

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



**School Safety Engineering Project**

**FINAL REPORT: P.S. 86, Irvington School, Brooklyn**



Prepared by  
The RBA Group/Urbitrans Associates



**SEPTEMBER 29, 2006**

**School Safety Engineering Project  
P.S. 86, Irvington School, Brooklyn**

**TABLE OF CONTENTS**

<b>1. INTRODUCTION .....</b>	<b>4</b>
1.1 PROJECT DESCRIPTION .....	4
<b>2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS.....</b>	<b>5</b>
<b>[REDACTED]</b>	
2.2 NEIGHBORHOOD DESCRIPTION .....	5
2.3 MEETING WITH SCHOOL REPRESENTATIVES.....	6
<b>[REDACTED]</b>	
2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL.....	7
2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS .....	7
2.8 CROSSING GUARD LOCATIONS.....	10
<b>3. TRAFFIC OPERATIONS.....</b>	<b>13</b>
3.1 SCHOOL BUS OPERATIONS .....	13
3.2 PARENT DROP-OFF OPERATIONS .....	13
3.3 PARKING REGULATIONS .....	14
3.4 EXISTING SCHOOL SIGNS AND MARKINGS .....	14
3.5 ACCIDENT SUMMARY.....	16
3.6 TRAFFIC OPERATIONS AND ISSUES .....	18
3.7 SIGNAL TIMING: PEDESTRIAN PHASE.....	24
3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS).....	24
<b>4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY .....</b>	<b>25</b>
4.1 SHORT-TERM MEASURES .....	25
4.2 LONG-TERM MEASURES .....	26
4.3 ADDITIONAL RECOMMENDATIONS FOR PRIORITY SCHOOLS IN THE VICINITY.....	27

**EXHIBITS**

EXHIBIT 1 - AERIAL PHOTOGRAPH .....	8
EXHIBIT 2 – CATCHMENT AREA.....	9
EXHIBIT 3 – TRAFFIC SAFETY PLAN.....	11
EXHIBIT 4 – CROSSING GUARD LOCATIONS .....	12
EXHIBIT 5 – PARKING REGULATIONS .....	15
EXHIBIT 6 – ACCIDENT SUMMARY .....	17
EXHIBIT 7 – TRAFFIC COUNTS .....	23
EXHIBIT 8 – PROPOSED MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY.....	30

## TABLES

TABLE 1: MODES OF TRAVEL .....	7
TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000).....	16
TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004) .....	16
TABLE 4: SPOT SPEED STUDY – HARMAN STREET .....	19
TABLE 5: SPOT SPEED STUDY – GREENE AVENUE.....	19
TABLE 4: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS.....	24

## APPENDIX

	
SPOT SPEED STUDY – GREENE AVENUE .....	A-2
SPOT SPEED STUDY – HARMAN STREET.....	A-4

## **1. INTRODUCTION**

### **1.1 PROJECT DESCRIPTION**

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

Under this consultant study, the School Safety Engineering Project, accident data in the vicinity of all program schools was reviewed. As a result, schools were ranked in terms of pedestrian safety, and 135 “priority” schools were identified Citywide. At each of these priority schools safety improvements are being recommended (e.g., new school crosswalks, new traffic signals and signal timing modifications, new speed reducers). In addition, 32 of these schools will receive further investigation to design physical improvements (e.g., raised center medians, widened sidewalks, “neckdowns” or “bulbouts” at intersections). P.S. 86 (Irvington School) in Brooklyn is one of the 135 priority schools.

## 2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



### 2.2 NEIGHBORHOOD DESCRIPTION

P.S. 86 is located at 220 Irving Avenue in Brooklyn. The area surrounding P.S. 86 is primarily residential with two to three story residential buildings and private houses. To the south of the school is Myrtle Avenue, a busy commercial street. A subway station servicing the M line is located on Myrtle Avenue at Harman Street. Myrtle Avenue is a bus route for the BK54 and Wyckoff Avenue is a bus route for the BK13 MTA bus line. Wyckoff Hospital is located just north of Wyckoff Avenue (See Exhibit 1 for Aerial Photograph).



*Figure 1: P.S. 86 location*



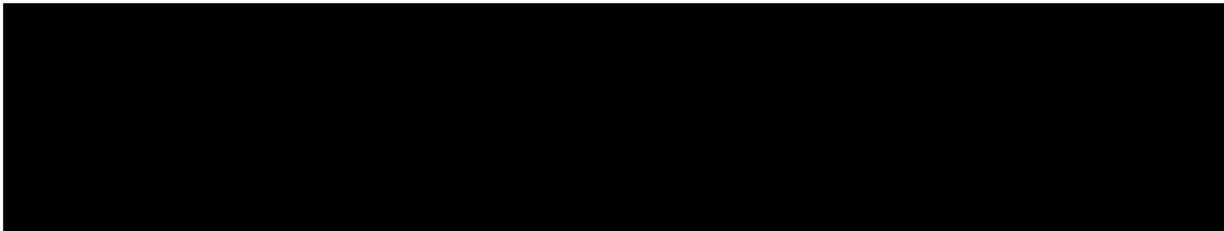
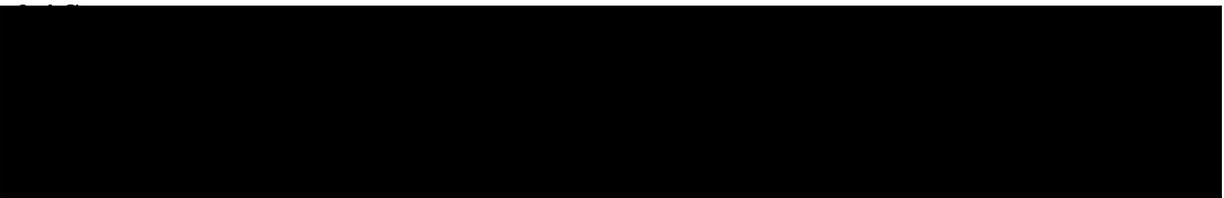
*Figure 2: Irving Avenue in front of P.S. 86*

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

The consultant team, the P.S. 86 principal, a custodian engineer and a UFT representative met at the school on the afternoon of May 1, 2006. (See the Appendix for a list of attendees).

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

- Speeding along Greene Avenue and Harman Street
- The high number of trucks turning from Irving Avenue onto Harman Street
- Only one crossing guard assigned to P.S. 86



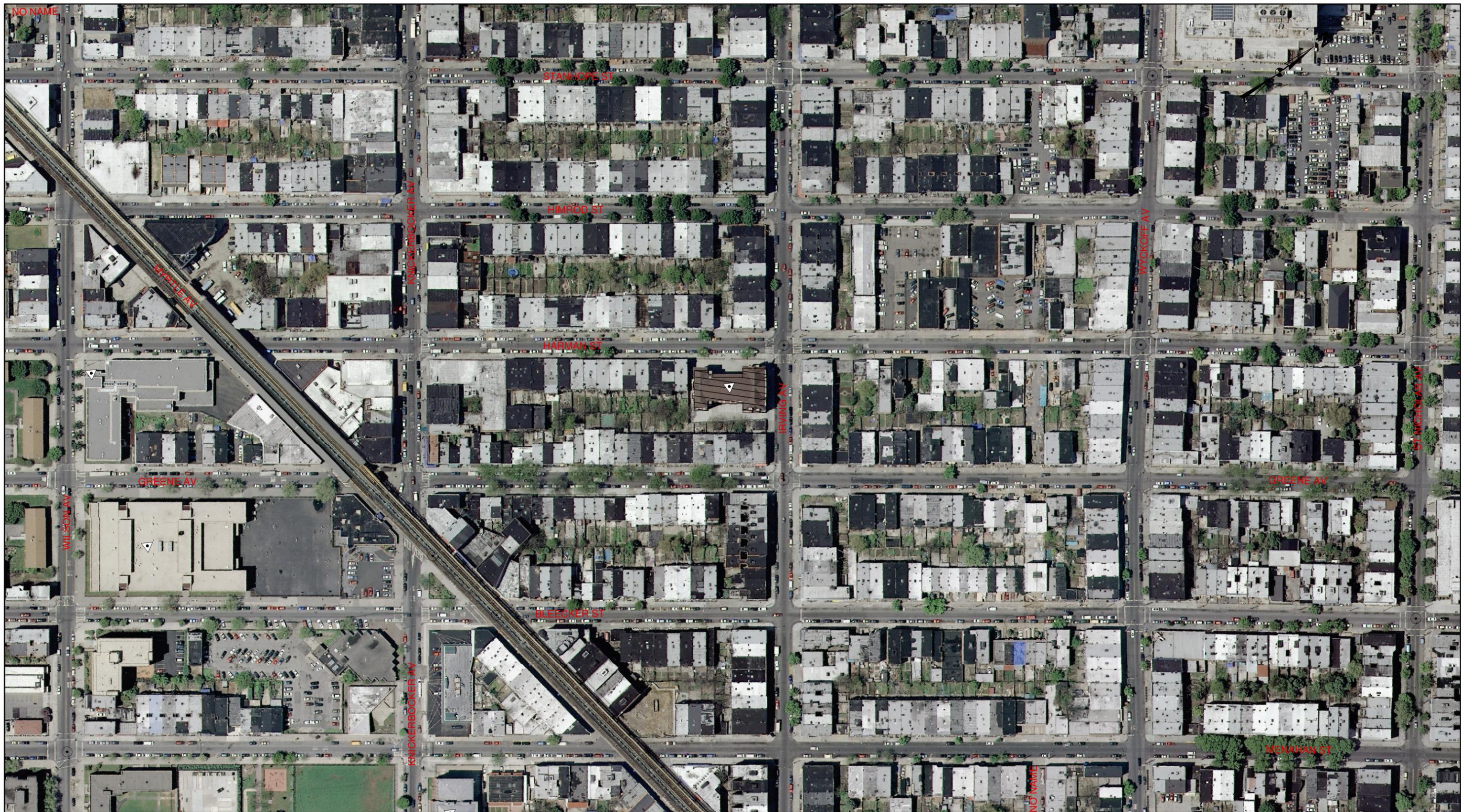
## 2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to school officials, approximately 90% of students walk to P.S. 86, 2% arrive via public transportation, 5% are transported by school buses and the remaining 3% are driven by parents or guardians. See Table 1 for the school's estimate of the modes of travel.

Description	Percentage
Walk	90%
Driven by parents or guardians	3%
School bus	5%
MTA bus or subway	2%
<b>TOTAL</b>	<b>100%</b>

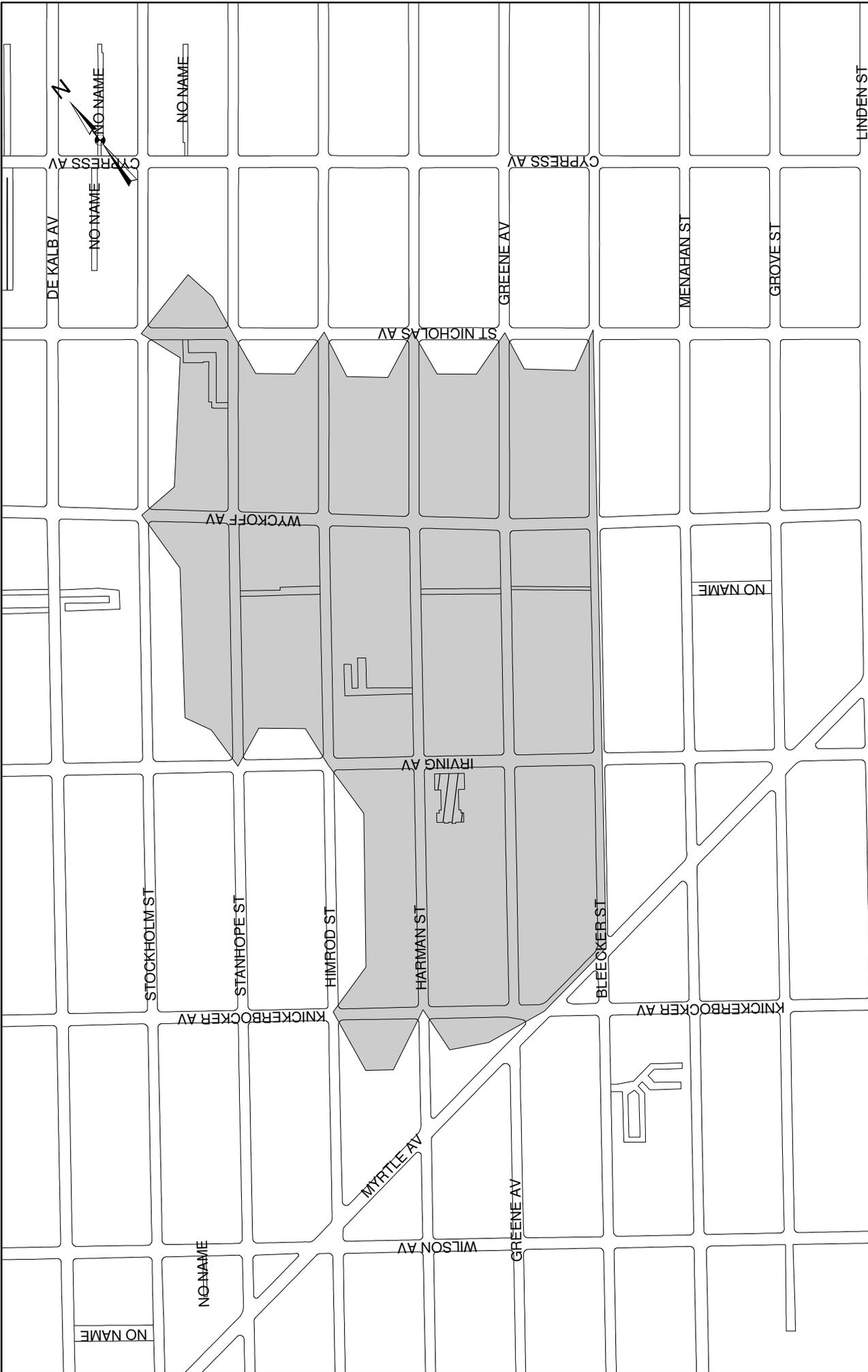
## 2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

I.S. 383 with an enrollment of approximately 1500 students is located on Greene Avenue between Knickerbocker Avenue and Wilson Avenue. P.S. 116 with 500 students is located on Knickerbocker Avenue between Menahan Street and Grove Street. Both I.S. 383 and 116 are priority schools. P.S. 376 with 551 students is located across Greene Avenue from I.S. 383. There are numerous restaurants, fast food restaurants, delis, supermarkets and other retail stores along Wyckoff Avenue and Knickerbocker Avenue. The subway stop for the M line is on Myrtle Avenue and a station for the L line is on Wyckoff Avenue.



1 inch equals 175 feet

**EXHIBIT 1**  
**P.S. 86, BROOKLYN**  
**IRVINGTON SCHOOL**  
**AERIAL PHOTOGRAPH**



**EXHIBIT 2**  
**P.S. 86, BROOKLYN**  
**IRVINGTON SCHOOL**  
**CATCHMENT AREA**

**CATCHMENT AREA**

## 2.8 CROSSING GUARD LOCATIONS

There is one crossing guard assigned to P.S. 86. The crossing guard is stationed at the intersection of Irving Avenue and Harman Street.



*Figure 3: A crossing guard assigned to P.S. 86 assisting students at the intersection of Irving Avenue and Harman Avenue*



# 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 86 Brooklyn Irvington School**

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

Map created on 11/16/2006

**EXHIBIT 3**

1.5.1

COMM. BOARD:	304
PRECINCT:	83



### 3. TRAFFIC OPERATIONS

#### 3.1 SCHOOL BUS OPERATIONS

According to school representatives, one school bus transports approximately 20 students to and from school. The school bus drops off and picks up students on Irving Avenue in front of school's main entrance. The school bus double-parks, while dropping off or picking up students.



*Figure 4: Double parked school bus on Irving Avenue in front of P.S. 86, dropping of students during arrival time*

#### 3.2 PARENT DROP-OFF OPERATIONS

School officials have indicated that, approximately 3% of P.S. 86 students are driven to and from school by parents or guardians. Field observations showed that parents use Irving Avenue as the student pick-up and drop-off area (Figure 5).



*Figure 5: Double-parked vehicles dropping of students during morning arrival time*

### 3.3 PARKING REGULATIONS

“NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS” parking regulation signs are posted on Irving Avenue and Harman Street in front of school and school yard entrances (Figure 6). A “NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS, EXCEPT BOARD OF EDUCATION” parking regulation exists on Harman Street. Exhibit 5 displays parking regulations in the vicinity of P.S. 86.



*Figure 6: Parking regulations on Irving Avenue*

### 3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Map, Exhibit 3, shows existing crosswalk pavement markings. It is noted that a citywide signage program is currently underway to upgrade school signage to current Federal Manual of 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” on Exhibit 8.



*Figure 7: School sign in front of P.S. 86 main entrance*



IRVING AVENUE

HIMROD STREET

KNICKERBOCKER AVENUE

HARMAN STREET

AVENUE

GREENE AVENUE

BLEECKER STREET

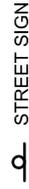
LEGEND



MAIN ENTRANCE



ENTRANCE



STREET SIGN

NO PARKING  
7:00am TO 4:00pm  
SCHOOL DAYS  
AUTHORIZED VEHICLES  
ON OTHER SIDE  
NO PARKING  
9:00am TO 10:30am  
TUESDAY & FRIDAY

NO PARKING  
7:00am TO 4:00pm  
SCHOOL DAYS  
EXCEPT BOARD  
OF EDUCATION  
NO PARKING  
9:00am TO 10:30am  
TUESDAY & FRIDAY

NO PARKING  
7:00am TO 4:00pm  
SCHOOL DAYS

NO PARKING  
11:00 am TO 12:30 pm  
MONDAY & THURSDAY

NO PARKING  
7:00am TO 4:00pm  
SCHOOL DAYS  
NO PARKING  
11:00 am TO 12:30 pm  
MONDAY & THURSDAY

NO PARKING  
11:00 am TO 12:30 pm  
MONDAY & THURSDAY



P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

P

SCALE: 1" : 160'

EXHIBIT 5

P.S. 86, BROOKLYN  
IRVINGTON SCHOOL

EXISTING PARKING REGULATIONS

### 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. 86 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 accidents. Table 2 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>TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED* ACCIDENTS</b>
Irving Ave and Harman Street	10	0	0	0
Irving Ave and Greene Ave	18	3	0	0
Knickerbocker Ave and Harman St	18	3	0	0
Knickerbocker Ave and Greene Ave	9	2	0	0
Knickerbocker Ave and Myrtle Ave	47	9	0	2
Myrtle Ave and Greene Ave	20	2	0	1
Myrtle Ave. and Menahan St.	17	3	0	1
<b>TOTAL</b>	<b>139</b>	<b>22</b>	<b>0</b>	<b>4</b>

<b>TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED* ACCIDENTS</b>
Irving Ave and Harman Street	24	8	0	2
Irving Ave and Greene Ave	14	2	0	0
Knickerbocker Ave and Harman ST	21	2	0	0
Knickerbocker Ave and Greene Ave	20	7	0	2
Knickerbocker Ave and Myrtle Ave	55	5	0	1
Myrtle Ave and Greene Ave	21	5	0	2
Myrtle Ave. and Menahan St.	26	11	0	2
<b>TOTAL</b>	<b>181</b>	<b>40</b>	<b>0</b>	<b>9</b>

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



### 3.6 TRAFFIC OPERATIONS AND ISSUES

The following describes traffic accidents and operational issues at intersections in the vicinity of P.S. 86.

#### 3.6.1 Irving Avenue and Harman Street

Irving Avenue is a 34-foot wide one-way (eastbound) roadway with two travel lanes and parking on both sides. Harman Street is 30-foot wide one-way (southbound) roadway with one travel lane and parking on both sides of the street. This is a signalized intersection. There are school crosswalks on the east, north and south legs of the intersection. There are no pedestrian ramps on the northwest corner of the intersection due to an obstruction created by a traffic signal pole.

A total of 10 accidents occurred at this intersection in the 1998-2000 study period. There were no pedestrians involved.

School officials noted that most students that walk to P.S. 86 cross at this intersection. They also noted that many trucks on Irving Avenue turn left onto Harman Street. A one-hour traffic count was performed at this intersection between the hours of 2:30 pm – 3:30 pm on June 13, 2006 with the results shown in Exhibit 7. The traffic count at this intersection indicates that 67 vehicles/hour turned right from Irving Avenue onto westbound Harman Street. During the same period, 276 pedestrians crossed Harman Street at the north crosswalk. Installation of a Leading Pedestrian Interval (LPI) was considered at this intersection. However, existing moderate traffic and pedestrian volumes do not meet DOT's LPI criteria.



*Figure 8: Irving Avenue and Harman Street intersection (looking south on Harman Street)*

The school officials expressed concern that vehicles were speeding on Harman Street. A spot speed study was conducted on Harman Street between Knickerbocker Avenue and Irving Avenue on June 13, 2006 between 10:30 am - 11:30 am.

The spot speed study showed that the 85<sup>th</sup> percentile speed was 24 mph, which does not exceed the statutory speed limit of 30 mph.

<b>TABLE 4: SPOT SPEED STUDY – HARMAN STREET</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
Harman Street between Knickerbocker Avenue and Irving Avenue	19	24

3.6.2 Irving Avenue and Greene Avenue

Greene Avenue is a 30-foot wide one-way (northbound) roadway with one travel lane and parking on both sides. This is a signalized intersection. There are school crosswalks on the west, south and north legs of the intersection.

Eighteen accidents occurred at this location during the 1998-2000 study period. Three accidents involved pedestrians, none of which were school-related. Two pedestrians were struck while crossing against the signal or crossing outside the crosswalk. The third pedestrian was struck while emerging from between parked vehicles. This accident was attributed to driver’s improper lane usage.



*Figure 9: Irving Avenue and Greene Avenue (looking west)*

The school officials expressed concern that vehicles were speeding on Greene Avenue. A spot speed study was conducted on Greene Avenue between Knickerbocker Avenue and Irving Avenue on June 13, 2006 between 1:00 pm – 2:00 pm.

The spot speed study showed that the 85<sup>th</sup> percentile speed was 20 mph, which does not exceed the statutory speed limit of 30 mph.

<b>TABLE 5: SPOT SPEED STUDY – GREENE AVENUE</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
Greene Avenue between Knickerbocker Avenue and Irving Avenue	16	20

### 3.6.3 Knickerbocker Avenue and Harman Street

NYCDOT has recently converted this to a signalized intersection. Prior to signalization, it operated as a stop controlled intersection with a stop sign on southbound Harman Street. Knickerbocker Avenue is a 34-foot wide one-way (westbound) street with one travel lane in each direction and metered parking on both sides. There are school crosswalks on the north, west and east legs of the intersection.

A total of 18 accidents occurred at this intersection during the 1998-2000 study period. Three accidents involved pedestrians. According to the accident data, all three pedestrians were struck while crossing against the signal. There were no school related accidents.



*Figure 10: Knickerbocker Avenue and Harman Street (looking northwest)*



*Figure 11: On Knickerbocker Avenue looking west at the intersection with Harman Street*

### 3.6.4 Knickerbocker Avenue and Greene Avenue

This is an unsignalized T-intersection located in close proximity to the larger intersection of Myrtle Avenue and Knickerbocker Avenue. There are school crosswalks on the north and west legs of the intersection.

Nine accidents occurred at this intersection during the 1998-2000 study period. Two accidents involved pedestrians. None were school related. According to the accident data, one pedestrian was crossing at a location without a crosswalk. The second pedestrian was struck by a northbound vehicle. No further information is provided regarding this accident.

### 3.6.5 Myrtle Avenue at Knickerbocker Avenue

Myrtle Avenue is a highly commercialized roadway and is the southern border of the Bushwick Shopping District. It is a two-way street with one travel lane in each direction and parking on both sides. The M train is elevated through this section of Brooklyn and runs directly above Myrtle Avenue. Columns for the overhead structure are located on raised islands in the center of the street. The center islands have at-grade cut-throughs for pedestrians. There is only one pedestrian ramp at northeast, northwest, and southwest corners of the intersection due to the obstruction of various utilities and subway supports.

There were 47 accidents at this signalized intersection during the 1998-2000 study period (including all sides of the intersection). Nine accidents involved pedestrians, two of which were school related. An eight-year-old student was crossing with the signal when struck by a vehicle attempting to make a left turn. Another 12-year-old student was struck due to a driver's failure to yield. Two pedestrians were struck while crossing against the signal or crossing outside of the crosswalks. Four other accidents were attributed to drivers' failure to yield or inattention. The last pedestrian was struck while getting out of a vehicle.



*Figure 12: On Myrtle Avenue looking northeast at the raised island at the intersection with Knickerbocker Avenue*



*Figure 13: Looking East at the intersection of Myrtle Avenue and Knickerbocker Avenue*

### 3.6.6 Myrtle Avenue and Greene Avenue

Myrtle Avenue and Greene Avenue is a stop controlled T-intersection, with a stop sign on Greene Avenue. There is a school crosswalk on the south leg.

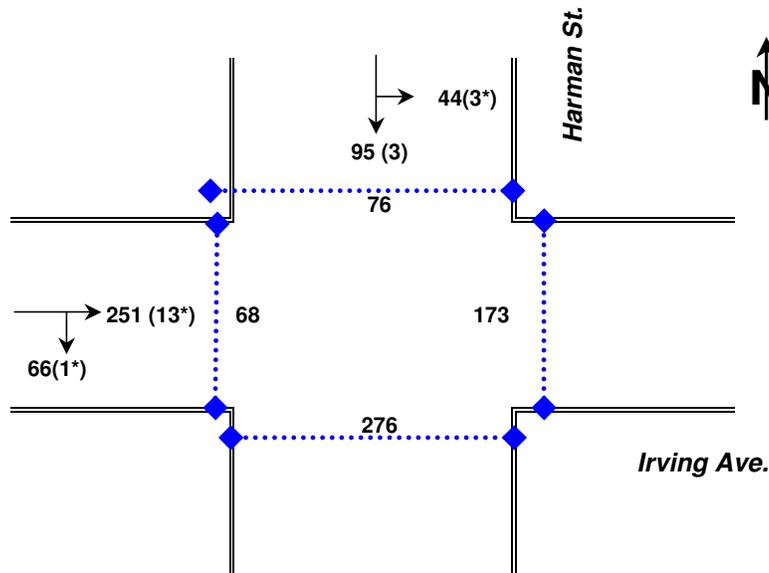
There were twenty accidents at this intersection during the 1998-2000 study period. Two accidents involved pedestrians and one accident was school related. An 11-year-old child and a six-year-old child were struck when crossing Myrtle Avenue. No further details were reported for these two accidents.

### 3.6.7 Myrtle Avenue and Menahan Street

Menahan Street has a stop control at the approach to Myrtle Avenue. There are no school crosswalks at this intersection.

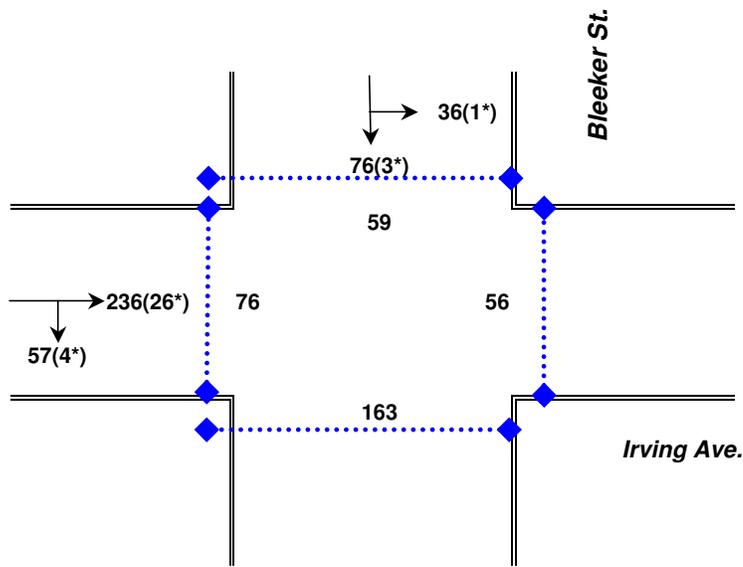
A total of seventeen accidents occurred at this intersection during the 1998-2000 study period. Three accidents involved pedestrians, one of which was school related. All three pedestrians, including a 10-year-old child, were struck while crossing without a crosswalk.

**One Hour Traffic Count Volumes**  
(2:30 PM - 3:30 AM June 19, 2006)



**Intersection of Harman Street and Irving Avenue**

\* Number of Heavy Vehicles



**Intersection of Irving Avenue and Bleeker St.**

\* Number of Heavy Vehicles

- 62 — Number of Pedestrians
- ◆ — Pedestrian Crossing
- 53 ← — Vehicle Movement
- — Number of Vehicles

<b>EXHIBIT 7</b>
<b>P.S. 86, BROOKLYN IRVINGTON SCHOOL</b>
<b>TRAFFIC COUNTS</b>

### 3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 86, and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches.

<b>TABLE 4: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS</b>				
Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
<b>Irving Avenue and Harman Street</b>				
Crossing Irving Avenue	34	25	15	NO
Crossing Harman Street	30	35	13	NO
<b>Irving Avenue and Greene Avenue</b>				
Crossing Irving Avenue	34	25	15	NO
Crossing Greene Avenue	30	35	13	NO
<b>Knickerbocker Avenue and Harman Street</b>				
Crossing Knickerbocker Avenue	34	25	15	NO
Crossing Harman Street	30	35	13	NO
<b>Knickerbocker Avenue and Myrtle Avenue</b>				
Crossing Knickerbocker Avenue	55	55	22	NO
Crossing Myrtle Avenue	52	25	21	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 (ROADWAYS AND SIDEWALKS)

The roadways in the vicinity of the school were generally observed to be in good condition. Pedestrian ramps were not installed on the northwest corner of Irving Avenue and Harman Street due to an obstruction by a traffic signal pole (see Figure 14).



*Figure 14: Missing pedestrian ramp at the northwest corner of Irving Avenue and Harman Street intersection*

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

This section describes potential countermeasures. These countermeasures are divided into short-term and long-term measures. Short-term measures are those that potentially can be performed in-house, long term measures are proposed capital improvements.

##### 4.1 SHORT-TERM MEASURES

- Administer student pedestrian safety education program

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

- No-Standing Zone on Irving Avenue

“NO STANDING 7 AM - PM, SCHOOL DAYS” parking regulation should be placed by for a length of 30’ in front of school entrance on Irving Avenue to provide sufficient additional frontage for school buses and parents to drop-off and pick-up students. In addition, a “NO PARKING 7 AM - PM, SCHOOL DAYS, EXCEPT DEPARTMENT OF EDUCATION” parking regulation should be posted for the rest of the block on Irving Avenue between Harman Street and Greene Avenue.

- Submit a request to the Police Department for a crossing guard

There were eighteen accidents at the intersection of Irving Avenue and Greene Avenue during the 1998-2000 study period, three of which were pedestrian accidents. It is recommended that a crossing guard be requested for this location.

- Place stop bars ten 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.

- Install new school crosswalks at the following locations:

- Irving Avenue and Himrod Street – south leg
- Irving Avenue and Bleecker Street – south leg
- Irving Avenue and Menahan Street – south leg

The installation of new school crosswalks at these locations will facilitate students walking to P.S. 86 (see Exhibit 8). These intersections are signal controlled.

- Irving Avenue and Harman Street

School officials noted a concern with the high number of trucks turning left from Irving Avenue onto Harman Street. It is therefore recommended that NYCDOT reach out to nearby truck generators to request that their truck drivers be especially careful at school crosswalks and yield to students and other pedestrians.

The truck drivers should also be reminded to follow all posted truck routes to the extent required

#### 4.2 LONG-TERM MEASURES

- Install curb extensions at the following intersections:

Consideration should be given to installing a curb extension at the following locations, provided that the Final Design confirms that construction of the recommended curb extension would be feasible and would 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.

- Irving Avenue and Harman Street – southeast corner
- Irving Avenue and Greene Avenue – southwest corner

Curb extensions should be considered at the corners as shown in Exhibit 8.

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 (or intersections). These curb extensions would not eliminate or reduce the width of any moving lanes.

- Installation/replacement of complex pedestrian ramps

Due to the presence of existing traffic signal pole, the installation of pedestrian ramps on the northeast corner of Irving Avenue and Harman Street is considered complex. Consideration should be given to the installation of pedestrian ramps per NYCDOT standards at this location.

### 4.3 ADDITIONAL RECOMMENDATIONS FOR PRIORITY SCHOOLS IN THE VICINITY

#### 4.3.1 RECOMMENDATIONS FOR P.S. 116:

The following actions are recommended as part of proposed measures to improve student pedestrian safety around P.S. 116, which is a nearby Priority School.

- Install new school crosswalks at the following intersections:
  - Irving Avenue and Grove Street – west and north legs
  - Myrtle Avenue and Grove Street – west and south legs
  - Menahan Street and Myrtle Avenue – south leg

Providing a school crosswalk at these locations will complete a network of contiguous school crosswalks in the immediate vicinity of the school.

- Submit a request to the police department for a crossing guard

It is recommended that a crossing guard be requested for the intersection of Knickerbocker Avenue and Grove Street.

- Install pedestrian ramp

Considerations shall be given to the installation of pedestrian ramps per NYCDOT standards at the following locations:

- Knickerbocker Avenue and Grove Street - northwest corner
  - Knickerbocker Avenue and Menahan Street - southwest corner
- Resurface Grove Street, west of Knickerbocker Avenue
- It is recommended to resurface and re-grade pavement on Grove Street just west of Knickerbocker Avenue to correct ponding.
- Improve lighting beneath the elevated railroad at Myrtle Avenue, Grove Street and Irving Avenue
- Additional lighting should be considered beneath the elevated railroad at Myrtle Avenue, Grove Street and Irving Avenue. This is a complex three-leg intersection with multiple crossings. Enhancing the lighting of the crosswalk areas will improve visibility for pedestrians, and make them more visible to motorists.

- Consider curb extensions at the following intersections

Consideration should be given to installing a curb extension at the following locations, provided that the Final Design confirms that construction of the recommended curb extension would be feasible and would 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.

- Knickerbocker Avenue and Grove Street

- Knickerbocker Avenue and Menahan Street
- Myrtle Avenue and Grove Street
- Myrtle Avenue and Menahan Street

Curb extensions should be considered at the corners as shown in Exhibit 8.

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 (or intersections). These curb extensions would not eliminate or reduce the width of any moving lanes.

#### 4.3.2 RECOMMENDATIONS FOR I.S. 383:

The following actions are recommended as part of proposed measures to improve student pedestrian safety around I.S. 383, which is a nearby Priority School:

- Submit a request to the NYPD to assign crossing guards at the following intersections:

- Myrtle Avenue and Knickerbocker Avenue
- Myrtle Avenue and Greene Avenue\*
- Wilson Avenue and Greene Avenue\*
- Wilson Avenue and Bleecker Street

\*Crossing guards are currently assigned to these two intersections but were not present during field observations. It is recommended that one crossing guard be reinstated at each of these intersections.

- Install new school crosswalk at Myrtle Avenue and Greene Avenue

According to the principal, a crossing guard is assigned here, and students utilize this intersection en route to I.S. 383. Providing a new school crosswalk at this intersection will complete a network of contiguous school crosswalks in the immediate school vicinity. Therefore, it is recommended that a school crosswalk be installed at this intersection.

- Install pedestrian ramps

Due to existing conflicts with utility and overhead subway structures, the following pedestrian ramps are considered complex. Considerations should be given to the installation of pedestrian ramps per NYCDOT standards.

- Myrtle Avenue and Knickerbocker Avenue – northeast, northwest, and southwest corners
- Myrtle Avenue and Bleecker Street – all four corners
- Wilson Avenue and Greene Avenue – southwest corner

- *Install a curb extension at the intersection of Myrtle Avenue and Greene Avenue*

Curb extensions should be installed at the corners as shown in Exhibit 8.

Consideration should be given to installing a curb extension at the following locations, provided that the Final Design confirms that construction of the recommended curb extension would be feasible and would 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.

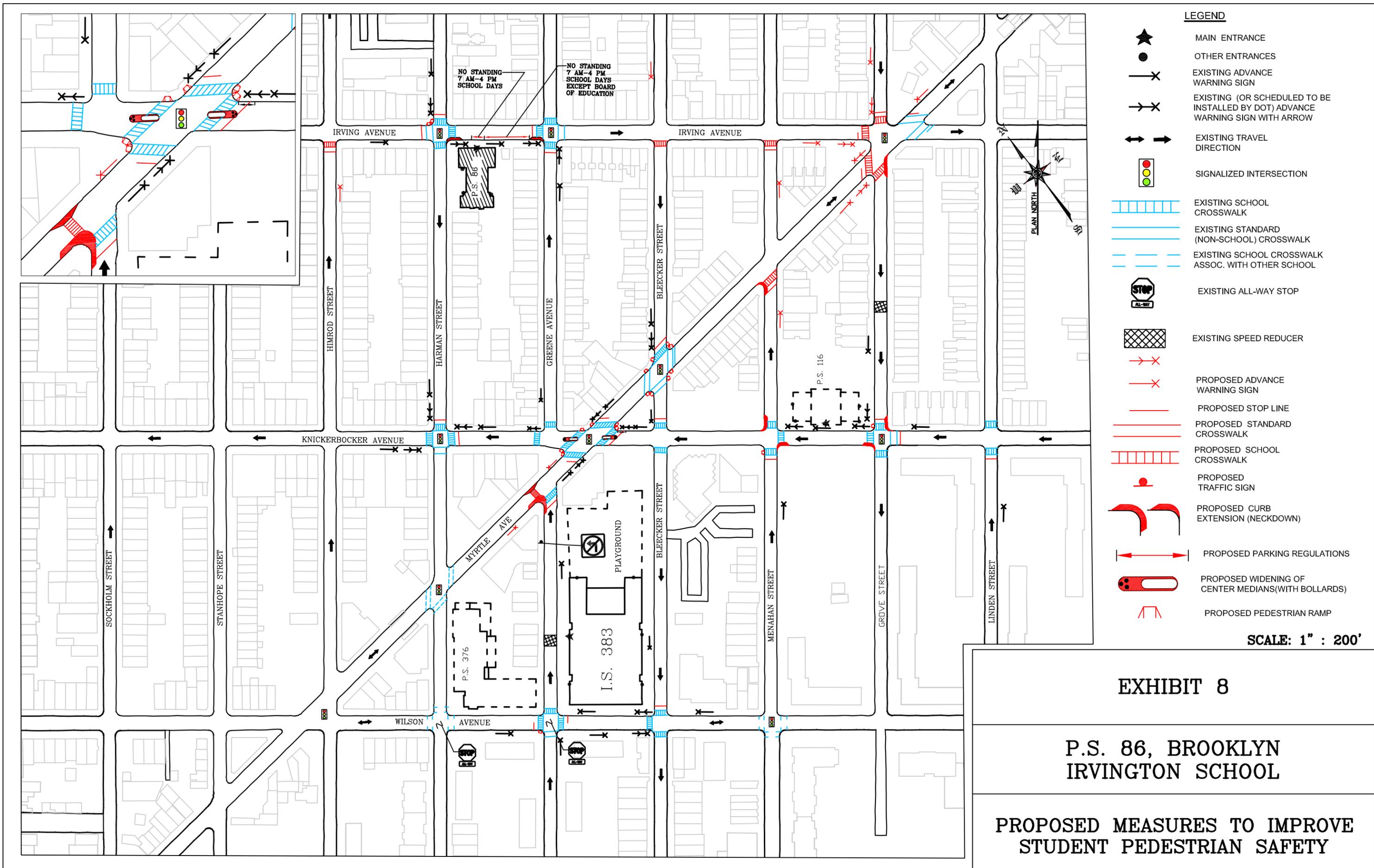
The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks (or intersections). These curb extensions would not eliminate or reduce the width of any moving lanes.

- *Widen curbed medians at the intersection of Knickerbocker Avenue and Myrtle Avenue*

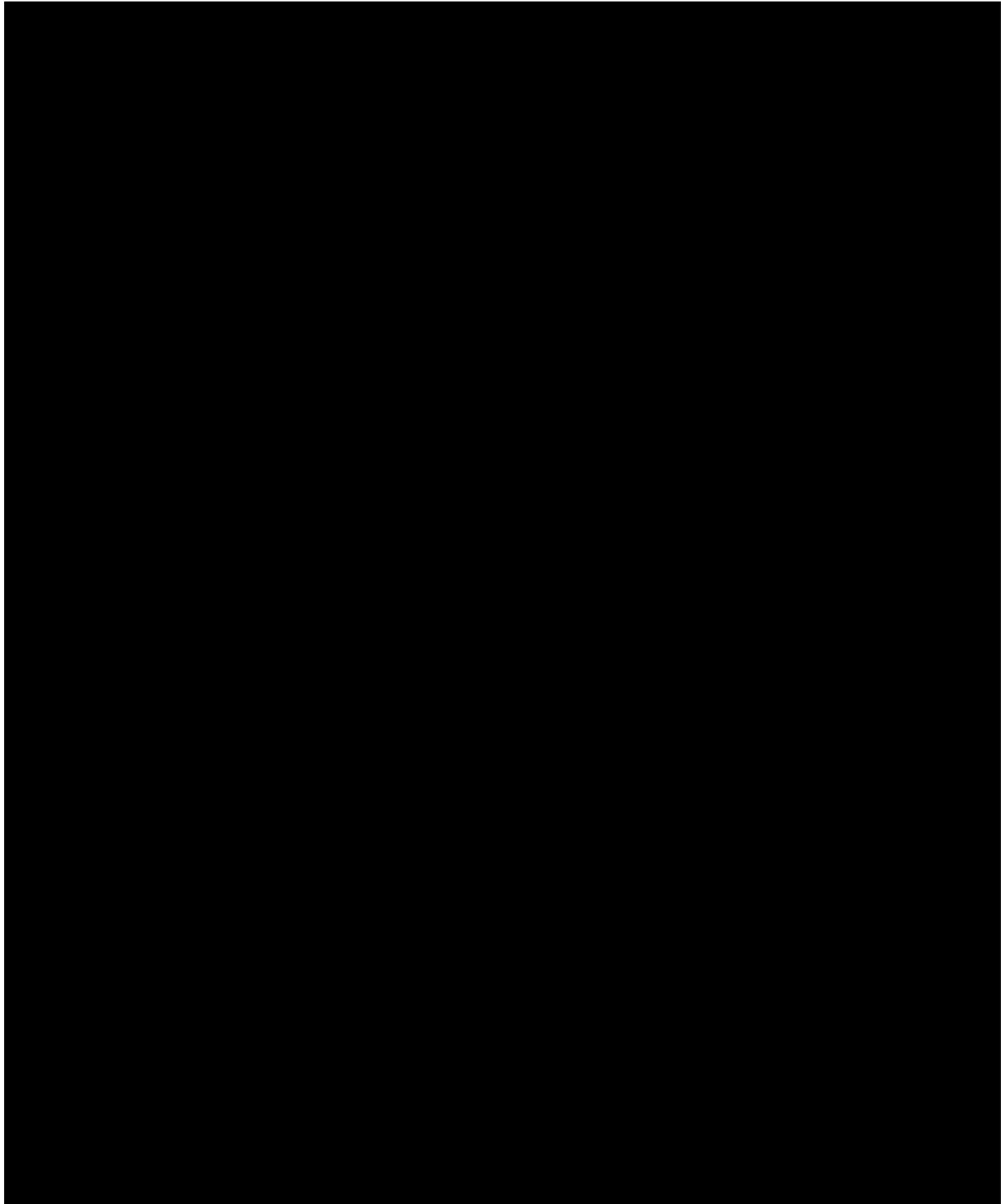
The curbed medians protecting the supports for the overhead subway should be widened by one foot on each side and also lengthened to increase the standing room for pedestrians (exact details will be determined during design). Bollards should also be placed on these medians.

- *Improve lighting beneath the elevated railroad on Myrtle Avenue at Greene Avenue and Knickerbocker Avenue*

Additional lighting should be considered beneath the elevated railroad at Myrtle Avenue, Greene Avenue and Knickerbocker Avenue. Enhancing the lighting of the crosswalk areas will improve visibility for pedestrians, and make them more visible to motorists.



# APPENDIX



# SPOT SPEED STUDY

Date: 6/13/06  
 Location: GREENE AVENUE BTWN IRVING AVENUE & KNICKERBOCKER AVENUE  
 Surveyor: T.S.

Time: 1PM - 2PM

School: P.S. 86  
 Direction: NORTH BOUND  
 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	5	11.4%	11.4%	55	605
12	4	9.1%	20.5%	48	576
13	3	6.8%	27.3%	39	507
14	7	15.9%	43.2%	98	1372
15	7	15.9%	59.1%	105	1575
16	3	6.8%	65.9%	48	768
17	3	6.8%	72.7%	51	867
18	4	9.1%	81.8%	72	1296
19	1	2.3%	84.1%	19	361
20	2	4.5%	88.6%	40	800
21	1	2.3%	90.9%	21	441
22	0	0.0%	90.9%	0	0
23	2	4.5%	95.5%	46	1058
24	0	0.0%	95.5%	0	0
25	0	0.0%	95.5%	0	0
26	1	2.3%	97.7%	26	676
27	0	0.0%	97.7%	0	0
28	0	0.0%	97.7%	0	0
29	0	0.0%	97.7%	0	0
30	1	2.3%	100.0%	30	900
31	0	0.0%	100.0%	0	0
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	44	100.0%		698	11802

Mean Speed = 15.9 mph	Median Speed = 15.9 mph
Standard Deviation = 4.1 mph	15th Percentile Speed = 11.6 mph
Margin of Error (95% Confidence) = ± 1.2 mph	85th Percentile Speed = 20.1 mph



# SPOT SPEED STUDY

Date: 6/13/06  
 Location: HARMAN AVENUE BTWN IRVING AVENUE & KNICKERBOCKER AVENUE  
 Surveyor: T.S.

Time: 10:30 AM - 11:30 AM

School: P.S. 86  
 Direction: SOUTH BOUND  
 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	4	5.4%	5.4%	44	484
12	4	5.4%	10.8%	48	576
13	2	2.7%	13.5%	26	338
14	5	6.8%	20.3%	70	980
15	9	12.2%	32.4%	135	2025
16	6	8.1%	40.5%	96	1536
17	5	6.8%	47.3%	85	1445
18	6	8.1%	55.4%	108	1944
19	6	8.1%	63.5%	114	2166
20	5	6.8%	70.3%	100	2000
21	4	5.4%	75.7%	84	1764
22	3	4.1%	79.7%	66	1452
23	2	2.7%	82.4%	46	1058
24	4	5.4%	87.8%	96	2304
25	1	1.4%	89.2%	25	625
26	2	2.7%	91.9%	52	1352
27	1	1.4%	93.2%	27	729
28	1	1.4%	94.6%	28	784
29	0	0.0%	94.6%	0	0
30	1	1.4%	95.9%	30	900
31	0	0.0%	95.9%	0	0
32	1	1.4%	97.3%	32	1024
33	0	0.0%	97.3%	0	0
34	0	0.0%	97.3%	0	0
35	0	0.0%	97.3%	0	0
36	1	1.4%	98.6%	36	1296
37	1	1.4%	100.0%	37	1369
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
	74	100.0%		1385	28151

Mean Speed = 18.7 mph  
 Standard Deviation = 5.5 mph  
 Margin of Error (95% Confidence) = ± 1.3 mph

Median Speed = 18.7 mph  
 15th Percentile Speed = 13.0 mph  
 85th Percentile Speed = 24.4 mph

