

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



**School Safety Engineering Project  
FINAL REPORT: INCARNATION SCHOOL, Manhattan**



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



**MARCH 22, 2006**



**School Safety Engineering Project  
Incarnation School, Manhattan**

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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). Incarnation School in Manhattan is one of the 135 priority schools.

## 2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS

### 2.2 NEIGHBORHOOD DESCRIPTION

Incarnation School is located at 570 West 175<sup>th</sup> Street, in the mid-block between St. Nicholas Avenue and Audubon Avenue.



*Figure 1: Looking west on West 175<sup>th</sup> Street, Incarnation is at the left side*

The surrounding area is generally a mix of residential buildings and commercial establishments. West 175<sup>th</sup> Street and West 174<sup>th</sup> Street are primarily residential roadways, with multi-story residential buildings on both sides of the street. The Church of Incarnation is located on West 175<sup>th</sup> Street, right next to the school. West 175<sup>th</sup> Street also has some storefronts. St. Nicholas Avenue and Audubon Avenue are lined with residential buildings with first floor commercial establishments. Broadway is a highly commercial roadway with numerous retail stores (see Exhibit 1 for Aerial Photograph).

There are four bus routes operating in the vicinity of Incarnation School, M3, M5, M100 and Bx7. In addition, a subway station for the 1 line is located on St. Nicholas Avenue with entrances at West 181<sup>st</sup> Street and a second subway station for the A line is located on Fort Washington Avenue with entrances at West 175<sup>th</sup> Street.

### 2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team and the principal of Incarnation School met at the school on the morning of June 3, 2004.

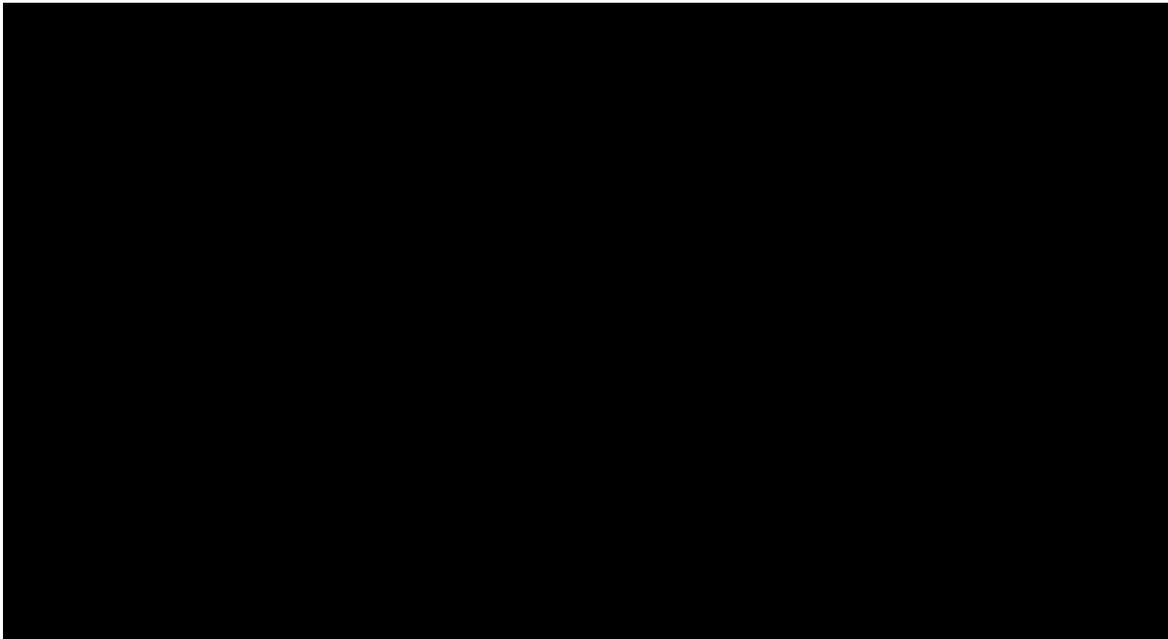
### **2.3 MEETING WITH SCHOOL REPRESENTATIVES**

The consultant team and the principal of Incarnation School met at the school on the morning of June 3, 2004.

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

- Vehicles speeding on West 175<sup>th</sup> Street
- Lack of a school crosswalk across West 175<sup>th</sup> Street at Wadsworth Avenue
- Lack of a school crossing guard at St. Nicholas Avenue and West 175<sup>th</sup> Street
- The safety of student pedestrians crossing the wide street of St. Nicholas Avenue at the intersection of West 175<sup>th</sup> Street

See the Appendix for a list of attendees.





1 inch equals 200 feet

**EXHIBIT 1  
INCARNATION SCHOOL  
MANHATTAN  
AERIAL PHOTOGRAPH**

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

According to the school principal, 88% of the students walk to Incarnation School, 7% of students are driven by a parent or guardian, and the remaining 5% arrive via public transportation. See Table 1 for school’s estimate of modal split.

<b>TABLE 1: MODE OF TRAVEL</b> (As estimated by school officials)	
<b>Description</b>	<b>Percentage</b>
Walk	88%
Driven by a parent or guardian	7%
School bus	0%
MTA bus or subway	5%
<b>TOTAL</b>	<b>100%</b>

**2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS**

There are three other public schools in the vicinity of Incarnation:

- P.S. 210 on Broadway between West 173<sup>rd</sup> Street and West 174<sup>th</sup> Street, three blocks southwest of Incarnation.
- P.S. 173 on Fort Washington Avenue between West 173<sup>rd</sup> Street and West 174<sup>th</sup> Street, adjacent to P.S. 210.
- P.S. 115 is on West 177<sup>th</sup> Street, two blocks north of Incarnation School.

Many commercial stores are located in the vicinity of Incarnation School. The students frequently visit these stores while walking to and from the school. However, the students are not allowed to leave West 175<sup>th</sup> Street during school hours.

There are two bus stops on Broadway between West 175<sup>th</sup> Street and West 176<sup>th</sup> Street, one serving the northbound M100 and Bx7 and the other one serving the southbound M100 and Bx7. In addition, there is a bus stop for the M3 on St. Nicholas Avenue at the northwest corner with West 174<sup>th</sup> Street.

**2.8 CROSSING GUARD LOCATIONS**

There is a school crossing guard assigned to West 175<sup>th</sup> Street and Audubon Avenue.

See Exhibit 3 for crossing guard locations.



# 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

**Manhattan  
INCARNATION SCHOOL**

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

Map created on 11/16/2006 **Exhibit 2** COMM. BOARD: 112  
PRECINCT: 33

1.5.1



1 inch equals 250 feet



**CROSSING GUARD ASSIGNED TO INCARNATION SCHOOL**

**EXHIBIT 3**

**INCARNATION SCHOOL  
(41) MANHATTAN**

**CROSSING GUARDS**

### **3. TRAFFIC OPERATIONS**

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

According to the school principal, there are no school bus operations for Incarnation School.

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

The principal indicated that approximately 7% of Incarnation students are driven to and from school by a parent or guardian. Incarnation School closes West 175<sup>th</sup> Street between St. Nicholas Avenue and Audubon Avenue from 7:45 am to 4:00 pm during school days (Figure 2). Vehicles cannot access West 175<sup>th</sup> Street to drop off or pick up students. Parents generally drop off their children on St. Nicholas Avenue or Audubon Avenue, adjacent to the barriers closing the roadway.

#### **3.3 PARKING REGULATIONS**

On the south side of West 175<sup>th</sup> Street, parking regulations are posted as “NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS, EXCEPT BOARD OF EDUCATION” in front of the school (Figure 2). Parking regulations are posted as “NO PARKING, 7:00 AM – 4:00 PM, SCHOOL DAYS” west of the school.

Parking regulations are posted as “NO STANDING ANY TIME” and striped for daylighting on all four corners of West 175<sup>th</sup> Street. The rest of West 175<sup>th</sup> Street has parking regulations posted for “BACK IN 60° PARKING ONLY” (Figure 3). West 175<sup>th</sup> Street between Amsterdam Avenue and Wadsworth Avenue is striped for back in angle parking on both sides.

Street cleaning regulations, which prohibit parking on alternating sides of the roadway, are in place near the school.

Exhibit 4 shows the existing parking regulations on the roadways surrounding Incarnation School.



*Figure 2: Parking regulations on West 175<sup>th</sup> Street in front of Incarnation*



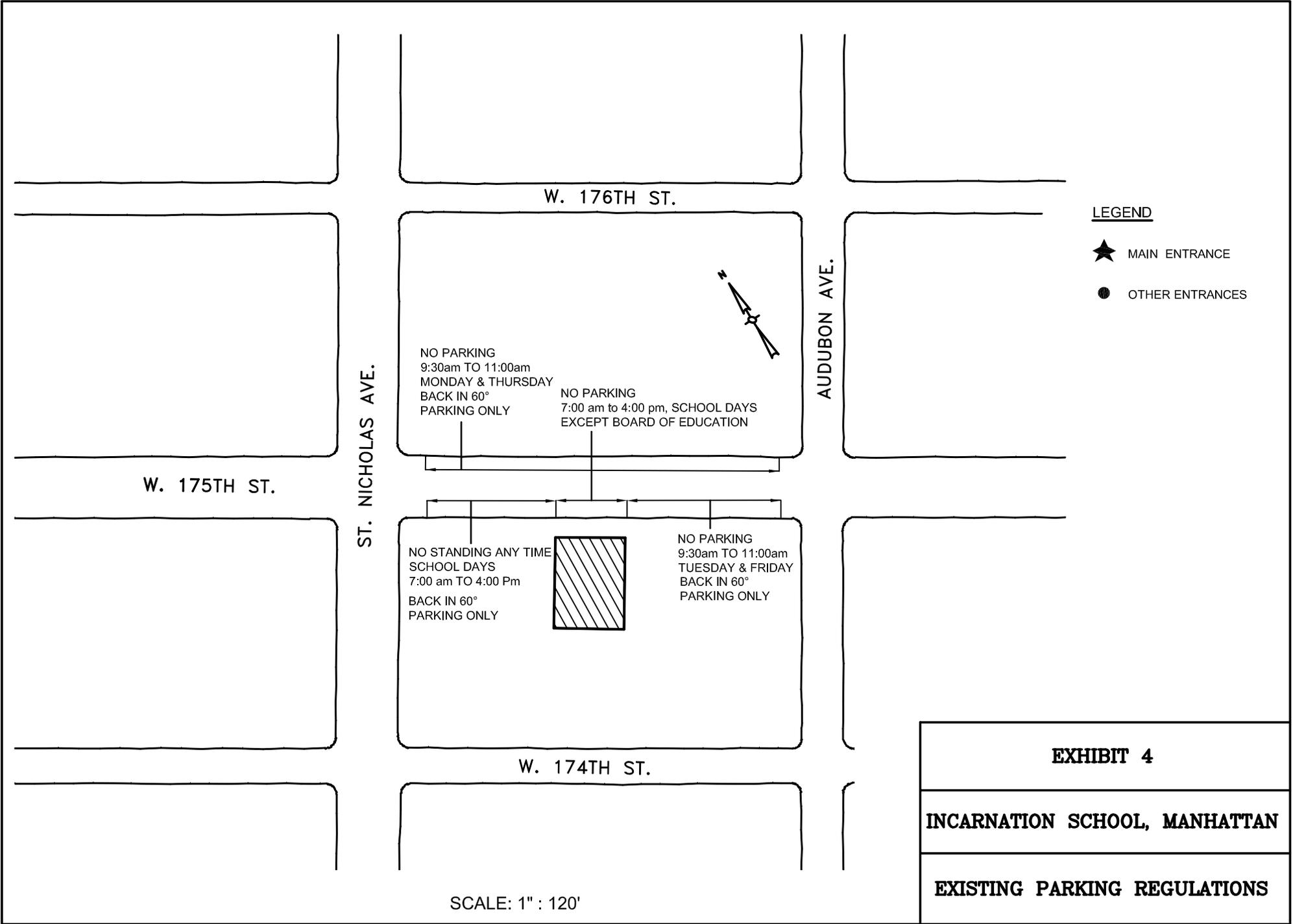
*Figure 3: Angle back-in parking along West 175<sup>th</sup> Street*

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

The Traffic Safety Map, Exhibit 2, shows existing signs, signals and pavement markings. It is noted that a citywide signage program is currently underway to upgrade school signage to current MUTCD standards of fluorescent yellow-green with downward pointing arrows. Signs scheduled to be installed under this program are shown as “existing” on Exhibit 7.



*Figure 4: School-crossing markings on St. Nicolas Avenue*



**EXHIBIT 4**

**INCARNATION SCHOOL, MANHATTAN**

**EXISTING PARKING REGULATIONS**

### 3.5 ACCIDENT SUMMARY

Exhibit 5 and Table 2 show a summary of accidents, as obtained from New York State Department of Motor Vehicles (DMV) in the vicinity of Incarnation for the three-year period from January 1, 1998 through December 1, 2000. The DMV data provides some detail relating to the cause of the accident. Table 3 is a summary of more recent accident data obtained from the NYC Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the DMV data. Accidents are discussed in Section 3.6, Traffic Operations and Issues.

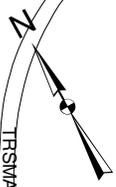
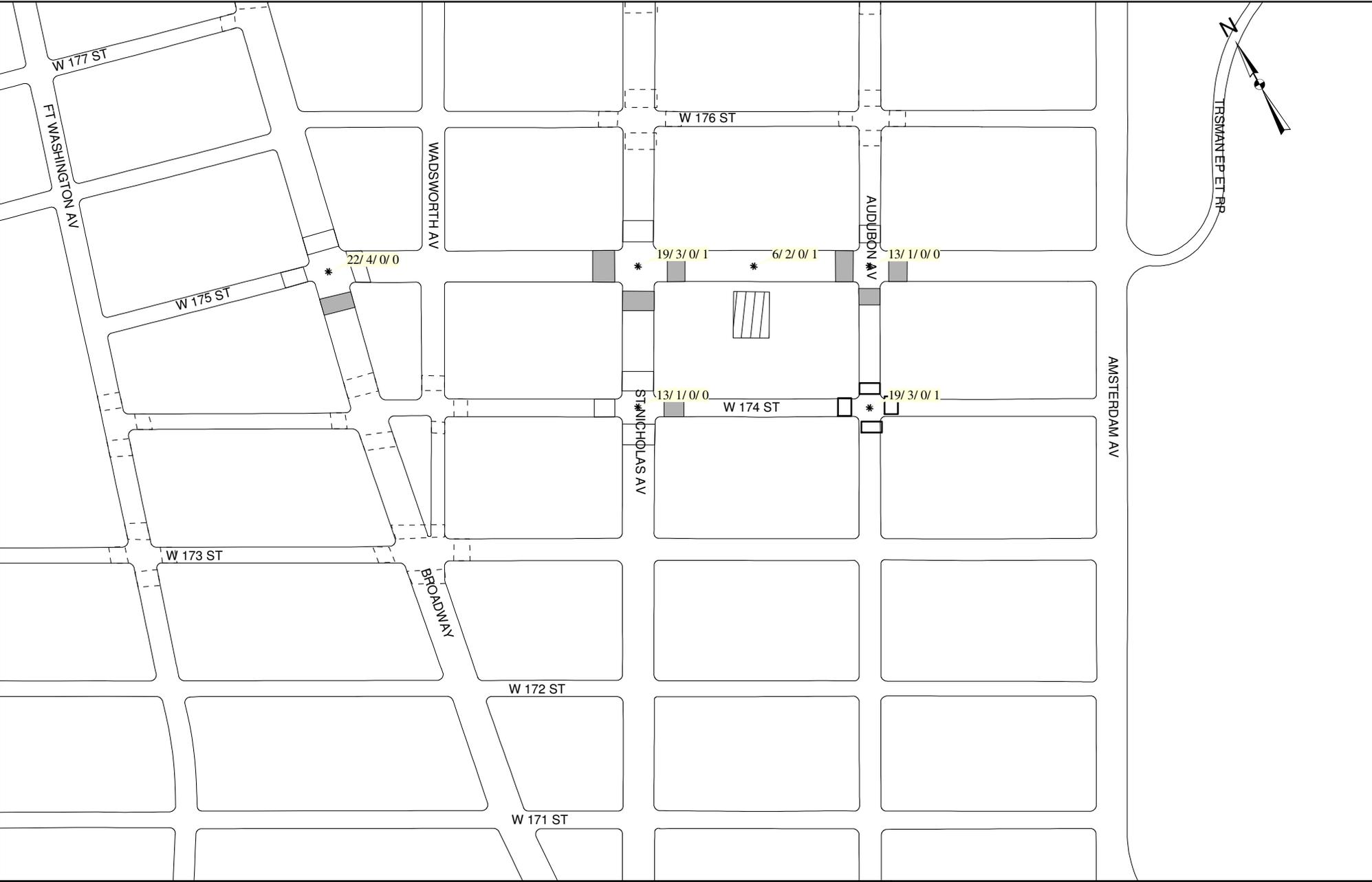
<b>TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED* ACCIDENTS</b>
West 175 <sup>th</sup> Street and St. Nicholas Ave	19	3	0	1
West 175 <sup>th</sup> Street and Audubon Avenue	13	1	0	0
West 175 <sup>th</sup> Street and Broadway	22	4	0	0
West 174 <sup>th</sup> Street and St. Nicholas Ave	13	1	0	0
West 174 <sup>th</sup> Street and Audubon Avenue	19	3	0	1
West 175 <sup>th</sup> Street between St. Nicholas Avenue and Audubon Avenue	6	2	0	1
<b>TOTAL</b>	<b>92</b>	<b>14</b>	<b>0</b>	<b>3</b>

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

<b>TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004) **</b>				
<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED* ACCIDENTS</b>
West 175 <sup>th</sup> Street and St. Nicholas Ave	21	5	0	0
West 175 <sup>th</sup> Street and Audubon Avenue	24	6	0	0
West 175 <sup>th</sup> Street and Broadway	65	8	0	1
West 174 <sup>th</sup> Street and St. Nicholas Ave	21	5	0	0
West 174 <sup>th</sup> Street and Audubon Avenue	18	3	0	0
<b>TOTAL</b>	<b>149</b>	<b>27</b>	<b>0</b>	<b>1</b>

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

\*\* The NYPD accident database does not include data for mid-block accidents.



ACCIDENT LOCATION \*  
 SCHOOL CROSSWALK ASSIGNED TO INCARNATION [Solid Grey Box]  
 SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL [Dashed Line Box]  
 CROSSWALK [White Box]

1 inch equals 250 feet

X/X/X/X

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

**EXHIBIT 5**  
**INCARNATION SCHOOL**  
**(41) MANHATTAN**  
**ACCIDENT SUMMARY**  
**THREE YEAR PERIOD**  
**(1998-2000)**

### 3.6 TRAFFIC OPERATIONS AND ISSUES

The following describes traffic accidents and operational issues at intersections in the vicinity of Incarnation School.

#### 3.6.1 West 175<sup>th</sup> Street and St. Nicholas Avenue

West 175<sup>th</sup> Street is a 62-foot wide one-way westbound roadway with one travel lane and back-in angle parking permitted on both sides of the street. St. Nicholas Avenue is a 62-foot wide two-way street with two travel lanes in each direction and parking permitted on both sides of the street.



*Figure 5: Looking west on West 175<sup>th</sup> Street, at the intersection of West 175<sup>th</sup> Street and St. Nicholas Avenue*

School crosswalks are striped across the east, west and south legs of the intersection. All four corners have only apex pedestrian ramps. The four corners, along West 175<sup>th</sup> Street are striped for no parking. This area provides an improved line of sight for both vehicles and pedestrians.

The safety of student pedestrians crossing St. Nicholas Avenue at West 175<sup>th</sup> Street is one of the major concerns of the school. The principal indicated that the width of St. Nicholas Avenue (62 feet) at West 175<sup>th</sup> Street is difficult for school students. Many students gather adjacent to this intersection before and after school. In addition, most parents also drop off and pick up their students close to this intersection.

This signalized intersection has been the site of nineteen accidents between 1998 and 2000. Three accidents involved pedestrians, one of which was school related. A nine-year old child was crossing with the signal when struck by a vehicle making a left turn. The second accident involved a pedestrian who was crossing St. Nicholas Avenue against the signal. The details of the third pedestrian accident were not reported.

### 3.6.2 West 175<sup>th</sup> Street and Audubon Avenue

Audubon Avenue is a 41-foot wide two-way roadway with one travel lane in each direction and parking allowed along both sides of the street (Figure 6). The intersection of West 175<sup>th</sup> Street and Audubon Avenue is controlled by a two-phase traffic signal. Back-in angle parking is allowed on both sides of West 175<sup>th</sup> Street.

School crosswalks are striped across the west, east, and south legs of the intersection. All four corners have standard pedestrian ramps. A school crossing guard is assigned to this intersection. East of Audubon Avenue the first parking spots on the north and south curb of West 175<sup>th</sup> Street are striped with no parking. During school days from 7:45 am to 4:00 pm, vehicles cannot drive westbound onto West 175<sup>th</sup> Street from this intersection.



*Figure 6: Looking south on Audubon Avenue, at the intersection of West 175<sup>th</sup> Street and Audubon Avenue*

Thirteen accidents occurred at this intersection between 1998 and 2000, one of which involved a pedestrian. This was not a school related accident. The pedestrian was crossing West 175<sup>th</sup> Street against the signal when struck.

### 3.6.3 West 175<sup>th</sup> Street and Broadway

Broadway is a 62-foot wide two-way street with two travel lanes and parking allowed along both sides of the roadway. East of the intersection, West 175<sup>th</sup> Street is a 64-foot wide one-way westbound street with parking along both sides of the roadway. West of the intersection, West 175<sup>th</sup> Street is a 32-foot wide roadway with parallel parking along both sides of the roadway (Figure 7).

A school crosswalk is striped on the south leg. The other three legs have pedestrian crosswalks. All four corners have standard pedestrian ramps except the southwest corner.

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The pedestrian ramp facing west at the southwest corner has a height of approximately three inches, which is not per DOT standards. There are bus stops for the M100 and Bx7 bus lines located on Broadway, north of the intersection.



*Figure 7: Looking east on West 175<sup>th</sup> Street, at the intersection of West 175<sup>th</sup> Street and Broadway*

This two-phase signalized intersection had twenty-two accidents between 1998 and 2000, four of which involved pedestrians. However, none of them were school related accidents. Two accidents involved a driver backing up and striking a pedestrian. The third accident was also attributed to driver error. A driver started from a parked position and injured a pedestrian. The fourth accident involved a pedestrian who was crossing against the signal.

#### 3.6.4 West 174<sup>th</sup> Street and St. Nicholas Avenue

West 174<sup>th</sup> Street is a 34-foot wide one-way eastbound roadway with parking along both sides of the street. The intersection of West 174<sup>th</sup> Street and St. Nicholas Avenue is controlled by a two-phase traffic signal (Figure 8). A school crosswalk is striped across the east leg. The other three legs have pedestrian crosswalks. All four corners have one-apex pedestrian ramp. There is a bus stop for the M3 bus line on St. Nicholas Avenue, north of the intersection.



*Figure 8: Looking north on St. Nicholas Avenue, at the intersection of West 174<sup>th</sup> Street and St. Nicholas Avenue*

Thirteen accidents occurred at this location between 1998 and 2000, one of which involved a pedestrian. A 56-year old pedestrian was crossing West 174<sup>th</sup> Street against the signal when struck. There was no any school related accident at this intersection.

### 3.6.5 West 174<sup>th</sup> Street and Audubon Avenue

The intersection of West 174<sup>th</sup> Street and Audubon Avenue is controlled by a two-phase traffic signal. Pedestrian crosswalks are striped across all four legs; none of them are school crosswalks.

Nineteen accidents occurred at this location between 1998 and 2000. Three accidents involved pedestrians, one of which was school related. Two students (5-year old and 10-year old) with a 46-year old adult were crossing the street when stuck by a driver traveling against the signal. The second accident involved a pedestrian who was crossing against the signal when struck. The third accident involved a driver who struck a pedestrian while making a left turn.

### 3.6.6 West 175<sup>th</sup> Street between St. Nicholas Avenue and Audubon Avenue

Incarnation School is located on West 175<sup>th</sup> Street between St. Nicolas Avenue and Audubon Avenue. During school days, from 7:45 am to 4:00 pm, the school places barricades in the roadway to prevent vehicles from driving westbound from Audubon Avenue onto West 175<sup>th</sup> Street. The school principal noted that vehicles regularly ignore the barricades placed at Audubon Avenue and travel at excessive speeds along West 175<sup>th</sup> Street. According to the principal, most vehicles driving through West 175<sup>th</sup> Street exit

from Henry Hudson Parkway to avoid traffic or utilize West 175<sup>th</sup> Street as alternate route to the George Washington Bridge.



*Figure 9: Looking east along West 175<sup>th</sup> Street, during school hours*

There were six accidents at this segment between 1998 and 2000. Two accidents included pedestrians, one of which was school related. A 12-year old student was struck on west 175<sup>th</sup> Street at 8:00 am. It was cited as driver's error. The details for the second accident were not reported.

A spot speed study was conducted on West 175<sup>th</sup> Street between St. Nicolas Avenue and Audubon Avenue on Monday, November 14, 2005 between 4:30 pm to 5:30 pm. The spot speed study showed that the 85<sup>th</sup> percentile speed was below the statutory speed limit of 30 mph. See Table 4 for a summary of the results and the Appendix for further detail.

<b>TABLE 4: SPOT SPEED STUDIES</b>		
<b>(Monday, November 14, 2005)</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
West 175 <sup>th</sup> Street between St. Nicolas Avenue and Audubon Avenue	23	27

### 3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 123. With a child pedestrian walking rate of 3ft/sec, the crossing time was found to be adequate in all directions and approaches. (see Table 5)

<b>TABLE 5: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS</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>West 175<sup>th</sup> Street and St. Nicholas Avenue</b>				
Crossing West 175 <sup>th</sup> Street	62	63	24	NO
Crossing St. Nicholas Avenue	62	27	24	NO
<b>West 175<sup>th</sup> Street and Audubon Avenue</b>				
Crossing West 175 <sup>th</sup> Street	62	63	24	NO
Crossing Audubon Avenue	41	27	17	NO
<b>West 175<sup>th</sup> Street and Broadway</b>				
Crossing West 175 <sup>th</sup> Street	63	63	24	NO
Crossing Broadway	62	27	24	NO
<b>West 174<sup>th</sup> Street and St. Nicholas Avenue</b>				
Crossing West 174 <sup>th</sup> Street	34	63	15	NO
Crossing St. Nicholas Avenue	62	27	24	NO
<b>West 174<sup>th</sup> Street and Audubon Avenue</b>				
Crossing West 174 <sup>th</sup> Street	34	63	14	NO
Crossing Audubon Avenue	41	27	17	NO

*Notes:*

*\*A rate of 3 feet per second plus 3 seconds reaction time was utilized as the child pedestrian walking rate*

### 3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK)

The roadways and sidewalks in the vicinity of the school were generally observed to be in good condition, with the exception of the following:

- There are asphalt patches and potholes on the west crosswalk at the intersection of Broadway and West 175<sup>th</sup> Street (Figure 10).
- Pedestrian ramps that are substandard have been noted in Section 3.6.



*Figure 10: The West crosswalk at Broadway and West 175<sup>th</sup> Street*

#### 4. PROPOSED 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 capital improvements.

##### 4.1 SHORT-TERM RECOMMENDATIONS

▪ Install graphic “Yield to Pedestrians” Signs

A “YIELD TO PEDESTRIAN SIGN” should be installed at the following locations:

- West 175<sup>th</sup> Street and Wadsworth Avenue intersection (on West 175<sup>th</sup> Street east leg)
- West 174<sup>th</sup> Street and St. Nicholas Avenue (on St. Nicholas Avenue south leg)

The installation of the signs is intended to remind the drivers that the pedestrians have the right of way within the crosswalk. See Exhibit 7 for the locations of the yield to pedestrian signs.

▪ Upgrade No Parking School Days to No-Standing School Days Zone on West 175<sup>th</sup> Street

It is recommended that “NO STANDING, 7:00 AM – 4 PM, SCHOOL DAYS” be posted in front of the school’s entrance for a length of 30 feet. Displaced teacher parking (3 spaces) will be relocated further west on West 175<sup>th</sup> street.

“ NO PARKING, 7:00 AM TO 4:00 PM, SCHOOL DAYS, EXCEPT DEPARTMENT OF EDUCATION” parking regulations should be upgraded to “NO STANDING 7:00 AM TO 4:00 PM SCHOOL DAYS, EXCEPT DEPARTMENT OF EDUCATION”.

▪ Install new school crosswalks

According to the school principal, many students walk to Incarnation from west of Broadway and south on Audubon Avenue. Therefore, it is recommended that the existing pedestrian crosswalks at the following three intersections become school crosswalk:

- The west leg of West 175<sup>th</sup> Street and Broadway
- The south leg of West 175<sup>th</sup> Street and Wadsworth Avenue
- The west leg of West 174<sup>th</sup> Street and Audubon Avenue

▪ Install pedestrian information sign that explains the signal phases

Installation of a pedestrian information sign at West 175<sup>th</sup> Street and St. Nicholas Avenue is recommended. St. Nicolas Avenue is a wide, high volume roadway. Most students utilize this intersection walking to and from school.

- *Submit Request to Police Department for Crossing Guard*

The school principal indicated that most students utilize the intersection of West 175<sup>th</sup> Street and St. Nicolas Avenue when they walk to or from the school. Therefore, it is recommended that a crossing guard be requested for this intersection.

- *Install/replace pedestrian ramps*

Consideration should be given for installation and/or replacement of pedestrian ramps per NYCDOT standards at the following locations:

- West 174<sup>th</sup> Street and St. Nicolas Avenue, at all four corners
- West 175<sup>th</sup> Street and St. Nicolas Avenue, at all four corners
- West 175<sup>th</sup> Street and Broadway, at southwest corner

- *Resurface the intersection of Broadway and West 175th Street*

It is recommended that the intersection be resurfaced to correct poor surface conditions.

- *Administer student pedestrian safety education program*

It is recommended that the NYCDOT, Safety Education Program work with the school to educate the students on pedestrian safety including crossing the street with the WALK phase, and the meaning of WALK - FLASHING DON'T WALK - DON'T WALK pedestrian signal sequence. It is also recommended that the school dedicate a staff member to act as valet or greeter to expedite the time required for students to disembark from or enter vehicles.

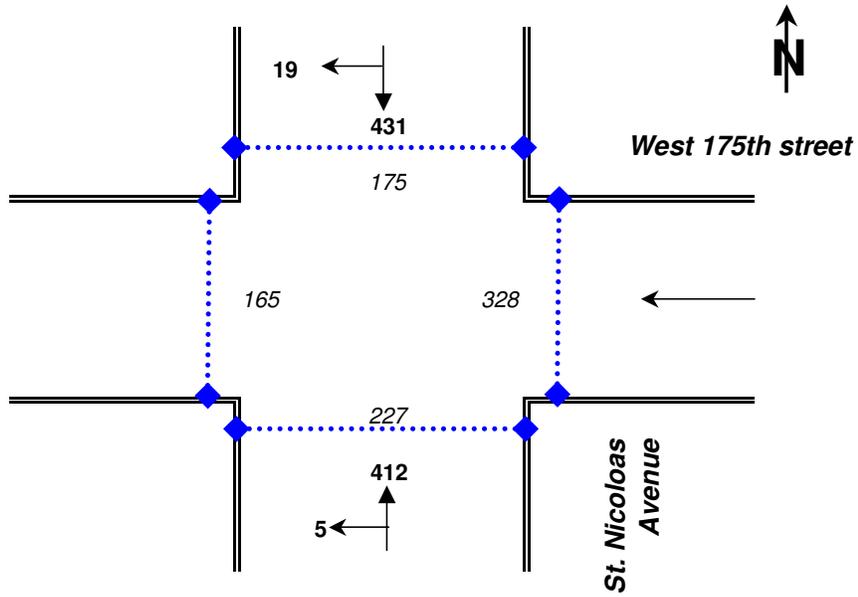
## 4.2 LONG-TERM RECOMMENDATIONS

- *Curb extensions on West 175<sup>th</sup> Street*

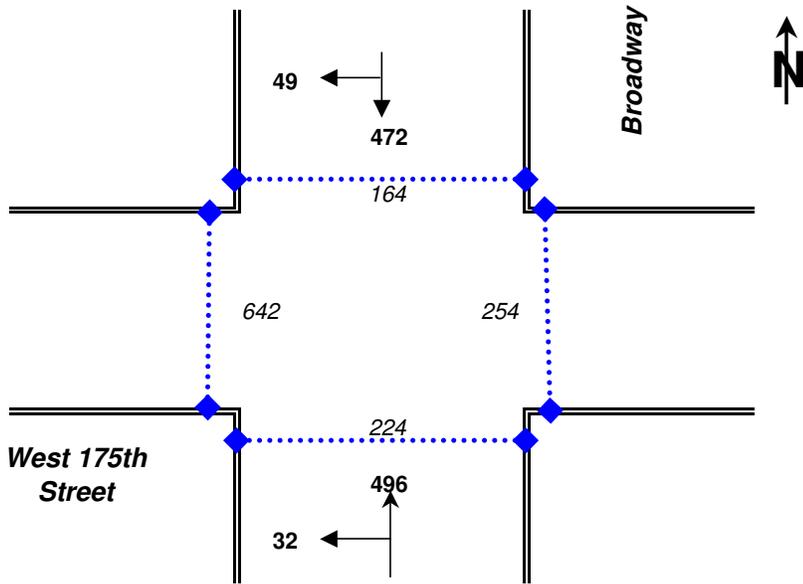
As noted in Section 3.3, “BACK IN 60° PARKING ONLY” is provided on both sides of West 175<sup>th</sup> Street between Amsterdam Avenue and Wadsworth Avenue. The roadway sections adjacent to street corners on West 175<sup>th</sup> Street are striped and no parking is allowed in areas (see Exhibit 1 for detail). Consideration should be given to replacing part of striped area with 18 feet wide curb extensions on both sides of West 175<sup>th</sup> Street as shown in Exhibit 7. Urban design treatments should be considered at the widened sidewalk areas. Possible treatments could include planting, street furniture, bicycle parking etc. Also 6-foot curb extensions are recommended on West 175<sup>th</sup> street between Wadsworth Avenue and Broadway.

The purpose of the curb extensions is to shorten the crossing distance for pedestrians at the school crosswalk. This curb extension 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.

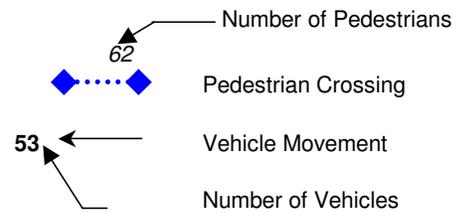
**One Hour Traffic Count Volumes**



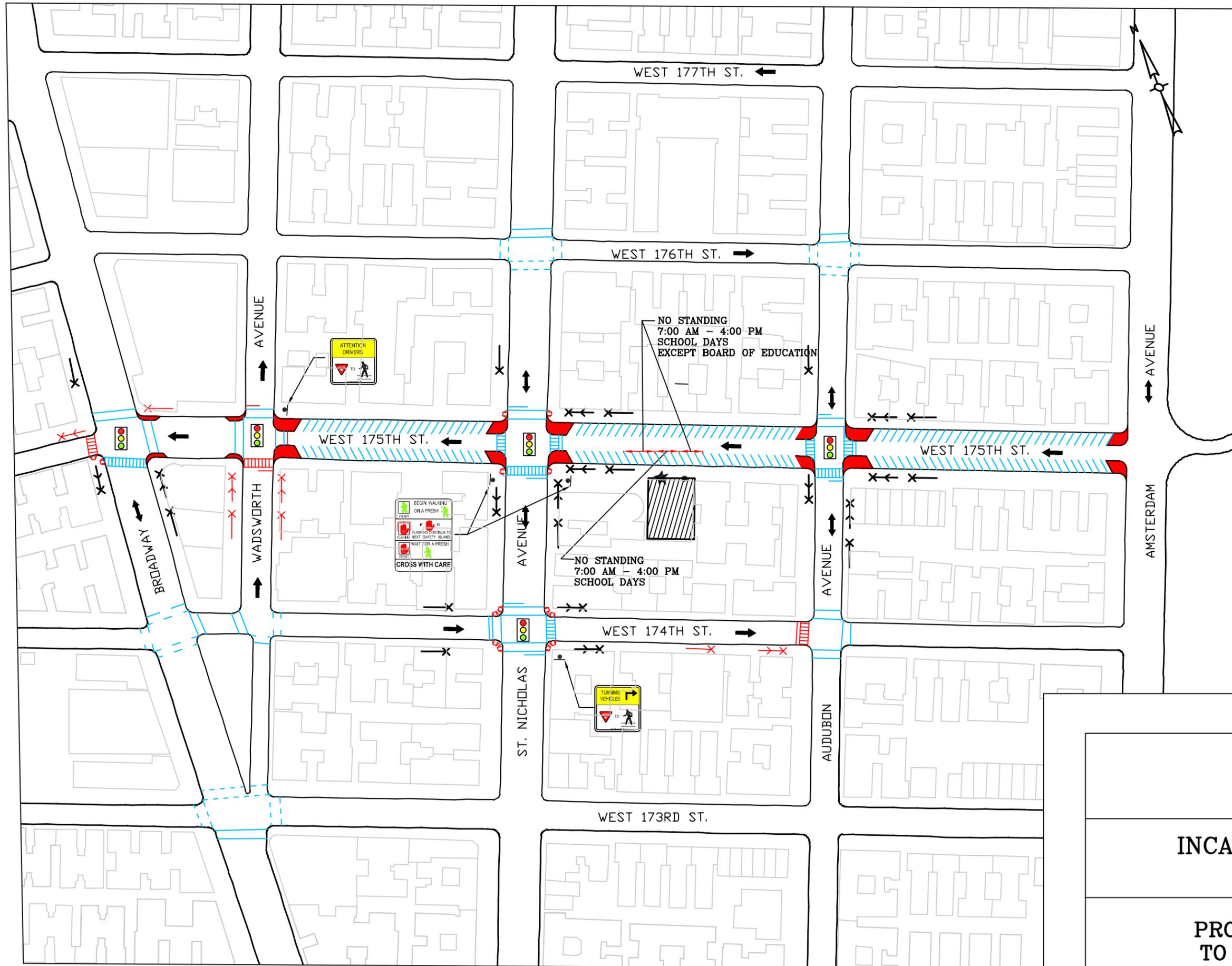
*Intersection of West 175th Street and St. Nicolas - (7:30 AM - 8:30 AM November 9, 2005)*



*Intersection of West 175th Street and Broadway - (2:30 PM - 3:30 PM, November 16, 2005)*



<b>EXHIBIT 6</b>
<b>INCARNATION SCHOOL</b>
<b>TRAFFIC COUNTS</b>



- LEGEND**
- MAIN ENTRANCE
  - OTHER ENTRANCES
  - EXISTING ADVANCE WARNING SIGN WITH ARROW
  - 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 ADVANCE WARNING SIGN WITH ARROW
  - PROPOSED ADVANCE WARNING SIGN
  - PROPOSED STOP LINE
  - PROPOSED PEDESTRIAN RAMP
  - PROPOSED SCHOOL CROSSWALK
  - PROPOSED TRAFFIC SIGN
  - PROPOSED CURB EXTENSION (NECKDOWN)

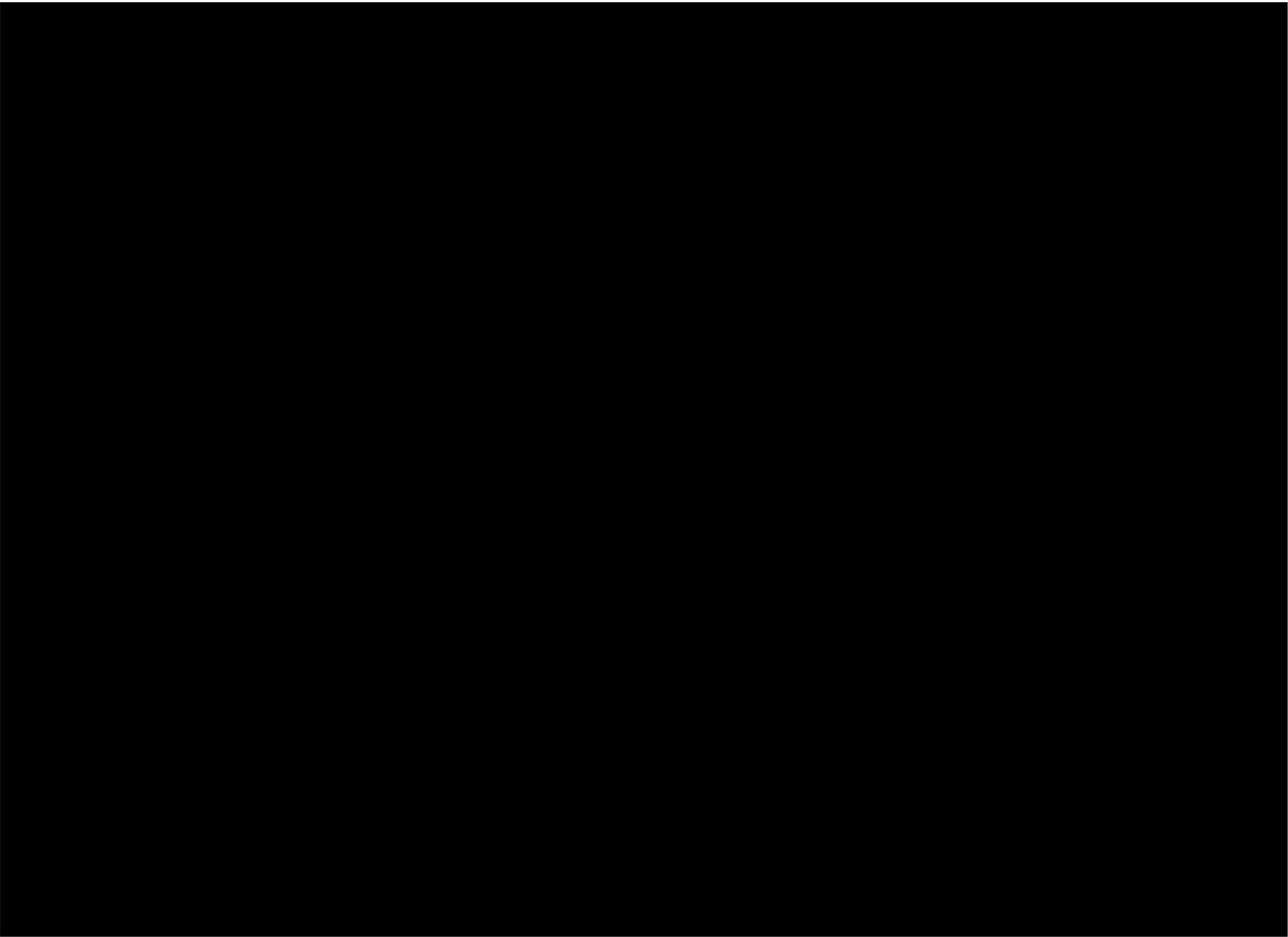
SCALE: 1" : 100'

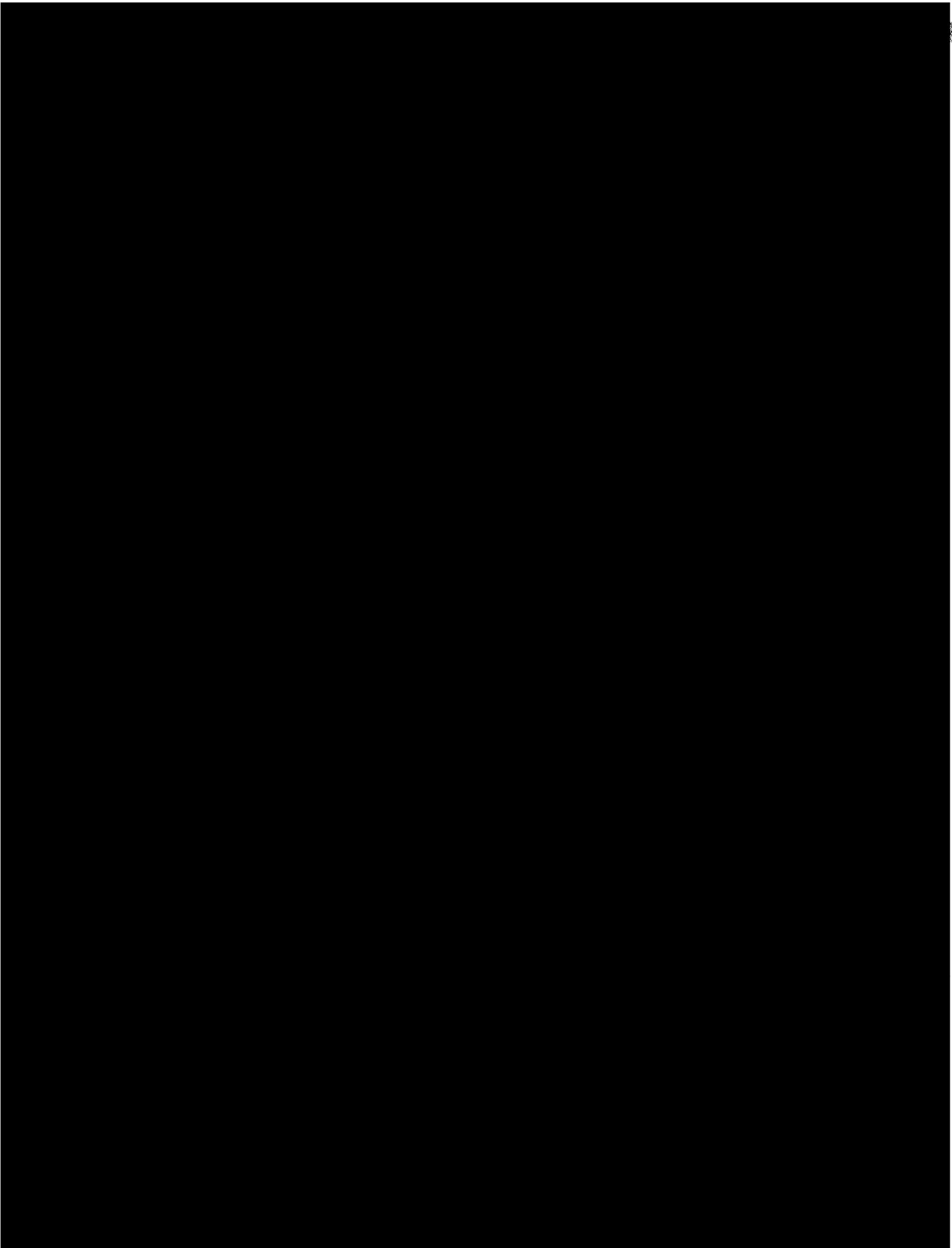
**EXHIBIT 7**

**INCARNATION SCHOOL  
MANHATTAN**

**PROPOSED MEASURES  
TO IMPROVE SAFETY**

# **APPENDIX**

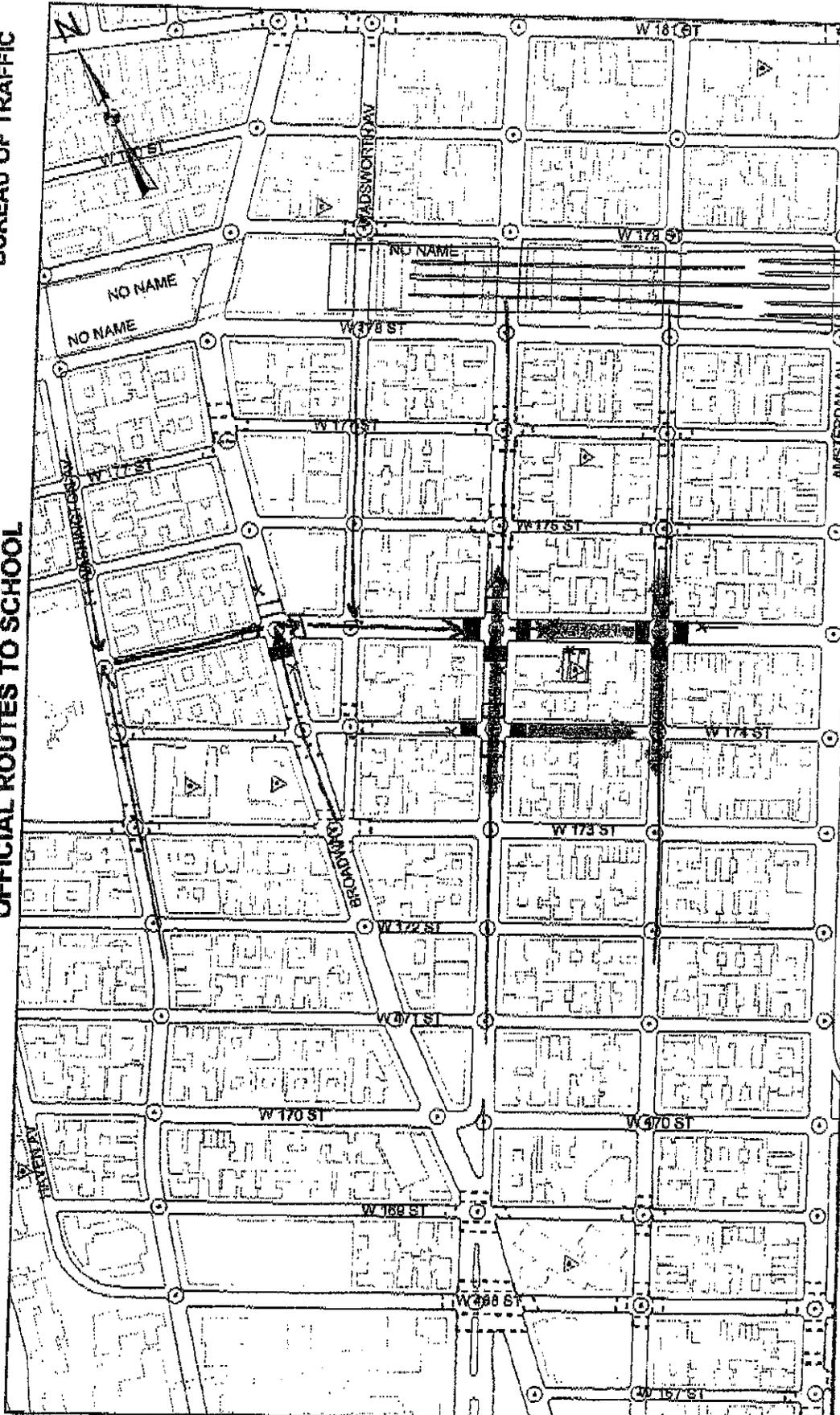




NEW YORK CITY  
DEPT. OF TRANSPORTATION

**TRAFFIC SAFETY PLAN  
OFFICIAL ROUTES TO SCHOOL**

BUREAU OF TRAFFIC



**LEGEND:**

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

The TRAFFIC SAFETY PLAN shown on this map was prepared 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 crosswalks.

**INCARNATION SCHOOL  
(41)**

Prepared by the NEW YORK CITY DEPARTMENT OF TRANSPORTATION,  
the Volunteer Commissioner, in cooperation with SCHOOL, and  
POLICE OFFICIALS

ORIG. DATE: 02/28/85  
GIS CORRECT: MAY 2002  
REVISIONS: 382081

DRAWING NO. CC-3616  
MS-2587

COMM. BOARD: 32  
BOROUGH: MANHATTAN  
PRECINCT: 94

# SPOT SPEED STUDY

Date: **November 14, 2005**      Time: **3:30 pm - 4:30 pm**  
 Location: **West 175th Street between St. Nicolas Avenue and Audubon Avenue**  
 Surveyor:

School: **Incarnation School**  
 Direction: **West**  
 Comments:

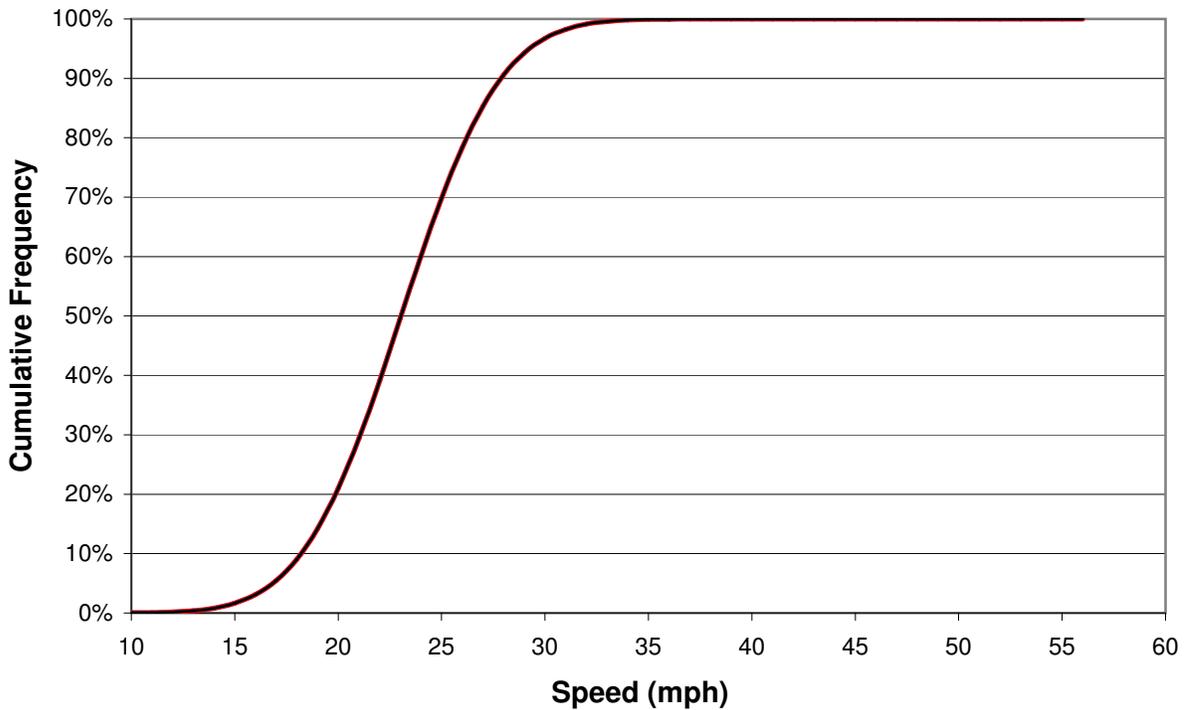
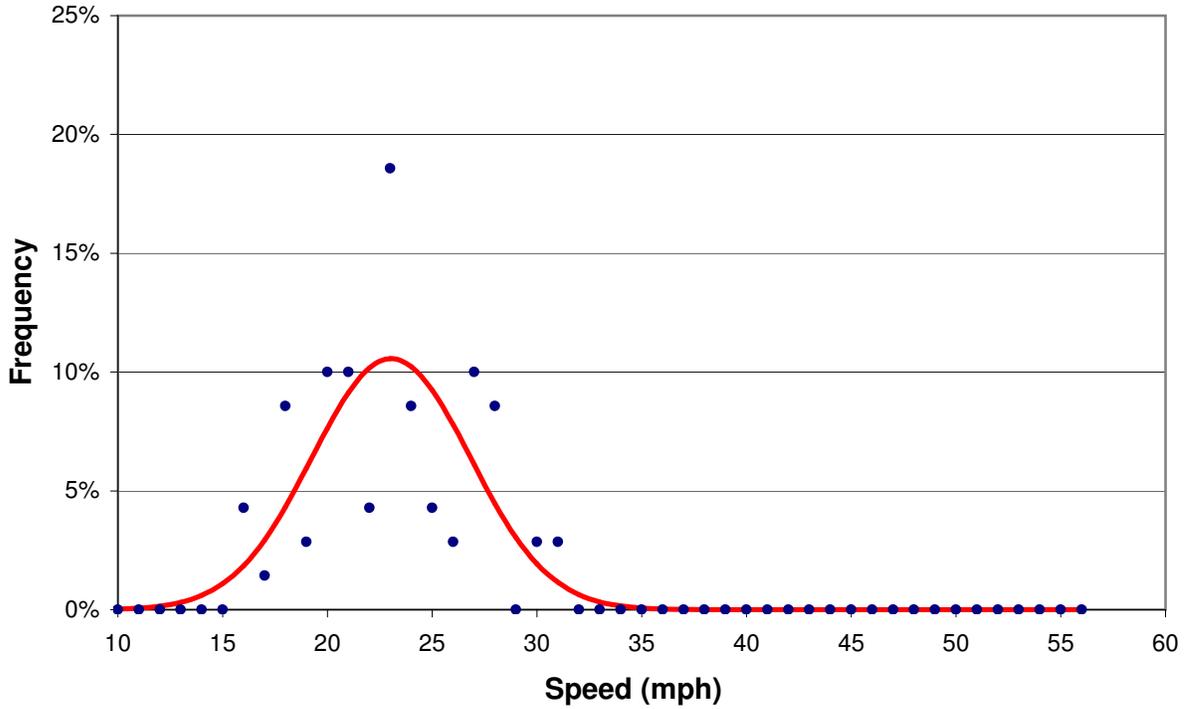
Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS <sup>2</sup>
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	0	0.0%	0.0%	0	0
16	3	4.3%	4.3%	48	768
17	1	1.4%	5.7%	17	289
18	6	8.6%	14.3%	108	1944
19	2	2.9%	17.1%	38	722
20	7	10.0%	27.1%	140	2800
21	7	10.0%	37.1%	147	3087
22	3	4.3%	41.4%	66	1452
23	13	18.6%	60.0%	299	6877
24	6	8.6%	68.6%	144	3456
25	3	4.3%	72.9%	75	1875
26	2	2.9%	75.7%	52	1352
27	7	10.0%	85.7%	189	5103
28	6	8.6%	94.3%	168	4704
29	0	0.0%	94.3%	0	0
30	2	2.9%	97.1%	60	1800
31	2	2.9%	100.0%	62	1922
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	70	100.0%		1613	38151

Mean Speed = 23.0 mph      Median Speed = 23.0 mph  
 Standard Deviation = 3.8 mph      15th Percentile Speed = 19.1 mph  
 Margin of Error (95% Confidence) = ± 0.9 mph      85th Percentile Speed = 27.0 mph

# SPOT SPEED STUDY

Date: **November 14, 2005**      Time: **3:30 pm - 4:30 pm**      School: **Incarnation School**  
 Location: **West 175th Street between St. Nicolas Avenue and Audubon Avenue**      Direction: **West**  
 Surveyor:      Comments:

Mean Speed = 23.0 mph      Median Speed = 23.0 mph  
 Standard Deviation = 3.8 mph      15th Percentile Speed = 19.1 mph  
 Margin of Error (95% Confidence) =  $\pm 0.9$  mph      85th Percentile Speed = 27.0 mph



# INCARNATION

November 9 2005  
7:30 am - 8:30 am

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

Site:  
Date: 11/09/05

Combined

\*Peds not included in table data

Begin Time	Total	ST NICHOLAS AVENUE			W 175 STREET				ST NICHOLAS AVENUE		W 175 STREET		
		S-R	S-T						N-T	N-L			
08:30:00	161	8	72	0	0	0	0	0	81	0	0	0	0
08:45:00	229	4	125	0	0	0	0	0	97	3	0	0	0
09:00:00	233	4	115	0	0	0	0	0	112	2	0	0	0
09:15:00	235	3	114	0	0	0	0	0	118	0	0	0	0
09:30:00	9	0	5	0	0	0	0	0	4	0	0	0	0
<b>867</b>		19	431	0	0	0	0	0	412	5	0	0	0

Peak Volume Periods <span style="float: right;">(1 hour Res:15 min.)</span>					
Period			Peak Period		Volume
<b>AM</b>	05:00:00	To 10:00:00	08:30:00	To 09:30:00	858
<b>Noon</b>	10:00:00	To 15:00:00	NA	To NA	0
<b>PM</b>	15:00:00	To 20:00:00	NA	To NA	0

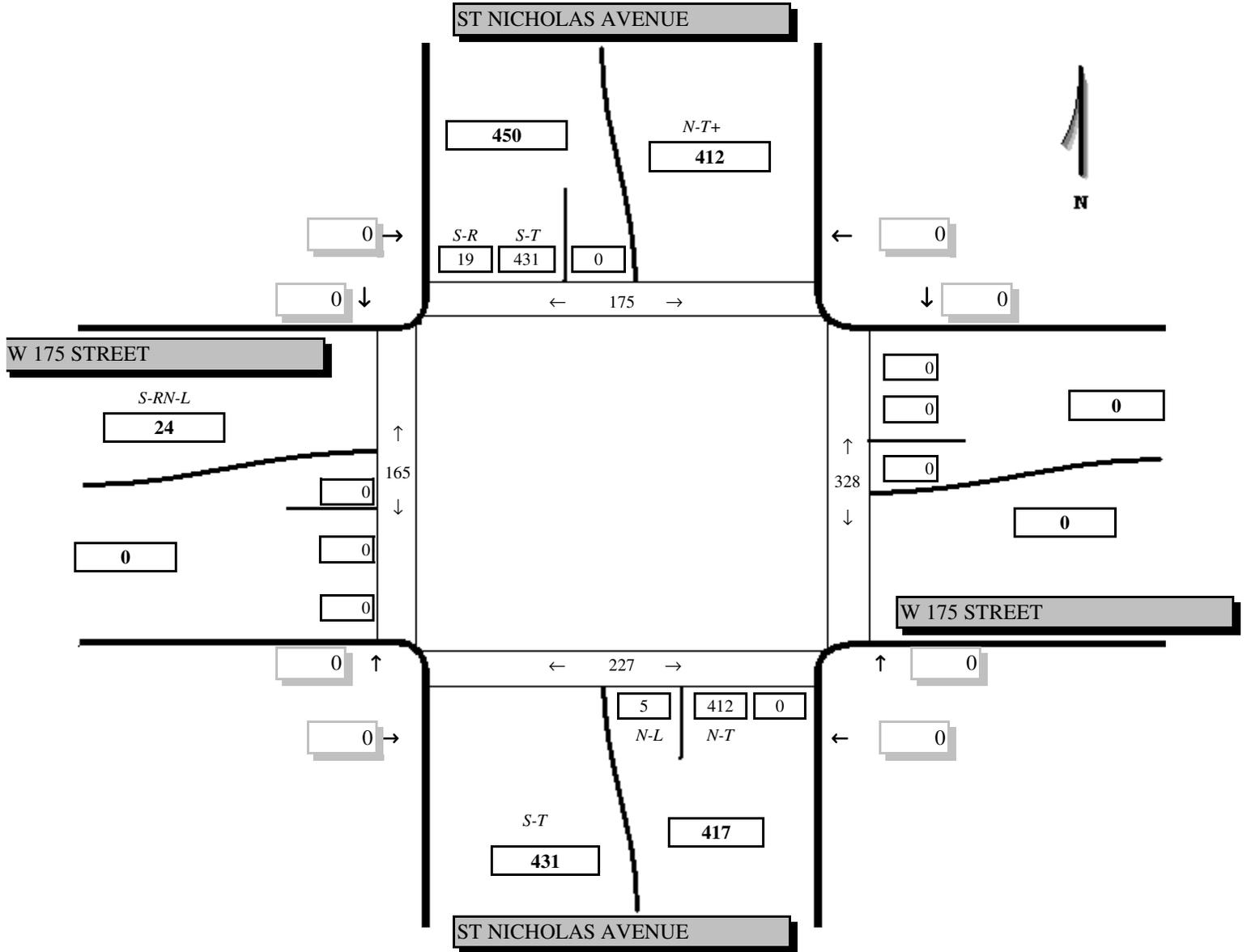
# INCARNATION

November 9 2005  
7:30 am - 8:30 am

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

Site: 11/09/05  
Date:

Combined  
\*Peds not included in table data



# Incarnation

November 16, 2005  
2:30 pm - 3:30 pm

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

Site:  
Date: 11/16/05

Combined

*\*Peds not included in table data*

Begin Time	Total	BROADWAY			W 175th STREET			BROADWAY		W 175th STREET			
		S-R	S-T		W-R	W-T	W-L	N-T	N-L				
15:30:00	250	10	109	0	0	0	0	0	119	12	0	0	0
15:45:00	260	15	118	0	0	0	0	0	120	7	0	0	0
16:00:00	262	12	115	0	0	0	0	0	129	6	0	0	0
16:15:00	277	12	130	0	0	0	0	0	128	7	0	0	0
<b>1,049</b>		49	472	0	0	0	0	0	496	32	0	0	0

Peak Volume Periods <span style="float: right;"><i>(1 hour Res:15 min.)</i></span>					
Period			Peak Period		Volume
<b>AM</b>	05:00:00	To 10:00:00	NA	To NA	0
<b>Noon</b>	10:00:00	To 15:00:00	NA	To NA	0
<b>PM</b>	15:00:00	To 20:00:00	15:30:00	To 16:30:00	1,049



Analyst: The Rba Group  
 Agency: NYC-DOT  
 Date: 11/17/2005  
 Period:  
 Project ID: Existing Timing  
 E/W St: West 175 Street

Inter.:  
 Area Type: All other areas  
 Jurisd:  
 Year :  
 N/S St: St. Nicholas Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	2	0	0	2	0
LGConfig				LTR			LT			TR		
Volume				1	1	1	5	412		431	19	
Lane Width				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					NB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
WB Left		P			SB Left			
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	20.0				58.0			
Yellow	4.0				4.0			
All Red	2.0				2.0			

Cycle Length: 90.0 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

Westbound

LTR 397 1785 0.01 0.22 27.3 C 27.3 C

Northbound

LT 2214 3435 0.21 0.64 6.8 A 6.8 A

Southbound

TR 2317 3595 0.22 0.64 6.8 A 6.8 A

Intersection Delay = 6.9 (sec/veh) Intersection LOS = A

Analyst: The Rba Group  
 Agency: NYC-DOT  
 Date: 11/17/2005  
 Period:  
 Project ID: ExistingTiming  
 E/W St: West 175 Street

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

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	2	0	0	2	0
LGConfig				LTR			LT			TR		
Volume				1	1	1	32	496		472	49	
Lane Width				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					NB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
WB Left	P				SB Left			
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	20.0				58.0			
Yellow	4.0				4.0			
All Red	2.0				2.0			

Cycle Length: 90.0 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

Westbound

LTR 397 1785 0.01 0.22 27.3 C 27.3 C

Northbound

LT 2078 3225 0.28 0.64 7.3 A 7.3 A

Southbound

TR 2299 3567 0.25 0.64 7.1 A 7.1 A

Intersection Delay = 7.2 (sec/veh) Intersection LOS = A

Analyst: The Rba Group  
 Agency: NYC-DOT  
 Date: 11/17/2005  
 Period:  
 Project ID: Adjusted Timing  
 E/W St: West 175 Street

Inter.:  
 Area Type: All other areas  
 Jurisd:  
 Year :  
 N/S St: St. Nicholas Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
No. Lanes	0	0	0	0	1	0	0	2	0	0	2	0	
LGConfig					LTR				LT			TR	
Volume				1	1	1	5	412			431	19	
Lane Width					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					NB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
WB Left	P				SB Left			
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	24.0				54.0			
Yellow	4.0				4.0			
All Red	2.0				2.0			

Cycle Length: 90.0 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

Westbound

LTR 476 1785 0.01 0.27 24.3 C 24.3 C

Northbound

LT 2061 3435 0.23 0.60 8.6 A 8.6 A

Southbound

TR 2157 3595 0.23 0.60 8.6 A 8.6 A

Intersection Delay = 8.6 (sec/veh) Intersection LOS = A

Analyst: The Rba Group  
 Agency: NYC-DOT  
 Date: 11/17/2005  
 Period:  
 Project ID: ExistingTiming  
 E/W St: West 175 Street

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

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
No. Lanes	0	0	0	0	1	0	0	2	0	0	2	0	
LGConfig					LTR			LT			TR		
Volume				1	1	1	32	496			472	49	
Lane Width					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					NB Left	P		
Thru					Thru	P		
Right					Right			
Peds	X				Peds	X		
WB Left		P			SB Left			
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	24.0				54.0			
Yellow	4.0				4.0			
All Red	2.0				2.0			

Cycle Length: 90.0 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

Westbound

LTR 476 1785 0.01 0.27 24.3 C 24.3 C

Northbound

LT 1933 3222 0.30 0.60 9.2 A 9.2 A

Southbound

TR 2140 3567 0.27 0.60 8.9 A 8.9 A

Intersection Delay = 9.1 (sec/veh) Intersection LOS = A