

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



School Safety Engineering Project

FINAL REPORT: M.S. 399 (The Elizabeth Barrett Browning School), Bronx



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



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**School Safety Engineering Project
Final Report: M.S. 399, 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). M.S. 399 (The Elizabeth Barrett Browning 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 shows an aerial view of the neighborhood surrounding the school. M.S. 399 is bounded by Creston Avenue to the east, Field Place to the south, Morris Avenue to the west, and East 184th Street to the north. The area surrounding the school is generally residential in character with some commercial uses.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant staff, the school principal of M.S. 399 and the Deputy Chief of School Safety Engineering, New York City Department of Transportation, met at the school on the afternoon of May 22, 2004. According to representatives of the school, M.S. 399 student pedestrians face the following problems:

- Speeding is a problem on Morris Avenue and on East 184th Street.
- Crossing Morris Avenue is a problem during fire drills as well as at dismissal; drivers often won't stop for the students crossing the street, even with faculty out in the street indicating for them to stop.
- Principal Torres requested consideration be given to converting East 184th Street to a one way (eastbound) street.
- Parking is difficult for teachers, and it becomes problematic on a regular basis. It was requested that a "NO PARKING SCHOOL DAYS – EXCEPT FOR FACULTY" sign be considered along Field Place or Morris Avenue.
- Parking across the school driveway is often a problem.



2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

The school’s “catchment area” as defined by the Department of Education is shown in Exhibit 2.

The school’s catchment area is roughly bounded by the Grand Concourse to the east (although some of their students do come from across the Grand Concourse); West 181st Street to the south (with some exceptions to the area between Jerome Avenue and Martin Luther King Jr. Boulevard/University Avenue); the Major Deegan Expressway to the west; and Fordham Road to the north..

Table 1 presents the modes of travel for M.S. 399 as identified by school representatives.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	STUDENTS (Percentage)
Walk	60%
Driven by car	2%
School bus	3%
MTA Bus/Subway	35%
Bicycle	0%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There is a fenced-in playground on the west side of Morris Avenue, across from the school, that attracts students from M.S. 399. There are various stores along East 184th Street across from the school, such as grocery stores, that also attract M.S. 399 students.

In addition, there are three heavily commercial streets within a relatively short distance of the school: Jerome Avenue, two short blocks to the west; East Fordham Road, one long block to the north; and the Grand Concourse, one short block to the east.



Figure 2: Looking northeast at a grocery store and other stores across the street from M.S. 399

2.8 CROSSING GUARD LOCATION

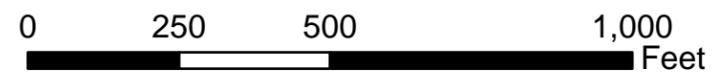
According to the school principal, there are no crossing guards assigned to M.S. 399.

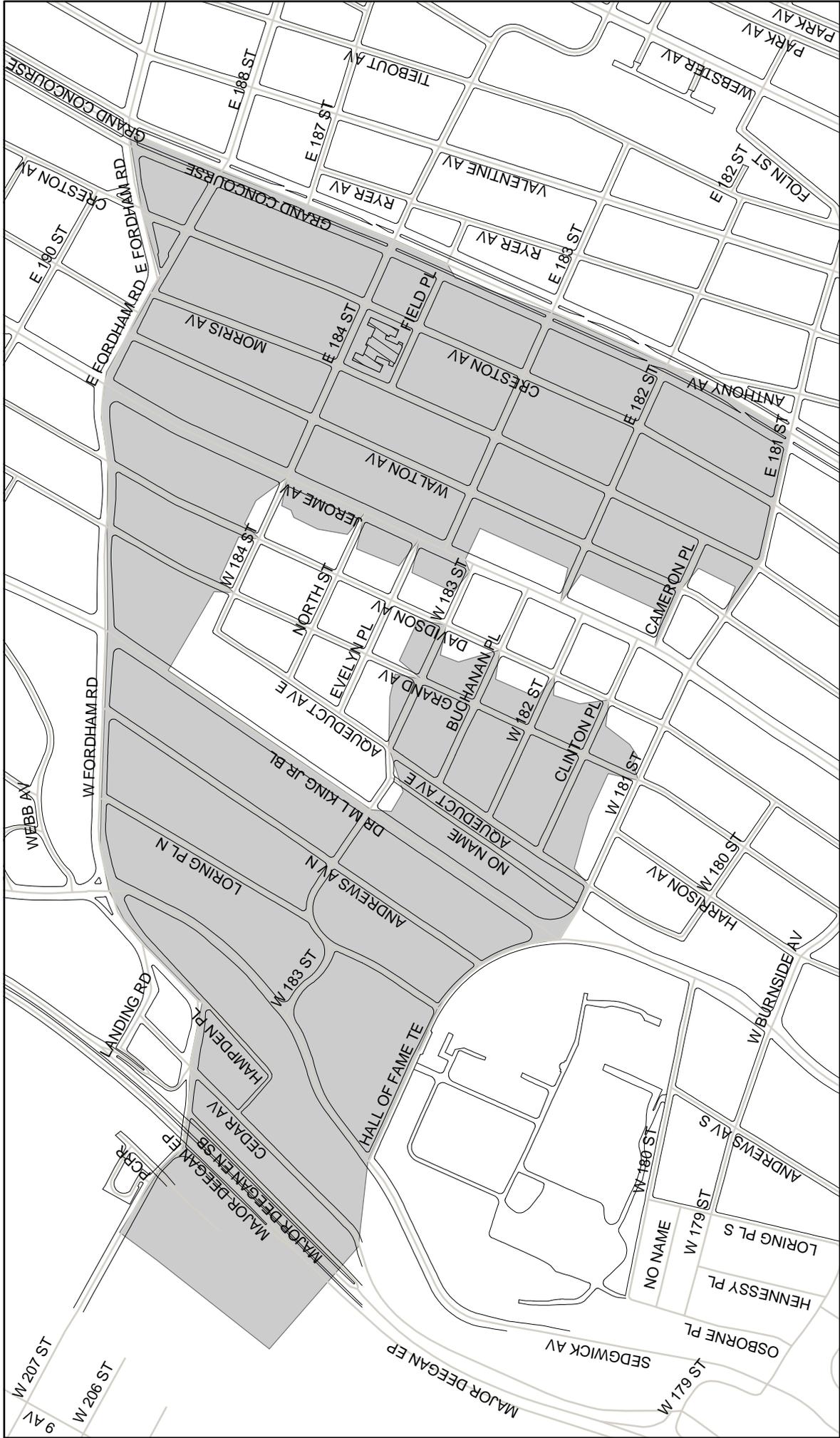


EXHIBIT 1

M.S. 399 / M.S. 319 BRONX

AERIAL PHOTOGRAPH





LEGEND:

CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND M.S. 399 / M.S. 319)



EXHIBIT 2

M.S. 399 / M.S. 319 BRONX

CATCHMENT AREA



3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to the school principal, there are approximately 270 students who ride an MTA bus to school, and approximately 23 students who ride a yellow school bus to school. Bus transportation for the students consists of one special bus.

Consultant observations concur that there is sufficient block face footage for school bus operations.

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives, only about two percent of the students are being dropped off. There are relatively few problems associated with the parental pick-up of students since the numbers are so low.

3.3 PARKING REGULATIONS

Parking regulations around the school block are shown in Exhibit 4.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 3 shows the existing school signals and pavement markings around M.S. 399. It should be noted that a citywide signage program is currently underway to upgrade school signage to the current edition of the Federal Manual of Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green signs accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 6.

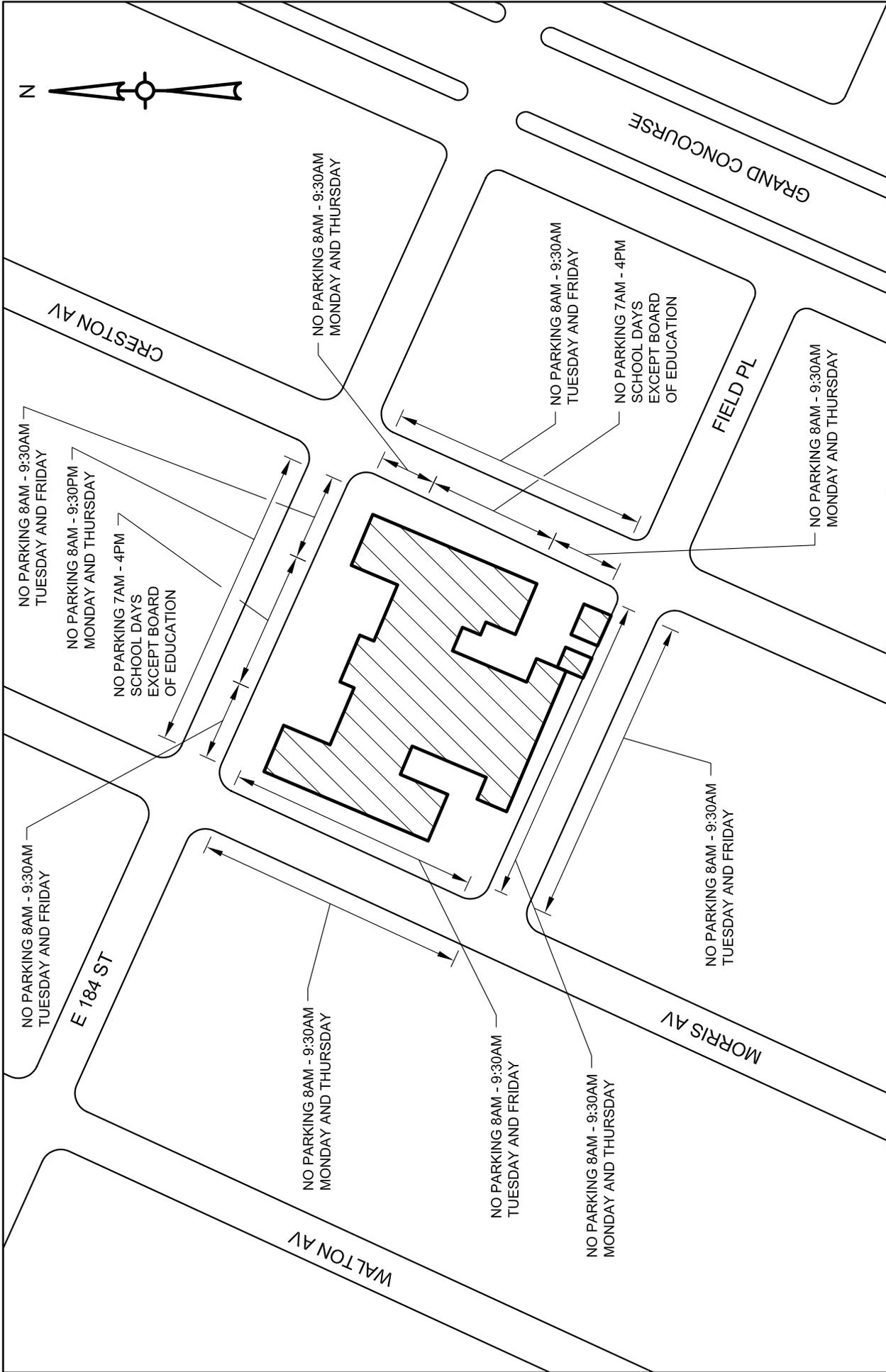


EXHIBIT 4
M.S. 399/M.S. 319 BRONX

LEGEND:



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 M.S. 399 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 were discussed in Section 3.6, Traffic Operations and Issues.

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS *
Jerome Avenue and West 184 th Street	26	3	0	1
Morris Avenue and East 184 th Street	15	0	0	0
Creston Avenue and East 184 th Street	53	3	0	0
Field Place and Morris Avenue	1	0	0	0
Field Place and Creston Avenue	4	2	0	0
Morris Avenue and East 183 rd Street	14	1	0	0
Creston Avenue and East 183 rd Street	30	7	0	2
TOTAL	143	16	0	3

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS *
Jerome Avenue and West 184 th Street	78	11	0	3
Morris Avenue and East 184 th Street	25	5	0	2
Creston Avenue and East 184 th Street	58	5	0	0
Field Place and Morris Avenue	6	2	0	0
Field Place and Creston Avenue	11	3	0	1
Morris Avenue and East 183 rd Street	32	6	0	1
Creston Avenue and East 183 rd Street	32	6	0	1
TOTAL	242	38	0	8

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

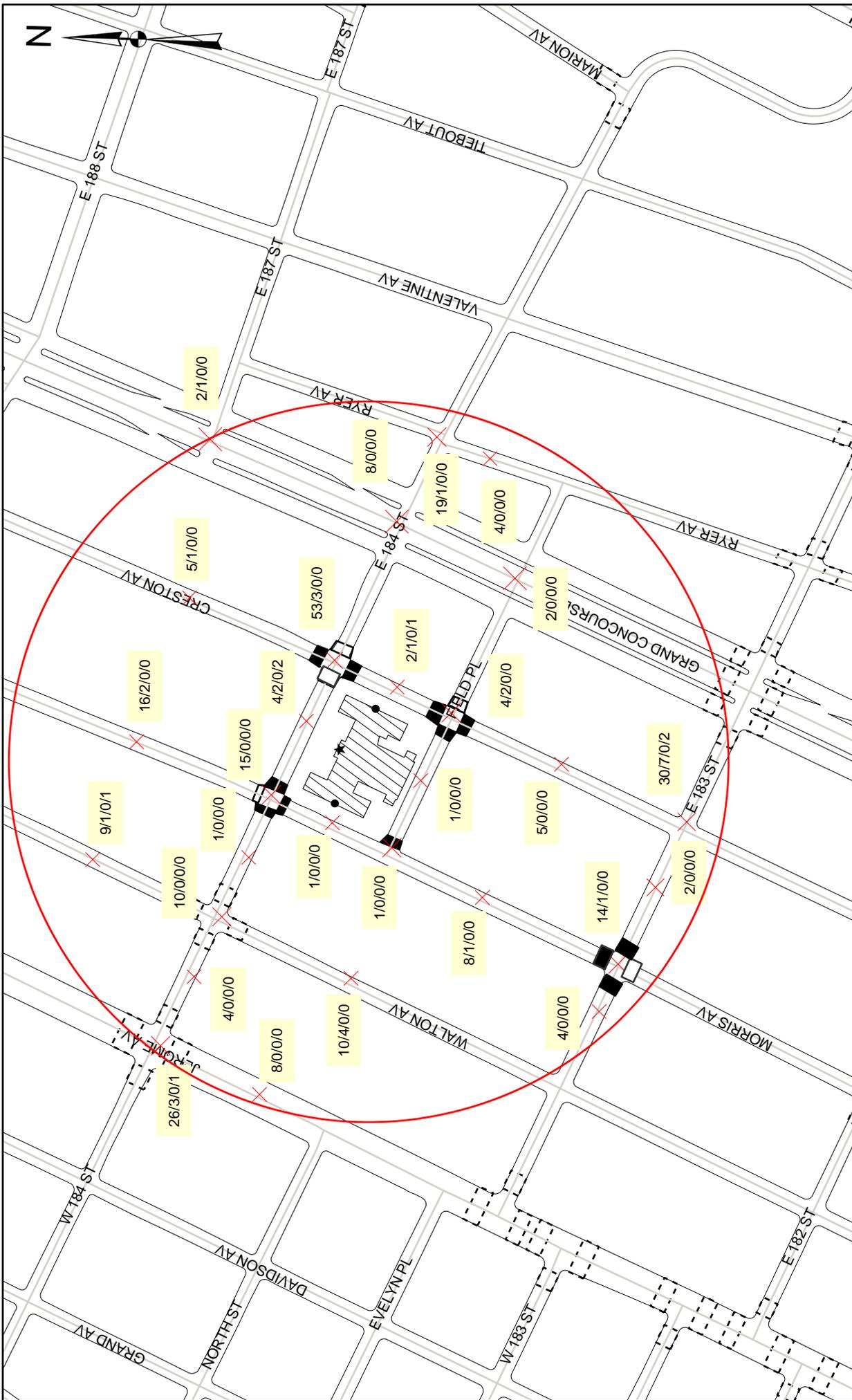


EXHIBIT 5

**M.S. 399 / M.S. 319 BRONX
ACCIDENT SUMMARY (1998-2000)**

LEGEND:

- ACCIDENT LOCATION
- SCHOOL CROSSWALK
- SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
- BORDER OF 700 FEET
- X/X/X

TOTAL ACCD / PED ACCD / SCHOOL_PED ACCD

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 M.S. 399. Details on specific intersections or roadway segments are given in the following sections.

3.6.1 Morris Avenue and East 184th Street

This is a signalized intersection with school crosswalks located across the east leg of East 184th Street and the north and south legs of Morris Avenue. East 184th Street is a two-way street with one traffic lane and one parking lane on each side of the roadway. Morris Avenue is a one-way northbound street with one traffic lane and parking on both sides of the roadway. Higher volumes of traffic use East 184th Street. All M.S. 399 students enter and exit the building using the Morris Avenue entrance between East 184th Street and Field Place. There are problems crossing Morris Avenue during fire drills and dismissals, since drivers often will not stop for students crossing the street, even with faculty out in the street indicating for them to stop.

There were 15 accidents reported at this intersection between 1998 and 2000 (Table 2). There were no pedestrian fatalities during this time period.

The school principal reported a speeding problem on Morris Avenue. Therefore, a speed survey was conducted on Morris Avenue between Field Place and East 184th Street in order to verify the existence of a speeding problem and to determine its extent.

The northbound vehicles on Morris Avenue between Field Place and East 184th Street were found to be traveling with an 85th percentile speed of 26 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 Morris Avenue between Field Place and East 184th Street are shown in the Appendix at the end of the document.



Figure 3: Looking west along East 184th Street across Morris Avenue (school is off to the left)

3.6.2 Field Place and Morris Avenue

This is an unsignalized T-intersection with a school crosswalk located across the east leg of Field Place. Morris Avenue is a one-way northbound street with one traffic lane and parking on both sides of the roadway. Field Place is the stem of the “T” and is a one-way eastbound street with one traffic lane and parking on both sides of the roadway.

This intersection was the site of one accident between 1998 and 2000 (Table 2). There were no pedestrian fatalities during this time period.



Figure 4: Looking east along Field Place from Morris Avenue (school is on the left)

3.6.3 Creston Avenue and East 184th Street

This is an unsignalized intersection with school crosswalks located across the north and south legs of Creston Avenue. East 184th Street is a two-way street with one traffic lane and one parking lane on each side of the roadway. Creston Avenue is a one-way southbound street with one traffic lane and parking on both sides of the roadway. Higher volumes of traffic use East 184th Street.

This intersection was the site of 53 accidents between 1998 and 2000 (Table 2). Three of these were pedestrian accidents, but none were school-related. There were no pedestrian fatalities during this time period.

The school principal reported a speeding problem on East 184th Street. Therefore, a speed survey was conducted on East 184th Street between Morris Avenue and Creston Avenue in order to verify the existence of a speeding problem and to determine its extent.

The eastbound vehicles on East 184th Street between Morris Avenue and Creston Avenue were found to be traveling with an 85th percentile speed of 21 mph. The westbound vehicles on East 184th Street between Morris Avenue and Creston Avenue were found to be traveling with an 85th percentile speed of 22 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 East 184th Street between Morris Avenue and Creston Avenue are shown in the Appendix at the end of the document.

3.6.4 Field Place and Creston Avenue

This is an unsignalized intersection with school crosswalks located across the north and south legs of Creston Avenue and the west leg of Field Place. Creston Avenue is a one-way southbound street with one traffic lane and parking on both sides of the roadway. Field Place is a one-way eastbound street with one traffic lane and parking on both sides of the roadway. Higher volumes of traffic use Creston Avenue.

This intersection was the site of four accidents between 1998 and 2000 (Table 2). Two of these were pedestrian accidents, but were not school-related. There were no pedestrian fatalities during either this period.



Figure 5: Looking north along Creston Avenue across Field Place (school is on the left)



Figure 6: Looking west along Field Place across Creston Avenue (school is up the street on right)

3.6.5 Jerome Avenue and West 184th Street

This is a four-leg signalized intersection with school crosswalks located on the north leg of Jerome Avenue and east leg of East 184th Street. Jerome Avenue is a two-way street with two travel lanes and a parking lane on each side of the roadway. Jerome Avenue also has an elevated train aligned over the center of the roadway. The supports for the train are located so that they provide an inner and an outer lane for each direction of travel.

East 184th Street is a two-way street with one travel lane and one parking lane on each side of the roadway. With the exception of some commercial uses near Jerome Avenue, the street is mostly residential in character.

This intersection was the site of 26 accidents between 1998 and 2000 (Table 2). Three were pedestrian accidents, of which one was a school-related accident. In the school-related accident, two 12-year-old pedestrians were struck while in the roadway at 3:00 pm on Monday, April 17, 2000. Both pedestrians suffered incapacitating injuries. The traffic signal was not reported as a contributing factor in the accident, and the pedestrians were reported as performing “other actions in roadway.” The roadway surface was reported to be wet due to rainy weather conditions.

3.6.6 Creston Avenue and East 183rd Street

This is a four-leg, signalized intersection with no school crosswalks. East 183rd Street is a two-way, east-west street with one travel lane and one on-street parking lane on each side of the roadway. Creston Avenue is a one-way southbound street with one travel lane and on-street parking on both sides of the roadway.

There were a total of 30 accidents reported at this intersection between 1998 and 2000 (Table 2), including seven pedestrian accidents. Two of the pedestrian accidents were school-related. The first school-related accident occurred at approximately 5:00 pm on Thursday, September 30, 1999. The accident involved an eight-year-old pedestrian who was reported struck by a vehicle as he/she was crossing the street with the traffic signal within a marked crosswalk. The pedestrian was reported to have sustained a “possible injury”. The accident occurred on a straight and level roadway segment. The roadway surface was dry and the weather was clear. The second school-related accident occurred at approximately 3:00 pm on Monday, May 22, 2000. This accident also involved an eight-year-old pedestrian who was reported as being struck by a vehicle as he/she was crossing the street with no traffic signal and a marked crosswalk (it should be noted that this is a signalized intersection). The pedestrian was reported to have sustained a “possible injury”. The accident occurred on a straight and level roadway segment. The roadway surface was dry and the weather was clear.

3.6.7 Morris Avenue and East 183rd Street

This is a four-leg signalized intersection with school crosswalks located across the east and west legs of East 183rd Street and the north leg of Morris Avenue. East 183rd Street is a two-way street with one traffic lane and a parking lane on each side of the roadway. Morris Avenue is a one-way northbound street with one traffic lane and parking on both sides of the roadway.

There were 14 accidents reported at this intersection between 1998 and 2000 including one pedestrian accident which was not school-related (Table 2). There were no pedestrian fatalities reported at this intersection during this time period.

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of M.S. 399, and were found to be adequate in all directions and approaches, based upon a child pedestrian walking at the rate of 3 feet per second. Signal timings are shown in Table 4.

TABLE 4: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
East 184th Street and Morris Avenue				
crossing East 184 th Street	34	19	15	NO
crossing Morris Avenue	34	19	15	NO
East 183rd Street and Morris Avenue				
crossing East 183 rd Street	34	29	15	NO
crossing Morris Avenue	34	20	15	NO

*Note – A rate of 3 ft/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate
This intersection has a 40-second cycle*

3.8 PHYSICAL CONDITIONS

3.8.1 Roadways and Sidewalks

The roadways in the vicinity of M.S. 399 are generally in fair condition. Sidewalks are 10 to 15 feet wide on the school block face, and are in fair condition and of adequate width.

3.8.3 Pedestrian Ramps

Overall, pedestrian ramps in the area of the school appear to be standard, except for the southeast corner of Morris Avenue and Field Place where a pedestrian ramp is missing.



Figure 7: Looking south along Morris Avenue at Field Place. Note missing pedestrian ramp on southeast corner

4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY

This section describes the proposed measures to improve school pedestrian safety around M.S. 399. 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 M.S. 399 is discussed as follows, and is shown in more detail in Exhibit 6 at the end of this section. See section 4.3 for additional recommendations for this area from the report on P.S.33, a nearby priority school.

4.1 SHORT-TERM MEASURES

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

Install “NO STANDING 7AM-4PM SCHOOL DAYS” signs for a distance of thirty feet on East 184th Street in front of 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” signs

Install “YIELD TO PEDESTRIAN” signs at intersection approaches with substantial vehicle–student pedestrian volumes.

“YIELD TO PEDESTRIAN” signs are recommended on the following approaches of signalized intersections around M.S. 399:

- Eastbound approach of East 184th Street at Creston Avenue
- Northbound approach of Morris Avenue at Field Place

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

➤ Place advanced stop bars before school crosswalks

The MUTCD and New York City DOT standard for placement of a stop bar is four feet in advance of a marked crosswalk. At signalized 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 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 the crosswalk before motor vehicles turn.)

Ten foot advanced stop bars are recommended before all school crosswalks.

➤ Other Traffic Issues

The principal related that parking across the school driveway is often a problem. The principal also reported that drivers often do not stop for students crossing Morris Avenue during fire drills and at dismissal, even with faculty out in the street indicating for them to stop. It is therefore recommended that:

- NYCDOT should consider arranging a meeting with representatives of the local police precinct and school officials in order to discuss this problem and identify corrective actions.
- Administer student pedestrian safety education program

There were mid-block accidents reported on West 184th Street between Morris Avenue and Creston Avenue and also on Creston Avenue between East 184th Street and Field Place. It is therefore recommended that:

 - The school should participate in the NYCDOT Safety Education Program to educate students to use designated school crosswalks while crossing the street, not to cross mid-block, not to cross against signals, and not to run out between cars.
- NYCDOT Pilot Program to reduce speeds
 - NYCDOT's existing Pilot Program to reduce speeds (20 mph) has been implemented on Morris Avenue from East 183rd Street to East 184th Street. Its effectiveness is being evaluated by the DOT.

4.2 LONG-TERM MEASURES

- Consider curb extensions at the following locations:
 - Northwest corner of East 183rd Street and Morris Avenue intersection.
 - Northeast corner of Morris Avenue and Field Place intersection.
 - Northeast and southeast corners of Creston Avenue and East 184th Street intersection.
 - Northwest and southwest corners of Creston Avenue and Field Place intersection.

The purpose of the curb extension is to provide additional space for pedestrians, 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.

4.3 ADDITIONAL RECOMMENDATIONS FROM PRIORITY SCHOOLS IN THE VICINITY OF M.S. 399

4.3.1 RECOMMENDATIONS FOR P.S. 33 (TIMOTHY DWIGHT SCHOOL):

The following recommendations are proposed as part of the proposed measures to improve school pedestrian safety around nearby P.S. 33, which is also a priority school.

- Install "NO STANDING 7AM – 4PM SCHOOL DAYS" signs

There are existing "NO PARKING 7AM – 4PM SCHOOL DAYS EXCEPT BOARD OF EDUCATION" signs along east side of Jerome Avenue in front of the school main entrance. Replace these signs with "NO STANDING 7AM –

4PM SCHOOL DAYS” signs for a distance of 240 feet in front of the school main entrance. (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

➤ Place advance stop bars before school crosswalks

The MUTCD and New York City DOT standard for placement of a stop bar is four feet in advance of a marked crosswalk. At signalized 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 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 foot advanced stop bars are recommended before all school crosswalks.

➤ Create time-specific “NO STANDING 2PM – 4PM SCHOOL DAYS” (“NO LOADING OR UNLOADING ZONE”)

Truck pick-up and delivery operations, coinciding with dismissal time and double-parking, lead to congestion around the Jerome Avenue entrance of the school.

It is therefore recommended to:

- Install signs reading “NO STANDING 2PM – 4PM SCHOOL DAYS” for the area on the west side of the roadway for a distance of 60 feet across from the main entrance of the school on Jerome Avenue.

➤ Change existing pedestrian crosswalk to a school crosswalk

According to observations made during the fieldwork, and the school catchment area, students are arriving at the school from West 184th Street and using the pedestrian crosswalks at the west leg of East 184th Street and the south leg of Jerome Avenue.

It is therefore recommended to:

- Convert the existing pedestrian crosswalks across the west and the south legs of East 184th Street and the south leg of Jerome Avenue into school crosswalks and install the associated advanced warning signs.

➤ Assign crossing guards at the following intersections:

There were 49 pedestrian accidents including three fatalities and seven school-related accidents between 2001 and 2004 (including three fatalities and two school-related accidents at Jerome Avenue/East Fordham Road, three school-related accidents at Jerome Avenue/East 184th Street, and two school-related accidents at East Fordham Road/Walton Avenue).

There is only one crossing guard assigned at the intersection of Jerome Avenue and East Fordham Road. It is therefore recommended to:

- Assign a crossing guard to the intersection of East Fordham Road and Walton Avenue
- Assign a crossing guard to the intersection of Jerome Avenue and East 184th Street.

➤ Request police officer for traffic control in front of main entrance

To address the school's concerns regarding congestion in front of the school's main entrance on Jerome Avenue, representatives should request the assistance of an NYPD officer to provide traffic control and parking enforcement at this location during arrival and dismissal times. This would provide for a safer environment for P.S. 33 students.

➤ Administer student pedestrian safety education program

As mentioned earlier, the intersections around the school block experienced seven school-related accidents during the four-year period between 2001 and 2004. In addition to the crossing guards, it is also proposed that:

- The school should participate in the NYCDOT Safety Education Program to educate the students to cross the street using the designated school crosswalks, not to cross mid-block, not to cross against signals, and not to run out between parked vehicles.

➤ NYCDOT Pilot Program to reduce speeds

NYC's existing Pilot Program to reduce speeds (15 mph) has been implemented on Walton Avenue from 181st Street to Burnside Avenue. Its effectiveness is being evaluated by DOT.

➤ Relocate Traffic Signal Pole

There is no pedestrian ramp at the northwest corner of Jerome Avenue and East 184th Street for eastbound pedestrians. The traffic signal pole presently at the northeast corner is in conflict with the pedestrian crosswalk at this intersection.

It is therefore recommended to:

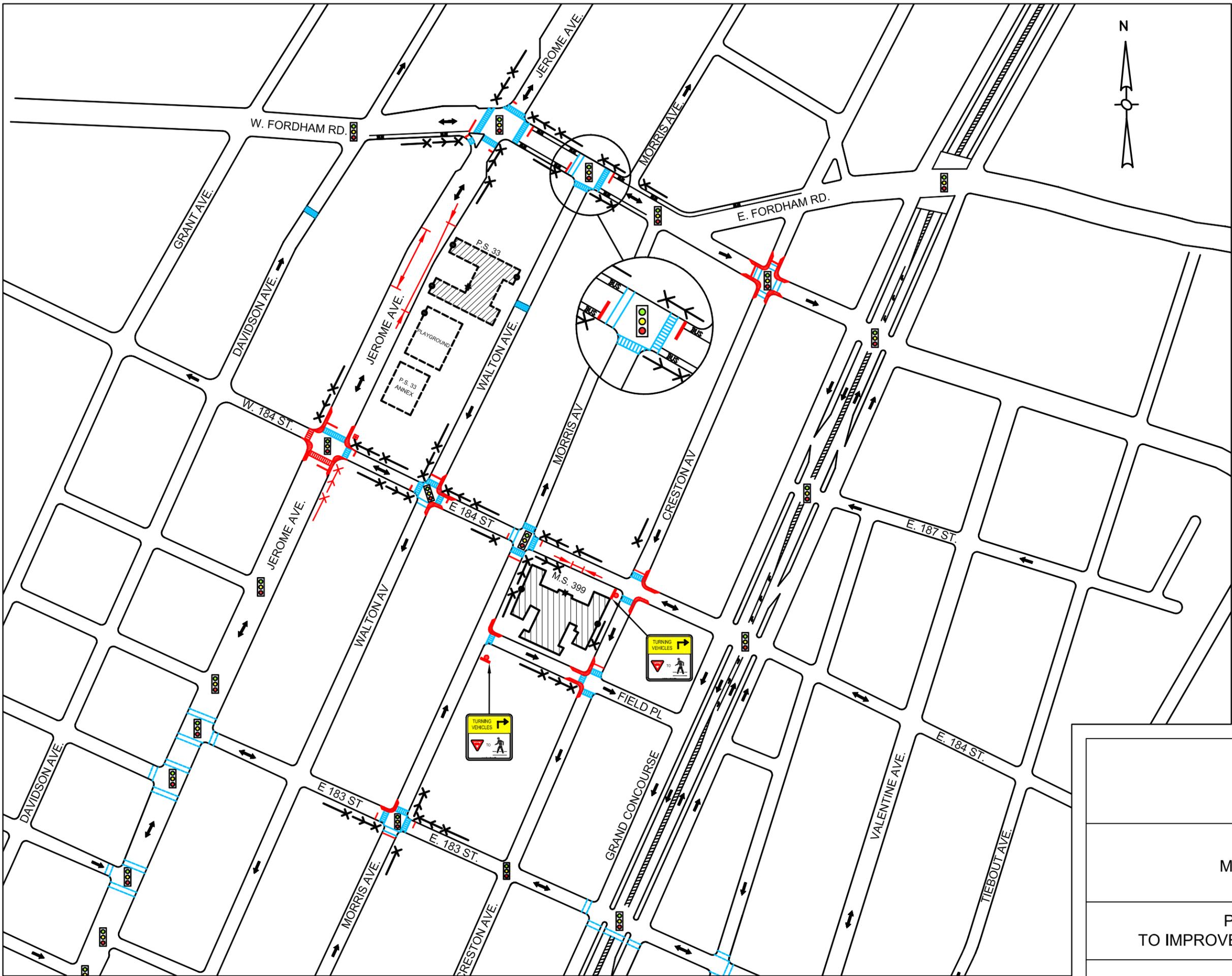
- Relocate the signal pole at the northeast corner.

➤ Consider curb extensions at the following locations:

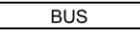
- At all four corners of Jerome Avenue at its intersection with East 184th Street.
- Northeast and southeast corners of West 184th Street and Walton Avenue intersection.
- At all four corners of East 188th Street and Creston Avenue intersection.

The purpose of the curb extension is to provide additional waiting space for pedestrians, 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.

It should be noted that the recent improvements at the intersection of Jerome Avenue and West Fordham Road included curb extensions along Jerome Avenue (bus stop neckdowns) that were extended to the elevated column. These improvements also included a curb extension along West Fordham Road (northwest corner). The extended curbs not only provide additional pedestrian space at this very busy intersection, but also reduce the crossing distance across the north and south legs of Jerome Avenue and the west leg of West Fordham Road.



LEGEND

-  MAIN ENTRANCE
-  OTHER ENTRANCES
-  EXISTING TRAVEL DIRECTION
-  EXISTING ADVANCE WARNING SIGN OR SCHEDULED TO BE INSTALLED
-  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY OR SCHEDULED TO BE INSTALLED
-  EXISTING BUS LANE
-  SIGNALIZED LOCATION
-  EXISTING SCHOOL CROSSWALK
-  EXISTING PEDESTRIAN CROSSWALK
-  EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
-  EXISTING SPEED REDUCER (HUMP)
-  PROPOSED ADVANCE WARNING SIGN
-  PROPOSED SCHOOL CROSSWALK WARNING ASSEMBLY
-  PROPOSED SCHOOL CROSSWALK
-  PROPOSED TRAFFIC SIGN
-  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
-  PROPOSED "NO STANDING 2 PM - 4 PM SCHOOL DAYS"
-  PROPOSED "NO STANDING 7 AM - 4 PM SCHOOL DAYS"
-  TRAFFIC SIGNAL POLE TO BE RELOCATED
-  PROPOSED CURB EXTENSION (NECKDOWN)

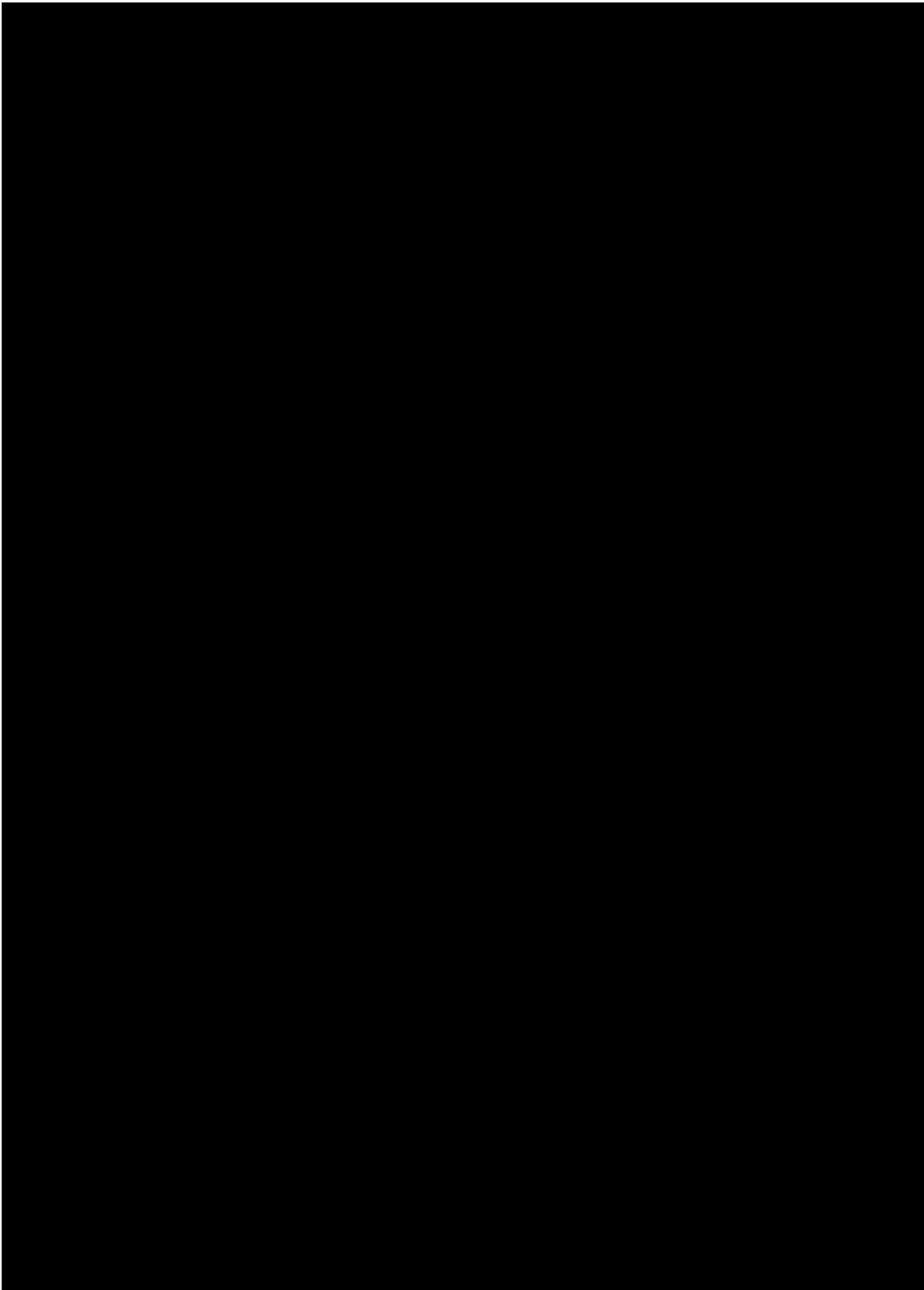
1" = 200'

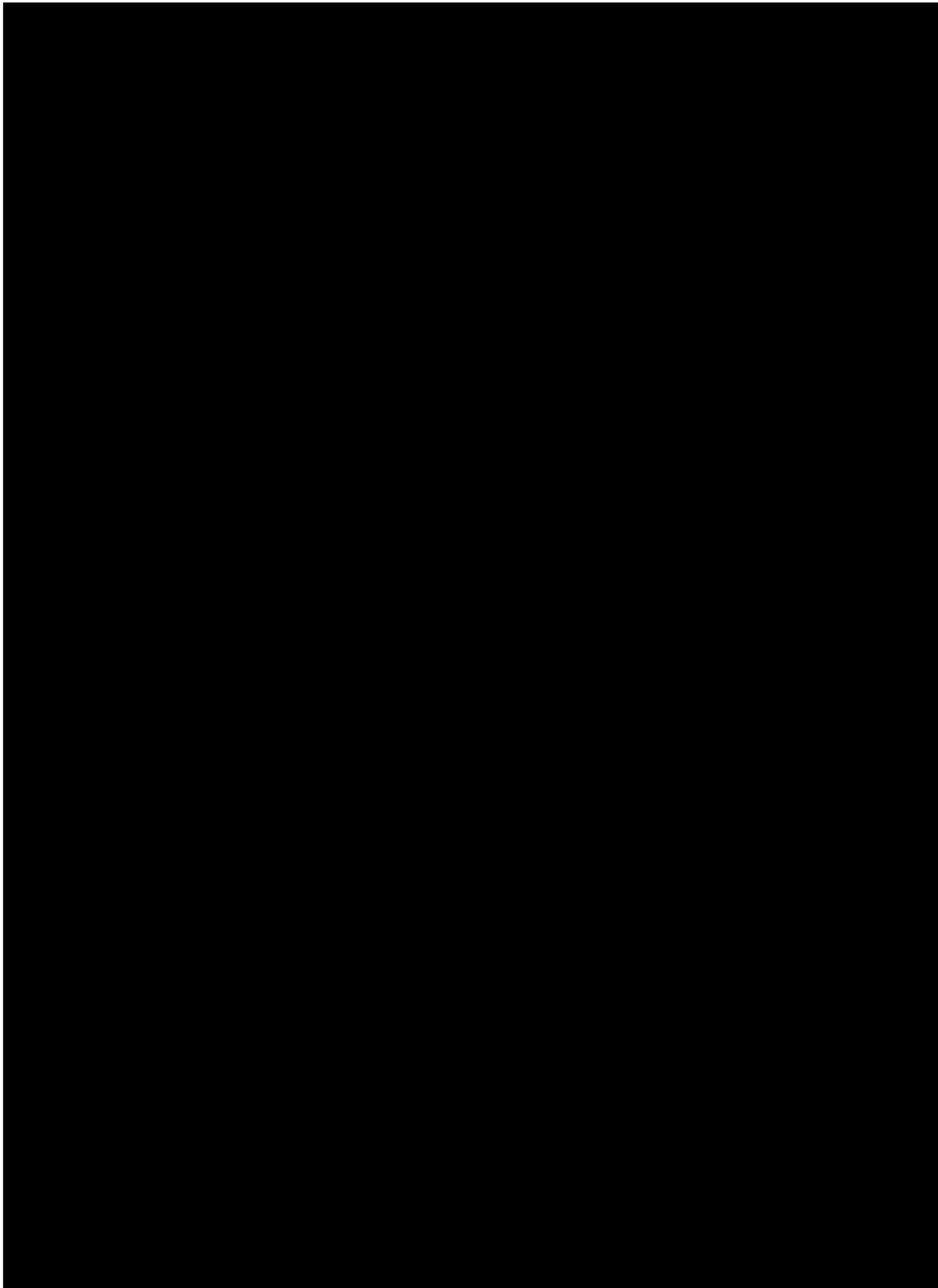
EXHIBIT 6

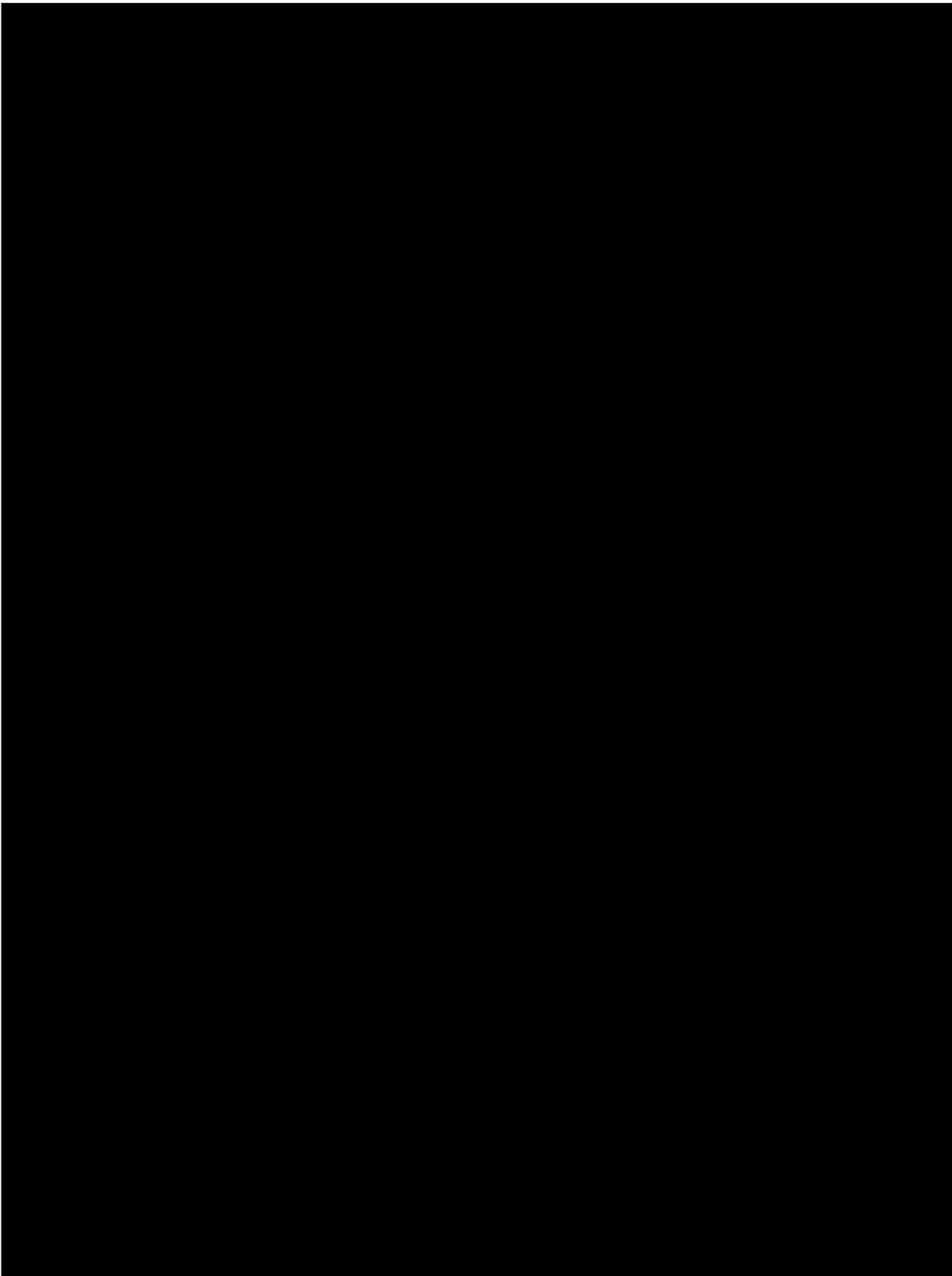
M.S. 399 / M.S. 319 BRONX

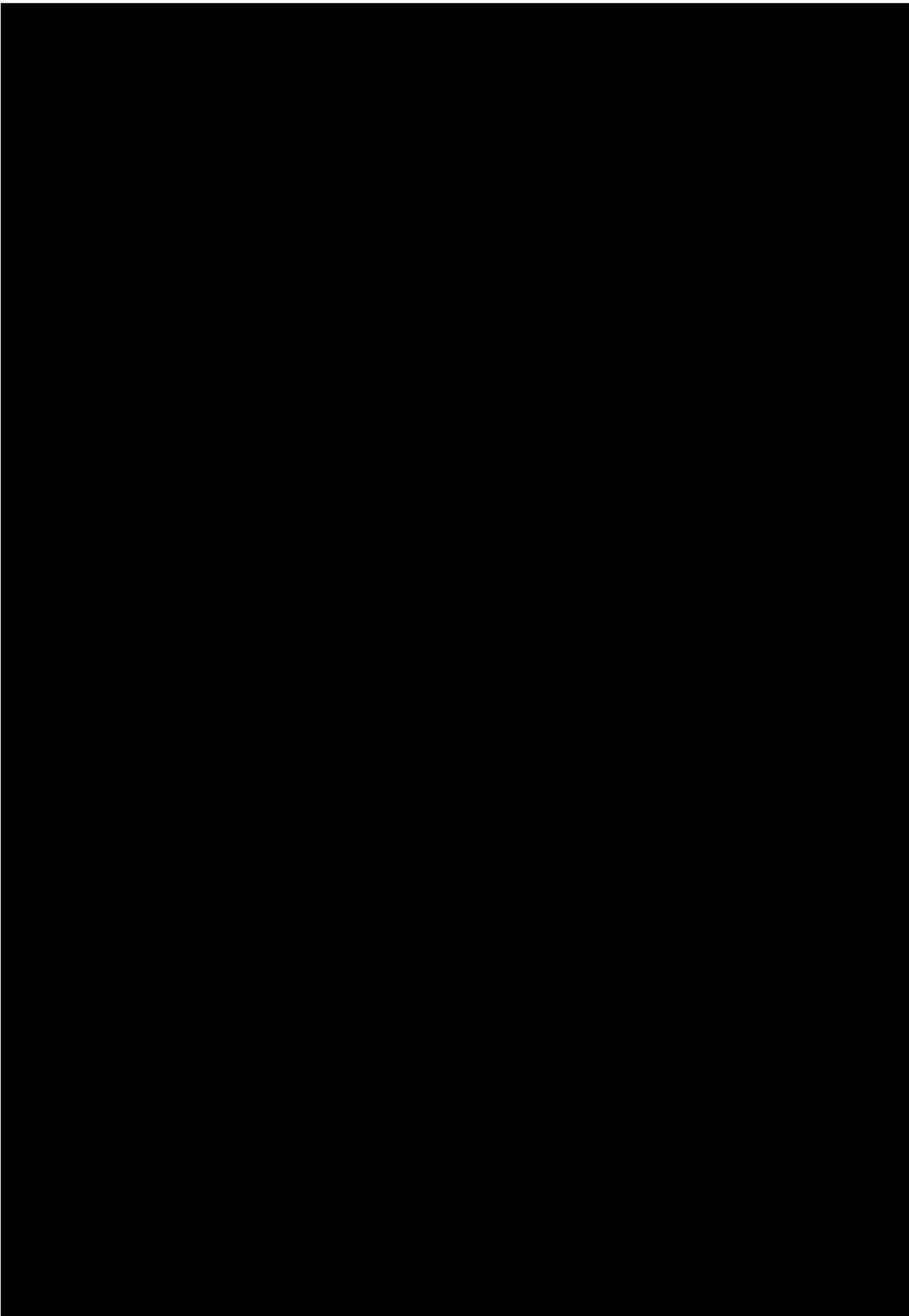
POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY

APPENDIX









SPOT SPEED STUDY

Date: **June 1, 2005**
 Location: **184th Street between Morris Avenue & Creston Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

Time: **12:35 PM**

School: **M.S. 399**
 Direction: **Eastbound**
 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	2	10.5%	10.5%	32	512
17	0	0.0%	10.5%	0	0
18	6	31.6%	42.1%	108	1944
19	2	10.5%	52.6%	38	722
20	3	15.8%	68.4%	60	1200
21	2	10.5%	78.9%	42	882
22	4	21.1%	100.0%	88	1936
23	0	0.0%	100.0%	0	0
24	0	0.0%	100.0%	0	0
25	0	0.0%	100.0%	0	0
26	0	0.0%	100.0%	0	0
27	0	0.0%	100.0%	0	0
28	0	0.0%	100.0%	0	0
29	0	0.0%	100.0%	0	0
30	0	0.0%	100.0%	0	0
31	0	0.0%	100.0%	0	0
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	19	100.0%		368	7196

Mean Speed = 19.4 mph
 Standard Deviation = 1.9 mph
 Margin of Error (95% Confidence) = ± 0.9 mph

Median Speed = 19.4 mph
 15th Percentile Speed = 17.3 mph
 85th Percentile Speed = 21.4 mph

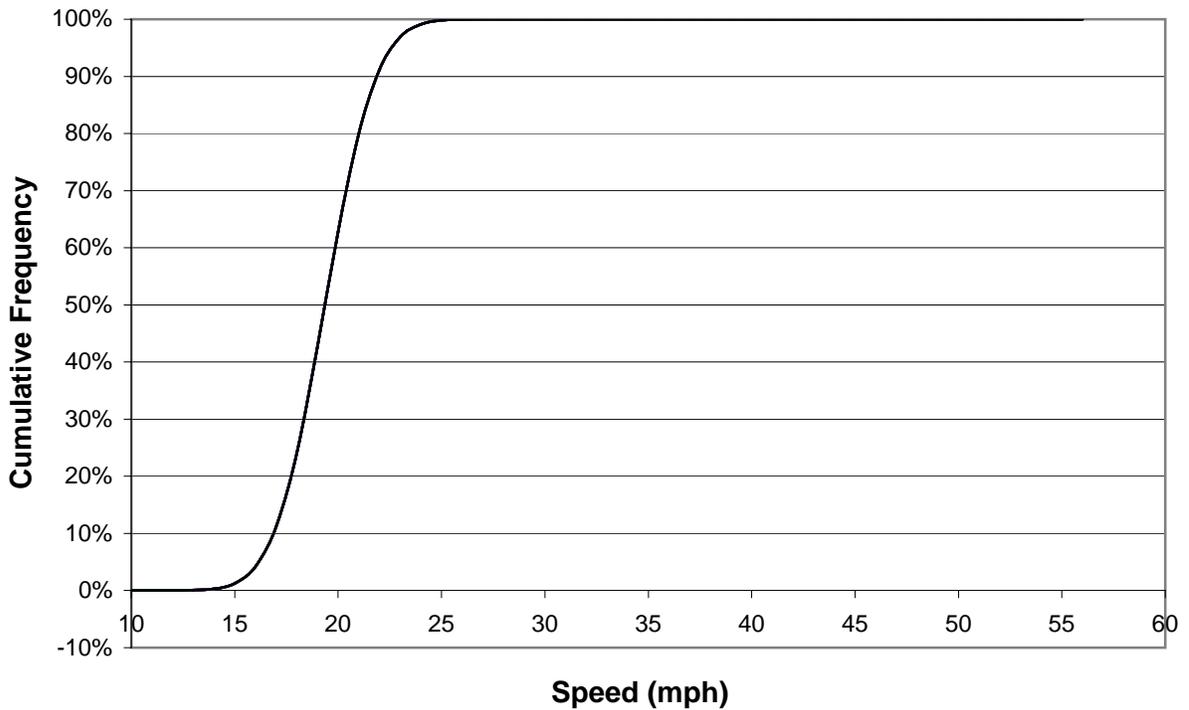
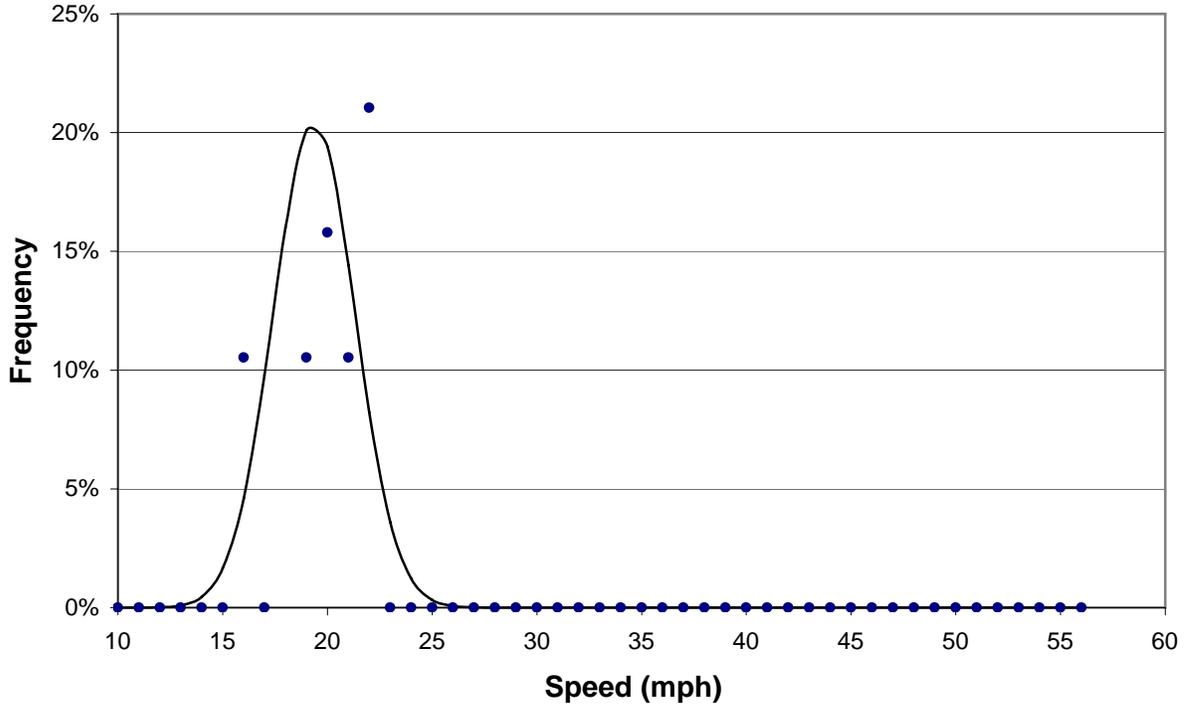
SPOT SPEED STUDY

Date: **June 1, 2005**
 Location: **184th Street between Morris Avenue & Creston Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

Time: **12:35 PM**
 School: **M.S. 399**
 Direction: **Eastbound**
 Comments:

Mean Speed = 19.4 mph
 Standard Deviation = 1.9 mph
 Margin of Error (95% Confidence) = ± 0.9 mph

Median Speed = 19.4 mph
 15th Percentile Speed = 17.3 mph
 85th Percentile Speed = 21.4 mph



SPOT SPEED STUDY

Date: **June 1, 2005** Time: **12:35 pm**
 Location: **Morris Avenue south of 184th Street**
 Surveyor: **Richard Calvache & Hugo Salinas**

School: **M.S. 399**
 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	1	1.6%	1.6%	16	256
17	2	3.2%	4.8%	34	578
18	12	19.4%	24.2%	216	3888
19	0	0.0%	24.2%	0	0
20	9	14.5%	38.7%	180	3600
21	6	9.7%	48.4%	126	2646
22	7	11.3%	59.7%	154	3388
23	7	11.3%	71.0%	161	3703
24	2	3.2%	74.2%	48	1152
25	6	9.7%	83.9%	150	3750
26	3	4.8%	88.7%	78	2028
27	2	3.2%	91.9%	54	1458
28	2	3.2%	95.2%	56	1568
29	0	0.0%	95.2%	0	0
30	2	3.2%	98.4%	60	1800
31	0	0.0%	98.4%	0	0
32	0	0.0%	98.4%	0	0
33	0	0.0%	98.4%	0	0
34	0	0.0%	98.4%	0	0
35	0	0.0%	98.4%	0	0
36	1	1.6%	100.0%	36	1296
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	62	100.0%		1369	31111

Mean Speed = 22.1 mph Median Speed = 22.1 mph
 Standard Deviation = 3.8 mph 15th Percentile Speed = 18.1 mph
 Margin of Error (95% Confidence) = ± 0.9 mph 85th Percentile Speed = 26.0 mph

SPOT SPEED STUDY

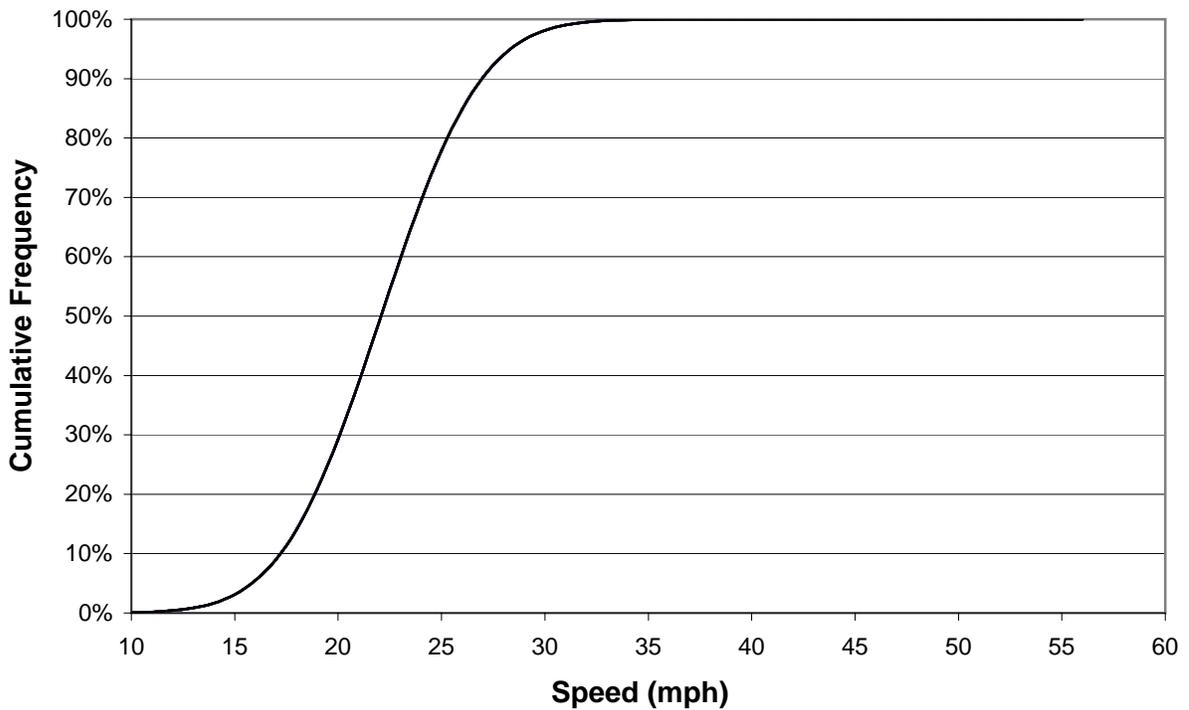
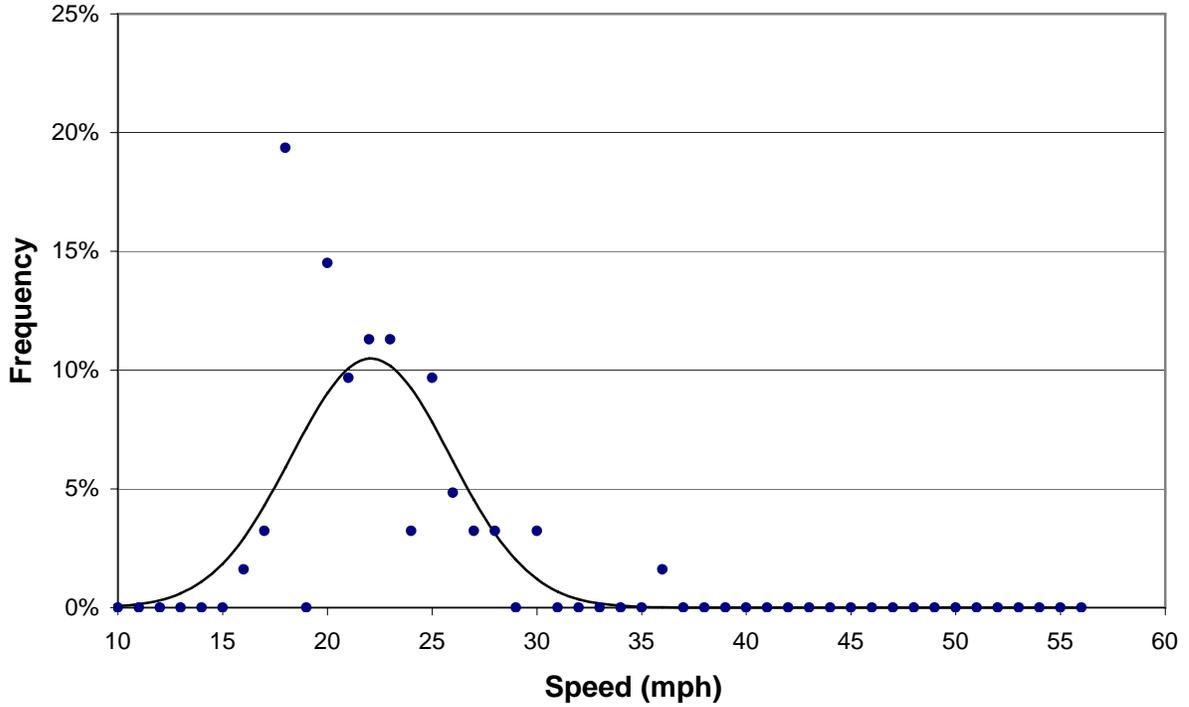
Date: **June 1, 2005**
Location: **Morris Avenue south of 184th Street**
Surveyor: **Richard Calvache & Hugo Salinas**

Time: **12:35 pm**

School: **M.S. 399**
Direction: **Northbound**
Comments:

Mean Speed = 22.1 mph
Standard Deviation = 3.8 mph
Margin of Error (95% Confidence) = ± 0.9 mph

Median Speed = 22.1 mph
15th Percentile Speed = 18.1 mph
85th Percentile Speed = 26.0 mph



SPOT SPEED STUDY

Date: **June 1, 2005**
 Location: **184th Street between Morris Avenue & Creston Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

Time: **12:35 pm**

School: **M.S. 399**
 Direction: **Westbound**
 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	6	15.0%	15.0%	96	1536
17	0	0.0%	15.0%	0	0
18	11	27.5%	42.5%	198	3564
19	6	15.0%	57.5%	114	2166
20	9	22.5%	80.0%	180	3600
21	2	5.0%	85.0%	42	882
22	2	5.0%	90.0%	44	968
23	3	7.5%	97.5%	69	1587
24	0	0.0%	97.5%	0	0
25	0	0.0%	97.5%	0	0
26	0	0.0%	97.5%	0	0
27	1	2.5%	100.0%	27	729
28	0	0.0%	100.0%	0	0
29	0	0.0%	100.0%	0	0
30	0	0.0%	100.0%	0	0
31	0	0.0%	100.0%	0	0
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	40	100.0%		770	15032

Mean Speed = 19.3 mph
 Standard Deviation = 2.3 mph
 Margin of Error (95% Confidence) = ± 0.7 mph

Median Speed = 19.3 mph
 15th Percentile Speed = 16.8 mph
 85th Percentile Speed = 21.7 mph

SPOT SPEED STUDY

Date: **June 1, 2005** Time: **12:35 pm**
 Location: **184th Street between Morris Avenue & Creston Avenue**
 Surveyor: **Richard Calvache & Hugo Salinas**

School: **M.S. 399**
 Direction: **Westbound**
 Comments:

Mean Speed = 19.3 mph Median Speed = 19.3 mph
 Standard Deviation = 2.3 mph 15th Percentile Speed = 16.8 mph
 Margin of Error (95% Confidence) = ± 0.7 mph 85th Percentile Speed = 21.7 mph

