

Safe Streets for Seniors

Mott Haven, The Bronx

FINAL REPORT
September, 2011



Janette Sadik-Khan, Commissioner



Safe Streets for Seniors
MOTT HAVEN

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PROJECT DESCRIPTION

1. PROJECT DESCRIPTION

Since 1990 the number of pedestrian fatalities in New York City has decreased by 56%. Moreover, prior to 1950, pedestrians accounted for three-fourths of all traffic fatalities and since then, that percentage has decreased to account for about one-half of all traffic fatalities. Despite these statistical improvements, pedestrians continue to be the largest at risk mode – with older adults more likely to suffer serious injuries or fatalities from traffic crashes than other pedestrians. The rate of pedestrian fatalities for every 100,000 persons in the City has decreased by nearly half since 1991 – to 2.0 from 3.8 – while the rate of senior pedestrian fatalities per 100,000 seniors has decreased even more sharply – to 6.6 from 13.1. Nevertheless, while seniors make up only 12% of the population in New York City, they still comprise 39% of pedestrian fatalities. The recognition of the disproportional representation of the senior population among severe pedestrian injuries and fatalities led to the development of the Department of Transportation’s Safe Streets for Seniors (SSS) Program.

The purpose of this project is to address senior pedestrian safety issues at 25 Senior Pedestrian Focus Areas (SPFAs) in the five boroughs of New York City and to develop and implement mitigation measures to improve the safety of seniors and other pedestrians within the 25 SPFAs. DOT identified SPFAs to include the top senior pedestrian crash (severe injury and fatality) areas within each borough. Four of the SPFAs are located in the Bronx, seven in Brooklyn, five in Queens, eight in Manhattan and one in Staten Island. The SPFAs have been selected based on the density of senior pedestrian crashes resulting in fatalities or severe injuries in a five-year period. DOT conducted in-house studies for five pilot SPFAs and is utilizing consultant services to perform a comprehensive study of pedestrian safety conditions at intersections and along corridors within 20 selected SPFAs.

The project evaluates the crash history and existing traffic conditions and controls (e.g., roadway geometry, signal timing) at selected intersections and corridors within each SPFA in order to develop short- and long-term measures to reduce pedestrian crashes specifically for seniors, and improve safety and traffic operations for all users. DOT makes specific safety recommendations consisting of low-cost as well as capital engineering and design improvements for these 20 areas. In addition, DOT conducts data analysis as needed, prepares engineering and design schematics and related services, as necessary, for capital improvements.

2. BACKGROUND

Land-use in the Mott Haven Study Area is a mix of commercial and residential buildings. A public park, St. Marys Park, is located in the center of the study area and is bordered by East 149th Street, St. Anns Avenue, Jackson Avenue, and St. Marys Street.

There are six Senior Centers located in/near the Study Area:

- Melrose Mott Haven Senior Center at East 152nd Street between Cortland Avenue and Melrose Avenue.
- Douglas Leon Senior Center at East 152nd Street between Jackson Avenue and Tinton Avenue
- Maria Isabel Senior Center at East 149th Street between Wales Avenue and Tinton Avenue
- Cab E Roberts Moore Senior Center at Jackson Avenue between East 149th Street and East 147th Street
- CCBA/Betances Senior Center at Saint Anns Avenue between East 144th Street and East 143rd Street
- Millbrook Community Center at St. Anns Avenue between East 137th Street and East 135th Street

There are two primary medical centers located near the Study Area:

- Lincoln Hospital–Cardio Clinic at East 149th Street between Park Avenue and Morris Ave.
- St. Barnabas Hospital at East 149th Street between Morris Avenue and Courtland Avenue

Bicycle Facilities

In the vicinity of Mott Haven Study Area, East 138th Street, St Anns Avenue, East 149th Street and Prospect Avenue are existing bike routes. There is no planned/proposed route based on the NYC DOT 2010 Bicycle Master Plan (Exhibit 2).

Truck Routes

Westchester Avenue, Third Avenue, East 149th Street and East 138th Street are local truck routes in the within the study area (Exhibit 3).

Bus Lines and Subway

Seven bus lines operate within the study area including (Exhibit 4):

- Bx15, Bx21, Bx55: Operate along Third Avenue
- Bx4: Operates along Westchester Avenue
- Bx19: Operates along East 149th Street
- Bx17: Operates along East 138th, St. Anns Avenue, East 149th Street and Prospect Avenue
- Bx33: Operates along East 138th Street

Three subway lines operate within the study area including (Exhibit 4):

- Local 6: Operates along East 138th Street with stops at Brook Avenue and Cypress Avenue
- Local 2, Local 5: Operate along Westchester Avenue with stops and Third Avenue, Jackson Avenue, and Prospect Avenue

EXHIBIT 1 – AREA MAP



EXHIBIT 2 – BIKE MAP

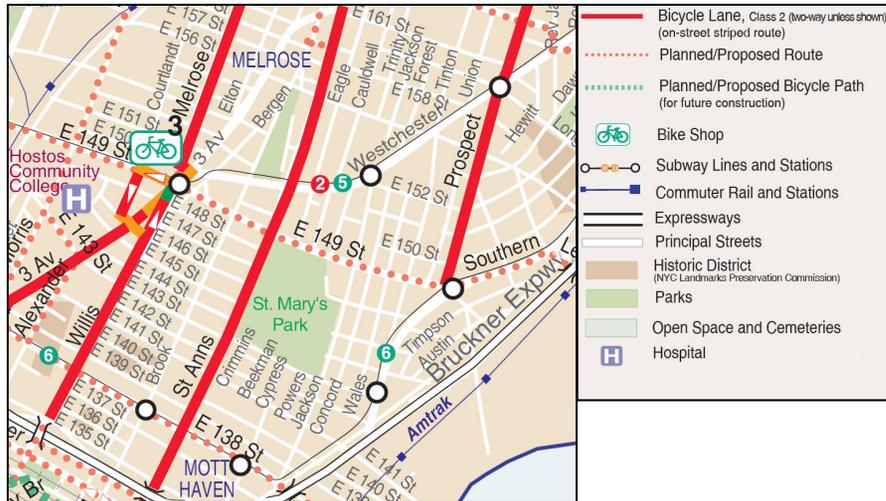


EXHIBIT 3 – TRUCK MAP

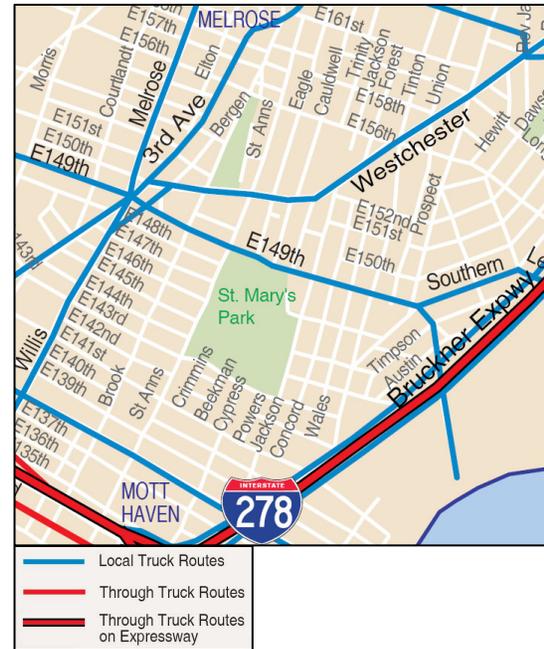


EXHIBIT 4 – TRANSIT MAP



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EXISTING CONDITIONS

3. EXISTING CONDITIONS

3.1 ABOUT THE STUDY AREA

The Mott Haven Study Area consists of one major north-south corridor, St. Anns Avenue, and two major east-west corridors, Westchester Avenue and East 149th street. The existing street geometry of St. Anns Avenue includes two travel lanes, one in each direction, as well as parking on both sides of the street. The existing geometry of the east-west corridors include, four travel lanes, two in each direction, and parking on both sides of the street. The intersection of East 149th Street, 3rd Avenue and Willis Avenue is a major intersection with heavy vehicular and pedestrian volume, generated from the subway station for the 2 and the 5 line as well as several bus stops for four bus lines (Photo No. 1).



Photo No. 1: E 149th St. & 3rd Ave /Melrose Ave. (looking east)

According to the NYC DCP Bronx Community District 1 Profile, the Mott Haven Study Area has one of the highest concentrations of New York City Housing Authority projects in the Bronx. This neighborhood is mainly occupied with public housing complexes and there is a high concentration of older apartment buildings between these developments.

The combination of the operational and geometric factors makes these corridors difficult for a senior pedestrian to safely cross.

There were several NYCDOT projects recently completed in the study area (Appendix F):

- Willis Avenue from East 135th Street to East 149th Street
- Third Avenue from East 153rd Street to Major Deegan Expressway
- East 149th Street from East 145th Street Bridge to Prospect Avenue

3.2 FIELD OBSERVATIONS AND PEDESTRIANS CONCERNS

There were numerous issues that were repeatedly observed during the field visits and/or conveyed by senior pedestrians during interviews. Those issues are:

- Insufficient crossing time
- Missing crosswalk markings
- Missing or inadequate pedestrian ramps

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TRAFFIC OPERATIONS

4. TRAFFIC OPERATIONS

4.1 CRASH SUMMARY

Crash data was obtained from the New York City Department of Transportation (NYCDOT) in the Mott Haven Study Area from 2001 through 2006. This data provides some detail relating to the circumstances and cause of each crash. Table 1 and Exhibit 5 show a summary of crashes.

TABLE 1: DMV SIX YEAR CRASH SUMMARY (2001-2006)

INTERSECTION		SENIOR PEDESTRIAN CRASHES	SENIOR PEDESTRIAN FATALITIES
East 156 th Street	Brook Avenue	1	0
	Prospect Avenue	1	0
3 rd Avenue	Westchester Avenue	1	0
St. Anns Avenue	East 143 rd Street	1	0
East 149 th Street	3 rd Avenue	2	0
	Eagle Avenue	1	0
	Trinity Avenue	1	0
East 138 th Street	St. Anns Avenue	1	0
	Jackson Avenue	1	0
TOTAL		10	0



EXHIBIT 5 – PEDESTRIAN CRASH STATISTICS (2001-2006)

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TRAFFIC OPERATIONS

4.2 TRAFFIC VOLUMES

The level of vehicle and pedestrian conflicts at the intersections utilized by senior pedestrians, in the Mott Haven Study Area, was assessed using traffic volume data collected at key locations in June of 2010 (see Table 2).

TABLE 2: TRAFFIC VOLUME DATA

Locations	ATR ¹	TMC ²	PED COUNTS
Westchester Avenue at Trinity Avenue	x		
E 149 th Street between Bergen Avenue & Brook Avenue	x		
E 149 th Street between Eagle Avenue & Cauldwell Avenue	x		
E 149 th Street between Cauldwell Avenue & Trinity Avenue	x		
E 149 th Street between Concord Avenue & Wales Avenue	x		
E 138 th Street & Jackson Avenue		x	x
E 138 th Street & Bruckner Boulevard		x	x
Westchester Avenue & Trinity Avenue		x	x

Notes:

1. Twenty-four hour Automatic Traffic Recorder (ATR)
2. Turning Movement Counts (TMC's)

The results of the ATR, TMC's and pedestrian counts are included in Appendix A, B, C and the Technical Supplement.

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TRAFFIC OPERATIONS

4.3 SIGNAL TIMING: PEDESTRIAN INTERVAL

According to MUTCD 2009 (Manual on Uniform Traffic Control Devices) Section 4E.06, a minimum of seven (7) seconds is allocated for a walk interval, in addition to a pedestrian clearance time based on a walking speed of 3.5 feet per second. All signalized intersections in the study area were modified to provide a clearance interval of 3 feet per second to accommodate slower walking speeds.

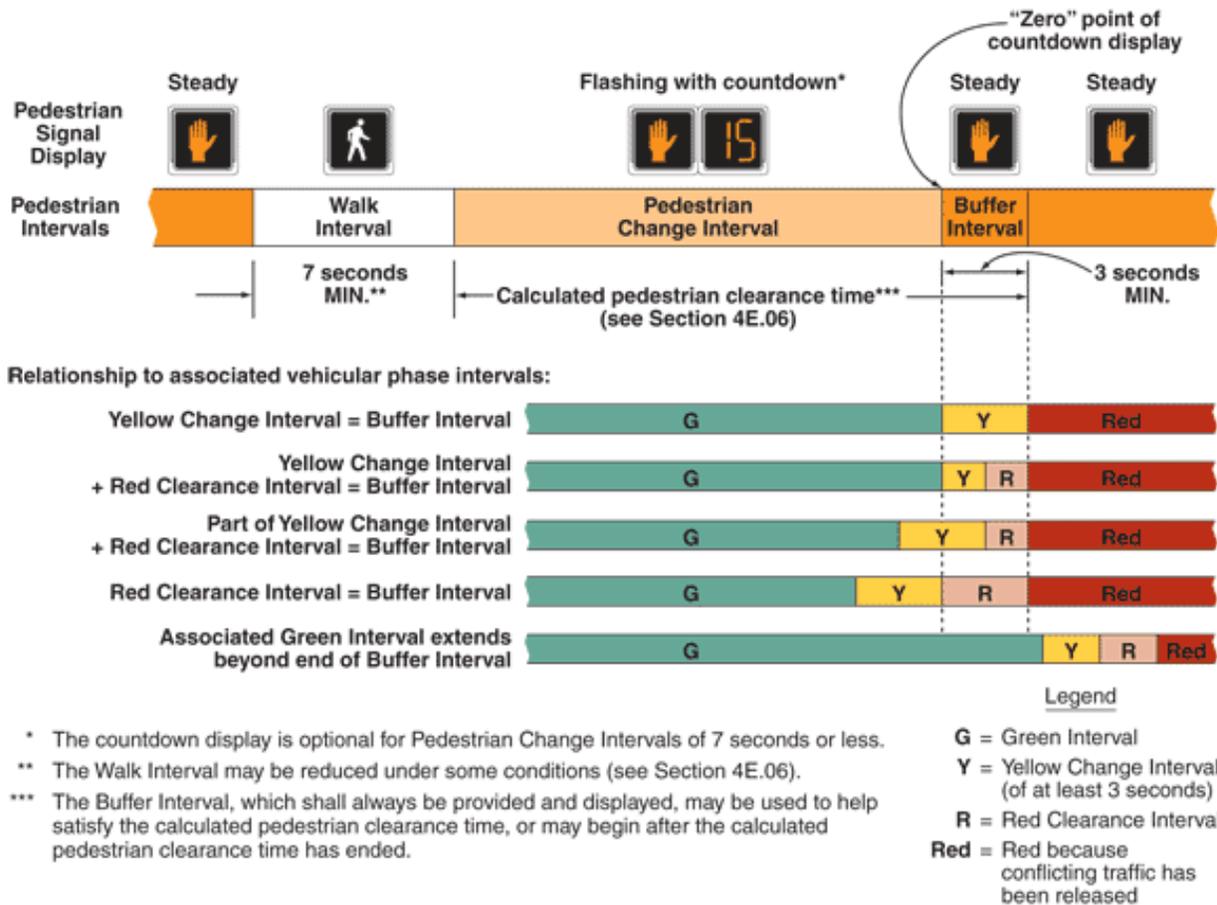


Figure No. 1: Pedestrian Intervals from MUTCD 2009

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ILLUSTRATING THE SOLUTION

5. ILLUSTRATING THE SOLUTION

5.1 EXECUTIVE SUMMARY AND GENERAL RECOMMENDATIONS

TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS											
Section	Locations	Install Extended / Raised Median	Pedestrian Plaza / Green Street Expansion	Curb Extension	Stripe Median	Stripe Right-Turn Bay	Stripe Parking Lane	Stripe Corner Geometry	Reconfigure Buffer Striping	Stripe High Visibility Crosswalk	Reconstruct Corner Quadrant / Pedestrian Ramps
5.2	E 138 th St between Third Ave & Jackson Ave						x				
5.2	E 138 th St & Alexander Ave										x
5.2	E 138 th St & Brown Pl										x
5.2	E 138 th St & Jackson Ave				x						
5.2	E138th St between Jackson Ave & Bruckner Blvd	x				x					
5.2	E 138 th St & Bruckner Blvd										x
5.2	Jackson Ave between E 138 th St & Bruckner Blvd		x								
5.3	Brook Ave between E 138 th St & E 149 th St						x				
5.3	Brook Ave & E 139 th St										x
5.3	Brook Ave & E 140 th St										x
5.3	Brook Ave & E 143 rd St									x	
5.3	Brook Ave & E 149 th St									x	
5.3	Brook Ave between Westchester Ave & E 159 th St						x				
5.3	Brook Ave & E 156 th St									x	
5.3	Brook Ave & E 159 th St										x

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ILLUSTRATING THE SOLUTION

Section	Locations	Install Extended / Raised Median	Pedestrian Plaza / Green Street Expansion	Curb Extension	Stripe Median	Stripe Right-Turn Bay	Stripe Parking Lane	Stripe Corner Geometry	Reconfigure Buffer Striping	Stripe High Visibility Crosswalk	Reconstruct Corner Quadrant / Pedestrian Ramps
5.5	Prospect Ave & Southern Blvd										x
5.5	Prospect Ave & E 149 th St									x	
5.5	Prospect Ave & E 150 th St	x			x				x		
5.5	Prospect Ave & E 152 nd St	x			x				x		
5.5	Prospect Ave & Avenue St. John							x			x
5.5	Prospect Ave & E 155 th St	x			x				x	x	
5.5	Prospect Ave & E 161 st St	x			x				x		
5.5	Prospect Ave & E 162 nd St	x			x				x		
5.5	Prospect Ave & E 164 th St	x			x				x		
5.5	Prospect Ave & E 165 th St	x			x				x	x	
5.5	Prospect Ave & E 166 th St										x
5.5	Prospect Ave & E 167 th St									x	x
5.5	Prospect Ave & Home St	x			x				x	x	
5.5	Prospect Ave & E 168 th St	x			x				x		
5.5	Prospect Ave & E 169 th St									x	
5.5	Prospect Ave & Jennings St	x			x				x		
5.6	St. Anns Ave & E 143 rd St			x						x	

General Recommendations

- Place stop bars ten feet in advance of all crosswalks
The NYCDOT standard for placement of a stop bar is ten feet in advance of any marked pedestrian crosswalk, including school and high-visibility crosswalks. This helps to maximize pedestrian visibility and to minimize the potential for pedestrian/vehicle conflicts. Therefore, it is recommended that stop bars be placed ten feet in advance of all crosswalks.
- Provide additional crossing time where feasible
Number of senior residents interviewed, indicated that there was not enough time to cross a lot of the streets. All the signals, where possible, will be re-timed to allow more crossing time for pedestrians.
- Green projects where feasible
All medians, pedestrian plazas and curb extensions will be part of the Greenstreets project where feasible. The Greenstreets project is a citywide program to convert paved vacant traffic islands and medians into green spaces filled with shade trees, flowering trees, shrubs and groundcover.

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ILLUSTRATING THE SOLUTION



Photo No. 2: E 138th St. btw Brook Ave. & St. Anns Ave.



Photo No. 3: Jackson Ave. & E 138th St.



Photo No. 4: E 138th St. & Bruckner Blvd.

5.2 EAST 138TH STREET

East 138th Street is a 48-foot wide corridor with one moving lane in each direction with parking on both sides. (Photo No. 2).

Thirteen-foot parking lane striping for both sides of the corridor from Third Avenue to Jackson Avenue is recommended. This measure will narrow the travel lanes and calm vehicular traffic.

At the southeast corner of East 138th Street and Alexander Avenue and northeast corner of East 138th Street and Brown Place, there are pedestrian ramps missing. A new NYCDOT standard pedestrian ramp and ADA safety surface is recommended for both locations.

The intersections of East 138th Street, Jackson Avenue and Bruckner Boulevard have heavy vehicular volume (Photo No. 3). Many seniors indicated they do not feel safe crossing the streets at this intersection and there is a history of pedestrian injuries at this location. Turning movement counts and pedestrian counts were collected in June of 2010. Traffic analysis was conducted to determine if the existing Greenstreet triangle can be turned into a pedestrian plaza by closing off Jackson Avenue from East 138th Street to Bruckner Boulevard. The closure would result in expansion of The Greenstreet (Gouverneur Morris Triangle), addition of right turn bay along East 138th Street between Jackson Avenue and Bruckner Boulevard (Photo No. 4) and an eight-foot concrete median along East 138th Street between Jackson Avenue and Bruckner Boulevard with 11-foot travel lanes. The analysis showed that Jackson Avenue can be closed with adjustments made to the signal timing at East 138th Street and

Jackson Avenue. The detailed results are presented in Appendices B, C and the Technical Supplement. A tapered striped median is recommended for the west leg of East 138th Street

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ILLUSTRATING THE SOLUTION

and Jackson Avenue to keep moving traffic in-line. The northwest and southwest corners of East 138th Street and Bruckner Boulevard are missing pedestrian ramps and new NYCDOT standard pedestrian ramp and ADA safety surface are recommended for both locations. All improvements can be found in Exhibit 8.

5.3 BROOK AVENUE

Brook Avenue is a 42-foot wide southbound corridor with two moving lanes and parking on both sides. It is a two-way corridor between East 149th Street and Westchester Avenue with parking along the east side of Brook Avenue.

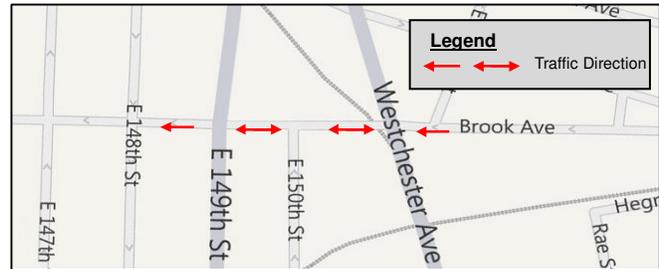


Figure No. 2: Brook Avenue Traffic Pattern

Along Brook Avenue from East 138th Street to East 149th Street and from Westchester Avenue to East 159th Street, 11-foot parking lanes are recommended to narrow the travel lanes and slow moving traffic. To increase visibility of crosswalks on the streets, high visibility crosswalks are recommended for the following intersections:

- North and south legs of East 143rd Street and Brook Avenue
- All four legs of East 149th Street and Brook Avenue (Photo No. 5)
- North and south legs of East 156th Street and Brook Avenue

At the following intersections, a new pedestrian ramp is recommended or an existing pedestrian ramp is in poor condition and should be replaced:

- Northwest corner of East 139th Street and Brook Avenue
- Southeast corner of East 140th Street and Brook Avenue
- Northwest and northeast corners of East 159th Street and Brook Avenue



Photo No. 5: Brook Ave. & E 149th St. (looking west)

5

ILLUSTRATING THE SOLUTION

5.4 TRINITY AVENUE

At the intersection of Trinity Avenue and Westchester Avenue, Trinity Avenue is stop-controlled and Westchester Avenue is uncontrolled. During the field visit, pedestrians were observed crossing mid-block. Automatic Traffic Recorder (ATR), Turning Movement Counts (TMC), pedestrian counts and spot speed surveys were collected in May and June of 2010 at this intersection and the analysis indicated that it does not meet any of the warrants for signalization given in Chapter 4C of The Manual on Uniform Traffic Control Devices (MUTCD 2009). The 85th percentile speeds on Westchester Avenue is not greater than 35 mph (see Table 4), as a result, Figure 4C-5 was used in determining if a signal is warranted. The detailed traffic data (ATR, TMC and pedestrian counts) and analysis are included in Appendices A, B, C, E and the Technical Supplement.

TABLE 4: SPOT SPEED SURVEY

Location	Direction	Median Speed (mph)	85th Percentile Speed (mph)
Trinity Avenue & Westchester Avenue	Westbound	19.3	23.0
	Eastbound	20.5	24.2

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ILLUSTRATING THE SOLUTION

5.5 PROSPECT AVENUE

Prospect Avenue is a 60-foot wide corridor that starts at East 149th Street and ends at Boston Road. The existing geometry is one 11-foot moving lane in each direction, 4-foot buffer, 6-foot bike lane and 9-foot parking lanes for both sides. This corridor has heavy vehicular volume and can be intimidating for seniors within the study area. New concrete refuge islands are recommended for the following intersections:

- South leg of East 150th Street, East 152nd Street
- North leg of East 155th Street
- South leg of East 161st Street
- North leg of East 162nd Street
- South leg of East 164th Street
- North leg of East 165th Street, Home Street
- South leg of East 168th Street (Photo No. 6), Jennings Street



Photo No. 6: Prospect Ave. & E 168th St.

A reconfigured striping of one 11-foot moving lane each direction with a tapered striped median, 6-foot bike lane and 9-foot parking lanes on both sides is also recommended where concrete refuge islands are being installed. These measures will slow turning traffic, discourage pedestrians from crossing mid-block and provide refuge areas. Autoturn for these intersections are shown in Appendix D.

At the following intersections, high visibility crosswalks are recommended across Prospect Avenue to increase visibility of crosswalks on the streets:

- East 149th Street & Prospect Avenue
- East 155th Street & Prospect Avenue
- East 165th Street & Prospect Avenue
- East 167th Street & Prospect Avenue
- Home Street & Prospect Avenue
- East 169th Street & Prospect Avenue

5

ILLUSTRATING THE SOLUTION

On the northeast corner of Prospect Avenue and Avenue Saint John (Photo No. 7), new channelized corner striping is recommended in order to normalize the intersection, narrow the travel lanes and restrict vehicles' turning radius at the intersection. A new corner striping is recommended for the southeast corner of the intersection. These measures will slow turning traffic and shorten the crossing distance for pedestrians. Autoturn for this intersection is shown in Appendix D.



Photo No. 7: Prospect Ave. & Avenue Saint John

Several intersections along Prospect Avenue are missing pedestrian ramps, new NYCDOT standard pedestrian ramps and ADA safety surfaces are recommended for the following intersections:

- Northwest and northeast corners of Southern Boulevard and Prospect Avenue
- Northwest and northeast corners of East 166th Street and Prospect Avenue
- Southwest corner of East 167th Street and Prospect Avenue

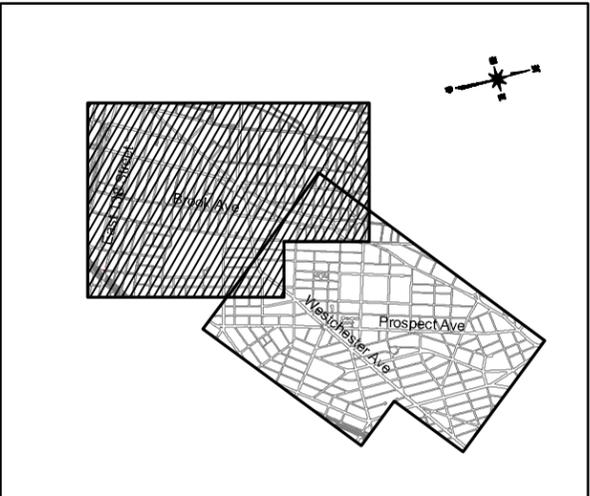
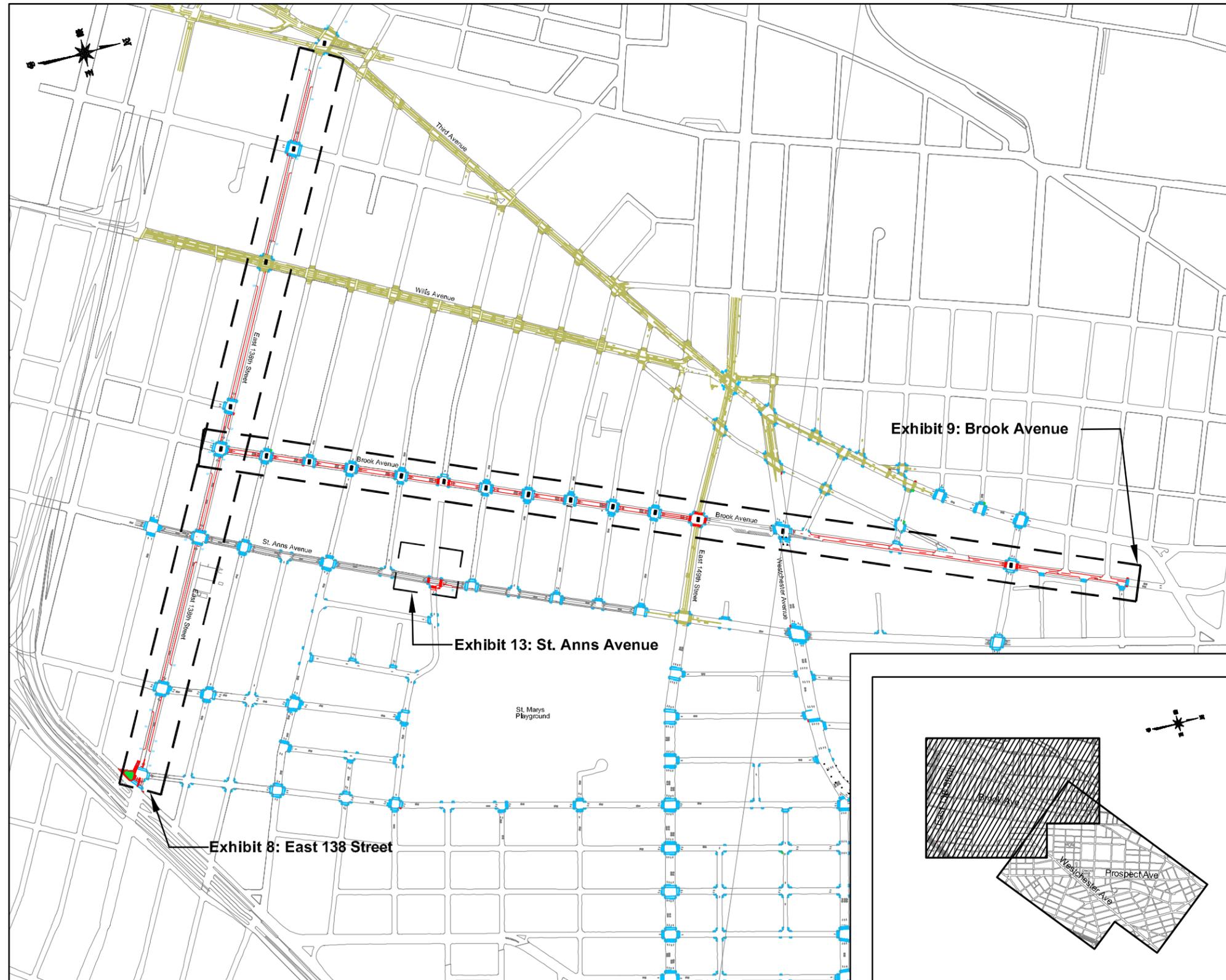
All improvements can be found in Exhibits 10, 11 and 12.

5.6 ST. ANNS AVENUE

St. Anns Avenue is a 42-foot wide corridor with one moving lane in each direction with bike lanes and parking on both sides. It borders the west side of St. Marys Playground which is located in the center of the study area. There is heavy pedestrian volume at the southwest corner of St. Anns Avenue and East 143rd Street. The volumes are generated from the bus stop at the north leg of the intersection and the playground entrance. The existing corner quadrant has a 30-foot radius (Photo No. 8) making the crossing distance for pedestrian excessive. To provide additional sidewalk width, improve pedestrian-vehicle visibility and shorten the crossing distance, a new corner with a 12-foot radius is recommended with high visibility cross walks for the north, south and east legs of the intersection. Along East 143rd Street, a neckdown is recommended to further shorten the crossing distance and to slow turning vehicles. All improvements can be found in Exhibit 13.



Photo No. 8: St. Anns Ave. & E 143rd St.



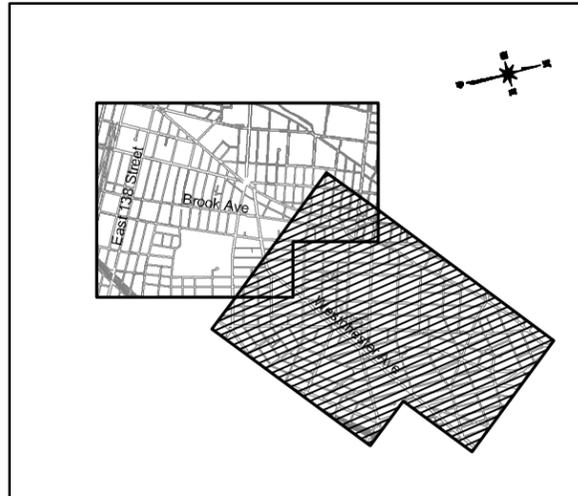
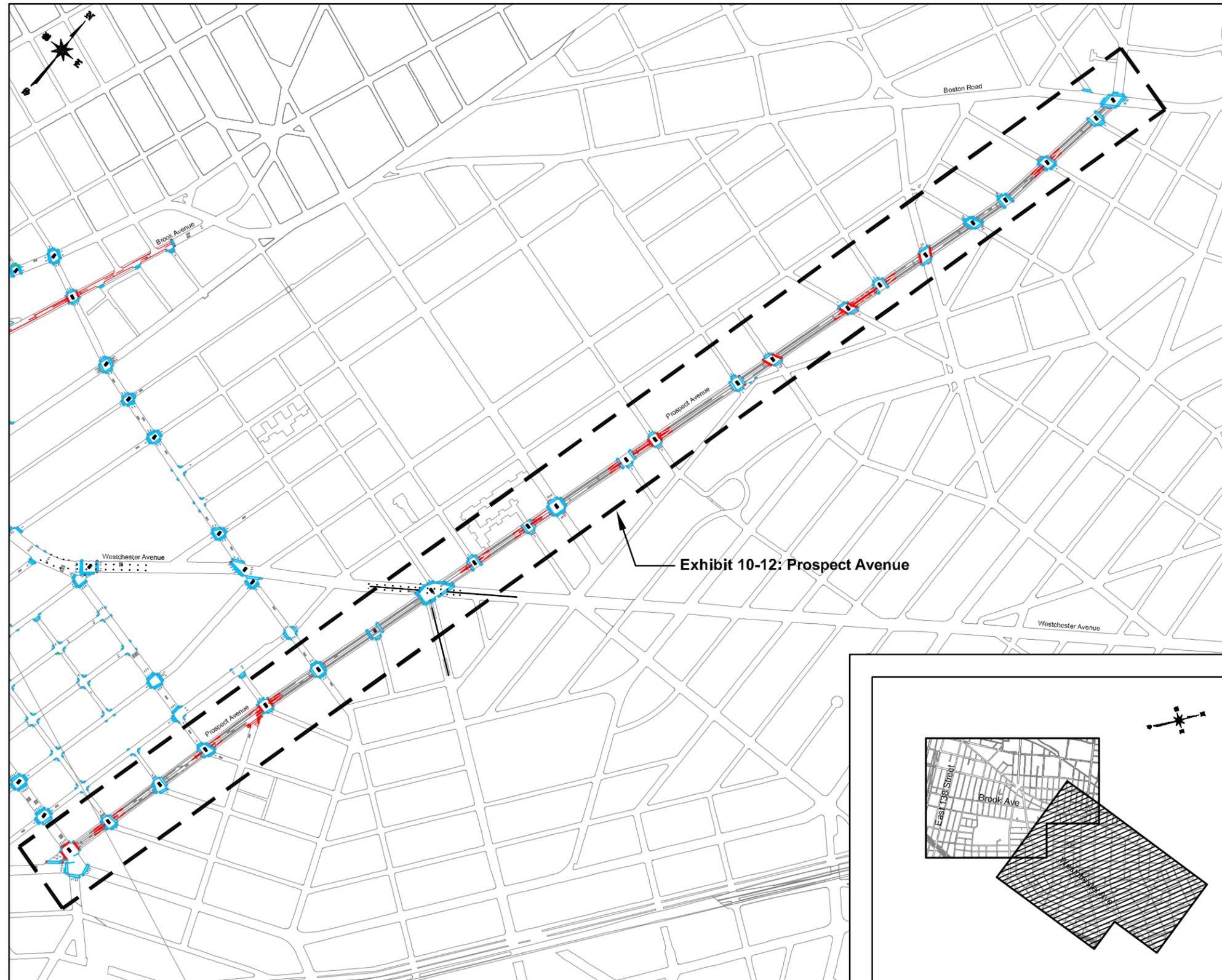
LEGEND:

	EXISTING TRAVEL DIRECTION
	EXISTING SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK
	EXISTING HIGH VISIBILITY CROSSWALK
	EXISTING STANDARD CROSSWALK
	EXISTING PEDESTRIAN RAMP
	EXISTING CATCH BASIN
	EXISTING TRAFFIC SIGN
	SUBWAY STOP
	BUS STOP
	PROPOSED STOP BAR
	PROPOSED SCHOOL CROSSWALK
	PROPOSED HIGH VISIBILITY CROSSWALK
	PROPOSED STANDARD CROSSWALK
	PROPOSED NEW PEDESTRIAN RAMP
	REPLACE EXISTING PEDESTRIAN RAMP
	PROPOSED CONCRETE REFUGE ISLAND
	PROPOSED STREET SWALE
	PROPOSED TRAFFIC SIGN
	PROPOSED CURB EXTENSION (NECKDOWN)
	PROPOSED SIGNALIZED INTERSECTION
	PROPOSED LPI
	PLANNED DOT PROJECTS

*NOTE: NOT ALL ITEMS ARE USED AND NOT ALL ITEMS ARE SHOWN.

MOTT HAVEN, THE BRONX

RECOMMENDATION INDEX 1



LEGEND:

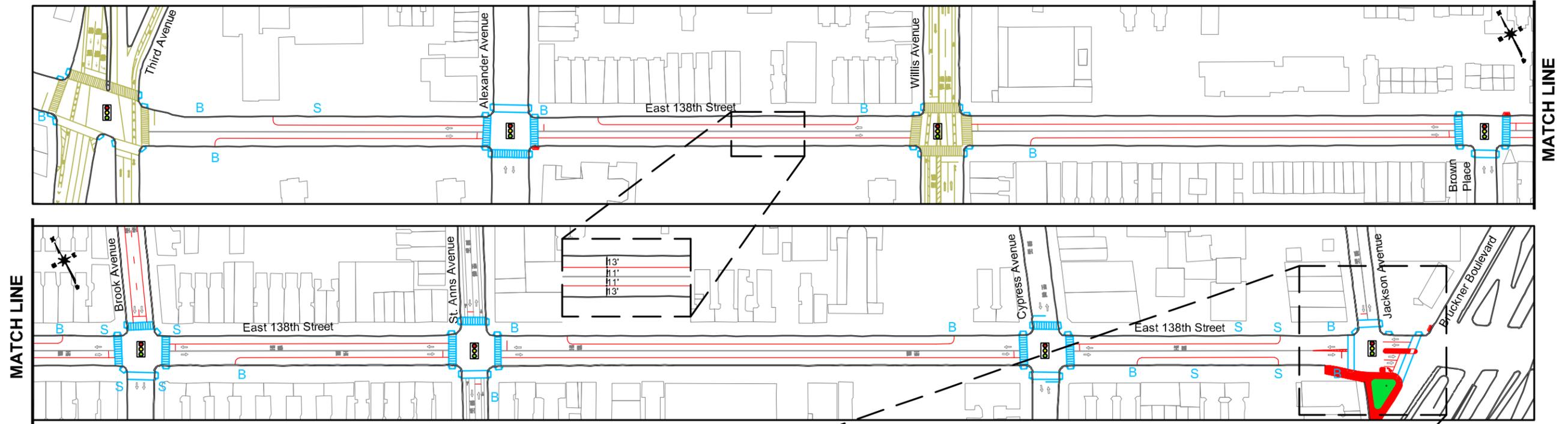
	EXISTING TRAVEL DIRECTION
	EXISTING SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK
	EXISTING HIGH VISIBILITY CROSSWALK
	EXISTING STANDARD CROSSWALK
	EXISTING PEDESTRIAN RAMP
	EXISTING CATCH BASIN
	EXISTING TRAFFIC SIGN
	SUBWAY STOP
	BUS STOP
	PROPOSED STOP BAR
	PROPOSED SCHOOL CROSSWALK
	PROPOSED HIGH VISIBILITY CROSSWALK
	PROPOSED STANDARD CROSSWALK
	PROPOSED NEW PEDESTRIAN RAMP
	REPLACE EXISTING PEDESTRIAN RAMP
	PROPOSED CONCRETE REFUGE ISLAND
	PROPOSED STREET SWALE
	PROPOSED TRAFFIC SIGN
	PROPOSED CURB EXTENSION (NECKDOWN)
	PROPOSED SIGNALIZED INTERSECTION
	PROPOSED LPI
	PLANNED DOT PROJECTS

*NOTE: NOT ALL ITEMS ARE USED AND NOT ALL ITEMS ARE SHOWN

MOTT HAVEN, THE BRONX

RECOMMENDATION INDEX 2

EXHIBIT 8 - East 138th Street



	EXISTING HIGH VISIBILITY CROSSWALK		PROPOSED HIGH VISIBILITY CROSSWALK		PROPOSED CURB EXTENSION (NECKDOWN)
	EXISTING STANDARD CROSSWALK		PROPOSED STANDARD CROSSWALK		EXISTING SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK		PROPOSED SCHOOL CROSSWALK		PROPOSED SIGNALIZED INTERSECTION
	EXISTING STOP BAR		PROPOSED STOP BAR		EXISTING TRAVEL DIRECTION
	EXISTING PEDESTRIAN RAMP		EXISTING BUS STOP		EXISTING CATCH BASIN
	PROPOSED NEW PED RAMP		EXISTING SUBWAY STOP		PROPOSED CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED LPI		EXISTING TRAFFIC SIGN
			PLANNED DDC PROJECTS		PROPOSED TRAFFIC SIGN

*NOTE: NOT ALL ITEMS ARE USED AND NOT ALL ITEMS ARE SHOWN.

Pedestrian concerns in this area:

- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Stripe parking lane along East 138th Street between Third Avenue & Jackson Avenue
- Close off Jackson Avenue from East 138th Street to Bruckner Boulevard by expanding Green Street (Gouverneur Morris Triangle)
- Stripe right-turn bay along East 138th Street between Jackson Avenue & Bruckner Boulevard
- Install an 8-foot concrete median along East 138th Street between Jackson Avenue & Bruckner Boulevard

Additional Information:

- Autoturn for East 138th Street & Jackson Avenue is shown in Appendix D
- This study area was visited on May 5th, 2010

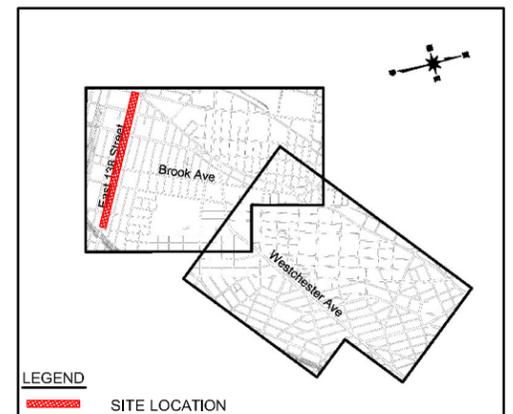
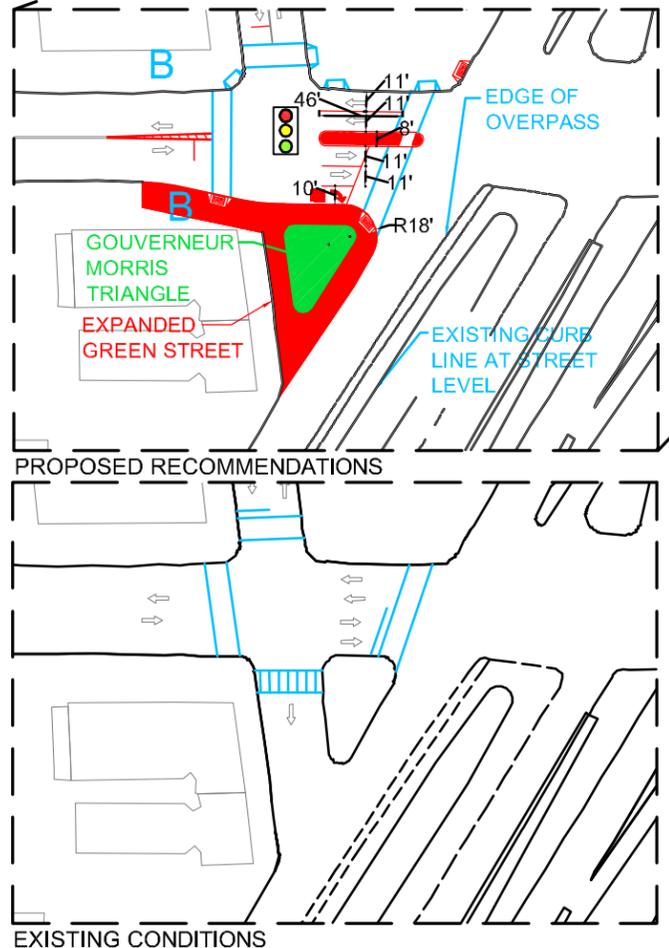
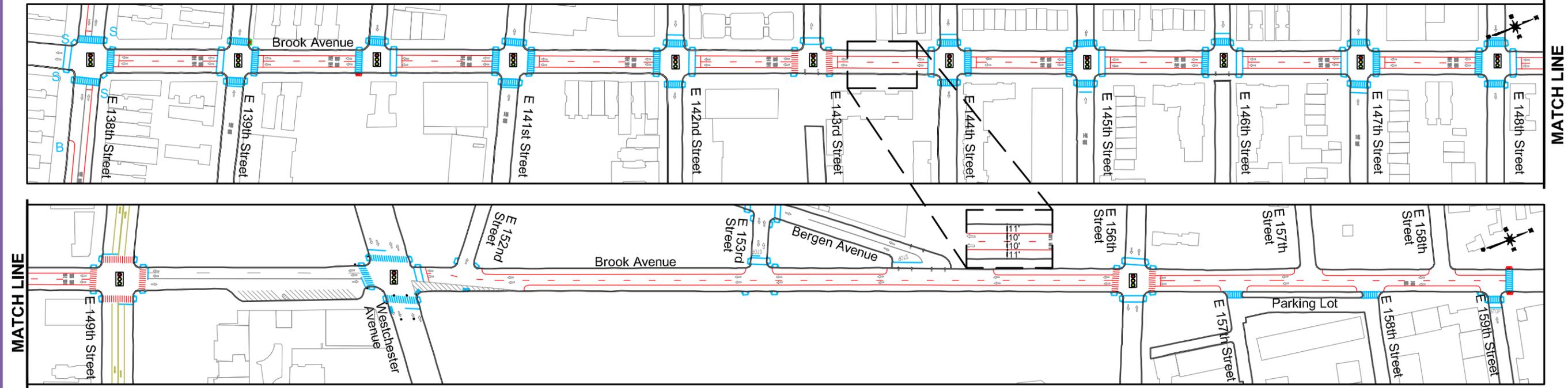


EXHIBIT 9 - Brook Avenue



Pedestrian concerns in this area:

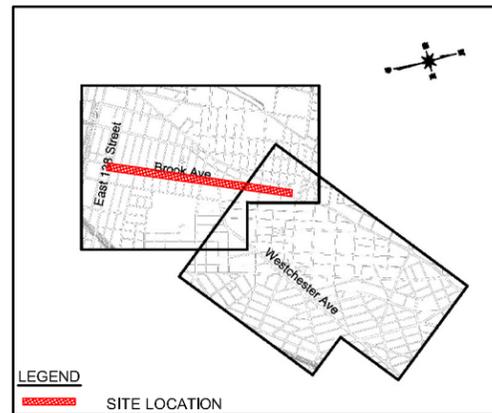
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Stripe parking lane
 - between East 138th Street & East 149th Street
 - between Westchester Avenue & East 159th Street
- Stripe high visibility cross walks
 - north & south legs of Brook Avenue & East 143rd Street
 - Brook Avenue & East 149th Street
 - north & south legs of Brook Avenue & East 156th Street

Additional Information:

- This study area was visited on May 5th, 2010.



LEGEND
SITE LOCATION

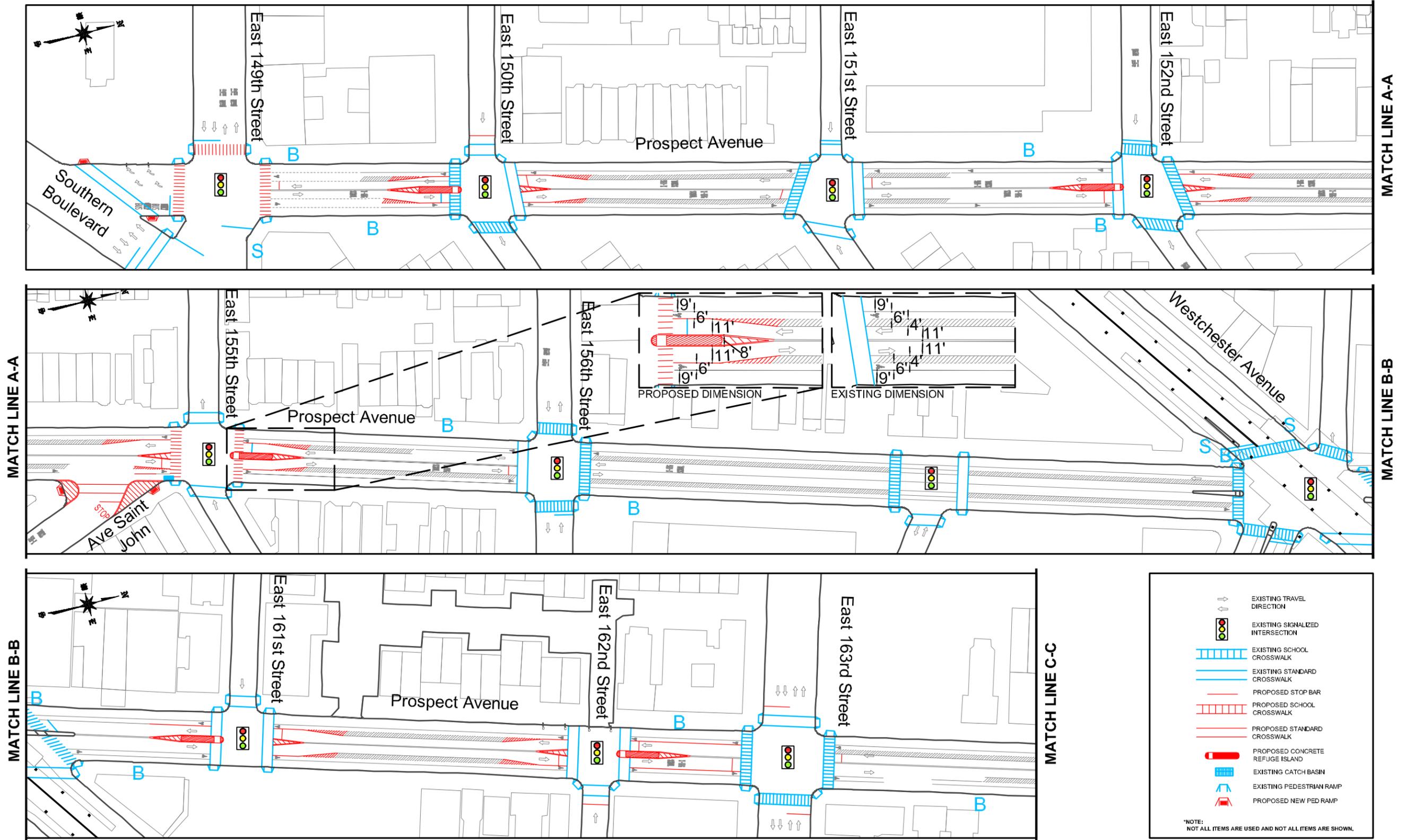
	EXISTING HIGH VISIBILITY CROSSWALK		PROPOSED HIGH VISIBILITY CROSSWALK		PROPOSED CURB EXTENSION (NECKDOWN)
	EXISTING STANDARD CROSSWALK		PROPOSED STANDARD CROSSWALK		EXISTING SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK		PROPOSED SCHOOL CROSSWALK		PROPOSED SIGNALIZED INTERSECTION
	EXISTING STOP BAR		PROPOSED STOP BAR		EXISTING TRAVEL DIRECTION
	EXISTING PEDESTRIAN RAMP		EXISTING BUS STOP		EXISTING CATCH BASIN
	PROPOSED NEW PED RAMP		EXISTING SUBWAY STOP		PROPOSED CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED LPI		EXISTING TRAFFIC SIGN
	PLANNED DDC PROJECTS		PROPOSED TRAFFIC SIGN		

*NOTE: NOT ALL ITEMS ARE USED AND NOT ALL ITEMS ARE SHOWN.

EXHIBIT 10 - Prospect Avenue (From East 149th Street to Boston Road)

5

ILLUSTRATING THE SOLUTION



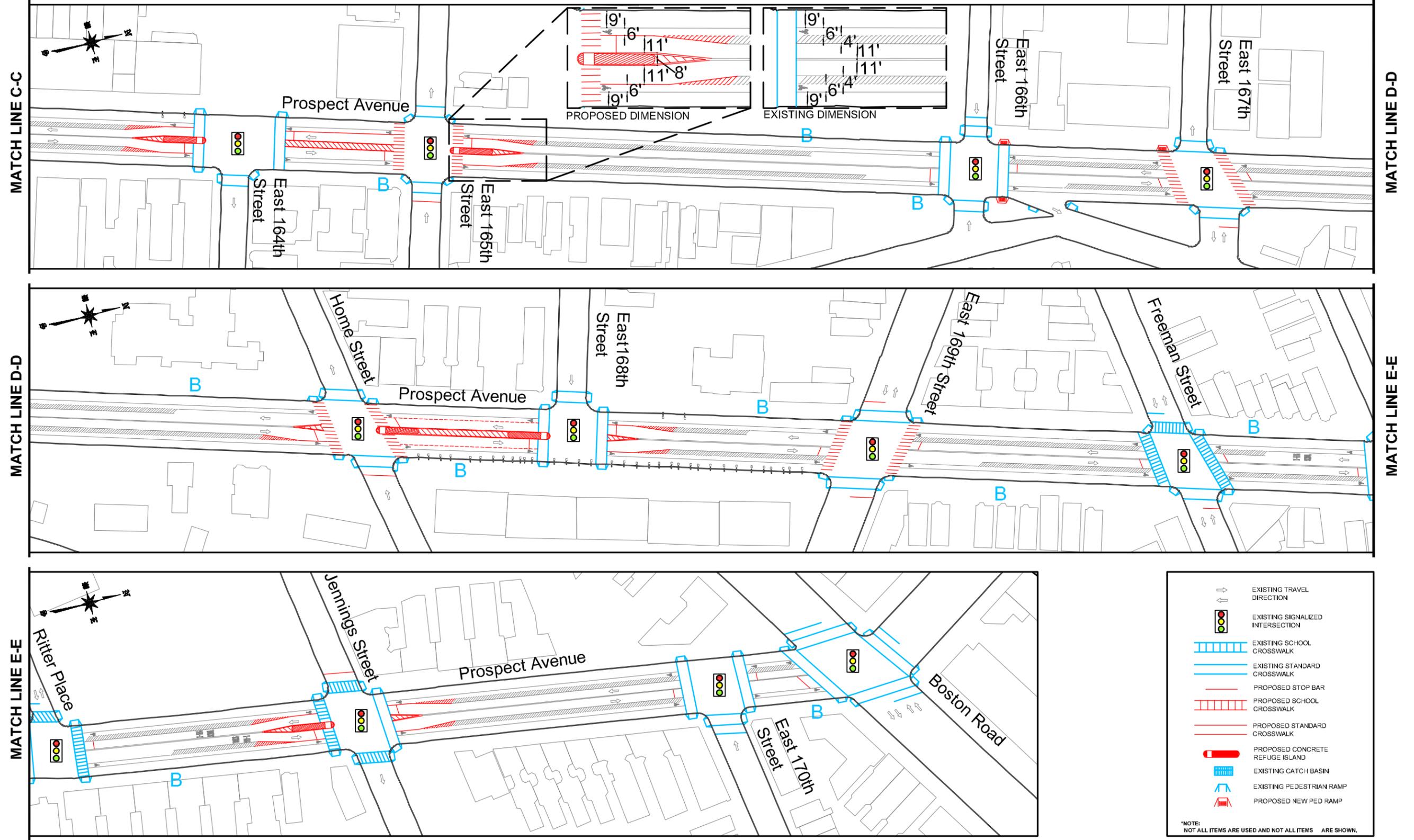
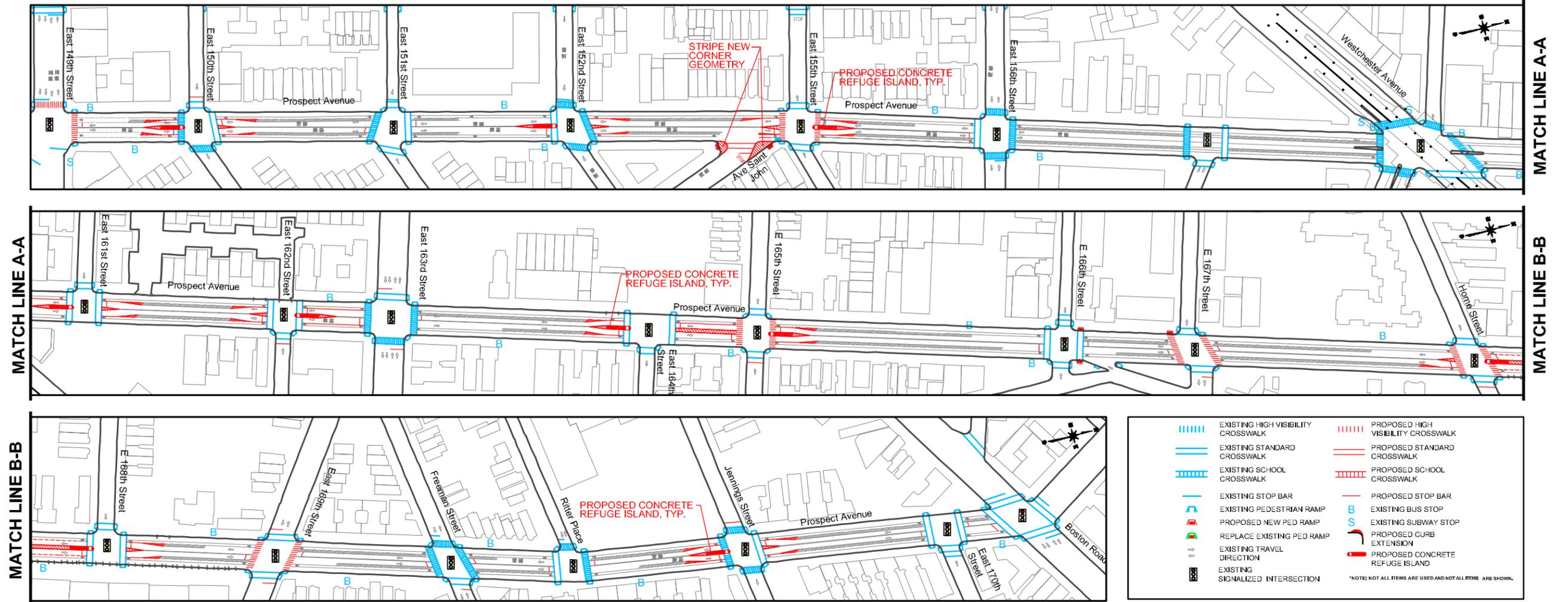


EXHIBIT 12 - Prospect Avenue (cont'd)



Pedestrian concerns in this area:

- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

Additional Information:

- Autoturn for the intersections with proposed concrete refuge islands are shown in Appendix D
- Detailed drawings of this area are shown in Exhibits 10 & 11
- This study area was visited on May 5th, 2010

Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Reconfigure buffer striping
 - at East 150th Street
 - at East 152nd Street
 - at East 155th Street
 - at East 161st Street
 - at East 164th Street
 - at East 165th Street
 - at Home Street
 - at East 168th Street
 - at Jennings Street
- Stripe new corner geometry at Avenue Saint John
 - southeast corner
 - northeast corner

- Install a concrete refuge island
 - south leg of East 150th Street, East 152nd Street
 - north leg of East 155th Street
 - south leg of East 161st Street
 - north leg of East 162nd Street
 - south leg of East 164th Street
 - north leg of East 165th Street, Home Street
 - south leg of East 168th Street, Jennings Street
- Stripe high visibility crosswalks
 - north, south, & west legs of East 149th Street
 - north & south legs of East 155th Street
 - north & south legs of East 165th Street
 - north & south legs of East 167th Street
 - north & south legs of Home Street
 - north & south legs of East 169th Street

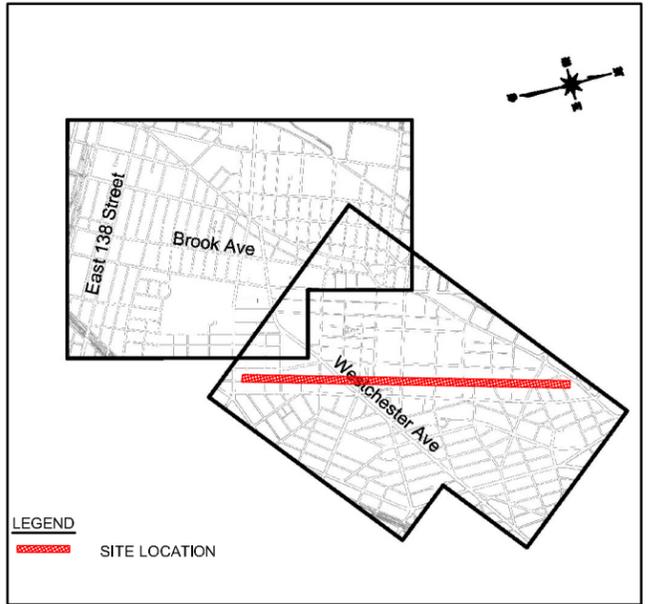
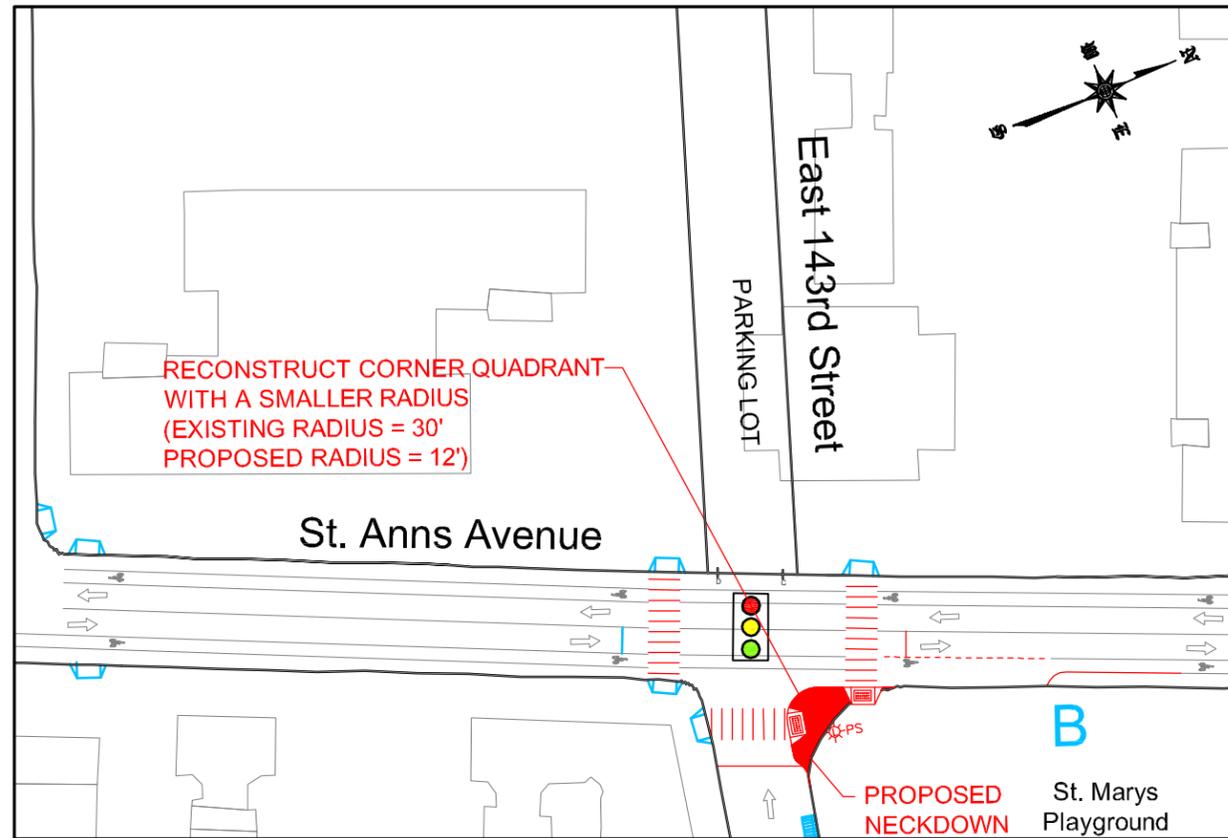


EXHIBIT 13 - St. Anns Avenue & East 143rd Street



	EXISTING HIGH VISIBILITY CROSSWALK		PROPOSED HIGH VISIBILITY CROSSWALK		PROPOSED CURB EXTENSION (NECKDOWN)
	EXISTING STANDARD CROSSWALK		PROPOSED STANDARD CROSSWALK		EXISTING SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK		PROPOSED SCHOOL CROSSWALK		PROPOSED SIGNALIZED INTERSECTION
	EXISTING STOP BAR		PROPOSED STOP BAR		EXISTING TRAVEL DIRECTION
	EXISTING PEDESTRIAN RAMP		EXISTING BUS STOP		EXISTING CATCH BASIN
	PROPOSED NEW PED RAMP		EXISTING SUBWAY STOP		PROPOSED CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED LPI		EXISTING TRAFFIC SIGN
			PLANNED DDC PROJECTS		PROPOSED TRAFFIC SIGN

*NOTE: NOT ALL ITEMS ARE USED AND NOT ALL ITEMS ARE SHOWN

Pedestrian concerns in this area:

- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Stripe high visibility crosswalks
- Reconstruct northeast corner with a smaller radius
- Install a neckdown
 - at the northeast corner along East 143rd Street

Additional Information:

- This study area was visited on May 5th, 2010

