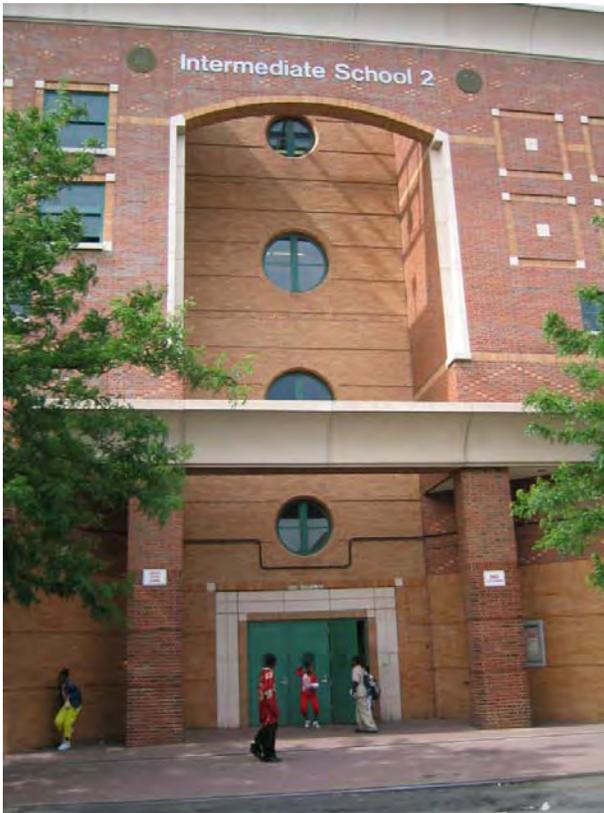


**New York City Department of Transportation
Office of School Safety Engineering**



School Safety Engineering Project

FINAL REPORT: I.S. 2, Parkside Preparatory Academy, Brooklyn



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



AUGUST 9, 2006

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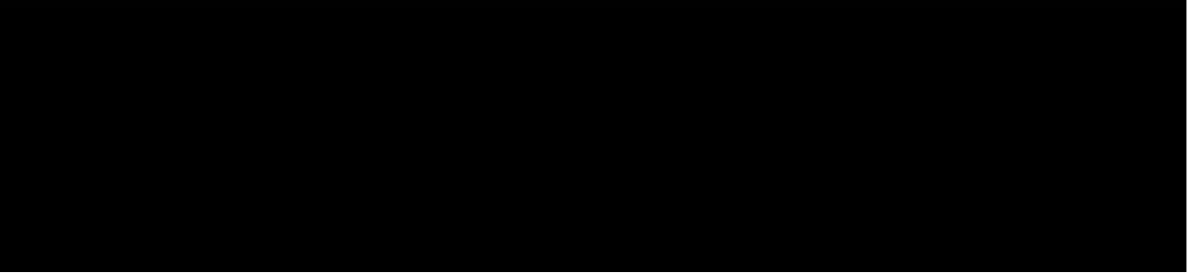
1. INTRODUCTION

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, 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). I.S. 2 (Parkside Preparatory Academy) in Brooklyn is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Parkside Avenue in the vicinity of I.S. 2 is mostly a commercial street. Directly across the street from I.S. 2, a storage area and several retail stores are located. To the east of the school is Nostrand Avenue, a busy commercial street. Kings County Hospital Center is located one block to the east of Nostrand Avenue. A subway station is located on Nostrand Avenue at Parkside Avenue. Nostrand Avenue is a bus route for BK44 and BK49 MTA bus lines (See Exhibit 1 for Aerial Photograph).



Figure 1: Looking east on Parkside Avenue, during student dismissal time

2.3 MEETING WITH SCHOOL REPRESENTATIVES

A Community Board member, the consultant team, and representatives from I.S. 2 met at the school on the afternoon of June 4, 2004 (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:

- Vehicles speeding on Parkside Avenue
- Students crossing mid-block on Parkside Avenue
- No crossing guards assigned to I.S. 2

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



2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to school officials, approximately 35% of the students walk to I.S. 2, 55% arrive via public transportation, and the remaining 10% arrive by private vehicles or school buses. See Table 1 for school’s estimate of the modes of travel.

| Description | Percentage |
|---------------------------------------|-------------|
| Walk | 35% |
| Driven by car, livery cab or mini-bus | 5% |
| School bus | 5% |
| MTA bus or subway | 55% |
| TOTAL | 100% |

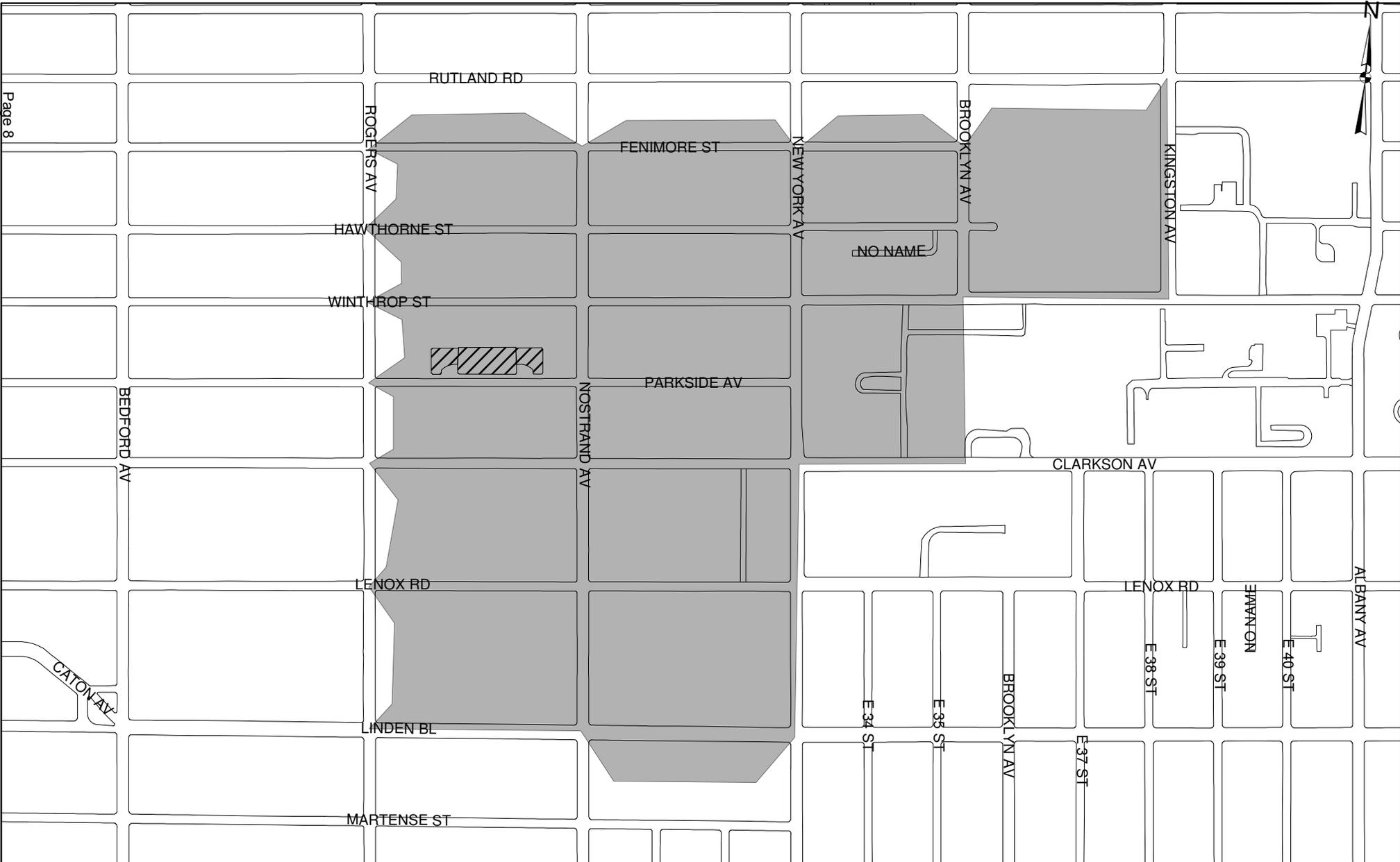
2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

P.S. 92 is located directly across Rogers Avenue from I.S. 2 (P.S. 92 is also a priority school). Numerous restaurants, fast food restaurants, delis, supermarkets and other retail stores are located along Nostrand Avenue. The subway stops for Lines 2 and 5, Kings County Hospital Center and University Hospital of Brooklyn are major pedestrian traffic generators in this area.



1 inch equals 150 feet

EXHIBIT 1
I.S. 2, BROOKLYN
PARKSIDE PREPARATORY ACADEMY
AERIAL PHOTOGRAPH



1 inch equals 500 feet



CATCHMENT AREA

EXHIBIT 2
I.S. 2, BROOKLYN
PARKSIDE PREPARATORY ACADEMY
CATCHMENT AREA

2.8 CROSSING GUARD LOCATIONS

There is no crossing guard assigned to I.S. 2. However, a crossing guard from P.S. 92 is assigned to the intersection of Rogers Avenue and Parkside Avenue.



Figure 2: A crossing guard assigned to P.S. 92 assisting I.S. 2 students at the Rogers Avenue and Parkside Avenue intersection



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 2 Brooklyn

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

Map created on 11/16/2006

EXHIBIT 3 COMM. BOARD: 309
 PRECINCT: 71

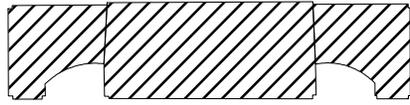


HAWTHORNE ST

ROGERS AV

NOSTRAND AV

WINTHROP ST



PARKSIDE AV

CLARKSON AV

1 inch equals 200 feet



Crossing guard assigned to another school (P.S. 92)

EXHIBIT 4

I.S. 2, BROOKLYN

PARKSIDE PREPARATORY ACADEMY

CROSSING GUARDS

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

According to school representatives, twelve school buses transport I.S. 2 students to and from school, six of which transport special education students. All school buses drop off and pick up students on Parkside Avenue. School buses will park or double-park, depending on traffic conditions, while dropping off or picking up students.



Figure 3: Double-parked school buses on Parkside Avenue in front of I.S. 2

3.2 PARENT DROP-OFF OPERATIONS

School officials have indicated that, approximately 5% of I.S. 2 students are driven to and from school by parents or guardians. Field observations indicated that parents use Parkside Avenue as student pick-up/drop-off area (Figure 4).



Figure 4: School buses and vehicles picking up students during afternoon dismissal time

3.3 PARKING REGULATIONS

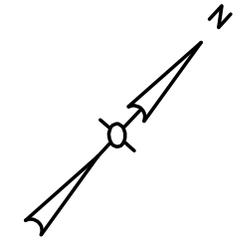
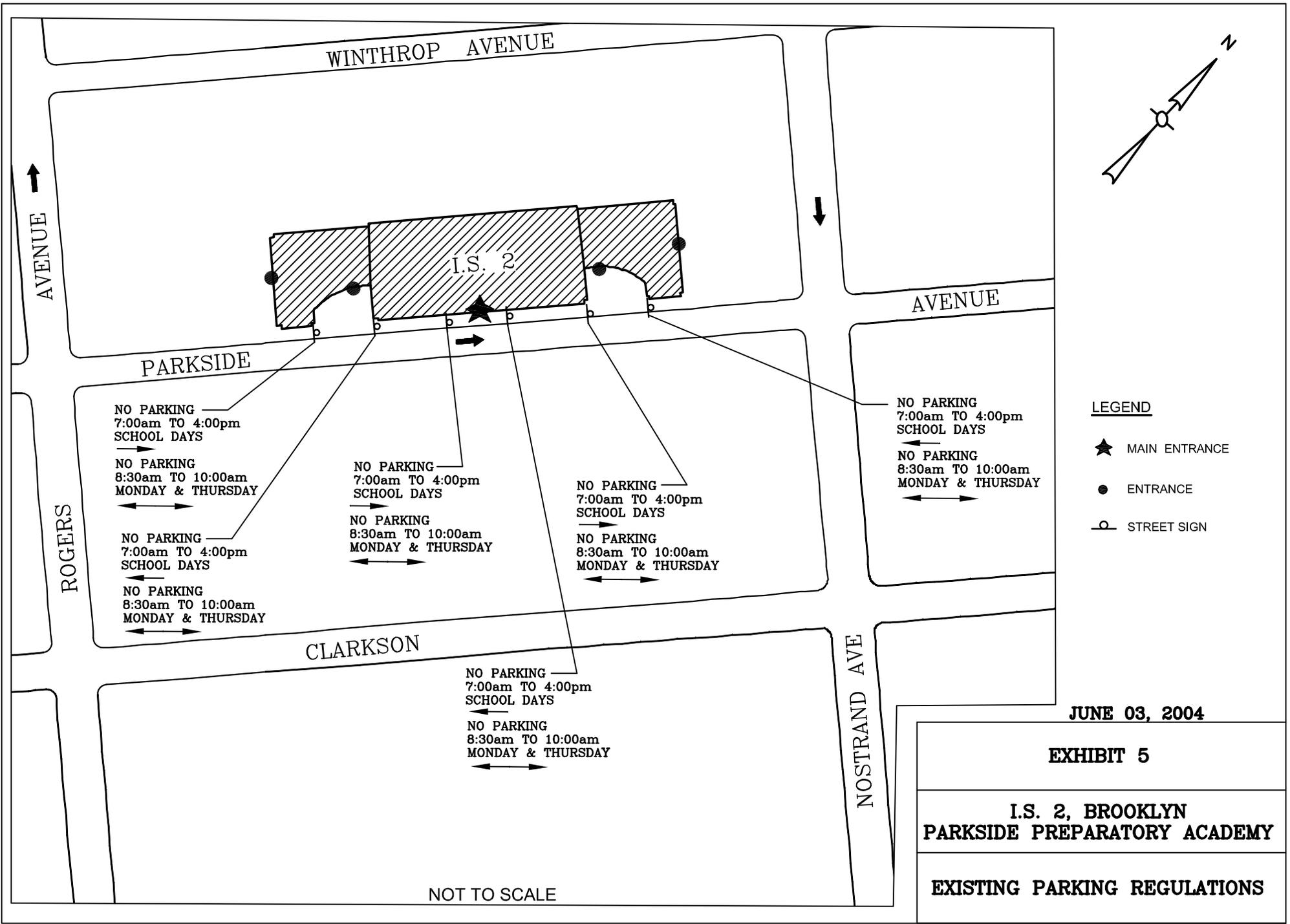
“NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS” parking regulation signs are posted on Parkside Avenue, in front of school and school yard entrances. Exhibit 5 displays parking regulations on Parkside Avenue.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 3, shows existing crosswalk 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 with downward pointing arrows. Signs scheduled to be installed under this program are shown as "existing" on Exhibit 8.



Figure 5: Pavement markings and crosswalks at the Rogers Avenue and Parkside Avenue intersection



- LEGEND**
- ★ MAIN ENTRANCE
 - ENTRANCE
 - STREET SIGN

JUNE 03, 2004

EXHIBIT 5

I.S. 2, BROOKLYN
PARKSIDE PREPARATORY ACADEMY

EXISTING PARKING REGULATIONS

NOT TO SCALE

3.5 ACCIDENT SUMMARY

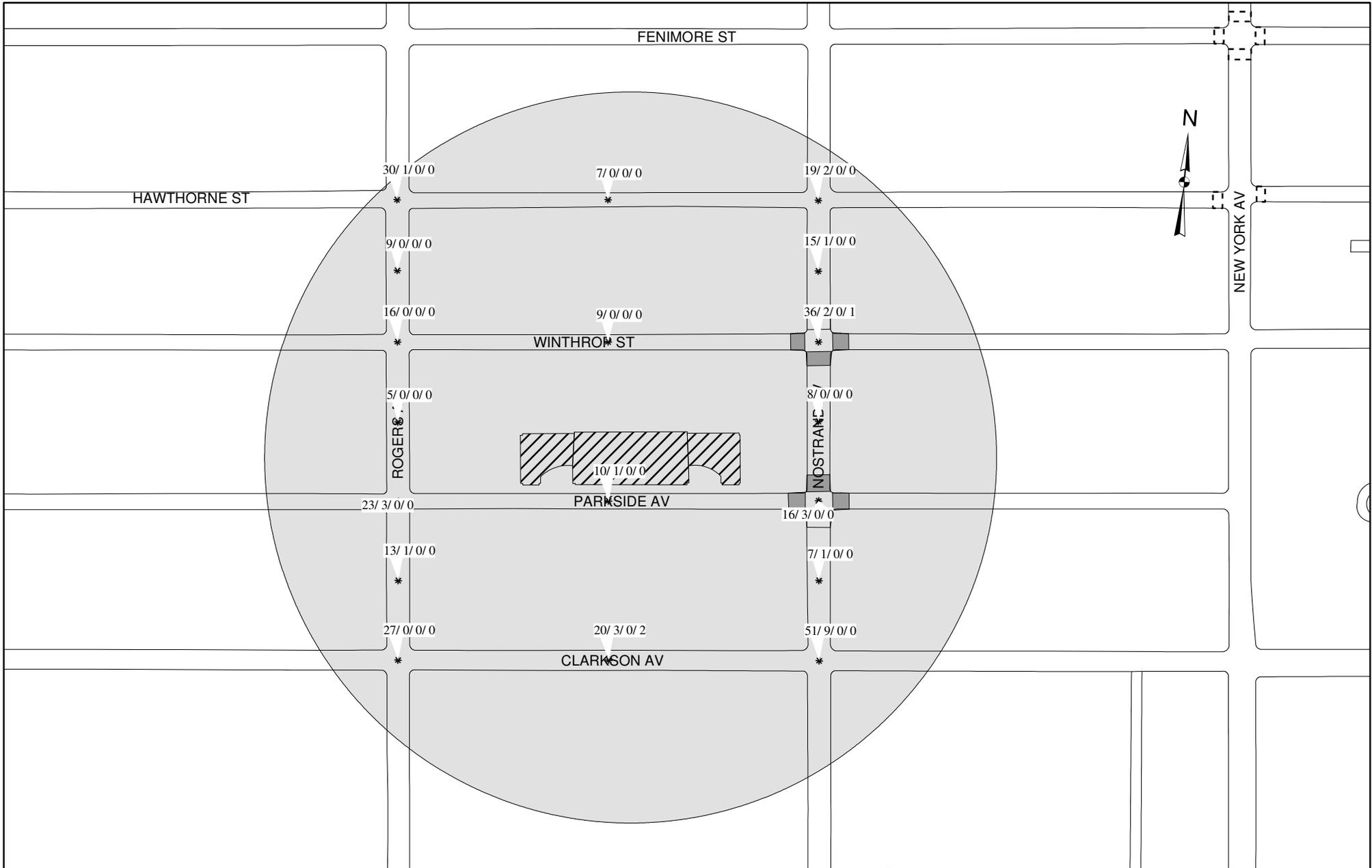
Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of I.S. 2 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of the 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.

| TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000) | | | | |
|---|------------------------|-----------------------------|------------------------------|----------------------------------|
| INTERSECTION | TOTAL ACCIDENTS | PEDESTRIAN ACCIDENTS | PEDESTRIAN FATALITIES | SCHOOL-RELATED* ACCIDENTS |
| Parkside Ave and Rogers Ave | 23 | 3 | 0 | 0 |
| Parkside Ave and Nostrand Ave | 16 | 3 | 0 | 0 |
| Winthrop Street and Rogers Ave | 16 | 0 | 0 | 0 |
| Winthrop Ave and Nostrand Ave | 36 | 2 | 0 | 1 |
| TOTAL | 123 | 9 | 0 | 1 |

| TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004) | | | | |
|---|------------------------|-----------------------------|------------------------------|----------------------------------|
| INTERSECTION | TOTAL ACCIDENTS | PEDESTRIAN ACCIDENTS | PEDESTRIAN FATALITIES | SCHOOL-RELATED* ACCIDENTS |
| Parkside Ave and Rogers Ave | 28 | 4 | 0 | 0 |
| Parkside Ave and Nostrand Ave | 50 | 7 | 0 | 1 |
| Winthrop Street and Rogers Ave | 49 | 5 | 0 | 0 |
| Winthrop Ave and Nostrand Ave | 39 | 4 | 0 | 1 |
| TOTAL | 166 | 20 | 0 | 2 |

* 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. 2

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X

*



| TOTAL ACCIDENTS | PED ACCIDENTS | PED FATAL | SCHOOL PED ACCIDENTS |
|-----------------|---------------|-----------|----------------------|
| X | X | X | X |

1 inch equals 250 feet

EXHIBIT 6

I.S. 2, BROOKLYN

PARKSIDE PREPARATORY ACADEMY

ACCIDENT SUMMARY

3.6 TRAFFIC OPERATIONS AND ISSUES

The following describes traffic accidents and operational issues at intersections in the vicinity of I.S. 2.

School officials noted that three students from I.S. 2 were struck between January and June 2004. School officials stated that on January 12, 2004 at 6:00 pm one 12-year-old male student was struck and killed at the Clarkson Avenue and Bedford Avenue intersection. This student was struck leaving the after school BEACON program. There is no information on what caused this accident. (Note: This accident was not reported in the 2001-2004 NYPD accident data.) Discussion of this intersection is included in the P.S. 92 priority school report and recommendations are shown in that report and sections 4.3.

School officials also said that on June 2, 2004 another student from I.S. 2 was struck on Parkside Avenue in front of the school while running out of school at 1:05 pm. He sustained serious injuries.

The third student was injured but did not sustain serious injuries (no date or location was provided by the school).

3.6.1 Parkside Avenue and Rogers Avenue

Parkside Avenue is a 30-foot wide one-way (eastbound) roadway with one travel lane and parking on both sides. Rogers Avenue is 45-foot wide one-way (northbound) roadway with two travel lanes and parking on both sides of the street. There are school crosswalks at the east, west and north legs of the intersection.

According to accident data shown in Table 2, 23 accidents occurred at this intersection in the three-year period from 1998 to 2000. Three accidents involved pedestrians. There were no school-related accidents or fatalities during this period. According to the accident data report, a pedestrian was struck while crossing Rogers Avenue by a northbound vehicle that was attempting to park. The pedestrian was crossing with the signal, and the accident was attributed to the unsafe parking maneuver of the driver. The second pedestrian was crossing against the signal and was struck by a left turning northbound vehicle. There were no accident details provided for the third pedestrian accident.

To determine the level of pedestrian-vehicle conflict a one-hour traffic count was performed at this intersection between the hours of 2:30 pm – 3:30 pm on June 8, 2005 with the results shown in Exhibit 7. The traffic count at this intersection indicates that there were 147 vehicles/hour turning left from Parkside Avenue onto northbound Rogers Avenue. During the same period, 272 pedestrians crossed Rogers Avenue 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 6: An eastbound left-turning vehicle yielding to school students at the Rogers Avenue and Parkside Avenue

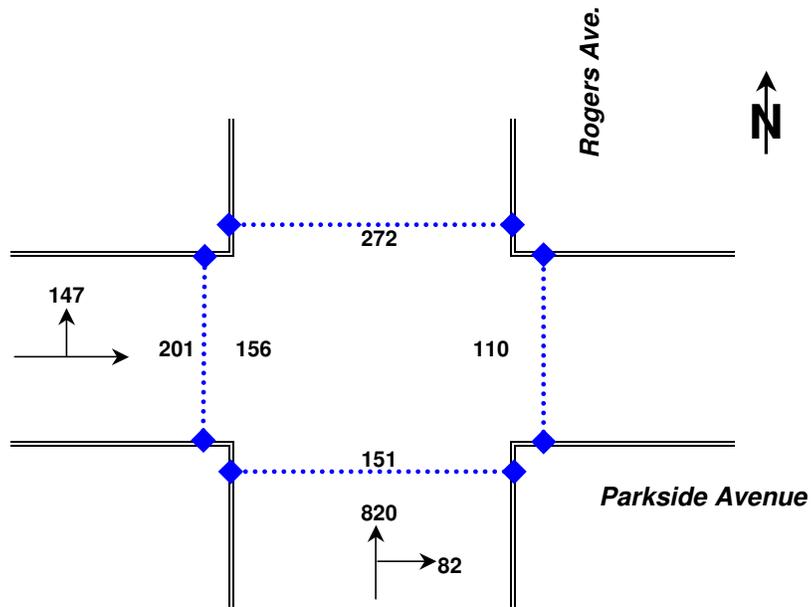
3.6.2 Parkside Avenue and Nostrand Avenue

Nostrand Avenue is a 44-foot wide one-way (southbound), busy and mostly commercial street. There are school crosswalks on the west, east and south legs of the intersection.

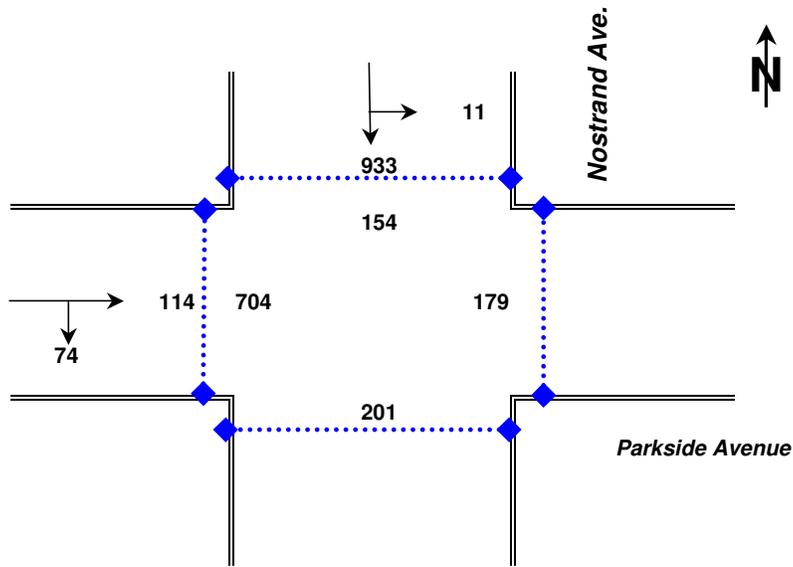
Sixteen accidents occurred at this location during the 1998-2000 time period (Table 2 and Exhibit 6). Three accidents involved pedestrians, though none were student-pedestrians. According to the accident data, one pedestrian was struck while playing in the roadway by a vehicle traveling eastbound. There is no information on the other two pedestrian accidents.

Vehicular and pedestrian counts were conducted at this location between 2:30 pm – 3:30 pm on June 8, 2005. 1238 pedestrians and 1162 vehicles passed through this intersection during that hour. The heaviest pedestrian volume was at the east crosswalk, with 704 pedestrians crossing Parkside Avenue in one hour. The No. 2 and 5 subway stop is located at the intersection of Winthrop Street and Nostrand Avenues.

One Hour Traffic Count Volumes
(2:30 PM - 3:30 AM June 8, 2005)



Intersection of Rogers Avenue and Parkside Avenue



Intersection of Parkside Avenue and Nostrand Avenue

- Number of Pedestrians
- 62
- Pedestrian Crossing
- 53
- Vehicle Movement
- Number of Vehicles

| |
|--|
| EXHIBIT 7 |
| I.S. 2, BROOKLYN PARKSIDE PREPARATORY ACADEMY |
| TRAFFIC COUNTS |



Figure 7: Pedestrians crossing Parkside Avenue against the signal at Nostrand Avenue.



Figure 8: Nostrand Avenue looking south toward the intersection with Parkside Avenue

3.6.3 Nostrand Avenue and Winthrop Street

Winthrop Street is 28-foot wide one-way (westbound) street with one travel lane and parking on both sides. There are school crosswalks on the south, east and west crosswalks.

Thirty-six accidents occurred at this intersection between 1998 and 2000. Two accidents involved pedestrians, one of which was school-related. According to the accident data both pedestrians were struck while crossing against the signal.

Pedestrian traffic is high at this location mostly because of the subway station (located at this intersection) and many retail stores and businesses along Nostrand Avenue.



Figure 9: Nostrand Avenue and Winthrop Street intersection (Nostrand Avenue looking south)

3.6.4 Rogers Avenue and Winthrop Street

The Traffic Safety Plan shows this intersection is marked as a school crossing assigned to P.S. 92. However, it is one of the four intersections abutting I.S.2, and students from this school use it en route to school. There are school crosswalks on the east and west legs of the intersection.

A total of 16 accidents occurred at this location during the 1998-2000 period. There were no pedestrians involved.

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field-verified at all signalized intersections in the vicinity of I.S. 2, and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches.

| TABLE 4: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS | | | | |
|--|------------------------|-----------------------------|----------------------------|-----------------------------|
| Intersection Name | Crosswalk Width (Feet) | Ped. Phase Actual (Seconds) | Ped. Phase Req'd (Seconds) | Timing Adjustment? (Yes/No) |
| Parkside Ave and Rogers Ave | | | | |
| Crossing Parkside Avenue | 30 | 55 | 13 | NO |
| Crossing Rogers Avenue | 45 | 35 | 18 | NO |
| Winthrop St. and Rogers Ave | | | | |
| Crossing Winthrop St. | 28 | 55 | 12 | NO |
| Crossing Rogers Avenue | 45 | 35 | 18 | NO |
| Parkside Ave and Nostrand Ave | | | | |
| Crossing Parkside Avenue | 30 | 70 | 13 | NO |
| Crossing Nostrand Avenue | 45 | 40 | 18 | NO |
| Winthrop St. and Nostrand Ave | | | | |
| Crossing Winthrop St. | 28 | 70 | 12 | NO |
| Crossing Nostrand Avenue | 45 | 40 | 18 | 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. The sidewalk on Parkside Avenue facing I.S. 2 is new and approximately 20 feet wide (Figure 10). On the south side of Parkside Avenue, sidewalks between Rogers Avenue and Nostrand Avenue are narrower and in some sections made of temporary pavement due to on-going construction (see Figure 11).



Figure 10: The sidewalk on Parkside Avenue in front of I.S. 2 (looking east)



Figure 11: Temporary sidewalk on south side of Parkside Avenue (looking west)

4. POTENTIAL MEASURES TO IMPROVE PEDESTRIAN SAFETY

This section describes potential countermeasures. Recommendations are divided into short-term and long-term measures. Short-term measures are those that potentially can be performed in-house, long term measures are proposed capital improvements. See Section 4.3 for additional recommendations developed in conjunction with the study of nearby priority schools.

4.1 SHORT-TERM MEASURES

- Install No-Standing Zone on Parkside Avenue

“NO PARKING 7AM-4 PM, SCHOOL DAYS” parking regulations should be replaced by “NO STANDING 7AM-4 PM, SCHOOL DAYS” for a length of 60’ in front of school entrance on Parkside Avenue to provide sufficient additional frontage for school buses to drop off and pick up students.

- Install a speed reducer on Parkside Avenue in front of I.S. 2 main entrance

A spot speed survey was conducted on Parkside Avenue between Nostrand Avenue and Rogers Avenue on June 9, 2005 from 2:00 pm to 3:00 pm. The objective of the survey was to determine if there is a speeding problem on this section of Parkside Avenue, as reported by several school officials.

The speed study results are shown Table 5 and in the Appendix. Forty-one percent of the surveyed vehicles were exceeding the legal speed limit of 30 mph. Therefore, to reduce speeding in the vicinity of I.S. 2, a speed reducer (hump) should be installed on Parkside Avenue directly in front of the I.S. 2.

| TABLE 5: SPOT SPEED STUDIES | | |
|---|--------------------|-----------------------------|
| LOCATION | MEDIAN SPEED (MPH) | 85TH PERCENTILE SPEED (MPH) |
| Parkside Avenue between Nostrand Avenue and Rogers Avenue | 29 | 35 |

- Review bus management / staging procedures

Sixty feet of curbside space has been provided for school bus operations. This may require some buses to stage at other locations until sufficient curbside space becomes available. School officials should review the bus operations at the school and consider the following:

- Restrict drop-off/pickup of students from school buses except at the designated curbside fronting the school

- Define a staging area for buses to queue until they can safely pull into the curbside directly fronting the school for drop-off/pick-up operations.

It is important that students do not enter or exit buses while the buses are in the staging area. By reducing the number of students entering or exiting the buses at one time, it may be easier to manage the students' actions at arrival and dismissal times.

- 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.

- Submit Request to Police Department for Crossing Guard

It is recommended that a crossing guard be requested for the intersection of Nostrand Avenue and Parkside Avenue.

- Install a new school crosswalk at:

- Nostrand Avenue and Clarkson Avenue – north and west leg

A school crosswalk at this location should be installed to facilitate students walking to I.S. 2 (see Exhibit 8). The Nostrand Avenue and Clarkson Avenue intersection is signal-controlled.

- 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.

4.2 LONG-TERM MEASURES

- Utilization of buses equipped with left hand side exit doors

Currently buses unload I.S. 2 students through right hand side doors. Since the school entrance is on the left side of the bus, it is recommended that buses with left hand side doors be used to transport students to and from I.S. 2.

This measure in conjunction with “NO STANDING 7AM-4PM, SCHOOL DAYS” signs in front of the school entrance would allow students to load and unload from the bus, at the curbside, directly in front of the school.

- Install curb extensions at the following intersections

- Nostrand Avenue and Parkside Avenue
- Nostrand Avenue and Winthrop Street
- Nostrand Avenue and Clarkson Avenue

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

The purpose of the curb extensions is to reduce speeds of vehicles approaching and turning at these heavily utilized 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.

(See Section 4.3 for additional recommendations developed in conjunction with the study of nearby priority schools)

4.3 ADDITIONAL RECOMMENDATIONS FOR PRIORITY SCHOOLS IN THE VICINITY

4.3.1 RECOMMENDATIONS FOR P.S. 92:

(All references in section 4.3.1 refer to the P.S. 92 Priority School Report)

- Install graphic “Yield to Pedestrian” sign

A “YIELD TO PEDESTRIAN” sign should be installed at the intersection of Rogers Avenue and Clarkson Avenue (on the northbound approach of Rogers Avenue, as shown in Exhibit 8).

- Install speed reducers (humps) on Parkside Avenue in front of P.S. 92 main entrance

A spot speed survey was conducted on Parkside Avenue between Nostrand Avenue and Rogers Avenue on July 21, 2005 from 12:00 pm to 3:00 pm. The objective of the survey was to determine if there is a speeding problem along Parkside Avenue between Flatbush Avenue and Nostrand Avenue.

The speed study results are shown Table 5 and in the Appendix. The 85th percentile speed is 33 mph, which exceeded the legal speed limit of 30 mph. Also, a previous speed study conducted on Parkside Avenue (for I.S. 2 report) shows that 41% of vehicles traveling on Parkside Avenue exceed the 30 mph speed limit. Therefore, to reduce speeding along Parkside Avenue in the vicinity of P.S. 92, speed reducers (humps) should be installed on Parkside Avenue.

(Since the original recommendation, NYCDOT has approved two speed reducers (hump) on Parkside Avenue.

| TABLE 6: SPOT SPEED STUDIES | | |
|---|--------------------|-----------------------------|
| LOCATION | MEDIAN SPEED (MPH) | 85TH PERCENTILE SPEED (MPH) |
| Parkside Avenue btw. Bedford Avenue and Rogers Avenue | 26 | 33 |

- Implement LPI (leading pedestrian interval) at Parkside Avenue and Flatbush Avenue

A one-hour traffic count was conducted on July 21, 2005 from 4:30 pm to 5:30 pm at this intersection. The results are shown in Exhibit 7. A total of 355 pedestrians crossed Parkside Avenue at the west crosswalk during this hour, while conflicting with 346 (233+113) turning vehicles/hour. During the same hour, 399 pedestrians crossed Parkside Avenue at the east crosswalk, while conflicting with 129 (103+26) vehicles. Therefore, a six second LPI (leading pedestrian interval) is recommended to be implemented for pedestrians crossing Parkside Avenue.

The Leading Pedestrian Interval (LPI) is a signal timing strategy that is designed to minimize turning vehicle/pedestrian conflicts. The LPI provides an exclusive "Walk" period (approximately six to ten seconds) at the start of the signal phase, long enough for pedestrians to establish their presence in the crosswalk.

NYCDOT will further investigate the feasibility of an LPI at this location.

▪ *Install a new school crosswalk at:*

- Bedford Avenue and Hawthorne Street – East leg
- Bedford Avenue and Winthrop Street – South leg

A school crosswalk at this location should be installed to facilitate students walking to P.S. 92 (see Exhibit 8).

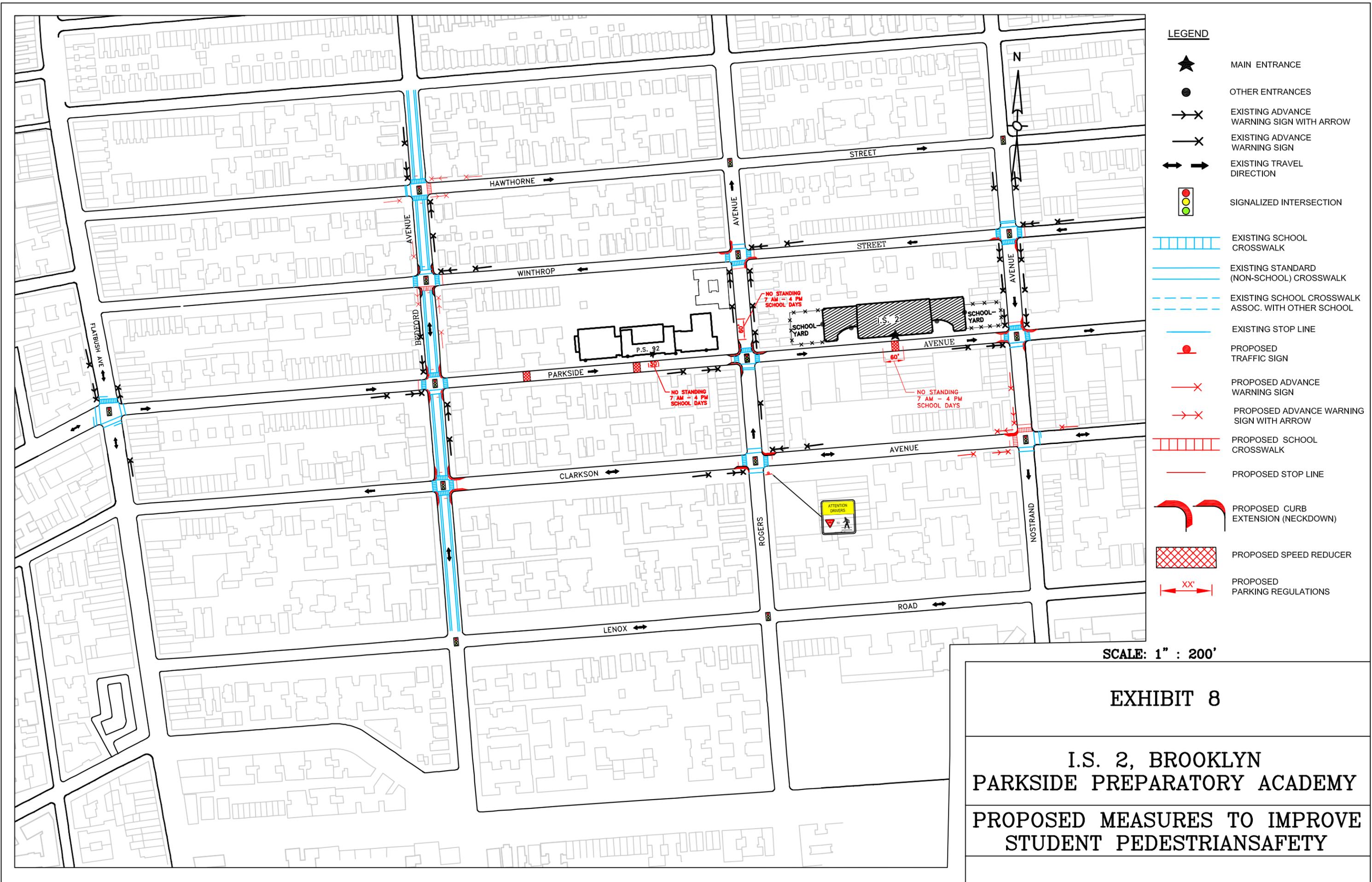
▪ *Consider curb extensions at the following intersections:*

- Bedford Avenue and Parkside Avenue
- Bedford Avenue and Clarkson Avenue
- Bedford Avenue and Winthrop Street
- Rogers Avenue and Clarkson Avenue
- Rogers Avenue and Parkside Avenue
- Rogers Avenue and Winthrop Street

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

The purpose of the curb extensions is to reduce speeds of vehicles approaching and turning at these heavily utilized 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.



- LEGEND**
- ★ MAIN ENTRANCE
 - OTHER ENTRANCES
 - X EXISTING 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 STOP LINE
 - PROPOSED TRAFFIC SIGN
 - X PROPOSED ADVANCE WARNING SIGN
 - X PROPOSED ADVANCE WARNING SIGN WITH ARROW
 - ▬▬▬ PROPOSED SCHOOL CROSSWALK
 - PROPOSED STOP LINE
 - 👉 PROPOSED CURB EXTENSION (NECKDOWN)
 - ▨ PROPOSED SPEED REDUCER
 - XX' PROPOSED PARKING REGULATIONS

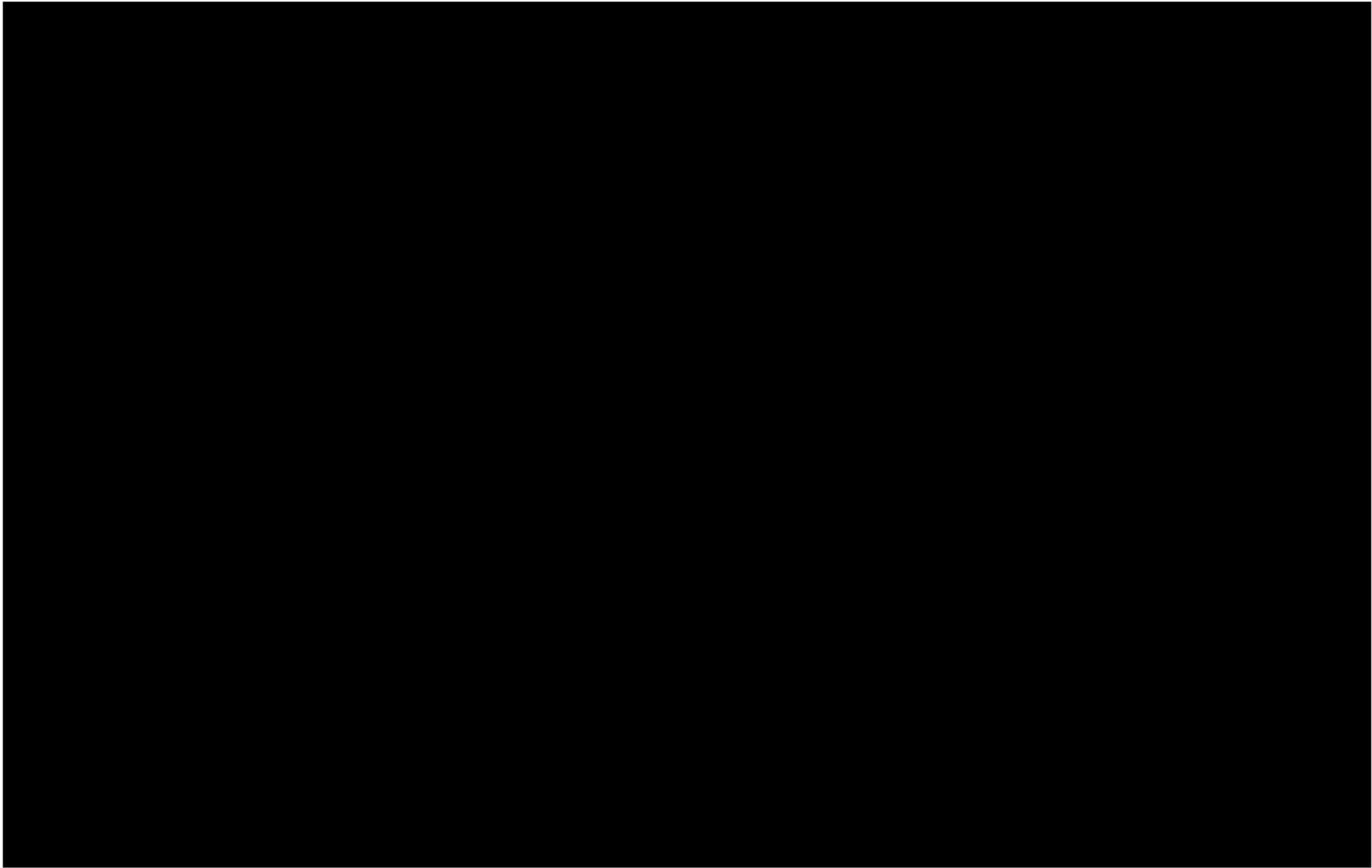
SCALE: 1" : 200'

EXHIBIT 8

**I.S. 2, BROOKLYN
PARKSIDE PREPARATORY ACADEMY**

**PROPOSED MEASURES TO IMPROVE
STUDENT PEDESTRIAN SAFETY**

APPENDIX



SPOT SPEED STUDY

Date: **June 9, 2005** Time: **2:00 pm - 3:00 pm**
 Location: **Parkside Avenue btw. Rogers Avenue & Nostrand Avenue**
 Surveyor: **The RBA Group**

School: **I.S. 2**
 Direction: **East-West**
 Comments:

| Speed S (mph) | No. of Vehicles in Group n | % of Vehicles in Group | % Cumulative Vehicles | nS | nS ² |
|---------------------|----------------------------------|---------------------------|--------------------------|------|-----------------|
| 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 | 2 | 5.1% | 5.1% | 40 | 800 |
| 21 | 2 | 5.1% | 10.3% | 42 | 882 |
| 22 | 2 | 5.1% | 15.4% | 44 | 968 |
| 23 | 3 | 7.7% | 23.1% | 69 | 1587 |
| 24 | 2 | 5.1% | 28.2% | 48 | 1152 |
| 25 | 2 | 5.1% | 33.3% | 50 | 1250 |
| 26 | 2 | 5.1% | 38.5% | 52 | 1352 |
| 27 | 2 | 5.1% | 43.6% | 54 | 1458 |
| 28 | 2 | 5.1% | 48.7% | 56 | 1568 |
| 29 | 2 | 5.1% | 53.8% | 58 | 1682 |
| 30 | 2 | 5.1% | 59.0% | 60 | 1800 |
| 31 | 2 | 5.1% | 64.1% | 62 | 1922 |
| 32 | 3 | 7.7% | 71.8% | 96 | 3072 |
| 33 | 2 | 5.1% | 76.9% | 66 | 2178 |
| 34 | 1 | 2.6% | 79.5% | 34 | 1156 |
| 35 | 1 | 2.6% | 82.1% | 35 | 1225 |
| 36 | 1 | 2.6% | 84.6% | 36 | 1296 |
| 37 | 1 | 2.6% | 87.2% | 37 | 1369 |
| 38 | 1 | 2.6% | 89.7% | 38 | 1444 |
| 39 | 2 | 5.1% | 94.9% | 78 | 3042 |
| 40 | 1 | 2.6% | 97.4% | 40 | 1600 |
| 41 | 1 | 2.6% | 100.0% | 41 | 1681 |
| 42 | 0 | 0.0% | 100.0% | 0 | 0 |
| 43 | 0 | 0.0% | 100.0% | 0 | 0 |
| 44 | 0 | 0.0% | 100.0% | 0 | 0 |
| 45 | 0 | 0.0% | 100.0% | 0 | 0 |
| 46 | 0 | 0.0% | 100.0% | 0 | 0 |
| 47 | 0 | 0.0% | 100.0% | 0 | 0 |
| 48 | 0 | 0.0% | 100.0% | 0 | 0 |
| 49 | 0 | 0.0% | 100.0% | 0 | 0 |
| 50 | 0 | 0.0% | 100.0% | 0 | 0 |
| 51 | 0 | 0.0% | 100.0% | 0 | 0 |
| 52 | 0 | 0.0% | 100.0% | 0 | 0 |
| 53 | 0 | 0.0% | 100.0% | 0 | 0 |
| 54 | 0 | 0.0% | 100.0% | 0 | 0 |
| 55 | 0 | 0.0% | 100.0% | 0 | 0 |
| 56 | 0 | 0.0% | 100.0% | 0 | 0 |
| | 39 | 100.0% | | 1136 | 34484 |

Mean Speed = 29.1 mph
 Standard Deviation = 6.1 mph
 Margin of Error (95% Confidence) = ± 1.9 mph

Median Speed = 29.1 mph
 15th Percentile Speed = 22.8 mph
 85th Percentile Speed = 35.4 mph

SPOT SPEED STUDY

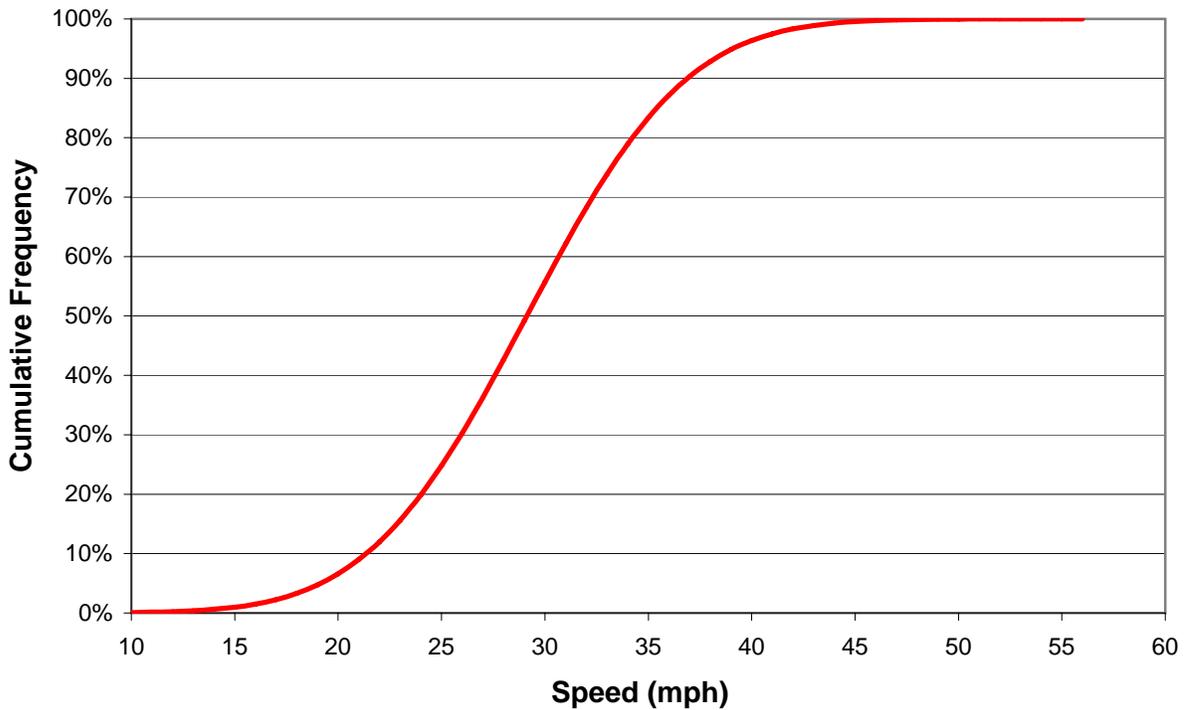
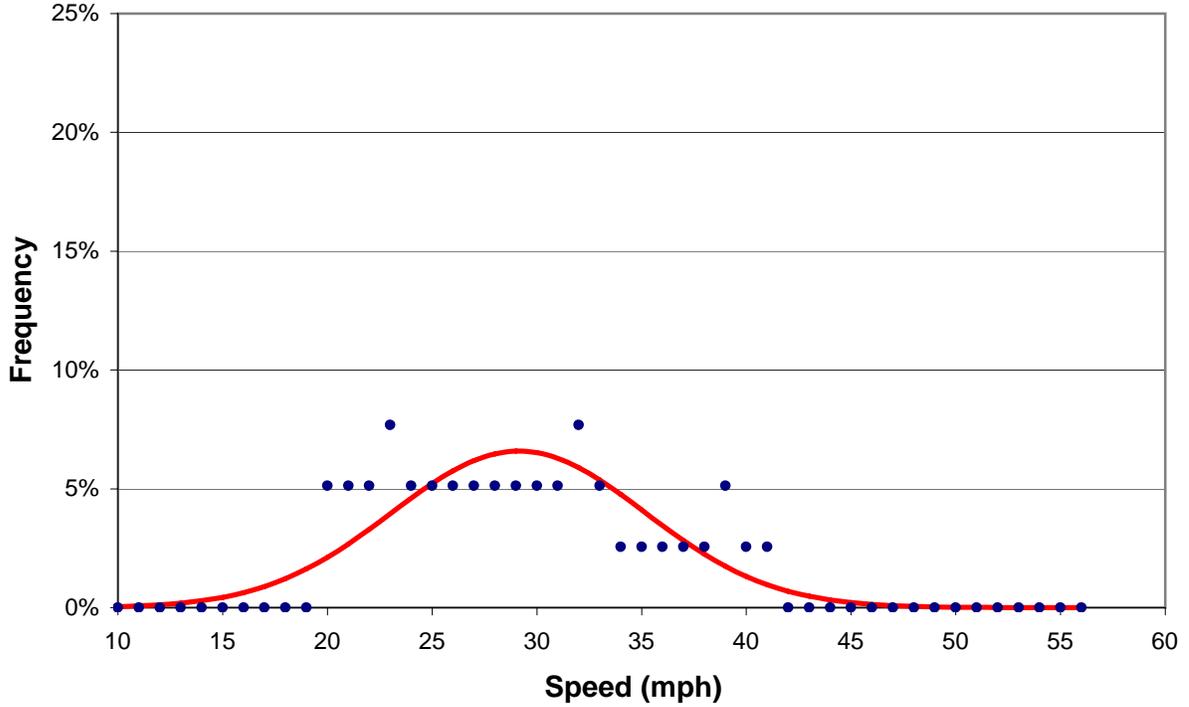
Date: **June 9, 2005**
 Location: **Parkside Avenue btw. Rogers Avenue & Nostrand Avenue**
 Surveyor: **The RBA Group**

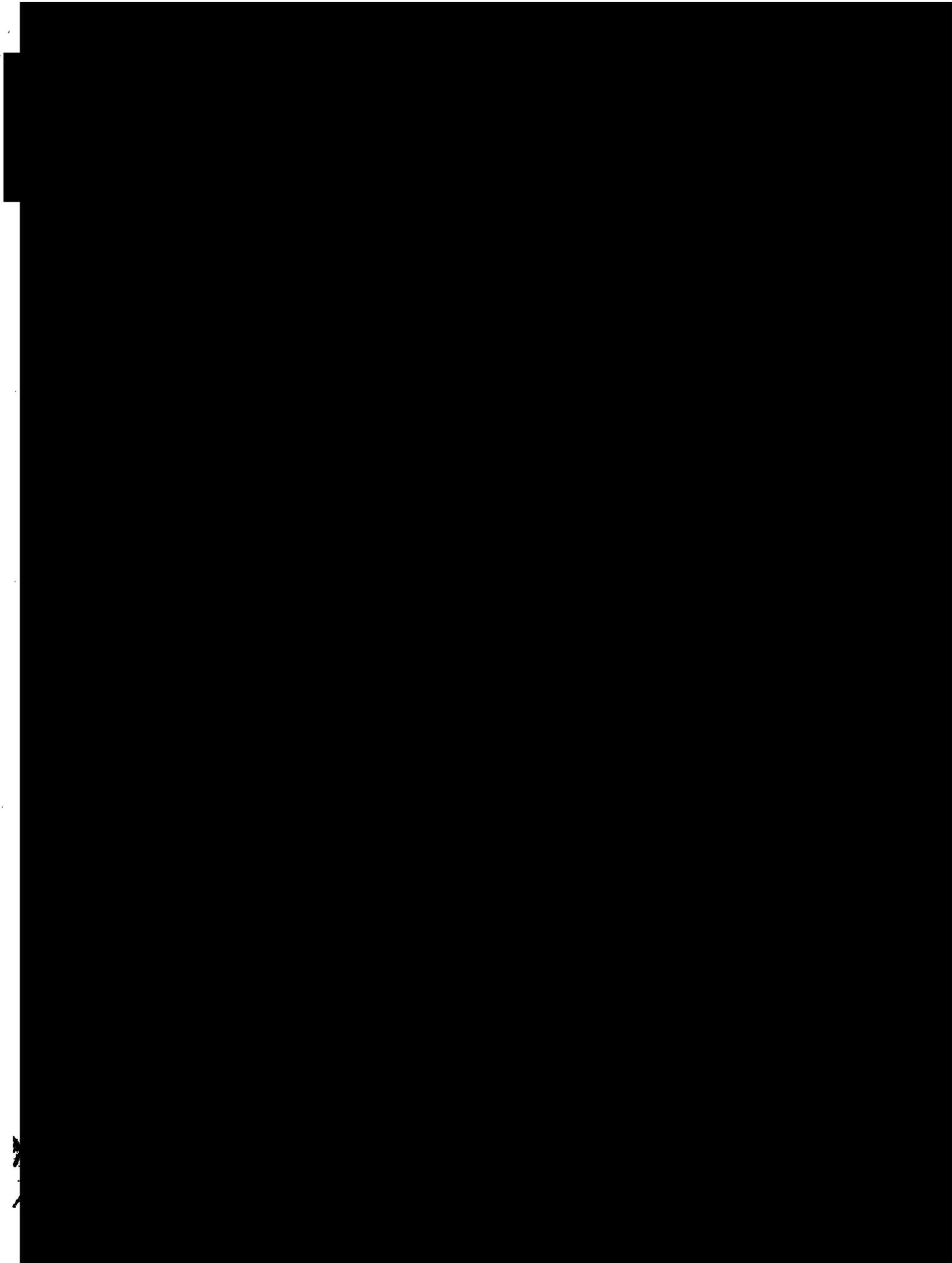
Time: **2:00 pm - 3:00 pm**

School: **I.S. 2**
 Direction: **East-West**
 Comments:

Mean Speed = 29.1 mph
 Standard Deviation = 6.1 mph
 Margin of Error (95% Confidence) = ± 1.9 mph

Median Speed = 29.1 mph
 15th Percentile Speed = 22.8 mph
 85th Percentile Speed = 35.4 mph





I.S. 2
 June 8, 2005
 2:30 pm - 3:30 pm

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

Site:
 Date: 06/08/05

Combined
 *Peds not included in table data

| Begin Time | Total | NOSTRAND AVENUE | | | PARKSIDE AVENUE | | | NOSTRAND AVENUE | | | PARKSIDE AVENUE | |
|------------|--------------|-----------------|------------|-----------|-----------------|---|---|-----------------|---|-----|-----------------|------------|
| | | S-T | S-L | | | | | | | E-R | E-T | |
| 14:30:00 | 204 | 0 | 157 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 32 |
| 14:45:00 | 209 | 0 | 243 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 28 |
| 15:00:00 | 291 | 0 | 253 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 19 |
| 15:15:00 | 338 | 0 | 280 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 35 |
| | 1,132 | 0 | 933 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 74 | 114 |

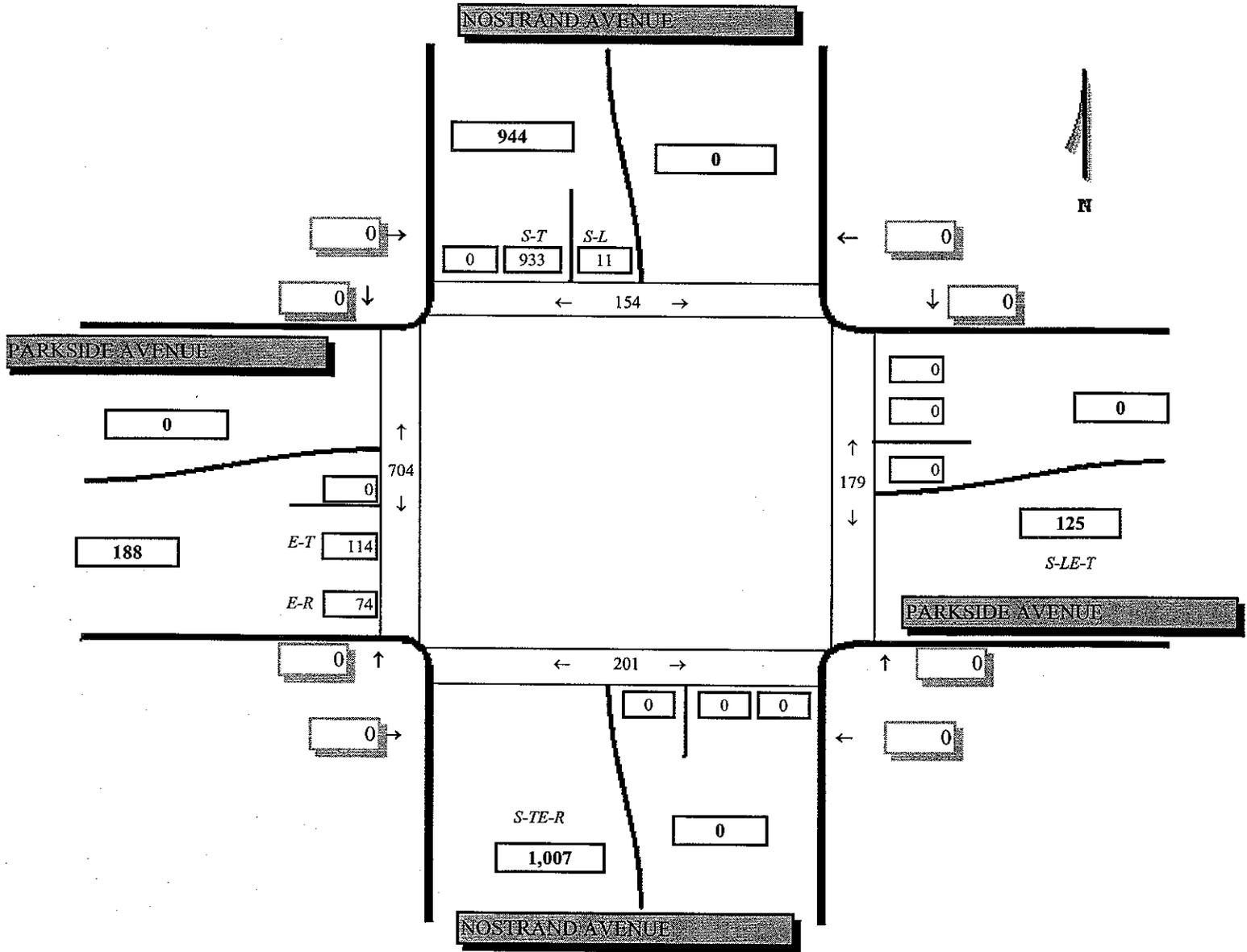
| Peak Volume Periods (1 hour Res 15 min) | | | | | |
|---|----------|-------------|-------------|-------------|--------|
| | Period | | Peak Period | | Volume |
| AM | 05:00:00 | To 10:00:00 | NA | To NA | 0 |
| Noon | 10:00:00 | To 15:00:00 | 14:15:00 | To 15:15:00 | 503 |
| PM | 15:00:00 | To 20:00:00 | 14:30:00 | To 15:30:00 | 1,132 |

I.S. 2
June 8, 2005
2:30 pm - 3:30 pm

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

Site:
Date: 06/08/05

Combined
*Peds not included in table data



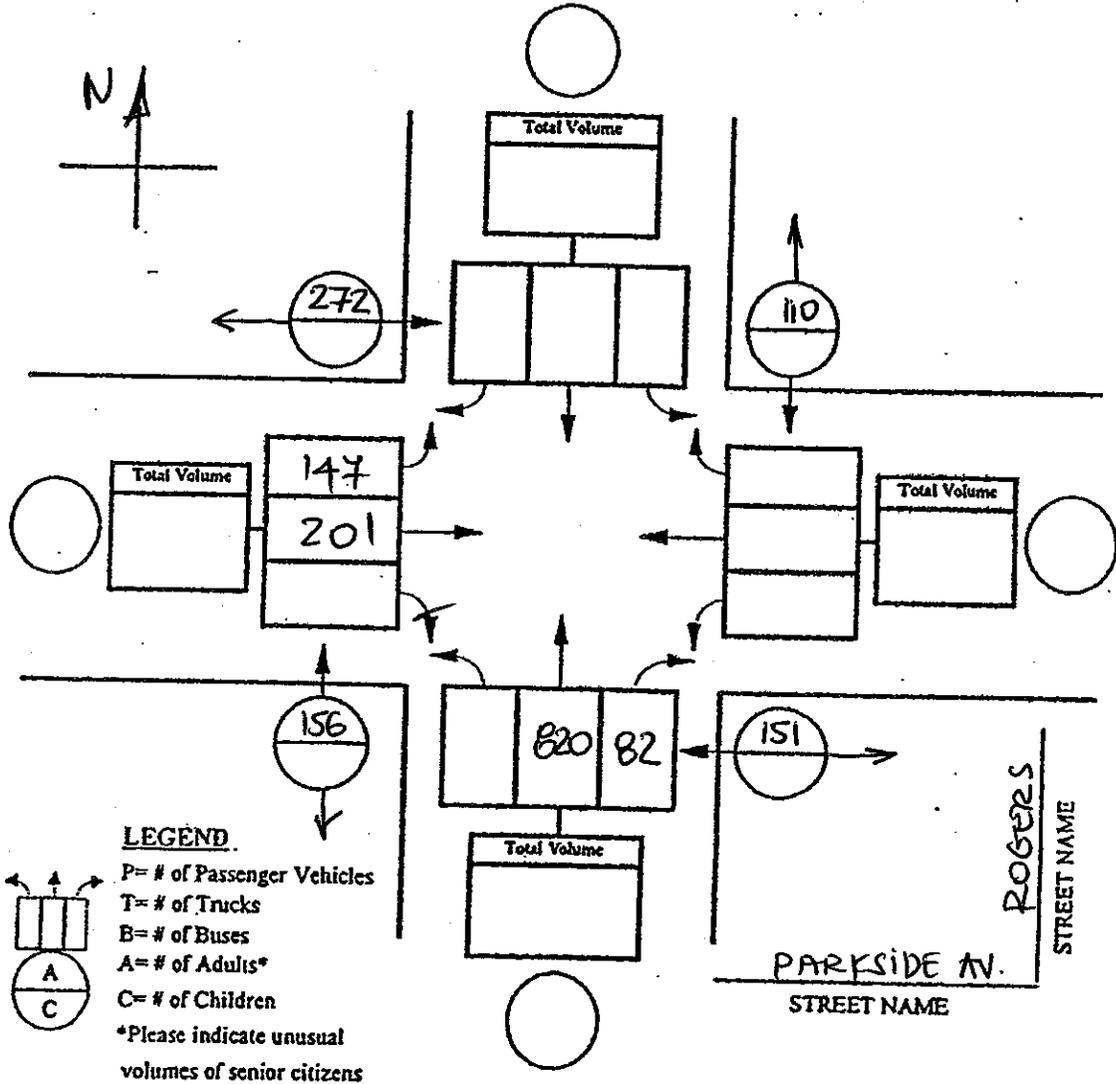
VOLUME CLASSIFICATION AND TURNING COUNTS

DATE: 6-8-05

TIME: 2:30 PM - 3:30 PM

DAY: WEDNESDAY

INSPECTOR: _____



COMMENTS:

- PARKSIDE IS ONE-WAY EASTBOUND
 - ROGERS IS ONE-WAY NORTHBOUND

| | |
|-------|--|
| MAJOR | |
| MINOR | |
| PEDS | |
| SC | |
| Other | |

I.S. 2

JUL 17 2004 10:22

INDIAN TRAFFIC & SAFETY

P. 11/12

SPEED DATA & ANALYSIS SHEET

| ED | CK.#1. | CK.#2 | CK.#3 | CK.#4 | COMB. |
|-------|--------|-------|-------|-------|-------|
| .83 | | | | | |
| .81 | | | | | |
| .79 | | | | | |
| .77 | | | | | |
| .75 | | | | | |
| .73 | | | | | |
| .71 | | | | | |
| .69 | | | | | |
| .67 | | | | | |
| .65 | | | | | |
| .63 | | | | | |
| .61 | | | | | |
| .59 | | | | | |
| .57 | | | | | |
| .55 | | | | | |
| .53 | | | | | |
| .51 | | | | | |
| .49 | | | | | |
| 46-47 | | | | | |
| 44-45 | | | | | |
| 42-43 | | | | | |
| 40-41 | | | | | |
| 38-39 | | | | | |
| 36-37 | | | | | |
| 34-35 | | | | | |
| 32-33 | | | | | |
| 30-31 | | | | | |
| 28-29 | | | | | |
| 26-27 | | | | | |
| 24-25 | | | | | |
| 22-23 | | | | | |
| 20-21 | | | | | |

Road PARKSIDE AVENUE

County _____ Town _____

Locality _____

| Speed Characteristic | Check No.1 | Check No.2 | Check No.3 | Check No.4 | Comb. |
|----------------------|------------|------------|------------|------------|-------|
| 85% Speed | | | | | |
| 10-Mile Pace | | | | | |
| % in Pace | | | | | |
| Legal Limit | | | | | |
| % over Legal Limit | | | | | |
| % over MPH | | | | | |
| % over MPH | | | | | |
| % over MPH | | | | | |

Check No.1

Date: 6-9-05

Time: From 2:00 To 3:00

Weather: CLEAR

Location: PARKSIDE AVE B/W ROGERS AVE

Pavement:

NORSTAND AVE.

Check No.1

Date:

Time: From _____ To _____

Weather:

Location:

Pavement:

Check No.1

Date:

Time: From _____ To _____

Weather:

Location:

Pavement:

Check No.1

Date:

Time: From _____ To _____

Weather:

Location:

Pavement:

ANALYSIS OF INTERSECTION TIMING

INTERSECTION
TYPE OF SYSTEM

NOSTRAND AVE @ WINTHROP STREET

TYPE OF CONTROL

Semi- Actuated

TIME OF OPERATION

Computer

CYCLE LENGTH

Mon-Fri 05:30AM - 10:15 AM, 03:00PM - 07:30PM

INT. OFFSET

120 Sec

MOVEMENT

96

GREEN

AMBER

RED

NOSTRAND AVE

65

3

2

WINTHROP STREET

45

3

2

TIME OF OPERATION

Mon-Fri 10:15AM - 03:00PM, 07:30PM-12:00Midnight, 04:00AM- 05:30AM,

Weekend - AAT

CYCLE LENGTH

90

INT. OFFSET

66

MOVEMENT

GREEN

AMBER

RED

NOSTRAND AVE

47

3

2

WINTHROP STREET

33

3

2

TIME OF OPERATION

Mon-Fri 12:00Midnight - 04:00AM

CYCLE LENGTH

60

INT. OFFSET

36

MOVEMENT

GREEN

AMBER

RED

NOSTRAND AVE

30

3

2

WINTHROP STREET

20

3

2

FM

ANALYSIS OF INTERSECTION TIMING

| | | | |
|---------------------------------|---|---------------------|-------------------|
| <u>INTERSECTION</u> | Nostrand Avenue@ Parkside Avenue | | |
| <u>TYPE OF SYSTEM</u> | Semi - Actuated | | |
| <u>TYPE OF CONTROL</u> | Computer | | |
| <u>TIME OF OPERATION</u> | Mon-Fri 5:30AM - 10:15AM, 03:00PM- 07:30PM | | |
| <u>CYCLE LENGTH</u> | 120Sec | | |
| <u>INT. OFFSET</u> | 103 | | |
| <u>MOVEMENT</u> | <u>GREEN</u> | <u>AMBER</u> | <u>RED</u> |

| | | | |
|------------------------|-----------|----------|----------|
| Nostrand Avenue | 61 | 3 | 2 |
| Parkside Avenue | 49 | 3 | 2 |

| | | | |
|---------------------------------|---|--|--|
| <u>TIME OF OPERATION</u> | Mon-Fri 10:15AM - 03:00PM, 07:30PM - 12:00Midnight, 04:00AM-05:30AM, Weekend - AAT | | |
|---------------------------------|---|--|--|

| | | | |
|----------------------------|---------------------|---------------------|-------------------|
| <u>CYCLE LENGTH</u> | 90 Sec | | |
| <u>INT. OFFSET</u> | 73 | | |
| <u>MOVEMENT</u> | <u>GREEN</u> | <u>AMBER</u> | <u>RED</u> |

| | | | |
|------------------------|-----------|----------|----------|
| Nostrand Avenue | 44 | 3 | 2 |
| Parkside Avenue | 36 | 3 | 2 |

| | | | |
|---------------------------------|--|---------------------|-------------------|
| <u>TIME OF OPERATION</u> | Mon-Fri 12:00Midnight - 04:00AM | | |
| <u>CYCLE LENGTH</u> | 60Sec | | |
| <u>INT. OFFSET</u> | 43 | | |
| <u>MOVEMENT</u> | <u>GREEN</u> | <u>AMBER</u> | <u>RED</u> |

| | | | |
|------------------------|-----------|----------|----------|
| Nostrand Avenue | 28 | 3 | 2 |
| Parkside Avenue | 22 | 3 | 2 |

F.M

ANALYSIS OF INTERSECTION TIMING

INTERSECTION **ROGERS AVENUE @ PARKSIDE AVENUE**

TYPE OF SYSTEM **Non - Actuated**

TYPE OF CONTROL **Mechanical**

TIME OF OPERATION **At All Times**

CYCLE LENGTH **100Sec**

INT. OFFSET **82**

| <u>MOVEMENT</u> | <u>GREEN</u> | <u>AMBER</u> | <u>RED</u> |
|-----------------|--------------|--------------|------------|
| PROGRS AVENUE | 60 | 3 | 2 |
| PARKSIDE AVENUE | 30 | 3 | 2 |

FM

ANALYSIS OF INTERSECTION TIMING

INTERSECTION ROGERS AVENUE @ WINTHROP STREET

TYPE OF SYSTEM Non - Actuated

TYPE OF CONTROL Mechanical

TIME OF OPERATION At All Times

CYCLE LENGTH 100Sec

INT. OFFSET 88

| <u>MOVEMENT</u> | <u>GREEN</u> | <u>AMBER</u> | <u>RED</u> |
|-----------------|--------------|--------------|------------|
| PROGRS AVENUE | 55 | 3 | 2 |
| WINTHROP STREET | 35 | 3 | 2 |

FM