

# Safe Streets for Seniors

## West Midtown, Manhattan

### FINAL REPORT

September 2012



Janette Sadik-Khan, Commissioner



Safe Streets for Seniors  
**WEST MIDTOWN**

**TABLE OF CONTENTS**

<b>1</b>	<b>PROJECT DESCRIPTION</b>	
1	PROJECT DESCRIPTION .....	4
<b>2</b>	<b>BACKGROUND</b>	
2	BACKGROUND .....	5
<b>3</b>	<b>EXISTING CONDITIONS</b>	
3	EXISTING CONDITIONS .....	7
3.1	ABOUT THE STUDY AREA .....	7
3.2	FIELD OBSERVATIONS AND SENIOR PEDESTRIANS CONCERNS .....	7
<b>4</b>	<b>TRAFFIC OPERATIONS</b>	
4	TRAFFIC OPERATIONS.....	8
4.1	CRASH SUMMARY.....	8
4.2	TRAFFIC VOLUMES .....	10
4.3	SIGNAL TIMING: PEDESTRIAN INTERVAL .....	11
<b>5</b>	<b>ILLUSTRATING THE SOLUTION</b>	
5	ILLUSTRATING THE SOLUTION.....	12
5.1	EXECUTIVE SUMMARY AND GENERAL RECOMMENDATIONS .....	12
5.2	9 <sup>TH</sup> AVENUE.....	17
5.3	8 <sup>TH</sup> AVENUE.....	19
5.4	7 <sup>TH</sup> AVENUE.....	22
5.5	BROADWAY.....	24
5.6	W 24 <sup>TH</sup> STREET, W 25 <sup>TH</sup> STREET, W 26 <sup>TH</sup> STREET & W 28 <sup>TH</sup> STREET (FROM 8 <sup>TH</sup> AVE TO 9 <sup>TH</sup> AVE) .....	25

## EXHIBITS

EXHIBIT 1 – AREA MAP .....	5
EXHIBIT 2 – BIKE MAP .....	6
EXHIBIT 3 – TRUCK MAP .....	6
EXHIBIT 4 – TRANSIT MAP .....	6
EXHIBIT 5 – LIST OF SCHOOLS IN THE STUDY AREA .....	6
EXHIBIT 6 – PEDESTRIAN CRASH STATISTICS (2001-2006) .....	9
EXHIBIT 7 – RECOMMENDATION INDEX 1 .....	27
EXHIBIT 8 – RECOMMENDATION INDEX 2 .....	28
EXHIBIT 9 – 9 <sup>TH</sup> AVENUE (FROM W 23 <sup>RD</sup> STREET TO W 31 <sup>ST</sup> STREET) .....	29
EXHIBIT 10 – 9 <sup>TH</sup> AVENUE (FROM W 33 <sup>RD</sup> STREET TO W 42 <sup>ND</sup> STREET) .....	30
EXHIBIT 11 – 9 <sup>TH</sup> AVENUE (FROM W 43 <sup>RD</sup> STREET TO W 52 <sup>ND</sup> STREET) .....	31
EXHIBIT 12 – 8 <sup>TH</sup> AVENUE (FROM W 23 <sup>RD</sup> STREET TO W 32 <sup>ND</sup> STREET) .....	32
EXHIBIT 13 – 8 <sup>TH</sup> AVENUE (FROM W 33 <sup>RD</sup> STREET TO W 42 <sup>ND</sup> STREET) .....	33
EXHIBIT 14 – 8 <sup>TH</sup> AVENUE (FROM W 43 <sup>RD</sup> STREET TO W 52 <sup>ND</sup> STREET) .....	34
EXHIBIT 15 – 7 <sup>TH</sup> AVENUE (FROM W 23 <sup>RD</sup> STREET TO W 32 <sup>ND</sup> STREET) .....	35
EXHIBIT 16 – 7 <sup>TH</sup> AVENUE (FROM W 33 <sup>RD</sup> STREET TO W 41 <sup>ST</sup> STREET) .....	36
EXHIBIT 17 – 7 <sup>TH</sup> AVENUE (FROM W 42 <sup>ND</sup> STREET TO W 47 <sup>TH</sup> STREET) .....	37
EXHIBIT 18 – BROADWAY (FROM W 29 <sup>TH</sup> STREET TO W 38 <sup>TH</sup> STREET) .....	38
EXHIBIT 19 – BROADWAY (FROM W 39 <sup>TH</sup> STREET TO W 47 <sup>TH</sup> STREET) .....	39
EXHIBIT 20 – W 24 <sup>TH</sup> ST, W 25 <sup>TH</sup> ST, W 26 <sup>TH</sup> ST AND W 28 <sup>TH</sup> ST (FROM 8 <sup>TH</sup> AVE TO 9 <sup>TH</sup> AVE) .....	40

## TABLES

TABLE 1: DMV SIX YEAR CRASH SUMMARY (2001-2006) .....	8
TABLE 2: TRAFFIC VOLUME DATA .....	10
TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS .....	12

## LIST OF APPENDICES

APPENDIX A:	AUTOMATIC TRAFFIC RECORDER COUNTS (ATR)
APPENDIX B:	TURNING MOVEMENT COUNTS (TMC)
APPENDIX C:	PEDESTRIAN COUNTS
APPENDIX D:	PARKING REGULATIONS
APPENDIX E:	ADDITIONAL TRAFFIC DATA & ANALYSIS
APPENDIX F:	NYCDOT IMPROVEMENTS

# 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. The DOT makes specific safety recommendations consisting of low-cost as well as capital engineering and design improvements for these 20 areas. In addition, the DOT conducts data analysis as needed, prepares engineering and design schematics and related services, as necessary, for capital improvements.

In this report, the West Midtown SPFA located in Manhattan has been studied and improvements have been recommended.



## 2 BACKGROUND

Land use in the West Midtown Study area is a mix of commercial and residential buildings. There are four senior centers located in or near the study area: Project Find Coffee House Senior Center at 551 9<sup>th</sup> Avenue between W 40<sup>th</sup> Street and W 41<sup>st</sup> Street; Murray Hill SRO at 11 E 29<sup>th</sup> Street between 5<sup>th</sup> Avenue and Madison Avenue; Project Find Woodstock Senior Center at 127 W 43<sup>rd</sup> Street between 6<sup>th</sup> Avenue and Broadway; and Encore Senior Center at 239 W 49<sup>th</sup> Street between Broadway and 8<sup>th</sup> Avenue.

There are ten schools located within the study area (list of school names and addresses shown in Exhibit 5).

### Bicycle Facilities

The 2010 NYC Cycling Map shows “existing” and “planned/proposed” bicycle facilities throughout the city. In the vicinity of the West Midtown Study Area, there are existing Class 1 bike route along Broadway and part of 9<sup>th</sup> Avenue, and Class 2 bike route along 8<sup>th</sup> Avenue and 6<sup>th</sup> Avenue. There are also planned/proposed bike routes on part of 9<sup>th</sup> Avenue, W 30<sup>th</sup> Street, W 31<sup>st</sup> Street, W 39<sup>th</sup> Street, W 40<sup>th</sup> Street, W 48<sup>th</sup> Street and W 51<sup>st</sup> Street. Refer to Exhibit 2 for details.

### Truck Routes

There are several local truck routes in the vicinity of the study area including those along 9<sup>th</sup> Avenue, 8<sup>th</sup> Avenue, 7<sup>th</sup> Avenue, 6<sup>th</sup> Avenue, W 23<sup>rd</sup> Street, W 30<sup>th</sup> Street, W 31<sup>st</sup> Street, W 34<sup>th</sup> Street and W 42<sup>nd</sup> Street (Exhibit 3).

### Bus Lines and Subway

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

- M11: Operates along 9<sup>th</sup> Avenue
- M20: Operates along 8<sup>th</sup> Avenue and 7<sup>th</sup> Avenue
- M7: Operates along 7<sup>th</sup> Avenue and 6<sup>th</sup> Avenue
- M5: Operates along 6<sup>th</sup> Avenue
- M23: Operates along W 23<sup>rd</sup> Street
- M34: Operates along W 34<sup>th</sup> Street
- M42: Operates along W 42<sup>nd</sup> Street
- M50: Operates along W 49<sup>th</sup> Street and W 50<sup>th</sup> Street
- M16: Operates along 9<sup>th</sup> Avenue, 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street
- M4: Operates along W 32<sup>nd</sup> Street, W 34<sup>th</sup> Street and 7<sup>th</sup> Avenue
- M104: Operates along 7<sup>th</sup> Avenue and 8<sup>th</sup> Avenue
- Q32: Operates along W 32<sup>nd</sup> Street, W 34<sup>th</sup> Street and 7<sup>th</sup> Avenue

The **A**, **C**, **E**, **1**, **2**, **3**, **N**, **Q**, **R**, **B**, **D**, **F**, **M**, **7** and **S** subway lines run along 8<sup>th</sup> Avenue, 7<sup>th</sup> Avenue, Broadway, 6<sup>th</sup> Avenue and 42<sup>nd</sup> Street, respectively, through the study area (Exhibit 4). Subway stations for the lines are located at the following intersections:

- 8<sup>th</sup> Avenue and W 23<sup>rd</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 50<sup>th</sup> Street
- 7<sup>th</sup> Avenue and W 23<sup>rd</sup> Street, W 28<sup>th</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 50<sup>th</sup> Street
- Broadway and W 28<sup>th</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 49<sup>th</sup> Street
- 6<sup>th</sup> Avenue and W 34<sup>th</sup> Street
- W 42<sup>nd</sup> Street and Broadway/Times Square

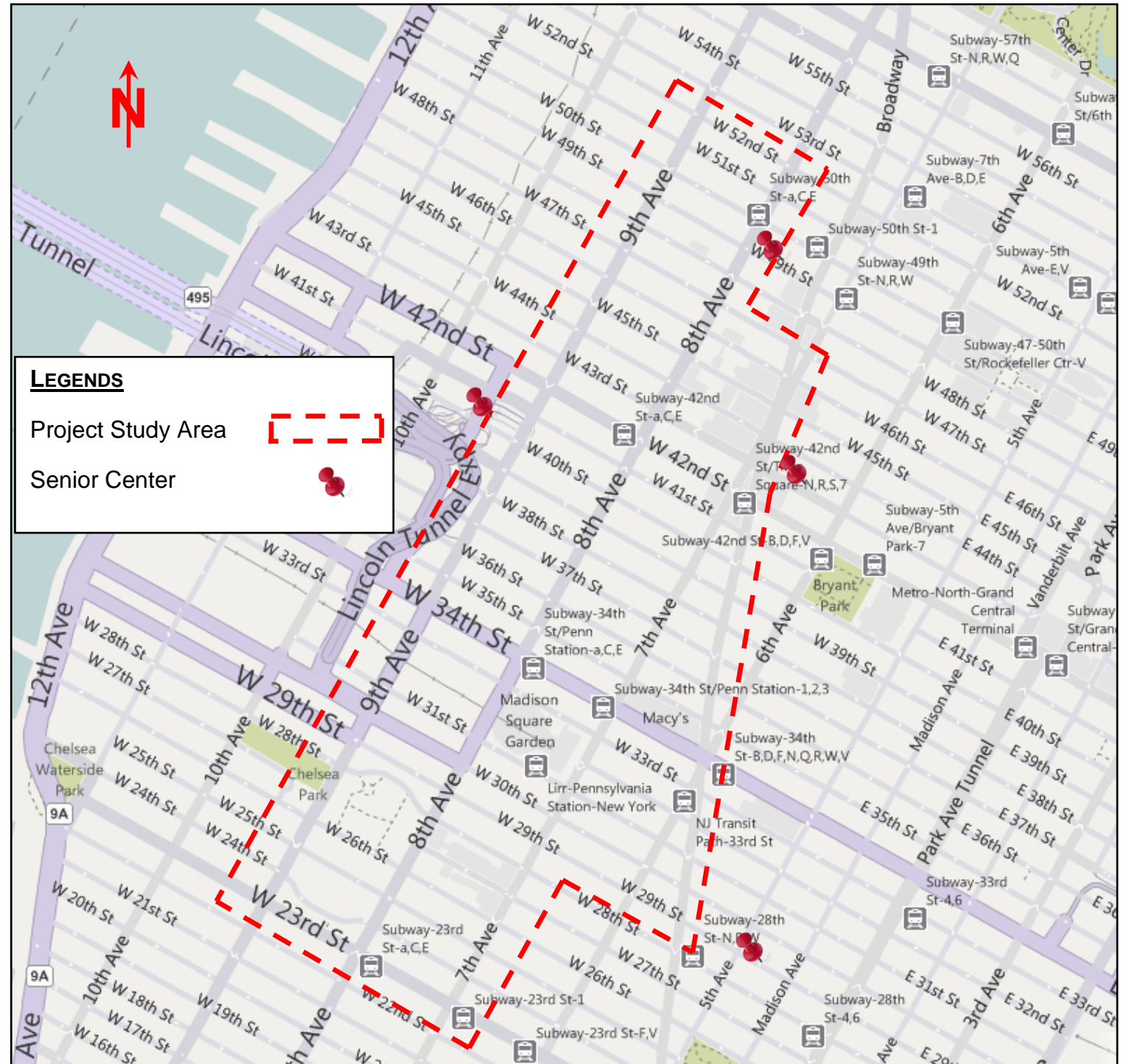


EXHIBIT 1 – AREA MAP

# 2

# BACKGROUND

EXHIBIT 2 – BIKE MAP

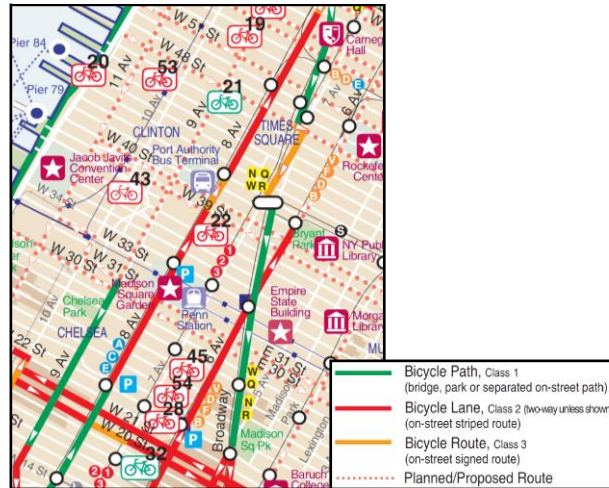


EXHIBIT 3 – TRUCK MAP

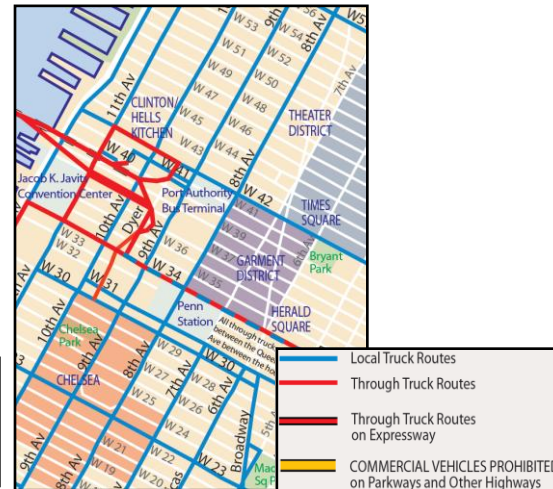


EXHIBIT 4 – TRANSIT MAP





# 3

# EXISTING CONDITIONS

## 3 EXISTING CONDITIONS

### 3.1 ABOUT THE STUDY AREA

The West Midtown Study Area consists of four major north-south corridors: 9<sup>th</sup> Avenue, 8<sup>th</sup> Avenue, 7<sup>th</sup> Avenue and Broadway (Photo No. 1). Three major west-east corridors are also located within the study area: W 23<sup>rd</sup> Street, W 34<sup>th</sup> Street and W 42<sup>nd</sup> Street. Six of these major corridors carry truck routes (Exhibit 2), while all of the major corridors carry at least one New York City Transit route (Exhibit 4). Many of the senior residents interviewed showed concern about W 34<sup>th</sup> Street, W 23<sup>rd</sup> Street, 8<sup>th</sup> Avenue and 7<sup>th</sup> Avenue. The combination of heavy traffic volumes, operational factors and geometric factors make these corridors difficult for senior pedestrians to safely cross.



*Photo No. 1 : 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street*

### 3.2 FIELD OBSERVATIONS AND SENIOR 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 listed here:

- Insufficient pedestrian crossing time
- Missing or non-standard ADA pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Insufficient pedestrian signs

# 4

# TRAFFIC OPERATIONS

## 4 TRAFFIC OPERATIONS

### 4.1 CRASH SUMMARY

Crash data was obtained from the New York City Department of Transportation (NYCDOT) for the West Midtown study area from 2001 through 2006. This data provides some detail relating the circumstances and cause of each crash. Table 1 and Exhibit 6 show a summary of crashes.

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

INTERSECTION		SENIOR PEDESTRIAN CRASHES	SENIOR PEDESTRIAN FATALITIES
9 <sup>th</sup> Avenue	W 23 <sup>rd</sup> Street	1	0
9 <sup>th</sup> Avenue	W 26 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 28 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 33 <sup>rd</sup> Street	1	0
9 <sup>th</sup> Avenue	W 35 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 37 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 39 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 41 <sup>st</sup> Street	2	1
9 <sup>th</sup> Avenue	W 42 <sup>nd</sup> Street	3	0
9 <sup>th</sup> Avenue	W 45 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 49 <sup>th</sup> Street	1	0
9 <sup>th</sup> Avenue	W 52 <sup>nd</sup> Street	1	0
8 <sup>th</sup> Avenue	W 25 <sup>th</sup> Street	1	0
8 <sup>th</sup> Avenue	W 27 <sup>th</sup> Street	1	0
8 <sup>th</sup> Avenue	W 31 <sup>st</sup> Street	1	0
8 <sup>th</sup> Avenue	W 42 <sup>nd</sup> Street	2	0
8 <sup>th</sup> Avenue	W 43 <sup>rd</sup> Street	1	0
8 <sup>th</sup> Avenue	W 50 <sup>th</sup> Street	1	0
7 <sup>th</sup> Avenue	W 25 <sup>th</sup> Street	1	0
7 <sup>th</sup> Avenue	W 31 <sup>st</sup> Street	1	0
7 <sup>th</sup> Avenue	W 32 <sup>nd</sup> Street	1	0
7 <sup>th</sup> Avenue	W 34 <sup>th</sup> Street	2	0
7 <sup>th</sup> Avenue	W 39 <sup>th</sup> Street	1	0
7 <sup>th</sup> Avenue	W 44 <sup>th</sup> Street	1	0
7 <sup>th</sup> Avenue	W 47 <sup>th</sup> Street	1	0
Broadway	W 30 <sup>th</sup> Street	1	0
Broadway	W 38 <sup>th</sup> Street	1	0
Broadway	W 42 <sup>nd</sup> Street	1	0
<b>TOTAL</b>		<b>33</b>	<b>1</b>



# 4

# TRAFFIC OPERATIONS



EXHIBIT 6 – PEDESTRIAN CRASH STATISTICS (2001-2006)

# 4

# TRAFFIC OPERATIONS

## 4.2 TRAFFIC VOLUMES

In order to analyze conditions for vehicles and pedestrians, traffic volume data was collected at key locations (see Table 2).

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

**TABLE 2: TRAFFIC VOLUME DATA**

LOCATION	ATR <sup>1</sup>	TMC <sup>2</sup>	PED COUNTS
9 <sup>th</sup> Avenue & W 33 <sup>rd</sup> Street		x	x
9 <sup>th</sup> Avenue & W 41 <sup>st</sup> Street	x	x	x
9 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street	x	x	x
9 <sup>th</sup> Avenue & W 46 <sup>th</sup> Street	x		
9 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street		x	x
9 <sup>th</sup> Avenue & W 48 <sup>th</sup> Street	x		
9 <sup>th</sup> Avenue & W 52 <sup>nd</sup> Street		x	x
8 <sup>th</sup> Avenue & W 31 <sup>st</sup> Street		x	x
8 <sup>th</sup> Avenue & W 33 <sup>rd</sup> Street		x	x
8 <sup>th</sup> Avenue & W 34 <sup>th</sup> Street		x	x
8 <sup>th</sup> Avenue & W 40 <sup>th</sup> Street		x	x
8 <sup>th</sup> Avenue & W 41 <sup>st</sup> Street	x		
8 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street	x	x	x
8 <sup>th</sup> Avenue & W 43 <sup>rd</sup> Street		x	x
8 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street		x	x
8 <sup>th</sup> Avenue & W 48 <sup>th</sup> Street	x		
8 <sup>th</sup> Avenue & W 52 <sup>nd</sup> Street	x		
7 <sup>th</sup> Avenue & W 31 <sup>st</sup> Street		x	x
7 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street		x	x
7 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street		x	x
Broadway & W 42 <sup>nd</sup> Street		x	x

Notes:

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

# 4

# 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 within the study area were modified to provide a clearance interval of 3 feet per second to accommodate the slower walking speeds of seniors.

## 5

## ILLUSTRATING THE SOLUTION

## 5 ILLUSTRATING THE SOLUTION

## 5.1 EXECUTIVE SUMMARY AND GENERAL RECOMMENDATIONS

TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS

Locations	New Left Turn Bay	Refuge Island	Curb Extension / Neckdown	Add Pedestrian Ramp	High-visibility Crosswalk	Standard Crosswalk	Stripe Stop Bar	Stripe Parking Lane / Buffer	Stripe Angle Parking	Stripe Channelization / Lane line	Do Not Block the Box	Stripe Bike Lane	Stripe Bus Lane	Daylighting	Yield to Peds / Cross With Care Sign	Leading Pedestrian Interval (LPI)
9 <sup>th</sup> Avenue & W 24 <sup>th</sup> Street							x	x							x	
9 <sup>th</sup> Avenue & W 25 <sup>th</sup> Street			x	x				x								
9 <sup>th</sup> Avenue & W 26 <sup>th</sup> Street			x	x				x	x							
9 <sup>th</sup> Avenue & W 28 <sup>th</sup> Street								x		x					x	
9 <sup>th</sup> Avenue & W 29 <sup>th</sup> Street			x	x			x									
9 <sup>th</sup> Avenue & W 30 <sup>th</sup> Street				x												
9 <sup>th</sup> Avenue & W 33 <sup>rd</sup> Street															x	x
9 <sup>th</sup> Avenue & W 35 <sup>th</sup> Street				x	x		x								x	
9 <sup>th</sup> Avenue & W 36 <sup>th</sup> Street							x								x	
9 <sup>th</sup> Avenue & W 37 <sup>th</sup> Street				x	x		x								x	
9 <sup>th</sup> Avenue & W 38 <sup>th</sup> Street				x											x	
9 <sup>th</sup> Avenue & W 39 <sup>th</sup> Street				x	x		x								x	
9 <sup>th</sup> Avenue & W 40 <sup>th</sup> Street					x											
9 <sup>th</sup> Avenue & W 41 <sup>st</sup> Street																x
9 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street																x
9 <sup>th</sup> Avenue & W 44 <sup>th</sup> Street						x										
9 <sup>th</sup> Avenue & W 45 <sup>th</sup> Street				x	x		x									
9 <sup>th</sup> Avenue & W 46 <sup>th</sup> Street							x									
9 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street															x	
9 <sup>th</sup> Avenue & W 48 <sup>th</sup> Street	x <sup>1</sup>							x <sup>1</sup>				x <sup>1</sup>				
9 <sup>th</sup> Avenue & W 49 <sup>th</sup> Street		x <sup>1</sup>			x		x	x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	
9 <sup>th</sup> Avenue & W 50 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>			x		x	x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	
9 <sup>th</sup> Avenue & W 51 <sup>st</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				



## 5

## ILLUSTRATING THE SOLUTION

TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS

Locations	New Left Turn Bay	Refuge Island	Curb Extension / Neckdown	Add Pedestrian Ramp	High-visibility Crosswalk	Standard Crosswalk	Stripe Stop Bar	Stripe Parking Lane / Buffer	Stripe Angle Parking	Stripe Channelization / Lane line	Do Not Block the Box	Stripe Bike Lane	Stripe Bus Lane	Daylighting	Yield to Peds / Cross With Care Sign	Leading Pedestrian Interval (LPI)
9 <sup>th</sup> Avenue & W 52 <sup>nd</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>				x <sup>1</sup>			x	
8 <sup>th</sup> Avenue & W 23 <sup>rd</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 24 <sup>th</sup> Street		x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 25 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	
8 <sup>th</sup> Avenue & W 26 <sup>th</sup> Street		x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 27 <sup>th</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 28 <sup>th</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 29 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 30 <sup>th</sup> Street		x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	
8 <sup>th</sup> Avenue & W 31 <sup>st</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	x
8 <sup>th</sup> Avenue Midblock at USPS		x <sup>1</sup>			x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>				x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 33 <sup>rd</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	x
8 <sup>th</sup> Avenue & W 34 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	x
8 <sup>th</sup> Avenue & W 35 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 36 <sup>th</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>		x		
8 <sup>th</sup> Avenue & W 37 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>		x	x			x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>			x	
8 <sup>th</sup> Avenue & W 38 <sup>th</sup> Street		x <sup>1</sup>			x			x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 39 <sup>th</sup> Street	x <sup>1</sup>			x	x			x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 40 <sup>th</sup> Street								x <sup>1</sup>		x <sup>1</sup>	x	x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 41 <sup>st</sup> Street										x <sup>1</sup>	x	x <sup>1</sup>				
8 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street		x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			x
8 <sup>th</sup> Avenue & W 43 <sup>rd</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			x
8 <sup>th</sup> Avenue & W 44 <sup>th</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
8 <sup>th</sup> Avenue & W 45 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>		x	
8 <sup>th</sup> Avenue & W 46 <sup>th</sup> Street		x <sup>1</sup>			x			x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			

## 5

## ILLUSTRATING THE SOLUTION

TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS

Locations	New Left Turn Bay	Refuge Island	Curb Extension / Neckdown	Add Pedestrian Ramp	High-visibility Crosswalk	Standard Crosswalk	Stripe Stop Bar	Stripe Parking Lane / Buffer	Stripe Angle Parking	Stripe Channelization / Lane line	Do Not Block the Box	Stripe Bike Lane	Stripe Bus Lane	Daylighting	Yield to Peds / Cross With Care Sign	Leading Pedestrian Interval (LPI)
8 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
8 <sup>th</sup> Avenue & W 48 <sup>th</sup> Street		x <sup>1</sup>		x				x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
8 <sup>th</sup> Avenue & W 49 <sup>th</sup> Street	x <sup>1</sup>	x <sup>1</sup>				x	x	x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
8 <sup>th</sup> Avenue & W 50 <sup>th</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>		x	
8 <sup>th</sup> Avenue & W 51 <sup>st</sup> Street	x <sup>1</sup>							x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
8 <sup>th</sup> Avenue & W 52 <sup>nd</sup> Street		x <sup>1</sup>						x <sup>1</sup>		x <sup>1</sup>		x <sup>1</sup>	x <sup>1</sup>			
7 <sup>th</sup> Avenue & W 23 <sup>rd</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 24 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 25 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 26 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 27 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 28 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 29 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 30 <sup>th</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 31 <sup>st</sup> Street			x	x											x	x
7 <sup>th</sup> Avenue & W 32 <sup>nd</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 33 <sup>rd</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 34 <sup>th</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 35 <sup>th</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 36 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 37 <sup>th</sup> Street			x	x										x		
7 <sup>th</sup> Avenue & W 38 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 39 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 40 <sup>th</sup> Street			x	x	x										x	
7 <sup>th</sup> Avenue & W 41 <sup>st</sup> Street			x	x												

# 5

# ILLUSTRATING THE SOLUTION

TABLE 3: SUMMARY OF SPECIFIC RECOMMENDATIONS

Locations	New Left Turn Bay	Refuge Island	Curb Extension / Neckdown	Add Pedestrian Ramp	High-visibility Crosswalk	Standard Crosswalk	Stripe Stop Bar	Stripe Parking Lane / Buffer	Stripe Angle Parking	Stripe Channelization / Lane line	Do Not Block the Box	Stripe Bike Lane	Stripe Bus Lane	Daylighting	Yield to Peds / Cross With Care Sign	Leading Pedestrian Interval (LPI)
7 <sup>th</sup> Avenue & W 42 <sup>nd</sup> Street			x	x												x
7 <sup>th</sup> Avenue & W 43 <sup>rd</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 44 <sup>th</sup> Street			x	x											x	
7 <sup>th</sup> Avenue & W 45 <sup>th</sup> Street			x	x												
7 <sup>th</sup> Avenue & W 46 <sup>th</sup> Street															x	
7 <sup>th</sup> Avenue & W 47 <sup>th</sup> Street			x	x											x	
Broadway & W 29 <sup>th</sup> Street				x												
Broadway & W 30 <sup>th</sup> Street			x	x											x	
Broadway & W 31 <sup>st</sup> Street				x												
Broadway & W 32 <sup>nd</sup> Street			x	x												
Broadway & W 33 <sup>rd</sup> Street			x	x												
Broadway & W 34 <sup>th</sup> Street			x													
Broadway & W 35 <sup>th</sup> Street			x	x												
Broadway & W 38 <sup>th</sup> Street				x											x	
Broadway & W 39 <sup>th</sup> Street				x												
Broadway & W 42 <sup>nd</sup> Street				x												
Broadway & W 43 <sup>rd</sup> Street															x	
Broadway & W 44 <sup>th</sup> Street				x											x	
Broadway & W 46 <sup>th</sup> Street															x	
Broadway & W 47 <sup>th</sup> Street			x	x											x	

Notes:

x - Recommendations proposed by study of Safe Street for Seniors – West Midtown

x<sup>1</sup> - Recommendations proposed under other NYCDOT projects

### 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 positioning 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  
A number of senior residents interviewed indicated that there was not enough time to cross many of the streets. Therefore, all of the signals, where possible, will be retimed to allow more crossing time for pedestrians.
- Green projects where feasible  
All medians, pedestrian plazas and curb extensions will be part of the Greenstreets program where feasible. The Greenstreets program is a citywide program to convert paved vacant traffic islands and medians into green spaces filled with shade trees, flowering trees, shrubs and groundcover.



## 5.2 9<sup>TH</sup> AVENUE

Within the study area, 9<sup>th</sup> Avenue is a southbound one-way arterial from W 23<sup>rd</sup> Street to W 52<sup>nd</sup> Street (Photo No. 2). 9<sup>th</sup> Avenue is a 68-foot wide street with four moving lanes and parking on both sides. Under a recent NYCDOT improvement project, a new bike lane, with an island and parking between the moving lane and the bike lane, has been provided along the east curbside of 9<sup>th</sup> Avenue from W 23<sup>rd</sup> Street to W 31<sup>st</sup> Street. 9<sup>th</sup> Avenue is a local truck route. W 23<sup>rd</sup> Street, W 30<sup>th</sup> Street, W 31<sup>st</sup> Street and W 42<sup>nd</sup> Streets are also local truck routes which intersect 9<sup>th</sup> Avenue within study area. W 34<sup>th</sup> Street, however, is a through truck route and also a limited local truck route within study area. Two bus lines run along the 9<sup>th</sup> Avenue corridor within the study area: bus M11 and bus M16. W 23<sup>rd</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 49<sup>th</sup> Street and W 50<sup>th</sup> Street also carry the following bus routes: M23, M34, M42 and M50. It should be noted that Holy Cross School is located near the 9<sup>th</sup> Avenue corridor. Proposed recommendations for this project concur with previously proposed School Safety recommendations.



Photo No. 2: 9<sup>th</sup> Avenue & W 33<sup>rd</sup> Street (looking south)

Neckdowns are recommended at the following locations to shorten the crossing distance and slow turning traffic:

- Southeast corner of 9<sup>th</sup> Avenue and W 25<sup>th</sup> Street
- Northeast corner of 9<sup>th</sup> Avenue and W 26<sup>th</sup> Street (Photo No. 3)
- Southeast corner of 9<sup>th</sup> Avenue and W 29<sup>th</sup> Street

As a part of 9<sup>th</sup> Avenue bicycle lane project NYCDOT is recommending pedestrian islands at the following locations. This measure will help in slowing down turning vehicle speed and will also provide refuge for senior pedestrians:

- North and south crosswalks at 9<sup>th</sup> Avenue and W 49<sup>th</sup> Street (NYCDOT Improvements)
- South crosswalk at 9<sup>th</sup> Avenue and W 50<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 9<sup>th</sup> Avenue and W 51<sup>st</sup> Street (NYCDOT Improvements)
- South crosswalk at 9<sup>th</sup> Avenue and W 52<sup>nd</sup> Street (NYCDOT Improvements)



Photo No. 3: 9<sup>th</sup> Avenue & W 26<sup>th</sup> Street (looking east)

# 5

## ILLUSTRATING THE SOLUTION

In addition to the above noted pedestrian islands; channelized striping, parking lanes striping and a new bike lane with buffer is also being recommended along the east curbside of 9<sup>th</sup> Avenue as part of the 9<sup>th</sup> Avenue bicycle lane project. This new setup will also include provision of left turn bays at alternate intersections to facilitate one-way intersecting street operations. This setup will start along 9<sup>th</sup> Avenue just north of W 48<sup>th</sup> Street and will continue north beyond W 52<sup>nd</sup> Street (the study limit of this project).

Turning movement counts for the AM, Midday and PM peak hours were performed at the intersections of: 9<sup>th</sup> Avenue and W 33<sup>rd</sup> Street; 9<sup>th</sup> Avenue and W 41<sup>st</sup> Street; 9<sup>th</sup> Avenue and W 42<sup>nd</sup> Street; 9<sup>th</sup> Avenue and W 47<sup>th</sup> Street; and 9<sup>th</sup> Avenue and W 52<sup>nd</sup> Street. The vehicle/pedestrian conflicts at the intersections of 9<sup>th</sup> Avenue and W 33<sup>rd</sup> Street, 9<sup>th</sup> Avenue and W 41<sup>st</sup> Street, and 9<sup>th</sup> Avenue and W 42<sup>nd</sup> Street were found to be significantly high (see Appendices B and C). Therefore, it is proposed that Leading Pedestrian Intervals (LPI) be installed on all crosswalks at these intersections.

It is recommended that standard crosswalks be replaced by high visibility crosswalks at various intersections along 9<sup>th</sup> Avenue. New stop bars as well as new pedestrian ramps should also be provided at various intersections. In addition, it is recommended that 'Yield to Pedestrian' signs be provided at certain intersections along the 9<sup>th</sup> Avenue corridor, and that 'Signal Ahead' signs be provided for eastbound traffic between 9<sup>th</sup> Avenue and 8<sup>th</sup> Avenue on both W 24<sup>th</sup> Street and W 28<sup>th</sup> Street.

All improvements proposed along 9<sup>th</sup> Avenue are shown in Exhibits 9, 10 and 11.

### 5.3 8<sup>TH</sup> AVENUE

Within the study area, 8<sup>th</sup> Avenue is a northbound one-way arterial from W 23<sup>rd</sup> Street to W 52<sup>nd</sup> Street (Photo No. 4). 8<sup>th</sup> Avenue is a 68-foot wide street with four moving lanes and parking on both sides. Throughout the study area, 8<sup>th</sup> Avenue has a one-way northbound Class 2 bike lane. It should be noted that NYCDOT is in progress of implementing a protected bike lane along the west side of 8<sup>th</sup> Avenue from W 23<sup>rd</sup> Street to W 34<sup>th</sup> Street. 8<sup>th</sup> Avenue is also a local truck route, as are W 23<sup>rd</sup> Street, W 30<sup>th</sup> Street, W 31<sup>st</sup> Street and W 42<sup>nd</sup> Streets which intersect 8<sup>th</sup> Avenue within the study area. W 34<sup>th</sup> Street is a through truck route and also a limited local truck route that also intersects 8<sup>th</sup> Avenue.



Photo No. 4: 8<sup>th</sup> Avenue & W 47<sup>th</sup> Street (looking south)

Three bus lines run along the 8<sup>th</sup> Avenue corridor within the study area: bus M20, bus M16 and bus M104. W 23<sup>rd</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 49<sup>th</sup> Street and W 50<sup>th</sup> Street also carry the following bus routes: M23, M34, M42 and M50. 8<sup>th</sup> Avenue also carries subway lines **A**, **C** and **E**. W 42<sup>nd</sup> Street, which intersects 8<sup>th</sup> Avenue within the study area, carries subway lines **7** and **S**. It should be noted that Holy Cross School is located near the 8<sup>th</sup> Avenue corridor. Proposed recommendations for this project concur with previously proposed School Safety recommendations and with NYCDOT recommendations proposed in conjunction with the 8<sup>th</sup> Avenue bike lane improvements.

Pedestrian islands are being recommended at the following locations as a part of 8<sup>th</sup> Avenue bicycle lane project to slow down turning traffic and to provide refuge for senior pedestrians:

- North crosswalk at 8<sup>th</sup> Avenue and W 23<sup>rd</sup> Street (NYCDOT Improvements) (Photo No. 5)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 24<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 25<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 26<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 27<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 28<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 29<sup>th</sup> Street (NYCDOT Improvements)



Photo No. 5: 8<sup>th</sup> Avenue & W 23<sup>rd</sup> Street (looking south)

# 5

# ILLUSTRATING THE SOLUTION

- North and south crosswalks at 8<sup>th</sup> Avenue and W 30<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 31<sup>st</sup> Street (NYCDOT Improvements)
- Midblock crosswalk at 8<sup>th</sup> Avenue between W 31<sup>st</sup> Street and W 33<sup>rd</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 33<sup>rd</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 35<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 36<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 37<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 38<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 43<sup>rd</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 44<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 45<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 46<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 47<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 48<sup>th</sup> Street (NYCDOT Improvements)
- North crosswalk at 8<sup>th</sup> Avenue and W 49<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 50<sup>th</sup> Street (NYCDOT Improvements)
- North and south crosswalks at 8<sup>th</sup> Avenue and W 52<sup>nd</sup> Street (NYCDOT Improvements)

In addition to the above noted pedestrian islands; channelized striping, parking lanes striping and a new bike lane with buffer is also being recommended along the west curbside of 8<sup>th</sup> Avenue as part of the 8<sup>th</sup> Avenue bicycle lane project. This new setup will also include provision of left turn bays at alternate intersections to facilitate one-way intersecting street operations. This 8<sup>th</sup> Avenue bicycle lane setup will continue along 8<sup>th</sup> Avenue throughout this project study limit (i.e., between W 23<sup>rd</sup> Street and W 52<sup>nd</sup> Street).

Turning movement counts for the AM, Midday and PM peak hours were performed at the intersections of: 8<sup>th</sup> Avenue and W 31<sup>st</sup> Street; 8<sup>th</sup> Avenue and W 33<sup>rd</sup> Street; 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street; 8<sup>th</sup> Avenue and W 40<sup>th</sup> Street; 8<sup>th</sup> Avenue and W 42<sup>nd</sup> Street; 8<sup>th</sup> Avenue and W 43<sup>rd</sup> Street; and 8<sup>th</sup> Avenue and W 47<sup>th</sup> Street. The vehicle/pedestrian conflicts at the intersections of 8<sup>th</sup> Avenue and W 31<sup>st</sup> Street, 8<sup>th</sup> Avenue and W 33<sup>rd</sup> Street, 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street, 8<sup>th</sup> Avenue and W 42<sup>nd</sup> Street, and 8<sup>th</sup> Avenue and W 43<sup>rd</sup> Street were found to be significantly high (see Appendices B and C). Therefore, it is proposed that Leading Pedestrian Intervals (LPI) be installed on all crosswalks at these intersections.

It is recommended that standard crosswalks be replaced by high visibility crosswalks at various intersections along 8<sup>th</sup> Avenue. New stop bars as well as new pedestrian ramps should also be provided at various intersections. In addition, it is recommended that 'Yield to Pedestrian' signs be provided at certain intersections along the 8<sup>th</sup> Avenue corridor.



# 5

## ILLUSTRATING THE SOLUTION

It is also recommended that a new bus lane be provided from W 42<sup>nd</sup> Street to W 52<sup>nd</sup> Street along the east side of 8<sup>th</sup> Avenue (NYCDOT Improvements). It is further recommended that new 'Do Not Block Box' striping be installed at the intersections of 8<sup>th</sup> Avenue and W 40<sup>th</sup> Street and 8<sup>th</sup> Avenue and W 41<sup>st</sup> Street.

All improvements proposed along 8<sup>th</sup> Avenue are shown in Exhibits 12, 13 and 14.

## 5.4 7<sup>TH</sup> AVENUE

Within the study area, 7<sup>th</sup> Avenue is a southbound one-way arterial from W 23<sup>rd</sup> Street to W 47<sup>th</sup> Street (Photo No. 6). The corridor is 59-foot wide with four moving lanes and parking on both sides. 7<sup>th</sup> Avenue is a local truck route from W 23<sup>rd</sup> Street to W 30<sup>th</sup> Street. W 23<sup>rd</sup> Street, W 30<sup>th</sup> Street, W 31<sup>st</sup> Street and W 42<sup>nd</sup> Streets are also local truck routes which intersect 7<sup>th</sup> Avenue within study area. W 34<sup>th</sup> Street is a through truck route and also a limited local truck route that intersects 7<sup>th</sup> Avenue. Three bus lines run along the 7<sup>th</sup> Avenue corridor within the study area: bus M7, bus M20 and bus M104. W 23<sup>rd</sup> Street, W 34<sup>th</sup> Street, W 42<sup>nd</sup> Street, W 49<sup>th</sup> Street and W 50<sup>th</sup> Street also carry the following bus



Photo No. 6: 7<sup>th</sup> Avenue & W 42<sup>nd</sup> Street (looking south)

routes: M23, M34 and M42. 7<sup>th</sup> Avenue also carries subway lines ①, ② and ③. W 42<sup>nd</sup> Street, which intersects 7<sup>th</sup> Avenue within the study area, carries subway lines ⑦ and S.

Neckdowns are recommended at the following locations to shorten the crossing distance and slow turning traffic:

- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 23<sup>rd</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 24<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 25<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 26<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 27<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 28<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 29<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 30<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 32<sup>nd</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 33<sup>rd</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 34<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 35<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 36<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 37<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 38<sup>th</sup> Street
- Northeast and southeast corners of 7<sup>th</sup> Avenue and W 39<sup>th</sup> Street

# 5

## ILLUSTRATING THE SOLUTION

- Southeast corner of 7<sup>th</sup> Avenue and W 40<sup>th</sup> Street
- Northeast corner of 7<sup>th</sup> Avenue and W 41<sup>st</sup> Street
- Southeast corner of 7<sup>th</sup> Avenue and W 42<sup>nd</sup> Street
- West side of 7<sup>th</sup> Avenue from W 42<sup>nd</sup> Street to W 43<sup>rd</sup> Street
- West side of 7<sup>th</sup> Avenue from W 43<sup>rd</sup> Street to W 44<sup>th</sup> Street
- Northwest corner of 7<sup>th</sup> Avenue and W 44<sup>th</sup> Street
- Southwest corner of 7<sup>th</sup> Avenue and W 45<sup>th</sup> Street
- Northeast corner of 7<sup>th</sup> Avenue and W 47<sup>th</sup> Street

Daylighting is recommended at the northwest corner of 7<sup>th</sup> Avenue and W 37<sup>th</sup> Street intersection in order to improve pedestrian visibility to the drivers.

Turning movement counts for the AM, Midday and PM peak hours were performed at the intersections of: 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street; 7<sup>th</sup> Avenue and W 42<sup>nd</sup> Street; and 7<sup>th</sup> Avenue and W 47<sup>th</sup> Street. The vehicle/pedestrian conflicts at the intersections of 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street and 7<sup>th</sup> Avenue and W 42<sup>nd</sup> Street were found to be significantly high (see Appendices B and C). Therefore, it is proposed that Leading Pedestrian Intervals (LPI) be installed on all crosswalks at these intersections.

It is recommended that at the intersection of 7<sup>th</sup> Avenue and W 40<sup>th</sup> Street, standard crosswalks be replaced by high visibility crosswalks on its north and south legs. New pedestrian ramps and 'Yield to Pedestrian' signs should also be provided at various intersections along 7<sup>th</sup> Avenue.

All improvements proposed along 7<sup>th</sup> Avenue are shown in Exhibits 15, 16 and 17.

## 5.5 BROADWAY

Within the study area, Broadway is a southbound one-way roadway from W 29<sup>th</sup> Street to W 47<sup>th</sup> Street (Photo No. 7). Broadway is 42-foot wide from W 29<sup>th</sup> Street to W 33<sup>rd</sup> Street and 59 feet wide from W 35<sup>th</sup> Street to W 42<sup>nd</sup> Street, with one and two moving lanes respectively, left turn bays at various locations, parking on both sides and a protected Class 1 bike lane on the east side of the roadway. Broadway is a local truck route between W 29 Street and W 31<sup>st</sup> Street. W 30<sup>th</sup> Street, W 31<sup>st</sup> Street and W 42<sup>nd</sup> Streets are also local truck routes which intersect Broadway within the study area. W 34<sup>th</sup> Street is a through truck route and also a limited local truck route that intersects Broadway. W 34<sup>th</sup> Street and W



Photo No. 7: Broadway & W 38<sup>th</sup> Street (looking north)

42<sup>nd</sup> Street carry bus routes M34 and M42. Broadway carries subway lines **N**, **Q** and **R**. W 42<sup>nd</sup> Street, which intersects Broadway within the study area, also carries subway lines **7** and **S**.

Important to note is the fact that lane configuration and traffic pattern on Broadway has been recently modified by the NYCDOT in order to include a Class 1 bike lane within the existing corridor curb-to-curb width. Additionally, pedestrian plazas are also created by the closure of Broadway from W 47<sup>th</sup> Street to W 42<sup>nd</sup> Street and from W 35<sup>th</sup> Street to W 33<sup>rd</sup> Street. These measures have provided significant public space for pedestrian activity without traffic operational conflicts.

Under this study, neckdowns are recommended at the following locations to shorten the crossing distance and slow turning traffic:

- Northwest corner of Broadway and W 30<sup>th</sup> Street
- Northeast corner of Broadway and W 33<sup>rd</sup> Street

Additionally, curb extensions are also recommended for the entire block length at the following locations:

- West side of Broadway from W 32<sup>nd</sup> Street to W 33<sup>rd</sup> Street
- West side of 6<sup>th</sup> Avenue from W 34<sup>th</sup> Street to W 35<sup>th</sup> Street
- South side of W 35<sup>th</sup> Street from Broadway to 6<sup>th</sup> Avenue
- East side of Broadway from W 47<sup>th</sup> Street to W 48<sup>th</sup> Street

It is recommended that new pedestrian ramps and 'Yield to Pedestrian' signs be provided at various intersections along the Broadway corridor. It is further recommended that 'Cross with Care' signs be provided at the intersections of Broadway and W 43<sup>rd</sup> Street and Broadway and W 44<sup>th</sup> Street.

All improvements proposed along Broadway are shown in Exhibits 18 and 19.



# 5

# ILLUSTRATING THE SOLUTION

## 5.6 W 24<sup>TH</sup> STREET, W 25<sup>TH</sup> STREET, W 26<sup>TH</sup> STREET & W 28<sup>TH</sup> STREET (FROM 8<sup>TH</sup> AVE TO 9<sup>TH</sup> AVE)

Recommendations for above noted streets are proposed between 8<sup>th</sup> Avenue and 9<sup>th</sup> Avenue (Photo No. 8 and Photo No. 9). W 24<sup>th</sup> Street is a one-way, one lane eastbound roadway; W 25<sup>th</sup> Street is a one-way, one lane westbound roadway, W 26<sup>th</sup> Street is a one-way, one lane eastbound roadway and W 28<sup>th</sup> Street is a one-way two lane eastbound roadway. The widths of these local streets vary between 45-foot and 50-foot. Parking is allowed along both sides of these streets.

During various field visits, opportunity to narrow travel lane was observed on all these cross streets between 9<sup>th</sup> Avenue and 8<sup>th</sup> Avenue. To narrow the travel lane, parking lanes and hatched buffer be striped as follows:

- On W 24<sup>th</sup> Street, 8.5-foot wide parking lane with 10-foot wide hatched buffer be striped along both curb sides. This will make way for one 13-foot wide eastbound travel lane. (Note: This recommendation has already been implemented by the NYCDOT as a part of W 24<sup>th</sup> Street improvement project).
- On W 25<sup>th</sup> Street, 10-foot wide parking lane with 7-foot wide hatched buffers be striped along both curb sides. This will make way for 11-foot wide westbound travel lane.
- On W 26<sup>th</sup> Street, 10-foot wide parking lane with 8-foot wide hatched buffer be striped along south curb side and 20-foot wide 'back-in angle parking stalls' be striped along north curb side. This will make way for 12-foot wide eastbound travel lane. A left-turn bay should also be striped at eastbound 8<sup>th</sup> Avenue and W 26<sup>th</sup> Street.
- On W 28<sup>th</sup> Street, 9-foot wide parking lane with 3-foot wide hatched buffer be striped along both curb sides. This will make way for two 12-foot wide eastbound travel lanes. The left moving lane will become a left turn only lane as it intersects the 8<sup>th</sup> Avenue intersection.

It is anticipated that the proposed striping modifications would help in calming traffic operations along these local streets. It would also help in accommodating additional parking spaces (especially along W 26<sup>th</sup> Street due to the proposed 'back-in angle parking configuration').



Photo No. 8: 8<sup>th</sup> Avenue & W 26<sup>th</sup> Street (looking west)



Photo No. 9: 9<sup>th</sup> Avenue & W 28<sup>th</sup> Street (looking east)

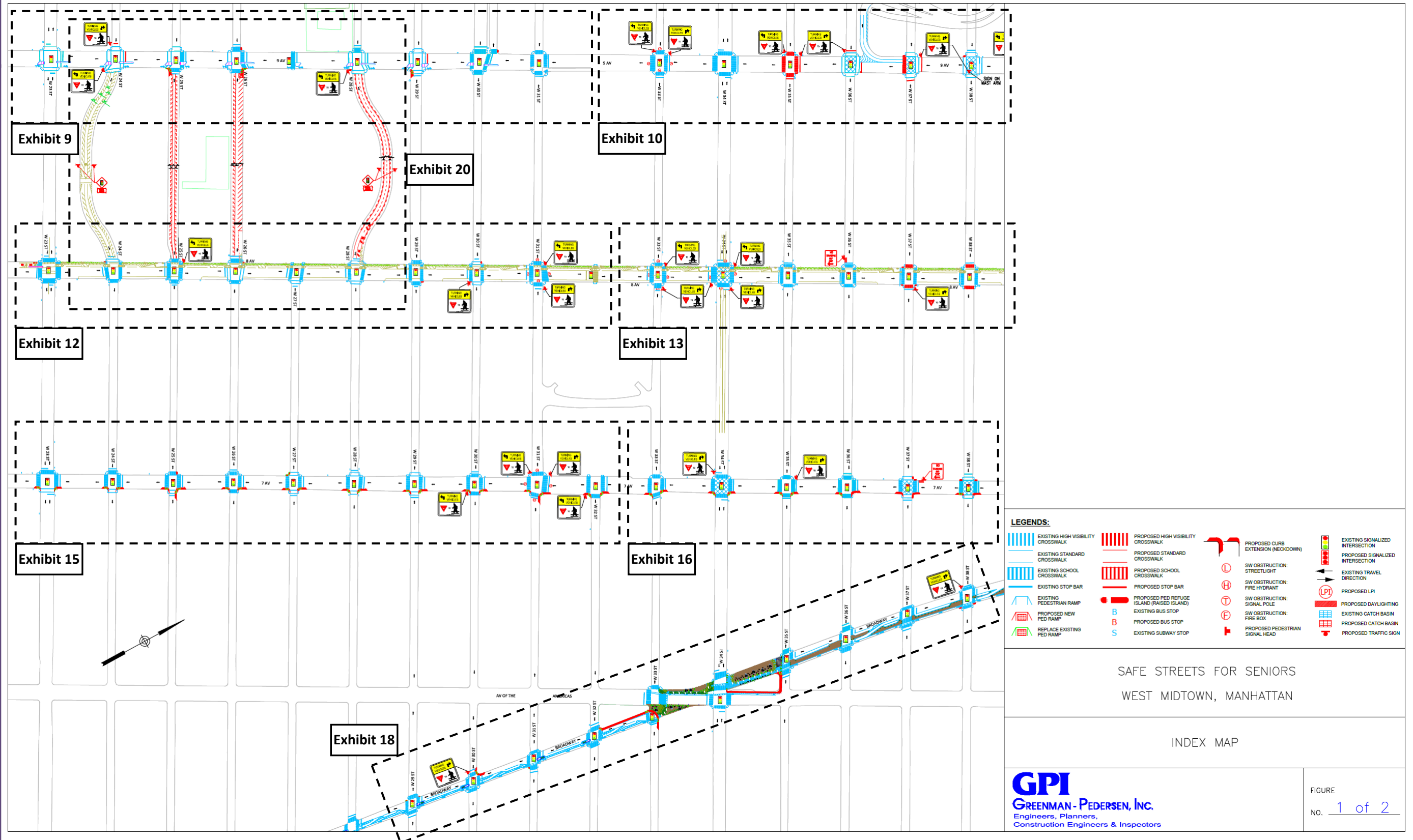
# 5

## ILLUSTRATING THE SOLUTION

Due to the curve roadway alignment it is further recommended that 'Signal Ahead' signs be provided between 9<sup>th</sup> Avenue and 8<sup>th</sup> Avenue on W 28<sup>th</sup> Street in order to warn drivers of the upcoming traffic signal which is not continuously visible from a safe distance.

All improvements proposed from 8<sup>th</sup> Avenue to 9<sup>th</sup> Avenue are shown in Exhibit 20.

## EXHIBIT 7 – RECOMMENDATION INDEX 1



## EXHIBIT 8 – RECOMMENDATION INDEX 2

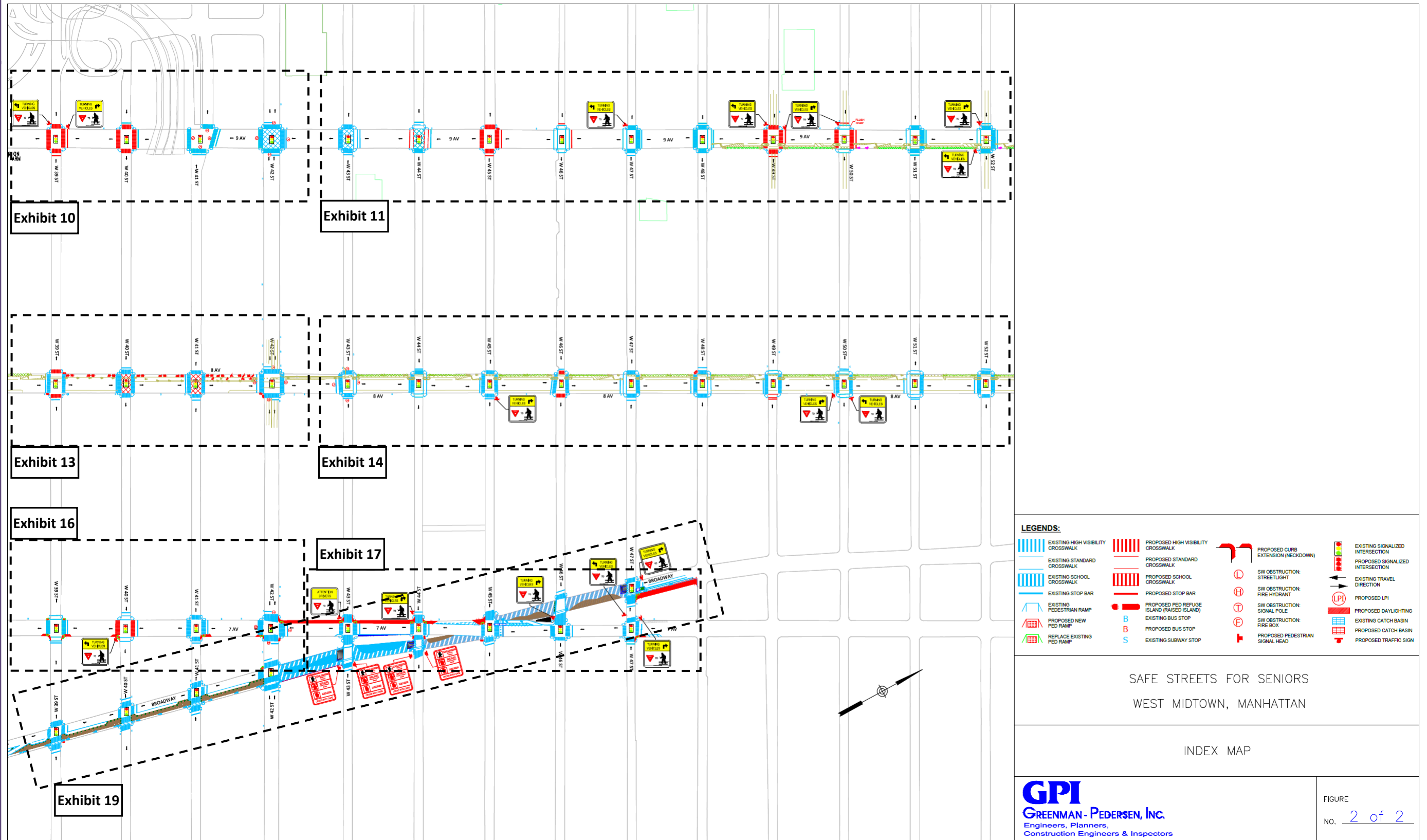
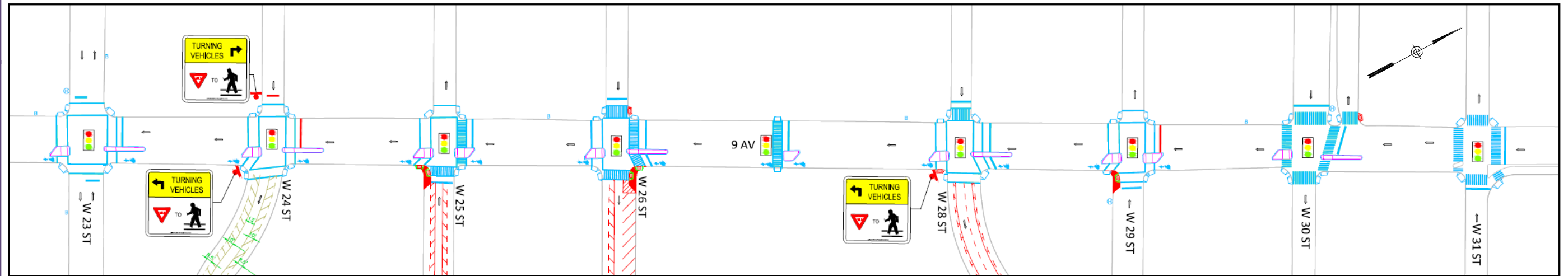




EXHIBIT 9 – 9<sup>TH</sup> AVENUE (FROM W 23<sup>RD</sup> STREET TO W 31<sup>ST</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Recommended improvements include:**

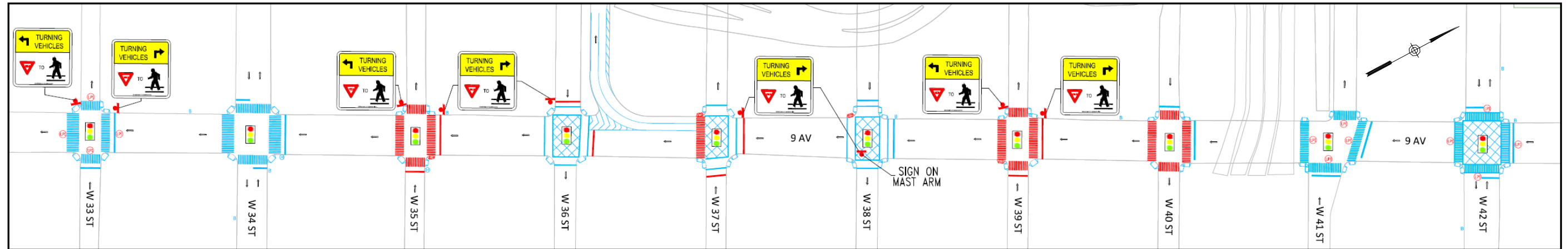
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new advanced stop bars as shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new “Yield to Pedestrian” signs at the intersections shown in the illustration
- Install neckdowns or a curb extensions





























**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

EXHIBIT 10 – 9<sup>TH</sup> AVENUE (FROM W 33<sup>RD</sup> STREET TO W 42<sup>ND</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		EXISTING SUBWAY STOP				PROPOSED CATCH BASIN
							PROPOSED TRAFFIC SIGN

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration
- Install new advanced stop bars as shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersections of: 9<sup>th</sup> Avenue and W 33<sup>rd</sup> Street; 9<sup>th</sup> Avenue and W 41<sup>st</sup> Street; and 9<sup>th</sup> Avenue and W 42<sup>nd</sup> Street (for all four crosswalks)

**Pedestrian concerns in this area:**

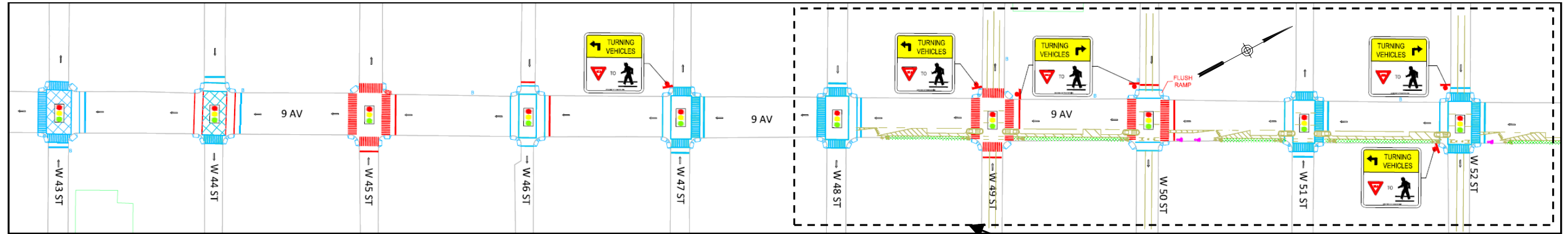
- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Traffic Analysis**

- ATR counts were analyzed at (see Appendix A):
  - 9<sup>th</sup> Avenue and W 41<sup>st</sup> Street
  - 9<sup>th</sup> Avenue and W 42<sup>nd</sup> Street
- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):
  - 9<sup>th</sup> Avenue and W 33<sup>rd</sup> Street
  - 9<sup>th</sup> Avenue and W 41<sup>st</sup> Street
  - 9<sup>th</sup> Avenue and W 42<sup>nd</sup> Street

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

EXHIBIT 11 – 9<sup>TH</sup> AVENUE (FROM W 43<sup>RD</sup> STREET TO W 52<sup>ND</sup> STREET)

BIKE LANE, LEFT TURN BAY, BUFFER AND MEDIAN ISLAND IMPROVEMENTS UNDER 9<sup>TH</sup> AVENUE IMPROVEMENT PROJECT BY NYCDOT (SHOWN IN ■ COLOR)

**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

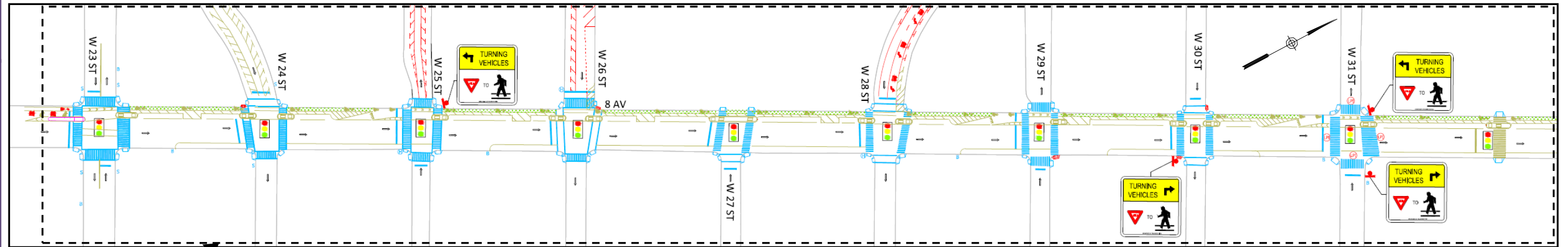
- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration
- Install new advanced stop bars as shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new pedestrian refuge islands (NYCDOT Improvement)
- Install new bike lanes along with buffer and parking lanes (NYCDOT Improvement)
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration






























**Traffic Analysis**

- ATR counts were analyzed at (see Appendix A):
  - 9<sup>th</sup> Avenue and W 46<sup>th</sup> Street
  - 9<sup>th</sup> Avenue and W 48<sup>th</sup> Street
- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):
  - 9<sup>th</sup> Avenue and W 47<sup>th</sup> Street
  - 9<sup>th</sup> Avenue and W 52<sup>nd</sup> Street

EXHIBIT 12 – 8<sup>TH</sup> AVENUE (FROM W 23<sup>RD</sup> STREET TO W 32<sup>ND</sup> STREET)

BIKE LANE, LEFT TURN BAY, BUFFER AND  
MEDIAN ISLAND IMPROVEMENTS UNDER 8<sup>TH</sup>  
AVENUE IMPROVEMENT PROJECT BY  
NYCDOT (SHOWN IN ■ COLOR)

**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Traffic Analysis**

- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):  
- 8<sup>th</sup> Avenue and W 31<sup>st</sup> Street

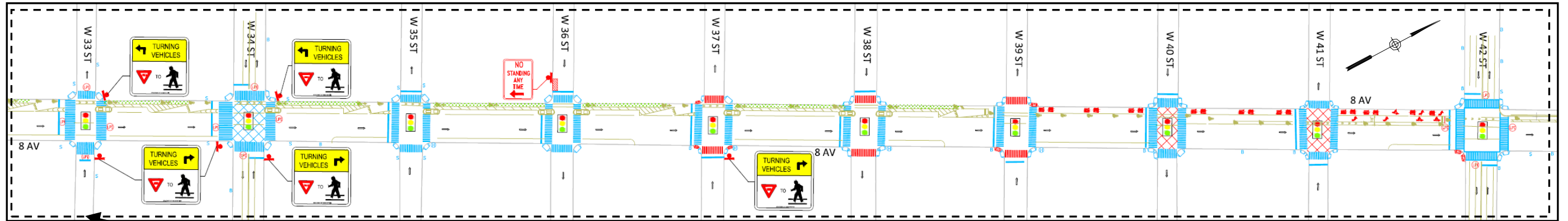
**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration (NYCDOT Improvement)
- Install new advanced stop bars as shown in the illustration (NYCDOT Improvement)
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersection of 8<sup>th</sup> Avenue and W 31<sup>st</sup> Street (for all four crosswalks)
- Install new pedestrian refuge islands (NYCDOT Improvement)
- Install new bike lanes along with buffer and parking lanes (NYCDOT Improvement)

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D



EXHIBIT 13 – 8<sup>TH</sup> AVENUE (FROM W 33<sup>RD</sup> STREET TO W 42<sup>ND</sup> STREET)

BIKE LANE, LEFT TURN BAY, BUFFER AND MEDIAN ISLAND IMPROVEMENTS UNDER 8<sup>TH</sup> AVENUE IMPROVEMENT PROJECT BY NYCDOT (SHOWN IN ■ COLOR)

**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

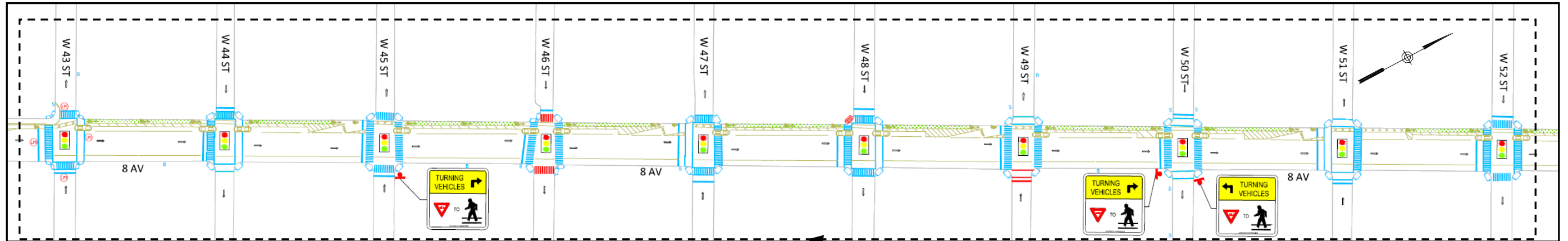
- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration
- Install new 'Do Not Block Box' striping at the intersections shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Remove the first parking space along the south side of W 36<sup>th</sup> Street at 8<sup>th</sup> Avenue in advance of the west crosswalk
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersections of 8<sup>th</sup> Avenue and W 33<sup>rd</sup> Street, 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street, and 8<sup>th</sup> Avenue and W 42<sup>nd</sup> Street (for all four crosswalks)
- Install new pedestrian refuge islands (NYCDOT Improvement)
- Install new bike lanes along with buffer and parking lanes (NYCDOT Improvement)

**Traffic Analysis**

- ATR counts were analyzed at (see Appendix A):
  - 8<sup>th</sup> Avenue and W 41<sup>st</sup> Street
  - 8<sup>th</sup> Avenue and W 42<sup>nd</sup> Street
- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):
  - 8<sup>th</sup> Avenue and W 33<sup>rd</sup> Street
  - 8<sup>th</sup> Avenue and W 34<sup>th</sup> Street
  - 8<sup>th</sup> Avenue and W 40<sup>th</sup> Street
  - 8<sup>th</sup> Avenue and W 42<sup>nd</sup> Street

EXHIBIT 14 – 8<sup>TH</sup> AVENUE (FROM W 43<sup>RD</sup> STREET TO W 52<sup>ND</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

BUS LANE IMPROVEMENTS UNDER 8<sup>TH</sup> AVENUE  
IMPROVEMENT PROJECT BY NYCDOT (SHOWN IN  
COLOR)

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Traffic Analysis**

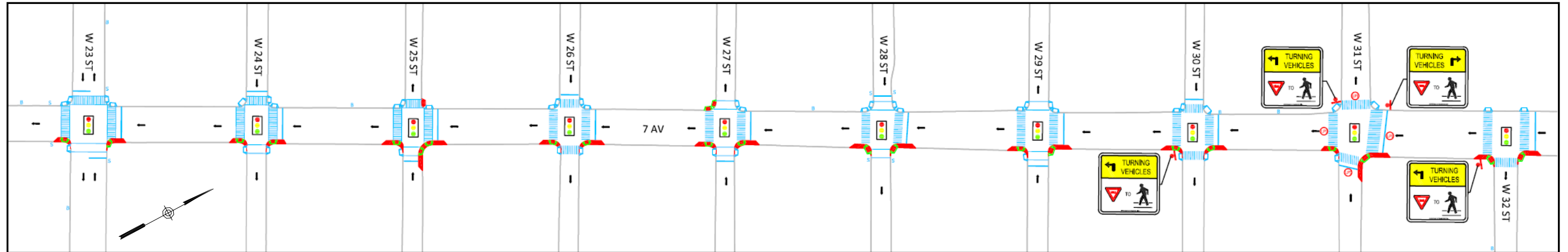
- ATR counts were analyzed at (see Appendix A):
  - 8<sup>th</sup> Avenue and W 48<sup>th</sup> Street
  - 8<sup>th</sup> Avenue and W 52<sup>nd</sup> Street
- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):
  - 8<sup>th</sup> Avenue and W 43<sup>rd</sup> Street
  - 8<sup>th</sup> Avenue and W 47<sup>th</sup> Street

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration
- Install new advanced stop bars as shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersection of 8<sup>th</sup> Avenue and W 43<sup>rd</sup> Street (for all four crosswalks)
- Install new Bus Lane as shown in the illustration (NYCDOT Improvement)
- Install new pedestrian refuge islands (NYCDOT Improvement)
- Install new bike lanes along with buffer and parking lanes (NYCDOT Improvement)

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

EXHIBIT 15 – 7<sup>TH</sup> AVENUE (FROM W 23<sup>RD</sup> STREET TO W 32<sup>ND</sup> STREET)**LEGENDS:**

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	PROPOSED DAYLIGHTING
PROPOSED NEW PED RAMP	EXISTING BUS STOP	PROPOSED PEDESTRIAN SIGNAL HEAD	EXISTING CATCH BASIN
REPLACE EXISTING PED RAMP	PROPOSED BUS STOP		PROPOSED CATCH BASIN
	EXISTING SUBWAY STOP		PROPOSED TRAFFIC SIGN

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new “Yield to Pedestrian” signs at the intersections shown in the illustration
- Install neckdowns or curb extensions
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersection of 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street (for all four crosswalks)

**Pedestrian concerns in this area:**

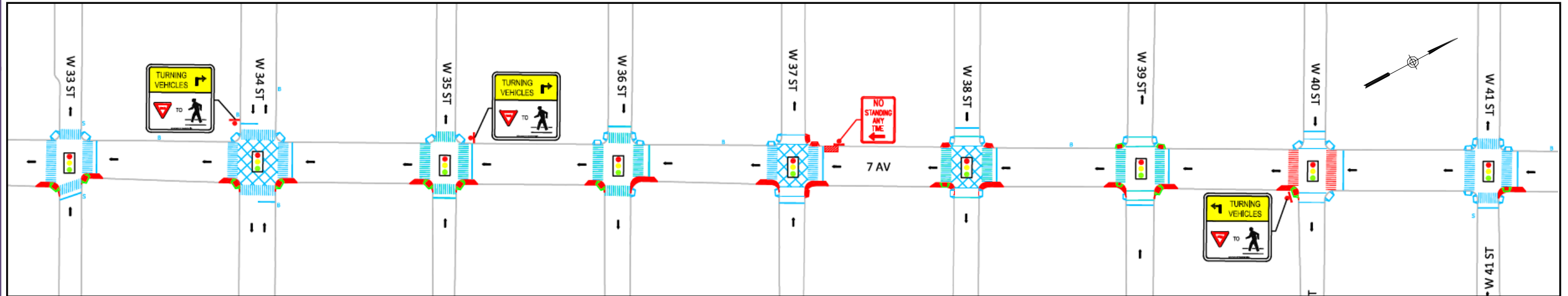
- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)





























**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

**Traffic Analysis**

- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):  
- 7<sup>th</sup> Avenue and W 31<sup>st</sup> Street

EXHIBIT 16 – 7<sup>TH</sup> AVENUE (FROM W 33<sup>RD</sup> STREET TO W 41<sup>ST</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		EXISTING SUBWAY STOP				PROPOSED CATCH BASIN
							PROPOSED TRAFFIC SIGN

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new high visibility crosswalks as shown in the illustration
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Install neckdowns or curb extensions
- Remove the first parking space along the west side of 7<sup>th</sup> Avenue at W 37<sup>th</sup> Street in advance of the north crosswalk

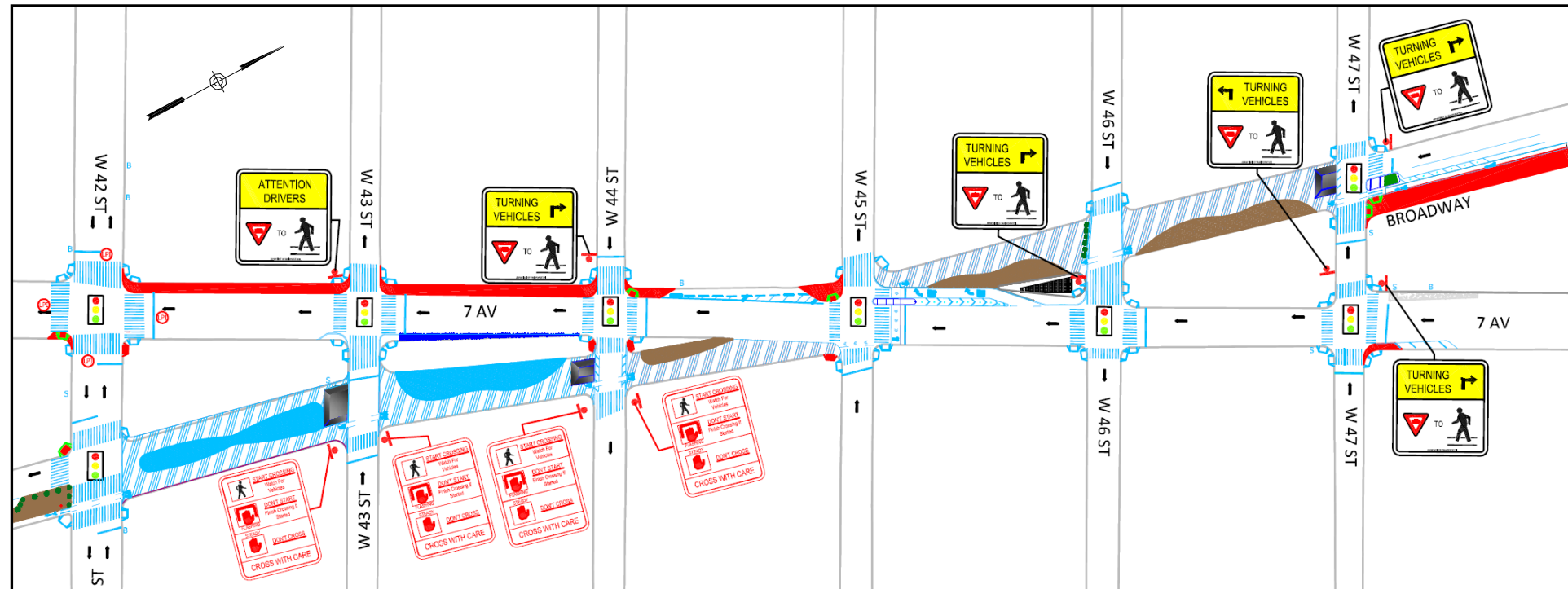
**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D



EXHIBIT 17 – 7<sup>TH</sup> AVENUE (FROM W 42<sup>ND</sup> STREET TO W 47<sup>TH</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

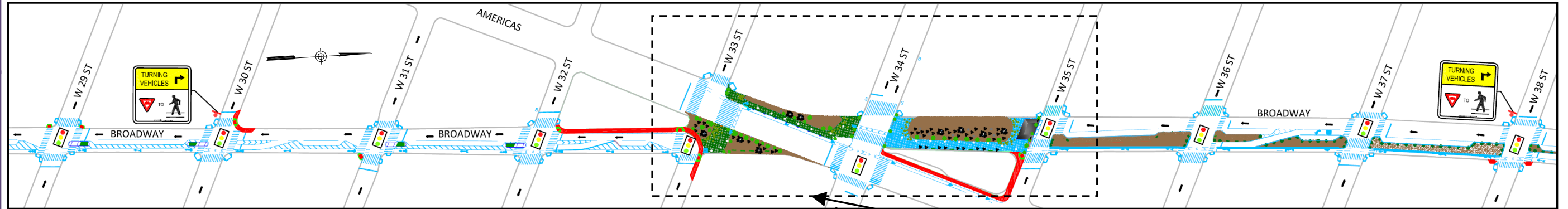
- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D






























**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Install neckdowns or curb extensions
- Consider the installation of a Leading Pedestrian Interval (LPI) at the intersection of 7<sup>th</sup> Avenue and W 42<sup>nd</sup> Street (for all four crosswalks)

**Traffic Analysis**

- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):
  - 7<sup>th</sup> Avenue and W 42<sup>nd</sup> Street
  - 7<sup>th</sup> Avenue and W 47<sup>th</sup> Street

EXHIBIT 18 – BROADWAY (FROM W 29<sup>TH</sup> STREET TO W 38<sup>TH</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

BROADWAY CLOSURE TO VEHICULAR TRAFFIC  
FROM W 33<sup>RD</sup> STREET TO W 35<sup>TH</sup> STREET  
IMPLEMENTED BY NYCDOT IN 2009

***Recommended improvements include:***

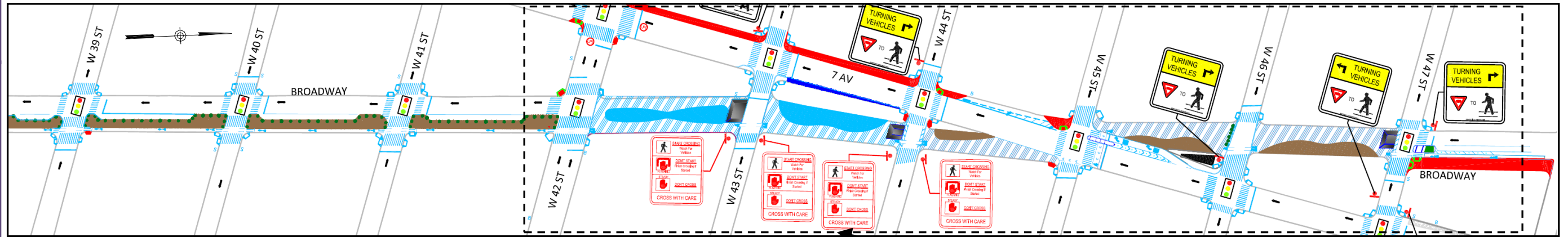
- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new "Yield to Pedestrian" signs at the intersections shown in the illustration
- Install neckdowns or curb extensions

***Pedestrian concerns in this area:***

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

***Additional Information***

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

EXHIBIT 19 – BROADWAY (FROM W 39<sup>TH</sup> STREET TO W 47<sup>TH</sup> STREET)**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN

**Pedestrian concerns in this area:**

- Non-standard pedestrian ramps
- Turning vehicles not yielding to pedestrians
- Signal timing (insufficient crossing time)

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

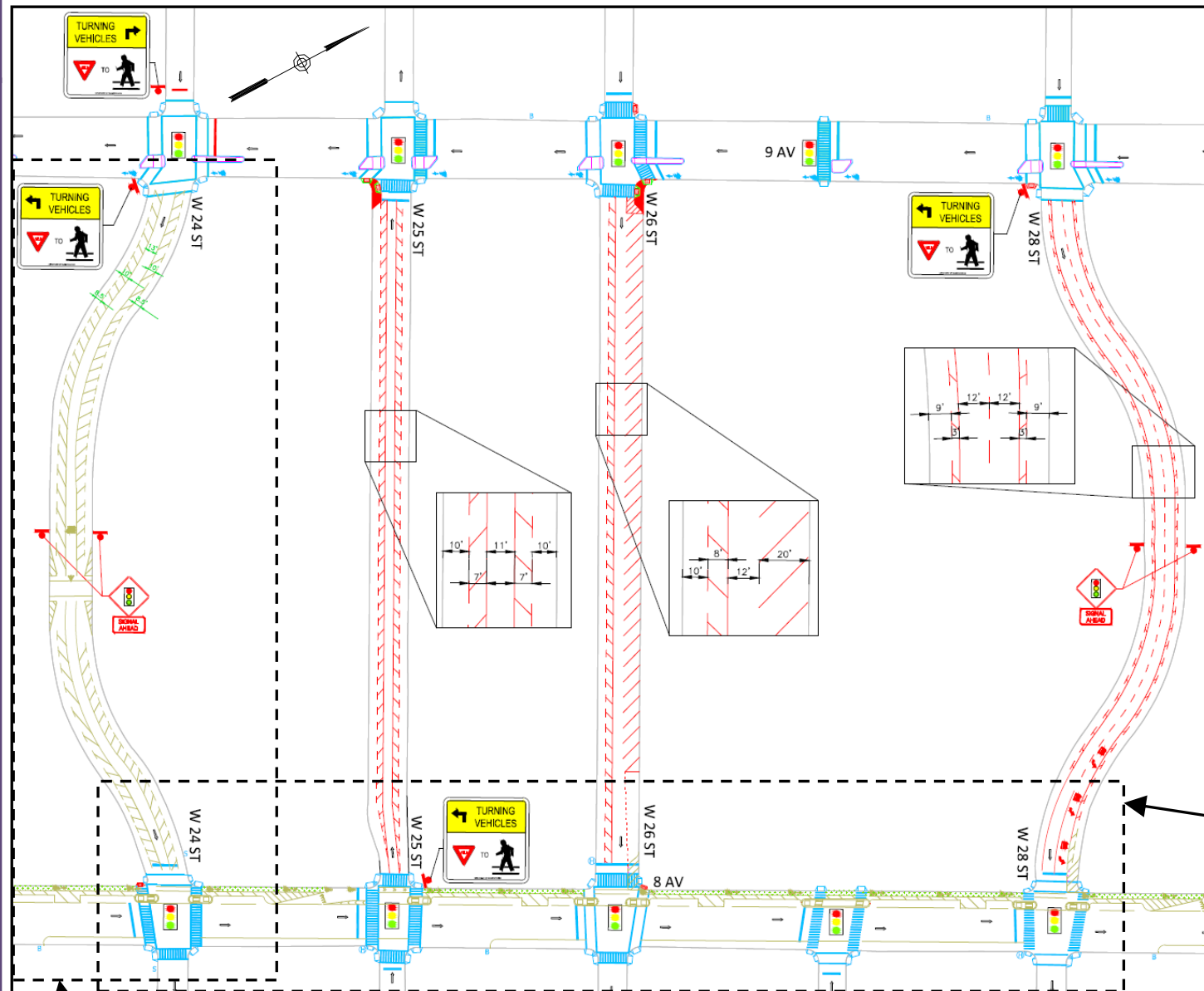
BROADWAY CLOSURE TO VEHICULAR TRAFFIC  
FROM W 42<sup>ND</sup> STREET TO W 47<sup>TH</sup> STREET  
IMPLEMENTED BY NYCDOT IN 2009

**Recommended improvements include:**

- Time all signals for seniors and where feasible, the crossing time will be extended
- Install new pedestrian ramps. Where proposed, align the ramps with the crosswalks
- Install new “Yield to Pedestrian” signs at the intersections shown in the illustration
- Install neckdowns or curb extensions
- Install new “Cross with Care” signs at the intersections shown in the illustration

**Traffic Analysis**

- Turning movement and pedestrian counts were analyzed at (see Appendices B and C):  
- Broadway and W 42<sup>nd</sup> Street

EXHIBIT 20 – W 24<sup>TH</sup> ST, W 25<sup>TH</sup> ST, W 26<sup>TH</sup> ST AND W 28<sup>TH</sup> ST (FROM 8<sup>TH</sup> AVE TO 9<sup>TH</sup> AVE)**Recommended improvements include:**

- Reconfigure the roadway geometry for W 24<sup>th</sup> Street by providing 8.5-foot parking lanes on both sides of the street and a 10-foot buffer between the parking lane and the moving lane on both sides of the roadway (NYCDOT Improvement)
- Reconfigure the roadway geometry for W 25<sup>th</sup> Street by providing 10-foot parking lanes on both sides of the street and a 7-foot buffer between the parking lane and the moving lane on both sides of the roadway
- Reconfigure the roadway geometry for W 26<sup>th</sup> Street by providing a 10-foot parking lane on the south side and an 8-foot buffer between the parking lane and the moving lane. Provide back-in 45-degree angle parking on the north side of W 26<sup>th</sup> Street. Install a left turn bay at the intersection of 8<sup>th</sup> Avenue and W 26<sup>th</sup> Street
- Reconfigure the roadway geometry for W 28<sup>th</sup> Street by providing 9-foot parking lanes on both sides of the street and a 3-foot buffer between the parking lane and the moving lane on both sides of the roadway. Install new lane lines on the roadway to delineate two 12-foot moving lanes. The left moving lane will become a left turn only lane as it intersects 8<sup>th</sup> Avenue.
- Install new 'Signal Ahead' signs on W 28<sup>th</sup> Street facing eastbound traffic

**Additional Information**

- This study area was visited on January 26<sup>th</sup> and 27<sup>th</sup>, February 5<sup>th</sup> and 9<sup>th</sup>, July 27<sup>th</sup> and September 10<sup>th</sup>, 2010.
- Parking regulations for the project area have been collected and are shown in Appendix D

BIKE LANE, LEFT TURN BAY, BUFFER AND MEDIAN ISLAND IMPROVEMENTS UNDER 8<sup>TH</sup> AVENUE IMPROVEMENT PROJECT BY NYCDOT (SHOWN IN ■ COLOR)

PARKING LANE, BUFFER AND OTHER IMPROVEMENTS UNDER 24<sup>TH</sup> STREET IMPROVEMENT PROJECT BY NYCDOT (SHOWN IN ■ COLOR)

**LEGENDS:**

	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		PROPOSED DAYLIGHTING
	PROPOSED NEW PED RAMP		EXISTING BUS STOP		PROPOSED PEDESTRIAN SIGNAL HEAD		EXISTING CATCH BASIN
	REPLACE EXISTING PED RAMP		PROPOSED BUS STOP				PROPOSED CATCH BASIN
			EXISTING SUBWAY STOP				PROPOSED TRAFFIC SIGN



# Safe Streets for Seniors

## West Midtown, Manhattan

### APPENDIX

September 2012



Janette Sadik-Khan, Commissioner





## CONTENTS

<b>APPENDIX – A .....</b>	<b>3</b>
AUTOMATIC TRAFFIC RECORDER COUNTS (ATR).....	3
<b>APPENDIX – B .....</b>	<b>5</b>
TURNING MOVEMENT COUNTS (TMC).....	5
<b>APPENDIX – C .....</b>	<b>19</b>
PEDESTRIAN COUNTS .....	19
<b>APPENDIX – D .....</b>	<b>24</b>
PARKING REGULATIONS .....	24
<b>APPENDIX – E.....</b>	<b>27</b>
ADDITIONAL TRAFFIC DATA & ANALYSIS .....	27
<b>APPENDIX – F.....</b>	<b>35</b>
NYCDOT IMPROVEMENTS .....	35

# **APPENDIX – A**

## **AUTOMATIC TRAFFIC RECORDER COUNTS (ATR)**

Twenty-four hour Automatic Traffic Recorder (ATR) counts were collected in December of 2008, and March and April of 2009. The results are shown in Table 1. Detailed ATR data are presented in the Technical Supplement.

<b>TABLE 1: EXISTING ATR TRAFFIC VOLUMES</b>		
<b>Locations</b>	<b>Direction</b>	<b>ADT* (veh/day)</b>
8 <sup>th</sup> Avenue between W 40 <sup>th</sup> Street and W 41 <sup>st</sup> Street	Northbound	24328
8 <sup>th</sup> Avenue between W 41 <sup>st</sup> Street and W 42 <sup>nd</sup> Street	Northbound	23684
W 42 <sup>nd</sup> Street at 8 <sup>th</sup> Avenue	Eastbound	12816
	Westbound	8318
8 <sup>th</sup> Avenue between W 47 <sup>th</sup> Street and W 48 <sup>th</sup> Street	Northbound	36334
8 <sup>th</sup> Avenue between W 51 <sup>st</sup> Street and W 52 <sup>nd</sup> Street	Northbound	33363
9 <sup>th</sup> Avenue between W 41 <sup>st</sup> Street and W 42 <sup>nd</sup> Street	Southbound	36945
9 <sup>th</sup> Avenue between W 42 <sup>nd</sup> Street and W 43 <sup>rd</sup> Street	Southbound	32093
W 42 <sup>nd</sup> Street at 9 <sup>th</sup> Avenue	Eastbound	12447
	Westbound	8888
9 <sup>th</sup> Avenue between W 46 <sup>th</sup> Street and W 47 <sup>th</sup> Street	Southbound	35598
9 <sup>th</sup> Avenue between W 48 <sup>th</sup> Street and W 49 <sup>th</sup> Street	Southbound	35951

\*Note: ADT is Average Daily Traffic

## **APPENDIX – B**

### **TURNING MOVEMENT COUNTS (TMC)**

Turning Movement Counts (TMC's) in 15-minute increments were collected in November and December of 2008, March and April of 2009, and March of 2010 during the morning (7:00 am to 9:00 am), mid-day (12:00 pm to 2:00 pm) and evening (4:00 pm to 6:00 pm) peak periods. The results of the turning movement counts for all three peak hours are shown in Table 2. Detailed TMC data are presented in the Technical Supplement.

TABLE 2: TURNING MOVEMENT COUNTS														
Intersection	Time	Class	Northbound			Southbound			Eastbound			Westbound		
			L	T	R	L	T	R	L	T	R	L	T	R
9 <sup>th</sup> Avenue and W 33 <sup>rd</sup> Street	AM*	<b>Total</b>	-	-	-	-	<b>1465</b>	<b>131</b>	-	-	-	<b>51</b>	<b>146</b>	-
	MD*	<b>Total</b>	-	-	-	-	<b>1459</b>	<b>76</b>	-	-	-	<b>76</b>	<b>202</b>	-
	PM*	<b>Total</b>	-	-	-	-	<b>1263</b>	<b>258</b>	-	-	-	<b>131</b>	<b>313</b>	-
9 <sup>th</sup> Avenue and W 41 <sup>st</sup> Street	AM	Auto	-	-	-	-	1173	230	-	-	-	48	35	-
		Truck	-	-	-	-	130	56	-	-	-	11	8	-
		Bus	-	-	-	-	50	88	-	-	-	23	44	-
		<b>Total</b>	-	-	-	-	<b>1353</b>	<b>374</b>	-	-	-	<b>82</b>	<b>87</b>	-
	MD	Auto	-	-	-	-	1166	331	-	-	-	64	59	-
		Truck	-	-	-	-	90	56	-	-	-	8	13	-
		Bus	-	-	-	-	34	27	-	-	-	15	31	-
		<b>Total</b>	-	-	-	-	<b>1290</b>	<b>414</b>	-	-	-	<b>87</b>	<b>103</b>	-
	PM	Auto	-	-	-	-	655	182	-	-	-	52	46	-
		Truck	-	-	-	-	26	20	-	-	-	9	7	-
		Bus	-	-	-	-	75	85	-	-	-	7	89	-
		<b>Total</b>	-	-	-	-	<b>756</b>	<b>287</b>	-	-	-	<b>68</b>	<b>142</b>	-
9 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM	Auto	-	-	-	120	1053	43	-	366	50	72	155	-
		Truck	-	-	-	5	145	5	-	41	4	13	9	-
		Bus	-	-	-	16	75	6	-	98	26	21	30	-
		<b>Total</b>	-	-	-	<b>141</b>	<b>1273</b>	<b>54</b>	-	<b>505</b>	<b>80</b>	<b>106</b>	<b>194</b>	-
	MD	Auto	-	-	-	129	1190	72	-	462	107	133	244	-
		Truck	-	-	-	12	164	11	-	32	1	18	25	-
		Bus	-	-	-	11	46	0	-	44	7	7	15	-
		<b>Total</b>	-	-	-	<b>152</b>	<b>1400</b>	<b>83</b>	-	<b>538</b>	<b>115</b>	<b>158</b>	<b>284</b>	-
	PM	Auto	-	-	-	91	1068	72	-	243	52	98	233	-
		Truck	-	-	-	2	61	7	-	10	2	3	10	-
		Bus	-	-	-	15	123	2	-	45	18	60	14	-
		<b>Total</b>	-	-	-	<b>108</b>	<b>1252</b>	<b>81</b>	-	<b>298</b>	<b>72</b>	<b>161</b>	<b>257</b>	-



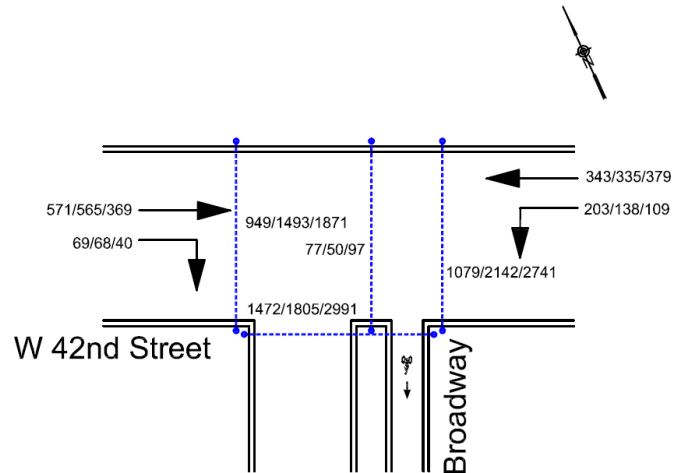
Intersection	Time	Class	Northbound			Southbound			Eastbound			Westbound		
			L	T	R	L	T	R	L	T	R	L	T	R
9 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	Auto	-	-	-	-	1138	84	-	-	-	246	129	-
		Truck	-	-	-	-	179	13	-	-	-	31	12	-
		Bus	-	-	-	-	58	4	-	-	-	8	3	-
		<b>Total</b>	-	-	-	-	<b>1375</b>	<b>101</b>	-	-	-	<b>285</b>	<b>144</b>	-
	MD	Auto	-	-	-	-	1304	87	-	-	-	175	130	-
		Truck	-	-	-	-	110	11	-	-	-	26	9	-
		Bus	-	-	-	-	28	0	-	-	-	5	1	-
		<b>Total</b>	-	-	-	-	<b>1442</b>	<b>98</b>	-	-	-	<b>206</b>	<b>140</b>	-
	PM	Auto	-	-	-	-	1135	81	-	-	-	136	203	-
		Truck	-	-	-	-	51	5	-	-	-	6	4	-
		Bus	-	-	-	-	49	0	-	-	-	7	4	-
		<b>Total</b>	-	-	-	-	<b>1235</b>	<b>86</b>	-	-	-	<b>149</b>	<b>211</b>	-
9 <sup>th</sup> Avenue and W 52 <sup>nd</sup> Street	AM	Auto	-	-	-	93	1431	-	276	88	-	-	-	-
		Truck	-	-	-	8	176	-	30	3	-	-	-	-
		Bus	-	-	-	0	71	-	0	0	-	-	-	-
		<b>Total</b>	-	-	-	<b>101</b>	<b>1678</b>	-	<b>306</b>	<b>91</b>	-	-	-	-
	MD	Auto	-	-	-	91	1403	-	179	88	-	-	-	-
		Truck	-	-	-	15	165	-	9	5	-	-	-	-
		Bus	-	-	-	0	15	-	1	0	-	-	-	-
		<b>Total</b>	-	-	-	<b>106</b>	<b>1583</b>	-	<b>189</b>	<b>93</b>	-	-	-	-
	PM	Auto	-	-	-	85	1496	-	232	87	-	-	-	-
		Truck	-	-	-	2	68	-	6	0	-	-	-	-
		Bus	-	-	-	1	16	-	1	0	-	-	-	-
		<b>Total</b>	-	-	-	<b>88</b>	<b>1580</b>	-	<b>239</b>	<b>87</b>	-	-	-	-
8 <sup>th</sup> Avenue and W 31 <sup>st</sup> Street	AM*	<b>Total</b>	<b>177</b>	<b>1308</b>	-	-	-	-	-	-	-	-	<b>278</b>	<b>182</b>
	MD*	<b>Total</b>	<b>167</b>	<b>1298</b>	-	-	-	-	-	-	-	-	<b>268</b>	<b>253</b>
	PM*	<b>Total</b>	<b>293</b>	<b>1384</b>	-	-	-	-	-	-	-	-	<b>338</b>	<b>146</b>
8 <sup>th</sup> Avenue and W 33 <sup>rd</sup> Street	AM*	<b>Total</b>	<b>126</b>	<b>1364</b>	-	-	-	-	-	-	-	-	<b>71</b>	<b>76</b>
	MD*	<b>Total</b>	<b>141</b>	<b>1409</b>	-	-	-	-	-	-	-	-	<b>136</b>	<b>91</b>
	PM*	<b>Total</b>	<b>227</b>	<b>1303</b>	-	-	-	-	-	-	-	-	<b>217</b>	<b>91</b>

Intersection	Time	Class	Northbound			Southbound			Eastbound			Westbound		
			L	T	R	L	T	R	L	T	R	L	T	R
8 <sup>th</sup> Avenue and W 34 <sup>th</sup> Street	AM*	<b>Total</b>	61	1288	91	-	-	-	-	379	-	-	414	182
	MD*	<b>Total</b>	86	1379	35	-	-	-	-	348	-	-	475	177
	PM*	<b>Total</b>	91	1278	25	-	-	-	-	354	-	-	540	197
8 <sup>th</sup> Avenue and W 40 <sup>th</sup> Street	AM*	<b>Total</b>	-	1285	220	-	-	-	5	465	-	-	-	-
	MD*	<b>Total</b>	-	1330	145	-	-	-	150	390	-	-	-	-
	PM*	<b>Total</b>	-	1285	150	-	-	-	40	235	-	-	-	-
8 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM*	<b>Total</b>	30	1358	91	-	-	-	187	364	-	-	313	45
	MD*	<b>Total</b>	61	1192	71	-	-	-	146	348	-	-	414	35
	PM*	<b>Total</b>	61	1111	61	-	-	-	131	333	-	-	338	45
8 <sup>th</sup> Avenue and W 43 <sup>rd</sup> Street	AM	Auto	85	1261	-	-	-	-	-	-	-	-	90	141
		Truck	8	94	-	-	-	-	-	-	-	-	12	31
		Bus	69	75	-	-	-	-	-	-	-	-	0	1
		<b>Total</b>	162	1430	-	-	-	-	-	-	-	-	102	173
	MD	Auto	65	1237	-	-	-	-	-	-	-	-	119	114
		Truck	6	74	-	-	-	-	-	-	-	-	11	12
		Bus	38	46	-	-	-	-	-	-	-	-	10	2
		<b>Total</b>	109	1357	-	-	-	-	-	-	-	-	140	128
	PM	Auto	67	1185	-	-	-	-	-	-	-	-	177	163
		Truck	1	25	-	-	-	-	-	-	-	-	11	4
		Bus	52	47	-	-	-	-	-	-	-	-	4	1
		<b>Total</b>	120	1257	-	-	-	-	-	-	-	-	192	168
8 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	Auto	53	1262	-	-	-	-	-	-	-	-	273	201
		Truck	4	116	-	-	-	-	-	-	-	-	25	15
		Bus	1	63	-	-	-	-	-	-	-	-	5	4
		<b>Total</b>	58	1441	-	-	-	-	-	-	-	-	303	220
	MD	Auto	106	1331	-	-	-	-	-	-	-	-	194	113
		Truck	7	76	-	-	-	-	-	-	-	-	15	13
		Bus	0	56	-	-	-	-	-	-	-	-	4	5
		<b>Total</b>	113	1463	-	-	-	-	-	-	-	-	213	131

Intersection	Time	Class	Northbound			Southbound			Eastbound			Westbound		
			L	T	R	L	T	R	L	T	R	L	T	R
8 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	PM	Auto	101	1219	-	-	-	-	-	-	-	-	257	182
		Truck	0	20	-	-	-	-	-	-	-	-	7	5
		Bus	2	47	-	-	-	-	-	-	-	-	12	4
		<b>Total</b>	<b>103</b>	<b>1286</b>	-	-	-	-	-	-	-	-	<b>276</b>	<b>191</b>
Broadway and W 42 <sup>nd</sup> Street	AM	Auto	-	-	-	-	-	-	-	458	61	198	261	-
		Truck	-	-	-	-	-	-	-	25	8	5	16	-
		Bus	-	-	-	-	-	-	-	88	0	0	66	-
		<b>Total</b>	-	-	-	-	-	-	-	<b>571</b>	<b>69</b>	<b>203</b>	<b>343</b>	-
	MD	Auto	-	-	-	-	-	-	-	497	60	134	269	-
		Truck	-	-	-	-	-	-	-	38	8	4	35	-
		Bus	-	-	-	-	-	-	-	30	0	0	31	-
		<b>Total</b>	-	-	-	-	-	-	-	<b>565</b>	<b>68</b>	<b>138</b>	<b>335</b>	-
	PM	Auto	-	-	-	-	-	-	-	319	39	106	281	-
		Truck	-	-	-	-	-	-	-	10	1	2	14	-
		Bus	-	-	-	-	-	-	-	40	0	1	84	-
		<b>Total</b>	-	-	-	-	-	-	-	<b>369</b>	<b>40</b>	<b>109</b>	<b>379</b>	-
7 <sup>th</sup> Avenue and W 31 <sup>st</sup> Street	AM*	<b>Total</b>	-	-	-	-	<b>1394</b>	<b>91</b>	-	-	-	<b>96</b>	<b>369</b>	-
	MD*	<b>Total</b>	-	-	-	-	<b>1177</b>	<b>192</b>	-	-	-	<b>162</b>	<b>328</b>	-
	PM*	<b>Total</b>	-	-	-	-	<b>1116</b>	<b>247</b>	-	-	-	<b>152</b>	<b>237</b>	-
7 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM	<b>Total</b>	-	-	-	<b>10</b>	<b>1232</b>	<b>45</b>	-	<b>354</b>	<b>101</b>	<b>10</b>	<b>313</b>	-
	MD	<b>Total</b>	-	-	-	<b>20</b>	<b>1066</b>	<b>51</b>	-	<b>263</b>	<b>157</b>	<b>10</b>	<b>399</b>	-
	PM	<b>Total</b>	-	-	-	<b>10</b>	<b>1086</b>	<b>56</b>	-	<b>313</b>	<b>81</b>	<b>20</b>	<b>328</b>	-
7 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	Auto	-	-	-	-	1056	62	-	-	-	125	198	-
		Truck	-	-	-	-	82	5	-	-	-	19	21	-
		Bus	-	-	-	-	63	0	-	-	-	5	6	-
		<b>Total</b>	-	-	-	-	<b>1201</b>	<b>67</b>	-	-	-	<b>149</b>	<b>225</b>	-
	MD	Auto	-	-	-	-	1150	60	-	-	-	57	74	-
		Truck	-	-	-	-	47	7	-	-	-	7	11	-
		Bus	-	-	-	-	68	0	-	-	-	2	5	-
		<b>Total</b>	-	-	-	-	<b>1265</b>	<b>67</b>	-	-	-	<b>66</b>	<b>90</b>	-

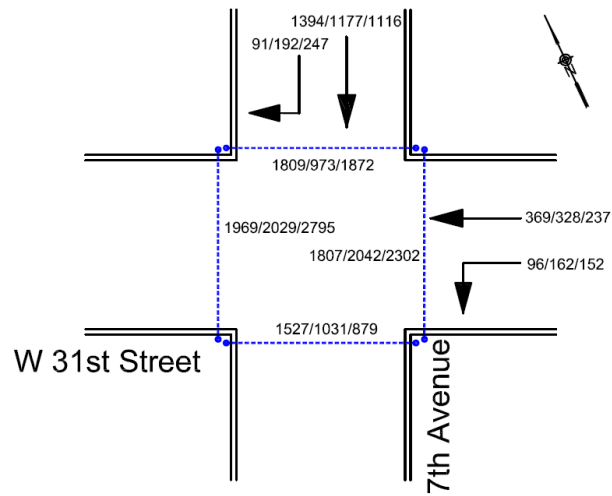
Intersection	Time	Class	Northbound			Southbound			Eastbound			Westbound		
			L	T	R	L	T	R	L	T	R	L	T	R
7 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	PM	Auto	-	-	-	-	848	10	-	-	-	58	235	-
		Truck	-	-	-	-	40	1	-	-	-	3	8	-
		Bus	-	-	-	-	113	0	-	-	-	1	3	-
		<b>Total</b>	-	-	-	-	<b>1001</b>	<b>11</b>	-	-	-	<b>62</b>	<b>246</b>	-

\*Note: Classification counts not available, shows cumulative of Auto, Truck and Bus.



### Intersection of Broadway and West 42nd Street

Note: Counts conducted on Tuesday, 03/16/2010.



### Intersection of 7th Avenue and West 31st Street

Note: Pedestrian counts conducted on Wednesday, 03/17/2010.

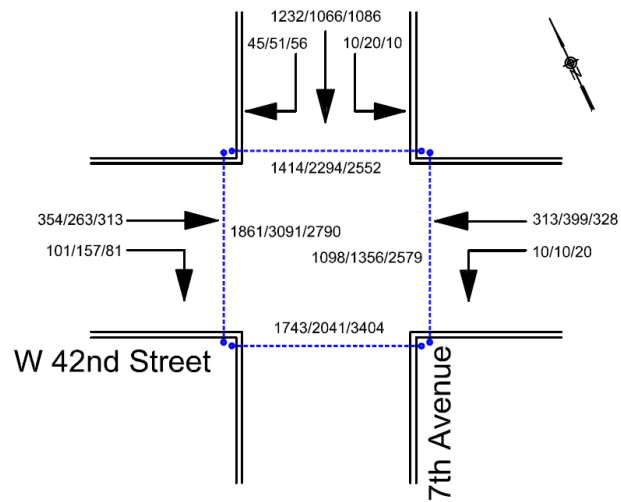
Note: Turning Movement counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.

**LEGENDS:**

- 161/146/224 AM/MD/PM
- 25/15/53 Conflicting Pedestrians
- 36/36/66 Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS

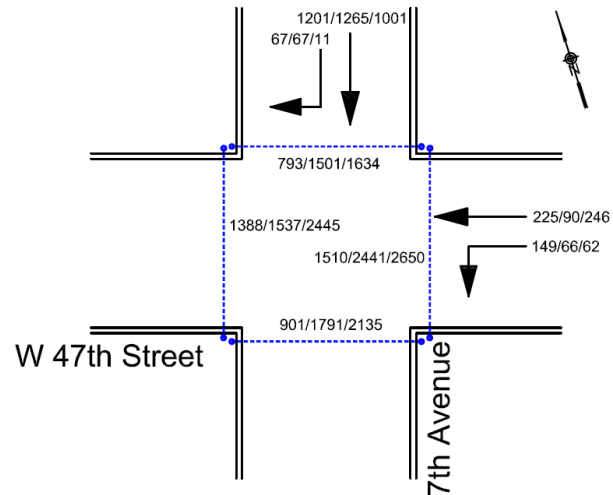




### Intersection of 7th Avenue and West 42nd Street

Note: Pedestrian counts conducted on Tuesday, 03/16/2010.

Note: Turning Movement counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.



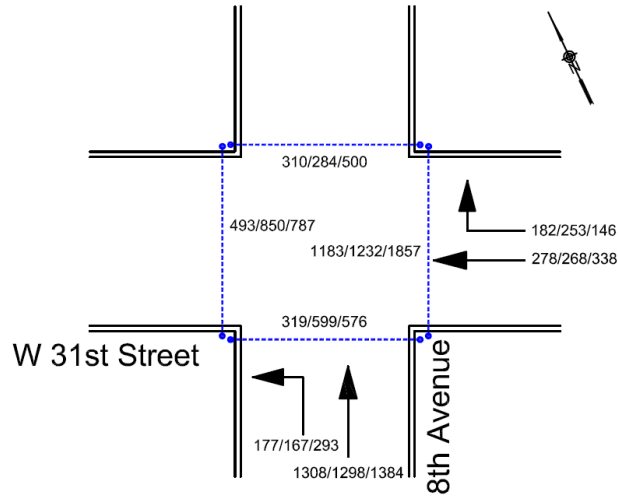
### Intersection of 7th Avenue and West 47th Street

Note: Counts conducted on Tuesday, 03/16/2010.

**LEGENDS:**

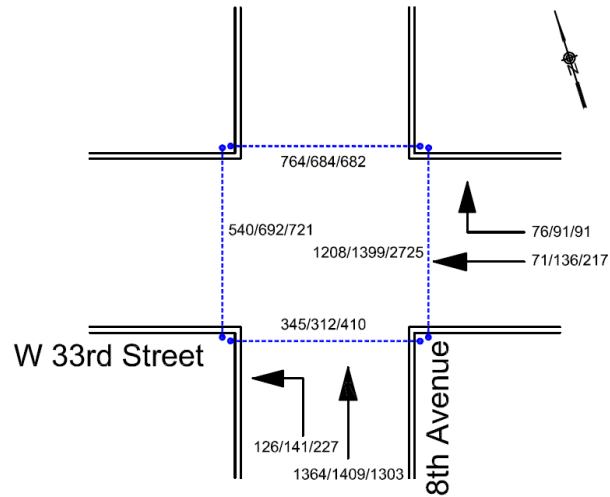
- 161/146/224 AM/MD/PM
- 25/15/53 Conflicting Pedestrians
- 36/36/66 Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS



### Intersection of 8th Avenue and West 31st Street

Note: Counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.



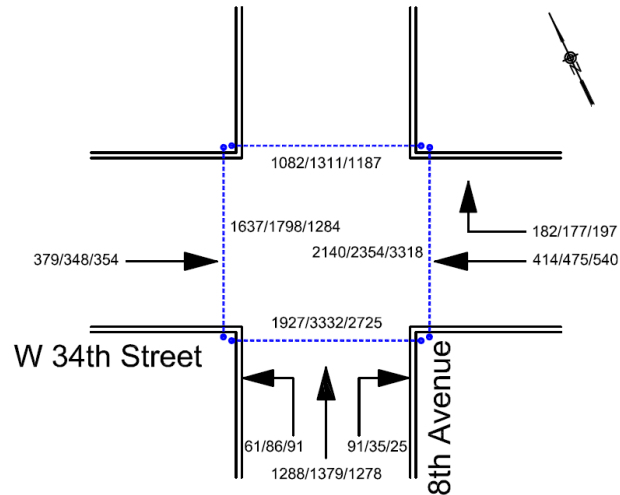
### Intersection of 8th Avenue and West 33rd Street

Note: Counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.

**LEGENDS:**

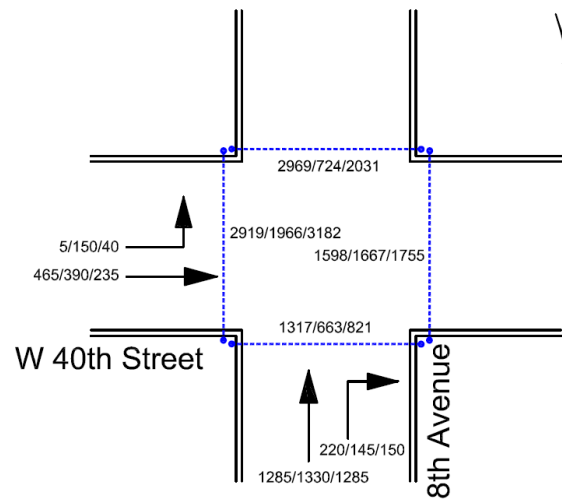
- 161/146/224 AM/MD/PM
- 25/15/53 Conflicting Pedestrians
- 36/36/66 Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS



### Intersection of 8th Avenue and West 34th Street

Note: Counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.



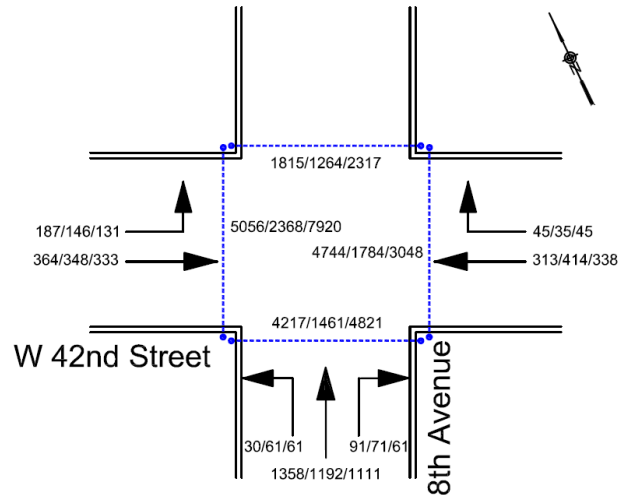
### Intersection of 8th Avenue and West 40th Street

Note: Pedestrian counts conducted on Wednesday, 03/17/2010.

Note: Turning Movement counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.

<b>LEGENDS:</b>	161/146/224	AM/MD/PM
	25/15/53	Conflicting Pedestrians
	36/36/66	Turning Movement

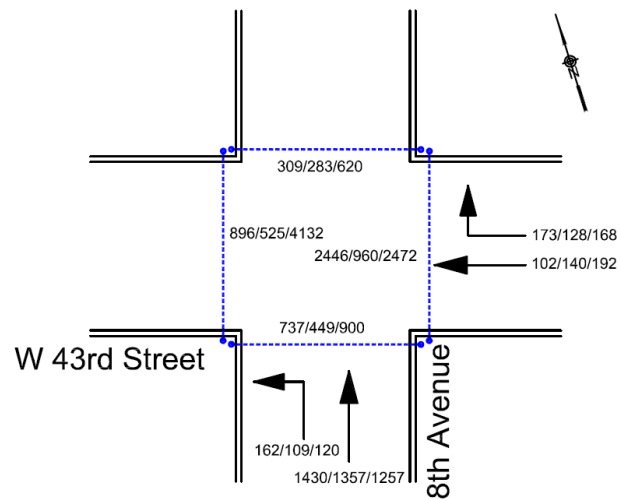
APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS



### Intersection of 8th Avenue and West 42nd Street

Note: Pedestrian counts conducted on Wednesday, 04/22/2009.

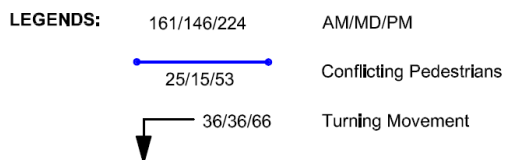
Note: Turning Movement counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.



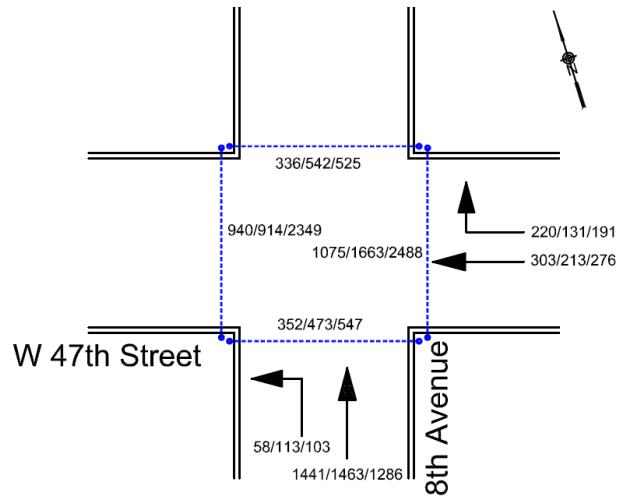
### Intersection of 8th Avenue and West 43rd Street

Note: Pedestrian counts conducted on Wednesday, 04/22/2009.

Note: Turning Movement counts conducted on Tuesdays, 04/21/2009.

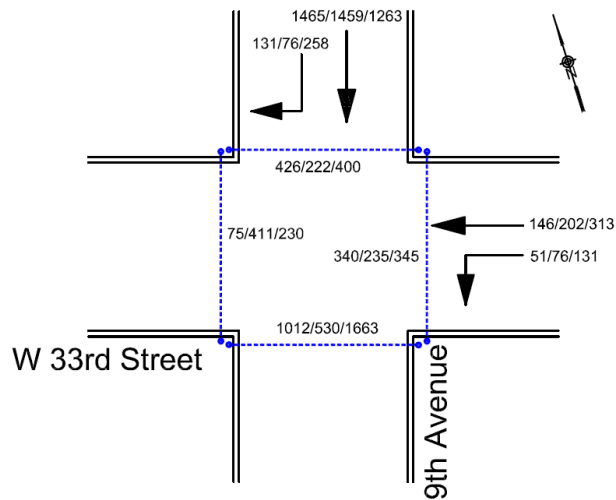


APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS



### Intersection of 8th Avenue and West 47th Street

Note: Counts conducted on Tuesday, 03/16/2010.



### Intersection of 9th Avenue and West 33rd Street

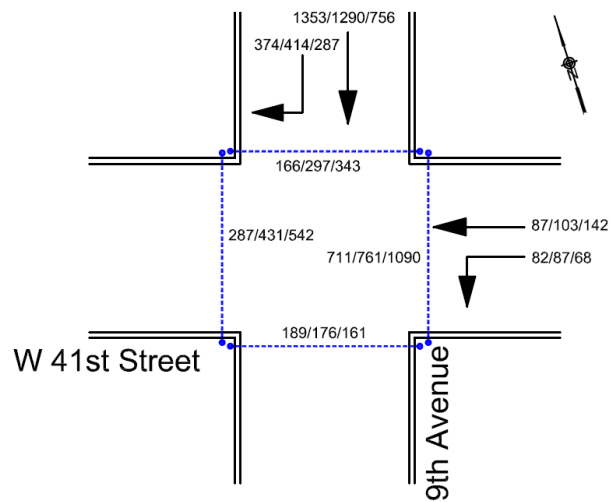
Note: Counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.

**LEGENDS:**

- 161/146/224 AM/MD/PM
- 25/15/53 Conflicting Pedestrians
- 36/36/66 Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS

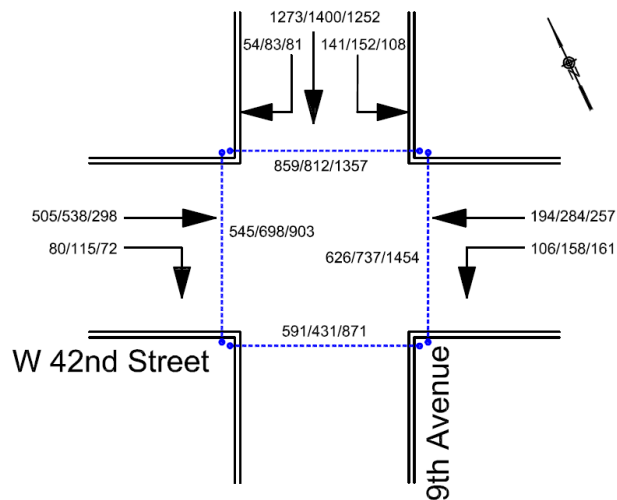




### Intersection of 9th Avenue and West 41st Street

Note: Pedestrian counts conducted on Wednesday, 04/22/2009.

Note: Turning Movement counts conducted on Wednesday, 03/18/2009 and Tuesdays, 04/21/2009.



### Intersection of 9th Avenue and West 42nd Street

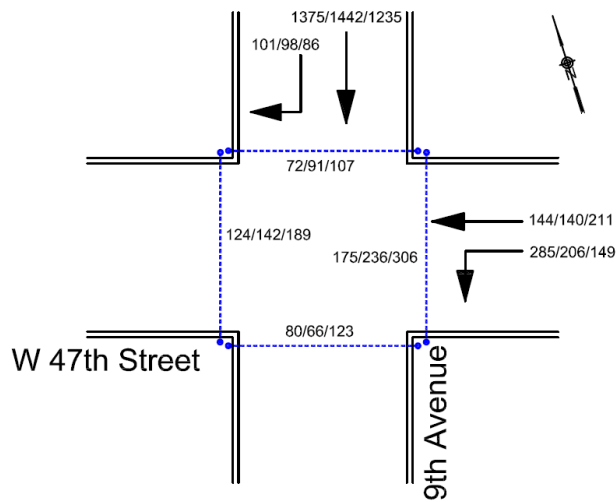
Note: Pedestrian counts conducted on Tuesday, 04/28/2009.

Note: Turning Movement counts taken from Western Rail Yard EIS and increased @ 0.5%/year for 2 years.

**LEGENDS:**

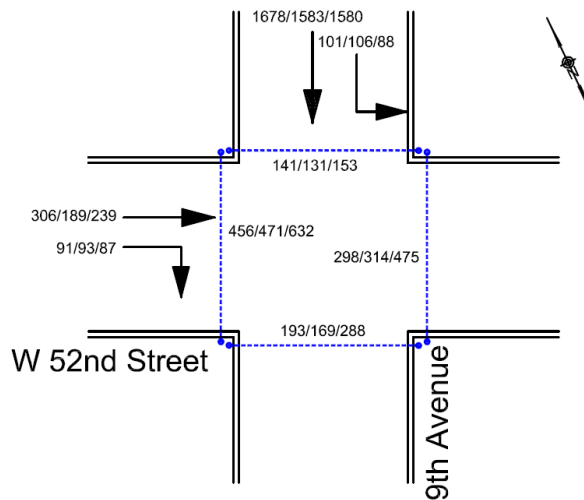
- 161/146/224 AM/MD/PM
- 25/15/53 Conflicting Pedestrians
- 36/36/66 Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS



### Intersection of 9th Avenue and West 47th Street

Note: Counts conducted on Tuesday, 03/16/2010.



### Intersection of 9th Avenue and West 52nd Street

Note: Pedestrian counts conducted on Tuesday, 04/28/2009.

Note: Turning Movement counts conducted on Tuesdays, 04/21/2009.

<b>LEGENDS:</b>	161/146/224	AM/MD/PM
	25/15/53	Conflicting Pedestrians
	36/36/66	Turning Movement

APPENDIX - B
WEST MIDTOWN, MANHATTAN
PEAK HOUR TRAFFIC COUNTS

## **APPENDIX – C**

### **PEDESTRIAN COUNTS**

Pedestrian counts in 15-minute increments were collected in November and December of 2008, March and April of 2009, and March of 2010 during the morning (7:00 am to 9:00 am), mid-day (12:00 pm to 2:00 pm) and evening (4:00 pm to 6:00 pm) peak periods. The results of the pedestrian counts for all three peak hours are shown in Table 3. Detailed pedestrian count data are presented in the Technical Supplement.

TABLE 3: PEDESTRIAN COUNTS						
Intersection	Time	Crosswalks (Legs)				Totals
		N	S	E	W	
9 <sup>th</sup> Avenue and W 33 <sup>rd</sup> Street	AM	426	1012	340	75	1853
	MD	222	530	235	411	1399
	PM	400	1663	345	230	2639
9 <sup>th</sup> Avenue and W 41 <sup>st</sup> Street	AM	166	189	711	287	1353
	MD	297	176	761	431	1665
	PM	343	161	1090	542	2136
9 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM	859	591	626	545	2621
	MD	812	431	737	698	2678
	PM	1357	871	1454	903	4585
9 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	72	80	175	124	1531
	MD	91	66	236	142	2092
	PM	107	123	306	189	2703
9 <sup>th</sup> Avenue and W 52 <sup>nd</sup> Street	AM	141	193	298	456	1088
	MD	131	169	314	471	1085
	PM	153	288	475	632	1548
8 <sup>th</sup> Avenue and W 31 <sup>st</sup> Street	AM	310	319	1183	493	2282
	MD	284	599	1232	850	2936
	PM	500	576	1857	787	3683
8 <sup>th</sup> Avenue and W 33 <sup>rd</sup> Street	AM	764	345	1208	540	2857
	MD	684	312	1399	692	3087
	PM	682	410	2725	721	4538
8 <sup>th</sup> Avenue and W 34 <sup>th</sup> Street	AM	1082	1927	2140	1637	6786
	MD	1311	3332	2354	1798	8795
	PM	1187	2725	3318	1284	8513

Intersection	Time	Crosswalks (Legs)				Totals
		N	S	E	W	
8 <sup>th</sup> Avenue and W 40 <sup>th</sup> Street	AM	2969	1317	1598	2919	<b>8803</b>
	MD	724	663	1667	1966	<b>5020</b>
	PM	2031	821	1755	3182	<b>7789</b>
8 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM	1815	4217	4744	5056	<b>15832</b>
	MD	1264	1461	1784	2368	<b>6877</b>
	PM	2317	4821	3048	7920	<b>18106</b>
8 <sup>th</sup> Avenue and W 43 <sup>rd</sup> Street	AM	309	737	2446	896	<b>4388</b>
	MD	283	449	960	525	<b>2217</b>
	PM	620	900	2472	4132	<b>8124</b>
8 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	336	352	1075	940	<b>2703</b>
	MD	542	473	1663	914	<b>3592</b>
	PM	525	547	2488	2349	<b>5909</b>
Broadway and W 42 <sup>nd</sup> Street	AM	77*	1472	1079	949	<b>3577</b>
	MD	50*	1805	2142	1493	<b>5490</b>
	PM	97*	2991	2741	1871	<b>7700</b>
7 <sup>th</sup> Avenue and W 31 <sup>st</sup> Street	AM	1809	1527	1807	1969	<b>7112</b>
	MD	973	1031	2042	2029	<b>6075</b>
	PM	1872	879	2302	2795	<b>7848</b>
7 <sup>th</sup> Avenue and W 42 <sup>nd</sup> Street	AM	1414	1743	1098	1861	<b>6116</b>
	MD	2294	2041	1356	3091	<b>8782</b>
	PM	2552	3404	2579	2790	<b>11325</b>
7 <sup>th</sup> Avenue and W 47 <sup>th</sup> Street	AM	793	901	1510	1388	<b>4592</b>
	MD	1501	1791	2441	1537	<b>7270</b>
	PM	1634	2135	2650	2445	<b>8864</b>

\*Note: These counts represent secondary East crosswalk counts, which is located at median between bike lane and parking lane.

**TABLE 4: PEDESTRIAN CROSSING INTERVAL AT SIGNALIZED INTERSECTIONS**

Intersection Name	Crossing Distance (Feet)	Pedestrian Interval Actual <sup>1</sup> (Seconds)	Ped. Interval Req'd (Seconds) <sup>1</sup>			Timing Adjustment? (Yes/No)
			Clearance Time <sup>3</sup> (A)	Walk Interval <sup>2</sup> (B)	Pedestrian Interval (A)+(B)	
9 <sup>th</sup> Avenue and West 33 <sup>rd</sup> Street						
Crossing 9 <sup>th</sup> Avenue	71	35	7	24	31	NO
Crossing West 33 <sup>rd</sup> Street	34	55	7	12	19	NO
9 <sup>th</sup> Avenue and West 41 <sup>st</sup> Street						
Crossing 9 <sup>th</sup> Avenue	70	40	7	24	31	NO
Crossing West 41 <sup>st</sup> Street	60	50	7	20	27	NO
9 <sup>th</sup> Avenue and West 42 <sup>nd</sup> Street						
Crossing 9 <sup>th</sup> Avenue	71	43	7	24	31	NO
Crossing West 42 <sup>nd</sup> Street	60	47	7	20	27	NO
9 <sup>th</sup> Avenue and West 47 <sup>th</sup> Street						
Crossing 9 <sup>th</sup> Avenue	70	35	7	24	31	NO
Crossing West 47 <sup>th</sup> Street	29	55	7	10	17	NO
9 <sup>th</sup> Avenue and West 52 <sup>nd</sup> Street						
Crossing 9 <sup>th</sup> Avenue	70	35	7	24	31	NO
Crossing West 52 <sup>nd</sup> Street	34	55	7	12	19	NO
8 <sup>th</sup> Avenue and West 31 <sup>st</sup> Street						
Crossing 8 <sup>th</sup> Avenue	70	45	7	24	31	NO
Crossing West 31 <sup>st</sup> Street	41	45	7	14	21	NO
8 <sup>th</sup> Avenue and West 33 <sup>rd</sup> Street						
Crossing 8 <sup>th</sup> Avenue	69	52	7	23	30	NO
Crossing West 33 <sup>rd</sup> Street	32	38	7	11	18	NO
8 <sup>th</sup> Avenue and West 34 <sup>th</sup> Street						
Crossing 8 <sup>th</sup> Avenue	69	52	7	23	30	NO
Crossing West 34 <sup>th</sup> Street	53	38	7	18	25	NO
8 <sup>th</sup> Avenue and West 40 <sup>th</sup> Street						
Crossing 8 <sup>th</sup> Avenue	70	48	7	24	31	NO
Crossing West 40 <sup>th</sup> Street	35	42	7	12	19	NO
8 <sup>th</sup> Avenue and West 42 <sup>nd</sup> Street						
Crossing 8 <sup>th</sup> Avenue	70	50	7	24	31	NO
Crossing West 42 <sup>nd</sup> Street	59	40	7	20	27	NO
8 <sup>th</sup> Avenue and West 43 <sup>rd</sup> Street						
Crossing 8 <sup>th</sup> Avenue	69	45/40	7	23	30	NO
Crossing West 43 <sup>rd</sup> Street	33	45/50	7	11	18	NO



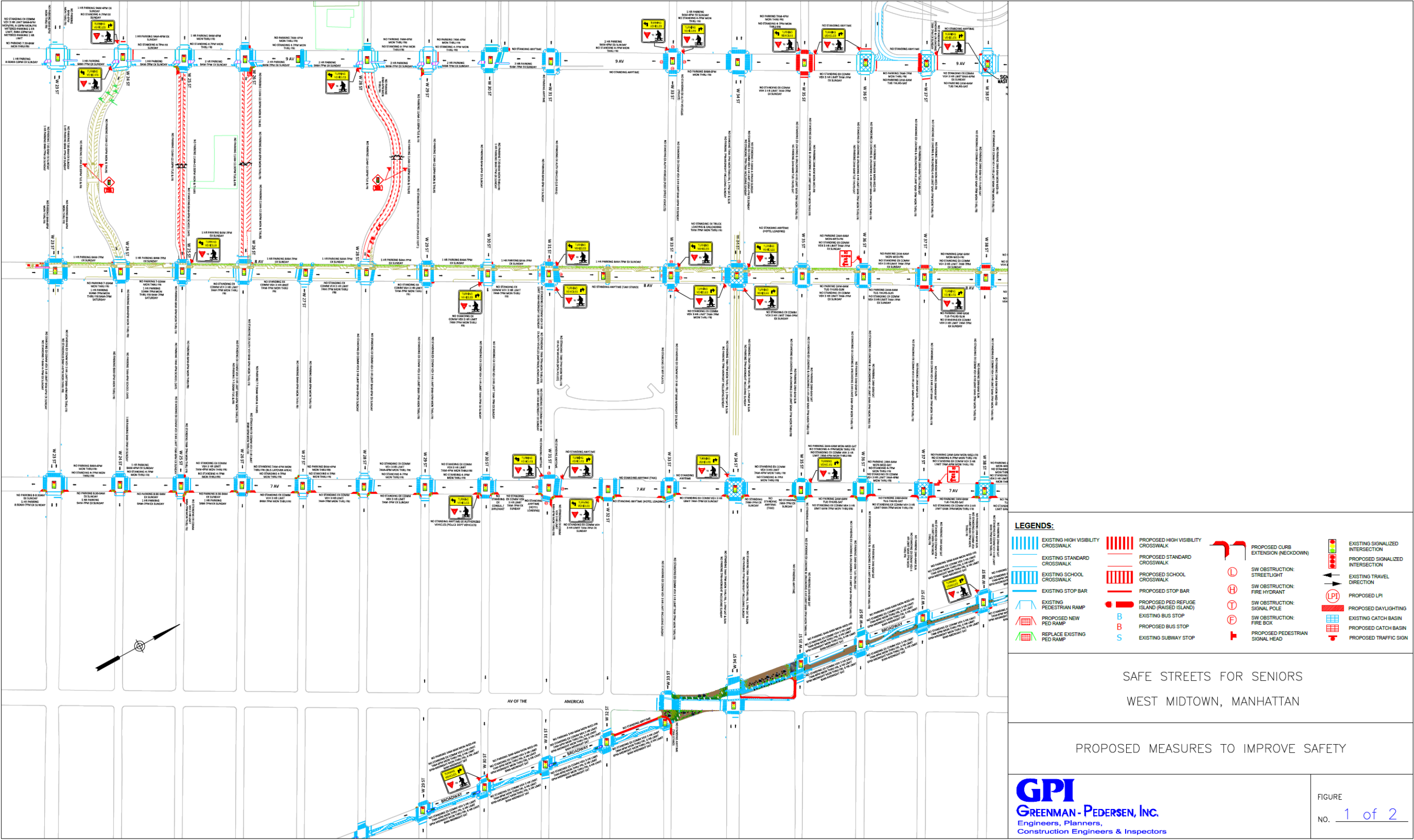
Intersection Name	Crossing Distance (Feet)	Pedestrian Interval Actual <sup>1</sup> (Seconds)	Ped. Interval Req'd (Seconds) <sup>1</sup>			Timing Adjustment? (Yes/No)
			Clearance Time <sup>3</sup> (A)	Walk Interval <sup>2</sup> (B)	Pedestrian Interval (A)+(B)	
8 <sup>th</sup> Avenue and West 47 <sup>th</sup> Street						
Crossing 8 <sup>th</sup> Avenue	69	45	7	23	30	NO
Crossing West 47 <sup>th</sup> Street	33	55	7	11	18	NO
Broadway and West 42 <sup>nd</sup> Street						
Crossing Broadway	59	33	7	20	27	NO
Crossing West 42 <sup>nd</sup> Street	54	33	7	18	25	NO
7 <sup>th</sup> Avenue and West 31 <sup>st</sup> Street						
Crossing 7 <sup>th</sup> Avenue	72	43	7	24	31	NO
Crossing West 31 <sup>st</sup> Street	34	47	7	11	18	NO
7 <sup>th</sup> Avenue and West 42 <sup>nd</sup> Street						
Crossing 7 <sup>th</sup> Avenue	59	39/45	7	20	27	NO
Crossing West 42 <sup>nd</sup> Street	54	51/45	7	18	25	NO
7 <sup>th</sup> Avenue and West 47 <sup>th</sup> Street						
Crossing 7 <sup>th</sup> Avenue	59	36	7	20	27	NO
Crossing West 47 <sup>th</sup> Street	29	54	7	10	17	NO

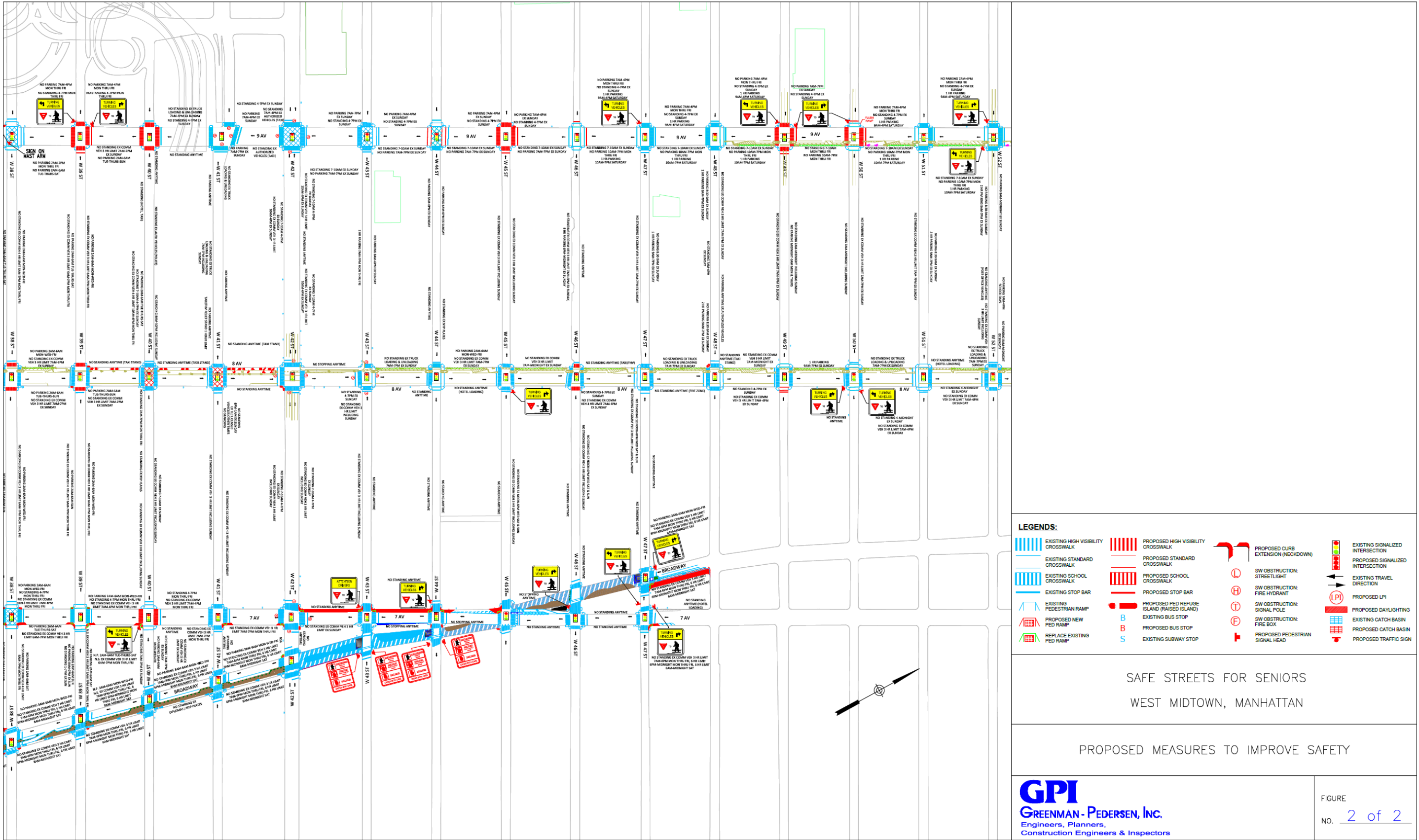
Notes:

1. The pedestrian interval consists of the pedestrian walk interval plus the pedestrian clearance time. Yellow change interval and red clearance interval are included in pedestrian clearance time.
2. The walk interval should be at least 7 seconds in length to provide pedestrians adequate opportunity to leave the curb or shoulder before the pedestrian clearance time begins.
3. A rate of 3 ft/sec was utilized as the senior pedestrian walking rate to evaluate pedestrian clearance time.

## **APPENDIX – D**

### **PARKING REGULATIONS**





# **APPENDIX – E**

## **ADDITIONAL TRAFFIC DATA & ANALYSIS**



## TRAVEL SPEED ANALYSIS





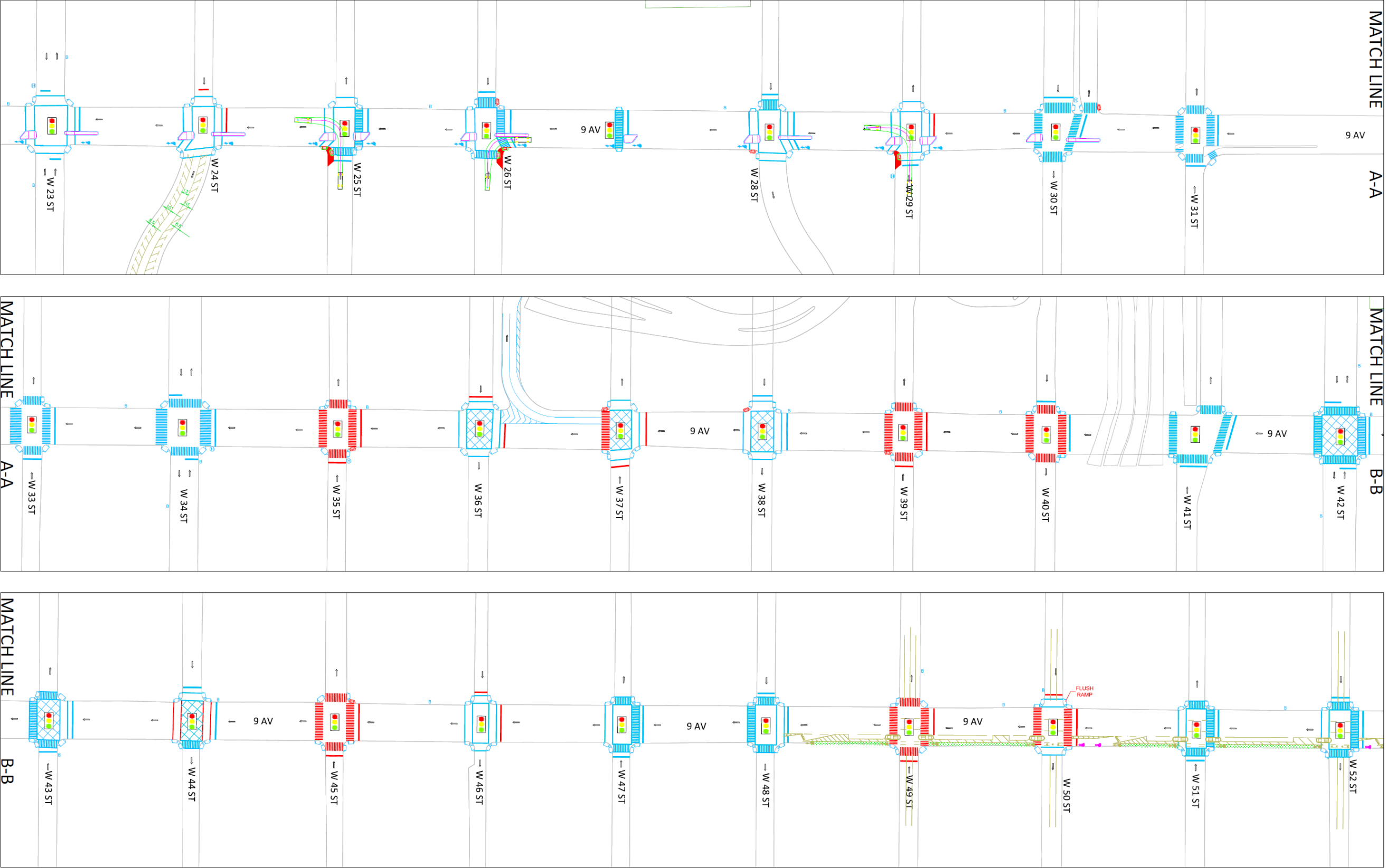
## TRAVEL SPEED ANALYSIS



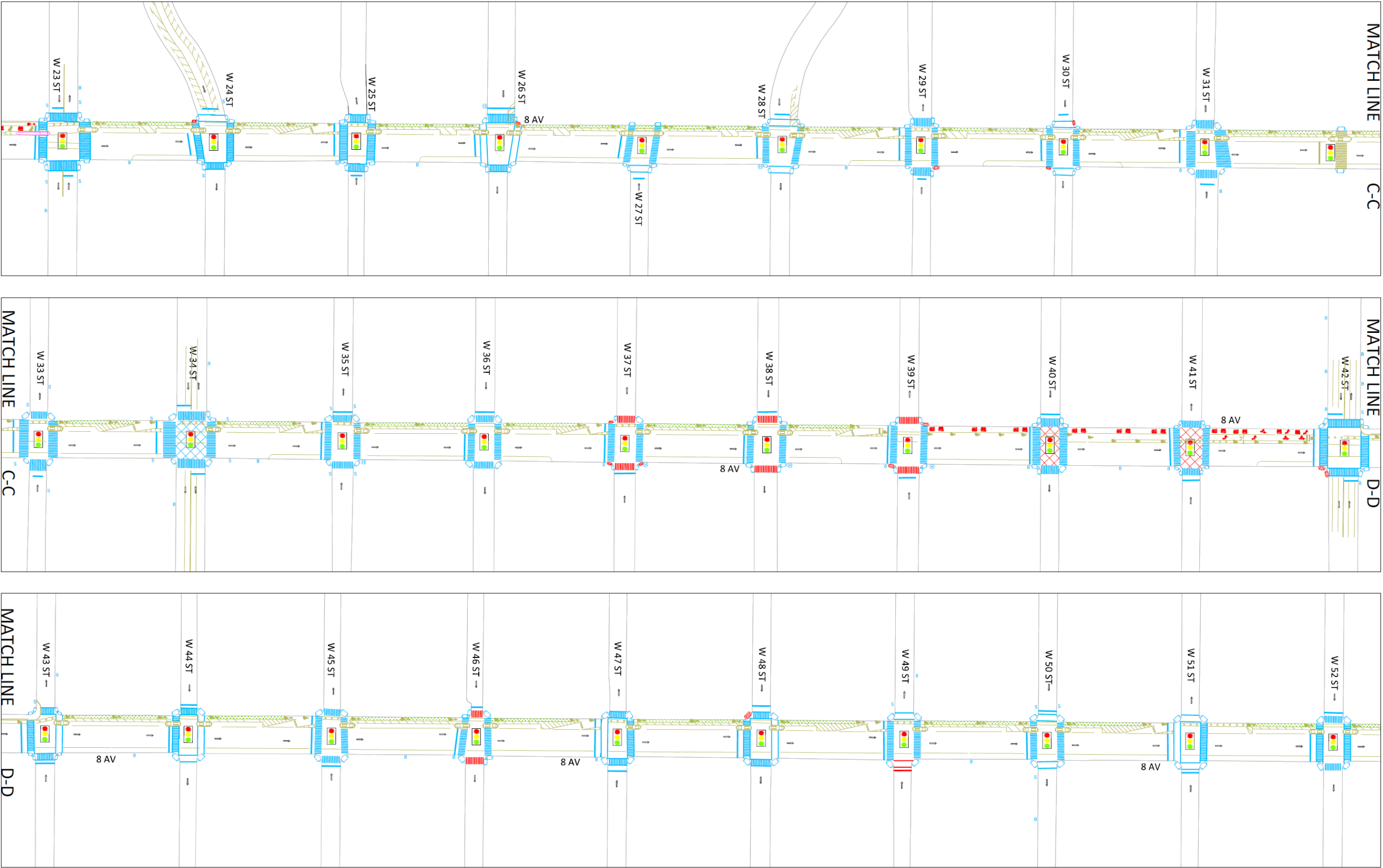
## TRAVEL SPEED ANALYSIS



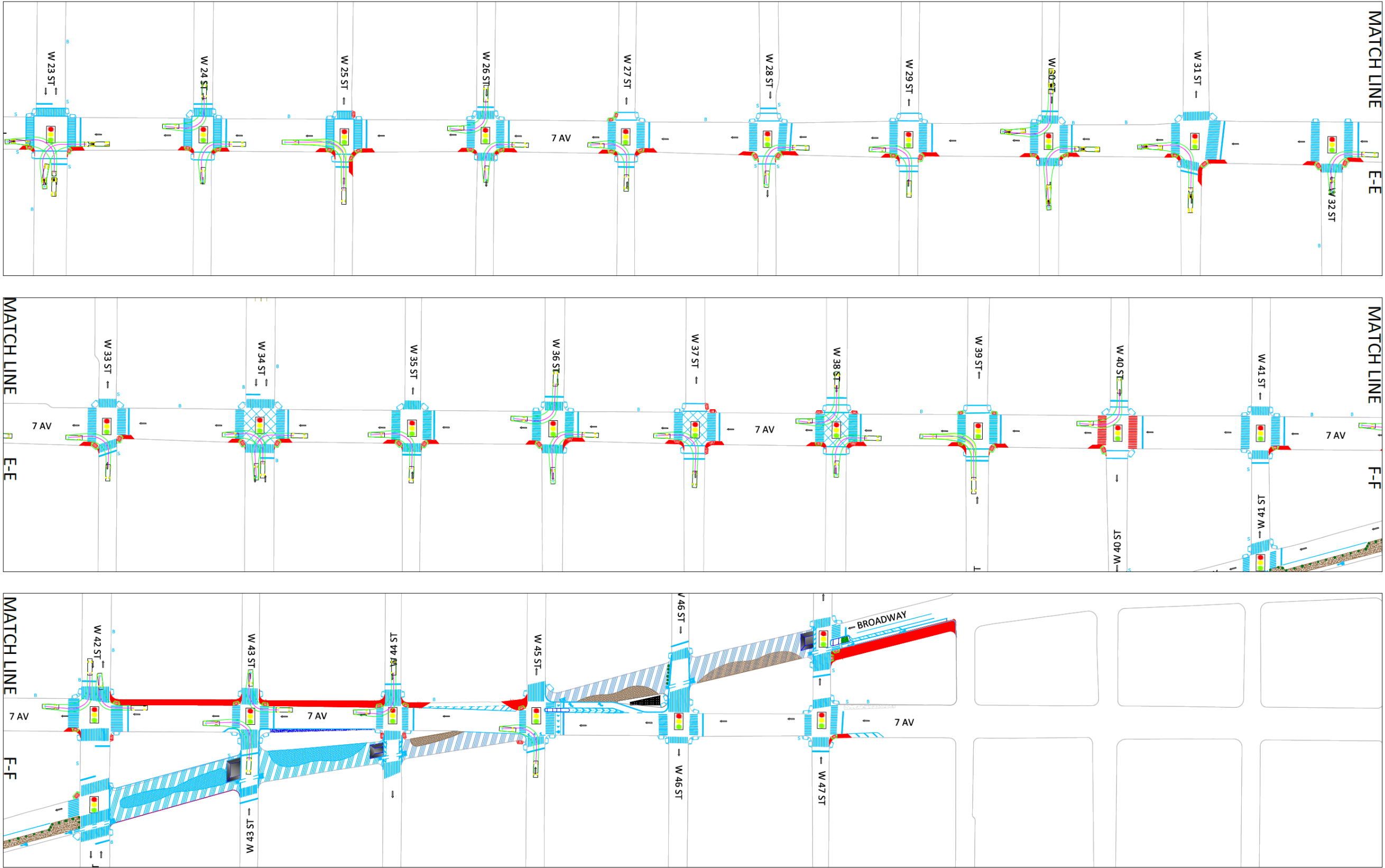
TURNING RADIUS ANALYSIS



TURNING RADIUS ANALYSIS

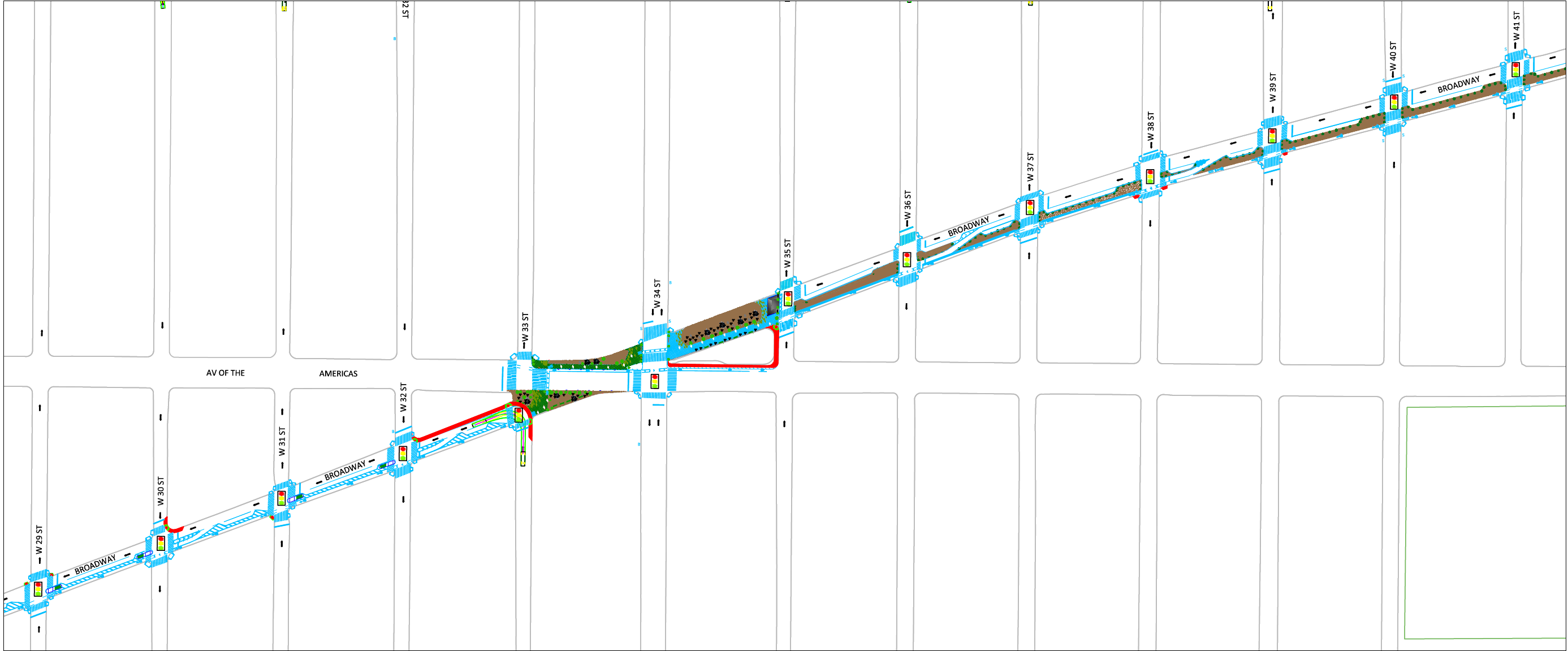


TURNING RADIUS ANALYSIS





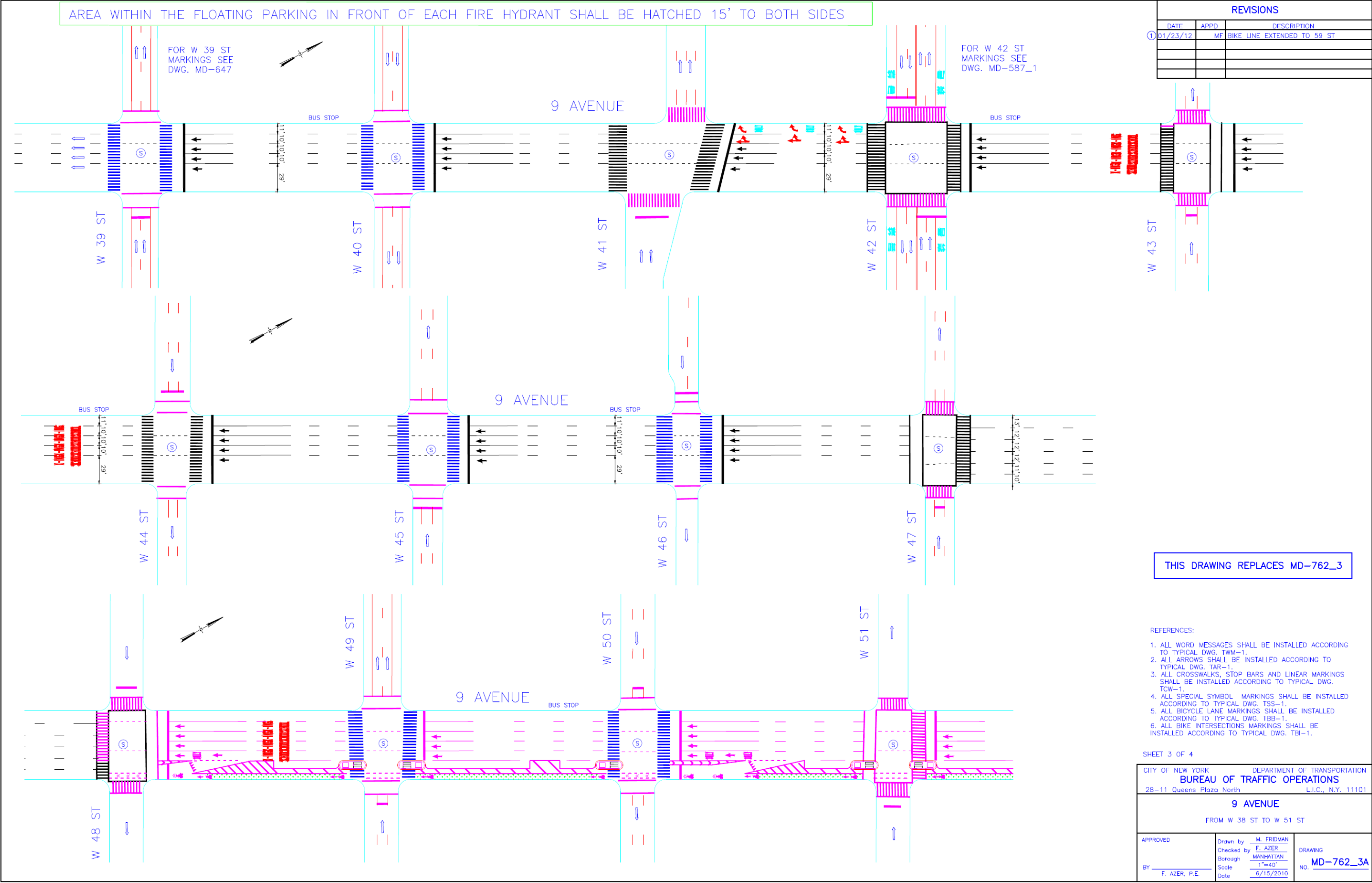
TURNING RADIUS ANALYSIS





# **APPENDIX – F**

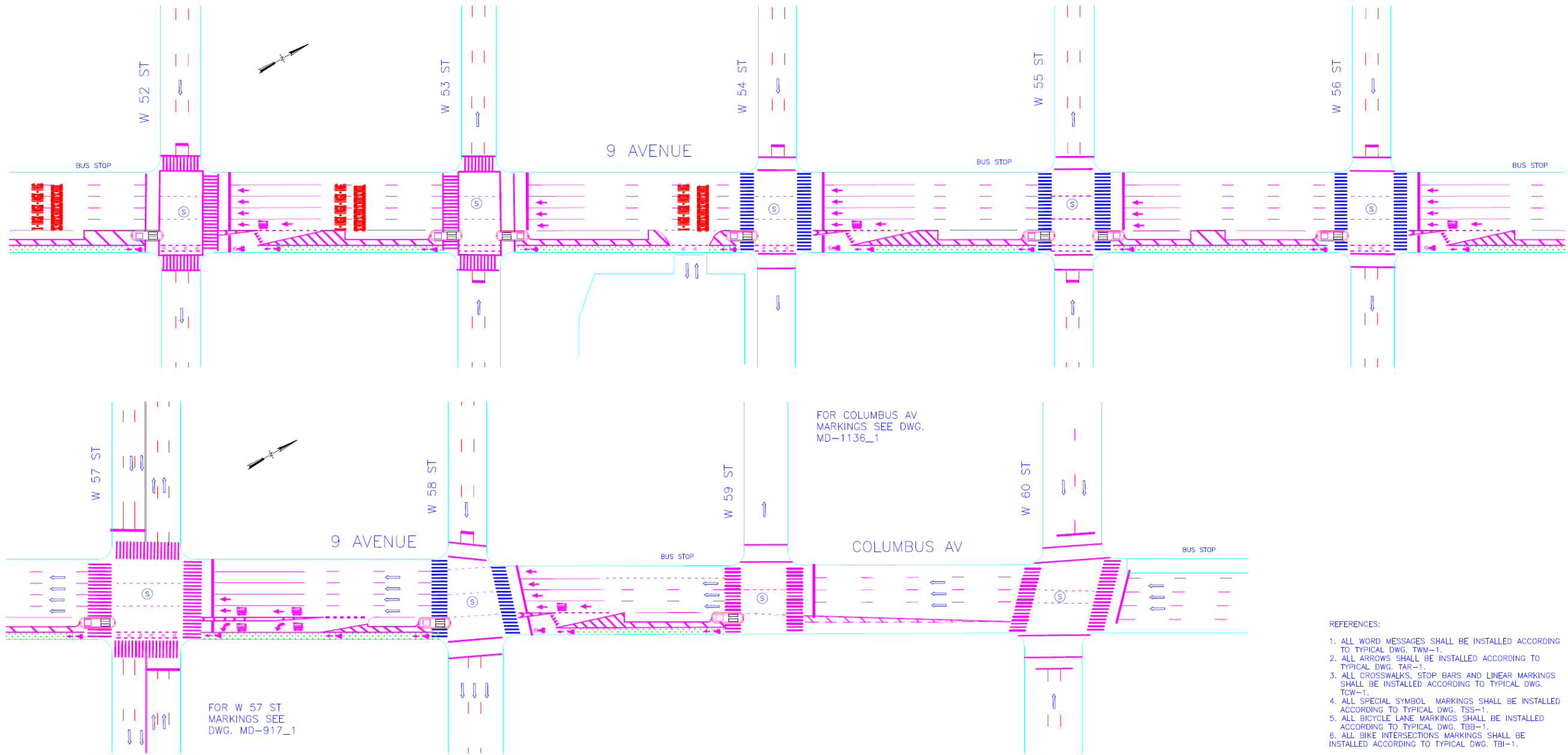
## **NYCDOT IMPROVEMENTS**



AREA WITHIN THE FLOATING PARKING IN FRONT OF EACH FIRE HYDRANT SHALL BE HATCHED 15' TO BOTH SIDES

REVISIONS

DATE	APPD	DESCRIPTION
01/23/12	MF	BIKE LANE EXTENDED TO 59 ST

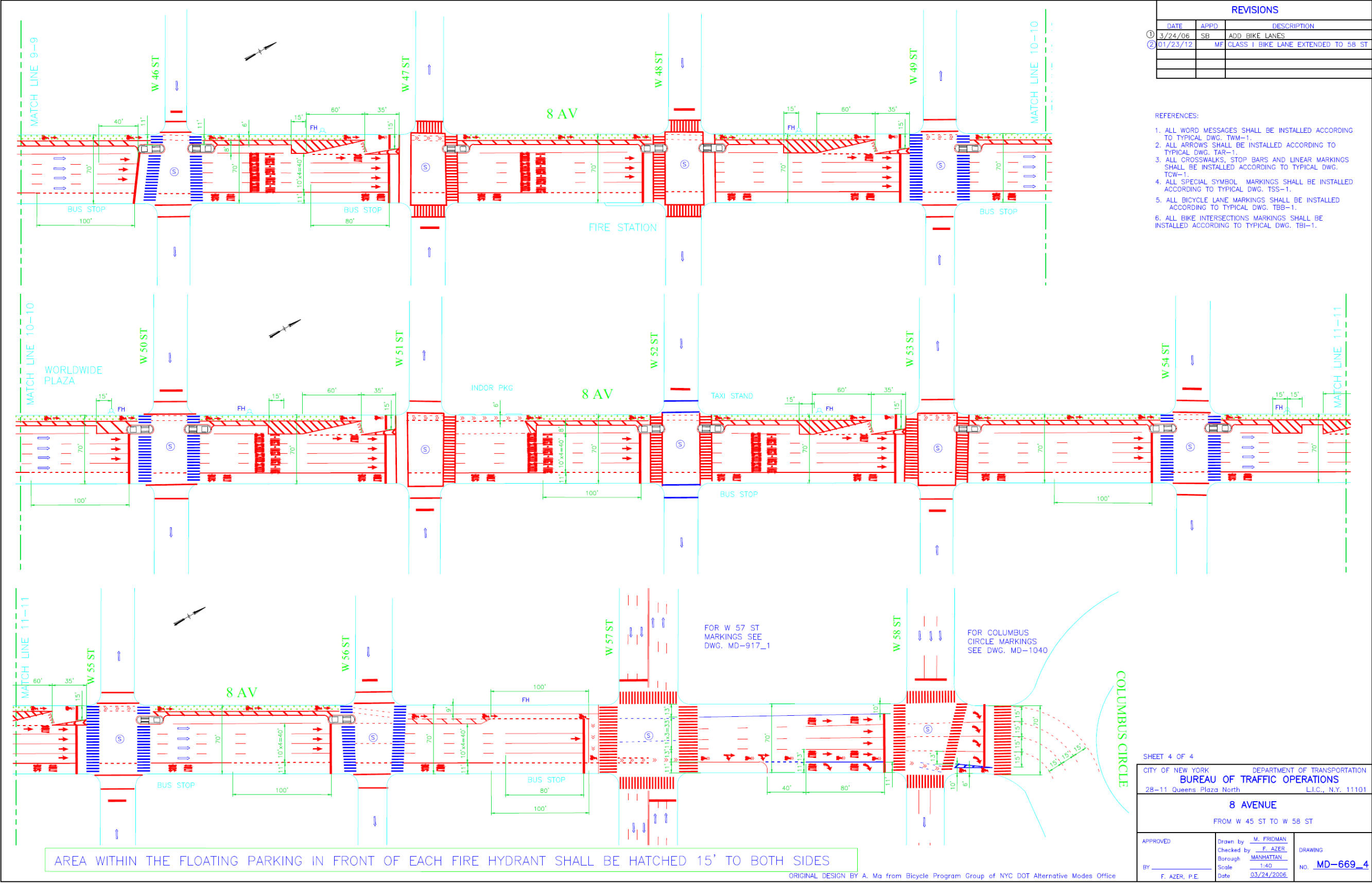


SHEET 4 OF 4

CITY OF NEW YORK		DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS		
28-11 Queens Plaza North		L.I.C., N.Y. 11101
9 AVENUE		
FROM W 52 ST TO W 59 ST		
APPROVED	Drawn by M. FRIDMAN	DRAWING NO. MD-762_4
	Checked by F. AZER	
	Borough MANHATTAN	
	Scale 1"=40'	
BY F. AZER, P.E.	Date 10/29/2010	







REVISIONS		
DATE	APPD	DESCRIPTION
3/24/06	SB	ADD BIKE LANES
01/23/12	MF	CLASS 1 BIKE LANE EXTENDED TO 58 ST

- REFERENCES:
1. ALL WORD MESSAGES SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TWM-1.
  2. ALL ARROWS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TAR-1.
  3. ALL CROSSWALKS, STOP BARS AND LINEAR MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TCW-1.
  4. ALL SPECIAL SYMBOL MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TSS-1.
  5. ALL BICYCLE LANE MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TBB-1.
  6. ALL BIKE INTERSECTIONS MARKINGS SHALL BE INSTALLED ACCORDING TO TYPICAL DWG. TBI-1.

SHEET 4 OF 4

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

8 AVENUE  
FROM W 45 ST TO W 58 ST

APPROVED	Drawn by M. FRIDMAN Checked by F. AZER Borough MANHATTAN Scale 1:40 Date 03/24/2006	DRAWING NO. MD-669_4
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