

New York City Department of Transportation

Office of School Safety Engineering

NEW YORK CITY



School Safety Engineering Project

FINAL REPORT: P.S. 7, M. Samuel Stern School, Manhattan



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



JUNE 8, 2006

School Safety Engineering Project
P.S. 7, M. Samuel Stern School, Manhattan

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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

The Department of Transportation 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). P.S. 7 (M. Samuel Stern School) in Manhattan is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Located at 160 East 120th Street in Manhattan, P.S. 7 is situated between Lexington Avenue and Third Avenue and spans from East 119th Street to East 120th Street. All four surrounding intersections are signalized (see Exhibit 1 for Aerial Photograph).

The surrounding land uses are primarily residential high-rise buildings on Lexington Avenue, commercial properties on East 119th Street and East 120th Street and three to four story residential buildings, with first floor commercial properties along Third Avenue.



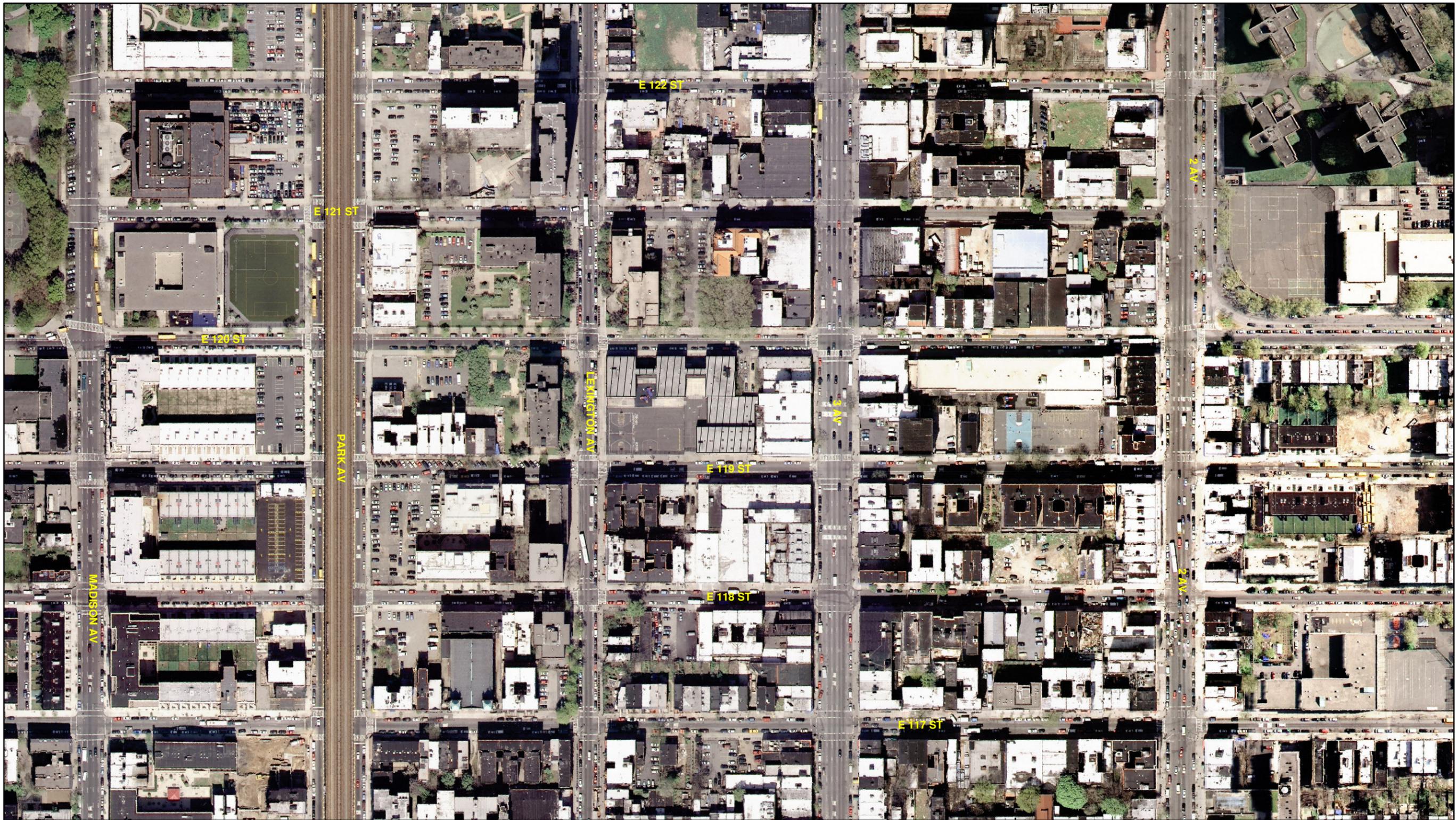
Figure 1: Lexington Avenue south of P.S. 7 (looking north)

2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team and the school principal from P.S. 7 met at the school on June 3rd, 2004. According to representatives of the school, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- Difficulties for pedestrians crossing Lexington Avenue at both East 119th Street and East 120th Street
- Students crossing in mid-block on East 120th Street between Lexington Avenue and Third Avenue



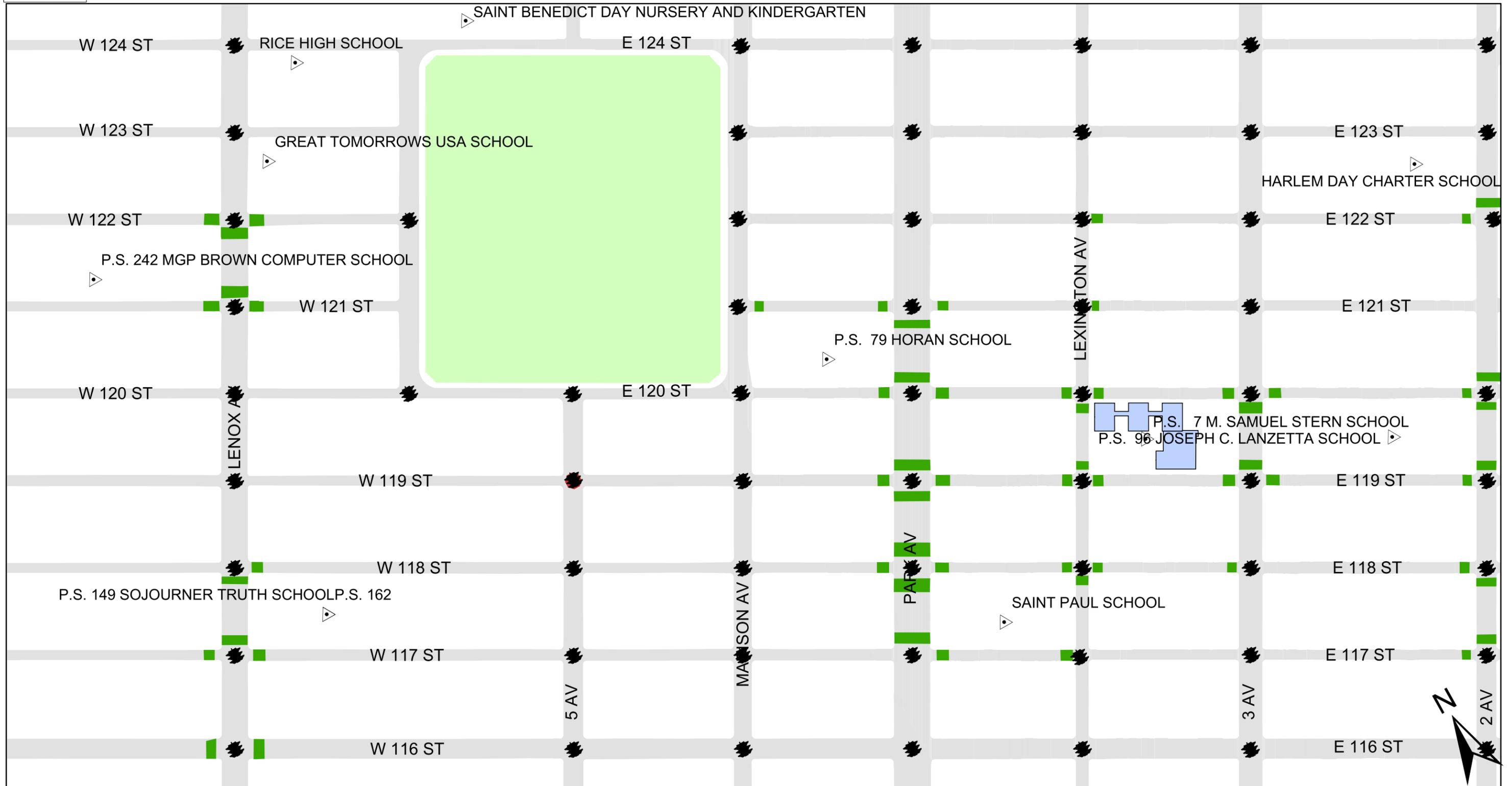


1 inch equals 200 feet

EXHIBIT 1
M. SAMUEL STERN SCHOOL
P.S. 7, MANHATTAN
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	TRAFFIC SIGNAL
SCHOOL CROSSWALK	ALL - WAY STOP
	SPEED REDUCER

PS 7 Manhattan
M. SAMUEL STERN SCHOOL

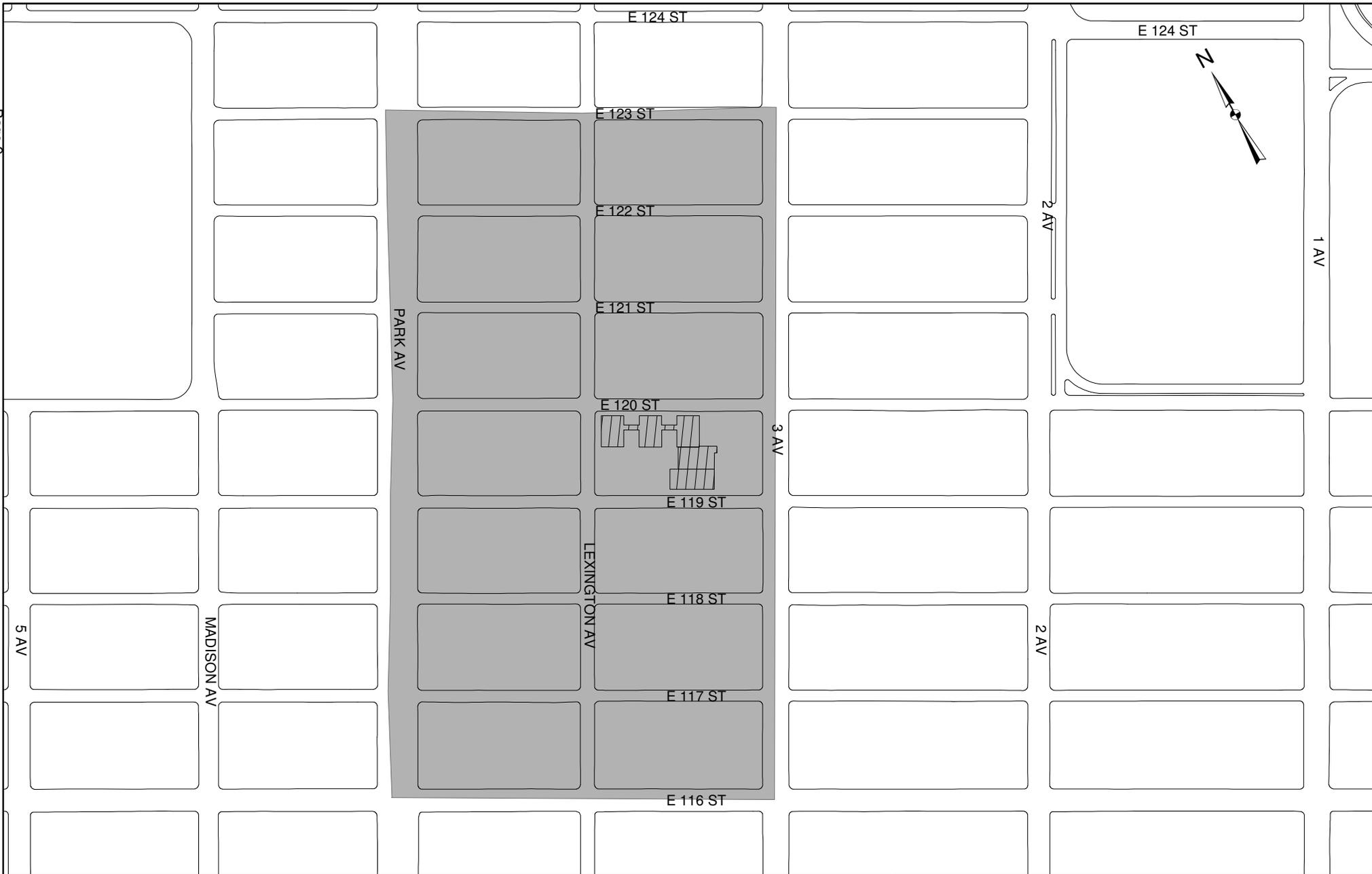
Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION, Iris Weinsall, COMMISSIONER.

Map created on 11/16/2006

EXHIBIT 2

1.5.1

COMM. BOARD: 111
 PRECINCT: 25



1 inch equals 350 feet



CATCHMENT AREA

EXHIBIT 3
P.S. 7, MANHATTAN
M. SAMUEL STERN SCHOOL
CATCHMENT AREA

2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL

According to the principal, approximately 87% of students walk to school, 1% arrive by school bus, 2% of the students are driven to school, and 10% come by public transportation. Table 1 shown below indicates the school’s estimate of modal split.

TABLE 1: MODE OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	
Description	Percentage
Walk	87%
Driven by parent or guardian	2%
School bus	1%
MTA bus or subway	10%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

MTA bus routes M98, M101, and M103 run north along Third Avenue and south along Lexington Avenue. Each of these roadways has bus stops just south of East 120th Street.

The Harlem Art Park is located directly across from the school on East 120th Street, but is not reported to be a major attraction for students.

2.8 CROSSING GUARD LOCATIONS

According to field observations and as confirmed by the school principal, there are currently two crossing guards assigned to this school. The guards are stationed at the following intersections:

- Lexington Avenue and East 119th Streets
- Lexington Avenue and East 120th Streets



Fig. 2 – A Crossing guard at the intersection of Lexington Avenue and East 120th Street



EXHIBIT 4

P.S. 7, MANHATTAN

M. SAMUEL STERN SCHOOL

CROSSING GUARD

1 inch equals 350 feet

CROSSING GUARD ASSIGNED TO ANOTHER SCHOOL

CROSSING GUARD ASSIGNED TO P.S.7



3. TRAFFIC OPERATIONS`

3.1 SCHOOL BUS OPERATIONS

According to school representatives, the school buses are primarily used by special education students. All buses park, or double-park, in front of the school on East 120th Street (Figure 3).



Figure 3: School buses double-park on East 120th Street during dismissal time

3.2 PARENT DROP-OFF OPERATIONS

Two percent of students (approximately 12 students per day) arriving at P.S. 7 were reported to be dropped off by a parent or guardian. There is no defined drop-off/pick-up area. Field observations performed on the afternoon of June 3, 2004 indicated that most area parking spaces around the perimeter of the school were occupied during school commute times. Vehicles typically double-park along East 119th Street or Lexington Avenue to drop-off or pick-up students.

Parents or guardians drop-off and pick-up kindergarten students directly within the school's playground area.

3.3 PARKING REGULATIONS

Exhibit 5 displays parking regulations around P.S. 7. On East 120th Street, "NO PARKING 7AM – 4PM SCHOOL DAYS EXCEPT BOARD OF EDUCATION" parking regulation signs are posted in front of the school. "NO PARKING 7AM – 4PM SCHOOL DAYS EXCEPT BOARD OF EDUCATION" parking regulations exist on East 119th Street near the intersection with Lexington Avenue. "NO PARKING 7AM – 4PM SCHOOL DAYS" regulations are posted on East 119th Street in front of the school.

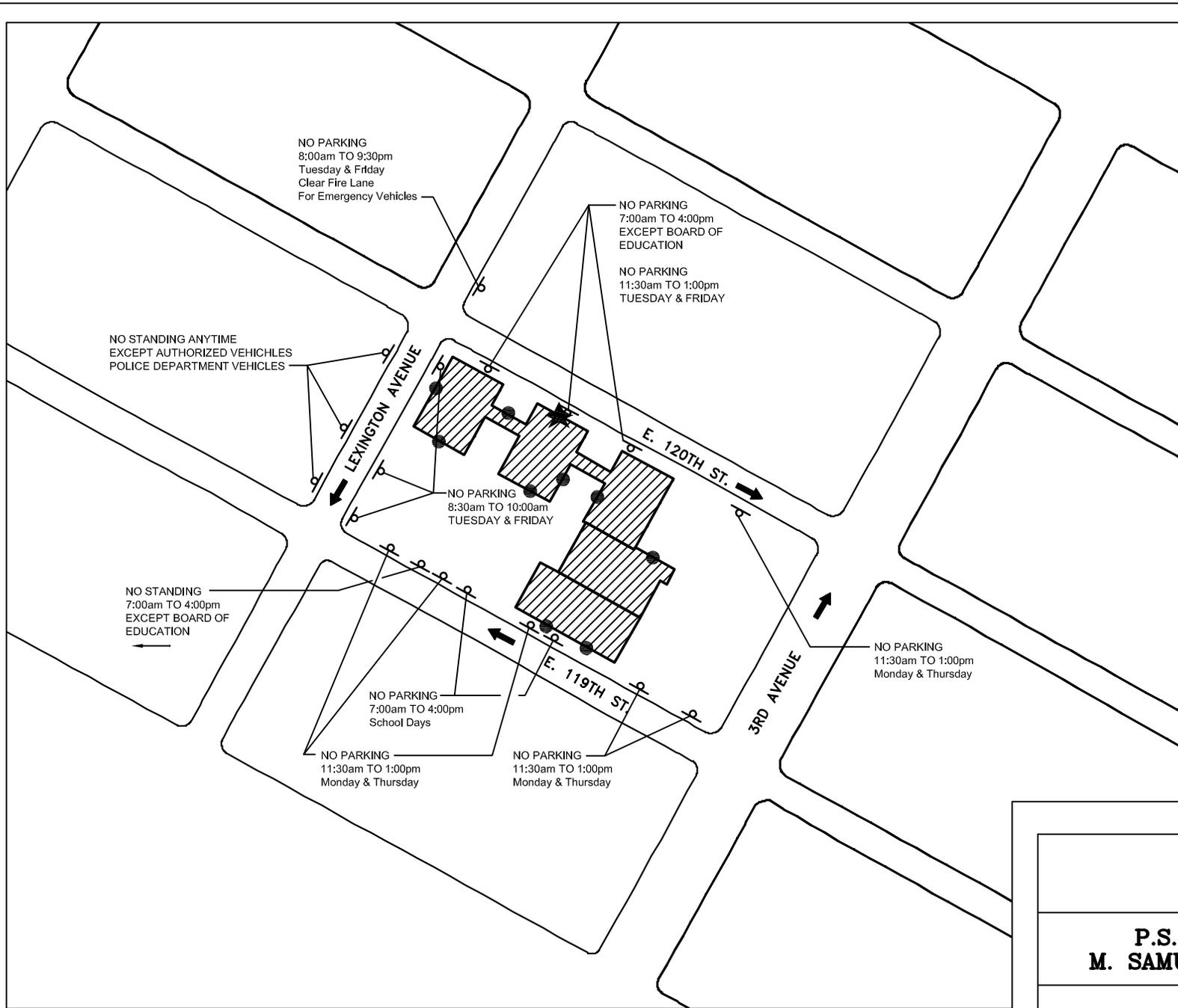
3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Map, Exhibit 2, shows existing signals and pavement markings in the vicinity of the school. It is noted that a citywide signage program is currently underway to upgrade school signage to current MUTCD standards of fluorescent yellow-green accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” on Exhibit 8.



LEGEND

-  MAIN ENTRANCE
-  ENTRANCE
-  STREET SIGN



SCALE: 1" : 150'

EXHIBIT 5

**P.S. 7, MANHATTAN
M. SAMUEL STERN SCHOOL**

EXISTING PARKING REGULATIONS

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. 7 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.

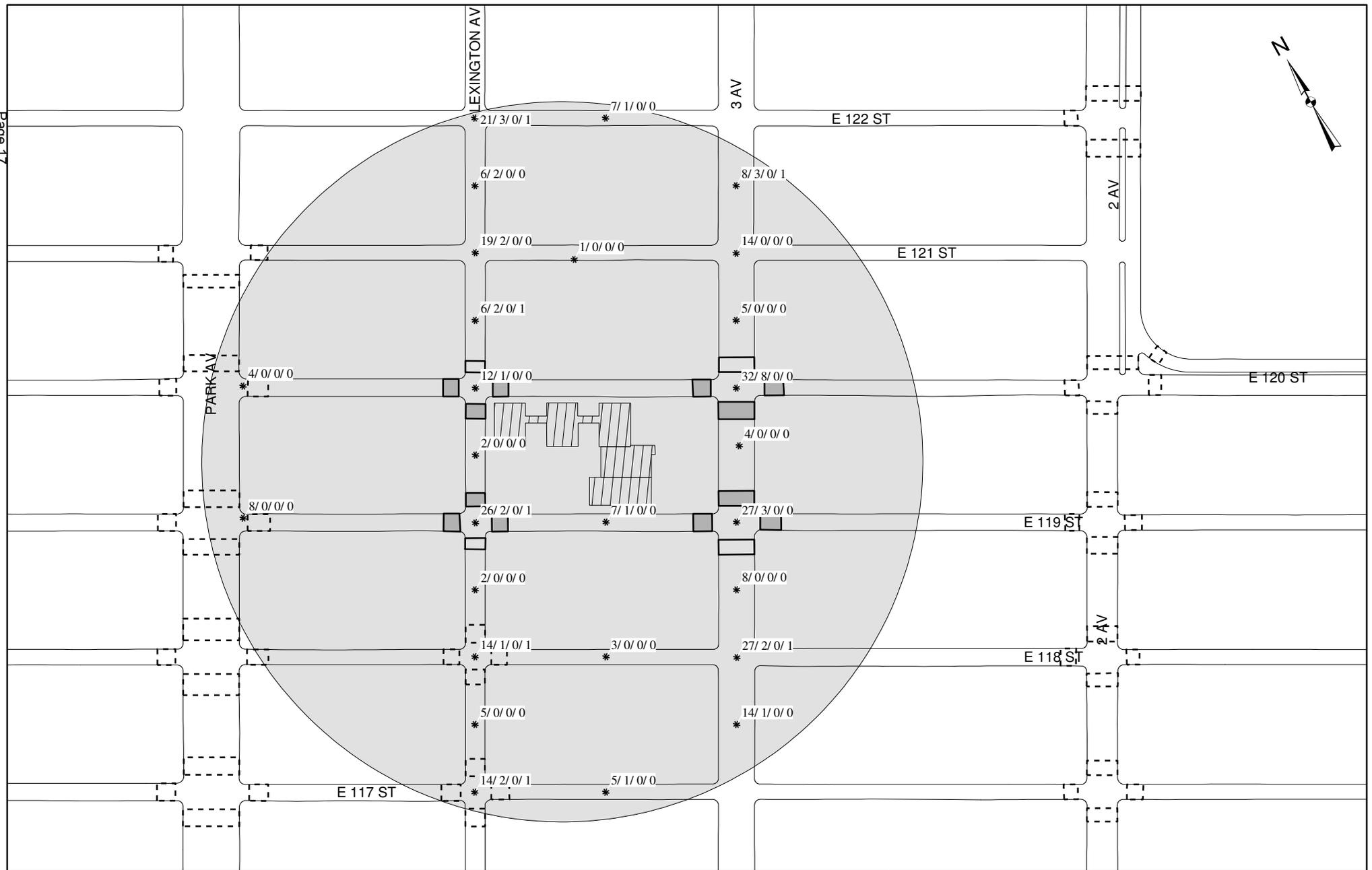
This report targets intersections closest to the school where the highest concentration of student pedestrians occurs. Intersections farther from the school and locations for which detailed data was not available at the time of this study will be addressed with the ongoing work of DOT’s School Safety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

TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
E 117 th St. and Lexington	14	2	0	1
E 118 th St. and Lexington	14	1	0	1
E 119 th St. and Lexington	26	2	0	1
E 120 th St. and Lexington	12	1	0	0
E 121 st St. and Lexington	19	2	0	0
E 122 nd St. and Lexington	21	3	0	1
E 118 th St. and Third Av.	27	2	0	1
E 119 th St. and Third Av.	27	3	0	0
E 120 th St. and Third Av	32	8	0	0
E 121 st St. and Third Av	14	0	0	0
TOTAL	206	24	0	5

TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
E 117 th St. and Lexington	20	2	0	1
E 118 th St. and Lexington	29	4	0	1
E 119th St. and Lexington	27	2	0	0
E 120th St. and Lexington	11	1	0	0
E 121 st St. and Lexington	27	2	0	0
E 122 nd St. and Lexington	29	0	0	0
E 118 th St. and Third Av.	38	4	0	0
E 119th St. and Third Av.	24	1	0	0
E 120th St. and Third Av.	46	1	0	0
E 121 st St. and Third Av	28	3	0	0
TOTAL	279	20	0	2

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



ACCIDENT LOCATION *

SCHOOL CROSSWALK ASSIGNED TO P.S. 7

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X



1 inch equals 250 feet

TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL PED ACCIDENTS
X	X	X	X

EXHIBIT 6

**P.S. 7, MANHATTAN
M. SAMUEL STERN SCHOOL**

**ACCIDENT SUMMARY
THREE YEAR PERIOD
(1998-2000)**

3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines traffic accident and operational issues in the vicinity of P.S. 7:

3.6.1 East 117th Street and Lexington Avenue

Lexington Avenue is a 40-foot one-way southbound street with two moving lanes and parking on both sides of the roadway. East 117th Street is 30-foot wide one-way westbound street with one moving lane and parking on both sides. School crosswalks are delineated across the west leg of the intersection.

This intersection had fourteen accidents between 1998 and 2000. Two accidents involved pedestrians, of which one was a school related accident. According to the accident data, both pedestrians were struck while crossing against the signal.

3.6.2 East 118th Street and Lexington Avenue

East 118th Street is a 30-foot wide one-way eastbound street with one travel lane and parking on both sides. School crosswalks are delineated across the east, west and south legs of the intersection.

This signalized intersection had fourteen accidents between 1998 and 2000. One accident involved a pedestrian, which was school related. According to the accident data a six-year old student was struck by a westbound traveling vehicle, while crossing at the crosswalk with the signal. This accident was attributed to driver error due to disregard for traffic control devices.

3.6.3 East 119th Street and Lexington Avenue

East 119th Street is a 32-foot wide one-way westbound street with one travel lane, a bicycle lane, and parallel parking on both sides of the roadway (Figure 4). School crosswalks are delineated across the east, west and north legs of the intersection. In the morning there is a large concentration of traffic entering Manhattan from the Tri-borough Bridge that travels along these two roadways. Many school children walk to school along Lexington Avenue.

This signalized intersection had 26 accidents in the three-year period from 1998 to 2000 (Exhibit 6 and Table 2). Two accidents involved pedestrians, including one that was school-related. The school age pedestrian accident was a result of pedestrian error. No other information was available about this accident. The other pedestrian accident was reported to have been caused by a “defective accelerator” while the driver was traveling west.



Figure 4: Looking west on East 119th Street at the intersection with Lexington Avenue

3.6.4 East 120th Street and Lexington Avenue

East 120th Street is a 30-foot one-way eastbound street with one moving lane, a bicycle lane and parking on both sides of the street. There are two pedestrian ramps at each corner of the intersection except for the southeast quadrant, closest to the school. There was also some standing water at this location (Figure 6).

According to the DMV accident data (see Table 2 and Exhibit 6) 12 accidents occurred at this location between 1998 and 2000. One accident involved a pedestrian, but this was not fatal or school related. According to the accident records, the driver failed to yield when making a left turn while the pedestrian was crossing with the signal. In addition, a total of six mid-block accidents occurred on Lexington Avenue between East 120th Street and East 121st Street. Two accidents involved pedestrians, of which one was a school related accident. No further information on this accident is available.



Figure 6: East 120th Street and Lexington Avenue (looking east)

3.6.5 East 122nd Street and Lexington Avenue

East 122nd Street is 30-foot wide one-way (eastbound) roadway with one travel lane and parking on both sides. There are no school crosswalks at this intersection.

This signalized intersection had 21 accidents between 1998 and 2000. Three accidents involved pedestrians, of which one was school related. According to the accident data a seven-year old pedestrian was struck while crossing against the signal and outside of the crosswalk.

3.6.6 East 118th Street and Third Avenue

This signalized intersection has no school crosswalks. A total of 27 accidents occurred at this location between 1998 and 2000. Two accidents involved pedestrians, of which one was school related. According to the accident data a ten-year old pedestrian was crossing against the signal when struck by an eastbound vehicle.

3.6.7 East 119th Street and Third Avenue

Third Avenue is a 70-foot one-way northbound street with five moving lanes and parking along each side of the roadway (Figure 5). The intersection of East 119th Street and Third Avenue is controlled by a two-phase signal.

There were 27 accidents reported at this intersection in the 1998-2000 time period, including 3 pedestrian accidents, none of which were fatal or school related. One of the pedestrian accidents occurred while the pedestrian was crossing with the signal and the motorist failed to yield while making a left turn. Another of the accidents occurred while the pedestrian was crossing with the signal and the motorist was traveling west. The third accident at this intersection involved a pedestrian crossing outside of the crosswalk while the motorist was traveling north.

A one-hour traffic count was performed at this intersection between the hours of 7:30 am - 8:30 am on Wednesday September 28, 2005 with the results shown in Exhibit 7. The data collected indicates that vehicular volumes are predominant in the northbound direction, and crossing pedestrian volumes are moderate in all directions, excluding the eastern leg, which had a minimal volume.



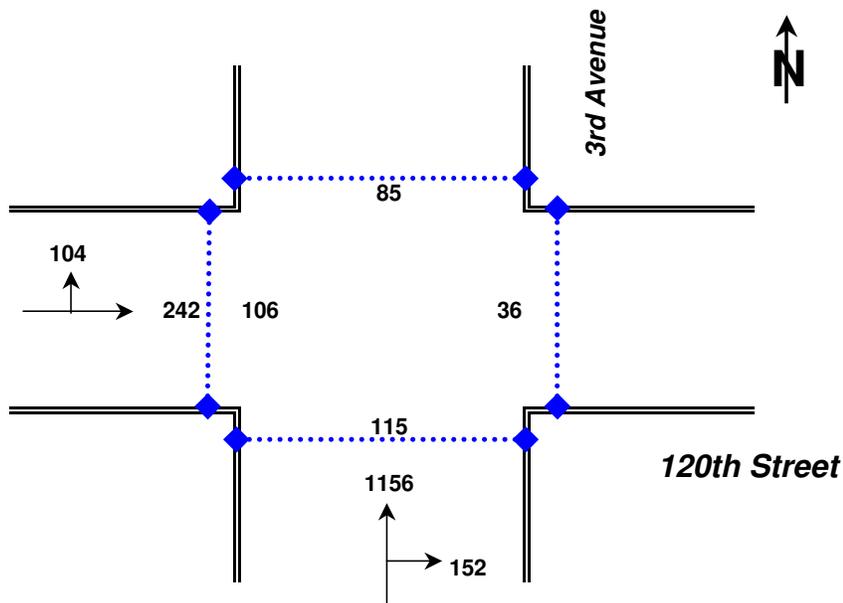
Figure 8: The 3rd Avenue and East 119th Street intersection (looking north)

3.6.8 East 120th Street and Third Avenue

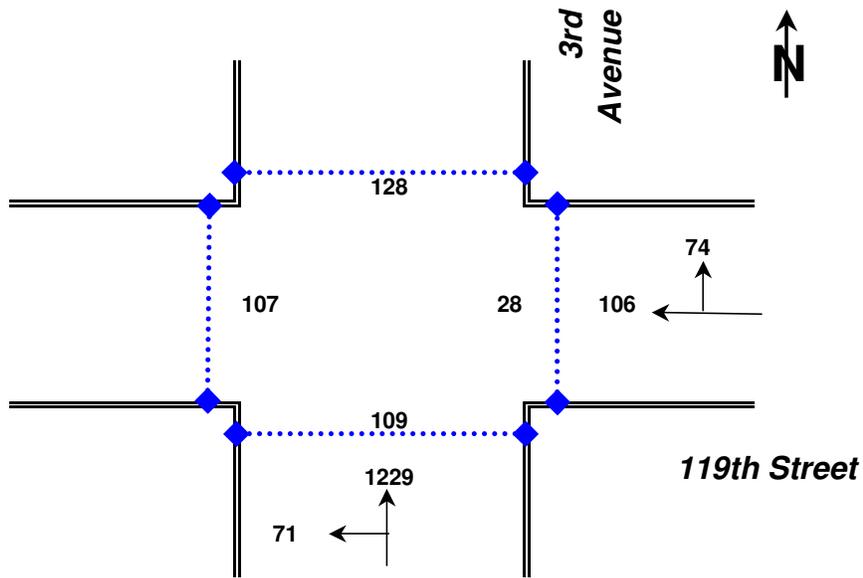
A total of 32 accidents occurred at this intersection during the 1998-2000-time period. This included eight pedestrian accidents, none of which were fatal or school related. Six of these accidents occurred while the pedestrians were crossing with the signal, mostly attributed to driver inattention. The reason for one accident was cited to be environmental, and one accident occurred while the pedestrian was crossing outside the crosswalk

A one-hour traffic count was performed on Wednesday September 28, 2005. Results are shown in Exhibit 7. A lead pedestrian interval was considered for the intersection of Third Avenue and East 120th Street. This intersection has moderate volumes and adequate crossing time. 152 vehicles/hour turn right onto East 120th Street, with 36 pedestrians crossing a distance of 34 feet (walk phase is 55 seconds), an LPI is therefore not proposed.

One Hour Traffic Count Volumes



Intersection of 3rd Avenue and 120th Street - (7:30 AM - 8:30 AM September 28, 2005)



Intersection of 3rd Avenue and 119th Street - (7:30 AM - 8:30 AM September 28, 2005)

- Number of Pedestrians
- Pedestrian Crossing
- Vehicle Movement
- Number of Vehicles

EXHIBIT 7
P.S. 7, MANHATTAN M. SAMUEL STERN SCHOOL
TRAFFIC COUNTS

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 7, and found to be adequate at all approaches for a child pedestrian walking rate of three feet per second.

TABLE 4: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS

Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
119th St. At Lexington Av.				
Crossing 119th St.	34	55	12	NO
Crossing Lexington Ave.	38	35	13	NO
119th St. At Third Av.				
Crossing 119th St.	34	55	12	NO
Crossing Third Av	70	35	24	NO
120th St. At Lexington Av.				
Crossing 120th St.	34	55	12	NO
Crossing Lexington Ave.	38	35	13	NO
120th St. At Third Av..				
Crossing 120th St.	34	55	12	NO
Crossing Third Av.	70	35	24	NO

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

3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK)

The roadways curbs and sidewalk in the vicinity of the project are generally in fairly good condition. There is a localized are of standing water at the southeast quadrant of the 120th Street and Lexington Avenue intersection (see Figure 6).

4. POTENTIAL COUNTERMEASURES

4.1 SHORT-TERM OPTIONS

- Upgrade No Parking to No-Standing Zone on East 120th Street in front of P.S. 7

“NO STANDING 7AM – 4 PM, SCHOOL DAYS” parking regulations should be considered in front of school entrance on East 120th Street for a length of 30 feet to provide sufficient clear frontage for school buses to drop off and pick up students. The lost teachers parking would be compensated east of the school building (as shown in Exhibit 8). Also, “NO PARKING 7AM – 4 PM, SCHOOL DAYS” parking regulation on East 119th Street should be upgraded to “NO STANDING 7AM – 4 PM, SCHOOL DAYS””
- Administer student pedestrian safety education program

It is recommended that the NYCDOT, Safety Education Program work with the school to educate the students on pedestrian safety including crossing the street with the WALK phase, and the meaning of WALK - FLASHING DON'T WALK - DON'T WALK pedestrian signal sequence, and to educate the students not to cross at mid-block locations.
- Install school crosswalks

School related accidents occurred at intersections of Lexington Avenue with all Streets from East 117th Street to East 122nd Street, and the intersection of Third Avenue and East 188th Street. New school crosswalks in conjunction with school signs are recommended at the following locations:

 - Lexington Avenue and East 117th Street – east leg
 - Lexington Avenue and East 121st Street – east leg
 - Lexington Avenue and East 122nd Street – east leg
 - Third Avenue and East 117th Street – west leg
 - Third Avenue and East 118th Street – west leg

4.2 LONG-TERM RECOMMENDATIONS

- Reconstruct pedestrian ramps at the East 120th Street and Lexington Avenue intersection

As shown in Figure 6, this street corner has outstanding drainage and pedestrian access needs. New curbing and pedestrian ramps should be constructed to mitigate the existing condition at the southeast corner of the intersection. Curb extension recommendations for this location are described below.

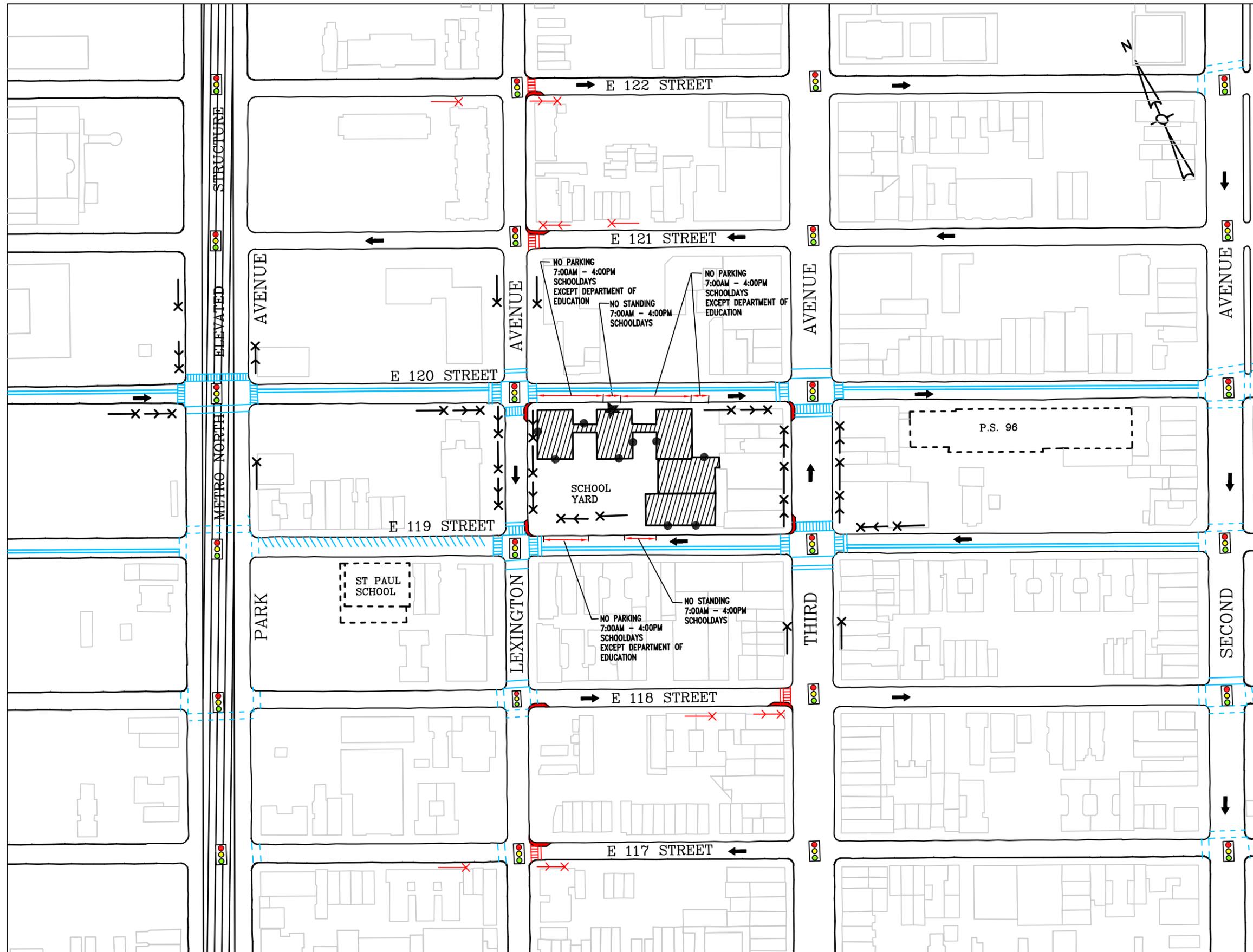
The existing drainage problem at this corner should also be addressed at the time the pedestrian ramps are installed. Further investigation is required to determine the extent of the issue causing ponding at this corner.

- Consider curb extensions at the following intersections:
 - Lexington Avenue and East 117th Street – northeast corner
 - Lexington Avenue and East 118th Street – southeast corner
 - Lexington Avenue and East 119th Street - northeast corner
 - Lexington Avenue and East 120th Street - southeast corner
 - Lexington Avenue and East 121st Street – northeast corner
 - Lexington Avenue and East 122nd Street – southeast corner
 - East 117th Street and Third Avenue - northwest corner
 - East 118th Street and Third Avenue - southwest corner
 - East 119th Street and Third Avenue - northwest corner
 - East 120th Street and Third Avenue - southwest corner

Curb extensions should be installed at the corners as shown in Exhibit 8.

The purpose of the curb extensions is to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks.

These curb extensions will not eliminate or reduce the width any moving lanes. Curb extensions are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to curb extensions will be developed during the Final Design/Contract Document preparation.



- LEGEND**
- ★ MAIN ENTRANCE
 - OTHER ENTRANCES
 - X EXISTING (OR SCHEDULED TO BE INSTALLED BY DOT) ADVANCE WARNING SIGN WITH ARROW
 - X EXISTING ADVANCE WARNING SIGN
 - ↔ EXISTING TRAVEL DIRECTION
 - 🚦 SIGNALIZED INTERSECTION
 - ▬▬▬ EXISTING SCHOOL CROSSWALK
 - ▬▬▬ EXISTING STANDARD (NON-SCHOOL) CROSSWALK
 - ▬▬▬ EXISTING SCHOOL CROSSWALK ASSOC. WITH OTHER SCHOOL
 - ▬▬▬ EXISTING BICYCLE LANES
 - ▬▬▬ EXISTING ANGLED PARKING
 - 👉 PROPOSED CURB EXTENSION (NECKDOWN)
 - ↔ PROPOSED PARKING REGULATIONS
 - X PROPOSED ADVANCE WARNING SIGN WITH ARROW
 - X PROPOSED ADVANCE WARNING SIGN
 - PROPOSED STOP LINE
 - ▬▬▬ PROPOSED SCHOOL CROSSWALK

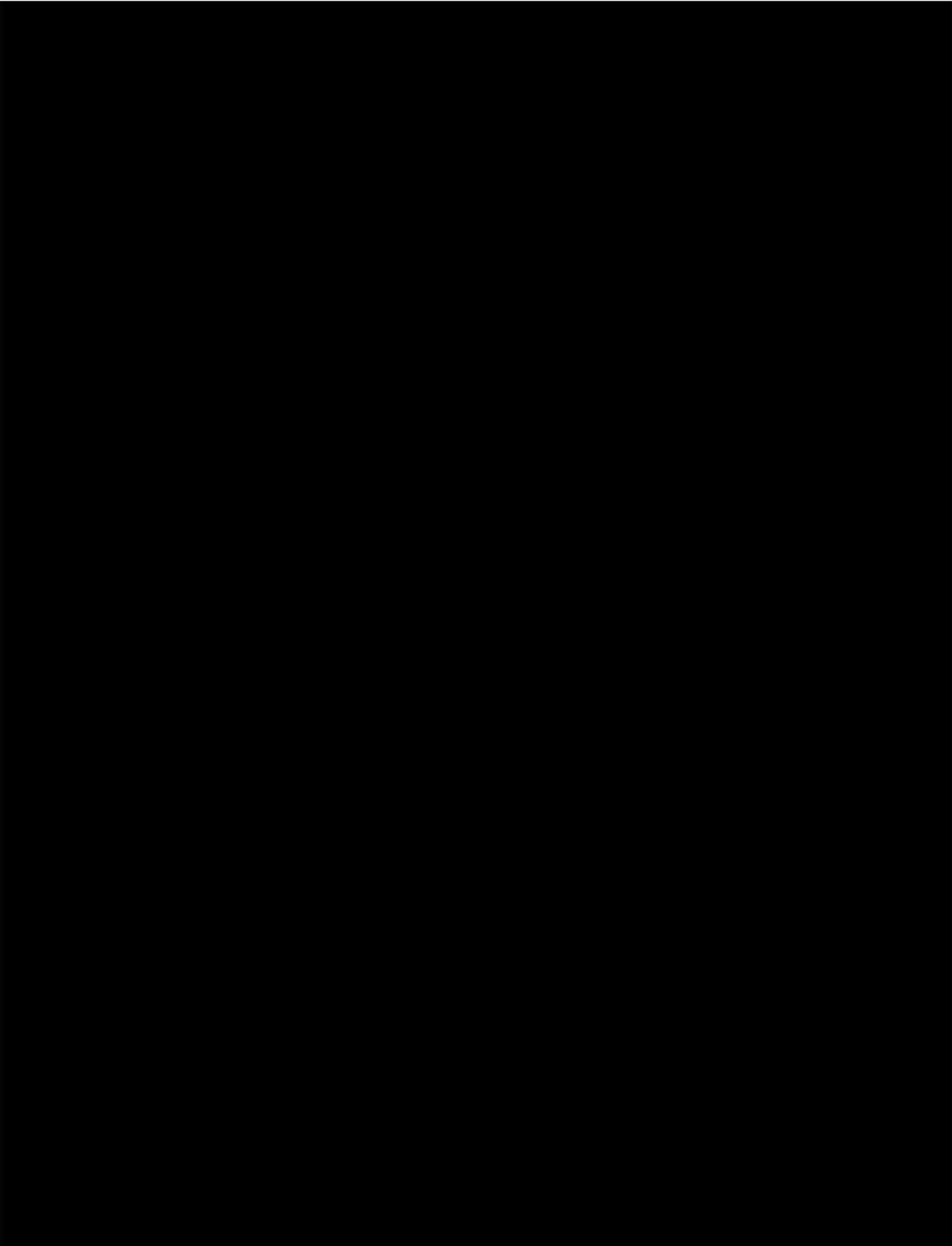
SCALE 1" = 150'

EXHIBIT 8

**P.S. 7, MANHATTAN
M. SAMUEL STERN SCHOOL**

**PROPOSED MEASURES
TO IMPROVE SAFETY**

APPENDIX



SCHOOL SAFETY ENGINEERING

INTERSECTION: 3rd Ave & 119th St
 TIME : 7:30 - 8:30
 DATE : 9-28-05

STREET NAME:
119th St.



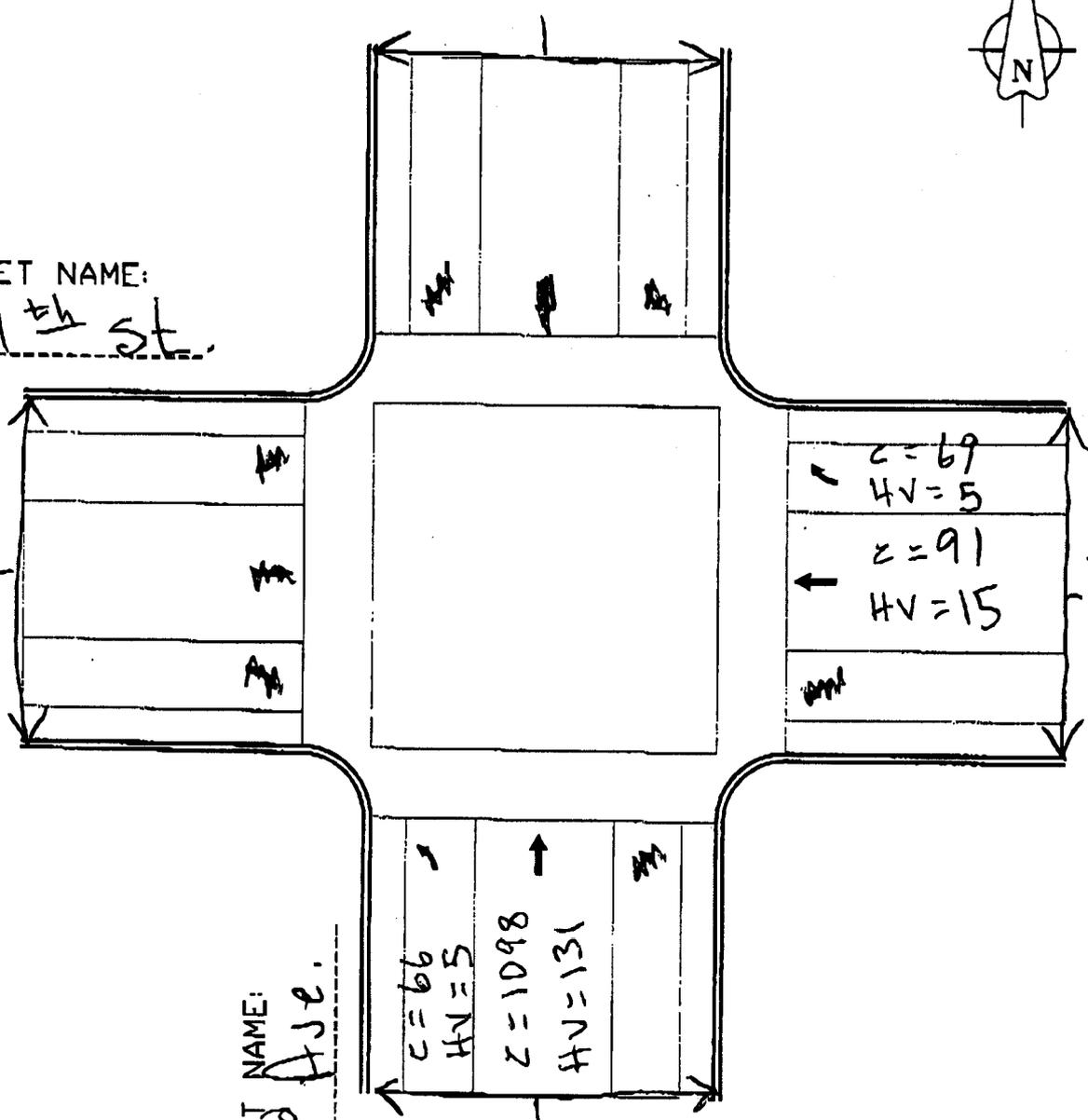
P = 128

P = 107

P = 28

STREET NAME:
3rd Ave.

P = 109



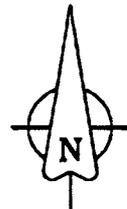
SCHOOL SAFETY ENGINEERING

INTERSECTION: 120th St & 3rd Ave.

TIME: 7:30 - 8:30

DATE: 9-28-05

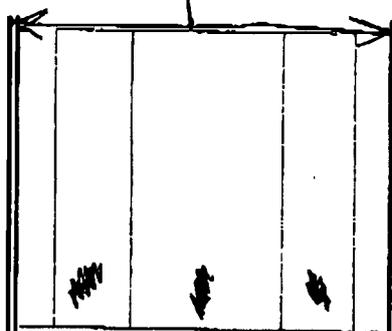
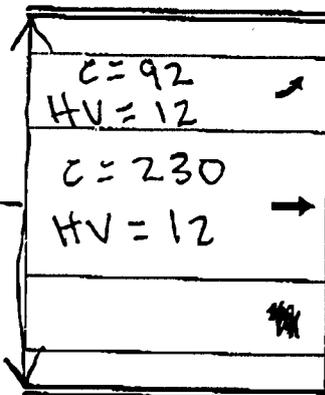
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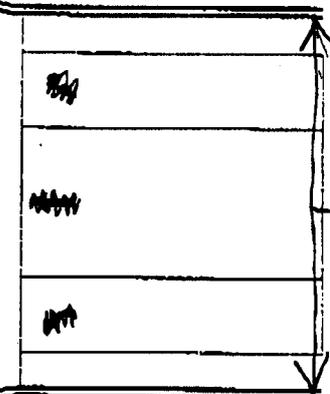
STREET NAME:

120th St.

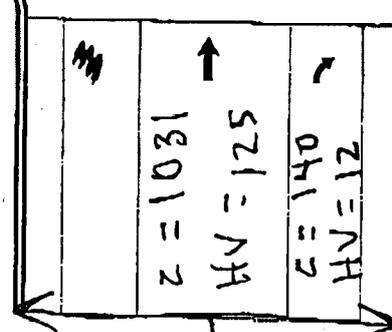
P = 106



P = 366
366



STREET NAME:
3rd Ave.



P = 115