

**NEW YORK CITY DEPARTMENT OF TRANSPORTATION**

**Office of School Safety Engineering**



**School Safety Engineering Project**

**FINAL REPORT: P.S. 219, Kennedy-King Elementary School, Brooklyn**



Prepared by

The RBA Group/Urbitran Associates



OCTOBER 18, 2006

**School Safety Engineering Project  
P.S. 219, Kennedy-King Elementary School, Brooklyn**

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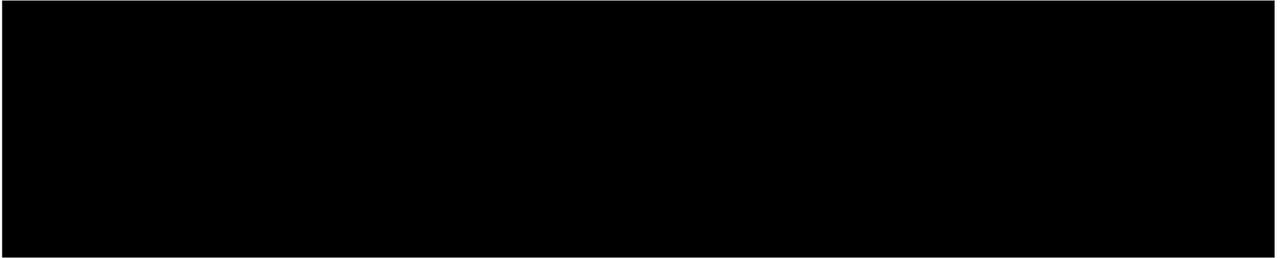
## **1. INTRODUCTION**

### **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 600 speed reducers (humps) have been installed in the immediate vicinity of schools.

Under this consultant study, the School Safety Engineering Project, crash data in the vicinity of all program schools was reviewed. As a result, schools were ranked in terms of pedestrian safety, and 135 “priority” schools were identified Citywide. At each of these priority schools safety improvements are being recommended (e.g., new school crosswalks, new traffic signals and signal timing modifications, new speed reducers). In addition, 32 of these schools will receive further investigation to design physical improvements (e.g., raised center medians, widened sidewalks, “neckdowns” or “bulbouts” at intersections). P.S. 219 (Kennedy-King Elementary School) in Brooklyn is one of the 135 priority schools.

## 2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



### 2.2 NEIGHBORHOOD DESCRIPTION

The immediate neighborhood surrounding the school buildings is a mixture of single-family homes, 2-3 story apartment buildings, and small commercial properties. Kings Highway is a main arterial through Brooklyn, with four lanes of two-way traffic along the mainline and one additional lane of traffic in each direction along the service roads on both sides of the mainline. The service roads are separated from the mainline by raised concrete medians. Other roadways surrounding P.S. 219 are mainly residential roadways. (Exhibit 1 for Aerial Photograph).



*Figure 1 –P.S. 219 main entrance on Clarkson Avenue*



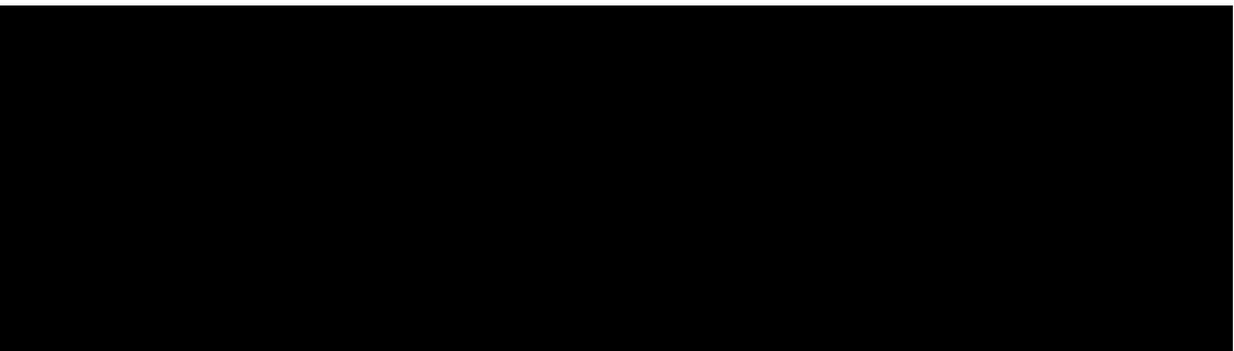
*Figure 2 – Clarkson Avenue at East 93rd Street*

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

Representatives from P.S. 219 were not able to meet with the consultant team at the school. The site assessments of the school and surrounding area were completed independently, with the benefit of the detailed survey form completed by the school principal in advance of the site visit. According to the survey completed by the school, the problems encountered at the school include the following:

- Speeding on Kings Highway
- Speeding on East 94<sup>th</sup> Street and East 93<sup>rd</sup> Street between Clarkson Avenue and Kings Highway
- Motorists ignoring stop signs and faded crosswalks at East 96<sup>th</sup> Street and Clarkson Avenue
- Lack of crossing guard at East 96<sup>th</sup> Street and Clarkson Avenue, and at East 94<sup>th</sup> Street and Clarkson Avenue

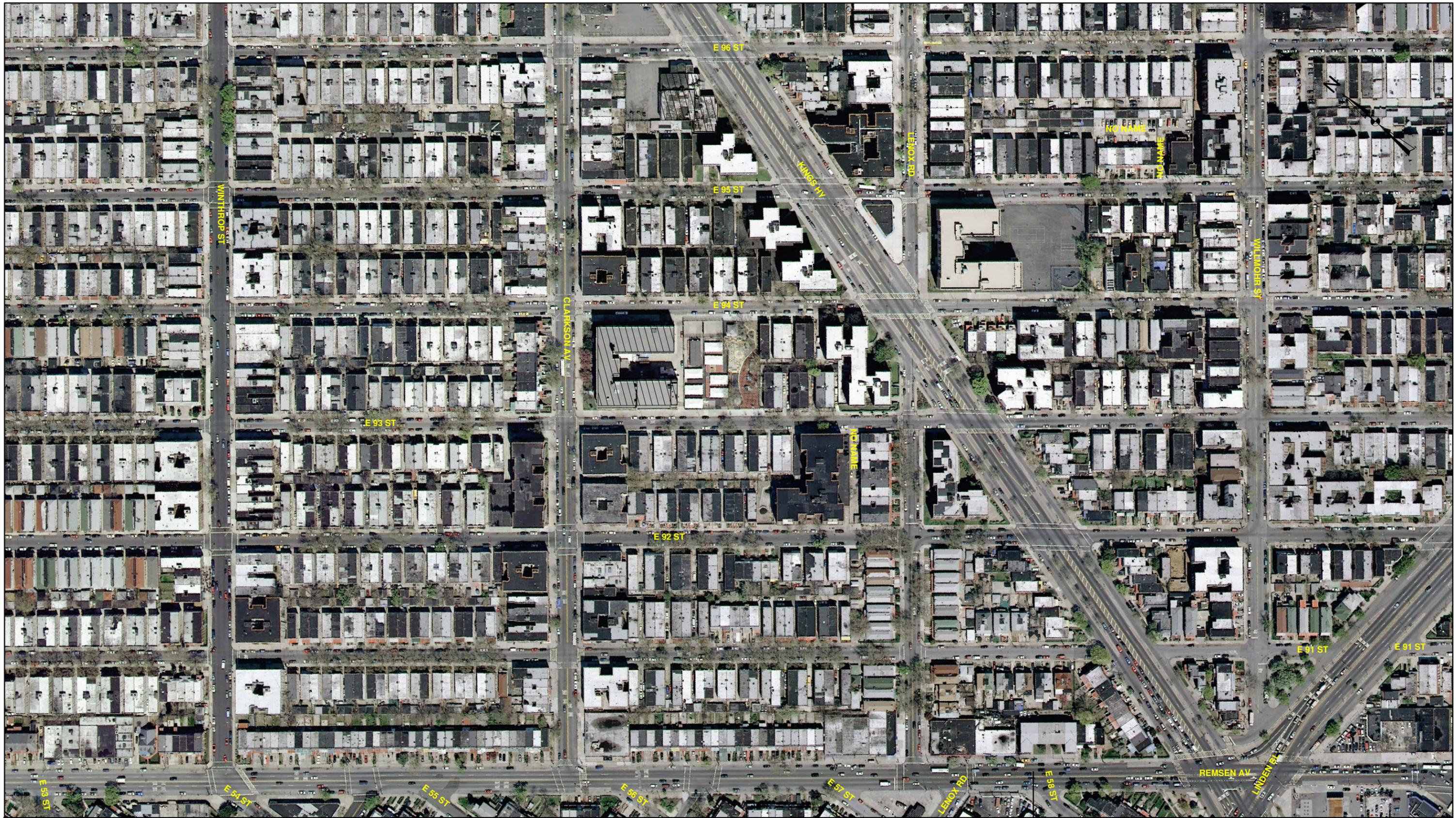
(See Appendix for the school's survey response).



## 2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

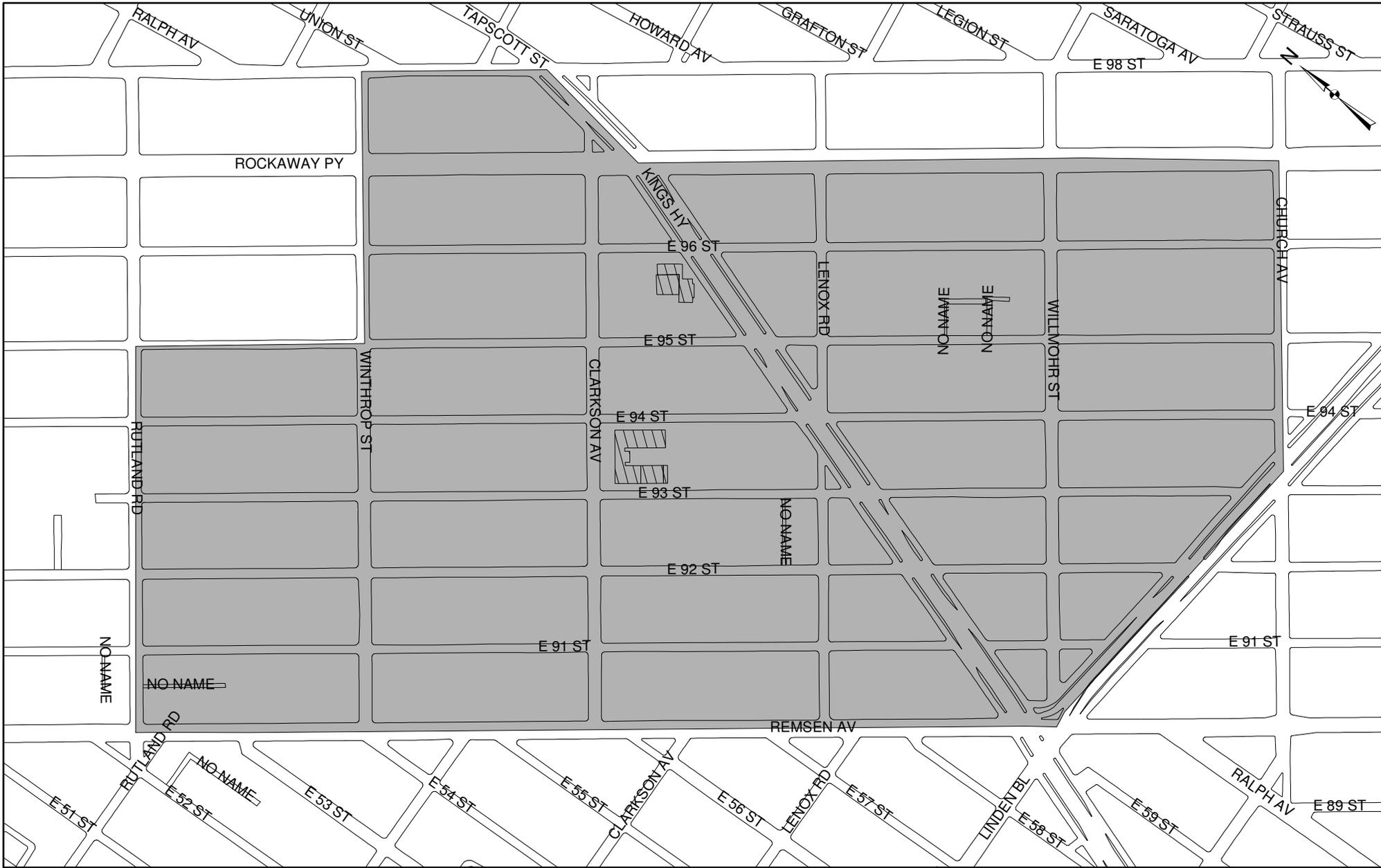
According to the survey form filled out by school officials, 90% of students walk to school, 8% are driven by parents or guardians, 1% arrive by public bus or subway service, and 1% are transported by school buses. See Table 1 for the school's estimate of the modes of travel.

<b>TABLE 1: MODES OF TRAVEL</b>	
<b>(AS ESTIMATED BY SCHOOL OFFICIALS)</b>	
<b>MODE</b>	<b>PERCENTAGE</b>
Walk	90%
Driven by car	8%
School bus	1%
MTA Bus/Subway	1%
<b>TOTAL</b>	<b>100%</b>



1 inch equals 200 feet

**EXHIBIT 1**  
**P.S. 219 & ANNEX, BROOKLYN**  
**KENNEDY-KING SCHOOL**  
**AERIAL PHOTOGRAPH**



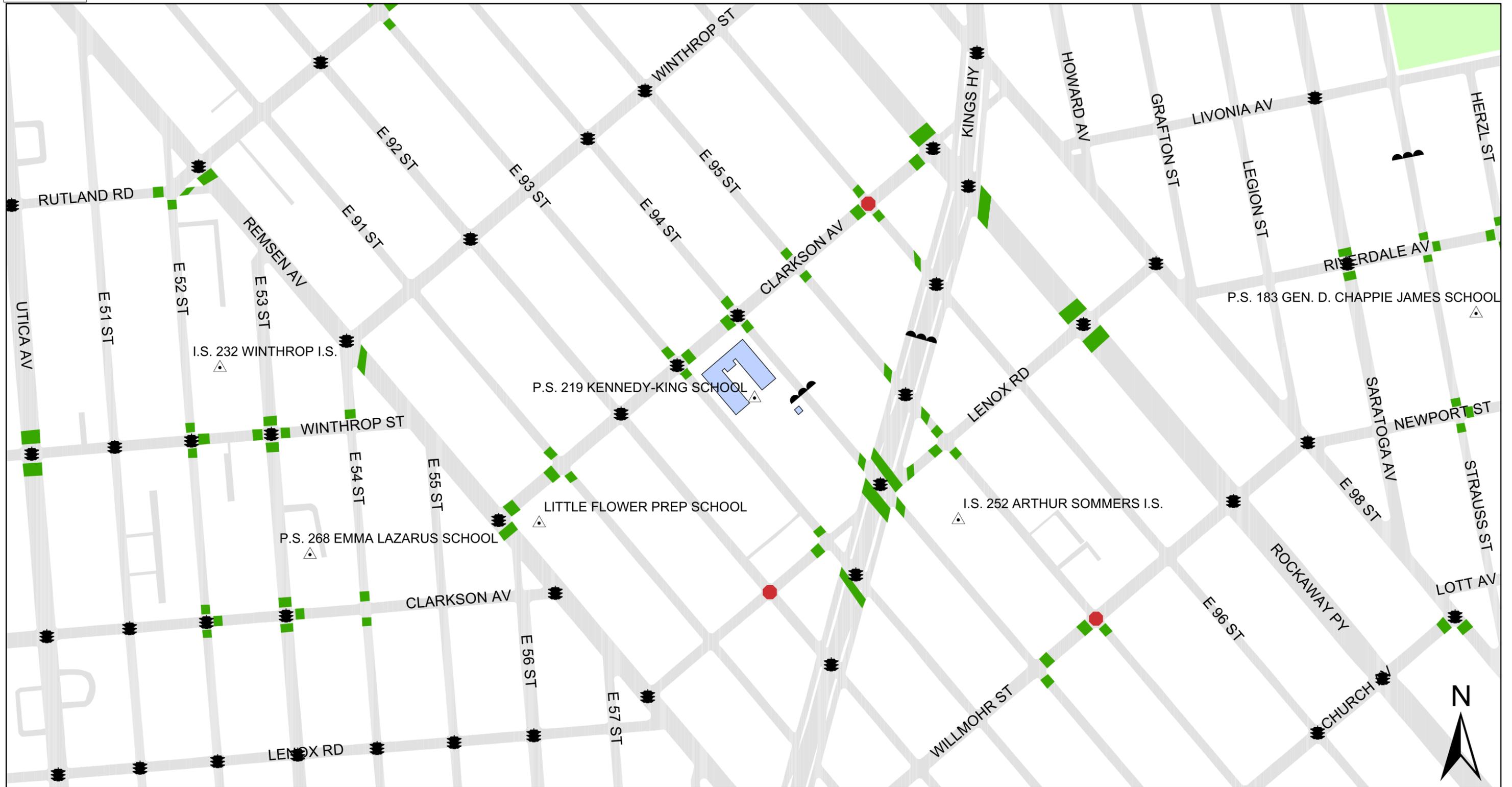
1 inch equals 450 feet

■ CATCHMENT AREA

**EXHIBIT 2**  
**P.S. 219 & ANNEX , BROOKLYN**  
**KENNEDY-KING SCHOOL**  
**CATCHMENT AREA**



# 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 219 Brooklyn  
KENNEDY-KING SCHOOL**

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

Map created on 11/16/2006

**EXHIBIT 3**

COMM. BOARD: 317  
PRECINCT: 67

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

There are several local businesses and food service shops located in the immediate area of the school. There are bus stops for the B7 bus line along Kings Highway, the B47 bus line along Clarkson Avenue and Remsen Avenue, and the B17 bus line along Remsen Avenue.

I.S. 252, another priority school, is in the vicinity of P.S. 219, located on Lenox Road, between East 94<sup>th</sup> Street and East 95<sup>th</sup> Street. During dismissal time, students from P.S. 219 walk across Kings Highway to congregate in front of I.S. 252.

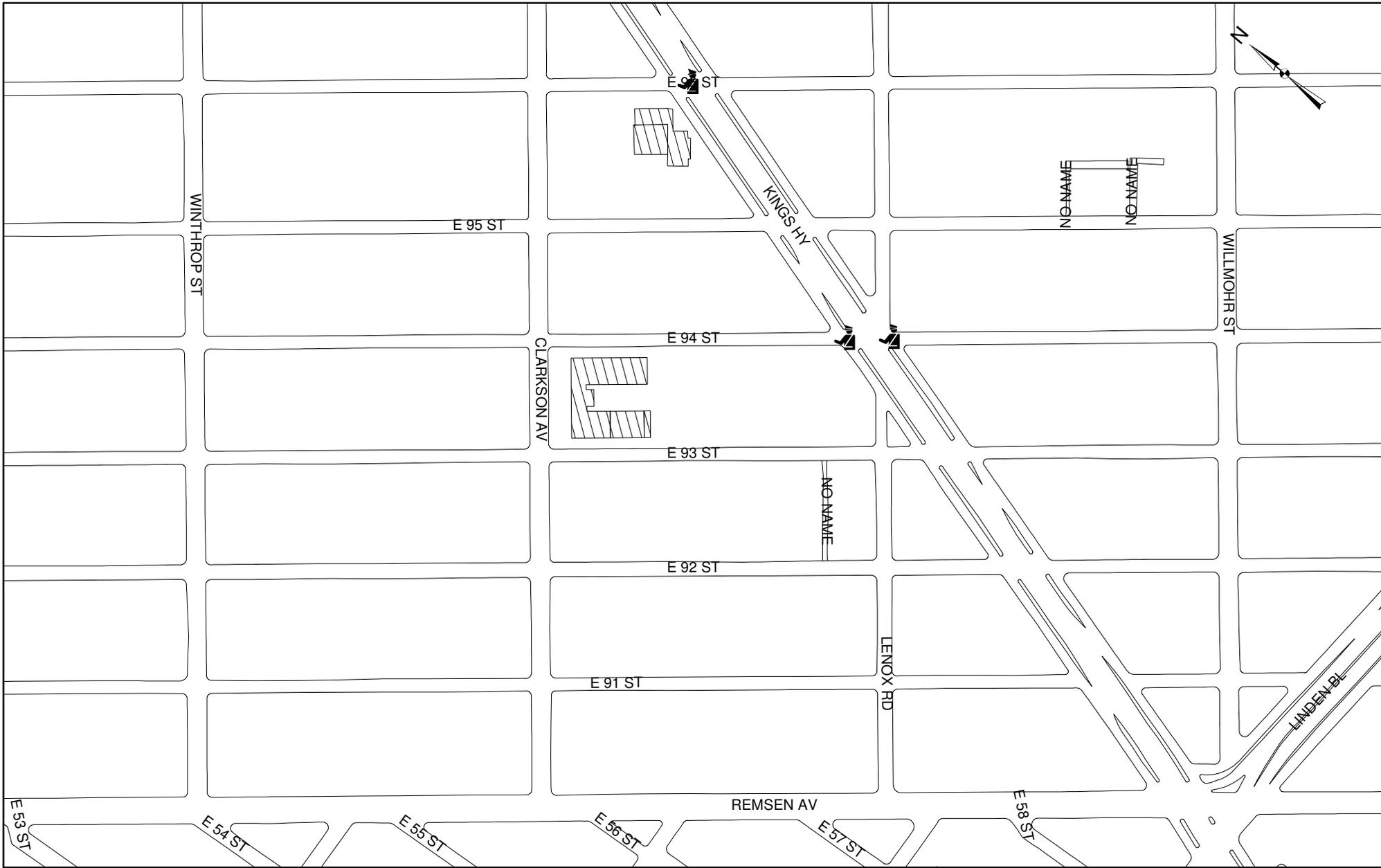
## **2.8 CROSSING GUARD LOCATIONS**

Three crossing guards are assigned to P.S. 219. The crossing guards are stationed at the following intersections:

- Kings Highway and East 94<sup>th</sup> Street (two crossing guards)
- Kings Highway and East 96<sup>th</sup> Street

Crossing guard locations are shown on Exhibit 4.

In the school survey, the principal noted that crossing guard should be assigned to the following intersections: Clarkson Avenue and East 96<sup>th</sup> Street, and Clarkson Avenue and East 94<sup>th</sup> Street.



1 inch equals 300 feet



Crossing guard assigned to P.S. 219

**EXHIBIT 4**  
**P.S. 219 & ANNEX , BROOKLYN**  
**KENNEDY-KING SCHOOL**

**CROSSING GUARDS**

### 3. TRAFFIC OPERATIONS

#### 3.1 SCHOOL BUS OPERATIONS

According to the school survey form, one percent of students ride a school bus to P.S. 219.



*Figure 3 - School bus on Kings Highway Service Road, in front of P.S. 219 Annex*

#### 3.2 PARENT DROP-OFF OPERATIONS

School officials have indicated that approximately 8% of P.S. 219 students are driven to and from school by parents or guardians. During the arrival and dismissal period, parents typically park or double-park vehicles on East 94<sup>th</sup> Street, East 93<sup>rd</sup> Street, and Clarkson Avenue to drop off or pick up students.

#### 3.3 PARKING REGULATIONS

On Clarkson Avenue and East 93<sup>rd</sup> Street, “NO PARKING 7:00 AM – 4:00 PM SCHOOL DAYS EXCEPT BOARD OF EDUCATION” parking regulations are posted in front of the school.

“NO PARKING 7:00 AM – 4:00 PM SCHOOL DAYS” parking regulations are posted on East 94<sup>th</sup> Street in front of P.S. 219’s main building, and on Kings Highway southbound service road in front of the P.S. 219 Annex. Street cleaning regulations, which prohibit parking on alternating sides of the roadway, are in place near the school.

Exhibit 5 shows parking regulations on the roadways surrounding the school.



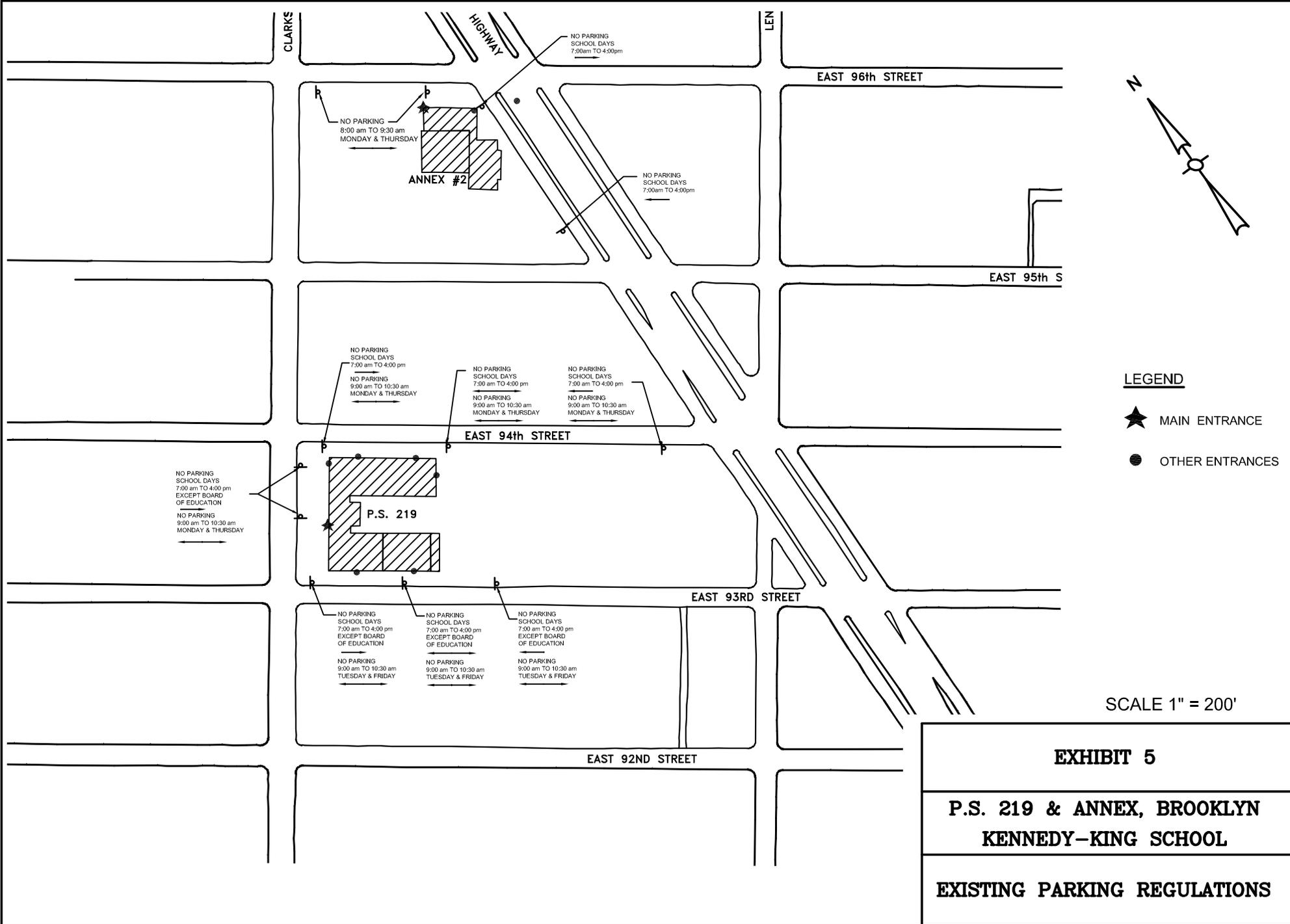
*Figure 4 – Parking regulation signs on Clarkson Avenue, in front of P.S. 219*



*Figure 5 – Parking regulation signs on Kings Highway service road, in front of P.S. 219 Annex*

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

The Traffic Safety Plan, Exhibit 3, shows existing signals and crosswalk pavement markings in the vicinity of the school. It is noted that a citywide signage program is currently underway to upgrade school signage to current Federal Manual of Uniform Traffic Control (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 9.



**LEGEND**

- ★ MAIN ENTRANCE
- OTHER ENTRANCES

SCALE 1" = 200'

**EXHIBIT 5**

**P.S. 219 & ANNEX, BROOKLYN  
KENNEDY-KING 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. 219 (Kennedy-King School) 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 3 is a summary of more recent accident data obtained from the NYC Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the DMV data.

This report targets intersections closest to the school where the highest concentration of student pedestrians occurs. Intersections farther from the school and locations for which detailed data was not available at the time of this study will be addressed with the ongoing work of DOT's School Safety Engineering Program. DMV accident data is discussed in Section 3.6, Traffic Operations and Issues.

<b>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>
Clarkson Avenue at East 96 <sup>th</sup> Street	15	1	0	0
Clarkson Avenue at East 95 <sup>th</sup> Street	23	2	0	1
Clarkson Avenue at East 94 <sup>th</sup> Street	13	0	0	0
Clarkson Avenue at East 93 <sup>rd</sup> Street	16	2	0	0
Clarkson Avenue at East 92 <sup>nd</sup> Street	15	2	0	1
Clarkson Avenue at East 91 <sup>st</sup> Street	6	1	0	0
Clarkson Avenue at Remsen Avenue	15	3	0	0
Kings Highway at East 96 <sup>th</sup> Street **	22	1	0	0
Kings Highway at East 95 <sup>th</sup> Street **	30	5	0	1
Kings Highway at East 94 <sup>th</sup> Street **	29	7	0	4
Kings Highway at East 93 <sup>rd</sup> Street **	37	2	0	1
Lenox Road at East 93 <sup>rd</sup> Street **	10	0	0	0
<b>TOTAL</b>	<b>231</b>	<b>26</b>	<b>0</b>	<b>8</b>

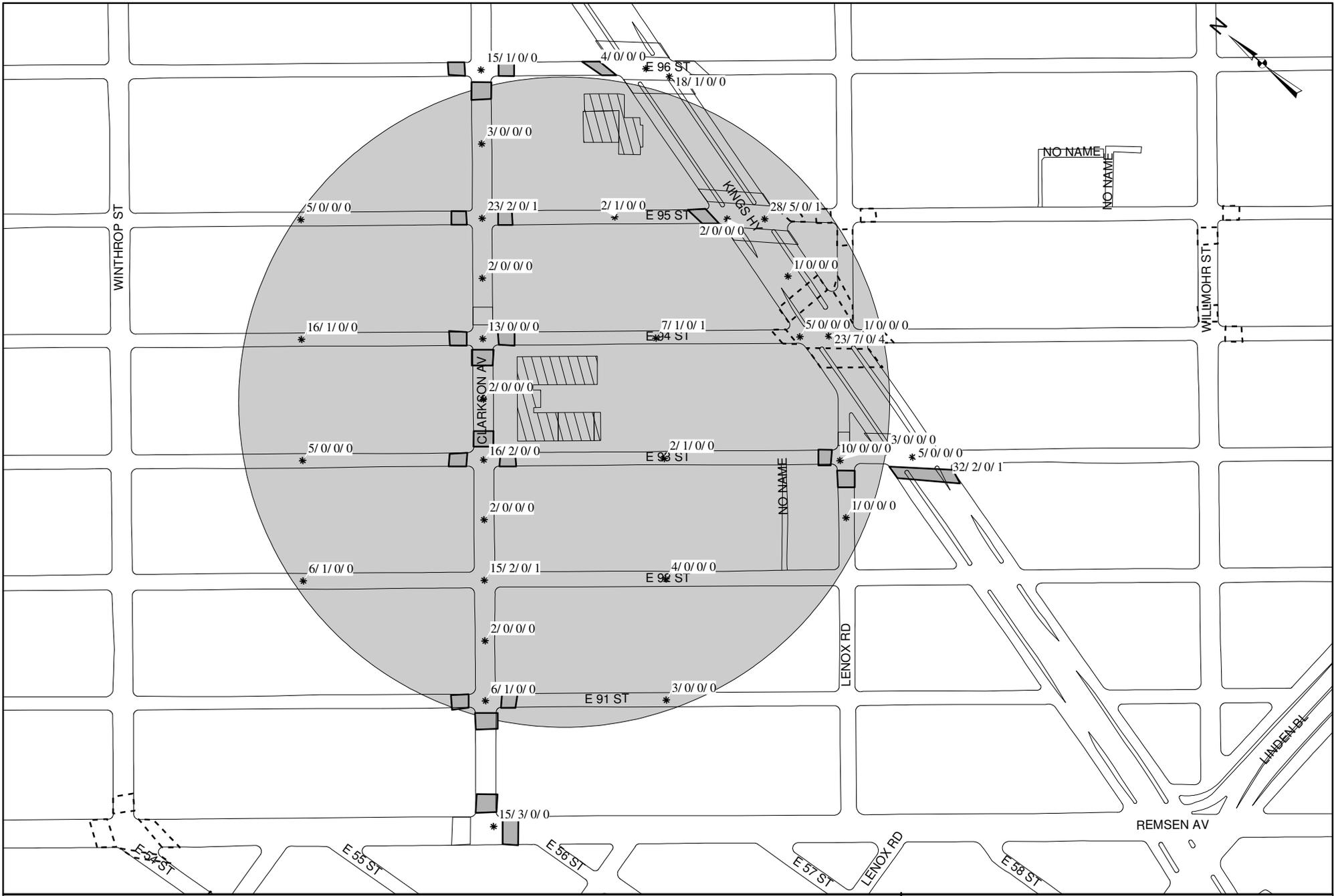
**TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)**

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Clarkson Avenue at East 96 <sup>th</sup> Street	23	4	0	N/A <sup>1</sup>
Clarkson Avenue at East 95 <sup>th</sup> Street	36	5	0	1 <sup>1</sup>
Clarkson Avenue at East 94 <sup>th</sup> Street	31	5	0	N/A <sup>1</sup>
Clarkson Avenue at East 93 <sup>rd</sup> Street	19	4	1	N/A <sup>1</sup>
Clarkson Avenue at East 92 <sup>nd</sup> Street	13	3	0	1 <sup>1</sup>
Clarkson Avenue at East 91 <sup>st</sup> Street	20	2	0	N/A <sup>1</sup>
Clarkson Avenue at Remsen Avenue	69	5	0	N/A <sup>1</sup>
Kings Highway at East 96 <sup>th</sup> Street **	12	1	0	N/A <sup>1</sup>
Kings Highway at East 95 <sup>th</sup> Street **	38	6	1	N/A <sup>1</sup>
Kings Highway at East 94 <sup>th</sup> Street **	39	7	0	N/A <sup>1</sup>
Kings Highway at East 93 <sup>rd</sup> Street **	58	3	0	N/A <sup>1</sup>
Lenox Road at East 93 <sup>rd</sup> Street **	11	1	0	0
<b>TOTAL</b>	<b>369</b>	<b>46</b>	<b>2</b>	<b>2<sup>1</sup></b>

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

\*\* Accident totals include both northbound and southbound Kings Highway

<sup>1</sup> NYPD data did not provide pedestrian age for some pedestrian accidents



ACCIDENT LOCATION \*  
 SCHOOL CROSSWALK ASSIGNED TO P.S. 219   
 SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL   
 CROSSWALK

1 inch equals 275 feet

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

**EXHIBIT 6**  
**P.S. 219 & ANNEX, BROOKLYN**  
**KENNEDY-KING SCHOOL**

**ACCIDENT SUMMARY**  
**THREE YEAR PERIOD**  
**(1998-2000)**

### 3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines the traffic accident and operational issues at intersections in the vicinity of P.S. 219.

#### 3.6.1 Kings Highway and East 93<sup>rd</sup> Street

Kings Highway is a 140-foot wide roadway that has northbound and southbound service roads, each with one travel lane and parking on the right side. The service roads are separated from the main line traffic by raised concrete medians. The mainline is composed of two through travel lanes in each direction and a left turn lane in the northbound direction (Figure 6). East 93<sup>rd</sup> Street is a 30-foot wide one-way westbound street with one travel lane and parking on both sides. There is a school crosswalk on the south leg of the intersection.



*Figure 6 - Kings Highway looking south across East 93<sup>rd</sup> Street*

Review of the existing signal timing indicates that a school age pedestrian needs two signal cycles to cross at three feet per second, stopping at the raised medians (refuge) separating Kings Highway and the service road to wait between cycles. However, all the raised medians observed do not extend through the crosswalks (Figure 7).

There were 37 accidents at this intersection during the 1998-2000 study period. Two accidents included pedestrians, one of which was school-related. A nine-year-old student was crossing against the signal when struck. The other pedestrian was struck by a driver failing to yield.



*Figure 7: Kings Highway at East 93<sup>rd</sup> Street, looking south*

### 3.6.2 Kings Highway and East 94<sup>th</sup> Street/Lenox Road

Kings Highway at East 94<sup>th</sup> Street is approximately 140 feet wide with raised concrete medians that separate the mainline from the service roads. East 94<sup>th</sup> Street is a 30-foot wide, one-way (eastbound) street with one travel lane and parking on both sides. The raised medians do not extend through the crosswalks. There are school crosswalks on all four legs of the intersection and across Lenox Road.

Pedestrian ramps were observed to be missing on the southeast corner of Kings Highway and East 94<sup>th</sup> Street and the southeast corner of East 94<sup>th</sup> Street and Lenox Road. The intersection has two crossing guards assigned to P.S. 219.

Review of the existing signal timing at this intersection indicates that a school age pedestrian needs two signal cycles to cross at three feet per second, stopping at the raised medians (refuge) separating Kings Highway and the service road to wait between cycles. However, the east median ends 40 feet short of the existing north crosswalk and is not raised at the crossing. The other three raised medians observed do not extend through the crosswalks (Figure 8). In addition, there are bus stops along the mainline which pick-up and drop-off pedestrians on the raised medians.

To determine the level of vehicle and pedestrian conflicts, traffic counts were performed on Tuesday, June 21, 2005 from 7:30 am to 8:30 am. The traffic counts indicated that only 25 pedestrians used the designated school crosswalk on the northern leg of the intersection. However, 184 pedestrians crossed Kings Highway in the roadway north of the designated crosswalk to the traffic Island (Exhibit 8).



*Figure 8 – Intersection of King’s Highway and East 94<sup>th</sup> Street, looking east*

This signalized intersection had 29 accidents during the 1998-2000 study period. There were seven pedestrian accidents at this intersection. Four of these seven pedestrian accidents are classified as school-related accidents. The other three accidents occurred during non-school hours.

All four of the school-related accidents involved children (ranging in age from 8 to 14) that were crossing against the traffic signal or outside the designated crosswalk. One of the non school-related accidents involved a 13-year-old child that was crossing with the signal when struck by a driver failing to yield. Details of the other two non school-related accidents were not available.

### 3.6.3 Kings Highway and East 95th Street

East 95<sup>th</sup> Street is a 30-foot wide, one-way (westbound) street with one travel lane and parking on both sides. The raised medians on Kings Highway do not extend through the crosswalks. There are school crosswalks on the east and west legs of the intersection.

Review of the existing signal timing indicates that a pedestrian needs three signal cycles to cross Kings Highway at this intersection at a walking speed of three feet per second, and is expected to stop at the raised median to wait between cycles.

Thirty accidents occurred between 1998 and 2000. There were five pedestrian accidents, of which three involved school age children.

The first involved a ten-year-old child who emerged from a parked vehicle when struck by a northbound vehicle. The second involved an eleven-year-old child who was crossing outside the crosswalk when struck. No details were reported for the third accident involving a child.



*Figure 9 –Intersection of King’s Highway and East 95<sup>th</sup> Street (looking north)*

### 3.6.4 Kings Highway and East 96th Street

East 96<sup>th</sup> Street is a 30-foot wide, one-way (eastbound) street with one travel lane and parking on both sides. The raised medians on Kings Highway do not extend through the crosswalks. There is a school crosswalk at the west leg of the intersection.

The intersection has one crossing guard assigned to P.S. 219.

Review of the existing signal timing indicates that a pedestrian needs three signal cycles to cross Kings Highway at this intersection at a walking speed of three feet per second, while stopping at the raised medians to wait between cycles.

This signalized intersection had 22 accidents during the 1998-2000 study period. One accident involved a pedestrian. A ten-year-old pedestrian was crossing against the signal when struck (occurring outside of school days or hours).



*Figure 10 - Kings Highway and East 96<sup>th</sup> Street (looking south), P.S. 219 Annex is on the left*

### 3.6.5 Clarkson Avenue and Remsen Avenue

Clarkson Avenue is a 43-foot wide, two-way (north-south) street with one travel lane in each direction and parking on both sides. Remsen Avenue is a two-way arterial with two travel lanes in each direction and parking on both sides. This is a signalized T-intersection. All corners need new standard pedestrian ramps. There are school crosswalks on the north and east legs of the intersection. There is a bus stop for the B47 line along Clarkson Avenue north of the intersection.

This intersection had 15 accidents during the 1998-2000 study period. Three accidents included pedestrians, of which none were school-related. Two pedestrians were crossing with the signal when struck by turning vehicles. A third pedestrian was crossing outside of the crosswalk when struck.



*Figure 11: Clarkson Avenue and Remsen Avenue (looking westbound along Remsen Avenue)*

### 3.6.6 Clarkson Avenue and East 91<sup>st</sup> Street

East 91<sup>st</sup> Street is a 30-foot wide, one-way (westbound) street with one travel lane and parking on both sides. Traffic on East 91<sup>st</sup> Street is stop controlled. Clarkson Avenue is not controlled at this intersection. Therefore, the school crosswalk at the south leg is uncontrolled. There are school crosswalks on the east, west and south legs of the intersection.

There were six accidents during the 1998-2000 study period. One accident involved a pedestrian. A pedestrian was crossing outside of the crosswalk when struck by a vehicle backing up.

A one-hour traffic count was performed on Thursday, May 12, 2005 from 7:30 am to 8:30 am (Exhibit 7). The results show that 25 pedestrians used the uncontrolled school crosswalk at the south leg. About 165 pedestrians used controlled school crosswalks at the west and east leg to cross East 91<sup>st</sup> Street during the one-hour count. But 20 pedestrians crossed Clarkson Avenue at the north leg where a crosswalk is not provided.

An all-way stop was considered to mitigate the uncontrolled crosswalk. However, the moderate vehicle volumes and pedestrian volumes do not meet the required NYCDOT warrants for an all-way stop at this location.

### 3.6.7 Clarkson Avenue and East 92<sup>nd</sup> Street

East 92<sup>nd</sup> Street is a 30-foot wide, one-way (eastbound) street with one travel lane and parking on both sides. There are school crosswalks on all four legs, but none of them are school crosswalks. This intersection is controlled by a two-phase traffic signal.

There were 15 at this intersection during the 1998-2000 study period. Two accidents included pedestrians, one of which was school-related. A nine-year-old pedestrian was crossing against the signal when struck. The second pedestrian was struck by a vehicle making a right turn.

### 3.6.8 Clarkson Avenue and East 93<sup>rd</sup> Street

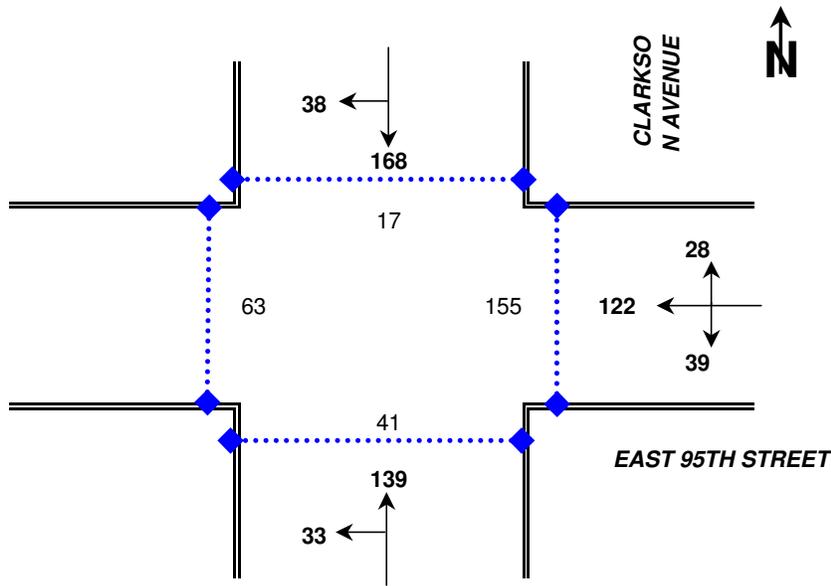
This is one of the four intersections abutting the school. This intersection is controlled by a two-phase signal. There are school crosswalks on the east, west and north legs of the intersection.

Sixteen accidents occurred at this intersection during the 1998-2000 study period. Two accidents involved pedestrians. Both pedestrians were crossing outside of the crosswalk area when struck. There were no school-related accidents at this location.

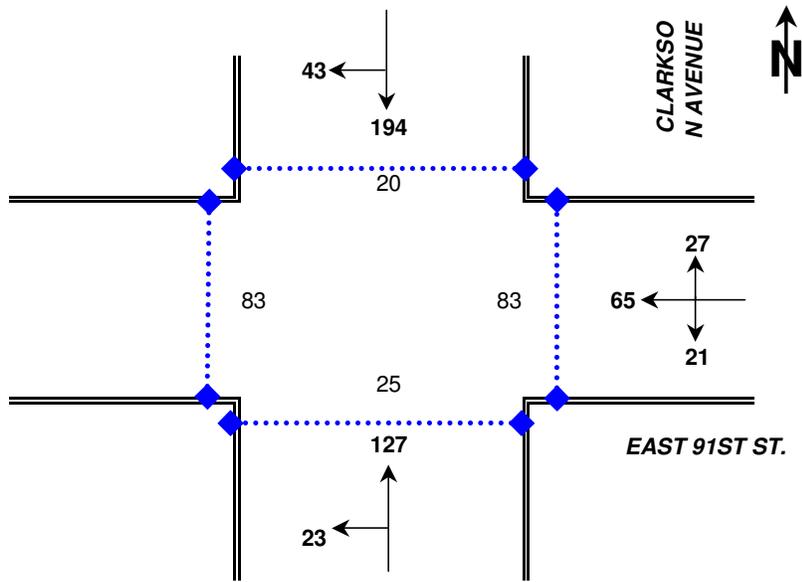


*Figure 12: Clarkson Avenue and East 93<sup>rd</sup> Street (looking west)*

**One Hour Traffic Count Volumes**



**Intersection of E. 95th Street and Clarkson Avenue**  
(7:30 AM - 8:30 AM MAY 9, 2005)



**Intersection of E. 91st Street and Clarkson Avenue**  
(7:30 AM - 8:30 AM MAY 12, 2005)

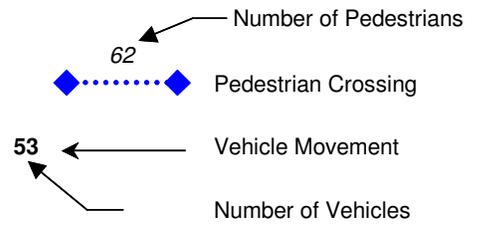


EXHIBIT 7
P.S 219 , BROOKLYN KENNEDY-KING SCHOOL
TRAFFIC COUNTS

### 3.6.9 Clarkson Avenue and East 94<sup>th</sup> Street

This signalized intersection has school crosswalks on the east, west and south legs of the intersection.

The pedestrian ramp on the west side of Clarkson Avenue south of East 94<sup>th</sup> street is not aligned with the crosswalk due to a conflict with a signal pole.

The school principal noted in the survey form that the signal does not provide enough time for a child to cross the street at this intersection; however, signal timing was field checked and there is sufficient time for pedestrians to cross the street at a walking rate of three feet per second (Table 4). School officials also felt that a crossing guard should be assigned to this intersection.

There were thirteen accidents at this intersection between 1998 and 2000. None of the accidents involved pedestrians.



*Figure 13 - Clarkson Avenue and East 94<sup>th</sup> Street (looking west across Clarkson Street) note ramp location*

### 3.6.10 Clarkson Avenue and East 95<sup>th</sup> Street

East 95<sup>th</sup> Street is stop controlled, but Clarkson Avenue is not controlled at this intersection. There are school crosswalks on the west and east legs of the intersection.

There were 23 accidents at this intersection during the 1998-2000 study period. Two accidents involved pedestrians and one involved a nine-year old student. A pedestrian was crossing outside the crosswalk when struck by a vehicle making a right turn. No details were reported for the school-related accident.

To determine the level of vehicle and pedestrian conflicts, a one-hour traffic count was performed on Monday, May 9, 2005 from 7:30 am to 8:30 am (Exhibit 7). The traffic count results show that 17 pedestrians (north leg) and 41 pedestrians (south leg) cross Clarkson Avenue, where no crosswalks are provided. 63 pedestrians (west leg) and 155 (east leg) used the controlled crosswalks to cross East 95<sup>th</sup> Street during the one-hour count.

3.6.11 Clarkson Avenue and East 96<sup>th</sup> Street

Clarkson Avenue at East 96<sup>th</sup> Street is an un-signalized, all-way stop controlled intersection. School crosswalks are located on the east, west, and south legs.

In the school survey, the school principal indicated that drivers do not yield to pedestrians at the crosswalks and that a crossing guard should be assigned to this location.

There were 15 accidents at this intersection during the 1998-2000 study period, including one pedestrian accident. The accident involved a 49-year-old pedestrian who was struck by a vehicle that was starting from a parked position.

### 3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing times were field verified at all signalized intersections in the vicinity of P.S. 219, 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>				
<b>(July 21, 2004)</b>				
<b>Intersection Name</b>	<b>Crosswalk Width (Feet)</b>	<b>Ped. Phase Actual (Seconds)</b>	<b>Ped. Phase Req'd (Seconds)</b>	<b>Timing Adjustment? (Yes/No)</b>
<b>Clarkson Ave. at 94th St</b>				
Crossing Clarkson Ave.	45	25	18	NO
Crossing 94 <sup>th</sup> Street	36	35	15	NO
<b>Clarkson Av at 93<sup>rd</sup> Street</b>				
Crossing Clarkson Ave.	45	25	18	NO
Crossing 93 <sup>rd</sup> St	36	35	15	NO
<b>Clarkson Ave. at 92<sup>nd</sup> Street</b>				
Crossing Clarkson Ave.	45	25	18	NO
Crossing 92 <sup>nd</sup> Street	36	35	15	NO
<b>Clarkson Ave. at Remsen Ave</b>				
Crossing Clarkson Ave.	45	25	18	NO
Crossing Remsen Ave.	60	35	23	NO
<b>Kings Hwy &amp; 96<sup>th</sup> Street</b>				
Crossing Kings Hwy.	32/62/32 <sup>1</sup>	40/40 <sup>2</sup>	14/24/14	NO
Crossing 96 <sup>th</sup> Street	36	80	15	NO
<b>Kings Hwy &amp; 95<sup>th</sup> St</b>				
Crossing Kings Hwy.	32/62/32 <sup>1</sup>	40/40 <sup>2</sup>	14/24/14	NO
Crossing 95 <sup>th</sup> St	35	80	15	NO
<b>Kings Hwy &amp; 94<sup>th</sup> St</b>				
Crossing Kings Hwy.	32/62/32 <sup>1</sup>	40/40 <sup>2</sup>	14/24/14	NO
Crossing 94 <sup>th</sup> St	36	80	15	NO
<b>Kings Hwy &amp; 93<sup>rd</sup> St</b>				
Crossing Kings Hwy.	32/62/32 <sup>1</sup>	40/40 <sup>2</sup>	14/24/14	NO
Crossing 93 <sup>rd</sup> St	36	80	15	NO

Note: –

- \* A rate of 3 ft/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate
- 1. The service roads of Kings Highway are each 32 feet wide and the mainline is 62 feet wide.
- 2. A pedestrian needs two signal cycles to cross Kings Highway at a rate of three feet per second while stopping at the raised medians separating mainline and service road.

### 3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

The roadways and sidewalks in the vicinity of P.S. 219 and Annex were generally observed to be in good condition with the exception of the following:

- On Clarkson Avenue at 96<sup>th</sup> Street, there is cracked sidewalk and curb on the southeast corner.

Pedestrian ramps that are missing or not positioned correctly have been noted in Section 3.6.



*Figure 14: Clarkson Avenue at 96<sup>th</sup> Street ( looking south)*

#### 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 Clarkson Avenue and East 96<sup>th</sup> Street

A “NO STANDING 7:00 AM - 4:00 PM, SCHOOL DAYS” parking regulation for a length of 30 feet should be provided in front of main school entrances on Clarkson Avenue (main school building) and on East 96<sup>th</sup> Street in front of the main entrance of the Annex.

- 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.

- 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 students be educated to cross Clarkson Avenue at the signalized intersections adjacent to the school, and to utilize raised medians on Kings Highway while waiting for the next signal cycle.

- Install pedestrian information sign that explains the signal phases

The safety of pedestrians at the wide intersections of Kings Highway and Rockaway Parkway is the major concern of school representatives. Installation of pedestrian information signs adjacent to each school crosswalk to explain the signal phases is recommended. The pedestrian should also be informed to wait at refuge islands between signal cycles.

- Submit a request to the NYPD for Crossing Guards

It is recommended that a crossing guard be requested for each of the following intersections:

- Clarkson Avenue and East 96<sup>th</sup> Street
- Clarkson Avenue and East 94<sup>th</sup> Street

- Install new school crosswalks at the following locations:
  - East 92<sup>nd</sup> Street and Clarkson Avenue – east and west legs
  - Kings Highway and East 96<sup>th</sup> Street – south leg

Install school crosswalks at these intersections to facilitate continuous school walking routes.

- Install enlarged signal lens

Install enlarged signal lens for vehicles traveling on the following intersection:

- Kings Highway at East 96th Street

The enlarged heads will improve drivers’ ability to see the signal heads.

- Install speed reducers (humps)

Two speed studies were conducted on Thursday, July 21, 2005. One was from 1:00 pm to 2:00 pm on East 94<sup>th</sup> Street between Clarkson Avenue and Kings Highway, and the second was from 2:00 pm to 3:00 pm on East 93<sup>rd</sup> Street between Clarkson Avenue and Kings Highway. Also, a speed study was performed on Kings Highway southbound service road between East 95<sup>th</sup> Street and East 96<sup>th</sup> Street on July 12, 2005 between 10:00 am and 10:30 am.

The results indicated that the 85<sup>th</sup> percentile speed at all three locations exceeded the statutory speed limit of 30 mph (see Table 5). Therefore, speed reducers should be installed at the following locations:

- East 94<sup>th</sup> Street - between Clarkson Avenue and Kings Highway
- East 93<sup>rd</sup> Street - between Clarkson Avenue and Kings Highway
- Kings Highway Service Road - between East 95<sup>th</sup> Street and East 96<sup>th</sup> Street

<b>TABLE 5: SPOT SPEED STUDIES</b>		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
Kings Hwy Service Road between E.95 <sup>th</sup> St. and E. 96 <sup>th</sup> St.	37	42
East 94 <sup>th</sup> Street between Clarkson Avenue and Kings Hwy	29	33
East 93 <sup>rd</sup> Street between Clarkson Avenue and Kings Hwy	28	32

The actual number and location of speed reducers (humps) will be determined by NYCDOT prior to installation.

#### 4.2 LONG-TERM MEASURES

- Install or replace pedestrian ramps at the following intersections:
  - Clarkson Avenue and East 94<sup>th</sup> Street (southwest corner)
  - Clarkson Avenue and Remsen Avenue (all four corners)

New pedestrian ramps should be installed at all locations where there are currently no pedestrian ramps, where only one ramp exists or where a pole requires relocation to facilitate the standard ramp installation.

- Reconstruct southeast corner of Clarkson Avenue and East 96<sup>th</sup> Street

As noted in Section 3.8 the southeast corner of this intersection has a cracked sidewalk and curb. It recommended that the cracked areas be repaired.

### **4.3 ADDITIONAL RECOMMENDATIONS FOR PRIORITY SCHOOLS IN THE VICINITY OF P.S. 219**

#### *4.3.1 RECOMMENDATIONS FOR I.S. 252:*

The following actions are recommended as part of proposed measures to improve student pedestrian safety around I.S. 252, which is a nearby Priority School.

- *Install a new school crosswalk*

It is recommended that a school crosswalk be installed at the following intersection:

- Kings Highway and East 95th Street - south leg

Students from I.S. 252 were observed to cross at this intersection, although there is no school crossing delineated across Kings Highway at this intersection. Therefore, a school crosswalk at this location should be striped to facilitate students walking to I.S. 252 (see Exhibit 9).

- *Install pedestrian Information sign that explains the signal phases*

The safety of pedestrians at the wide intersection of Kings Highway at East 93rd Street, at East 94th Street, at East 95th Street, at East 96th Street, at Rockaway Parkway, and Rockaway Parkway at Lenox Road is the major concern of school representatives. Installation of a pedestrian information sign adjacent to each school crosswalk that explains the signal phases is recommended. The pedestrian should also be informed to wait at refuge between signal cycles.

- *Submit a request to the Police Department for crossing guards*

It is recommended that a crossing guard be requested at the following intersections:

- Lenox Road and East 95th Street
- Willmohr Street and East 94th Street

- *Install enlarged signal lens*

Install enlarged signal lens for vehicles traveling on the following intersections:

- Kings Highway at East 94th Street
- Rockaway Parkway at Kings Highway and Clarkson Avenue

The enlarged heads will allow drivers to see the red signal and deter drivers from traveling through the red signal.

- Install speed reducers (humps) at the following locations:
  - East 94<sup>th</sup> Street between Lenox Road and Willmohr Street
  - East 95<sup>th</sup> Street between Lenox Road and Willmohr Street

Spot speed surveys were conducted on East 94th Street between Lenox Road and Willmohr Street and East 95th Street between Lenox Road and Willmohr Street on June 30, 2005. The objective of the survey was to determine if there is a speeding problem on these sections of East 95th Street and 95th Street, as reported by several school officials.

The speed study results are shown in Table 6 and in the Appendix. The 85th percentile speed on East 94th Street was 31 mph, and 43 mph on East 95th Street. This indicates that operating speeds along these two streets exceeded the legal speed limit of 30 mph. Therefore, to reduce speeding in the vicinity of I.S. 252, speed reducers (humps) should be installed on East 94th Street between Lenox Road and Willmohr Street and East 95th Street between Lenox Road and Willmohr Street.

<b>TABLE 6: SPOT SPEED STUDIES</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
East 94 <sup>th</sup> Street between Lenox Road and Willmohr Street	26	31
East 95 <sup>th</sup> Street between Lenox Road and Willmohr Street	28	34

- Install or replace pedestrian ramps at all crosswalks where required

New pedestrian ramps should be installed at all locations in which there are currently no pedestrian ramps, where only one ramp currently exists or where a pole requires relocation to facilitate the standard ramp installation (Figure 16).
- Extend concrete raised medians on Kings Highway through adjacent crosswalks and provide pedestrian ramps within the extended medians

Since pedestrians must cross Kings Highway in more than one signal phase, all raised medians should be extended through the adjacent crosswalk at the following intersections:

  - Kings Highway and East 93<sup>rd</sup> Street
  - Kings Highway and East 94<sup>th</sup> Street
  - Kings Highway and East 95<sup>th</sup> Street
  - Kings Highway and East 96<sup>th</sup> Street

In addition, ADA compliant at-grade cut throughs should be provided at all medians. By extending the raised median, a physically protected refuge location can be provided for pedestrians as they wait for the next cycle to cross the street.

- *Install Pedestrian refuge islands*

The median striping should be replaced with an extended raised median at the following locations:

- North leg of Kings Highway at East 95th Street
- South leg of Kings Highway at East 96th Street
- South leg of Kings Highway at East 93rd Street

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

- *Install curb extensions at:*

Consideration should be given to installing curb extensions at the following location, provided that the Final Design confirms that construction of the recommended curb extensions 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.

- Lenox Road and East 95th Street - both curbs of the southeast corner

Curb extensions should be considered as shown in Exhibit 9.

The purpose of 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.

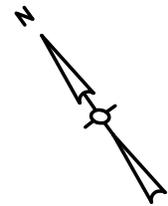
- *Install pedestrian fence on Kings Highway medians, from East 94th Street to East 95th Street*

Traffic counts on June 21, 2005 showed that only 25 pedestrians were using the designated school crosswalk on the north leg of the intersection. However, 184 pedestrians were crossing mid-block without a crosswalk to and from the traffic island just north of the crosswalk. It is recommended that pedestrian fences be installed on both east and west medians separating the service road from the mainline to deter mid-block crossing.

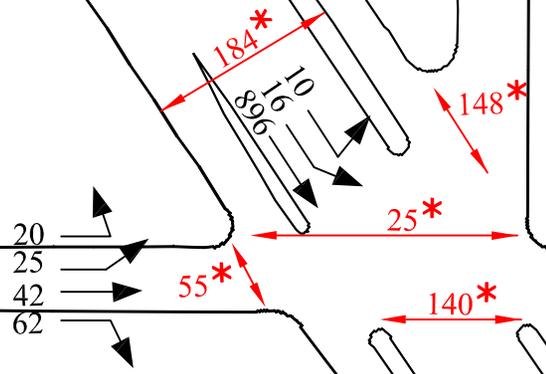
- Repair roadway and sidewalk deficiencies within the walking routes or in the vicinity of I.S. 252

Pavement repairs should be performed at the following locations:

- Intersection of Rockaway Parkway and Kings Highway
- On Lenox Road, north of Kings Highway around catch basin and basin chute trench
- On East 94th Street, west of Willmohr Street, depression in roadway
- On East 95th Street, mid-block, repaired depression in roadway



KINGS HWY



E 94 ST

LEGEND



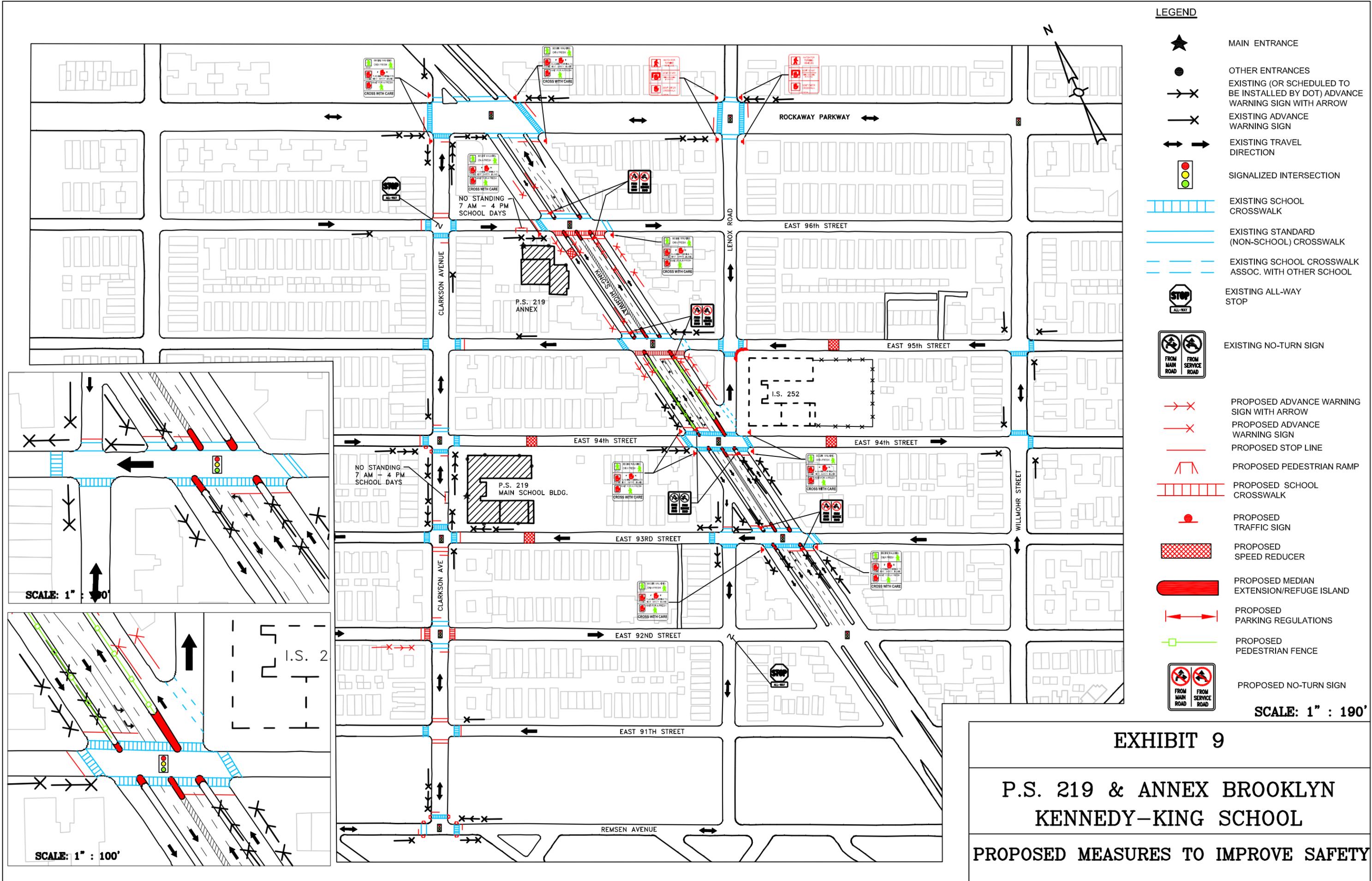
E 93 ST

**EXHIBIT 8**

**P.S. 219 BROOKLYN  
KENNEDY-KING SCHOOL**

**TRAFFIC AND PEDESTRIAN  
VOLUMES**

NOT TO SCALE



- LEGEND**
- ★ MAIN ENTRANCE
  - OTHER ENTRANCES
  - X EXISTING (OR SCHEDULED TO BE INSTALLED BY DOT) ADVANCE WARNING SIGN WITH ARROW
  - X EXISTING ADVANCE WARNING SIGN
  - ↔ EXISTING TRAVEL DIRECTION
  - 🚦 SIGNALIZED INTERSECTION
  - ▬▬▬ EXISTING SCHOOL CROSSWALK
  - ▬▬▬ EXISTING STANDARD (NON-SCHOOL) CROSSWALK
  - ▬▬▬ EXISTING SCHOOL CROSSWALK ASSOC. WITH OTHER SCHOOL
  - 🛑 EXISTING ALL-WAY STOP
  - 🚫 EXISTING NO-TURN SIGN
  - X PROPOSED ADVANCE WARNING SIGN WITH ARROW
  - X PROPOSED ADVANCE WARNING SIGN
  - PROPOSED STOP LINE
  - 🚶 PROPOSED PEDESTRIAN RAMP
  - ▬▬▬ PROPOSED SCHOOL CROSSWALK
  - 🚦 PROPOSED TRAFFIC SIGN
  - 🚧 PROPOSED SPEED REDUCER
  - 🚶 PROPOSED MEDIAN EXTENSION/REFUGE ISLAND
  - ↔ PROPOSED PARKING REGULATIONS
  - 🚧 PROPOSED PEDESTRIAN FENCE
  - 🚫 PROPOSED NO-TURN SIGN

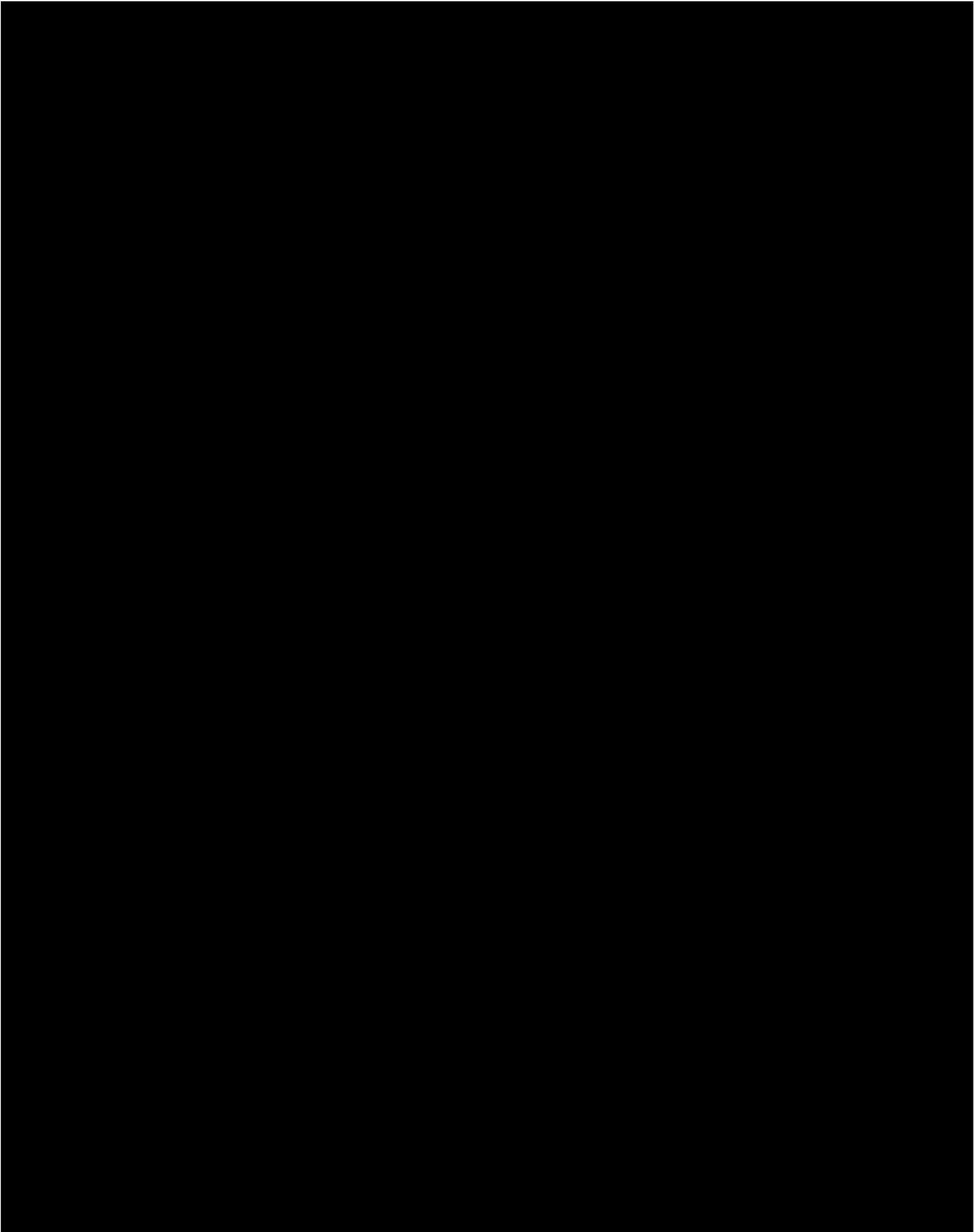
SCALE: 1" : 190'

**EXHIBIT 9**

**P.S. 219 & ANNEX BROOKLYN  
KENNEDY-KING SCHOOL**

**PROPOSED MEASURES TO IMPROVE SAFETY**

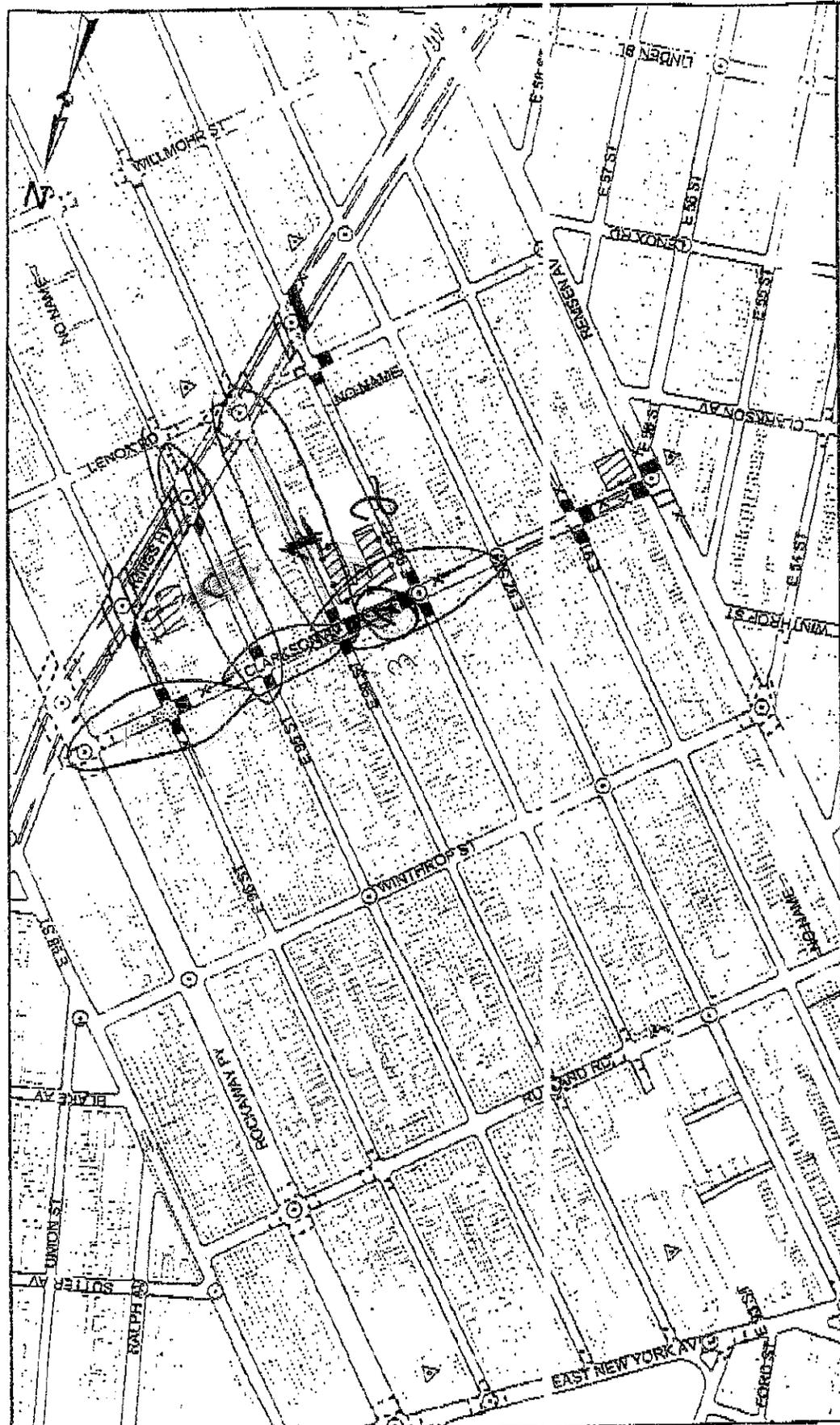
# APPENDIX



NEW YORK CITY  
DEPT. OF TRANSPORTATION

# TRAFFIC SAFETY PLAN OFFICIAL ROUTES TO SCHOOL

BUREAU OF TRAFFIC



**KENNEDY-KING SCHOOL  
P.S. 219 & ANNEX 1 & 2**

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION,  
In consultation with the COMMISSIONER, in cooperation with SCHOOL and  
POLICE OFFICIALS.

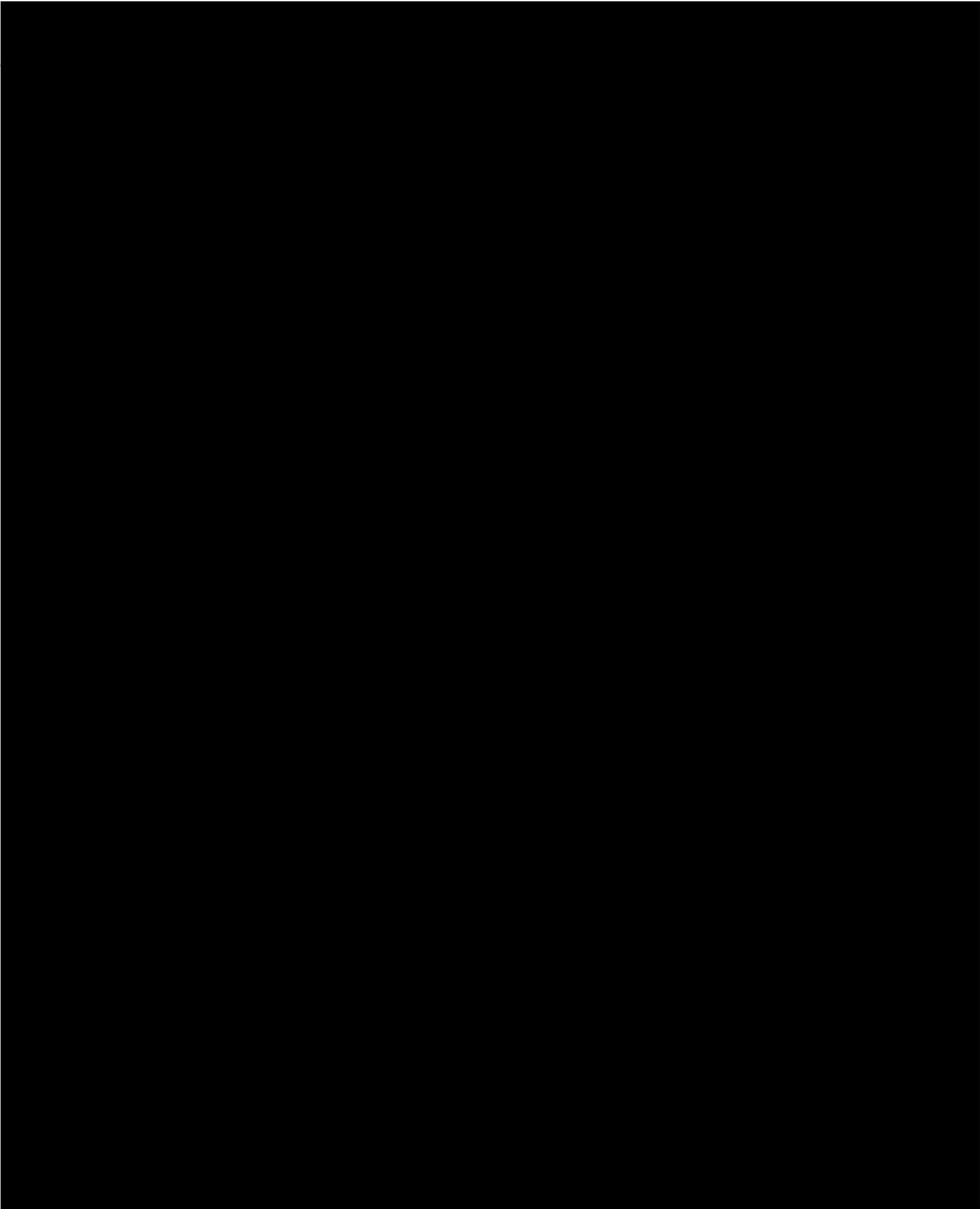
ORIG. DATE: 02/28/88  
DESIGNED BY: J.M.L./J.M.L.  
CIS. CORRECTED: J.M.L./J.M.L.  
REVISIONS: MS-5219

CONTRA BOARD: BUREAU OF TRAFFIC  
BOROUGH: BUREAU OF TRAFFIC  
PRECEPT: BUREAU OF TRAFFIC

**LEGEND:**

	TRAFFIC FLOW		TRAFFIC SIGNAL
	ROUTE TO SCHOOL		ALL-WAY STOP
	ADV. WARNING SIGN		2-WAY STOP
	SCHOOL LOCATION		STOP LINE
	MAIN SCHOOL ENTRANCE		WALKS ASSOCIATED WITH OTHER SCHOOLS
	OTHER SCHOOL ENTRANCES		PED. X-WALK
			SCHOOL X-WALK
			BYPASS HUBAP

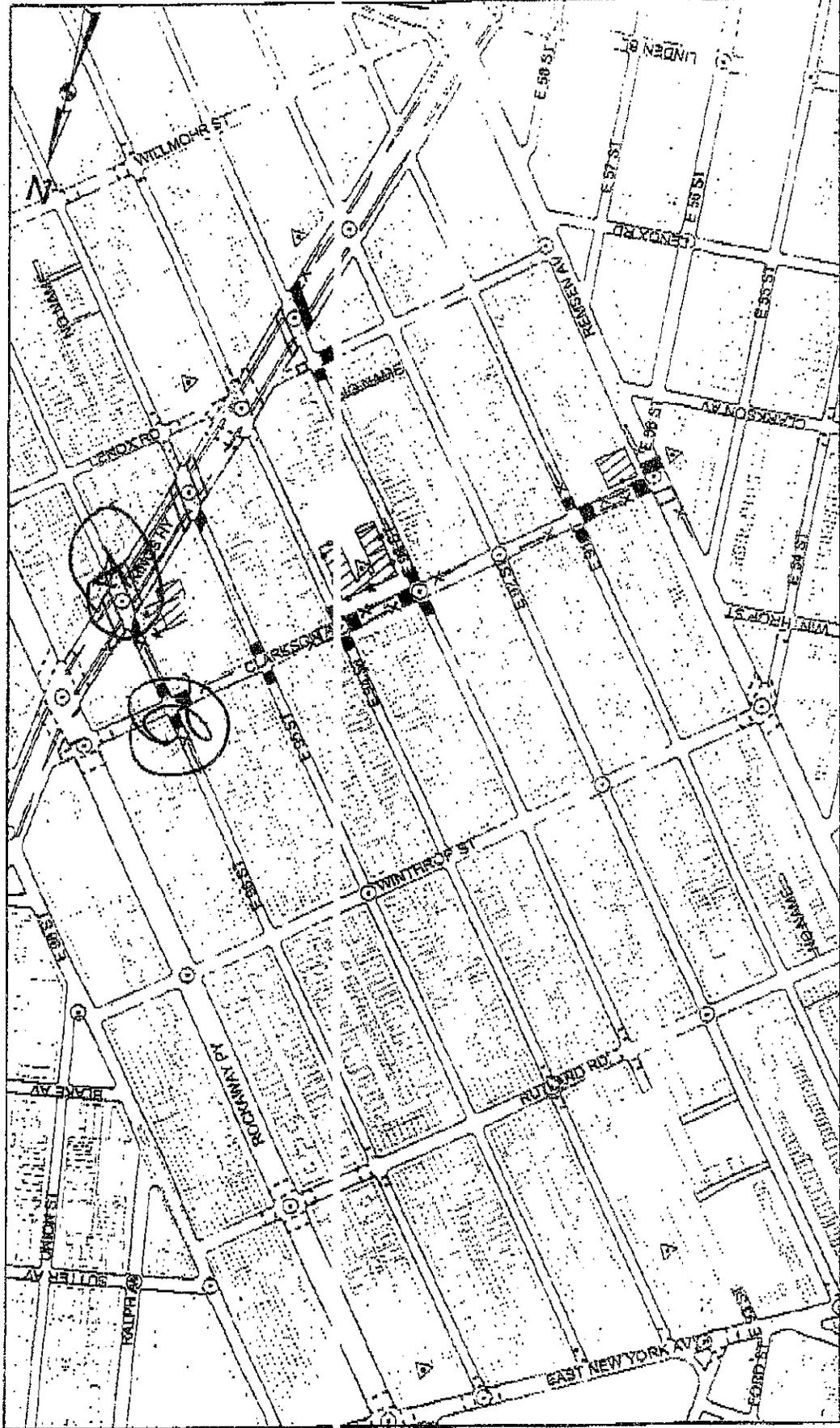
The TRAFFIC SAFETY PLAN shown on this map was established to provide the maximum degree of safety for children going to and from school. It is required that all children follow the prescribed routes and use the designated crossings.



NEW YORK CITY  
DEPT. OF TRANSPORTATION

**TRAFFIC SAFETY PLAN  
OFFICIAL ROUTES TO SCHOOL**

BUREAU OF TRAFFIC



The TRAFFIC SAFETY PLAN shown on this map was submitted to provide the maximum degree of safety for children going to and from school. It is required that all children follow the illustrated routes and use the designated crosswalks.

**LEGEND:**

- TRAFFIC FLOW
- ROUTE TO SCHOOL
- ADV. WARNING SIGN
- SCHOOL LOCATION
- MAIN SCHOOL ENTRANCE
- OTHER SCHOOL ENTRANCES
- SCHOOL X-WALK
- PEDE. X-WALK
- STOP LINE
- X-WALKS ASSOCIATED WITH OTHER SCHOOLS
- SPEED HUMP
- TRAFFIC SIGNAL
- ALL-WAY STOP
- 2-WAY STOP

**KENNEDY-KING SCHOOL  
P.S. 219 & ANNEX 1 & 2**

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION  
 THE VESPERAL COMMISSIONER, IN COOPERATION WITH SCHOOL BUS  
 POLICE OFFICIALS

DATE: 12/15/03  
 DESIGNED BY: J. J. J. J.  
 DRAWING NO. CC 67302  
 DRAWING NO. MS-5516  
 CORNER BOARD NO. 47  
 SCHOOL PRECINCT 21





# Pedestrian Count Form

P.S. 219

Job Number

~~316~~ **P.S. 219**

Prepared By

EYAD

Task Number

Date

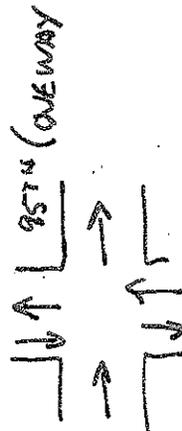
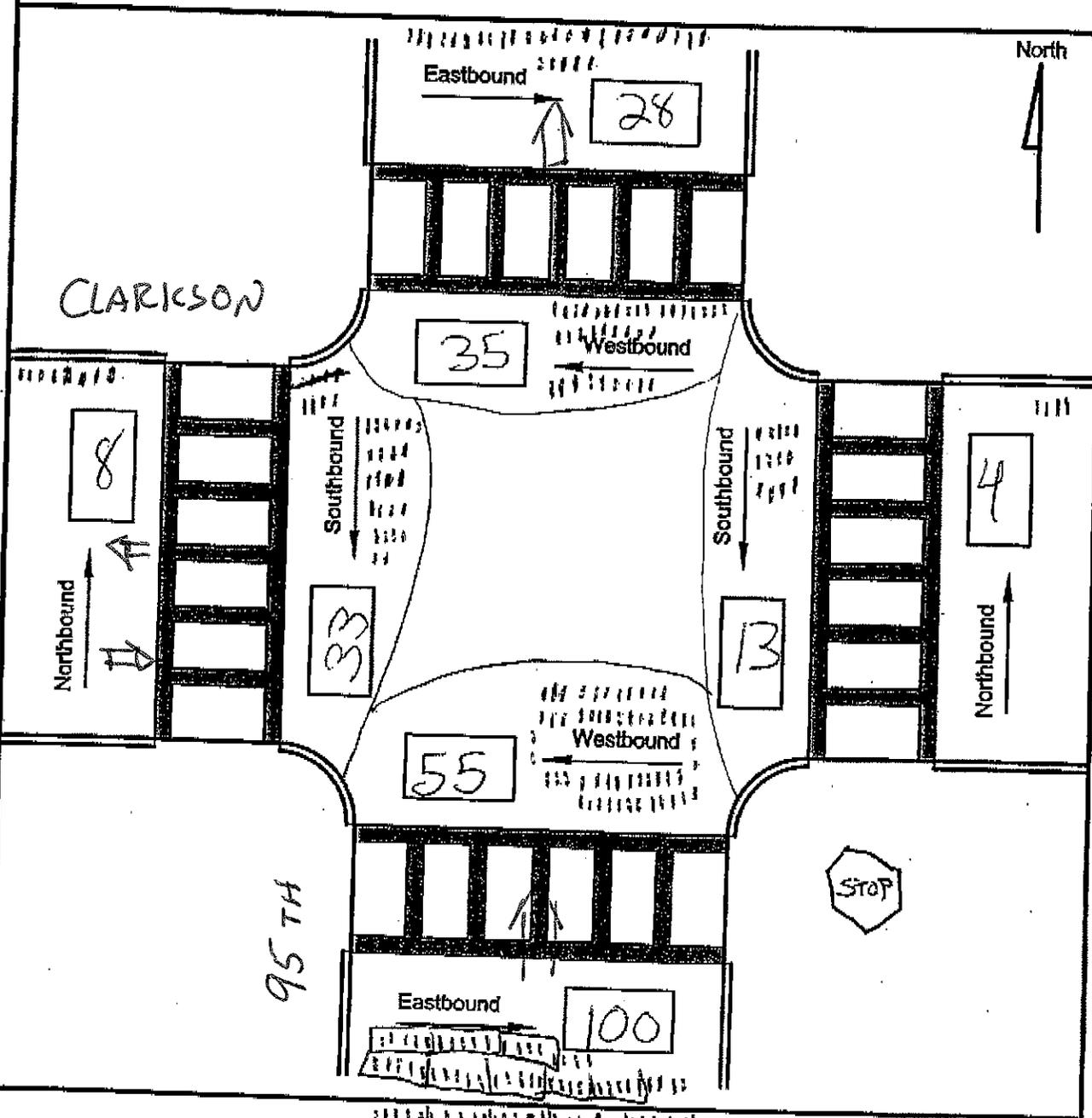
5/9/05 (Monday)

Location

95th & Clarkson

Time Period

7:30 - 8:30 AM



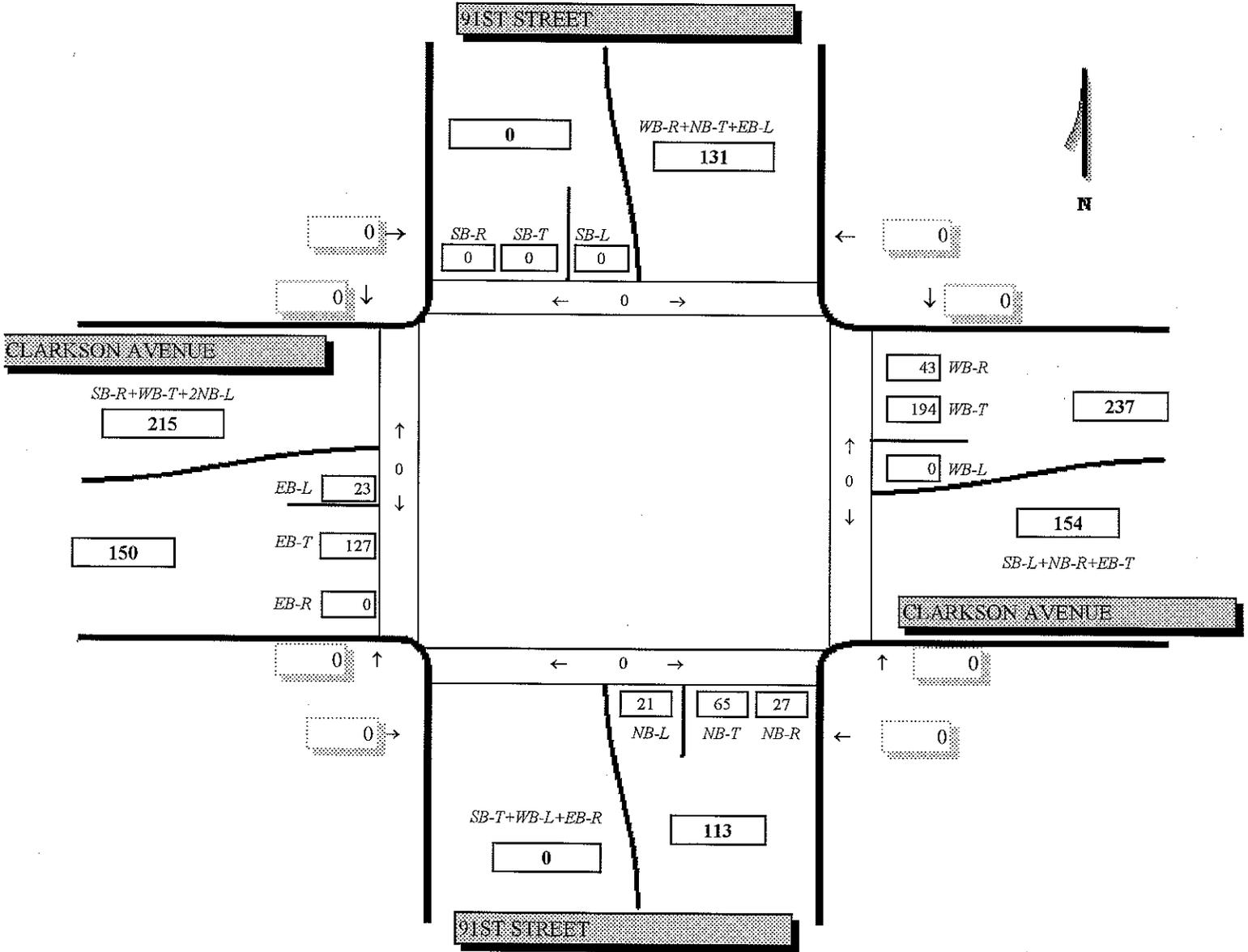
i:\eng standards\misc\files\forms\pedestrian counts.dwg

**P.S. 219**  
MAY 12, 2005  
7:30 am - 8:30 am

Title1 : SCHOOL SAFETY ENGINEERING  
Title2 : BOROUGH OF BROOKLYN  
Title3 : NYC-DOT

Site:  
Date: 05/12/05

Combined  
*\*Peds not included in table data*





# Pedestrian Count Form

Job Number

P.S. 219

Prepared By Eyad Yousef

Task Number

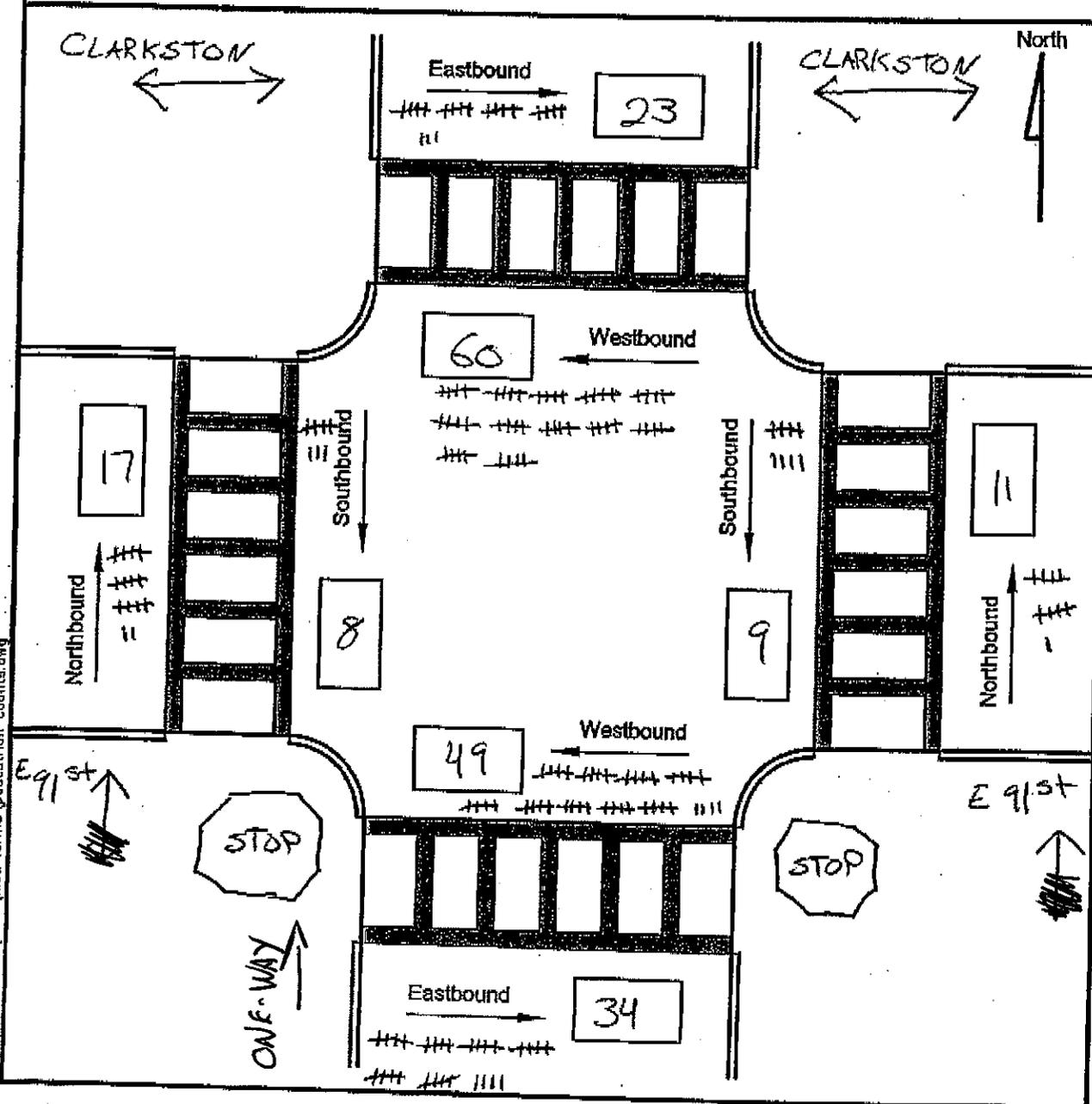
Date 5-12-05 (Thursday)

Location

ON E 9th & Clarkston

Time Period

7:30 AM - 8:30 AM



t:\eng\_standards\misc\filed\_farms\pedestrian\_counts.dwg

ALL SCHOOL CROSSWALKS

HCS2000: Signalized Intersections Release 4.1e

Analyst: The RBA Group  
 Agency: NYC-DOT  
 Date: 6/21/2005  
 Period:  
 Project ID: SCHOOL SAFETY ENGINEERING  
 E/W St: E 94th STREET

Inter.:  
 Area Type: All other areas  
 Jurisd:  
 Year :  
 N/S St: KINGS HIGHWAY

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	2	0	1	2	0
LGConfig	LTR						TR			L T		
Volume	45	42	62				1175 120			26 815		
Lane Width	12.0						12.0			12.0 12.0		
RTOR Vol	0						0					

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left			
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
WB Left					SB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				80.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LTR	442	1767	0.38	0.25	39.7	D	39.7	D
Westbound								
Northbound								
TR	2378	3567	0.61	0.67	12.3	B	12.3	B
Southbound								
L	164	246	0.18	0.67	9.9	A		
T	2412	3618	0.38	0.67	9.3	A	9.4	A

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1e

Analyst: The RBA Group  
 Agency: NYC-DOT  
 Date: 6/21/2005  
 Period: 2:30-3:30 PM  
 Project ID: SCHOOL SAFETY ENGINEERING  
 E/W St: E 92nd STREET

Inter.:  
 Area Type: All other areas  
 Jurisd:  
 Year :  
 N/S St: KINGS HIGHWAY

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	2	0	1	2	0
LGConfig	LTR						TR			L	T	
Volume	45	42	62				1175 120			26	815	
Lane Width	12.0						12.0			12.0	12.0	
RTOR Vol	0						0					

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left			
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
WB Left					SB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				80.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LTR 442 1767 0.38 0.25 39.7 D 39.7 D

Westbound

Northbound

TR 2378 3567 0.61 0.67 12.3 B 12.3 B

Southbound

L 164 246 0.18 0.67 9.9 A  
 T 2412 3618 0.38 0.67 9.3 A 9.4 A

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

## SPOT SPEED STUDY

Date: **July 12, 2005**                      Time: **10:00 am - 10:30 am**  
 Location: **Kings Highway Service Road between East 96th Street and East 95th Street**  
 Surveyor:

School: **P.S. 219**  
 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	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	0	0.0%	0.0%	0	0
24	0	0.0%	0.0%	0	0
25	0	0.0%	0.0%	0	0
26	0	0.0%	0.0%	0	0
27	0	0.0%	0.0%	0	0
28	0	0.0%	0.0%	0	0
29	0	0.0%	0.0%	0	0
30	5	4.6%	4.6%	150	4500
31	4	3.7%	8.3%	124	3844
32	6	5.5%	13.8%	192	6144
33	5	4.6%	18.3%	165	5445
34	8	7.3%	25.7%	272	9248
35	7	6.4%	32.1%	245	8575
36	7	6.4%	38.5%	252	9072
37	18	16.5%	55.0%	666	24642
38	13	11.9%	67.0%	494	18772
39	6	5.5%	72.5%	234	9126
40	8	7.3%	79.8%	320	12800
41	4	3.7%	83.5%	164	6724
42	4	3.7%	87.2%	168	7056
43	4	3.7%	90.8%	172	7396
44	6	5.5%	96.3%	264	11616
45	2	1.8%	98.2%	90	4050
46	0	0.0%	98.2%	0	0
47	1	0.9%	99.1%	47	2209
48	1	0.9%	100.0%	48	2304
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
	109	100.0%		4067	153523

Mean Speed = 37.3 mph  
 Standard Deviation = 4.1 mph  
 Margin of Error (95% Confidence) = ± 0.8 mph

Median Speed = 37.3 mph  
 15th Percentile Speed = 33.1 mph  
 85th Percentile Speed = 41.5 mph



## SPOT SPEED STUDY

Date: **July 21, 2005**                      Time: **1:00 pm - 2:00 pm**  
 Location: **East 94th Street between Kings Highway Service Road and Clarkson Avenue**  
 Surveyor:

School: **P.S. 219**  
 Direction: **East 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	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	0	0.0%	0.0%	0	0
23	0	0.0%	0.0%	0	0
24	2	4.9%	4.9%	48	1152
25	2	4.9%	9.8%	50	1250
26	3	7.3%	17.1%	78	2028
27	2	4.9%	22.0%	54	1458
28	6	14.6%	36.6%	168	4704
29	9	22.0%	58.5%	261	7569
30	8	19.5%	78.0%	240	7200
31	3	7.3%	85.4%	93	2883
32	2	4.9%	90.2%	64	2048
33	1	2.4%	92.7%	33	1089
34	0	0.0%	92.7%	0	0
35	1	2.4%	95.1%	35	1225
36	0	0.0%	95.1%	0	0
37	0	0.0%	95.1%	0	0
38	1	2.4%	97.6%	38	1444
39	1	2.4%	100.0%	39	1521
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	41	100.0%		1201	35571

Mean Speed = 29.3 mph                      Median Speed = 29.3 mph  
 Standard Deviation = 3.1 mph              15th Percentile Speed = 26.1 mph  
 Margin of Error (95% Confidence) = ± 1.0 mph      85th Percentile Speed = 32.5 mph



## SPOT SPEED STUDY

Date: **July 21, 2005**                      Time: **2:00 pm - 3:00 pm**  
 Location: **East 93rd Street between Kings Highway Service Road and Clarkson Avenue**  
 Surveyor:

School: **P.S. 219**  
 Direction: **West 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	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	0	0.0%	0.0%	0	0
17	0	0.0%	0.0%	0	0
18	0	0.0%	0.0%	0	0
19	0	0.0%	0.0%	0	0
20	0	0.0%	0.0%	0	0
21	0	0.0%	0.0%	0	0
22	3	9.7%	9.7%	66	1452
23	2	6.5%	16.1%	46	1058
24	2	6.5%	22.6%	48	1152
25	3	9.7%	32.3%	75	1875
26	1	3.2%	35.5%	26	676
27	2	6.5%	41.9%	54	1458
28	4	12.9%	54.8%	112	3136
29	1	3.2%	58.1%	29	841
30	6	19.4%	77.4%	180	5400
31	2	6.5%	83.9%	62	1922
32	0	0.0%	83.9%	0	0
33	2	6.5%	90.3%	66	2178
34	1	3.2%	93.5%	34	1156
35	0	0.0%	93.5%	0	0
36	1	3.2%	96.8%	36	1296
37	0	0.0%	96.8%	0	0
38	1	3.2%	100.0%	38	1444
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
	31	100.0%		872	25044

Mean Speed = 28.1 mph                      Median Speed = 28.1 mph  
 Standard Deviation = 4.1 mph              15th Percentile Speed = 23.8 mph  
 Margin of Error (95% Confidence) = ± 1.5 mph      85th Percentile Speed = 32.4 mph

