

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



School Safety Engineering Project

FINAL REPORT: P.S. 50 (Talfourd Lawn Elementary School), Queens



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



October 13, 2006

**School Safety Engineering Project
Final Report: P.S. 50, Queens**

TABLE OF CONTENTS

1. INTRODUCTION 3

 1.1 PROJECT DESCRIPTION 3

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS 4

 [REDACTED]

 2.2 NEIGHBORHOOD DESCRIPTION 4

 2.3 MEETING WITH SCHOOL REPRESENTATIVES 4

 [REDACTED]

 2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL 6

 2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS 6

 2.8 CROSSING GUARD LOCATIONS 7

3. TRAFFIC OPERATIONS 12

 3.1 SCHOOL BUS OPERATIONS 12

 3.2 PARENT DROP-OFF OPERATIONS 12

 3.3 PARKING REGULATIONS 12

 3.4 EXISTING SCHOOL SIGNS AND MARKINGS 12

 3.5 ACCIDENT SUMMARY 14

 3.6 TRAFFIC OPERATIONS AND ISSUES 16

 3.6.1 *Liberty Avenue and Princeton Street* 16

 3.6.2 *Liberty Avenue and Allendale Street* 16

 3.6.3 *Liberty Avenue and Liverpool Street* 19

 3.6.4 *Liberty Avenue and Waltham Street* 21

 3.6.5 *Liberty Avenue and Sutphin Boulevard* 22

 3.6.6 *101st Avenue and Allendale Street* 23

 3.6.7 *101st Avenue and Liverpool Street* 23

 3.6.8 *101st Avenue and Waltham Street* 24

 3.7 SIGNAL TIMING 25

 3.8 PHYSICAL CONDITIONS 25

 3.8.1 *Roadways and Sidewalks* 25

3.8.2 *Pedestrian Ramps* 25

4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY..... 30

4.1 SHORT-TERM MEASURES 30

4.2 LONG-TERM MEASURES..... 32

LIST OF EXHIBITS

EXHIBIT 1 - AERIAL PHOTOGRAPH 8

EXHIBIT 2 - CATCHMENT AREA..... 9

EXHIBIT 3 - SCHOOL TRAFFIC SAFETY MAP..... 10

EXHIBIT 4 - CROSSING GUARD LOCATIONS 11

EXHIBIT 5 - PARKING REGULATIONS..... 13

EXHIBIT 6 - ACCIDENT SUMMARY (1998-2000)..... 14

EXHIBIT 7A - TRAFFIC COUNT AT LIBERTY AVENUE AND ALLENDALE STREET 27

EXHIBIT 7B - TRAFFIC COUNT AT LIBERTY AVENUE AND LIVERPOOL STREET 28

EXHIBIT 7C - TRAFFIC COUNT AT LIBERTY AVENUE AND SUTPHIN BOULEVARD..... 29

EXHIBIT 8 - POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY 33

LIST OF TABLES

TABLE 1: MODES OF TRAVEL 6

TABLE 2: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000) 14

TABLE 3: ACCIDENT SUMMARY OF NYPD DATA (2001-2004) 14

TABLE 4: VEHICLE VOLUMES 18

TABLE 5: PEDESTRIAN VOLUMES 19

TABLE 6: VEHICLE VOLUMES 20

TABLE 7: PEDESTRIAN VOLUMES 20

TABLE 8: VEHICLE VOLUMES 23

TABLE 9: PEDESTRIAN VOLUMES 23

TABLE 10: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS..... 25

APPENDIX



SPOT SPEED SURVEY AT ALLENDALE STREET BETWEEN 101 AVENUE AND LIBERTY AVENUE NORTHBOUND.....A4-A5

SPOT SPEED SURVEY AT ALLENDALE STREET BETWEEN 101 AVENUE AND LIBERTY AVENUE SOUTHBOUND.....A6-A7

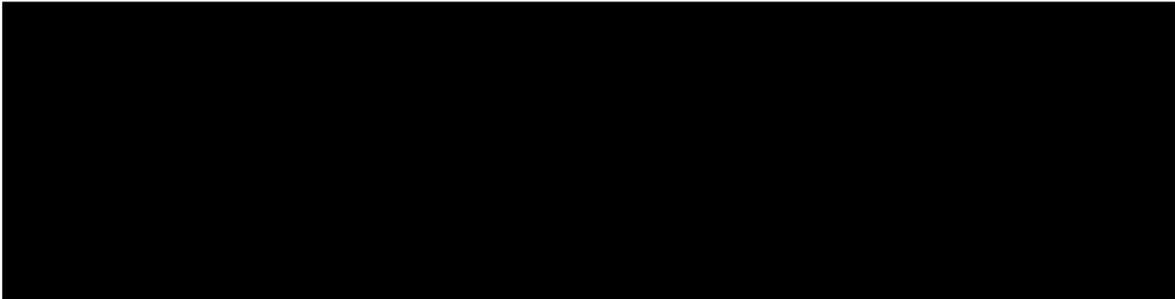
1. INTRODUCTION

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 600 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. 50 (Talfourd Lawn Elementary School) in Jamaica, 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



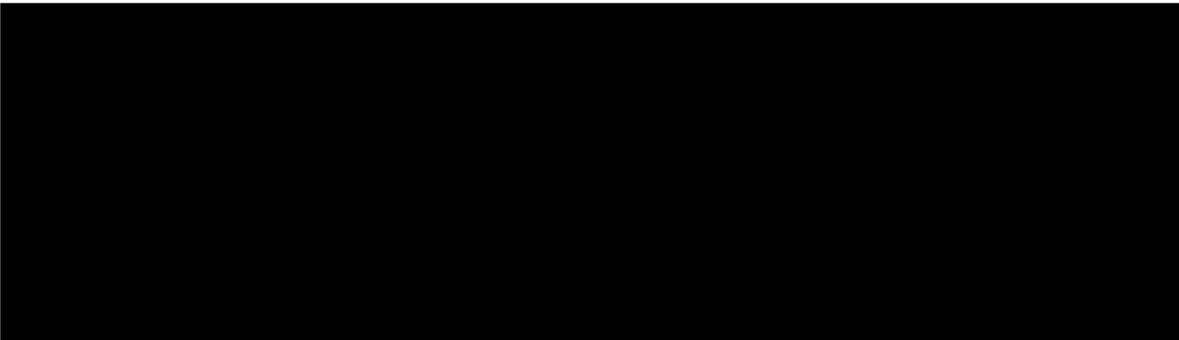
2.2 NEIGHBORHOOD DESCRIPTION

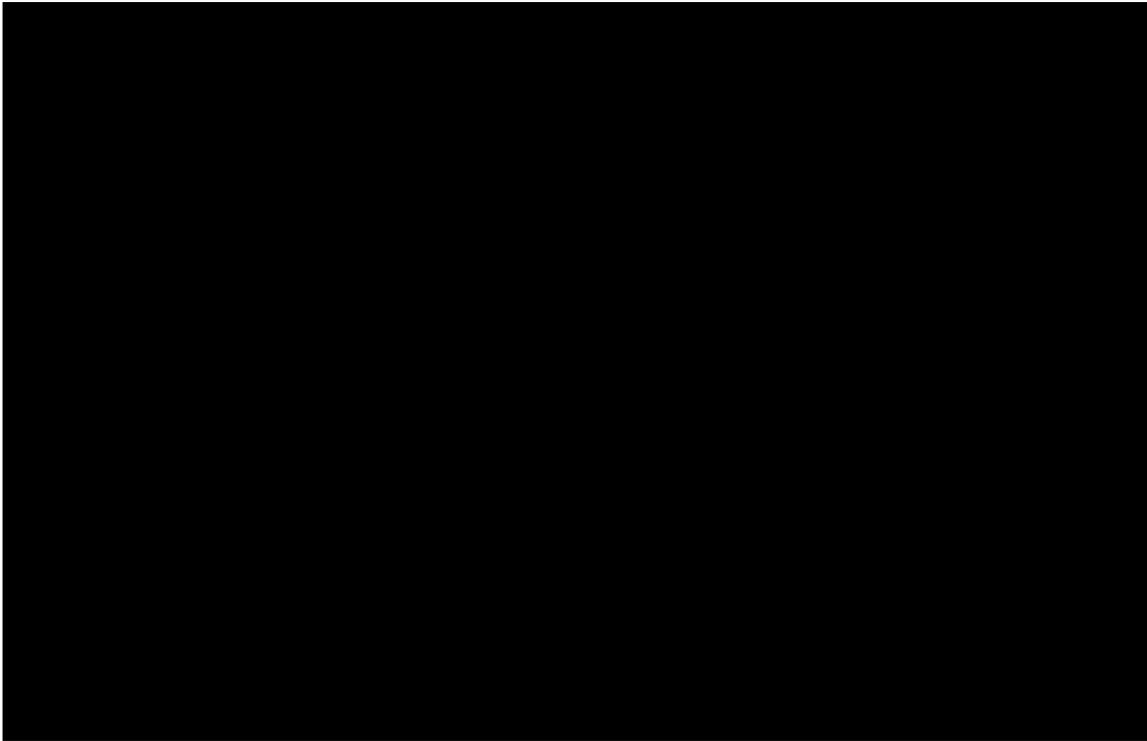
Exhibit 1 shows an aerial view of the neighborhood surrounding the school. P.S. 50 is bounded by 101st Avenue to the north, Liberty Avenue to the south, Waltham Street to the east, and Allendale Street to the west. The neighborhood surrounding the school consists of a mixed residential and commercial land uses.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Members of the consultant team met with the school's assistant principal, guidance counselor, parent coordinator, school safety director, and a school crossing guard at P.S. 50 in the afternoon of May 11, 2004. According to these school officials, student pedestrians at P.S. 50 face the following problems:

- Speeding on Allendale Street (at the meeting, school officials requested a speed reducer on Allendale Street to reduce the likelihood that motorists would speed on this roadway).
- A crossing guard needs to be assigned to the intersection of Liberty Avenue and Allendale Street to assist with pedestrian crossings of this intersection.
- A crossing guard needs to be assigned to the intersection of Allendale Street and 101st Avenue to assist with pedestrian crossings of this intersection.





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 at the end of this section. The catchment area is roughly bounded by 94th Avenue to the north, Shore Avenue to the south, 150th Street to the east, and the Van Wyck Expressway to the west. An additional portion of the catchment area extends west of the Van Wyck Expressway to 134th Street between 97th Avenue and 103rd Avenue.

Table 1 presents the modes of travel for P.S. 50 as identified by school officials.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	STUDENTS (Percentage)
Walk	80%
Driven by car	10%
School bus	5%
MTA Bus / Subway	5%
Bicycle	NA
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There are relatively few student pedestrian traffic generators in the vicinity of P.S. 50. However, Saint Pious V Elementary School is located approximately one block south of P.S. 50 on Liverpool Street between 105th Avenue and 106th Avenue and does generate additional vehicular traffic and pedestrian activity in the neighborhood (this school has closed since the time of the investigation of this report).

2.8 CROSSING GUARD LOCATIONS

As shown in Figure 3, a crossing guard is assigned to the signalized intersection of Liberty Avenue and Liverpool Street on school days. There is also a crossing guard assigned to the signalized intersection of 101st Avenue and Liverpool Street. Exhibit 4 shows the location of both crossing guards.



Figure 3: Looking north across Liberty Avenue at the signalized intersection with Liverpool Street (school crossing guard on duty)



LEGEND:

CATCHMENT AREA: (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND P.S. 50)

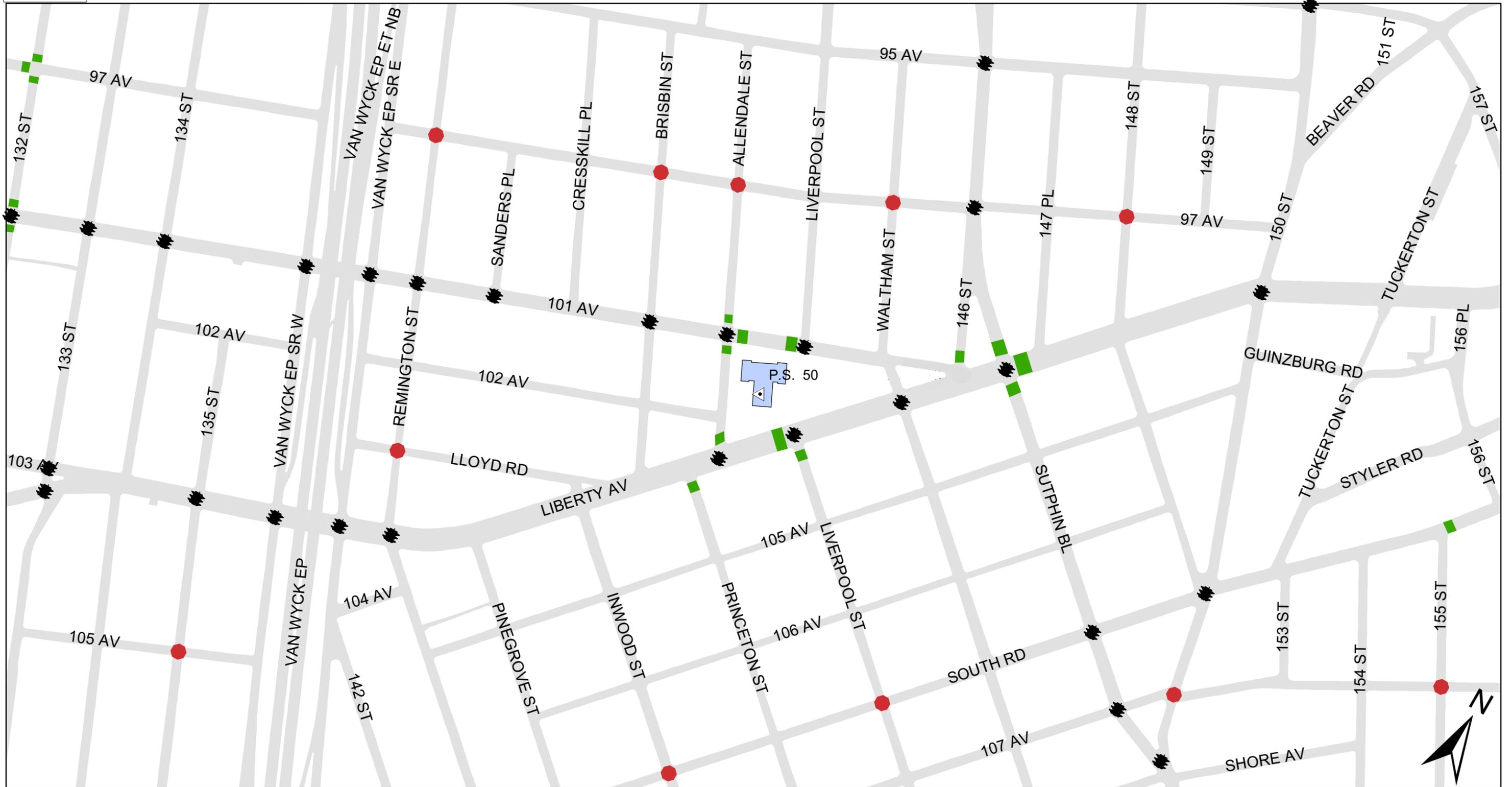


EXHIBIT 2
P.S. 50 QUEENS
TALFOURD LAWN SCHOOL
CATCHMENT AREA





School Traffic Safety Map



0 410 820 1,640 Feet

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 50 Queens
TALFOURD LAWN SCHOOL

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

Map created on
 10/12/2006

EXHIBIT 3

COMM. BOARD: 412
 PRECINCT: 103

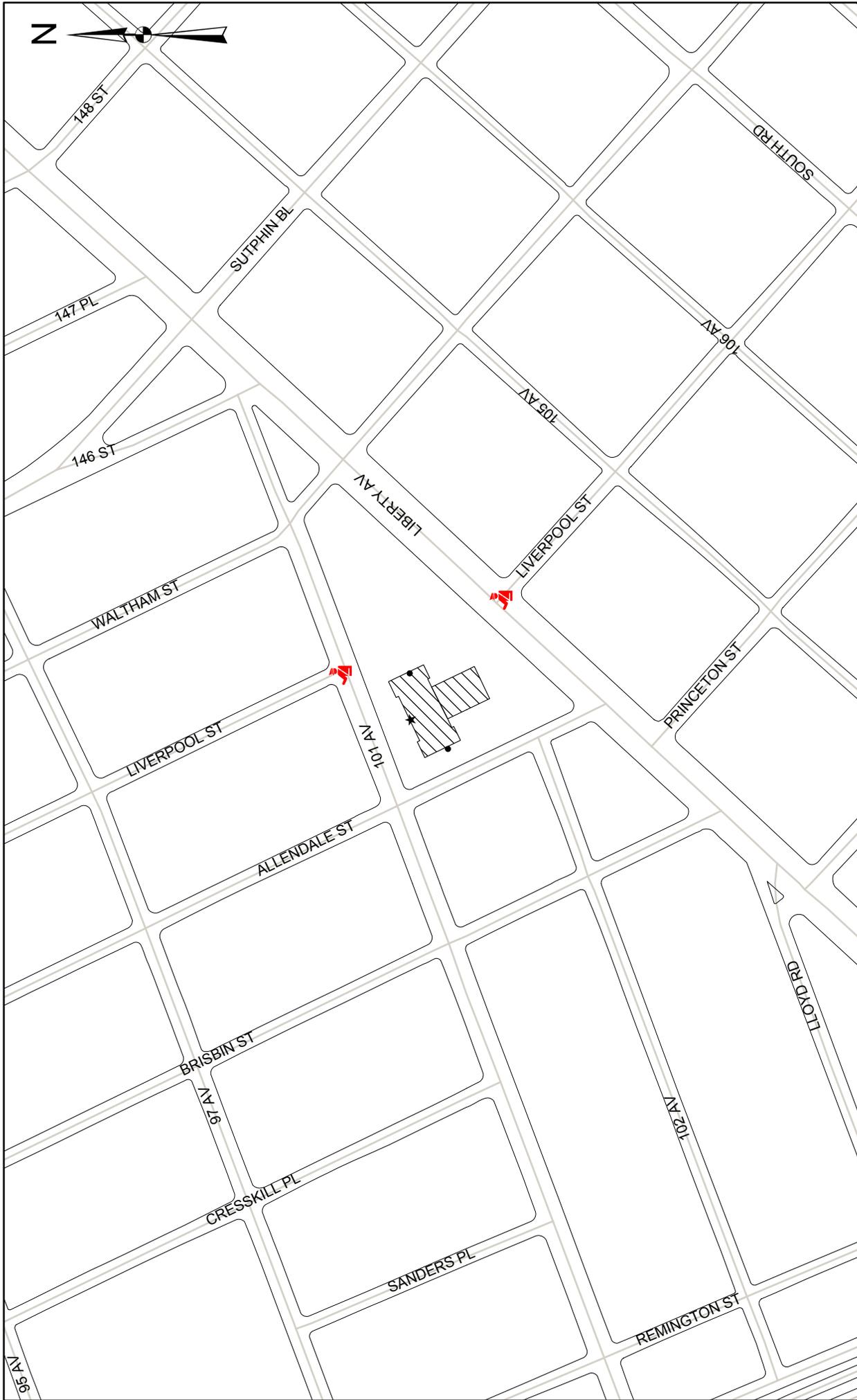


EXHIBIT 4
P.S. 50 QUEENS
TALFOURD LAWN SCHOOL
CROSSING GUARDS LOCATIONS

LEGEND:

CROSSING GUARD LOCATION

0 250 500 1,000 Feet

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

The school officials reported that approximately five percent of the students ride a yellow bus to school and another five percent ride an MTA bus to school (see Table 1). According to the current Department of Education website, P.S. 50 provides door-to-door transportation for 17 general education students using three buses, and for another 23 students using four special education buses. The school also issues 335 half-fare MetroCards and 95 full-fare Metro Cards.

3.2 PARENT DROP-OFF OPERATIONS

According to the school principal, 85 students are currently being dropped off.

3.3 PARKING REGULATIONS

Parking regulations around the school's adjacent block faces are shown in Exhibit 5.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3 shows the existing signals, school crosswalks, and speed reducers in the vicinity of P.S. 50. 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.

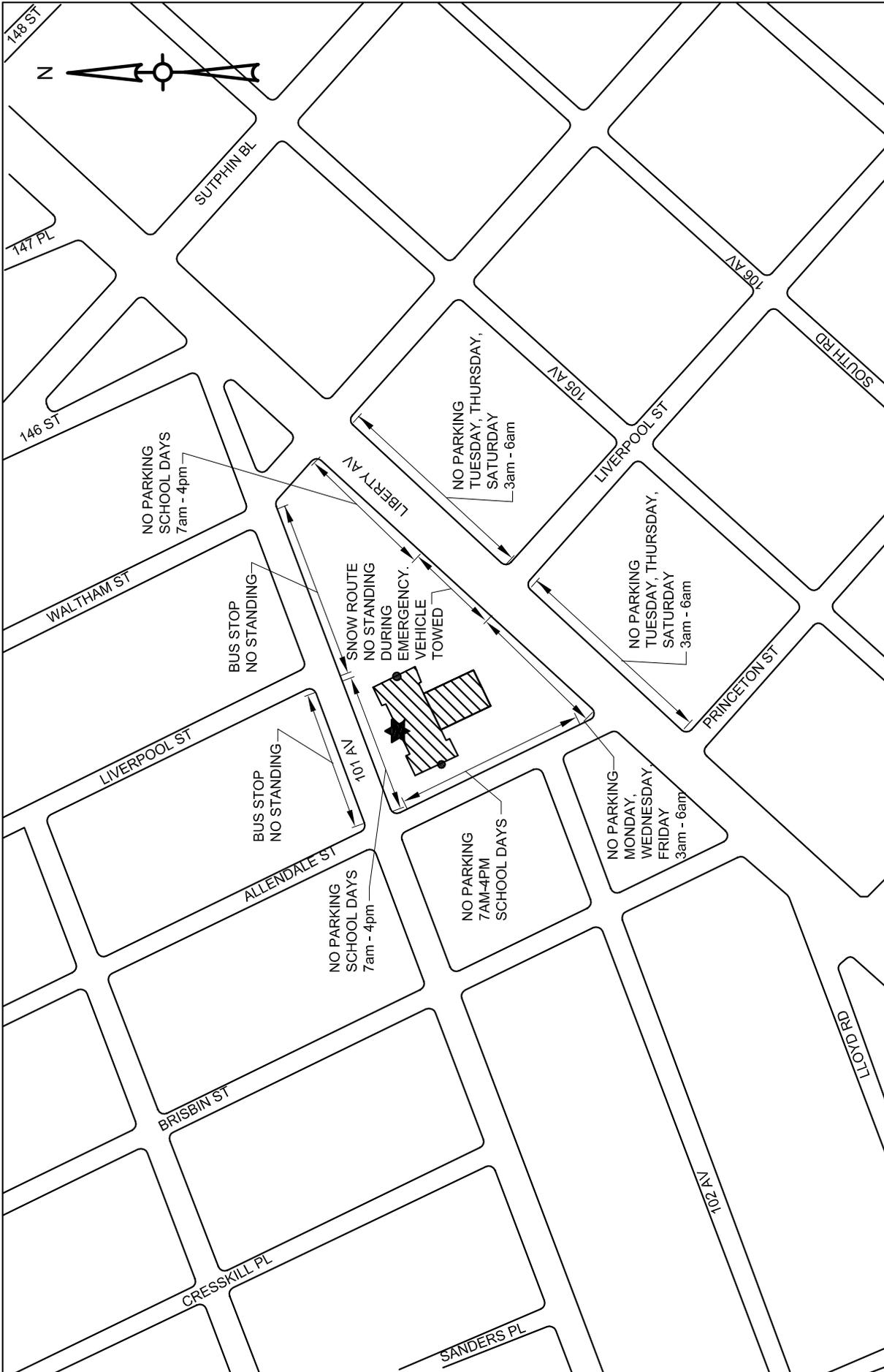
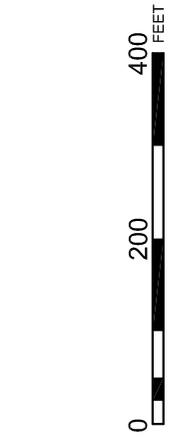


EXHIBIT 5
 P.S. 50 QUEENS
 TALFOURD LAWN SCHOOL
 EXISTING PARKING REGULATION



- LEGEND:**
- ★ MAIN ENTRANCE
 - ENTRANCE

3.5 ACCIDENT SUMMARY

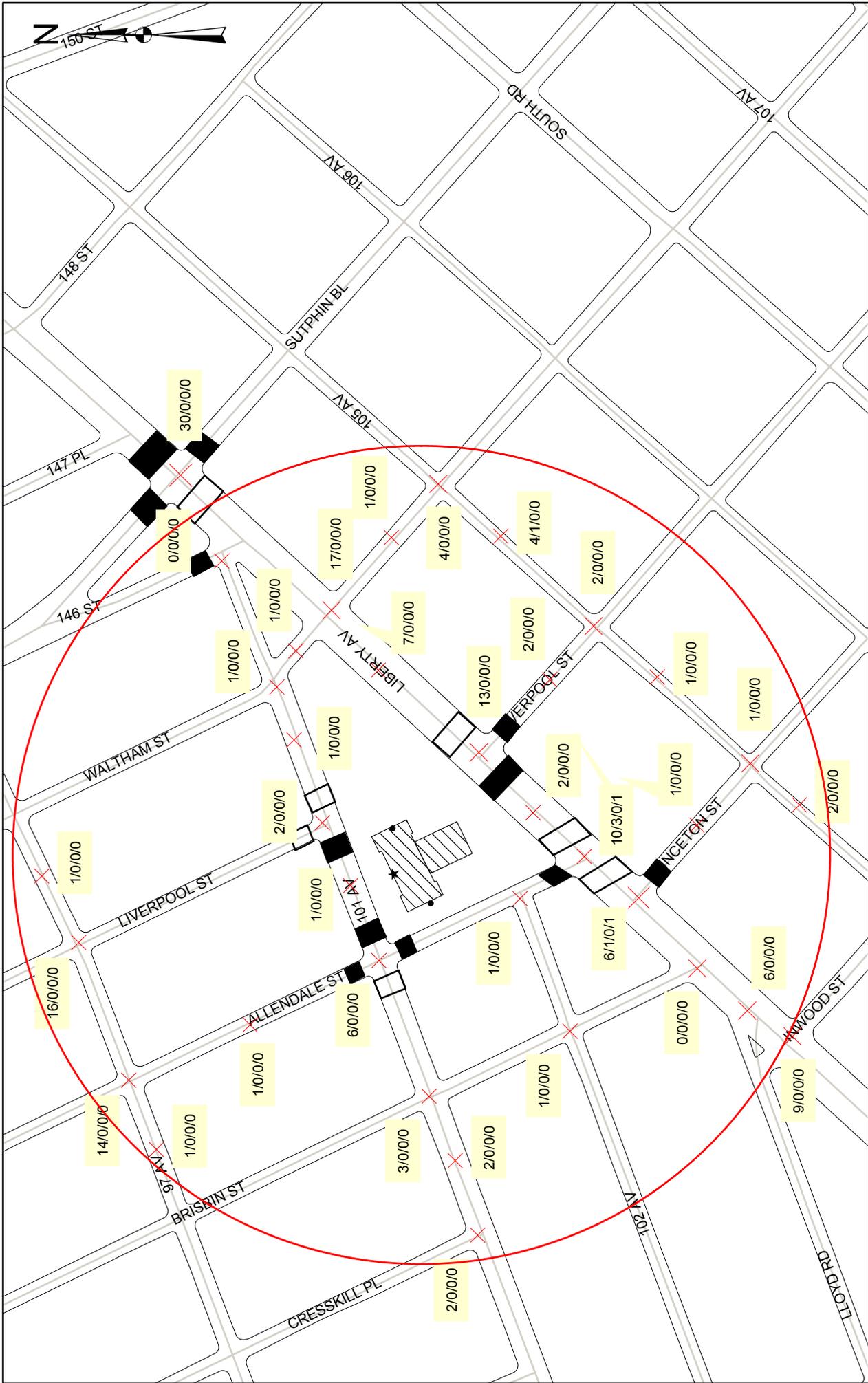
Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of P.S. 50 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of 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*
Liberty Avenue and Princeton Street	6	1	0	1
Liberty Avenue and Allendale Street	10	3	0	1
Liberty Avenue and Liverpool Street	13	0	0	0
Liberty Avenue and Waltham Street	17	0	0	0
Liberty Avenue and Sutphin Boulevard	30	0	0	0
101 st Avenue and Allendale Street	6	0	0	0
101 st Avenue and Liverpool Street	2	0	0	0
101 st Avenue and Waltham Street	1	0	0	0
101 st Avenue and 146 th Street	0	0	0	0
TOTAL	85	4	0	2

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Liberty Avenue and Princeton Street	11	0	0	0
Liberty Avenue and Allendale Street	8	2	1	2
Liberty Avenue and Liverpool Street	9	1	0	1
Liberty Avenue and Waltham Street	24	3	0	1
Liberty Avenue and Sutphin Boulevard	94	5	0	0
101 st Avenue and Allendale Street	13	1	0	0
101 st Avenue and Liverpool Street	3	0	0	0
101 st Avenue and Waltham Street	9	0	0	0
101 st Avenue and 146 th Street	0	0	0	0
TOTAL	171	12	1	4

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



LEGEND:

- ACCIDENT LOCATION
- SCHOOL CROSSWALK
- SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
- BORDER OF 700 FEET
- X/X/X
- TOTAL ACCD
- PED ACCD
- FATAL
- SCHOOL_PED ACCD

EXHIBIT 6
P.S. 50 QUEENS
TALFOURD LAWN SCHOOL
ACCIDENT SUMMARY (1998-2000)

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. 50.

3.6.1 Liberty Avenue and Princeton Street

This is an unsignalized "T"-intersection with a school crosswalk located across the southeast leg of Princeton Street. In the vicinity of P.S. 50, Liberty Avenue is a two-way street on a northeast-southwest alignment, with two travel lanes and one on-street parking lane on each side of the roadway, plus a ten foot painted center median with exclusive left-turn lanes at selected intersections. Princeton Street is a two-way street on a northwest-southeast alignment, with one travel lane and one on-street parking lane on each side of the roadway. Princeton Street is stop-controlled at its intersection with Liberty Street.

There was a total of six accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident that was also school-related. The school-related accident occurred at approximately 5:00 pm on May 5, 2000 when a ten-year-old pedestrian sustained an incapacitating injury after being struck at the intersection. The pedestrian's actions, the roadway surface conditions, and the weather conditions were not reported. There were no pedestrian fatalities reported at this intersection between 1998 and 2000.

3.6.2 Liberty Avenue and Allendale Street

This is a signalized "T"-intersection with a school crosswalk located across the northwest leg of Allendale Street, and pedestrian crosswalks located across both legs of Liberty Avenue. Liberty Avenue is a two-way street on a northeast-southwest alignment, with two travel lanes and one on-street parking lane on each side of the roadway, plus a ten foot painted center median with exclusive left-turn lanes at selected intersections. Allendale Street is a two-way street on a northwest-southeast alignment with one travel lane and one on-street parking lane on each side of the roadway. There is an exclusive left-turn lane on Liberty Avenue at its intersection with Allendale Street (see Figures 4 and 5).

There was a total of ten accidents reported at this intersection between 1998 and 2000 (Table 2), including three pedestrian accidents, one of which was school-related. The school-related accident occurred at approximately 7:00 am on November 6, 2000 when an eight-year-old pedestrian sustained a "possible injury" after being struck by a vehicle while crossing with the traffic signal. The roadway surface and weather conditions were

reported as dry and clear, respectively. There were no pedestrian fatalities reported at this intersection between 1998 and 2000.



Figure 4: Looking northeast on Liberty Avenue to the intersection with Allendale Street



Figure 5: Looking northeast at the sidewalk on the south side of Liberty Avenue, between Princeton Street and Liverpool Street

During the meeting with the consultant team, school officials reported a speeding problem on Allendale Street. Therefore, a spot speed survey was conducted on Allendale Street between 101st Avenue and Liberty Avenue in order to verify the existence of a speeding problem and to determine its extent.

Spot speed surveys are used to identify the 85th percentile speed, which is considered to be the representative speed for a specified street segment. By definition, 85 percent of the surveyed vehicles are traveling below this speed and 15 percent of the surveyed vehicles are traveling above this speed. 85th percentile speeds above 30 mph indicate a potential speeding problem that may require appropriate traffic calming measures.

The results of the spot speed survey revealed that northwest-bound vehicles on Allendale Street between 101st Avenue and Liberty Avenue were traveling at an 85th percentile speed of 27 mph, and that southeast-bound vehicles on this same section were traveling at an 85th percentile speed of 28 mph. Because these 85th percentile speeds do not exceed the 30 mph threshold, no traffic calming measures are recommended.

The detailed results of the spot speed surveys on Allendale Street between 101st Avenue and Liberty Avenue are shown in the Appendix at the end of this document.

To assess vehicle and pedestrian volumes on Liberty Avenue in the vicinity of P.S. 50, vehicle turning movement and pedestrian crossing counts were conducted at the intersection from 7:30 to 9:00 am on Friday, September 30, 2005. The results of these counts during the weekday morning peak hour (7:30 to 8:30 am) are shown in Tables 4 and 5, and in Exhibit 7A at the end of this section.

As shown in Table 5, the pedestrian crossing count identified a total of 88 pedestrians (including 44 adults and 44 students) utilizing the pedestrian crosswalk located across the southwest leg of Liberty Avenue, and a total of 23 pedestrians (including 10 adults and 13 students) utilizing the pedestrian crosswalk located across the northeast leg of Liberty Avenue. This represents a total of 111 pedestrians (including 54 adults and 57 students) crossing Liberty Avenue at Allendale Street during the weekday morning peak hour (7:30 to 8:30 am).

INTERSECTION	Liberty Avenue EASTBOUND		Liberty Avenue WESTBOUND		Allendale Street SOUTHBOUND	
	Left	Straight	Straight	Right	Left	Right
Liberty Avenue and Allendale Street	30	750	736	97	22	25
TOTAL	780		833		47	

TABLE 5: PEDESTRIAN CROSSING VOLUMES (7:30-8:30 AM)			
INTERSECTION	Crossing Liberty Avenue SOUTHWEST-LEG CROSSWALK	Crossing Liberty Avenue NORTHEAST-LEG CROSSWALK	Crossing Allendale Street NORTHWEST-LEG CROSSWALK
Liberty Avenue and Allendale Street	88 (44 / 44) *	23 (10 / 13) *	114 (57 / 57) *

* Numbers in parenthesis indicate (adults / students).

3.6.3 Liberty Avenue and Liverpool Street

This is a signalized “T”-intersection with school crosswalks located across the southwest leg of Liberty Avenue and the southeast leg of Liverpool Street, and a pedestrian crosswalk located across the northeast leg of Liberty Avenue. Liberty Avenue is a two-way street on a northeast-southwest alignment, with two travel lanes and one on-street parking lane on each side of the roadway, plus a ten-foot painted center median with exclusive left-turn lanes at selected intersections. Liverpool Street is a two-way street on a northwest-southeast alignment with one travel lane and one on-street parking lane on each side of the roadway. Liverpool Street is discontinuous through the school property (between Liberty Avenue and 101st Avenue), but continues north of 101st Avenue. There is an exclusive left-turn lane on Liberty Avenue at its intersection with Liverpool Street (see Figures 6 and 7).

There was a total of 13 accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these accidents involved pedestrians. There were no pedestrian fatalities reported at this intersection between 1998 and 2000.

The available time for a student pedestrian to cross Liberty Avenue (assuming a child pedestrian walking rate of three feet/second, plus three seconds reaction time) was found to be insufficient at this intersection. To determine the effect that a change in traffic signal timing would have on traffic flow at this intersection, and to assess vehicle and pedestrian volumes on Liberty Avenue in the vicinity of P.S. 50, vehicle turning movement and pedestrian crossing counts were conducted at the intersection from 7:30 to 9:00 am on Monday, September 26, 2005. The results of these counts during the weekday morning peak hour (7:30 to 8:30 am) are shown in Tables 6 and 7, and in Exhibit 7B at the end of this section.

As shown in Table 7, the pedestrian crossing count identified a total of 46 pedestrians (including 17 adults and 29 students) utilizing the school crosswalk located across the southwest leg of Liberty Avenue, and a total of 346 pedestrians (including 145 adults and 201 students) utilizing the pedestrian crosswalk located across the northeast leg of Liberty Avenue. This represents a total of 392 pedestrians (including 162 adults and 230 students) crossing Liberty Avenue at Liverpool Street during the weekday morning peak hour (7:30 to 8:30 am).

TABLE 6: VEHICLE TURNING MOVEMENT VOLUMES (7:30-8:30 AM)						
INTERSECTION	Liberty Avenue EASTBOUND		Liberty Avenue WESTBOUND		Liverpool Street NORTHBOUND	
	Straight	Right	Left	Straight	Left	Right
Liberty Avenue and Liverpool Street	868	16	15	774	136	31
TOTAL	884		789		167	

TABLE 7: PEDESTRIAN CROSSING VOLUMES (7:30-8:30 AM)			
INTERSECTION	Crossing Liberty Avenue SOUTHWEST-LEG CROSSWALK	Crossing Liberty Avenue NORTHEAST-LEG CROSSWALK	Crossing Liverpool Street SOUTHEAST-LEG CROSSWALK
Liberty Avenue and Liverpool Street	46 (17 / 29) *	346 (145 / 201) *	108 (49 / 59) *

* Numbers in parenthesis indicate (adults / students).



Figure 6: Looking southwest on Liberty Avenue to the intersection with Liverpool Street



Figure 7: Looking southeast on Liverpool Street from across the intersection with Liberty Avenue

3.6.4 Liberty Avenue and Waltham Street

This is a four-leg signalized intersection with pedestrian crosswalks located across all four legs of the intersection. Liberty Avenue is a two-way street on a northeast-southwest alignment, with two travel lanes and one on-street parking lane on each side of the roadway, plus a ten foot painted center median with exclusive left-turn lanes at selected intersections. Southeast of Liberty Avenue, Waltham Street is a two-way street with one travel lane and one on-street parking lane on each side of the roadway.

Between Liberty Avenue and 101st Avenue, Waltham Street is a one-way southbound street with two travel lanes. Although on-street parking is not prohibited along this segment of Waltham Street, motorists typically do not park here due to the relatively short block length between 101st Avenue and Liberty Avenue. There is one exclusive left-turn lane on Liberty Avenue for southwest-bound traffic on Liberty Avenue to turn onto southeast-bound Waltham Street (see Figure 8).

There was a total of 17 accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these accidents involved pedestrians. There were no pedestrian fatalities reported at this intersection between 1998 and 2000.

A warrant study was conducted between January and March 2003 at the intersection of Liberty Avenue and Waltham Street to determine the need for traffic signal control at the intersection. The study included a full warrant analysis of vehicle and pedestrian counts, accident analysis, and speed surveys. The investigation determined that a traffic signal installation was warranted. Installation of a traffic signal at Liberty Avenue and Waltham Street was approved on April 1, 2003 as a result of this study.



Figure 8: Looking southwest on Liberty Avenue to the intersection with Waltham Street

3.6.5 Liberty Avenue and Sutphin Boulevard

This is a four-leg signalized intersection with school crosswalks located across the northwest and southeast legs of Sutphin Boulevard and the northeast leg of Liberty Avenue, and a pedestrian crosswalk located across the southwest leg of Liberty Avenue. Liberty Avenue is a two-way street on a northeast-southwest alignment, with two travel lanes and one on-street parking lane on each side of the roadway, plus a ten foot painted center median with exclusive left-turn lanes at selected intersections. Sutphin Boulevard is a two-way street with one travel lane and one on-street parking lane on each side of the roadway. There is one exclusive left-turn lane on Liberty Avenue in each direction at the intersection with Sutphin Boulevard.

There was a total of 30 accidents reported at this intersection between 1998 and 2000 (Table 2), but none of these accidents involved pedestrians. There were no pedestrian fatalities reported at this intersection between 1998 and 2000.

To assess vehicle and pedestrian volumes on Liberty Avenue in the vicinity of P.S. 50, vehicle turning movement and pedestrian crossing counts were conducted at the intersection of Liberty Avenue and Sutphin Boulevard between 7:30 and 9:00 am on Friday, June 17, 2005. The results of these counts during the weekday morning peak hour (7:30 to 8:30 am) are shown in Tables 8 and 9 and in Exhibit 7C at the end of this section.

The pedestrian crossing count determined that there were a total of 52 pedestrians (including 41 adults and 11 students) utilizing the pedestrian crosswalk located across the southwest leg of Liberty Avenue, and a total of 82 pedestrians (including 69 adults and 13 students) utilizing the school crosswalk located across the east leg of Liberty Avenue.

This is a total of 134 pedestrians (including 110 adults and 24 students) crossing Liberty Avenue at the intersection with Sutphin Boulevard during the weekday morning peak hour (7:30 to 8:30 am).

TABLE 8: VEHICLE TURNING MOVEMENT VOLUMES (7:30-8:30 AM)												
INTERSECTION	Liberty Avenue EASTBOUND			Liberty Avenue WESTBOUND			Sutphin Boulevard NORTHBOUND			Sutphin Boulevard SOUTHBOUND		
	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right
Liberty Avenue and Sutphin Boulevard	126	754	76	52	726	69	68	525	6	34	247	7
TOTAL	956			847			599			288		

TABLE 9: PEDESTRIAN CROSSING VOLUMES (7:30-8:30 AM)								
INTERSECTION	Crossing Liberty Avenue SOUTHWEST-LEG CROSSWALK		Crossing Liberty Avenue NORTHEAST-LEG CROSSWALK		Crossing Sutphin Blvd. SOUTHEAST-LEG CROSSWALK		Crossing Sutphin Blvd. NORTHWEST-LEG CROSSWALK	
	Liberty Avenue and Sutphin Boulevard	52	(41 / 11) *	82	(69 / 13) *	53	(30 / 23) *	30

* Numbers in parenthesis indicate (adults / students).

3.6.6 101st Avenue and Allendale Street

This is a four-leg signalized intersection with school crosswalks located across the north and south legs of Allendale Street and the east leg of 101st Avenue, and a pedestrian crosswalk located across the west leg of 101st Avenue. 101st Avenue is a two-way east-west street with one travel lane and one on-street parking lane on each side of the roadway. Allendale Street is a two-way north-south street with one travel lane and one on-street parking lane on each side of the roadway.

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

3.6.7 101st Avenue and Liverpool Street

This is a signalized “T”-intersection with a school crosswalk located across the west leg of 101st Avenue, and pedestrian crosswalks located across the east leg of 101st Avenue and the north leg of Liverpool Street. 101st Avenue is a two-way east-west street with one travel lane and one on-street parking lane on each side of the roadway. Liverpool Street is a two-way north-south street with one travel lane and one on-street parking lane on each side of the roadway. Liverpool Street is discontinuous through the school property (between Liberty Avenue and 101st Avenue), but continues south of Liberty Avenue.

There was two accidents reported at this intersection between 1998 and 2000 (Table 2), but neither of these accidents involved a pedestrian.

3.6.8 101st Avenue and Waltham Street

This is a four-leg unsignalized intersection with no crosswalks. The south leg of Waltham Street is located slightly to the east of the north leg (see Exhibits 1 and 3). West of the intersection with Waltham Street, 101st Avenue is a two-way east-west street with one travel lane and one on-street parking lane on each side of the roadway. East of the intersection with Waltham Street, 101st Avenue is a one-way westbound street with one travel lane and on-street parking permitted on both sides of the roadway. North of 101st Avenue, Waltham Street is a two-way street with one travel lane and one on-street parking lane on each side of the roadway. Between 101st Avenue and Liberty Avenue, Waltham Street is a one-way southbound street with two traffic lanes. Although on-street parking is not prohibited along this segment of Waltham Street, motorists typically do not park here due to the relatively short block length between 101st Avenue and Liberty Avenue.

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

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of P.S. 50, and were found to be adequate based upon a child pedestrian walking at the rate of three feet per second, except for at several crosswalks located across Liberty Avenue. Comparisons of actual and required pedestrian signal timings are shown in Table 10.

TABLE 10: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
Liberty Avenue and Allendale Street				
crossing Liberty Avenue	70	27	27	NO
crossing Allendale Street	30	32	13	NO
Liberty Avenue and Liverpool Street				
crossing Liberty Avenue	70	24	27	YES
crossing Liverpool Street	30	34	13	NO
Liberty Avenue and Waltham Street				
crossing Liberty Avenue	70	27	27	NO
crossing Waltham Street	30	32	13	NO
Liberty Avenue and Sutphin Boulevard				
crossing Liberty Avenue	70	25	27	YES
crossing Sutphin Blvd.	40	34	17	NO
101st Avenue and Allendale Street				
crossing 101 st Avenue	44	29	18	NO
crossing Allendale Street	30	57	13	NO
101st Avenue and Liverpool Street				
crossing 101 st Avenue	44	29	18	NO
crossing Liverpool Street	30	57	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 times.

3.8 PHYSICAL CONDITIONS

3.8.1 Roadways and Sidewalks

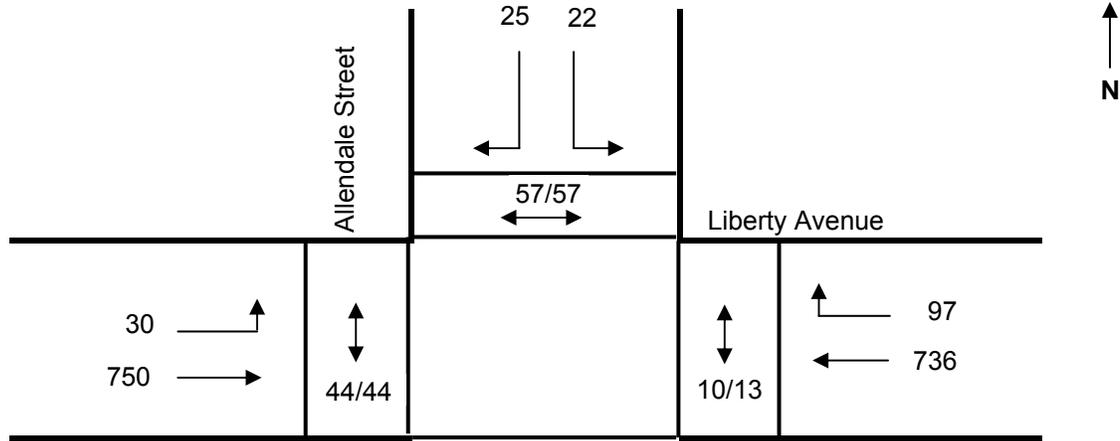
The roadways and sidewalks in the vicinity of P.S. 50 were observed to be in fair condition. On the school’s block faces, sidewalks are in fair condition and are approximately 10 to 15 feet wide.

3.8.2 Pedestrian Ramps

Pedestrian ramps in the vicinity of the school were observed to be standard, with the following exception:

- Pedestrian ramps are missing on the south side of 101st Avenue at the intersection with Liverpool Street for the school crosswalk located across the west leg of 101st Avenue and the pedestrian crosswalk located across the east leg of 101st Avenue.

One Hour Traffic Volumes
Friday, September 30th, 2005 7:30 am - 8:30 am

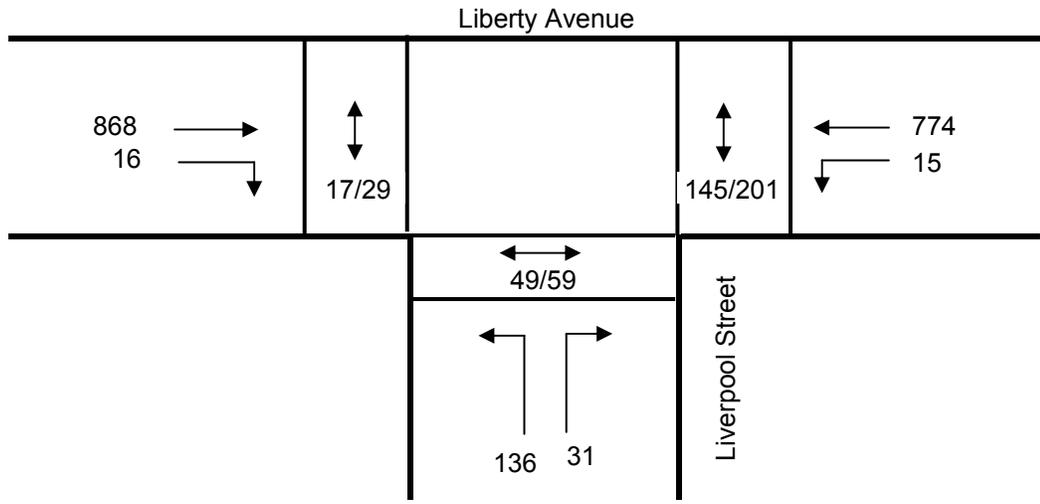


Intersection of Liberty Avenue and Allendale Street

<u>Legend</u>	
XX / XX	(Adult / Child)
←→	Pedestrian Counts
—↑	Vehicle Movement

EXHIBIT 7A
P.S. 50 QUEENS
TALFOURD LAWN ELEMENTARY SCHOOL
TRAFFIC AND PEDESTRIAN COUNTS

One Hour Traffic Volumes
Wednesday, September 25th, 2005 7:30am - 8:30am



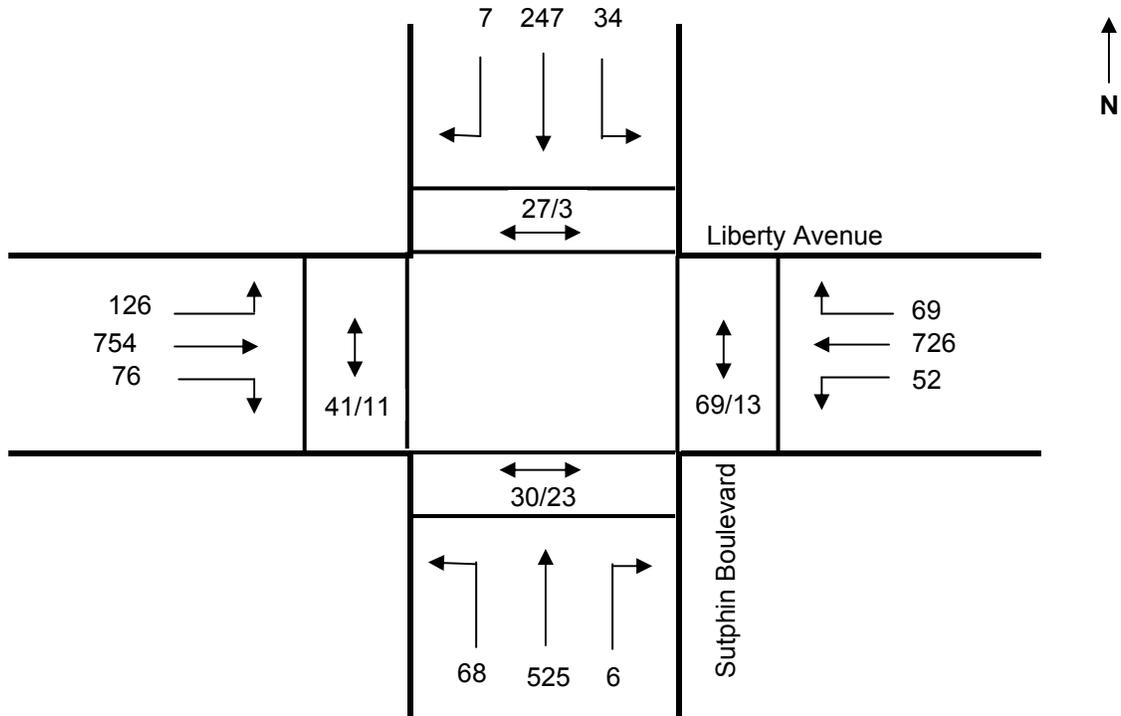
Intersection of Liberty Avenue and Liverpool Street

Table of Content:

XX / XX	Adult / Child
↔	Pedestrian Counts
→	Vehicle Movement

EXHIBIT 7B
P.S. 50
TALFOURD LAWN ELEMENTARY SCHOOL
TRAFFIC AND PEDESTRIAN COUNTS

One Hour Traffic Volumes
Friday, June 17th, 2005 7:30 am - 8:30 am



Intersection of Liberty Avenue and Sutphin Blvd

<u>Legend</u>	
XX / XX	(Adult / Child)
←→	Pedestrian Counts
—↑	Vehicle Movement

EXHIBIT 7C
P.S. 50 QUEENS TALFOURD LAWN ELEMENTARY SCHOOL
TRAFFIC AND PEDESTRIAN COUNTS

4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY

This section describes proposed measures to improve school pedestrian safety around P.S. 50. 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. 50 is discussed as follows, and is shown in more detail in Exhibit 8 at the end of this section.

4.1 SHORT-TERM MEASURES

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

Signs reading: “NO STANDING 7AM - 4PM SCHOOL DAYS” should be installed 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.)

- Place stop bars ten feet in advance of 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.

- Designate existing pedestrian crosswalks as school crosswalks

There is an existing pedestrian crosswalk located across the northeast leg of the signalized Liberty Avenue and Liverpool Street intersection. The traffic count (see Table 5) showed a total of 201 students using this crosswalk (as compared to 29 students using the designated school crosswalk located across the west leg of Liberty Avenue). Based on these volumes, it would be appropriate to designate this pedestrian crosswalk as a school crosswalk.

Therefore, the following action is recommended:

- The existing pedestrian crosswalk located across the northeast leg of the signalized Liberty Avenue and Liverpool Street intersection should be designated as a school crosswalk.

There is an existing pedestrian crosswalk located across the north leg of the signalized 101st Avenue and Liverpool Street intersection. This crosswalk is used by students and it is in close proximity to the main entrance to P.S. 50.

Therefore, the following action is recommended:

- The existing pedestrian crosswalk located across the north leg of the signalized 101st Avenue and Liverpool Street intersection should be designated as a school crosswalk.

There is an existing pedestrian crosswalk located across the east leg of the signalized “T”-intersection of Liberty Avenue and Allendale Street. This crosswalk is used by students and it is in close proximity to the school’s yard.

Therefore, the following action is recommended:

- The existing pedestrian crosswalk located across the east leg of the signalized Liberty Avenue and Allendale Street intersection should be designated as a school crosswalk.

There are existing pedestrian crosswalks located across all four legs of the signalized intersection of Liberty Avenue and Waltham Street. This intersection is used by students and it is in close proximity to the P.S. 50.

Therefore, the following action is recommended:

- The existing pedestrian crosswalks located across the south and west legs of the signalized Liberty Avenue and Waltham Street intersection should be designated as a school crosswalks.

➤ Consideration of crossing guards at the intersections of Liberty Avenue/Allendale Street and 101st Avenue/Allendale Street

The school has requested that crossing guards be assigned to the signalized intersections of Liberty Avenue/Allendale Street and 101st Avenue/Allendale Street. Both intersections are adjacent to the school block, with the former located in close proximity to the school’s main entrance, and the latter located on a major five-lane roadway through the area (Liberty Avenue) that accommodates relatively high traffic volumes. Therefore, the following is recommended:

- Consider assigning a school crossing guard to the intersections of Liberty Avenue/Allendale Street and 101st Avenue/Allendale Street.

➤ Modify signal timing to accommodate student pedestrian crossing times

As shown in Table 8, based on a child pedestrian walking rate of three feet/second, and a reaction time of three seconds, the current time available for students to cross Liberty Avenue is insufficient at two intersections in the vicinity of P.S. 50. These include the intersections of Liberty Avenue at Liverpool Street, and Liberty Avenue at Sutphin Boulevard.

Therefore NYCDOT will increase the “WALK” times across Liberty Avenue at selected intersections, as shown below:

<u>Intersection</u>	<u>Additional “WALK” Time</u>
Liberty Avenue and Liverpool Street	3 seconds
Liberty Avenue and Sutphin Boulevard	2 seconds

4.2 LONG-TERM MEASURES

➤ Consider installing a curb extension (neckdowns)

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.

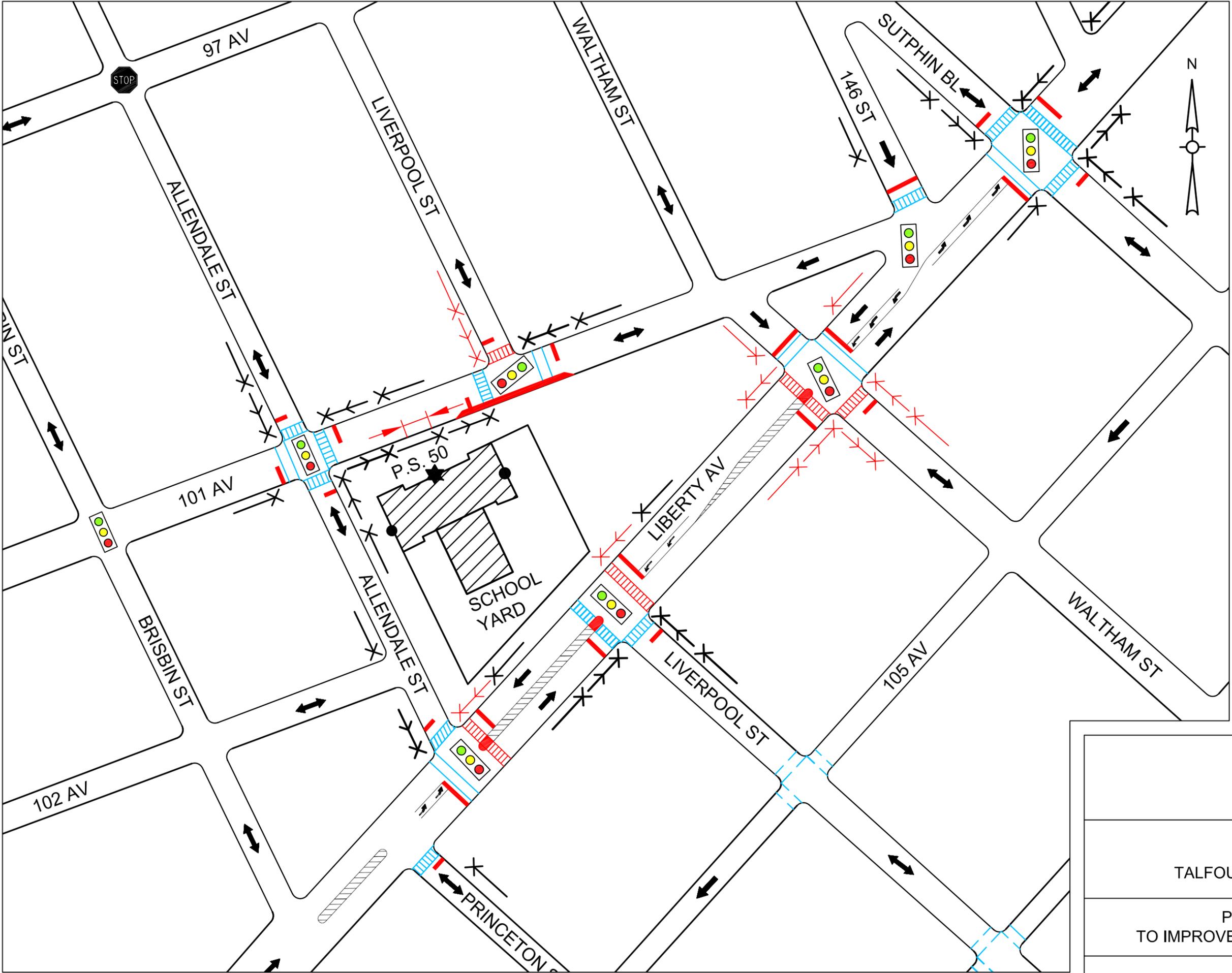
- On the south side of 101st Avenue at the intersection with Liverpool Street, between the crosswalks across the west and east legs of the intersection.

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.

➤ Consider refuge islands

There is a striped median along the center of Liberty Avenue, separating eastbound and westbound traffic. School crosswalks are located across Liberty Avenue at its intersections with Allendale Street, Liverpool Street and Waltham Street. Therefore, it is recommended to install pedestrian refuge islands at the following intersections provided that the Final Design confirms that construction of the refuge islands would be feasible and not interfere with traffic operations:

- Provide a concrete pedestrian refuge island on the east leg of Liberty Avenue and Allendale Street intersection.
- Provide a concrete pedestrian refuge island on the west leg of Liberty Avenue and Liverpool Street intersection.
- Provide a concrete pedestrian refuge island on the west leg of Liberty Avenue and Waltham Street intersection.



- 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 SCHOOL CROSSWALK
 - ▬ EXISTING PEDESTRIAN CROSSWALK
 - - - EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
 - 🚦 EXISTING SIGNALIZED LOCATION
 - STOP EXISTING ALL WAY STOP LOCATION
 - ⊥ PROPOSED ADVANCE WARNING SIGN
 - ⊥ PROPOSED SCHOOL CROSSWALK WARNING ASSEMBLY
 - ▤ PROPOSED SCHOOL CROSSWALK
 - ▬ PROPOSED STOP LINE 4' IN ADVANCE OF SCHOOL CROSSWALK
 - ⊥ PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
 - 👉 PROPOSED CURB EXTENSION (NECKDOWN)
 - ▬ PROPOSED CONCRETE REFUGE ISLAND



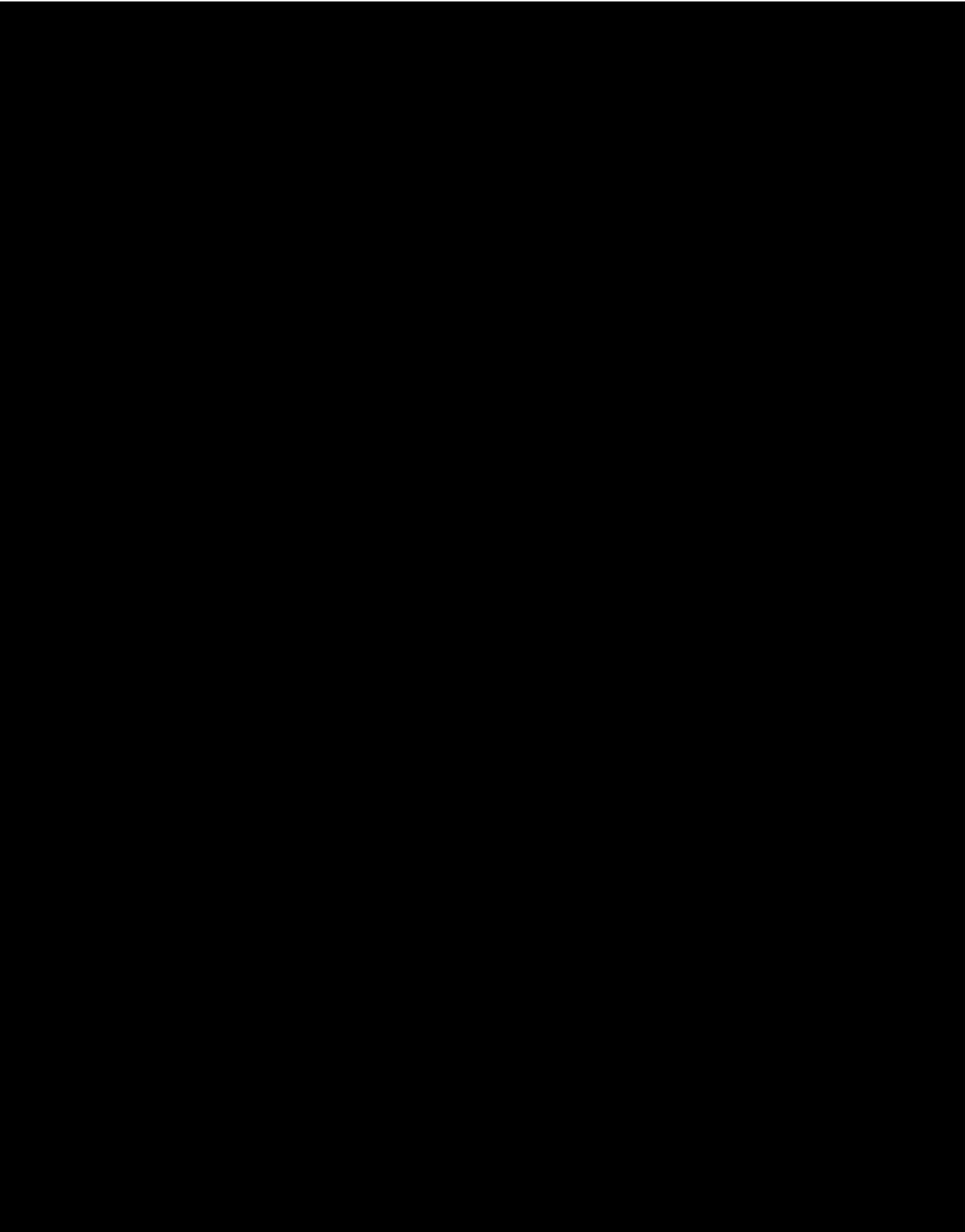
1" = 100'

EXHIBIT 8

P.S. 50 QUEENS
TALFOURD LAWN ELEMENTARY SCHOOL

POTENTIAL MEASURES
TO IMPROVE STUDENT PEDESTRIAN SAFETY

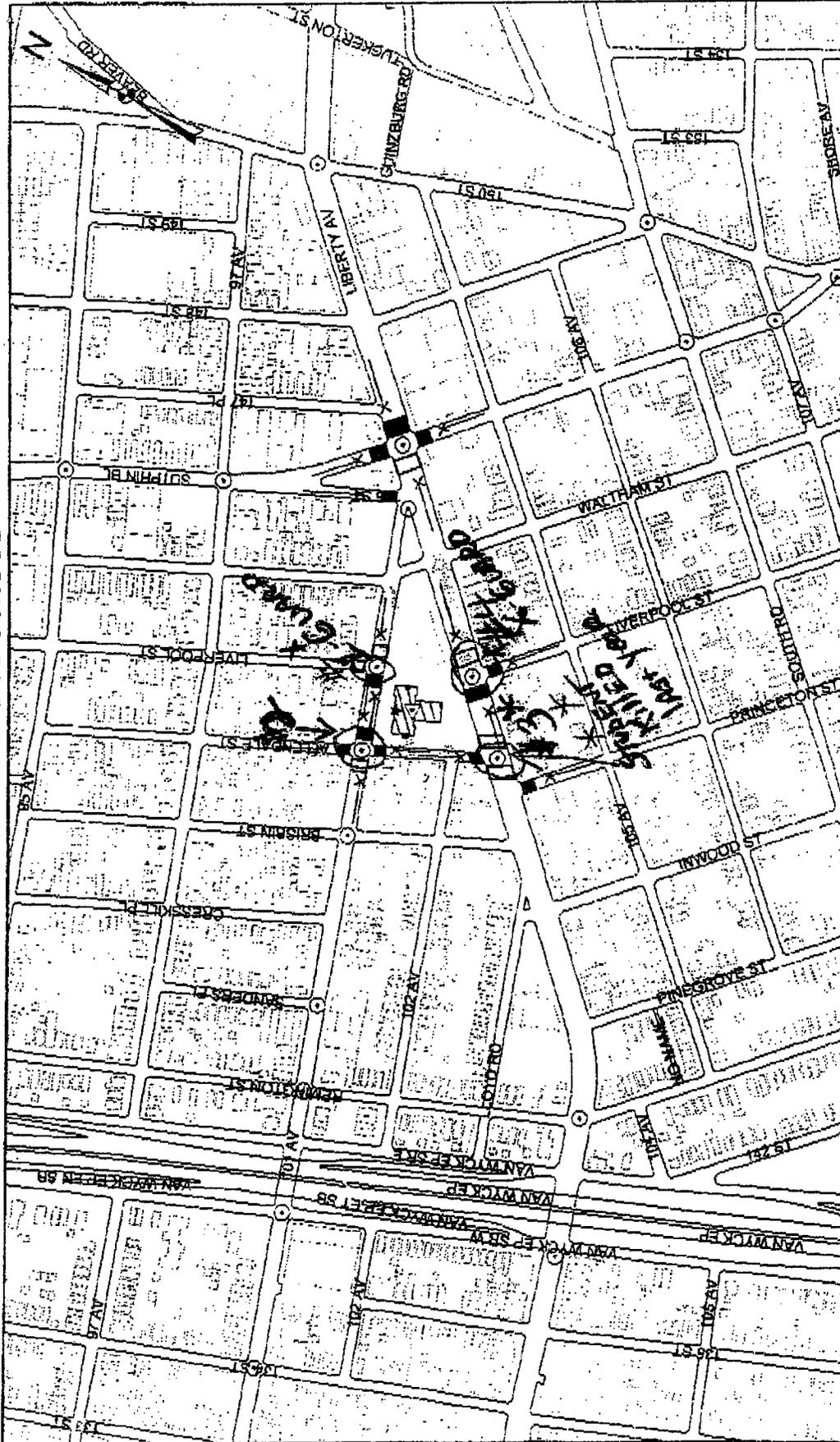
APPENDIX



NEW YORK CITY
DEPT. OF TRANSPORTATION

TRAFFIC SAFETY PLAN OFFICIAL ROUTES TO SCHOOL

BUREAU OF TRAFFIC



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.

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

TALFOURD LAWN SCHOOL P.S. 50

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION,
the Vice-Minister, COMMISSIONER, in cooperation with SCHOOL and
POLICE OFFICIALS.

ORIG. DATE: 08/1987
CIS. COM. NO.: 067-2002
REVISIONS:

DRAWING NO.:
CC- 481
MS- 481B

COMM. BOARD:
BOROUGH: QUEENS
PRECINCT: 613

SPOT SPEED STUDY

Date: **October 11, 2005** Time: **1:15- 2:15 pm**
 Location: **Allendale Street between 101 Avenue & Liberty Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

School: **P.S. 50**
 Direction: **Northbound**
 Comments: **narrow street**

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	1	9.1%	9.1%	20	400
21	1	9.1%	18.2%	21	441
22	2	18.2%	36.4%	44	968
23	1	9.1%	45.5%	23	529
24	1	9.1%	54.5%	24	576
25	3	27.3%	81.8%	75	1875
26	0	0.0%	81.8%	0	0
27	0	0.0%	81.8%	0	0
28	1	9.1%	90.9%	28	784
29	1	9.1%	100.0%	29	841
30	0	0.0%	100.0%	0	0
31	0	0.0%	100.0%	0	0
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
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
	11	100.0%		264	6414

Mean Speed = 24.0 mph
 Standard Deviation = 2.8 mph
 Margin of Error (95% Confidence) = ± 1.7 mph

Median Speed = 24.0 mph
 15th Percentile Speed = 21.1 mph
 85th Percentile Speed = 26.9 mph

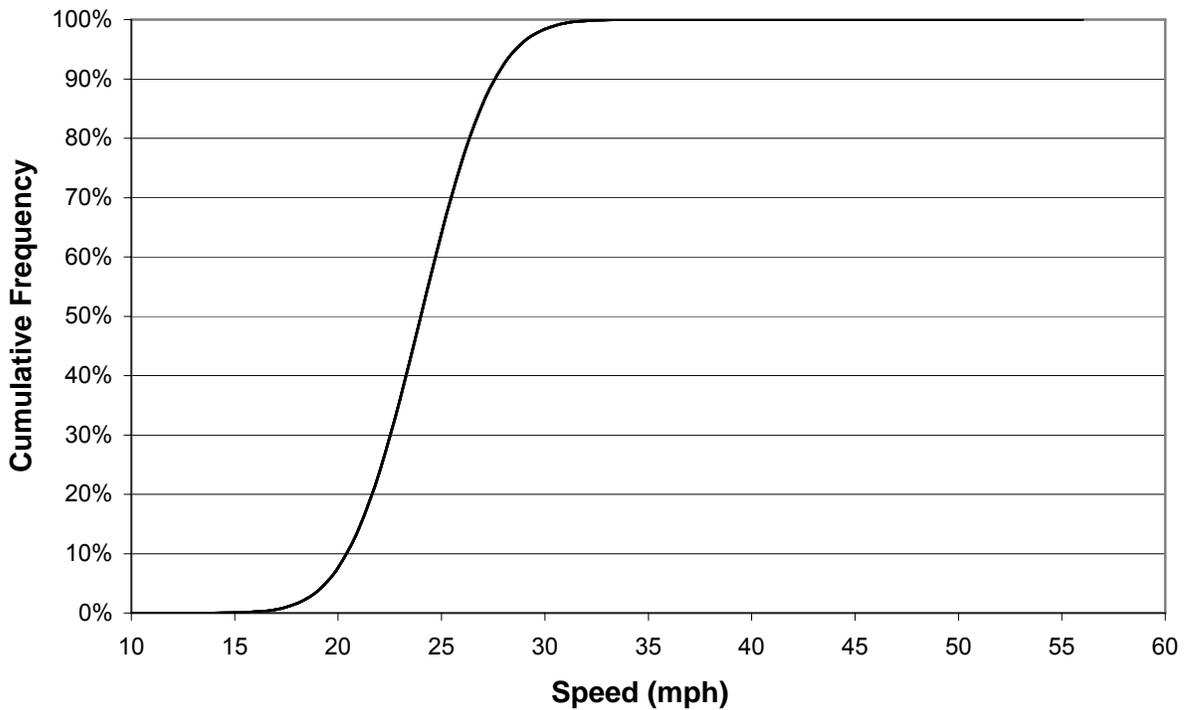
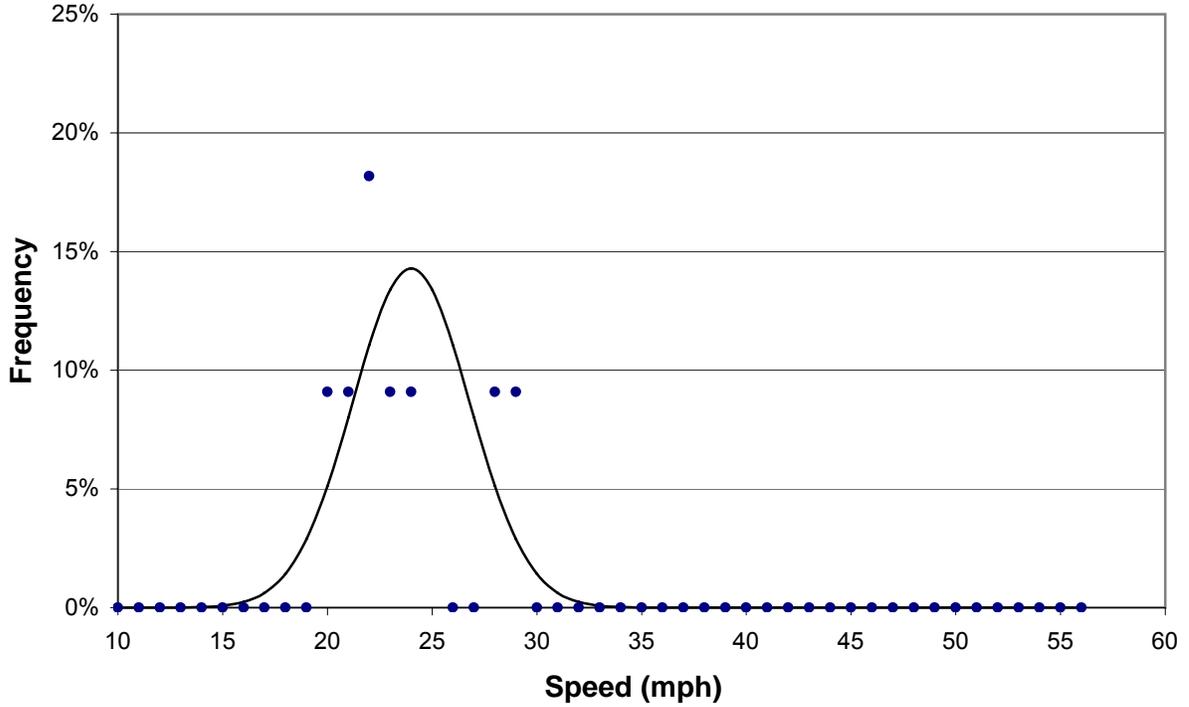
SPOT SPEED STUDY

Date: **October 11, 2005** Time: **1:15- 2:15 pm**
Location: **Allendale Street between 101 Avenue & Liberty Avenue**
Surveyor: **Richard Calvache & Hugo Salinas**

School: **P.S. 50**
Direction: **Northbound**
Comments: **narrow street**

Mean Speed = 24.0 mph
Standard Deviation = 2.8 mph
Margin of Error (95% Confidence) = ± 1.7 mph

Median Speed = 24.0 mph
15th Percentile Speed = 21.1 mph
85th Percentile Speed = 26.9 mph



SPOT SPEED STUDY

Date: **October 11, 2005** Time: **1:15- 2:15 pm**
 Location: **Allendale Street between 101 Avenue & Liberty Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

School: **P.S. 50**
 Direction: **Southbound**
 Comments: **narrow street**

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	2	12.5%	12.5%	38	722
20	2	12.5%	25.0%	40	800
21	1	6.3%	31.3%	21	441
22	3	18.8%	50.0%	66	1452
23	0	0.0%	50.0%	0	0
24	1	6.3%	56.3%	24	576
25	2	12.5%	68.8%	50	1250
26	2	12.5%	81.3%	52	1352
27	0	0.0%	81.3%	0	0
28	0	0.0%	81.3%	0	0
29	0	0.0%	81.3%	0	0
30	2	12.5%	93.8%	60	1800
31	1	6.3%	100.0%	31	961
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
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
	16	100.0%		382	9354

Mean Speed = 23.9 mph
 Standard Deviation = 3.9 mph
 Margin of Error (95% Confidence) = ± 1.9 mph

Median Speed = 23.9 mph
 15th Percentile Speed = 19.8 mph
 85th Percentile Speed = 28.0 mph

SPOT SPEED STUDY

Date: **October 11, 2005** Time: **1:15- 2:15 pm**
Location: **Allendale Street between 101 Avenue & Liberty Avenue**
Surveyor: **Richard Calvache & Hugo Salinas**

School: **P.S. 50**
Direction: **Southbound**
Comments: **narrow street**

Mean Speed = 23.9 mph
Standard Deviation = 3.9 mph
Margin of Error (95% Confidence) = ± 1.9 mph

Median Speed = 23.9 mph
15th Percentile Speed = 19.8 mph
85th Percentile Speed = 28.0 mph

