

NEW YORK CITY DEPARTMENT OF TRANSPORTATION

Office of School Safety Engineering



School Safety Engineering Project

FINAL REPORT: P.S. 72, East Harlem Technical, Manhattan



Prepared by
The RBA Group/Urbitrans Associates



NOVEMBER 17, 2006

School Safety Engineering Project
P.S. 72, East Harlem Technical 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 600 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. 72 (East Harlem Technical School) in Manhattan is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Located at 131 East 104th Street in Manhattan, P.S. 72 is situated between Lexington Avenue and Park Avenue and the building spans the block from East 104th Street to East 105th Street. All four surrounding intersections are signalized; see Exhibit 1 for an Aerial Photograph of the area.

The surrounding land use is a mixture of four to six story residential apartment buildings, brownstones, and single story commercial establishments. Many of the larger residential buildings on East 104th and East 105th Street have first floor retail.

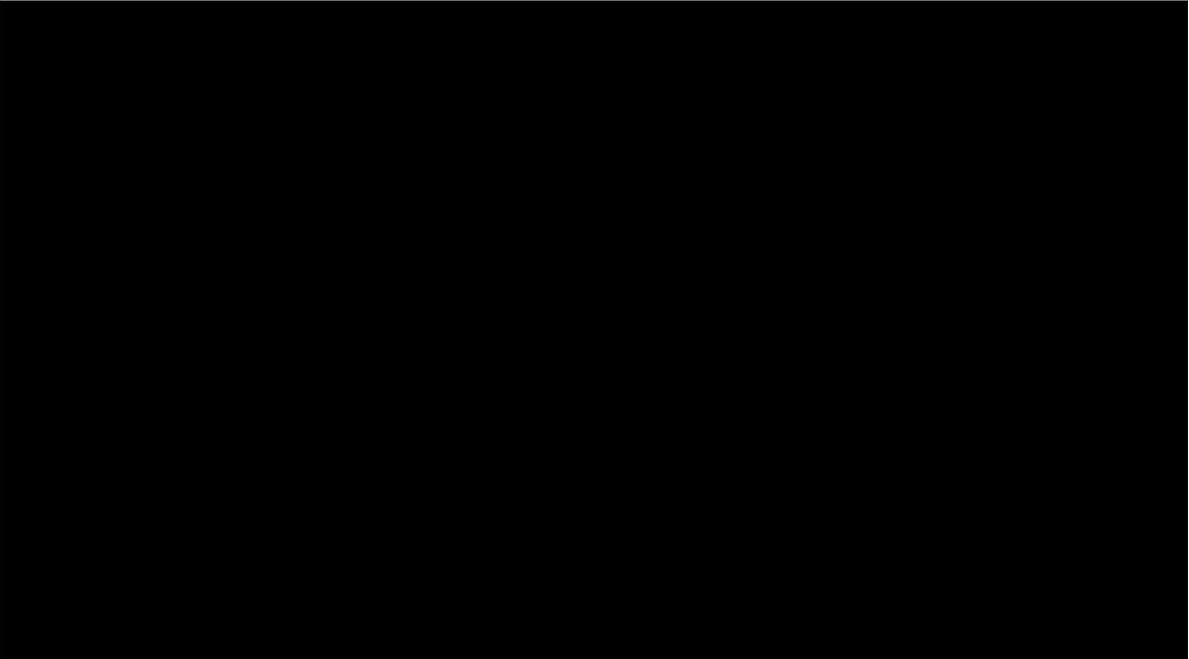


Figure 1: Lexington Avenue in front of P.S. 7 (looking south)

2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team and the school principal from P.S. 72 met at the school on June 8, 2004. According to representatives of the school, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- Pedestrian safety at the intersections of Park Avenue at both East 104th Street and East 105th Street;
- Vehicles traveling at excessive speeds along Park Avenue;
- Poor sight distance for pedestrians and motorists as pedestrians emerge from pedestrian tunnels beneath the median viaduct on Park Avenue.





1 inch equals 150 feet

EXHIBIT 1

**P.S. 72, MANHATTAN
EAST HARLEM TECHNICAL SCHOOL**

AERIAL PHOTOGRAPH



School Traffic Safety Map



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

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

LEGEND:

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

PS 72 Manhattan

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

Map created on 11/16/2006

EXHIBIT 2

1.5.1

COMM. BOARD: 111
PRECINCT: 23

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 3. According to the principal, approximately 82% of students walk to school, 4% arrive by school bus, 13% arrive via public transportation, and only 1% of students are driven to school. Table 1 shown below indicates the school’s estimate of the mode of travel.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	
Description	Percentage
Walk	82%
Driven by parent or guardian	1%
School bus	4%
MTA bus or subway	13%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

MTA bus routes M98, M101, M102 and M103 run north on Third Avenue and south on Lexington Avenue. There are numerous retail shops, such as delis, coffee shops and similar small-scale local attractions throughout the school area.

There are other schools in the area including: The Heritage School on Lexington Avenue between East 105th Street and East 106th Street; and The Young Women’s Leadership High School on East 106th Street between Park Avenue and Lexington Avenue.

2.8 CROSSING GUARD LOCATIONS

According to field observations and as confirmed by the school principal, there are currently three crossing guards assigned to this school. The guards are stationed at the intersections of Lexington Avenue with East 104th and East 105th Streets (Figure 2), and at the intersection of Park Avenue and East 104th Street.



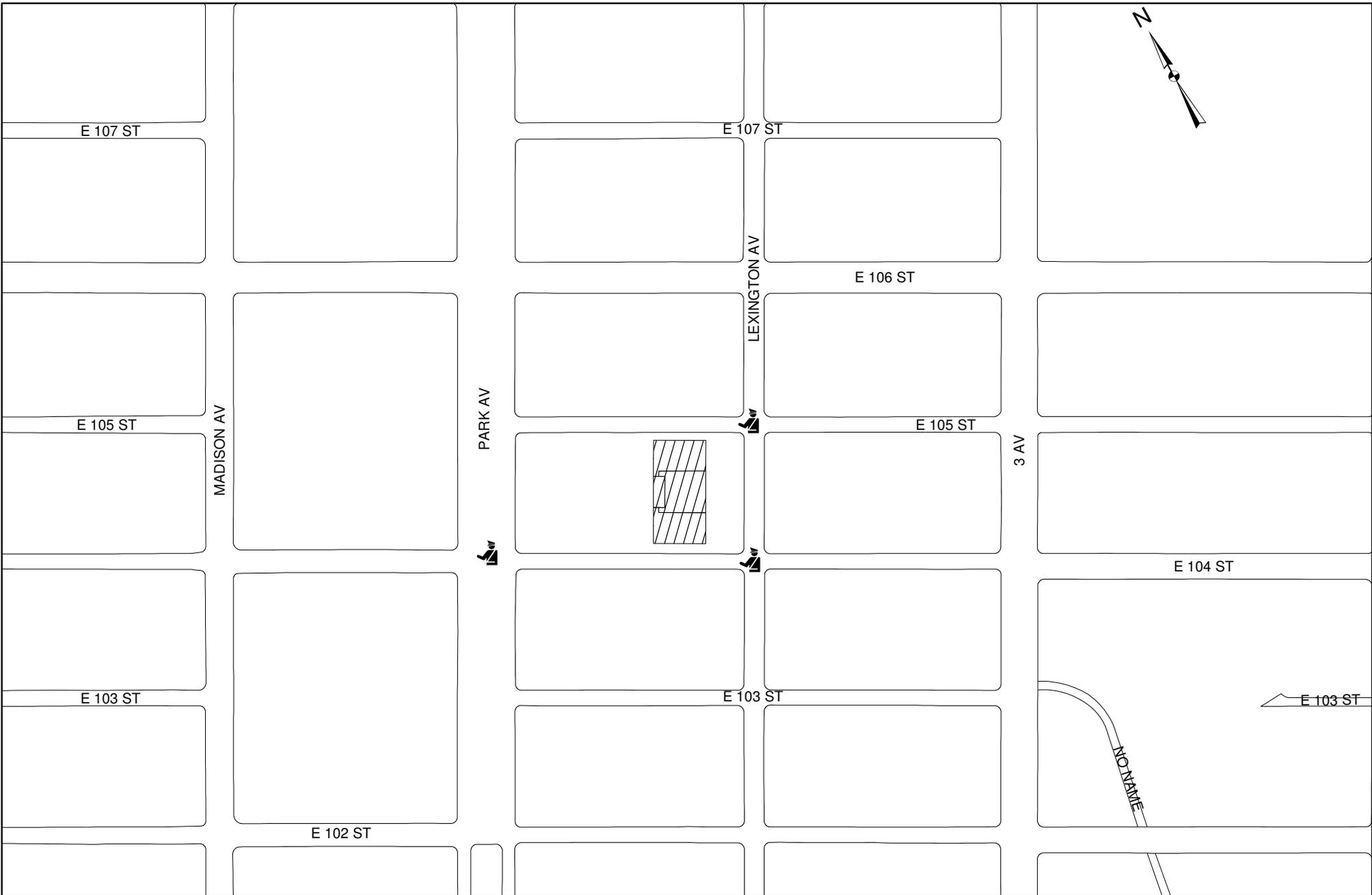
Fig. 2 – Crossing guard at the intersection of Lexington Avenue and East 105th Street (looking east)



1 inch equals 350 feet


CATCHMENT AREA

EXHIBIT 3
P.S. 72, MANHATTAN
EAST HARLEM TECHNICAL SCHOOL
CATCHMENT AREA



1 inch equals 250 feet



CROSSING GUARDS ASSIGNED TO P.S. 72

EXHIBIT 4

**P.S. 72, MANHATTAN
EAST HARLEM TECHNICAL SCHOOL
CROSSING GUARS**

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to school representatives there are typically two school buses that transport approximately 30 special education students. The school buses bring students to the school in the morning, and pick them up in the afternoon during the school dismissal time. If full size buses are used, they typically park or double park in front of the school on Lexington Avenue. When smaller mini buses are used, they typically park on the school side of East 105th Street (Figure 3).



Figure 3: School buses double parked on East 105th Street during arrival time (looking east on 105th Street)

3.2 PARENT DROP-OFF OPERATIONS

One percent of students arriving at P.S. 72 were reported to be dropped off by a parent or guardian. There is no defined drop-off/pick-up area for this. Field observations taken in the morning of June 8, 2004 indicated that most area parking spaces around the perimeter of the school were typically occupied during the student arrival times forcing parents or guardians to double-park along East 105th Street or Lexington Avenue (Figure 4).



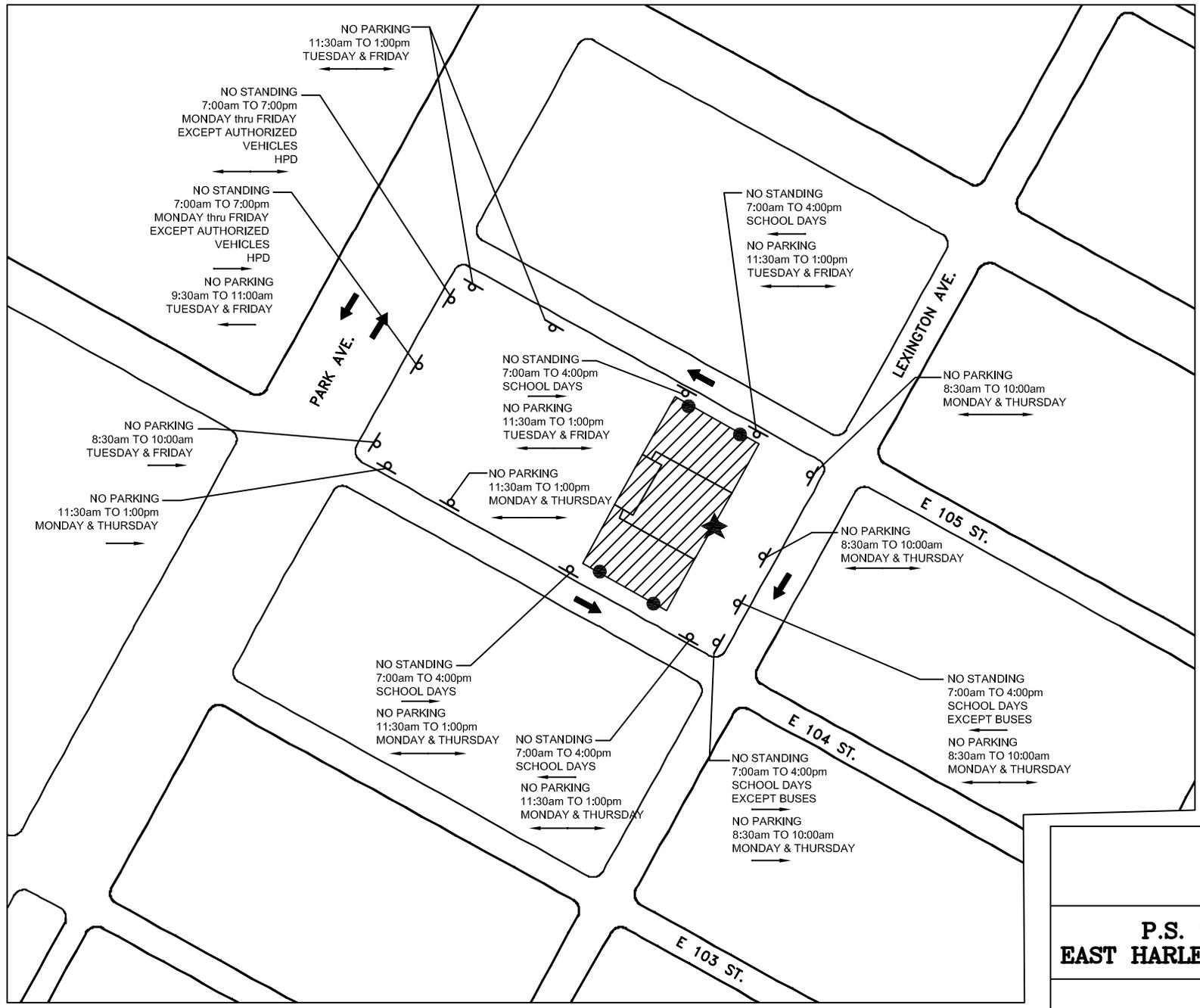
Figure 4: Parents and guardians double park on East 105th Street during arrival time (looking west on East 105th Street)

3.3 PARKING REGULATIONS

“NO STANDING 7 AM – 4 PM, SCHOOL DAYS” parking regulation are posted on East 104th Street and on East 105th Street in front of the school entrances. “NO STANDING 7 AM – 4 PM, SCHOOL DAYS, EXCEPT BUSES” is posted on Lexington Avenue (near the intersection with East 104th Street). Exhibit 5 displays parking regulations on the streets surrounding P.S. 72.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 2, shows existing signals and school crosswalk pavement markings. It is noted that a citywide signage program is currently underway to upgrade school signage to current Federal Manual of Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green signs with downward pointing arrows. Signs scheduled to be installed under this program are shown as "existing" on Exhibit 7.



LEGEND

- ★ MAIN ENTRANCE
- ENTRANCE
- STREET SIGN

SCALE: 1" : 150'

EXHIBIT 5
P.S. 72, MANHATTAN EAST HARLEM TECHNICAL SCHOOL
EXISTING PARKING REGULATIONS

3.5 ACCIDENT SUMMARY

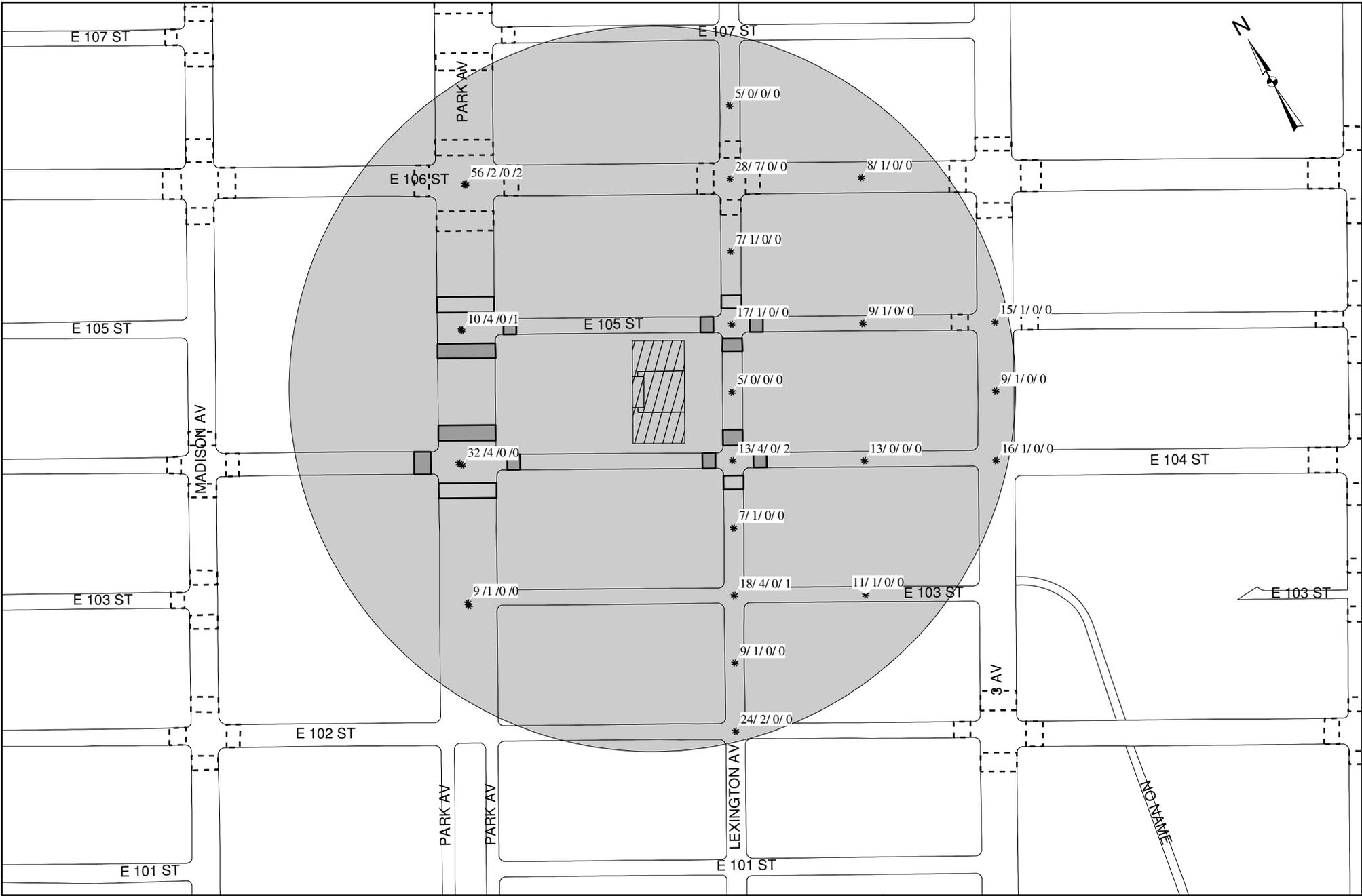
Exhibit 5 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of P.S. 72 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of 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 concentrations of student pedestrians occur. Intersections that are farther from the school which did not have detailed data available at the time of this study will be addressed with DOT's School Safety Engineering Program's ongoing work. 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*
East 104th St. and Lexington Av.	13	4	0	2
East 104th St. and Park Av.	32	4	0	0
East 105th St. and Lexington Av.	17	1	0	0
East 105th St. and Park Av.	10	4	0	1
East 103rd St. and Lexington Av.	18	4	0	1
East 106th St. and Park Av.	56	2	0	2
TOTAL	146	19	0	6

TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
East 104th St. and Lexington av.	31	6	0	1
East 104th St. and Park Av.	40	6	0	2
East 105th St. and Lexington Av.	36	4	0	0
East 105th St. and Park Av.	6	1	0	0
East 103rd St. and Lexington Av.	52	6	0	1
East 106th St. and Park Av.	104	10	0	2
TOTAL	269	33	0	6

* School-Related Accidents are defined as accidents involving school-aged pedestrians (age 4 – 14) that occur week-days during the school year.



ACCIDENT LOCATION *

SCHOOL CROSSWALK ASSIGNED TO P.S. 72

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X

TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL_PED ACCIDENTS
/	/	/	/

1 inch equals 250 feet

EXHIBIT 6
P.S. 72, MANHATTAN
EAST HARLEM TECHNICAL SCHOOL
ACCIDENT SUMMARY
THREE YEAR PERIOD
(1998-2000)

3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines the traffic accident and operational issues in the vicinity of P.S. 72:

3.6.1 East 104th Street and Lexington Avenue

Lexington Avenue is a 38-foot wide one-way southbound street with two moving lanes and parking on both sides of the roadway. East 104th Street is a 30-foot wide one-way eastbound street with one travel lane, and parallel parking on both sides of the roadway (Figure 5 and 6). The intersection is controlled by a two-phase signal. School crosswalks are on the east, west and north legs. However, The northeast, northwest, and southwest corners at this intersection do not have standard pedestrian ramps.

This signalized intersection had 13 accidents during the 1998-2000 study period (Exhibit 6 and Table 2). Four accidents involved pedestrians, including two that were school related. One of the school related pedestrian accidents occurred while the pedestrian was crossing with the signal and the driver slowed or stopped in traffic. The other school related pedestrian accident occurred while the pedestrian was crossing against the signal. The third pedestrian accident involved a driver making a left turn and the last accident was attributed to the pedestrian crossing against the signal.



Figure 5: Looking south on Lexington Avenue at the intersection with East 104th Street



Figure 6: Northwest corner of Lexington Avenue at the intersection with East 104th Street

3.6.2 East 104th Street and Park Avenue

Park Avenue is a two-way divided north-south street with one travel lane and parking along outer curb of the roadway (Figure 7). Both the north and south roadways are 26 feet wide and the MTA viaduct is 58 feet wide. The intersection of East 104th Street and Park Avenue is controlled by a two-phase signal. School crosswalks are on the east, west and north legs.

The pedestrian crossings of Park Avenue at East 104th Street and East 105th Street utilize stone arch underpasses beneath the elevated MTA rail line. Plaques in the roadway caution pedestrians to wait for the signal (see Figures 8 and 9). There is no inside shoulder at the face of the rail line abutment wall and therefore very limited sight distance for pedestrians crossing Park Avenue or traffic on Park Avenue.

The lighting provided in the pedestrian underpasses along the Park Avenue median does meet standards for lighting level requirements. However, on sunny days, the contrast between the lighting level outside and inside the underpass can be difficult for pedestrians to adjust to.

There were 32 accidents reported at this intersection in the 1998-2000 study period, including four pedestrian accidents, none of which were fatal or school related. Two pedestrian accidents occurred while the pedestrian was crossing against the signal, one while the driver was headed north, and the other when the driver was headed south. The third accident occurred while the pedestrian was crossing with the signal and the driver, who was headed east, failed to yield. The fourth pedestrian accident occurred while the pedestrian was working in the roadway, and the driver was headed northbound. Additional information was not available for the last accident.



Figure 7: The intersection of Park Avenue and 104th Street (looking north)



Figure 8: Looking west on the south side of East 104th Street across Park Avenue



Figure 9: Looking west on the north side of East 104th Street across Park Avenue

3.6.3 East 105th Street and Lexington Avenue

East 105th Street is a one-way westbound street with one travel lane and parking on both sides. School pick-up and drop-off often occurs along this side of the school (Figure 10). This intersection is controlled by a two-phase signal. School crosswalks are on the east, west and south legs.

17 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 pedestrian was struck when walking along the roadway with traffic.



Figure 10: At the intersection of East 105th Street and Lexington Avenue (looking east)

3.6.4 East 105th Street and Park Avenue

This is a three leg signalized intersection, with East 105th Street terminating at the eastern approach to Park Avenue. The westbound traffic can make left turns from East 105th Street onto Park Avenue southbound and pedestrian can continue across Park Avenue. School crosswalks are on the north, south and east legs.

A total of ten accidents occurred at this intersection during the 1998-2000 study period. This included four pedestrian accidents, of which one was school related. An 8-year old student was struck when crossing against the signal. Two other accidents were attributed to drivers backing up their vehicles unsafely. There is no detailed information for the last accident.

3.6.5 East 103rd Street and Lexington Avenue

East 103rd Street is a one-way westbound street with one travel lane and parking on both sides. This intersection is controlled by a two-phase signal. All four corners have pedestrian ramps, however, none of them are school crosswalks.

There were 18 accidents at this location between 1998 and 2000. Four accidents involved pedestrians, one of which was school related. A 9-year old student was struck when crossing against the signal. Two accidents were attributed to driver error. One pedestrian was struck when getting out of a vehicle, and the other pedestrian was struck by a driver making a left turn.

3.6.6 East 106th Street and Park Avenue

East 106th Street is a two-way roadway with two travel lanes and parking on both sides. The intersection is controlled by a two-phase signal. School crosswalks are in place on all four legs.

There were 56 accidents at this location between 1998 and 2000. Two accidents involved pedestrians, both of which were school related. Two school age students were struck when crossing against the signal.

3.6.7 East Park Avenue between East 104th Street and East 105th Street

Spot speed surveys were conducted on Park Avenue between East 104th Street and East 105th Street on September 19, 2005. The objective of the survey was to determine if there is a speeding problem on this section of Park Avenue, as school officials have reported.

The speed study results are shown Table 4 and in the Appendix. The median speed on Park Avenue is 31 mph, and the 85% speed is 37 mph, 55% of the surveyed vehicles were exceeding the legal speed limit of 30 mph.

Speed reducers were not feasible due to the lengths of the blocks. Alternative recommendations to improve safety along Park Avenue are discussed in Section 4.

TABLE 4: SPOT SPEED STUDY (PARK AVENUE)		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
Park Avenue between East 104th Street and East 105th Street	31	37

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 72, and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches.

TABLE 5: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
East 104th Street at Lexington Ave.				
crossing 104 th St.	30	49	13	NO
crossing Lexington Ave.	38	31	16	NO
East 104th Street at Park Ave.				
crossing 104 th St.	30	53	13	NO
crossing Park Ave. (east)	26	27	12	NO
crossing Park Ave. (west)	26	27	12	NO
East 105th St. at Lexington Ave.				
crossing 105 th St.	30	49	13	NO
crossing Lexington Ave.	38	31	16	NO
East 105th St. at Park Ave.				
crossing 105 th St.	30	53	13	NO
crossing Park Ave. (east)	26	27	12	NO
crossing Park Ave. (west)	26	27	12	NO

Note – A rate of three feet per second plus three seconds reaction time was utilized as the child pedestrian walking rate

Park Avenue has a 58-foot wide elevated railroad viaduct. Pedestrian crossings occur via stone arch underpasses at grade level. Crossing the northbound and southbound sides of Park Avenue is assumed to occur during separate signal cycles. Pedestrians have ample queuing area within the viaduct underpass (Figure 11).



Figure 11: East 104th Street and Park Avenue (looking east)

3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

The roadways curbs and sidewalks in the vicinity of the project are generally in fairly good condition.

4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY

4.1 SHORT-TERM MEASURES

- Extend No-Standing Zone on Lexington Avenue in front of P.S. 72
“NO STANDING 7 AM – 4 PM, SCHOOL DAYS” parking regulations should be extended for a length of 30 feet in front of the school entrance on Lexington Avenue to provide sufficient clear frontage for school buses to drop-off and pick-up students.
- 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 the WALK - FLASHING DON'T WALK - DON'T WALK pedestrian signal sequence. It is also recommended that the students be educated not to cross at mid-block locations.
- Install new school crosswalks at East 103rd Street and Lexington Avenue
Providing new school crosswalks at this intersection will complete a network of contiguous school crosswalks in the immediate school vicinity. Therefore, it is recommended that school crosswalks be installed at the intersections of East 103rd Street and Lexington Avenue.
- 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.

4.2 LONG-TERM MEASURES

- Consider curb extensions at the following intersections:

Consideration should be given to installing a curb extension at the following locations, provided that the Final Design confirms that construction of the recommended curb extension would be feasible and would 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.

- Lexington Avenue and East 104th Street - northwest corner
- Lexington Avenue and East 105th Street - southwest corner

Curb extensions should be installed at the corners as shown in Exhibit 7.

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

- Consider curb extensions, new sidewalk, and striping

There is no inside shoulder at the face of the rail line abutment wall and therefore very limited sight distance for pedestrians crossing Park Avenue or for traffic on Park Avenue. To improve the sight distance for pedestrians and vehicles on Park Avenue it is proposed to install curb extensions with bollards to protect pedestrians, along the abutment at the following intersections:

- Park Avenue and East 104th Street
- Park Avenue and East 105th Street

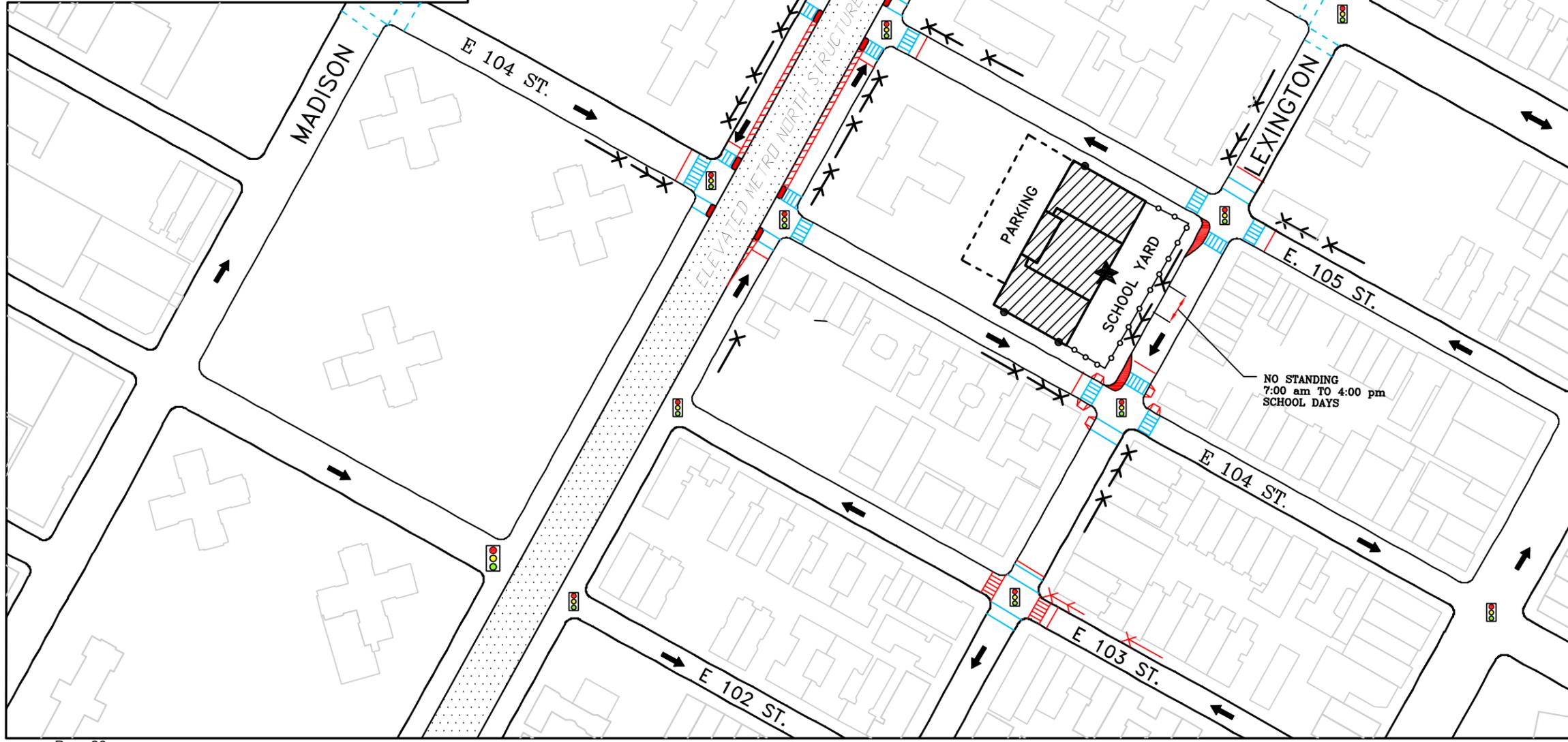
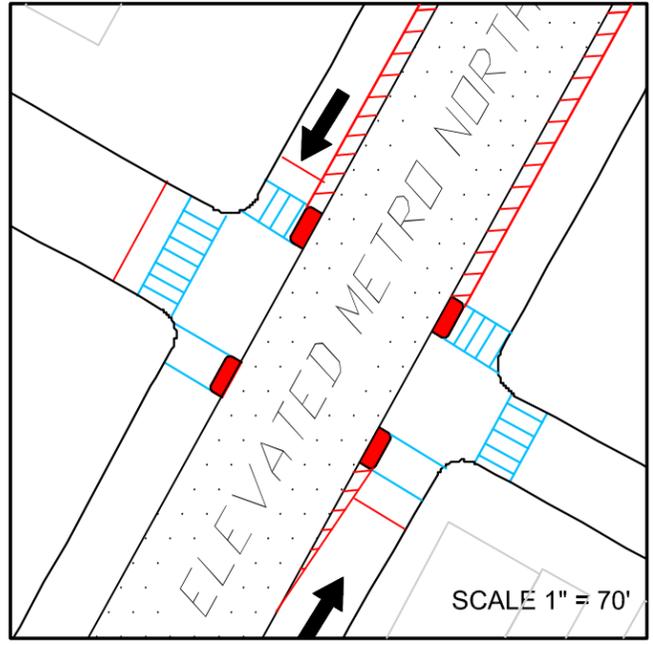
In accordance with MUTCD, striped tapers should be installed to alert motorists of the change in the roadway alignment. This proposed striping will help alert drivers to the presence of the curb extensions and help to narrow the effective width of the roadway. Narrowing the roadway slightly is expected to help reduce the effects of speeds on this street.

In conjunction with the curb extensions, sidewalks need to be constructed beneath the pedestrian underpasses to minimize drainage issues or pedestrian tripping hazards in the underpasses.

- Installation/replacement of complex pedestrian ramps at the East 104th Street and Lexington Avenue

Due to existing utility conflicts, the following pedestrian ramps are considered complex and will require relocation of utility pole or drainage structures in order to install ramps to NYCDOT standards. Consideration should be given to the installation of pedestrian ramps per NYCDOT standards at the following locations.

- East 104th Street and Lexington Avenue – northeast, northwest, and southwest corners



- 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
 - - - SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
 - ▬ EXISTING STANDARD (NON-SCHOOL) CROSSWALK
 - EXISTING STOP LINE
 - ○ ○ EXISTING FENCE
 - X PROPOSED ADVANCE WARNING SIGN WITH ARROW
 - X PROPOSED ADVANCE WARNING SIGN
 - ▬ PROPOSED SCHOOL CROSSWALK
 - PROPOSED STOP LINE
 - 👉 PROPOSED CURB EXTENSION (NECKDOWN)
 - ⌞ PROPOSED PEDESTRIAN RAMP
 - ↔ PROPOSED PARKING REGULATIONS
 - ▨ PROPOSED STRIPING

SCALE 1" = 150'

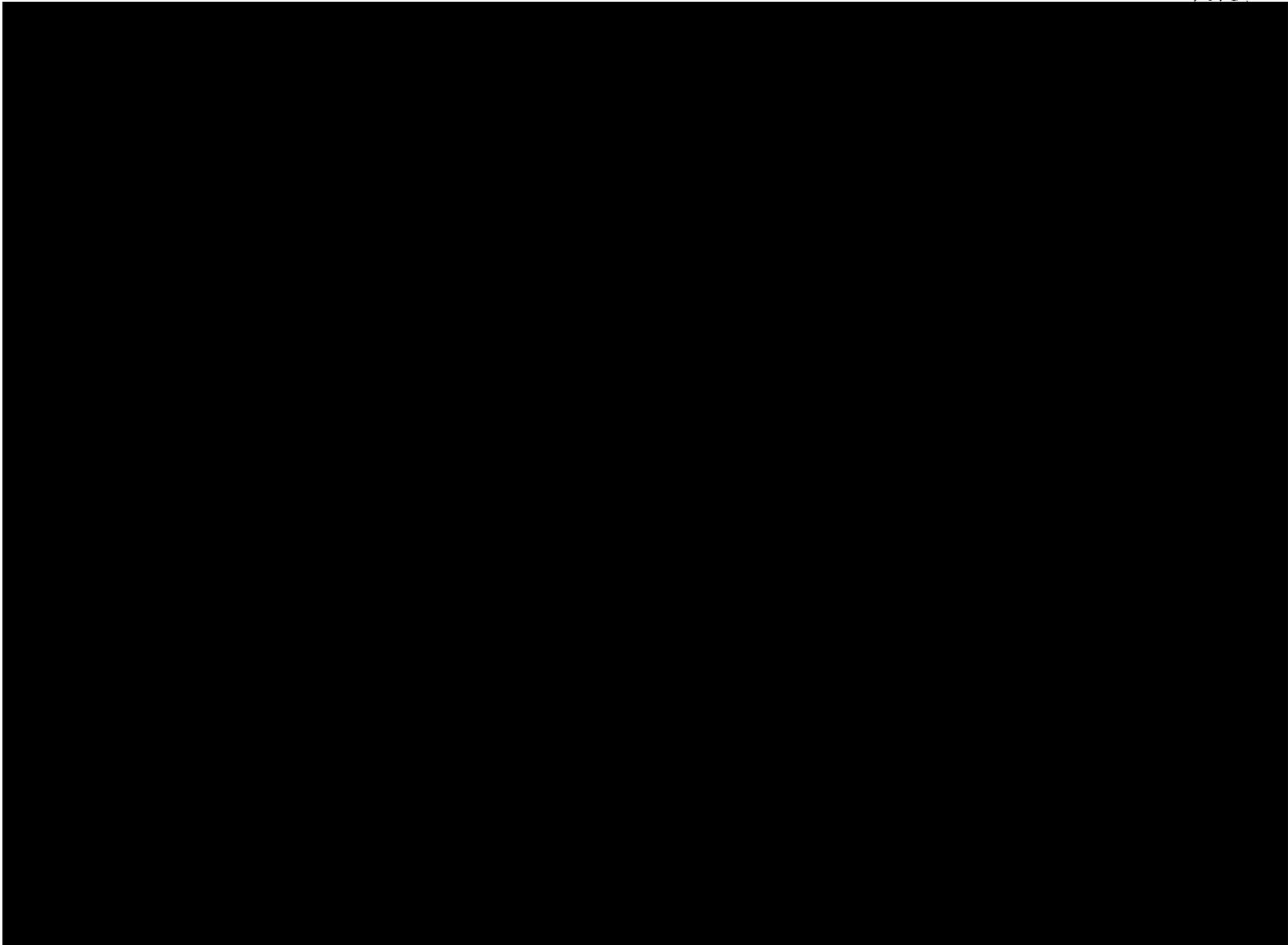
EXHIBIT 7

**P.S. 72. MANHATTAN
EAST HARLEM TECHNICAL SCHOOL**

**PROPOSED MEASURES TO IMPROVE
STUDENT PEDESTRIAN SAFETY**

APPENDIX

mike



SPOT SPEED STUDY

Date: **September 19, 2005**
 Location: **Park Avenue**
 Surveyor: **EY**

Time: **1:45 - 2:30 pm**

School: **P.S. 72**
 Direction: **104th - 105th**
 Comments: **Clear & Dry**

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	1	1.0%	1.0%	22	484
23	0	0.0%	1.0%	0	0
24	8	7.7%	8.7%	192	4608
25	14	13.5%	22.1%	350	8750
26	13	12.5%	34.6%	338	8788
27	3	2.9%	37.5%	81	2187
28	3	2.9%	40.4%	84	2352
29	4	3.8%	44.2%	116	3364
30	1	1.0%	45.2%	30	900
31	0	0.0%	45.2%	0	0
32	6	5.8%	51.0%	192	6144
33	7	6.7%	57.7%	231	7623
34	8	7.7%	65.4%	272	9248
35	6	5.8%	71.2%	210	7350
36	12	11.5%	82.7%	432	15552
37	6	5.8%	88.5%	222	8214
38	2	1.9%	90.4%	76	2888
39	1	1.0%	91.3%	39	1521
40	3	2.9%	94.2%	120	4800
41	0	0.0%	94.2%	0	0
42	0	0.0%	94.2%	0	0
43	6	5.8%	100.0%	258	11094
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
	104	100.0%		3265	105867

Mean Speed = 31.4 mph
 Standard Deviation = 5.7 mph
 Margin of Error (95% Confidence) = ± 1.1 mph

Median Speed = 31.4 mph
 15th Percentile Speed = 25.5 mph
 85th Percentile Speed = 37.3 mph

SPOT SPEED STUDY

Date: **September 19, 2005**
Location: **Park Avenue**
Surveyor: **EY**

Time: **1:45 - 2:30 pm**

School: **P.S. 72**
Direction: **104th - 105th**
Comments: **Clear & Dry**

Mean Speed = 31.4 mph
Standard Deviation = 5.7 mph
Margin of Error (95% Confidence) = ± 1.1 mph

Median Speed = 31.4 mph
15th Percentile Speed = 25.5 mph
85th Percentile Speed = 37.3 mph

