

**New York City Department of Transportation**

**Office of School Safety Engineering**



**School Safety Engineering Project**

**FINAL REPORT: P.S. 124, Yung Wing School, Manhattan**



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



**SEPTEMBER 29, 2006**

**School Safety Engineering Project  
P.S. 124, Yung Wing School, Manhattan**

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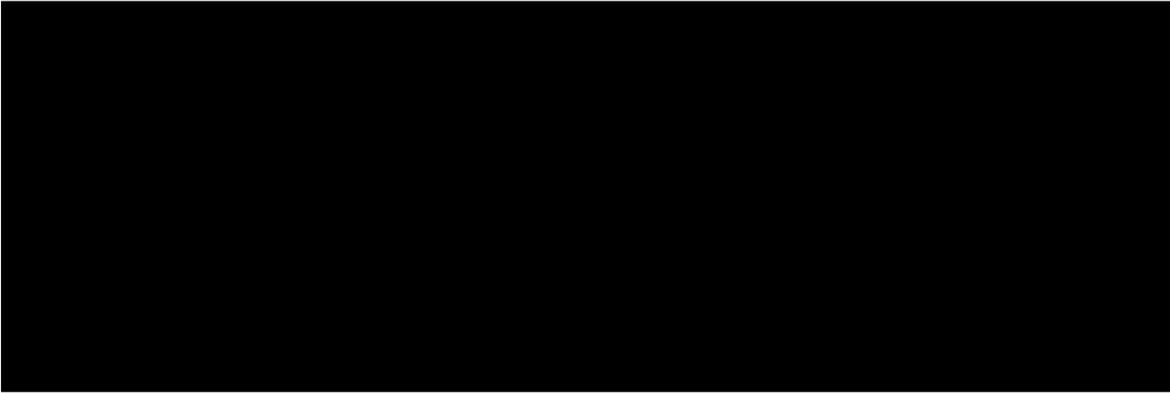
## **1. INTRODUCTION**

### **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, 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. 124 (Yung Wing School) in Manhattan is one of the 135 priority schools.

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



### **2.2 NEIGHBORHOOD DESCRIPTION**

Located at 4 Division Street in Manhattan, the Yung Wing School is situated between Market Street and Bowery. Immediately to the east of Market Street are the approach ramps of the Manhattan Bridge, which pass over Division Street. The intersection of Division Street and Bowery is one point of the six-way intersection called Chatham Square. Chatham Square was recently reconstructed by the New York City Department of Design and Development under Contract No. HWM-780.

The south side of Division Street has a mix of commercial and manufacturing uses with produce vendors and garment factories existing side-by-side. The sidewalk is frequently congested with forklifts loading and unloading produce and other merchandise.

Yung Wing School is located on the north side of Division Street, with its building incorporated into the much larger Confucius Plaza apartment and retail complex.

The school is in the midst of the dense Chinatown commercial and residential area and is bordered by the Lower East Side and the municipal center of lower Manhattan. It is located among many high vehicular and pedestrian traffic generators, such as the Manhattan Bridge and Chinatown, that present a host of student pedestrian challenges, as described below (see Exhibit 1 for Aerial Photograph).



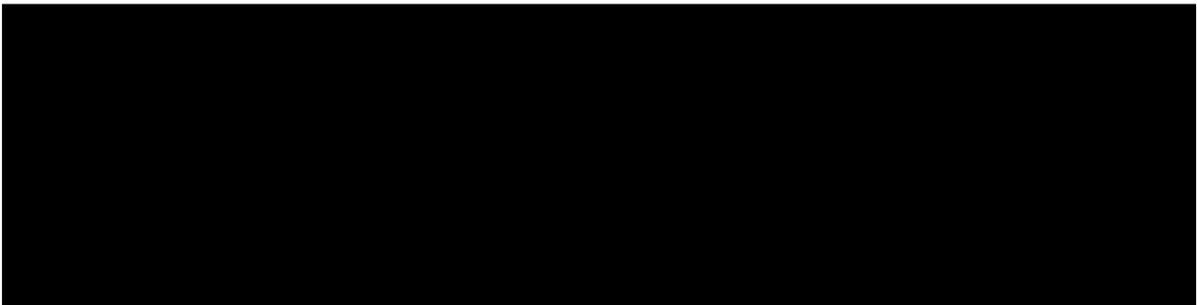
*Figure 1: Looking east on Division Street*

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

Staff from New York City DOT, consultant staff, representatives from P.S. 124, and a police officer from the NYPD Fifth Precinct met at the school on the morning of February 10, 2004. According to the survey completed by the school, the problems that students encounter on a regular basis include the following:

- Difficulty crossing Division Street at Market Street due to overall traffic congestion in the area
- Lack of school crossing signs in the vicinity of the school
- Insufficient time provided to cross during the pedestrian phases of signals
- The presence of produce and other sidewalk vendors, long-distance bus service to Boston, Washington, Atlantic City and elsewhere, and “gypsy” cab and minivan pick-up points that leave little space for the student pedestrians walking to and from school.

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



## 2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to school officials, approximately 90% of students walk to P.S. 124, 5% are driven by a parent or guardian, 3% arrive via public transportation, and 2% travel via school bus. See Table 1 for the school's estimate of the modes of travel.

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

## 2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

Some P.S. 124 students arrive by subway. The nearest subway stations are on Canal Street at Lafayette Street (4, 5, 6) and at Centre Street (M, J, Q, W). The Grand Street station at Chrystie Street recently re-opened with expanded subway service.

## 2.8 CROSSING GUARD LOCATIONS

According to the school crossing guard coordinator for the NYPD Fifth Precinct, there are three crossing guards assigned to P.S. 124. The crossing guards are stationed at the following intersections:

- Market Street and East Broadway
- Market Street and Division Street
- Bowery and Bayard Street

In addition, there are four crossing guards assigned to other schools near P.S. 124. Their locations are indicated on the map in Exhibit 4.



1 inch equals 175 feet

**EXHIBIT 1**  
**P.S. 124, MANHATTAN**  
**YUNG WING SCHOOL**  
**AERIAL PHOTOGRAPH**



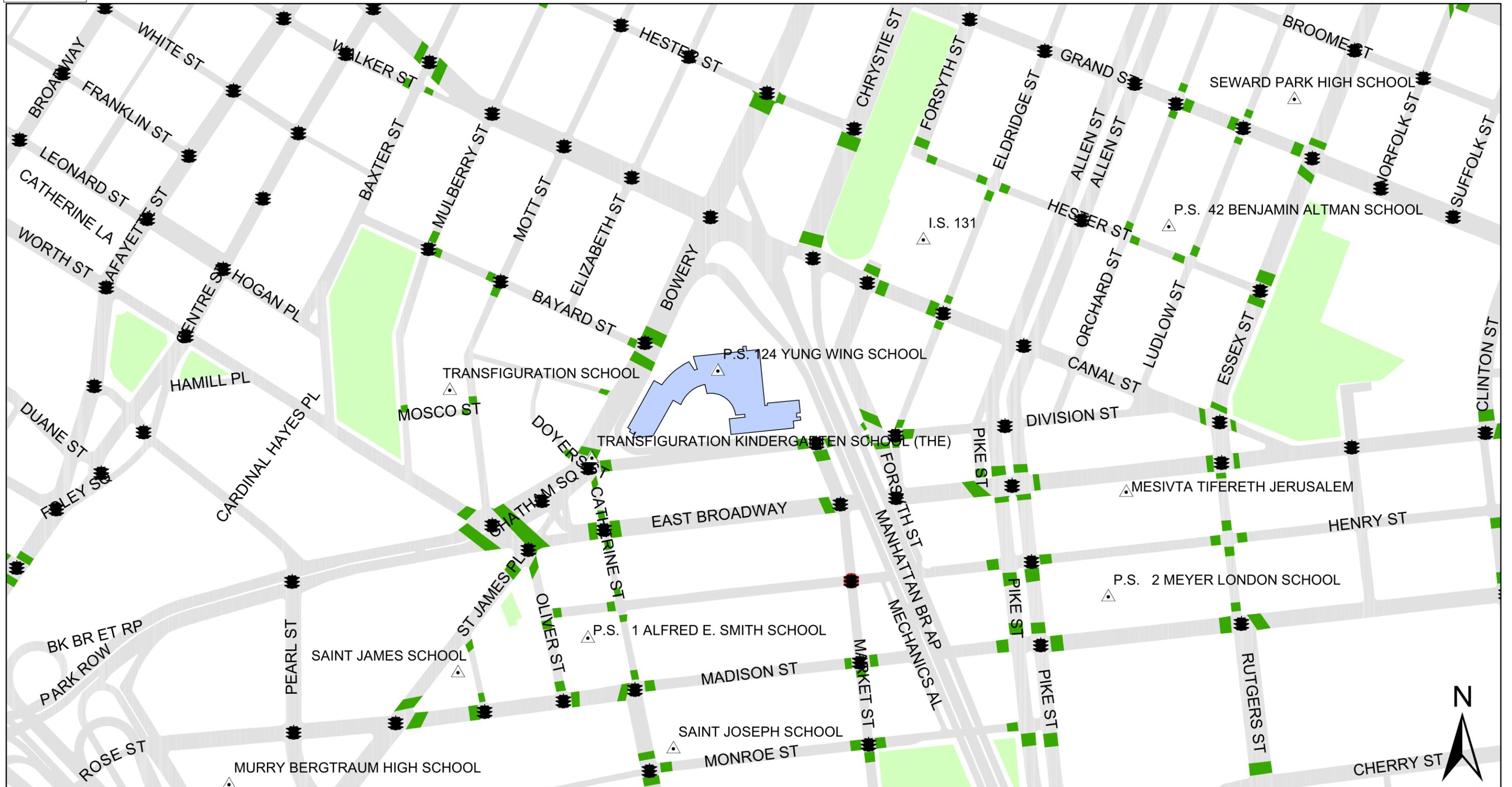
1 inch equals 350 feet

 **CATCHMENT AREA**

**EXHIBIT 2**  
**P.S. 124, MANHATTAN**  
**YUNG WING 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 124 Manhattan  
YUNG WING SCHOOL**

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

Map created on 11/16/2006

**EXHIBIT 3**

1.5.1

COMM. BOARD: 103  
PRECINCT: 5



### 3. TRAFFIC OPERATIONS

#### 3.1 SCHOOL BUS OPERATIONS

According to school representatives, there are three school buses that transport approximately 20 students to P.S. 124, and the majority of them are special education students. School buses stop at an unofficial sign placed by school personnel (see Figure 6, page 14) and drop students off while double-parked adjacent to the teacher parking area. School bus operations, according to school representatives, are not an issue at P.S. 124.

#### 3.2 PARENT DROP-OFF OPERATIONS

Although school representatives noted that only about five percent of P.S. 124 students are dropped off by parents or guardians, field observations taken on the morning of February 10, 2004, indicated that approximately twice that many, or about 100 students, were dropped off at the school. During the morning arrival period, it was not uncommon that private vehicles and school buses were parked or standing four abreast at the entrance to the school, as students disembarked from buses or emerged from private vehicles (see Figures 2, 3, and 4). Division Street is at times reduced to a single moving lane, as trucks, buses, and private vehicles double-, triple-, and quadruple-park in front of P.S. 124.



*Figure 2: Morning arrival time at P.S. 124.*



*Figure 3: A young student emerges from a private car in front of the school's main entrance*



*Figure 4: Looking east on Division Street. Vehicles double- and triple-park in front of P.S. 124, and are double-parked on the south side of Division Street.*

### **3.3 PARKING REGULATIONS**

Parking regulations on the south side of Division Street are posted as “NO STANDING EXCEPT TRUCKS LOADING AND UNLOADING.”

On the north side of Division Street in front of P.S. 124 “NO PARKING, SCHOOL DAYS, 7 AM - 4 PM, EXCEPT FOR BOARD OF EDUCATION” signs are posted. Further west, “NO PARKING ANYTIME” regulations are posted, and a “NO STANDING ANYTIME” sign is posted in the vicinity of the intersection with Bowery. See Exhibit 5 for a map of parking regulations on Division Street.



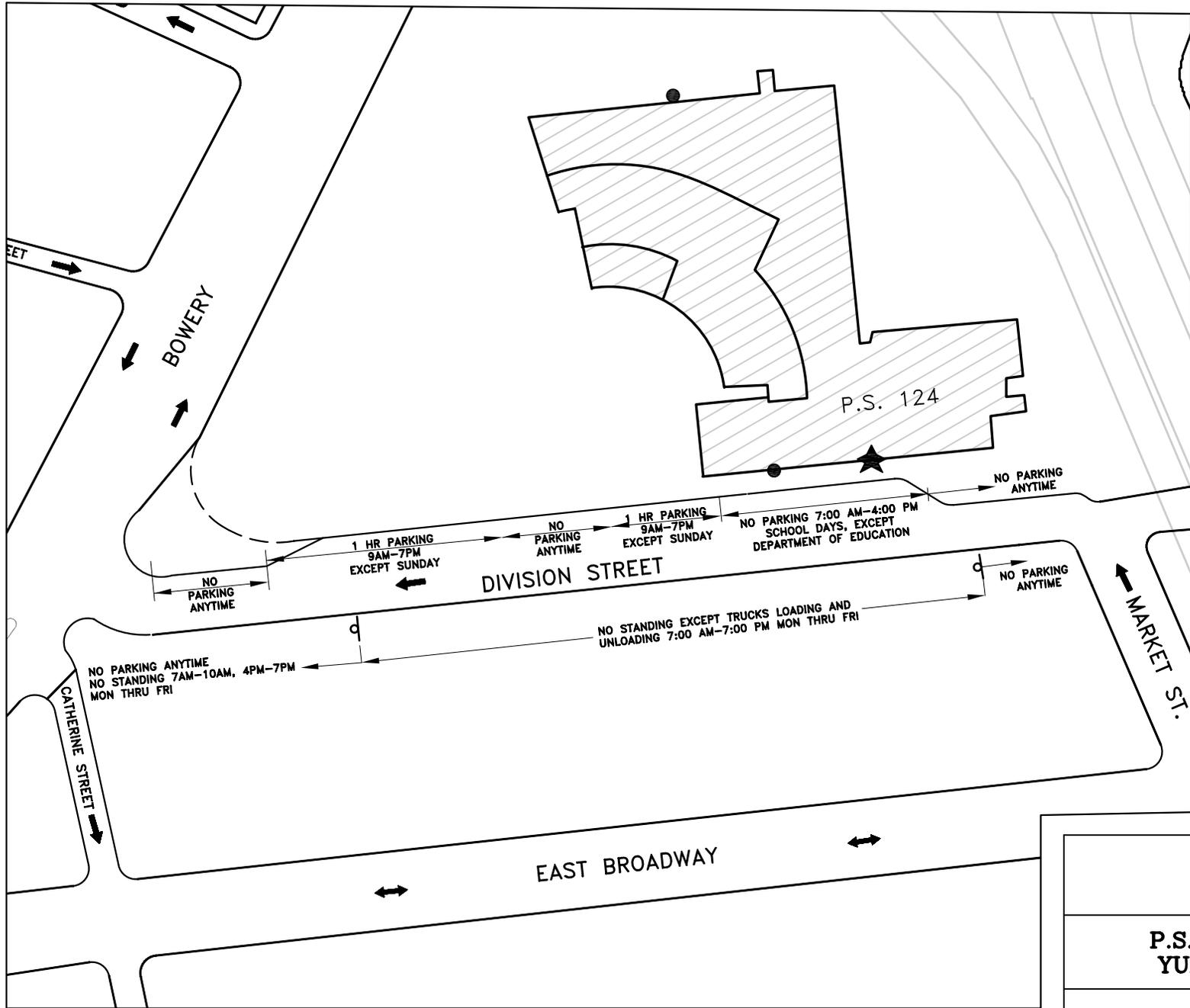
*Figure 5: Parking restriction sign in front of P.S. 124*



*Figure 6: Temporary parking restriction sign in front of P.S. 124*

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

The Traffic Safety Plan, Exhibit 3, shows existing signs and markings. The existing Traffic Safety Plan does not reflect the recent reconfiguration done as part of the Chatham Square reconstruction project, DDC Contract No. HWM 780. 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.



LEGEND

- ★ MAIN ENTRANCE
- ENTRANCE
- STREET SIGN

SCALE: 1" : 100'

**EXHIBIT 5**

**P.S. 124, MANHATTAN  
YUNG WING SCHOOL**

**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. 124 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>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Bowery and Bayard Street	51	10	0	0
Bowery and Pell Street	45	2	0	0
Bowery/Doyers and Division	98	9	2	0
East Broadway and Catherine St	61	7	0	0
East Broadway and Market Street	57	4	1	0
Division Street and Market Street	33	2	0	0
Division Street and Forsyth Street	35	5	1	0
Canal Street and Bowery	379	13	1	0
<b>TOTAL</b>	<b>759</b>	<b>52</b>	<b>5</b>	<b>0</b>

<b>INTERSECTION</b>	<b>TOTAL ACCIDENTS</b>	<b>PEDESTRIAN ACCIDENTS</b>	<b>PEDESTRIAN FATALITIES</b>	<b>SCHOOL-RELATED ACCIDENTS*</b>
Bowery and Bayard Street	79	10	1	0
Bowery and Pell Street	42	4	0	0
Bowery/Doyers/Catherine/Division	108	13	0	0
East Broadway and Catherine Street	65	12	0	1
East Broadway and Market Street	105	10	0	0
Division Street and Market Street	46	10	0	0
Division Street and Forsyth Street	48	10	0	0
Canal Street and Bowery	465	12	0	1
<b>TOTAL</b>	<b>958</b>	<b>81</b>	<b>1</b>	<b>2</b>

\* School-Related Accidents are defined as accidents involving school-aged pedestrians (age 4 – 14) that occur week-days during the school year.



ACCIDENT LOCATION \*

SCHOOL CROSSWALK ASSIGNED TO P.S. 124

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X

TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL PED ACCIDENTS
/	/	/	/

\*



1 inch equals 250 feet

**EXHIBIT 6**

**P.S. 124, MANHATTAN**

**YUNG WING SCHOOL**

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

### 3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines the traffic accident and operations issues at the intersections in the vicinity of P.S. 124.

#### 3.6.1 Division Street and Bowery

This is a six-way signalized intersection that has high volumes of both vehicular and pedestrian traffic. This intersection has been reconfigured as part of the Chatham Square reconstruction project, DDC Contract No. HWM 780. Chatham Square was reconstructed in 2000. It should be noted that the existing TSP (Traffic Safety Plan, Exhibit 3) shows the old intersection geometry and does not show the new alignment of curbs and crosswalks. However, the newly constructed intersection geometry, sidewalks and curb extensions are illustrated in Exhibit 8.

With the recent construction, the uncontrolled right turn from Division Street northbound onto Bowery has been eliminated by removing the turn lane, bringing right-turning vehicles to the signalized intersection, and providing a right turn-only signal phase for this movement. To avoid a conflict point between right-turning vehicles and pedestrians crossing Bowery, the pedestrian crossing has been eliminated. Pedestrians wishing to cross between the west side of Bowery and the northeastern corner of Division Street cross from Bowery to the southeastern corner of Division Street, and then continue, in the next signal phase, to the north side of Division Street. There are school crosswalks on the east and south legs of the intersection.



*Figure 7: Looking west on Division Street at Bowery*

This intersection has been the site of 98 accidents between 1998 and 2000, including nine pedestrian accidents, of which two were fatal. According to accident data, one victim was a 33-year-old pedestrian who was crossing against the signal when struck by a southbound left-turning vehicle. The second fatality occurred when a 70-year-old pedestrian crossed the street against the signal outside of the marked crosswalk area.

Three more pedestrians were struck and injured while crossing against the signal; two pedestrians were struck by turning vehicles while crossing with the signal at the crosswalk. No details were provided regarding the other two pedestrian accidents. None of the pedestrian accidents were school-related.

### 3.6.2 Division Street and Market Street

This is a signalized T-intersection that is utilized by a large number of P.S. 124 students en route to school. Division Street is a one-way (westbound) street that varies in width from 30 feet at the intersection to 50 feet in front of P.S. 124. Because of the high level of commercial activity, trucks routinely double-park on the south side of Division Street for loading and unloading activities. Restrictions on the south side of the street limit parking to trucks loading and unloading. On the north side, vehicles double- and triple-park in front of the school when dropping off students at the school in the morning. As described previously, tour buses lay over on the north side of Division Street adjacent to Confucius Plaza.



*Figure 8: Looking west on Division Street in front of P.S. 124 from the Manhattan Bridge*

Market Street is a 44-foot wide, one-way (northbound) street. Both streets are very congested during the a.m. and p.m. peak hours. There are school crosswalks on the east, west, and south legs of the intersection. Traffic counts were performed on May 10, 2005 to better understand the pedestrian/vehicle conflicts at the intersection (Exhibit 7A).

The intersection is adjacent to the Manhattan Bridge approach, and all traffic from Market Street must turn left onto Division Street. Immediately to the east of the school, and forming part of the Confucius Plaza complex, are an underground commercial parking garage and an above-ground parking lot used by P.S. 124 teachers (see Figure 9). Driveways for both of these parking facilities are located immediately opposite the three-way intersection with Market Street. There are curb cuts for both facilities on the north side of Division Street. While there are relatively few above-ground parking spaces, there are a significant number of users of the underground parking garage, and a car exiting the garage may block the sidewalk as pedestrians and schoolchildren are going to or from P.S. 124.



*Figure 9: Entrance to parking garage and parking ramp on Division Street at Market Street.*

A total of 33 accidents occurred at this intersection during the 1998 – 2000 study period. Two accidents involved pedestrians. One pedestrian was struck while crossing against the signal. The second pedestrian was crossing with the signal when struck by a vehicle improperly backing up.

In addition, 28 accidents occurred on Division Street between Market Street and Bowery during the 1998 - 2000 study period. Four pedestrians were struck, and one pedestrian was killed, during this period. All four accidents are attributed to pedestrians crossing at areas not marked for pedestrian crossings.



*Figure 10: Division Street at Market Street during morning rush hour*



Figure 11: Division Street at Market Street (looking from the Manhattan Bridge)

A spot speed survey was conducted on Division Street between Bowery and Market Street on September 19, 2005.

The speed study results are shown in Table 4 and in the Appendix. The 85<sup>th</sup> percentile speed was found to be 29 mph, which is under the legal speed limit of 30 mph.

<b>TABLE 4: SPOT SPEED STUDY (DIVISION STREET)</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
Division Street between Bowery and Market Street	26	29

### 3.6.3 East Broadway and Market Street

The East Broadway-Market Street intersection is a four-way signalized intersection. East Broadway is a 52-foot wide, two-way (east-west) street with two travel lanes in each direction and parking on both sides. There is a school crosswalk on the west leg of the intersection. Because of numerous retail stores and other activities along Market Street and East Broadway, this intersection is utilized by many pedestrians traveling in all directions.

A traffic count was conducted at the intersection on September 19, 2005 to better understand vehicle/pedestrian conflicts at this intersection. A total of 3,648 pedestrians crossed at this intersection between 2:30 p.m. and 3:30 p.m. At the same time, 1,369 vehicles utilized this intersection (see Exhibit 7A and Appendix for details). During field data collection efforts, many pedestrians were observed disregarding traffic rules, crossing against the signal and outside of the marked pedestrian crosswalk.

A total of 57 accidents occurred during the 1998-2000 study period, including four that involved pedestrians. One pedestrian was killed during this period. According to the accident data, the pedestrian was not in the roadway when struck by a northbound vehicle; the accident was attributed to driver error and wet roadway conditions. The second accident occurred when a pedestrian who was crossing with the signal was struck by a driver that failed to yield to the pedestrian. Two other accidents were the result of pedestrians crossing against the signal.



*Figure 12: Looking east on East Broadway at Market Street (looking south on Market Street)*

A spot speed survey was conducted on East Broadway between Market Street and Catherine Street on September 19, 2005.

The speed study results are shown Table 4 and in the Appendix. The 85<sup>th</sup> percentile speed was found to be 25 mph, which is under the legal speed limit of 30 mph.

<b>TABLE 5: SPOT SPEED STUDY (EAST BROADWAY)</b>		
<b>LOCATION</b>	<b>MEDIAN SPEED (MPH)</b>	<b>85TH PERCENTILE SPEED (MPH)</b>
East Broadway between Market Street and Catherine Street	23	25

#### 3.6.4 Forsyth Street/ Eldridge Street at Division Street

This is a five-way intersection where Forsyth Street, Eldridge Street, and Division Street meet. Forsyth Street is a 45-foot wide, one-way (southbound) street with two travel lanes and parking on both sides. Forsyth Street becomes a two-way street south of Division Street. Eldridge Street is 20-foot wide, one-way (northbound) street with one travel lane and parking on both sides. There are school crosswalks on all legs of the intersection.

This intersection was the site of 35 accidents during the 1998 - 2000 study period. Five pedestrians were struck, and one pedestrian was killed, during this time period. According to accident data, an 80-year-old pedestrian was struck and killed by a northbound vehicle; the primary cause of this accident was the driver's obstructed view. Another pedestrian was hit while crossing with the signal. All other pedestrian accidents were attributed to pedestrian error with pedestrians crossing against the signal or outside of marked pedestrian crosswalks.



*Figure 13: looking west on Division Street at Forsyth Street*

### 3.6.5 East Broadway and Catherine Street

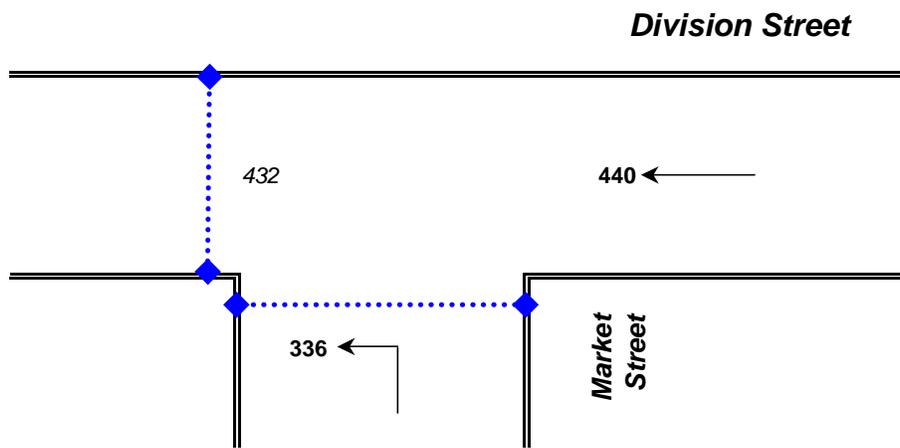
The East Broadway-Catherine Street intersection is a four-way signalized intersection. East Broadway is a two-way, 54-foot wide busy roadway, and Catherine Street is a one-way (southbound) 20-foot wide street. School crosswalks are striped across all four legs of the intersection.

A traffic count was conducted at this intersection on September 19, 2005. Although vehicular volumes were relatively moderate (648 vehicles/hour), a total of 3,330 pedestrians crossed at this intersection during the 2:30 p.m. to 3:30 p.m. period (see Exhibit 7B and Appendix for details).

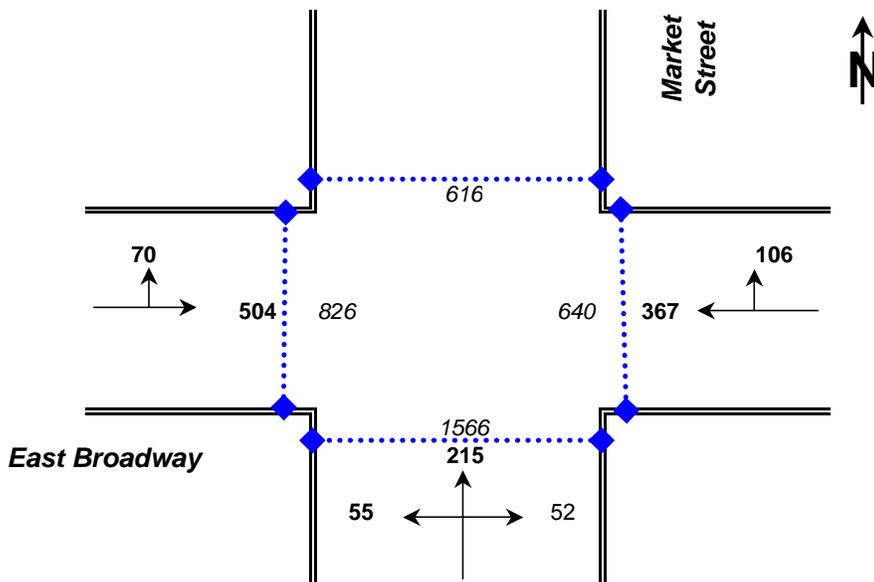
From 1998 to 2000, 61 accidents occurred at this intersection. Seven accidents involved pedestrians. Five accidents occurred as pedestrians were crossing against the signal or outside of the marked crosswalk. One pedestrian was struck by an eastbound vehicle that failed to yield the right-of-way to the pedestrian crossing at the crosswalk and with the signal. There was insufficient information available to determine how the seventh pedestrian accident occurred.

In addition, 52 accidents occurred on East Broadway between Market Street and Catherine Street during the 1998 - 2000 study period. Three pedestrians were struck, one of which was school-related. No further information is available.

**One Hour Traffic Count Volumes**



*Intersection of Division Street and Market Street - (7:30 AM - 8:30 AM May 10, 2005)*

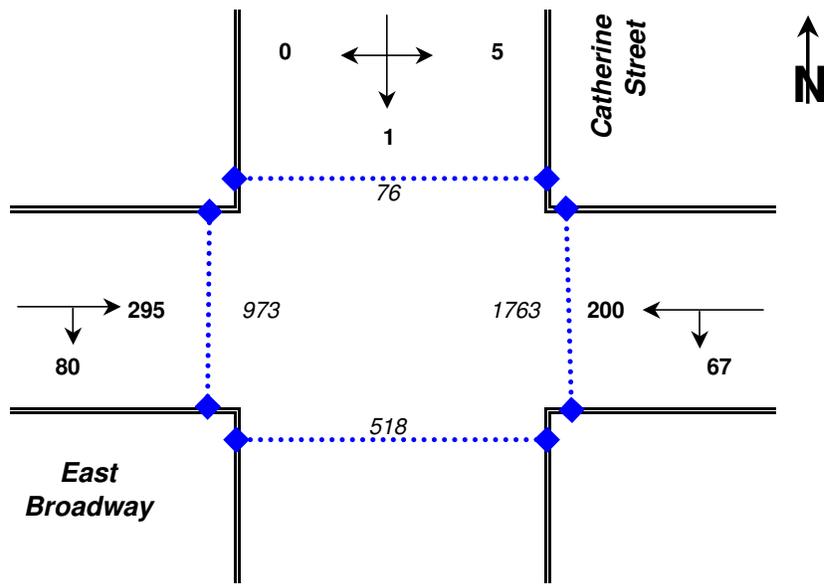


*Intersection of East Broadway and Market Street - (2:30 PM - 3:30 PM, September 19, 2005)*

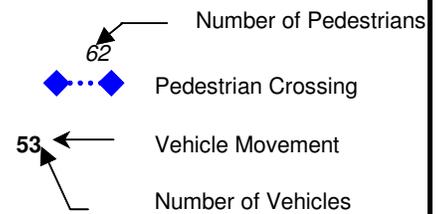
- Number of Pedestrians
- 62
- Pedestrian Crossing
- 53
- Vehicle Movement
- Number of Vehicles

EXHIBIT 7A
P.S. 124 YUNG WING SCHOOL
TRAFFIC COUNTS

**One Hour Traffic Count Volumes**



*Intersection of East Broadway and Catherine Street - (2:30 PM - 3:30 PM, September 19, 2005)*



<b>EXHIBIT 7B</b>
<b>P.S. 124 YUNG WING SCHOOL</b>
<b>TRAFFIC COUNTS</b>

### 3.6.6 Bowery and Bayard Street

This is a signalized T-intersection. Bowery is a two-way 80-foot wide roadway with two travel lanes and parking on both sides. Bayard Street is a one-way (eastbound) 24-foot wide street. Bowery is a major arterial connecting Third Avenue to the Manhattan Bridge and carries high traffic volumes in both the southbound and northbound directions.

Fifty-one accidents occurred at this intersection during the 1998 to 2000 period. Ten accidents involved pedestrians. According to accident data, eight pedestrian accidents occurred as a result of driver's failure to yield to pedestrians crossing at the crosswalk with the signal. One accident was attributed to an improper parking maneuver. There are no further details on the tenth accident.

### 3.6.7 Bowery and Canal Street

This is a very heavily traveled intersection as it serves as the entrance to the Manhattan Bridge. West of Bowery, Canal Street has two lanes traveling westbound with parking permitted along the north curb. East of Bowery, Canal Street is divided to facilitate vehicles entering and exiting the Manhattan Bridge (see Figure 14). There is no parking permitted on Canal Street between Bowery and Chrystie Street.

There are school crosswalks on all the legs of the intersection.



*Figure 14: Intersection of Canal Street and Bowery*

*It should be noted that a large-scale NYCDOT transportation study (CATS - Canal Area Transportation Study) is currently underway for the Canal Street area.*

The accident data from 1998-2000 indicates that there were 379 accidents at this intersection; 13 of these involved pedestrians, one of which was fatal. An 87-year-old pedestrian was crossing against the signal while the driver was traveling east. Most of the accidents at this intersection occurred while the pedestrian was crossing against the signal; two were caused by drivers reversing their vehicles.

3.6.8 Bowery and Pell Street

This is an uncontrolled intersection. Pell Street is a 18-foot wide, one-way (eastbound) street with one travel lane and parking one side of the street. There is a school crosswalk on the west leg of the intersection.

A total of 45 accidents occurred at this intersection during the 1998-2000 study period. Two accidents involved pedestrians. Both pedestrians were struck while crossing Bowery, although no crosswalks exist at this location.

### 3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field verified at all signalized intersections in the vicinity of P.S. 124 and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches.

<b>TABLE 6: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS</b>				
Intersection Name	Crosswalk Length (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
<b>Division St. @ Forsyth St.</b>				
crossing Division St.	62	40	24	NO
crossing Forsyth St.	44	40	18	NO
<b>Division St. @ Market St.</b>				
crossing Division St.	31	40	13	NO
crossing Market St.	44	40	18	NO
<b>E. Broadway @ Market St.</b>				
crossing E. Broadway	56	31	20	NO
crossing Market St.	49	49	22	NO
<b>Division St. @ Chatham Sq.</b>				
crossing Division Street	51	38	20	NO
crossing Chatham Square	70	34	26	NO
<b>E. Broadway @ Catherine St</b>				
crossing E. Broadway	55	25	21	NO
crossing Catherine St	20	55	10	NO
<b>Bowery @ Bayard Street</b>				
crossing Bowery	80	30	30	NO
crossing Bayard	23	50	11	NO

*Note – A rate of 3 feet/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate.*

### 3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

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

#### **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 Division Street*

It is recommended that all buses assigned to P.S. 124 load and unload students at a designated school bus area in front of the Division Street entrance. The installation of “No Standing 7AM - 4 PM, School Days” signs should be installed for a length of 60 feet in front of the school’s main entrance to provide sufficient frontage for school buses to drop off and pick up students. The existing teacher parking now located in front of the school's main entrance should be relocated to the west of the No Standing Zone (see Exhibit 8).

- *Install a “NO LEFT TURN” sign at Bowery/Division and Catherine Street*

Remove the existing “NEW- NO TURN” sign from the signal pole, and replace it with a “NO LEFT TURN” sign for vehicles traveling south on Bowery. This sign should be placed on the same signal pole, but not higher than seven feet from the top of the median. Prohibiting this movement will eliminate the pedestrian-vehicle conflict point between pedestrians crossing Catherine Street and southbound left turning vehicles from Bowery (see Exhibit 8).

- *Install “USE CROSSWALK” sign at Bowery and Division Street*

A “USE CROSSWALK” sign should be considered to direct pedestrians not to cross Bowery where crosswalks are not in place.

- *Install “STOP” sign for vehicles exiting the underground parking garage on Division Street*

It is recommended that the owners of the Confucius Plaza underground parking garage install a mirror and stop sign so that vehicles exiting the parking garage on Division Street at Market Street are required to stop before driving onto the sidewalk.

- *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 issues, including crossing the street with the WALK phase and the meaning of the WALK - FLASHING DON’T WALK - DON’T WALK pedestrian signal sequence.

- Place advanced stop bars ten feet before school crosswalks

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

- Install pedestrian information sign that explains the signal phases

Installation of a pedestrian information sign at the intersection of Bayard Street and Bowery is recommended. Most students utilize these two intersections walking to and from school. Bowery is a wide, high volume roadway. Therefore, pedestrians will benefit from the proposed informational signage.

- Install pavement markings on Division Street

Division Street does not currently have pavement markings that delineate the appropriate vehicle travel path. It is therefore recommended that NYCDOT install pavement markings as indicated on Exhibit 8 and the Appendix.

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

- Realign geometry of Forsyth Street and Division Street

It is proposed to realign the intersection of Forsyth Street and Division Street as a regular four-way intersection. This would eliminate the free right turn for southbound vehicles on Forsyth Street turning onto Division Street. In addition, the crossing distance for pedestrians crossing Division Street will be substantially reduced.

It is also recommended that the existing island dividing Forsyth Street (south of Division Street) be widened to increase its capacity for pedestrian storage and to shorten the crossing distance for pedestrians.

- Install raised concrete medians on Bowery

To improve safety conditions for pedestrians crossing at Bowery and Bayard Street, raised concrete medians should be considered. The raised medians will replace existing striped medians provided that the Final Design confirms that construction of the recommended medians would be feasible and would not interfere with traffic operations (See Exhibit 8).

The proposed raised median should extend through the crosswalk to provide a refuge area for pedestrians. The median should have an ADA compliant at-grade cut-through. Final details pertaining to geometry of concrete medians will be developed during the Final Design/Contract Document preparation.

- Consider curb extensions at the following intersections:

Consideration should be given to installing a curb extension at the following locations, provided that the Final Design confirms that construction of the recommended curb extension would be feasible and would not interfere with traffic operations. Final details pertaining to the number, location and geometry of curb extensions will be developed during the Final Design/Contract Document preparation.

- Market Street and Division Street (southwest corner)
- Forsyth Street/Eldridge Street and Division Street (northeast)
- East Broadway and Catherine Street (northeast and southeast corners)
- East Broadway and Market Street (northwest and southwest corners)

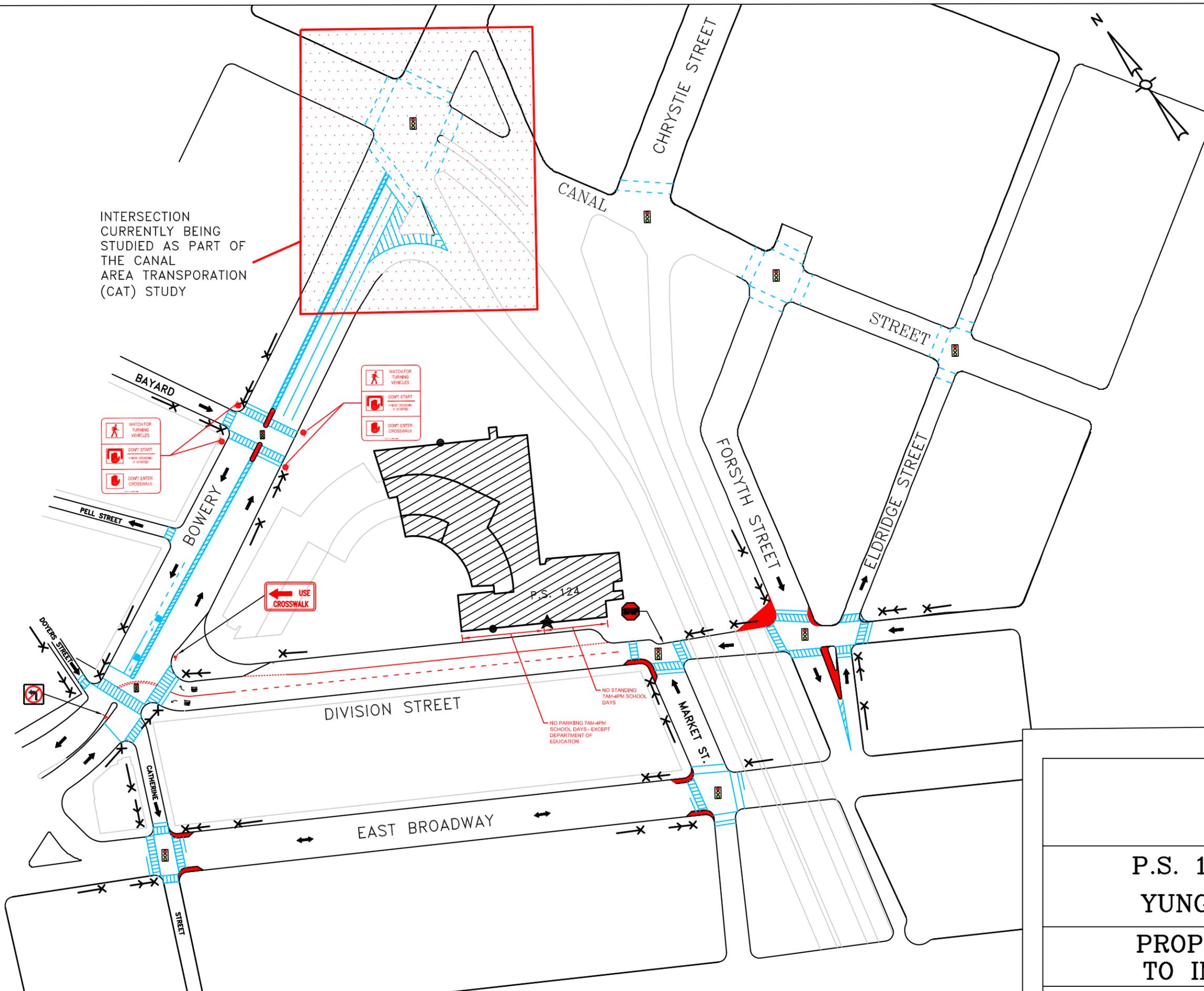
Curb extensions should be considered at the corners as shown in Exhibit 8.

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

- Bowery and Canal Street

This intersection is being studied as part of the Canal Area Transportation Study (CAT Study) currently underway by New York Metropolitan Transportation Council (NYMTC). Measures developed for improving student pedestrian safety for this intersection have been forwarded to NYMTC for coordination with the larger CATS study.

INTERSECTION CURRENTLY BEING STUDIED AS PART OF THE CANAL AREA TRANSPORTATION (CAT) STUDY



**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
- 📐 PROPOSED CURB EXTENSION (NECKDOWN)
- ▬ PROPOSED MEDIAN
- ↔ PROPOSED PARKING REGULATIONS

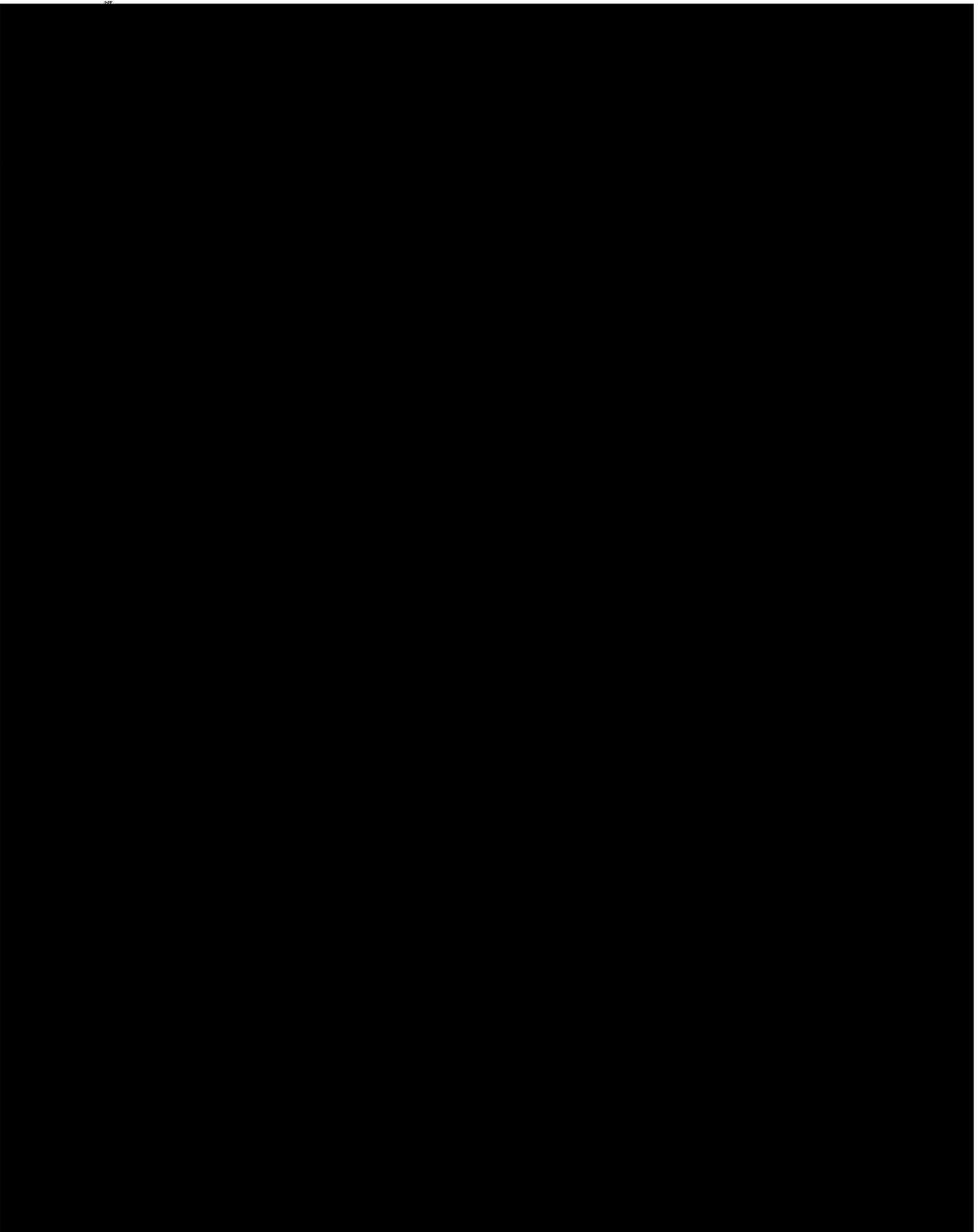
SCALE: 1" : 100'

**EXHIBIT 8**

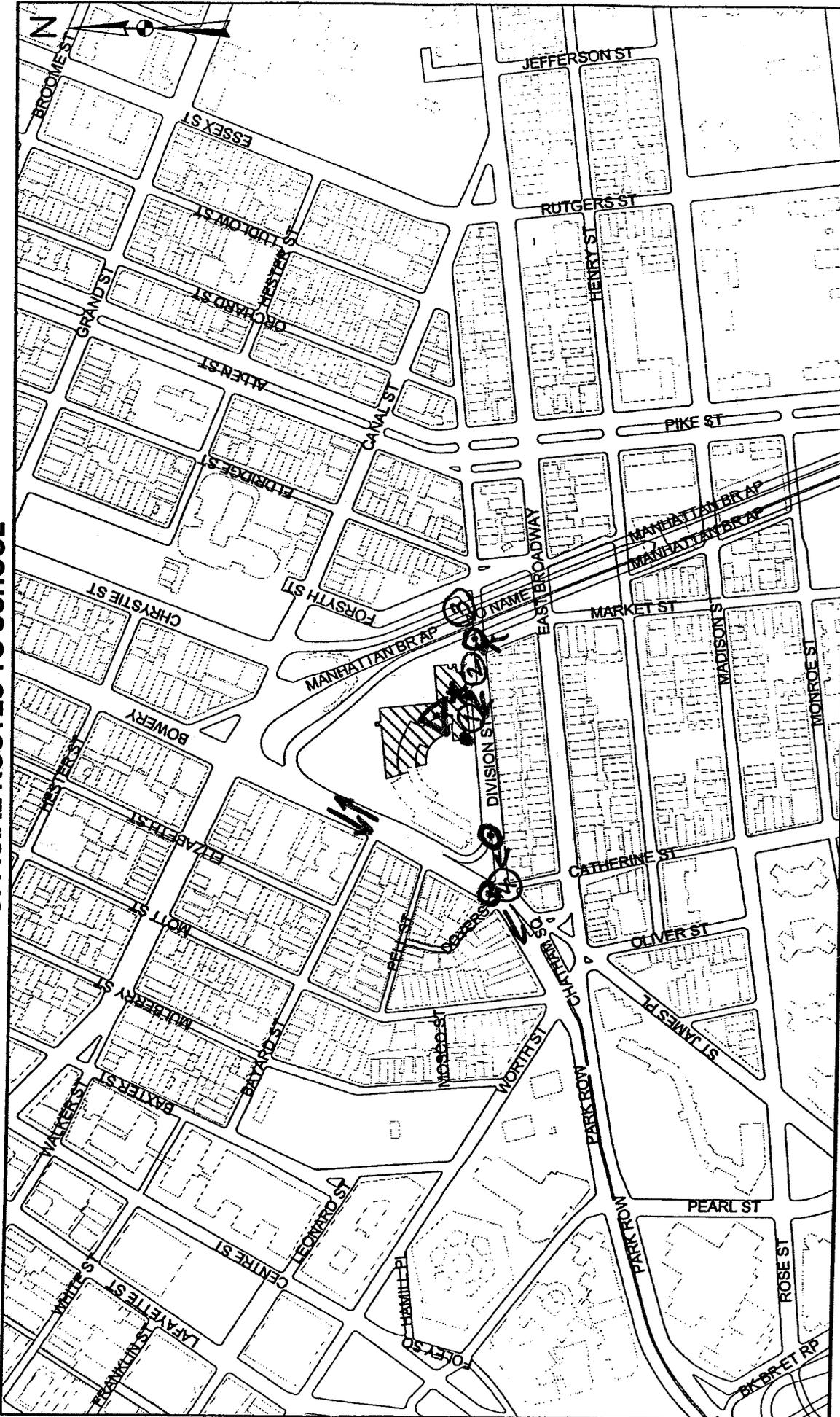
**P.S. 124, MANHATTAN  
YUNG WING SCHOOL  
PROPOSED MEASURES  
TO IMPROVE SAFETY**

# APPENDIX





**TRAFFIC SAFETY PLAN  
OFFICIAL ROUTES TO SCHOOL**



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 crosswalks.

**LEGEND:**

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

**YUNG WING SCHOOL  
P.S. 124**

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

ORIG. DATE: 1/14/1977  
GIS CONVY: 04/2002  
REVISIONS:

COMM. BOARD: 3  
BOROUGH: MANHATTAN  
PRECINCT: 5

DRAWING NO. \_\_\_\_\_  
CC- 112  
MS- 5215

## SPOT SPEED STUDY

Date: **September 19, 2005**      Time: **12:00 PM To 12:45 PM**  
 Location: **Division Street between Bowery and Market Street**  
 Surveyor: **Eyad Yousef**

School: **P.S.124**  
 Direction: **WB**  
 Comments: **Sunny and Dry**

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	1	1.0%	1.0%	19	361
20	1	1.0%	2.0%	20	400
21	4	4.0%	6.0%	84	1764
22	3	3.0%	9.0%	66	1452
23	9	9.0%	18.0%	207	4761
24	17	17.0%	35.0%	408	9792
25	12	12.0%	47.0%	300	7500
26	19	19.0%	66.0%	494	12844
27	10	10.0%	76.0%	270	7290
28	8	8.0%	84.0%	224	6272
29	4	4.0%	88.0%	116	3364
30	7	7.0%	95.0%	210	6300
31	3	3.0%	98.0%	93	2883
32	1	1.0%	99.0%	32	1024
33	0	0.0%	99.0%	0	0
34	1	1.0%	100.0%	34	1156
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
	100	100.0%		2577	67163

Mean Speed = 25.8 mph      Median Speed = 25.8 mph  
 Standard Deviation = 2.8 mph      15th Percentile Speed = 22.9 mph  
 Margin of Error (95% Confidence) = ± 0.5 mph      85th Percentile Speed = 28.6 mph

# SPOT SPEED STUDY

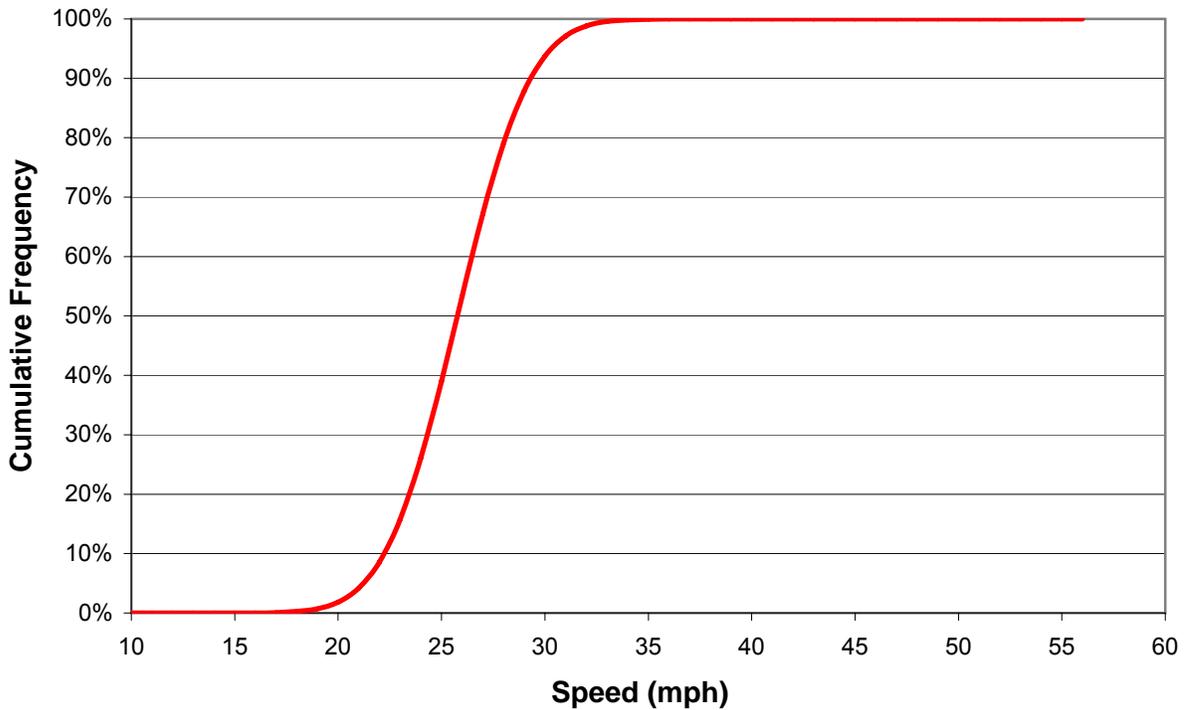
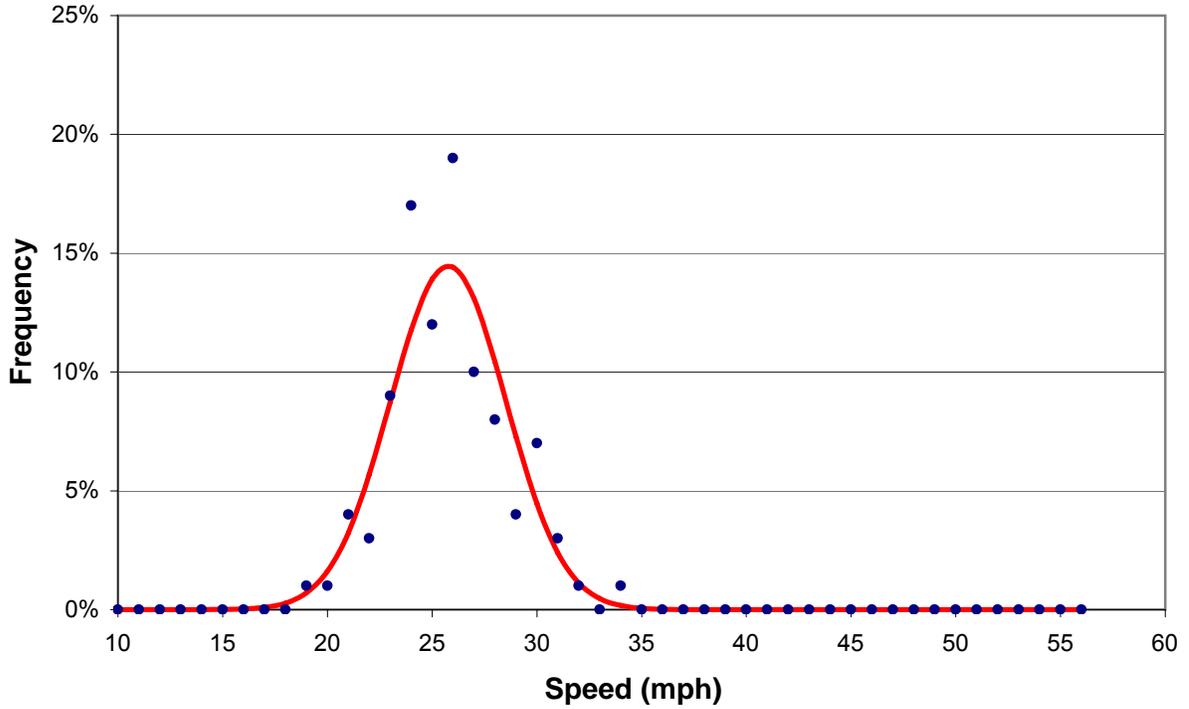
Date: **September 19, 2005**  
Location: **Division Street between Bowery and Market Street**  
Surveyor: **Eyad Yousef**

Time: **12:00 PM To 12:45 PM**

School: **P.S.124**  
Direction: **WB**  
Comments: **Sunny and Dry**

Mean Speed = 25.8 mph  
Standard Deviation = 2.8 mph  
Margin of Error (95% Confidence) =  $\pm 0.5$  mph

Median Speed = 25.8 mph  
15th Percentile Speed = 22.9 mph  
85th Percentile Speed = 28.6 mph



## SPOT SPEED STUDY

Date: **September 19, 2005**      Time: **12:45 PM To 1:45 PM**  
 Location: **East Broadway between Market Street and Catherine Street**  
 Surveyor: **Eyad Yousef**

School: **P.S.124**  
 Direction: **EW**  
 Comments: **Sunny and Dry**

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	13	12.9%	12.9%	260	5200
21	6	5.9%	18.8%	126	2646
22	19	18.8%	37.6%	418	9196
23	23	22.8%	60.4%	529	12167
24	18	17.8%	78.2%	432	10368
25	22	21.8%	100.0%	550	13750
26	0	0.0%	100.0%	0	0
27	0	0.0%	100.0%	0	0
28	0	0.0%	100.0%	0	0
29	0	0.0%	100.0%	0	0
30	0	0.0%	100.0%	0	0
31	0	0.0%	100.0%	0	0
32	0	0.0%	100.0%	0	0
33	0	0.0%	100.0%	0	0
34	0	0.0%	100.0%	0	0
35	0	0.0%	100.0%	0	0
36	0	0.0%	100.0%	0	0
37	0	0.0%	100.0%	0	0
38	0	0.0%	100.0%	0	0
39	0	0.0%	100.0%	0	0
40	0	0.0%	100.0%	0	0
41	0	0.0%	100.0%	0	0
42	0	0.0%	100.0%	0	0
43	0	0.0%	100.0%	0	0
44	0	0.0%	100.0%	0	0
45	0	0.0%	100.0%	0	0
46	0	0.0%	100.0%	0	0
47	0	0.0%	100.0%	0	0
48	0	0.0%	100.0%	0	0
49	0	0.0%	100.0%	0	0
50	0	0.0%	100.0%	0	0
51	0	0.0%	100.0%	0	0
52	0	0.0%	100.0%	0	0
53	0	0.0%	100.0%	0	0
54	0	0.0%	100.0%	0	0
55	0	0.0%	100.0%	0	0
56	0	0.0%	100.0%	0	0
	101	100.0%		2315	53327

Mean Speed = 22.9 mph	Median Speed = 22.9 mph
Standard Deviation = 1.6 mph	15th Percentile Speed = 21.2 mph
Margin of Error (95% Confidence) = ± 0.3 mph	85th Percentile Speed = 24.6 mph

# SPOT SPEED STUDY

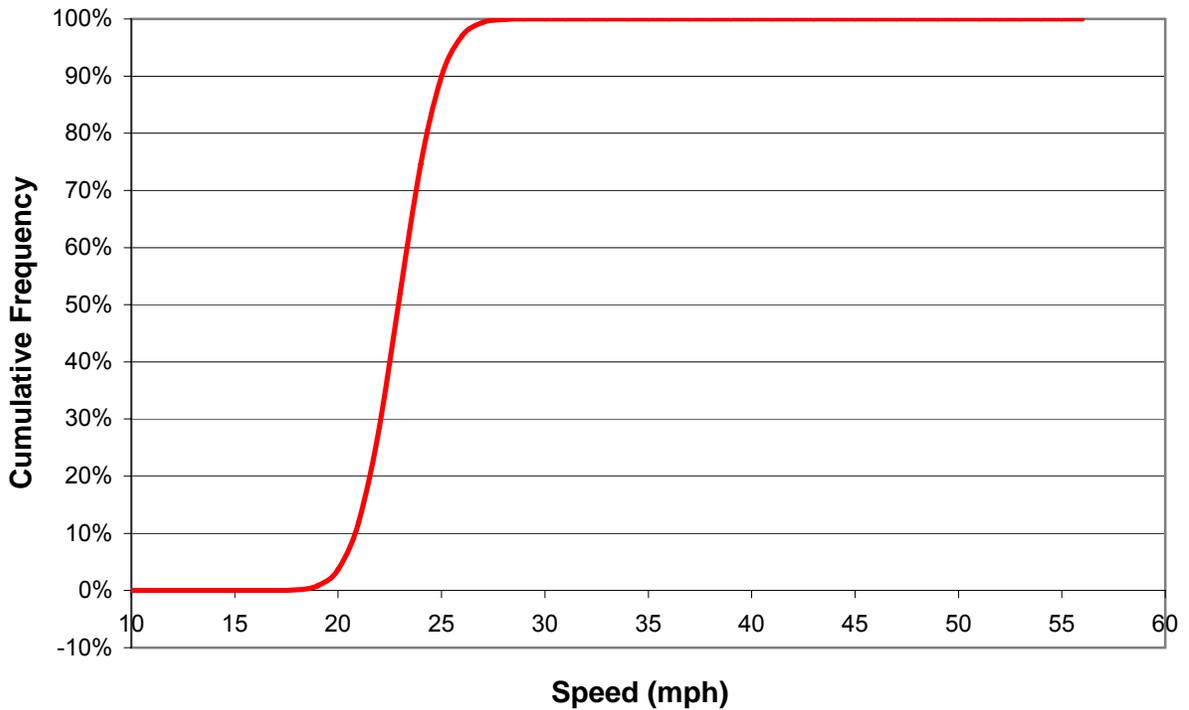
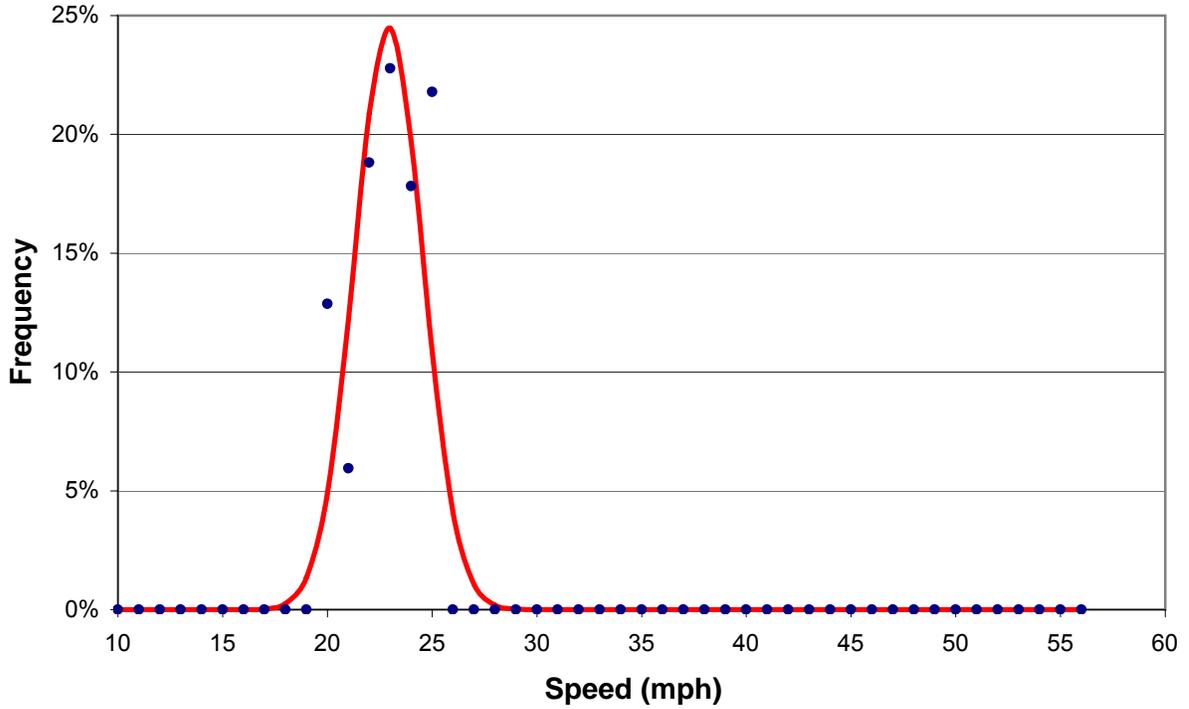
Date: **September 19, 2005**  
Location: **East Broadway btw. Market Street and Catherine Street**  
Surveyor: **Eyad Yousef**

Time: **12:45 PM To 1:45 PM**

School: **P.S.124**  
Direction: **EW**  
Comments: **Sunny and Dry**

Mean Speed = 22.9 mph  
Standard Deviation = 1.6 mph  
Margin of Error (95% Confidence) =  $\pm 0.3$  mph

Median Speed = 22.9 mph  
15th Percentile Speed = 21.2 mph  
85th Percentile Speed = 24.6 mph



**P.S. 124**  
 September 19, 2005  
 2:30 pm - 3:30 pm

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

Site:  
 Date: 09/19/05

Combined

*\*Peds not included in table data*

Begin Time	Total	MARKET STREET			EAST BROADWAY		MARKET STREET			EAST BROADWAY			
		W-R	W-T	N-R	N-T	N-L	E-T	E-L					
14:30:00	217	0	0	0	15	59	0	20	45	1	0	69	8
14:45:00	302	0	0	0	34	64	0	11	31	14	0	119	29
15:00:00	373	0	0	0	26	117	0	13	29	27	0	145	16
15:15:00	477	0	0	0	31	127	0	8	110	13	0	171	17
	<b>1,369</b>	0	0	0	106	367	0	52	215	55	0	504	70

Peak Volume Periods (1 hour Res:15 min.)					
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	14:15:00	To 15:15:00	519
<b>PM</b>	15:00:00	To 20:00:00	14:30:00	To 15:30:00	1,369

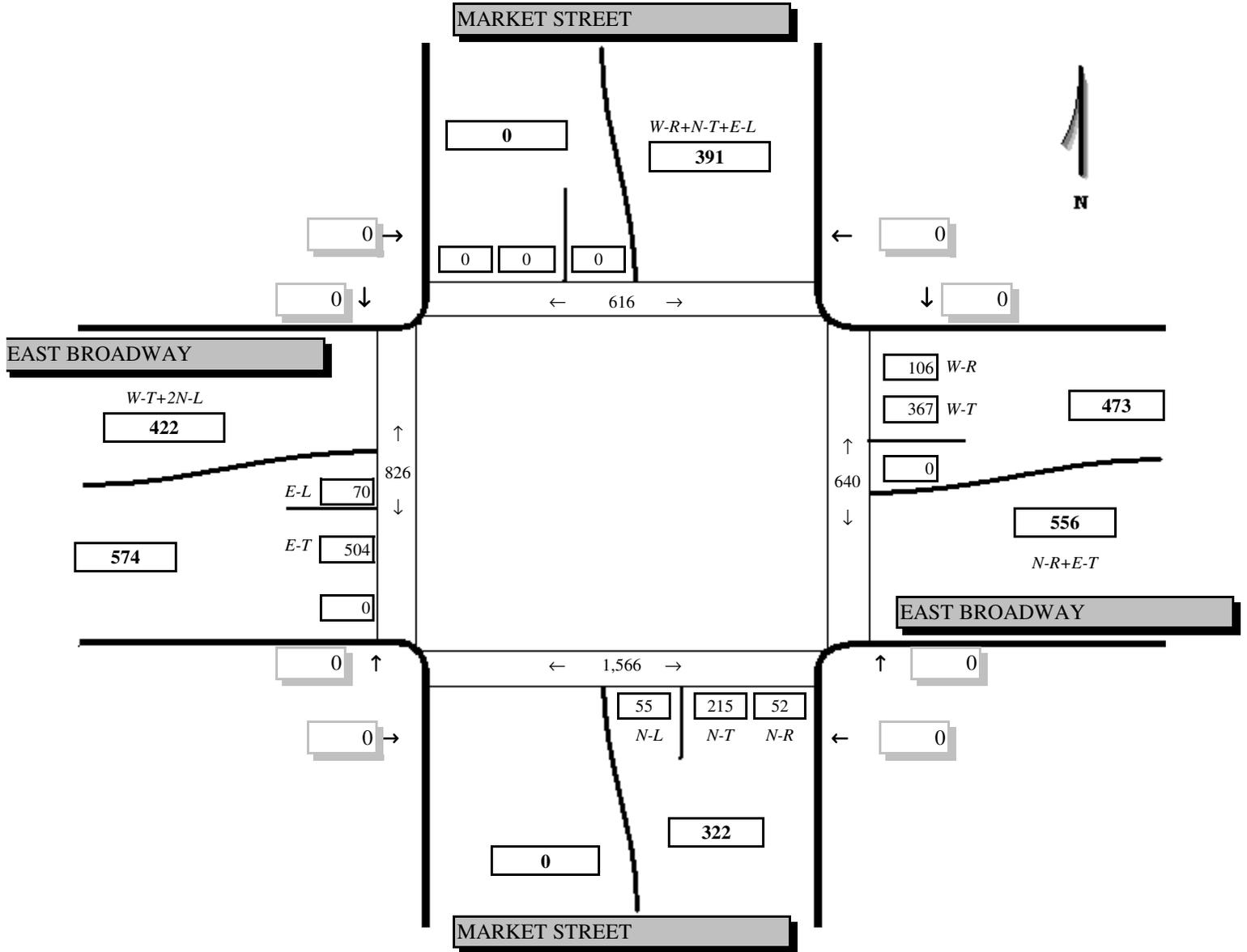
**P.S. 124**  
 September 19, 2005  
 2:30 pm - 3:30 pm

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

Site:  
 Date: 09/19/05

Combined

*\*Peds not included in table data*



**P.S. 124**

September 19, 2005  
2:30 pm - 3:30 pm

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

Site:  
Date: 09/19/05

Combined

*\*Peds not included in table data*

Begin Time	Total	CATHERINE STREET			EAST BROADWAY			CATHERINE STREET			EAST BROADWAY		
		S-R	S-T	S-L	W-R	W-T	W-L	E-R	E-T	E-L			
14:30:00	166	0	0	2	0	49	14	0	0	0	24	77	0
14:45:00	173	0	0	0	0	54	16	0	0	0	18	85	0
15:00:00	167	0	0	3	0	54	16	0	0	0	19	75	0
15:15:00	142	0	1	0	0	43	21	0	0	0	19	58	0
<b>648</b>		0	1	5	0	200	67	0	0	0	80	295	0

Peak Volume Periods (1 hour Res:15 min.)					
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	14:15:00	To 15:15:00	339
<b>PM</b>	15:00:00	To 20:00:00	14:30:00	To 15:30:00	648

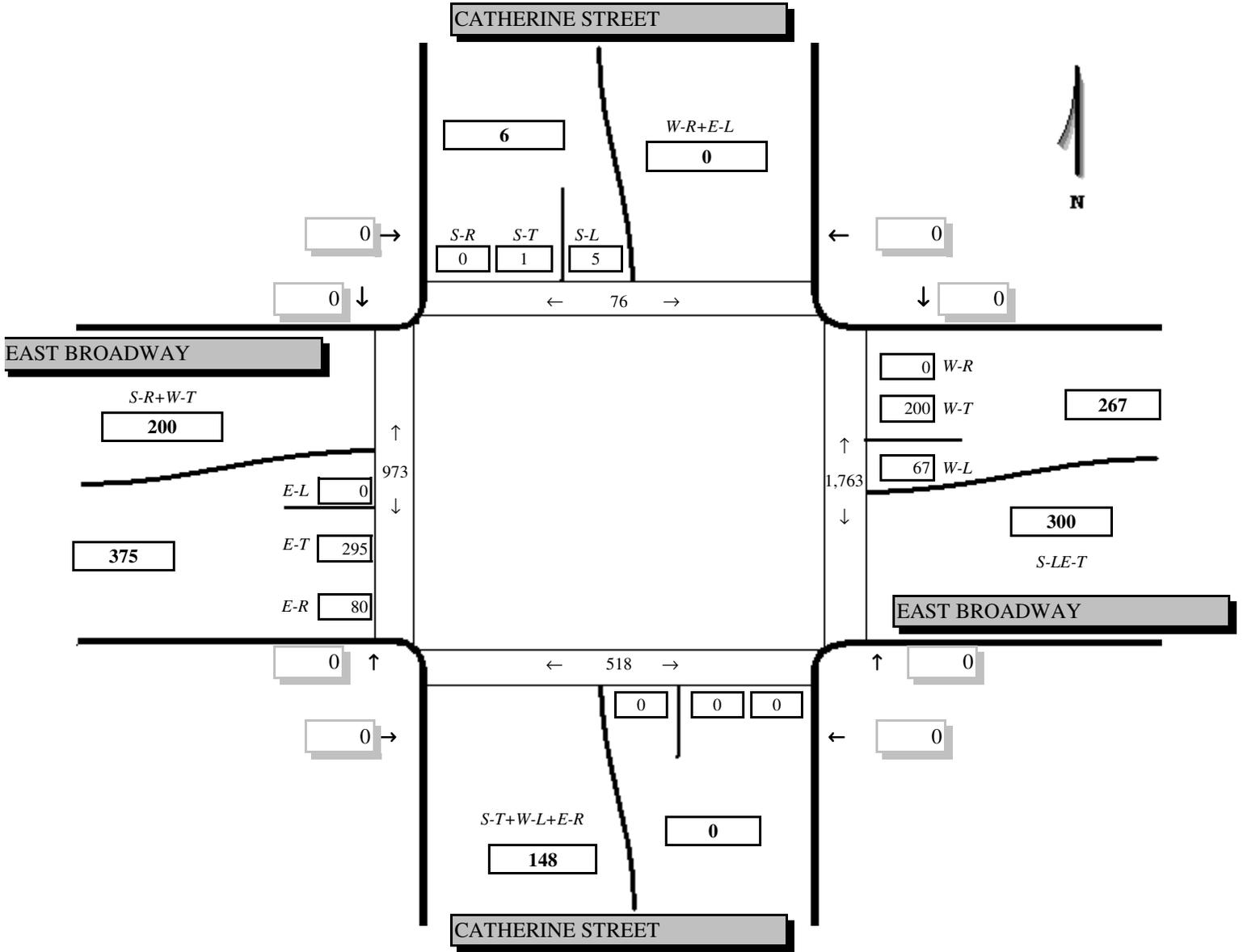
**P.S. 124**  
 September 19, 2005  
 2:30 pm - 3:30 pm

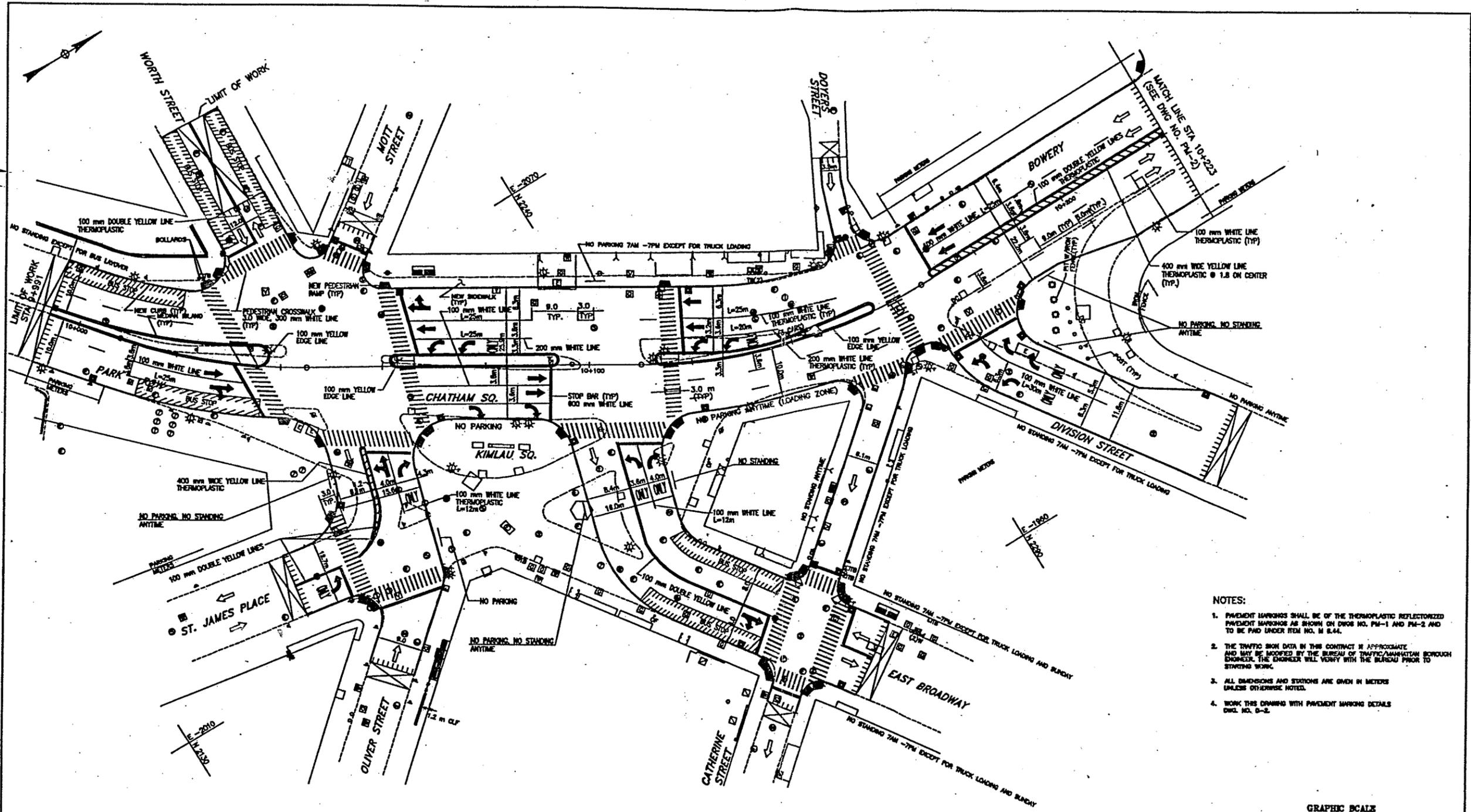
Title1 : SCHOOL SAFETY ENGINEERING  
 Title2 : BOROUGH OF MANHATTAN  
 Title3 : NYC-DOT

Site:  
 Date: 09/19/05

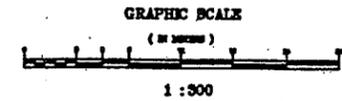
Combined

\*Peds not included in table data



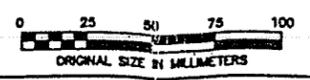


- NOTES:
1. PAVEMENT MARKINGS SHALL BE OF THE THERMOPLASTIC REFLECTORIZED PAVEMENT MARKINGS AS SHOWN ON DWG NO. PM-1 AND PM-2 AND TO BE PAID UNDER ITEM NO. M 8.44.
  2. THE TRAFFIC SIGN DATA IN THIS CONTRACT IS APPROXIMATE AND MAY BE MODIFIED BY THE BUREAU OF TRAFFIC/MANHATTAN BOROUGH ENGINEER. THE ENGINEER WILL VERIFY WITH THE BUREAU PRIOR TO STARTING WORK.
  3. ALL DIMENSIONS AND STATIONS ARE GIVEN IN METERS UNLESS OTHERWISE NOTED.
  4. WORK THIS DRAWING WITH PAVEMENT MARKING DETAILS DWG. NO. 9-2.



CITY OF NEW YORK DEPARTMENT OF DESIGN & CONSTRUCTION DIVISION OF INFRASTRUCTURE			
PREPARED BY: <b>Raytheon</b> <small>Raytheon Infrastructure Services Incorporated</small>			
<b>RECONSTRUCTION OF          CHATHAM SQUARE AREA</b>			
BOROUGH OF MANHATTAN		CONTRACT NO. HMM780	
<b>PAVEMENT MARKING PLAN</b>			
DWG. NO. PM-1	DATE	SCALE 1 : 300	SHEET OF

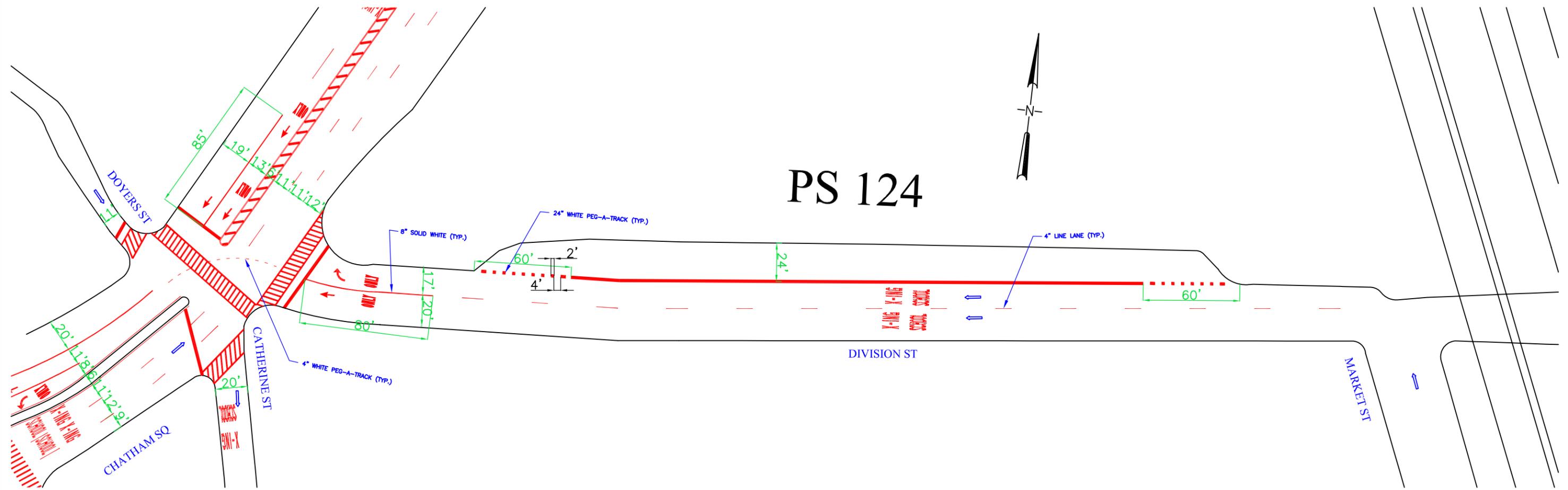
DESIGNED	J.L.	ENGINEER-IN-CHARGE	P.E.	DIRECTOR	P.E.
DRAWN	S.P./N.B.				
CHECKED	F.P.				



NO.	DATE	DESCRIPTIONS	APPR'D

REVISIONS

DATE	BY	DESCRIPTION



CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION  
**BUREAU OF TRAFFIC OPERATIONS**  
 28-11 Queens Plaza North L.I.C., N.Y. 11101

**DIVISION ST**  
 FROM MARKET ST TO BOWERY

APPROVED	Drawn by <u>DR</u>	DRAWING NO. <u>N/A</u>
BY <u>BE</u>	Checked by <u>BE</u>	
	Borough <u>MANHATTAN</u>	
	Scale <u>1"=60'</u>	
	Date <u>9/15/06</u>	