

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



**School Safety Engineering Project**

**FINAL REPORT: I.S. 27 (Anning S. Prall School), Staten Island**



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



**February 15, 2006**

**School Safety Engineering Project  
Final Report: I.S. 27, Staten Island**

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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). I.S. 27 (Anning S. Prall School) in Staten Island is one of the 135 “priority” schools identified by the New York City Department of Transportation, Office of School Safety Engineering.

## **2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS**

### **2.2 NEIGHBORHOOD DESCRIPTION**

Exhibit 1, at the end of this section, shows an aerial view of the neighborhood surrounding the school. I.S. 27 is bounded by Clove Lake Place to the south, Elizabeth Street to the west, Forest Avenue to the north, and by Broadway to the east. The area surrounding the school is generally residential in character, except for the area around the intersection of Forest Avenue and Broadway, which is commercial in character. Forest Avenue carries significant traffic volumes as an arterial roadway, and Broadway serves as a connector road. Clove Lake Place and Elizabeth Street are relatively low volume roadways. Clove Lake Park is one block to the west.

### **2.3 MEETING WITH SCHOOL REPRESENTATIVES**

Consultant staff and the Principal of I.S. 27 met at the school on the afternoon of June 14, 2004. According to the Principal, the major problem faced by I.S. 27 students is the difficulty of crossing Forest Avenue at its intersection with Elizabeth Street. Two factors are:

- Cars traveling at excessive speed on Forest Avenue
- Congestion which typically occurs on Forest Avenue and on Broadway

The school principal has requested the installation of a traffic signal for the intersection of Forest Avenue and Elizabeth Street

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



## **2.6 PRIMARY MODE OF TRANSPORT TO AND FROM SCHOOL**

The school's catchment area as defined as the Department of Education is shown in Exhibit 2 at the end of this section. Based upon information gathered from the school principal, the catchment area shown in Exhibit 2 is correct for I.S. 27.

The school's catchment area, as described by the school principal is as follows: the westerly border runs from Holden Boulevard northward between Bradley Avenue and Wheeler Avenue; then continues along Jewett Avenue to Richmond Terrace (or to the Kill Van Kull), the northerly boundary runs from there along Richmond Terrace (or the Kill Van Kull) to Bement Avenue; the easterly boundary then runs southerly along Bement Avenue to Forest Avenue and easterly along Forest Avenue to Pelton Avenue then continues southerly along Pelton Avenue to its southerly terminus and then southeasterly across Silver Lake Park to the intersection of East Cheshire Place and Highland Avenue, then easterly again along Arlo Road and southerly along Stratford Avenue, and continuing southerly along Howard Avenue to Clove Road; then southeasterly along Clove Road to Milford Drive; the southerly boundary then runs along Milford Drive and curves southwestly over to the intersection of Todt Hill Road & Tillman Street, then along Tillman Street / Holden Boulevard back to between Bradley Avenue and Wheeler Avenue.

Table 1 presents the mode of travel for I.S. 27 as identified by school representatives.

<b>TABLE 1: MODE OF TRAVEL</b>	<b>STUDENTS (Percentage)</b>
Walk	17%
Driven by car	3%
School bus	44%
Bus/Subway	36%
Bicycle	0%
<b>TOTAL</b>	<b>100%</b>

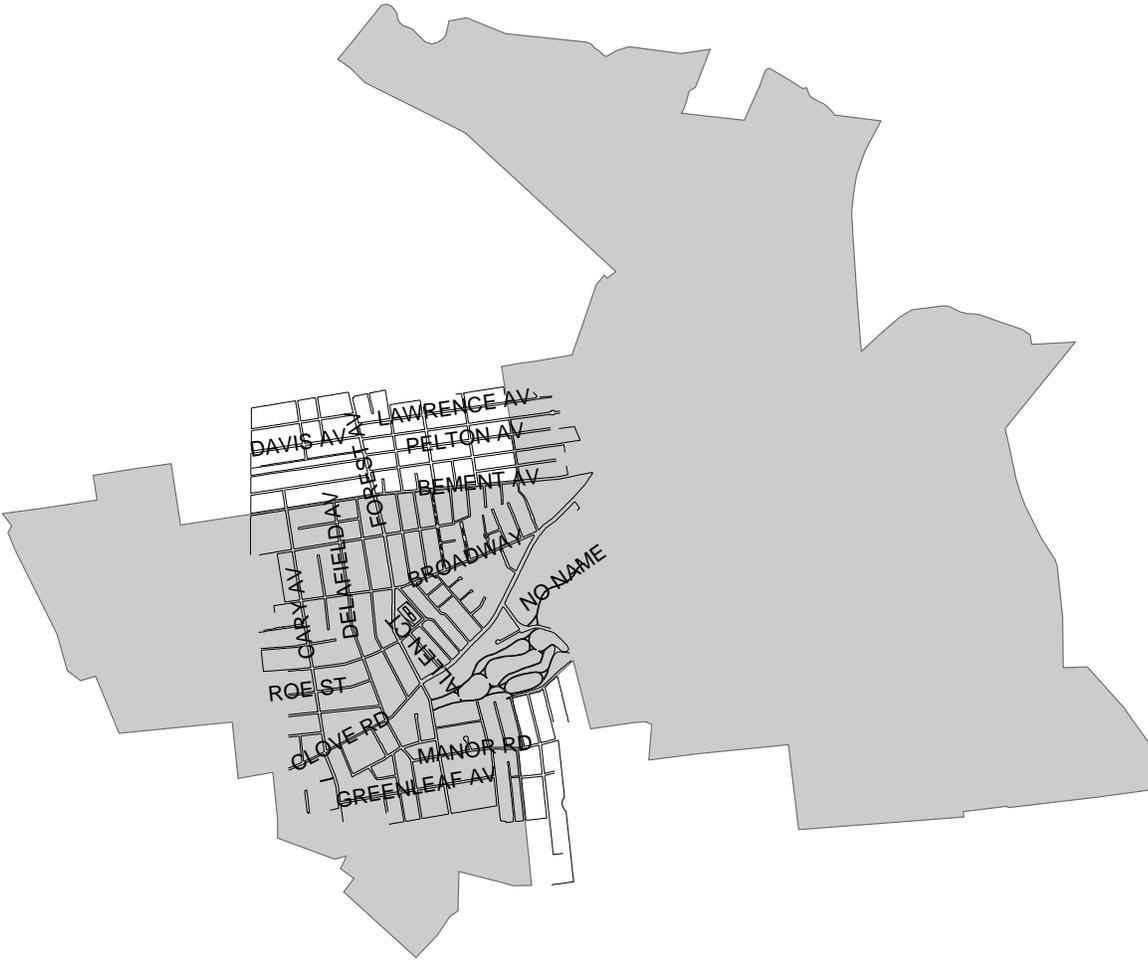
### **2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS**

A McDonald's restaurant located on the northeast corner of the Forest Avenue and Broadway intersection, a delicatessen on Forest Avenue across from the school, and other stores in the area, generate pedestrian and vehicular traffic, including students from I.S. 27.

### **2.8 CROSSING GUARD LOCATIONS**

There are no crossing guards assigned to I.S.27.





**EXHIBIT 2**

**I.S. 27 STATEN ISLAND  
ANNING S. PRALL SCHOOL  
CATCHMENT AREA**

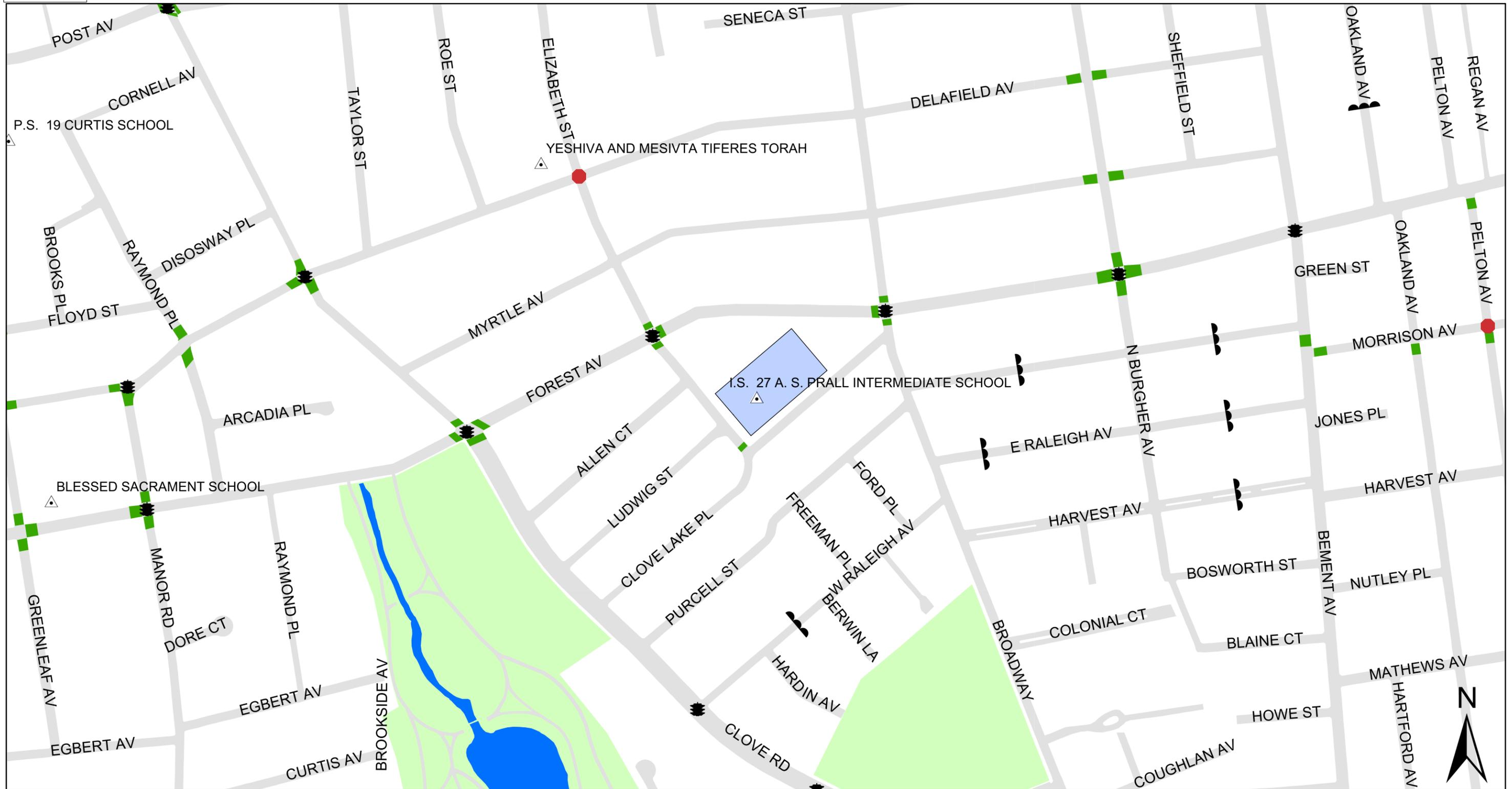


**LEGEND:**  
CATCHMENT AREA, (DEPARTMENT OF EDUCATION DESIGNATED  
AREA FROM WITHIN WHICH STUDENTS ARE ENTITLED TO ATTEND I.S. 27)





# 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   
 SCHOOL CROSSWALK 

TRAFFIC SIGNAL   
 ALL - WAY STOP   
 SPEED REDUCER 

**IS 27 Staten Island**  
**A. S. PRALL INTERMEDIATE SCHOOL**

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

Map created on 11/16/2006

**EXHIBIT 3**

COMM. BOARD: 501  
 PRECINCT: 120

### **3. TRAFFIC OPERATIONS**

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

According to school representatives, there are approximately 350 students who ride a city (MTA) bus to school, and approximately 420 students who ride a yellow school bus to school. Bus transportation for the students consisted of eight yellow school buses and five special buses. The eight yellow buses stop on Clove Lake Place in front of the school (see Figure 2). The five special buses stop on Elizabeth Street on the west of the school (see Figure 3). Student access the city (MTA) buses at local bus stops on Forest Avenue and on Broadway.

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

According to school representatives, about three percent (3%) of the students are dropped-off by car. Since the number of students being dropped-off is relatively low (about 30 students), no significant operational problems were observed around the school.

#### **3.3 PARKING REGULATIONS**

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

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

Exhibit 3, at the end of Section 2, shows the existing signs, signals, and pavement markings assigned to I.S. 27. It should be noted that a citywide signage program is currently underway to upgrade school signage to the current edition of the Federal Manual of Uniform Traffic Control Devices (MUTCD) standards of fluorescent yellow-green accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” in Exhibit 7.



*Figure 2: School buses parked along north side of Clove Lake Pl. in front of school (school is on left)*



*Figure 3: School buses parked along Elizabeth Street on west side of school (school is on right)*

### 3.5 ACCIDENT SUMMARY

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

Exhibit 5, at end of this section, and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (NYS DMV) in the vicinity of I.S. 27 for a three-year period from January 1, 1998 to December 1, 2000. The NYS DMV data provides some detail relating to the cause of the accident. Table 3 is a summary of more recent accident data obtained from the New York City Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the NYS DMV data.

Between 1998 and 2000 (Table 2), there were two pedestrian accidents in the vicinity of I.S. 27 (within a 700-foot radius around the school) at the intersection of Forest Avenue and Broadway. The accidents were not school-related. The NYPD accident data (Table 3) shows eight pedestrian accidents between 2001 and 2004. There were no pedestrian fatalities during the same four-year period. One of the eight pedestrian accidents was a school-related accident. Further discussions on accidents are included in Section 3.6, Traffic Operations and Issues.

<b>TABLE 2: ACCIDENT SUMMARY OF NYS DMV DATA (1998-2000)</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Clove Lake Place & Elizabeth Street	0	0	0	0
Forest Avenue & Elizabeth Street	12	0	0	0
Forest Avenue & Broadway	26	2	0	0
Forest Avenue & Clove Road	42	0	0	0
<b>TOTAL</b>	<b>80</b>	<b>2</b>	<b>0</b>	<b>0</b>

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

<b>TABLE 3: ACCIDENT SUMMARY OF NYC PD DATA (2001-2004)</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Clove Lake Place & Elizabeth Street	5	0	0	0
Forest Avenue & Elizabeth Street	21	1	0	1
Forest Avenue & Broadway	45	6	0	0
Forest Avenue & Clove Road	71	1	0	0
<b>TOTAL</b>	<b>142</b>	<b>8</b>	<b>0</b>	<b>1</b>

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

### 3.6 TRAFFIC OPERATIONS AND ISSUES

The specific roadway-related physical conditions for each location within the school's vicinity directly affect the safety and efficiency of operations for both pedestrian and vehicular traffic. These conditions are required information when analyzing a location, and are the starting point for any revisions that may be considered to improve safety and/or efficiency.

The following sub-sections outline the physical conditions and issues concerning traffic operations and accidents at the intersections in the vicinity of I.S. 27.

#### 3.6.1 Clove Lake Place and Elizabeth Street

This is an unsignalized "T" intersection with a stop-controlled school crosswalk located across the north leg of Elizabeth Street (see Figure 4). Clove Lake Place is a one-way street in the westbound direction from Broadway to Clove Road. Clove Lake Place has one travel lane and parking lanes on both sides of the roadway. Elizabeth Street is a two-way street with one moving lane and a parking lane on each side of the roadway.

The NYS DMV accident data (Table 2) indicates that there were no accidents at this intersection between 1998 and 2000. The NYPD accident data (Table 3) indicates that there were five accidents at this intersection between 2001 and 2004; none were pedestrian accidents.



Figure 4: Looking west along Clove Lake Place at school crosswalk on north leg of Elizabeth Street

### 3.6.2 Forest Avenue and Elizabeth Street

This is an unsignalized four-legged intersection with school crosswalks located across the north, east, and south legs (see Figure 5). Forest Avenue is a two-way street with one travel lane and a parking lane on each side of the roadway. Elizabeth Street is also a two-way street with one moving lane and a parking lane on each side of the roadway.

The school has requested the installation of a traffic signal for the intersection of Forest Avenue and Elizabeth Street. It was reported by the school principal that significant number of students utilizes this intersection, which school officials provide some assistance during arrival and dismissal.

In order to better determine the available options for this intersection, a traffic count was conducted on Wednesday, May 11, 2005 from 7:15 am - 8:15 am. The results of this count are shown in Tables 4 and 5 and in Exhibit 6 at the end of this section.

<b>TABLE 4: ONE-HOUR TRAFFIC VOLUMES</b>				
<b>LOCATIONS</b>	<b>ELIZABETH ST NORTHBOUND</b>	<b>FOREST AVE EASTBOUND</b>	<b>ELIZABETH ST SOUTHBOUND</b>	<b>FOREST AVE WESTBOUND</b>
Forest Avenue and Elizabeth Street	80	595	25	345

<b>TABLE 5: ONE-HOUR PEDESTRIAN VOLUMES</b>				
<b>CROSSWALK LOCATIONS</b>	<b>CROSSING ELIZABETH ST. SOUTH X-WALK</b>	<b>CROSSING FOREST AVE WEST X-WALK</b>	<b>CROSSING ELIZABETH ST. NORTH X-WALK</b>	<b>CROSSING FOREST AVE. EAST X-WALK</b>
Forest Avenue and Elizabeth Street	33	16	12	50

Signal warrant analysis, based on the criteria established in the current edition of the Federal Manual on Uniform Traffic Control Devices, as well as an analysis of operational conditions, was conducted for this intersection. The results of the two analyses indicated that a traffic signal is unwarranted at this time. In addition to these analyses, the NYCDOT also conducted a separate signal warrant analysis of this intersection, and also concluded that a traffic signal is unwarranted.

Summaries of the signal warrant and operational analyses and the NYCDOT correspondence responding to the installation of the traffic signal at the intersection of Forest Avenue and Elizabeth Street are included in the Appendix at the end of the document.

In addition, school principal reported that a speeding problem exists on Forest Avenue between Elizabeth Street and Broadway. Therefore, a spot speed survey was conducted on Forest Avenue between Elizabeth Street and Broadway in the vicinity of the school in order to verify the existence of a speeding problem and to determine its extent.

The 85<sup>th</sup> percentile speed in the eastbound direction of Forest Avenue between Elizabeth Street and Broadway was found to be 30.2 miles per hour (mph). The 85<sup>th</sup> percentile

speed for westbound vehicles on Forest Avenue between Elizabeth Street and Broadway were found to be 30.5 mph.

The 85<sup>th</sup> percentile speed is considered to be the representative speed for the street segment. Speeds above the 30 mph threshold would indicate a speed problem and may require appropriate traffic calming measures.

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

The NYS DMV accident data (Table 2) indicates that there were twelve (12) accidents at this intersection between 1998 and 2000; none were pedestrian accidents. The NYPD accident data (Table 3) indicates that there were twenty-one (21) accidents at this intersection between 2001 and 2004. There was one pedestrian accident reported during same four-year period. It was a school-related accident. However, no additional information about the accident is available. No pedestrian fatalities were reported.



*Figure 5: Looking north along Elizabeth Street at school crosswalk on east leg of Forest Avenue*

### 3.6.3 Forest Avenue and Broadway

This is a signalized four-legged intersection with school crosswalks located across the west, north, and south legs (see Figure 6). Forest Avenue is a two-way street with one moving lane and a parking lane on each side of the roadway. Broadway is also a two-way street with one travel lane and a parking lane on each side of the roadway.

The NYS DMV accident data (Table 2) indicates that there were twenty-six (26) accidents at this intersection between 1998 and 2000. There were two (2) pedestrian accidents during this three-year period. Both pedestrian accidents were not school-related. No pedestrian fatalities were reported between 1998 and 2000. The NYPD accident data (Table 3) indicates that there were forty-five (45) accidents at this intersection between 2001 and 2004. There were six pedestrian accidents reported during this same four-year period. None of the pedestrian accidents were school-related.



*Figure 6: Looking northwest at McDonald's Restaurant, located at the intersection of Forest Avenue and Broadway*

#### 3.6.4 Forest Avenue and Clove Road

This is a signalized four-legged intersection with school crosswalks located across all four approaches. Forest Avenue is a two-way street with one travel lane and a parking lane on each side of the roadway. Clove Road, north of Forest Avenue, has three moving lanes; one northbound lane and two southbound lanes (one for left turns and one for through and right turns). South of Forest Avenue, Clove Road has five travel lanes; three northbound lanes (one for left turns, one for through movements and one for right turns) and two southbound lanes.

The NYS DMV accident data (Table 2) indicates that there were forty-two (42) accidents at this intersection between 1998 and 2000; none were pedestrian accidents. The NYPD accident data (Table 3) indicates that there were seventy-one (71) accidents at this intersection between 2001 and 2004. There was one pedestrian accident during the same four-year period. It was not school-related.

### 3.7 SIGNAL TIMING

Pedestrian crossing times were field-verified for crosswalks at signalized intersections in the vicinity of I.S. 27, and were found to be adequate based on a child pedestrian walking at the rate of 3 feet per second. Signal timings are shown in Table 6.

TABLE 6: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
INTERSECTION	CROSSWALK LENGTH (FEET)	PEDESTRIAN TIME ACTUAL (SECONDS)	PEDESTRIAN TIME REQUIRED (SECONDS)	TIMING ADJUSTMENT REQUIRED?
<b>Forest Avenue &amp; Broadway</b>				
crossing Forest Avenue	44	34 (am/pm)	18	NO
crossing Broadway	36	52 (am/pm)	15	NO
<b>Forest Avenue &amp; Clove Road</b>				
crossing Forest Avenue	55	43 (am) 40 (pm)	22 22	NO NO
crossing Clove Road	61	43 (am) 46 (pm)	24 24	NO 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. 27 were observed to be in fair condition. Sidewalks are about 10 to 15 feet wide on the school block face, and are in fair condition.

#### 3.8.2 Pedestrian Ramps

Overall, pedestrian ramps in the vicinity of the I.S. 27 were observed to be standard except at the following locations:

- There is no pedestrian ramp on the west side of Elizabeth Street at its intersection with Clove Lake Place. (see Figure 4).
- On the northwest corner of the Forest Avenue and Broadway intersection, there is a misaligned pedestrian ramp and a utility pole (see Figures 7). The utility pole obstructs the crosswalk on the west leg of Forest Avenue.



*Figure 7: Looking north at unaligned pedestrian ramp and obstructing utility pole on west leg of Forest Avenue crosswalk at its intersection with Broadway*

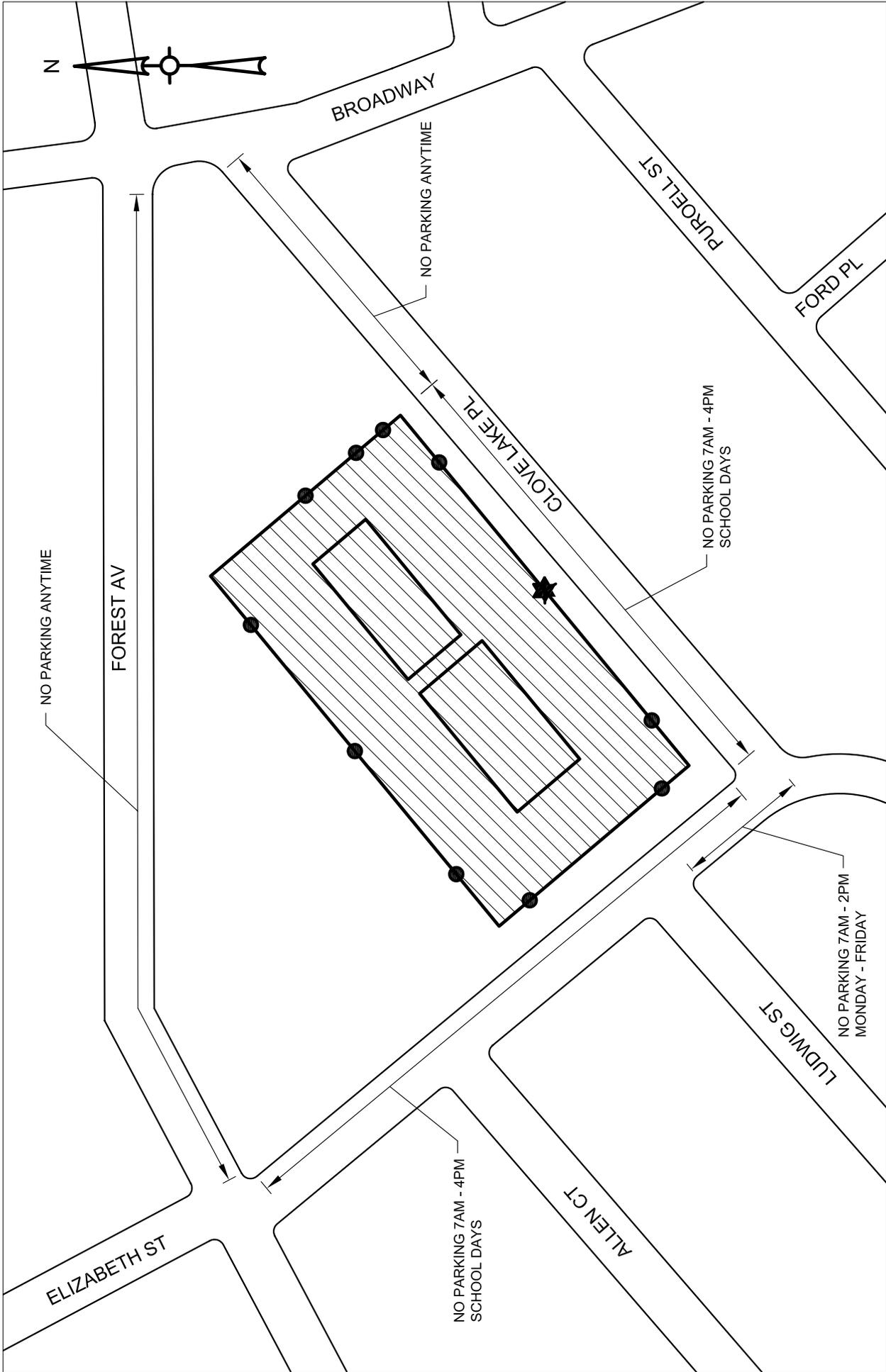


EXHIBIT 4

I.S. 27 STATEN ISLAND  
ANNING PRALL SCHOOL

EXISTING PARKING REGULATIONS

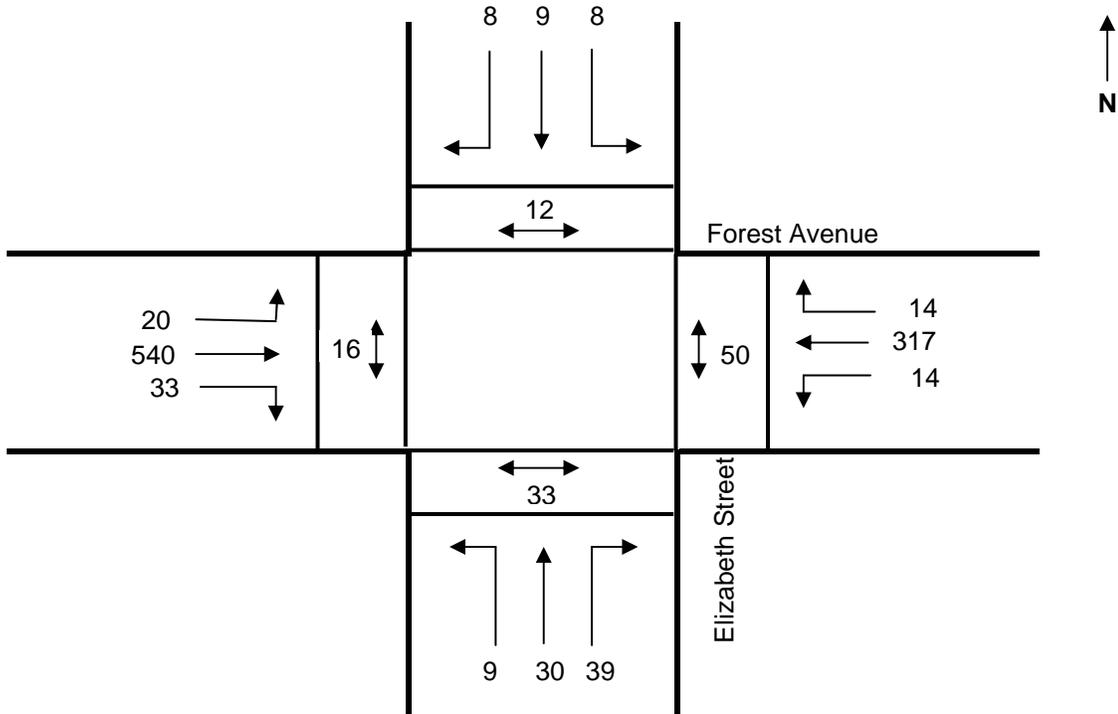
LEGEND:

- ★ MAIN ENTRANCE
- ENTRANCE





**One Hour Traffic Volumes**  
**Wednesday, May 11th, 2005 7:15am - 8:15am**



***Intersection of Forest Avenue and Elizabeth Street***

<b>Table of Content:</b>	
←→	Pedestrian Counts
—↑	Vehicle Movement

<b>EXHIBIT 6</b>
<b>I.S. 27 ANNING S. PRALL SCHOOL</b>
<b>TRAFFIC AND PEDESTRIAN COUNTS</b>

#### 4. PROPOSED MEASURES TO IMPROVE SCHOOL PEDESTRIAN SAFETY

This section describes the proposed measures to improve school pedestrian safety around I.S. 27. 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 I.S. 27 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 “No Standing 7AM – 4PM School Days” signs

Replace the existing “No Parking 7 AM – 4 PM School Days” signs with “No Standing 7AM – 4PM School Days” signs on north side of Clove Lake Place in front of the school.

➤ Place advanced stop bar ten feet before school crosswalk

The MUTCD and New York City Department of Transportation (NYCDOT) standard for placement of a stop bar is 4 feet in advance of a marked crosswalk. At signalized intersections and mid-block crossings, the vehicle stop line can be moved farther back from the pedestrian crosswalk.

For school crosswalks with significant potential for vehicular/pedestrian conflicts, it is recommended that the advance stop bar be placed ten feet (10’) in advance of the crosswalk to maximize the safety benefit for school-aged pedestrians. (This would improve visibility of pedestrians to motorists, and allow pedestrians to proceed in a crosswalk before motor vehicles turn.)

Ten feet (10’) advanced stop bars before school crosswalks are recommended on the following approaches of signalized intersections surrounding I.S. 27:

- Northbound approach of Clove Road at its intersection with Forest Avenue
- Westbound approach of Forest Avenue at its intersection with Clove Road
- Northbound approach of Elizabeth Street at its intersection with Forest Avenue
- Westbound approach of Forest Avenue at its intersection with Elizabeth Street

At the intersection of Forest Avenue and Broadway, the existing stop lines which are about 15 to 40 feet in advance of school crosswalk should be maintained and be supplemented by “STOP HERE ON RED” signs.

➤ School Crossing Guard at Clove Lake Place and Elizabeth Street

There is no crosswalk at the east leg of the intersection. However, during the field visit, students were observed crossing this uncontrolled approach of Clove Lake Place.

- It is therefore recommended to assign a crossing guard at this intersection.

➤ Pedestrian Ramps

- The crosswalk across the west leg of Forest Avenue at its intersection with Broadway is partially obstructed at both the north and south ends of the crosswalk by two utility poles. The pole on the south side is situated near the western edge of the crosswalk, but within the crosswalk extension. The pole on the north side is situated approximately in the center of the crosswalk extension. Consideration should be given to conducting a study to determine how the areas leading to and from the crosswalk could be cleared of the two utility poles, by either relocating the utility poles or realigning the crosswalks and the associated pedestrian ramps.
- Install a pedestrian ramp on the west side of Elizabeth Street at its intersection with Clove Lake Place.

#### 4.2 LONG-TERM MEASURES

➤ Consider Curb Extension at the intersection of Forest Avenue and Elizabeth Street

The school had requested the installation of a traffic signal for the intersection of Forest Avenue and Elizabeth Street during the school visit on June 14, 2004. It was reported by the school principal that a significant number of students utilize this intersection, and school officials provide some assistance during arrival and dismissal. Though a signal warrant analysis concluded that a traffic signal is unwarranted at this time, consideration should be given to re-evaluating the intersection of Forest Avenue and Elizabeth Street sometime in the future. It should be noted that there is an uncontrolled school crosswalk at the east leg of this intersection.

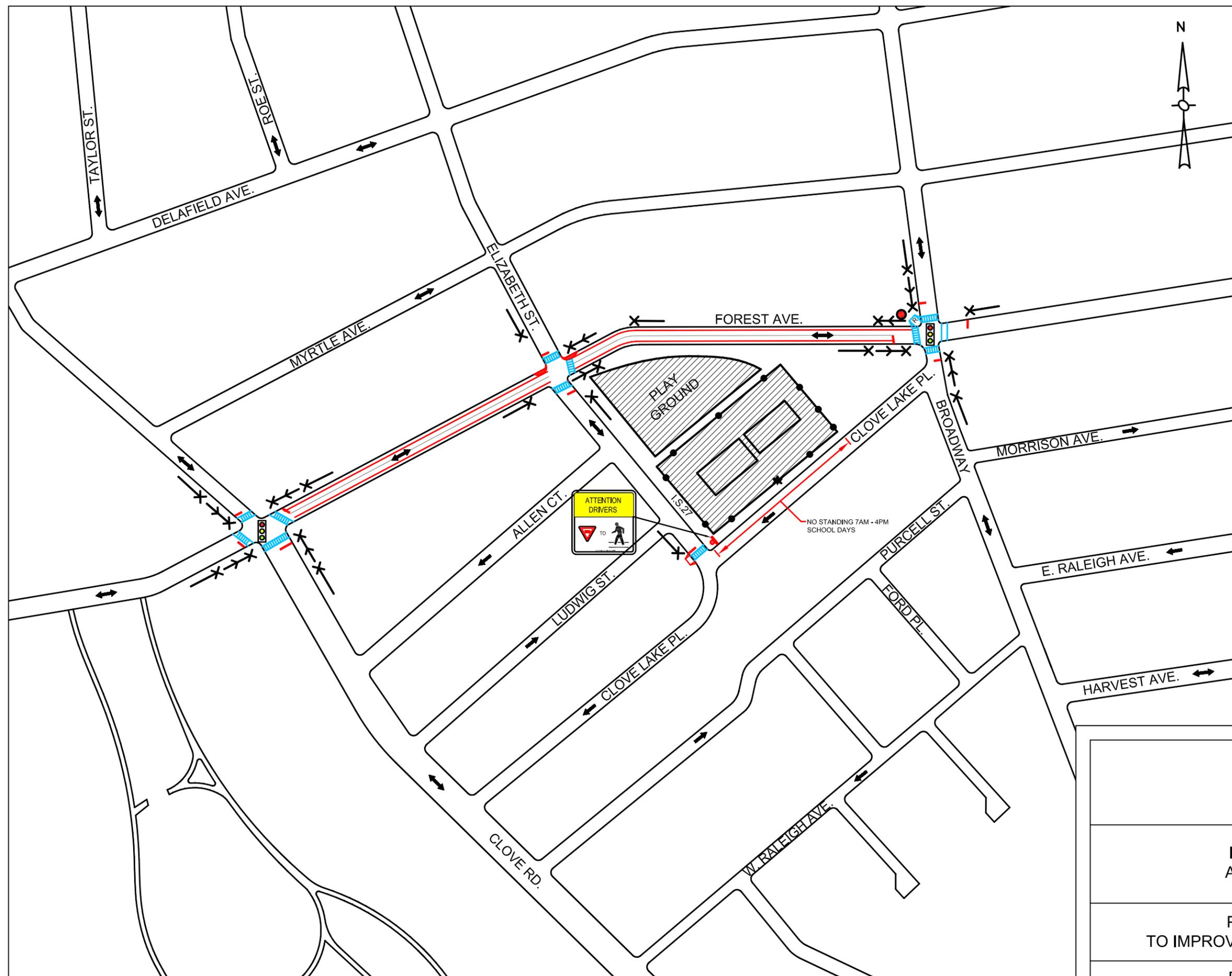
In addition, school officials reported a speeding problem along Forest Avenue between Elizabeth Street and Broadway. The speed survey conducted on Forest Avenue between Elizabeth Street and Broadway showed that the 85th percentile speed exceeded the 30 mph threshold speed limit (see section 3.6.1 and Appendix).

- A speed reducer (speed hump) is not feasible on Forest Avenue as Forest Avenue is not only a major roadway; but also a truck, snow emergency, and bus route. It is therefore recommended to provide curb extensions at the northeast and northwest corners of Forest Avenue at its intersection with Elizabeth Street, as shown in Exhibit 7. There is a bus stop on the south side of Forest Avenue just west of the intersection which precludes construction of curb extensions at the south corners. However, it is also recommended to provide a white solid line on Forest Avenue between Clove Road and Broadway to separate the travel and parking lanes on both sides of the street.

The purpose of the curb extension is to shorten the crossing distance for pedestrians, and to reduce the speed of vehicles approaching and turning

on school crosswalks. The curb extension will not eliminate or reduce the width of any travel lanes. Curb extensions are not proposed where they would hinder the ability of vehicle to turn.

- In addition to a curb extension, it is recommended to assign a crossing guard at this location.



**LEGEND**

-  MAIN ENTRANCE
-  OTHER ENTRANCES
-  EXISTING TRAVEL DIRECTION
-  EXISTING ADVANCE WARNING SIGN
-  EXISTING SCHOOL CROSSWALK WARNING ASSEMBLY
-  SIGNALIZED LOCATION
-  PEDESTRIAN RAMP TO BE RELOCATED
-  EXISTING SCHOOL CROSSWALK
-  EXISTING PEDESTRIAN CROSSWALK
-  PROPOSED TRAFFIC SIGN
-  PROPOSED PEDESTRIAN RAMP
-  PROPOSED STOP LINE IN ADVANCE OF SCHOOL CROSSWALK
-  PROPOSED EDGELINE
-  PROPOSED CURB EXTENSION (NECKDOWN)
-  PROPOSED "NO STANDING 7AM - 4PM SCHOOL DAYS"
-  POLE TO BE RELOCATED

1" = 200'

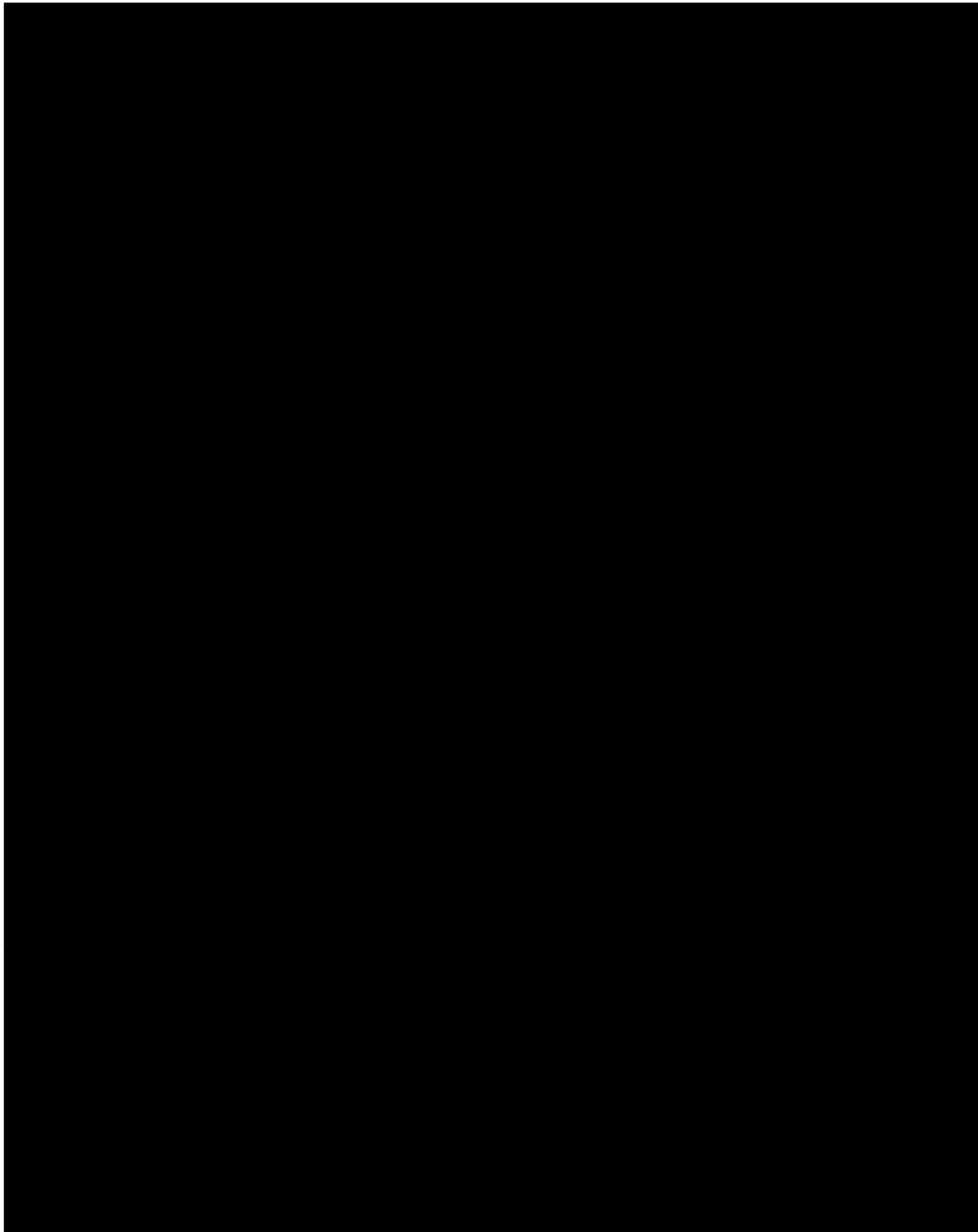
EXHIBIT 7

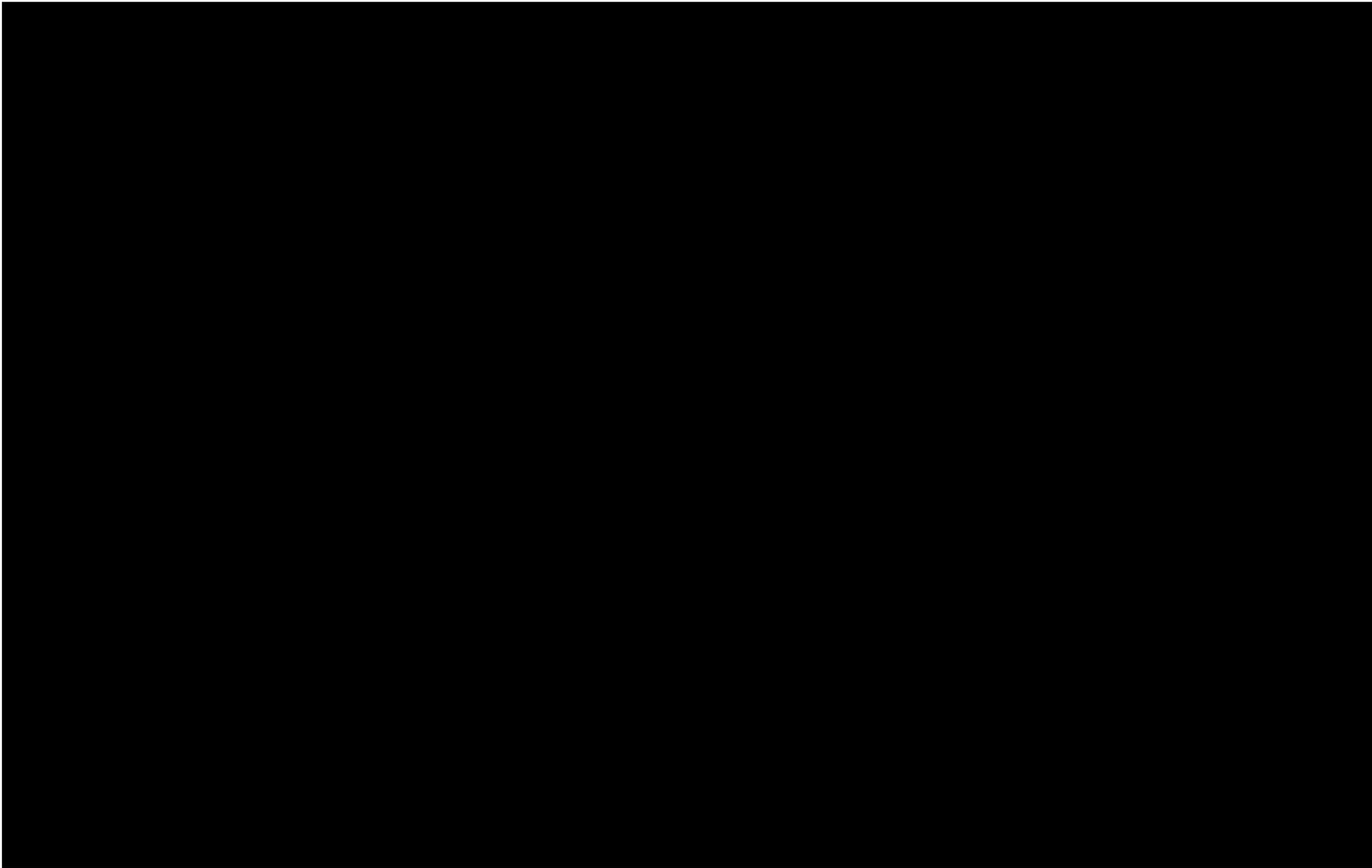
I.S. 27 STATEN ISLAND  
ANNING PRALL SCHOOL

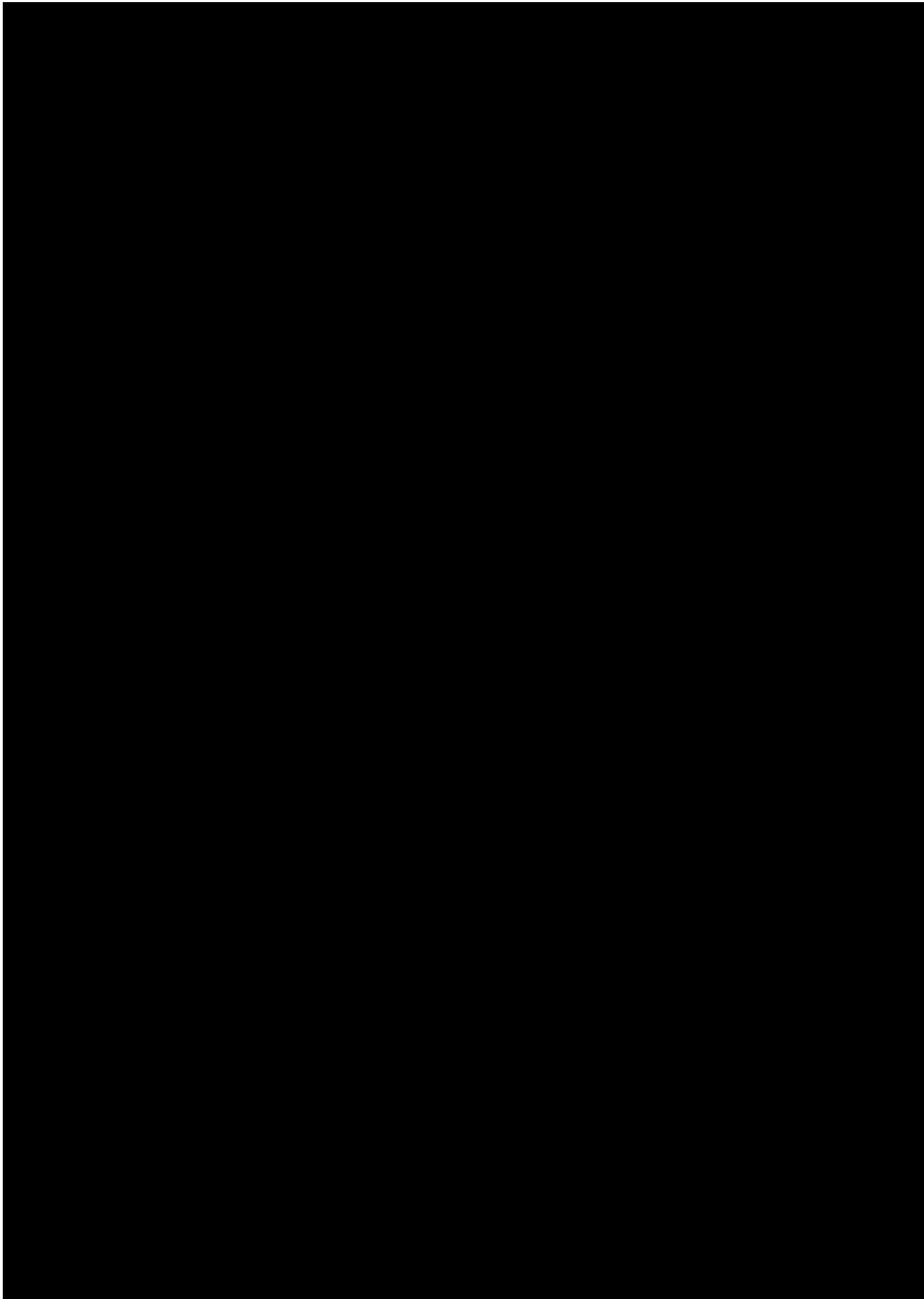
PROPOSED MEASURES  
TO IMPROVE SCHOOL PEDESTRIAN SAFETY

DATE: FEBRUARY, 2006

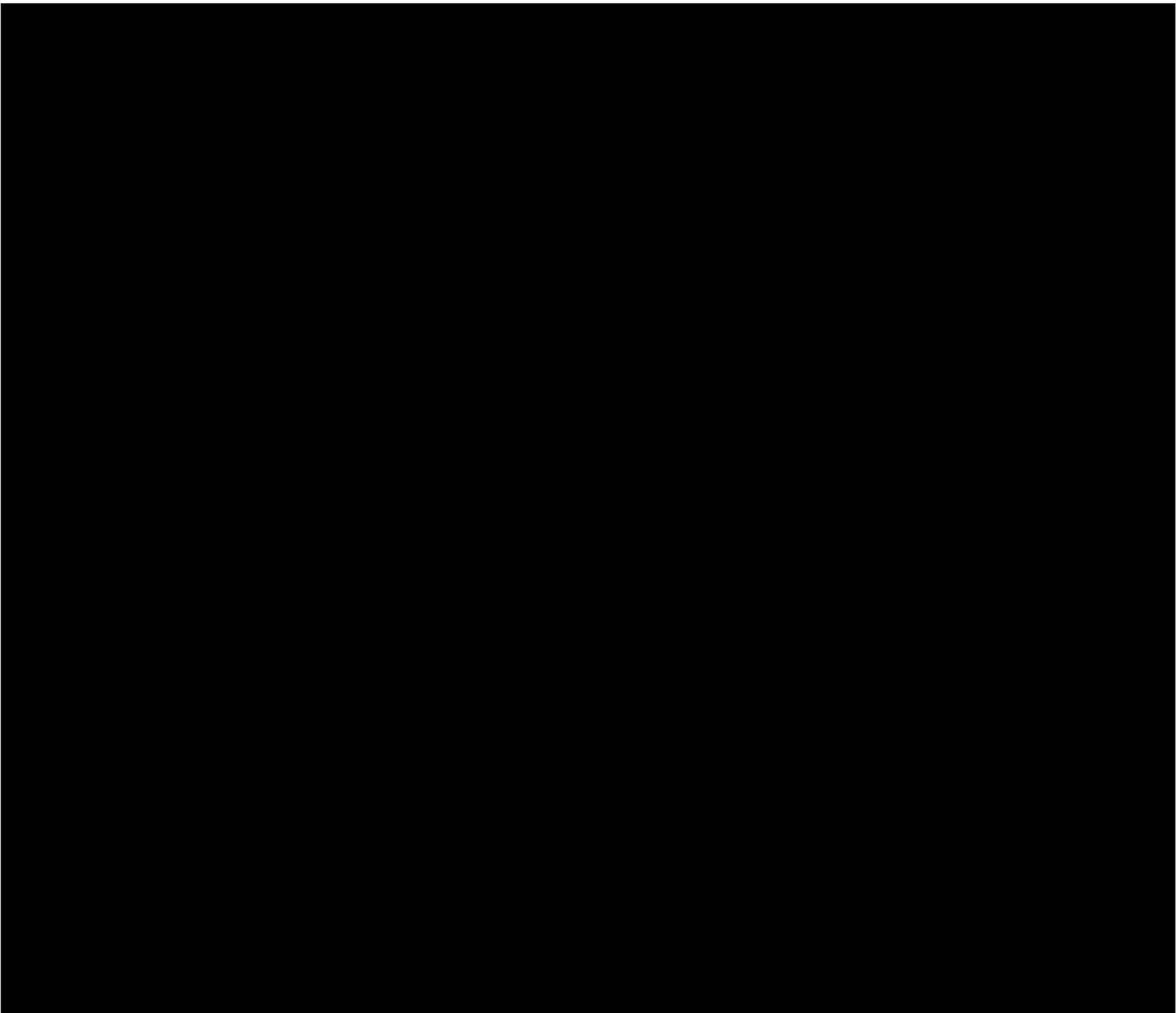
# APPENDIX











# MUTCD 2003 Signal Warrant Analysis Worksheet

**GENERAL INFORMATION**

Project Name:   
 Project #:   
 Task #:   
 Analyst: JP  
 Intersection: Forest Ave/Elizabeth St  
 Conditions/Scenario:



Urbitran Associates, Inc.  
 71 West 23rd Street, Suite 11  
 New York, New York 10010  
 Phone: (212) 366-6200  
 FAX: (212) 366-6214  
 www.urbitran.com

Date: 7/21/2005  
 File: C:\My Documents\Crossroad\xml\SIGNAL WARRANT Analysis Worksheet 2003.xls\SIGNAL WARRANT ANALYSIS  
 Intellectual property of Urbitran Associates, Inc.

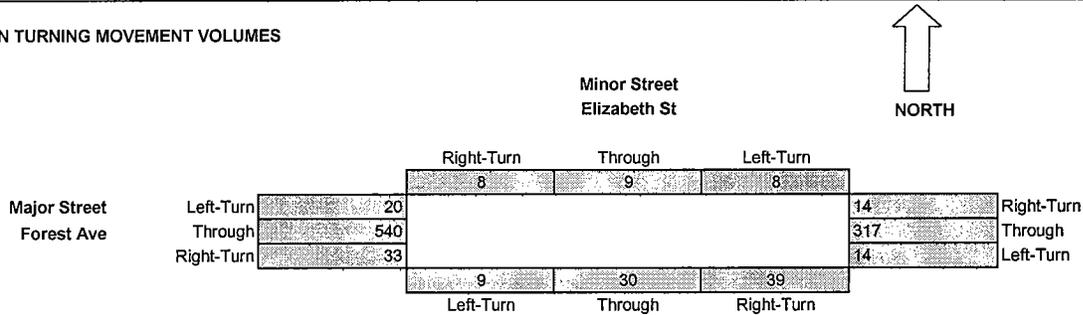
North/South street: Elizabeth St  
 East/West street: Forest Ave  
 Major Street: EW (Enter NS or EW)  
 Speed >40 mph? N (Enter Y or N)  
 Population <10,000? N (Enter Y or N)  
 Major Street: 8th-highest/peak hr %<sup>2</sup> 70% (60% to 80% typical)  
 Minor Street: 8th-highest/peak hr %<sup>2</sup> 70% (60% to 80% typical)  
 Major Street: 4th-highest/peak hr % 85%  
 Minor Street: 4th-highest/peak hr % 85%  
 3-legged or 4-legged intersection? 4 (Enter 3 or 4)

Reduction factor: 100%

Number of upstream approach lanes = 

Major Street	1
Minor Street	1

**INTERSECTION TURNING MOVEMENT VOLUMES**



**SIGNAL WARRANT CALCULATIONS**

**WARRANT #1: Eight-Hour Vehicular Volume**

Warrant Conditions	Major Street		Minor Street		Condition Met?	Warrant #1 Met?
	Actual Volume	Required Volume	Actual Volume	Required Volume		
Condition "A"	657	500	55	150	NO	NO
Condition "B"	657	750	55	75	NO	
Conditions "A" and "B"	657	400	55	120	NO	
	657	600	55	60		

Condition "A": "Minimum Vehicular Volume"  
 Condition "B": "Interruption of Continuous Traffic"

**WARRANT #2: Four-Hour Vehicular Volume**

Warrant Conditions	Major Street		Minor Street		Warrant #2 Met?
	Actual Volume	Required Volume	Actual Volume	Required Volume	
Warrant #2	797	797	66	155	NO

**WARRANT #3: Peak Hour**

Warrant Conditions	Minor Street Approach	Average Control Delay (sec/veh)	Average Stopped Delay (vehicle-hours)	Minor Street Volume	TEV Serviced	Condition Met?	Warrant #3 Met?
	Southbound	25.9	0.1	25	1,041	NO	
Condition "B"	Major Street		Minor Street			Condition Met?	
	Actual Volume	Required Volume	Actual Volume	Required Volume			
	938	938	78	230		NO	

Condition "A": combination of delay, approach volume, and total entering volume  
 Condition "B": volume of intersecting traffic

Notes:  
 The analysis results on this page are based on the traffic signal warrant procedures described in Chapter 4C of the MUTCD 2003 *Manual on Uniform Traffic Control Devices*, published by the Federal Highway Administration.  
 1: 85th-percentile speed  
 2: The 8th-highest hour volume typically ranges between 60% and 80% of the peak hour volume.

TWO-WAY STOP CONTROL SUMMARY

Analyst: JP  
 Agency/Co.: UAI  
 Date Performed: 7/21/2005  
 Analysis Time Period: EXAM  
 Intersection: Forest Ave/Elizabeth St  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year:  
 Project ID:  
 East/West Street: Forest Ave  
 North/South Street: Elizabeth St  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach Movement	Eastbound				Westbound		
	1 L	2 T	3 R		4 L	5 T	6 R
Volume	20	540	33		14	317	14
Peak-Hour Factor, PHF	0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR	22	600	36		15	352	15
Percent Heavy Vehicles	3	--	--		3	--	--
Median Type/Storage	Undivided						
RT Channelized?							
Lanes	0	1	0		0	1	0
Configuration	LTR				LTR		
Upstream Signal?	No				No		

Minor Street: Approach Movement	Northbound				Southbound		
	7 L	8 T	9 R		10 L	11 T	12 R
Volume	9	30	39		8	9	8
Peak Hour Factor, PHF	0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR	10	33	43		8	10	8
Percent Heavy Vehicles	3	3	3		3	3	3
Percent Grade (%)	0				0		
Flared Approach: Exists?/Storage	No				No		
Lanes	0	1	0		0	1	0
Configuration	LTR				LTR		

Delay, Queue Length, and Level of Service

Approach Movement Lane Config	EB	WB	Northbound			Southbound		
	1 LTR	4 LTR	7 	8 LTR	9 	10 	11 LTR	12
v (vph)	22	15		86			26	
C(m) (vph)	1154	865		245			198	
v/c	0.02	0.02		0.35			0.13	
95% queue length	0.06	0.05		1.51			0.44	
Control Delay	8.2	9.2		27.4			25.9	
LOS	A	A		D			D	
Approach Delay				27.4			25.9	
Approach LOS				D			D	



New York City  
Department of Transportation

Traffic Operations Bureau  
34-02 Queens Boulevard  
Long Island City, New York 11101  
Tel: 718/786-4475  
Fax: 718/786-6186

Iris Weinshall, Commissioner

Web: [www.nyc.gov/dot](http://www.nyc.gov/dot)

January 7, 2004

Mr. Ricardo Cervoni  
180 Myrtle Avenue  
Staten Island, N.Y. 10310

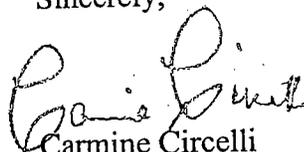
Dear Mr. Cervoni:

This is in response to your July 28, 2003 letter regarding the traffic controls at the intersection of Elizabeth Street and Forest Avenue. Please accept my apologies for the delay.

We completed our analysis earlier this month. Factors such as vehicular and pedestrian volumes, accident experience, vehicular speeds, visibility and signal spacing were all taken into consideration in making our determination. Based upon our evaluation of the data collected, it is our judgment that a traffic signal is unwarranted at this time.

Thank you for your interest in this matter.

Sincerely,



Carmine Circelli

Chief of Intersection Control Unit

CC:gb  
ICU/CS03-1498

c: Staten Island Borough Engineering Office

# SPOT SPEED STUDY

Date: **May 11, 2005**                      Time: **9:40AM**  
 Location: **Forest Ave between Elizabeth St & Broadway**  
 Surveyor: **Richard Calvache & Keren Mor**

School: **I.S. 27**  
 Direction: **Eastbound**  
 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	2	2.0%	2.0%	36	648
19	2	2.0%	4.0%	38	722
20	1	1.0%	5.0%	20	400
21	4	4.0%	9.0%	84	1764
22	5	5.0%	14.0%	110	2420
23	6	6.0%	20.0%	138	3174
24	8	8.0%	28.0%	192	4608
25	15	15.0%	43.0%	375	9375
26	13	13.0%	56.0%	338	8788
27	11	11.0%	67.0%	297	8019
28	9	9.0%	76.0%	252	7056
29	6	6.0%	82.0%	174	5046
30	6	6.0%	88.0%	180	5400
31	2	2.0%	90.0%	62	1922
32	3	3.0%	93.0%	96	3072
33	3	3.0%	96.0%	99	3267
34	1	1.0%	97.0%	34	1156
35	1	1.0%	98.0%	35	1225
36	2	2.0%	100.0%	72	2592
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	100	100.0%		2632	70654

Mean Speed = 26.3 mph                      Median Speed = 26.3 mph  
 Standard Deviation = 3.7 mph              15th Percentile Speed = 22.5 mph  
 Margin of Error (95% Confidence) = ± 0.7 mph      85th Percentile Speed = 30.2 mph

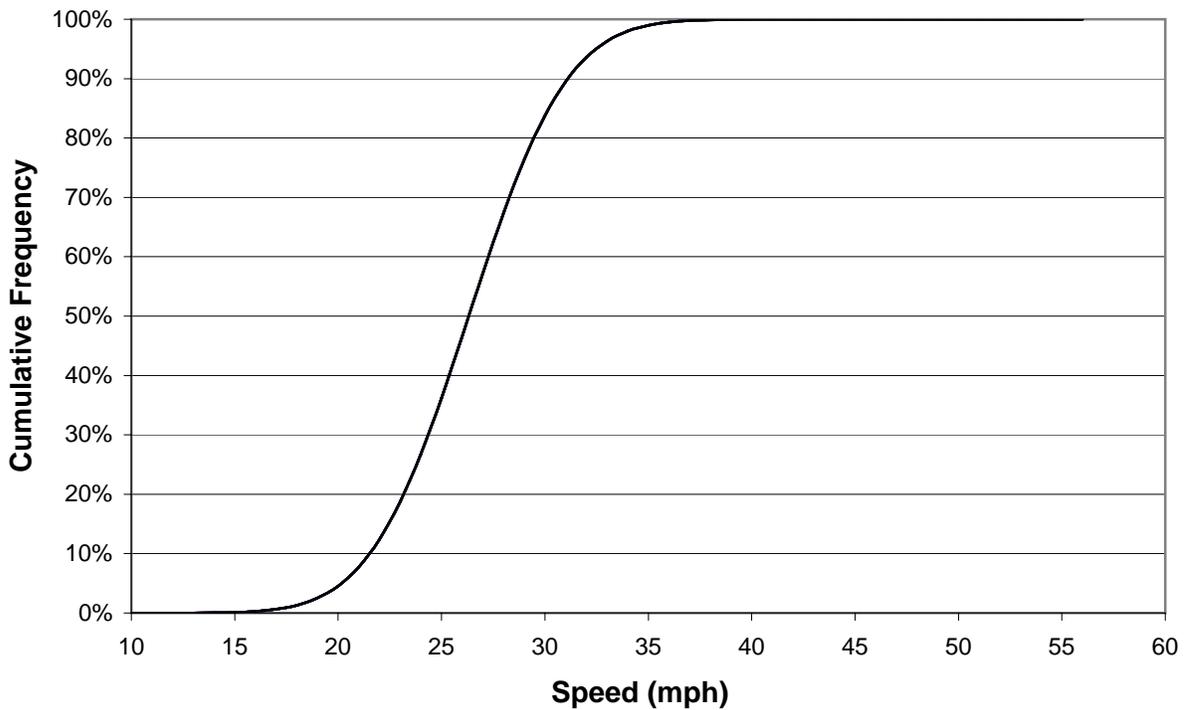
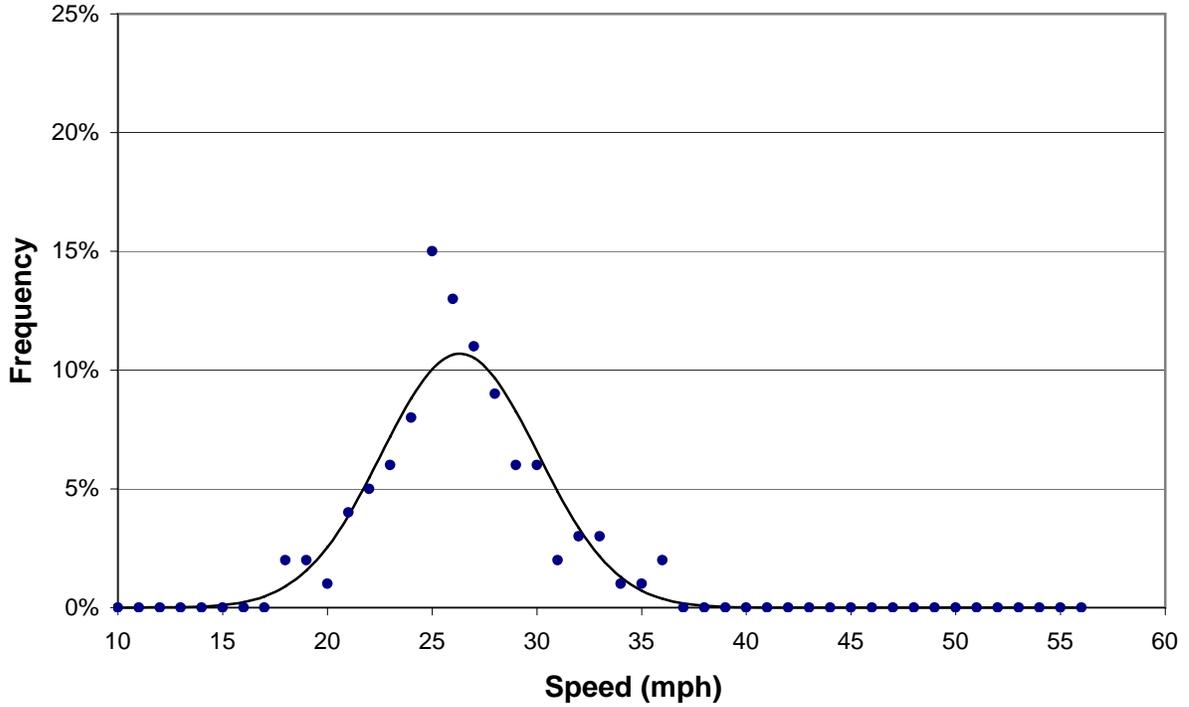
# SPOT SPEED STUDY

Date: **May 11, 2005** Time: **9:40AM**  
Location: **Forest Ave between Elizabeth St & Broadway**  
Surveyor: **Richard Calvache & Keren Mor**

School: **I.S. 27**  
Direction: **Eastbound**  
Comments:

Mean Speed = 26.3 mph  
Standard Deviation = 3.7 mph  
Margin of Error (95% Confidence) =  $\pm 0.7$  mph

Median Speed = 26.3 mph  
15th Percentile Speed = 22.5 mph  
85th Percentile Speed = 30.2 mph



## SPOT SPEED STUDY

Date: **May 11, 2005**                      Time: **9:40AM**  
 Location: **Forest Ave between Elizabeth St & Broadway**  
 Surveyor: **Richard Calvache & Keren Mor**

School: **I.S. 27**  
 Direction: **Westbound**  
 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	1	1.0%	1.0%	15	225
16	1	1.0%	2.0%	16	256
17	1	1.0%	3.0%	17	289
18	1	1.0%	4.0%	18	324
19	1	1.0%	5.0%	19	361
20	2	2.0%	7.0%	40	800
21	6	6.0%	13.0%	126	2646
22	8	8.0%	21.0%	176	3872
23	4	4.0%	25.0%	92	2116
24	9	9.0%	34.0%	216	5184
25	11	11.0%	45.0%	275	6875
26	5	5.0%	50.0%	130	3380
27	10	10.0%	60.0%	270	7290
28	10	10.0%	70.0%	280	7840
29	7	7.0%	77.0%	203	5887
30	9	9.0%	86.0%	270	8100
31	3	3.0%	89.0%	93	2883
32	5	5.0%	94.0%	160	5120
33	3	3.0%	97.0%	99	3267
34	1	1.0%	98.0%	34	1156
35	2	2.0%	100.0%	70	2450
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	100	100.0%		2619	70321

Mean Speed = 26.2 mph                      Median Speed = 26.2 mph  
 Standard Deviation = 4.2 mph              15th Percentile Speed = 21.9 mph  
 Margin of Error (95% Confidence) = ± 0.8 mph      85th Percentile Speed = 30.5 mph

# SPOT SPEED STUDY

Date: **May 11, 2005**  
Location: **Forest Ave between Elizabeth St & Broadway**  
Surveyor: **Richard Calvache & Keren Mor**

Time: **9:40AM**

School: **I.S. 27**  
Direction: **Westbound**  
Comments:

Mean Speed = 26.2 mph  
Standard Deviation = 4.2 mph  
Margin of Error (95% Confidence) =  $\pm 0.8$  mph

Median Speed = 26.2 mph  
15th Percentile Speed = 21.9 mph  
85th Percentile Speed = 30.5 mph

