

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



School Safety Engineering Project

FINAL REPORT: I.S. 131, Dr. Sun Yat Sen School, Manhattan



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



SEPTEMBER 19, 2006

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SPOT SPEED STUDY – HESTER ST. BETWEEN FORSYTH ST. AND ELDRIDGE ST.....A-1

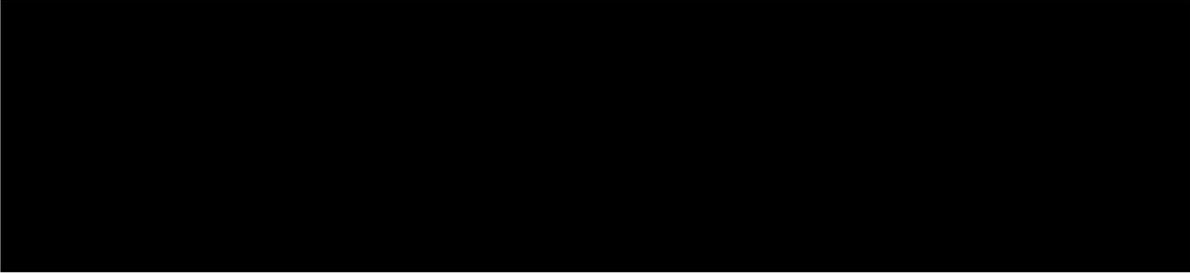
1. INTRODUCTION

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). I.S. 131 in Manhattan is one of the 135 priority schools.

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

The area surrounding I.S. 131 is zoned as a General Central Commercial District, with a land use that is primarily mixed-use and industrial with some commercial facilities. A New York City Housing Authority property is located across Hester Street at 45 Allen Street. S.D. Roosevelt Park is located adjacent to the west side of I.S. 131 and extends from Grand Street to Canal Street. The school is located one block northwest of the Manhattan Bridge terminus. The main entrance to I.S. 131 is on Hester Street.

Several MTA subway lines are in the vicinity of I.S. 131. The B and D trains run along Chrystie Street with a stop on Grand street, one block northwest of the school. The F train runs on Essex Street with a stop on East Broadway, five blocks southeast of the school. The N, Q, B and D trains travel across the Manhattan Bridge, although there are no stations within the immediate vicinity of the school. (See Figure 1)

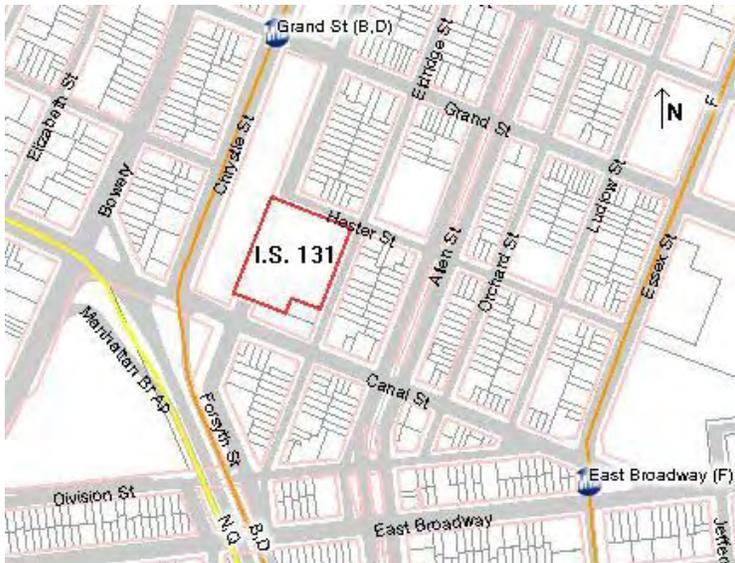


Figure 1: MTA Subway service near I.S. 131, Manhattan



1 inch equals 200 feet

EXHIBIT 1

DR. SUN YAT SEN SCHOOL
I.S. 131, MANHATTAN

AERIAL PHOTOGRAPH



1 inch equals 350 feet

■ CATCHMENT AREA

EXHIBIT 2
I.S. 131, MANHATTAN
DR. SUN YAT SEN SCHOOL
CATCHMENT AREA

2.3 MEETING WITH SCHOOL REPRESENTATIVES

The consultant team, NYPD police officers and representatives of I.S. 131 met at the school on the afternoon of April 22, 2004. According to school representatives, the identifiable problems that student pedestrians encounter on a regular basis include the following:

- Vehicles disregard the stop sign at the intersection of Hester Street and Forsyth Street;
- Severe vehicle congestion and speeding near the school entrance on Hester Street;
- Illegally parked cars on Hester Street that narrow the travel lane;
- School buses blocking traffic while double parked on Hester Street to drop off and pick up students, or while waiting on Forsyth Street;
- There are no crossing guards assigned to I.S. 131;
- Students do not have enough time to cross Chrystie Street at Hester Street;
- Students cross mid-block on Hester Street between Forsyth Street and Eldridge Street;
- Sidewalks surrounding the school are generally missing, damaged, or not wide enough



Figure 2: Congestion in front of I.S. 131 on Hester Street



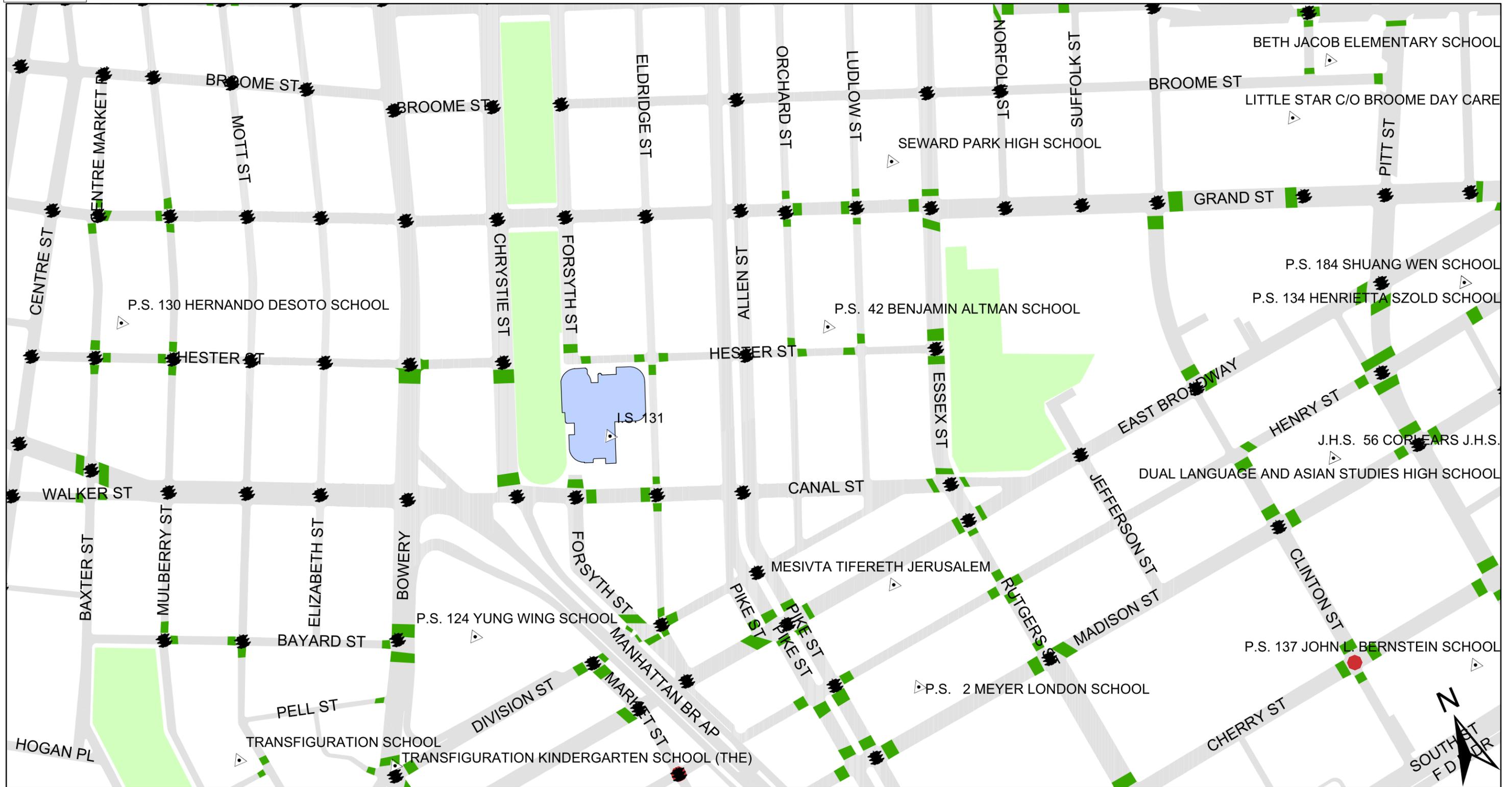
2.6 PRIMARY MODES OF TRANSPORT TO AND FROM SCHOOL

According to school officials, approximately 46% of students walk to school, 50% arrive by public bus or subway service, 3% ride on school bus, and the remaining 1% of students are driven by a parent or guardian. 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	46%
Driven by car	1%
School bus	3%
MTA bus or other city bus	5%
MTA subway	45%
TOTAL	100%



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 

IS 131 Manhattan
DR. SUN YAT SEN SCHOOL

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

Map created on 11/16/2006 **EXHIBIT 3** COMM. BOARD: 103
 PRECINCT: 5

1.5.1

2.7 OTHER PEDESTRIAN TRAFFIC GENERATORS

I.S. 131 houses a local chapter of the YMCA, which runs from school dismissal time to 10:00 pm each weekday, and 9:00 am to 6:00 pm on Saturdays year round. A day care facility affiliated with the school is located in an adjacent building, which operates from 8:30 am to 6:00 pm and has over 100 children enrolled.

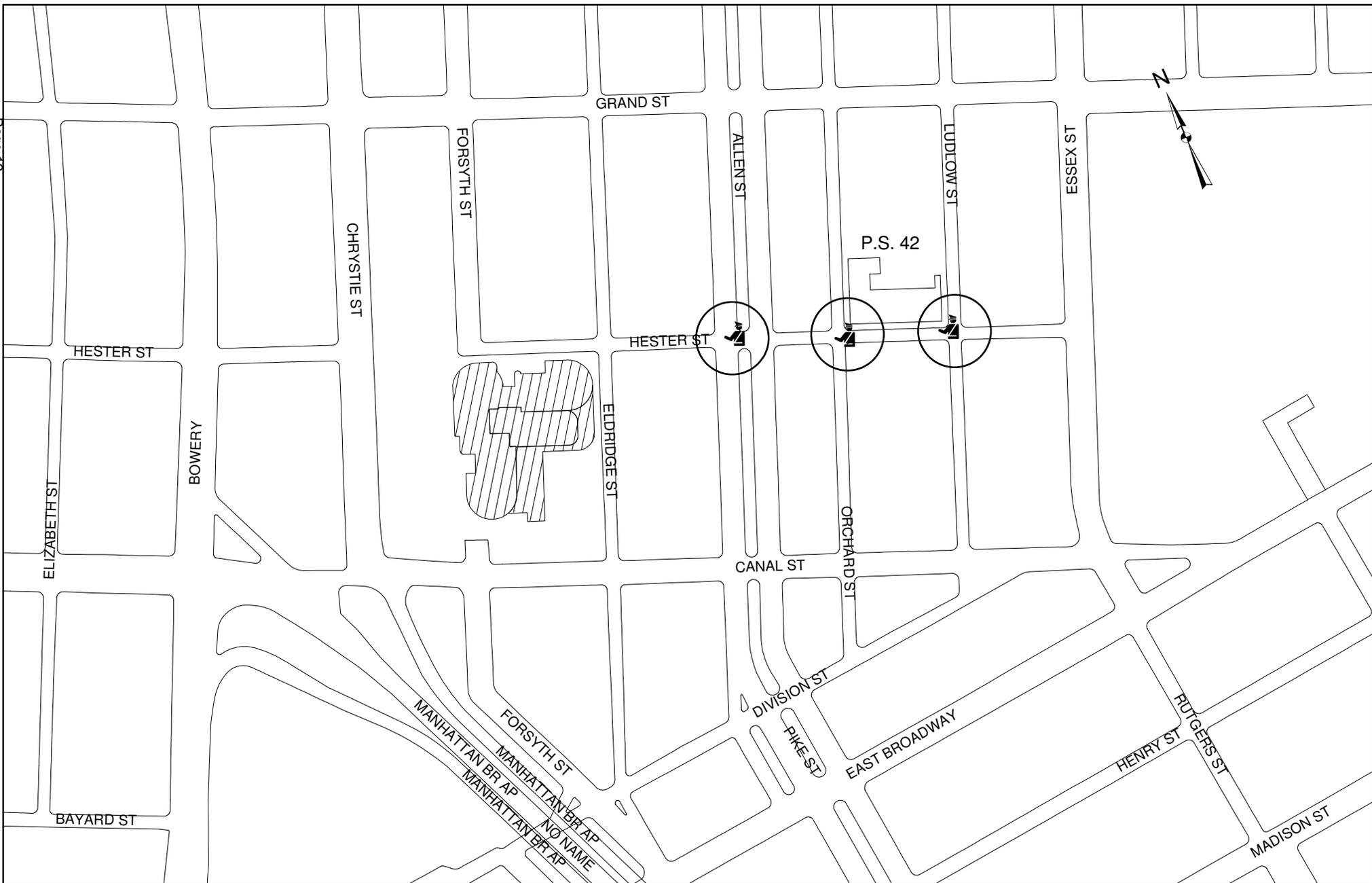
Some students visit S.D. Roosevelt Park, which is adjacent to the west side of the school. Other schools in the area include P.S. 124 on Division Street and Bowery, P.S. 42 on Hester Street and Orchard Street, Seward Park High School on Grand Street and Ludlow Street, Mesivta Tifereth Jerusalem on Henry Street between Pike Street and Rutgers Street, and P.S. 1 on Henry Street between Catherine Street and Oliver Street. P.S. 124, Mesivta Tifereth, P.S. 1 and P.S. 42 are all priority schools.

2.8 CROSSING GUARD LOCATIONS

According to school representatives, there are no crossing guards assigned to I.S. 131. P.S. 42, located three blocks east of I.S. 131 on Hester Street between Orchard Street and Ludlow Street, has crossing guards stationed at three intersections along Hester Street: at Allen Street, Orchard Street, and Ludlow Street. (See Exhibit 4)



Figure 4: Safety agent in front of I.S. 131



1 inch equals 250 feet



Crossing guard assigned to P.S. 42

EXHIBIT 4

**I.S. 131, MANHATTAN
DR. SUN YAT SEN SCHOOL**

CROSSING GUARDS

3. TRAFFIC OPERATIONS

3.1 SCHOOL BUS OPERATIONS

School representatives indicated that approximately 3% of students ride school buses to and from school, all of whom participate in the special education program. Five school buses, including two mini-buses and three full-length buses, serve the school.

School buses drop off and pick up students on Hester Street, near the school's main entrance. Buses line up on Forsyth Street before loading or unloading students. According to school officials, the double-parked buses block moving traffic on Hester Street and Forsyth Street.



Figure 5: Handicapped student's bus access on Hester Street

3.2 PARENT DROP-OFF OPERATIONS

According school representatives, only 1% of I.S. 131 students are driven to and from school by parents or guardians. Field observations indicated that vehicles primarily parked or double-parked on Hester Street to drop off students, thereby blocking moving traffic on Hester Street.

3.3 PARKING REGULATIONS

“NO PARKING 7:00 AM – 4 PM, SCHOOL DAYS” parking regulations are posted for the full length of the block on the south side of Hester Street.

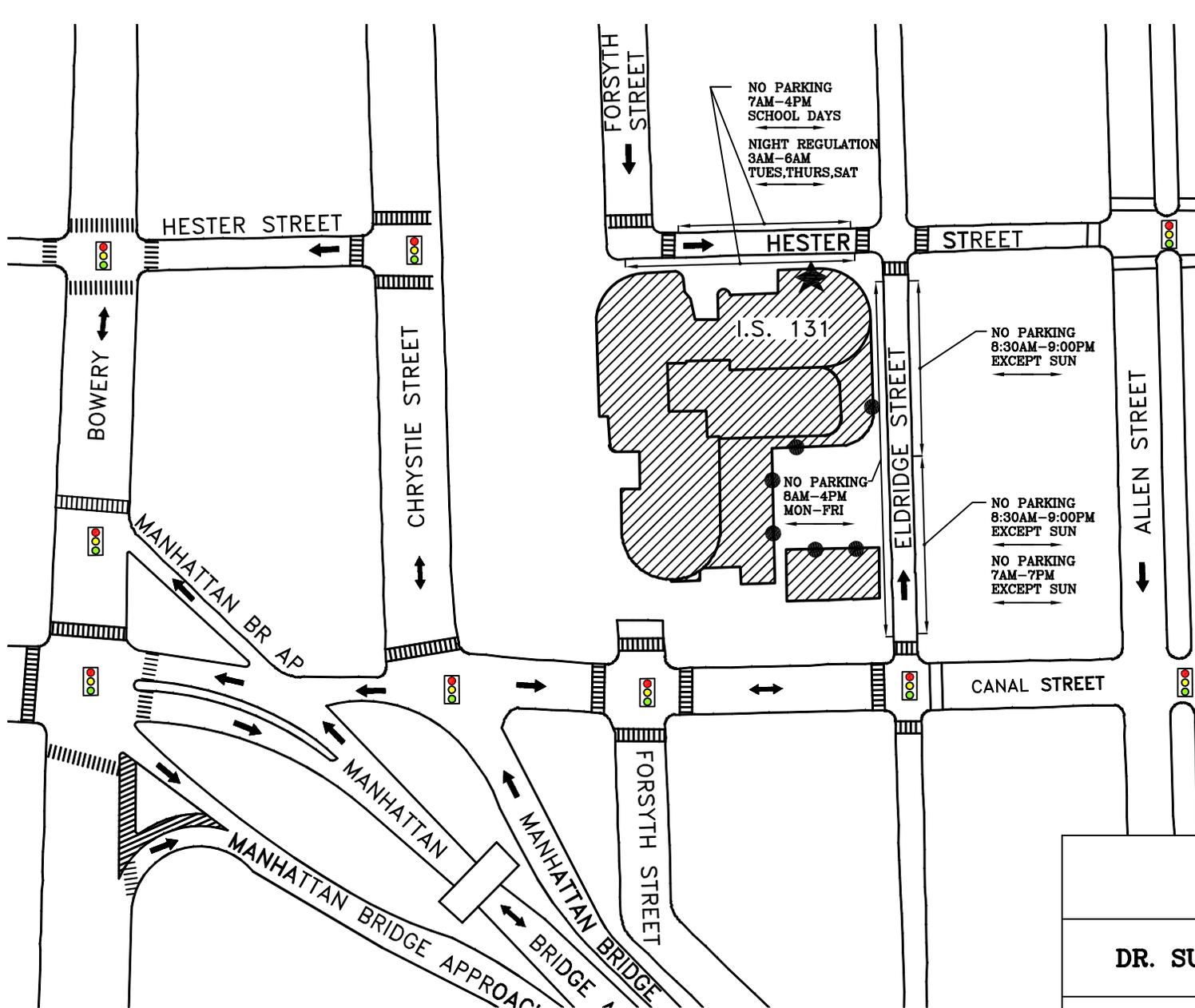
“NO PARKING 8:00 AM – 9 PM, EXCEPT SUNDAY ” parking regulations are posted for the full length of the block on the both sides of Eldridge Street.

Exhibit 5 shows the existing parking regulations on the roadways surrounding I.S. 131.

3.4 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 3, 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 (MUTCD) standards of fluorescent

yellow-green signs accompanied by downward pointing arrows. Signs scheduled to be installed under this program are shown as "existing" on Exhibit 8.



- LEGEND**
- ★ MAIN ENTRANCE
 - OTHER ENTRANCES

SCALE 1" = 150'

EXHIBIT 5

I.S. 131
DR. SUN YAT SEN SCHOOL
MANHATTAN

EXISTING PARKING REGULATIONS

3.5 ACCIDENT SUMMARY

Exhibit 6 and Table 2 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of I.S. 131 for the three-year period from January 1, 1998 through December 31, 2000. The DMV data provide 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 do 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 were not available at the time of this study will be addressed with the ongoing work of DOT's School Safety Engineering Program. DMV accident data is discussed in Section 3.6, Traffic Operations and Issues.

TABLE 2: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)

INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Hester Street and Chrystie Street	109	8	0	0
Hester Street and Forsyth Street	7	1	0	0
Hester Street and Eldridge Street	17	5	0	1
Canal Street and Bowery	379	13	1	0
Canal Street and Chrystie Street	85	0	0	0
Canal Street and Forsyth Street	21	2	0	0
Canal Street and Eldridge Street	27	0	0	0
Canal Street and Allen Street ***	78	8	0	1
Bowery and Manhattan Bridge Ap.	4	0	0	0
Total	727	37	1	2

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

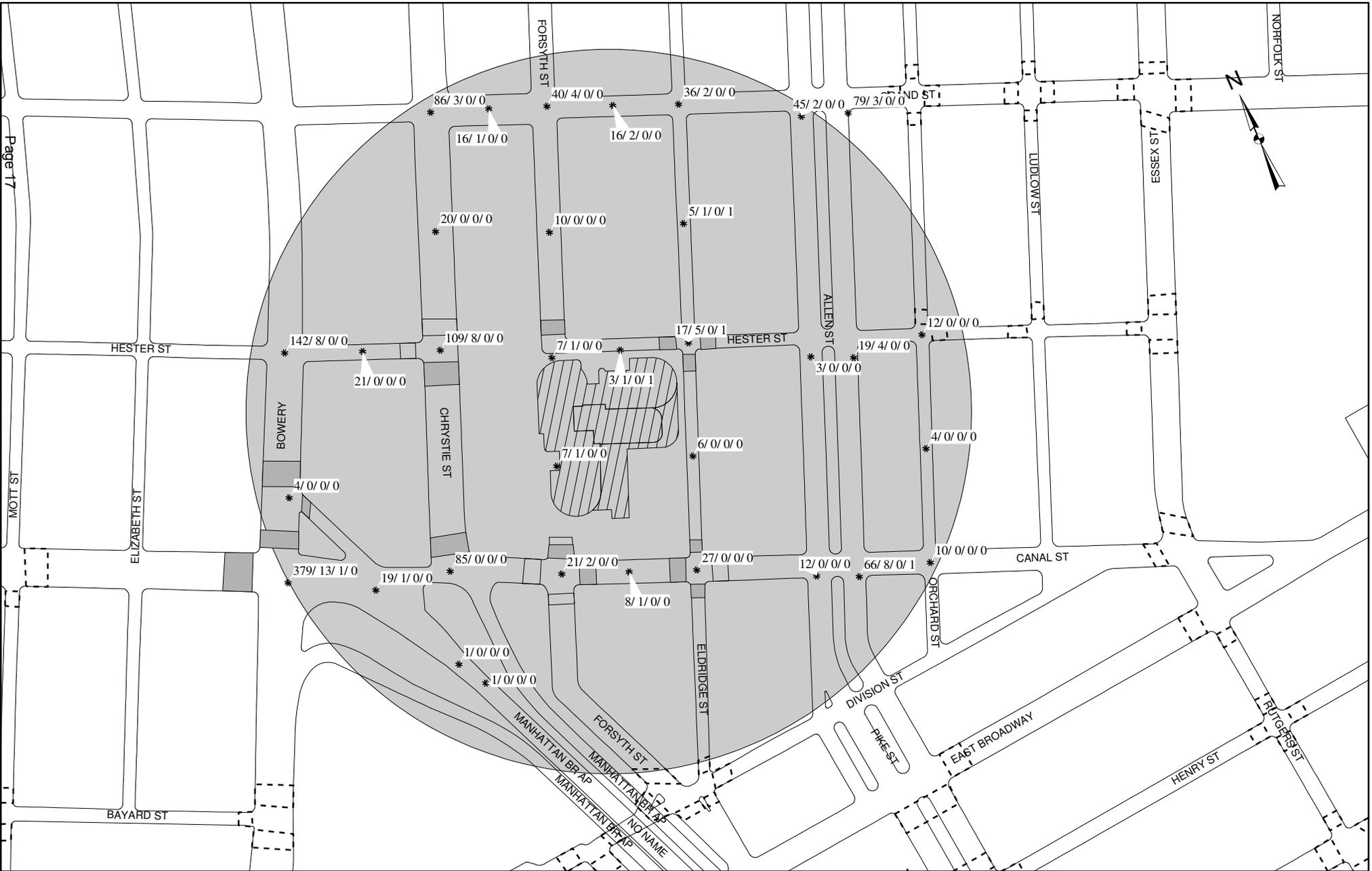
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Hester Street and Chrystie Street	91	4	1	0
Hester Street and Forsyth Street	30	6	0	3
Hester Street and Eldridge Street	17	2	0	0
Canal Street and Bowery	465	12	0	0
Canal Street and Chrystie Street	67	0	0	0
Canal Street and Forsyth Street	24	2	0	0
Canal Street and Eldridge Street**	31	3	0	-
Canal Street and Allen Street ***	78	13	0	0
Bowery and Manhattan Bridge Ap. ¹	-	-	-	-
Total	803	42	1	3

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

** NYPD accident data does not always provide pedestrian age or accident time

*** Accidents are summarized for both southbound and northbound directions

1 - NYPD information was not available for this intersection from 2001 to 2004



ACCIDENT LOCATION *

SCHOOL CROSSWALK ASSIGNED TO I.S. 131

SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL

CROSSWALK

X/X/X/X



1 inch equals 250 feet



TOTAL ACCIDENTS	PED ACCIDENTS	PED FATAL	SCHOOL PED ACCIDENTS
X	X	X	X

EXHIBIT 6
I.S. 131, MANHATTAN
DR. SUN YAT SEN SCHOOL

ACCIDENT SUMMARY
THREE YEAR PERIOD
(1998-2000)

3.6 TRAFFIC OPERATIONS AND ISSUES

The following sections outline the traffic accidents and operations issues at intersections in the vicinity of I.S. 131.

3.6.1 Hester Street and Chrystie Street

Hester Street and Chrystie Street is a signalized T-intersection. Hester Street is one-way westbound west of Christie Street with one travel lane and parking on both sides. Chrystie Street is a two-way collector street with two travel lanes in each direction and parking on both sides. There are school crosswalks in place on all three approaches.

There were 109 accidents at this intersection during 1998-2000 study period. Eight accidents involved pedestrians, none of which were school-related. Two accidents were attributed to pedestrians crossing against the signal. Another accident was due to driver error. Five other accidents involved drivers traveling on Chrystie Street. No further details were reported.

School representatives noted that students had difficulty crossing Chrystie Street at this intersection due to the insufficient pedestrian signal timing. Signal timing was reviewed at this intersection and found to be sufficient for students to cross (see Table 5).

3.6.2 Hester Street and Forsyth Street

Forsyth Street is a one-way southbound roadway with one travel lane. Parallel parking is on the west side and angled parking is on the east side of Forsyth Street. Hester Street is a one-way eastbound roadway east of Forsyth Street with parking on both sides. This intersection, which is adjacent to S.D. Roosevelt Park, is not signalized. Forsyth Street is stop-controlled with a school crosswalk on the north leg. There is an un-controlled school crosswalk on the east leg (see Figure 6).



Figure 6: Looking west on Hester Street at Forsyth Street

Seven accidents occurred at this intersection during the 1998-2000 study period, one of which was a non school-related pedestrian accident. The driver struck a pedestrian while backing up his vehicle.

3.6.3 Hester Street and Eldridge Street

Eldridge Street is a one-way northbound roadway with parking on both sides. Hester Street and Eldridge Street is an un-signalized intersection with a stop sign on Hester Street for eastbound traffic. There are school crosswalks on the south, east and west legs. The crosswalk on Eldridge Street is an uncontrolled school crosswalk.

School representatives noted that vehicles speed on Hester Street in the vicinity of the school. A spot speed study was conducted on October 4, 2005 from 12:00 pm to 1:00 pm on Hester Street between Forsyth Street and Eldridge Street. The 85th percentile speed was 23 mph, which is below the legal speed limit of 30 mph. See Table 4 for a summary of the results and the Appendix for further detail.

TABLE 4: SPOT SPEED STUDY		
LOCATION	MEDIAN SPEED (MPH)	85TH PERCENTILE SPEED (MPH)
Hester Street between Forsyth Street and Eldridge Street	20	23



Figure 7: Looking west on Hester Street at Eldridge Street

To better understand pedestrian and vehicle conflicts at this intersection traffic counts were performed on Thursday, May 16, 2005 between 2:30 pm to 3:30 pm (see Exhibit 7). The traffic counts indicated that a total of 305 vehicles per hour and 2092 pedestrians per hour utilized this intersection during the study hour, when students were being dismissed from I.S. 131. Many of the pedestrians were I.S. 131 students. In addition, 159 (110+49) uncontrolled vehicles per hour traveled northbound on Eldridge Street, while conflicting with 946 pedestrians crossing Eldridge Street. The number of pedestrians per hour

crossing Eldridge Street exceeds the required MUTCD Warrant 4 – Pedestrian Volume requirement of a minimum of 190 pedestrians during any given hour. However, the gap study performed on August 17, 2006 shows that more than 60 gaps of 12 seconds (the time required to cross a 25-foot wide street at three feet per second plus three seconds of reaction time) were available for pedestrians to cross Eldridge Street. Therefore, the intersection does not meet the warrants for a traffic signal.

There were 17 accidents at this intersection during the 1998-2000 study period. Five accidents involved pedestrians, one of which was school-related. A pedestrian was struck while emerging from behind a parked vehicle. The other four accidents, including the school-related accident, were due to driver inattention, although two of these accidents involved pedestrians crossing Eldridge Street at the uncontrolled crosswalk or without crosswalk.

3.6.4 Canal Street and Bowery

Canal Street and Bowery is a signalized intersection, which serves as the entrance to the Manhattan Bridge and has heavy traffic volumes. Bowery is a two-way collector roadway with two travel lanes in each direction and parking on both sides. West of Bowery, Canal Street has two through lanes and two right turn only lanes for eastbound traffic and one travel lane for westbound traffic. Parking is permitted on both sides. East of the Bowery, Canal Street is divided to facilitate vehicles entering and exiting the Manhattan Bridge (see Figure 8). There is no parking permitted on Canal Street between the Bowery and Chrystie Street.

There are school crosswalks on the north and west legs of the intersection. High visibility pedestrian crosswalks are installed on the east and south legs.

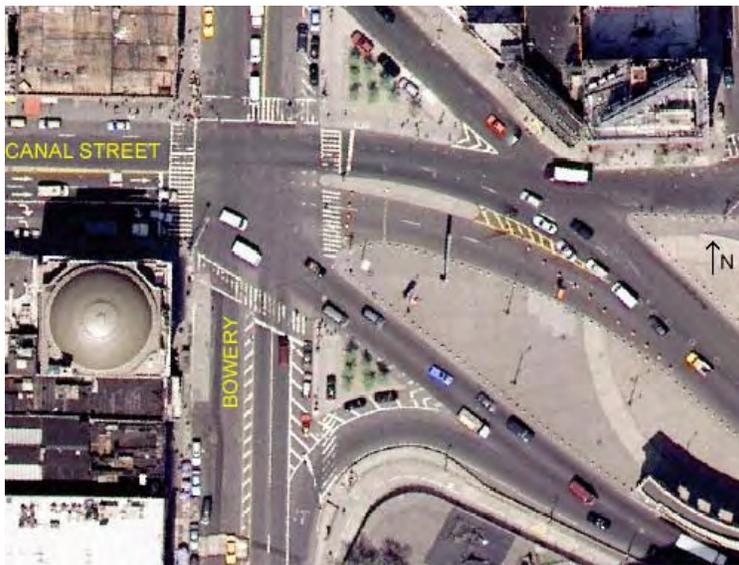


Figure 8: Intersection of Canal Street and Bowery

A total of 379 accidents occurred at this intersection during the 1998-2000 study period. Thirteen accidents involved pedestrians, none of which were school-related. There was a pedestrian fatality at this location. An 87-year-old pedestrian was struck and killed while crossing against the signal. The driver was traveling east. Five accidents at this

intersection occurred while the pedestrian was crossing against the signal or outside of the crosswalk. Six accidents involved driver's failure to yield to pedestrians when making a left or right turn. Two other drivers struck pedestrians while backing up their vehicles.

3.6.5 Canal Street and Chrystie Street

Canal Street and Chrystie Street is a signalized intersection. Traffic exiting the Manhattan Bridge can turn left and travel westbound to Canal Street via the left-turn-only lane, or travel northbound to Chrystie Street, or travel eastbound to Canal Street via the through and right turn lane (see Figure 9). Parking is permitted on both sides of Chrystie Street north of Canal Street, and on the north side of Canal Street between Chrystie Street and Forsyth Street. There is a school crosswalk on the north leg of the intersection.

A total of 85 accidents occurred at this intersection during the 1998-2000 study period. None of these accidents involved pedestrians.

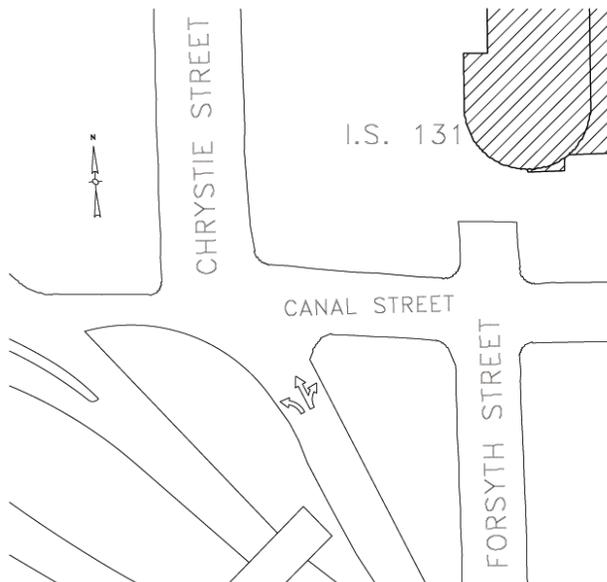


Figure 9: Intersection of Canal Street and Chrystie Street

3.6.6 Canal Street and Forsyth Street

Canal Street and Forsyth Street is a signalized intersection. North of Canal Street, Forsyth Street dead-ends into I.S. 131, creating a small area for parking adjacent to the school (See Figure 10). There are school crosswalks in place on all four approaches.

There were 21 accidents at this intersection during 1998-2000 study period. Two accidents involved pedestrians, none of which were school-related. Both accidents were due to pedestrians crossing against the signal.



Figure 10: Looking north at Forsyth Street and Canal Street

3.6.7 Canal Street and Eldridge Street

Canal Street and Eldridge Street is a signalized intersection. There are school crosswalks in place on the west, north and south legs.

There were 27 accidents at this intersection during the 1998-2000 study period, none of which involved pedestrians.

3.6.8 Canal Street and Allen Street

Canal Street and Allen Street is a signalized intersection. Canal Street is a 45-foot wide, two-way street with parking on both sides. There are pedestrian crosswalks on all four approaches, none of which are school crosswalks.

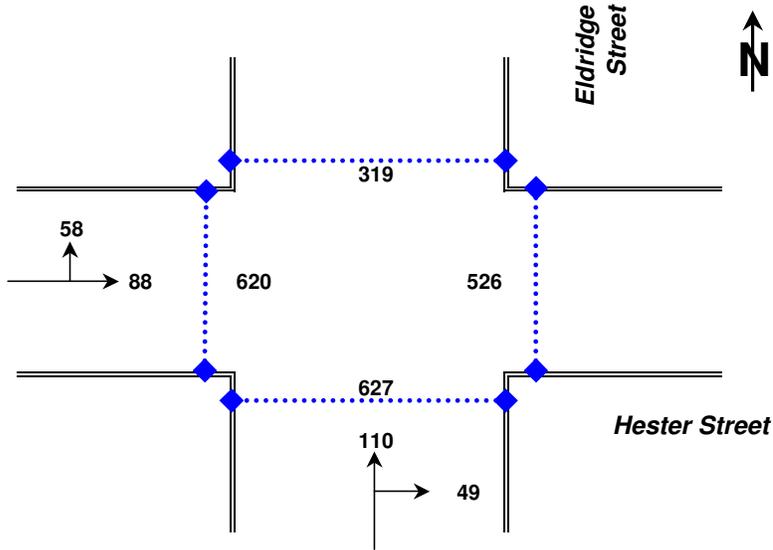
There were 78 accidents at this location during the 1998-2000 study period. Eight accidents involved pedestrians, one of which was school-related. Two accidents, including the school-related accident, involved pedestrians crossing against the signal. Five accidents involved drivers failing to yield to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

3.6.8 Bowery and Manhattan Bridge Approach

Bowery and Manhattan Bridge Approach is a signalized intersection. The Manhattan Bridge Approach is a one-way northwest roadway with one travel lane and terminates at Bowery north of Canal Street. There is a school crosswalk on the north leg and a high visibility crosswalk on the east leg.

Four accidents occurred at this intersection during the 1998-2000 study period, none of which involved pedestrians.

One Hour Traffic Count Volumes
 (2:30 PM - 3:30 PM May 16, 2005)



Intersection of Eldridge Street and Hester Street

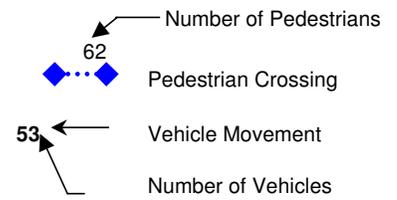


EXHIBIT 7
I.S. 131 (MANHATTAN) DR. SUN YAT SEN SCHOOL
TRAFFIC COUNTS

3.7 SIGNAL TIMING: PEDESTRIAN PHASE

Pedestrian crossing time was field-verified at all signalized intersections in the vicinity of I.S. 131, and found to be adequate for a child pedestrian walking rate of three feet per second in all directions and approaches (see Table 5).

TABLE 5: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)*	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
Hester Street and Chrystie Street				
Crossing Hester Street	30	61	13	NO
Crossing Chrystie Street.	66	29	25	NO
Canal Street and Bowery				
Crossing Canal Street	76	41	29	NO
Crossing Bowery	76	43	29	NO
Canal Street and Chrystie Street				
Crossing Chrystie Street	72	95	27	NO
Canal Street and Forsyth Street				
Crossing Canal Street	46	20	19	NO
Crossing Forsyth Street	50	70	20	NO
Canal Street and Eldridge Street				
Crossing Canal Street	46	45	19	NO
Crossing Eldridge Street	25	45	11	NO
Bowery and Manhattan Bridge Approach				
Crossing Bowery	72	48	27	NO

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

** Actual pedestrian phase includes the green light in seconds, yellow light in seconds and all-red in seconds*

3.8 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

The roadways, sidewalks, and curbs in the vicinity of the school were found to be in fair condition with the exception of the following:

- Settled sidewalk at the northwest corner of the school (see Figure 11)



Figure 11: Sidewalk settlement at the northwest corner of the school

4. POTENTIAL MEASURES TO IMPROVE STUDENT 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 MEASURES

- Upgrade No Parking Zone to No Standing Zone on Hester Street and Eldridge Street

“NO PARKING 7 AM- 4 PM, SCHOOL DAYS” parking regulations on Hester Street should be upgraded to “NO STANDING 7 AM- 4 PM, SCHOOL DAYS”. This will allow school buses a place to load and unload students at the curb, and also improve visibility of those students arriving to and leaving the school.

In addition, “NO PARKING 8:30 AM - 9:00 PM, EXCEPT SUNDAYS” parking regulations on the west side of Eldridge Street should be supplemented with “NO STANDING 7 AM- 4 PM, SCHOOL DAYS” from Hester Street for a length of 120 feet south of the intersection (see Exhibit 8).

- 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.

- Submit a request to The Police Department for crossing guards at the following locations:

- Hester Street and Forsyth Street
- Hester Street and Eldridge Street

As noted in sections 3.6.2 and 3.6.3, these two intersections are un-signalized and have uncontrolled school crosswalks. According to school officials, some I.S. 131 students cross these uncontrolled school crosswalks en route to school. Therefore,

it is recommended that a crossing guard be requested at each of these two intersections.

- *Install pedestrian ramps*

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

- Eldridge Street and Hester Street - northwest and northeast corner
- Forsyth Street and Hester Street - northwest and northeast corner
- Forsyth Street and Canal Street - southwest and northeast corners
- Bowery and Canal Street - northwest and southwest corner

- *Install new sidewalks at Eldridge Street and Hester Street*

It is recommended to install new sidewalks at Eldridge Street and Hester Street to correct settled sidewalk area.

4.2 LONG-TERM MEASURES

- *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.

- Hester Street and Eldridge Street
- Canal Street and Eldridge Street
- Canal Street and Forsyth Street
- Hester Street and Chrystie Street

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.

- *Realign intersection of Forsyth Street and Hester Street*

According to school officials, student pedestrian safety at this intersection is a major concern. They indicated that many students use school crosswalks en route to school and vehicles ignore the recently installed stop signs on Forsyth Street. It is recommended that the southwest corner curb at this intersection be realigned as shown in Exhibit 8. This would provide pedestrians with a wider sidewalk and slow turns of moving vehicles in advance of the uncontrolled school crosswalk.

- *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.

4.3 ADDITIONAL MEASURES FOR PRIORITY SCHOOL IN THE VICINITY OF I.S. 131

4.3.1 MEASURES FOR P.S. 42

The following actions are recommended as part of proposed measures to improve student pedestrian safety around P.S. 42, a nearby Priority School.

- Install new school crosswalk at the following location
 - Allen Street and Grand Street – east and south legs
 - Allen Street and Hester Street – east and north legs

There are no school crosswalks installed at these two busy intersections. The school officials stated that students of P.S. 42 use these intersections en route to school. Therefore, it is recommended that school crosswalks be installed at this intersection to facilitate students walking to school.

- Submit request to Police Department for crossing guards at the following intersections:
 - Allen Street and Grand Street
 - Hester Street and Ludlow Street

According to school officials, the safety at Grand Street and Allen Street is one of the major concerns. Grand Street and Allen Street are both wide two-way streets. In addition, some P.S. 42 students cross Hester Street at Ludlow Street, an uncontrolled crossing. Therefore, it is recommended that a crossing guard be requested at each of these two locations to assist students crossing the street.

- Consider curb extensions

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.

- Hester Street and Orchard Street
- Hester Street and Ludlow Street
- Allen Street and Grand Street
- Allen Street and Hester Street

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.

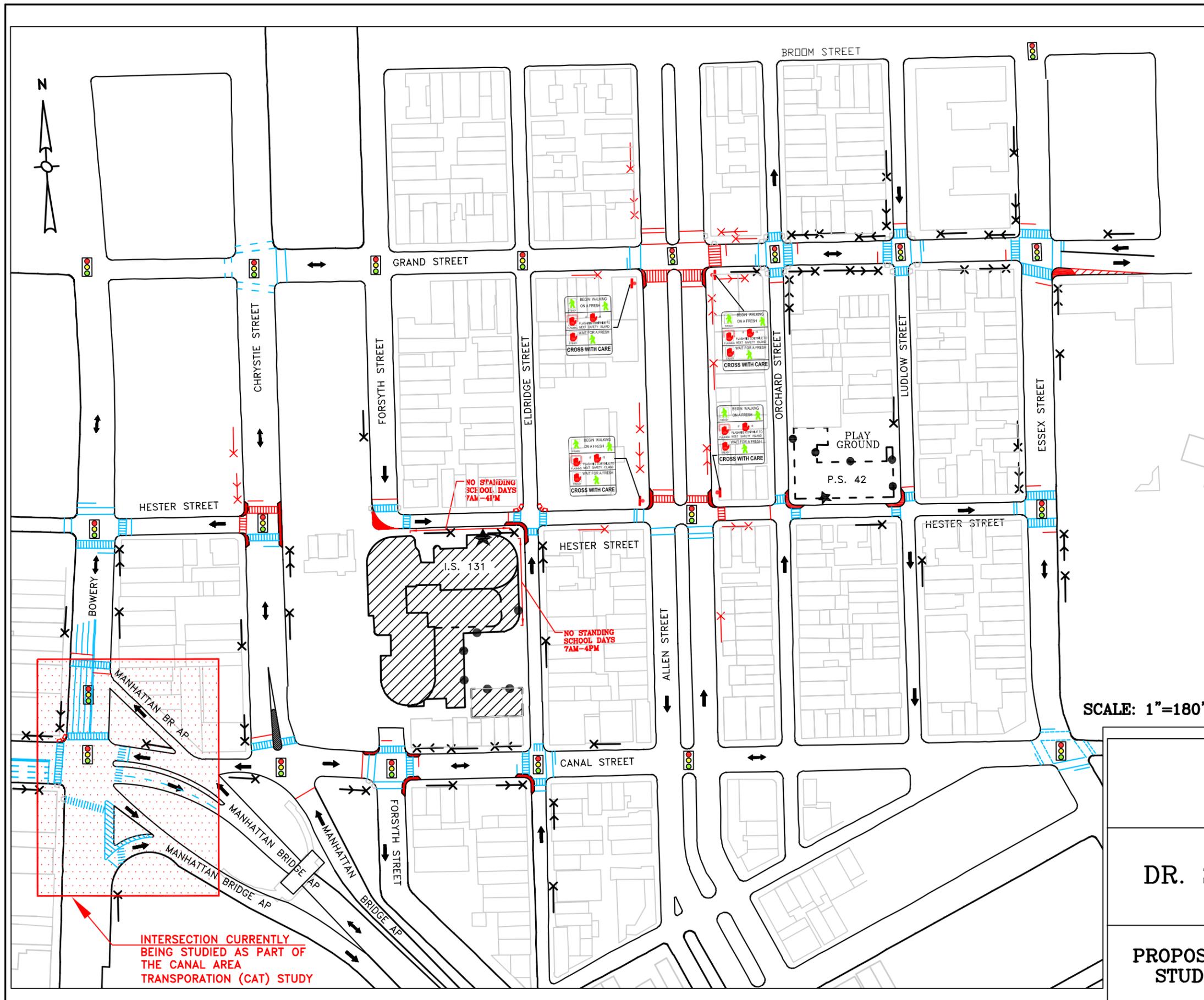
- Consider a curb extension at the southeast corner of Grand Street and Essex Street intersection

To normalize the intersection geometry and reduce the crossing distance on the east and south legs of the intersection, it is recommended that a 12-foot-wide curb extension be installed at the southeast corner of the intersection. The narrowed east leg of the intersection will maintain one travel lane and parking in the westbound direction, and two travel lanes and parking in the eastbound direction. The crosswalk on the south leg of the intersection will decrease by approximately six feet, which provides pedestrians with a shorter crossing distance.

- Install/replace complex pedestrian ramps

Due to existing utility pole conflicts, the following pedestrian ramps are considered to be complex pedestrian ramp installations. Consideration should be given to the installation of pedestrian ramps per NYCDOT standards.

- Grand Street and Ludlow Street - all corners
- Grand Street and Orchard Street - all corners
- Grand Street and Allen Street – northeast corner



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 HIGH VISIBILITY CROSSWALK
- ⌒ PROPOSED PEDESTRIAN RAMP
- X PROPOSED ADVANCE WARNING SIGN WITH ARROW
- X PROPOSED ADVANCE WARNING SIGN
- PROPOSED STOP LINE
- ▬▬▬ PROPOSED STANDARD CROSSWALK
- ▬▬▬ PROPOSED SCHOOL CROSSWALK
- PROPOSED TRAFFIC SIGN
- ⌒ PROPOSED CURB EXTENSION (NECKDOWN)
- ↔ PROPOSED PARKING REGULATIONS

SCALE: 1"=180'

EXHIBIT 8

**I.S. 131
DR. SUN YAT SEN SCHOOL
MANHATTAN**

**PROPOSED MEASURES TO IMPROVE
STUDENT PEDESTRIAN SAFETY**

APPENDIX

SPOT SPEED STUDY

Date: **October 4, 2005** Time:
 Location: **Hester Street between Forsyth Street and Eldridge Street**
 Surveyor: **Eyad Yousef**

School: **P.S. 131**
 Direction: **Eastbound**
 Comments:

Speed S (mph)	No. of Vehicles in Group n	% of Vehicles in Group	% Cumulative Vehicles	nS	nS ²
8	0	0.0%	0.0%	0	0
9	0	0.0%	0.0%	0	0
10	0	0.0%	0.0%	0	0
11	0	0.0%	0.0%	0	0
12	0	0.0%	0.0%	0	0
13	0	0.0%	0.0%	0	0
14	0	0.0%	0.0%	0	0
15	8	10.5%	10.5%	120	1800
16	6	7.9%	18.4%	96	1536
17	4	5.3%	23.7%	68	1156
18	9	11.8%	35.5%	162	2916
19	2	2.6%	38.2%	38	722
20	10	13.2%	51.3%	200	4000
21	12	15.8%	67.1%	252	5292
22	8	10.5%	77.6%	176	3872
23	11	14.5%	92.1%	253	5819
24	3	3.9%	96.1%	72	1728
25	2	2.6%	98.7%	50	1250
26	0	0.0%	98.7%	0	0
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
	76	100.0%		1514	30820

Mean Speed = 19.9 mph Median Speed = 19.9 mph
 Standard Deviation = 3.0 mph 15th Percentile Speed = 16.8 mph
 Margin of Error (95% Confidence) = ± 0.7 mph 85th Percentile Speed = 23.0 mph

SPOT SPEED STUDY

Date: **October 4, 2005**
Location: **Hester Street between Forsyth Street and Eldridge Street**
Surveyor: **Eyad Yousef**

Time:

School: **P.S. 131**
Direction: **Eastbound**
Comments:

Mean Speed = 19.9 mph
Standard Deviation = 3.0 mph
Margin of Error (95% Confidence) = ± 0.7 mph

Median Speed = 19.9 mph
15th Percentile Speed = 16.8 mph
85th Percentile Speed = 23.0 mph

