

NEW YORK CITY DEPARTMENT OF TRANSPORTATION
Office of School Safety Engineering



School Safety Engineering Project

FINAL REPORT: Collegiate School, Manhattan



Prepared by
The RBA Group/Urbitrans Associates



NOVEMBER 17, 2006

**School Safety Engineering Project
The Collegiate School, Manhattan**

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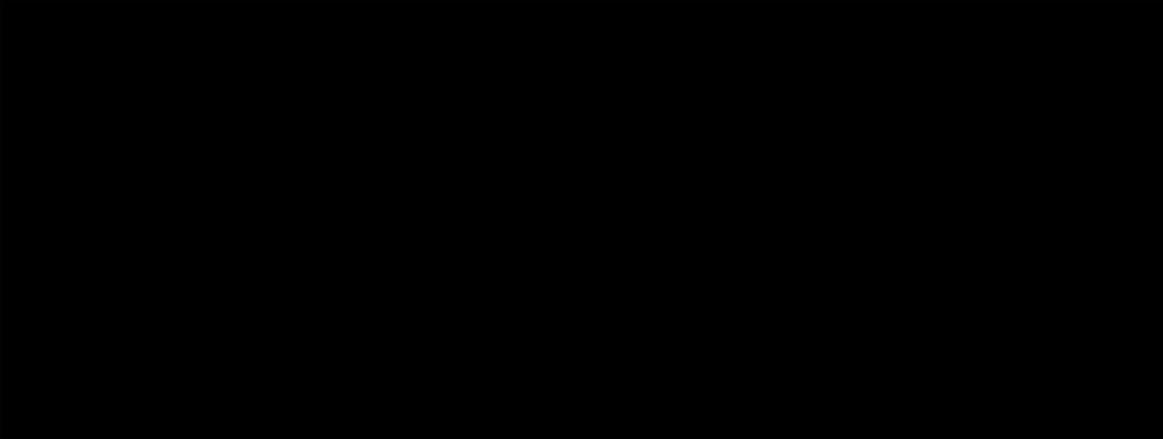
1. INTRODUCTION

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

2. BACKGROUND—EXISTING CONDITIONS AND ANALYSIS



2.2 NEIGHBORHOOD DESCRIPTION

Located at 260 West 78th Street in Manhattan, Collegiate School is located on the south side of West 78th Street between Broadway and West End Avenue (see Figure 1). The school's main entrance is on West 78th Street. There is also a secondary entrance with a distinctive metal gate (painted red) facing West End Avenue.

The surrounding land use is commercial with mixed use residential. West 78th Street is mostly a residential roadway with apartment buildings on both sides of the street. West End Avenue is a two-way roadway with a mixture of retail stores and apartment buildings. Broadway is a major commercial corridor with many retail stores and commercial establishments (see Exhibit 1 for Aerial Photograph and Exhibit 2 for the Traffic Safety Plan).



Figure 1: Collegiate School main entrance on West 78th Street



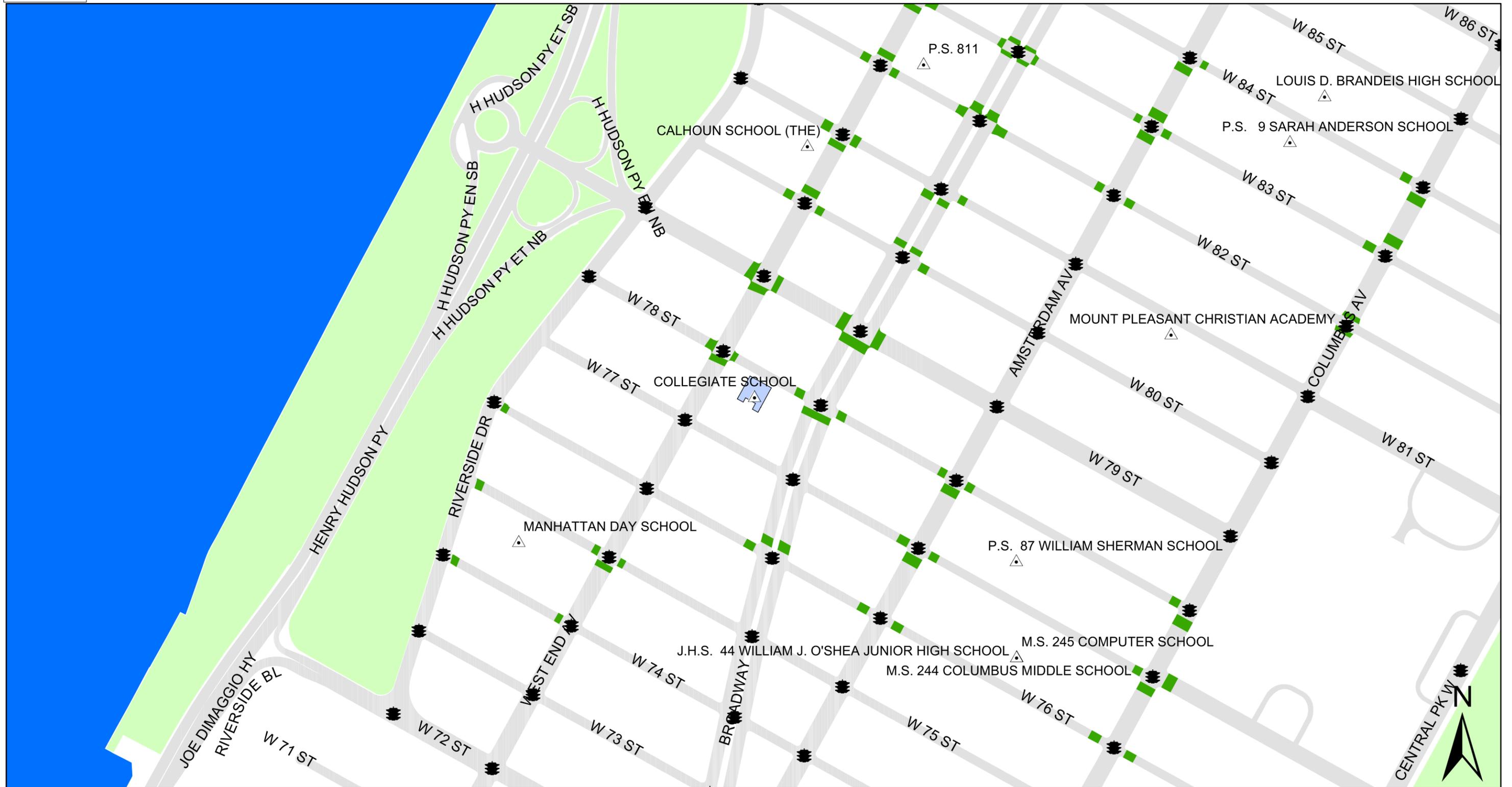
1 inch equals 200 feet

EXHIBIT 1
COLLEGIATE SCHOOL
MANHATTAN

AERIAL PHOTOGRAPH



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 COLLEGIATE SCHOOL

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

Map created on 11/16/2006

EXHIBIT 2

COMM. BOARD: 107
PRECINCT: 20

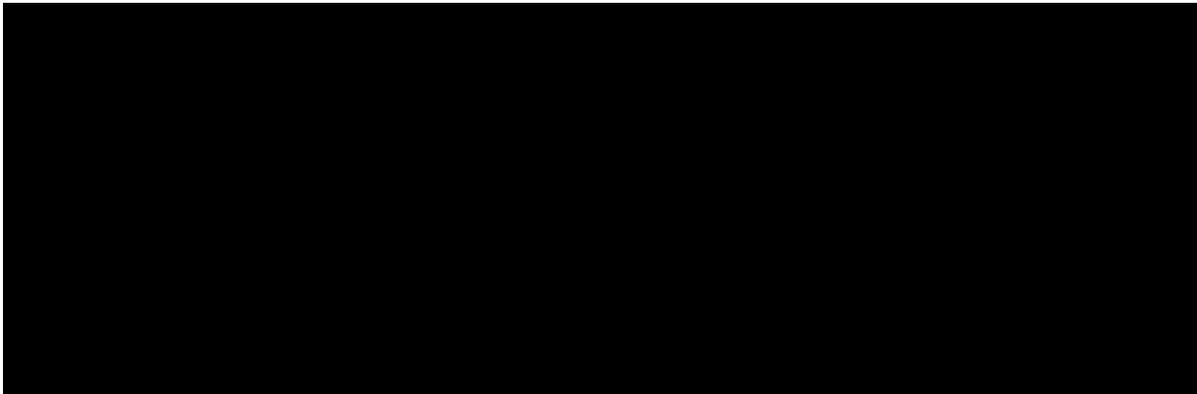
2.3 ADDITIONAL STUDENT PEDESTRIAN TRAFFIC GENERATORS

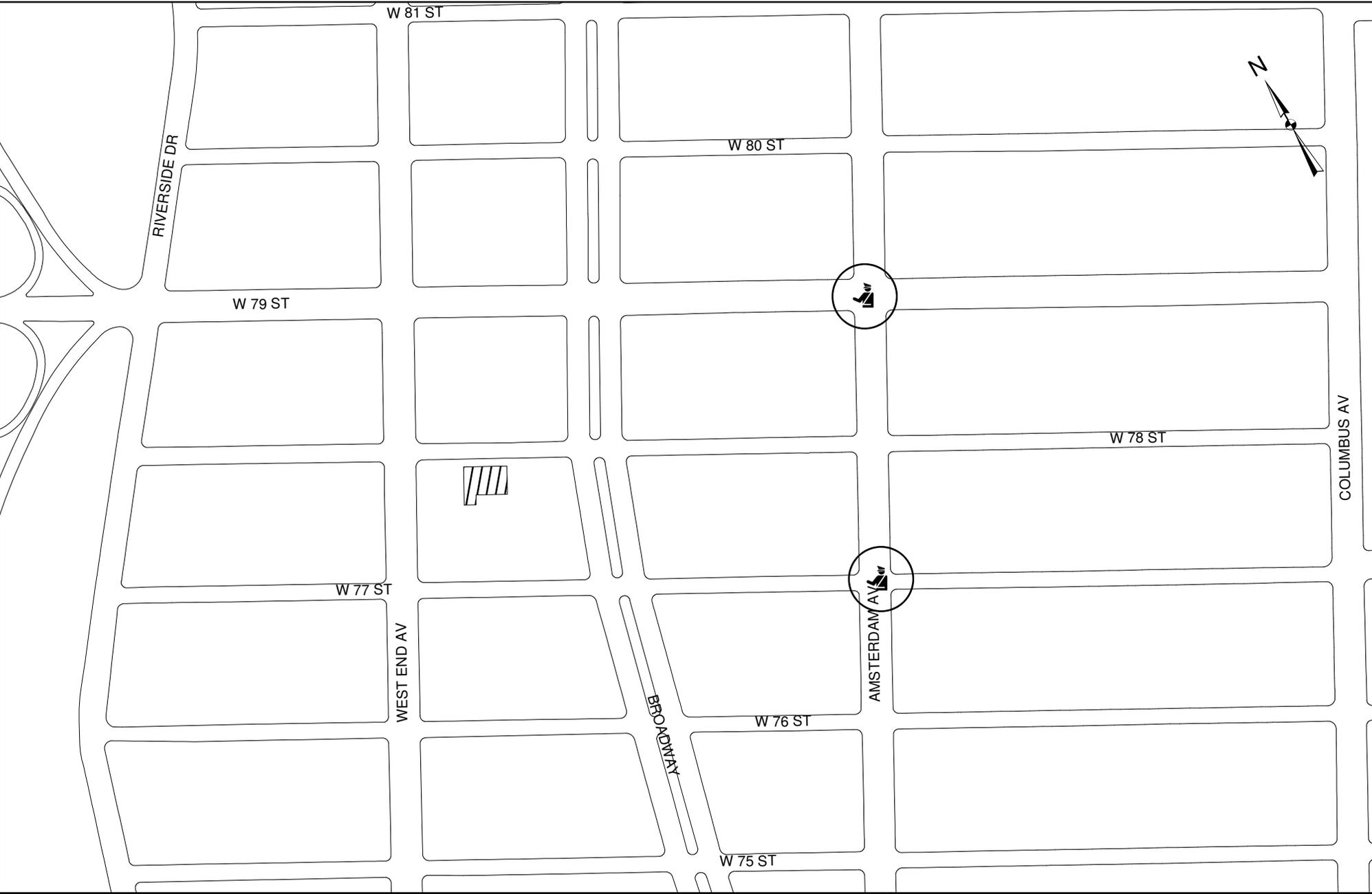
The commercial district along Broadway is located half a block east of Collegiate School (see Figure 2). There are several bus routes operating in the vicinity of the school: M7, M11 and M79. In addition, a subway station for the 1 line is located one block north of the school at the corner of Broadway and West 79th Street.

There are two public schools in the vicinity of Collegiate School. P.S. 87 is located on West 78th Street between Amsterdam Avenue and Columbus Avenue, which is two blocks east of Collegiate School. M.S. 244 is located on West 77th Street between Amsterdam Avenue and Columbus Avenue.



Figure 2 – Broadway in the vicinity of Collegiate School





1 inch equals 250 feet



CROSSING GUARD ASSIGNED TO ANOTHER SCHOOL

EXHIBIT 3
COLLEGIATE SCHOOL
MANHATTAN
CROSSING GUARDS

3. TRAFFIC OPERATIONS

3.1 PARKING REGULATIONS

“NO PARKING 7AM – 4 PM SCHOOL DAYS” parking regulations are posted in front of the school on the south side of West 78th Street. “2-HOUR PARKING 9:00 AM - 7:00 PM INCLUDING SUNDAY” regulations are posted on both sides of West 78th Street (see Figure 3).

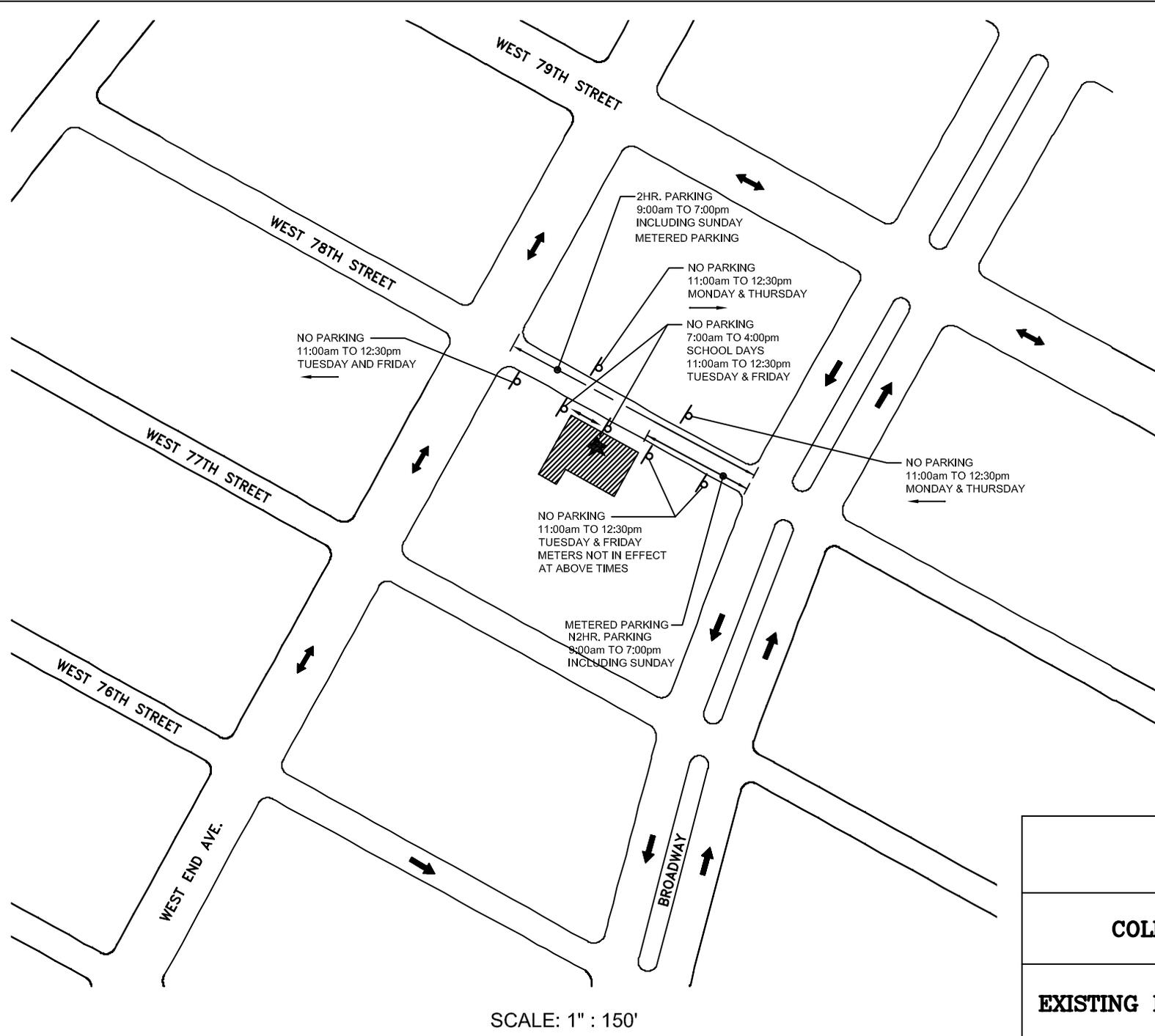
Alternate side street parking regulations are in effect 11:00 am – 12:30 pm on the roadways surrounding the school. See Exhibit 4 for parking regulations.



Figure 3 – Parking regulations on West 78th Street, east of Collegiate School

3.2 EXISTING SCHOOL SIGNS AND MARKINGS

The Traffic Safety Plan, Exhibit 3, shows existing signals and school 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 6.



NO PARKING
11:00am TO 12:30pm
TUESDAY AND FRIDAY

2HR. PARKING
9:00am TO 7:00pm
INCLUDING SUNDAY
METERED PARKING

NO PARKING
11:00am TO 12:30pm
MONDAY & THURSDAY

NO PARKING
7:00am TO 4:00pm
SCHOOL DAYS
11:00am TO 12:30pm
TUESDAY & FRIDAY

NO PARKING
11:00am TO 12:30pm
MONDAY & THURSDAY

NO PARKING
11:00am TO 12:30pm
TUESDAY & FRIDAY
METERS NOT IN EFFECT
AT ABOVE TIMES

METERED PARKING
2HR. PARKING
9:00am TO 7:00pm
INCLUDING SUNDAY

LEGEND

- ★ MAIN ENTRANCE
- ENTRANCE
- STREET SIGN

EXHIBIT 4

COLLEGIATE SCHOOL

EXISTING PARKING REGULATIONS

SCALE: 1" : 150'

3.3 ACCIDENT SUMMARY

Exhibit 5 and Table 1 show a summary of accidents, as obtained from the New York State Department of Motor Vehicles (DMV), in the vicinity of Collegiate 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 accident. Table 2 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 and locations for which detailed data was not 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.

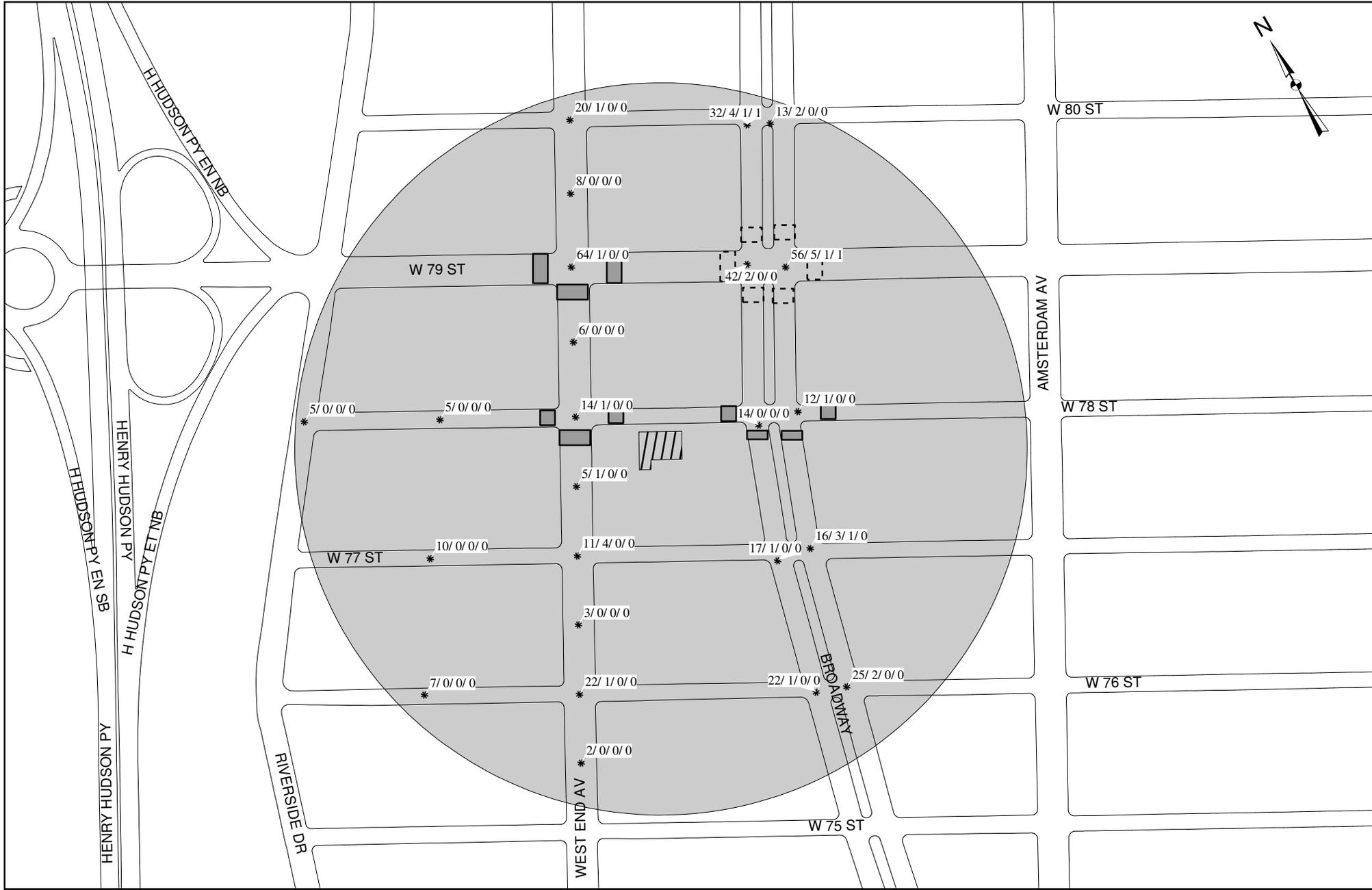
TABLE 1: DMV THREE-YEAR ACCIDENT SUMMARY (1998-2000)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Broadway and West 78th Street ¹	26	1	0	0
Broadway and West 79th Street ¹	98	7	1	1
West End Ave. and West 78th Street	14	1	0	0
West End Ave. and West 79th Street	64	1	0	0
Broadway and West 77 th Street ¹	33	4	1	0
Broadway and West 80 th Street ¹	45	6	1	1
TOTAL	280	20	3	2

TABLE 2: NYPD FOUR-YEAR ACCIDENT SUMMARY (2001-2004)				
INTERSECTION	TOTAL ACCIDENTS	PEDESTRIAN ACCIDENTS	PEDESTRIAN FATALITIES	SCHOOL-RELATED ACCIDENTS*
Broadway and West 78th Street ¹	36	6	0	0
Broadway and West 79th Street ¹	122	9	0	0
West End Ave. and West 78th Street	22	0	0	0
West End Ave. and West 79th Street**	82	4	0	N/A
Broadway and West 77 th Street ¹	80	9	0	0
Broadway and West 80 th Street ¹	64	3	0	0
TOTAL	406	31	0	0

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

** NYPD accident data did not provide pedestrian age or accident time

¹ Accident totals have been combined for both northbound and southbound Broadway



ACCIDENT LOCATION *
SCHOOL CROSSWALK ASSIGNED TO COLLEGIATE SCHOOL
SCHOOL CROSSWALK ASSIGNED TO ANOTHER SCHOOL
CROSSWALK

1 inch equals 250 feet

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

EXHIBIT 5
COLLEGIATE SCHOOL
MANHATTAN
ACCIDENT SUMMARY
THREE YEAR PERIOD
(1998-2000)

3.4 TRAFFIC OPERATIONS AND ISSUES

The following sections outlines the traffic accident and operational issues in the vicinity of Collegiate:

3.4.1 Broadway and West 78th Street

West 78th Street is a 30-foot wide, one-way eastbound street, with one travel lane and parking on both sides (see Figure 5). Broadway is a 100-foot wide, two-way roadway with three moving lanes in each direction and parking on both sides of the street (see Figure 6). A 20-foot wide median separates the northbound and the southbound traffic. Broadway and West 78th Street is a signalized intersection with school crosswalks on the south, east and west legs.



Figure 5: West 78th Street looking west from Broadway



Figure 6: Looking north on Broadway from West 78th Street

Review of the existing signal timing indicates that the pedestrian phase does not provide adequate time for pedestrians to cross Broadway from curb-to-curb in one cycle at a walking rate of three feet per second plus three seconds reaction time. A pedestrian is expected to wait at the center median between signal cycles. It is common practice to utilize the median as a refuge for pedestrians to wait between signal cycles

There were 26 accidents at this intersection during the 1998-2000 study period. One accident involved a pedestrian, which was not school-related. The accident was attributed to a driver backing up his vehicle unsafely.

3.4.2 Broadway and West 79th Street

Broadway and West 79th Street is a signalized intersection. West 79th Street is a 60-foot wide, two-way roadway with two travel lanes in each direction and parking on both sides of the street (Figures 7 and 8). West 79th Street provides access to Henry Hudson Parkway and carries significant traffic volumes through the area. There are school crosswalks on all four legs of the intersection. The northeast and northwest quadrants do not have standard pedestrian ramps.



Figure 7: Looking west at West 79th Street and Broadway

Review of the existing signal timing indicates that the pedestrian phase does not provide adequate time for pedestrians to cross Broadway from curb-to-curb in one cycle at a walking rate of three feet per second plus three seconds reaction time. A pedestrian is expected to wait in the center median between signal cycles. It is common practice to utilize the median as a refuge for pedestrians to wait between signal cycles



Figure 8: Looking south on the east side of Broadway across West 79th Street

There were 98 accidents at this intersection during the 1998-2000 study period. Seven accidents involved pedestrians, one of which was fatal. A 79-year-old pedestrian was struck and killed. This fatal accident was a combination of pedestrian error and the driver traveling at an unsafe speed.

There was one school-related pedestrian accident. An 11-year-old student was struck while crossing with the signal. It was cited as driver error. Two pedestrians were struck while crossing against the signal. One pedestrian was struck while getting out of a vehicle. Another accident was due to the driver's failure to yield to a pedestrian while he making a left turn. There was no further detail for the last accident.

3.4.3 West End Avenue and West 78th Street

West End Avenue and West 78th Street is a signalized intersection. West End Avenue is a 60-foot wide, two-way roadway with two travel lanes and parking on both sides (see Figure 9). There are school crosswalks on the south, east and west legs of the intersection (see Figures 9 and 10).



Figure 9: Looking south on the east side of West End Avenue across West 78th Street



Figure 10: Looking west on the north side of West 78th Street across West End Avenue

There were 14 accidents at this intersection during the 1998-2000 study period. One accident involved a pedestrian, which was not school-related. A pedestrian was struck while emerging from between parked vehicles.

3.4.4 West End Avenue and West 79th Street

West End Avenue and West 79th Street is a signalized intersection with school crosswalks on the south, east and west legs.

A total of 64 accidents occurred at this intersection during the 1998-2000 study period. One accident involved a pedestrian, which was not school-related. The accident was due to the driver's failure to yield to a pedestrian while he was making a left turn.

3.4.5 Broadway and West 77th Street

Broadway and West 77th Street is a signalized intersection. West 77th Street is a 30-foot wide, one-way westbound street with one travel lane and parking on both sides. There are pedestrian crosswalks on all four legs, none of which are school crosswalks.

A total of 33 accidents occurred at this intersection during the 1998-2000 study period. Four accidents involved pedestrians, one of which was fatal. There were no school-related accidents. A 23-year-old pedestrian was struck and killed by a southbound vehicle. This fatal accident was due to driver error.

A pedestrian was struck while crossing against the signal. The other accident was due to the driver's failure to yield to a pedestrian while he was making a left turn. There were no further details for the last accident.

3.4.6 Broadway and West 80th Street

Broadway and West 80th Street is a signalized intersection. West 80th Street is a 30-foot wide, one-way eastbound street, with one travel lane and parking on both sides. There are school crosswalks on the north and east legs of the intersection.

A total of 45 accidents occurred at this intersection during the 1998-2000 study period, six of which involved pedestrians. One pedestrian accident was fatal and one was school-related. A 30-year-old pedestrian was struck and killed while crossing outside the crosswalk. This fatal accident was due to pedestrian error.

An eight-year-old student was struck while getting out of a vehicle. A pedestrian was struck while crossing against the signal. The other three accidents were attributed to the driver's failure to yield while making a left turn.

3.5 SIGNAL TIMING: PEDESTRIAN PHASE

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

TABLE 3: PEDESTRIAN CROSSING TIME AT SIGNALIZED INTERSECTIONS				
Intersection Name	Crosswalk Length (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
West 78th Street and Broadway				
Crossing West 78 th Street	34	60	15	NO
Crossing Broadway	40/40 ¹	30/30 ¹	17/17	NO
West 79th Street and Broadway				
Crossing West 79 th Street	50	50	20	NO
Crossing Broadway	40/40 ¹	40/40 ¹	17/17	NO
West 78th Street and West End Avenue				
Crossing West 78 th Street	34	65	15	NO
Crossing West End Avenue	60	25	23	NO
West 79th Street and West End Avenue				
Crossing West 79 th Street	50	50	20	NO
Crossing West End Avenue	60	40	23	NO

Note – A rate of three feet per second plus three seconds reaction time was utilized as the child pedestrian walking rate

1- A pedestrian needs two signal cycles to cross Broadway at a rate of three feet per second while stopping at the protected pedestrian median. The actual pedestrian phase for Broadway at West 78th Street is 30 seconds and at West 79th Street is 40 seconds.

3.6 PHYSICAL CONDITIONS (ROADWAYS AND SIDEWALKS)

The roadways and sidewalks in the vicinity of Collegiate were in fair condition.

4. PROPOSED 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

- *Upgrade No Parking Zone to No Standing Zone*

Existing “NO PARKING 7:00 AM - 4:00 PM, SCHOOL DAYS” parking regulations on West 78th Street should be upgraded to “NO STANDING 7:00 AM -4:00 PM, SCHOOL days” for a length of 60 feet in front of the school's main entrance. (This is a typical requirement for all NYC schools in order to provide for emergency access to and from the school.)

- *Administer student pedestrian safety education program*

It is recommended that the NYCDOT Safety Education Program work with the school to educate the students on pedestrian safety, including crossing the street with the WALK phase, and the meaning of WALK - FLASHING DON'T WALK - DON'T WALK pedestrian signal sequence. It is also recommended that the students be educated not to cross at mid-block locations.

- *Install pedestrian information sign that explains the signal phases*

The safety of pedestrians at the wide intersections of Broadway at West 78th Street, West 79th Street and West 80th Street is a major concern. Installation of a pedestrian information sign adjacent to each school crosswalk that explains the signal phases is recommended. The pedestrian should be informed to wait at the median between signal cycles.

- *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 Request to Police Department for Crossing Guard*

It is recommended that a crossing guard be requested for the following two intersections:

- Broadway and West 78th Street
- Broadway and West 79th Street

- Install/replace pedestrian ramps

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

- Broadway and West 79th Street – northeast and northwest corners

- Install new school crosswalks at the following intersection:

- Broadway and West 77th Street – east and west legs

Providing a new school crosswalk at these locations will facilitate students en route to school.

- Install graphic “Yield to Pedestrian”

A “YIELD TO PEDESTRIAN” sign should be installed at all approaches to the following intersection:

- Broadway and West 77th Street

The installation of the signs is intended to remind the drivers that the pedestrians have the right of way within the crosswalk.

4.2 LONG-TERM MEASURES

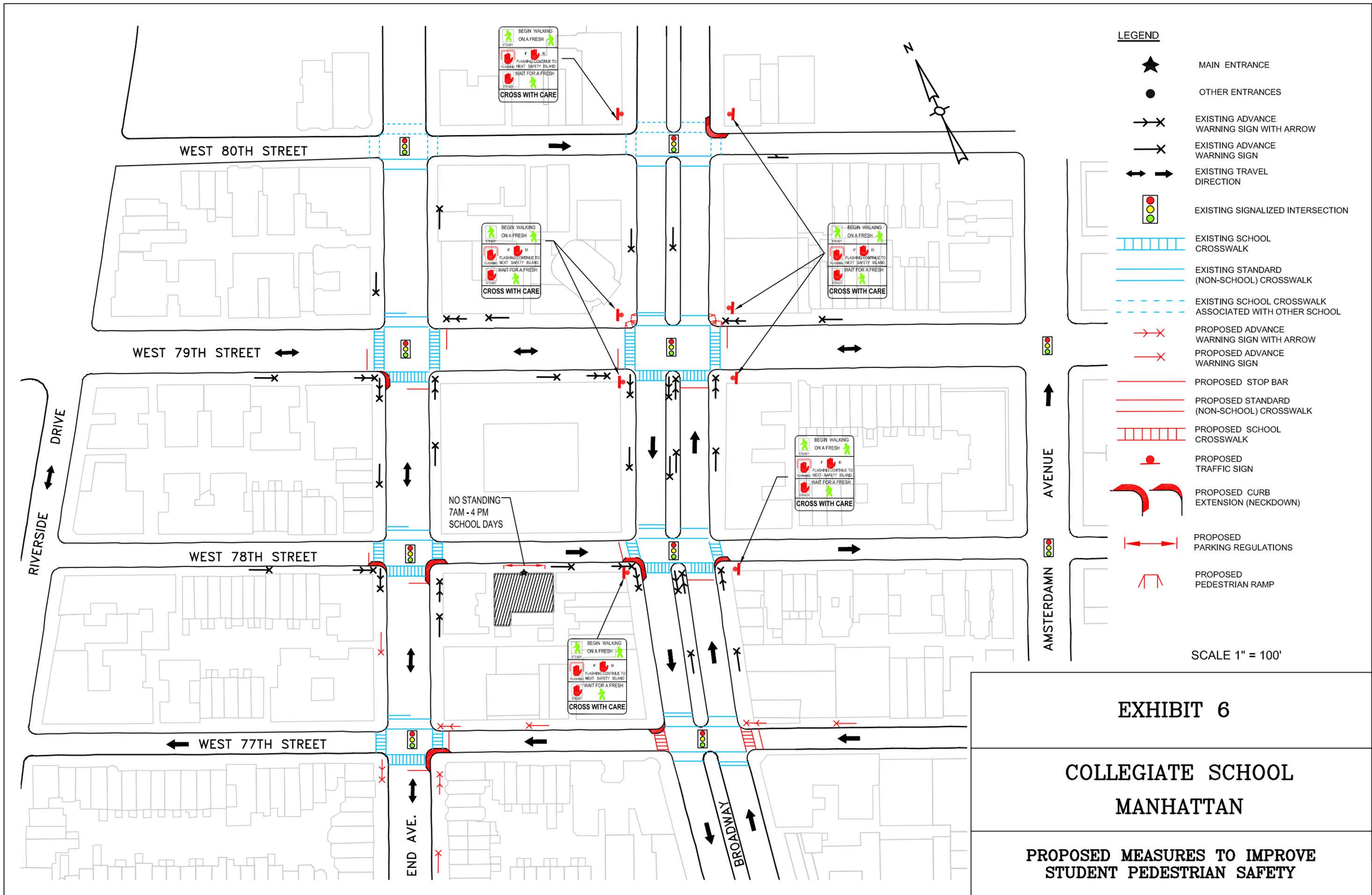
- Consider curb extensions at the following intersections:

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.

- Broadway and West 78th Street – southwest, southeast corners
- Broadway and West 77th Street – northwest corner
- Broadway and West 80th Street – northeast corner
- West End Avenue and West 78th Street – southeast, southwest corner
- West End Avenue and West 77th Street – southeast corner
- West End Avenue and West 79th Street – southwest corner

Curb extensions should be considered at the corners as shown in Exhibit 6.

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.



APPENDIX