

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



School Safety Engineering Project

FINAL REPORT: I.S. 2 (George L. Egbert School), Staten Island



Prepared by
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September 27, 2006

**School Safety Engineering Project
Final Report: I.S. 2, Staten Island**

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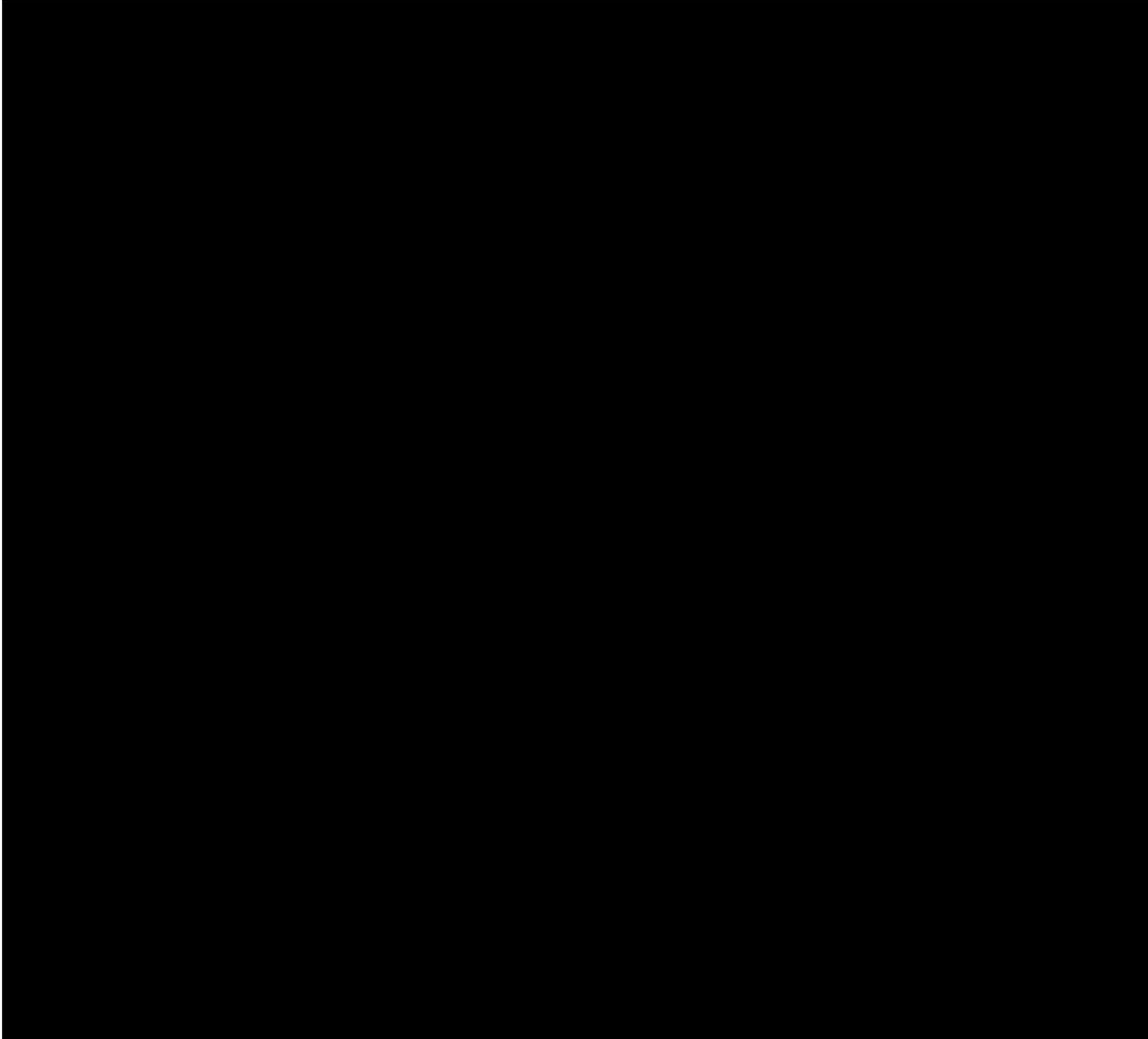
1. INTRODUCTION

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, 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). I.S. 2 (George L. Egbert 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

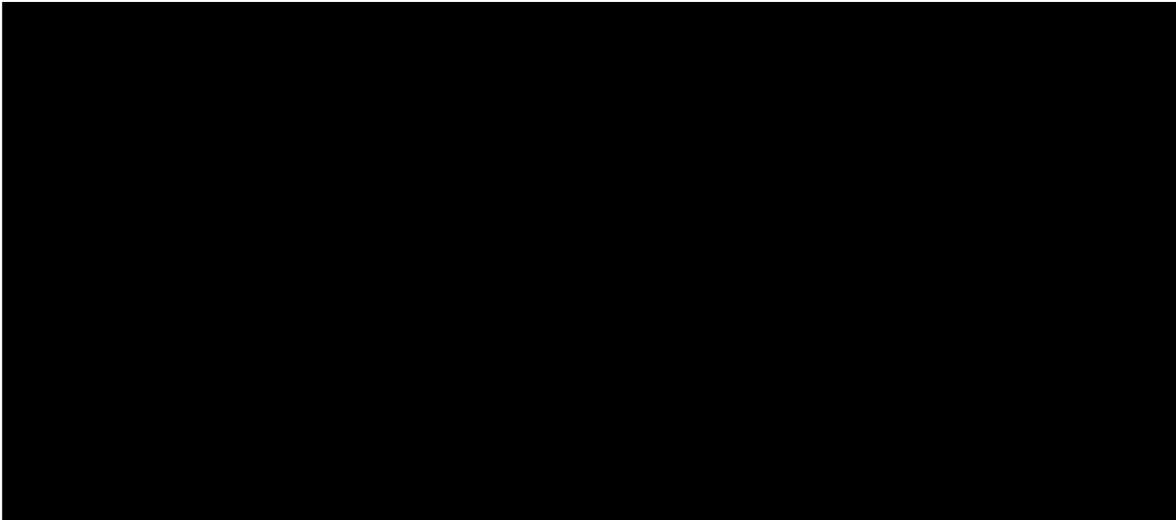
Exhibit 1 shows an aerial view of the neighborhood surrounding the school. I.S. 2 is bounded by Bedford Avenue to the north, Midland Avenue to the south, and Boundary Avenue to the west. The school's associated athletic facilities (including tennis and basketball courts, and baseball/softball fields) are located east of the school building, and adjacent to residential properties fronting Mason Avenue. The neighborhood surrounding the school consists primarily of residential uses, except for a wooded area directly opposite the school along the south side of Midland Avenue. I.S. 2 is also one block east of Hylan Boulevard, a roadway with many commercial uses that also carries significant traffic volumes. Another school, P.S. 38, is located east of, and adjacent to, the wooded area south of Midland Avenue.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Members of the consultant team and New York City Department of Transportation (NYCDOT) staff met with the principal and assistant principal from I.S. 2, as well as the district manager for Community Board 2, on the afternoon of Thursday, March 25, 2004. According to representatives of the school, students at I.S. 2 face the following problems:

- Difficulty crossing Hylan Boulevard at its intersection with Midland Avenue.
- Traffic signals provide insufficient time for pedestrians to cross Hylan Boulevard.
- High volume and high speed traffic along Midland Avenue, making pedestrian crossings of this roadway difficult and unsafe.
- A lack of traffic agents to control pedestrian movements and vehicular traffic.
- Parents double parking while dropping off and/or picking up students.

(See Appendix for a summary of the school’s survey responses).



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 roughly bounded by Old Town Road and Quintard Street on the north, Tysen’s Lane to the south, Todt Hill Road and Richmond Road to the west, and New York Bay (and the Narrows) to the east. However, school representatives reported that many students at I.S. 2 also travel to school from neighborhoods between Hylan Avenue and Todt Hill Road. Field observations during the school visit on March 25, 2004, also indicated many students crossing Hylan Boulevard.

According to school officials, approximately five percent of the students walk to school, five percent arrive by private vehicles, 20 percent arrive via yellow school bus, and 70 percent use public transportation.

Table 1 presents the modes of travel for I.S. 2, as identified by school officials on March 25, 2005.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	STUDENTS (Percentage)
Walk	5%
Driven by car	5%
School bus	20%
Bus/Subway	70%
Bicycle	0%
TOTAL	100%

2.7 OTHER STUDENT PEDESTRIAN TRAFFIC GENERATORS

A McDonald's restaurant is located on the southeast corner of the Hylan Boulevard and Midland Avenue intersection. In addition, a Duane Reade Pharmacy and other strip commercial uses are located on or near Hylan Boulevard. All of these uses generate a significant amount of pedestrian and vehicular traffic in the area, including students from I.S. 2.

2.8 CROSSING GUARD LOCATION

There are no crossing guards currently assigned to I.S. 2. During the school visit, the principal indicated that police officers are needed to direct children crossing at nearby intersections, especially at the intersection of Hylan Boulevard and Midland Avenue.

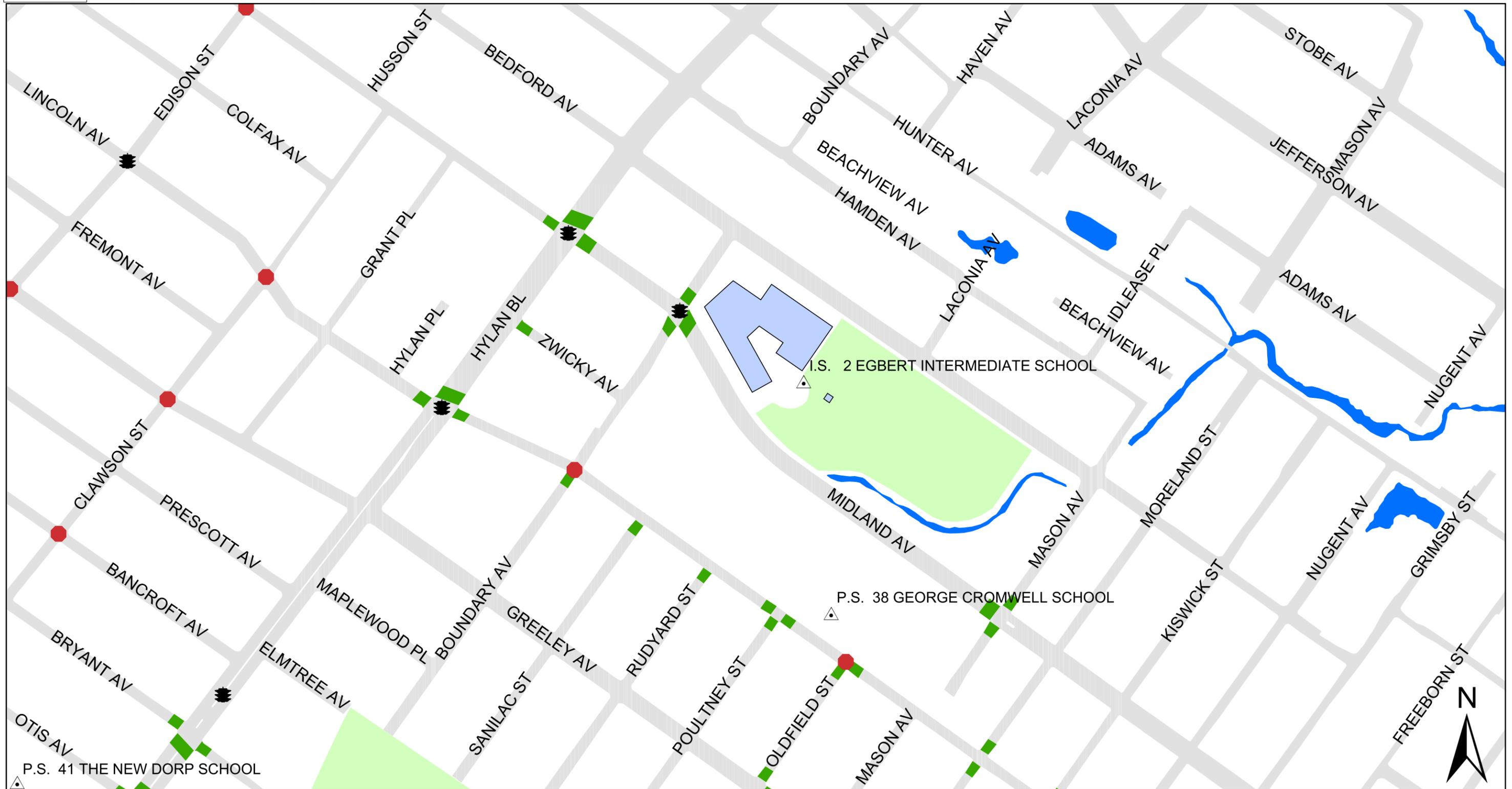


0 250 500 1,000 Feet

EXHIBIT 1
I.S. 02 STATEN ISLAND
GEORGE L. EGBERT SCHOOL
AERIAL PHOTOGRAPH



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	

IS 2 Staten Island
EGBERT INTERMEDIATE SCHOOL

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

Map created on 11/16/2006

EXHIBIT 3

COMM. BOARD: 502
PRECINCT: 122

1.5.1

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to school representatives, approximately 750 students ride a city (MTA) bus to and from school, and approximately 200 students ride a yellow school bus to and from school. Bus transportation for students of I.S. 2 consists of six specially-scheduled city (MTA) buses, plus six yellow school buses and two special buses. The six yellow buses stop on Bedford Avenue (behind the school) and the six MTA buses stop in the vicinity of the main entrance on Midland Avenue. Following dismissal, approximately 200 students wait in the cafeteria for transport via the yellow buses on Bedford Avenue.

The six specially-scheduled MTA buses await school dismissal at the curbside bus stop in front of the main entrance to the school on Midland Avenue. The school has painted large yellow numbers on the sidewalk and pavement to delineate the appropriate boarding areas. In addition, there are also yellow transverse lines from the curb across the parking lane to help the bus drivers and students identify their particular boarding station (see Figures 2 and 4).

Other students travel on regularly-scheduled MTA buses on regular routes. They access these buses at designated local bus stops.

Observations by the consultant team indicated that there is sufficient space on Midland Avenue and Bedford Avenue for school bus operations.



Figure 2: Looking east on Midland Avenue across the intersection with Boundary Avenue (note school bus and MTA buses).

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives, approximately five percent of the students are dropped off. Parents typically double park across the street from the school entrance on Midland Avenue while dropping off students in the morning or awaiting the afternoon student dismissal. The double-parked vehicles temporarily block the existing bicycle lane and a portion of the eastbound travel lane of Midland Avenue.

School administrators had previously requested that parents use Bedford Avenue to drop off and pick up students, but many parents did not comply.



Figure 3: Looking east on Midland Avenue from the intersection with Boundary Avenue.

3.3 PARKING REGULATIONS

Parking regulations around the school are shown in Exhibit 4.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3 shows the existing signals and pavement markings assigned to I.S. 2. It should be noted that a citywide signage program is currently underway to upgrade school signage to the Federal Manual of Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green signs accompanied by downward pointed arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 7.

Figure 4 shows pavement markings and signs in front of the school’s main entrance on Midland Avenue.



Figure 4: Looking west on Midland Avenue toward the intersection with Boundary Avenue (the main entrance to I.S. 2 is shown to the right).

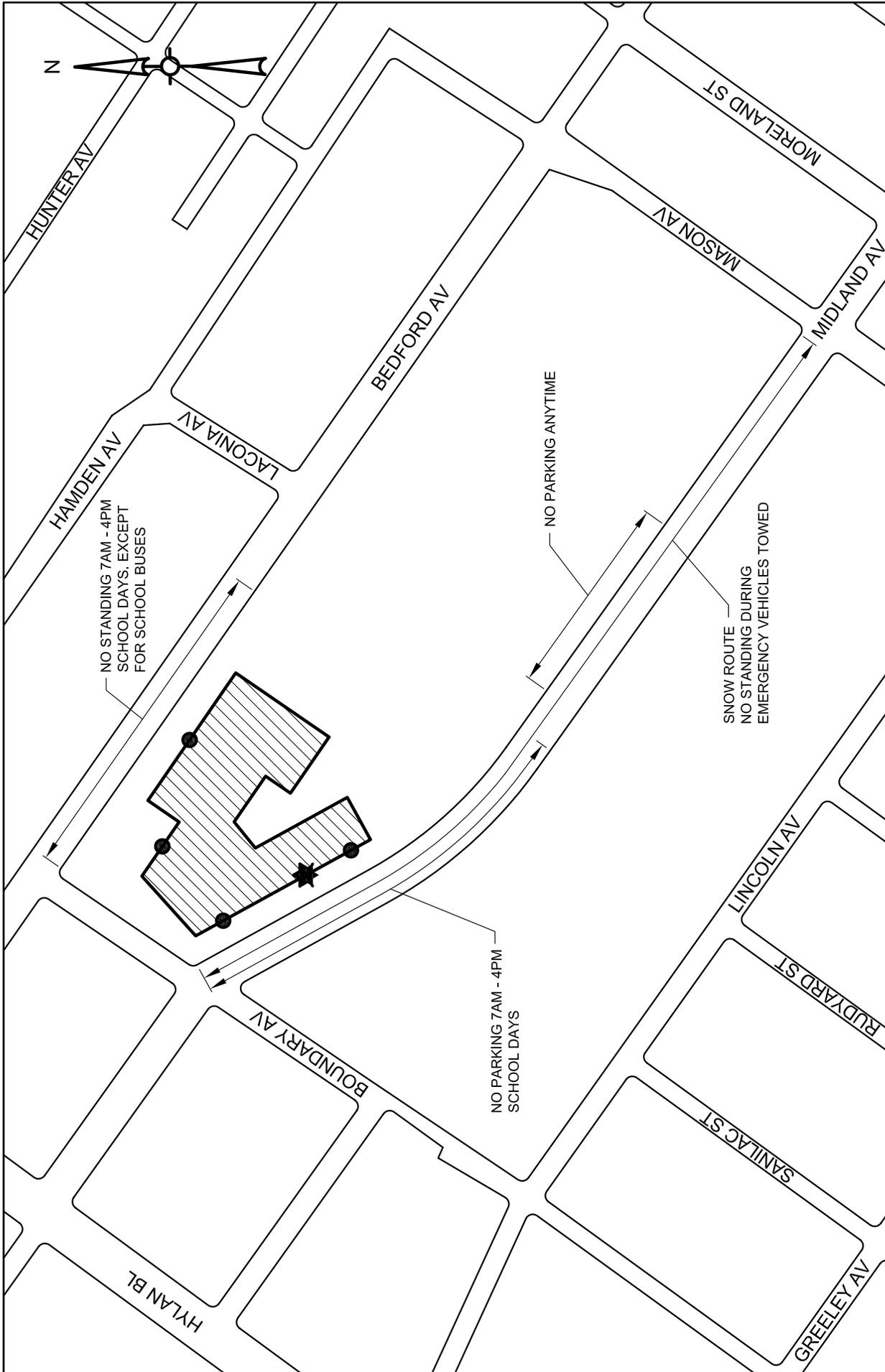
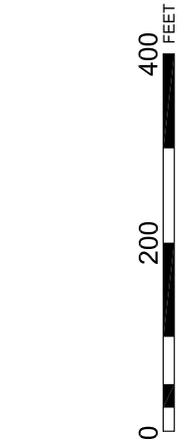


EXHIBIT 4
 I.S. 02 STATEN ISLAND
 GEORGE L. EGBERT SCHOOL
 EXISTING PARKING REGULATIONS



- LEGEND:**
- ★ MAIN ENTRANCE
 - ENTRANCE

3.5 ACCIDENT SUMMARY

Exhibit 5 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of I.S. 2 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.

TABLE 2: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Hylan Boulevard and Midland Avenue	78	5	1	1
Midland Avenue and Boundary Avenue	9	1	0	0
Hylan Boulevard and Lincoln Avenue	60	3	0	0
Hylan Boulevard and Zwicky Avenue	0	0	0	0
Boundary Avenue and Bedford Avenue	3	0	0	0
TOTAL	150	9	1	1

TABLE 3: ACCIDENT SUMMARY OF NYPD DATA (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Hylan Boulevard and Midland Avenue	143	9	0	4
Midland Avenue and Boundary Avenue	20	0	0	0
Hylan Boulevard and Lincoln Avenue	97	9	1	1
Hylan Boulevard and Zwicky Avenue	0	0	0	0
Boundary Avenue and Bedford Avenue	1	0	0	0
TOTAL	261	18	1	5

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

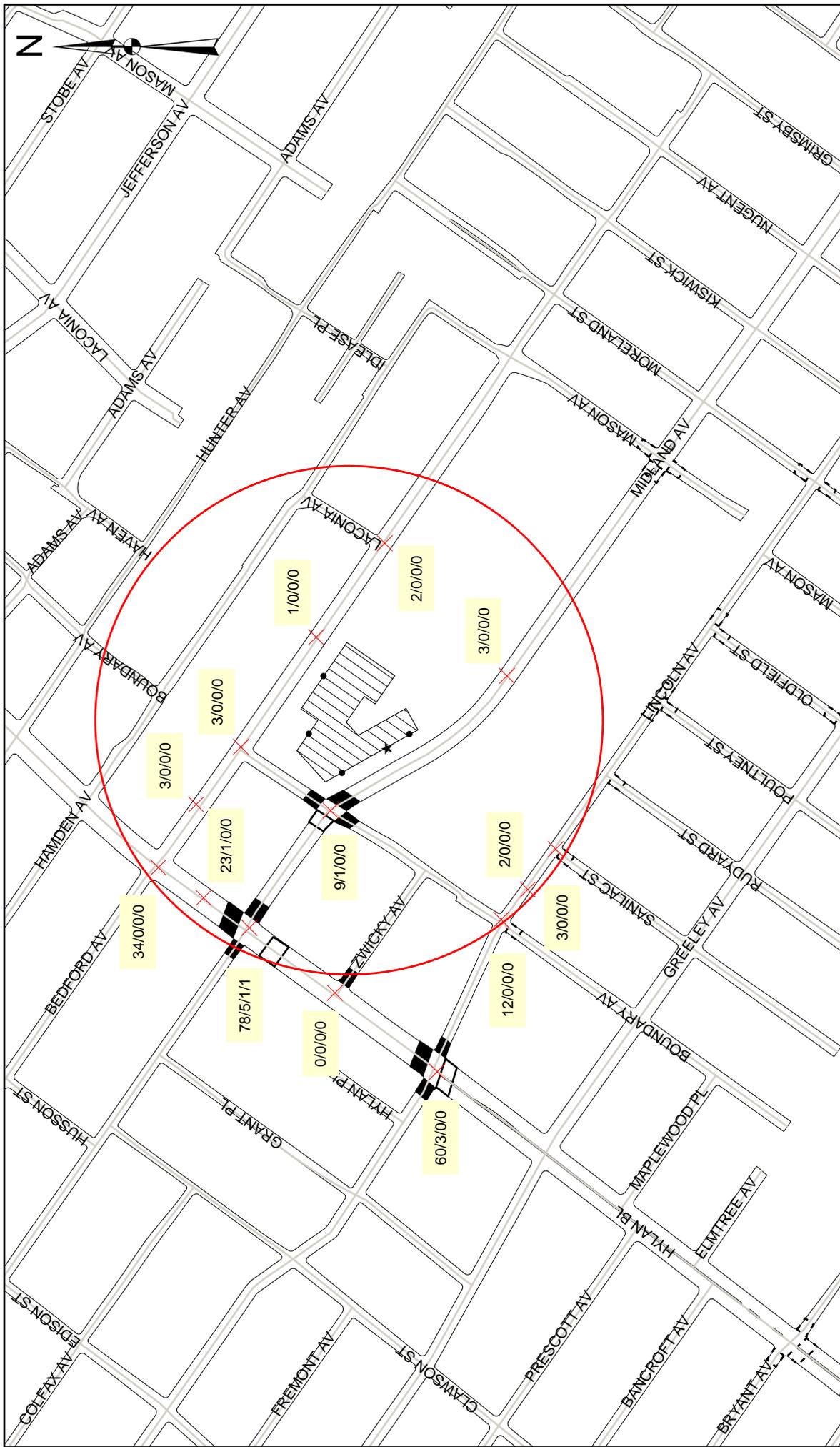


EXHIBIT 5

I.S. 2 STATEN ISLAND

GEORGE L. EGBERT SCHOOL

ACCIDENT SUMMARY (1998-2000)

0 250 500 1,000 Feet

LEGEND:

- ACCIDENT LOCATION
- SCHOOL CROSSWALK
- PEDESTRIAN CROSSWALK
- 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 I.S. 2.

3.6.1 Hylan Boulevard and Midland Avenue

This is a four-leg signalized intersection with school crosswalks located across the north leg of Hylan Boulevard, and east and west legs of Midland Avenue. A pedestrian crosswalk is located across the south leg of Hylan Boulevard. Although most students were observed crossing Hylan Boulevard using the northerly school crosswalk, some students were observed using the southerly pedestrian crosswalk.

Hylan Boulevard is a two-way street with two travel lanes and one on-street parking lane on each side of the roadway. The on-street parking lanes are converted into travel lanes during peak periods: parking is prohibited in the northbound parking lane during the morning peak period, and prohibited in the southbound parking lane during the evening peak period. There is also a painted center median on Hylan Boulevard with an exclusive left-turn lane for traffic movements from southbound Hylan Boulevard onto eastbound Midland Avenue.

East of the intersection with Hylan Boulevard, Midland Avenue has two westbound approach lanes (separate exclusive left-turn and right-turn lanes) to Hylan Boulevard, and one travel lane, one bicycle lane, and one on-street parking lane in the eastbound direction. West of the intersection, Midland Avenue is a one-way eastbound street with three approach lanes, including separate exclusive left-turn, through, and right-turn lanes.

There are two bus stops located at the intersection. The first is located on northbound Hylan Boulevard, north of the intersection (a far-side bus stop). The second is located on eastbound Midland Avenue, east of the intersection (also a far-side stop).

There were a total of 78 accidents reported at this intersection between 1998 and 2000 (see Table 2), including five pedestrian accidents, one of which involved a fatality, and another that was school-related. The school-related accident occurred at approximately 8:00 am on Friday, June 11, 1999 when a 13-year-old pedestrian sustained a "possible injury" while crossing with the signal at the intersection. At the time of the accident, the road surface was dry and the weather was clear. The accident also occurred during daylight conditions.

In order to gain a better understanding of existing traffic and pedestrian operations at this intersection, vehicle turning movement and pedestrian crossing counts were conducted on Tuesday, May 10, 2005 from 2:15 to 3:15 pm. The results of this count are shown in Tables 4 and 5 below, and in Exhibit 6.

TABLE 4: VEHICLE TURNING MOVEMENT VOLUMES (2:15 TO 3:15 PM)									
INTERSECTION	HYLAN BOULEVARD NORTHBOUND		HYLAN BOULEVARD SOUTHBOUND		MIDLAND AVENUE EASTBOUND			MIDLAND AVENUE WESTBOUND	
	T	R	L	T	L	T	R	L	R
HYLAN BOULEVARD AND MIDLAND AVENUE	1,326	172	40	1,308	220	224	72	244	34
TOTAL	1,498		1,348		516			278	

TABLE 5: PEDESTRIAN CROSSING VOLUMES (2:15 TO 3:15 PM)				
INTERSECTION	CROSSING HYLAN BOULEVARD NORTH CROSSWALK	CROSSING MIDLAND AVENUE EAST CROSSWALK	CROSSING HYLAN BOULEVARD SOUTH CROSSWALK	CROSSING MIDLAND AVENUE WEST CROSSWALK
HYLAN BOULEVARD AND MIDLAND AVENUE	136	94	62	55

In addition, Figures 5 through 9 show pedestrian crossing conditions observed at the intersection of Hylan Boulevard and Midland Avenue during the field visit on the afternoon of March 25, 2004.



Figure 5: Students are shown crossing the north leg of Hylan Boulevard at its intersection with Midland Avenue against a “DON'T WALK” indication. Note that conflicting eastbound left-turn vehicle movements from Midland Avenue are also taking place.



Figure 6: Students waiting to cross Hylan Boulevard on the northeast corner of the intersection with Midland Avenue.



Figure 7: Students attempting to cross the north leg of the Hylan Boulevard/Midland Avenue intersection against the “DON’T WALK” signal.



Figure 8: Students crossing the north leg of the Hylan Boulevard/Midland Avenue intersection during the leading eastbound green interval. Note the “DON’T WALK” signal display and conflicts with eastbound left-turning vehicular traffic.



Figure 9: Students crossing the north and south legs of the Hylan Boulevard/Midland Avenue intersection using the school and pedestrian crosswalks, respectively.

3.6.2 Midland Avenue and Boundary Avenue

This is a four-leg signalized intersection with school crosswalks located across the north and south legs of Boundary Avenue, and the east leg of Midland Avenue. A pedestrian crosswalk is located across the west leg of Midland Avenue (see Figures 2, 3 and 10).

Midland Avenue is a two-way street with one travel lane, one bicycle lane, and one on-street parking lane on each side of the roadway. Boundary Avenue is a two-way street with one travel lane and one on-street parking lane on each side of the roadway.

There were a total of nine accidents reported at this intersection between 1998 and 2000 (see Table 2), including one pedestrian accident that was not school-related. There were no fatal pedestrian accidents between 1998 and 2000.

School representatives reported a problem with vehicles speeding on Midland Avenue in the vicinity of I.S. 2. In order to verify the existence of a speeding problem and to determine its extent, a spot speed survey was conducted on Midland Avenue between Boundary Avenue and Mason Avenue in both the eastbound and westbound directions.

In the analysis of vehicle speeds, the 85th percentile speed is considered to be the representative speed for a specified street segment. By definition, this is the speed at which 85 percent of the surveyed vehicles are traveling below and 15 percent of the surveyed vehicles are traveling above. An 85th percentile speed exceeding a 30 mph

threshold indicates a potential speeding problem that may require appropriate traffic calming measures.

The results of the spot speed survey indicated that vehicles on Midland Avenue were traveling at 85th percentile speeds of 41 mph in both the eastbound and westbound directions. Both of these 85th percentile speeds are above the 30 mph threshold. Recommendations to alleviate speeding on Midland Avenue are discussed in Section 4.

Detailed summaries of the spot speed surveys on Midland Avenue are provided in the Appendix at the end of the document.



Figure 10: Looking north on Boundary Avenue to the intersection with Midland Avenue.

3.6.3 Boundary Avenue and Bedford Avenue

The Boundary Avenue and Bedford Avenue intersection is a three-leg unsignalized “T”-intersection with a pedestrian crosswalk across the south leg (see Figures 1 and 11). During the field visit, students from I.S. 2 were observed utilizing this pedestrian crosswalk. Bedford Avenue and Boundary Avenue are both two-way streets with one travel lane and one on-street parking lane on each side of the roadways. The northbound approach of Boundary Avenue is stop-controlled at its intersection with Bedford Avenue.

There were a total of three accidents reported at this intersection between 1998 and 2000 (see Table 2), but none of the accidents were pedestrian-related.



Figure 11: Looking north on Boundary Avenue to the intersection with Bedford Avenue.

3.6.4 Hylan Boulevard and Lincoln Avenue

The is a four-leg signalized intersection with school crosswalks located across the north leg of Hylan Boulevard, and the west and east legs of Lincoln Avenue (see Figure 12).

Hylan Boulevard is a two-way street with two travel lanes and one on-street parking lane on each side of the roadway. The on-street parking lanes are converted into travel lanes during peak periods: parking is prohibited in the northbound parking lane during the morning peak period, and prohibited in the southbound parking lane during the evening peak period. There is also a painted center median on Hylan Boulevard with an exclusive left-turn lane for northbound left-turns from Hylan Boulevard onto westbound Lincoln Avenue.

East of the intersection with Hylan Boulevard, Lincoln Avenue is a one-way westbound street with three travel lanes (including two exclusive left-turn lanes and one shared through/right-turn lane on the approach to Hylan Boulevard), and no parking permitted on either side of the roadway. West of the intersection, Lincoln Avenue is a one-way westbound street with two travel lanes and on-street parking permitted on both sides of the roadway.

There were a total of 60 accidents reported at this intersection between 1998 and 2000 (see Table 2), including three pedestrian accidents, none of which were school-related.



Figure 12: Looking west on Lincoln Avenue to the intersection with Hylan Boulevard.

3.6.5 Hylan Boulevard and Zwicky Avenue

This is a three-leg unsignalized “T”-intersection with a school crosswalk located across the east leg of Zwicky Avenue (see Figure 13). Hylan Boulevard is a two-way street with two travel lanes and one on-street parking lane on each side of the roadway. The on-street parking lanes are converted into travel lanes during peak periods: parking is prohibited in the northbound parking lane during the morning peak period, and prohibited in the southbound parking lane during the evening peak period. There is also a two-way left-turn lane in the center of Hylan Boulevard.

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



Figure 13: Looking west on Zwicky Avenue to the intersection with Hylan Boulevard.

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at all signalized intersections in the vicinity of I.S. 2, and were found to be adequate based upon a child pedestrian walking at a rate of three feet per second (see Table 5).

TABLE 6: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
Intersection	Crosswalk Length (Feet)	Pedestrian Time Actual (Seconds)	Pedestrian Time Required (Seconds)	Timing Adjustment Required?
Hylan Boulevard and Midland Avenue				
crossing Hylan Boulevard	72	32	27	NO
crossing Midland Avenue -east leg	44	65	18	NO
crossing Midland Avenue -west leg	30	65	13	NO
Midland Avenue and Boundary Avenue				
crossing Midland Avenue	44	28	18	NO
crossing Boundary Avenue	36	58	15	NO
Hylan Boulevard and Lincoln Avenue				
crossing Hylan Boulevard	71	30	27	NO
crossing Lincoln Avenue	30	80	13	NO

Note: A child pedestrian walking rate of 3 feet/second, plus 3 seconds reaction time, was utilized to calculate the required pedestrian crossing time.

3.8 PHYSICAL CONDITIONS

3.8.1 Roadways and Sidewalks

The roadways and sidewalks in the vicinity of I.S. 2 were observed to be in fair condition. Sidewalks on the school's block faces were found to be typically 15 to 20 feet wide and in fair condition.

3.8.2 Pedestrian Ramps

In general, pedestrian ramps in the vicinity of I.S. 2 were observed to be standard. However, there were some locations where the pedestrian ramps do not meet current standards relative to grade or width, and/or are obstructed or missing. The following summarizes the existing deficiencies as observed in the field:

- The existing pedestrian ramp on the northwest corner of the Midland Avenue and Hylan Boulevard intersection is obstructed by utility poles (see Figure 14).
- The existing pedestrian ramp on the northeast corner of the Midland Avenue and Hylan Boulevard intersection is too narrow and not properly located (see Figure 16).
- Pedestrian ramps are missing for the crosswalk located across Boundary Avenue at the intersection with Bedford Avenue (see Figure 1).
- Pedestrian ramps are missing for the school crosswalk located across the east leg of Midland Avenue at the intersection with Boundary Avenue (see Figure 2).



Figure 14: Looking east on the north side of Midland Avenue to the intersection with Hylan Boulevard.

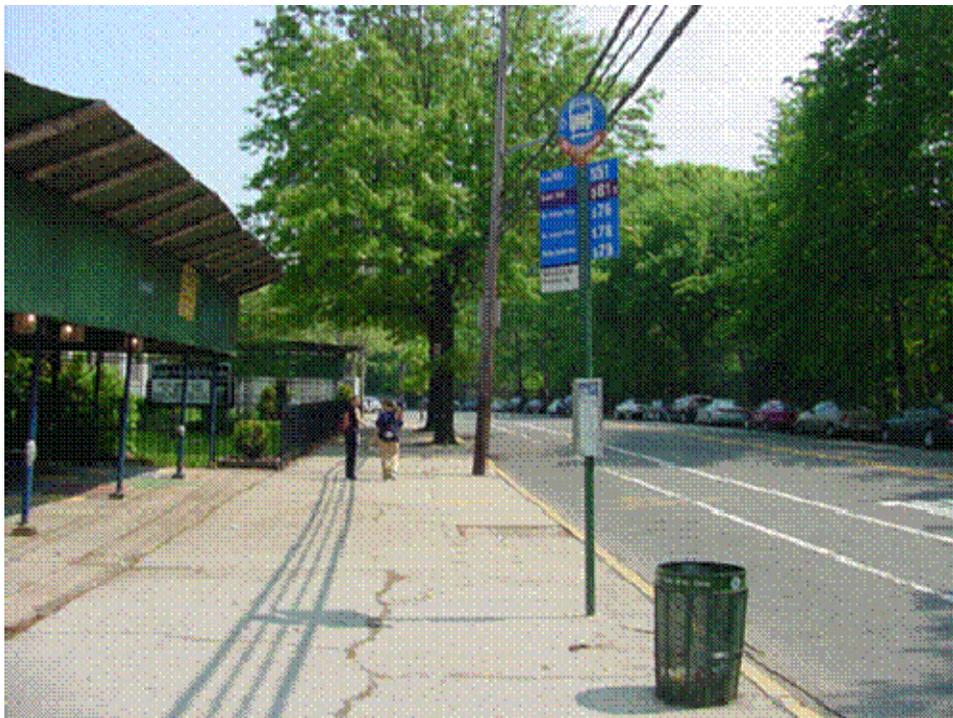
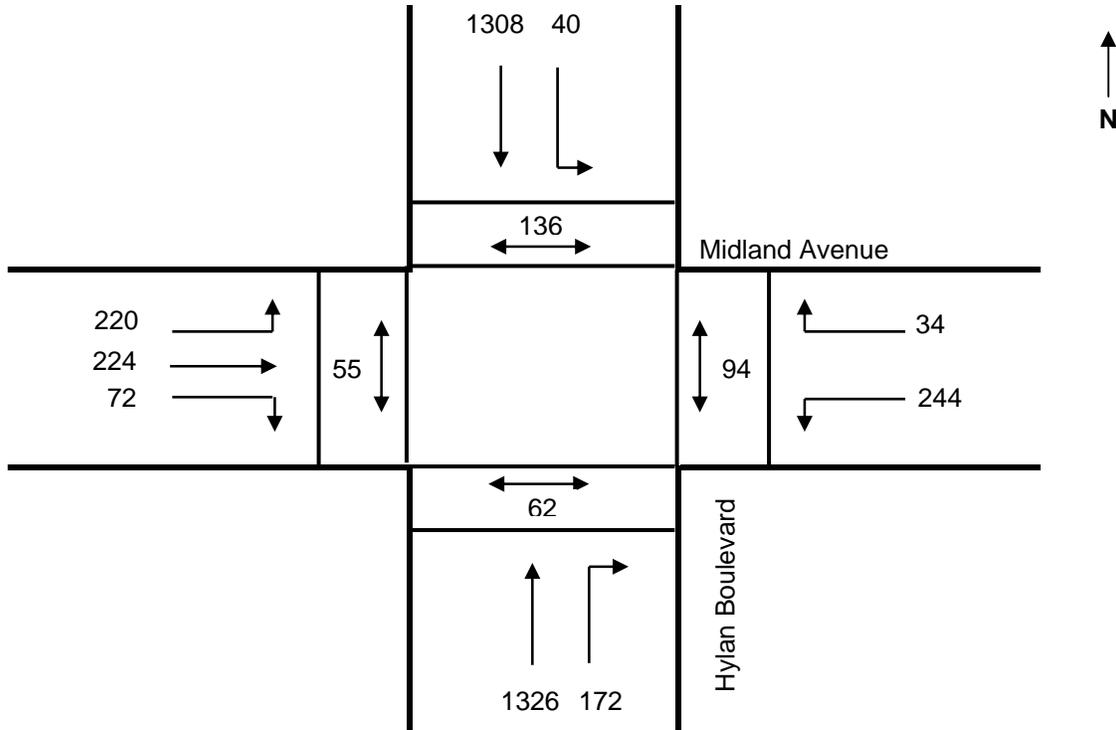


Figure 15: Looking east on the north side of Midland Avenue at the sidewalk in front of I.S. 2.



Figure 16: Looking southwest from the northeast corner of the Hylan Boulevard and Midland Avenue intersection (note narrow pedestrian ramp on northeast corner).

One Hour Traffic Volumes
Tuesday, May 10th, 2005 2:15pm - 3:15pm



Intersection of Midland Avenue and Hylan Boulevard

Table of Content:	
	Pedestrian Counts
	Vehicle Movement

EXHIBIT 6
I.S. 02 STATEN ISLAND GEORGE L. EGBERT SCHOOL
TRAFFIC AND PEDESTRIAN COUNTS

4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes the proposed measures to improve student pedestrian safety around I.S. 2. 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 I.S. 2 is discussed as follows, and is shown in more detail in Exhibit 7 at the end of this section.

4.1 SHORT-TERM MEASURES

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

Replace the existing “NO PARKING 7AM – 4PM SCHOOL DAYS” signs on the north side of Midland Avenue with “NO STANDING 7AM – 4PM SCHOOL DAYS” 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).

➤ Remove parking along south side of Midland Avenue

According to school officials, parents typically double park on the south side of Midland Avenue opposite the school’s main entrance while dropping off students in the morning or awaiting the afternoon dismissal. These parked vehicles block the bicycle lane and a portion of the eastbound travel lane on Midland Avenue during these times. Therefore, it is recommended to:

- Install “NO STANDING 7AM – 4PM SCHOOL DAYS” signs on the south side of Midland Avenue, east of Boundary Avenue, in front of the school building.

➤ Install graphic “YIELD TO PEDESTRIAN” sign

“YIELD TO PEDESTRIAN” signs should be installed on intersection approaches with substantial vehicle–student pedestrian volumes. A “YIELD TO PEDESTRIAN” sign is recommended on the following intersection approach around I.S. 2:

- The eastbound approach on Bedford Avenue at its intersection with Boundary Avenue.

➤ 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.

➤ *Intersection of Hylan Boulevard and Midland Boulevard*

This is a controlled intersection with high volumes of cars and pedestrians. During the field visit, it was observed that significant numbers of students are crossing against the walk signal at this intersection. It is therefore recommended to:

- Request that NYPD assign a crossing guard at this intersection.
- NYCDOT Safety Education Program work with the school to educate the students not to cross against signals.

➤ *Install school crosswalk at the Boundary Avenue and Bedford Avenue intersection*

Students from I.S. 2 were observed using the existing pedestrian crosswalk located across the south leg of the Boundary Avenue and Bedford Avenue intersection, which is adjacent to the school. Therefore, it is recommended to:

- Convert the existing pedestrian crosswalk located across the south leg of the Boundary Avenue and Bedford Avenue intersection to a school crosswalk, and install all appropriate advance warning devices.

➤ *Speeding on Midland Avenue*

The school officials reported high vehicle speeds as a problem on Midland Avenue. Therefore, a spot speed survey was conducted on Midland Avenue between Boundary Avenue and Mason Avenue in order to verify the existence of a speeding problem and to determine its extent. The spot speed survey indicated an 85th percentile speed of 41 mph for both the eastbound and westbound directions on Midland Avenue. These results indicate the need for speed reduction measures (i.e. speed reducers) for this section of roadway.

However, because Midland Avenue is a local bus route, this precludes the use of speed reducers. Further, Midland Avenue is a designated snow emergency route and also a designated truck route. Curb extensions (neckdowns) would also not be conducive to the character of the roadway at this location. This location is also not a candidate for reduced “school zone” speed limits because it is not a minor local roadway. However, a technique often used to slow traffic on a roadway is the use of an automatic “speed board” which informs an approaching driver of the actual speed of the vehicle, and also reminds drivers of the speed limit for the roadway.

Therefore, it is recommended to:

- Install speed boards in both directions on Midland Avenue in the vicinity of I.S. 2.

4.2 LONG-TERM MEASURES

➤ Consider installing curb extensions at the following intersections:

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

- The southwest corner of the Hylan Boulevard and Lincoln Avenue intersection.
- The northeast corner of Boundary Avenue at the intersection with Midland Avenue .

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 [or intersections]. These curb extensions would not eliminate or reduce the width of any moving lanes.

➤ Install pedestrian ramps

Pedestrian ramps are missing at several locations. Therefore, it is recommended to:

- Install pedestrian ramps on the northeast and southeast corners of the Midland Avenue and Boundary Avenue intersection for the crosswalk located across the east leg of Midland Avenue (2 ramps).
- Install pedestrian ramps on the southeast and southwest corners of the Boundary Avenue and Bedford Avenue intersection for the proposed school crosswalk across the south leg of the intersection (2 ramps).

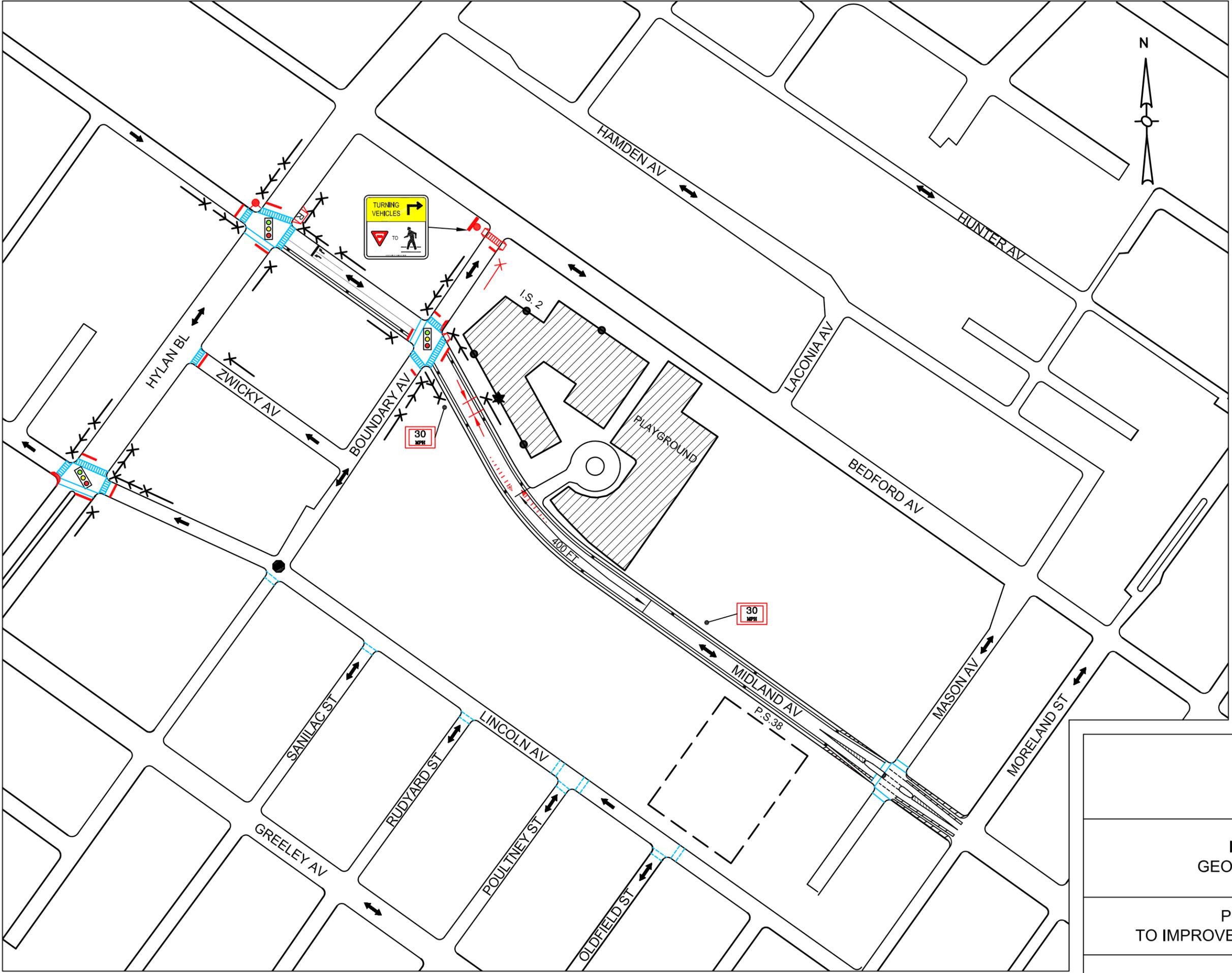
➤ Relocate obstructions in crosswalk path

Utility poles on the northwest corner of the Hylan Boulevard and Midland Avenue intersection obstruct the existing crosswalk (see Figure 14). In addition, the existing pedestrian ramp on the northeast corner of this intersection is too narrow and not properly located (see Figure 16).

Therefore, it is recommended to:

- Relocate the utility poles and any associated crosswalk obstructions located on the northwest corner of the Hylan Boulevard and Midland Avenue intersection.

- Reconstruct the existing pedestrian ramp located on the northeast corner of the Hylan Boulevard and Midland Avenue intersection in accordance with current design standards.



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 BIKE LANE
-  EXISTING ALL WAY STOP LOCATION
-  EXISTING SCHOOL CROSSWALK
-  EXISTING PEDESTRIAN CROSSWALK
-  EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
-  PROPOSED ADVANCE WARNING SIGN
-  PROPOSED SCHOOL CROSSWALK WARNING ASSEMBLY
-  PROPOSED SCHOOL CROSSWALK
-  PROPOSED ADVANCED WARNING MARKINGS
-  PROPOSED TRAFFIC SIGN
-  PROPOSED PEDESTRIAN RAMP
-  EXISTING PEDESTRIAN RAMP TO BE RECONSTRUCTED
-  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
-  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
-  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
-  PROPOSED SPEED BOARD
-  UTILITY POLE TO BE RELOCATED
-  PROPOSED CURB EXTENSION (NECKDOWN)

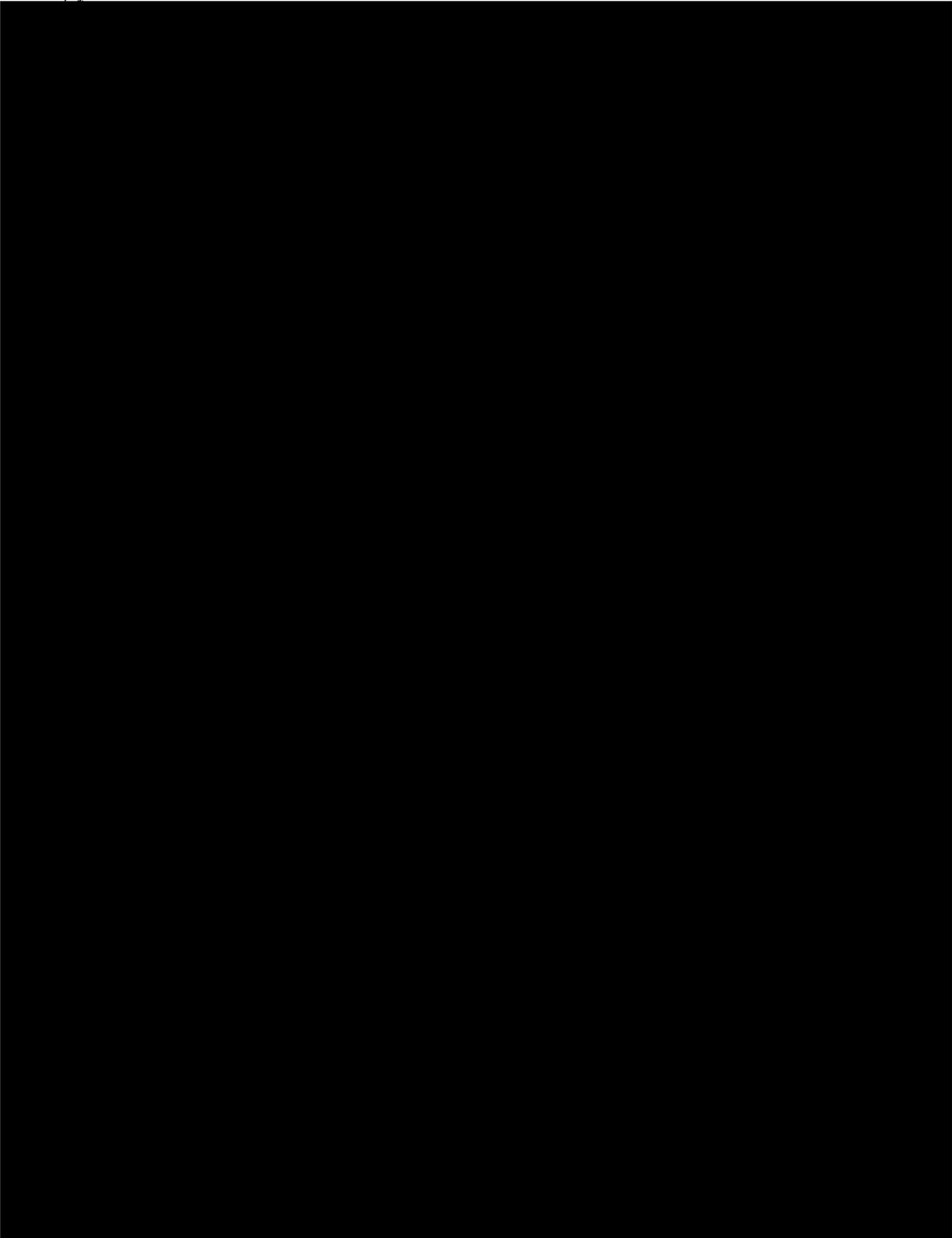
1" = 200'

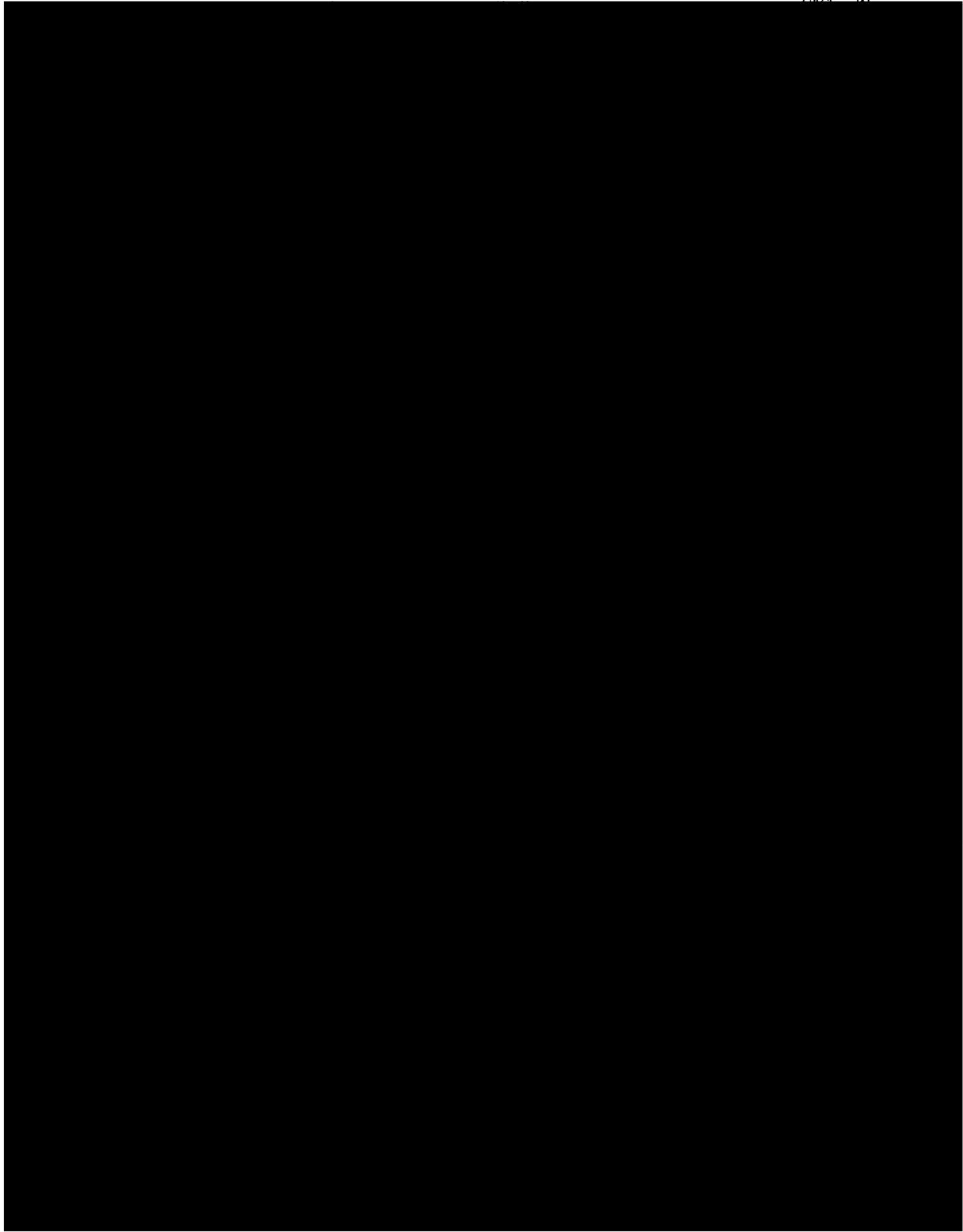
EXHIBIT 7

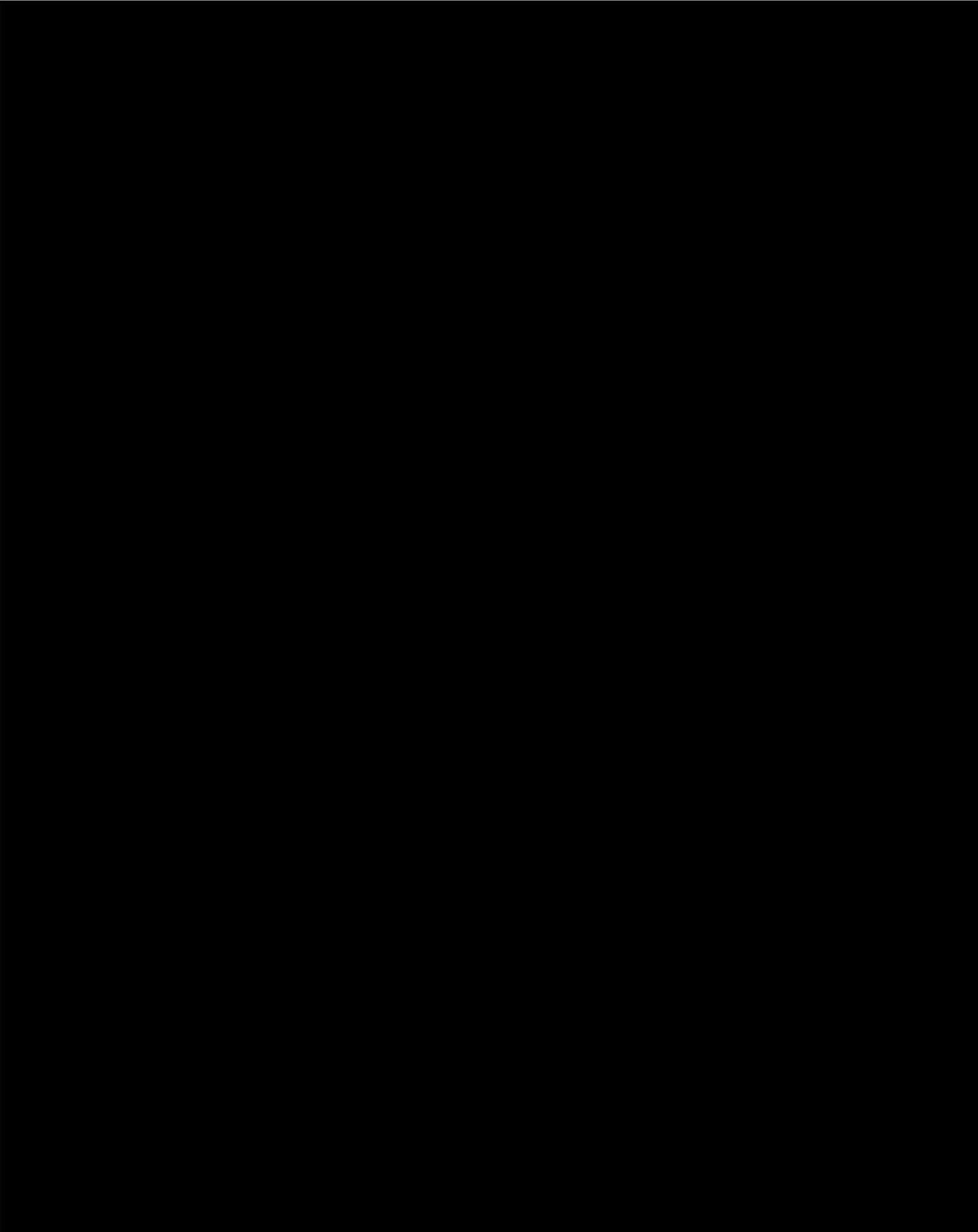
**I.S. 2 STATEN ISLAND
GEORGE L. EGBERT SCHOOL**

**POTENTIAL MEASURES
TO IMPROVE STUDENT PEDESTRIAN SAFETY**

APPENDIX







SPOT SPEED STUDY

Date: **May 10, 2005** Start Time: **9:30**
 Location: **Midland Ave between Mason Ave & Boundary Ave**
 Surveyor: **Richard Calvache & Keren Mor**

School: **I.S. 2**
 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	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	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	0	0.0%	0.0%	0	0
24	0	0.0%	0.0%	0	0
25	1	1.0%	1.0%	25	625
26	1	1.0%	2.0%	26	676
27	1	1.0%	3.1%	27	729
28	2	2.0%	5.1%	56	1568
29	1	1.0%	6.1%	29	841
30	7	7.1%	13.3%	210	6300
31	4	4.1%	17.3%	124	3844
32	6	6.1%	23.5%	192	6144
33	12	12.2%	35.7%	396	13068
34	10	10.2%	45.9%	340	11560
35	9	9.2%	55.1%	315	11025
36	5	5.1%	60.2%	180	6480
37	6	6.1%	66.3%	222	8214
38	9	9.2%	75.5%	342	12996
39	5	5.1%	80.6%	195	7605
40	2	2.0%	82.7%	80	3200
41	3	3.1%	85.7%	123	5043
42	2	2.0%	87.8%	84	3528
43	5	5.1%	92.9%	215	9245
44	2	2.0%	94.9%	88	3872
45	0	0.0%	94.9%	0	0
46	2	2.0%	96.9%	92	4232
47	1	1.0%	98.0%	47	2209
48	0	0.0%	98.0%	0	0
49	2	2.0%	100.0%	98	4802
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
	98	100.0%		3506	127806

Mean Speed = 35.8 mph Median Speed = 35.8 mph
 Standard Deviation = 5.0 mph 15th Percentile Speed = 30.6 mph
 Margin of Error (95% Confidence) = ± 1.0 mph 85th Percentile Speed = 40.9 mph

SPOT SPEED STUDY

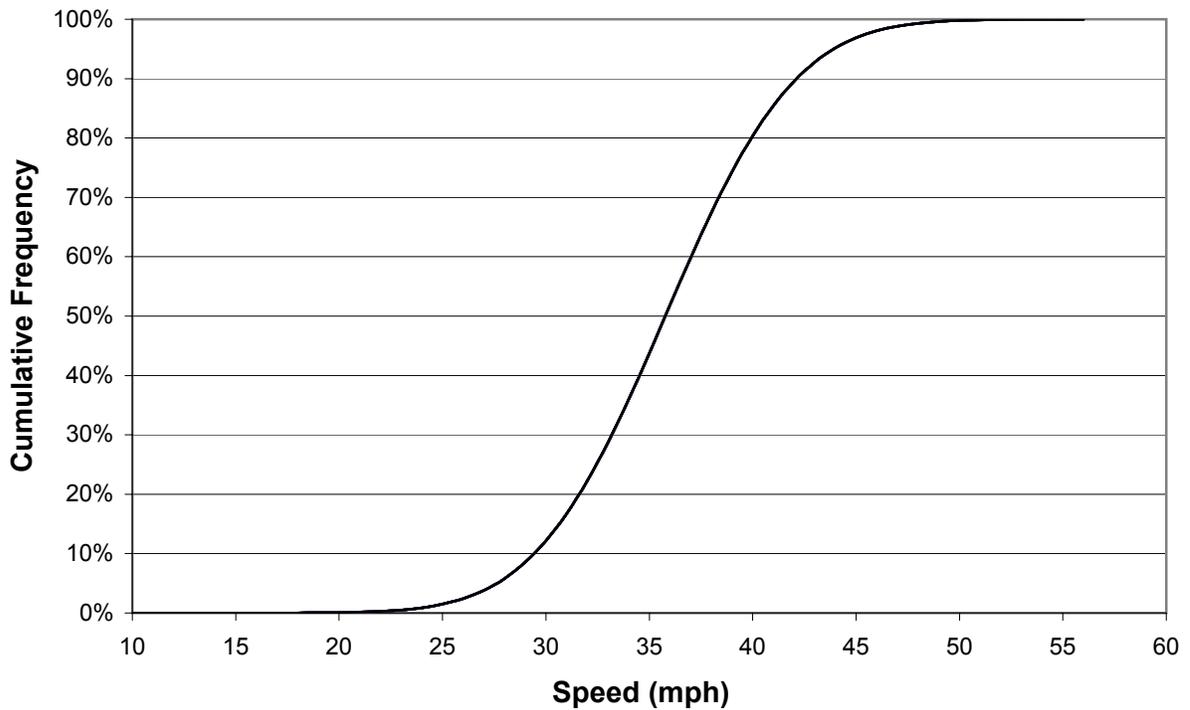
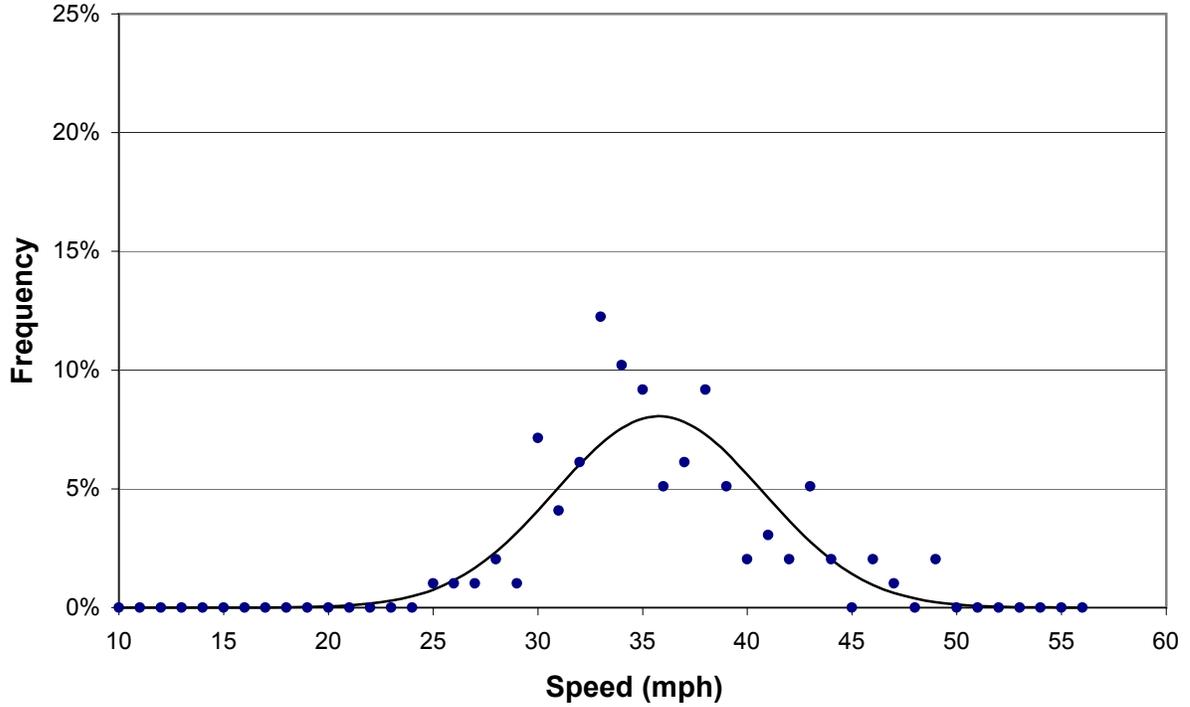
Date: **May 10, 2005**
Location: **Midland Ave between Mason Ave & Boundary Ave**
Surveyor: **Richard Calvache & Keren Mor**

Start Time: **9:30**

School: **I.S. 2**
Direction: **Eastbound**
Comments:

Mean Speed = 35.8 mph
Standard Deviation = 5.0 mph
Margin of Error (95% Confidence) = ± 1.0 mph

Median Speed = 35.8 mph
15th Percentile Speed = 30.6 mph
85th Percentile Speed = 40.9 mph



SPOT SPEED STUDY

Date: **May 10, 2005** Start Time: **9:30**
 Location: **Midland Ave between Mason Ave & Boundary Ave**
 Surveyor: **Richard Calvache & Keren Mor**

School: **I.S. 2**
 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	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	0	0.0%	0.0%	0	0
24	3	2.9%	2.9%	72	1728
25	1	1.0%	3.9%	25	625
26	0	0.0%	3.9%	0	0
27	0	0.0%	3.9%	0	0
28	3	2.9%	6.8%	84	2352
29	1	1.0%	7.8%	29	841
30	6	5.8%	13.6%	180	5400
31	4	3.9%	17.5%	124	3844
32	5	4.9%	22.3%	160	5120
33	5	4.9%	27.2%	165	5445
34	9	8.7%	35.9%	306	10404
35	8	7.8%	43.7%	280	9800
36	12	11.7%	55.3%	432	15552
37	6	5.8%	61.2%	222	8214
38	10	9.7%	70.9%	380	14440
39	5	4.9%	75.7%	195	7605
40	5	4.9%	80.6%	200	8000
41	5	4.9%	85.4%	205	8405
42	8	7.8%	93.2%	336	14112
43	0	0.0%	93.2%	0	0
44	2	1.9%	95.1%	88	3872
45	0	0.0%	95.1%	0	0
46	2	1.9%	97.1%	92	4232
47	1	1.0%	98.1%	47	2209
48	0	0.0%	98.1%	0	0
49	2	1.9%	100.0%	98	4802
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
	103	100.0%		3720	137002

Mean Speed = 36.1 mph
 Standard Deviation = 5.1 mph
 Margin of Error (95% Confidence) = ± 1.0 mph

Median Speed = 36.1 mph
 15th Percentile Speed = 30.8 mph
 85th Percentile Speed = 41.4 mph

SPOT SPEED STUDY

Date: **May 10, 2005**
Location: **Midland Ave between Mason Ave & Boundary Ave**
Surveyor: **Richard Calvache & Keren Mor**

Start Time: **9:30**

School: **I.S. 2**
Direction: **Westbound**
Comments:

Mean Speed = 36.1 mph
Standard Deviation = 5.1 mph
Margin of Error (95% Confidence) = ± 1.0 mph

Median Speed = 36.1 mph
15th Percentile Speed = 30.8 mph
85th Percentile Speed = 41.4 mph

