

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



**School Safety Engineering Project**

**FINAL REPORT: I.S. 68, Isaac Bildersee School, Brooklyn**



Prepared by  
The RBA Group/Urbitrans Associates



SEPTEMBER 15, 2006



**School Safety Engineering Project  
I.S. 68, Isaac Bildersee School, Brooklyn**

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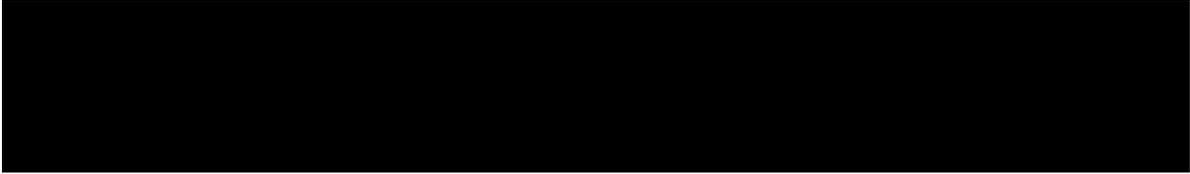
## **1. INTRODUCTION**

### **1.1 PROJECT DESCRIPTION**

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

Under this consultant study, the School Safety Engineering Project, 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. 68 (Isaac Bildersee School) in Brooklyn is one of the 135 priority schools.

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



### **2.2 NEIGHBORHOOD DESCRIPTION**

I.S. 68 is bounded by East 82<sup>nd</sup> Street to the north, Avenue J to the east, East 81<sup>st</sup> Street to the south and Flatlands Avenue to the west (see Exhibit 1 for Aerial Photograph). The area surrounding I.S. 68, with the exception of Flatlands Avenue, is primarily residential. Flatlands Avenue is a commercial street, with storefronts that include grocery stores, fast-food restaurants, as well as multi-story apartment buildings.

Many I.S. 68 students come from two nearby housing complexes: the Bay View Houses located on Seaview Avenue between East 102<sup>nd</sup> Street and East 105<sup>th</sup> Street, and the Breukelen Houses on Flatlands Avenue at East 108<sup>th</sup> Street. These housing complexes are not within the Department of Education established catchment area (See Exhibit 2 for Catchment Area).





**CATCHMENT AREA**

1 inch equals 600 feet

**EXHIBIT 2**  
**I.S. 68, BROOKLYN**  
**CATCHMENT AREA**

### 2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team and the school principal met at the school on the afternoon of June 9, 2004. According to the principal, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- Students crossing at the uncontrolled intersections of Avenue J and East 82<sup>nd</sup> Street, and Avenue J and East 81<sup>st</sup> Street
- Double parked vehicles in front of the school
- Students crossing at mid-block locations on Flatlands Avenue
- Inadequate pedestrian phase to cross Flatlands Avenue
- Vehicles speeding on Avenue J in front of I.S. 68
- Vehicles parked in the “No Parking” zone on East 81<sup>st</sup> Street and in the MTA bus stop on Flatlands Avenue, making it difficult for students to pass
- School buses on East 81<sup>st</sup> Street unload students into moving traffic

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

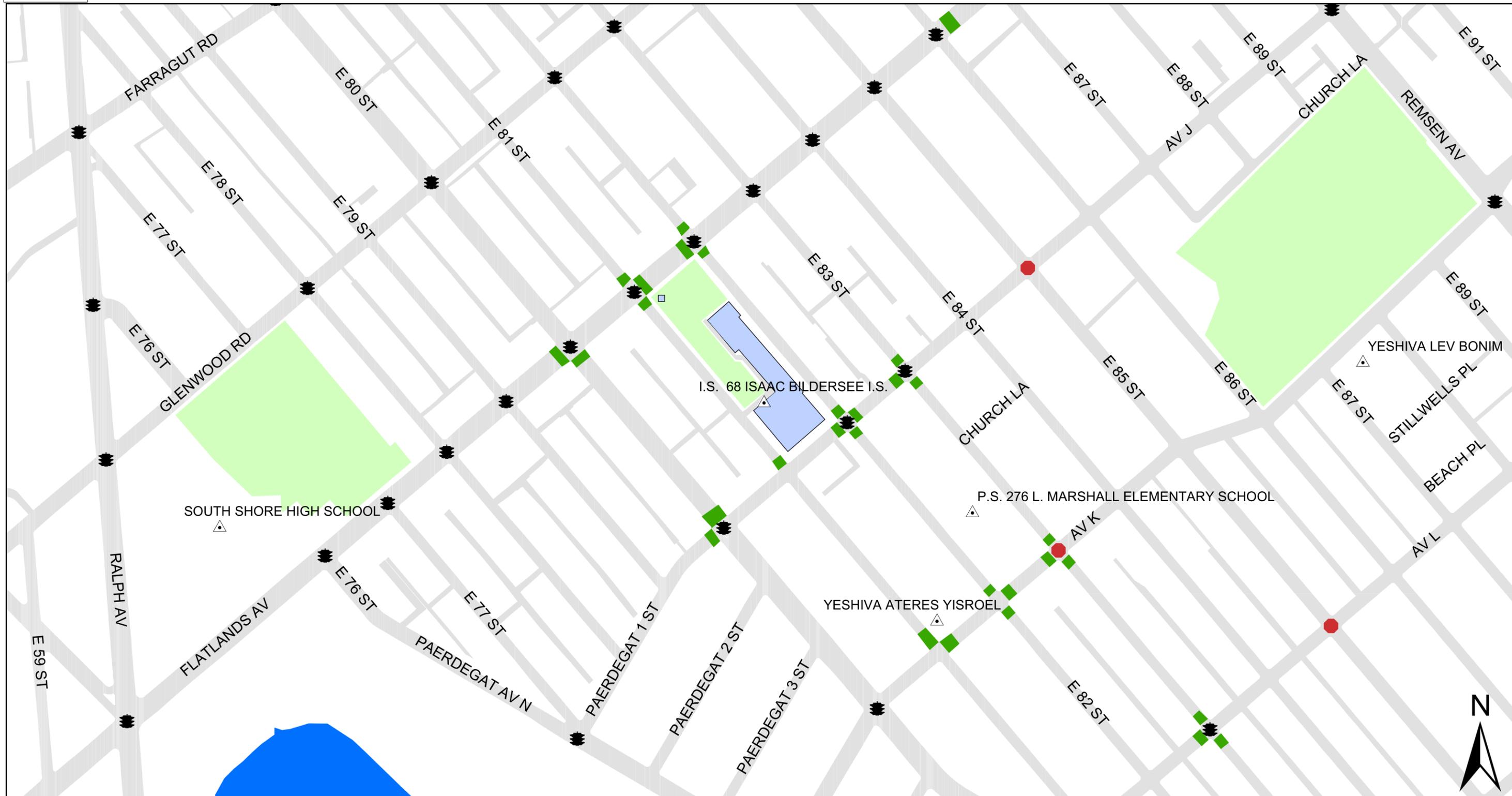


*Figure 1: Looking north on East 82<sup>nd</sup> Street, south of Flatlands Avenue, Brooklyn*





# 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 68 Brooklyn**  
**ISAAC BILDERSEE I.S.**

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

Map created on 11/16/2006

**EXHIBIT 3**

COMM. BOARD: 318  
 PRECINCT: 69

## 2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to the principal, approximately 60% of students walk to I.S. 68, 30% utilize MTA buses, 5% of students are driven by parents or guardians, and the remaining 5% of students ride school buses. See Table 1 for the school’s estimate of the modes of travel.

<b>TABLE 1: MODES OF TRAVEL</b> (AS ESTIMATED BY SCHOOL OFFICIALS)	
DESCRIPTION	PERCENTAGE
Walk	60%
Driven by parent or guardian	5%
School bus	5%
MTA bus	30%
<b>TOTAL</b>	<b>100%</b>

## 2.7 OTHER PEDESTRIAN TRAFFIC GENERATORS

There are three other schools located within four city blocks from I.S. 68: P.S. 276, L. Marshall Elementary School, Yeshiva Ateres Yiseroel, and South Shore High School. School officials indicated that after school, some students visit the grocery stores and fast-food establishments on Flatlands Avenue. MTA bus routes B6 and B82 run on Flatlands Avenue, and the B103 bus runs on East 80<sup>th</sup> Street.

## 2.8 CROSSING GUARDS

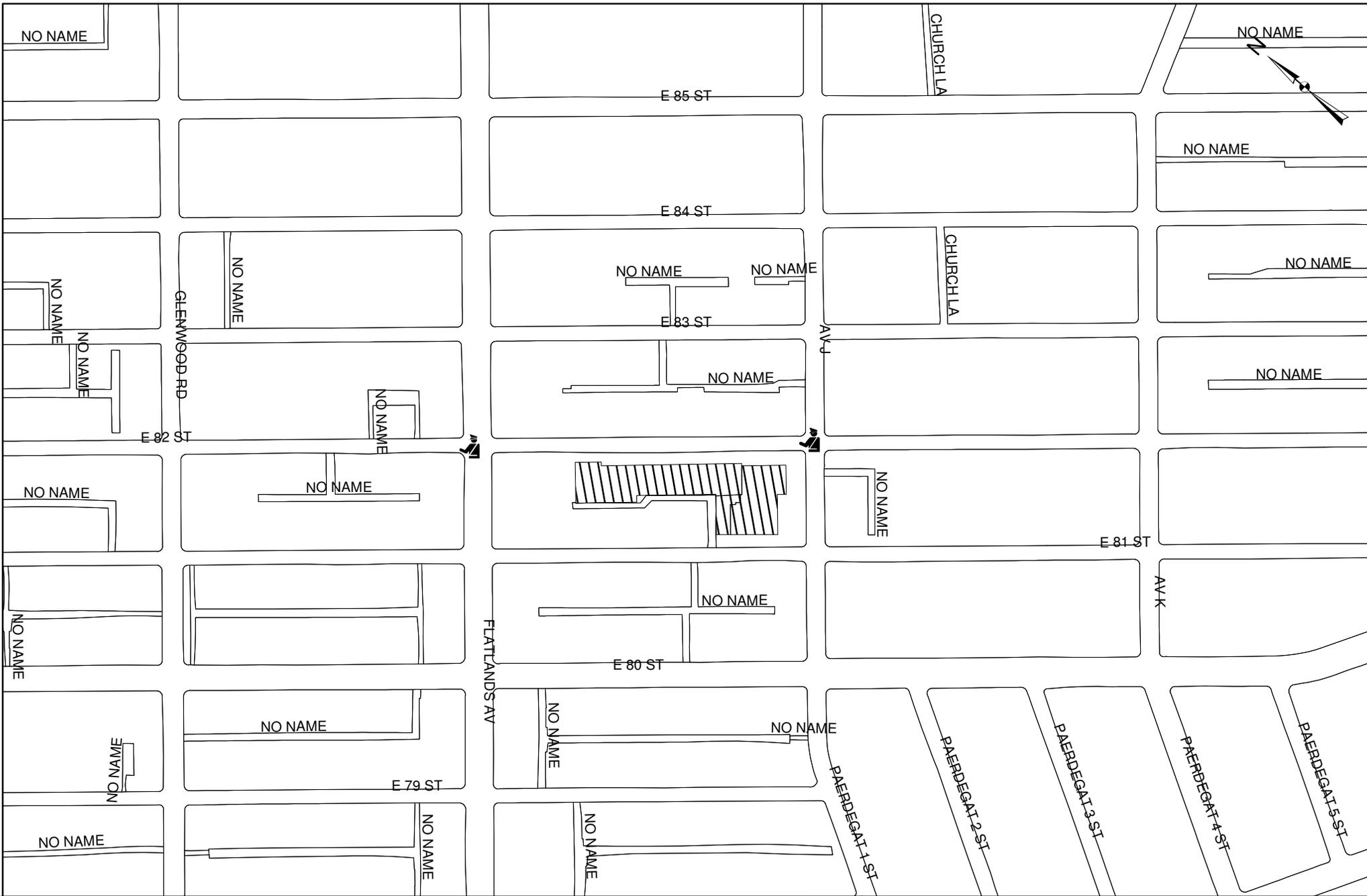
Crossing guards assigned to I.S. 68 are stationed at the following intersections (See Figure 2):

- Avenue J and East 82<sup>nd</sup> Street
- Flatlands Avenue and East 82<sup>nd</sup> Street

See Exhibit 4 for crossing guard locations.



*Figure 2: I.S. 68 crossing guard at Flatlands Avenue and E. 82<sup>nd</sup> Street during dismissal time*



1 inch equals 300 feet



Crossing Guards Assigned to I.S. 68

EXHIBIT 4

I.S. 68, BROOKLYN

CROSSING GUARD

### 3. TRAFFIC OPERATIONS

#### 3.1 SCHOOL BUS OPERATIONS

According to the school principal, five school buses drop-off students on East 81<sup>st</sup> Street near the schoolyard entrance. Most buses have doors on the right side, and therefore dismiss students to the roadway.

During dismissal time, school buses load students on Avenue J within the “No Parking 7 am - 4 pm School Days” zone. It was observed that vehicles park in the no parking zones, which forces school buses to double park on Avenue J and block moving traffic. In addition, MTA buses waiting to load students on Avenue J cause congestion.

#### 3.2 PARENT DROP-OFF OPERATIONS

According to the survey provided by school representatives, only 5% of students at I.S. 68 are driven to and from school by parents or guardians. During arrival, vehicles drop off students on either East 81<sup>st</sup> Street or East 82<sup>nd</sup> Street, typically stopped in the “no parking” zones or double-parked.

During dismissal, most vehicles are double parked on East 82<sup>nd</sup> Street. Field observations indicate that they do not block moving traffic.



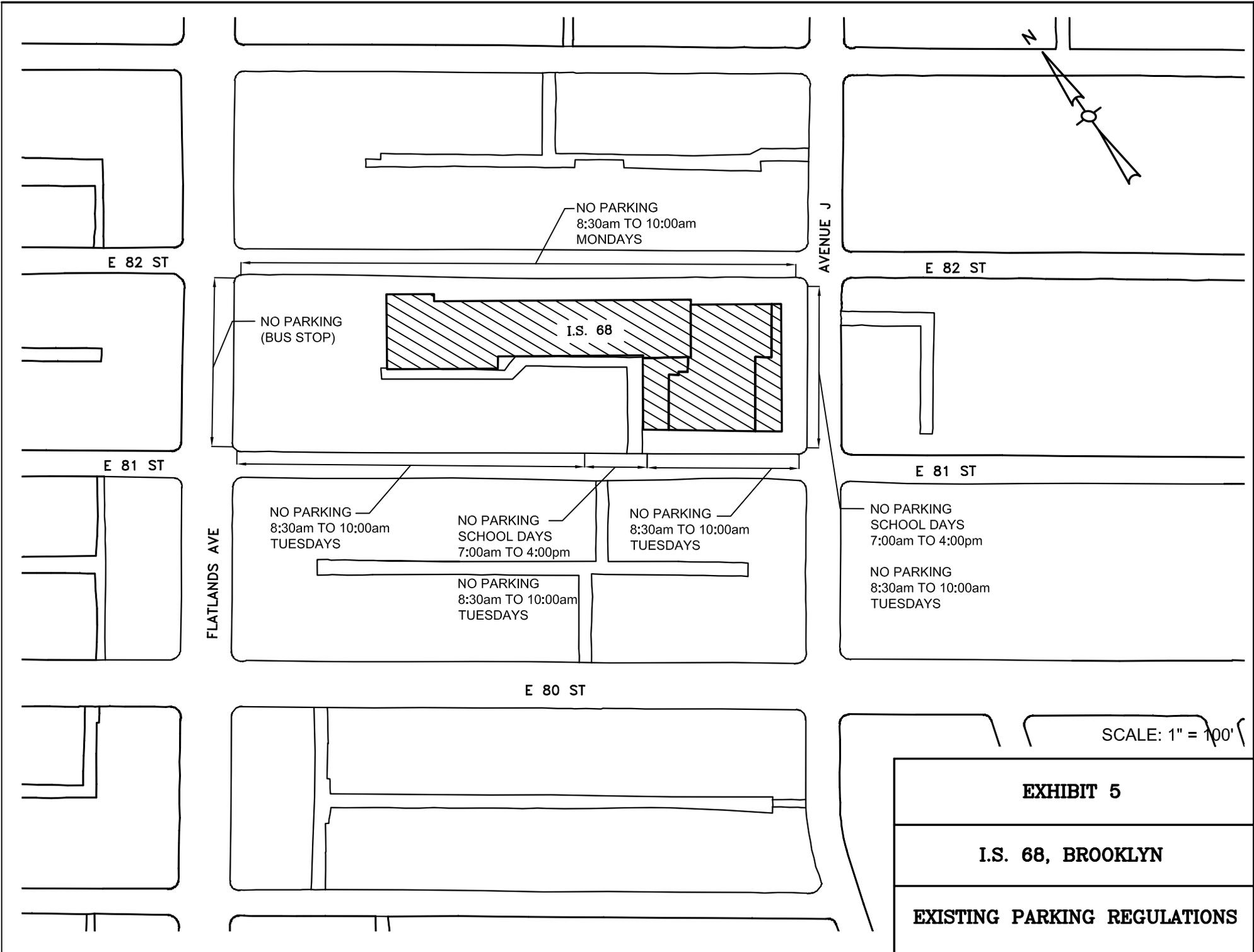
*Figure 3: Vehicles double-parked on East 82<sup>nd</sup> Street during afternoon dismissal time*

### **3.3 PARKING REGULATIONS**

“ NO PARKING, 7 AM – 4:00 PM, SCHOOL DAYS” parking regulations are posted for the full length of Avenue J between East 81<sup>st</sup> Street and East 82<sup>nd</sup> Street, and are also posted on East 81<sup>st</sup> Street in front of the schoolyard entrance. Alternate side parking regulations are in effect 8:30 am – 10:00 am Tuesdays. Exhibit 5 shows parking regulations on the roadways surrounding the school.

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

The Traffic Safety Map, Exhibit 3, shows existing signs, signals, and pavement markings as of June 2004. 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.



**EXHIBIT 5**

**I.S. 68, BROOKLYN**

**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 I.S. 68 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 concentrations of student pedestrians occur. Intersections that are farther from the school which did not have detailed data available at the time of this study will be addressed with DOT's School Safety Engineering Program's ongoing work. DMV accident data is discussed in Section 3.6, Traffic Operations and Issues.

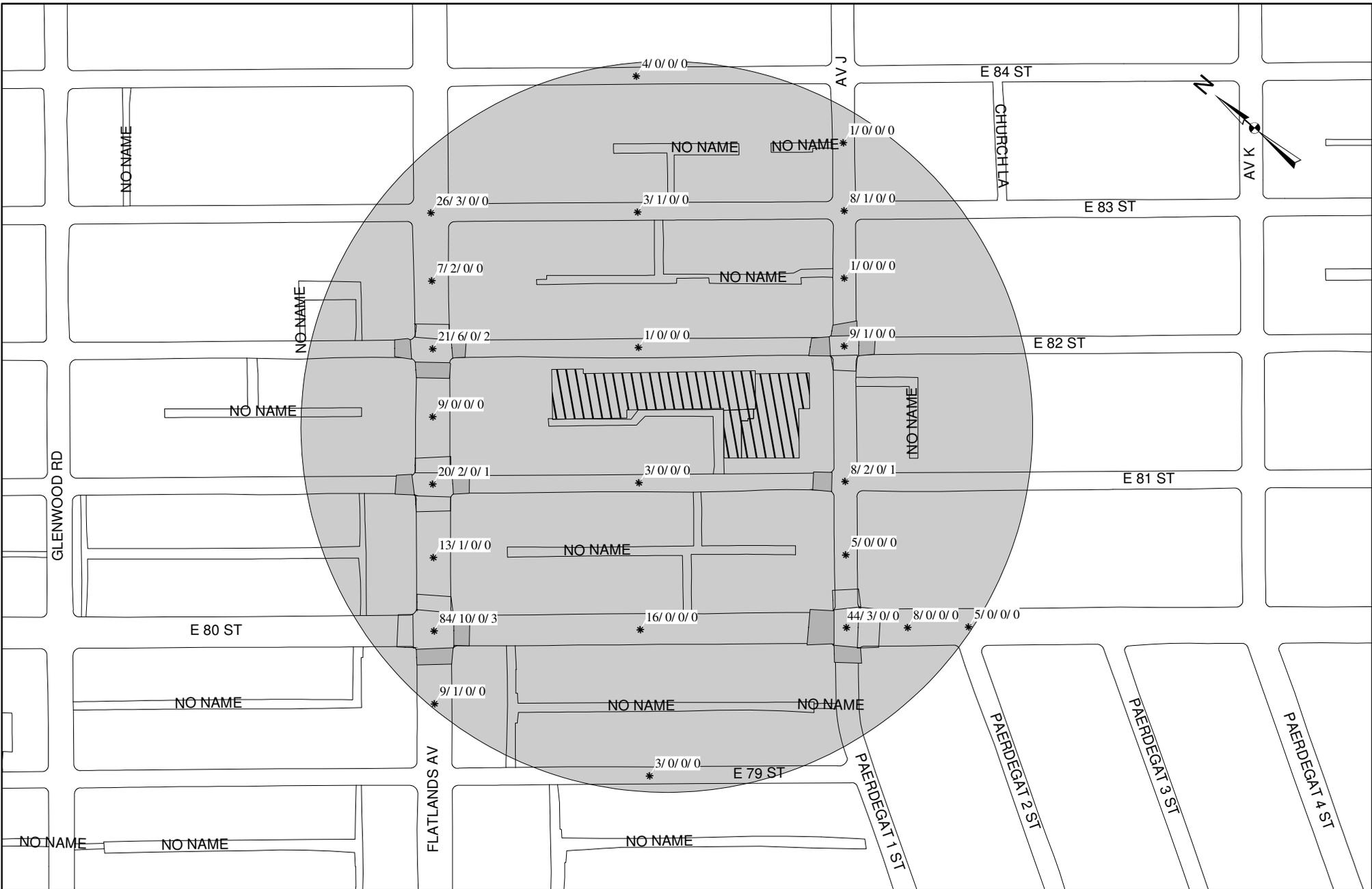
**TABLE 2: DMV THREE YEAR ACCIDENT SUMMARY (1998-2000)**

<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
East 82 <sup>nd</sup> Street and Avenue J	9	1	0	0
East 81 <sup>st</sup> Street and Avenue J	8	2	0	1
East 80 <sup>th</sup> Street and Avenue J	44	3	0	0
East 82 <sup>nd</sup> Street and Flatlands Ave.	21	6	0	2
East 81 <sup>st</sup> Street and Flatlands Ave.	20	2	0	1
East 80 <sup>th</sup> Street and Flatlands Ave.	84	10	0	3
<b>Total</b>	<b>186</b>	<b>24</b>	<b>0</b>	<b>7</b>

**TABLE 3: NYPD FOUR YEAR ACCIDENT SUMMARY (2001-2004)**

<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
East 82 <sup>nd</sup> Street and Avenue J	17	1	0	0
East 81 <sup>st</sup> Street and Avenue J	14	1	0	0
East 80 <sup>th</sup> Street and Avenue J	79	5	0	1
East 82 <sup>nd</sup> Street and Flatlands Ave.	33	8	0	2
East 81 <sup>st</sup> Street and Flatlands Ave.	32	5	0	0
East 80 <sup>th</sup> Street and Flatlands Ave.	113	14	0	0
<b>Total</b>	<b>288</b>	<b>34</b>	<b>0</b>	<b>3</b>

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



ACCIDENT LOCATION \*

SCHOOL CROSSWALK ASSIGNED TO I.S. 68

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X

\*



1 inch equals 250 feet

TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL_PED ACCIDENTS
X	X	X	X

EXHIBIT 6

I.S. 68, BROOKLYN

ACCIDENT SUMMARY

THREE YEAR PERIOD

1998-2000

### 3.6 TRAFFIC OPERATIONS AND ISSUES

The following sections outline the traffic accidents and operations issues at intersections in the vicinity of I.S. 68.

#### 3.6.1 East 82<sup>nd</sup> Street and Avenue J

Avenue J is a two-way collector street with one travel lane in each direction and parking allowed on both sides. East 82<sup>nd</sup> Street is a one-way, westbound roadway with two travel lanes and parking permitted on both sides of the roadway. School crosswalks are in place on all legs.

When the consultant team met with the school on June 9, 2004, the school principal had concern for students crossing at this intersection, which was unsignalized (see Figure 5). In response to concerns from the school, DOT conducted an investigation and found that a signal was warranted at this location. Field observations on August 9, 2005 verified that a new traffic signal has been installed at this intersection.

There were nine accidents at this intersection during the 1998-2000 study period, one of which involved a pedestrian. A 70-year-old pedestrian was crossing Avenue J while the driver was traveling north with defective headlights.



*Figure 4: Looking east on Avenue J at East 82<sup>nd</sup> Street*

#### 3.6.2 East 81<sup>st</sup> Street and Avenue J

East 81<sup>st</sup> Street is a one-way, eastbound roadway with two travel lanes and parking allowed on both sides. The eastbound traffic on East 81<sup>st</sup> Street is stop-controlled at the intersection with Avenue J. A school crosswalk is in place on the west leg.

Eight accidents occurred at this intersection during the 1998-2000 study period. Two accidents involved pedestrians, one of which was school related. A 12-year-old student was struck by an eastbound vehicle while crossing East 81<sup>st</sup> Street. No further detail was reported on this accident. The other accident was attributed to a driver's failure to yield while making a left turn onto East 81<sup>st</sup> Street.

### 3.6.3 East 80<sup>th</sup> Street and Avenue J

This is a signalized intersection. East 80<sup>th</sup> Street is a two-way, collector street with two travel lanes in each direction and parking on both sides. School crosswalks are in place on the west and south legs.

Review of the signal timing at the intersection showed that the pedestrians only have 20 seconds to cross East 80<sup>th</sup> Street. East 80<sup>th</sup> Street is 60-foot wide roadway and a pedestrian requires 23 seconds to cross at walking rate of three feet per second plus 3 seconds for reaction time (see Table 4). See Section 4 for further discussion.

There were 44 accidents at this intersection during the 1998-2000 study period. Three accidents involved pedestrians, none of which were school related. Two accidents were attributed to drivers' failure to yield while making left turns. The third accident was due to a pedestrian crossing against the signal.

### 3.6.4 East 82<sup>nd</sup> Street and Flatlands Avenue

This is a signalized intersection. Flatlands Avenue is a heavily traveled two-way street with two travel lanes in each direction and parking on both sides. Parking is not allowed on Flatlands Avenue between East 81<sup>st</sup> and East 82<sup>nd</sup> Streets due to MTA bus stops. School crosswalks are in place on the east, west, and south legs.

The school principal noted that students did not have enough time to cross Flatlands Avenue at this intersection. However, analysis of the signal timing on Flatlands Avenue determined that there is adequate time for students to cross (see Table 4).

Traffic counts were performed on Monday, December 9, 2004 to better understand the pedestrian and vehicle conflicts at the intersection (see Figure 7). The counts show that 343 pedestrians utilized the school crosswalk on the south leg across Flatlands Avenue, with a minimal number of turning vehicle-pedestrian conflicts (38). See Exhibit 7 for the details.

During the 1998-2000 study period, 21 accidents occurred at this intersection, six of which involved pedestrians and two of which were school-related. A 7-year-old student emerged from a parked vehicle and was struck by an inattentive driver. Two pedestrians, including a 5-year-old child, were crossing against the signal when struck. Two other accidents involved drivers making left turns. No details were reported for the last accident.



*Figure 5: Looking east at East 82<sup>nd</sup> Street on Flatlands Avenue*



*Figure 6: Students crossing Flatlands Avenue at East 82<sup>nd</sup> Street against the pedestrian signal*

### 3.6.5 East 81<sup>st</sup> Street and Flatlands Avenue

This is a signalized intersection. Parking is not allowed on Flatlands Avenue between East 81<sup>st</sup> and East 82<sup>nd</sup> Streets due to MTA bus stops. School crosswalks are in place on the west and east legs of the intersection.

There were 20 accidents at this intersection during the 1998-2000 study period. Two accidents involved pedestrians, one of which was school related. An 11-year-old student was crossing Flatlands Avenue against the signal when struck. The other pedestrian emerged from behind a parked vehicle and was struck by a driver backing up his vehicle.

### 3.6.6 East 80<sup>th</sup> Street and Flatlands Avenue

At this signalized intersection, there are exclusive left turn lanes on both sides of Flatlands Avenue for vehicles turning onto East 80<sup>th</sup> Street. School crosswalks are in place on the south and east legs of the intersection.

84 accidents occurred at this intersection during the 1998-2000 study period. Ten of these accidents involved pedestrians, three of which were school related. Seven accidents, including two school-related accidents occurred due to driver's failure to yield. Another accident involved a pedestrian crossing against the signal. There was no detailed information for the last two accidents.



*Figure 7: Looking east on Flatlands Avenue, from East 80<sup>th</sup> Street*

### 3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of I.S. 68. Except for the intersection of Avenue J and East 80<sup>th</sup> Street, the signal timing was found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches (see Table 4).

<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>Avenue J and East 80<sup>th</sup> Street</b>				
Crossing Avenue J	44	32	18	NO
Crossing East 80 <sup>th</sup> Street	60	20	23	NO*
<b>Flatlands Ave and East 80<sup>th</sup> Street</b>				
Crossing Flatlands Avenue	66	49	25	NO
Crossing East 80 <sup>th</sup> Street	60	54	23	NO
<b>Flatlands Ave and East 81<sup>st</sup> Street</b>				
Crossing Flatlands Avenue	66	54	25	NO
Crossing East 81 <sup>st</sup> Street	60	24	15	NO
<b>Flatlands Ave and East 82<sup>nd</sup> Street</b>				
Crossing Flatlands Avenue	66	45	25	NO
Crossing East 82 <sup>nd</sup> Street	35	30	15	NO

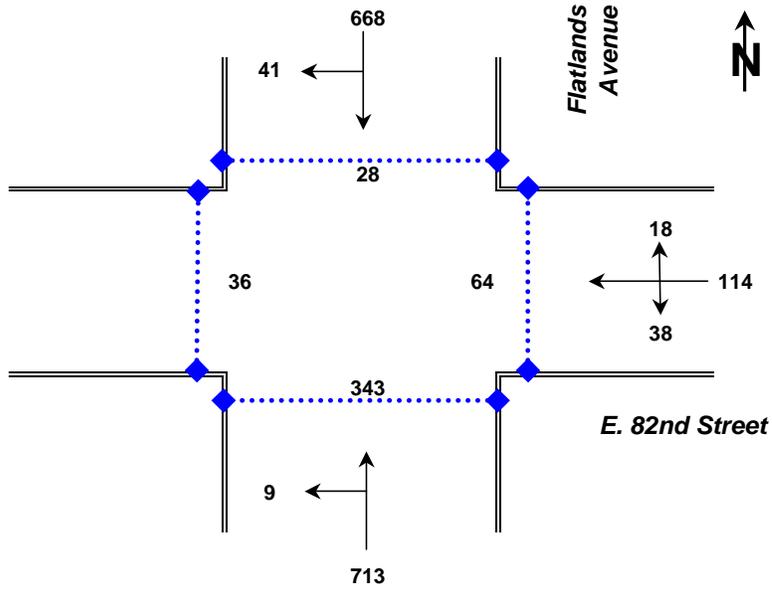
*Notes – A rate of three feet per second plus three seconds reaction time was utilized as the child pedestrian walking rate*

*\* DOT recently allocated an additional 3 seconds for pedestrians to cross East 80<sup>th</sup> Street, from 20 seconds to 23 seconds. At the same time, the pedestrian time to cross Avenue J was reduced by the same amount, from 32 seconds to 29 seconds. Pedestrians now have sufficient time to cross East 80<sup>th</sup> Street at Avenue J*

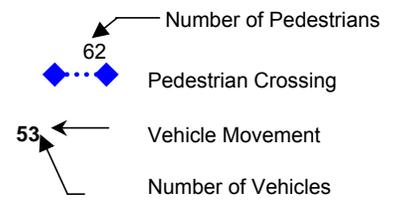
### 3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

The roadways and sidewalks in the vicinity of the school were generally observed to be in good condition.

**One Hour Traffic Count Volumes**  
 (7:30 AM - 8:30 AM December 9, 2004)



**Intersection of East 82nd Street and Flatlands Avenue**



<b>EXHIBIT 7</b>
<b>I.S. 68</b>
<b>TURNING MOVEMENT COUNTS</b>

#### **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**

- *No-Standing Zone on East 82<sup>nd</sup> Street in front of I.S. 68*

“NO STANDING 7 AM – 4 PM, SCHOOL DAYS” parking regulations should be considered in front of the school’s main entrance for a length of 60 feet. This will improve visibility of students arriving to and leaving the school.

- *Upgrade No Parking Zone to No Standing Zone*

Existing “NO PARKING 7 AM – 4 PM, SCHOOL DAYS” parking regulations on East 81<sup>st</sup> Street and Avenue J should be upgraded to “NO STANDING 7 AM – 4 PM, SCHOOL DAYS”. This will allow school buses and parents a place to load and unload students at the curb, and will also improve visibility of those students arriving and leaving the school.

- *Administer student pedestrian safety education program*

Students should be encouraged to utilize the school crosswalks on 82nd Street to cross Avenue J and instead of at 81st Street which is not a signalized or a designated school crosswalk. The main entrance of the school is on 82nd Street and a school crossing guard is assigned to that intersection to help students cross Avenue J.

In addition, it is also recommended that the school participate in the NYCDOT Safety Education Program work with the school to educate 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 at mid-block locations.

- *Place advanced stop bars ten feet before school crosswalks*

The MUTCD and New York City DOT standard for placement of a stop bar is four feet in advance of a marked crosswalk. At signalized (or stop controlled) crosswalks, the vehicle stop line can be placed farther back from the crosswalk in order to maximize visibility of pedestrians and to minimize the potential for pedestrian/vehicle conflicts. Therefore, it is recommended that stop bars be placed ten feet in advance of all school crosswalks.

- *Install new school crosswalk at Flatlands Avenue and East 81<sup>st</sup> Street*

It is recommended that a new school crosswalk be installed on the north leg at Flatlands Avenue and East 81<sup>st</sup> Street. The catchment area indicates that students of I.S. 68 come from west of the school; therefore, the proposed school crosswalk will facilitate students walking to school.

- *Adjust signal timing for the intersection of Avenue J and East 80<sup>th</sup> Street*

As shown in Table 4, the pedestrian phase did not provide enough time for a pedestrian to cross East 80<sup>th</sup> Street at Avenue J in one cycle, at a walking rate of three feet per second plus a three second reaction time. At the time of this study, it was recommended that the signal timing at this intersection be adjusted to provide additional walking time for pedestrians to safely cross East 80<sup>th</sup> Street.

*(In response DOT has added an additional three (3) seconds per cycle for pedestrians to cross East 80<sup>th</sup> Street. Pedestrians now have sufficient time to cross Avenue J and East 80th Street. )*

- *Utilization of buses equipped with left side exit doors*

Currently buses unload I.S. 68 students through right side doors, though the schoolyard entrance is on the left side of the bus. The Department of Education school bus fleet does include school buses with left side doors. It is recommended that buses with left side doors be used to transport students to I.S. 68 when the buses unload students on East 81<sup>st</sup> Street.

This measure in conjunction with “NO STANDING 7 AM – 4 PM” in front of the schoolyard entrance would allow students to unload from the bus, at the curbside, directly in front of the schoolyard.

- *Narrow lanes using a center striped median on Avenue J.*

The school officials indicated that vehicles were speeding on Avenue J. In response, a spot speed study was conducted on August 9, 2005, between 1:00 pm - 2:00 pm. The spot speed study confirmed that the 85<sup>th</sup> percentile speed was 32 mph, which exceeds the statutory speed limit of 30 mph. See Table 5 for a summary of the results and the Appendix for further detail. Although 85 percentile speeds were above 30 mph, speed reducers (humps) are not feasible for this location since this is an arterial roadway.

As an alternative, it is recommended that a striped center median be painted on Avenue J as shown in Exhibit 8. A striped center median will promote reduced speeds by narrowing the effective width of the moving lanes. By using striping instead of a raised median, the additional width is still available for emergency and other service vehicles.

<b>TABLE 5: SPOT SPEED STUDIES</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
Avenue J between East 81 <sup>st</sup> Street and East 82 <sup>nd</sup> Street	26	32

- Administer student pedestrian safety education program

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

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

- Consider curb extensions “neckdowns” at the following intersections:
  - Avenue J and East 82<sup>nd</sup> Street (southeast and southwest corner)
  - Avenue J and East 81<sup>st</sup> Street (northwest)
  - Avenue J and East 80<sup>th</sup> Street (northwest and southwest)
  - Flatlands Avenue and East 82<sup>nd</sup> Street (northeast, southeast, southwest)
  - Flatlands Avenue and East 81<sup>st</sup> Street (northeast and northwest)
  - Flatlands Avenue and East 80<sup>th</sup> Street (southeast and southwest)

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

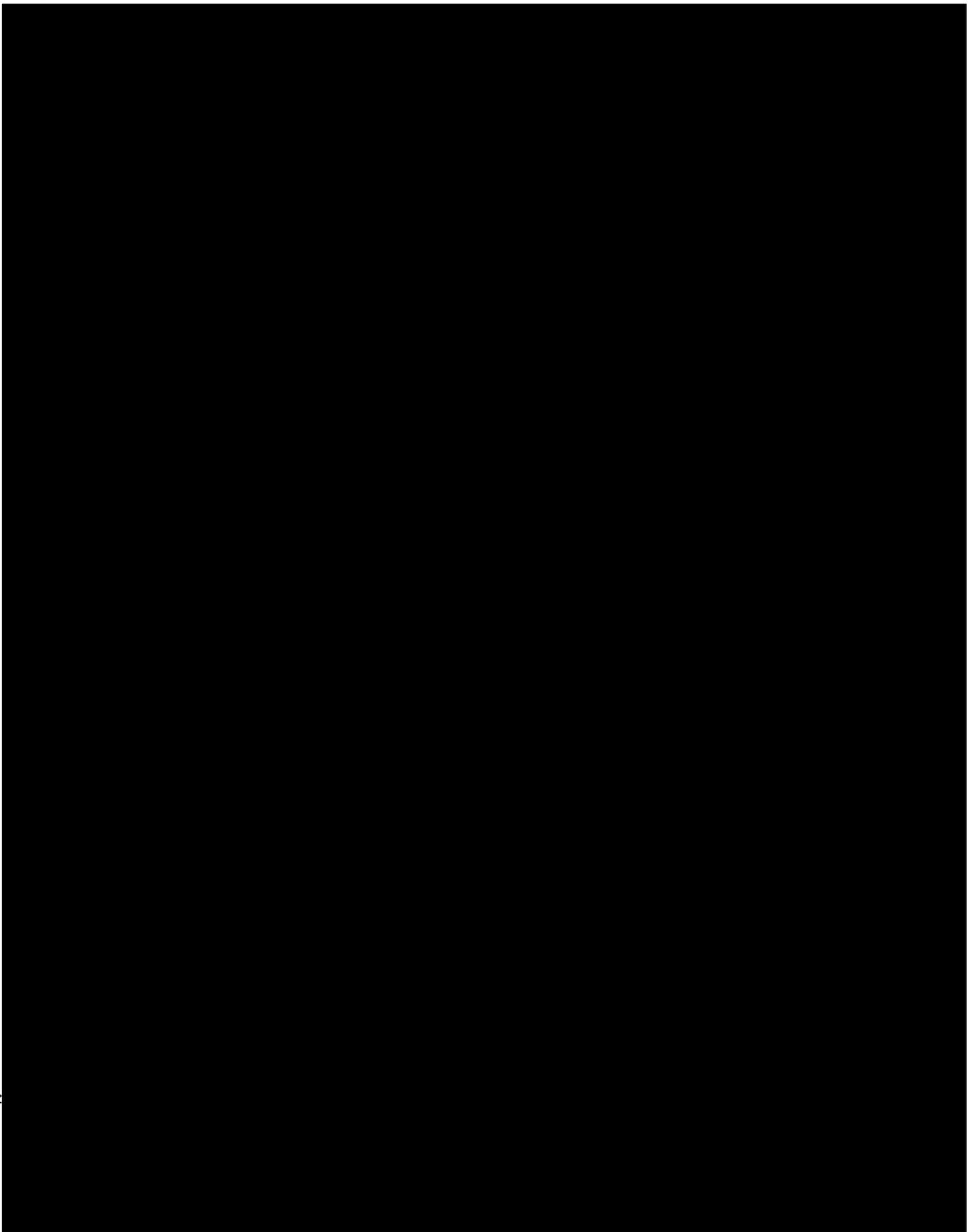
The purpose of the curb extensions is to shorten the crossing distance for pedestrians, increase pedestrian storage space, and to reduce the speeds of vehicles approaching and turning at school crosswalks.

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



# APPENDIX







## SPOT SPEED STUDY

Date: **August 9, 2005**                      Time: **1:00pm to 2:00pm**  
 Location: **Avenue J between E. 81st Street and E. 82nd Street**  
 Surveyor: **Eyad Yousef**

School: **I.S. 68**  
 Direction:  
 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	2	3.2%	3.2%	32	512
17	2	3.2%	6.3%	34	578
18	2	3.2%	9.5%	36	648
19	0	0.0%	9.5%	0	0
20	0	0.0%	9.5%	0	0
21	2	3.2%	12.7%	42	882
22	4	6.3%	19.0%	88	1936
23	6	9.5%	28.6%	138	3174
24	12	19.0%	47.6%	288	6912
25	4	6.3%	54.0%	100	2500
26	8	12.7%	66.7%	208	5408
27	0	0.0%	66.7%	0	0
28	4	6.3%	73.0%	112	3136
29	2	3.2%	76.2%	58	1682
30	3	4.8%	81.0%	90	2700
31	0	0.0%	81.0%	0	0
32	4	6.3%	87.3%	128	4096
33	2	3.2%	90.5%	66	2178
34	0	0.0%	90.5%	0	0
35	2	3.2%	93.7%	70	2450
36	0	0.0%	93.7%	0	0
37	0	0.0%	93.7%	0	0
38	2	3.2%	96.8%	76	2888
39	0	0.0%	96.8%	0	0
40	2	3.2%	100.0%	80	3200
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
	<b>63</b>	<b>100.0%</b>		<b>1646</b>	<b>44880</b>

Mean Speed = 26.1 mph                      Median Speed = 26.1 mph  
 Standard Deviation = 5.5 mph              15th Percentile Speed = 20.4 mph  
 Margin of Error (95% Confidence) = ± 1.4 mph      85th Percentile Speed = 31.8 mph

# SPOT SPEED STUDY

Date: **August 9, 2005**

Time: **1:00pm to 2:00pm**

School: **I.S. 68**

Location: **Avenue J between E. 81st Street and E. 82nd Street**

Direction:

Surveyor: **Eyad Yousef**

Comments:

Mean Speed = 26.1 mph  
 Standard Deviation = 5.5 mph  
 Margin of Error (95% Confidence) =  $\pm 1.4$  mph

Median Speed = 26.1 mph  
 15th Percentile Speed = 20.4 mph  
 85th Percentile Speed = 31.8 mph

