	3	3.0%	83.2%	96	3072
33	6	5.9%	89.1%	198	6534
34	1	1.0%	90.1%	34	1156
35	3	3.0%	93.1%	105	3675
36	2	2.0%	95.0%	72	2592
37	5	5.0%	100.0%	185	6845
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
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
	101	100.0%		2703	74923

Mean Speed = 26.8 mph Median Speed = 26.8 mph
 Standard Deviation = 5.1 mph 15th Percentile Speed = 21.5 mph
 Margin of Error (95% Confidence) = ± 1.0 mph 85th Percentile Speed = 32.0 mph

SPOT SPEED STUDY

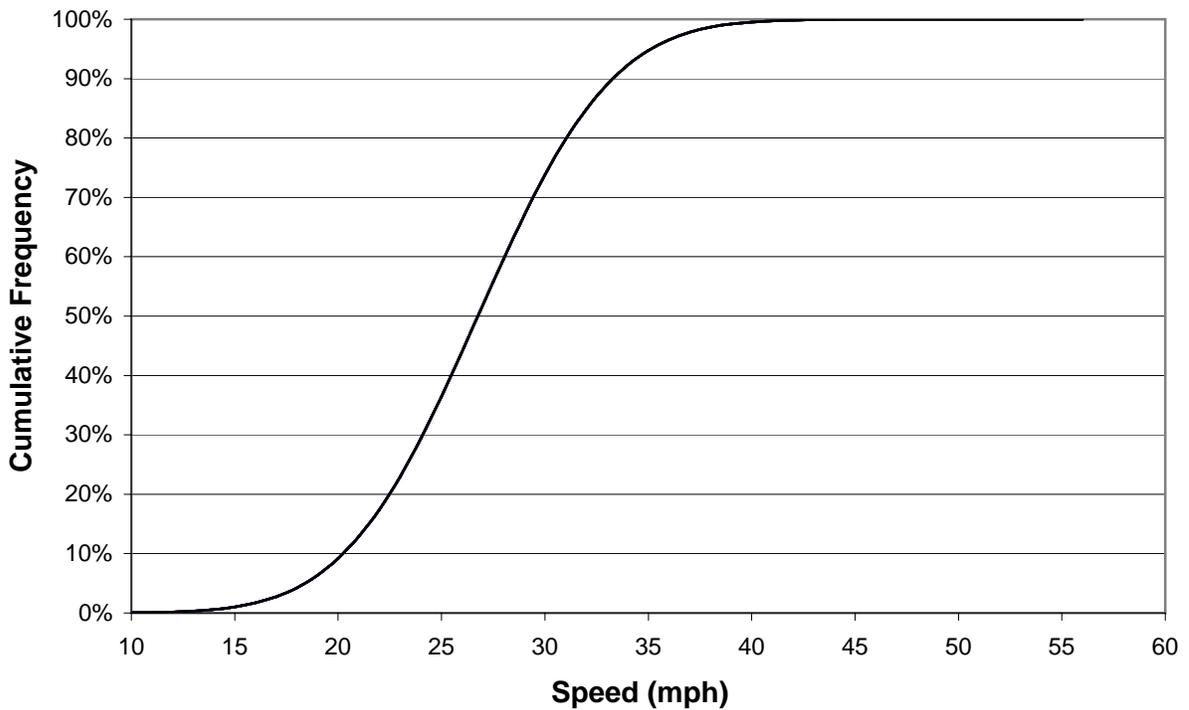
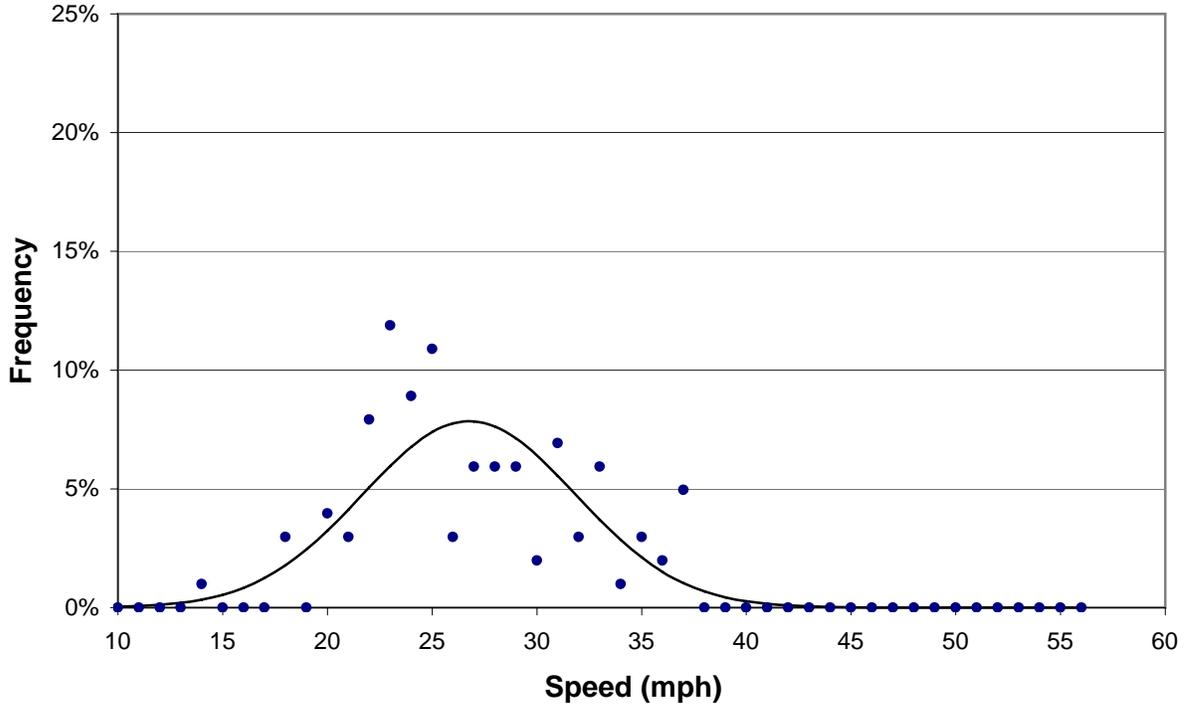
Date: **May 9, 2005**
Location: **Hunderson Ave between Broadway & Bemont Ave**
Surveyor: **Richard Calvache & Keren Mor**

Time: **11:15AM**

School: **P.S. 18**
Direction: **Eastbound**
Comments:

Mean Speed = 26.8 mph
Standard Deviation = 5.1 mph
Margin of Error (95% Confidence) = ± 1.0 mph

Median Speed = 26.8 mph
15th Percentile Speed = 21.5 mph
85th Percentile Speed = 32.0 mph



SPOT SPEED STUDY

Date: **May 9, 2005**
 Location: **Hunderson Ave between Broadway & Bemont Ave**
 Surveyor: **Richard Calvache & Keren Mor**

Time: **11:15AM**
 School: **P.S. 18**
 Direction: **Westbound**
 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	5	4.9%	4.9%	90	1620
19	2	2.0%	6.9%	38	722
20	4	3.9%	10.8%	80	1600
21	4	3.9%	14.7%	84	1764
22	3	2.9%	17.6%	66	1452
23	6	5.9%	23.5%	138	3174
24	1	1.0%	24.5%	24	576
25	10	9.8%	34.3%	250	6250
26	10	9.8%	44.1%	260	6760
27	8	7.8%	52.0%	216	5832
28	6	5.9%	57.8%	168	4704
29	9	8.8%	66.7%	261	7569
30	5	4.9%	71.6%	150	4500
31	2	2.0%	73.5%	62	1922
32	4	3.9%	77.5%	128	4096
33	4	3.9%	81.4%	132	4356
34	5	4.9%	86.3%	170	5780
35	7	6.9%	93.1%	245	8575
36	1	1.0%	94.1%	36	1296
37	4	3.9%	98.0%	148	5476
38	1	1.0%	99.0%	38	1444
39	0	0.0%	99.0%	0	0
40	0	0.0%	99.0%	0	0
41	1	1.0%	100.0%	41	1681
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
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
	102	100.0%		2825	81149

Mean Speed = 27.7 mph
 Standard Deviation = 5.4 mph
 Margin of Error (95% Confidence) = ± 1.0 mph

Median Speed = 27.7 mph
 15th Percentile Speed = 22.1 mph
 85th Percentile Speed = 33.3 mph

SPOT SPEED STUDY

Date: **May 9, 2005** Time: **11:15AM**
 Location: **Hunderson Ave between Broadway & Bemont Ave**
 Surveyor: **Richard Calvache & Keren Mor**

School: **P.S. 18**
 Direction: **Westbound**
 Comments:

Mean Speed = 27.7 mph Median Speed = 27.7 mph
 Standard Deviation = 5.4 mph 15th Percentile Speed = 22.1 mph
 Margin of Error (95% Confidence) = ± 1.0 mph 85th Percentile Speed = 33.3 mph

