

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



School Safety Engineering Project

FINAL REPORT: P.S 90 (The Horace Mann School), Queens



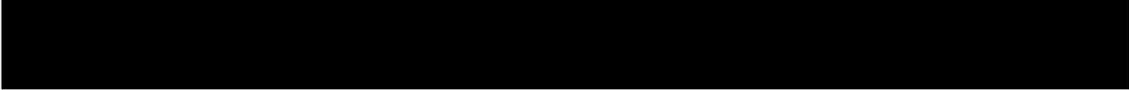
**Prepared by
The RBA Group and URBITRAN Associates Inc.**



August 31, 2006

**School Safety Engineering Project
Final Report: P.S. 90, Queens**

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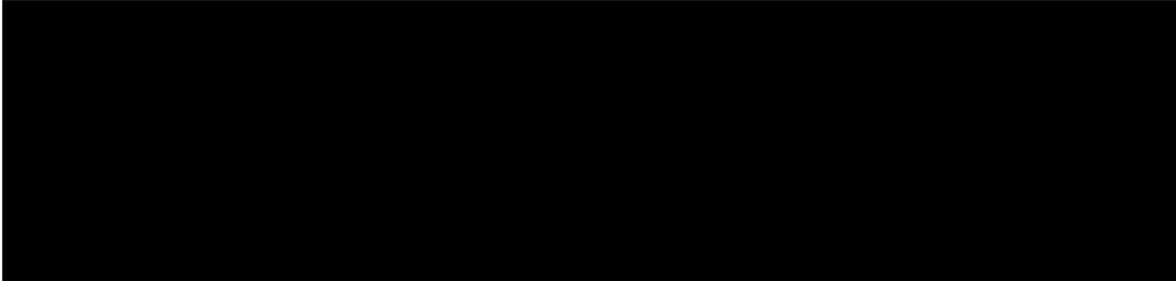
1. INTRODUCTION

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. 90 (The Horace Mann School) in the Richmond Hill section of Queens 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

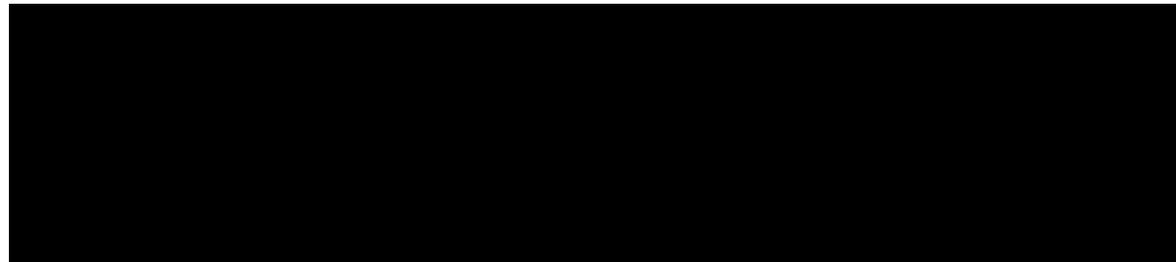
Exhibit 1 shows an aerial view of the neighborhood surrounding the school. P.S. 90 is bounded by 86th Avenue to the north, Jamaica Avenue to the south, 108th Street to the west, and 109th Street to the east. The neighborhood surrounding the school includes some commercial uses, but is primarily residential.

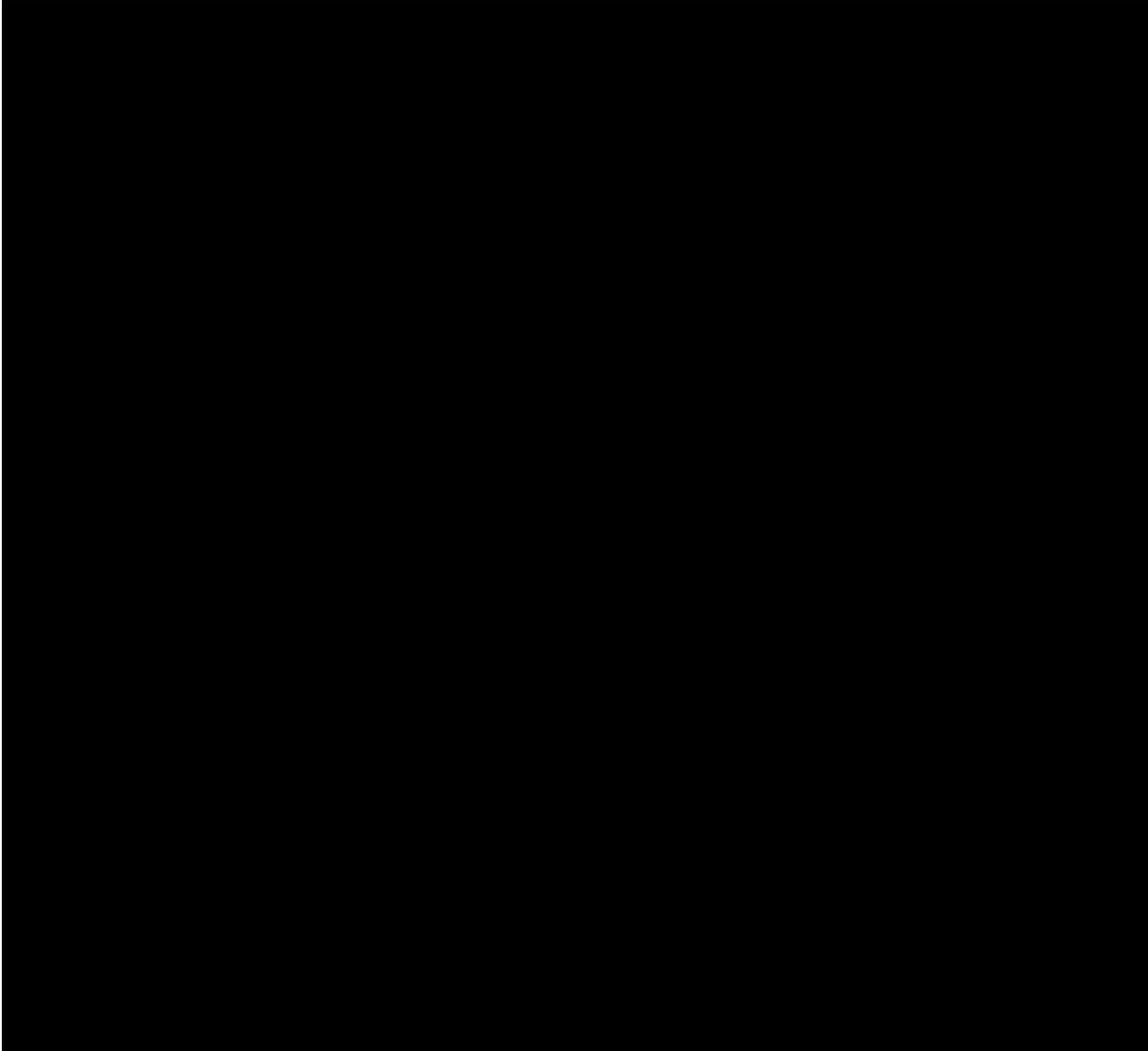
2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team staff met with the school principal on the morning of May 12, 2004 to discuss traffic and pedestrian safety issues at and around P.S. 90. According to the school principal, P.S. 90 student pedestrians face the following problems:

- There is a need for a crossing guard to be assigned to the intersection of Jamaica Avenue and 111th Street.
- Vehicles sometimes speed along 108th Street adjacent to the school. The principal reported that she has been requesting a speed reducer (hump) on 108th Street to help slow drivers down.
- High traffic volumes, double parking, and congestion are issues when the students are dropped off and picked up at arrival and dismissal times.
- Some parents stop their vehicles in the bus area, often blocking buses from getting to the curb.
- Some parents double park and drop their children off across the street. The children then run across the street to the school.
- Rainy days are very difficult with queued cars spilling back from Jamaica Avenue.

(See the Appendix for a summary of school concerns, and 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 roughly bounded by Park Lane South to the north, 95th Avenue to the south, 105th and 96th Streets to the west, 111th Street and 115th Street to the east. Table 1 presents the mode of travel for P.S. 90 students as identified by school representatives.

According to school officials, approximately 40% of the students walk to school, 30% arrive by private vehicles, 20% use the school bus and 10% use public transportation.

Table 1 presents the modes of travel for P.S. 90, as identified by the school principal.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	STUDENTS (Percentage)
Walk	40%
Driven by car	30%
School bus	20%
MTA Bus / Subway	10%
Bicycle	NA
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There are no major student pedestrian generators in the immediate vicinity of the school. However, there are various commercial uses located along Jamaica Avenue. During the meeting with the consultant team, the principal of P.S. 90 indicated that there are many other schools (including P.S. 66 on 102nd Street, P.S. 56 on 114th Street, Holy Child Jesus School on 86th Avenue, Theatre Street School on 111th Street, Richmond Hill High School on 114th Street, and P.S. 51 on 117th Street) located in the general vicinity of P.S. 90, resulting in additional vehicular and pedestrian traffic in the area.

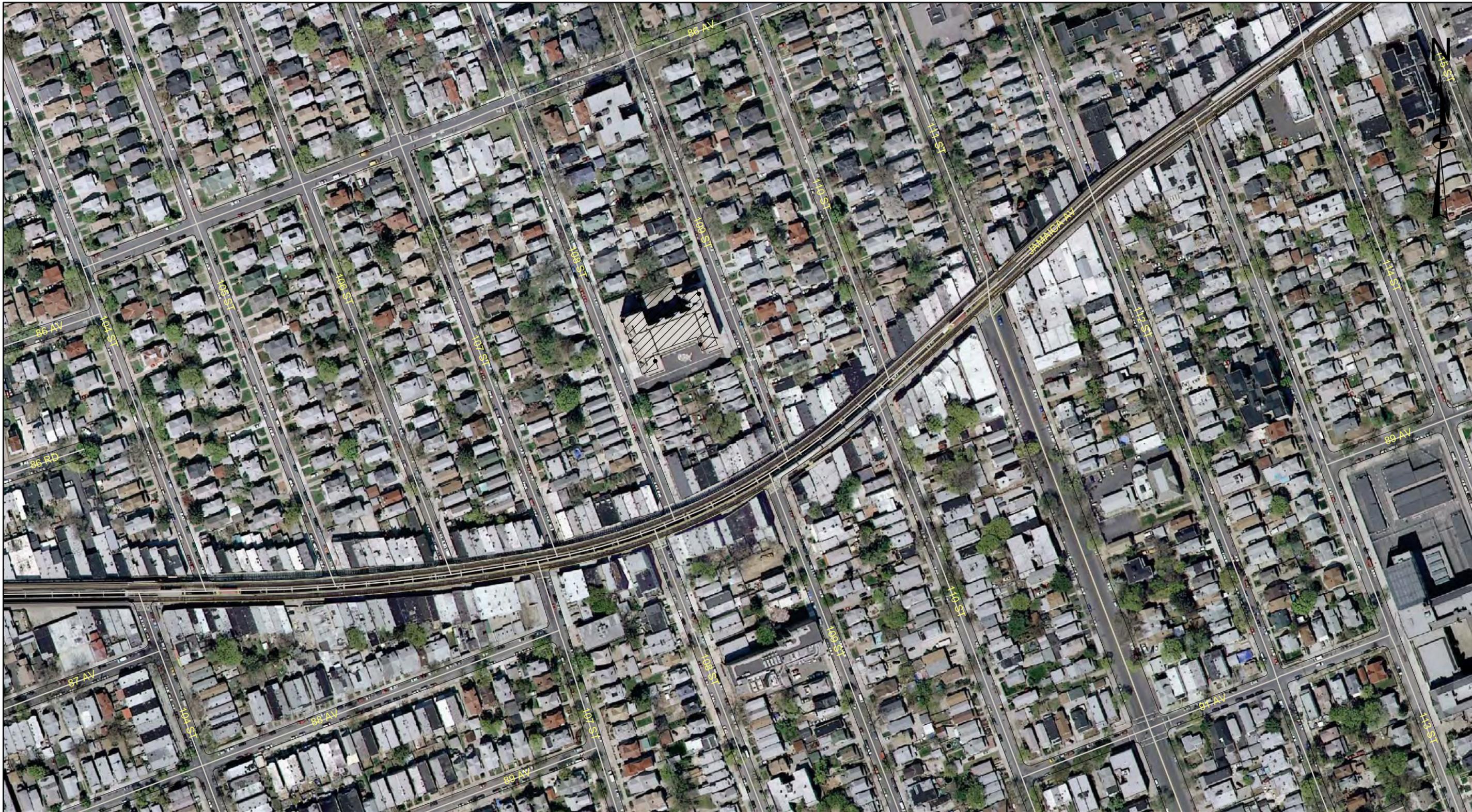
2.8 CROSSING GUARD LOCATIONS

As shown in Exhibit 4, there are three crossing guard around the school during school days.

- At the intersection of 86 Avenue and 109th Street.
- At the intersection of Jamaica Avenue and 108th Street.
- At the intersection of Jamaica Avenue and 109th Street (see Figure 2).



Figure 2: Looking west on Jamaica Avenue at 109th Street at the school crossing guard on duty

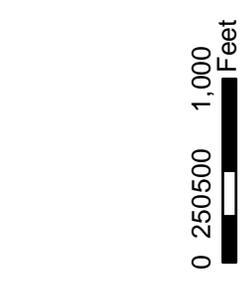


0 250 500 1,000 Feet

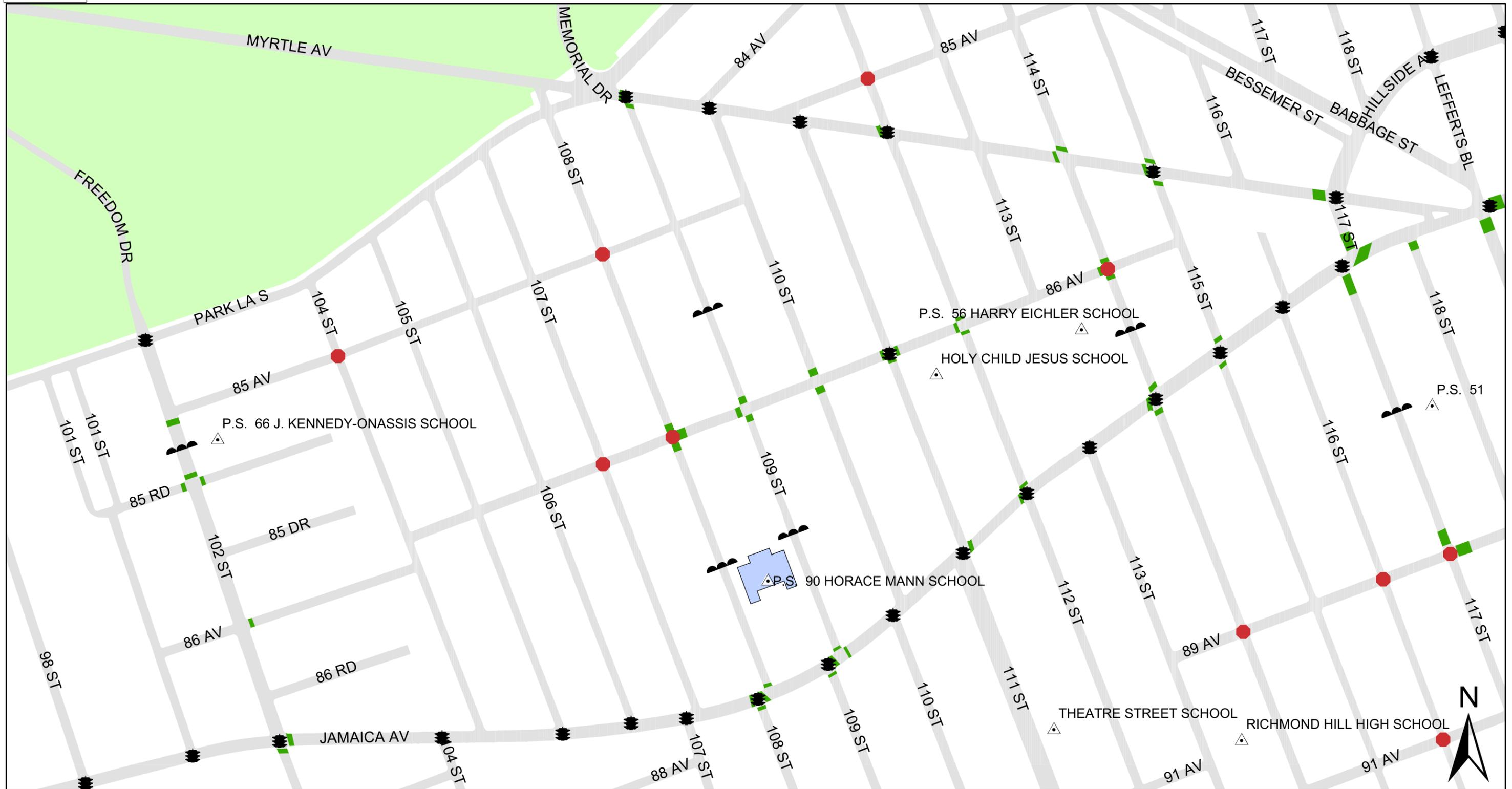
EXHIBIT 1
P.S. 90 QUEENS
HORACE MANN SCHOOL
AERIAL PHOTOGRAPH



EXHIBIT 2
P.S. 90 QUEENS
HORACE MANN SCHOOL
CATCHMENT AREA



LEGEND:
 CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND P.S. 90)



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

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

LEGEND:

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

PS 90 Queens
HORACE MANN SCHOOL

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

Map created on 11/17/2006

EXHIBIT 3

COMM. BOARD: 409
 PRECINCT: 102

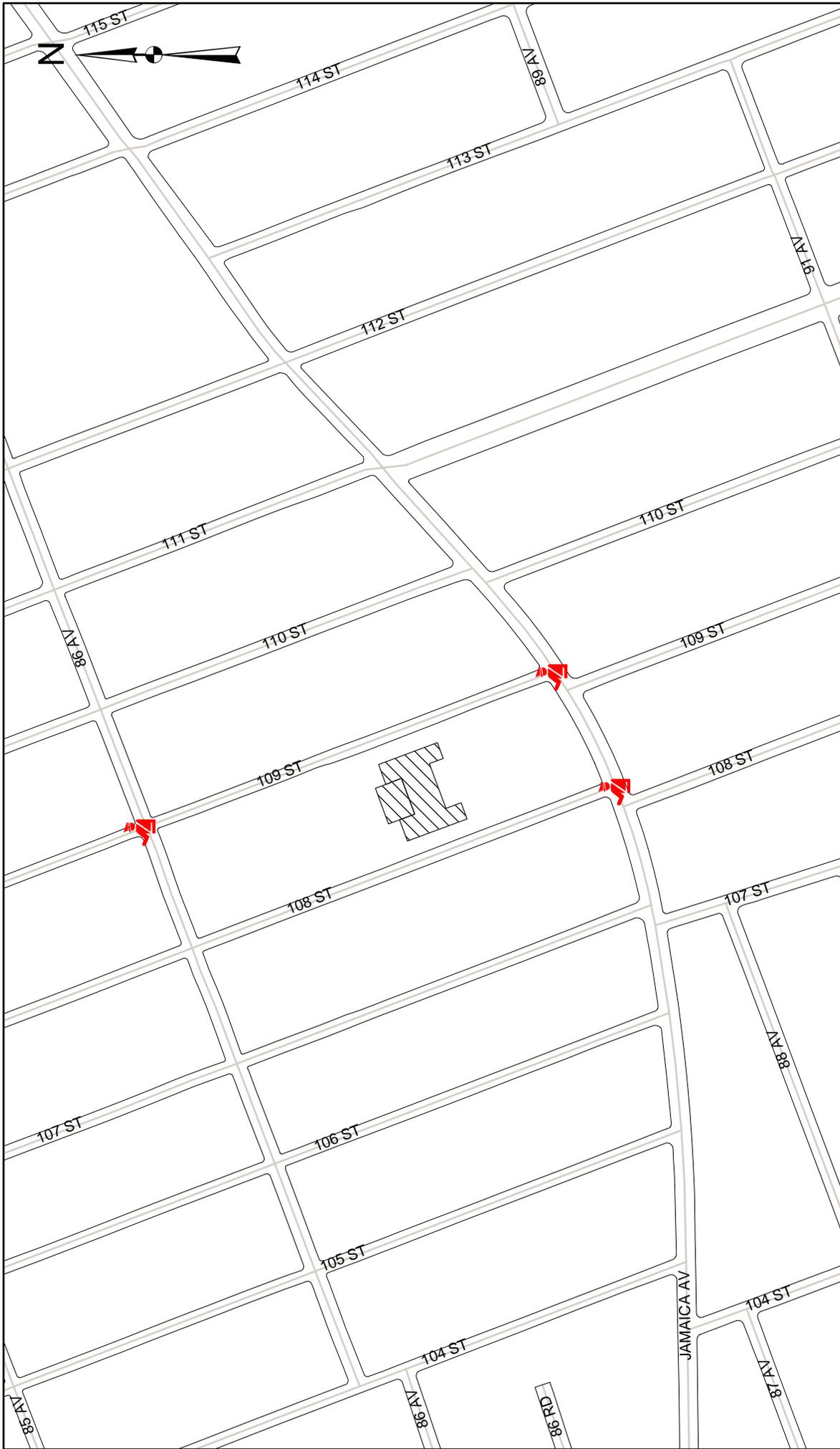


EXHIBIT 4
P.S. 90 QUEENS
HORACE MANN SCHOOL
CROSSING GUARDS LOCATIONS

LEGEND:

CROSSING GUARD LOCATION 

0 250 500 1,000 Feet

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

At the time of the school site visit, the school principal reported that three yellow school buses, one private bus, and four special education buses serve P.S. 90 students. The principal also reported that approximately 100 students use Metro Cards. Of these, approximately 80 students use their cards for the bus, and approximately 20 students use them for the subway (see Table 1). According to the current Department of Education website, P.S. 90 provides special education door-to-door transportation for 24 students on six buses. The school also issues 61 half-fare Metro Cards and 59 full-fare Metro Cards. The current web site also shows six general education school buses for 168 students.

3.2 PARENT DROP-OFF OPERATIONS

According to the school principal, 30 percent of the students at P.S. 90 are being dropped off. Congestion typically occurs at times of arrival and dismissal, and there is also often double-parking around the school during these times. Many parents were observed dropping off students on 108th Avenue, at the back of the school. Parents often double park and drop the children off on the opposite side of the street as the school.

3.3 PARKING REGULATIONS

There are “NO STANDING 7AM - 4PM SCHOOL DAYS” signs along the west side of 109th Street between Jamaica Avenue and the northern limit of the school building, including the main entrance to the school.

Parking regulations around the school block are shown in Exhibit 5.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3 shows the existing school signals and pavement markings around P.S. 90. 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 signs accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 8.

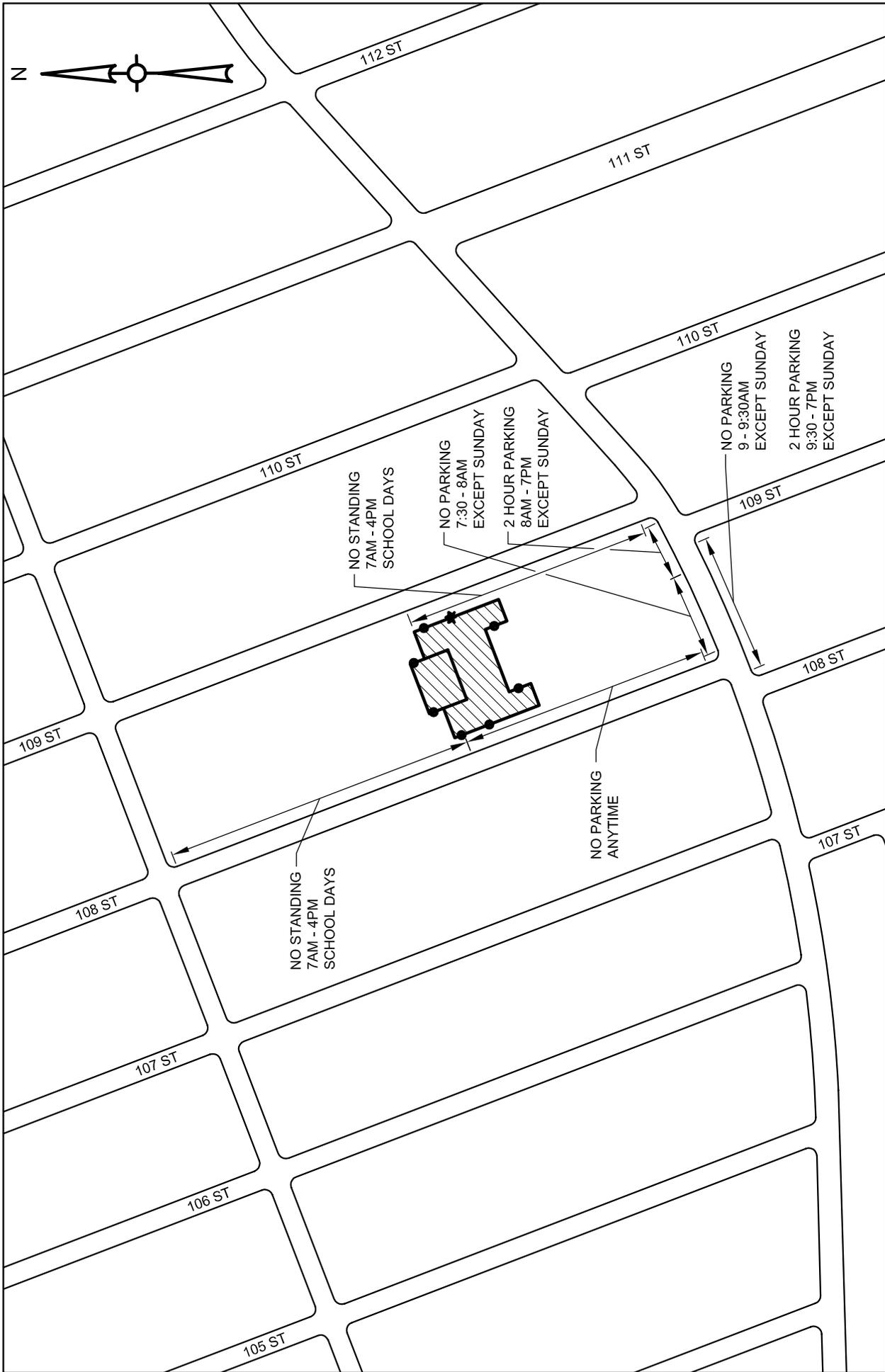
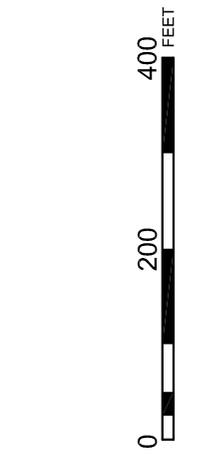


EXHIBIT 5
 P.S. 90 QUEENS
 HORACE MANN SCHOOL
 EXISTING PARKING REGULATIONS



- LEGEND:**
- ★ MAIN ENTRANCE
 - ENTRANCE

3.5 ACCIDENT SUMMARY

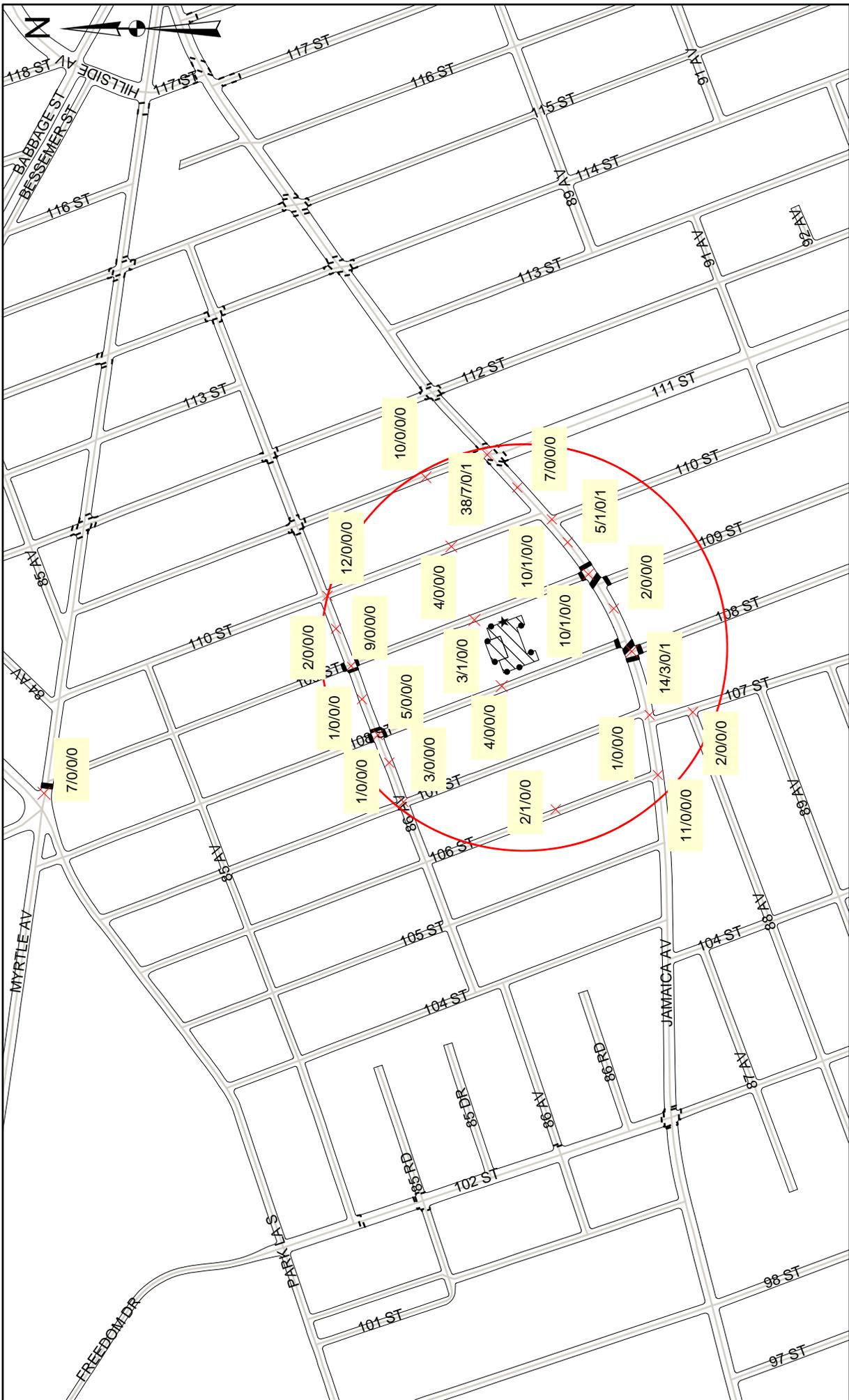
Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of P.S. 90 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of the accident. Table 3 is a summary of more recent accident data obtained from the NYC Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the DMV data.

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

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Jamaica Avenue and 108 th Street	14	3	0	1
Jamaica Avenue and 109 th Street	10	1	0	0
Jamaica Avenue and 111 th Street	38	7	0	1
86 th Avenue and 108 th Street	5	0	0	0
86 th Avenue and 109 th Street	9	0	0	0
Myrtle Avenue and 109 th Street	7	0	0	0
TOTAL	83	11	0	2

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Jamaica Avenue and 108 th Street	23	0	0	0
Jamaica Avenue and 109 th Street	17	1	0	0
Jamaica Avenue and 111 th Street	40	5	0	1
86 th Avenue and 108 th Street	0	0	0	0
86 th Avenue and 109 th Street	11	0	0	0
Myrtle Avenue and 109 th Street	10	1	0	0
TOTAL	101	7	0	1

* School-related accidents are defined as accidents involving school-age pedestrians (age 4 to 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 pedestrian and vehicular traffic. These 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. 90.

3.6.1 Jamaica Avenue and 108th Street

This is an offset signalized intersection with school crosswalks located across the north and south legs of 108th Street, the west leg of Jamaica Avenue, and the center section of Jamaica Avenue between the offset north and south legs of 108th Street (see Figure 3). Jamaica Avenue is a two-way street with one travel lane and on-street parking on each side of the roadway. Jamaica Avenue also has an elevated subway train running over the center of the roadway. 108th Street is a one-way northbound street with one travel lane and on-street parking on both sides of the roadway. The north leg of 108th Street is offset to the east of the south leg of 108th Street (see Exhibits 3 and 8).

There were a total of 14 accidents reported at this intersection between 1998 and 2000 (Table 2), including three pedestrian accidents, one of which was school-related. There were no fatalities during this time period. In the school-related accident, an eight-year-old pedestrian was struck by a vehicle at approximately 8:00 am on Monday, October 19, 1998. Neither the young pedestrian's actions nor the extent of injuries was reported. The road was dry and the weather was clear at the time of the accident. There were no pedestrian fatalities reported at this intersection.

The school principal reported a speeding problem on 108th Street. Therefore, a speed survey was conducted on 108th Street, between Jamaica Avenue and 86th Avenue, in order to verify the existence of a speeding problem and to determine its extent.

The 85th percentile speed for northbound vehicles on 108th Street between Jamaica Avenue and 86th Avenue was found to be 32 mph. The 85th percentile speed is considered to be the representative speed for the street segment. Speeds above the 30 mph threshold indicate a speeding problem that may require appropriate traffic calming measures.

The detailed results of the spot speed survey on 108th Street between Jamaica Avenue and 86th Avenue are shown in the Appendix at the end of the document.

It should be noted that a speed reducer (hump) was installed on 108th Street between Jamaica Avenue and 86th Avenue in June 2006, as a mitigation measure for the speeding issue identified by the school principal.



Figure 3: Looking north across Jamaica Avenue along 108th Street (P.S. 90 can be seen on the right side of 108th Street)

3.6.2 Jamaica Avenue and 109th Street

This is an offset signalized intersection with school crosswalks located across the north and south legs of 109th Street, the east leg of Jamaica Avenue, and the center section of Jamaica Avenue between the offset north and south legs of 109th Street (see Figures 4 and 5). Jamaica Avenue is a two-way street with one travel lane and on-street parking on each side of the roadway. Jamaica Avenue also has an elevated subway train running over the center of the roadway. 109th Street is a one-way southbound street with one travel lane and parking on both sides of the roadway. The north leg of 109th Street is offset to the east of the south leg of 109th Street (see Exhibits 3 and 8).

There were a total of 10 accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident that was not school-related. However, one school-related pedestrian accident was reported mid-block on Jamaica Avenue between 109th Street and 110th Street. This particular accident occurred at approximately 3:00 pm on November 4, 1999 when a six-year-old pedestrian suffered a “possible injury.” The pedestrian’s actions were unreported. The road surface was dry, the weather was clear, and the accident occurred during daylight conditions. There were no pedestrian fatalities reported at this intersection.



Figure 4: Looking north across Jamaica Avenue along 109th Street (P.S. 90 can be seen on the left side of 109th Street)

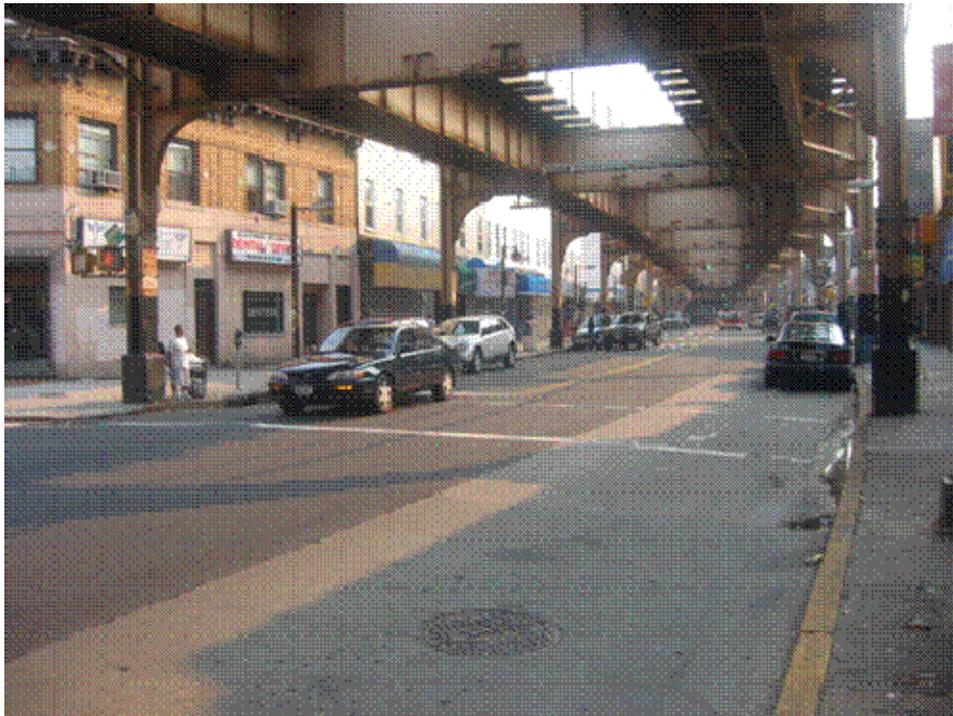


Figure 5: Looking east on Jamaica Avenue across the intersection with 109th Street

3.6.3 Jamaica Avenue and 111th Street

This is a four-leg signalized intersection with school crosswalks located across the east leg of 111th Street. Jamaica Avenue is a two-way street with one travel lane and on-street parking on each side of the roadway. Jamaica Avenue also has an elevated subway train running over the center of the roadway. North of Jamaica Avenue, 111th Street is a two-way street with one travel lane in each direction, and on-street parking on the east side of the roadway. South of Jamaica Avenue, 111th Street is a two-way street with one wide travel lane in each direction and on-street parking on both sides of the roadway. South of Jamaica Avenue, 111th Street is wide enough to accommodate two travel lanes in each direction, although the roadway is not striped as such.

There were a total of 38 accidents reported at this intersection between 1998 and 2000 (Table 2), including seven pedestrian accidents, one of which was school-related. This particular accident occurred at approximately 4:00 pm on February 23, 2000 when a 14-year-old pedestrian sustained a non-incapacitating injury while attempting to cross against the signal at the intersection. The road surface was dry, the weather was clear, and the accident occurred under daylight conditions. There were no pedestrian fatalities reported at this intersection.

3.6.4 86th Avenue and 108th Street

This is a four-leg, all-way stop-controlled, intersection with school crosswalks located across the north and south legs of 108th Street, and the east leg of 86th Avenue. 86th Avenue is a two-way street with one travel lane and on-street parking on each side of the roadway. 108th Street is a one-way northbound street with one travel lane and parking on both sides of the roadway (see Figures 6 and 7).

There were five accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these involved pedestrians.



Figure 6: Looking south along 108th Street across 86th Avenue

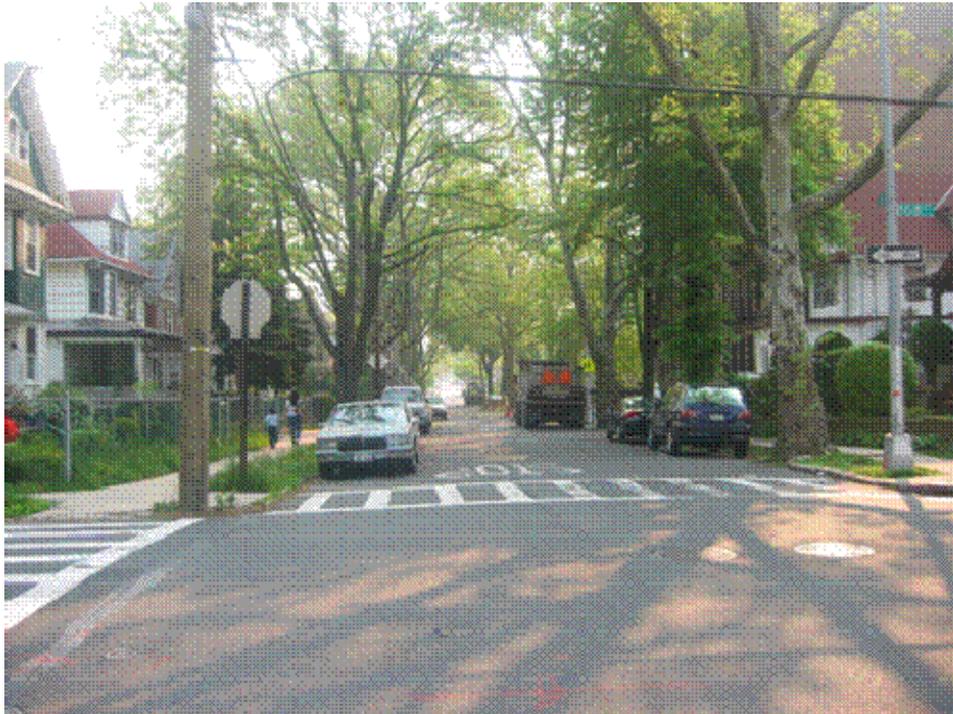


Figure 7: Looking east on 86th Avenue across 108th Street

3.6.5 86th Avenue and 109th Street

This is a four-leg unsignalized intersection with school crosswalks located across the north and south legs of 109th Street, and the west leg of 86th Avenue. 86th Avenue is a two-way street with one travel lane and on-street parking on each side of the roadway. 109th Street is a one-way southbound street with one travel lane and parking on both sides of the roadway. There is a stop sign for southbound 109th Street and 86th Avenue is the through street (see Figures 8 and 9).

There were nine accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these were pedestrian accidents. Between 2001 and 2004 (Table 3), there were 11 accidents reported at this intersection, but none of these were pedestrian accidents.

An uncontrolled school crosswalk is located across the west leg of 86th Avenue. In order to determine the most appropriate type of traffic control for the school crosswalk, a preliminary traffic signal warrant assessment was performed. As part of this assessment, a traffic count was conducted at the intersection of 86th Avenue and 109th Street from 7:30 to 9:00 am on Wednesday, November 2, 2005 to better understand the pedestrian/vehicle conflict at the intersection. The results of the peak hour (7:30 to 8:30 am) count are shown in Table 4 and in Exhibit 7 at the end of this section.

The traffic volume count showed a total of 51 pedestrians (32 adults and 19 students) utilizing the school crosswalk located across the west leg of 86th Avenue, and ten pedestrians (nine adults and one student) were utilizing the east leg of 86th Avenue where no marked crosswalk exists. This results in a total of 61 pedestrians crossing 86th Avenue at its intersection with 109th Street (41 adults and 20 students) during the 7:30 to 8:30 am peak hour.

INTERSECTION	86th Avenue EASTBOUND		86th Avenue WESTBOUND		109th Street SOUTHBOUND		
	Straight	Right	Left	Straight	Left	Straight	Right
86th Avenue and 109th Street	153	68	55	32	40	37	6
TOTAL	221		87		83		

INTERSECTION	Crossing 86th Avenue WEST-LEG CROSSWALK	Crossing 86th Avenue EAST-LEG CROSSWALK	Crossing 109th Street SOUTH-LEG CROSSWALK	Crossing 109th Street NORTH-LEG CROSSWALK
86th Avenue and 109th Street	51 (32 / 19) *	10 (9 / 1) *	29 (20 / 9) *	76 (44 / 32) *

* Numbers in parenthesis indicate (adults / students).

TABLE 6: TRAFFIC SIGNAL WARRANT 4 ANALYSIS (PEDESTRIAN VOLUME)						
Intersection	Total Hourly (7:30 - 8:30 AM) Pedestrian Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour*	Greater than 190 Pedestrians / hour	
86th Avenue and 109th Street	61	105	166	No	No	No

* The available gap is based on the time required for a pedestrian to walk across the street. The analysis assumed 10 seconds.

TABLE 7: TRAFFIC SIGNAL WARRANT 5 ANALYSIS (SCHOOL CROSSING)						
Intersection	Total Hourly (7:30 - 8:30 AM) Student Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour ⁽¹⁾	Greater than 20 Students / hour	
86th Avenue and 109th Street	20	41	62	No	No	No

* The available gap is based on the time required for a pedestrian to walk across the street. The analysis assumed 10 seconds.



Figure 8: Looking west on 86th Avenue across the intersection with 109th Street



Figure 9: Looking south on 109th Street across the intersection with 86th Avenue

3.6.6 Myrtle Avenue / Park Lane South / 109th Street / Memorial Drive

This intersection is a six-leg intersection formed by the intersection of Myrtle Avenue, Park Lane South, 109th Street, and Memorial Drive. School crosswalk is located across the east leg of Myrtle Avenue. Pedestrian crosswalk is located across the north leg. The south leg of 109th Street intersects Myrtle Avenue slightly east of the Myrtle Avenue / Park Lane South intersection, so that the easterly school crosswalk across Myrtle Avenue is west of the 109th Street intersection. Myrtle Avenue is a two-way street with two travel lanes and a parking lane on each side of the roadway. Park Lane South is a two-way roadway with one travel lane and a parking lane on each side of the roadway. 109th Street is a one-way southbound street with one travel lane and on-street parking on both sides of the roadway. Memorial Drive is a two-way roadway that provides vehicular access to and from Forest Park.

The school crosswalk located across the east leg of Myrtle Avenue is protected (controlled) by the traffic signal. The school crosswalk located across the south leg of 109th Street has no through traffic crossing it, only the traffic turning from Myrtle Avenue.

There were a total of seven accidents reported at this intersection between 1998 and 2000 (Table 2), but none were pedestrian accidents. There were no pedestrian fatalities reported at this intersection.

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of P.S. 90, and were found to be adequate based upon a child pedestrian walking at the rate of 3 feet per second. Signal timings are shown in Table 8.

TABLE 8: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
Jamaica Avenue and 108th Street				
crossing Jamaica Avenue	40	25	17	NO
crossing 108 th Street (north leg)	30	61	13	NO
crossing 108 th Street (south leg)	30	61	13	NO
Jamaica Avenue and 109th Street				
crossing Jamaica Avenue	40	25	17	NO
crossing 109 th Street (north leg)	30	61	13	NO
crossing 109 th Street (south leg)	30	61	13	NO
Myrtle Avenue and 109th Street				
crossing Myrtle Avenue	35	58	15	NO
crossing 109 th Street (no signal)	25	N.A.	12	N.A.

Note: A child pedestrian walking rate of 3 ft/sec plus 3 seconds reaction time was used 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 P.S. 90 were observed to be in fair condition. All sidewalks around the periphery of the school (along the front and back), and along Jamaica Avenue, are approximately 10 to 15 feet wide, but are only four to five feet wide for most of the remainder of the school block.

3.8.2 Pedestrian Ramps

Overall, pedestrian ramps in the vicinity of the school were observed to be standard. There were, however, several locations that were not found to be standard. These locations are:

Jamaica Avenue and 109th Street intersection

- A pedestrian ramp is missing on the south side of Jamaica Avenue for the crosswalk located across the east leg of the intersection.
- The pedestrian ramp on the northeast corner, for the crosswalk located across the east leg of Jamaica Avenue, has a small lip at the curb which does not provide a smooth transition between the pavement and the sidewalk.

- A pedestrian ramp is missing on the southeast corner, for the school crosswalk across Jamaica Avenue connecting with the northwest and southeast corners of the intersection.

Jamaica Avenue and 108th Street

- A pedestrian ramp is missing on the northwest corner, for the school crosswalk across Jamaica Avenue connecting the northwest and southeast corners of the intersection.
- A pedestrian ramp is missing on the north side of Jamaica Avenue, west of 108th Street, for the school crosswalk located across the west leg of the intersection.
- A pedestrian ramp is missing on the southwest corner of the intersection for the school crosswalk located across the south leg of 108th Street.
- A drainage inlet is located in the crosswalk across the north leg of the intersection near the northeast corner (see Figure 10).

86th Avenue and 108th Street

- Pedestrian ramps are missing on both the east and west sides of 108th Street for the school crosswalk located across the south leg of the intersection.
- Pedestrian ramps are missing on both the north and south sides of 86th Avenue for the school crosswalk located across the east leg of the intersection.

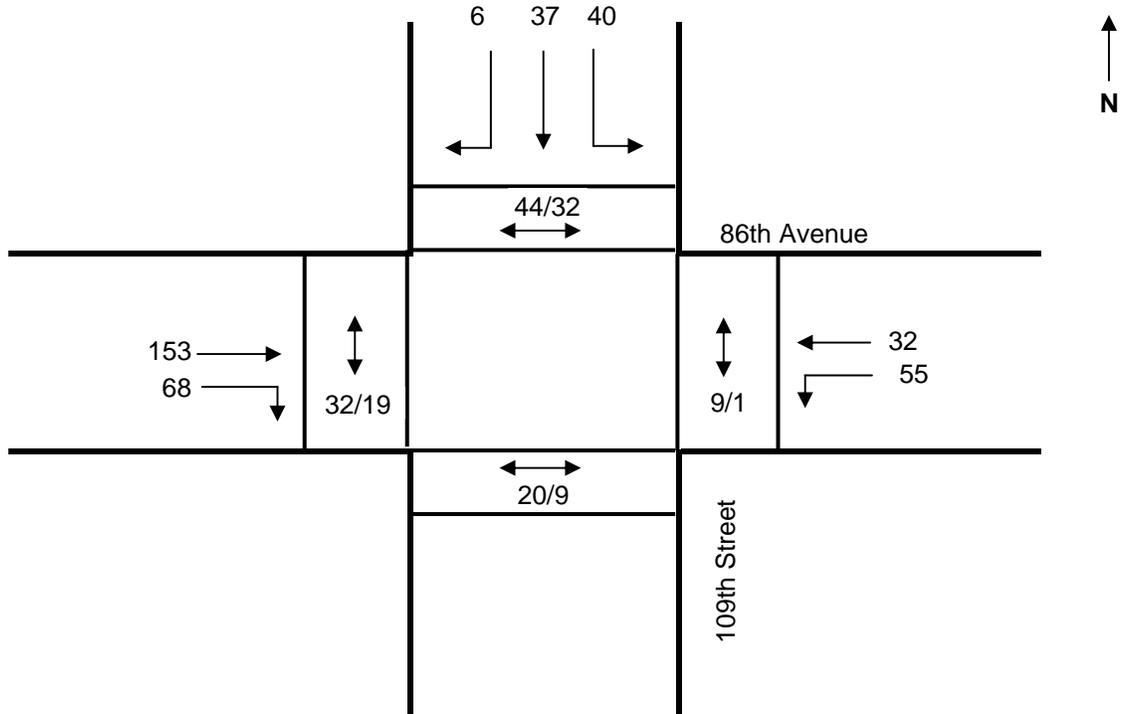
86th Avenue and 109th Street

- A pedestrian ramp is missing on the west side of 109th Street for the school crosswalk located across the south leg of the intersection.
- A pedestrian ramp is missing on the east side of 109th Street for the school crosswalk located across the north leg of the intersection.



Figure 10: Looking east across the north leg of the Jamaica Avenue and 108th Street intersection at the existing drainage inlet located within the school crosswalk.

One Hour Traffic Volumes
Wednesday, November 2nd, 2005 7:30am - 8:30am



Intersection of 86th Avenue and 109th Street

Table of Content:

XX / XX	Adult / Child
←→	Pedestrian Counts
—↑	Vehicle Movement

EXHIBIT 7
P.S. 90 QUEENS HORACE MANN SCHOOL
TRAFFIC AND PEDESTRIAN COUNTS

4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes proposed measures to improve school pedestrian safety around P.S. 90. 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. 90 is discussed as follows, and is shown in more detail in Exhibit 8 at the end of this section.

4.1 SHORT-TERM MEASURES

➤ 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.

➤ Construct Pedestrian Ramps

There were several locations where pedestrian ramps were either missing or needed modification. Therefore, the following is recommended:

Jamaica Avenue and 108th Street

- Construct a pedestrian ramp on the northwest corner where the pedestrian ramp is missing for the school crosswalk connecting with the southeast corner of the intersection.
- Construct a pedestrian ramp on the north side of Jamaica Avenue, west of 108th Street, where the pedestrian ramp is missing for the school crosswalk located across the west leg of the intersection.
- Construct a pedestrian ramp on the southwest corner of the intersection where the pedestrian ramp is missing for the school crosswalk located across the south leg of 108th Street.
- Relocate the drainage inlet near the northwest corner of the intersection for the crosswalk located across the north leg of 108th Street.

Jamaica Avenue and 109th Street

- Construct a pedestrian ramp on the south side of Jamaica Avenue, east of 109th Street, where the pedestrian ramp is missing for the crosswalk located across the east leg of the intersection.
- Reconstruct or modify the pedestrian ramp on the northeast corner of the intersection, to create a smooth transition between the pedestrian ramp across the east leg of Jamaica Avenue and the roadway pavement.

- Construct a pedestrian ramp on the southeast corner of the intersection where the pedestrian ramp for the school crosswalk located across Jamaica Avenue is missing.

86th Avenue and 108th Street

- Construct pedestrian ramps on both the east and west sides of 108th Street for the school crosswalk located across the south leg of the intersection.
- Construct pedestrian ramps on both the north and south sides of 86th Avenue for the school crosswalk located across the east leg of the intersection.

86th Avenue and 109th Street

- Construct a pedestrian ramp on the west side of 109th Street for the school crosswalk located across the south leg of the intersection.
- Construct a pedestrian ramp on the east side of 109th Street for the school crosswalk located across the north leg of the intersection.

➤ *Install New Standard Crosswalks*

There are no marked crosswalks located across the north and south legs of 86th Avenue and 110 Street, across the north leg of Jamaica Avenue and 111 Street and across the west leg of 86th Avenue and 108 Street intersection.

It is therefore recommended to:

- Install the school crosswalk markings at the following locations:
 - ❖ Across the north and south legs of 86th Avenue at 110th Street
 - ❖ Across the north leg of Jamaica Avenue at 111th Street
- Install the standard pedestrian crosswalk markings at the following location:
 - ❖ Across the west leg of 86th Avenue at 108th Street

➤ *Assign crossing guards at the following intersections*

There were 38 pedestrian accidents including one school-related accident between 2001 and 2004 at the intersection of Jamaica Avenue and 111th Street. In addition, the school as requested and additional crossing guard at this location

It is therefore recommended to:

- Assign a crossing guard to the intersection of Jamaica Avenue and 111th Street

➤ *Administer student pedestrian safety education program*

There were mid-block accident reported on Jamaica Avenue between 109th Street and 110th Street. 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.

➤ Other issues

In addition, the following actions were recommended as part of the NYCDOT Walk to School Program:

- Increase enforcement or add additional crossing guards on Jamaica Avenue at 108th and 109th Streets to increase compliance with traffic controls (e.g. stop sign).
- Repair broken and cracked sidewalks (e.g. 86th Avenue between 109th and 110th Streets).

4.2 LONG-TERM MEASURES

All recommendations for improving pedestrian safety in the vicinity of the school will be implemented as short-term measures.



- 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 ALL WAY STOP LOCATION
 -  EXISTING SCHOOL CROSSWALK
 -  EXISTING PEDESTRIAN CROSSWALK
 -  EXISTING PEDESTRIAN CROSSWALK
 -  EXISTING SPEED REDUCER (HUMP)
 -  SIGNALIZED LOCATION
 -  PROPOSED SCHOOL CROSSWALK
 -  PROPOSED PEDESTRIAN CROSSWALK
 -  PROPOSED ADVANCE WARNING SIGN
 -  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY
 -  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
 -  PROPOSED PEDESTRIAN RAMP
 -  MAINTAIN EXISTING SIGNS "NO STANDING" 7:00AM - 4:00PM SCHOOL DAYS"
 -  DRAINAGE INLET TO BE RELOCATED
 -  EXISTING PEDESTRIAN RAMP TO BE RECONSTRUCTED
 -  RECONSTRUCT SIDEWALK

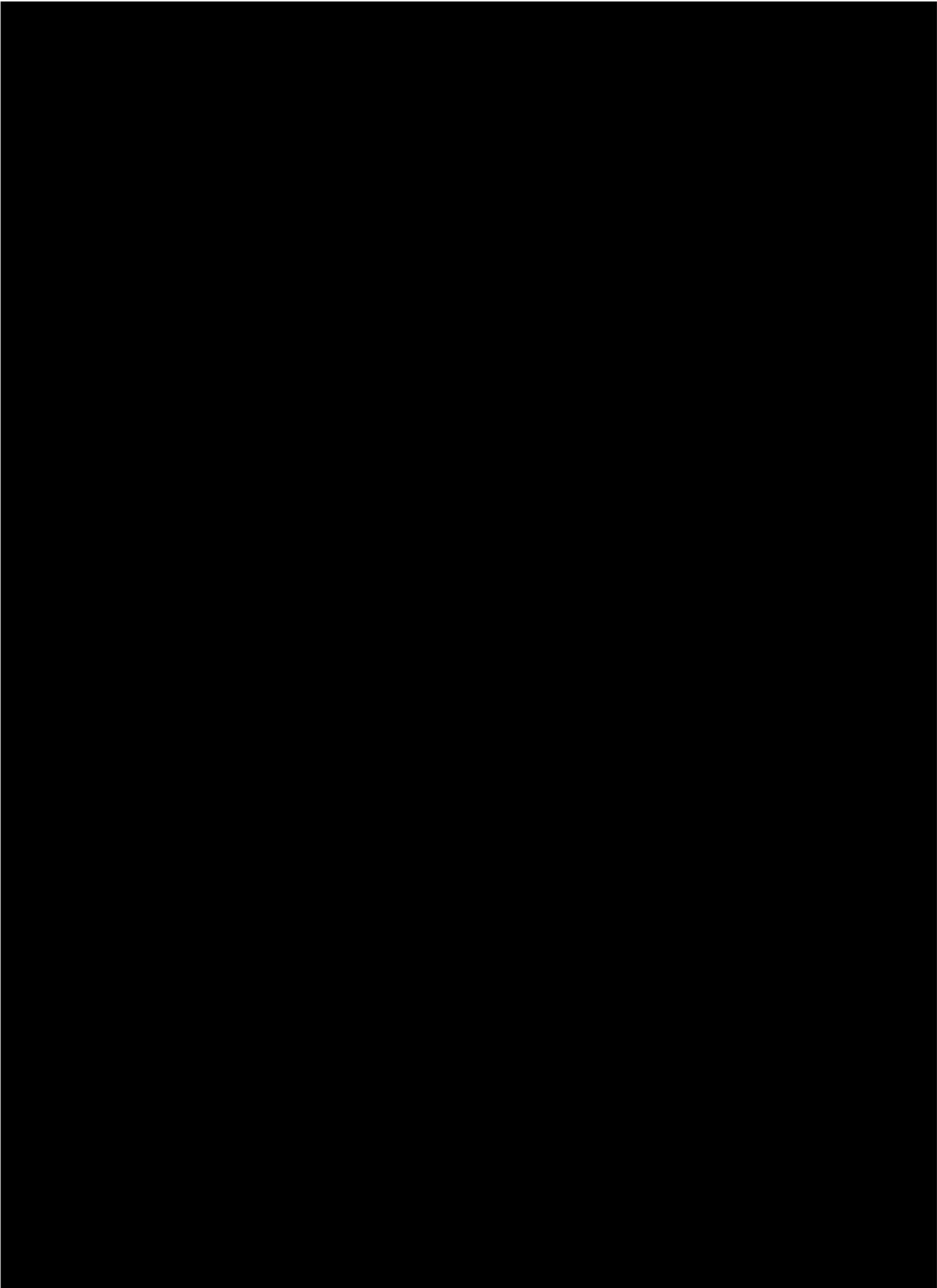
1" = 300'

EXHIBIT 8

P.S. 90 QUEENS
HORACE MANN SCHOOL

POTENTIAL MEASURES
TO IMPROVE STUDENT PEDESTRIAN SAFETY

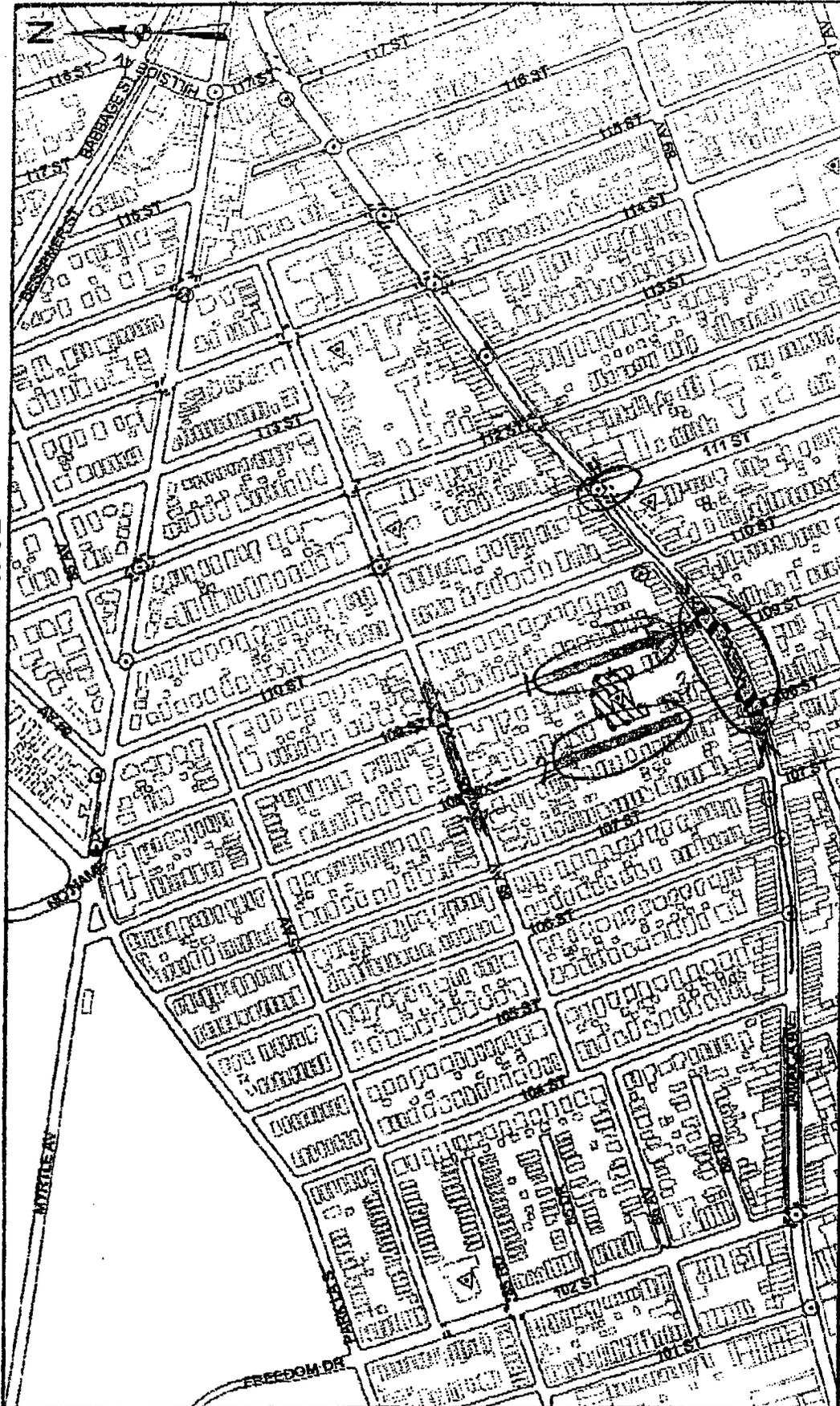
APPENDIX



NEW YORK CITY
DEPT. OF TRANSPORTATION

**TRAFFIC SAFETY PLAN
OFFICIAL ROUTES TO SCHOOL**

BUREAU OF TRAFFIC



LEGEND:

- TRAFFIC FLOW
- ROUTE TO SCHOOL
- ADJ. WARNING SIGN
- SCHOOL LOCATION
- MAIN SCHOOL ENTRANCE
- OTHER SCHOOL ENTRANCES
- TRAFFIC SIGNAL
- ALL-WAY STOP
- 2-WAY STOP
- SCHOOL X-WALK
- PED. X-WALK
- STOP LINE
- X-WALKS ASSOCIATED WITH OTHER SCHOOLS
- SPEED HUMP

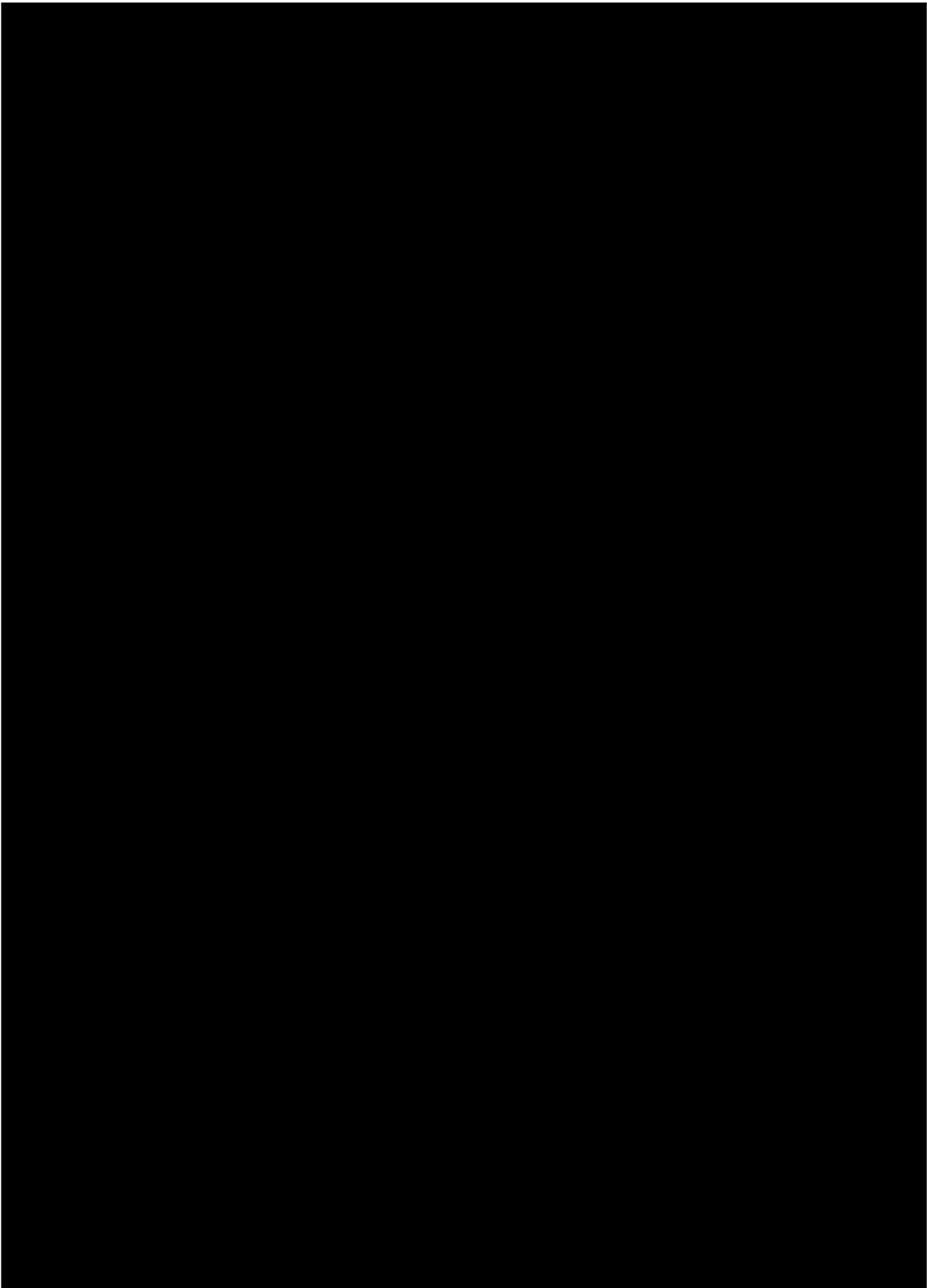
**HORACE MANN SCHOOL
P.S. 90**

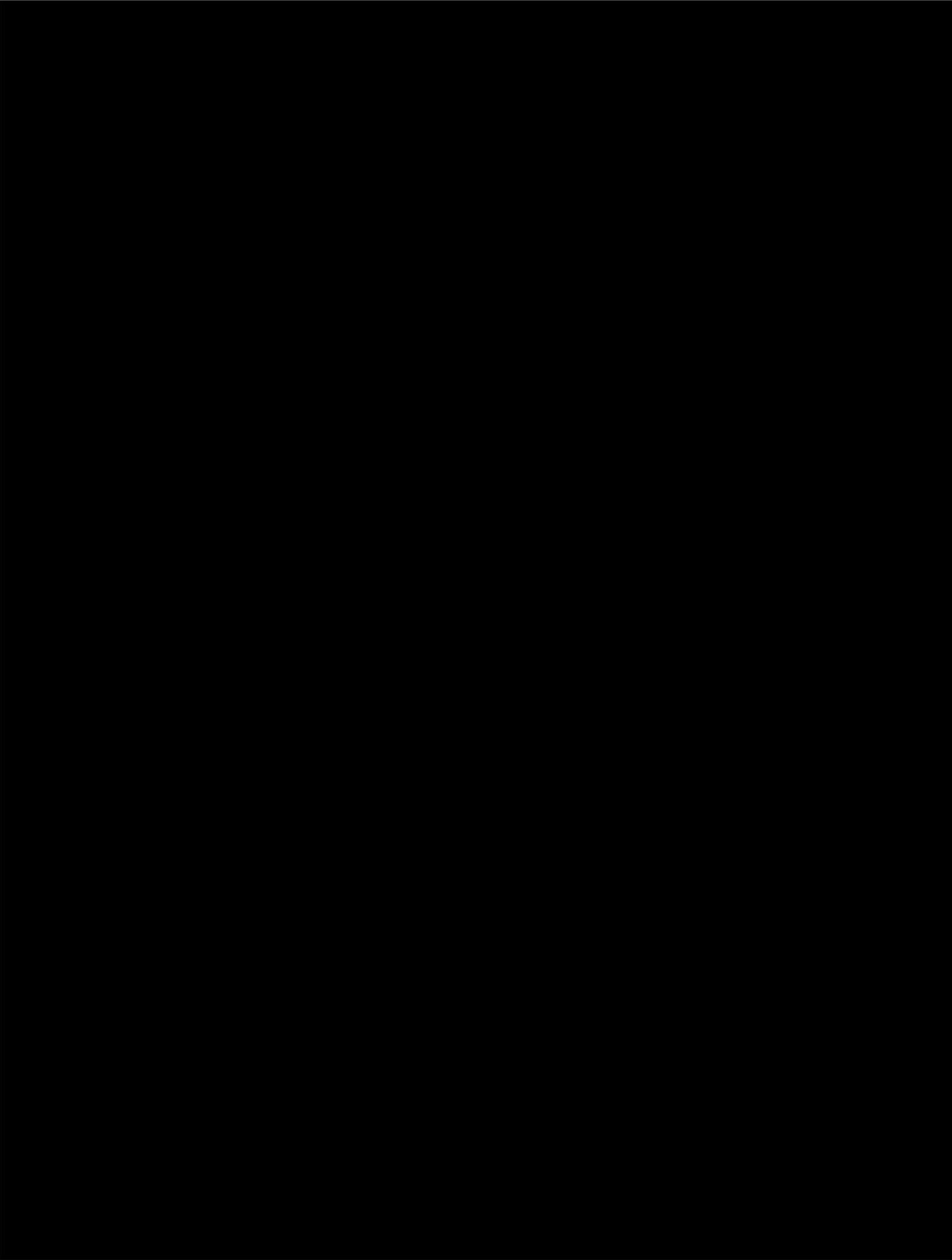
Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION
IN CONSULTATION WITH THE QUEEN'S BOARD OF EDUCATION, IN COOPERATION WITH S.U.H.O.L., AND
POLICE OFFICIALS

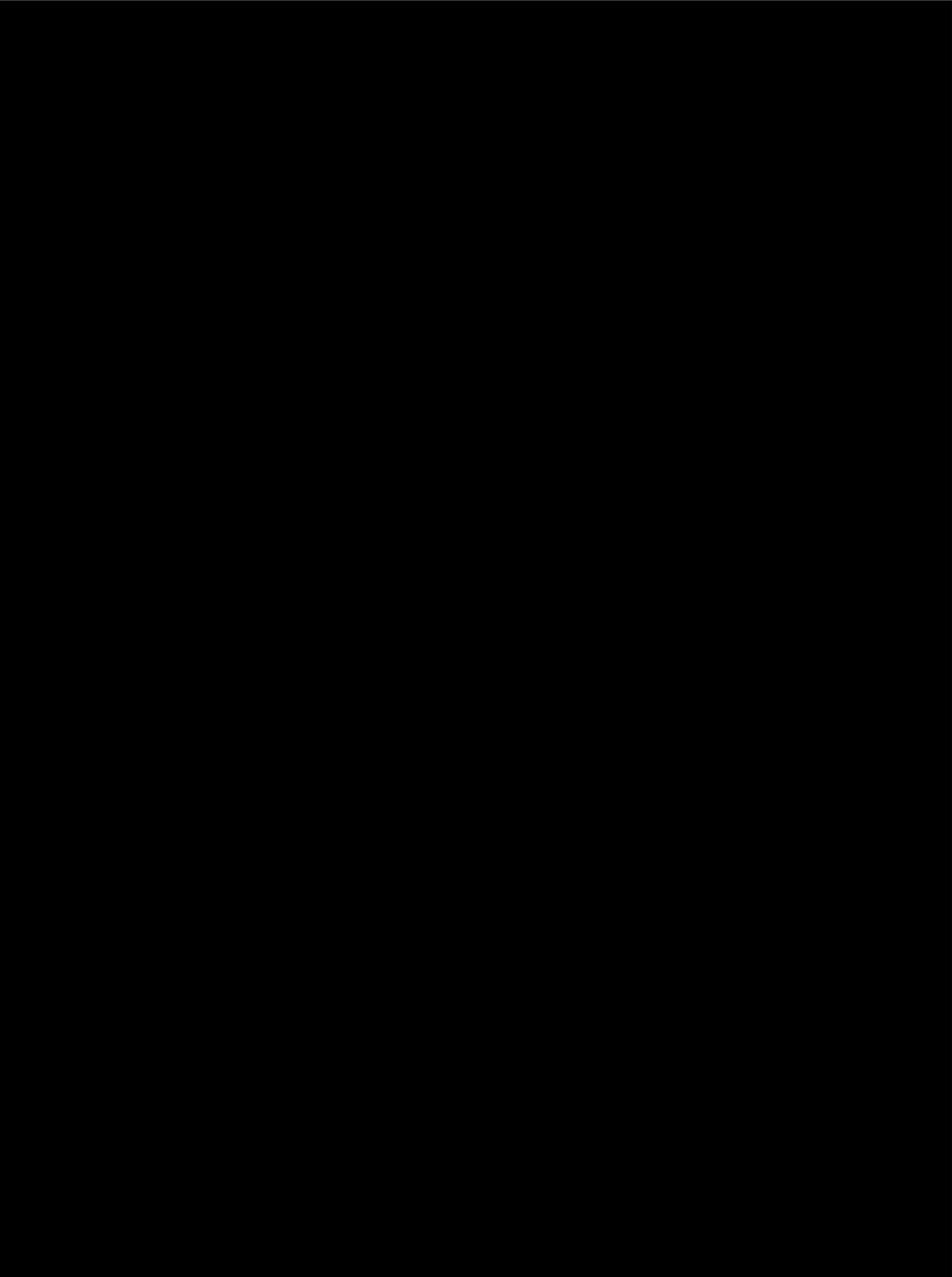
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DESIGNER: J. BELL
REVISIONS:

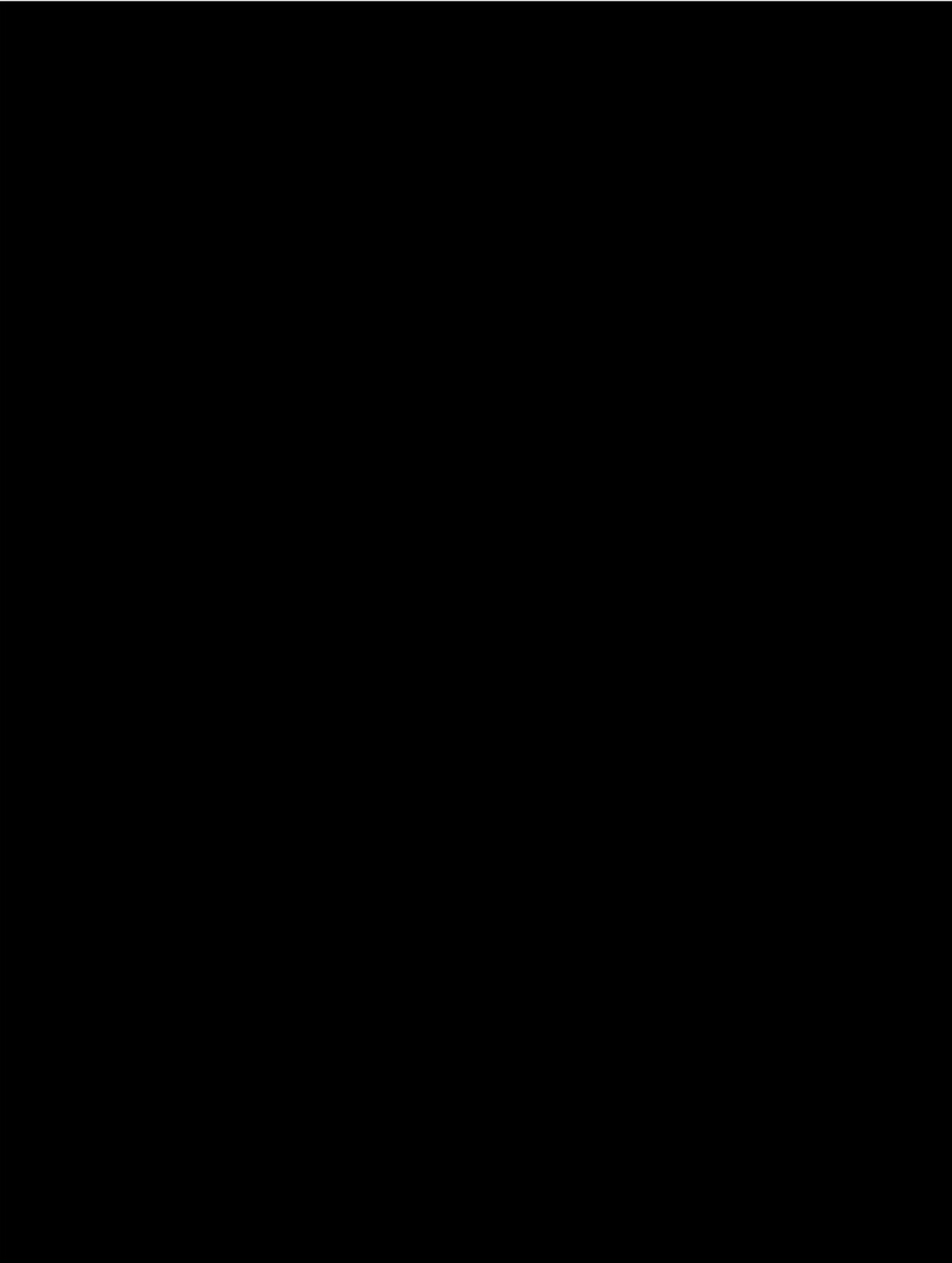
COMMA BOARD: QUEENS
BOROUGH: QUEENS
PRECINCT: 952

The TRAFFIC SAFETY PLAN shown on this map was established to provide the maximum degree of safety for children going to and from school. It is required that all children follow the prescribed routes and use the designated crosswalks.









SPOT SPEED STUDY

Date: **November 17, 2005** Time: **9:45 am - 10:45 am**
 Location: **108 Street between Jamaica Avenue and 86 Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

School: **P.S. 90**
 Direction: **Northbound**
 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	4	14.8%	14.8%	92	2116
24	6	22.2%	37.0%	144	3456
25	7	25.9%	63.0%	175	4375
26	1	3.7%	66.7%	26	676
27	2	7.4%	74.1%	54	1458
28	1	3.7%	77.8%	28	784
29	1	3.7%	81.5%	29	841
30	0	0.0%	81.5%	0	0
31	0	0.0%	81.5%	0	0
32	1	3.7%	85.2%	32	1024
33	2	7.4%	92.6%	66	2178
34	0	0.0%	92.6%	0	0
35	0	0.0%	92.6%	0	0
36	0	0.0%	92.6%	0	0
37	1	3.7%	96.3%	37	1369
38	0	0.0%	96.3%	0	0
39	0	0.0%	96.3%	0	0
40	0	0.0%	96.3%	0	0
41	0	0.0%	96.3%	0	0
42	0	0.0%	96.3%	0	0
43	1	3.7%	100.0%	43	1849
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
	27	100.0%		726	20126

Mean Speed = 26.9 mph
 Standard Deviation = 4.8 mph
 Margin of Error (95% Confidence) = ± 1.8 mph

Median Speed = 26.9 mph
 15th Percentile Speed = 21.9 mph
 85th Percentile Speed = 31.9 mph

SPOT SPEED STUDY

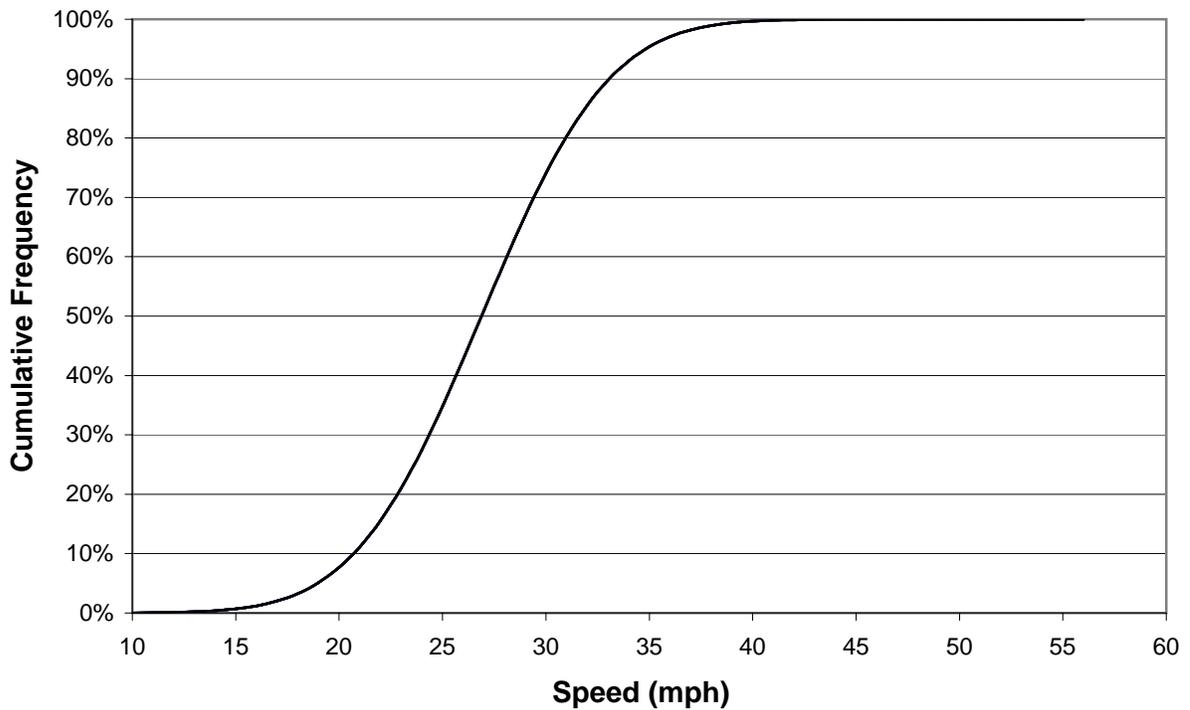
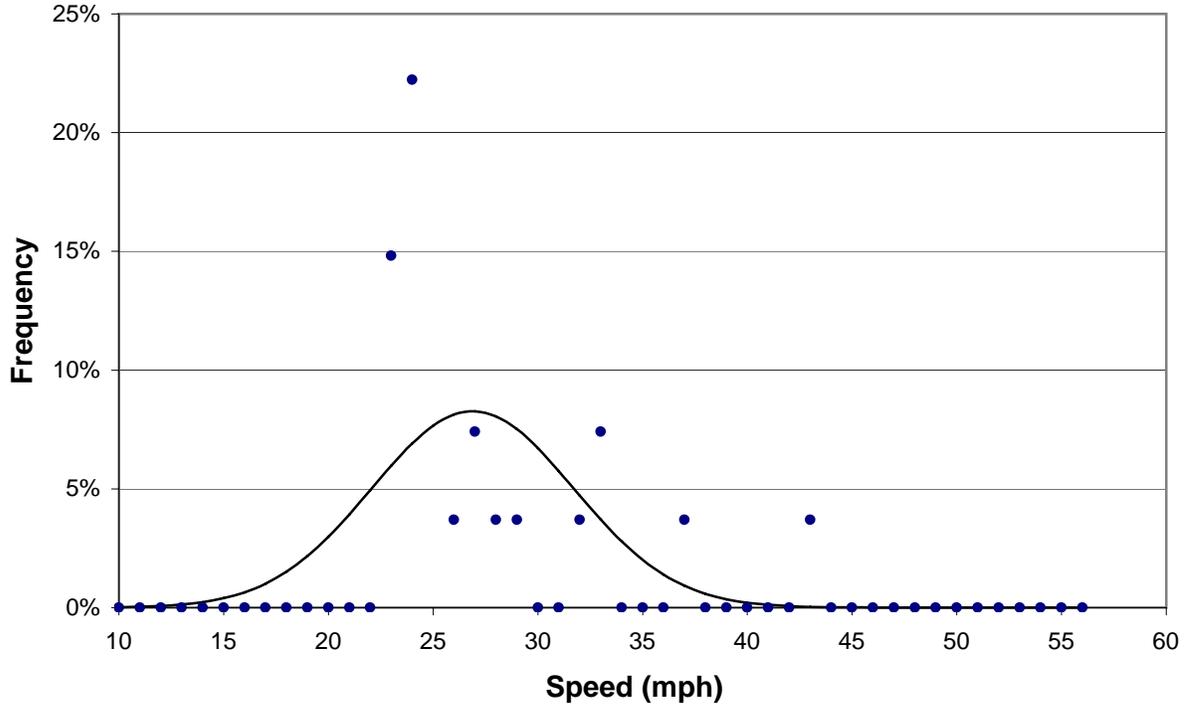
Date: **November 17, 2005**
Location: **108 Street between Jamaica Avenue and 86 Avenue**
Surveyor: **Richard Calvache & Hugo Salinas**

Time: **9:45 am - 10:45 am**

School: **P.S. 90**
Direction: **Northbound**
Comments:

Mean Speed = 26.9 mph
Standard Deviation = 4.8 mph
Margin of Error (95% Confidence) = ± 1.8 mph

Median Speed = 26.9 mph
15th Percentile Speed = 21.9 mph
85th Percentile Speed = 31.9 mph



GAP STUDY FIELD SHEET

Date: 11/1/05

Location: P.S. 90 - 109th St & 86th Ave

Gap Information:

Crossing Distance	<u>30</u>	ft
Reaction Time	<u>3</u>	sec
Walking Speed	<u>3</u>	ft/sec
Minimum Acceptable Gap	<u>13</u>	sec

Gap Survey:

Time:	From: <u>7:45 am</u>	To: <u>8:15 am</u>	
Gap (sec)	Tally	Total	
10		1	
11	DISCARD GAP LESS THAN 13 Sec		
12		5	
13		2	✓
14		1	✓
15			
16		5	✓
17		2	✓
18		2	✓
19			
20		2	3
21		2	3
22		2	3
23			
24		2	3
25		2	3
26			
27		1	2
28		4	6
29			
30		2	3
31			
32			
33			
34		1	2
35		1	2
36		1	2
37			
38			
39			
40			
41		1	2
42			
43			
44			
45		4	6

Total: 54