

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



**School Safety Engineering Project**

**FINAL REPORT: I.S. 238 (Susan B. Anthony School), Queens**



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



**November 17, 2006**

**School Safety Engineering Project  
Final Report: I.S. 238, Queens**

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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 600 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). I.S. 238 (Susan B. Anthony School) in Queens 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



*Figure 1: I.S. 238 (Susan B. Anthony School)*

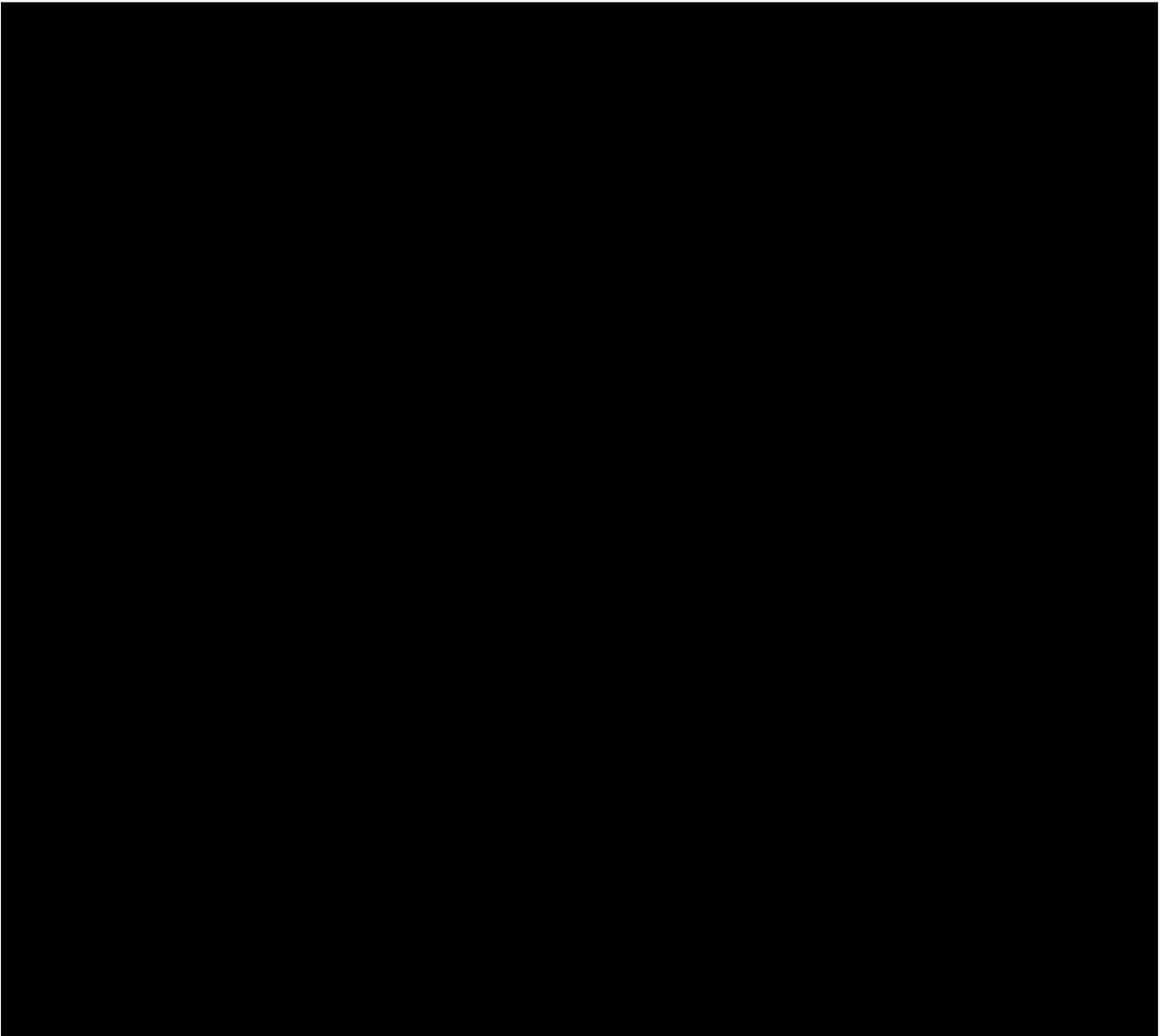
### 2.2 NEIGHBORHOOD DESCRIPTION

Exhibit 1 shows an aerial view of the neighborhood surrounding the school. I.S. 238 is bounded by Hillside Avenue on the north, 89<sup>th</sup> Avenue on the south, 183<sup>rd</sup> Street on the east, and 182<sup>nd</sup> Street on the west. The area surrounding the school is generally residential in character, consisting primarily of one- and two-family houses. Commercial uses are found along Hillside Avenue, a major east-west collector road located on the north side of the school.

### 2.3 MEETING WITH SCHOOL REPRESENTATIVES

Consultant staff and the Deputy Chief of NYCDOT School Safety Engineering met with the principal and assistant principal of I.S. 238 at the school on the morning of Thursday, May 27, 2004. According to the school representatives, I.S. 238 student pedestrians face the following problems:

- Illegal and double-parking in front of the school is a concern. The front of the school should be kept clear when school is in session; particularly for emergency evacuation purposes (see Figure 2).
- The principal requested an all-way stop at the intersection of 89<sup>th</sup> Avenue and 182<sup>nd</sup> Street. He reported many students cross at this location and congregate there as well.
- Many I.S. 238 students use public transportation on Hillside Avenue. The principal would like a bus stop at 182<sup>nd</sup> Street, similar to the bus stop in the eastbound direction. A westbound bus stop is located on 184<sup>th</sup> Street, two blocks east of the school. Students often do not use the designated school crosswalks to cross Hillside Avenue to and from school and “dodge through traffic” to get to school.
- The principal reported that the speeding problem on 182<sup>nd</sup> Street has been alleviated since the installation of the speed reducer (hump).



## 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 at the end of this section. Based upon information gathered from school officials, the catchment area shown in Exhibit 2 was verified as accurate for I.S. 238.

Table 1 presents the modes of travel for I.S. 238 as identified by school representatives.

<b>TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)</b>	<b>STUDENTS (Percentage)</b>
Walk	13%
Driven by car	6%
School bus	2%
MTA Bus / Subway	79%
Bicycle	0%
<b>TOTAL</b>	<b>100%</b>

## 2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

Hillside Avenue is a major commercial corridor that generates pedestrian and vehicular traffic around the school. In addition, Hillside Avenue is well served by local and express bus service as well as subway service (the “F” line). Following dismissal, I.S. 238 students were observed congregating around the local stores and fast-food restaurants, waiting for buses along Hillside Avenue near the school (see Figures 3 and 4).



*Figure 3: Following dismissal, students congregate near local stores on the south side of Hillside Avenue, east of I.S. 238*



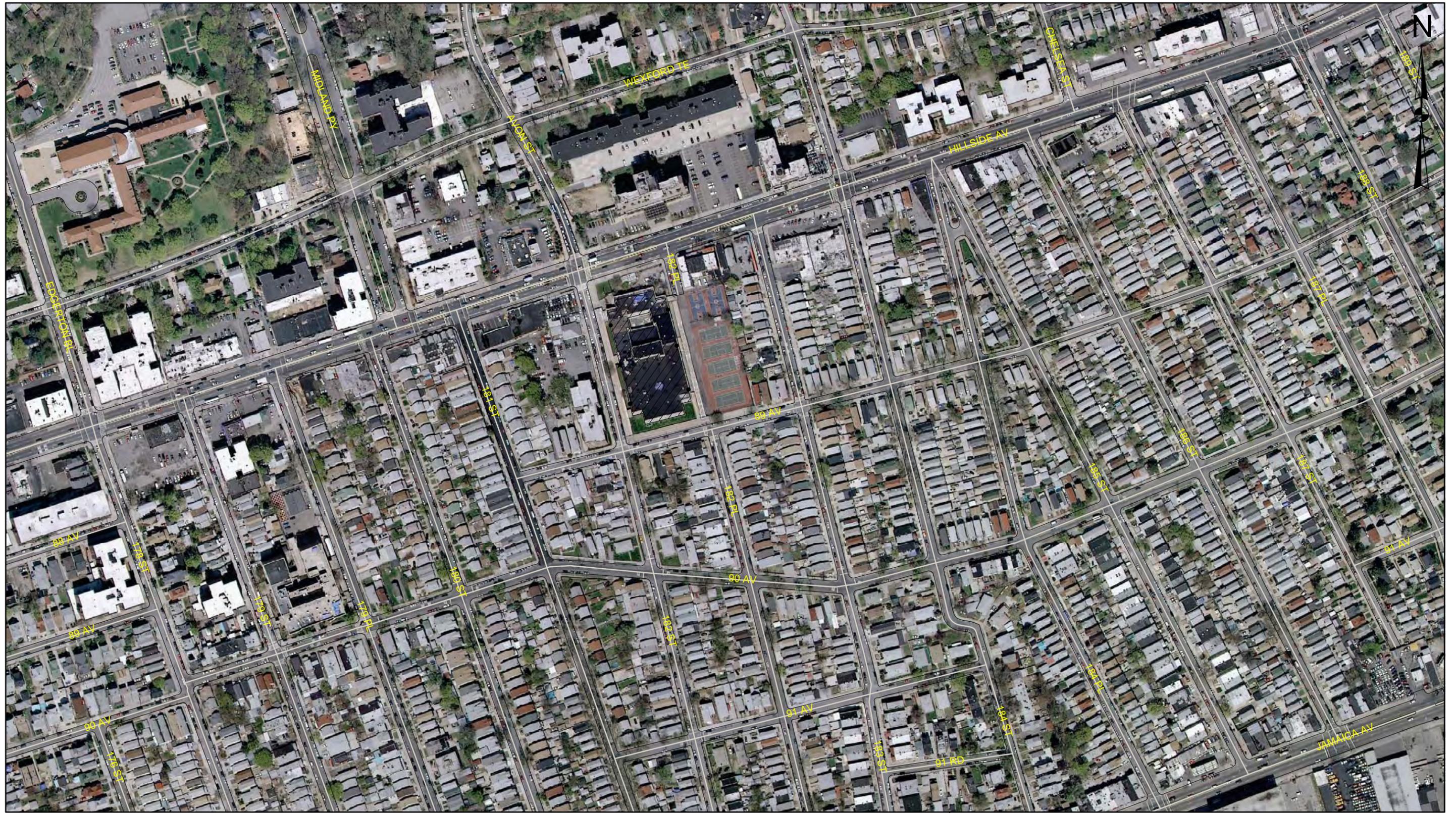
*Figure 4: Following dismissal, students cross Hillside Avenue to patronize a fast-food restaurant located opposite I.S. 238*



*Figure 5: Following dismissal, students wait for buses on south side of Hillside Avenue at 182<sup>nd</sup> Place (I.S. 238 is shown on the left)*

## **2.8 CROSSING GUARD LOCATION**

According to the school principal, there are no crossing guards assigned to I.S. 238.

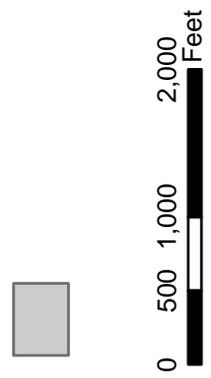


0 250 500 1,000 Feet

**EXHIBIT 1**  
**I.S. 238 QUEENS**  
**SUSAN B. ANTHONY SCHOOL**  
**AERIAL PHOTOGRAPH**



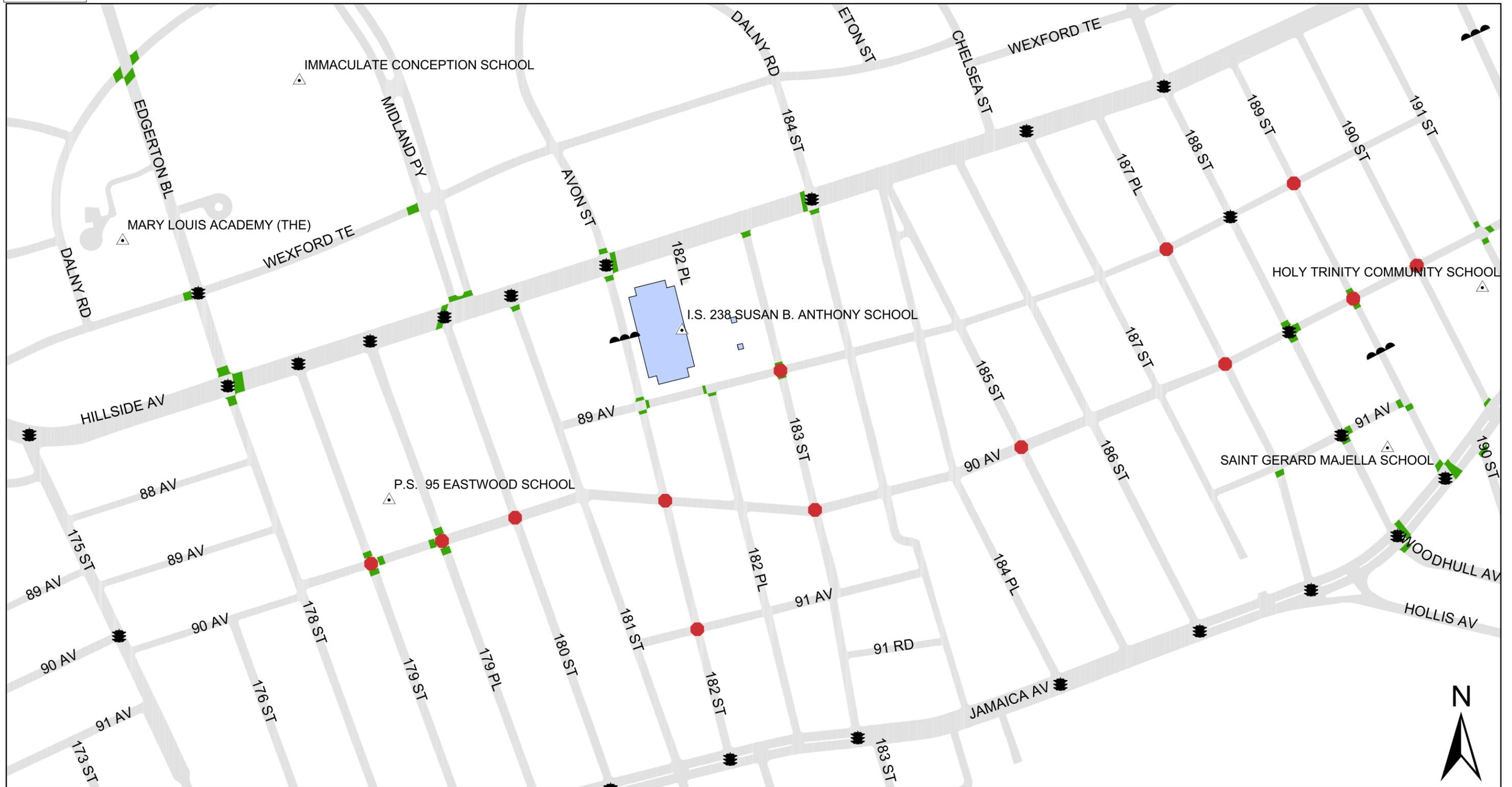
**EXHIBIT 2**  
**I.S. 238 QUEENS**  
**SUSAN B. ANTHONY SCHOOL**  
**CATCHMENT AREA**



**LEGEND:**  
 CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND I.S. 238)



# 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

**IS 238 Queens**  
**SUSAN B. ANTHONY SCHOOL**

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

Map created on 11/17/2006 **EXHIBIT 3**

COMM. BOARD: 412  
 PRECINCT: 103

1.5.1

### 3. TRAFFIC OPERATIONS

#### 3.1 SCHOOL BUS OPERATIONS

According to school representatives, approximately 1,500 students take public transportation, including nine MTA buses and subway service running along Hillside Avenue. The F train has stops at East 169<sup>th</sup> Street and East 179<sup>th</sup> Street and the MTA bus stops are at East 182<sup>nd</sup> Street and Dalny Road, all along Hillside Avenue in the vicinity of the school. In addition, approximately 30 students ride a yellow school bus to and from school (see Table 1). Figure 5 through Figure 9 shows bus operations.



*Figure 6: I.S. 238 students aboard buses along 89<sup>th</sup> Avenue at dismissal time (school bus is shown blocking school crosswalk)*



*Figure 7: Due to on-street parking, school buses must double-park along the north side of 89<sup>th</sup> Avenue*



*Figure 8: Queued MTA buses on south side of Hillside Avenue at 182<sup>nd</sup> Place, at dismissal time for I.S. 238*



*Figure 9: Following dismissal, I.S. 238 students board MTA buses on the south side of Hillside Avenue at 182<sup>nd</sup> Place*

### **3.2 PARENT DROP-OFF OPERATIONS**

According to school representatives, six percent of the students are dropped off, usually on 89<sup>th</sup> Avenue near the intersection with 182<sup>nd</sup> Street, and use the nearby entrance to enter the school. Congestion and double-parking typically occur around the school during arrival and dismissal times.

### **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 signals, signs, school crosswalks, and speed reducers in the vicinity of I.S. 238. It should be noted that a citywide signage program is currently underway to upgrade school signage to current Federal Manual on Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green signs accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 7.



### 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 I.S. 238 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.

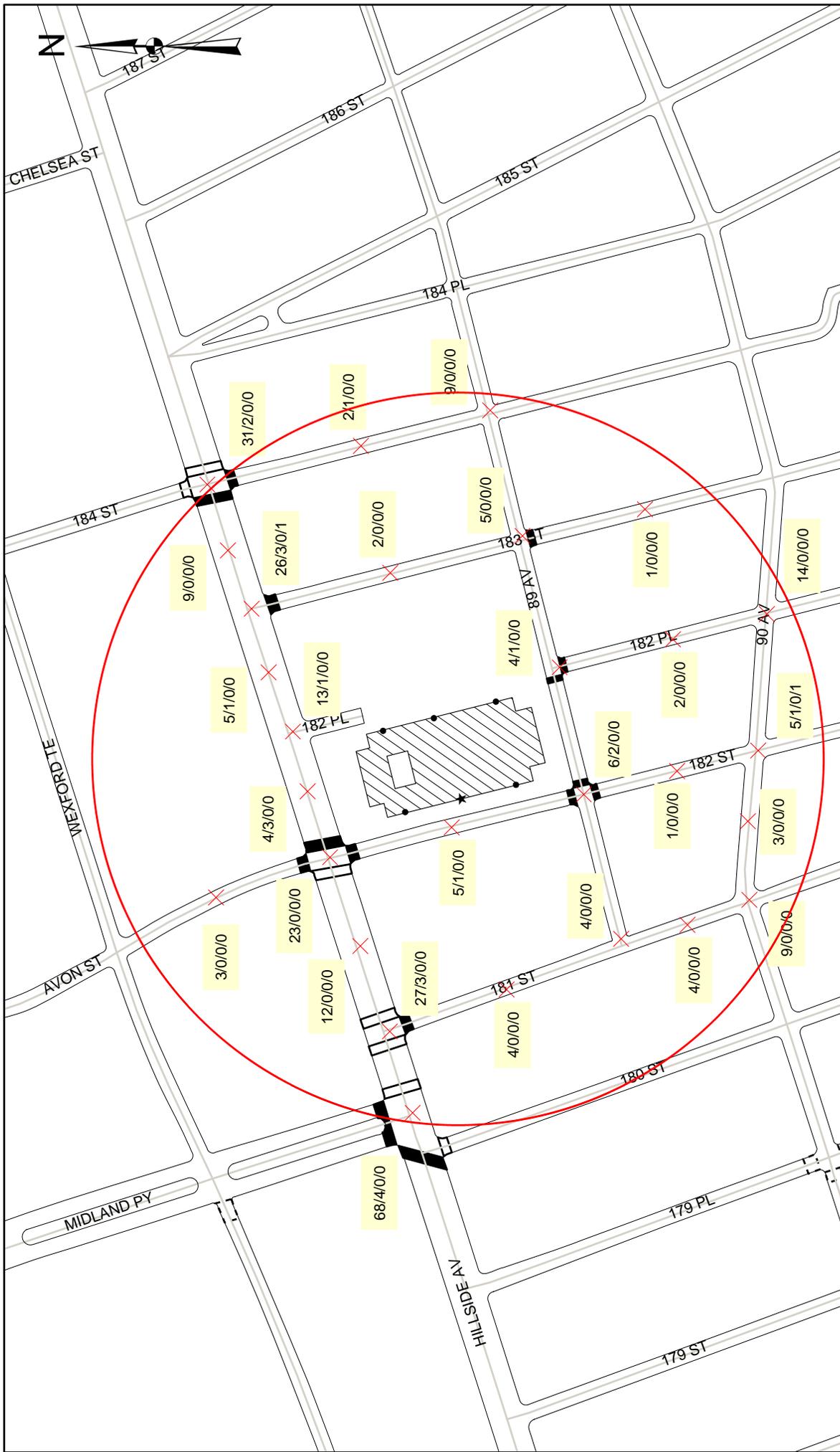
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Hillside Avenue and Midland Pkwy/180 <sup>th</sup> Street	68	4	0	0
Hillside Avenue and 181 <sup>st</sup> Street	27	3	0	0
Hillside Avenue and 182 <sup>nd</sup> Street/Avon Street	23	0	0	0
Hillside Avenue and 182 <sup>nd</sup> Place	13	1	0	0
Hillside Avenue and 183 <sup>rd</sup> Street	26	3	0	1
Hillside Avenue and 184 <sup>th</sup> Street/Dalny Road	31	2	0	0
89 <sup>th</sup> Avenue and 181 <sup>st</sup> Street	4	0	0	0
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	6	2	0	0
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	4	1	0	0
89 <sup>th</sup> Avenue and 183 <sup>rd</sup> Street	5	0	0	0
89 <sup>th</sup> Avenue and 184 <sup>th</sup> Street	9	0	0	0
90 <sup>th</sup> Avenue and 181 <sup>st</sup> Street	9	0	0	0
90 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	5	1	0	1
90 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	14	0	0	0
<b>TOTAL</b>	<b>244</b>	<b>17</b>	<b>0</b>	<b>2</b>

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

**TABLE 3: ACCIDENT SUMMARY OF NYPD DATA (2001-2004)**

<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Hillside Avenue and Midland Pkwy/180 <sup>th</sup> Street	81	10	0	0
Hillside Avenue and 181 <sup>st</sup> Street	27	2	0	0
Hillside Avenue and 182 <sup>nd</sup> Street/Avon Street	45	6	0	2
Hillside Avenue and 182 <sup>nd</sup> Place	9	0	0	0
Hillside Avenue and 183 <sup>rd</sup> Street	43	2	0	0
Hillside Avenue and 184 <sup>th</sup> Street/Dalny Road	30	7	0	0
89 <sup>th</sup> Avenue and 181 <sup>st</sup> Street	5	0	0	0
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	7	0	0	0
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	10	1	0	0
89 <sup>th</sup> Avenue and 183 <sup>rd</sup> Street	14	1	0	0
89 <sup>th</sup> Avenue and 184 <sup>th</sup> Street	6	0	0	0
90 <sup>th</sup> Avenue and 181 <sup>st</sup> Street	11	0	0	0
90 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	5	0	0	0
90 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	17	0	0	0
<b>TOTAL</b>	<b>286</b>	<b>23</b>	<b>0</b>	<b>2</b>

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



**EXHIBIT 5**  
**I.S. 238 QUEENS**  
**SUSAN B. ANTHONY SCHOOL**  
**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	PED FATAL	SCHOOL_PED ACCD
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### **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 I.S. 238.

#### **3.6.1 Hillside Avenue and Midland Parkway/180<sup>th</sup> Street**

This is a signalized intersection with school crosswalks located across the north leg of Midland Parkway and west leg of Hillside Avenue. This is an offset intersection with the north leg of Midland Parkway east of the south leg 180<sup>th</sup> Street. Hillside Avenue is a two-way street with two travel lanes and a dedicated bus lane on each side of the roadway. Hillside Avenue also has a painted striped median approximately ten feet wide along the center of the roadway, with dedicated left-turn lanes at intersections. Parking is permitted along the curbs in the dedicated bus lanes during off-peak hours.

Midland Parkway is situated north of Hillside Avenue, and is a two-way street with one traffic lane and a parking lane on each side of the roadway. Midland Avenue has a landscaped median approximately 20 feet wide along the center of the roadway. There is also a dedicated left turn lane for eastbound Hillside Avenue to northbound Midland Parkway.

180<sup>th</sup> Street is situated south of Hillside Avenue and is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. 180<sup>th</sup> Street is slightly west of, and opposite from, Midland Parkway. The stop line for eastbound traffic on Hillside Avenue at the Midland Parkway traffic signal is located on the west side of 180<sup>th</sup> Street. 180<sup>th</sup> Street traffic is generally unaffected by the traffic signal because it is southbound (away) from Hillside Avenue.

There was a total of 68 accidents reported at this intersection between 1998 and 2000 (Table 2), including four pedestrian accidents, none of which were school-related. There were no pedestrian fatalities reported at this intersection.

#### **3.6.2 Hillside Avenue and 181<sup>st</sup> Street**

This is a signalized T-intersection with no school crosswalks across any legs of the intersection. Hillside Avenue is a two-way street with two travel lanes and a dedicated bus lane on each side of the roadway, a painted median approximately ten feet wide along the center of the roadway, and dedicated left-turn lanes at intersections. Parking is permitted along the curb in the dedicated bus lanes during off-peak hours. 181<sup>st</sup> Street is situated south of Hillside Avenue and is a one-way northbound street with one travel lane and on-street parking permitted on both sides of the roadway.

There was a total of 27 accidents reported at this intersection between 1998 and 2000 (Table 2). Three of these were pedestrian accidents, but none were school-related. There were no pedestrian fatalities reported at this intersection.

### 3.6.3 Hillside Avenue and 182nd Street/Avon Street

This is a signalized four-leg intersection with school crosswalks located across the north leg of Avon Street, the south leg of 182<sup>nd</sup> Street, and the east leg of Hillside Avenue. A pedestrian crosswalk is located across the west leg of Hillside Avenue. Hillside Avenue is a two-way street with two travel lanes and a dedicated bus lane on each side of the roadway, a painted median approximately ten feet wide along the center of the roadway, and dedicated left turn lanes at intersections. Parking is permitted along the curb in the dedicated bus lanes during off-peak hours. 182<sup>nd</sup> Street is situated south of Hillside Avenue and is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. Avon Street is situated north of Hillside Avenue and is also a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. There is a dedicated left turn lane from westbound Hillside Avenue to southbound 182<sup>nd</sup> Street.

There was a total of 23 accidents reported at this intersection between 1998 and 2000 (Table 2), none of which were pedestrian accidents. There were no pedestrian fatalities reported at this intersection.

### 3.6.4 Hillside Avenue and 182nd Place

This is an unsignalized T-intersection with no school crosswalks. Hillside Avenue is a two-way street with two traffic lanes and a dedicated bus lane on each side of the roadway, a painted median approximately ten feet wide along the center of the roadway, and dedicated left turn lanes at intersections. Parking is permitted along the curb in the dedicated bus lanes during off-peak hours. 182<sup>nd</sup> Place is situated south of Hillside Avenue and is a two-way street with one traffic lane and on-street parking permitted on both sides of the roadway (see Figure 14). 182<sup>nd</sup> Place extends only approximately 100 feet south of Hillside Avenue. It terminates at a playground/sport fields for I.S. 238. There is a dedicated left turn lane from westbound Hillside Avenue to southbound 182<sup>nd</sup> Place.

There was a total of 13 accidents reported at this intersection between 1998 and 2000 (Table 2). One of these was a pedestrian accident, but was not school-related. There were no pedestrian fatalities reported at this intersection.

### 3.6.5 Hillside Avenue and 183<sup>rd</sup> Street

This is an unsignalized T-intersection with a school crosswalk located across the south leg of 183<sup>rd</sup> Street. Hillside Avenue is a two-way street with two travel lanes and a dedicated bus lane on each side of the roadway, a painted median approximately ten feet wide along the center of the roadway, and dedicated left turn lanes at intersections. Parking is permitted along the curb in the dedicated bus lanes during off-peak hours. There is a dedicated left turn lane for westbound Hillside Avenue traffic to turn

southbound on 183<sup>rd</sup> Street. 183<sup>rd</sup> Street is situated south of Hillside Avenue and is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway

There was a total of 26 accidents reported at this intersection between 1998 and 2000 (Table 2), including three pedestrian accidents, one of which was school-related. The school-related accident occurred at the intersection at approximately 3:00 pm on Friday, October 27, 2000. The accident involved a 12-year old pedestrian who was reported as being struck by a vehicle and sustaining a “possible injury” while playing in the street at the intersection. The accident location was on a straight and level segment, and the roadway and weather conditions were dry and clear, respectively. There were no pedestrian fatalities reported at this intersection.



*Figure 10: Looking south across Hillside Avenue at 182<sup>nd</sup> Place  
(the school playground/sport fields is located at end of 182nd Place, the school is shown on the right)*

### 3.6.6 Hillside Avenue and 184<sup>th</sup> Street/Dalny Road

This is a signalized four-leg intersection with school crosswalks located across the south leg of 184<sup>th</sup> Street and the west leg of Hillside Avenue. Hillside Avenue is a two-way street with two travel lanes and a dedicated bus lane on each side of the roadway, a painted median approximately ten feet wide along the center of the roadway, and dedicated left turn lanes at intersections. Parking is permitted along the curb in the dedicated bus lanes during off-peak hours. 184<sup>th</sup> Street is situated south of Hillside Avenue and is a one-way northbound street with one travel lane and on-street parking permitted on both sides of the roadway. Dalny Road is situated north of Hillside Avenue and is a two-way street with one travel lane and a parking lane on each side of the roadway. There is a dedicated left turn lane for eastbound Hillside Avenue traffic to turn northbound on Dalny Road.

There was a total of 31 accidents reported at this intersection between 1998 and 2000 (Table 2), including two pedestrian accidents, neither of which was school-related. There were no pedestrian fatalities reported at this intersection.

3.6.7 89<sup>th</sup> Avenue and 182<sup>nd</sup> Street

This is an unsignalized four-leg intersection with school crosswalks located across the east leg of 89<sup>th</sup> Avenue, and the north and south legs of 182<sup>nd</sup> Street. 89<sup>th</sup> Avenue is a two-way street with one traffic lane and parking on each side of the roadway. 182<sup>nd</sup> Street is a one-way southbound street with one traffic lane and on-street parking permitted on both sides of the roadway. Traffic movements at both approaches of 182<sup>nd</sup> Street are controlled by stop signs.

There was a total of six accidents reported at this intersection between 1998 and 2000 (Table 2), including two pedestrian accidents, neither of which was school-related. There were no pedestrian fatalities reported at this intersection.

In order to determine the appropriate level of traffic control for the school crosswalks, a preliminary traffic signal warrant assessment was performed to assess the traffic situation and determine what type of traffic control devices would be appropriate. A traffic count was conducted at the intersection of 89<sup>th</sup> Avenue and 182<sup>nd</sup> Street, from 7:30 to 9:00 am on Tuesday, June 21, 2005. The results of the peak hour (7:30 to 8:30 am) count are shown in Tables 4 and 5, and in Exhibit 6A at the end of this section.

As shown in Table 5, the pedestrian volume count determined there were 28 pedestrians (18 adults and 10 students) utilizing the school crosswalk located across the west leg of 89<sup>th</sup> Avenue, and 115 pedestrians (51 adults and 64 students) utilizing the pedestrian crosswalk located across the east leg of 89<sup>th</sup> Avenue. This results in a total of 143 pedestrians crossing 89<sup>th</sup> Avenue at 182<sup>nd</sup> Street (69 adults and 74 students) during the 7:30 to 8:30 a.m. time period.

TABLE 4: VEHICLE VOLUMES (7:30-8:30 AM)							
INTERSECTION	89 <sup>th</sup> Avenue EASTBOUND		89 <sup>th</sup> Avenue WESTBOUND		182 <sup>nd</sup> Street SOUTHBOUND		
	Straight	Right	Left	Straight	Left	Straight	Right
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	19	10	70	37	17	96	31
<b>TOTAL</b>	<b>29</b>		<b>107</b>		<b>144</b>		

TABLE 5: PEDESTRIAN VOLUMES (7:30-8:30 AM)				
INTERSECTION	Crossing 89 <sup>th</sup> Avenue WEST-LEG CROSSWALK	Crossing 89 <sup>th</sup> Avenue EAST-LEG CROSSWALK	Crossing 182 <sup>nd</sup> Street SOUTH-LEG CROSSWALK	Crossing 182 <sup>nd</sup> Street NORTH-LEG CROSSWALK
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Street	28 (18 / 10) *	115 (51 / 64) *	100 (31 / 69) *	133 (57 / 76) *

\* Numbers in parenthesis indicate (adults / students).

In addition, a traffic signal warrant analysis was performed to determine the need for traffic signal control at this intersection. The results of the preliminary assessment based on traffic signal warrant 4 (Pedestrian Volumes) and warrant 5 (School Crossing) of the Federal MUTCD are presented in Tables 6 and 7, respectively.

<b>TABLE 6: TRAFFIC SIGNAL WARRANT 4 ANALYSIS (PEDESTRIAN VOLUME)</b>						
Intersection	Total Hourly (7:30-8:30 AM) Pedestrian Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour*	Greater than 190 Pedestrians / hour	
89th Avenue and 182nd Street	223	143	366	No	Yes	No
* The available gap is based on the time needed for a pedestrian to walk across the street. The analysis assumed 11 seconds.						

<b>TABLE 7: TRAFFIC SIGNAL WARRANT 5 ANALYSIS (SCHOOL CROSSING)</b>						
Intersection	Total Hourly (7:30-8:30 AM) Student Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour <sup>(1)</sup>	Greater than 20 Students / hour	
89th Avenue and 182nd Street	145	74	219	No	Yes	No
* The available gap is based on the time needed for a pedestrian to walk across the street. The analysis assumed 11 seconds.						



*Figure 11: Looking east on 89th Avenue across 182nd Street (the school is shown on the left)*

### 3.6.8 89<sup>th</sup> Avenue and 182<sup>nd</sup> Place

This is an unsignalized T-intersection with school crosswalks located across the west leg of 89th Avenue and the south leg of 182nd Place. 89th Avenue is a two-way street with one travel lane and parking on each side of the roadway. 182nd Place is situated south of 89th Avenue and is a one-way northbound street with one travel lane and on-street parking permitted on both sides of the roadway. There is a stop sign for northbound 182<sup>nd</sup> Place traffic.

There was a total of four accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident, which was not school-related. There were no pedestrian fatalities reported at this intersection.

There is an uncontrolled school crosswalk located across the west leg of 89<sup>th</sup> Avenue at the 182<sup>nd</sup> Place intersection. In order to determine the appropriate level of traffic control for the school crosswalks, a preliminary traffic signal warrant assessment was performed to assess the traffic situation and determine what type of traffic control devices would be appropriate. A traffic count was conducted at the intersection, from 7:30 to 9:00 am on Tuesday, September 27, 2005. The results of the peak hour (7:30 to 8:30 am) count are shown in Tables 8 and 9, and in Exhibit 6B at the end of this section.

As shown in Table 8, the vehicular volume count determined there were 125 vehicles on northbound 182<sup>nd</sup> Place (74 left turns and 51 right turns) and 101 vehicles eastbound on 89<sup>th</sup> Avenue (37 eastbound and 64 westbound). As Table 9 shows, the pedestrian volume

count determined there were 83 pedestrians (23 adults and 60 students) utilizing the school crosswalk located across the west leg of 89<sup>th</sup> Avenue, and 97 pedestrians (6 adults and 91 students) utilizing the unmarked crosswalk located across the east leg of 89<sup>th</sup> Avenue. This results in a total of 180 pedestrians crossing 89<sup>th</sup> Avenue at 182<sup>nd</sup> Place (29 adults and 151 students) during the 7:30 to 8:30 am time period.

TABLE 8: VEHICLE VOLUMES (7:30-8:30 AM)				
INTERSECTION	182nd Place NORTHBOUND		89th Avenue EASTBOUND	89th Avenue WESTBOUND
	Left	Right	Straight	Straight
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	74	51	37	64
TOTAL	125		101	

TABLE 9: PEDESTRIAN VOLUMES (7:30-8:30 AM)			
INTERSECTION	Crossing 182nd Place SOUTH-LEG CROSSWALK	Crossing 89th Avenue WEST-LEG CROSSWALK	Crossing 89th Avenue EAST-LEG CROSSWALK
89 <sup>th</sup> Avenue and 182 <sup>nd</sup> Place	32 (21 / 11) *	83 (23 / 60) *	97 (6 / 91) *

\* Numbers in parenthesis indicate (adults / students)



Figure 12: Looking east on 89th Avenue at the 182nd Place intersection (school buses are shown waiting for student dismissal)

In addition, a traffic signal warrant analysis was performed to determine the need for traffic signal control at this intersection. The results of the preliminary assessment based on traffic signal warrant 4 (Pedestrian Volumes) and warrant 5 (School Crossing) of the Federal MUTCD are presented in Tables 10 and 11, respectively.

<b>TABLE 10: TRAFFIC SIGNAL WARRANT 4 ANALYSIS (PEDESTRIAN VOLUME)</b>						
Intersection	Total Hourly (7:30-8:30 AM) Pedestrian Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour*	Greater than 190 Pedestrians / hour	
89th Avenue and 182nd Place	180	32	212	No	No	No
* The available gap is based on the time needed for a pedestrian to walk across the street. The analysis assumed 11 seconds.						

<b>TABLE 11: TRAFFIC SIGNAL WARRANT 5 ANALYSIS (SCHOOL CROSSING)</b>						
Intersection	Total Hourly (7:30-8:30 AM) Student Volumes			Criteria		Traffic Signal Warranted
	Crossing Street			Gap	Crossing Major Street	
	Major	Minor	Total	Fewer than 60 gaps / hour <sup>(1)</sup>	Greater than 20 Students / hour	
89th Avenue and 182nd Place	151	11	162	No	Yes	No
* The available gap is based on the time needed for a pedestrian to walk across the street. The analysis assumed 11 seconds.						

**3.6.9 89<sup>th</sup> Avenue and 183<sup>rd</sup> Street**

This is an unsignalized four-leg intersection with school crosswalks located across the north and south legs of 183<sup>rd</sup> Street, and pedestrian crosswalks located across the east and west legs of 89<sup>th</sup> Avenue. 89<sup>th</sup> Avenue is a two-way street with one travel lane and parking on each side of the roadway. 183<sup>rd</sup> Street is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. There is a stop sign for southbound 183<sup>rd</sup> Street traffic.

There was a total of five accidents reported at this intersection between 1998 and 2000 (Table 2), none of which were pedestrian accidents. There were no pedestrian fatalities reported at this intersection.

**3.6.10 90<sup>th</sup> Avenue and 182<sup>nd</sup> Street**

This is an unsignalized four-leg intersection with no crosswalks across any legs. 90<sup>th</sup> Avenue is a two-way street with one travel lane and parking on each side of the roadway. 182<sup>nd</sup> Street is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. The intersection is a multi-way stop with stop signs for the southbound, eastbound, and westbound approaches.

There was a total of five accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident that was also school-related. This school-related accident occurred at approximately 3:00 pm on April 3, 2000, when a six-year-old pedestrian sustained a “non-incapacitating injury” while crossing at the intersection. The accident occurred under cloudy, daylight conditions, and the road surface was reported as dry. There were no pedestrian fatalities reported at this intersection.

### 3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of I.S. 238, 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 12.

TABLE 12: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
<b>Hillside Avenue and Midland Place/180<sup>th</sup> Street</b>				
crossing Hillside Avenue	70	29	27	NO
crossing Midland Parkway	81	87	30	NO
<b>Hillside Avenue and 181<sup>st</sup> Street</b>				
crossing Hillside Avenue	70	29	27	NO
crossing 181 <sup>st</sup> Street	30	87	13	NO
<b>Hillside Avenue and 182<sup>nd</sup> Street/Avon Street</b>				
crossing Hillside Avenue	70	29	27	NO
crossing 182 <sup>nd</sup> Street/Avon Street	30	87	13	NO
<b>Hillside Avenue and 184<sup>th</sup> Street/Dalny Road</b>				
crossing Hillside Avenue	70	29	27	NO
crossing 184 <sup>th</sup> Street/Dalny Road	30	87	13	NO

*Note: A rate of 3 ft/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate.*

### 3.8 PHYSICAL CONDITIONS

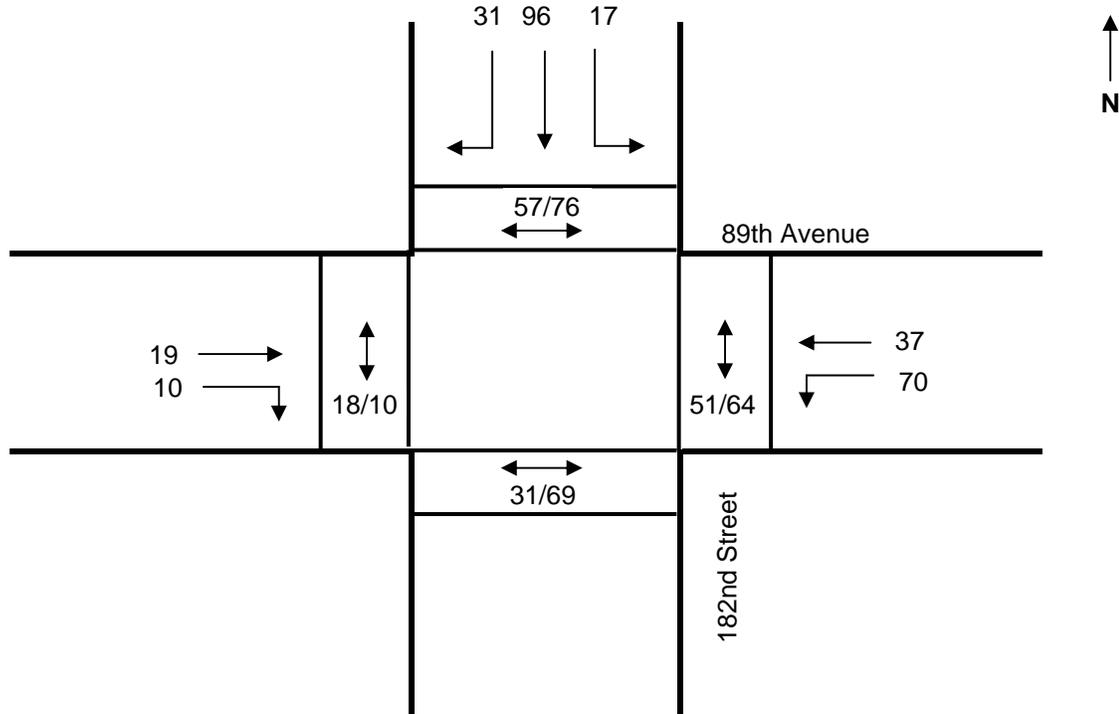
#### 3.8.1 Roadways and Sidewalks

The roadways in the vicinity of I.S. 238 were observed to generally be in fair condition. Existing sidewalks on the school block-faces are approximately 12 to 15 feet wide and are in fair condition.

#### 3.8.2 Pedestrian Ramps

Overall, pedestrian ramps in the vicinity of the school were observed to be standard.

**One Hour Traffic Volumes**  
**Tuesday, June 21st, 2005 7:30am - 8:30m**

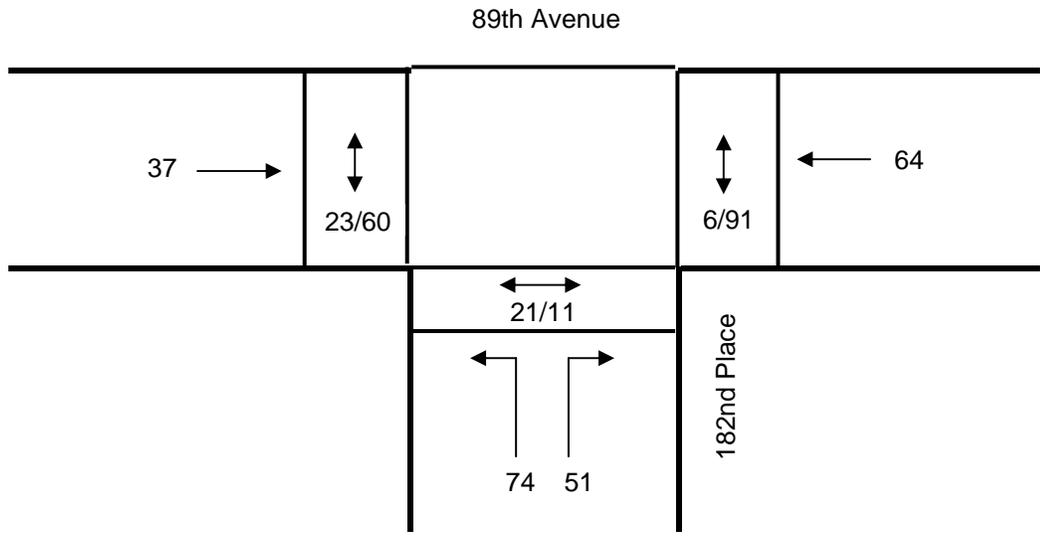


**Intersection of 182nd Street and 89th Avenue**

<b>Table of Content:</b>	
	Pedestrian Counts
<b>XX/XX</b>	(Adult/Child)
	Vehicle Movement

<b>EXHIBIT 6A</b>
<b>I.S. 238 QUEENS</b>
<b>SUSAN B. ANTHONY SCHOOL</b>
<b>TRAFFIC AND PEDESTRIAN COUNTS</b>

**One Hour Traffic Volumes**  
**Tuesday, September 27th, 2005 7:30 am - 8:30 am**



***Intersection of 182nd Place and 89th Avenue***

<b>Table of Content:</b>	
<b>XX / XX</b>	Adult / Child
<b>↔</b>	Pedestrian Counts
<b>→</b>	Vehicle Movement

<b>EXHIBIT 6B</b>
<b>I.S. 238 QUEENS</b>
<b>SUSAN B. ANTHONY SCHOOL</b>
<b>TRAFFIC AND PEDESTRIAN COUNTS</b>

## **4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY**

This section describes proposed measures to improve school pedestrian safety around I.S. 238. 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 I.S. 238 is discussed as follows, and is shown in more detail in Exhibit 7 at the end of this section.

### **4.1 SHORT-TERM MEASURES**

➤ *Install graphic “YIELD TO PEDESTRIAN” signs*

Install “YIELD TO PEDESTRIAN” signs at intersection approaches with substantial vehicle–student pedestrian volumes at intersections assigned to this school. “YIELD TO PEDESTRIAN” signs are recommended on the following approaches of signalized intersections around I.S. 238:

- Eastbound approach of Hillside Avenue at Avon Street

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

➤ *Re-designate pedestrian crosswalks as school crosswalks*

The existing pedestrian crosswalks located across the east leg of Hillside Avenue at Midland Parkway, south leg of 181<sup>st</sup> Street at Hillside Avenue, south leg of 182<sup>nd</sup> Place at Hillside Avenue, and east leg of Hillside Avenue at 184<sup>th</sup> Street/Dalny Road are natural crossing points for students going to and from I.S. 238. They also “fill in” the connections between other school crosswalks that students currently use.

It is therefore recommended to re-designate the following existing pedestrian crosswalks as school crosswalks, and install all appropriate warning devices:

- The crosswalk located across the east leg of Hillside Avenue at Midland Parkway
- The crosswalk located across the south leg of 181<sup>st</sup> Street at Hillside Avenue
- The crosswalk located across the south leg of 182<sup>nd</sup> Place at Hillside Avenue
- The crosswalk located across the east leg of Hillside Avenue at 184<sup>th</sup> Street/Dalny Road

➤ 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 (or stop controlled) crosswalks, the vehicle stop line can be placed farther back from the crosswalk in order to maximize visibility of pedestrians and to minimize the potential for pedestrian/vehicle conflicts. Therefore, it is recommended that stop bars be placed ten feet in advance of all school crosswalks.

➤ Bus Stop Relocation

Many I.S. 238 students (79% or approximately 1,400 students) use public transportation on Hillside Avenue. A westbound (far-side) bus stop is currently located at 184th Street, two blocks east of the school. Students often do not use the designated school crosswalks to cross Hillside Avenue and were reported by school representatives as “dodging through traffic” to get to school. The principal has requested a westbound (near-side) bus stop at 182<sup>nd</sup> Street on Hillside Avenue, similar to the bus stop in the eastbound direction. This would drop students off at the intersection closest to the main entrance of the school, and also at an existing school crosswalk located across the east leg of Hillside Avenue. This improvement should help concentrate student crossings at a signalized location with a designated school crosswalk.

It is therefore recommended to:

- Relocate the existing westbound bus stop on Hillside Avenue from the 184<sup>th</sup> Street location to a near-side stop at 182<sup>nd</sup> Street.

➤ Request that NYPD assign a crossing guards to the following locations

Student pedestrians were observed crossing at the uncontrolled school crosswalk of 182<sup>nd</sup> Street at 89<sup>th</sup> Avenue.

It is therefore recommended to:

- Request that NYPD assign a school crossing guard at the intersection of 182<sup>nd</sup> Street at 89<sup>th</sup> Avenue.
- Request that NYPD assign a school crossing guard at the intersection of 89<sup>th</sup> Avenue and 182<sup>nd</sup> Place intersection.

➤ Administer student pedestrian safety education program

According to the principal of I.S. 238, students are unsafe crossing the uncontrolled intersections of 182<sup>nd</sup> Street at 89<sup>th</sup> Avenue and 89<sup>th</sup> Avenue at 182<sup>nd</sup> Place. Therefore, the following action is recommended:

- 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.

#### 4.2 LONG-TERM MEASURES

➤ Consider installing curb extensions at the intersection of 89<sup>th</sup> Avenue and 182<sup>nd</sup> Place

Consideration should be given to installing curb extensions at the following locations, provided that the Final Design confirms that construction of the recommended curb extensions would be feasible and not interfere with traffic operations. Final details pertaining to the number, location and geometry of curb extensions will be developed during the Final Design/Contract Document preparation.

- Provide a curb extension at the southwest corner of 89<sup>th</sup> Avenue and 182<sup>nd</sup> Place, as shown in Exhibit 7

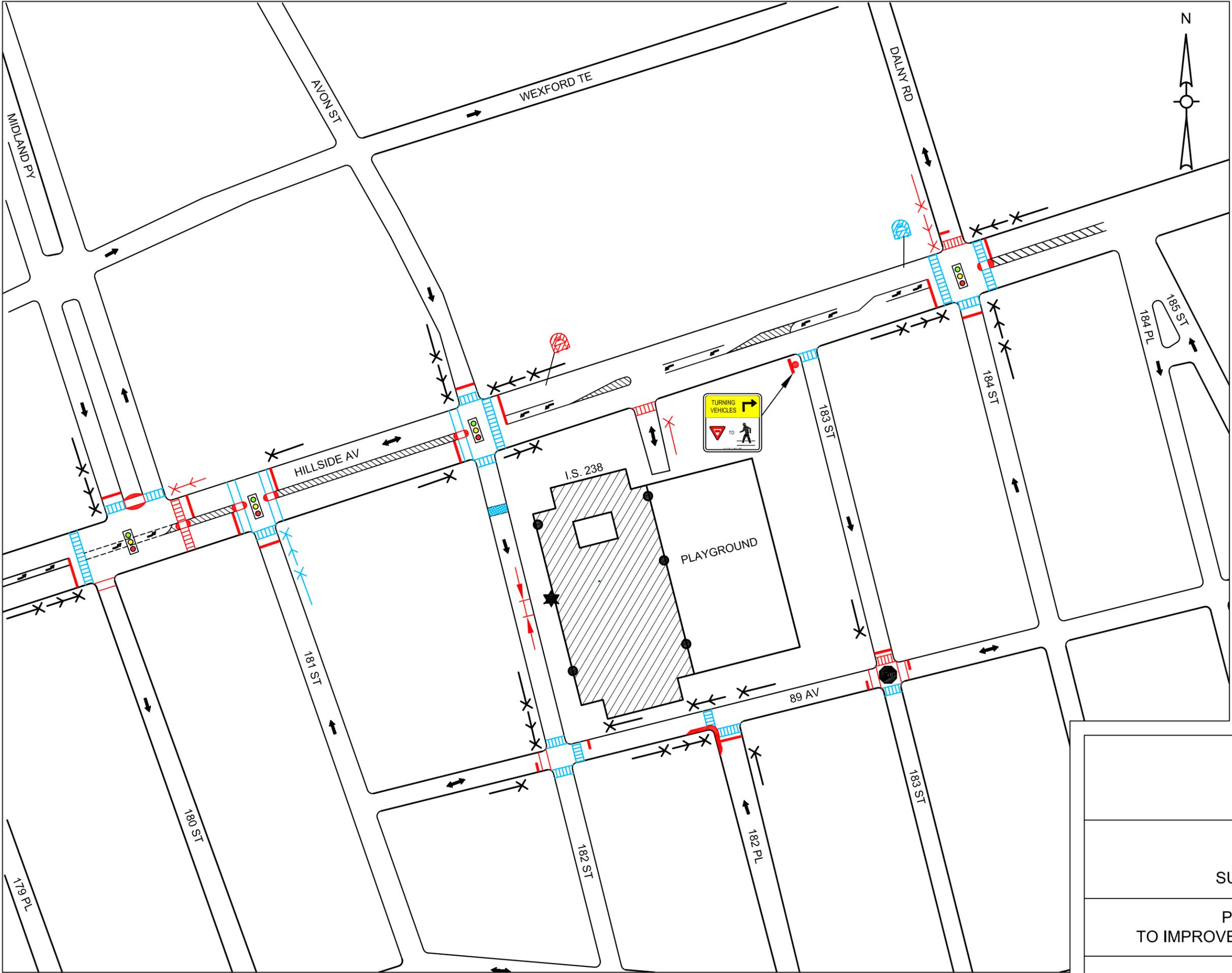
The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks. These curb extensions would not eliminate or reduce the width of any moving lanes.

➤ Consider installing pedestrian refuge islands at the following intersections:

There is a striped median along the center of Hillside Avenue, separating eastbound and westbound traffic. It is therefore recommended to:

- Provide a pedestrian refuge island at the east leg of Hillside Avenue at Dalny Road
- Provide a pedestrian refuge island at the west leg of Hillside Avenue at 182<sup>nd</sup> Street
- Provide a pedestrian refuge island at the east and west legs of Hillside Avenue at 181<sup>st</sup> Street
- Provide a pedestrian refuge island at the east leg of Hillside Avenue at Midland Parkway

The islands, as shown in Exhibit 7, will provide a refuge for pedestrians who do not complete the crossing during the flashing “DON’T WALK” indication. The proposed median should be at least five feet wide, should extend beyond the crosswalk, and should have at least five 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 and curb extensions will be developed during Final Design.



**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 SIGNALIZED LOCATION
-  EXISTING ALL WAY STOP LOCATION
-  EXISTING SCHOOL CROSSWALK
-  EXISTING PEDESTRIAN CROSSWALK
-  EXISTING SPEED REDUCER (HUMP)
-  EXISTING BUS STOP LOCATION TO BE RELOCATED
-  PROPOSED SCHOOL CROSSWALK
-  PROPOSED TRAFFIC SIGN
-  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
-  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
-  PROPOSED BUS STOP LOCATION
-  PROPOSED CONCRETE REFUGE ISLAND
-  PROPOSED CURB EXTENSION (NECKDOWN)

1" = 200'

EXHIBIT 7

I.S. 238 QUEENS  
SUSAN B ANTHONY SCHOOL

POTENTIAL MEASURES  
TO IMPROVE STUDENT PEDESTRIAN SAFETY

# APPENDIX



