

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



**School Safety Engineering Project**

**FINAL REPORT: P.S. 71 (The Forest Elementary School), Queens**



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



**September 21, 2006**

**School Safety Engineering Project  
Final Report: P.S. 71, 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 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). P.S. 71 (Forest Elementary School) in the Ridgewood section of 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



### 2.2 NEIGHBORHOOD DESCRIPTION

Exhibit 1 shows an aerial view of the neighborhood surrounding the school. P.S. 71 is bounded by Metropolitan Avenue to the north, Bleecker Street to the south, 60<sup>th</sup> Street to the east, and Forest Avenue to the west. The neighborhood surrounding the school is primarily residential, but also includes some commercial uses. In Ridgewood, Forest Avenue is fronted by a mix of residential and commercial uses including restaurants, grocery stores, and other similar neighborhood services. Metropolitan Avenue, located one-half block north of P.S. 71, has many commercial uses and therefore is a focus of pedestrian and traffic activity in the neighborhood.



*Figure 1: Looking north on Forest Avenue from the intersection with Bleecker Street  
(P.S. 71 is shown in right-center)*

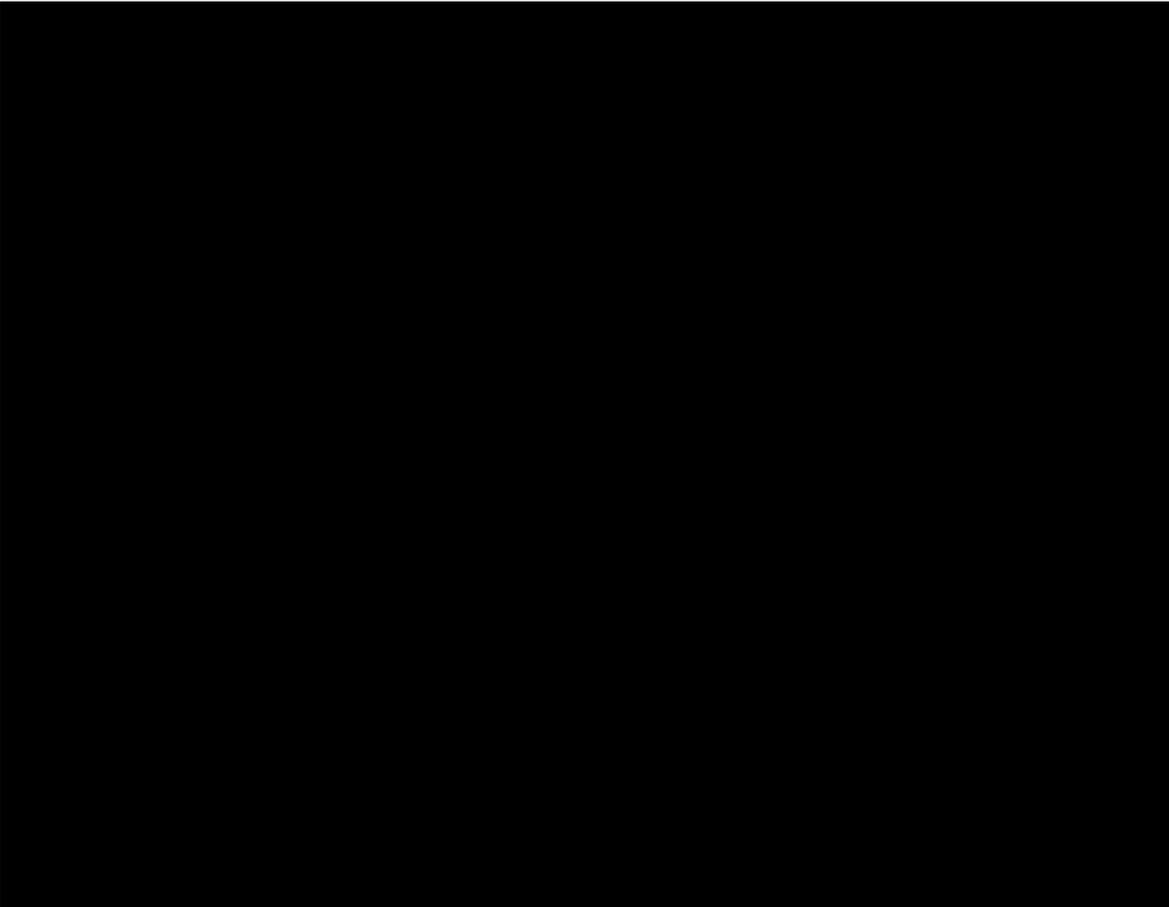
### 2.3 MEETING WITH SCHOOL REPRESENTATIVES

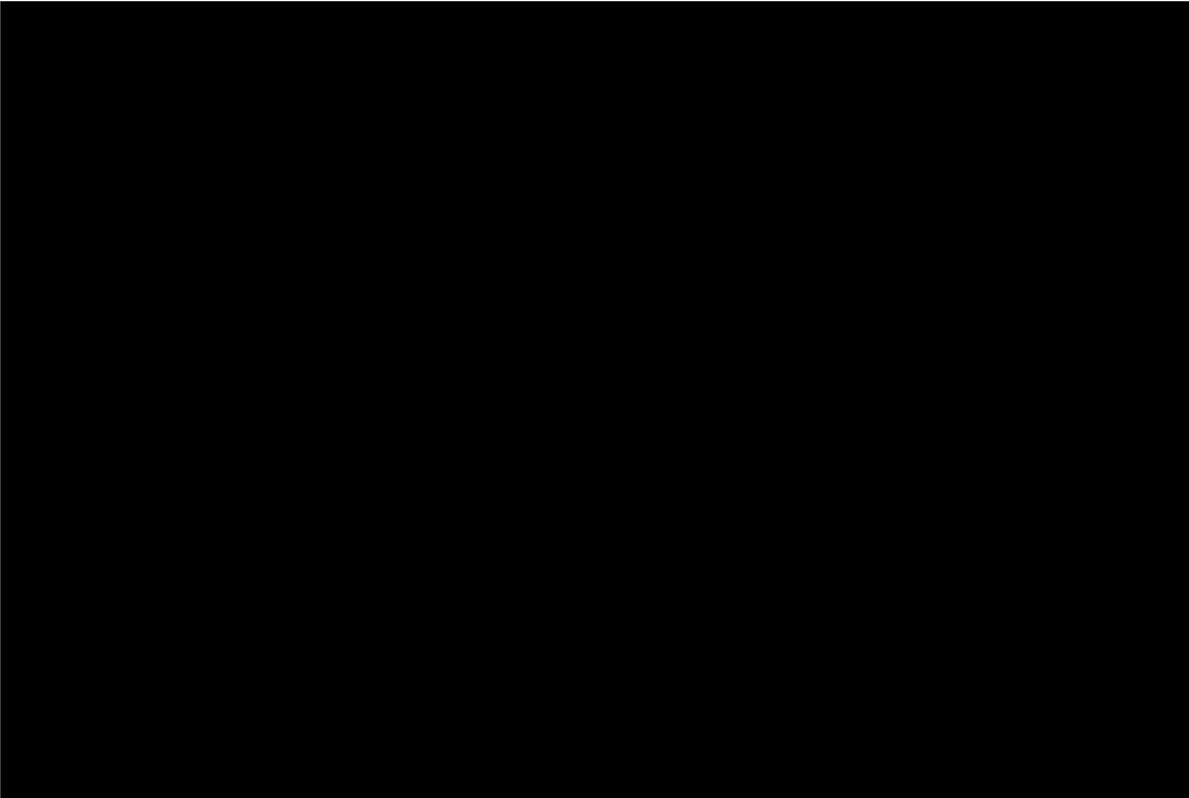
Members of the consultant team met with school representatives—including the principal, assistant principal, and custodial engineer—at P.S. 71 on the afternoon of May

7, 2004. According to these representatives, student pedestrians at P.S. 71 face the following problems:

- Vehicles have a tendency to speed along 60<sup>th</sup> Street, on the block adjacent to the school. School representatives reported that the speeding is due to commuters who use the 60<sup>th</sup> Street and Bleecker Street as a shortcut to bypass intersections along Metropolitan Avenue. The principal indicated that he would like a speed reducer (hump) on 60<sup>th</sup> Street to address the speeding issue, and noted that he has been requesting that one be installed for some time.
- Vehicles, including trucks, also have a tendency to speed along Forest Avenue in the vicinity of the school.
- Parents dropping-off students creates confusion and congestion in the vicinity of the school during the morning arrival period.
- Traffic volumes are particularly heavy during peak periods.

(See the Appendix of this document for minutes of the meeting with school representatives.)





**2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL**

The school’s “catchment area” as defined by the Department of Education is shown in Exhibit 2. The catchment area is roughly bounded by the Long Island Railroad, Metropolitan Avenue, and Eliot Avenue to the north; Madison Street to the south; Woodward Avenue and Flushing Avenue to the west; and 69<sup>th</sup> Street and Rentar Plaza to the east.

According to school officials, approximately 800 students walk to school, approximately 100 to 125 are driven to school, and the remaining students ride a school bus. At the time of the meeting with school officials, none of the students at P.S. 71 traveled by public bus or subway. However, the current New York City Department of Education web site shows that 18 half-fare Metrocards and 21 full-fare Metrocards were issued to students at this school.

Table 1 presents the modes of travel for P.S. 71, adjusted according to the information on the current web site.

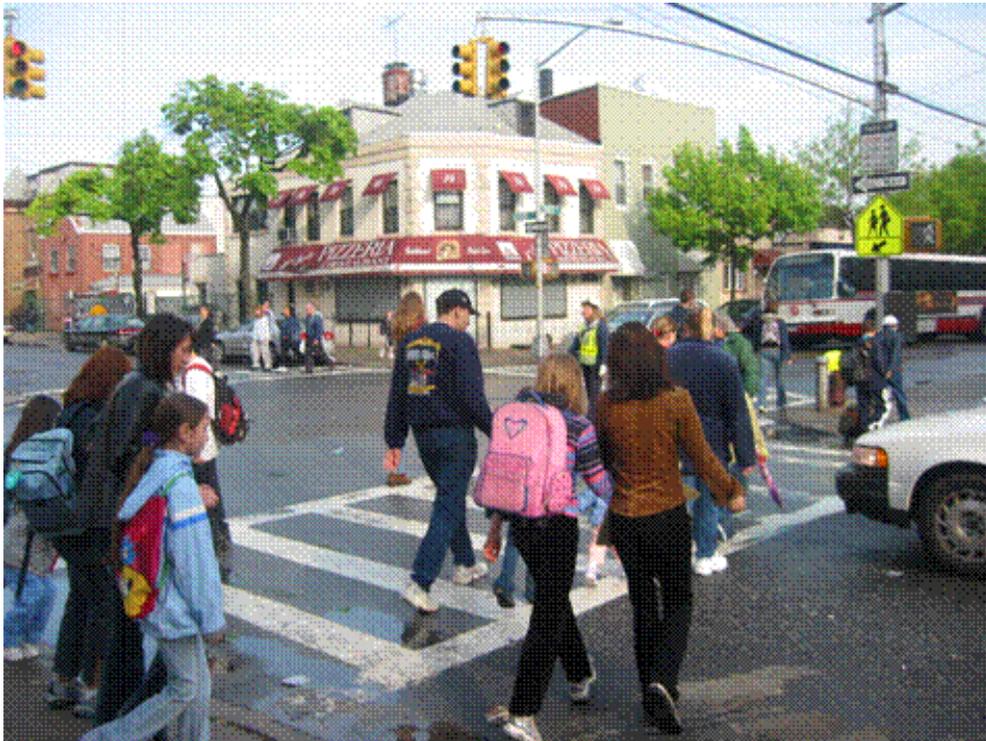
<b>TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)</b>	<b>STUDENTS (Percentage)</b>
Walk	75%
Driven by car	10%
School bus	11%
MTA Bus / Subway	4%
Bicycle	0%
<b>TOTAL</b>	<b>100%</b>

## 2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

Grover Cleveland High School and Grover Cleveland Park (both located several blocks to the west of P.S. 71), and Our Lady of Miraculous Medal School (located two blocks to the east of P.S. 71), generate additional pedestrian activity and vehicular traffic in the vicinity of the school. In addition, the commercial uses along Forest Avenue and Metropolitan Avenue generate additional pedestrian activity and vehicular traffic in the area.

## 2.8 CROSSING GUARD LOCATIONS

Crossing guards for P.S. 71 are located at the intersections of Forest Avenue and Metropolitan Avenue, and Forest Avenue and Bleecker Street (see Figure 3). Exhibit 4 shows the locations of the crossing guards.



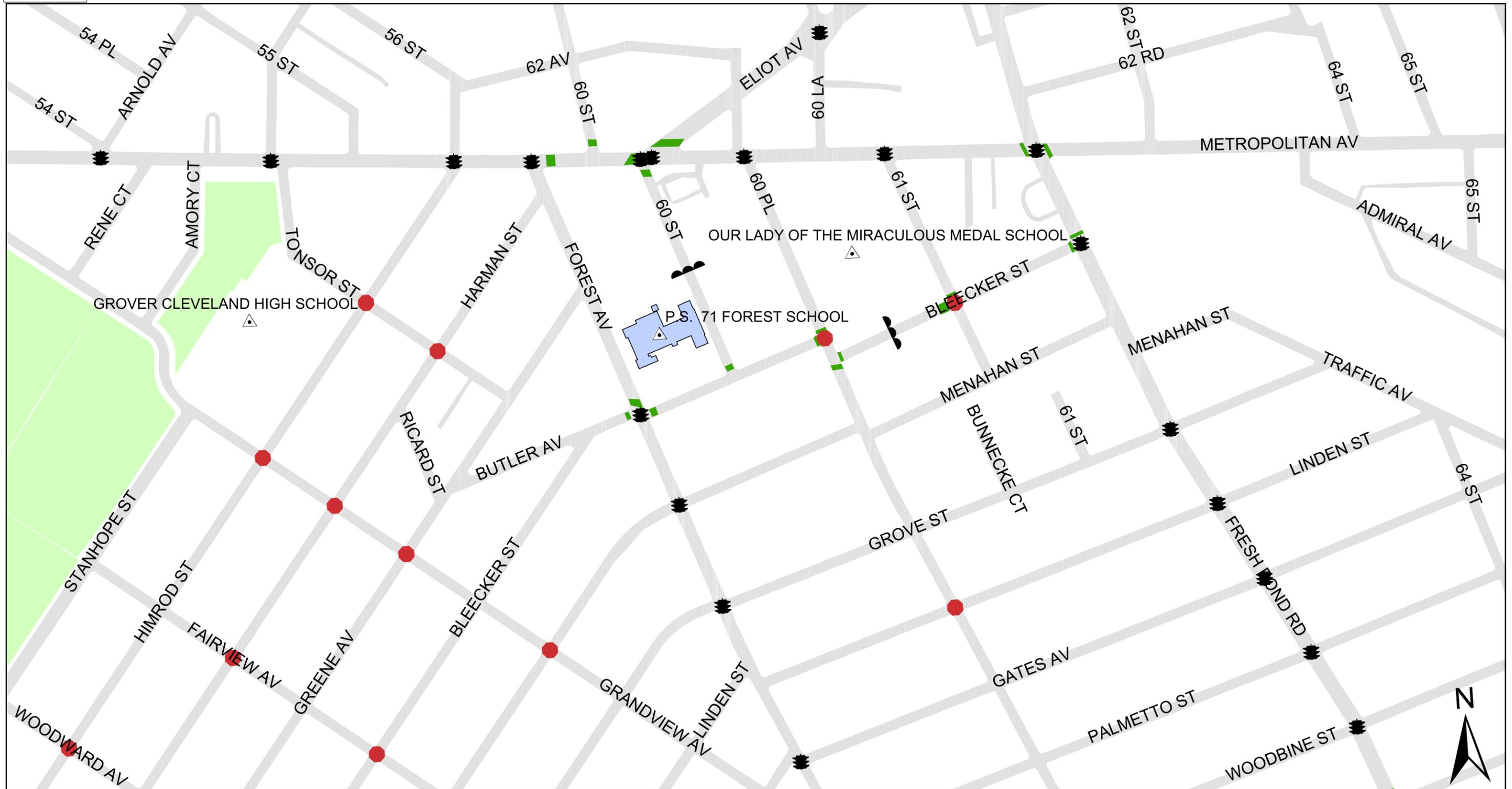
*Figure 3: Crossing guard shown on duty at the intersection of Forest Avenue and Bleecker Street*







# 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 

**PS 71 Queens  
 FOREST SCHOOL**

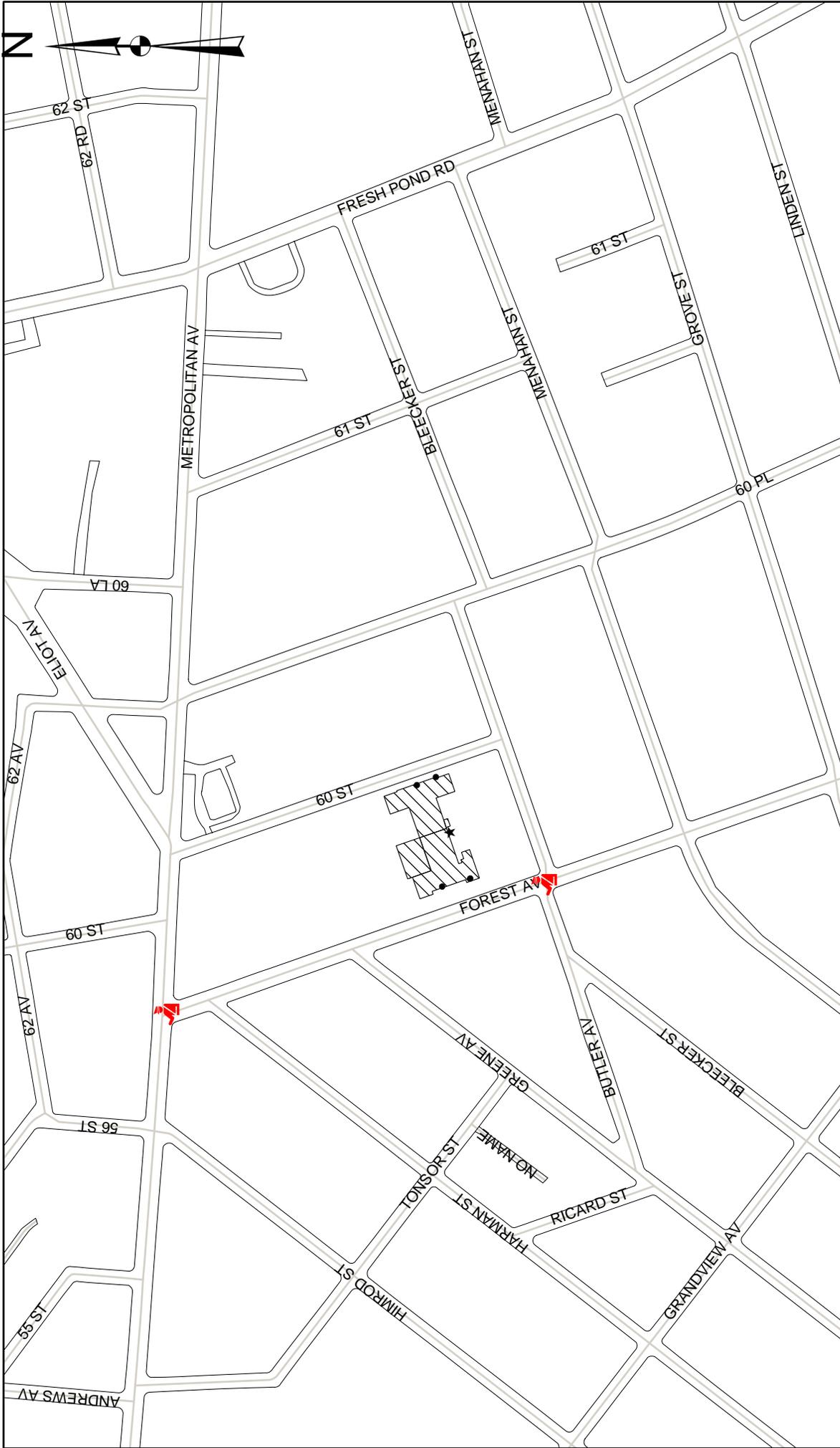
Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION, Iris Weinsall, COMMISSIONER.

Map created on 11/17/2006

**EXHIBIT 3**

COMM. BOARD: 405  
 PRECINCT: 104

1.5.1 10



**EXHIBIT 4**  
**P.S. 71 QUEENS**  
**FOREST ELEMENTARY SCHOOL**  
**CROSSING GUARDS LOCATIONS**

**LEGEND:**



CROSSING GUARD LOCATION



### **3. TRAFFIC OPERATIONS**

#### **3.1 SCHOOL BUS OPERATIONS**

At the meeting with school representatives, the principal reported 11 yellow school buses and two special education buses serving the school students. No Metrocards were issued at that time. (However, according to the Department of Education web site, the school now issues 18 half-fare Metrocards and 21 full-fare Metrocards.) The principal also reported that five of the school buses pick up and discharge students in front of the school on Forest Avenue, and six of the school buses do so to the west of the school on 60<sup>th</sup> Street. According to the Department of Education website, P.S. 71 provides three yellow buses for 92 students and five special education buses for door-to-door transportation for 54 students. The special education buses use the 60<sup>th</sup> Street entrance to P.S. 71. In order to be eligible for school busing, P.S. 71 students from Kindergarten through Grade 2 must live more than one-half mile from the school. Students in Grade 3 through Grade 5 must live more than one mile from school in order to be eligible for busing. Based on field observations, the consultant team determined that there is currently sufficient space along the block faces adjacent to the school to accommodate school bus operations.

According to school representatives, school bus operations are typically not an issue at P.S. 71, except for when parents occupy the area designated for the school buses while dropping off their children. Some parents insist upon leaving their vehicles to escort their children to the front door, thus blocking the school bus unloading area.

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

Approximately ten percent of the students arriving at P.S. 71 are dropped off by a parent or guardian. This percentage increases during inclement weather. Field observations conducted on the morning of May 7, 2004 indicated that parents drop off students on both Forest Avenue and 60<sup>th</sup> Street, but most parents utilize Forest Avenue.

The principal reported that drop off operations create congestion on both streets, and that some parents insist upon leaving their vehicles to escort their children to the school entrance, thus blocking the school bus unloading area. At times, Forest Avenue is congested due to double parking associated with the student arrivals.

#### **3.3 PARKING REGULATIONS**

Parking regulations around the school block are shown in Exhibit 5.

#### **3.4 EXISTING SCHOOL SIGNS AND MARKINGS**

Exhibit 3 shows the existing school signals and pavement markings around P.S. 71. 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 8.

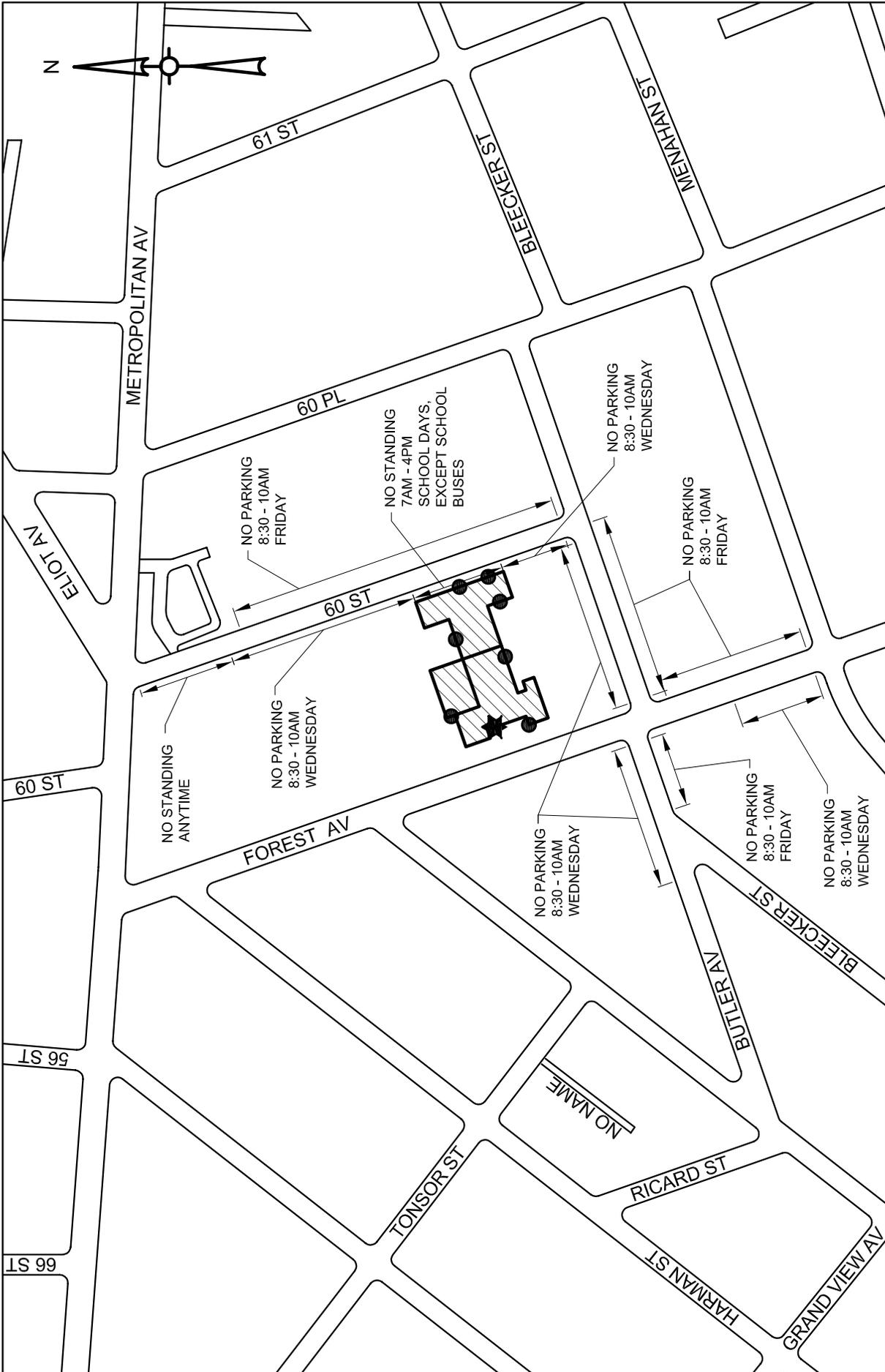
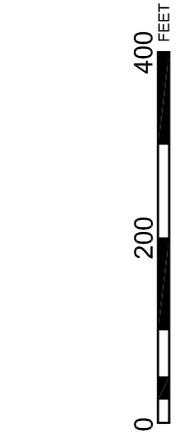


EXHIBIT 5  
 PS 71 QUEENS  
 FOREST ELEMENTARY SCHOOL  
 EXISTING PARKING REGULATIONS



- LEGEND:**
- ★ MAIN ENTRANCE
  - ENTRANCE

### 3.5 ACCIDENT SUMMARY

Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of P.S. 71 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>
Metropolitan Avenue and Forest Avenue	34	2	0	0
Metropolitan Avenue and 60 <sup>th</sup> Street (north leg)	49	2	0	1**
Metropolitan Avenue and Eliot Avenue/60 <sup>th</sup> Street (south leg)	42	1	0	1**
Forest Avenue and Bleecker Street	11	1	0	1
Bleecker Street and 60 <sup>th</sup> Street	1	0	0	0
<b>TOTAL</b>	<b>137</b>	<b>6</b>	<b>0</b>	<b>3</b>

<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Metropolitan Avenue and Forest Avenue	45	11	0	0
Metropolitan Avenue and 60 <sup>th</sup> Street (north leg)	77	3	0	1
Metropolitan Avenue and Eliot Avenue/60 <sup>th</sup> Street (south leg)	47	0	0	0
Forest Avenue and Bleecker Street	17	1	0	0
Bleecker Street and 60 <sup>th</sup> Street	4	0	0	0
<b>TOTAL</b>	<b>190</b>	<b>15</b>	<b>0</b>	<b>1</b>

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

\*\* This school related accident involved two pedestrians.



### **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 P.S. 71.

#### **3.6.1 Forest Avenue and Bleecker Street**

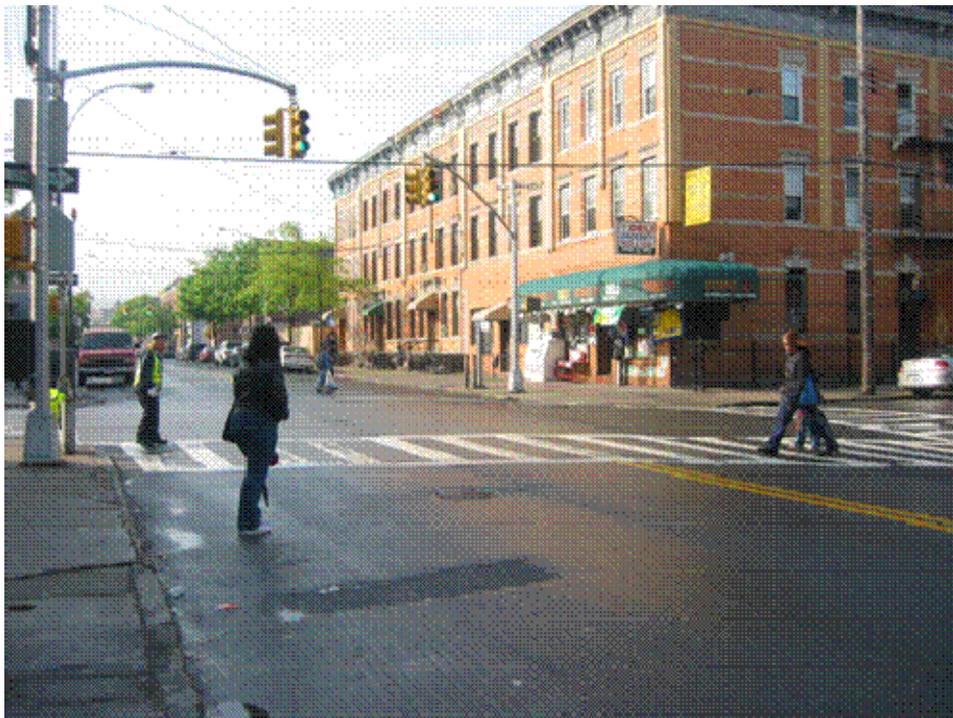
This is a four-leg signalized intersection with school crosswalks located across the north leg of Forest Avenue, and the east and west legs of Bleecker Street. There is a pedestrian crosswalk located across the south leg of Forest Avenue.

Forest Avenue is a two-way street with one travel lane and one on-street parking lane on each side of the roadway. Bleecker Street is a one-way westbound street with one travel lane and on-street parking permitted on both sides of the roadway (see Figures 4 and 5). The west and east legs of Bleecker Street are slightly offset, with the east leg intersecting Forest Avenue slightly south of the west leg of the intersection (see Exhibits 3 and 7).

There were a total of 11 accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident, which was also school related. The school-related accident occurred at approximately 6:00 pm on September 29, 1999, when a ten-year-old pedestrian sustained non-incapacitating injuries after being struck by a vehicle while crossing the intersection against the traffic signal. The roadway surface and weather conditions were reported as dry and clear, respectively. There were no pedestrian fatalities at this intersection between 1998 and 2000.



*Figure 4: Looking east along Bleecker Street from the intersection with Forest Avenue*



*Figure 5: Looking south along Forest Avenue from the intersection with Bleecker Street*

### 3.6.2 60<sup>th</sup> Street and Bleecker Street

This is an unsignalized “T”-intersection with a school crosswalk located across the north leg of 60<sup>th</sup> Street. 60<sup>th</sup> Street is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. The southbound approach of 60<sup>th</sup> Street is stop-controlled at its intersection with Bleecker Street. Bleecker Street is a one-way westbound street with one travel lane and on-street parking permitted on both sides of the roadway (see Figures 6 and 7).

There was one accident reported at this intersection between 1998 and 2000 (Table 2), but it was not a pedestrian accident.

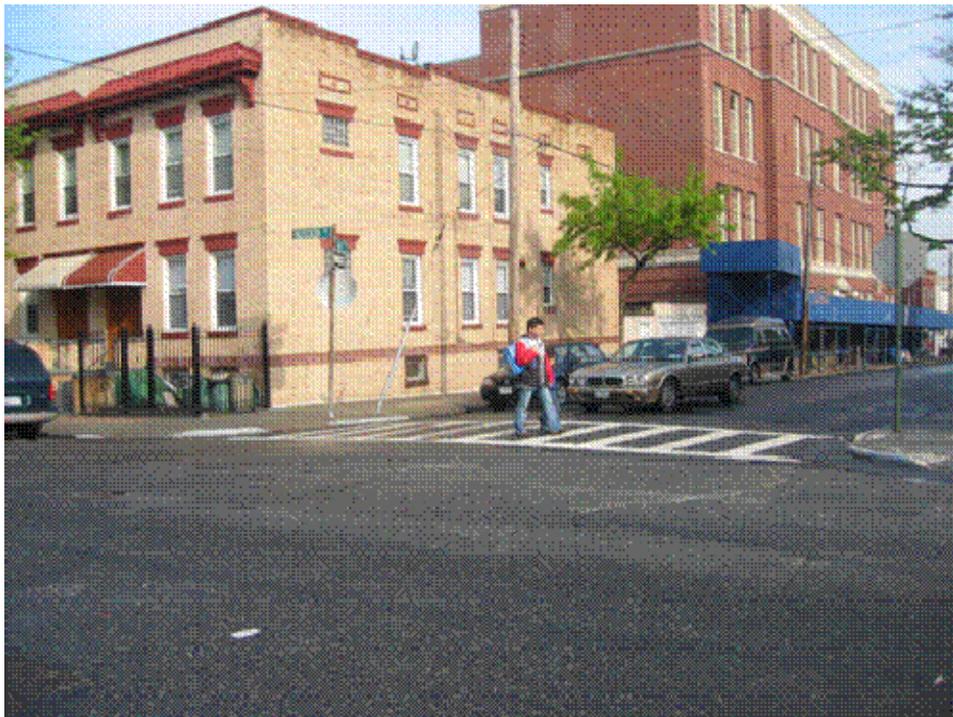
School officials reported a speeding problem on 60<sup>th</sup> Street. Therefore, a speed survey was conducted on 60<sup>th</sup> Street, between Metropolitan Avenue and Bleecker Street, in order to verify the existence of a speeding problem and to determine its extent.

Spot speed surveys are used to identify the 85<sup>th</sup> percentile speed, which is considered to be the representative speed for a specified street segment. By definition, 85 percent of the surveyed vehicles are traveling below this speed and 15 percent of the surveyed vehicles are traveling above this speed. 85<sup>th</sup> percentile speeds above 30 mph indicate a potential speeding problem that may require appropriate traffic calming measures. The results of the spot speed survey revealed that vehicles traveling southbound on 60<sup>th</sup> Street between Metropolitan Avenue and Bleecker Street were traveling at an 85<sup>th</sup> percentile speed of 31 mph.

The detailed results of the spot speed survey on 60<sup>th</sup> Street between Metropolitan Avenue and Bleecker Street are shown in the Appendix at the end of the document.



*Figure 6: Looking west along Bleeker Street to the intersection with 60th Street*



*Figure 7: Looking northwest across Bleeker Street to the intersection with 60th Street*

### 3.6.3 Metropolitan Avenue and Forest Avenue

This is a signalized “T”-intersection with a school crosswalk located across the east leg of Metropolitan Avenue, and pedestrian crosswalks located across the west leg of Metropolitan Avenue and the south leg of Forest Avenue.

In the vicinity of Forest Avenue, Metropolitan Avenue is a two-way street with two travel lanes on each side of the roadway and no on-street parking permitted along either side. Forest Avenue is also a two-way street with one travel lane and one on-street parking lane on each side of the roadway. Forest Avenue intersects Metropolitan Avenue from the southeast at an approximate 70-degree angle (see Figures 8 and 9).

There were a total of 34 accidents reported at this intersection between 1998 and 2000 (Table 2), including two pedestrian accidents, neither of which was school-related. No pedestrian fatalities were reported at this intersection between 1998 and 2000.

The school principal reported a speeding problem on Forest Avenue. Therefore, a speed survey was conducted on Forest Avenue between Metropolitan Avenue and Bleeker Street in order to verify the existence of a speeding problem and to determine its extent.

Spot speed surveys are used to identify the 85<sup>th</sup> percentile speed, which is considered to be the representative speed for a specified street segment. By definition, 85 percent of the surveyed vehicles are traveling below this speed and 15 percent of the surveyed vehicles are traveling above this speed. 85<sup>th</sup> percentile speeds above 30 mph indicate a potential speeding problem that may require appropriate traffic calming measures. The results of the spot speed survey revealed that the 85<sup>th</sup> percentile speeds for northbound and southbound vehicles on Forest Avenue, between Metropolitan Avenue and Bleeker Street, were 35 mph and 33 mph, respectively.

This roadway is a local bus route (Q-39), which precludes the use of a speed reducer in the roadway. A neckdown would also not be conducive to the character of the roadway at this location. Another technique often used to slow traffic on a roadway is the use of an automatic “speed board” which informs an approaching driver of the actual speed of the vehicle, and also shows a reminder of the speed limit for the roadway. However, speed boards are recommended for use only when the 85<sup>th</sup> percentile speed is found to exceed 40 mph.

The detailed results of the spot speed survey on Forest Avenue, between Metropolitan Avenue and Bleeker Street, are shown in the Appendix at the end of the document.



*Figure 8: Looking north along Forest Avenue to the intersection with Metropolitan Avenue*



*Figure 9: Looking northeast across the Metropolitan Avenue and Forest Avenue intersection*

### 3.6.4 Metropolitan Avenue and 60<sup>th</sup> Street (north leg)

This is a signalized “T”-intersection with a school crosswalk located across the north leg of 60<sup>th</sup> Street, and pedestrian crosswalks located across the east and west legs of Metropolitan Avenue.

In the vicinity of 60<sup>th</sup> Street, Metropolitan Avenue is a two-way street with two travel lanes on each side of the roadway and no on-street parking permitted on either side. 60<sup>th</sup> Street is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway. 60<sup>th</sup> Street intersects on the north side of Metropolitan Avenue, and continues south of Metropolitan Avenue approximately one hundred-fifty feet to the east via a separate signalized intersection.

There were a total of 49 accidents reported at this intersection between 1998 and 2000 (Table 2), including two pedestrian accidents, one of which was school-related. The school-related accident occurred at approximately 6:00 pm on February 23, 1998, when two five-year-old pedestrians sustained “possible injuries” after being struck by a vehicle while crossing the intersection with the traffic signal. The roadway surface and weather conditions were reported as wet and rainy, respectively. No pedestrian fatalities were reported at this intersection between 1998 and 2000.

### 3.6.5 Metropolitan Avenue and Eliot Avenue/60<sup>th</sup> Street (south leg)

This is a four-leg signalized intersection with school crosswalks located across the the north leg of Eliot Avenue, the south leg of 60<sup>th</sup> Street, and west leg of Metropolitan Avenue. There is a pedestrian crosswalk located across the east leg of Metropolitan Avenue.

In the vicinity of the intersection with Eliot Avenue and 60<sup>th</sup> Street, Metropolitan Avenue is a two-way street with two travel lanes on each side of the roadway and no on-street parking permitted on either side. Eliot Avenue is a two-way street with one very wide travel lane and one on-street parking lane on each side of the roadway. During the field visit, vehicles on Eliot Avenue were observed forming two lanes on the southbound approach to the intersection. 60<sup>th</sup> Street is a one-way southbound street with one travel lane and on-street parking permitted on both sides of the roadway (see Figures 10 and 11). There is a right-turn arrow for southbound Eliot Avenue traffic turning westbound onto Metropolitan Avenue. Eliot Avenue intersects the north side of Metropolitan Avenue from the northeast at an approximate 30-degree angle. 60<sup>th</sup> Street intersects Metropolitan Avenue from the southeast at approximately a 70-degree angle (60<sup>th</sup> Street is parallel to Forest Avenue).

There were a total of 42 accidents reported at this intersection between 1998 and 2000 (Table 2), including one pedestrian accident that was also school-related. The school-related accident occurred at approximately 2:00 pm on November 11, 1999 when two pedestrians, ages 9 and 12 sustained “possible injuries” after being struck while attempting to cross the intersection against the traffic signal. The roadway surface and

weather conditions were reported as dry and clear, respectively. No pedestrian fatalities were reported at this intersection between 1998 and 2000.

This intersection can be confusing for motorists due to the unconventional angles of the intersection and turning movements. School staff reported that many motorists choose to detour around the intersection rather than travel through it. In addition, school staff stated that they had observed many drivers performing unexpected maneuvers while traveling through the intersection. Specifically, drivers southbound on Eliot Avenue have been observed crossing Metropolitan Avenue to 60<sup>th</sup> Street with the southbound right-turn green arrow, even though they have a red indication for this movement and Metropolitan Avenue has a green indication. School officials also reported that 60<sup>th</sup> Street experiences relatively high volumes of traffic during certain times of the day, such that it can take approximately twenty minutes to travel around the block during these times.

To assess vehicle and pedestrian volumes at the intersection of Metropolitan Avenue and Eliot Avenue/60<sup>th</sup> Street (south leg), vehicle turning movement and pedestrian crossing counts were conducted at this intersection from 7:30 to 9:00 am on October 11, 2005. The results of these counts during the weekday peak hour (7:45 to 8:45 am) are shown in Tables 4 and 5, and in Exhibit 7 at the end of this section.

TABLE 4: VEHICLE VOLUMES (7:45 - 8:45 AM)									
INTERSECTION	Metropolitan Avenue EASTBOUND			Metropolitan Avenue WESTBOUND			Eliot Avenue SOUTHBOUND		
	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right
Metropolitan Avenue and Eliot Avenue/60 <sup>th</sup> Street	335	373	26	11	701	0	0	82	322
<b>TOTAL</b>	734			712			404		

TABLE 5: PEDESTRIAN VOLUMES (7:45 - 8:45 AM)				
INTERSECTION	Crossing Metropolitan Avenue EAST - LEG CROSSWALK	Crossing Metropolitan Avenue WEST - LEG CROSSWALK	Crossing Eliot Avenue NORTH - LEG CROSSWALK	Crossing 60 <sup>th</sup> Street SOUTH - LEG CROSSWALK
Metropolitan Avenue and Eliot Ave/60 <sup>th</sup> Street	14 (6 / 8) *	4 (3 / 1) *	31 (12 / 19) *	82 (39 / 43) *

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



*Figure 10: Looking north across Metropolitan Avenue to the Eliot Avenue approach*



*Figure 11: Looking east along Metropolitan Avenue to the intersection with Eliot Avenue/60<sup>th</sup> Street*

### 3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of P.S. 71, and were found to be adequate based upon a child pedestrian walking at the rate of three feet per second. Signal timings are shown in Table 6.

<b>TABLE 6: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS</b>				
<b>INTERSECTION</b>	<b>CROSSWALK LENGTH (FEET)</b>	<b>PEDESTRIAN TIME ACTUAL (SECONDS)</b>	<b>PEDESTRIAN TIME REQUIRED (SECONDS)</b>	<b>TIMING ADJUSTMENT REQUIRED?</b>
<b>Forest Avenue and Bleecker Street</b>				
Crossing Forest Avenue	35	33	15	NO
Crossing Bleecker Street (west leg)	30	52	13	NO
Crossing Bleecker Street (east leg)	30	52	13	NO
<b>Metropolitan Avenue and Forest Avenue</b>				
Crossing Metropolitan Avenue	40	24	17	NO
Crossing Forest Avenue	45	49	18	NO
<b>Metropolitan Avenue and 60<sup>th</sup> Street</b>				
Crossing Metropolitan Avenue	40	25	17	NO
Crossing 60 <sup>th</sup> Street (north leg)	30	61	13	NO
<b>Metropolitan Avenue and Eliot Avenue</b>				
Crossing Metropolitan Avenue (east leg)	40	25	17	NO
Crossing Metropolitan Avenue (west leg)	40	25	17	NO
Crossing Eliot Avenue (northbound )	55	61	22	NO
Crossing Eliot Avenue (southbound)	40	61	17	NO
Crossing Eliot Avenue (total)	110	61	40	NO
Crossing 60 <sup>th</sup> Street (south leg)	33	61	14	NO

*Note: A child pedestrian walking rate of 3 feet/second, plus 3 seconds reaction time, was utilized to calculate the required pedestrian crossing times.*

### 3.8 PHYSICAL CONDITIONS

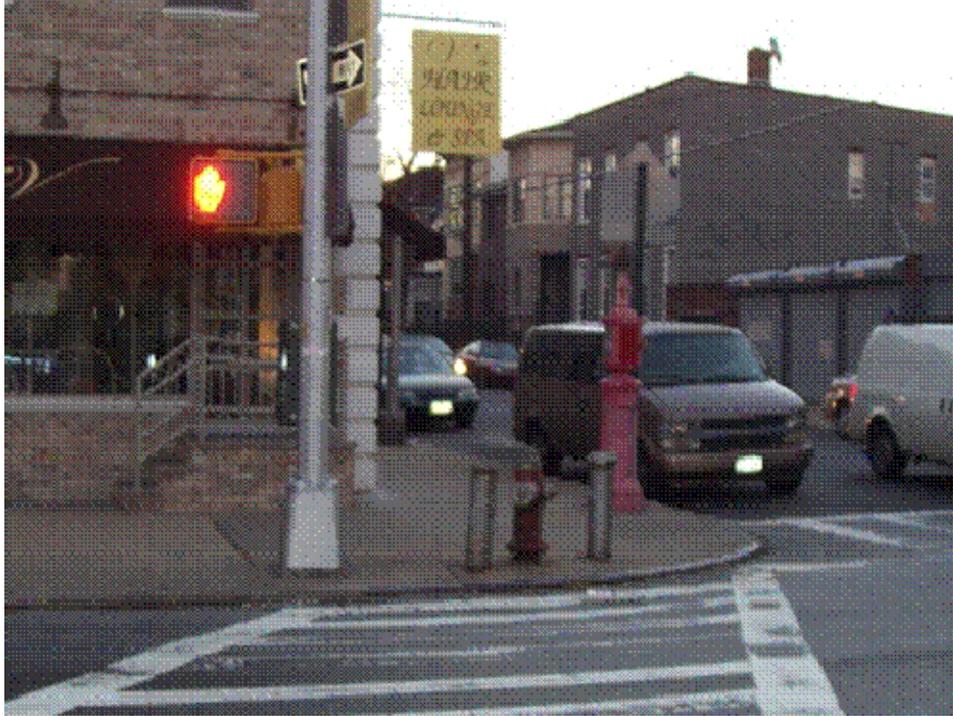
#### 3.8.1 Roadways and Sidewalks

The roadways and sidewalks in the vicinity of P.S. 71 were observed to be in fair condition. Sidewalks are range from approximately 10 to 15 feet wide around the school block.

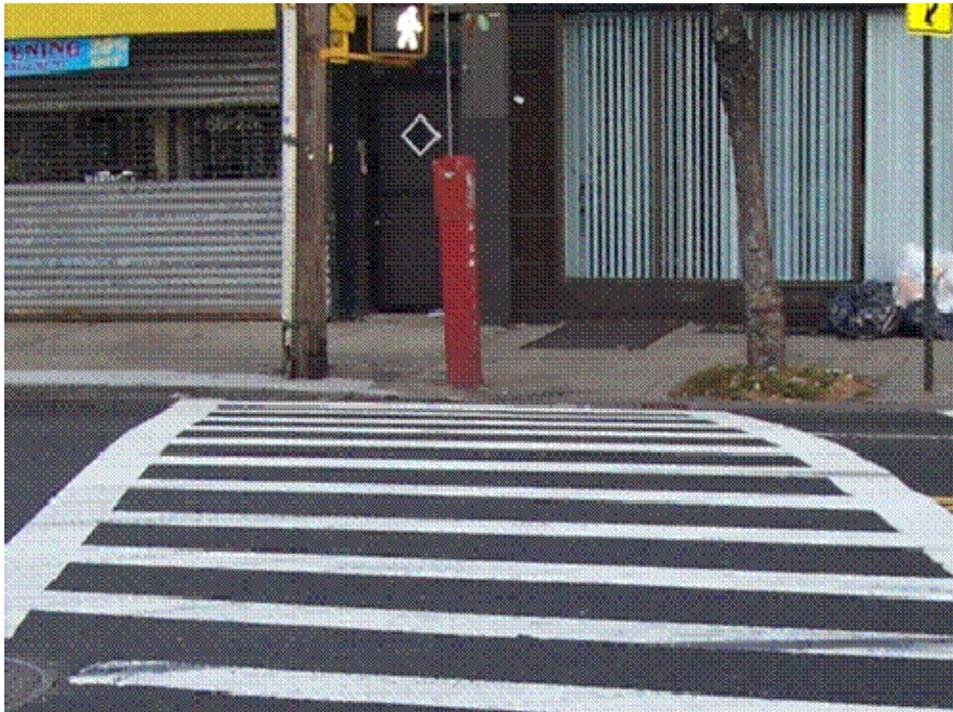
#### 3.8.2 Pedestrian Ramps

Pedestrian ramps in the vicinity of the school were observed to be standard. However, there are some locations that are not standard. These locations are:

- *Forest Avenue and Bleecker Street*
  - On the northeast corner of the intersection, a fire hydrant and its protective bollards are located in the path for the school crosswalk located across the north leg of Forest Avenue.
  - A pedestrian ramp is missing on the northeast corner of the intersection.
  - The pedestrian ramp located on the southeast corner of the intersection has a small lip at the curb.
- *Metropolitan Avenue and Forest Avenue*
  - On the north side of Forest Avenue, a fire call box is located in the path of the crosswalk located across the east leg of the intersection.
  - On the southwest corner of the intersection, a drainage inlet is located in the path for the pedestrian crosswalk located across the south leg of the intersection.
- *Metropolitan Avenue and 60<sup>th</sup> Street (north leg)*
  - Pedestrian ramps are missing on the south side of the intersection for the pedestrian crosswalks located across both the east and west legs of the intersection.
- *Metropolitan Avenue and Eliot Avenue/60<sup>th</sup> Street (south leg)*
  - A traffic signal pole is situated in the center of the crosswalk across the north leg of the intersection in the center of the roadway. A circular concrete protective curb, approximately four feet in diameter and approximately two feet high, supports this traffic signal pole. Pedestrians using the north crosswalk must walk around this concrete curb.
  - A traffic signal pole and a utility pole are located on the southwest corner in the path for the school crosswalk located across the west leg of the intersection.
  - The pedestrian ramp on the southwest corner, for the crosswalk located across the west leg of the intersection, has a small lip at the curb rather than a smooth transition between the pavement and the sidewalk.

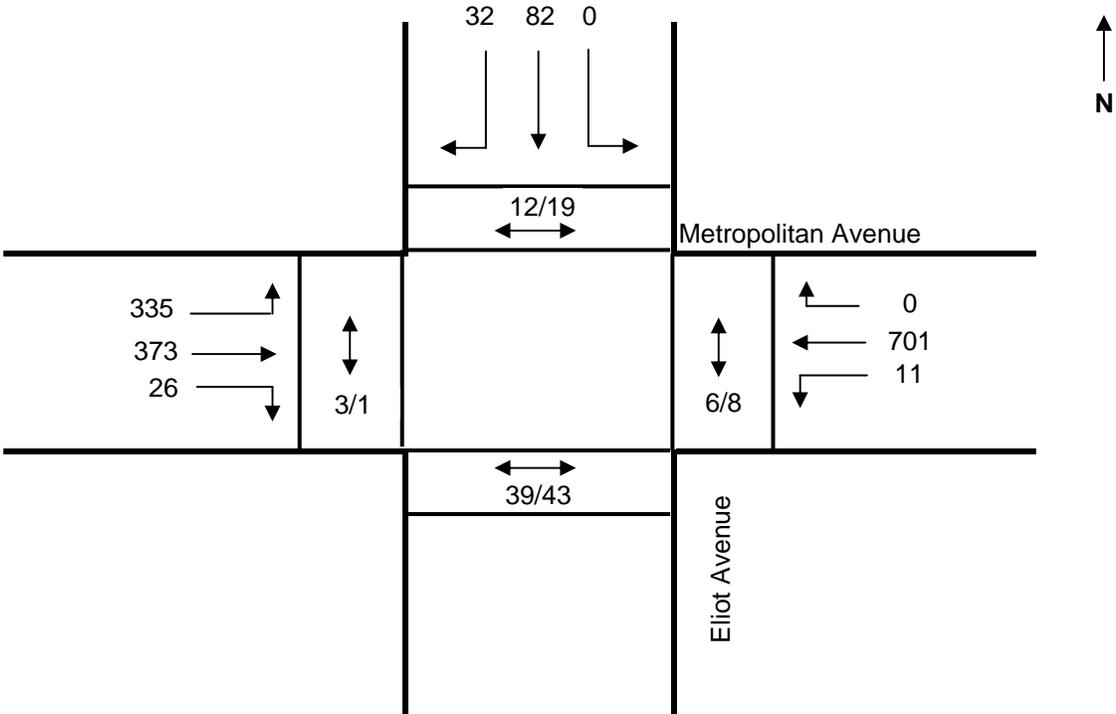


*Figure 12: Looking east across the intersection of Forest Avenue and Bleecker Street at the fire hydrant and protective bollards on the northeast corner (also note missing pedestrian ramp)*



*Figure 13: Looking north across Metropolitan Avenue at the intersection with Forest Avenue at the fire call box located within crosswalk path*

**One Hour Traffic Volumes**  
**Tuesday, October 11th, 2005 7:45am - 8:45am**



*Intersection of Metropolitan Avenue and Eliot Avenue/60th Street*

**Table of Content:**

<b>XX / XX</b>	Adult / Child
<b>←→</b>	Pedestrian Counts
<b>—↑</b>	Vehicle Movement

<b>EXHIBIT 7</b>
<b>P.S. 71 QUEENS</b> <b>THE FOREST ELEMENTARY 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 P.S. 71. 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 P.S. 71 is discussed as follows, and is shown in more detail in Exhibit 8 at the end of this section.

### 4.1 SHORT-TERM MEASURES

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

A parking regulation should be instituted and signs installed reading: “NO STANDING 7AM - 4PM SCHOOL DAYS” for 30 feet in front of the school at the main entrance of the school. (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

➤ *Place stop bars 10 feet in advance of 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.

➤ *Speeding on 60<sup>th</sup> Street*

School officials also reported a speeding problem on 60<sup>th</sup> Street. Therefore, a speed survey was conducted on 60<sup>th</sup> Street, between Metropolitan Avenue and Bleecker Street, in order to verify the existence of a speeding problem and to determine its extent.

The spot speed survey showed an 85<sup>th</sup> percentile speed of 31 mph for southbound vehicles on 60<sup>th</sup> Street, between Metropolitan Avenue and Bleecker Street. This finding suggests the need for a speed reducer (hump) on this section of roadway.

Therefore, it is recommended to:

- Install a speed reducer (hump) on 60<sup>th</sup> Street, near the center of the block between Metropolitan Avenue and Bleecker Street.

➤ Re-designate existing pedestrian crosswalk as school crosswalk

The existing pedestrian crosswalk located across the south leg of the Forest Avenue and Metropolitan Avenue intersection connects with a school block corner and is a natural crossing location for students walking to and from P.S. 71.

Therefore, it is recommended to:

- Re-designate the existing pedestrian crosswalk located across the south leg of the Forest Avenue and Metropolitan Avenue intersection as a school crosswalk, and install all appropriate warning devices.

➤ Request that NYPD assign a traffic enforcement agent during the morning arrival period

The school principal reported that parent drop off operations generate congestion along both Forest Avenue and 60<sup>th</sup> Street, especially because some parents insist upon leaving their vehicles to escort their children to the school entrance, thus blocking the bus unloading areas. This is a particular problem on Forest Avenue, where double parking exacerbates the existing congestion.

Therefore, it is recommended that:

- A traffic enforcement agent should be assigned to Forest Avenue in the vicinity of the school during the morning arrival time to encourage parents to drop off students more quickly and maintain the flow of traffic in front of the main entrance to the school. The enforcement agent should manage parent drop offs by expanding the drop off area beyond the immediate vicinity of the school's main entrance.

➤ Construct pedestrian ramps

In general, pedestrian ramps in the vicinity of the school were observed to be standard. However, there are some locations that were observed to be non-standard and require improvements. Therefore, the following actions are recommended:

- *Forest Avenue and Bleecker Street*
  - Construct a new pedestrian ramp on the northeast corner for the school crosswalk located across the north leg of the intersection.
- *Metropolitan Avenue and 60<sup>th</sup> Street (north leg)*
  - Construct new pedestrian ramps on the south side of Metropolitan Avenue for the pedestrian crosswalks located across both the east and west legs of the intersection.

- *Metropolitan Avenue and Eliot Avenue/60<sup>th</sup> Street (north leg)*
  - Reconstruct the pedestrian ramp on the southwest corner of the intersection, for the crosswalk located across the west leg of Metropolitan Avenue, to eliminate the small lip at the curb and to provide a smooth transition between the roadway pavement and the pedestrian ramp.

#### **4.2 LONG-TERM MEASURES**

- *Consider installing curb extensions at the following location:*

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

- Northwest and southeast corners of the Forest Avenue and Bleecker Street intersection.

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.

- *Install a pedestrian refuge island on Eliot Avenue at its intersection with Metropolitan Avenue, as shown in Exhibit 7:*

The school crosswalk across the north leg (Eliot Avenue) is approximately 110 feet long. There is a narrow, striped median on the north leg that separates the northbound and southbound travel lanes. A concrete traffic signal pole foundation is also located within the striped median in the middle of the school crosswalk, obstructing the pedestrian movements.

Therefore, it is recommended to:

- Provide a raised concrete median on the north leg of the Metropolitan Avenue and Eliot Avenue intersection, as shown in Exhibit 7, to serve as a pedestrian refuge island. This improvement will also enhance protection of the traffic existing signal pole foundation.
- Relocate the existing traffic signal pole further north on the median island to minimize its obstruction of the northerly crosswalk.

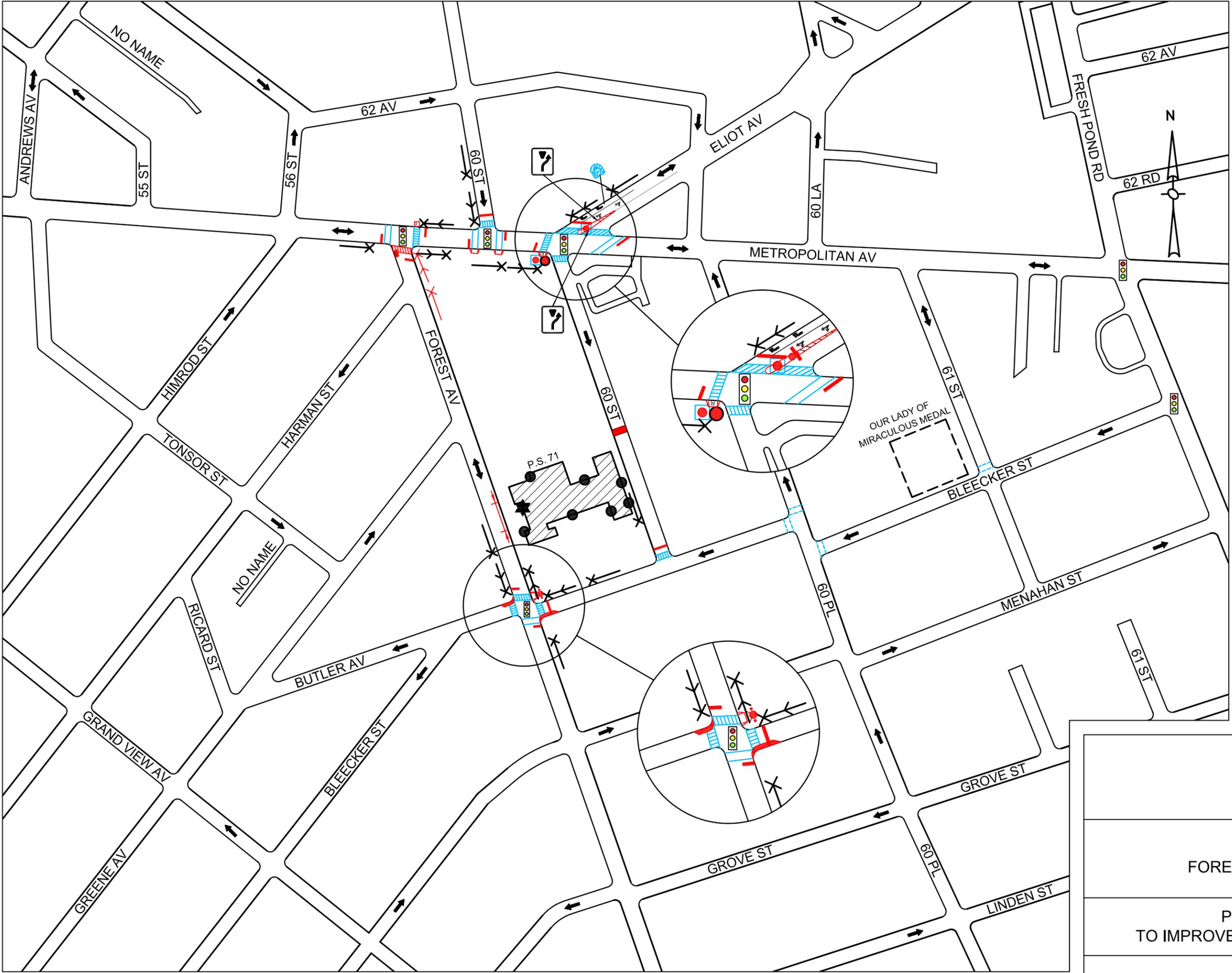
The raised concrete median island will provide a refuge for pedestrians who do not complete the crossing during the flashing “DON’T WALK” indication. The proposed median should be at least five feet wide, should extend beyond the

crosswalk, and should have at least a five foot at-grade cut-through section. 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.

➤ *Remove/relocate obstructions in path of school crosswalk*

Pedestrian ramps in the vicinity of the school were observed to be standard. However, there are some locations that are not standard. Therefore, the following actions are recommended:

- Relocate the fire hydrant and its protective bollards on the northeast corner of the Forest Avenue and Bleecker Street intersection, outside the path for the school crosswalk located across the north leg of the intersection.
- Relocate the fire call box on the north side of Metropolitan Avenue, at the intersection with Forest Avenue, from the path for the crosswalk located across the east leg of Metropolitan Avenue.
- Relocate the drainage inlet on the southwest corner of the Metropolitan Avenue and Forest Avenue intersection from the path for the pedestrian crosswalk located across the south leg of the intersection.
- Relocate the traffic signal pole and the utility pole on the southwest corner of Metropolitan Avenue and 60<sup>th</sup> Street (south leg) intersection that are in the path for the school crosswalk located across the west leg of the intersection.



- LEGEND**
-  MAIN ENTRANCE
  -  OTHER ENTRANCES
  -  EXISTING TRAVEL DIRECTION
  -  EXISTING ADVANCE WARNING SIGN OR SCHEDULED TO BE INSTALLED
  -  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY OR SCHEDULED TO BE INSTALLED
  -  SIGNALIZED LOCATION
  -  EXISTING BUS STOP LOCATION
  -  EXISTING SCHOOL CROSSWALK
  -  EXISTING PEDESTRIAN CROSSWALK
  -  EXISTING SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
  -  PROPOSED ADVANCE WARNING SIGN
  -  PROPOSED SCHOOL CROSSWALK WARNING ASSEMBLY
  -  PROPOSED PEDESTRIAN CROSSWALK
  -  PROPOSED SPEED REDUCER (HUMP)
  -  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
  -  PROPOSED "NO STANDING 7:00AM - 4:00PM SCHOOL DAYS"
  -  FIRE HYDRANT AND PROTECTIVE BOLLARDS TO BE RELOCATED
  -  TRAFFIC SIGNAL POLE TO BE RELOCATED
  -  PROPOSED PEDESTRIAN RAMP
  -  UTILITY POLE TO BE RELOCATED
  -  RECONSTRUCT EXISTING PEDESTRIAN RAMP
  -  FIRE CALL BOX TO BE RELOCATED
  -  DRAINAGE INLET TO BE RELOCATED
  -  PROPOSED CURB EXTENSION (NECKDOWN)
  -  PROPOSED REFUGE ISLAND

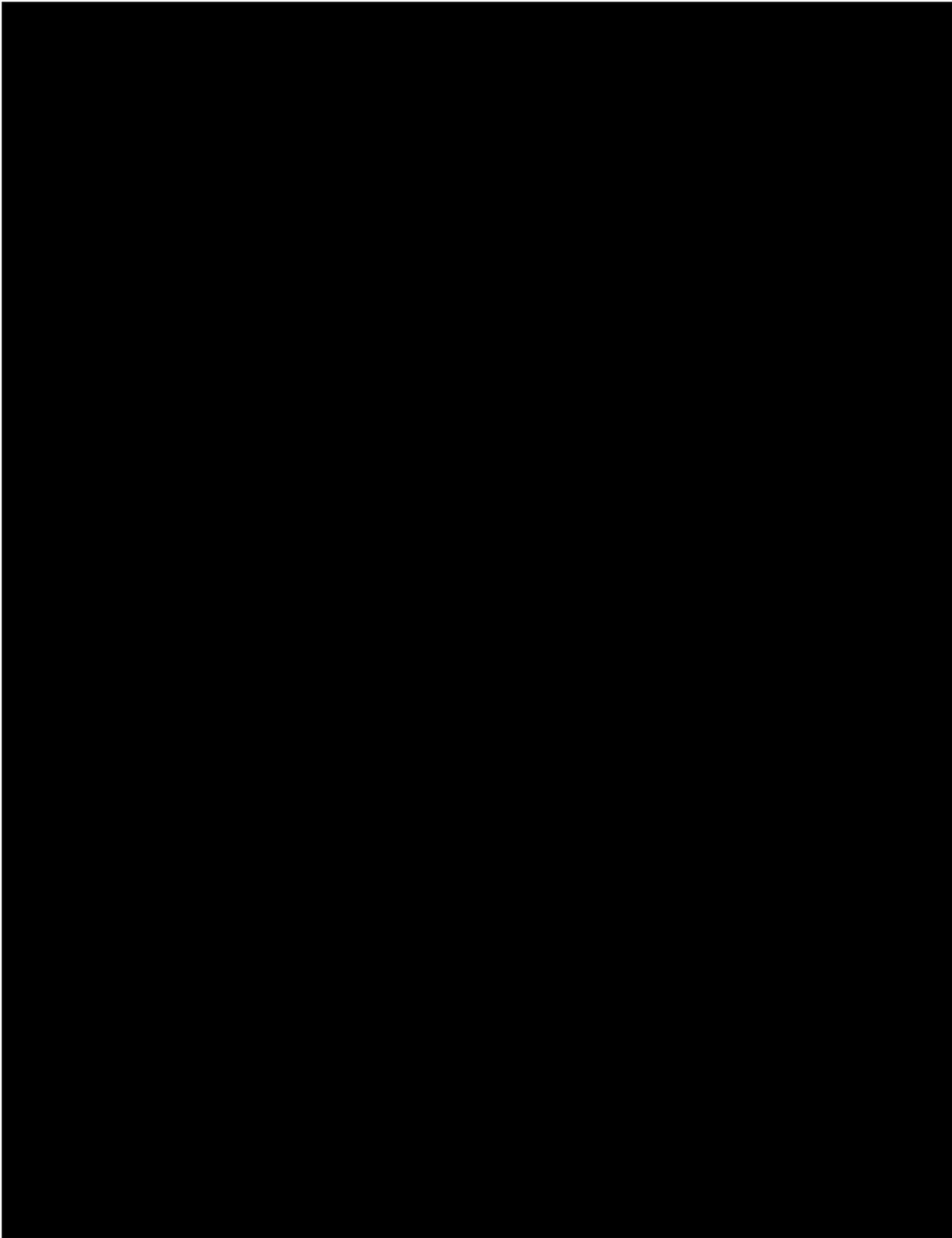
1" = 200'

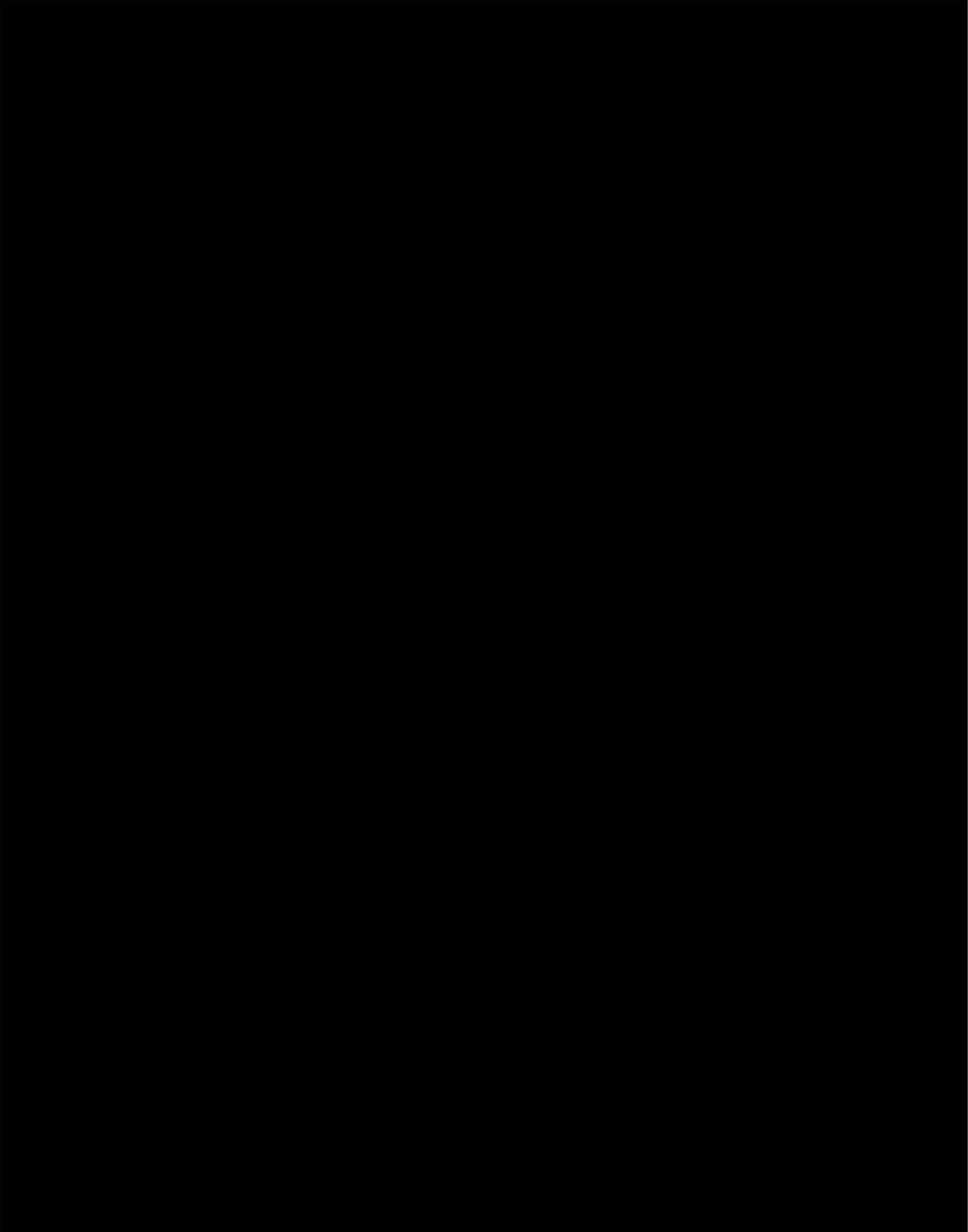
EXHIBIT 8

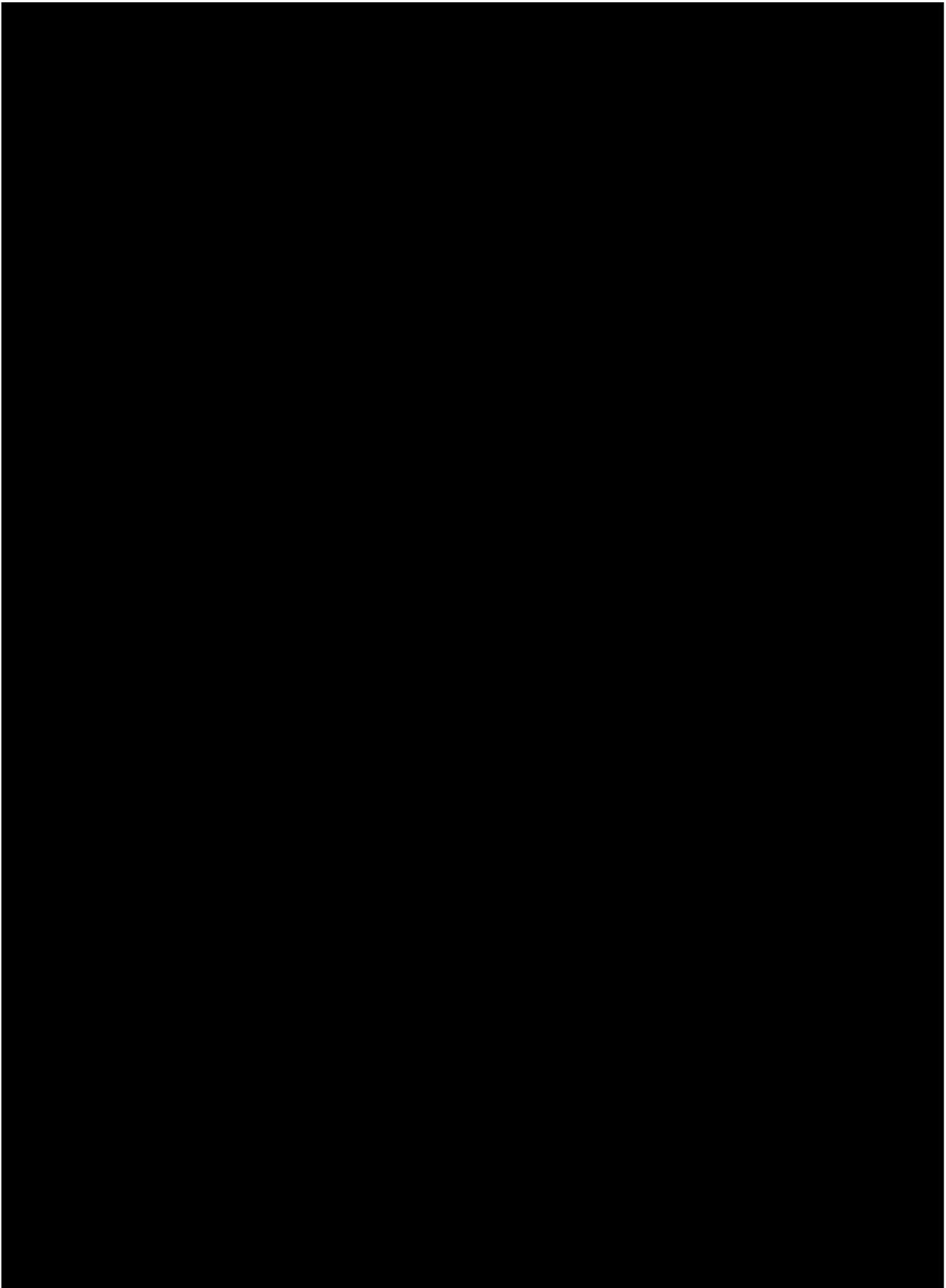
P.S. 71 QUEENS  
FOREST ELEMENTARY SCHOOL

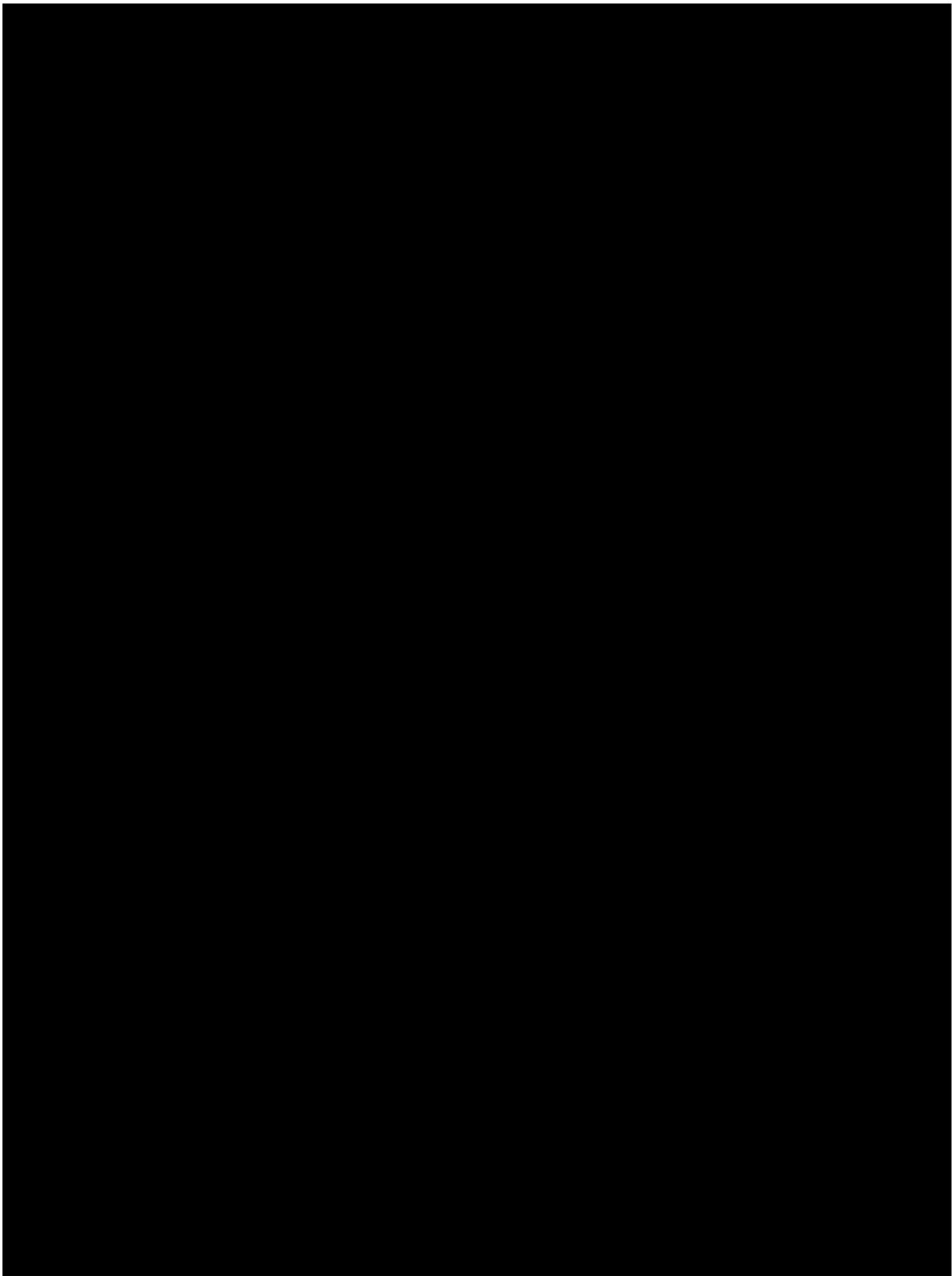
POTENTIAL MEASURES  
TO IMPROVE STUDENT PEDESTRIAN SAFETY

# APPENDIX









## SPOT SPEED STUDY

Date: **October 11, 2005**                      Time: **10 am - 11 am**  
 Location: **60 Street between Metropolitan Avenue & Bleecker Street**  
 Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
 Direction: **SB**  
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS <sup>2</sup>
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	1	1.6%	1.6%	19	361
20	1	1.6%	3.1%	20	400
21	1	1.6%	4.7%	21	441
22	2	3.1%	7.8%	44	968
23	5	7.8%	15.6%	115	2645
24	5	7.8%	23.4%	120	2880
25	12	18.8%	42.2%	300	7500
26	12	18.8%	60.9%	312	8112
27	5	7.8%	68.8%	135	3645
28	5	7.8%	76.6%	140	3920
29	5	7.8%	84.4%	145	4205
30	3	4.7%	89.1%	90	2700
31	1	1.6%	90.6%	31	961
32	2	3.1%	93.8%	64	2048
33	0	0.0%	93.8%	0	0
34	0	0.0%	93.8%	0	0
35	2	3.1%	96.9%	70	2450
36	0	0.0%	96.9%	0	0
37	1	1.6%	98.4%	37	1369
38	0	0.0%	98.4%	0	0
39	0	0.0%	98.4%	0	0
40	0	0.0%	98.4%	0	0
41	1	1.6%	100.0%	41	1681
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
	64	100.0%		1704	46286

Mean Speed = 26.6 mph  
 Standard Deviation = 3.8 mph  
 Margin of Error (95% Confidence) = ± 0.9 mph

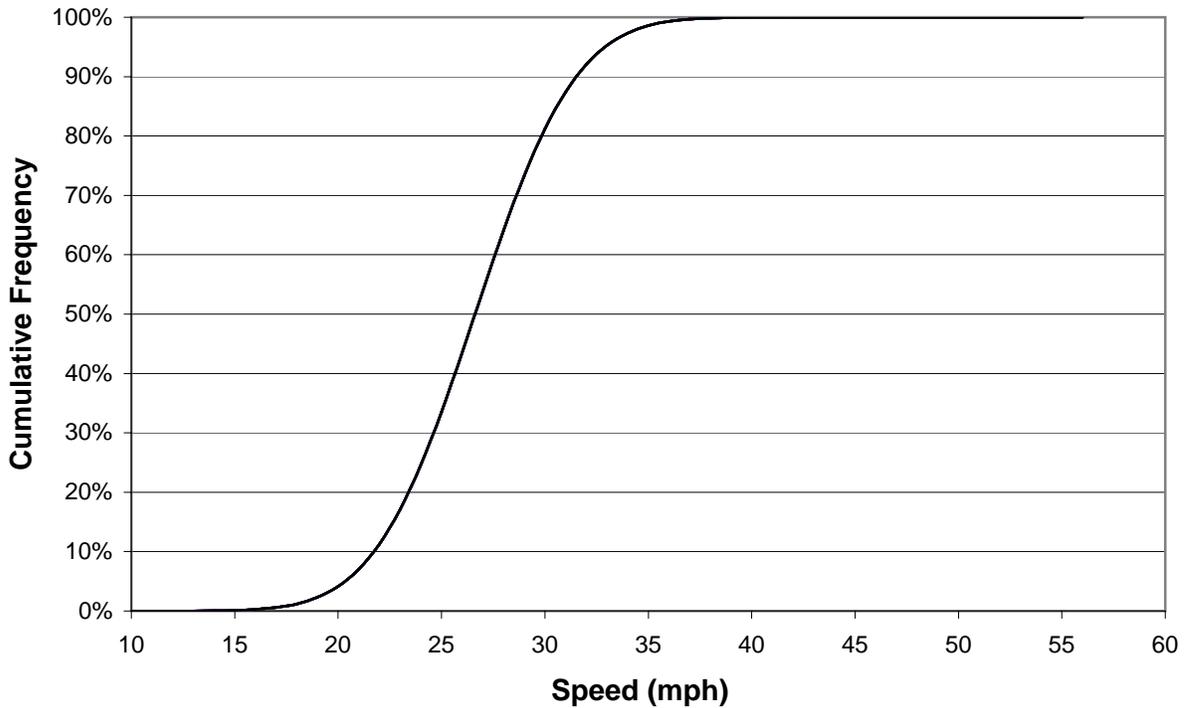
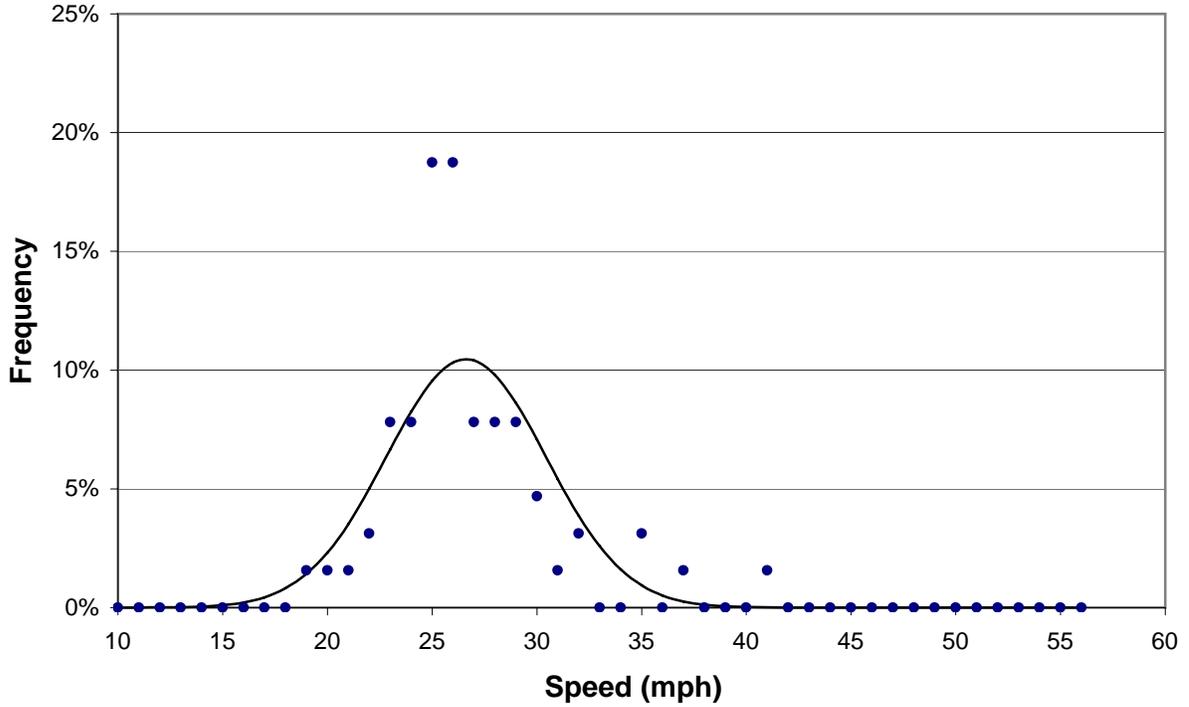
Median Speed = 26.6 mph  
 15th Percentile Speed = 22.7 mph  
 85th Percentile Speed = 30.6 mph

# SPOT SPEED STUDY

Date: **October 11, 2005**      Time: **10 am - 11 am**  
 Location: **60 Street between Metropolitan Avenue & Bleecker Street**  
 Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
 Direction: **SB**  
 Comments:

Mean Speed = 26.6 mph      Median Speed = 26.6 mph  
 Standard Deviation = 3.8 mph      15th Percentile Speed = 22.7 mph  
 Margin of Error (95% Confidence) =  $\pm 0.9$  mph      85th Percentile Speed = 30.6 mph



## SPOT SPEED STUDY

Date: **October 11, 2005**                      Time: **11:10 am - 12:10 pm**  
 Location: **Forest Avenue between Metropolitan Avenue & Bleecker Street**  
 Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
 Direction: **NB**  
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS <sup>2</sup>
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	1	2.9%	2.9%	20	400
21	0	0.0%	2.9%	0	0
22	0	0.0%	2.9%	0	0
23	1	2.9%	5.7%	23	529
24	2	5.7%	11.4%	48	1152
25	7	20.0%	31.4%	175	4375
26	5	14.3%	45.7%	130	3380
27	2	5.7%	51.4%	54	1458
28	3	8.6%	60.0%	84	2352
29	3	8.6%	68.6%	87	2523
30	1	2.9%	71.4%	30	900
31	0	0.0%	71.4%	0	0
32	1	2.9%	74.3%	32	1024
33	2	5.7%	80.0%	66	2178
34	0	0.0%	80.0%	0	0
35	0	0.0%	80.0%	0	0
36	3	8.6%	88.6%	108	3888
37	1	2.9%	91.4%	37	1369
38	1	2.9%	94.3%	38	1444
39	0	0.0%	94.3%	0	0
40	1	2.9%	97.1%	40	1600
41	0	0.0%	97.1%	0	0
42	1	2.9%	100.0%	42	1764
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
	35	100.0%		1014	30336

Mean Speed = 29.0 mph  
 Standard Deviation = 5.3 mph  
 Margin of Error (95% Confidence) = ± 1.8 mph

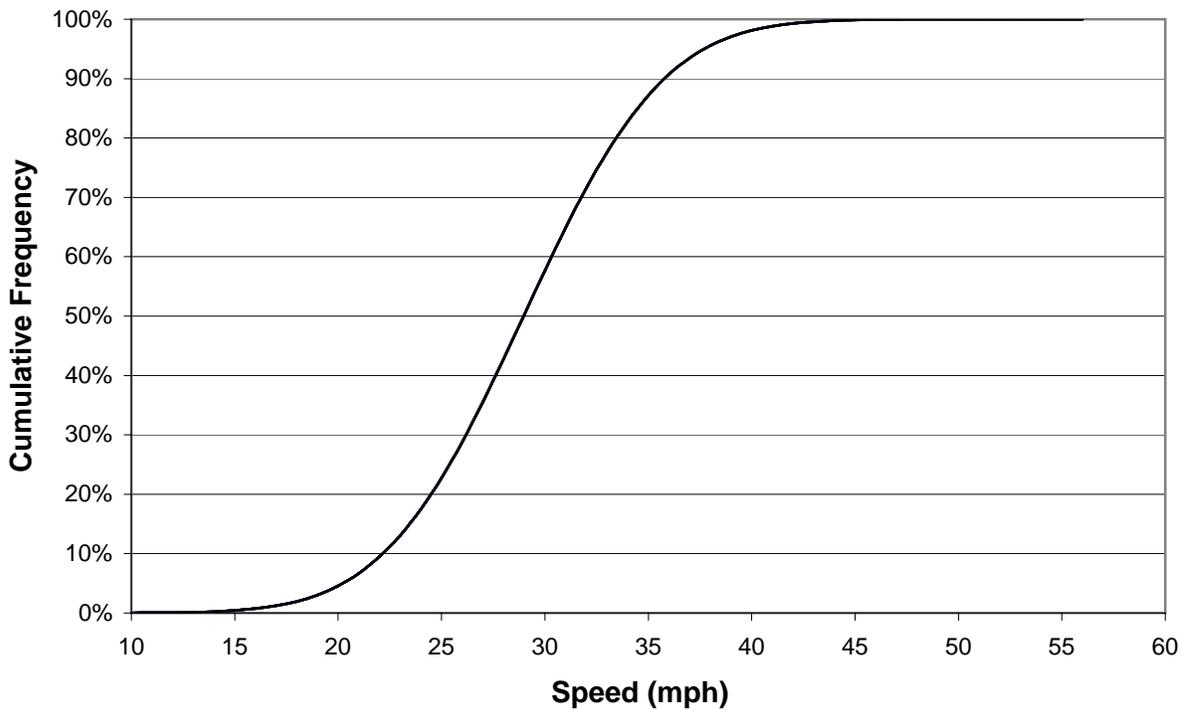
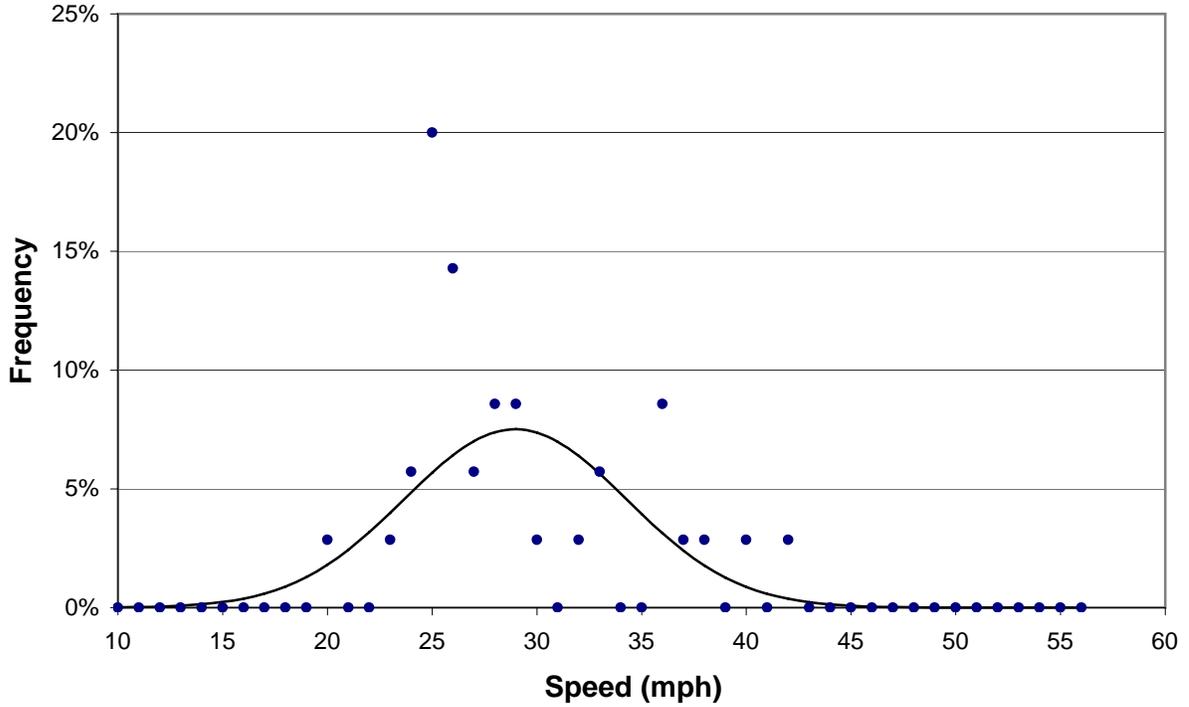
Median Speed = 29.0 mph  
 15th Percentile Speed = 23.5 mph  
 85th Percentile Speed = 34.5 mph

# SPOT SPEED STUDY

Date: **October 11, 2005**      Time: **11:10 am - 12:10 pm**  
Location: **Forest Avenue between Metropolitan Avenue & Bleecker Street**  
Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
Direction: **NB**  
Comments:

Mean Speed = 29.0 mph      Median Speed = 29.0 mph  
Standard Deviation = 5.3 mph      15th Percentile Speed = 23.5 mph  
Margin of Error (95% Confidence) =  $\pm 1.8$  mph      85th Percentile Speed = 34.5 mph



## SPOT SPEED STUDY

Date: **October 11, 2005**                      Time: **11:10 am - 12:10 pm**  
 Location: **Forest Avenue between Metropolitan Avenue & Bleecker Street**  
 Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
 Direction: **SB**  
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS <sup>2</sup>
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	0	0.0%	0.0%	0	0
24	6	23.1%	23.1%	144	3456
25	5	19.2%	42.3%	125	3125
26	2	7.7%	50.0%	52	1352
27	2	7.7%	57.7%	54	1458
28	1	3.8%	61.5%	28	784
29	3	11.5%	73.1%	87	2523
30	1	3.8%	76.9%	30	900
31	0	0.0%	76.9%	0	0
32	1	3.8%	80.8%	32	1024
33	2	7.7%	88.5%	66	2178
34	0	0.0%	88.5%	0	0
35	0	0.0%	88.5%	0	0
36	0	0.0%	88.5%	0	0
37	0	0.0%	88.5%	0	0
38	2	7.7%	96.2%	76	2888
39	1	3.8%	100.0%	39	1521
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
	26	100.0%		733	21209

Mean Speed = 28.2 mph                      Median Speed = 28.2 mph  
 Standard Deviation = 4.7 mph              15th Percentile Speed = 23.4 mph  
 Margin of Error (95% Confidence) = ± 1.8 mph      85th Percentile Speed = 33.0 mph

# SPOT SPEED STUDY

Date: **October 11, 2005**      Time: **11:10 am - 12:10 pm**  
 Location: **Forest Avenue between Metropolitan Avenue & Bleecker Street**  
 Surveyor: **R. Calvache/H. Salinas**

School: **P.S. 71**  
 Direction: **SB**  
 Comments:

Mean Speed = 28.2 mph	Median Speed = 28.2 mph
Standard Deviation = 4.7 mph	15th Percentile Speed = 23.4 mph
Margin of Error (95% Confidence) = $\pm 1.8$ mph	85th Percentile Speed = 33.0 mph

