

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



School Safety Engineering Project

FINAL REPORT: MESIVTHA TIFERETH JERUSALEM, Manhattan



**Prepared by
The RBA Group**



NOVEMBER 17, 2006

School Safety Engineering Project
Mesivtha Tifereth Jerusalem School, Manhattan

TABLE OF CONTENTS

1. INTRODUCTION	4
1.1 PROJECT DESCRIPTION	4
2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS.....	5
[REDACTED]	
2.2 NEIGHBORHOOD DESCRIPTION	5
2.3 MEETING WITH SCHOOL REPRESENTATIVES.....	5
[REDACTED]	
2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL.....	6
2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS	8
2.8 CROSSING GUARD LOCATIONS.....	8
3. TRAFFIC OPERATIONS.....	11
3.1 SCHOOL BUS OPERATIONS	11
3.2 PARENT DROP-OFF OPERATIONS	11
3.3 PARKING REGULATIONS	11
3.4 EXISTING SCHOOL SIGNS AND MARKINGS	13
3.5 ACCIDENT SUMMARY	13
3.6 TRAFFIC OPERATIONS AND ISSUES	16
3.7 SIGNAL TIMING: PEDESTRIAN PHASE.....	24
3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK).....	24
4. POTENTIAL MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY	25
4.1 SHORT-TERM MEASURES	25
4.2 LONG-TERM MEASURES	27

EXHIBITS

EXHIBIT 1 - AERIAL PHOTOGRAPH	7
EXHIBIT 2 – TRAFFIC SAFETY PLAN	9
EXHIBIT 3 – CROSSING GUARD LOCATIONS.....	10
EXHIBIT 4 – PARKING REGULATIONS	12
EXHIBIT 5 – ACCIDENT SUMMARY	15
EXHIBIT 5 – ACCIDENT SUMMARY	15
EXHIBIT 6A – TRAFFIC COUNTS	22
EXHIBIT 6B –TRAFFIC COUNTS.....	23
EXHIBIT 7 – PROPOSED MEASURES TO IMPROVE STUDENT PEDESTRIAN SAFETY	28

TABLES

TABLE 1: MODES OF TRAVEL	6
TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000).....	13
TABLE 3: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004).....	14
TABLE 4: SPOT SPEED STUDIES	21
TABLE 5: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS	24

APPENDIX

	
SPOT SPEED STUDY – EAST BROADWAY.....	A4
TRAFFIC COUNT – RUTGERS STREET / EAST BROADWAY.....	A6
TRAFFIC COUNT – RUTGERS STREET / CANAL STREET.....	A8

1. INTRODUCTION

1.1 PROJECT DESCRIPTION

The Department of Transportation has developed school safety maps for 1,471 schools throughout the City. Schools currently in the program are primarily elementary and intermediate schools with an enrollment of at least 250 students. The safety plans include the designation of official school crosswalks, identified by prominent warning signs and roadway markings. DOT also designates curbside locations for school bus loading and unloading and other parking controls to improve conditions for students. In addition, nearly 600 speed reducers (humps) have been installed in the immediate vicinity of schools.

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

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Located on south side of East Broadway in Manhattan, Mesivtha Tifereth Jerusalem School is situated between Pike Street and Rutgers/Essex Street. East Broadway is a busy two-way street running east-west. The school is in the midst of the dense Chinatown commercial and residential area, and is bordered by the Lower East Side, and the civic center of lower Manhattan. Produce vendors and retail stores exist side-by-side, and the sidewalk is frequently congested with forklifts loading and unloading material, produce and other merchandise. A lumberyard is located on East Broadway directly across from the school.



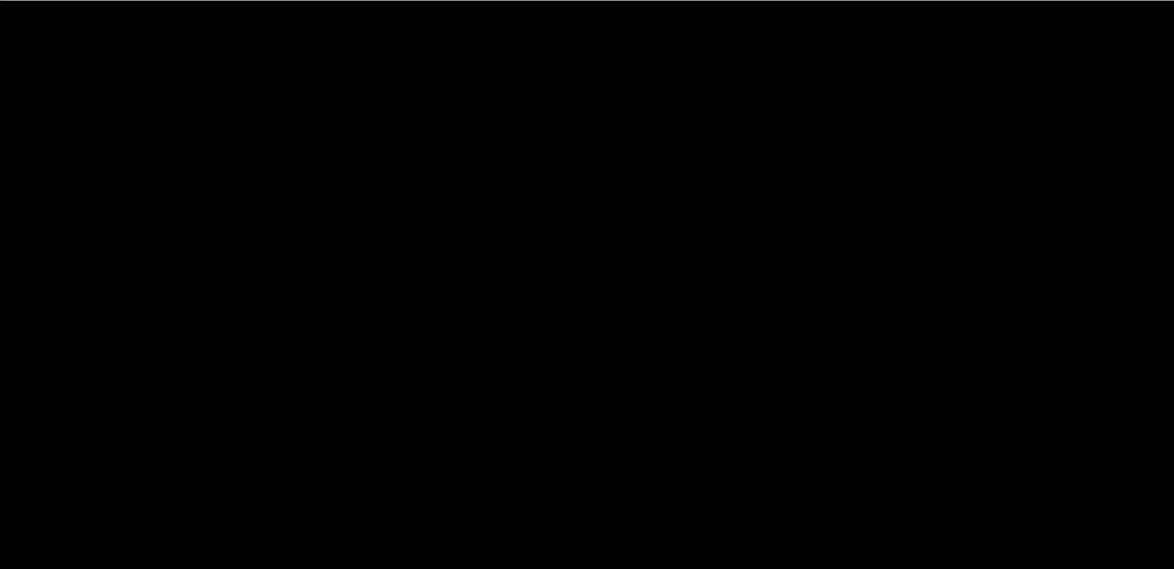
Figure 1: Looking east on East Broadway

2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant staff met with the principal at the school on the afternoon of March 25, 2004. According to the principal, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- The sidewalk on the south side of East Broadway between Rutgers Avenue and Jefferson Avenue is crowded with wholesale food distributors serving Chinatown restaurants and markets.

- Students have difficulty crossing the intersection of Grand Street and East Broadway.
- East Broadway is heavily congested during the morning rush hour, and many vehicles ignore school bus warning flashing lights and stop signs. Additionally, loading and unloading trucks directly in front of the school create unsafe conditions for students disembarking from school buses.



2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to school officials, approximately 34% of students walk to school, 6% arrive via public transportation, 10% are driven by a parent or guardian, and the remaining 50% take school buses. See Table 1 for the school’s estimate of modes of travel.

TABLE 1: MODES OF TRAVEL (AS ESTIMATED BY SCHOOL OFFICIALS)	
Description	Percentage
Walk	34%
Driven by a parent or guardian	10%
School bus	50%
MTA bus or subway	6%
TOTAL	100%



1 inch equals 150 feet

EXHIBIT 1
MESIVTHA TIFERETH JERUSALEM
MANHATTAN
AERIAL PHOTOGRAPH

2.7 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

Numerous public and private schools are located within several blocks of Mesivtha Tifereth Jerusalem. P.S. 2, P.S. 42, P.S. 137, P.S. 134, P.S. 124 students, and students from several private schools share some of the walking routes with Mesivtha Tifereth Jerusalem students. Pedestrian volumes are relatively high throughout the immediate intersections.

2.8 CROSSING GUARD LOCATIONS

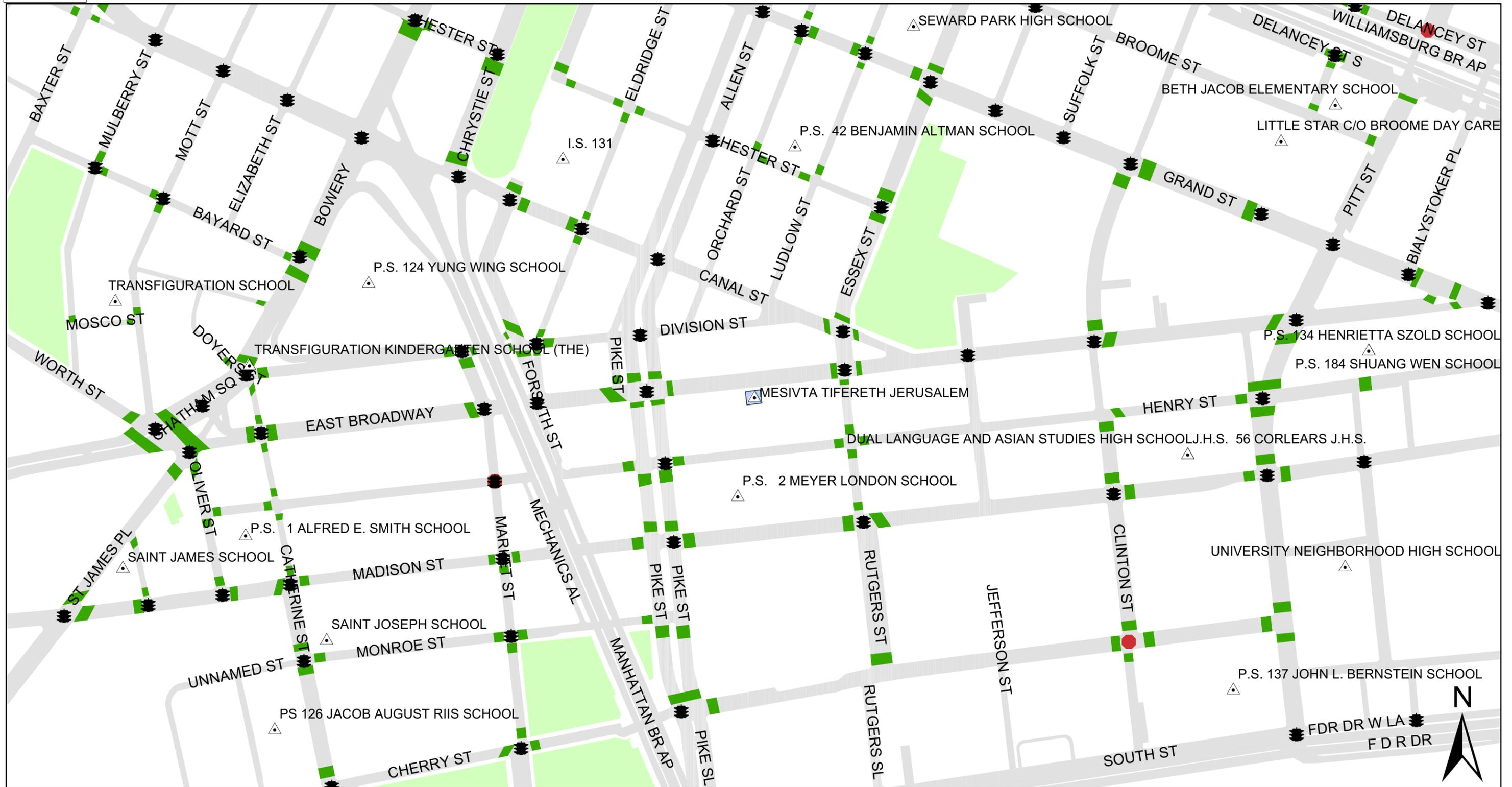
According to school representatives, there are no crossing guards assigned to this school. However, the intersection of East Broadway and Essex Street has a crossing guard (see Figure 2). Although not assigned to Mesivtha Tifereth Jerusalem School, the crossing guard stated that she routinely crosses Mesivtha Tifereth Jerusalem students.



Figure 2: Crossing guard stationed at East Broadway and Rutgers Street 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

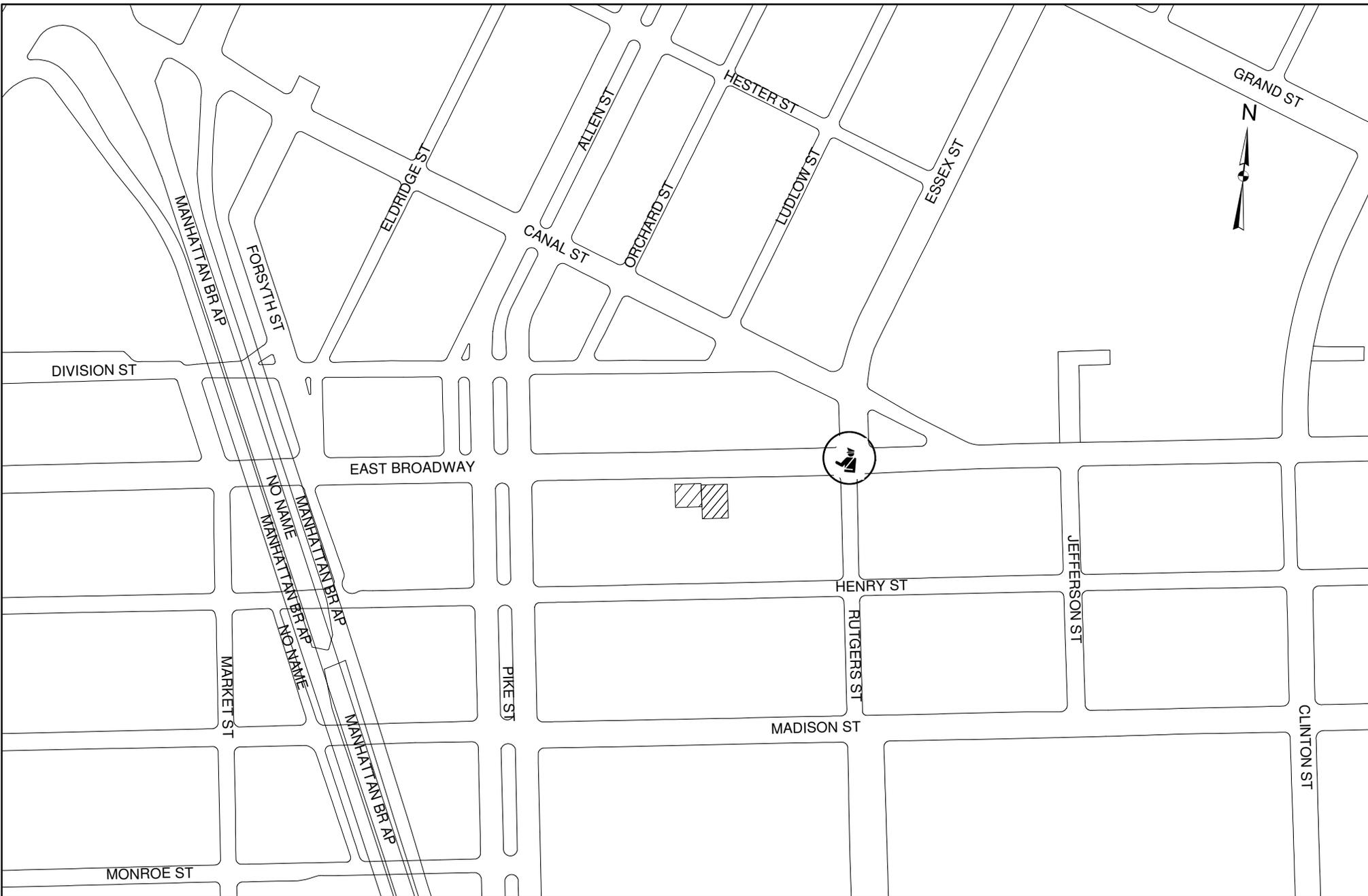
Manhattan
[MESIVTHA TIFERETH JERUSALEM]

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

Map created on 11/16/2006

EXHIBIT 2

COMM. BOARD: 103
PRECINCT: 7



1 inch equals 250 feet



Crossing guard assigned to another school

EXHIBIT 3
MESIVTHA TIFERETH JERUSALEM
MANHATTAN

CROSSING GUARDS

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

All school buses stop directly in front of the school's entrance. Since five parking spaces are reserved for school faculty, school buses double-park to load and unload students. Operations of the lumberyard directly across the street from the school include morning loading and unloading of large lumber trucks, which are double and triple-parked (see Figure 3), leaving little room for moving traffic in front of the school entrance at arrival time. The Principal and the Assistant Principal personally supervise off-loading of students from the buses in the morning.



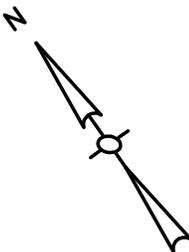
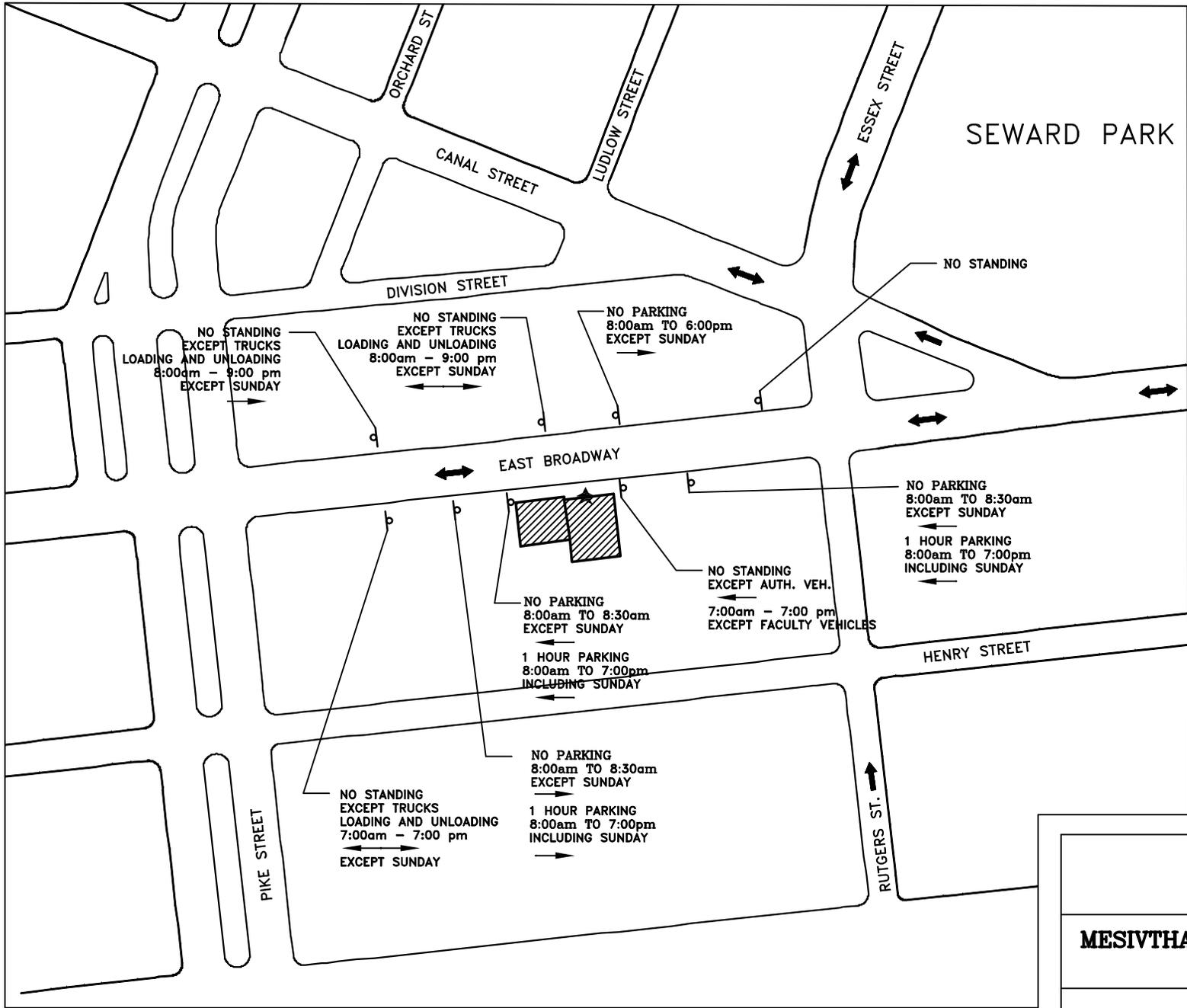
Figure 3: A truck double-parked in front of “Chinatown Lumber Co.” is parked directly across from the school

3.2 PARENT DROP-OFF OPERATIONS

According to school representatives 10% of students are transported by private cars. Parents typically double-park while dropping off or picking up their children. The school officials did not report any specific problems related to private vehicle operations during student arrival and dismissal.

3.3 PARKING REGULATIONS

“NO STANDING, EXCEPT AUTHORIZED VEHICLES, 7:00 AM – 7:00 PM, EXCEPT FACULTY VEHICLES” and metered parking is provided on south side of East Broadway in the vicinity of the school. See Exhibit 4 for parking regulations.



LEGEND

- ★ MAIN ENTRANCE
- STREET SIGN

SCALE: 1"=150'

EXHIBIT 4
MESIVTHA TIFERETH JERUSALEM, MANHATTAN
EXISTING PARKING REGULATIONS

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 2, shows existing crosswalk pavement markings. 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 7.

3.5 ACCIDENT SUMMARY

Exhibit 5 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of Mesivtha Tifereth Jerusalem School for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provides some detail relating to the circumstances and cause of the accidents. Table 3 is a summary of more recent accident data obtained from the NYC Police Department (NYPD). Though current through 2004, the NYPD data does not provide the same level of detail as the DMV data.

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

TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
East Broadway and Pike Street	112	14	1	1
Henry Street and Pike Street	31	2	0	0
Madison Street and Pike Street	47	5	1	0
Allen Street and Canal Street	78	8	0	1
Rutgers Street and Madison Street	2	2	1	0
Rutgers Street and Henry Street	13	4	0	2
Rutgers Street and East Broadway	17	1	0	0
Canal Street and Essex Street	17	0	0	0
East Broadway and Canal Street	6	0	0	0
TOTAL	323	36	3	4

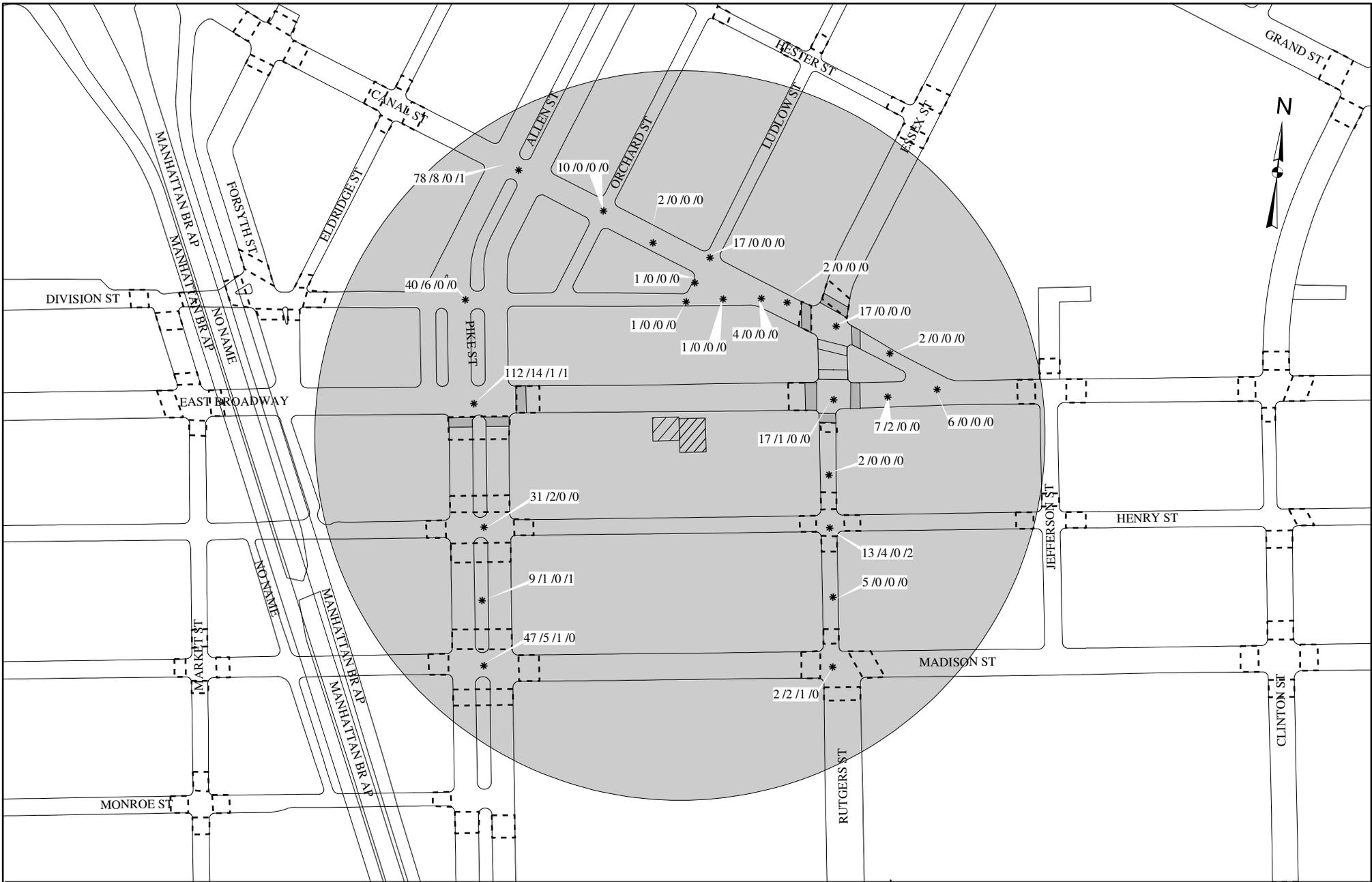
* School-Related Accidents are defined as accidents involving school-age pedestrians (age 4 – 14), occurring weekdays during the school year.

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

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS**
East Broadway and Pike Street	112	14	0	N/A
Henry Street and Pike Street	52	6	0	N/A
Madison Street and Pike Street	66	9	0	0
Allen Street and Canal Street	78	13	0	0
Rutgers Street and Madison Street	26	5	0	0
Rutgers Street and Henry Street	14	4	0	0
Rutgers Street and East Broadway	28	6	0	0
Canal Street and Essex Street	3	2	0	0
East Broadway and Canal Street	3	1		N/A
TOTAL	381	60	0	0

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

** The day and time of the accident has not been provided for all accident data



ACCIDENT LOCATION

SCHOOL CROSSWALK ASSIGNED TO MESIVTHA TIFEREETH JERUSALEM

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 5

MESIVTHA TIFEREETH JERUSALEM

MANHATTAN

ACCIDENT SUMMARY

THREE YEAR PERIOD

1998-2000

3.6 TRAFFIC OPERATIONS AND ISSUES

The following outlines the traffic accidents and operations issues at the intersections in the vicinity Mesivtha Tifereth Jerusalem School.

3.6.1 Rutgers Street/Essex Street and East Broadway

According to the school principal, most of Mesivtha Tifereth Jerusalem students that walk to school come from the east along East Broadway.

East Broadway is a 52-foot wide, two-way roadway with one travel lane in each direction and parking on both sides. Rutgers Street is a 28-foot wide one-way, northbound roadway south of East Broadway with one travel lane and parking on both sides, and Essex Street is a 62-foot wide two-way roadway north of East Broadway. A subway stop for the F line is located at the northwest corner of the intersection, which makes this location a major pedestrian crossing (see Figure 4). This is a signalized intersection. There are school crosswalks on the east, west and south legs of the intersection.

There were 17 accidents at this intersection during the 1998 to 2000 study period. One accident involved a pedestrian. According to the accident data, this accident occurred because of pedestrian error due to the pedestrian crossing against the signal.

To determine the level of vehicle and pedestrian conflict a traffic count was performed at this intersection on September 21, 2005 between 2:30 pm and 3:30 pm (see Exhibit 6A).



Figure 4: East Broadway and Rutgers Street (looking south)

3.6.2 Essex Street and Canal Street

According to school officials, approximately 5% of students from Mesivtha Tifereth Jerusalem School come to school from north of Canal Street. Most of those students use Essex Street en route to school.

Essex Street is a 62-foot wide, two-way (north-south) roadway with two travel lanes in each direction and parking on both sides. Canal Street is a 42-foot wide two-way roadway with one travel lane and parking on both sides west of Essex Street, and a 30-foot wide one-way roadway (westbound) east of Essex Street (see Figure 5). Canal Street terminates at East Broadway. This is a signalized intersection. There are school crosswalks on the east, west and north legs of the intersection.

A total of 17 accidents occurred at this location during the 1998-2000 study period, none of which involved pedestrians.

To determine the level of vehicle and pedestrian conflicts at this intersection, traffic counts were performed on September 21, 2005 between 7:30 am and 8:30 am (see Exhibit 6A).



Figure 5: Essex Street and Canal Street (from the southeast corner looking north)

3.6.3 Rutgers Street and Henry Street

Henry Street is a 30-foot wide, one-way (eastbound) roadway with one travel lane and parking on both sides. Rutgers Street is a 20-foot wide street north of Madison Street and a 62-foot wide street south of Madison Street. This is a stop-controlled intersection with a stop sign on Henry Street. There are school crosswalks on all four legs of the intersection.

There were 13 accidents at this intersection during the 1998-2000 study period. Four accidents involved pedestrians, of which two were school related accidents. According to the accident data, all four accidents were attributed to driver error due to failure to yield to pedestrians, or due to inattention and disregard for traffic control devices.

3.6.4 Rutgers Street and Madison Street

Madison Street is a 50-foot wide, two-way roadway with one travel lane and parking on both sides. This is a signalized intersection. There are school crosswalks on the east, west and north legs of the intersection.

There were two accidents at this intersection during the 1998-2000 study period. Both accidents involved pedestrians, one of which involved a fatality. According to the accident data a 32-year old pedestrian was struck and killed by an eastbound vehicle that was backing up unsafely. The primary reason given for this accident was driver intoxication. The second pedestrian was an 80-year old who was struck while crossing Madison Street.

3.6.5 East Broadway and Canal Street

This is an unsignalized intersection that does not have marked crosswalks. However, school officials noted that most pedestrians walking westbound on the north side of East Broadway cross at this intersection (this was confirmed during field observations). Pedestrians walking west cross at this location which has an uncontrolled right turn for westbound vehicles as this is the most direct path along East Broadway (see Figure 6). There are no crosswalks or pedestrian ramps at this location and the oblique angle of Canal Street results in a long crossing curb to curb.

Six accidents occurred at this location during the 1998-2000 study period. There were no pedestrian accidents during this period during this period.



Figure 6: East Broadway at Canal Street (looking west to Canal Street)

3.6.6 Pike Street and Madison Street

Pike Street is a 115-foot wide two-way (north-south) roadway with six moving lanes (three in the northbound, and three in the southbound direction) and parking along both sides of the street. A 25-foot wide median separates northbound and the southbound traffic. This is a signalized intersection. The medians extend through the crosswalks on both sides of Pike Street. There are school crosswalks located on the east, west and north legs of this intersection.

There were 47 accidents at this intersection during the 1998-2000 study period. Five accidents included pedestrians. None were school related. One accident involved a fatality. The victim was a 57-year old pedestrian who was struck and killed by a northbound vehicle. According to the accident data, this accident was attributed to driver inattention and failure to yield. One pedestrian was struck while crossing with the signal. There is no information on the three other pedestrian accidents.

3.6.7 Pike Street and Henry Street

This is a signalized intersection located adjacent to P.S. 2 (see Exhibit 7). There are school crosswalks on the east, west and south legs of the intersection.

There were 31 accidents at this intersection during the 1998-2000 study period. Two accidents involved pedestrians. According to the accident data, both pedestrians were struck while crossing against the signal.

In addition, a 12-year old student pedestrian was struck while crossing mid-block on Pike Street between Madison Street and Henry Street.

3.6.8 Pike Street and East Broadway

The south leg of the intersection is a 125-foot wide street with a 25-foot wide median separating northbound and southbound traffic. The north leg of the intersection is a 170-foot wide street with three travel lanes and parking on the right side. Southbound traffic splits in two, forming two southbound roadways divided by a 20-foot wide median. This is a signalized intersection. There are school crosswalks on the east and south legs of the intersection.

There were 112 accidents at this intersection during the 1998-2000 study period. Fourteen accidents involved pedestrians. One accident involved a school-age pedestrian, and there was one fatality involving a 71-year old pedestrian..

On Friday, September 22, 2000 a student was struck by a northbound traveling vehicle. The student pedestrian was crossing with the signal. No further details about the accident were available.

According to the accident data, the fatal accident occurred as a result of the pedestrian crossing against the signal. The pedestrian was struck by a vehicle traveling westbound.

Ten pedestrian accidents were attributed to driver's failure to yield to pedestrians crossing with the signal. The remaining three pedestrian accidents were attributed to pedestrian error due to pedestrians crossing against the signal or outside of the pedestrian crossings.

3.6.9 Pike Street/Allen Street and Canal Street

Pike Street becomes Allen Street north of Canal Street. Canal Street is a 42-foot wide two-way street. There are no school crosswalks at this intersection.

There were 78 accidents at this location during the 1998-2000 study period. Eight accidents involved pedestrians, one of which was school-related. Two accidents, including the school-related accident, involved pedestrians crossing against the signal. Five accidents involved drivers failing to yield to pedestrians. There were no details for the last accident.

3.6.10 East Broadway between Rutgers Street and Jefferson Street

The south side of East Broadway from Essex Street to Jefferson Street is lined with wholesale food distributors. In the morning these sidewalks are congested due to numerous large pallets of food and forklifts operating on the sidewalk. In addition, trucks utilize motorized tailgates that are raised and lowered directly adjacent to the curb where children must walk to avoid the pallets. The sidewalk is washed down each evening causing icy conditions in the winter.



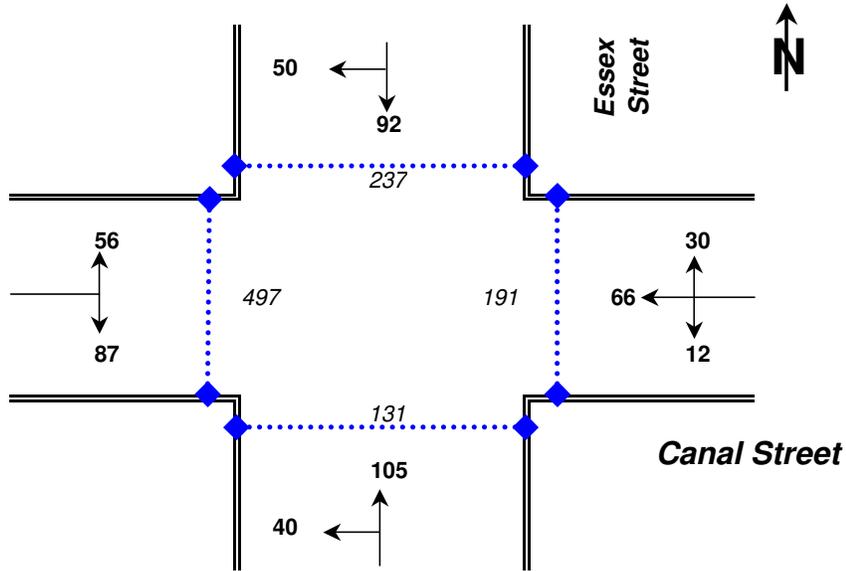
Figure 7: East Broadway between Rutgers Street and Jefferson Street

3.6.11 East Broadway between Pike Street and Rutgers Street

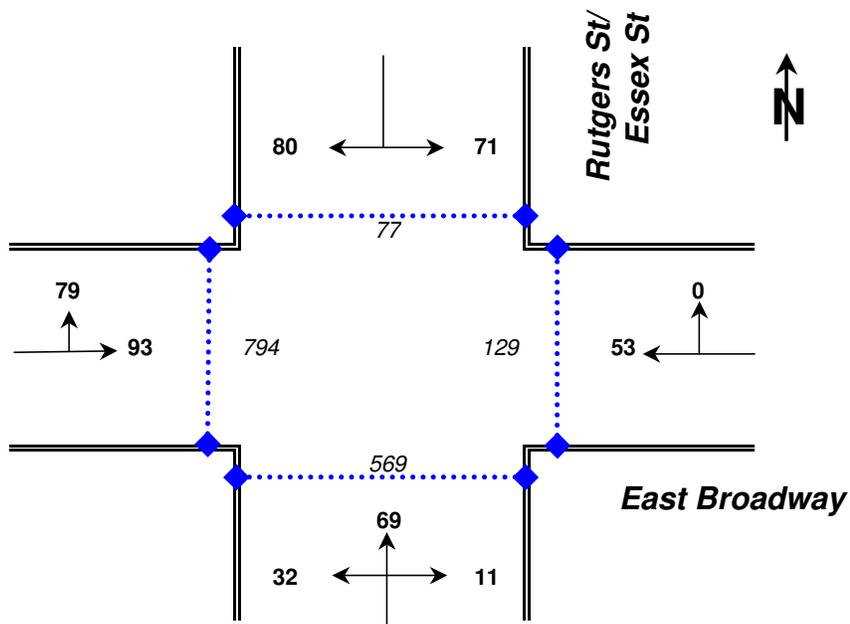
The school principal said that vehicles travel at excessive speeds along East Broadway between Pike Street and Rutgers Street. To determine the operating speed along this route, a spot speed survey was conducted on September 19, 2005. The 85th percentile speed was found to be 24 mph, which is lower than the city speed limit of 30 mph (see Table 4 for summary of results, and the Appendix for detail).

TABLE 4: SPOT SPEED STUDIES		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
East Broadway between Pike Street and Rutgers Street	22	24

One Hour Traffic Count Volumes



Intersection of Canal Street and Essex Street - (7:30 AM - 8:30 AM May 10, 2005)



Intersection of Rutgers Street and East Broadway - (2:30 PM - 3:30 PM, September 21, 2005)

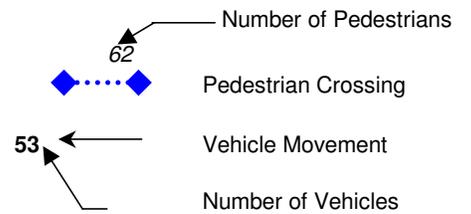
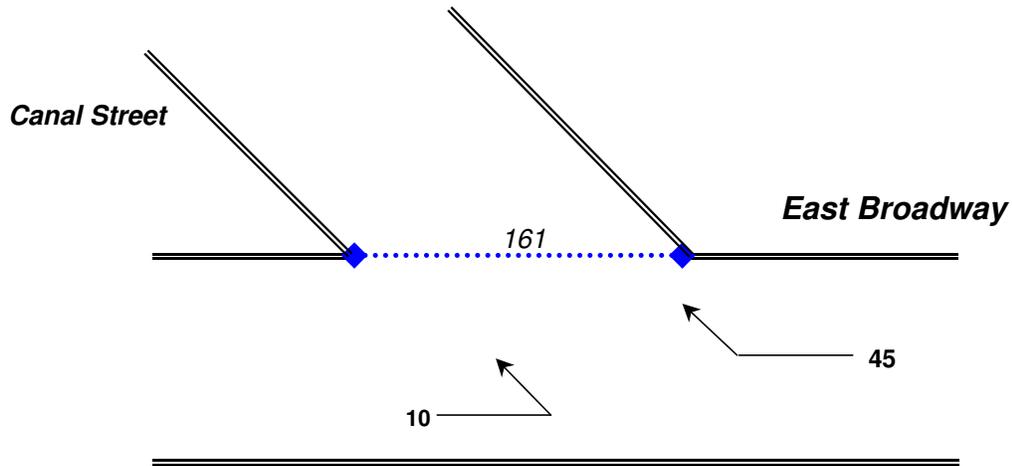


EXHIBIT 6A
MESIVTHA TIFERETH JERUSALEM MANHATTAN
TRAFFIC COUNTS

One Hour Traffic Count Volumes



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

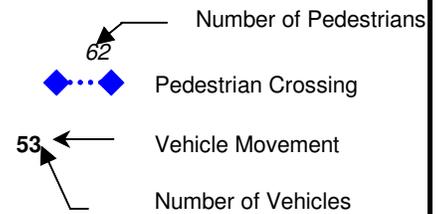


EXHIBIT 6B
MESIVTHA TIFERETH JERUSALEM MANHATTAN
TRAFFIC COUNTS

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

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

TABLE 5: PEDESTRIAN CROSSING TIMES AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Length (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
East Broadway and Rutgers Street				
Crossing E. Broadway	52	35	20	NO
Crossing Rutgers Street	32	55	13	NO
Canal Street and Essex/ Rutgers St.				
Crossing Canal Street	62	45	24	NO
Crossing Essex Street	50	45	20	NO
East Broadway and Pike Street/ Allen St.				
Crossing E. Broadway	52	45	20	NO
Crossing Pike St./ Allen St.	170*	45	60	NO*

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

** Pedestrians crossing Pike Street at East Broadway are expected to utilize the two existing medians available to cross Pike Street in two phases*

3.8 PHYSICAL CONDITIONS (ROADWAY AND SIDEWALK)

The roadways, curbs and sidewalk ramp in the vicinity of the project are generally in fairly 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

- *Install a No-Standing Zone on East Broadway*

A “NO STANDING 7AM-4PM, SCHOOL DAYS” parking regulation should be provided in front of the school’s main entrance on East Broadway to provide sufficient clear frontage for school buses to drop off and pick up students. Lost teacher parking could be relocated farther east on the same block (see Exhibit 7).

- *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, the meaning of the WALK - FLASHING DON’T WALK - DON’T WALK pedestrian signal sequence and instructing students not to cross at mid-block locations. 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.

- *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.

- *Install new school crosswalks*

Providing a new school crosswalk at key intersections will complete a network of contiguous school crosswalks in the immediate school vicinity. Therefore, it is recommended that a school crosswalk be installed at the following intersections.

- Canal Street at East Broadway – north leg
- Pike Street and East Broadway West Service Road – north leg

- *Install pedestrian information signs*

Pedestrian signal head information signs should be installed at the intersection of Pike Street and East Broadway. These signs will help to educate pedestrians on how to safely cross Eastern Parkway in two cycles.

- *Provide a minimum of five feet clearance along the south sidewalks on East Broadway between Rutgers Street and Jefferson Street*

As noted in the report (Section 2.3) the principal stated that the sidewalk on the south side of East Broadway between Rutgers Street and Jefferson Street is crowded with wholesale food distributors serving Chinatown restaurants and markets. This makes walking difficult for pedestrians walking along this route. It was field verified that in some areas along this sidewalk a minimum of five feet clear width is not provided due to sidewalk obstructions.

Therefore, it is recommended that NYCDOT work with NYPD to monitor the sidewalks along East Broadway and work to achieve better compliance with the required five-foot clearance free of obstructions for pedestrians.

4.2 LONG-TERM MEASURES

- *Install curb extensions at East Broadway and Rutgers Street*

Consideration should be given to installing curb extensions at the following location, 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.

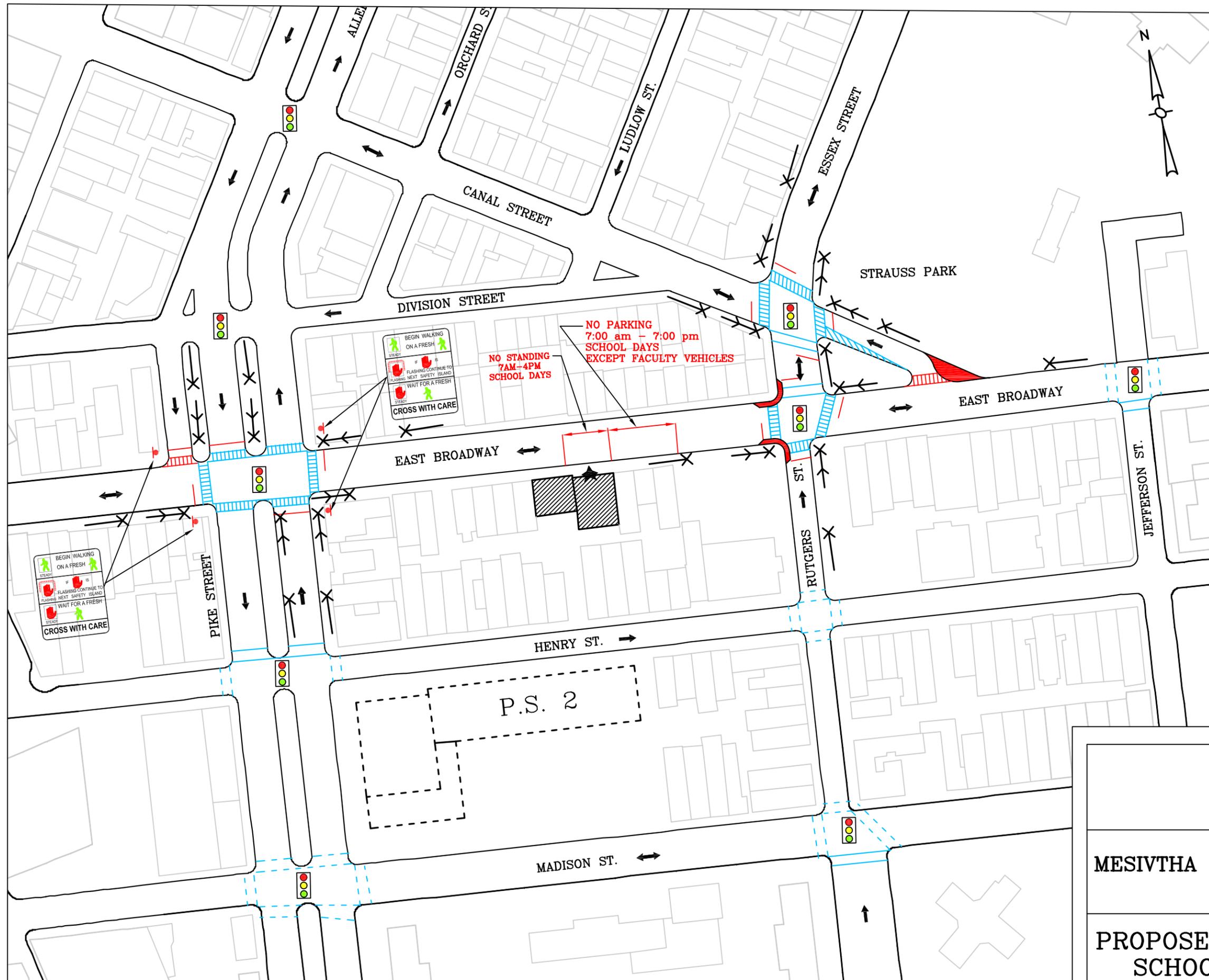
- East Broadway and Rutgers Street intersection, northwest and southwest corners.

Curb extensions should be considered at the corners as shown in Exhibit 7.

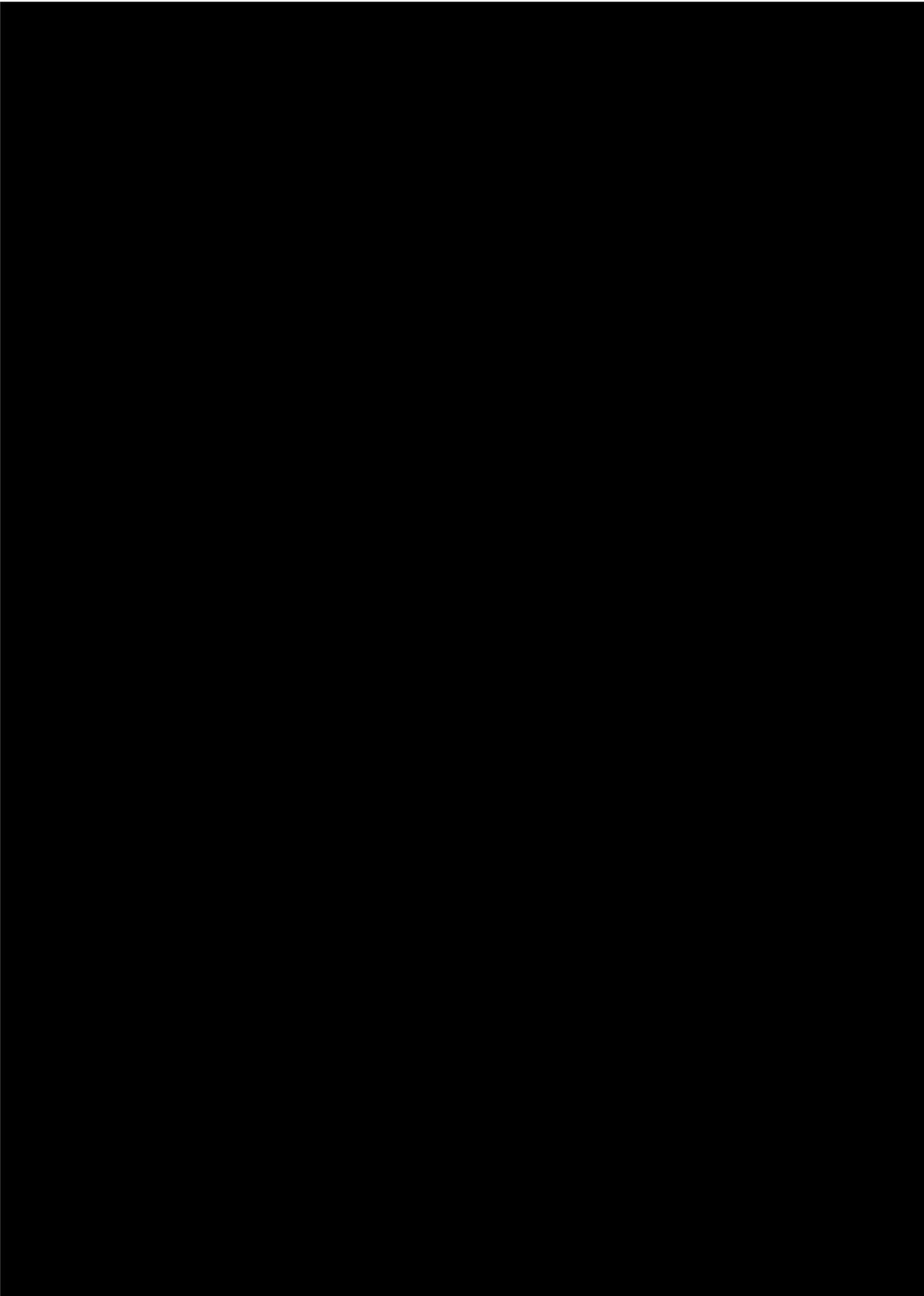
The purpose of the curb extensions is to shorten the crossing distance for pedestrians, and to reduce speeds of vehicles approaching and turning at these heavily utilized school crosswalks (or intersections). These curb extensions would not eliminate or reduce the width of any moving lanes.

- *Realign geometry at the intersection of East Broadway and Canal Street near Strauss Park*

As described in Section 3.6.5 this intersection does not have any marked pedestrian crosswalks. In addition, westbound vehicles turning right from East Broadway onto Canal Street are uncontrolled. Traffic counts were conducted at this intersection on Tuesday September 19, 2005. A total of 161 pedestrians crossed at this location between 2:30 pm and 3:30 pm in conjunction with 55 vehicles turning onto Canal Street from East Broadway (see Exhibit 6B). Therefore, it is proposed that the sidewalk on the east side be extended shortening the crossing distance and normalizing the intersection. Provided that the Final design confirms that construction would be feasible, final details will be developed during the Final Design/Contract document preparation. In addition, a school crosswalk and school signs should be installed at this location. The crosswalk should be implemented only in conjunction with the new intersection realignment (see Exhibit 7).



APPENDIX



SPOT SPEED STUDY

Date: **Septemebr 19, 2005** Time: **4:30 PM To 5:30 PM**
 Location: **East Broadway btw. Pike Street and Rutgers Street**
 Surveyor: **Eyad Yousef**

School: **Mesivtha Tifereth (H-4)**
 Direction: **EW**
 Comments: **Sunny and Dry**

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	4	5.3%	5.3%	68	1156
18	3	4.0%	9.3%	54	972
19	4	5.3%	14.7%	76	1444
20	8	10.7%	25.3%	160	3200
21	13	17.3%	42.7%	273	5733
22	19	25.3%	68.0%	418	9196
23	12	16.0%	84.0%	276	6348
24	8	10.7%	94.7%	192	4608
25	0	0.0%	94.7%	0	0
26	3	4.0%	98.7%	78	2028
27	1	1.3%	100.0%	27	729
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
	75	100.0%		1622	35414

Mean Speed = 21.6 mph Median Speed = 21.6 mph
 Standard Deviation = 2.1 mph 15th Percentile Speed = 19.4 mph
 Margin of Error (95% Confidence) = ± 0.5 mph 85th Percentile Speed = 23.8 mph

SPOT SPEED STUDY

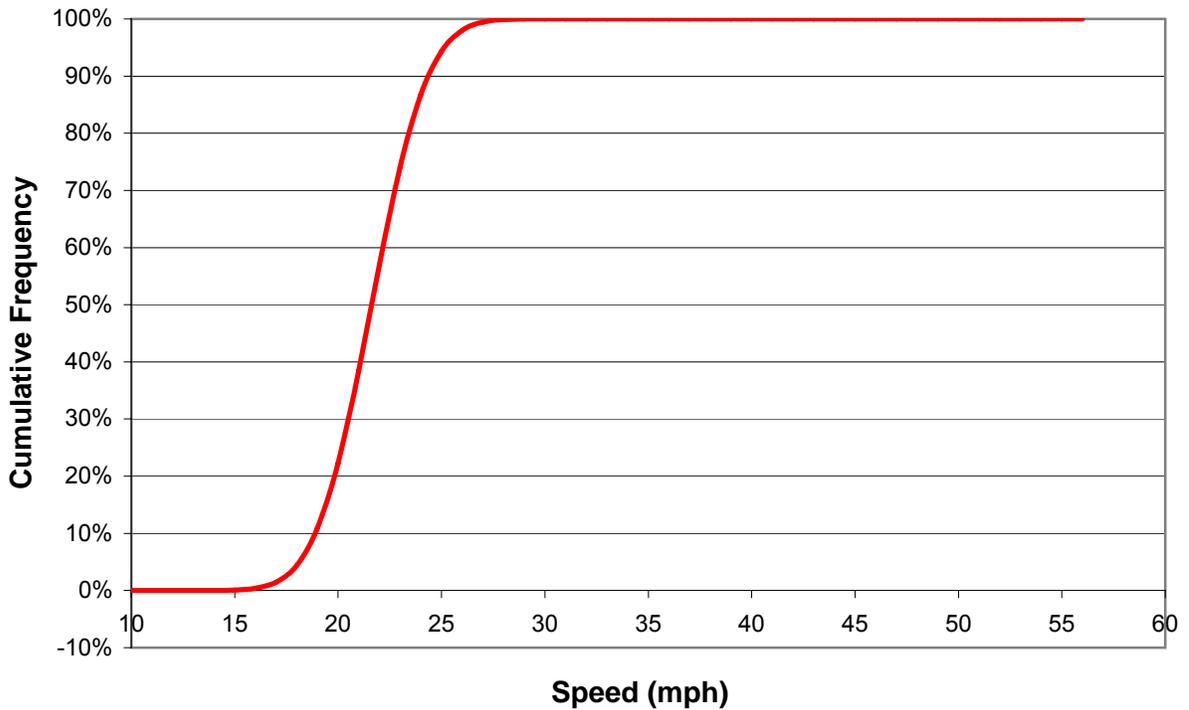
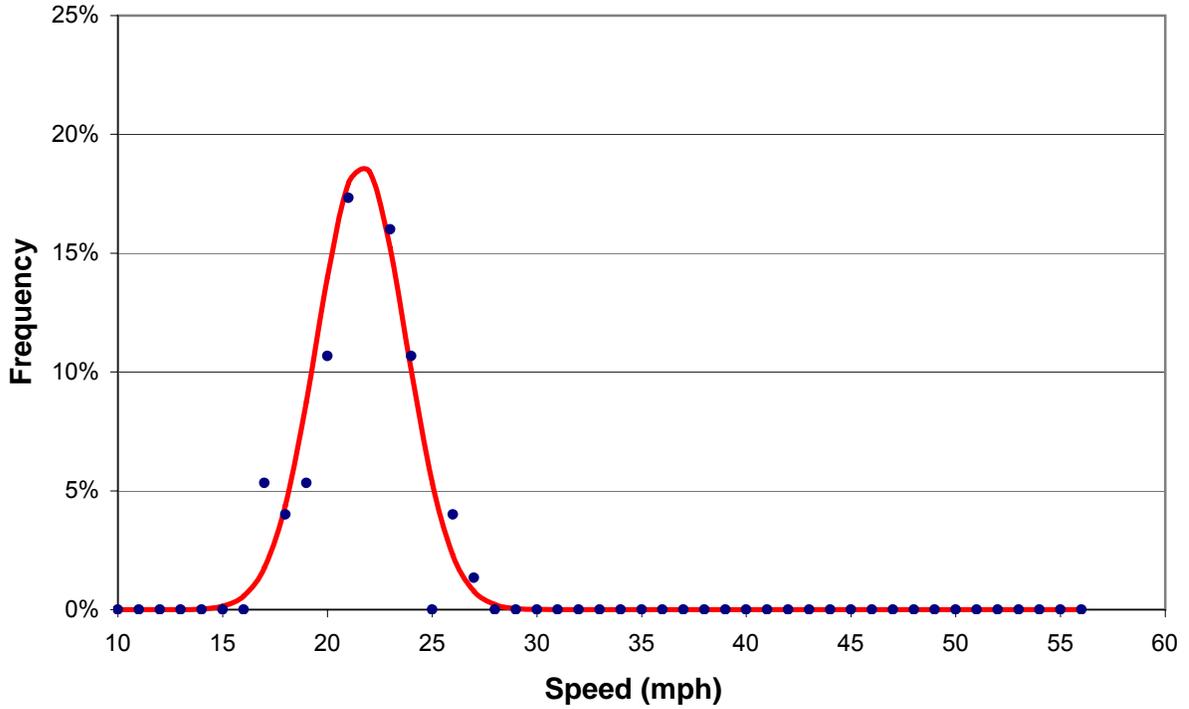
Date: **Septemebr 19, 2005**
Location: **East Broadway btw. Pike Street and Rutgers Street**
Surveyor: **Eyad Yousef**

Time: **4:30 PM To 5:30 PM**

School: **Mesivtha Tifereth (H-4)**
Direction: **EW**
Comments: **Sunny and Dry**

Mean Speed = 21.6 mph
Standard Deviation = 2.1 mph
Margin of Error (95% Confidence) = ± 0.5 mph

Median Speed = 21.6 mph
15th Percentile Speed = 19.4 mph
85th Percentile Speed = 23.8 mph



MESIVTHA TIFERETH JERUSALEM (H-4)

Septemebr 21, 2005

2:30 pm - 3:30 pm

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

Site:
 Date: 05/10/05

Combined
 *Peds not included in table data

Begin Time	Total	RUTGERS/ESSEX STREET			CANAL STREET			RUTGERS/ESSEX STREET		CANAL STREET			
		SB-R	SB-T		WB-L	WB-T	WB-R	NB-T	NB-L	EB-R		EB-L	
07:30:00	249	27	47	0	13	26	4	0	52	21	28	0	31
08:00:00	833	535	47	0	22	47	11	0	57	25	62	0	27
	1,082	562	94	0	35	73	15	0	109	46	90	0	58

Peak Volume Periods <small>(1 hour Res: 15 min.)</small>					
Period		Peak Period		Volume	
AM	05:00:00 To 10:00:00	07:45:00	To 08:45:00	961	
Noon	10:00:00 To 15:00:00	NA	To NA	0	
PM	15:00:00 To 20:00:00	NA	To NA	0	

MESIVTHA TIFERETH JERUSALEM (H-4)

Septemebr 21, 2005

2:30 pm - 3:30 pm

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

Site:
 Date: 09/21/05

Combined

*Peds not included in table data

Begin Time	Total	RUTGERS STREET		EAST BROADWAY			RUTGERS STREET			EAST BROADWAY			
		S-R	S-L	W-R	W-T	W-L	N-R	N-T	N-L	W-T	W-L		
14:30:00	125	20	0	23	0	13	0	5	18	7	0	18	21
14:45:00	110	23	0	11	0	7	0	1	15	12	0	24	17
15:00:00	121	19	0	14	0	19	0	2	14	4	0	28	21
15:15:00	132	18	0	23	0	14	0	3	22	9	0	23	20
	488	80	0	71	0	53	0	11	69	32	0	93	79

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	235
PM	15:00:00	To 20:00:00	14:30:00	To 15:30:00	488

