

# Safe Streets for Seniors

## Stuyvesant, Manhattan

**FINAL REPORT**

September 8, 2010



Janette Sadik-Khan, Commissioner



**Safe Streets for Seniors  
Stuyvesant Town, Manhattan  
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## PROJECT DESCRIPTION

Since 1990 the number of pedestrian fatalities in New York City has decreased by 56%. Moreover, prior to 1950, pedestrians accounted for  $\frac{3}{4}$  of all traffic fatalities and since then, that percentage has decreased to account for about  $\frac{1}{2}$  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’s Safe Streets for Seniors (SSS) Program.

The purpose of this project is to address senior pedestrian safety issues at twenty-five 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 twenty 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. The consultant makes specific safety recommendations consisting of low-cost as well as capital engineering and design improvements for these twenty areas. In addition, the consultant conducts data analysis as needed, prepares engineering and design schematics and related services, as necessary, for capital improvements.

# Background

## BACKGROUND

Land-use in the Stuyvesant Town Study Area is a mix of commercial and residential buildings. A senior center, Sirovich Senior Center, is located at 331 East 12<sup>th</sup> Street, between First Avenue and Second Avenue. The East Village Community High School is across the street from the senior center.

There are two medical centers:

- Beth Israel Medical Center on First Avenue between East 16<sup>th</sup> Street and East 17<sup>th</sup> Street
- Cabrini Medical Center on East 19<sup>th</sup> Street between Second Avenue and Third Avenue.

Second Avenue divides Stuyvesant Park, which is located north of East 15<sup>th</sup> Street. Many senior citizens from the neighborhood as well as from the Medical Centers utilize the park.

Transit access in this area includes the L Subway line. There are several bus routes operating in the vicinity of Stuyvesant Town Study Area: M9, M14A, M14D, M15, M101, M102 and M103.

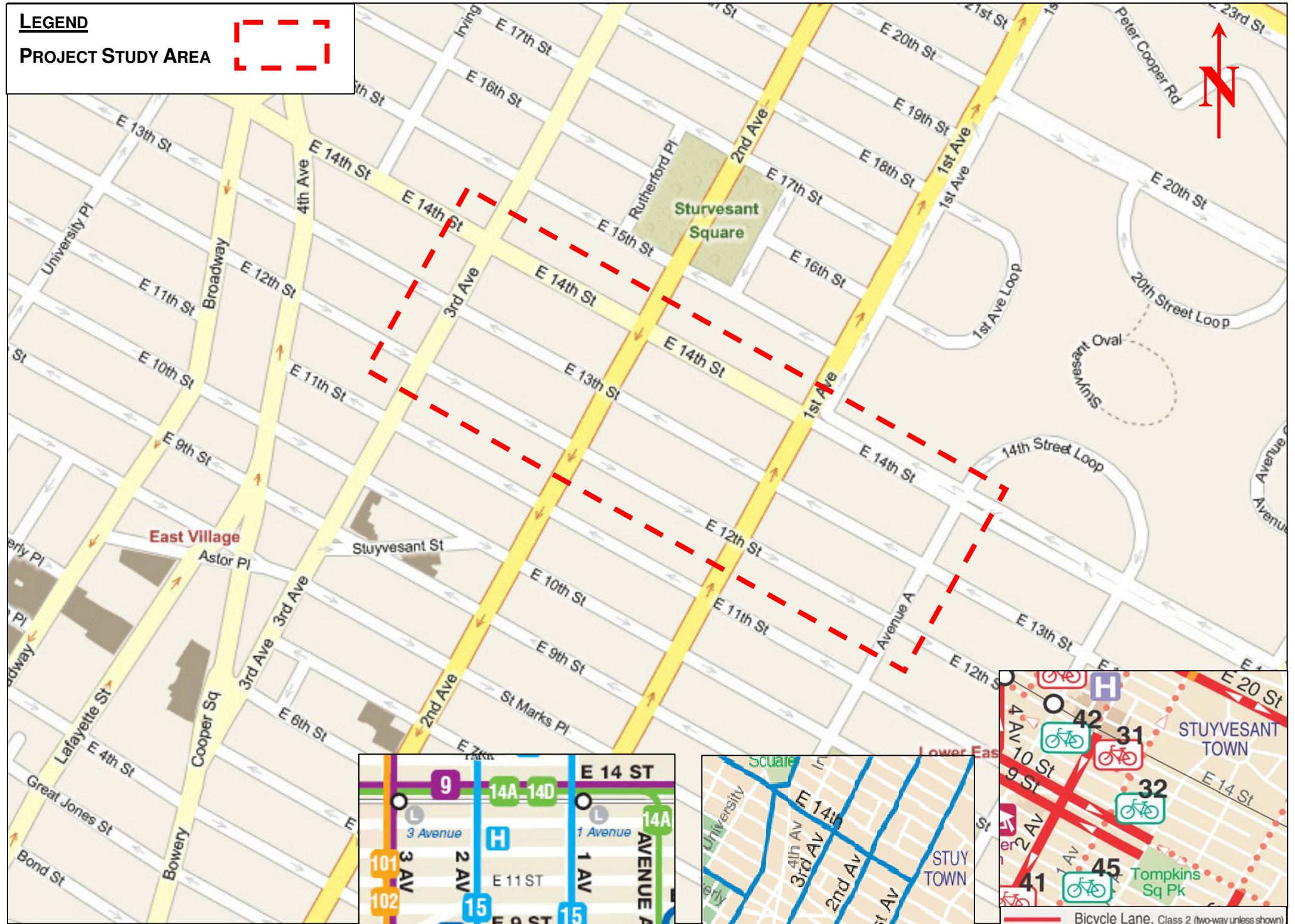


EXHIBIT 1 – AREA MAP



EXHIBIT 2 – TRANSIT MAP

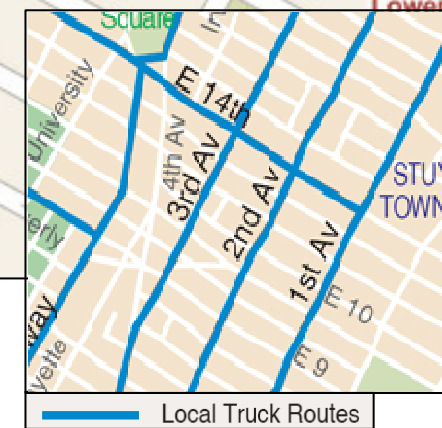


EXHIBIT 3 – TRUCK MAP

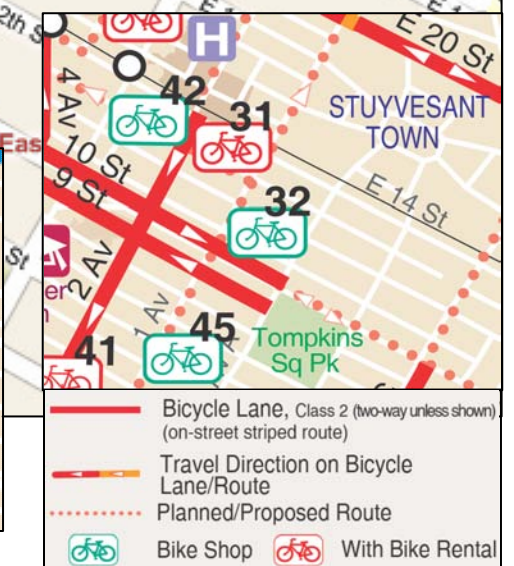


EXHIBIT 4 – BIKE MAP

### EXHIBIT 5 – PEDESTRIAN CRASH STATISTICS (2001-2005)



## EXISTING CONDITIONS

The Stuyvesant Town Study Area consists of one major east-west corridor, namely East 14<sup>th</sup> Street, and four major north-south corridors: Avenue A, First Avenue, Second Avenue and Third Avenue. Within this area, the four intersections of East 14<sup>th</sup> Street with Avenue A, First, Second and Third Avenues, respectively, are heavily congested. Each of these corridors carries at least one NYCT bus route (Exhibit 2) and First, Second and Third Avenues are designated truck routes (Exhibit 3). The existing street geometry of the avenues includes six moving lanes with a parking lane on each side. The major east-west corridor, East 14<sup>th</sup> Street, has four moving lanes, two in each direction, with parking on both sides (Photo No. 1). The combination of heavy traffic volumes, operational factors and geometric factors make these corridors difficult for a senior pedestrian to safely cross.



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

- Insufficient crossing time
- Missing or inadequate pedestrian ramps
- Motorists turning quickly and not yielding to pedestrians
- Missing crosswalk striping

## Avenue A

The southwest corner of Avenue A and East 13<sup>th</sup> Street is missing a pedestrian ramp on the west side of Avenue A (Photo No. 2). It is recommended that this



ramp be replaced with a NYCDOT standard pedestrian ramp and ADA safety surface. A signal pole may need to be relocated to accommodate the ramp. The pedestrian ramp on the northwest corner along Avenue A is in poor condition and should be replaced with a new one.

There is an entrance to Stuyvesant Town at Avenue A and East 14<sup>th</sup> Street. At this location there are bus stops along

14<sup>th</sup> Street and heavy pedestrian volumes, including a significant number of seniors. Many seniors indicated they do not feel safe crossing the street at this intersection. Medians along East 14<sup>th</sup> Street do not have at-grade cut throughs for pedestrians, making it more difficult for seniors to cross East 14<sup>th</sup> Street (Photo No. 3). It is recommended that the east median have at-grade cut

through with an ADA safety surface installed. It is also recommended that pedestrian signals be installed on the median islands. Sight lines to the current signals are not direct and the signals can be difficult to detect.



Photo No. 3

Avenue A & East 14<sup>th</sup> Street (east median)

### *First Avenue*

New York City Transit (NYCT) in conjunction with the New York City Department of Transportation (NYCDOT) is installing a Bus Rapid Transit (BRT) System in New York to improve urban mobility. The First Avenue/Second Avenue Select Bus Service (SBS) are two of five corridors where the BRT is being implemented across NYC. Along these corridors, the BRT will extend from 125<sup>th</sup> Street to South Ferry. However, from 125<sup>th</sup> Street to Houston Street the BRT will have an exclusive bus lane with bus bulb outs at the stations. The SBS will improve service with increased hours of operation by utilizing a simpler service pattern including transit signal priority between Houston Street and South Ferry. The proposed design of BRT along First and Second Avenues is shown on Site Pages 2 and 3.

Vehicles making right turns from First Avenue onto East 12<sup>th</sup> Street fail to yield to pedestrians. A new yield to pedestrian sign is recommended for the eastbound traffic along East 12<sup>th</sup> Street to mitigate this issue. New NYCDOT standard pedestrian ramp and ADA safety surface is recommended for the northwest corner of the intersection. A speed study was performed on East 12<sup>th</sup> Street between First Avenue and Second Avenue on 07/21/08. The study showed that the 85<sup>th</sup> percentile speed was 23.0 mph. Since the 85<sup>th</sup> percentile speed is lower than the posted speed limit, a speed reducer is not applicable on East 12<sup>th</sup> Street.

The intersection of First Avenue and East 14<sup>th</sup> Street has heavy vehicular and pedestrian volumes with an exclusive left turn signal for eastbound to northbound traffic (Photo No. 4). The exclusive left turn shortens the crossing time and many



seniors raised concerns about this particular intersection. Additional pedestrian traffic is generated from the 'L' Train entrances/exits at this intersection and the three bus stops. A new yield to pedestrian sign is recommended for the eastbound traffic. The pedestrian ramp along the north side of the median should be replaced with a NYCDOT standard pedestrian curb configuration and ADA safety surface. A new East 14<sup>th</sup>

Street sign is recommended to be hung over First Avenue. The oversized sign will allow motorists to determine their location so they can concentrate on the traffic/pedestrian conditions.



## *Second Avenue*

Second Avenue is a 57-foot wide southbound corridor with 3 moving lanes and parking on both sides. As discussed under First Avenue, New York City Transit in conjunction with the New York City Department of Transportation (NYCDOT) is installing the First Avenue/Second Avenue Select Bus Service (SBS) along Second Avenue from 125<sup>th</sup> Street to South Ferry.

A pedestrian ramp is missing on the northwest corner of East 13<sup>th</sup> Street and Second Avenue. A new NYCDOT standard pedestrian ramp and ADA safety surface is recommended. High-visibility crosswalks are recommended for all four legs of this intersection.



Many of the senior residents interviewed, indicated that there was not enough time to cross Second Avenue. It was observed that vehicles speed to the intersection to make both left and right turns from Second Avenue onto East 14<sup>th</sup> Street, before pedestrians could cross. This further shortens the crossing time, as pedestrians need to wait for vehicles to clear the intersection (Photo No. 5).

Turning movement counts for the AM and PM peak periods were performed on 06/08/08. For southbound traffic turning right, the PM peak counts indicated that 491 pedestrians conflict with 85 vehicles turning per hour. For southbound traffic turning left, the AM peak counts indicated that 294 pedestrians conflict with 197 vehicles turning per hour (see Appendix C for complete traffic count). A Leading Pedestrian Interval (LPI) is recommended at this intersection to minimize this conflict. Another alternative would be to evaluate changing the leading left turn phase to a lagging left turn phase. The existing dedicated left turn signal for westbound traffic along East 14<sup>th</sup> Street will be eliminated and the westbound to southbound turn will be banned at this intersection. Pedestrians often ignore the DON'T WALK signal when westbound East 14<sup>th</sup> Street has the dedicated left arrow, and this modification could help to eliminate pedestrian/vehicle conflict and also process more traffic.



### *Third Avenue*

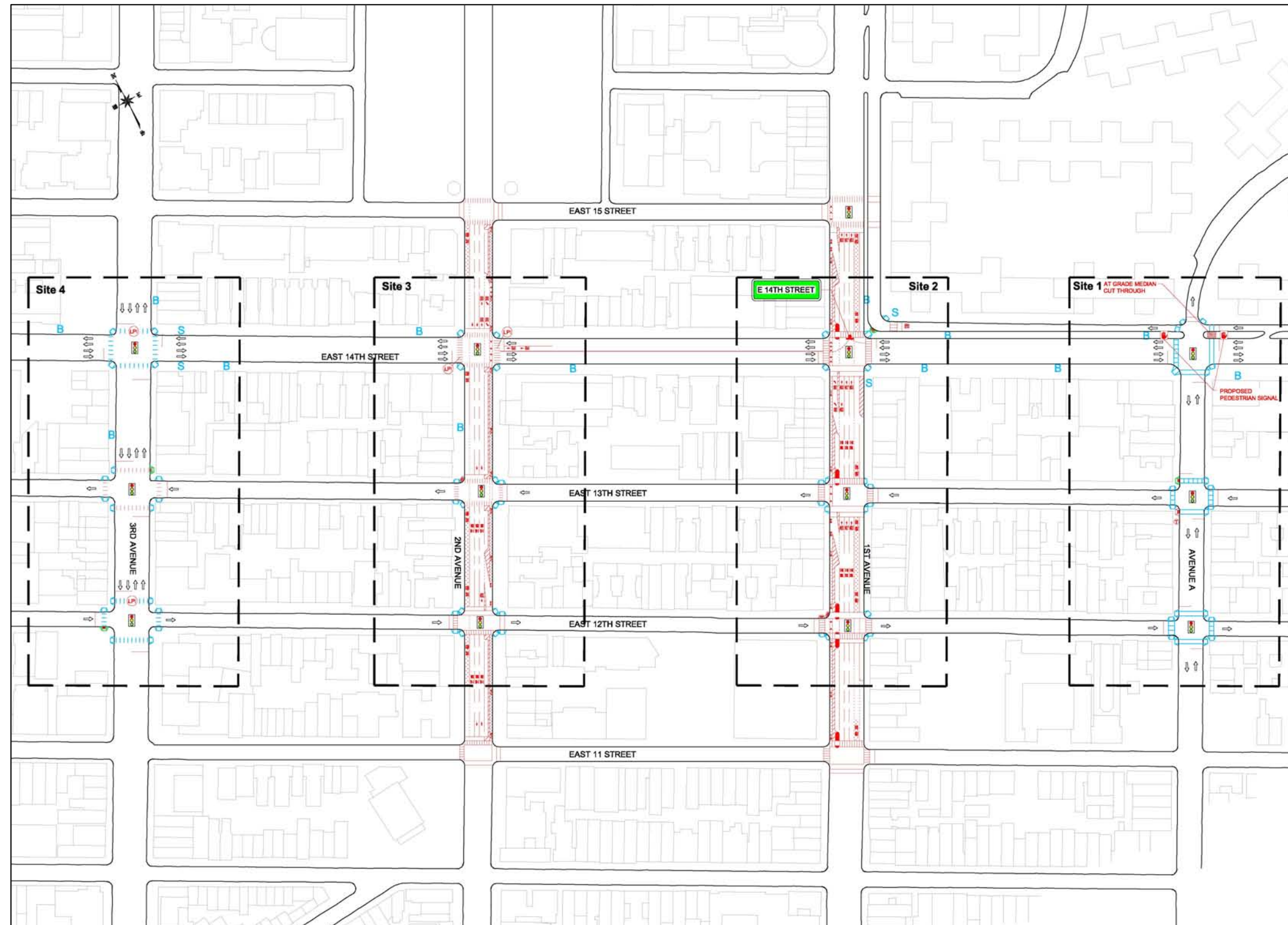
Due to heavy turning vehicles at the intersection of Third Avenue and East 12<sup>th</sup> Street, we recommend installing an LPI for Third Avenue so pedestrians can establish their presence in the crosswalk before the vehicles begin to turn.

High-visibility crosswalks are recommended for all four legs of Third Avenue and East 13<sup>th</sup> Street.










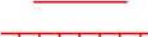












Third Avenue and East 14<sup>th</sup> Street is a congested intersection with heavy truck, bus and pedestrian volumes (Photo No. 6). It was observed that westbound and eastbound traffic on East 14<sup>th</sup> Street turning onto Third Avenue were not yielding to pedestrians crossing the north leg of the intersection. Turning movement counts for the AM and PM peak periods were performed on 06/10/08. The PM peak counts indicated that 1298 pedestrians conflict with 174 vehicles (68 westbound + 106 eastbound) turning per hour (see Appendix C for complete traffic count). In order to lengthen the pedestrian crossing time, a Leading Pedestrian Interval (LPI) is recommended for pedestrians crossing Third Avenue.

# INDEX

# Illustrating the Solution

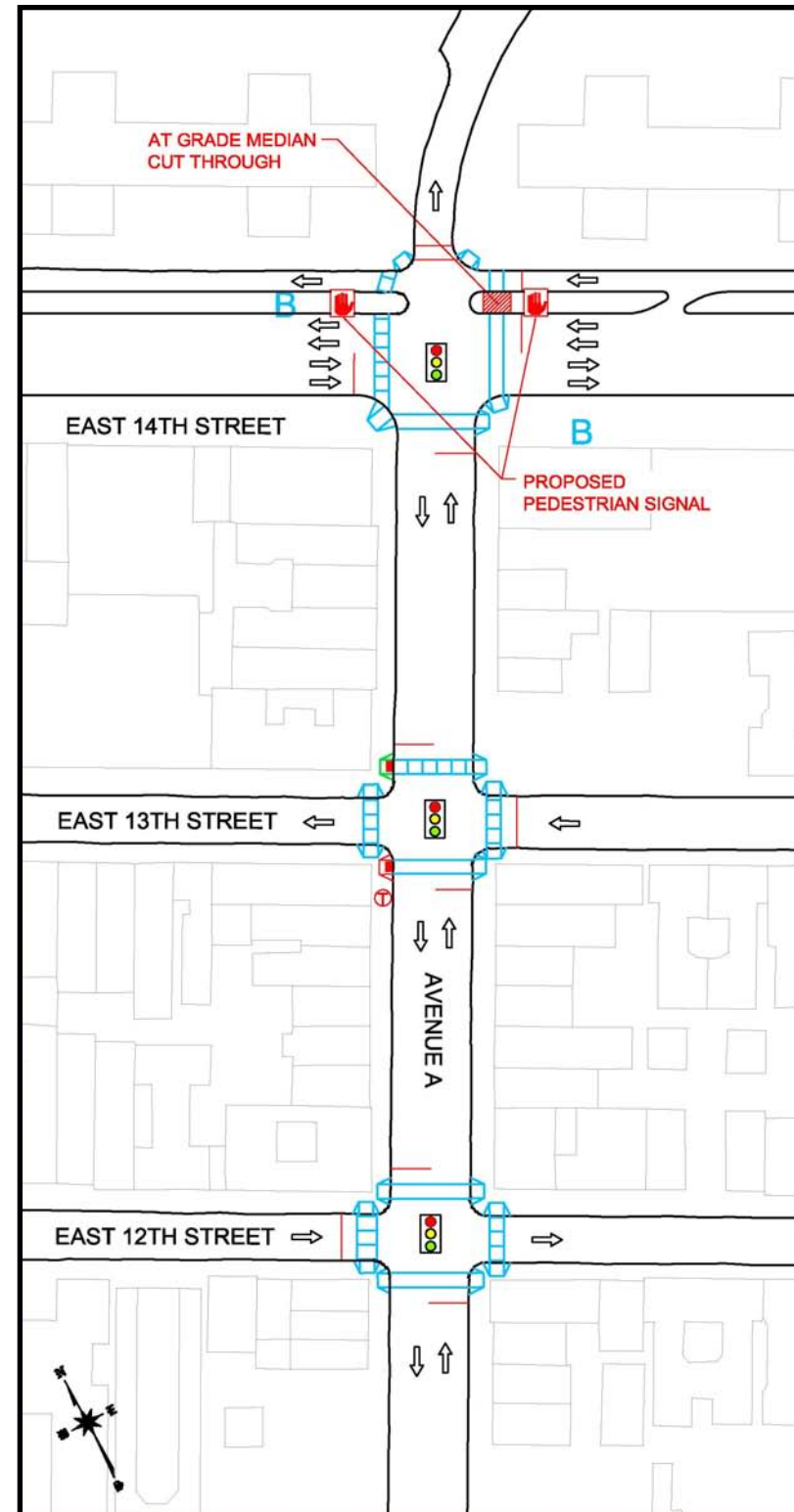


**LEGEND**

-  EXISTING TRAVEL DIRECTION
-  EXISTING SIGNALIZED INTERSECTION
-  EXISTING SCHOOL CROSSWALK
-  EXISTING HIGH VISIBILITY CROSSWALK
-  EXISTING STANDARD CROSSWALK
-  EXISTING PEDESTRIAN RAMP
-  EXISTING CATCH BASIN
-  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 CATCH BASIN
-  PROPOSED TRAFFIC SIGN
-  PROPOSED CURB EXTENSION (NECKDOWN)
-  PROPOSED SIGNALIZED INTERSECTION
-  PROPOSED LPI
-  SW OBSTRUCTION: SIGNAL POLE
-  SW OBSTRUCTION: STREET LIGHT

# SITE 1: AVENUE A (FROM EAST 12<sup>TH</sup> STREET TO EAST 14<sup>TH</sup> STREET)

# Illustrating the Solution



### Pedestrian concerns in this area:

- Signal timing (insufficient crossing time)
- Missing or inadequate pedestrian ramps

### Traffic Analysis:

- Speed study on East 12<sup>th</sup> Street  
(between First Avenue & Second Avenue)*
- 85<sup>th</sup> Percentile = 23.0 mph

### Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Provide an at-grade median cut through on the east median of East 14<sup>th</sup> Street
- Install pedestrian signals on the west and east median islands of East 14<sup>th</sup> Street

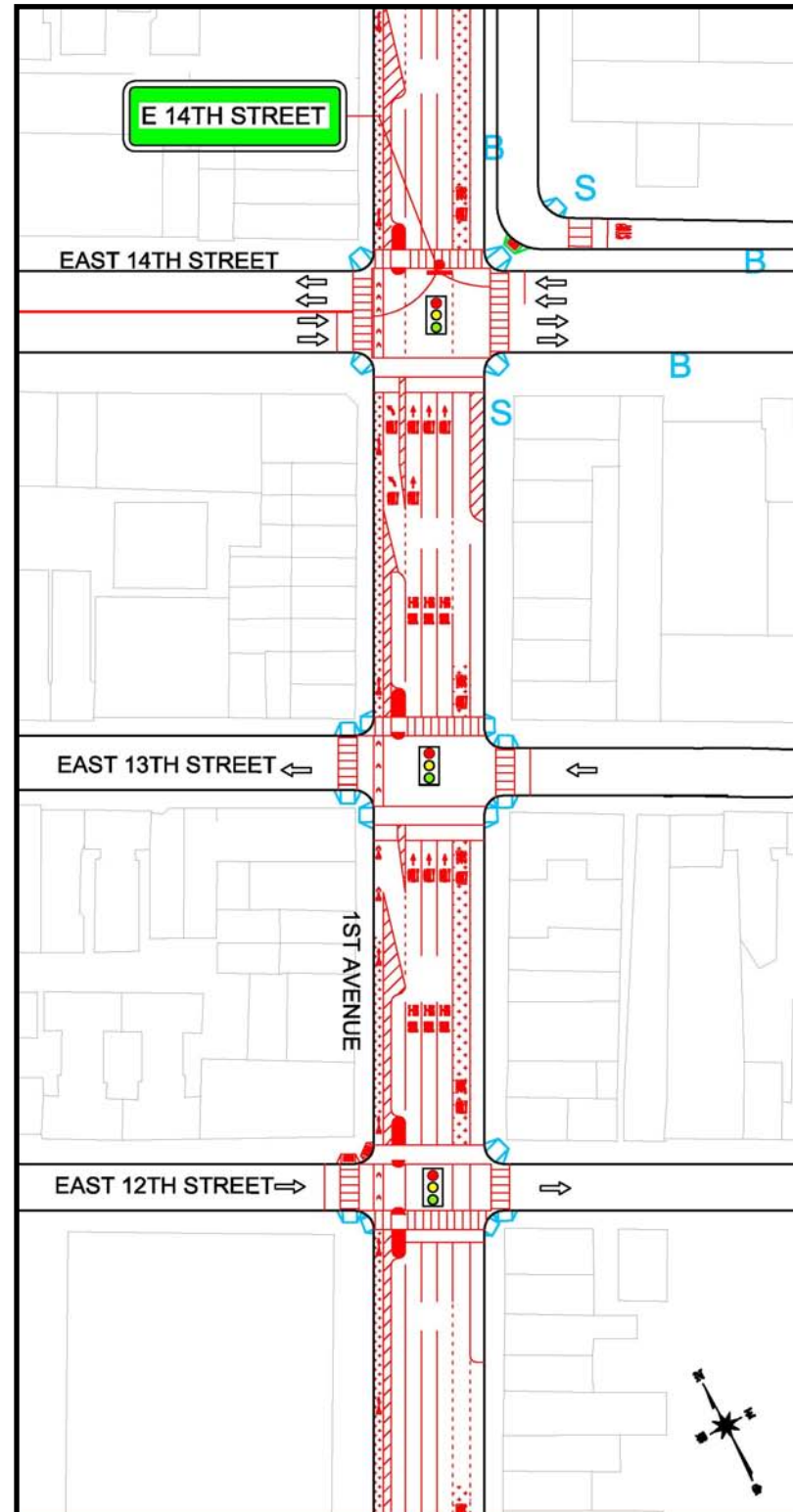
### Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix B
- This study area was visited on June 24<sup>th</sup>, 2008, October 27<sup>th</sup>, 2008 and July 1<sup>st</sup>, 2009.

	EXISTING HIGH VISIBILITY CROSSWALK		PROPOSED HIGH VISIBILITY CROSSWALK		PROPOSED CURB EXTENSION (NECKDOWN)		EXISTING SIGNALIZED INTERSECTION
	EXISTING STANDARD CROSSWALK		PROPOSED STANDARD CROSSWALK		SW OBSTRUCTION: STREETLIGHT		PROPOSED SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK		PROPOSED SCHOOL CROSSWALK		SW OBSTRUCTION: FIRE HYDRANT		EXISTING TRAVEL DIRECTION
	EXISTING STOP BAR		PROPOSED STOP BAR		SW OBSTRUCTION: SIGNAL POLE		PROPOSED LPI
	EXISTING PEDESTRIAN RAMP		PROPOSED PED REFUGE ISLAND (RAISED ISLAND)		SW OBSTRUCTION: FIRE BOX		EXISTING CATCH BASIN
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED TRAFFIC SIGN		
	REPLACE EXISTING PED RAMP		EXISTING SUBWAY STOP				

# SITE 2: FIRST AVENUE (FROM EAST 12<sup>TH</sup> STREET TO EAST 14<sup>TH</sup> STREET)

Illustrating the Solution



- Pedestrian concerns in this area:**
- Speeding vehicles
  - Turning vehicles not yielding to pedestrians
  - Signal timing (insufficient crossing time)
  - Missing or inadequate pedestrian ramps

- Recommended improvements include:**
- Time all signals for seniors and where feasible, the crossing time will be extended
  - Install new advanced stop bars
  - Install Bus Rapid Transit (BRT) along First Avenue
  - Install new sign  
-oversized E 14<sup>th</sup> Street sign to be hung over First Avenue

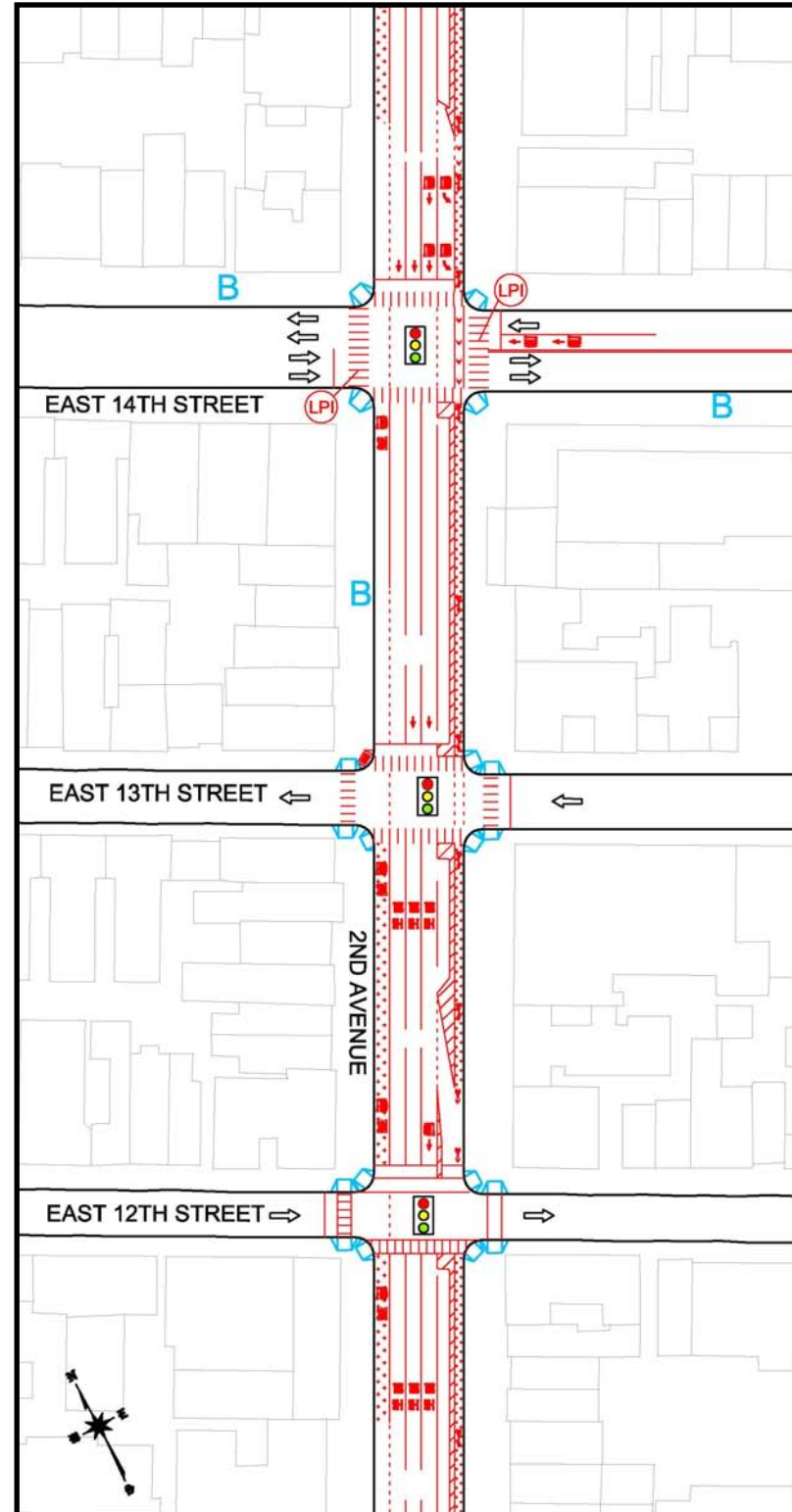
- Traffic Analysis:**
- Speed study on East 12<sup>th</sup> Street between 1<sup>st</sup> & 2<sup>nd</sup> Avenue*
- 85<sup>th</sup> Percentile = 23.0 mph
- East 14<sup>th</sup> Street*
- ATR & TMC (full intersection)
  - Intersection Geometry
  - Peak Hour Signal Timing

- Additional Information:**
- Parking regulations for the project area have been collected and are shown in Appendix B
  - Details of neckdown construction are shown in Appendix E
  - This study area was visited on June 24<sup>th</sup>, 2008, October 27<sup>th</sup>, 2008 and July 1<sup>st</sup>, 2009.

	EXISTING HIGH VISIBILITY CROSSWALK		PROPOSED HIGH VISIBILITY CROSSWALK		PROPOSED CURB EXTENSION (NECKDOWN)		EXISTING SIGNALIZED INTERSECTION
	EXISTING STANDARD CROSSWALK		PROPOSED STANDARD CROSSWALK		SW OBSTRUCTION: STREETLIGHT		PROPOSED SIGNALIZED INTERSECTION
	EXISTING SCHOOL CROSSWALK		PROPOSED SCHOOL CROSSWALK		SW OBSTRUCTION: FIRE HYDRANT		EXISTING TRAVEL DIRECTION
	EXISTING STOP BAR		PROPOSED STOP BAR		SW OBSTRUCTION: SIGNAL POLE		PROPOSED LPI
	EXISTING PEDESTRIAN RAMP		PROPOSED PED REFUGE ISLAND (RAISED ISLAND)		SW OBSTRUCTION: FIRE BOX		EXISTING CATCH BASIN
	PROPOSED NEW PED RAMP		EXISTING BUS STOP				PROPOSED CATCH BASIN
	REPLACE EXISTING PED RAMP		EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

# SITE 3: SECOND AVENUE (FROM EAST 12<sup>TH</sup> STREET TO EAST 14<sup>TH</sup> STREET)

Illustrating the Solution



### Pedestrian concerns in this area:

- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)
- Missing or inadequate pedestrian ramps

### Traffic Analysis for East 14<sup>th</sup> Street:

*Turning Movement Counts for southbound traffic*

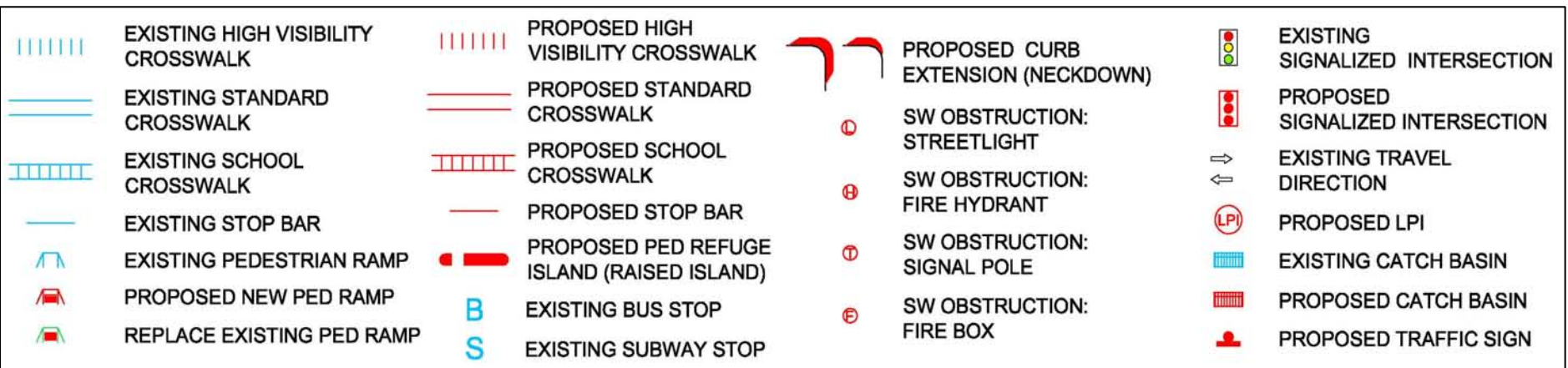
AM CONFLICT	Left Turn	Right Turn	Pedestrians
East Leg	197	VS	294
West Leg		156	VS
<b>PM CONFLICT</b>			
East Leg	263	VS	206
West Leg		85	VS

### Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Stripe new high visibility crosswalks on East 13<sup>th</sup> Street
- Install new advanced stop bars
- Install Bus Rapid Transit (BRT) along Second Avenue
- Incorporate Lagging Pedestrian Interval on the west and east leg of East 14<sup>th</sup> Street

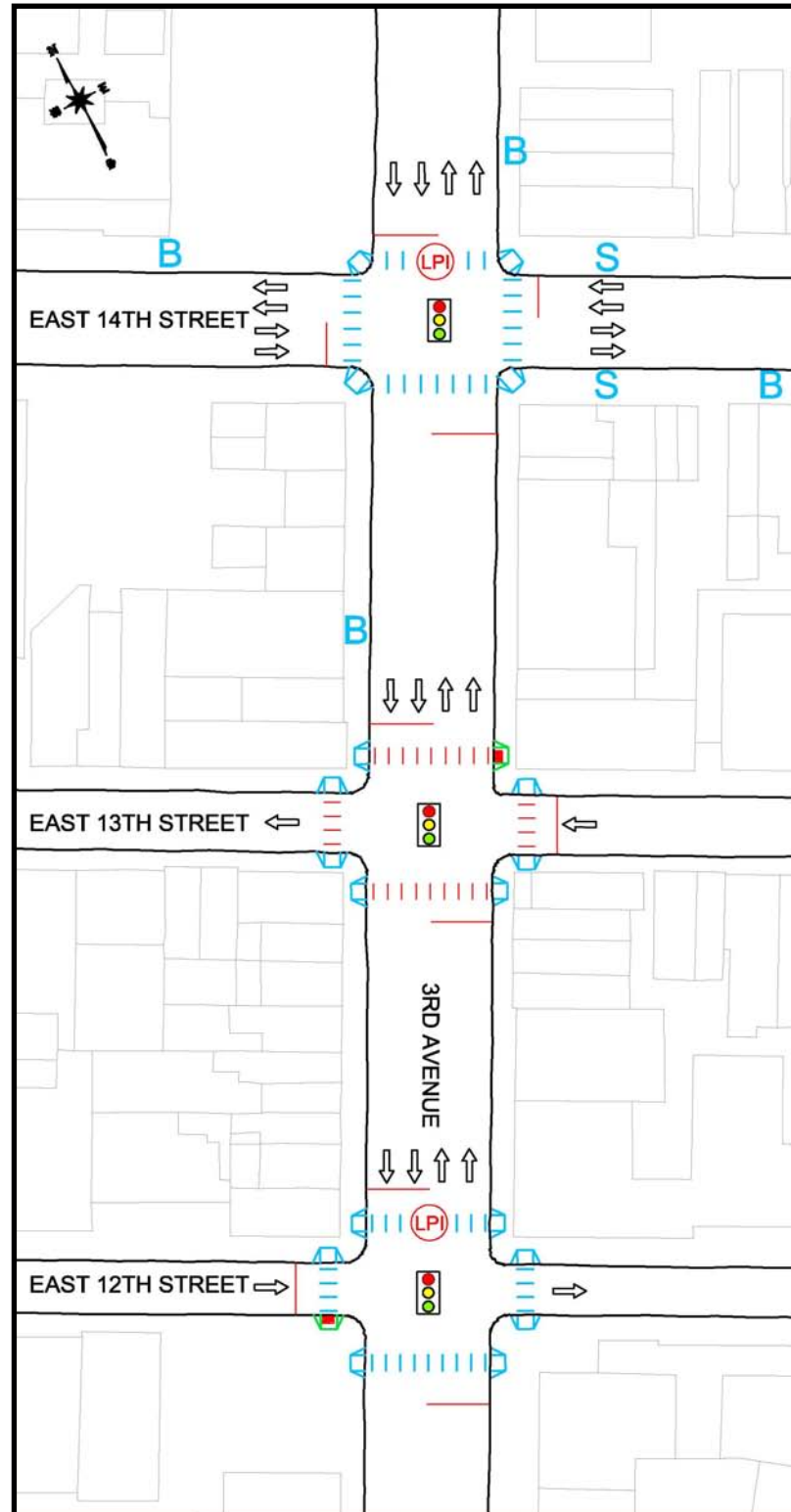
### Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix B
- This study area was visited on June 24<sup>th</sup>, 2008, October 27<sup>th</sup>, 2008 and July 1<sup>st</sup>, 2009.



# SITE 4: THIRD AVENUE (FROM EAST 12<sup>TH</sup> STREET TO EAST 14<sup>TH</sup> STREET)

Illustrating the Solution



### Pedestrian concerns in this area:

- Speeding vehicles
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)
- Missing or inadequate pedestrian ramps

### Additional Information:

- Parking regulations for the project area have been collected and are shown in Appendix B
- This study area was visited on June 24<sup>th</sup>, 2008, October 27<sup>th</sup>, 2008 and July 1<sup>st</sup>, 2009.

### Recommended improvements include:

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars
- Incorporate Leading Pedestrian Interval on the north legs of East 12<sup>th</sup> Street & East 14<sup>th</sup> Street

### Traffic Analysis for East 14<sup>th</sup> Street:

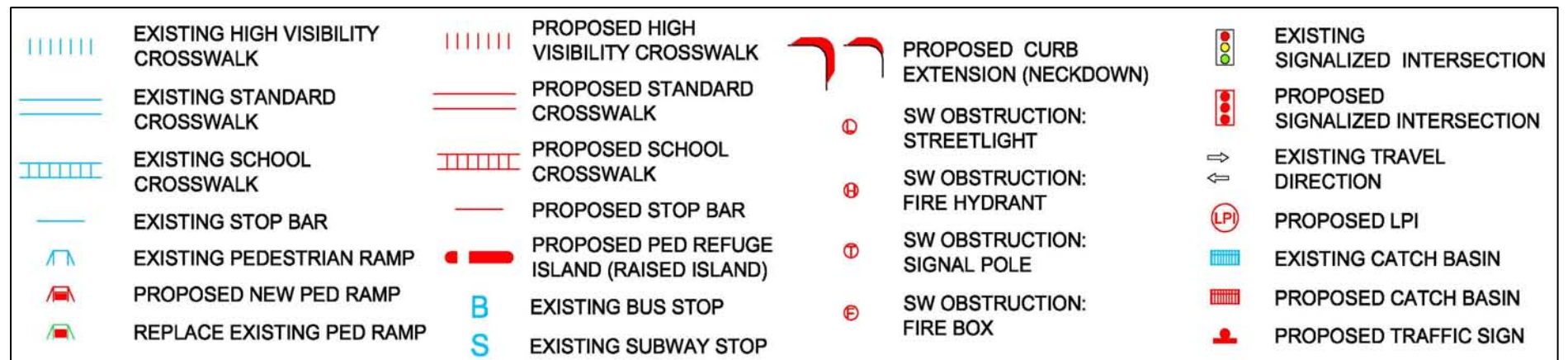
Turning Movement Counts for east and westbound traffic

#### AM CONFLICT

	Left Turn	Right Turn	Pedestrians
East Leg	103	VS	879
West Leg		41	VS 879

#### PM CONFLICT

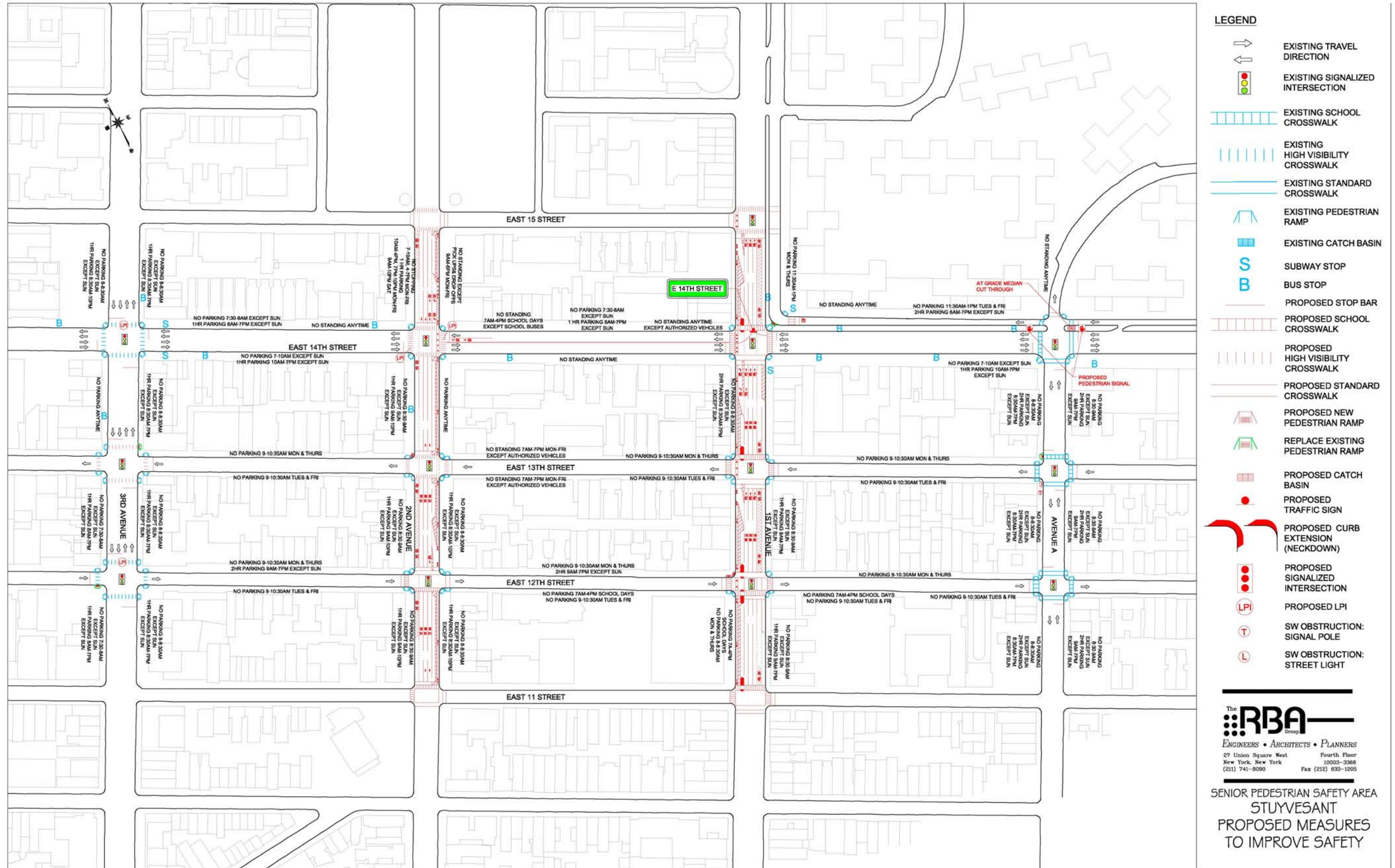
East Leg	106	VS	1298
West Leg		68	VS 1298



**APPENDIX A:  
PHOTO LOG  
(SEPARATE COVER)**

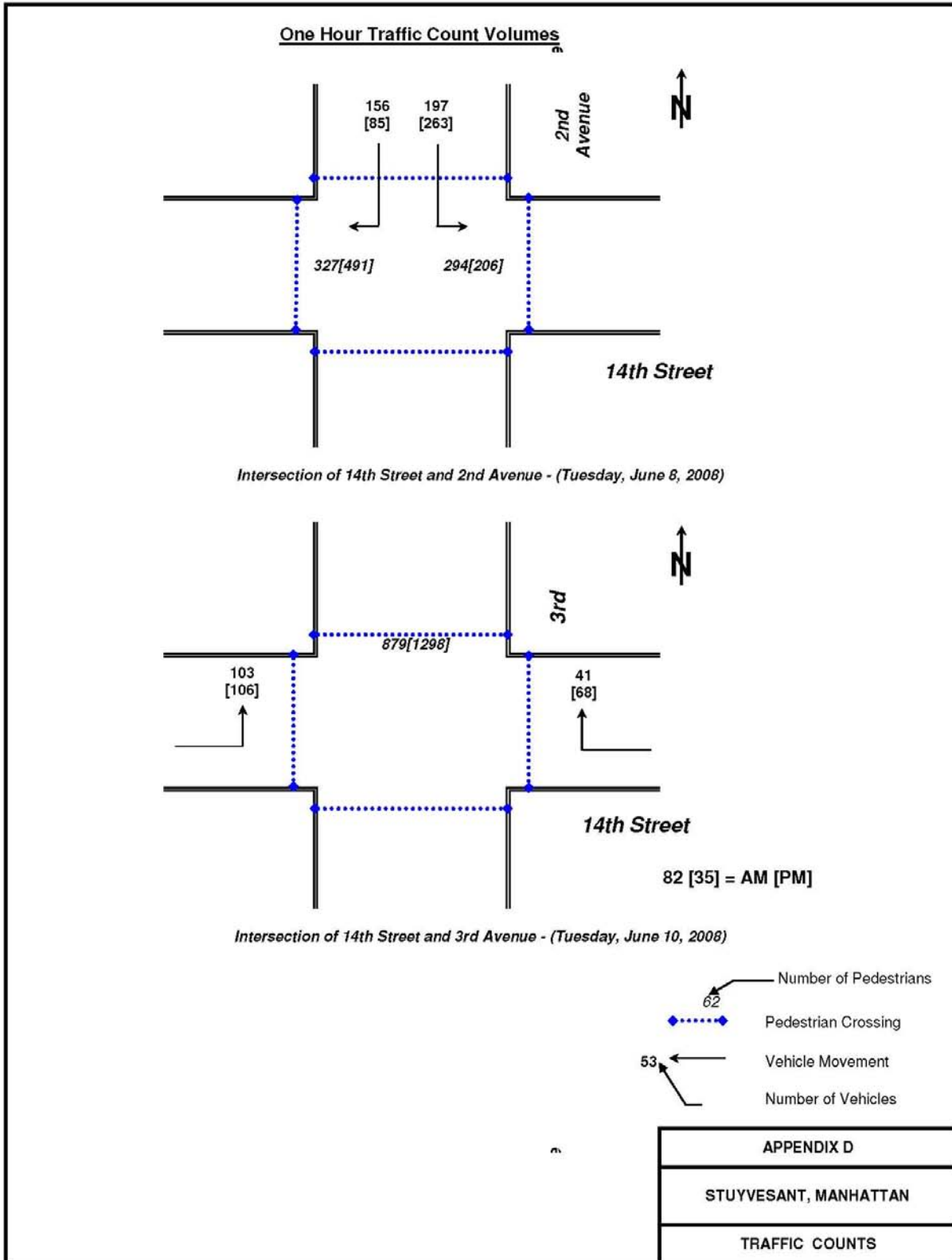


# **APPENDIX B: MAP OF PROPOSED CHANGES**



# APPENDIX C: TRAFFIC COUNTS

### APPENDIX C – TRAFFIC COUNT



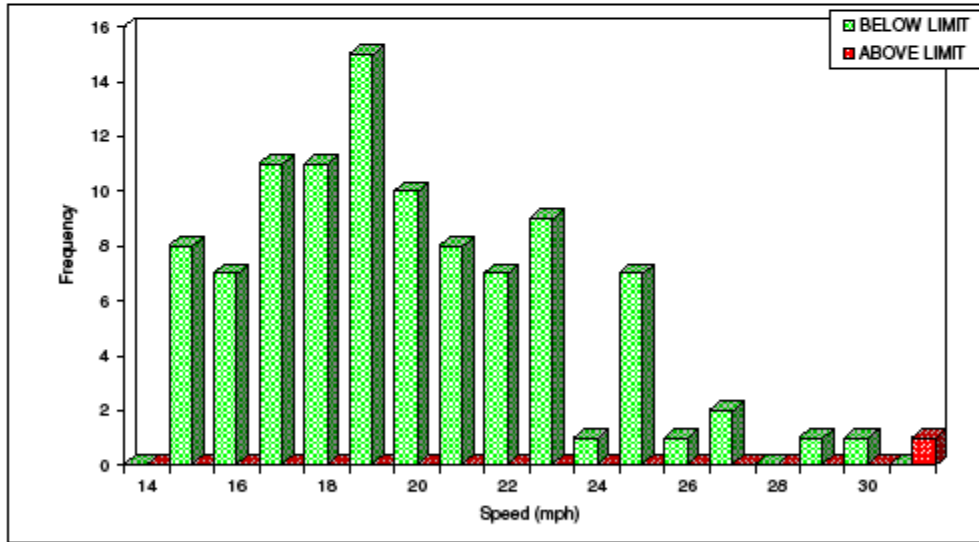
# **APPENDIX D: SPEED STUDY**

**APPENDIX D – SPEED STUDY  
EAST 12<sup>TH</sup> STREET BETWEEN FIRST AVENUE & SECOND AVENUE**

**RADAR SPEED SURVEY**

Arterial: E. 12th St E/B                      From: 2nd Ave                      To: 1st Ave

Boro:	Manhattan	Average Speed:	20.0 mph
Date:	07/21/08	15th Percentile:	16.9 mph
Day:	Mon.	50th Percentile:	19.0 mph
Weather:	Clear	85th Percentile:	23.0 mph
Time:	12:45PM-1:45PM		
Speed Limit:	30 mph	Above Speed Limit:	1.0 %
Sample Size:	100	Minimum Speed	15.0 mph
		Maximum Speed	31.0 mph
Type of Roadway:	One-Way	Pace:	15.0 - 25.0 mph
Width of Road by Direction:	30'	In Pace:	94.0 %
Number of Moving Lanes:	1	Below Pace:	0.0 %
Number of Parking Lanes:	2	Above Pace:	6.0 %
Observer:	B. Patel	Standard Deviation:	3.5 mph



# **APPENDIX E: CONSTRUCTION DETAILS**

APPENDIX E – CONSTRUCTION DETAIL – CURB

REVISIONS		
DATE	APPO	DESCRIPTION

NOTES:

- ALL CROSSWALK LINES TO BE 12" WIDE THERMOPLASTIC PAVEMENT MARKINGS
- STOP LINES SHALL BE 24" WIDE AND LOCATED AT EITHER:
  - THE BUILDING LINE
  - 4' FROM STANDARD CROSSWALK
  - 10' FROM SCHOOL CROSSWALK
- THE RADIUS, R OF THE CORNER QUADRANT SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF H-1101 FOR SIDEWALK PEDESTRIAN RAMPS AND THE FOLLOWING GUIDELINES SHALL BE APPLIED IN DETERMINING THE RADIUS, R OF THE CORNER QUADRANT:
  - R=12' INTERIOR > 90
  - R=13' INTERIOR BET. 83 AND 93
  - R=14' INTERIOR BET. 77 AND 90
  - R=15' INTERIOR BET. 72 AND 81
- CURB EXTENSIONS SHALL BE CONSTRUCTED OF STEEL FACED CONCRETE CURB, 18 MINIMUM DEPTH. REFER TO H1010 R79 (LATEST REVISION) FOR STEEL FACED CURB – TYPE D.
- REFER TO H1011 (LATEST REVISION) FOR DETECTABLE WARNING SURFACE
- REFER TO H1011 (LATEST REVISION) FOR ADDITIONAL NOTES AND REQUIREMENTS FOR THE PEDESTRIAN RAMPS CORNER QUADRANT AREA OF THE SIDEWALK.
- THE WIDTH, W OF THE NECKDOWN IS EQUAL TO WIDTH OF THE PARKING LANE MINUS TWO (2) FEET. SEE TABLE BELOW.

WIDTH OF PARKING LANE (FT)	WIDTH OF NECKDOWN, W (FT)
7	5
8	6

- INSTALLATION OF A NECKDOWN MUST ALLOW FOR THE TURNING MOVEMENT OF A THIRTY FOOT SIGNLE UNIT TRUCK (SU-30). ON DESIGNATED TRUCK ROUTES OR REGULARLY SCHEDULE BUS ROUTES THAT REQUIRE TURNING, THE APPROPRIATE DESIGN VEHICLE SHALL BE USED.
- A FIRE TRUCK TURNING ZONE WITH A FIFTY FOOT OUTSIDE RADIUS SHALL BE MAINTAINED CLEAR OF PHYSICAL OBSTRUCTIONS (SIGNS, PLANTERS, NON-FLEXIBLE BOLLARDS, TRESS, ETC).
- A 22-FOOT MINIMUM ROADWAY WIDTH (FROM CURB TO CURB OR PARKED VEHICLE) MUST BE MAINTAINED AT A FIRE HYDRANT, SO THAT A FIRE TRUCK MAY PASS ANOTHER PARKED AT THE HYDRANT.
- FIRE HYDRANTS AND PARKING METERS SHALL BE MOVED ONTO THE NECKDOWN. PLACEMENT SHALL BE IN ACCORDANCE WITH APPROPRIATE NYCDOT AND NYCEP DESIGN STANDARDS.

LOCATION	CASE	LENGTH
NORTHWEST CORNER OF EAST 12TH ST. & 1ST AVE.	B	22.0'
NORTHEAST CORNER OF EAST 14TH ST. & 2ND AVE.	B	22.0'

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

CURB EXTENSIONS AND PAVEMENT MARKING CONFIGURATIONS

APPROVED BY _____	Drawn by J.M. Checked by N.A. Borough B/A Scale AS NOTED Date 11/30/2007	DRAWING NO. XXX-X
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