

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



School Safety Engineering Project

FINAL REPORT: C.E.S. 55 (Benjamin Franklin School), Bronx



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



June 8, 2006

**School Safety Engineering Project
Final Report: C.E.S. 55, Bronx**

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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

The Department of Transportation (DOT) has developed school safety maps for 1,471 schools throughout the City. Schools currently in the program are primarily elementary and intermediate schools with an enrollment of at least 250 students. The safety plans include the designation of official school crosswalks, identified by prominent warning signs and roadway markings. DOT also designates curbside locations for school bus loading and unloading and other parking controls to improve conditions for students. In addition, nearly 350 speed reducers (humps) have been installed in the immediate vicinity of schools.

Under this consultant study, the School Safety Engineering Project, crash data in the vicinity of all program schools was reviewed. As a result, schools were ranked in terms of pedestrian safety, and 135 “priority” schools were identified Citywide. At each of these priority schools, safety improvements are being recommended (e.g., new school crosswalks, new traffic signals and signal timing modifications, new speed reducers). In addition, 32 of these schools will receive further investigation to design physical improvements (e.g., raised center medians, widened sidewalks, “neckdowns” or “bulbouts” at intersections). C.E.S. 55 (Benjamin Franklin School) in the Bronx 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, at the end of this section, shows an aerial view of the neighborhood surrounding the school. C.E.S. 55 is bounded by Park Avenue on the west, Washington Avenue on the east, St. Paul's Place on the north, and East 170th Street on the south. The surrounding neighborhood is mostly high-density residential in character. Third Avenue to the east and Webster Avenue to the west are two main commercial streets in the neighborhood. A pedestrian bridge connecting high-density residential apartment buildings which front on Webster Avenue to Park Avenue is located west of the school over the railroad.



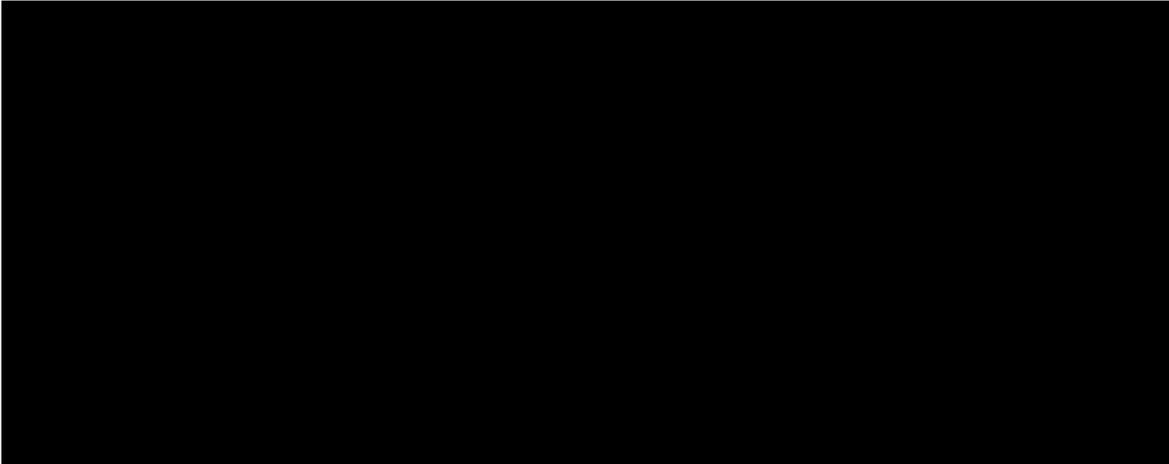
Figure 1: Looking west along St. Paul's Place across Washington Avenue (school is on the far left)

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant staff and the Principal of C.E.S. 55, met at the school in the morning of April 16, 2004. According to the Principal of the school, the problems facing C.E.S. 55 student pedestrians are as follows:

- Speeding on Park Avenue and Washington Avenue.
- Double Parking on Washington Avenue.
- Food and other truck deliveries on Park Avenue.
- UPS & FedEx delivery trucks on St. Paul's Place & Washington Avenue.
- Children crossing Park Avenue, which requires a traffic signal.
- Need a crossing guard at East 170th Street & Washington Avenue.
- Need speed reducer (hump) on Washington Avenue.
- Need speed reducer (hump) on Park Avenue.

(See the Appendix for a summary of school concerns.)



2.6 PRIMARY MODE 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. Based upon information gathered from the school principal, the catchment area shown in Exhibit 2 was verified as accurate for C.E.S. 55.

The school's catchment area, as confirmed by the school principal is generally as follows: the western border runs along Webster Avenue in the east to the bridge with St. Paul's Place and then to and along Park Avenue; the north border goes along East 171st Street to half-way between Washington Avenue and Third avenue; the east border runs between Washington Avenue and Third Avenue to East 170th Street and then to and along Washington Avenue to East 169th Street; the south border goes along East 169th Street between Washington Avenue and Webster Avenue.

Table 1 presents the mode of travel for C.E.S. 55 as identified by school representatives.

TABLE 1: MODE OF TRAVEL	STUDENTS (Percentage)
Walk	88%
Driven by car	5%
School bus	6%
Bus/Subway	1%
Bicycle	0%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

The area in the vicinity of the school is mostly residential in character. The two nearest commercial streets are Third Avenue to the east and Webster Avenue to the west, but their locations relative to the school, yield a minimal influence as traffic generators for school students.

2.8 CROSSING GUARD LOCATIONS

According to school representatives and also verified during the field observations, there is one crossing guard assigned to C.E.S. 55, at the intersection of Washington Avenue and St. Paul’s Place.

The crossing guard location is shown in Exhibit 4 at the end of this section.



EXHIBIT 1
C.E.S. 55 BRONX
BENJAMIN FRANKLIN SCHOOL
AERIAL PHOTOGRAPH

0 250 500 1,000 Feet

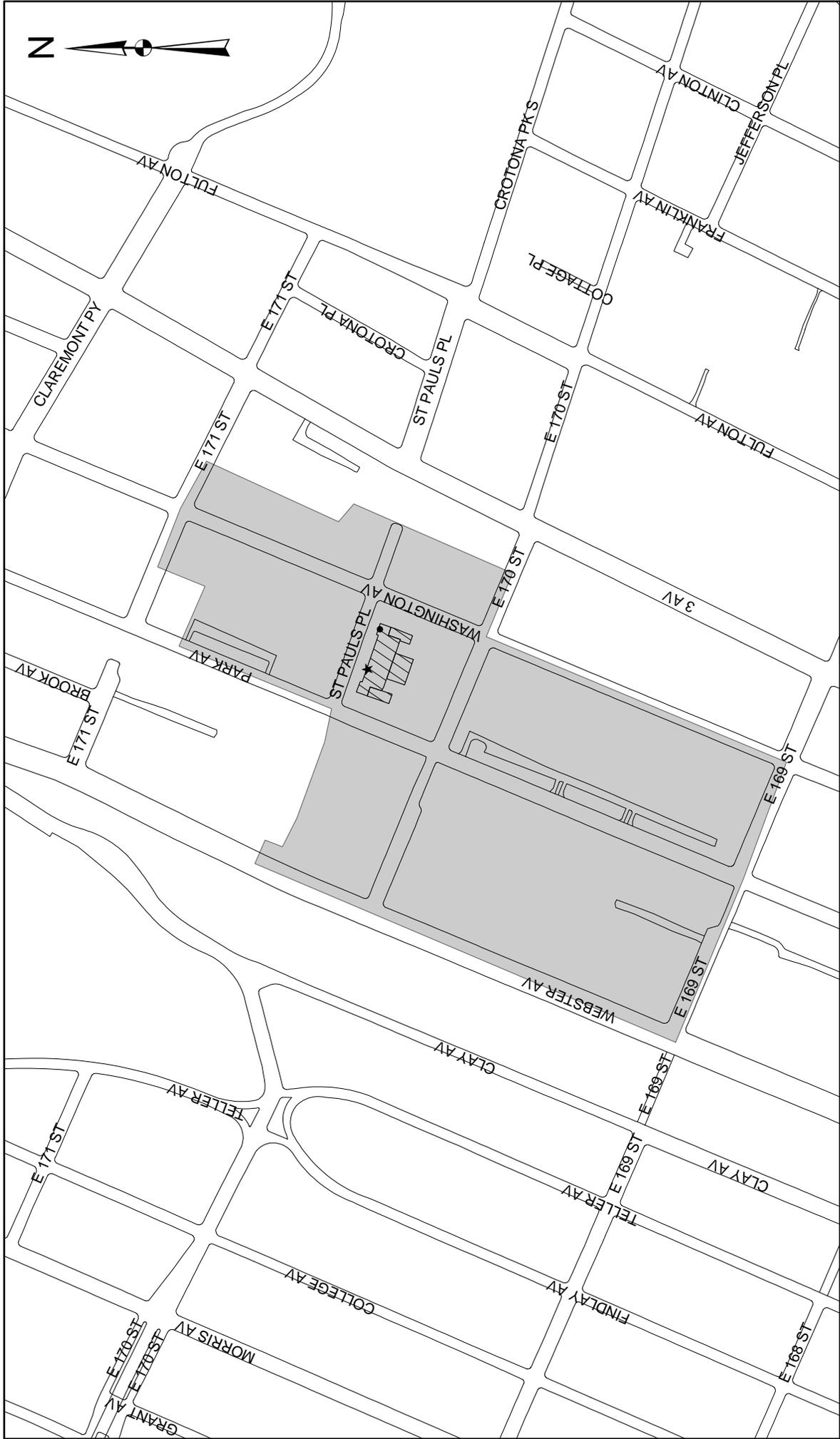
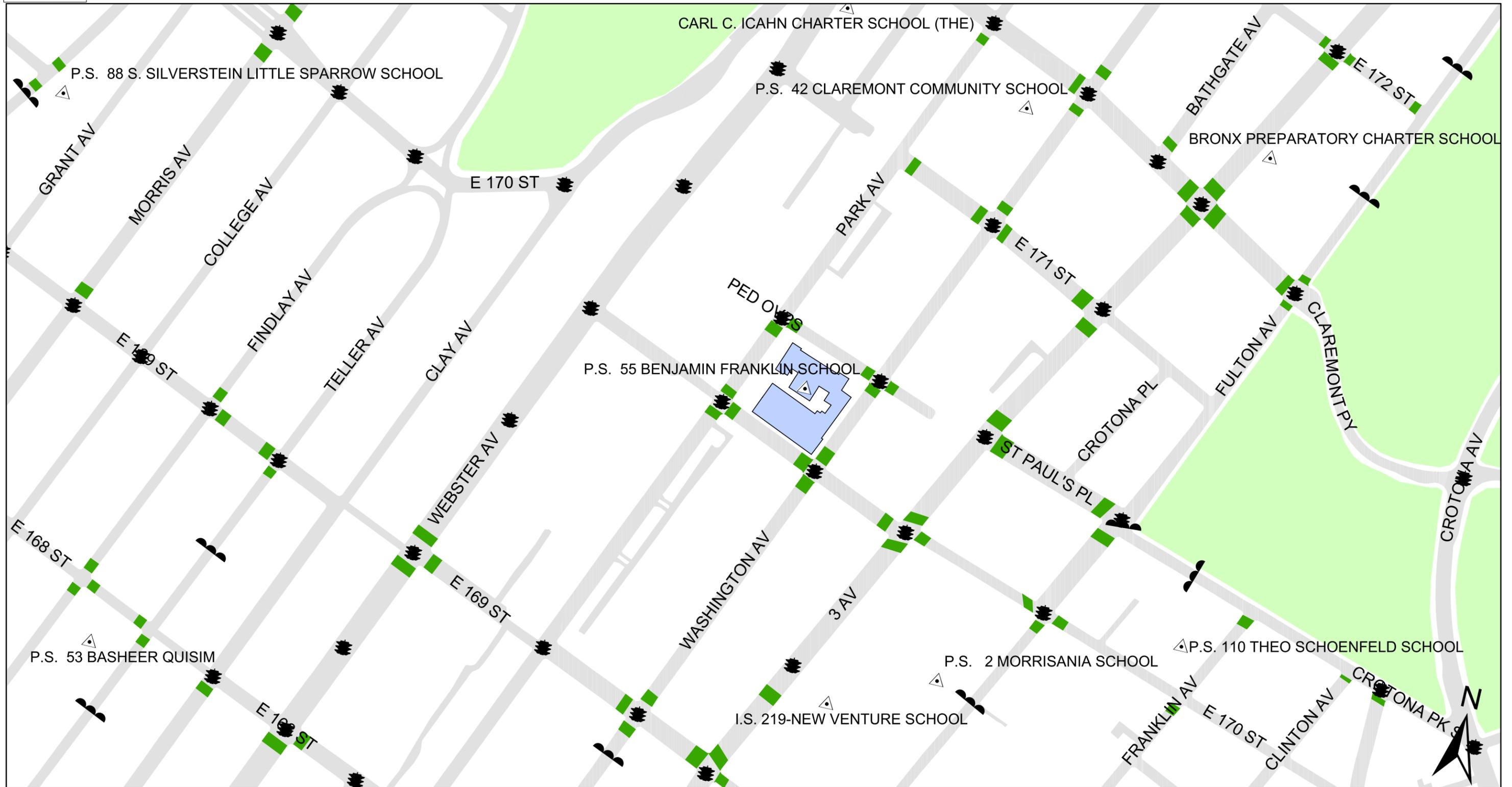


EXHIBIT 2
C.E.S. 55 BRONX
BENJAMIN FRANKLIN SCHOOL
CATCHMENT AREA

LEGEND:

-  CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND C.E.S. 55)

0 250 500 1,000 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		TRAFFIC SIGNAL	
SCHOOL CROSSWALK		ALL - WAY STOP	
		SPEED REDUCER	

PS 55 Bronx
BENJAMIN FRANKLIN SCHOOL

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

Map created on 11/16/2006

EXHIBIT 3

1.5.1

COMM. BOARD:	203
PRECINCT:	42

7

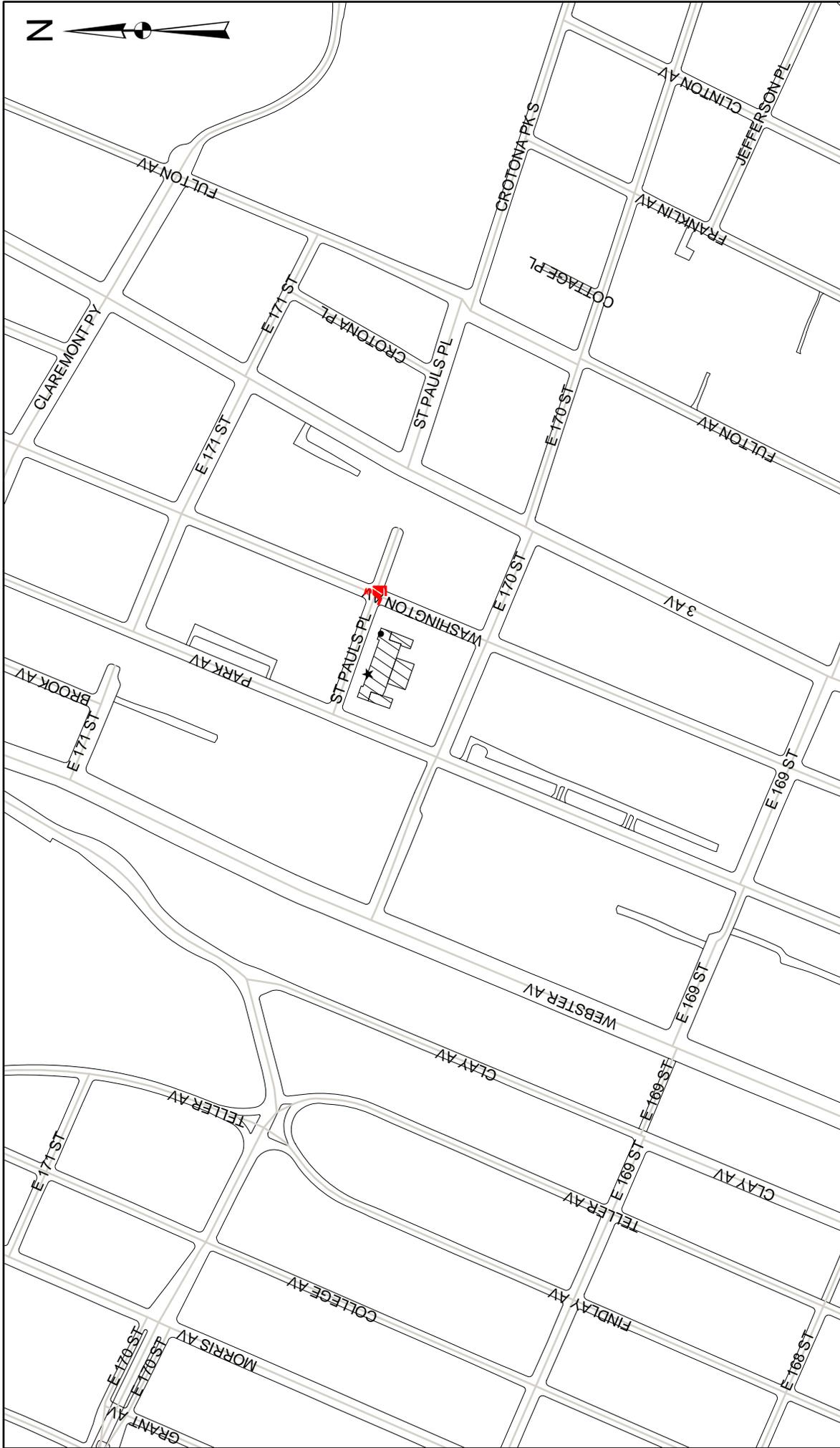


EXHIBIT 4
C.E.S. 55 BRONX
BENJAMIN FRANKLIN SCHOOL
CROSSING GUARD LOCATION



LEGEND:
 CROSSING GUARD LOCATION 

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

School buses stop on St. Paul's Place in front of the school entrance. According to school representatives, there are approximately forty-five (45) students who ride a school bus to school and about seven (7) students who ride the regular MTA buses. School bus transportation for the students consists of six (6) special education buses. School bus operations, according to school representatives, are not an issue at C.E.S. 55.



Figure 2: Looking east along St. Paul's Place across Third Avenue

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives, about five percent (5%) of the students are being dropped off. Parents typically park vehicles across the school entrances on St. Paul's Place while dropping-off students in the morning or awaiting the afternoon student dismissal. Traffic operations did not seem to be a problem during the arrival (drop-off) and dismissal (pick-up) time.

3.3 PARKING REGULATIONS

Parking regulations around the school block are shown in Exhibit 5 at the end of this section.

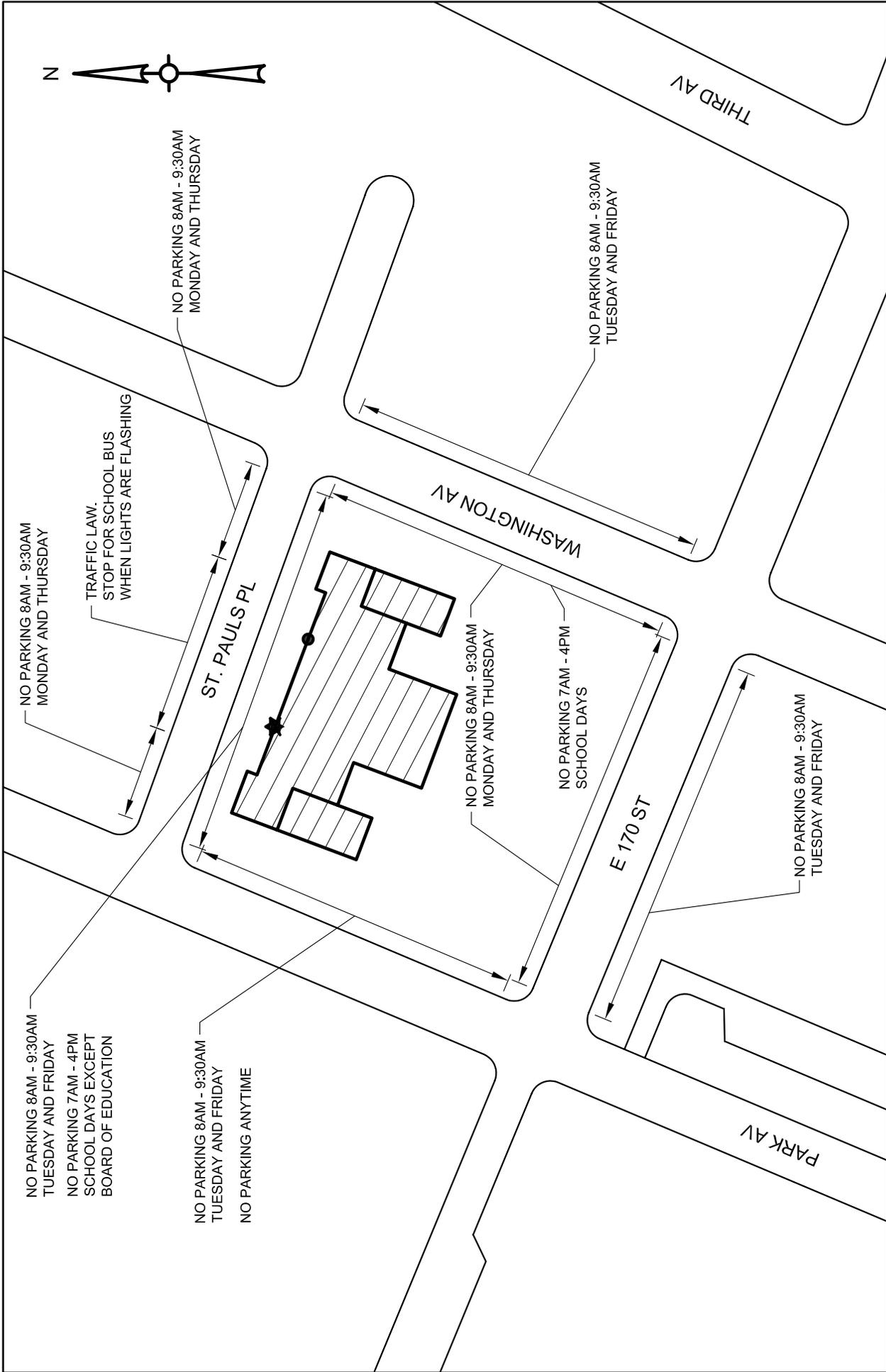
3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3, at the end of Section 2, shows the existing school signs, signals, and pavement markings around C.E.S. 55. 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 accompanied by downward pointing arrows. (Signs scheduled to be installed under this program are shown as “existing” in Exhibit 7.)



Figure 3: Looking east along East 170th Street across Park Avenue (school is off to left)



NO PARKING 8AM - 9:30AM
TUESDAY AND FRIDAY
NO PARKING 7AM - 4PM
SCHOOL DAYS EXCEPT
BOARD OF EDUCATION

NO PARKING 8AM - 9:30AM
MONDAY AND THURSDAY

TRAFFIC LAW.
STOP FOR SCHOOL BUS
WHEN LIGHTS ARE FLASHING

NO PARKING 8AM - 9:30AM
TUESDAY AND FRIDAY
NO PARKING ANYTIME

NO PARKING 8AM - 9:30AM
MONDAY AND THURSDAY

NO PARKING 7AM - 4PM
SCHOOL DAYS

NO PARKING 8AM - 9:30AM
TUESDAY AND FRIDAY

NO PARKING 8AM - 9:30AM
TUESDAY AND FRIDAY

LEGEND:

- ★ MAIN ENTRANCE
- ENTRANCE

EXHIBIT 5

C.E.S. 55 BRONX
BENJAMIN FRANKLIN 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 C.E.S. 55 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: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
East 170 th St & Webster Ave	41	6	1	1
East 170 th St & Park Ave	15	2	0	0
East 170 th St & Washington Ave	7	1	0	0
East 170 th St & Third Ave	23	4	0	2
St. Paul's Pl & Park Ave	1	0	0	0
St. Paul's Pl & Washington Ave	4	1	0	0
St. Paul's Pl & Third Ave	18	2	0	1
East 171 st St & Park Ave	2	0	0	0
East 171 st St and Washington Ave	10	2	0	1
TOTAL	121	18	1	5

TABLE 3: ACCIDENT SUMMARY OF NYPD DATA (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
East 170 th St & Webster Ave	71	6	0	0
East 170 th St. & Park Ave.	27	1	0	0
East 170 th St. & Washington Ave.	20	2	0	1
East 170 th St & Third Ave	46	8	0	2
St. Paul's Pl. & Park Ave.	3	0	0	0
St. Paul's Pl. & Washington Ave.	10	1	0	0
St. Paul's Pl. & Third Ave.	35	12	0	3
East 171 st St & Park Ave	4	1	0	0
East 171 st St and Washington Ave	11	2	0	0
TOTAL	227	33	0	6

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

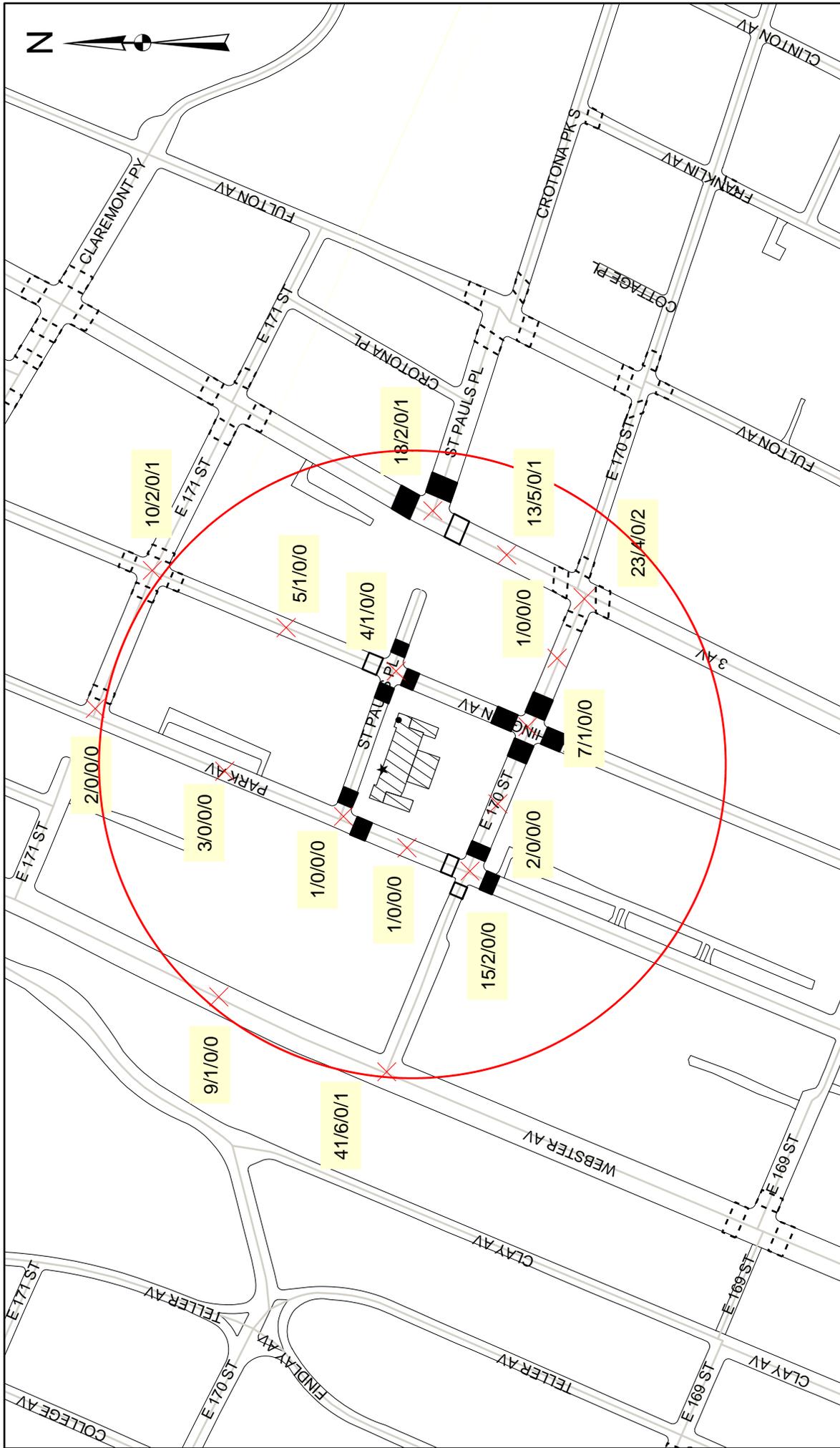


EXHIBIT 6
C.E.S. 55 BRONX
BENJAMIN FRANKLIN SCHOOL
ACCIDENT SUMMARY (1998-2000)

LEGEND:
 ACCIDENT LOCATION
 SCHOOL CROSSWALK
 SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
 BORDER OF 700 FEET
 XX/XX
 TOTAL ACCD / PED ACCD / FATAL / SCHOOL PED ACCD

0 250 500 1,000 Feet

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 C.E.S. 55.

3.6.1 St. Paul's Place and Park Avenue

This is a signalized T-intersection with school crosswalks located across the east leg of St. Paul's Place and south leg of Park Avenue. The signal at this intersection was installed in December 2004, as part of DOT's experimental pedestrian actuated signal program. St. Paul's Place is a one-way westbound street with one travel lane and parking on both sides of the roadway. Park Avenue is a one-way northbound street with two traffic lanes and a wide parking lane along the east side.

Students arrive at the west side of Park Avenue after crossing a pedestrian bridge from the housing project in order to get to the school on St. Paul's Place. There is only a relatively small landing area to stand on at the base of the staircase for the pedestrian bridge. According to school representatives, at arrival and dismissal times the sidewalk is crowded with children and pedestrians. As a result, some pedestrians must stand in the roadway while waiting to cross Park Avenue or to cross over the bridge. In addition, school officials reported speeding on Park Avenue. Therefore, a speed survey was conducted on Park Avenue between St. Paul's Place and East 170th Street in order to verify the existence of a speeding problem and to determine its extent.

The northbound vehicles on Park Avenue between St. Paul's Place and East 170th Street were found to be traveling with an 85th percentile speed of 33 mph. The 85th percentile speed is considered to be the representative speed for the street segment. Speeds above the 30 mph threshold would indicate a speeding problem and may require appropriate traffic calming measures.

The detailed results of the spot speed survey on Park Avenue between St. Paul's Place and East 170th Street are shown in the Appendix at the end of the document.

There was one (1) accident reported at this intersection between 1998 and 2000 (Table 2); which was not a pedestrian accident. Between 2001 and 2004 (Table 3), there were three (3) accidents reported at this intersection; none of which were pedestrian accidents. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 4: Looking west across Park Avenue at southeast corner of St. Paul's Place, toward pedestrian bridge over railroad

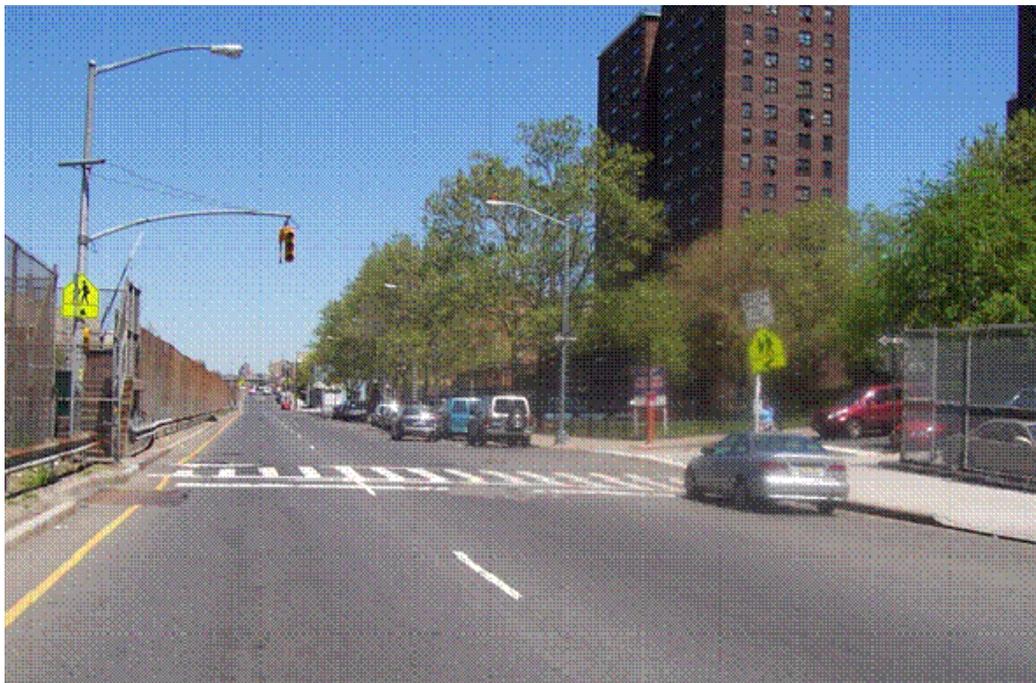


Figure 5: Looking north along Park Avenue across west end of St. Paul's Place, guide rail and fencing block approaching driver's view of pedestrian bridge landing area

3.6.2 St. Paul's Place and Washington Avenue

This is a signalized intersection with school crosswalks located across the south leg of Washington Avenue, and west and east legs of St. Paul's Place. St. Paul's Place, west of Washington Avenue, is a one-way westbound street with one travel lane and parking on both sides of the roadway. East of Washington Avenue, St. Paul's Place is a two-way street with one travel lane and a parking lane on each side of the roadway, as it is only a short block with no outlet. Washington Avenue is a one-way southbound street with two travel lanes and parking on both sides of the roadway.

The school principal reported a speeding problem on Washington Avenue. Therefore, a speed survey was conducted on Washington Avenue between St. Paul's Place and East 170th Street in order to verify the existence of a speeding problem and to determine its extent.

The southbound vehicles on Washington Avenue between St. Paul's Place and East 170th Street were found to be traveling with an 85th percentile speed was 33 mph. The 85th percentile speed is considered to be the representative speed for the street segment. Speeds above the 30 mph threshold would indicate a speeding problem and may require appropriate traffic calming measures.

The detailed results of the spot speed survey on Washington Avenue between St. Paul's Place and East 170th Street are shown in the Appendix at the end of the document.

There were four (4) accidents reported at this intersection between 1998 and 2000 (Table 2); one (1) of which was a pedestrian accident, but not a school-related. Between 2001 and 2004 (Table 3), there were ten (10) accidents reported at this intersection; one (1) of which was a pedestrian accident. The pedestrian accident was not a school-related accident. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 6: Looking west along St. Paul's Place across Washington Avenue (school is on the left)

3.6.3 St. Paul's Place and Third Avenue

This is a signalized T-intersection with school crosswalks located across the north leg of Third Avenue and east leg of St. Paul's Place. At this intersection, St. Paul's Place only extends east of Third Avenue, forming the stem of the "T" while Third Avenue is the through street. West of the intersection, St. Paul's Place does not connect with the west side of Third Avenue, as the westerly section only runs from Park Avenue to just east of Washington Avenue. East of Third Avenue, St. Paul's Place has one eastbound travel lane and a parking lane; and two westbound approach lanes, one for left, and one for right turning vehicles, and a parking lane.

Third Avenue is a two-way, north-south, street with two travel lanes and a parking lane of each side of the roadway. Third Avenue accommodates many commercial activities along both sides of the roadway.

There were eighteen (18) accidents reported at this intersection between 1998 and 2000 (Table 2); two (2) of which involved pedestrians, one (1) of which was a school-related accident. In the school-related accident, a six-year-old pedestrian sustained a "non-incapacitating injury" on Wednesday, April 12, 2000 at 2:00 pm. The pedestrian action was not reported. The accident occurred on a straight and level surface under the daylight condition. The road was dry and the weather was clear. Between 2001 and 2004 (Table 3), there were thirty-five (35) accidents reported at this intersection; twelve (12) of these were pedestrian accidents, three (3) of which were school-related. No additional information about the school-related accidents is available. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 7: Looking south along Third Avenue at St. Paul's Place

3.6.4 East 170th Street and Webster Avenue

This is a signalized T-intersection with pedestrian crosswalks located across the north, south and east legs.

East 170th Street, which is the east leg, is a one-way eastbound roadway with a very wide travel lane and a parking lane on both sides of the roadway. East 169th Street has no lane markings and is wide enough to provide two travel lanes.

Webster Avenue is a two-way, north-south, arterial consisting of two travel lanes and a parking lane in both directions of travel. A painted center median separates the northbound and southbound travel lanes on Webster Avenue. A left turn lane is provided in the center median at this intersection for traffic to turn from southbound Webster Avenue to travel eastbound on East 170th Street. Webster Avenue is a major roadway for this area with significant commercial activity, and carries significant traffic volumes. Webster Avenue is a “snow emergency” route and a designated ‘local’ truck route.

This intersection has been the site of forty-one (41) accidents between 1998 and 2000, including six (6) pedestrian accidents. There was one (1) pedestrian fatality and one (1) school-related accident during the same three-year period. In the school-related accident, a seven-year-old pedestrian sustained a “possible injury” on Thursday, February 17, 2000 at 3:00 pm. The pedestrian reportedly “emerged from behind a parked vehicle.” The accident occurred on a straight and level surface under daylight condition. The road was dry and the weather was clear. The fatal pedestrian accident occurred on Sunday, January 31, 1999 at 6:00 pm, which involved an eighty-one-year-old pedestrian whose action was not reported. The accident occurred on a straight and level surface at night while the road was lighted. The roadway surface was dry and the weather was clear.

The NYPD accident data (Table 3) shows seventy-one (71) accidents at this location including six (6) pedestrian accidents between 2001 and 2004. There were no pedestrian fatalities or school-related accidents during the same four-year period.

3.6.5 East 170th Street and Park Avenue

This is a four-leg signalized intersection with school crosswalks located across the south leg of Park Avenue and east leg of East 170th Street. East of Park Avenue, East 170th Street is a one-way eastbound street with two travel lanes and a parking lane on both sides of the roadway. West of Park Avenue, East 170th Street is situated on a bridge overpass and has two traffic lanes with a parking lane on the north side of the roadway. Park Avenue is a one-way northbound street with two travel lanes and a wide parking lane along the east side of the roadway. School representatives mentioned that delivery trucks often double-park on Park Avenue.

Field observation noted that children are utilizing the north and west crosswalks (as seen in Figure 8 and 9), when walking to school, and not many were observed utilizing the designated school crosswalks across the south and east legs of the intersection.

There were fifteen (15) accidents reported at this intersection between 1998 and 2000 (Table 2); two (2) of which were pedestrian accidents, none of which was a school-related accident. Between 2001 and 2004 (Table 3), there were twenty-seven (27) accidents at this intersection; one (1) was a pedestrian accident that was not school-related. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.

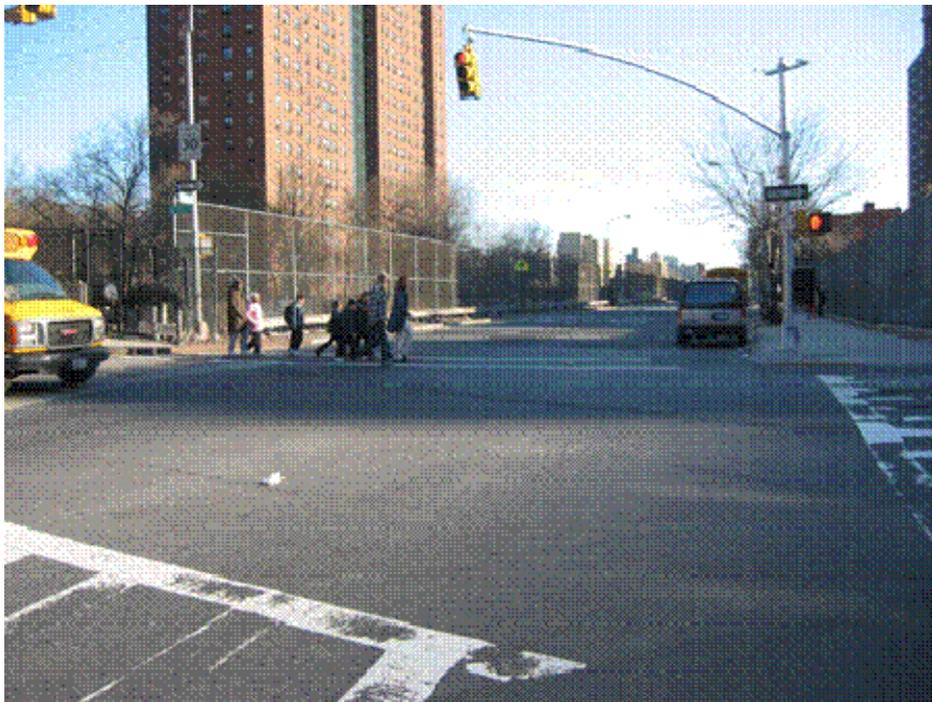


Figure 8: Looking north along Park Avenue across East 170th Street



Figure 9: Looking west on East 170th Street across Park Avenue

3.6.6 East 170th Street and Washington Avenue

This is a four-leg signalized intersection with school crosswalks located across all 4 legs. East 170th Street is a one-way eastbound street with two travel lanes and parking on both sides of the roadway. Washington Avenue is a one-way southbound street with two travel lanes and parking on both sides of the roadway.

There were seven (7) accidents reported at this intersection between 1998 and 2000 (Table 2); one (1) accident involved pedestrian, which was not a school-related accident. Between 2001 and 2004 (Table 3), there were twenty (20) accidents reported at this intersection; two (2) of these were pedestrian accidents, one (1) of which was a school-related accident. No additional information about the school-related accident is available. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.

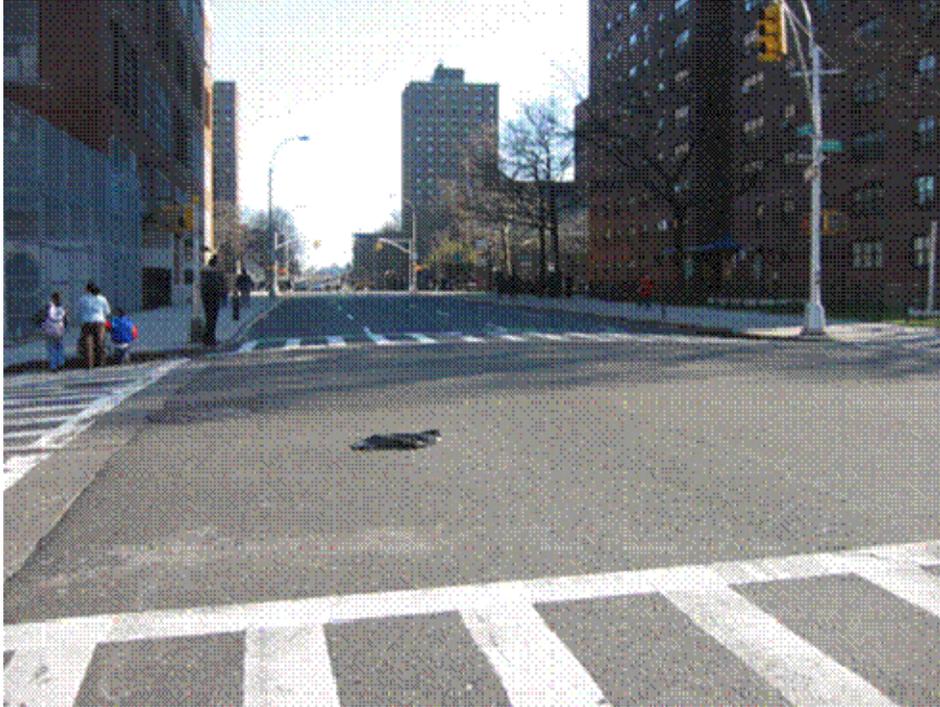


Figure 10: Looking north along Washington Avenue across East 170th Street



Figure 11: Looking on East 170th Street across Washington Avenue

3.6.7 East 170th Street and Third Avenue

This is a four-leg signalized intersection with school crosswalks located across all four legs. East 170th Street is a one-way eastbound street and wide enough to provide two travel lanes with parking on both sides of the roadway.

Third Avenue is a two-way, north-south, street with two travel lanes and a parking lane of each side of the roadway. Third Avenue is a designated “local” truck route. Third Avenue accommodates many commercial activities along both sides of the roadway.

There were twenty-three (23) accidents reported at this intersection between 1998 and 2000 (Table 2); four (4) of these involved pedestrians, two of which were school-related accidents. In the first school-related accident, a ten-year-old pedestrian sustained a “possible injury” on Thursday, January 14, 1998 at 5:00 pm, while crossing against the signal. The roadway surface was dry and the weather was clear. In the second school-related accident, a fourteen-year-old pedestrian sustained a “possible injury” on Thursday, February 11, 1998 at 3:00 pm, while crossing the roadway at not marked crosswalk location. The roadway surface was dry and the weather was clear.

There were also thirteen (13) mid-block accidents reported on Third Avenue between East 170th Street and St. Paul’s Place during the same three-year period including five (5) pedestrian accidents. One (1) of the pedestrian accidents was school-related. In the school-related accident, a thirteen-year-old pedestrian sustained a “possible injury” on Tuesday, April 28, 1998 at 9:00 am, while crossing at a mid-block location. The accident occurred on a straight and level roadway under daylight condition. The roadway surface was dry and the weather was clear.

Between 2001 and 2004 (Table 3), there were forty-six (46) accidents reported at this intersection; eight (8) of these were pedestrian accidents, two (2) of which were school-related. No additional information about the school-related accidents is available. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.

3.6.8 East 171st Street and Washington Avenue

This is a four-leg signalized intersection with school crosswalks located across the east and west legs of East 171st Street and the north leg of Washington Avenue. East 170th Street is a one-way eastbound street and wide enough to provide two travel lanes with parking on both sides of the roadway. Washington Avenue is a one-way southbound street with two travel lanes and parking on both sides of the roadway..

There were ten (10) accidents reported at this intersection between 1998 and 2000 (Table 2); two (2) of these involved pedestrians, one of which was a school-related accident. In the school-related accident, a six-year-old pedestrian sustained a “possible injury” on Friday, April 7, 2000 at 5:00 pm, while crossing the roadway at no marked crosswalk location (probably a mid-block location). The accident occurred on a straight and level roadway under daylight condition the roadway surface was dry and the weather was clear.

Between 2001 and 2004 (Table 3), there were eleven (11) accidents reported at this intersection; two (2) of these were pedestrian accidents, none were school-related. For

both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of C.E.S. 55, and were found to be adequate based upon a child pedestrian walking at a rate of 3 feet per second. Signal timings are shown in Table 4.

TABLE 4: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
Washington Ave & St. Paul's Pl				
crossing Washington Ave	44	19	18	No
crossing St. Paul's Pl	37	37	16	No
Washington Ave & East 170 th St				
crossing Washington Ave	44	19	18	No
crossing East 170 th St	52	37	21	No
Park Ave & East 170 th St				
crossing Park Ave	48	23	19	No
crossing East 170 th St	48	35	19	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

3.8.1 Roadways and Sidewalks

The roadways in the vicinity of the C.E.S. 55 are generally in good condition. Sidewalks are about 10 to 15 feet wide on the school block. As mentioned in section 3.6.1, the sidewalk landing area at the base of the stairway for the pedestrian bridge over the railroad at Park Avenue and St. Paul's Place is relatively small. The sidewalks are generally in fair condition.



Figure 12: Looking east along St. Paul's Place across Park Avenue, note misaligned pedestrian ramps and utility stanchion obstructing crosswalk path

3.8.2 Pedestrian Ramps

Overall, pedestrian ramps in the area of the school are standard except for the following:

- A utility stanchion obstructing the crosswalk path at the northeast corner of the St. Paul's Place & Park Avenue intersection (see Figure 12).
- A misaligned ramp on the southeast corner of St Paul's Place & Park Avenue for the crosswalk located across the east leg (see Figure 12).
- A traffic signal pole on the northeast corner of the East 170th Street & Washington Avenue intersection obstructing the path for the crosswalk located across the north leg of Washington Avenue (see Figure 10).
- A small and misaligned pedestrian ramp on the southeast corner of Washington Ave & East 170th Street for the crosswalk located across the east leg (see Figure 14).
- A traffic signal pole on the southeast corner of Washington Ave & East 170th Street obstructs the path of the crosswalk located across the east leg (see Figure 13).
- A missing pedestrian ramp on the southeast corner of Washington Ave & East 170th Street for the crosswalk located across the south leg (see Figure 13).
- A misaligned pedestrian ramp on the northwest corner of East 170th Street & Washington Avenue for the crosswalk located across the west leg (see Figure 10)

- Missing pedestrian ramps for all four locations on west side of Park Avenue on both north and south corners of East 170th Street (see Figure 9).
- Utility pole obstructing the crosswalk located across the north leg of Third Avenue on the west side of Third Avenue at St Paul's Place (see Figure 15).



Figure 13: Looking south along Washington Avenue across East 170th Street, note traffic signal pole obstructing the crosswalk on south east corner



Figure 14: Looking at small and misaligned pedestrian ramp on south east corner of Washington Ave & East 170th St



Figure 15: Looking north along Third Avenue across St. Paul's Place at utility pole obstructing west end of crosswalk located across north leg of intersection

4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes proposed measures to improve school pedestrian safety around C.E.S. 55. 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 C.E.S. 55 is discussed as follows, and is shown in more detail in Exhibit 7 at the end of this section.

4.1 SHORT-TERM MEASURES

➤ Install “No Standing 7am-4pm School Days” signs

Install “No Standing 7am-4pm School Days” signs for thirty feet (30’) in front of the school at the main entrance of the school. (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

➤ Install graphic “Yield to Pedestrian” sign

Install “YIELD TO PEDESTRIAN” signs at intersection approaches with substantial vehicle–student pedestrian volumes at intersections assigned to this school. A “YIELD TO PEDESTRIAN” sign is recommended on the following approaches of signalized intersections around C.E.S. 55:

- Northbound approach of Third Avenue at St. Paul’s Place
- Southbound approach of Washington Avenue at St. Paul’s Place

These signs are suggested to improve driver awareness and the visibility and safety of student-pedestrians.

➤ Place advanced stop bar before school crosswalk

The MUTCD and New York City DOT standard for placement of a stop bar is four feet (4’) in advance of a marked crosswalk. At signalized intersections and mid-block crossings, the vehicle stop line can be moved farther back from the pedestrian crosswalk.

For school crosswalks with significant potential for vehicular / pedestrian conflicts, it is recommended that the advance stop bar be placed ten feet (10’) in advance of the crosswalk to maximize the safety benefit for school-aged pedestrians. (This would improve visibility of pedestrians to motorists, and allow pedestrians to proceed in a crosswalk before motor vehicles turn.)

Ten feet (10’) advanced stop bars before school crosswalks with ‘STOP HERE’ signs are recommended on the following approaches of signalized intersections surrounding C.E.S. 55:

- Southbound and eastbound approaches of Washington Avenue and East 170th Street intersection
- Northbound approach of Park Avenue at East 170th Street

- Northbound and westbound approaches of Park Avenue and St. Paul's Place intersection
- Southbound and westbound approaches of Third Avenue and St. Paul's Place intersection
- Northbound, southbound, and eastbound approaches of Third Avenue and East 170th Street intersection
- Northbound and southbound approaches of Webster Avenue at the intersection of East 170th Street.

➤ School crosswalk at the intersection of Park Avenue and East 170th Street

Field observation noted that children are utilizing the north and east crosswalks of the 170th Street & Park Avenue intersection (as seen in Figures 8 and 9) when walking to school, and few students were observed utilizing the designated school crosswalks across the south and east legs of the intersection.

It is therefore recommended to:

- Convert the existing pedestrian crosswalk across the north leg of Park Avenue to a school crosswalk and install all appropriate advance-warning devices.

➤ Pedestrian crosswalk at the intersection of Washington Avenue and East 170th Street

The easterly crosswalk at the intersection of Washington Avenue and East 170th Street should be constructed to a pedestrian crosswalk, as it is better for the children to be directed to the westerly crosswalk across East 170th Street.

It is therefore recommended to:

- Convert the existing school crosswalk across the east leg of East 170th Street to a pedestrian crosswalk and remove all appropriate advance-warning devices.

➤ Speeding on Washington Avenue between St. Paul's Place and East 170th Street

The speed survey conducted on Washington Avenue between St. Paul's Place and East 170th Street showed that the 85th percentile exceeded the speed limit (see Section 3.6.2 and Appendix). Since Washington Avenue is a one-way southbound street with two travel lanes and parking on both sides of the roadway, a speed reducer is not a feasible option. However, the proposed curb extensions (see Section 4.2 Long-Term Measures) are recommended for the southeast and southwest corners of Washington Avenue at East 170th Street. This would serve to reduce vehicular speeds and also give better visibility for the approaching drivers of students waiting to cross Washington Avenue.

➤ Speeding on Park Avenue between East 170th Street and St. Paul's Place

As mentioned in Section 3.6.1, the sidewalk landing at the base of the staircase for the pedestrian bridge on the west side of Park Avenue at St. Paul's Place is relatively small in area. The school principal reported students queuing in the roadway when crossing at arrival and dismissal times. Even with students waiting

on the sidewalk landing, they may not readily be seen by approaching drivers as the fencing, guide rail and light pole along the curb on the west side of Park Avenue restricts an approaching driver's view of pedestrians on the sidewalk landing. The school officials also report vehicles speeding along this section of Park Avenue, which is quite wide and open. The speed survey conducted on Park Avenue between East 170th Street and St. Paul's Place showed that the 85th percentile speed exceeded the threshold speed limit of 30 mph (see Section 3.6.1 and Appendix). The Park Avenue is a wide and open street with two travel lanes and permits parking on the east side of the roadway. Therefore a speed reducer is not recommended.

It should be noted that a pedestrian actuated signal has been installed at the intersection to help pedestrians cross Park Avenue. In addition, the proposed curb extensions at the southeast and the extended sidewalk along the west side of Park Avenue would give more sidewalk space for student pedestrians to wait on and also serve to slow motorists (see Section 4.2 – Long-Term Measures).

4.2 LONG-TERM MEASURES

➤ Consider curb extension at the following locations:

- Provide curb extensions at the northeast and southeast corners of East 170th Street at Webster Avenue.
- Provide curb extensions at the southeast corner of Park Avenue and East 170th Street intersection.
- Provide curb extension at all four corners of Washington Avenue and East 170th Street intersection.
- Provide curb extensions at northwest and southwest corners of Third Avenue and East 170th Street intersection.
- Provide curb extensions at the northeast and southeast corners of Park and St. Paul's Place intersection. In addition, extend the west sidewalk along Park Avenue as shown in Exhibit 7.
- Provide curb extensions at the southeast and southwest corners of Washington Avenue and St. Paul's Place intersection.
- Provide curb extensions at the northeast and southeast corners and extend the west sidewalk along Third Avenue at its intersection with St. Paul's Place.
- Provide curb extensions at all four corners of Washington Avenue and East 171st Street intersection.
- Provide curb extension at the southwest corner of East 171st Street at its intersection with Third Avenue.

Curb extensions should be installed at the corners as shown in Exhibit 7. The purpose of the curb extension is to shorten the crossing distance for pedestrians, and to reduce the speed of vehicles approaching and turning on school crosswalks. The curb extension will not eliminate or reduce the width of any

travel lanes. Curb extensions are not proposed where they would hinder the ability of a vehicle to turn.

(Installation note: The two traffic lanes for Park Avenue are situated along the west side of the roadway. Should the curb extensions (neckdowns) be installed at this location, the traffic lanes will have to be realigned to transition over to the center of the roadway from East 170th Street to St. Paul's Place. They will then have to be transitioned back again north of St. Paul's Place.)

➤ Consider refuge islands at the intersection of Webster Avenue and East 170th Street:

There was one pedestrian fatal accident and one school-related pedestrian accident between 1998 and 2000. A wide striped median separates the northbound and southbound travel lanes on Webster Avenue. Since Webster Avenue is a snow emergency route, a sidewalk extension along the west sidewalk and curb extension at the northeast and southeast corners are not recommended. It is therefore recommended to:

- Provide a pedestrian refuge island at the south leg of Webster Avenue with at least a 5-foot at grade cut through section.

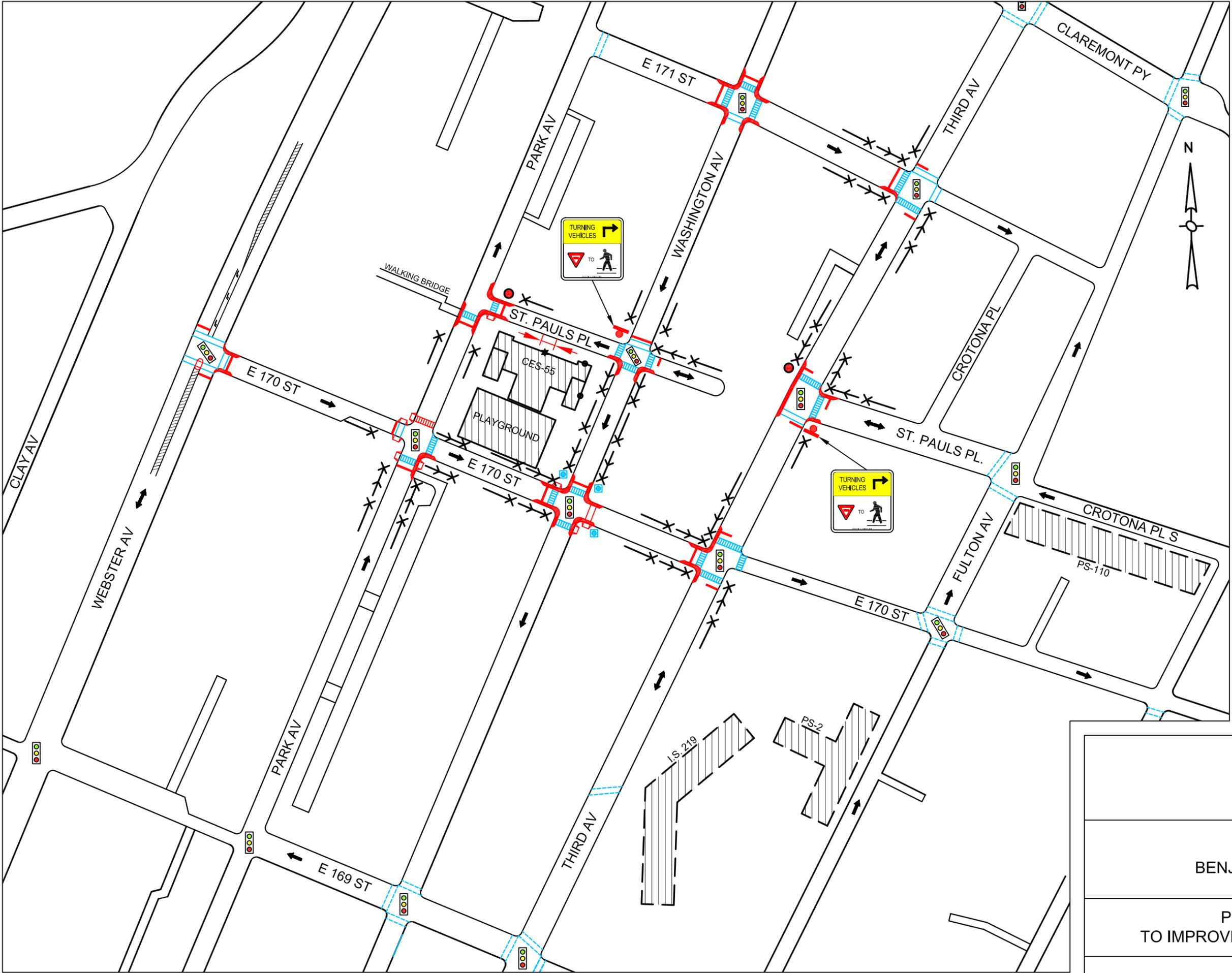
The refuge islands with extended medians will provide a refuge for pedestrians who do not complete the crossing during the flashing "Don't Walk" indication. The proposed extended median should extend beyond the crosswalk, and should have at least 5-feet at grade cut through section. These medians are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to proposed extended medians will be developed during Final Design.

➤ Pedestrian ramps:

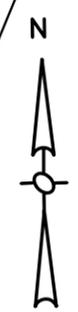
Several pedestrian ramps are misaligned, missing, or obstructed by utility poles at several locations as described in Section 3.8.2 - Pedestrian Ramps. It is therefore recommended to:

- Reconstruct the misaligned ramp on the southeast corner of St Paul's Place & Park Avenue, which is for the crosswalk located across the east leg (see Figure 12).
- Relocate and reconstruct the ramp located at the northeast corner of the St. Paul's Place & Park Avenue intersection in order to avoid the utility stanchion which is currently obstructing the crosswalk path (see Figure 12).
- Relocate and reconstruct the ramp located at the northeast corner of the East 170th Street & Washington Avenue intersection, as a utility pole is obstructing the path for the crosswalk located across the north leg of Washington Avenue (see Figure 10).
- Reconstruct the misaligned pedestrian ramp on the southeast corner of Washington Ave & East 170th Street, which is for the crosswalk located across the east leg (see Figure 14).

- A traffic signal pole on the southeast corner of Washington Ave & East 170th Street is obstructing the path of the crosswalk located across the east leg (see Figure 13). It is therefore recommended to relocate and reconstruct the ramp located at the southeast corner of the Washington Avenue and East 170th Street.
- Install a pedestrian ramp on the southeast corner of Washington Ave & East 170th Street that is missing for the crosswalk located across the south leg (see Figure 13).
- Reconstruct the misaligned pedestrian ramp on the northwest corner of East 170th Street & Washington Avenue, which is for the crosswalk located across the west leg (see Figure 10)
- Install the pedestrian ramps for all four locations on the west side of Park Avenue that are missing on both north and south corners of East 170th Street (see Figure 9).
- Relocate and reconstruct the ramp located on the west side of Third Avenue, as a utility pole is obstructing the crosswalk located across the north leg of Third Avenue at St Paul's Place (see Figure 15).



- 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
 - SIGNALIZED LOCATION
 - EXISTING SCHOOL CROSSWALK
 - EXISTING PEDESTRIAN CROSSWALK
 - EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
 - PROPOSED SCHOOL CROSSWALK
 - PROPOSED PEDESTRIAN CROSSWALK
 - PROPOSED TRAFFIC SIGN
 - PROPOSED PEDESTRIAN RAMP
 - PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
 - PROPOSED "NO PARKING 7:00AM - 4:00PM SCHOOL DAYS"
 - POLE OR STANCHION TO BE RELOCATED
 - TRAFFIC SIGNAL POLE TO BE RELOCATED
 - PROPOSED CURB EXTENSION (NECKDOWN)



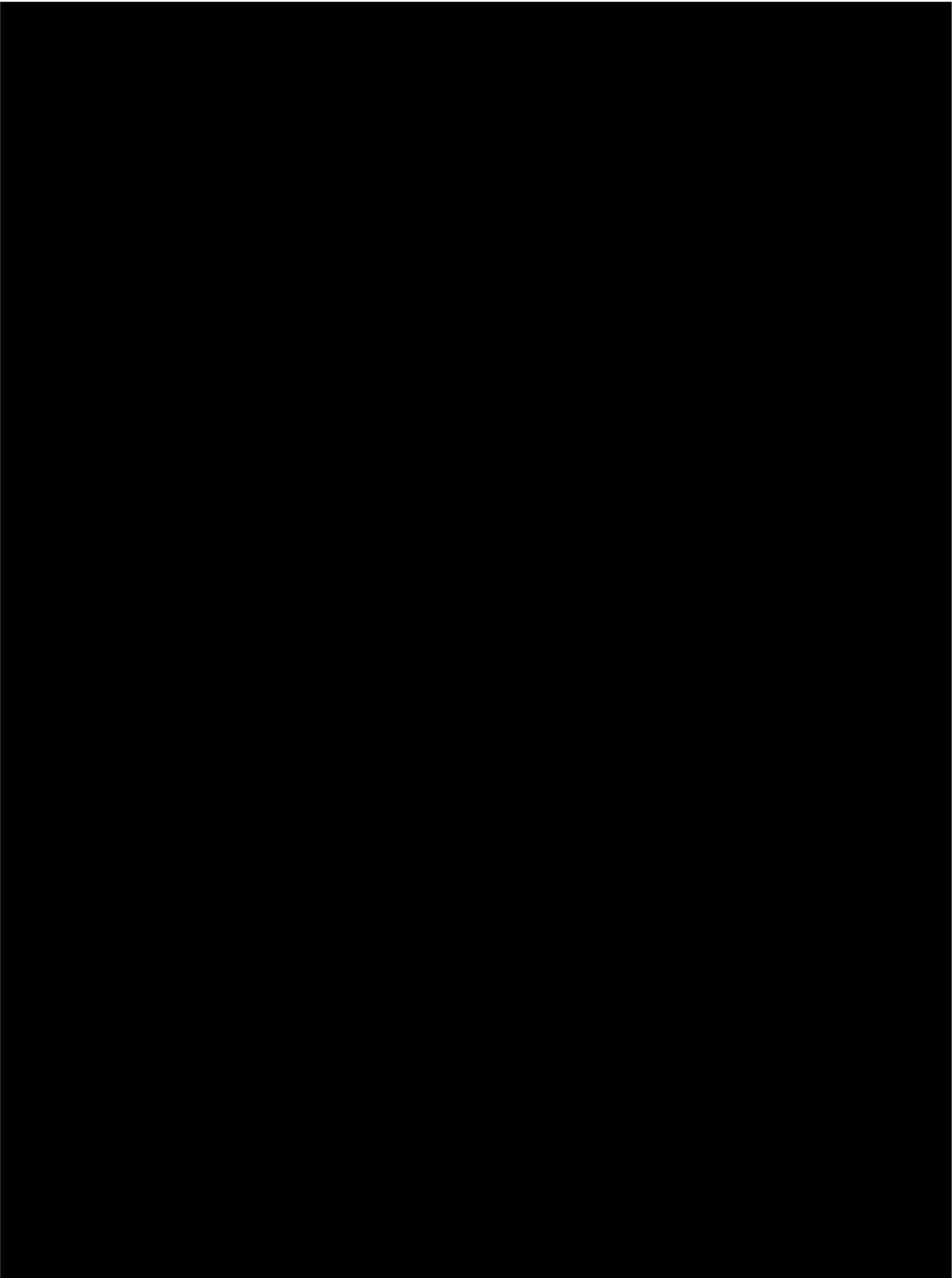
1" = 200'

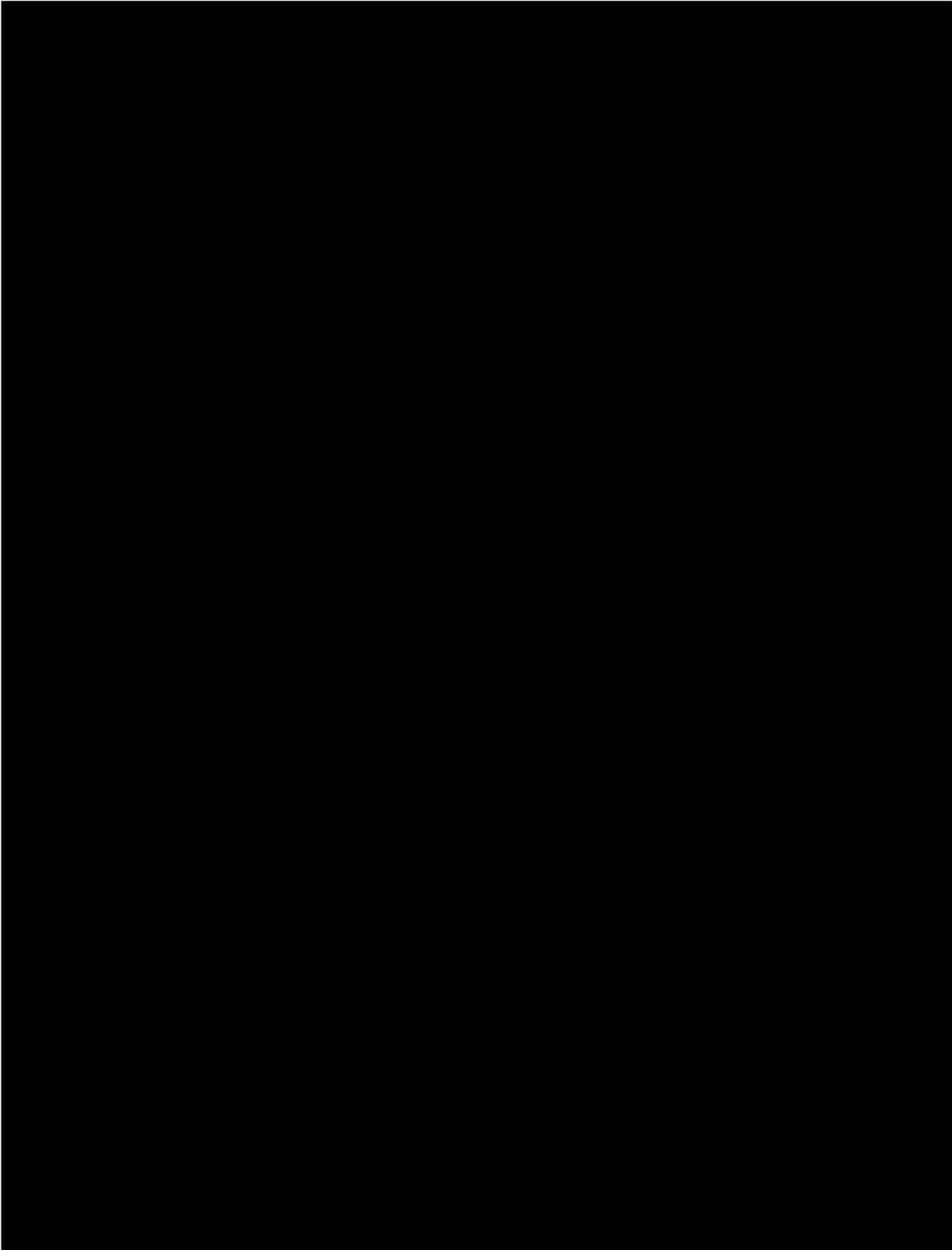
EXHIBIT 7

C.E.S. 55 BRONX
BENJAMIN FRANKLIN SCHOOL

PROPOSED MEASURES
TO IMPROVE SCHOOL PEDESTRIAN SAFETY

APPENDIX





SPOT SPEED STUDY

Date: **May 4, 2006** Time: **10:30-11:30 am**
 Location: **Park Avenue between E.170 Street and St. Paul's Place**
 Surveyor: **Richard Calvache**

School: **C.E.S. 55**
 Direction: **Northbound**
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS ²
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	1	1.3%	1.3%	22	484
23	1	1.3%	2.6%	23	529
24	1	1.3%	3.9%	24	576
25	2	2.6%	6.5%	50	1250
26	4	5.2%	11.7%	104	2704
27	8	10.4%	22.1%	216	5832
28	10	13.0%	35.1%	280	7840
29	7	9.1%	44.2%	203	5887
30	8	10.4%	54.5%	240	7200
31	7	9.1%	63.6%	217	6727
32	10	13.0%	76.6%	320	10240
33	7	9.1%	85.7%	231	7623
34	7	9.1%	94.8%	238	8092
35	1	1.3%	96.1%	35	1225
36	1	1.3%	97.4%	36	1296
37	0	0.0%	97.4%	0	0
38	2	2.6%	100.0%	76	2888
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
	77	100.0%		2315	70393

Mean Speed = 30.1 mph Median Speed = 30.1 mph
 Standard Deviation = 3.2 mph 15th Percentile Speed = 26.7 mph
 Margin of Error (95% Confidence) = ± 0.7 mph 85th Percentile Speed = 33.4 mph

SPOT SPEED STUDY

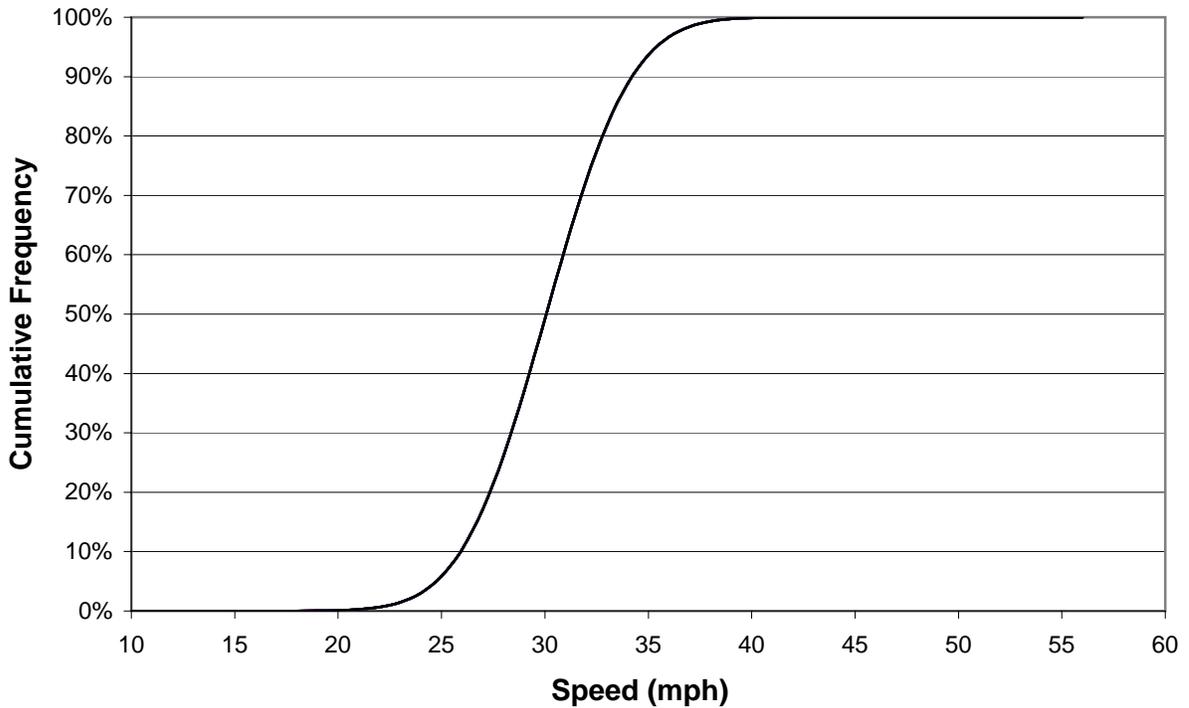
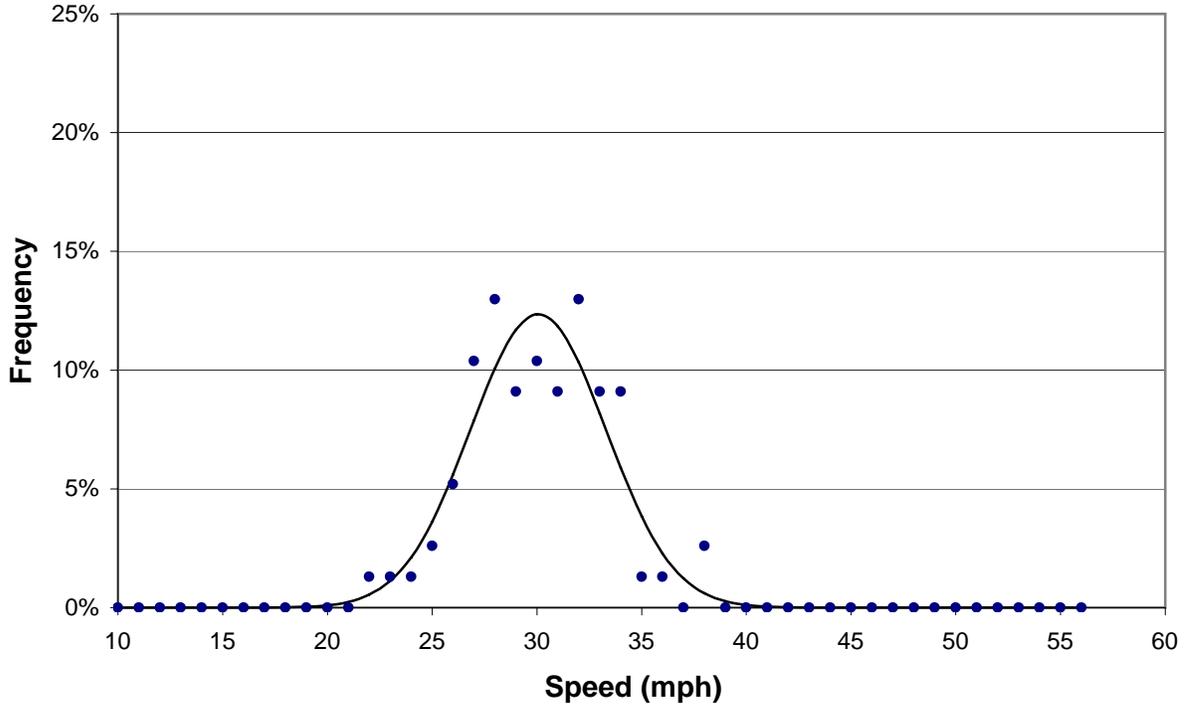
Date: **May 4, 2006**
Location: **Park Avenue between E.170 Street and St. Paul's Place**
Surveyor: **Richard Calvache**

Time: **10:30-11:30 am**

School: **C.E.S. 55**
Direction: **Northbound**
Comments:

Mean Speed = 30.1 mph
Standard Deviation = 3.2 mph
Margin of Error (95% Confidence) = ± 0.7 mph

Median Speed = 30.1 mph
15th Percentile Speed = 26.7 mph
85th Percentile Speed = 33.4 mph



SPOT SPEED STUDY

Date: **May 23, 2005** Time: **9:30 am**
 Location: **Washington Ave between St. Pauls & 170 St**
 Surveyor: **Richard Calvache**

School: **C.E.S. 55**
 Direction: **SB**
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS ²
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	1	1.9%	1.9%	23	529
24	3	5.8%	7.7%	72	1728
25	1	1.9%	9.6%	25	625
26	4	7.7%	17.3%	104	2704
27	3	5.8%	23.1%	81	2187
28	12	23.1%	46.2%	336	9408
29	4	7.7%	53.8%	116	3364
30	2	3.8%	57.7%	60	1800
31	7	13.5%	71.2%	217	6727
32	6	11.5%	82.7%	192	6144
33	3	5.8%	88.5%	99	3267
34	2	3.8%	92.3%	68	2312
35	2	3.8%	96.2%	70	2450
36	1	1.9%	98.1%	36	1296
37	1	1.9%	100.0%	37	1369
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
	52	100.0%		1536	45910

Mean Speed = 29.5 mph Median Speed = 29.5 mph
 Standard Deviation = 3.3 mph 15th Percentile Speed = 26.2 mph
 Margin of Error (95% Confidence) = ± 0.9 mph 85th Percentile Speed = 32.9 mph

SPOT SPEED STUDY

Date: **May 23, 2005**
Location: **Washington Ave between St. Pauls & 170 St**
Surveyor: **Richard Calvache**

Time: **9:30 am**

School: **C.E.S. 55**
Direction: **SB**
Comments:

Mean Speed = 29.5 mph
Standard Deviation = 3.3 mph
Margin of Error (95% Confidence) = ± 0.9 mph

Median Speed = 29.5 mph
15th Percentile Speed = 26.2 mph
85th Percentile Speed = 32.9 mph

