

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



School Safety Engineering Project

FINAL REPORT: Immaculate Conception, Bronx



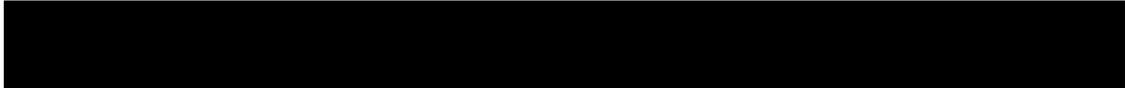
**Prepared by
The RBA Group and URBITRAN Associates Inc.**



February 15, 2006

**School Safety Engineering Project
Final Report: Immaculate Conception School, Bronx**

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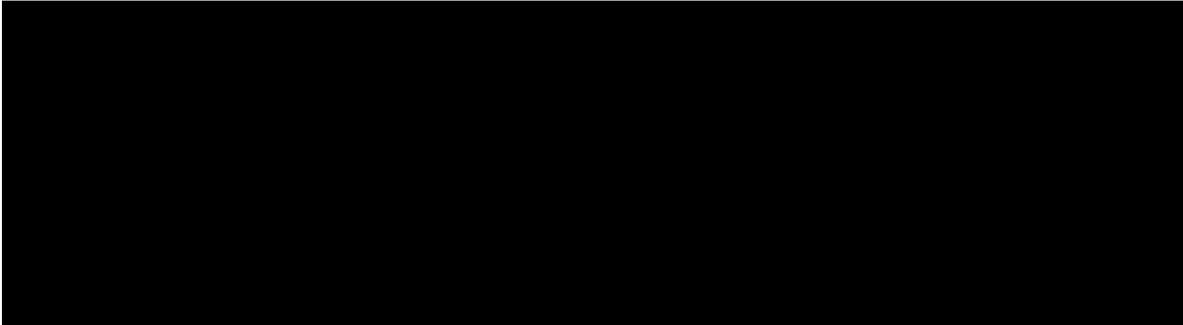
1. INTRODUCTION

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). Immaculate Conception 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

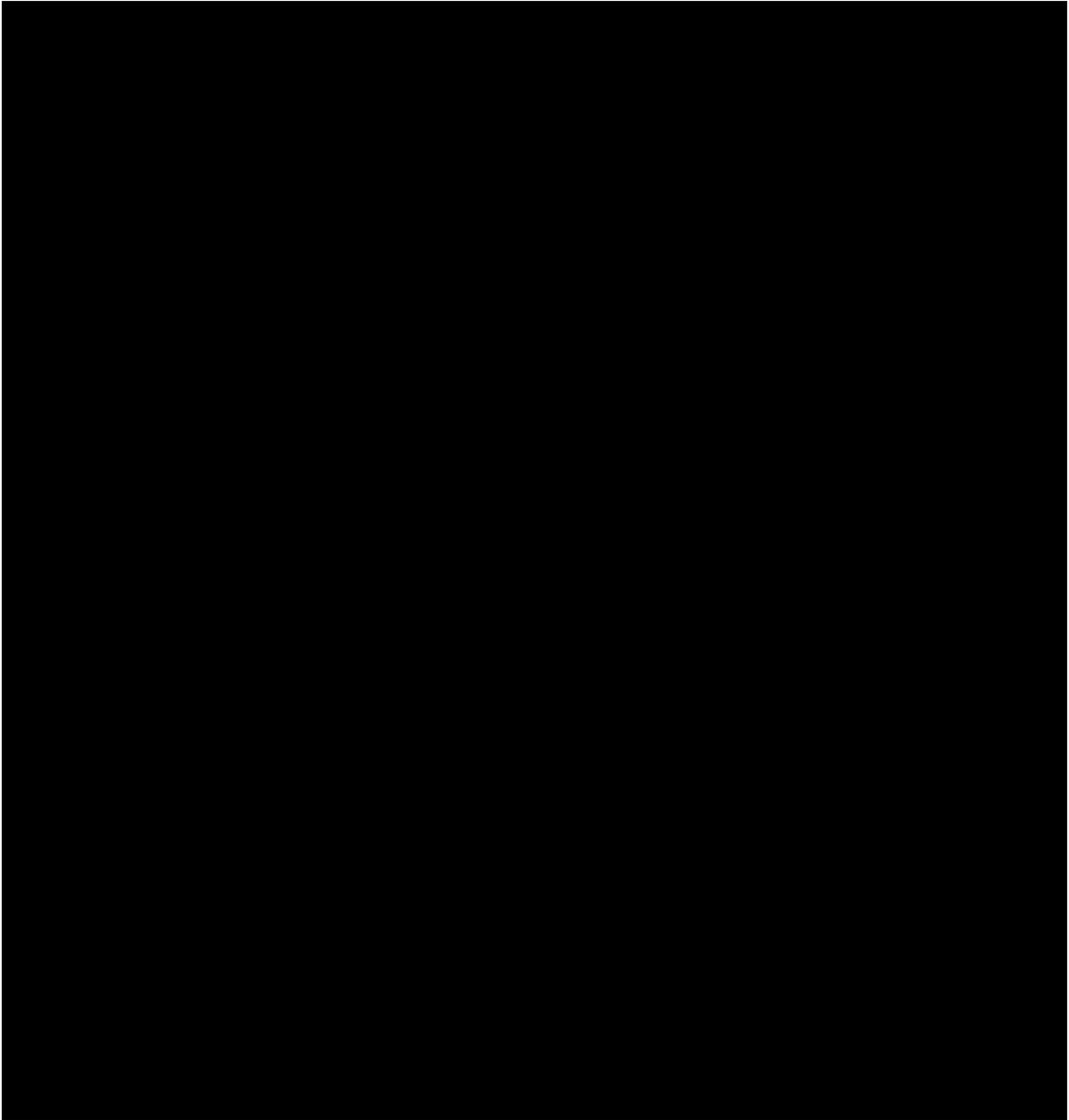
Exhibit 1, at the end of this section, shows an aerial view of the neighborhood surrounding the school. Immaculate Conception School is bounded by East 151st Street to the north, East 150th Street to the south, Melrose Avenue to the east, and Courtlandt Avenue to the west. The area surrounding the school is generally residential in character with primarily high-density, multi-level, apartment buildings. However, the area east of the school including Melrose Avenue is mainly commercial. Third Avenue, a major commercial corridor with significant vehicle and pedestrian traffic, is located one block to the east of Immaculate Conception School. Commercial activity is also found on East 149th Street, two blocks to the north of the school. East 149th Street generates significant vehicular and pedestrian traffic.

2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant staff and the Principal, Parish Bookkeeper and Parish Secretary of Immaculate Conception School met at the school on the afternoon of May 10, 2004. According to the school principal, some of the problems faced by students and staff are as follows:

- Vehicles traveling at excessive speed, especially on East 151st Street in front of the school and on Melrose Avenue between 150th and 151st Streets.
- Parked vehicles blocking crosswalks
- Students crossing at mid-block locations
- Significant traffic volumes due to commercial activity on Melrose Avenue, Third Avenue, and East 149th Street
- Verizon trucks are parked on the north sidewalk along 150th Street between Courtlandt and Melrose Avenues damaging the sidewalk
- Delivery trucks for Cookies Department Store, located on the southwest corner of 150th Street and Melrose Avenue, also park on the sidewalks along 150th Street

(See the Appendix for a summary of school concerns, and the school's survey response.)





2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL

Immaculate Conception School, similar to other private schools, does not have a defined catchment area such as defined by the Department of Education (DOE) for public schools.

Table 1 presents the mode of travel for Immaculate Conception School as identified by school representatives.

TABLE 1: MODE OF TRAVEL	STUDENTS (Percentage)
Walk	10%
Driven By Car	50%
School Bus	0%
MTA Bus	25%
MTA Subway	15%
Bicycle	0%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

A local delicatessen on the northwest corner of the East 151st Street and Melrose Avenue intersection, and several other stores and restaurants located along Melrose Avenue, Courtlandt Avenue, East 149th Street, and a McDonald's on Third Avenue generate significant vehicle and pedestrian traffic around Immaculate Conception.

2.8 CROSSING GUARD LOCATIONS

According to the school representatives, school crossing guards are assigned to the following intersections:

- East 151st Street and Courtlandt Avenue
- East 151st Street and Melrose Avenue

The crossing guard locations are shown in Exhibit 3 at the end of this section.

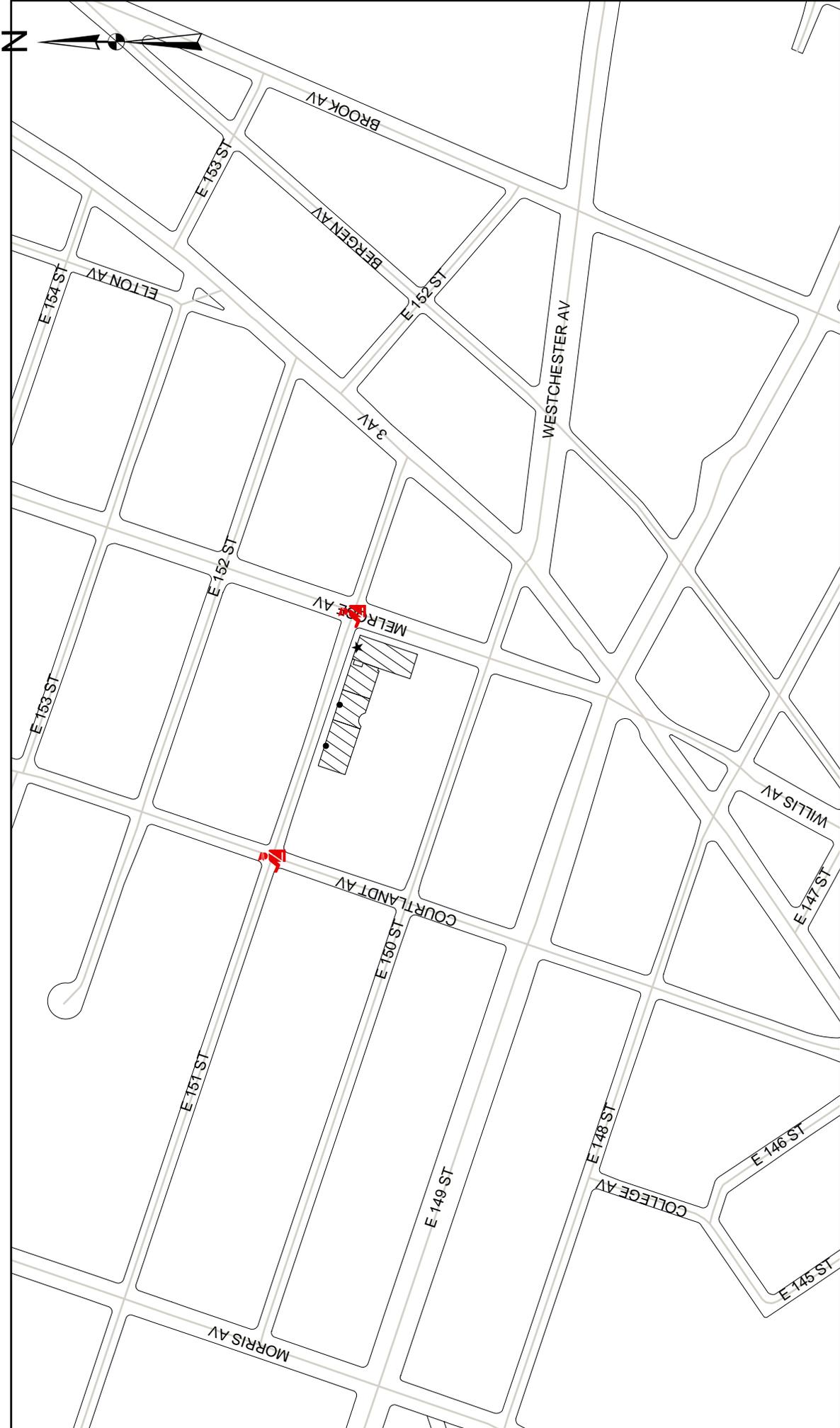


Figure 3: Crossing guard at intersection of East 151st Street and Melrose Avenue at dismissal time



0 250 500 1,000 Feet

EXHIBIT 1
IMMACULATE CONCEPTION SCHOOL BRONX
AERIAL PHOTOGRAPH



LEGEND:

CROSSING GUARD LOCATION

EXHIBIT 3

IMMACULATE CONCEPTION SCHOOL BRONX



CROSSING GUARDS LOCATION

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

Immaculate Conception School did not provide the school bus transportation as of June 3, 2004, the date the school was visited. According to the school's questionnaire response, approximately forty-percent (40%) of the student take public transportation, which consists of twenty-five percent (25%) riding a city bus and fifteen percent (15%) riding the subway to and from the school.

3.2 PARENT DROP-OFF OPERATIONS

According to school's questionnaire response, approximately fifty percent (50%) of the students are being dropped-off in the morning. During the dismissal time vehicles were observed to be double-parked on 151st Street and also on Melrose Avenue to pick-up the students.

3.3 PARKING REGULATIONS

Parking regulations around the school block-faces are shown in Exhibit 4 at the end of this section.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

Exhibit 2, at the end of Section 2, shows the existing signals, and school signs and pavement markings assigned to Immaculate Conception School. 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 accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as "existing" in Exhibit 6.

3.5 ACCIDENT SUMMARY

The number and severity of accidents at a location are typical indicators used to help determine the existence and severity of any potentially safety-related situations. Such situations are then examined for possible solutions and/or remedies.

Exhibit 5, at end of this section, and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (NYS DMV) in the vicinity of Immaculate Conception School for a three-year period from January 1, 1998 to December 1, 2000. The NYS DMV data provides some detail relating to the cause of the accident. Table 3 is a summary of more recent accident data obtained from the New York City Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the NYS DMV data.

In the vicinity of Immaculate Conception School (within a 700-foot radius around the school), there were 215 accidents reported between 1998 and 2000 including twenty-eight (28) pedestrian accidents (Table 2). Of these twenty-eight (28) pedestrian accidents, there was one pedestrian fatality and two school-related accidents. A school-

related accident is defined as an accident involving a school-age pedestrian (age 4 through 14), occurring on a weekday during the school year. The pedestrian fatality and both school-related accidents occurred at the intersection of East 149th Street and Melrose Avenue/Third Avenue.

The NYPD accident data (Table 3) shows there were three hundred and fifty-six (356) accidents between 2001 and 2004; fifty-two (52) were pedestrian accidents. Of these fifty-two pedestrian accidents, there were no pedestrian fatalities and four school-related accidents. Two of the school-related accidents occurred at the intersection of East 151st Street and Courtlandt Avenue. The intersections of East 150th Street/Melrose Avenue and East 149th Street/Melrose Avenue/Third Avenue each experienced one school-related accident during the four-year period. Further discussions on accidents are included in Section 3.6, Traffic Operations and Issues.

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
E. 151 st St. & Courtlandt Ave.	11	1	0	0
E. 151 st St. & Melrose Ave.	7	1	0	0
E. 151 st St. & Third Ave.	14	3	0	0
E. 150 th St. & Courtlandt Ave.	10	1	0	0
E. 150 th St. & Melrose Ave.	18	2	0	0
E. 150 th St. & Third Ave.	44	2	0	0
E. 149 th St. & Melrose/Third Aves.	111	18	1	2
TOTAL	215	28	1	2

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

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
E. 151 st St. & Courtlandt Ave.	29	6	0	2
E. 151 st St. & Melrose Ave.	34	1	0	0
E. 151 st St. & Third Ave.	35	1	0	0
E. 150 th St. & Courtlandt Ave.	21	0	0	0
E. 150 th St. & Melrose Ave.	21	3	0	1
E. 150 th St. & Third Ave.	61	7	0	0
E. 149 th St. & Melrose/Third Aves.	155	34	0	1
TOTAL	356	52	0	4

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

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 the Immaculate Conception School.

3.6.1 East 151st Street and Courtlandt Avenue

This is a four-leg signalized intersection with school crosswalks located across the south leg of Courtlandt Avenue and east and west legs of East 151st Street. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 60-second cycle length. East 151st Street is a one-way eastbound street with one traffic lane and on-street parking on both sides of the roadway. Courtlandt Avenue is a one-way northbound street with two traffic lanes and on-street parking on both sides of the roadway.

The NYS DMV accident data indicates that there were eleven (11) accidents reported at this intersection between 1998 and 2000 (Table 2); including one (1) pedestrian accident. There were no school-related accidents at this intersection during the same three-year period. The NYPD accident data (Table 3) shows twenty-nine (29) accidents at this intersection between 2001 and 2004. Six (6) accidents involved pedestrians including two school-related accidents. The NYPD accident data does not provide additional information about the accidents. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 4: Looking East on East 151st Street at Courtlandt Avenue intersection

3.6.2 East 151st Street and Melrose Avenue

This is a four-leg signalized intersection with school crosswalks located across the south, east, and west legs of the intersection. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 120-second cycle length between 7:00 am and 7:30 pm. East 151st Street is a one-way eastbound street with one travel lane and on-street parking on both sides of the roadway. However, in front of school building, parking is not permitted on the south side of East 151st Street between 7:00 am and 4:00 pm during school days. Melrose Avenue is a two-way, north-south, street with one traffic lane and on-street parking on both sides of the roadway. There is a bus stop on the east side of Melrose Avenue south of East 151st Street.

A spot speed survey was conducted on East 151st Street between Courtlandt Avenue and Melrose Avenue to determine if there is a speeding problem near the school. The detailed results of the spot speed survey are shown in the Appendix at the end of the document.

In summary, the 85th percentile speed for vehicles traveling on East 151st Street between Courtlandt and Melrose Avenues were found to be 23 miles per hour (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 speed problem and may require appropriate traffic calming measures.

The NYS DMV accident data indicates that there were seven (7) accidents reported at this intersection between 1998 and 2000 including one (1) pedestrian accident (Table 2). The NYPD accident data (Table 3) shows thirty-four (34) accidents at this intersection between 2001 and 2004. There was one pedestrian accident during the same four-year

period. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities or school-related accidents reported at this intersection.



Figure 5: Looking west on East 151st Street at Melrose Avenue intersection



Figure 6: Looking north on Melrose Avenue at East 151st street, truck double-parked facing the wrong way

3.6.3 East 151st Street and Third Avenue

This is a signalized T-intersection with school crosswalks located across all three (the north, south and west) legs. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 120-second cycle length

between 6:30 am and 7:30 pm. East 151st Street is a one-way eastbound street with one travel lane and on-street parking on both sides of East 151st Street. Third Avenue is two-way, north-south, street with one travel lane and on-street parking on each sides of the roadway. There are near side bus stops on both approaches of Third Avenue.

The NYS DMV accident data indicates that there were fourteen (14) accidents reported at this intersection between 1998 and 2000 (Table 2). There were three (3) pedestrian accidents reported during the same three-year period; none of the accidents were school-related. The NYPD accident data (Table 3) shows thirty-five (35) accidents at this intersection between 2001 and 2004. There was one pedestrian accident during the same four-year period. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 7: Looking East on East 151st Street approaching intersection of Third Avenue

3.6.4 East 150th Street and Courtlandt Avenue

This is a four-leg signalized intersection with no school crosswalks. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 60-second cycle length. East 150th Street is a one-way westbound street with one travel lane and permits parking on both sides of the street. Courtlandt Avenue is a one-way northbound street with two travel lanes and on-street parking on both side of the roadway.

The NYS DMV accident data indicates that there were ten (10) accidents reported at this intersection between 1998 and 2000 (Table 2); one (1) was pedestrian accident. The NYPD accident data (Table 3) shows twenty-one (21) accidents at this intersection between 2001 and 2004. There were no pedestrian accidents during the same four-year period. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities or school-related accidents reported at this intersection



Figure 8: Looking north on Courtlandt Avenue across East 150th Street intersection

3.6.5 East 150th Street and Melrose Avenue

This is a four-leg signalized intersection with school crosswalks located across the east and west legs of East 150th Street. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 120-second cycle length between 7:00 am and 7:30 pm. East 150th Street is a one-way westbound street with one travel lane and on-street parking on both sides of the roadway. Melrose Avenue is a two-way, north-south, street with one traffic lane in each direction. Parking is not permitted on the west side of Melrose Avenue. In addition, standing is not permitted on the west side of Melrose Avenue between 7:00 am and 10:00 am Monday through Friday.

A spot speed survey was conducted on Melrose Avenue between East 150th and 151st Streets to determine if there is a speeding problem near the school. The detailed results of the spot speed survey are shown in the Appendix at the end of the document.

The 85th percentile speed for vehicles traveling on northbound Melrose Avenue between East 150th and East 151st Streets were found to be 26 mph. The 85th percentile speed for vehicles traveling on southbound Melrose Avenue between East 151st and East 150th Streets were found to be 23 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 speed problem and may require appropriate traffic calming measures.

The NYS DMV accident data indicates that there were eighteen (18) accidents reported at this intersection between 1998 and 2000 (Table 2). There were two (2) pedestrian accidents reported during the same three-year period; none of the accidents were school-related. The NYPD accident data (Table 3) shows twenty-one (21) accidents at this

intersection between 2001 and 2004. There were three (3) pedestrian accidents during the same four-year period including one school-related accident. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities reported at this intersection.



Figure 9: Looking south along Melrose Avenue toward East 150th street intersection

3.6.6 East 150th Street and Third Avenue/Westchester Avenue

This is a four-leg signalized intersection with no school crosswalks. This intersection has high visibility crosswalks at all legs of the intersection. Vehicular and pedestrian movements at this intersection are controlled by a two-phase traffic signal that operates on a 120-second cycle length between 6:30 am and 7:30 pm. East 150th Street is a one way westbound (out) with one travel lane and permits on-street parking on both sides of the street. Westchester Avenue is a two-way, east-west, street and wide enough to provide two travel lanes and permits on-street parking on both sides of the street.

The NYS DMV accident database indicates that there were forty-four (44) accidents reported at this intersection between 1998 and 2000 (Table 2); two (2) were pedestrian accidents. The NYPD accident data (Table 3) shows sixty-one (61) accidents at this intersection between 2001 and 2004. There were seven (7) pedestrian accidents during the same four-year period. For both accident summary periods (1998-2000 and 2001-2004), there were no pedestrian fatalities or school-related accidents reported at this intersection.



Figure 10: Looking west along East 150th St from Westchester Ave across Third Ave intersection

3.6.7 East 149th Street and Melrose/Third Avenues

This is a five-leg signalized intersection with school crosswalks located across all legs of the intersection. Vehicular and pedestrian movements at this intersection are controlled by a three-phase traffic signal that operates on a 120-second cycle length between 6:30 am and 7:30 pm. East 149th Street is a two-way, east-west, street with two travel lanes in each direction and permits on-street parking on both sides of the street. The eastbound approach of 149th Street also has a left-turn bay. Melrose Avenue, which terminates at East 149th Street, provides one travel lane in each direction and does not permit parking on either side of the street. Third Avenue is a two-way, north-south, street with one travel lane in each direction and does not allow parking on either side of the street.

The NYS DMV accident data indicates that there were one hundred and eleven (111) accidents reported at this intersection between 1998 and 2000 (Table 2); eighteen were pedestrian accidents. Of eighteen (18) pedestrian accidents, there was one (1) fatal pedestrian accident and two (2) school-related accidents.

The fatal accident occurred at 2:00 am on October 3, 1999. The accident involved a forty-one (41) year old pedestrian who was reported to be crossing against the signal. The accident occurred during the nighttime on wet surface and under rainy weather conditions.

The two school-related accidents occurred on May 22, 1998 and June 16, 1998. Both accidents occurred at 6:00 pm and involved thirteen (13) year-old pedestrians. Both pedestrians were reported to be at the intersections and were crossing against the signal. The extent of injury was reported as "Possible Injury".

The NYPD accident data shows one hundred and fifty-five (155) accidents at this intersection between 2001 and 2004 (Table 3). There were thirty-four (34) pedestrian accidents during the same four-year period. Of thirty-four (34) pedestrian accidents,

there was one school-related accident. No pedestrian fatalities were reported at this intersection during the same four-year (2001-2004) period. No further information on the school-related accident is available.



Figure 11: Looking northeast on Third Avenue at the East 149th street / Melrose Avenue intersection



Figure 12: Looking northeast on East 149th Street at Third Ave, students and other pedestrians queuing to cross East 149th Street

3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of Immaculate Conception School, and were found to be adequate based upon a child pedestrian walking at a rate of 3 feet per second. The 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⁽¹⁾ (SECONDS)	TIMING ADJUSTMENT REQUIRED?
East 151st St. & Courtlandt Ave.				
crossing Courtlandt Avenue	36	23	15	NO
crossing 151 st Street	27	35	12	NO
East 151st St. & Melrose Ave.				
crossing Melrose Avenue	50	37	20	NO
crossing East 151 st Street	27	79	12	NO
East 151st St. & Third Ave.				
Crossing Third Avenue	50	34	20	NO
Crossing East 151 st St.	28	82	13	NO
East 150th St. & Melrose Ave.				
crossing Melrose Ave.	50	40	20	NO
crossing East 150 th St.	28	76	13	NO
East 149th St. & Melrose Ave./ Third Aves.				
crossing Third Ave. (south leg)	71	35	27	NO
crossing Melrose/Third Aves.	85	35	32	NO
crossing 149 th St.	60	50	23	NO

1. 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 Immaculate Conception School were observed to be in generally fair condition. Sidewalks are about ten (10) to fifteen (15) feet wide on the school block-faces. They are in fair to good conditions.

3.8.2 Pedestrian Ramps

Overall, the pedestrian ramps in the vicinity of Immaculate Conception School were observed to be standard. However, the pedestrian ramps for the north and south crosswalks located on the east side of Third Avenue at its intersection with East 151st Street are observed to be substandard in terms of grade.

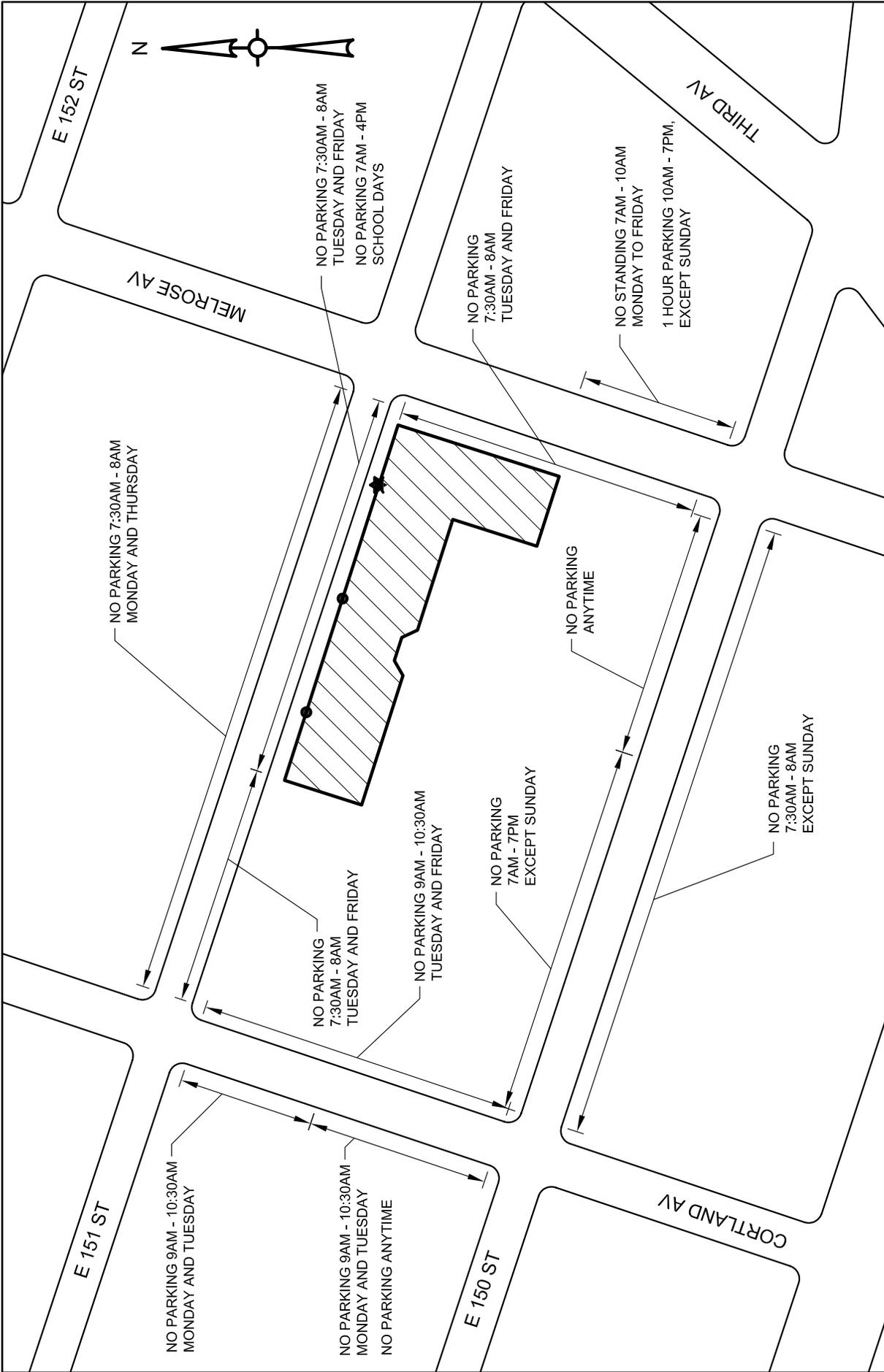
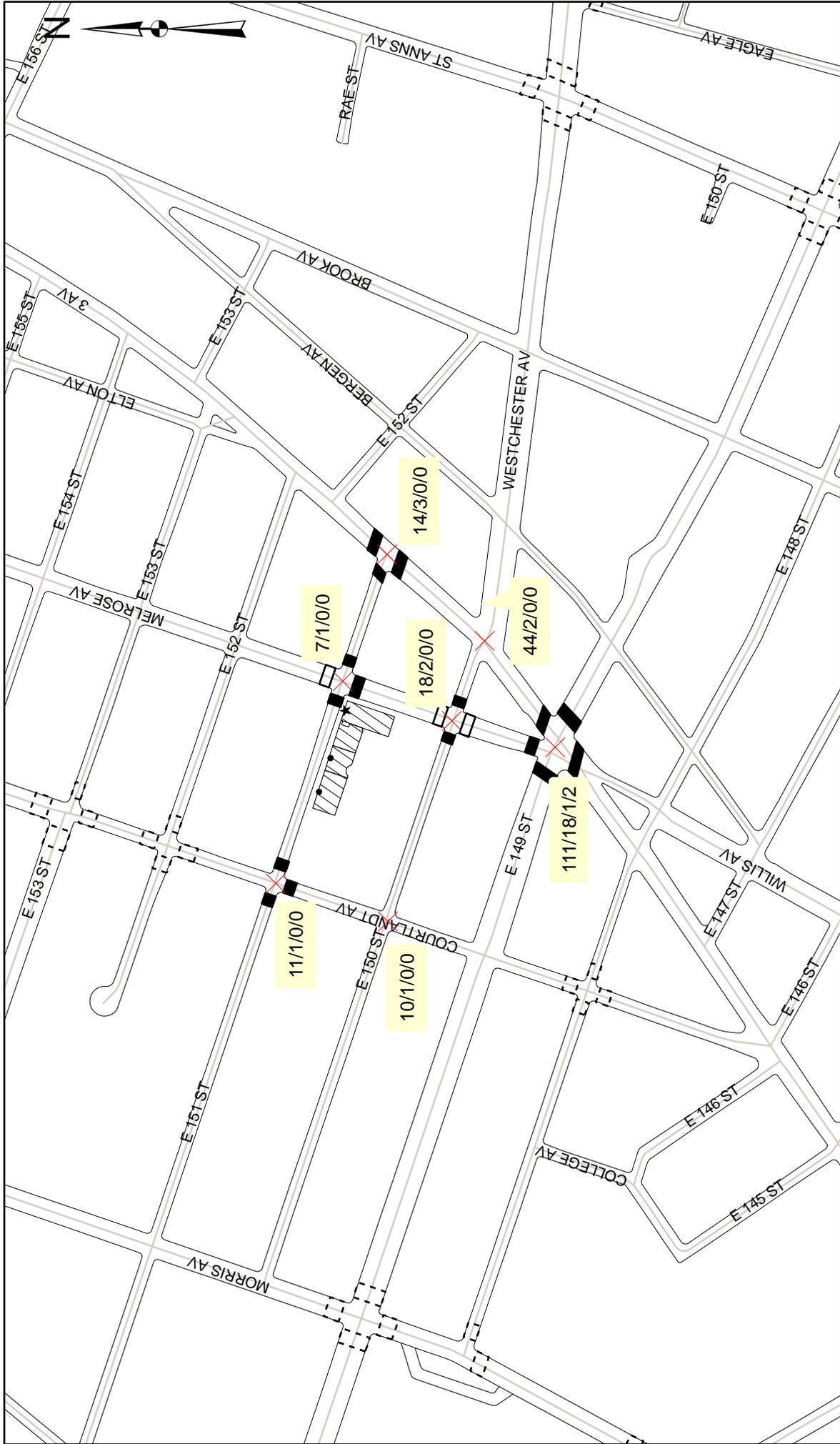


EXHIBIT 4
IMMACULATE CONCEPTION SCHOOL BRONX
EXISTING PARKING REGULATIONS

LEGEND:

-  MAIN ENTRANCE
-  ENTRANCE

0 100 200 FEET



LEGEND:

ACCIDENT LOCATION

SCHOOL CROSSWALK

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

X/X/X

TOTAL ACCD

PED ACCD

FATAL

SCHOOL_PED ACCD



EXHIBIT 5

IMMACULATE CONCEPTION SCHOOL BRONX

ACCIDENT SUMMARY (1998-2000)



4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes the proposed measures to improve school pedestrian safety around the Immaculate Conception School. 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 the Immaculate Conception School is discussed as follows, and is shown in more detail in Exhibit 6 at the end of this section.

4.1 SHORT-TERM MEASURES

➤ *Install “No Standing 7AM-4PM School Days” sign*

Replace the existing “No Parking 7 AM – 4 PM School Days” signs with “No Standing 7AM – 4PM School Days” signs on the south side of East 151st Street in front of the school.

➤ *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 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.)

Four feet (4’) advanced stop bars before school crosswalks are recommended on the following approaches of signalized intersections surrounding Immaculate Conception School:

- Northbound and eastbound approaches of the Courtlandt Avenue and East 151st Street intersection
- Eastbound approach of East 151st Street at its intersection with Melrose Avenue
- Eastbound approach of East 151st Street at its intersections with Third Avenue
- Westbound approach of East 150th Street at its intersection with Melrose Avenue

Ten feet (10’) advanced stop bars before school crosswalks are recommended on the following approaches of signalized intersections surrounding the Immaculate Conception School:

- Northbound and southbound approaches of Melrose Avenue at its intersection with East 151st Street

- Northbound and southbound approaches of Third Avenue at its intersection with East 151st Street
 - At all approaches at the intersection of East 149th Street and Melrose/Third Avenues
- Crossing guard at the intersection of East 149th Street and Melrose Avenue/Third Avenue
- There were eighteen (18) pedestrian accidents at this intersection, including one (1) fatal and two (2) school-related accidents during the three-year period (1998-2000). The same intersection during a four-year (2001-2004) period experienced thirty-four (34) pedestrian accidents. Therefore, it is recommended to assign a school crossing guard to this intersection.
- Reconstruct pedestrian ramps
- The pedestrian ramps for the north and south crosswalks located on the eastside of Third Avenue at its intersections with East 151st Street appear to have a substandard grade.
- It is therefore recommended to reconstruct the northeast and southeast pedestrian ramps.

4.2 LONG-TERM MEASURES

- Consider curb extension at the intersection of East 151st Street and Courtlandt Avenue
- Though a crossing guard is assigned to this intersection, there were six (6) pedestrian accidents during a four-year period between January 2001 and December 2004, including two school-related accidents.
- It is recommended to provide curb extensions at the northwest, southwest, and southeast corners.
- Consider curb extension at the intersection of East 150th Street and Melrose Avenue
- There were three (3) pedestrian accidents during the four-year period between January 2001 and December 2004, including one school-related accident.
- It is recommended to provide curb extensions at the southwest and southeast corners.

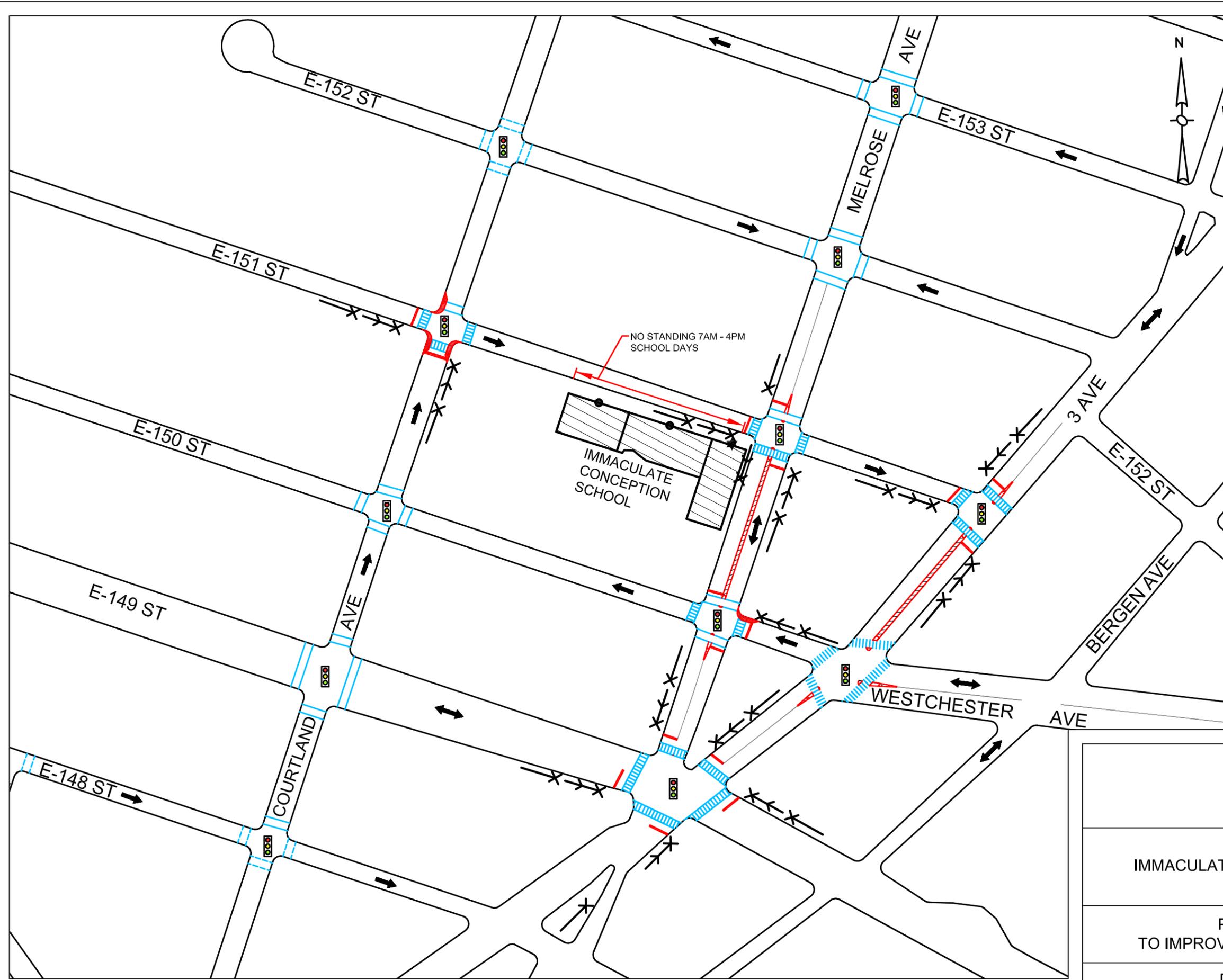
Curb extensions should be installed at the corners as shown in Exhibit 6. The purpose of the curb extension is to shorten the crossing distance for pedestrians, and to reduce the speed of vehicles approaching and turning on school crosswalks. The curb extension will not eliminate or reduce the width of any

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

➤ Consider refuge islands and/or striped medians at the following locations as shown in Exhibit 6:

- The north, south, and east legs of Third Avenue/Westchester Avenue intersection
- The north and south legs of Third Avenue/East 151st Street intersection
- The north and south legs of Melrose Avenue at its intersections with East 150th and East 151st Streets

The refuge islands with extended medians will provide a refuge for pedestrians who do not make the crossing in one cycle. The proposed median should be at least 5-foot wide, 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 refuge islands, curb extensions, and striped medians will be developed during Final Design.



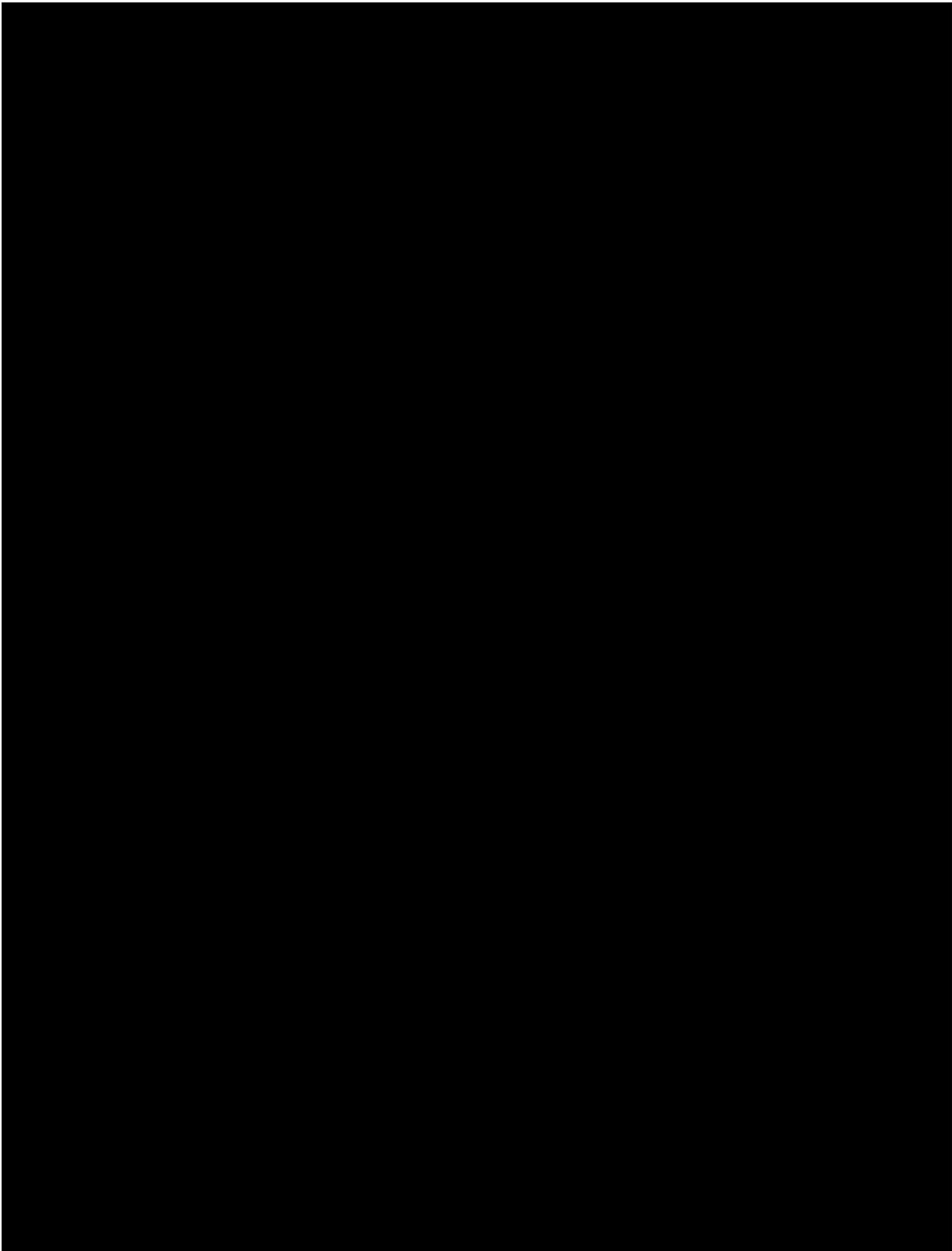
LEGEND

- ★ MAIN ENTRANCE
- OTHER ENTRANCES
- ↔ EXISTING TRAVEL DIRECTION
- X EXISTING ADVANCE WARNING SIGN
- X EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY
- 🚦 SIGNALIZED LOCATION
- ||||| EXISTING HIGH VISIBILITY CROSSWALK
- ▤ EXISTING SCHOOL CROSSWALK
- ▬ EXISTING PEDESTRIAN CROSSWALK
- - - EXISTING SCHOOL CROSSWALK ASSOCIATED WITH ANOTHER SCHOOL
- PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
- ⤴ PROPOSED CURB EXTENSION (NECKDOWN)
- PROPOSED "NO STANDING 7AM - 4PM SCHOOL DAYS"
- POLE TO BE RELOCATED
- ▨ PROPOSED MEDIAN

1" = 200'

EXHIBIT 6
IMMACULATE CONCEPTION SCHOOL BRONX
PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY
DATE: FEBRUARY, 2006

APPENDIX





SPOT SPEED STUDY

Date: **August 31, 2005**
 Location: **Melrose Avenue bet. 150th Street & 151 Street**
 Surveyor: **Richard Calvache**

Time: **12:35 -1:35**

School: **Immaculate Conception**
 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	3	7.9%	7.9%	63	1323
22	4	10.5%	18.4%	88	1936
23	5	13.2%	31.6%	115	2645
24	7	18.4%	50.0%	168	4032
25	7	18.4%	68.4%	175	4375
26	8	21.1%	89.5%	208	5408
27	3	7.9%	97.4%	81	2187
28	1	2.6%	100.0%	28	784
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
	38	100.0%		926	22690

Mean Speed = 24.4 mph
 Standard Deviation = 1.8 mph
 Margin of Error (95% Confidence) = ± 0.6 mph

Median Speed = 24.4 mph
 15th Percentile Speed = 22.5 mph
 85th Percentile Speed = 26.3 mph

SPOT SPEED STUDY

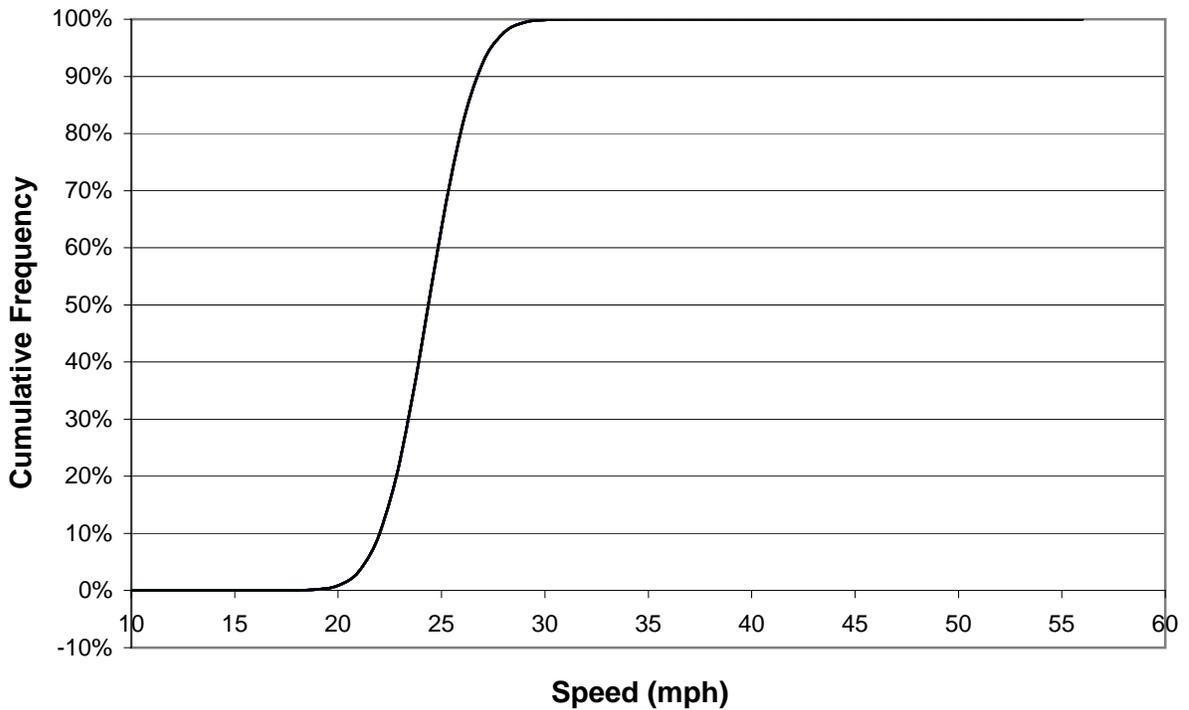
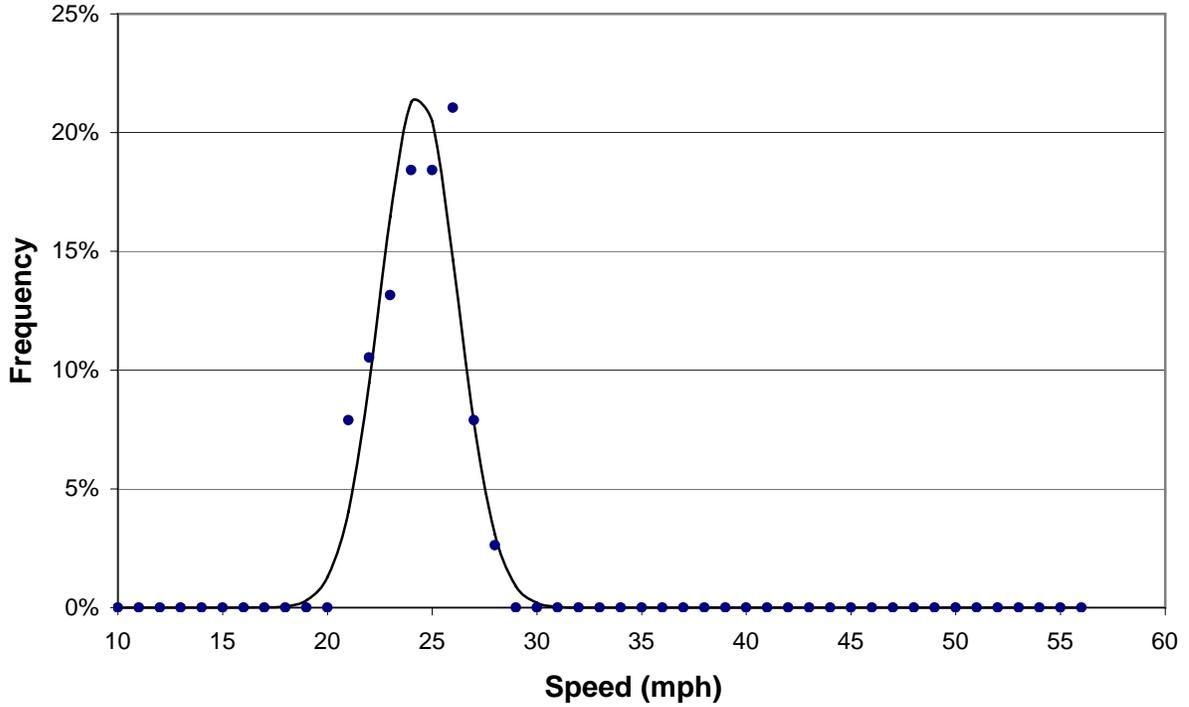
Date: **August 31, 2005**
Location: **Melrose Avenue bet. 150th Street & 151 Street**
Surveyor: **Richard Calvache**

Time: **12:35 -1:35**

School: **Immaculate Conception**
Direction: **Northbound**
Comments:

Mean Speed = 24.4 mph
Standard Deviation = 1.8 mph
Margin of Error (95% Confidence) = ± 0.6 mph

Median Speed = 24.4 mph
15th Percentile Speed = 22.5 mph
85th Percentile Speed = 26.3 mph



SPOT SPEED STUDY

Date: **August 31, 2005**
 Location: **Melrose Avenue bet. 150th Street & 151 Street**
 Surveyor: **Richard Calvache**

Time: **12:35 -1:35**

School: **Immaculate Conception**
 Direction: **Southbound**
 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	2	3.6%	3.6%	36	648
19	3	5.4%	8.9%	57	1083
20	12	21.4%	30.4%	240	4800
21	11	19.6%	50.0%	231	4851
22	21	37.5%	87.5%	462	10164
23	5	8.9%	96.4%	115	2645
24	1	1.8%	98.2%	24	576
25	1	1.8%	100.0%	25	625
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
	56	100.0%		1190	25392

Mean Speed = 21.3 mph
 Standard Deviation = 1.4 mph
 Margin of Error (95% Confidence) = ± 0.4 mph

Median Speed = 21.3 mph
 15th Percentile Speed = 19.8 mph
 85th Percentile Speed = 22.7 mph

SPOT SPEED STUDY

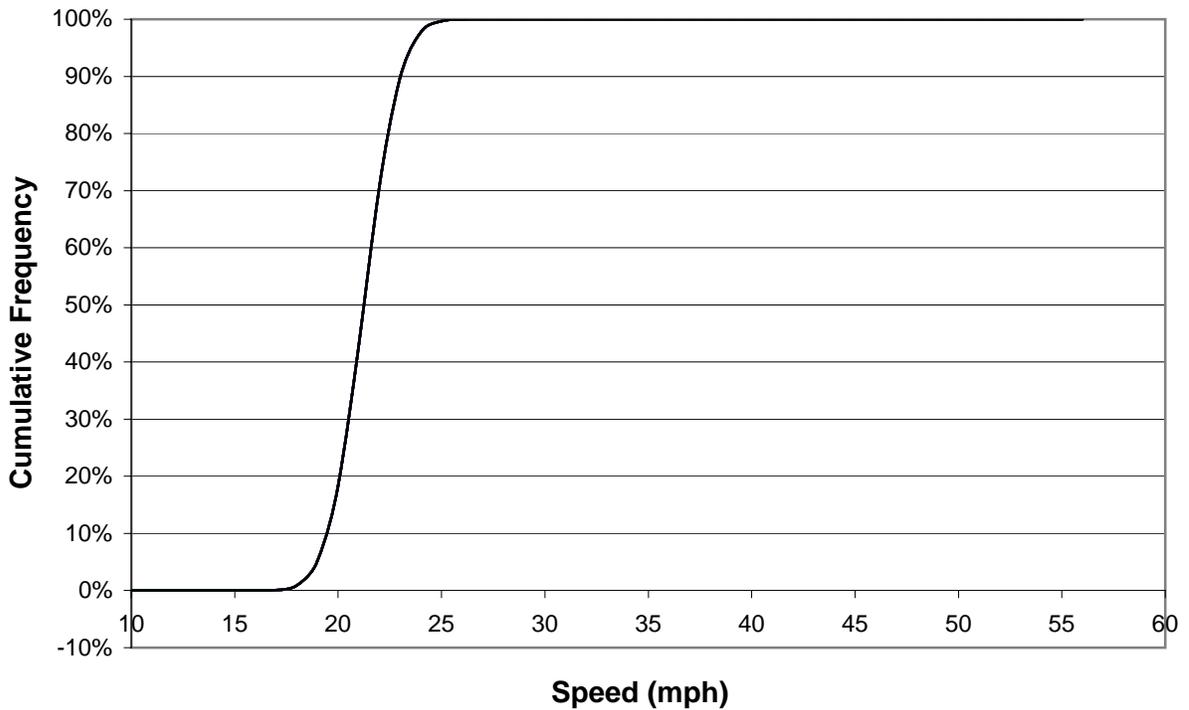
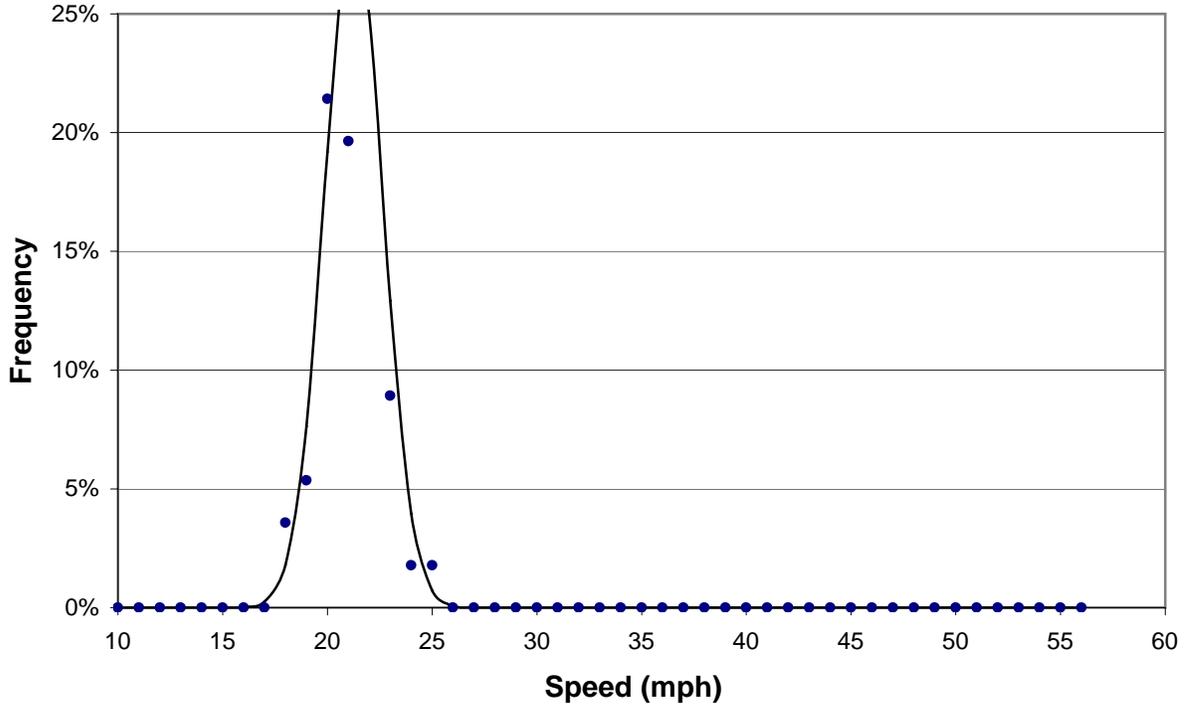
Date: **August 31, 2005**
 Location: **Melrose Avenue bet. 150th Street & 151 Street**
 Surveyor: **Richard Calvache**

Time: **12:35 -1:35**

School: **Immaculate Conception**
 Direction: **Southbound**
 Comments:

Mean Speed = 21.3 mph
 Standard Deviation = 1.4 mph
 Margin of Error (95% Confidence) = ± 0.4 mph

Median Speed = 21.3 mph
 15th Percentile Speed = 19.8 mph
 85th Percentile Speed = 22.7 mph



SPOT SPEED STUDY

Date: **August 31, 2005**
 Location: **151st Street bet. Courtlandt Avenue & Melrose Avenue**
 Surveyor: **Richard Calvache**

Time: **11:30 -12:30**

School: **Immaculate Conception**
 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	1	2.8%	2.8%	16	256
17	1	2.8%	5.6%	17	289
18	2	5.6%	11.1%	36	648
19	5	13.9%	25.0%	95	1805
20	5	13.9%	38.9%	100	2000
21	8	22.2%	61.1%	168	3528
22	5	13.9%	75.0%	110	2420
23	6	16.7%	91.7%	138	3174
24	1	2.8%	94.4%	24	576
25	2	5.6%	100.0%	50	1250
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
	36	100.0%		754	15946

Mean Speed = 20.9 mph
 Standard Deviation = 2.1 mph
 Margin of Error (95% Confidence) = ± 0.7 mph

Median Speed = 20.9 mph
 15th Percentile Speed = 18.8 mph
 85th Percentile Speed = 23.1 mph

SPOT SPEED STUDY

Date: **August 31, 2005**
Location: **151st Street bet. Courtlandt Avenue & Melrose Avenue**
Surveyor: **Richard Calvache**

Time: **11:30 -12:30**

School: **Immaculate Conception**
Direction: **Eastbound**
Comments:

Mean Speed = 20.9 mph
Standard Deviation = 2.1 mph
Margin of Error (95% Confidence) = ± 0.7 mph

Median Speed = 20.9 mph
15th Percentile Speed = 18.8 mph
85th Percentile Speed = 23.1 mph

