

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



**School Safety Engineering Project
FINAL REPORT: St. Charles Borromeo School, Manhattan**



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



JUNE 15, 2006

**School Safety Engineering Project
St. Charles Borromeo School, Manhattan**

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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

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

Under this consultant study, the School Safety Engineering Project, accident 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). St. Charles Borromeo School in Manhattan is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS

2.2 NEIGHBORHOOD DESCRIPTION

St. Charles Borromeo School is located at 214 West 142nd Street, which occupies the city block bounded by West 142nd Street, West 141st Street, Adam C. Powell Boulevard, and Frederick Douglass Boulevard.



Figure 1: Looking East on West 142nd Street, St. Charles Borromeo is on the right

The surrounding area is generally a mix of residential buildings and commercial establishments. West 142nd Street and West 141st Street are primarily residential roadways, with multi-story residential buildings on both sides of the street. MT Calvary Baptist Church is located on the north side of West 142nd Street, directly across from the school, and St. Charles Borromeo church is located on West 141st Street, at the rear of the school. Adam C. Powell Boulevard and Frederick Douglass Boulevard are lined by residential buildings with first floor commercial establishments (see Exhibit 1 for Aerial Photograph).

There are two bus routes operating in the vicinity of St. Charles Borromeo School, M10 and M12. In addition, a subway station for the lines A, B, C, D is located on St. Nicholas Avenue (two blocks east of the school) with entrances at West 145th Street and West

148th Street. A second subway station for the number 3 line is on Lenox Avenue (two blocks west of the school) with entrances at West 145th Street.

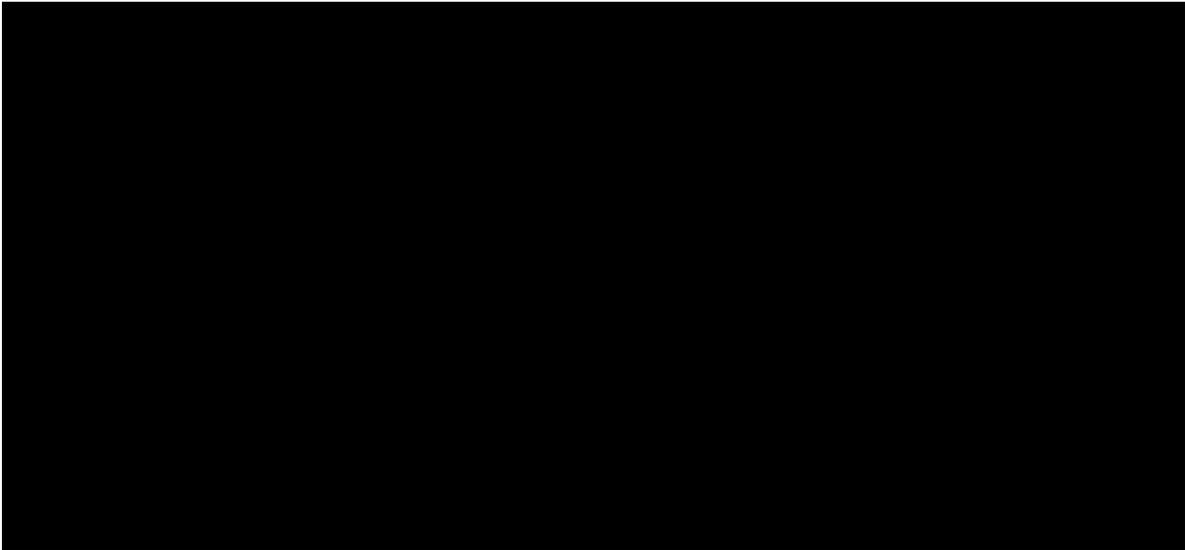
2.3 MEETING WITH SCHOOL REPRESENTATIVES

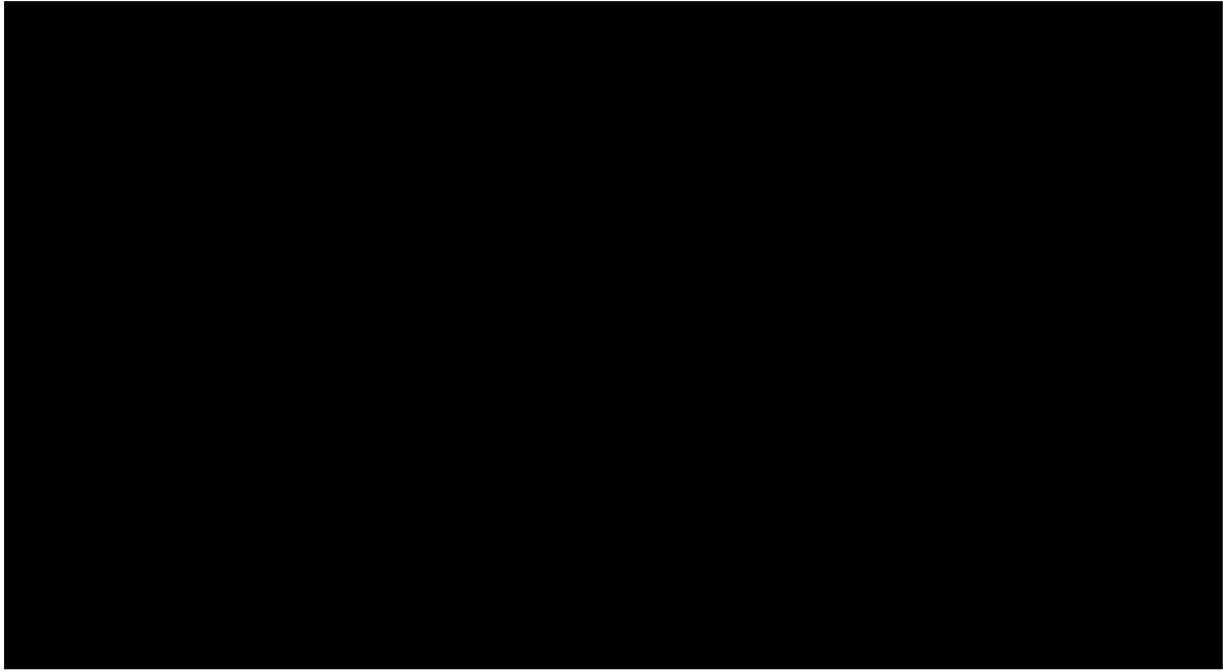
The consultant team and the principal of St. Charles Borromeo met at the school on the morning of May 28, 2004.

According to the school principal, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- Vehicles speeding on West 142nd Street
- Children crossing mid-block at West 142nd Street
- Too much traffic at the intersection of Frederick Douglass Boulevard and West 142nd Street

See the Appendix for a list of attendees.







**EXHIBIT 1
ST CHARLES BORROMEO SCHOOL
MANHATTAN
AERIAL PHOTOGRAPH**

2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL

According to the school principal, 40% of the students walk to St. Charles Borromeo School, 30% are driven by a parent or guardian, and 28% arrive via public transportation. Approximately ten students (2% of students) take a private bus (not a school bus) to and from school. See Table 1 for the school’s estimate of modal split.

TABLE 1: MODE OF TRAVEL	
(As estimated by school officials)	
Description	Percentage
Walk	40%
Driven by a parent or guardian	30%
Private bus	2%
MTA bus or subway	28%
TOTAL	100%

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

There are three other public schools in the vicinity of St. Charles Borromeo: P.S. 123, P.S. 194, and P.S. 200. P.S. 123 is on West 140th Street between Frederick Douglass Boulevard and Edgecombe Avenue, P.S. 194 is on West 144th Street between Frederick Douglass Boulevard and Adam C. Powell Boulevard, and P.S. 200 is on Adam C. Powell Boulevard between West 149th Street and West 150th Street. In addition, a private school, Frederick Douglass Academy is on Adam C. Powell Boulevard between West 149th Street and West 150th Street. P.S. 194 and PS 123 are both priority schools.

There are two bus stops for the M10 on Frederick Douglass Boulevard between West 141st Street and West 142nd Street, one bus stop serving the northbound route and the other bus stop serving the southbound route. In addition, there are two bus stops for the M2 on Adam C. Powell Boulevard between West 141st Street and West 142nd Street, one bus stop for the northbound route and the other bus stop for the southbound route

.

2.8 CROSSING GUARD LOCATIONS

Crossing guards assigned to St. Charles Borromeo School are stationed at the following intersections:

- Adam C. Powell Boulevard and West 142nd Street (Figure 3)
- Frederick Douglass Boulevard and West 142nd Street

Crossing guards assigned to other schools in the area are stationed at several intersections on Adam C. Powell Boulevard, Frederick Douglass Boulevard and Edgecombe Avenue.

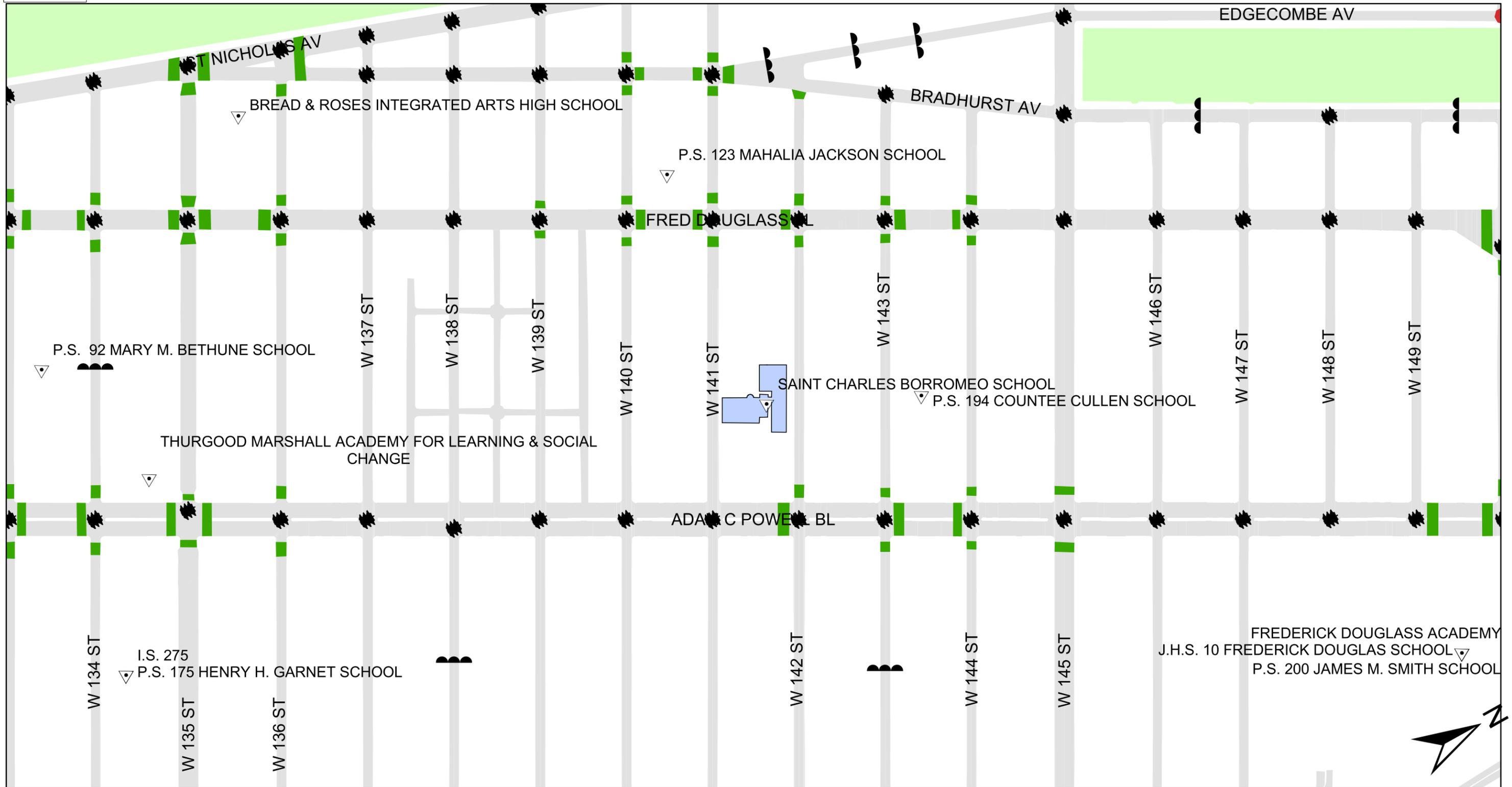
See Exhibit 3 for crossing guard locations.



Figure 3: Crossing guard assisting students during dismissal time



School Traffic Safety Map



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

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

LEGEND:

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

Manhattan
ST CHARLES BORROMEIO SCHOOL

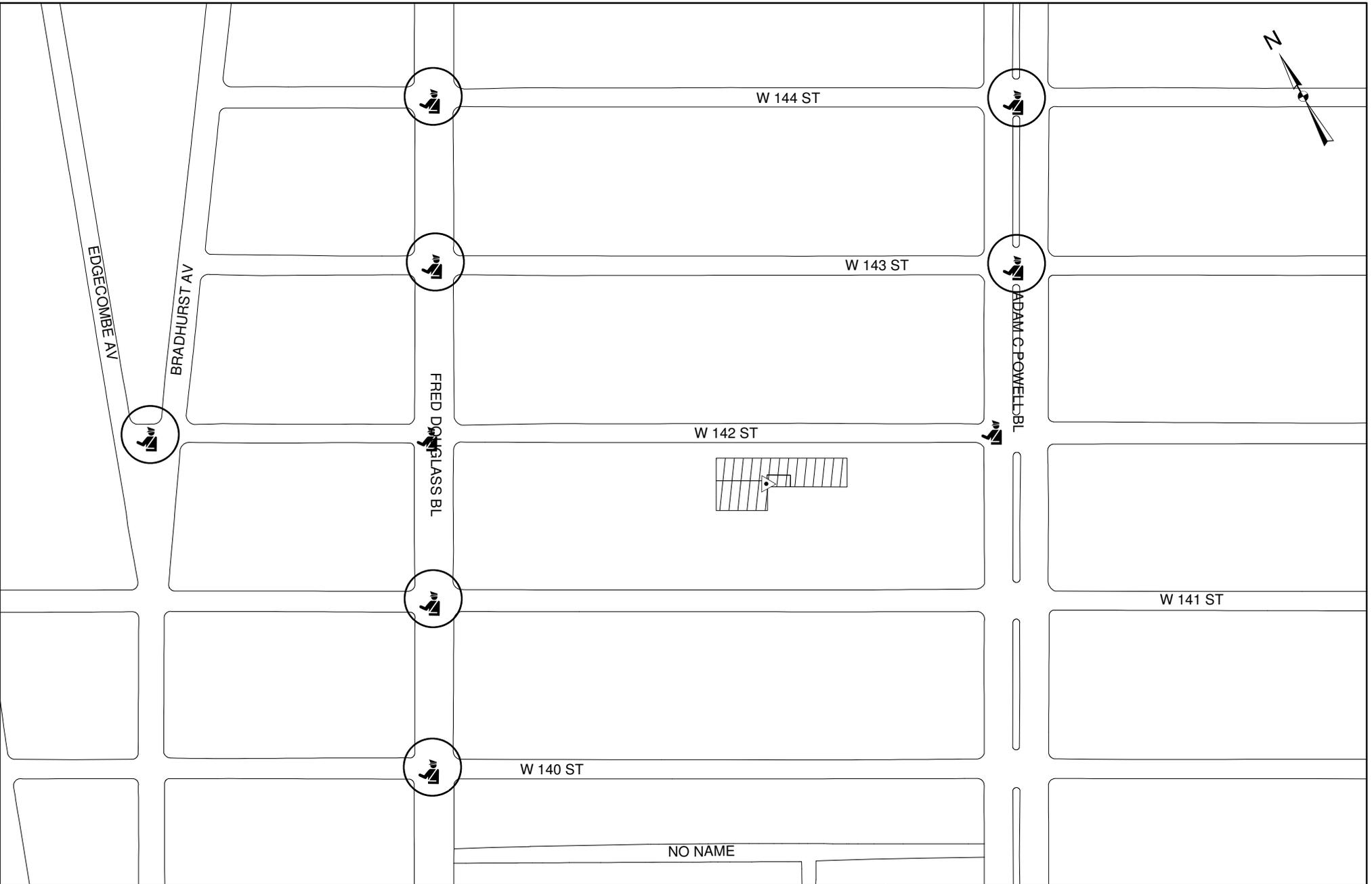
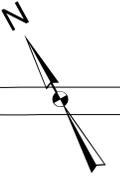
Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION, Iris Weinsahl, COMMISSIONER.

Map created on 11/16/2006

EXHIBIT 2

COMM. BOARD: 110
PRECINCT: 32

1.5.1



1 inch equals 200 feet



SCHOOL CROSSING GUARD ASSIGNED TO ST CHARLES BORROMEO

SCHOOL CROSSING GUARD ASSIGNED TO ANOTHER SCHOOL

EXHIBIT 3
ST CHARLES BORROMEO SCHOOL
MANHATTAN

CROSSING GUARD

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to the school principal, there are no school bus operations for St. Charles Borromeo.

3.2 PARENT DROP-OFF OPERATIONS

The principal indicated that approximately 30% of St. Charles Borromeo students are driven to and from school by parents or guardians. Almost all parents stop on West 142nd Street to drop off or pick up students. Parents typically park their vehicles in the available spots, or double-park their vehicle on both sides of the street (Figure 4).



Figure 4: Parents pick up students on West 142nd Street during dismissal time

3.3 PARKING REGULATIONS

On the south side of West 142nd Street, parking regulations are posted as “NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS, EXCEPT FACULTY” in front of the school (Figure 5).

On the north side of West 142nd Street, “NO PARKING, ANY TIME” is posted in front of MT Calvary Baptist Church.

Street cleaning regulations, which prohibit parking on alternating sides of the roadway, are in place near the school.

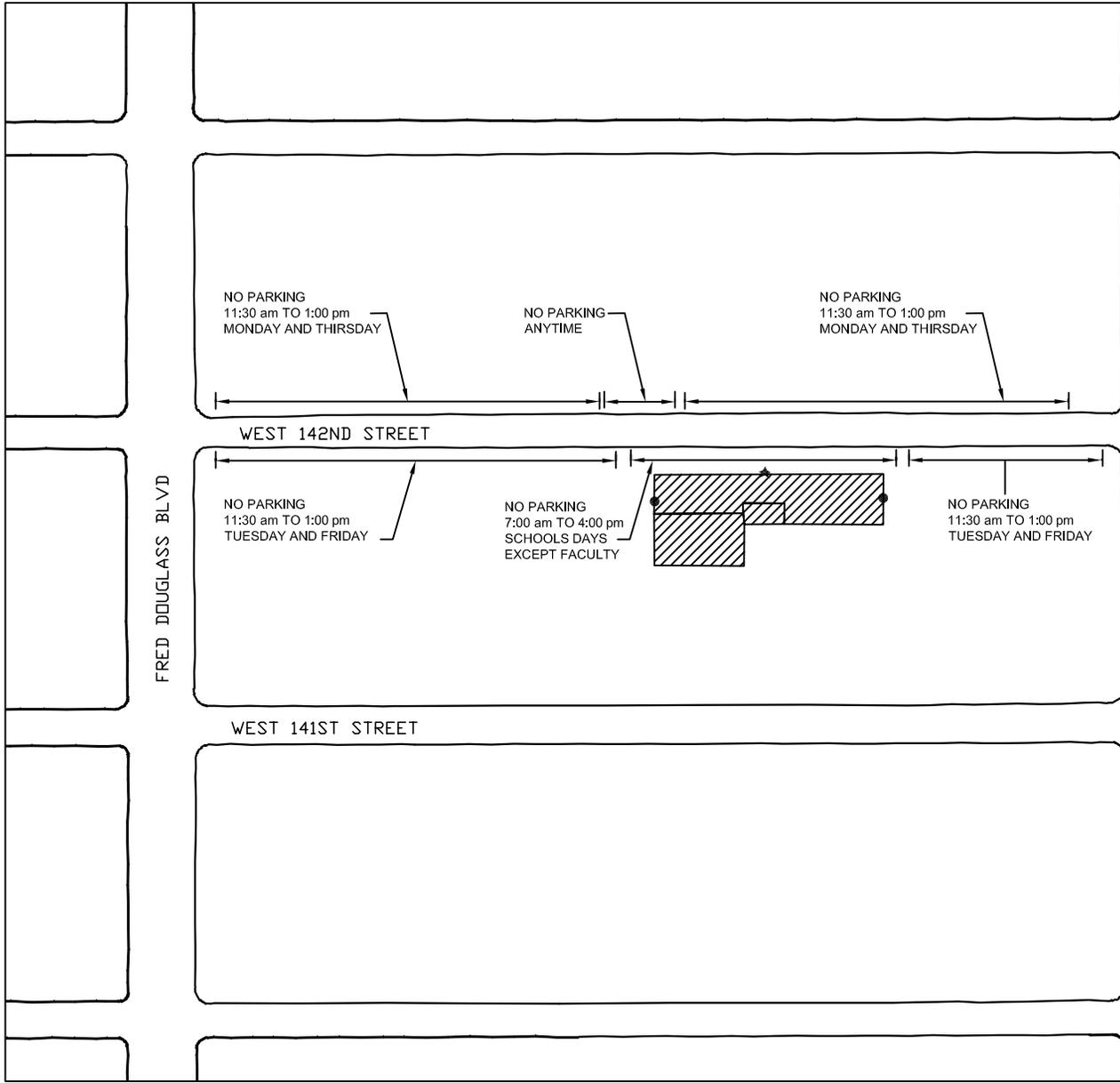
Exhibit 4 shows the existing parking regulations on the roadways surrounding St. Charles Borromeo.



Figure 5: Parking regulations on West 142nd Street in front of St. Charles Borromeo

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Map, Exhibit 2, shows existing signs, signals and pavement markings. It is noted that a citywide signage program is currently underway to upgrade school signage to current MUTCD standards of fluorescent yellow-green with downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” on Exhibit 7.



LEGEND



MAIN ENTRANCE



ENTRANCE

SCALE 1" = 150'

EXHIBIT 4

**ST CHARLES BORROMEIO
MANHATTAN**

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 St. Charles Borromeo 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.

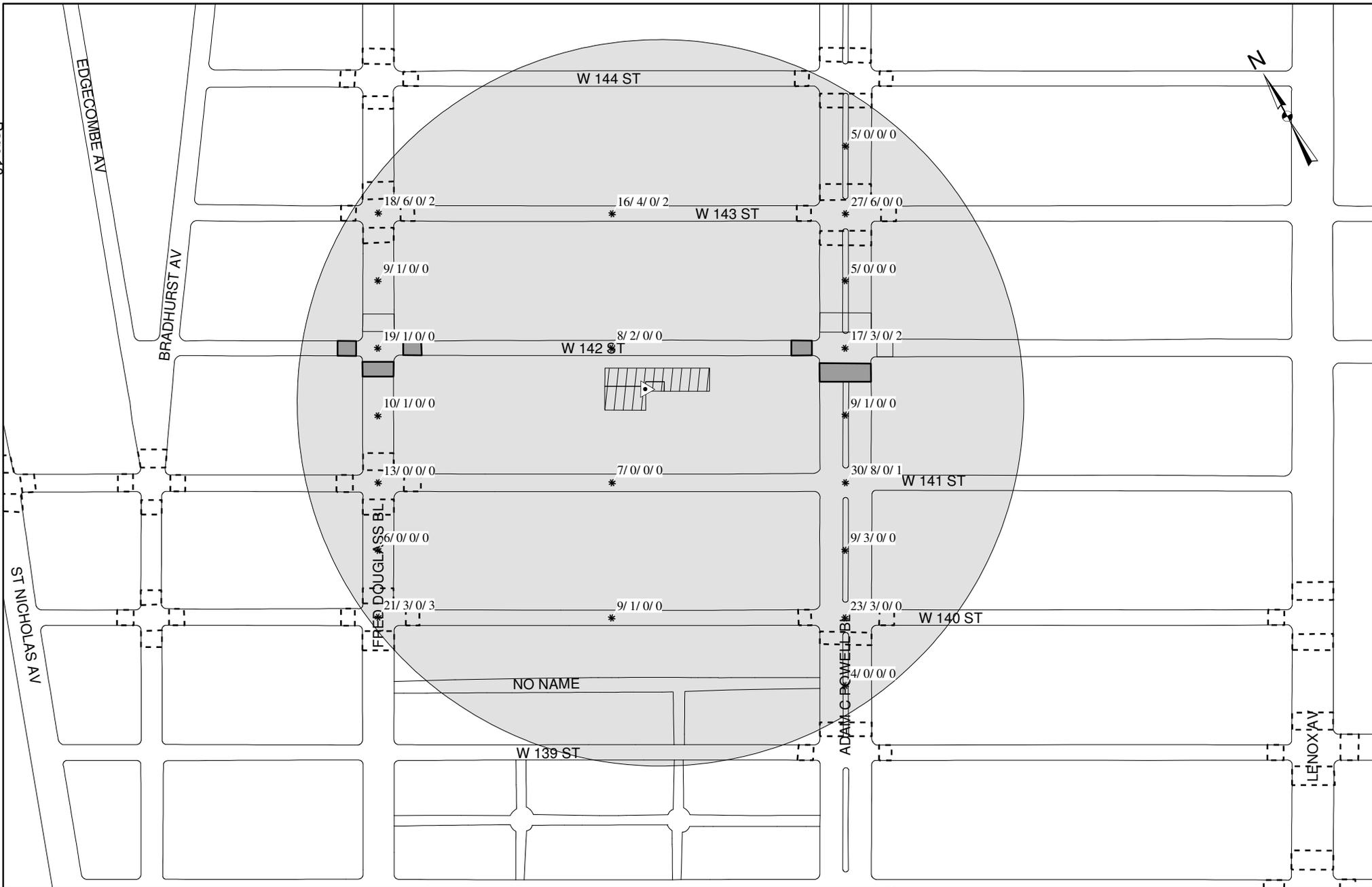
This report targets intersections closest to the school where the highest concentration of student pedestrians occurs. Intersections farther from the school and locations for which detailed data was not available at the time of this study will be addressed with the ongoing work of DOT’s School Safety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

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED* ACCIDENTS
West 143 rd St. and Adam C. Powell Blvd.	27	6	0	0
West 143 rd St. and Frederick Douglass Blvd.	18	6	0	2
West 142 nd St. and Adam C. Powell Blvd.	17	3	0	2
West 142 nd St. and Frederick Douglass Blvd.	19	1	0	0
West 141 st St. and Adam C. Powell Blvd.	30	8	0	1
West 141 st St. and Frederick Douglass Blvd.	13	0	0	0
West 140 th St. and Adam C. Powell Blvd.	23	3	0	0
West 140 th St. and Frederick Douglass Blvd.	21	3	0	3
TOTAL	168	30	0	8

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

TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED* ACCIDENTS
West 143 rd St. and Adam C. Powell Blvd.	56	11	0	3
West 143 rd St. and Frederick Douglass Blvd.	45	6	0	2
West 142 nd St. and Adam C. Powell Blvd.	43	8	0	1
West 142 nd St. and Frederick Douglass Blvd.	35	4	0	2
West 141 st St. and Adam C. Powell Blvd.	40	3	0	0
West 141 st St. and Frederick Douglass Blvd.	43	4	0	1
West 140 th St. and Adam C. Powell Blvd.	58	8	0	0
West 140 th St. and Frederick Douglass Blvd.	36	7	0	0
TOTAL	356	51	0	9

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

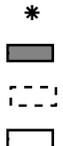


ACCIDENT LOCATION *

SCHOOL CROSSWALK ASSIGNED TO ST CHARLES BORROMEIO

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK



1 inch equals 250 feet

X/X/X

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

EXHIBIT 5
ST CHARLES BORROMEIO SCHOOL
MANHATTAN
ACCIDENT SUMMARY
THREE YEAR PERIOD
(1998-2000)

3.6 TRAFFIC OPERATIONS AND ISSUES

The following describes traffic accidents and operational issues at intersections in the vicinity of St. Charles Borromeo School.

3.6.1 West 142nd Street and Adam C. Powell Boulevard

West 142nd Street is a 30-foot wide one-way eastbound roadway with one travel lane and parking allowed on both sides of the street. Adam C. Powell Boulevard is a 100-foot wide two-way street with three travel lanes in each direction and parking allowed along both sides of the street (Figure 6). The northbound and southbound traffic are separated by a raised concrete median.



Figure 6: Looking east on West 142nd Street, at the intersection of West 142nd Street and Adam C. Powell Boulevard

School crosswalks are striped across the west and south legs of the intersection. All four corners have pedestrian ramps. There is a bus shelter for the southbound M2 located at the southwest corner of the intersection. A bus stop for the northbound M2 is located on the east side of Adam C. Powell Boulevard, mid-block between West 142nd Street and West 141st Street. A school crossing guard is assigned to this intersection.

Review of the existing signal timing indicates that the pedestrian phase does not provide adequate time for pedestrians to cross Adam C. Powell Boulevard in one cycle at a walking rate of three feet per second plus a three second reaction time. A school age pedestrian needs two signal cycles to cross at three feet per second, stopping at the raised median to wait between signal cycles. However, the raised medians do not extend through the crosswalks (Figure 7).



Figure 7: The raised median does not extend through the school crosswalk

This signalized intersection has been the site of seventeen accidents between 1998 and 2000. Three accidents involved pedestrians, two of which were school-related. A seven-year old child was crossing outside of the crosswalk when struck. Another 11-year old child was crossing against the signal when struck. The details of the third pedestrian accident were not reported.

3.6.2 West 142nd Street and Frederick Douglass Boulevard

Frederick Douglass Boulevard is a 60-foot wide two-way roadway with two travel lanes in each direction and parking allowed along both sides of the street (Figure 8). The intersection of West 142nd Street and Frederick Douglass Boulevard is controlled by a two-phase traffic signal.

School crosswalks are striped across the west, east, and south legs of the intersection. All four corners have pedestrian ramps. There is a bus shelter for the northbound M10 located at the northeast corner of the intersection. A bus stop for the southbound M10 is on the west side of Frederick Douglass Boulevard, mid-block between West 142nd Street and West 141st Street. A school crossing guard is assigned to this intersection.

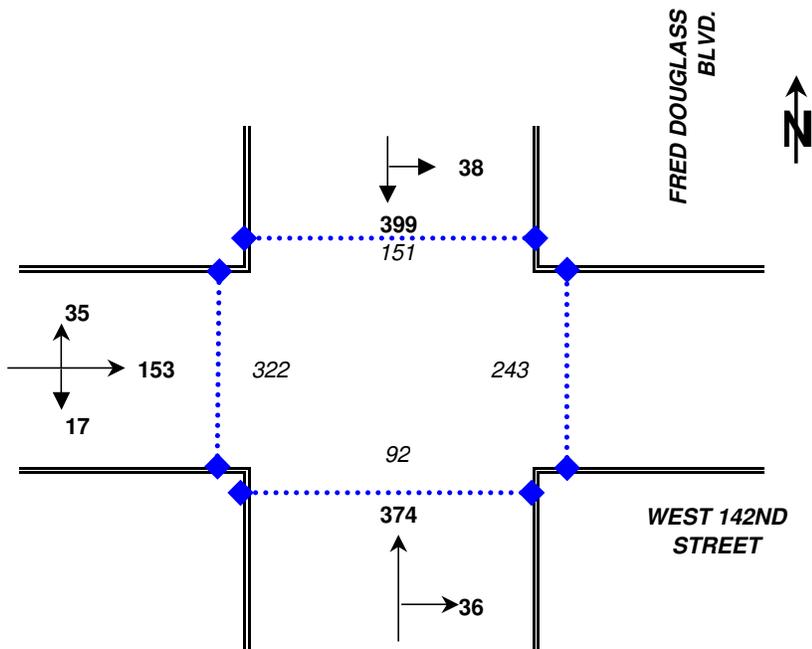
School officials felt that there was too much traffic at this intersection. A Lead Pedestrian Interval (LPI) was considered to mitigate the vehicular-pedestrian conflicts. To determine the level of this conflict, a one-hour traffic count was conducted between 2:30 pm and 3:30 pm on Monday, October 17, 2005 (Exhibit 6). There were 17 vehicles turning right into the south leg school crosswalk and 36 vehicles turning right into the east leg school crosswalk during that hour. The moderate turning vehicle volumes do not satisfy the general guidelines for installation of an LPI.



Figure 8: Looking east on West 142nd Street, at the intersection of West 142nd Street and Frederick Douglass Boulevard

Nineteen accidents occurred at this intersection between 1998 and 2000, one of which was a pedestrian accident. However, this was not a school related accident. The pedestrian accident was attributed to driver's error although no specific information was provided to indicate the cause of the accident.

One Hour Traffic Count Volumes



**Intersection of Fred Douglass Boulevard and West 142nd Street
(2:30 PM - 3:30 PM OCTOBER 17, 2005)**

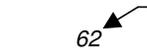
-  Number of Pedestrians
-  Pedestrian Crossing
-  Vehicle Movement
-  Number of Vehicles

EXHIBIT 6
ST CHARLES BORROMEIO, MANHATTAN
TRAFFIC COUNTS

3.6.3 West 141st Street and Adam C. Powell Boulevard

West 141st Street is a 34-foot wide one-way westbound street with one travel lane and parking allowed along both sides of the roadway. The intersection of West 141st Street and Adam C. Powell Boulevard is controlled by a two-phase traffic signal (Figure 9). Pedestrian crosswalks are striped across all four legs; however, none of them are school crosswalks. All four corners have pedestrian ramps.



Figure 9: Looking north on West 141st Street, at the intersection of West 141st Street and Adam C. Powell Boulevard

Review of the existing signal timing indicates that the pedestrian phase does not provide adequate time for pedestrians to cross Adam C. Powell Boulevard in one cycle at a walking rate of three feet per second plus a three second reaction time. A school age pedestrian needs two signal cycles to cross at three feet per second, stopping at the raised median to wait between signal cycles.

There were thirty accidents at this intersection during the 1998-2000-study period. Eight accidents involved pedestrians, one of which was school-related. A vehicle traveling northbound struck a nine-year old child, although no specific data was provided to indicate what caused the accident. Three pedestrians were crossing when struck by vehicles making left turns. Two pedestrians were crossing outside of the crosswalk and one pedestrian was crossing against the signal when struck. The details of the last accident were not reported.

3.6.4 West 141st Street and Frederick Douglass Boulevard

The intersection of West 141st Street and Frederick Douglass Boulevard is controlled by a two-phase traffic signal (Figure 10). School crosswalks are striped across the west, east, and south legs, and are assigned to another public school, P.S.123. All four corners have pedestrian ramps.

Thirteen accidents occurred at this location between 1998 and 2000. No pedestrians were struck at this intersection during this time.



Figure 10: Looking east on West 141st Street, at the intersection of West 141st Street and Frederick Douglass Boulevard

3.6.5 Frederick Douglass Boulevard and West 140th Street

Frederick Douglass Boulevard is a two-way roadway with two travel lanes in each direction and parking on each side. The intersection with West 140th Street is signalized with school crosswalks on all legs except the south leg. The M10 bus runs along Frederick Douglass Boulevard with a stop on the west side just south of this intersection.

The accident data from 1998-2000 indicates 21 accidents occurred at this intersection. Three of those accidents involved a school-aged pedestrian. All three accidents were attributed to pedestrian error, although one occurred while a pedestrian was crossing with the signal.

3.6.6 Frederick Douglass Boulevard at West 143rd Street

West 143rd Street is a 30-foot wide one-way roadway with one travel lane and parking along both sides of the roadway. The intersection of West 143rd Street and Frederick Douglass Boulevard is controlled by a two-phase signal. School crosswalks are striped on the north, east and west legs of the intersection.

Eighteen accidents occurred at this location between 1998 and 2000 including six pedestrian accidents, two of which were school related accidents. Two pedestrians were

struck while crossing against the signal. Another two pedestrian accidents occurred as a result of the drivers' failing to yield to pedestrians while crossing with the signal. There is no additional information on the other two pedestrian accidents.

In addition, 16 accidents occurred on the mid-block of West 143rd Street between Frederick Douglass Boulevard and Adam C. Powell Boulevard between 1998 and 2000. Four accidents involved pedestrian injuries (including two student pedestrians).

According to the accident data on June 1st, 1998 at approximately 3:00 pm, a vehicle struck a six-year-old pedestrian that was emerging from between parked vehicles. On March 31st, 1999 at approximately 4:00 pm, a vehicle struck a ten-year-old pedestrian that was attempting to perform a mid-block crossing. The weather at the time of both accidents was clear.

3.6.7 Speeding on West 142nd Street between Adam C. Powell Boulevard and Frederick Douglass Boulevard

St. Charles Borromeo is located on West 142nd Street between Adam C. Powell Boulevard and Frederick Douglass Boulevard. The school principal noted that vehicles are speeding along West 142nd Street. A spot speed study was conducted on West 142nd Street between Adam C. Powell Boulevard and Frederick Douglass Boulevard on Tuesday, October 11, 2005 between 8:30 am to 9:30 am. The spot speed study showed that the 85th percentile speed was below the statutory speed limit of 30 mph. See Table 4 for a summary of the results and the Appendix for further detail.

TABLE 4: SPOT SPEED STUDIES		
(Tuesday, October 11, 2005)		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
West 142 nd Street between Adam C. Powell Boulevard and Frederick Douglass Boulevard	23	28

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of St. Charles Borromeo School, and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches (Table 5).

TABLE 5: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)*	Timing Adjustment? (Yes/No)
West 142nd Street and Adam C. Powell Boulevard				
Crossing West 142 nd Street	30	49	13	NO
Crossing Adam C. Powell Blvd.	100	31/31 ¹	18/18	NO
West 142nd Street and Frederick Douglass Boulevard				
Crossing West 142 nd Street	30	58	13	NO
Crossing Frederick Douglass	60	22	23	YES
West 141st Street and Adam C. Powell Boulevard				
Crossing West 141 st Street	34	49	15	NO
Crossing Adam C. Powell Blvd.	100	31/31 ¹	18/18	NO
West 141st Street and Frederick Douglass Boulevard				
Crossing West 141 st Street	34	58	15	NO
Crossing Frederick Douglass	60	22	23	YES

Notes:

- * *A rate of 3 feet per second plus 3 seconds reaction time was utilized as the child pedestrian walking rate*
- 1. *A pedestrian needs two signal cycles to cross Adam C. Powell Boulevard at a rate of three feet per second while stopping at the raised center medians between the northbound and southbound roadways. The actual pedestrian phase in one signal cycle is 31 seconds.*

3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK)

The roadways and sidewalks in the vicinity of the school were generally observed to be in good condition, with the exception of the pedestrian ramp and sidewalk at northwest corner of West 142nd Street and Adam C. Powell Boulevard were found to be in poor condition (Figure 11).



Figure 11: The pedestrian ramp at northwest corner of West 142nd Street and Adam C. Powell Boulevard

4. POTENTIAL MEASURES TO IMPROVE PEDESTRAIN SAFETY

This section describes potential countermeasures. 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 are capital improvements.

4.1 SHORT-TERM RECOMMENDATIONS

▪ Install graphic “Yield to Pedestrians” Sign

A “YIELD TO PEDESTRIAN SIGN” should be installed at the following locations:

- Adam C. Powell Boulevard and West 143rd Street - (on the median of Adam C. Powell Boulevard, northbound and southbound approach)
- Adam C. Powell Boulevard and West 145th Street - (on the median of Adam C. Powell Boulevard, northbound and southbound approach)

The installation of the signs is intended to remind the drivers that pedestrians have right of way within the crosswalk (see Exhibit 7 for detail).

▪ No-Standing Zone on West 142nd Street

“NO STANDING 7AM-4 PM, SCHOOL DAYS” parking regulations should be considered in front of school’s main entrance on West 142nd Street for a length of 30 feet. This will improve visibility of students arriving and leaving the school. The lost 30 feet of teacher parking will be compensated to the east on West 142nd Street (Exhibit 7).

▪ Place advance stop bar ten feet before school crosswalks at the following intersections:

- West 142nd Street and Adam C. Powell Boulevard – eastbound approach
- West 142nd Street and Frederick Douglass Boulevard- eastbound approach

It is recommended that the advanced stop bar be placed ten feet in advance of the crosswalks to maximize the safety benefit for school-aged pedestrians (Exhibit 7). This would improve visibility of pedestrians to motorists, and allow pedestrians to proceed in a crosswalk before motor vehicles turn.

▪ Install enlarged signal lens

Enlarged 12” red signal lenses should be installed at the following intersections:

- Adam C. Powell Boulevard at West 142nd Street
- Adam C. Powell Boulevard at West 143rd Street

Replacing existing 8-inch signal lenses with 12-inch signal lenses will improve visibility.

▪ *Install pedestrian information sign that explains the signal phases*

The safety of pedestrians at the wide intersections of Adam Clayton Powell Boulevard and at Frederick Douglass Boulevard is a major concern. Installation of pedestrian information signs adjacent to each school crosswalk that explain the signal phases is recommended.

During a consultant field visit, it was noted that students and others attempted to cross Adam Clayton Powell Boulevard in one pedestrian signal phase. The information signs instruct pedestrians to wait at the median between signal cycles.

Frederick Douglass Boulevard does not have a median however; the crossing is long (60 feet) on a busy roadway. Therefore, the information signs on Frederick Douglas Boulevard instruct pedestrians not to begin crossing the block when the pedestrian head shows a flashing “Don’t Walk” hand. Pedestrians will benefit from informational signage even though they are provided with sufficient time to cross at these intersections. Pedestrian information signs should be installed as shown on Exhibit 7.

▪ *New school crosswalks at West 141st Street and Adam C. Powell Boulevard*

During the field visit, it was observed that the west leg of the intersection is used by St. Charles Borromeo students to cross West 141st Street. It is recommended the existing pedestrian crosswalk at the west leg, across West 141st Street, be striped as a school crosswalk. Additionally, the east leg should be striped as a school crosswalk, to encourage students to continue north on the east side of the street to the school crosswalk at West 142nd Street.

▪ *Administer student pedestrian safety education program*

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

▪ *Adjust signal timing at the following intersections:*

- Frederick Douglass Boulevard and West 141st Street
- Frederick Douglass Boulevard and West 142nd Street

As noted in Section 3.7, 22 seconds are available for pedestrians crossing Frederick Douglass Boulevard, which is not sufficient for student pedestrians to cross this street at speed of three feet per second (plus three seconds of reaction time). Therefore, it is recommended that an additional five seconds be added to the “Walk” phase for pedestrians crossing Frederick Douglass Boulevard at both intersections.

4.2 LONG-TERM RECOMMENDATIONS

- Consider curb extensions at the following intersections
 - Adam Clayton Powell Boulevard and West 142nd Street
 - Frederick Douglass Boulevard and West 142nd Street

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

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at school crosswalks. These curb extensions will not eliminate or reduce the width of any moving lanes. Curb extensions are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to curb extensions will be developed during the Final Design/Contract Document preparation.

- Extend concrete raised medians on Adam C. Powell Boulevard through adjacent school crosswalk and provide pedestrian ramps within the median

Since pedestrians must cross Adam Clayton Powell Boulevard in more than one signal phase, all raised medians should be extended through the adjacent crosswalk at the following intersections:

- Adam Clayton Powell Boulevard and West 141st Street - north leg
- Adam Clayton Powell Boulevard and West 142nd Street - south leg

By extending the raised median, a refuge location can be provided for the student pedestrians as they wait for the next cycle to cross the street. In addition, an ADA at-grade cut through should be provided at this location. Median extensions were not proposed at the locations where a standard unit vehicle would not be able to complete a left turn movement.

4.3 ADDITIONAL RECOMMENDATIONS FROM PRIORITY SCHOOLS IN THE VICINITY OF ST. CHARLES BORROMEIO SCHOOL

4.3.1 RECOMMENDATIONS FOR P.S. 194:

The following recommendations are proposed as part of mitigation measures for P.S. 194, which is also a priority school.

- *Install curb extensions at the following intersections:*
 - Adam Clayton Powell Boulevard and West 143rd Street
 - Adam Clayton Powell Boulevard and West 144th Street
 - Frederick Douglass Boulevard and West 143rd Street
 - Frederick Douglass Boulevard and West 144th Street

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

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at school crosswalks. These curb extensions will not eliminate or reduce the width of any moving lanes. Curb extensions are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to curb extensions will be developed during the Final Design/Contract Document preparation.

- *Extend raised concrete curb medians through the school crosswalks at the following intersections:*
 - Adam Clayton Powell Boulevard and West 143rd Street – north leg
 - Adam Clayton Powell Boulevard and West 144th Street – south leg
 - Adam Clayton Powell Boulevard and West 145th Street – south and north legs

Pedestrians crossing Adam Clayton Powell Boulevard at West 143rd Street, West 144th Street and West 145th Street are expected to cross in more than one signal phase. Therefore, consideration should be given to extending the concrete raised median through the existing pedestrian crosswalk to provide refuge for pedestrians. The median should have an ADA compliant at-grade cut-through. (see Exhibit 7 for detail). Final details pertaining to the curb extensions will be developed during the Final Design/Contract Document preparation.

4.3.2 RECOMMENDATIONS FOR P.S. 123:

The following recommendations are proposed as part of mitigation measures for P.S. 123, which is also a priority school.

- Install new school crosswalks

Due to the proximity to P.S. 123, new school crosswalks should be installed at the east and west legs of intersection of Frederick Douglass Boulevard and West 139th Street (see Exhibit 7 for detail).

- Install curb extensions at the following intersections:

- Frederick Douglass Boulevard and West 140th Street – northeast and northwest corners
- Frederick Douglass Boulevard and West 141st Street – southeast and southwest corners
- Saint Nicholas Avenue and West 141st Street - northeast and northwest corners
- Edgecombe Avenue and West 140th Street – northeast corner
- Edgecombe Avenue and West 141st Street – southeast corner

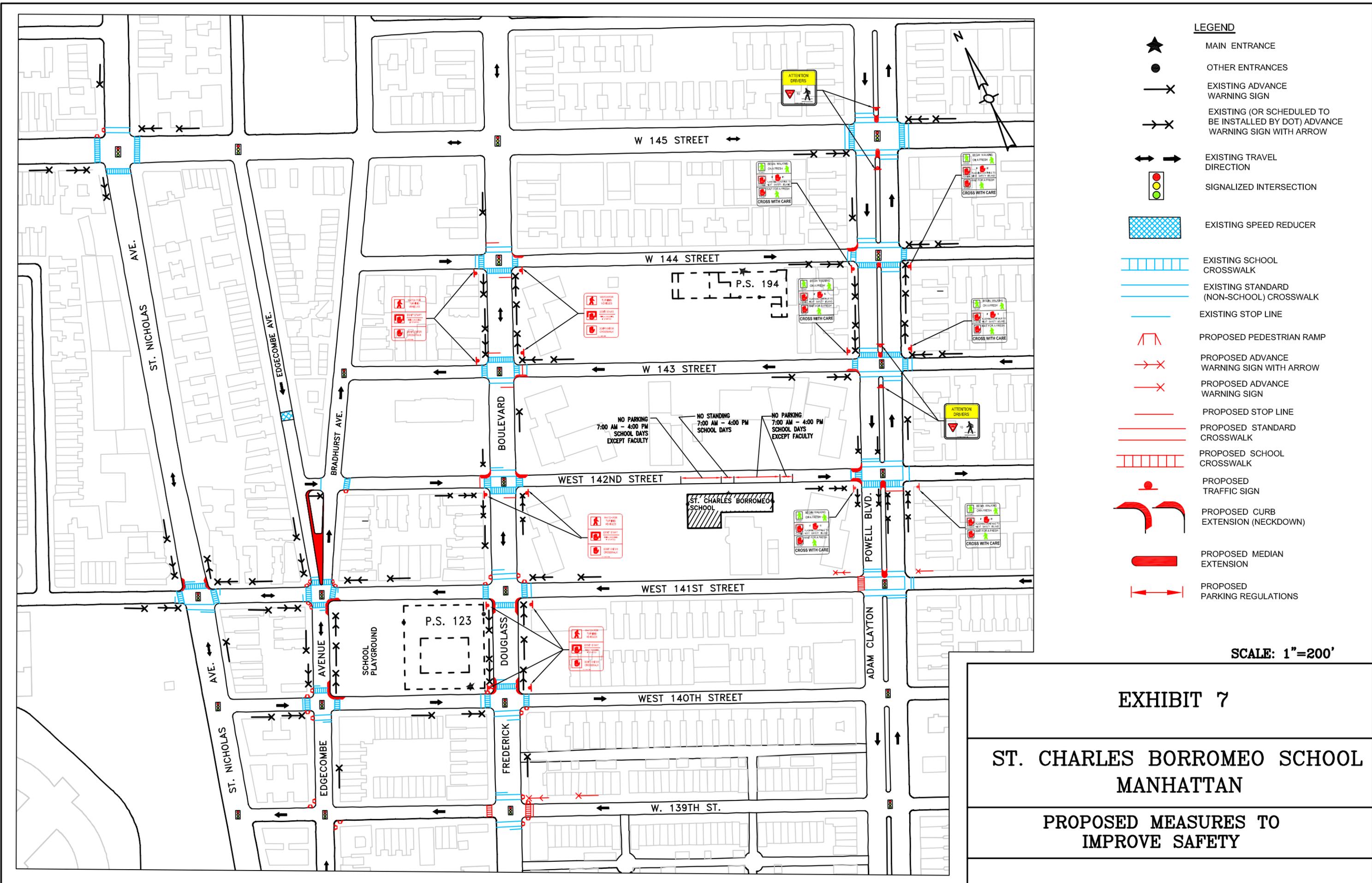
Curb extensions should be installed at the corners as shown in Exhibit 7.

The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at school crosswalks.

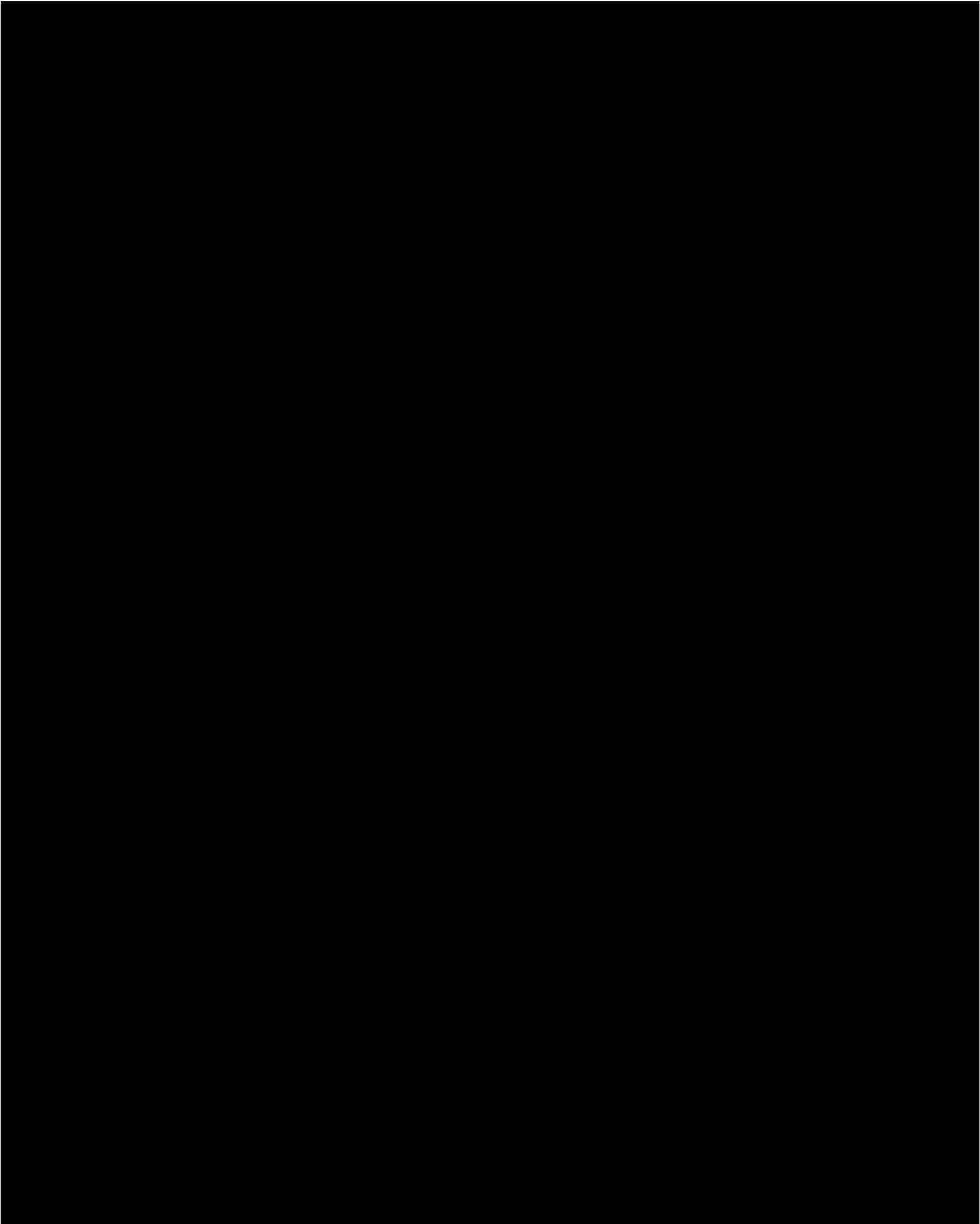
These curb extensions will not eliminate or reduce the width of any moving lanes. Curb extensions are not proposed where they would hinder the ability of vehicles to turn. Final details pertaining to curb extensions will be developed during the Final Design/Contract Document preparation.

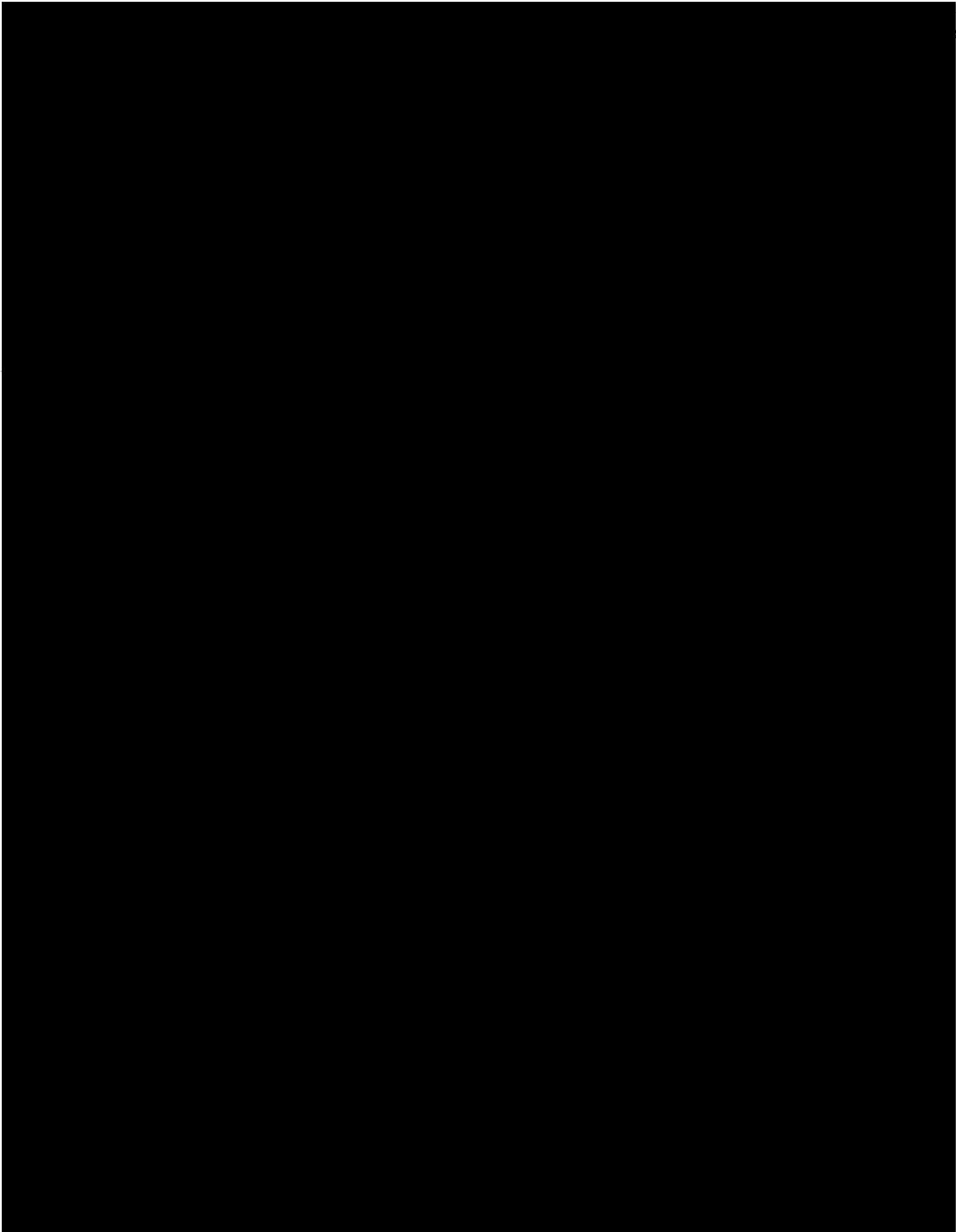
- Consider widening and extending existing triangular island

Currently a raised island is located at the triangular intersection between Edgecombe Avenue, West 142nd Street and Bradhurst Avenue. It is recommended that the existing island be widened for approximately 7 feet eastward, and extended south for approximately 120 feet through the north school crosswalk on Edgecombe Avenue. The proposed island would replace the striped area, and provide pedestrians with a refuge while crossing Edgecombe Avenue (see Exhibit 7 for detail).

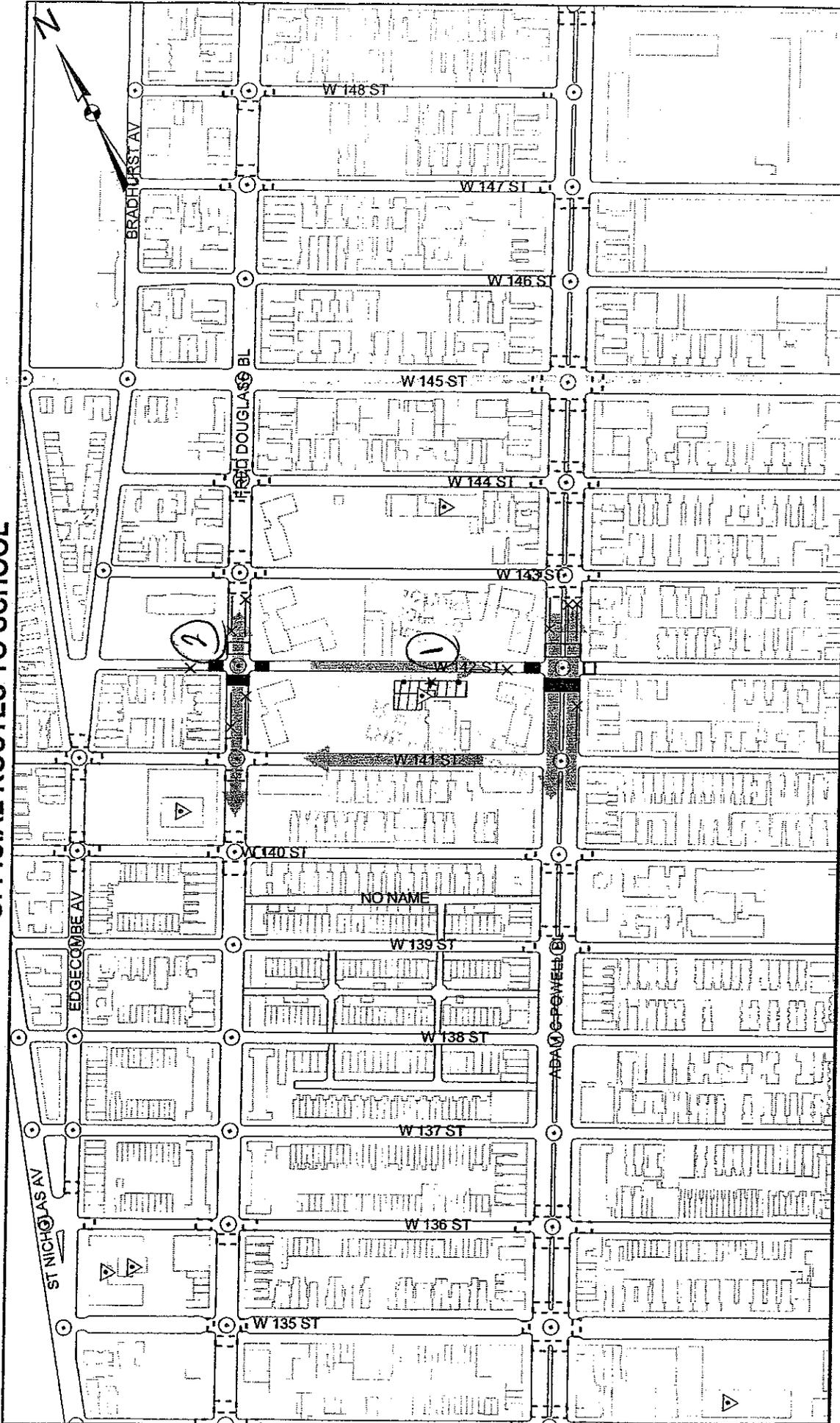


APPENDIX





**TRAFFIC SAFETY PLAN
OFFICIAL ROUTES TO SCHOOL**



The TRAFFIC SAFETY PLAN shown on this map was established to provide the maximum degree of safety for children going to and from school. It is required that all children follow the prescribed routes and use the designated crosswalks.

LEGEND:

- TRAFFIC FLOW
- ROUTE TO SCHOOL
- ADV. WARNING SIGN
- SCHOOL LOCATION
- MAIN SCHOOL ENTRANCE
- OTHER SCHOOL ENTRANCES
- SCHOOL X-WALK
- PED. X-WALK
- STOP LINE
- X-WALKS ASSOCIATED WITH OTHER SCHOOLS
- SPEED HUMP
- TRAFFIC SIGNAL
- ALL-WAY STOP
- 2-WAY STOP

**ST CHARLES BORROMEO SCHOOL
(19)**

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION,
His Worshipful, COMMISSIONER, in cooperation with SCHOOL, and
POLICE OFFICIALS.

ORIG. DATE: 5/1/1965
GIS CONVRT: 04/2002
REVISIONS:

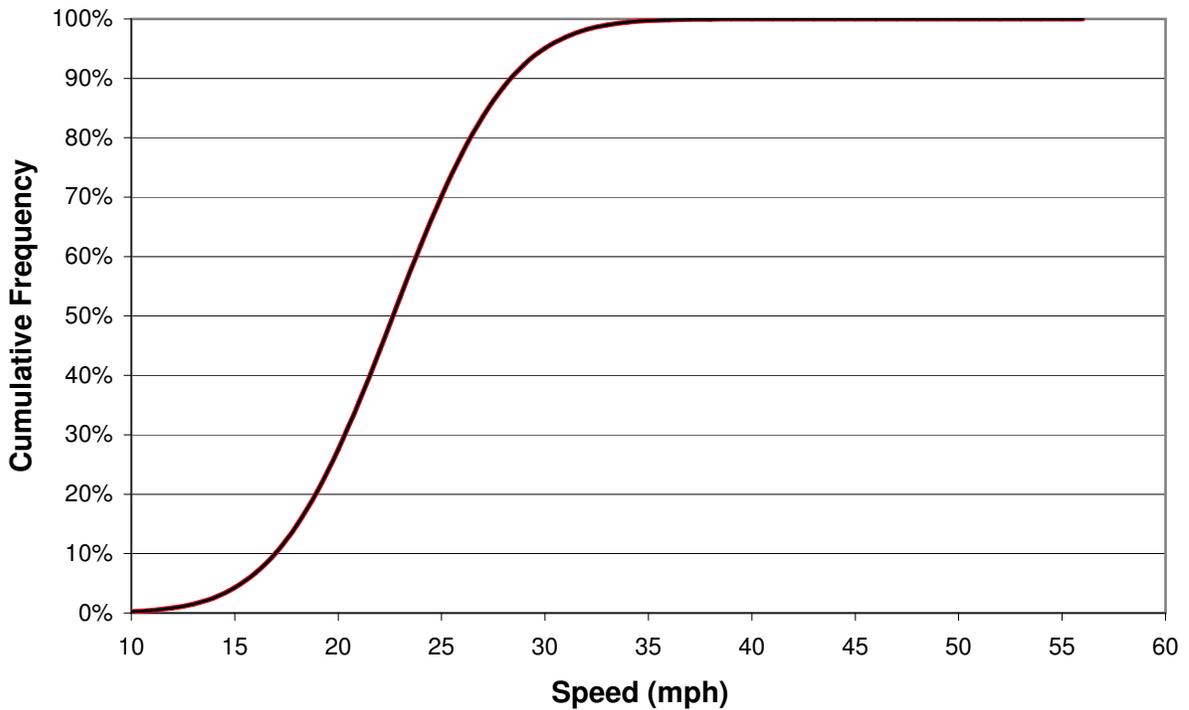
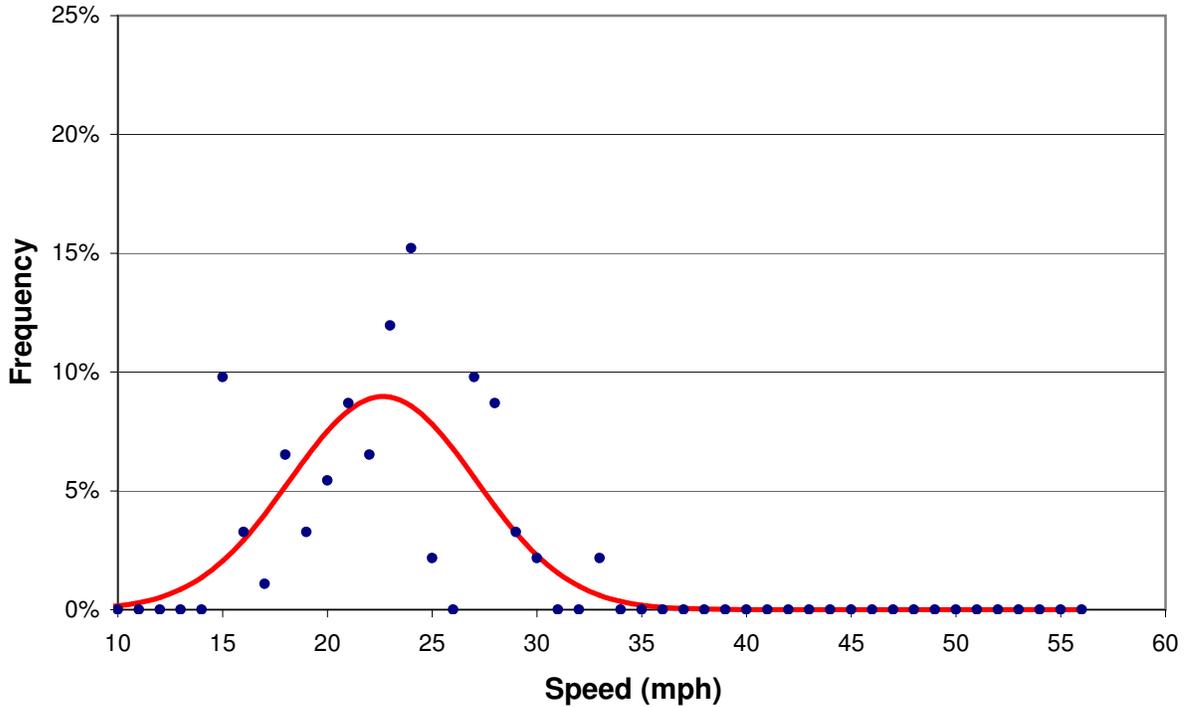
COMM. BOARD: 10
BOROUGH: MANHATTAN
PRECINCT: 32

DRAWING NO. CC-894
MS-4180

SPOT SPEED STUDY

Date: **October 11, 2005** Time: **8:30 am - 9:30 am** School: **St. Charles Borromeo**
Location: **West 142nd Street between Fred Douglass Boulevard and Adam C. Po** Direction: **East**
Surveyor: Comments:

Mean Speed = 22.7 mph Median Speed = 22.7 mph
Standard Deviation = 4.4 mph 15th Percentile Speed = 18.0 mph
Margin of Error (95% Confidence) = ± 0.9 mph 85th Percentile Speed = 27.3 mph



ST CHARLES BORROMEIO

October 17, 2005
2:30 pm - 3:30 pm

Title1 : SCHOOL SAFETY ENGINEERING
Title2 : BOROUGH OF MANHATTAN
Title3 : NYCDOT

Site:
Date: 10/17/05

Combined
**Peds not included in table data*

Begin	F. DOUGLAS BLVD			142 nd STREET			F. DOUGLAS BLVD			142 nd STREET			
Time	Total	S-T	S-R				N-R	N-T		E-R	E-T	E-L	
14:34:00	167	0	68	4	0	0	0	8	57	0	2	24	4
14:45:00	266	0	108	9	0	0	0	12	75	0	10	42	10
15:00:00	291	0	107	13	0	0	0	11	96	0	2	50	12
15:15:00	328	0	116	12	0	0	0	5	146	0	3	37	9
1,052		0	399	38	0	0	0	36	374	0	17	153	35

Peak Volume Periods <i>(1 hour Res:15 min.)</i>					
Period			Peak Period		Volume
AM	05:00:00	To 10:00:00	NA	To NA	0
Noon	10:00:00	To 15:00:00	14:30:00	To 15:30:00	433
PM	15:00:00	To 20:00:00	14:30:00	To 15:30:00	1,052

ST CHARLES BORROMEIO

October 17, 2005
2:30 pm - 3:30 pm

Title1 : SCHOOL SAFETY ENGINEERING
Title2 : BOROUGH OF MANHATTAN
Title3 : NYCDOT

Site:
Date: 10/17/05

Combined
*Peds not included in table data

