

# CITYWIDE CONGESTED CORRIDORS PROJECT

## EAST GUN HILL ROAD (JEROME AVENUE TO WHITE PLAINS ROAD)

### FINAL REPORT AUGUST 2014



City of New York  
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A Member of the New York  
Metropolitan Transportation Council

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## EXECUTIVE SUMMARY

The East Gun Hill Road Congested Corridors Project has been undertaken by the New York City Department of Transportation (NYCDOT) with the goals of improving mobility and safety for all street users (pedestrians, cyclists, transit users and motorists), air quality and the quality of life. This report presents recommended improvement measures based on analysis of existing and future conditions, as well as community input and feedback.

The study area of the East Gun Hill Road corridor extends from Jerome Avenue on the west to White Plains Road on the east. It is contained within Bronx Community Boards 7 and 12, and includes the Jerome-Gun Hill Business Improvement District.

Existing regional transportation facilities within the East Gun Hill Road study corridor are the Bronx River Parkway, which provides full-service access via a diamond interchange, and the Harlem Branch of the Metro-North Railroad, via the Williams Bridge station. Subway service is provided by the Nos. 2 and 5 trains along White Plains Road, and No. 4 train along Jerome Avenue. There are several bus routes along East Gun Hill Road, and along the major cross streets: Jerome Avenue, Bainbridge Avenue, Webster Avenue and White Plains Road. The biggest traffic generator for the study corridor is Montefiore Medical Center and North Central Bronx Hospital complex, with over 8,000 employees and thousands of patients and visitors.

Problems were identified based on data collection and analysis, field observations and consultation with stakeholders such as residents, local businesses, Montefiore Medical Center and North Central Bronx Hospital representatives, transportation providers, Community Board members, elected officials, city and state agencies, and various interest groups. The following is a summary of the major problems:

- Chronic congestion during the AM and PM Peak hours;
- The capacity of the Bronx River Parkway interchange with East Gun Hill Road is insufficient to handle the demand;
- Widespread violations exacerbate already congested conditions:
  - Chronic double parking often reduces the effective number of travel lanes from two to one.
  - Illegal U-turns disrupts traffic stream.
  - Jaywalking pedestrians causes safety problems.

In order to address these issues, improvement measures were designed and analyzed. The recommended improvements, developed in conjunction with stakeholder and other city and state agencies, are summarized as follows:

- Signal timing and coordination adjustments at six intersections.
- Parking regulation changes between Perry Avenue and Webster Avenue during weekday AM and PM peak hours.
- Marking improvements, including:
  - Parking lane marking to delineate parking lane and travel lane between Jerome Avenue and Webster Avenue.

- STOP bars set back 10 feet from crosswalks, where applicable.
- Change existing two-way street directions to one-way at the following streets north of East Gun Hill Road: Putnam Place, Perry Avenue, Hull Avenue, Decatur Avenue and East 211<sup>th</sup> Street.
- Intersection specific improvements at the following locations:
  - Raised concrete curb extensions and new STOP bars at Jerome Avenue.
  - Northbound left-turn bay at Bainbridge Avenue.
  - Corner curb extension with truffle paint and delineators at Perry Avenue.
  - Marking changes at Webster Avenue to provide better alignment and safer pedestrian crossing.
  - Conversion of westbound right-turn lane to shared lane at Bronx River Parkway northbound ramp.
  - Complete redesign at Olinville Avenue, featuring raised channelization island, concrete curb extensions, and signal redesign.
  - Eastbound left-turn prohibition and signage improvements at Willet Avenue.
  - New high visibility crosswalk at southbound White Plains Road.

These recommendations have been evaluated and their benefits and drawbacks have been quantified using Synchro/Simtraffic software, where applicable. The recommendations are projected to produce significant improvements for all street users. However, the main “choke point” of the study corridor is, and will remain for the foreseeable future, the intersection with the Bronx River Parkway. Given the existing constraints, there is no low- to moderate-cost solution to provide this interchange with sufficient capacity to handle the traffic demand. Improving this intersection would require massive capital funds that are unavailable at this time.



# 1. INTRODUCTION

## 1.1 BACKGROUND

The Citywide Congested Corridors Project (CCCP) is a study undertaken by the New York City Department of Transportation (NYCDOT) of selected roadways across the five boroughs which experience congestion, with the goals of improving mobility and safety for all street users, air quality and the quality of life. East Gun Hill Road in the Bronx was selected as one of the congested corridors. The study is consistent with the City’s goal of building “Complete Streets” that accommodate all street users including pedestrians, cyclists, transit users and motorists.

This report documents the data collection effort, presents analysis of existing conditions and future conditions without improvements, summarizes recommended improvements, and evaluates future conditions with improvements for the East Gun Hill Road Congested Corridor. The identification of current issues along the corridor was based on analyses of traffic, roadway geometry, parking, safety, goods movement, transit, pedestrian and bicycle data collected as part of a comprehensive data collection effort.

The public outreach effort to obtain community input was a critical component throughout the study process. The participants consisted of various stakeholders including residents, local businesses, Montefiore Medical Center, North Central Bronx Hospital, transportation providers, Community Board members, elected officials, city and state agencies, and various interest groups. Input from the outreach effort helped identify issues and were incorporated into the development of various potential improvements and the selection of the recommended improvements.

## 1.2 ORGANIZATION OF REPORT

This technical memorandum is organized into the following sections:

- Section 1 “**Introduction**” provides a brief overview of the study;
- Section 2 “**Data Collection**” presents a synopsis and results of the data collection effort;
- Section 3 “**Existing Conditions and Analysis**” summarizes the existing conditions from field observations, public input, and technical analysis;
- Section 4 “**Future Conditions without Improvements**” uses future-estimated traffic volumes, roadway conditions and land use changes to project future traffic conditions that can be expected along the corridor without improvements recommended as part of this study;
- Section 5 “**Improvements**” summarizes the recommended improvement measures;
- Section 6 “**Evaluation**” includes comparative travel speed, LOS, and emissions analysis between the Future without Improvements and the Future with Improvement scenarios.

### 1.3 STUDY AREA

Through an evaluation process, NYCDOT has identified East Gun Hill Road as one of the congested corridors in the borough of the Bronx to be studied under the CCCP. Gun Hill Road is a major 3.5 mile long thoroughfare that stretches from Stillwell Avenue/Hutchinson River Parkway in the Pelham Bay section on the east to Mosholu Parkway in Van Cortland section on the west.

Gun Hill Road was originally known as Kingsbridge Road (part of the original Boston Post Road) until 1875, when it was renamed. It did not originally extend east of White Plains Road, but was extended by segments to the Hutchinson River by 1938.

The study area for this corridor is the 0.9-mile segment of East Gun Hill Road between Jerome Avenue on the west and White Plains Road on the east, located in the Norwood community, and traversing Community Boards 7 and 12 (Figure 1). East Gun Hill Road from Jerome Avenue to Webster Avenue is a 60-foot wide roadway consisting of two travel lanes and curbside parking in each direction. The segment from Webster Avenue to White Plains Road consists mostly of three travel lanes in each direction with no curbside parking. The corridor is surrounded by a diverse neighborhood with a mix of commercial and residential land uses. The major trip generator in the area is Montefiore Medical Center and Bronx North Central Hospital, with 8,000 employees and thousands of patients and visitors, located on the south side of East Gun Hill Road between DeKalb Avenue and Wayne Avenue.

There are 18 intersections within the study corridor:

- East Gun Hill Road and Jerome Avenue;
- East Gun Hill Road and DeKalb Avenue;
- East Gun Hill Road and Rochambeau Avenue;
- East Gun Hill Road and Bainbridge Avenue;
- East Gun Hill Road and Wayne Avenue;
- East Gun Hill Road and Tryon Avenue;
- East Gun Hill Road and Kings College Place;
- East Gun Hill Road and Putnam Place;
- East Gun Hill Road and Perry Avenue;
- East Gun Hill Road and Hull Avenue;
- East Gun Hill Road and Decatur Avenue;
- East Gun Hill Road and Webster Avenue;
- East Gun Hill Road and Bronx River Parkway Southbound Ramp;
- East Gun Hill Road and Bronx River Parkway Northbound Ramp;
- East Gun Hill Road and Olinville Avenue;
- East Gun Hill Road and Willet Avenue;
- East Gun Hill Road and southbound White Plains Road; and
- East Gun Hill Road and northbound White Plains Road.



LEGEND



STUDY INTERSECTIONS

Figure 1

STUDY AREA

CITYWIDE CONGESTED CORRIDOR PROJECT  
EAST GUN HILL ROAD



## 2. DATA COLLECTION

A comprehensive data collection program was conducted along the East Gun Hill Road corridor. It included 24-hour automatic traffic recorder (ATR) counts at 27 locations. ATR data was collected in 15 minute intervals from May 17 to May 30, 2010 for a period of 14 days, including two days of data for each day of the week including weekends.

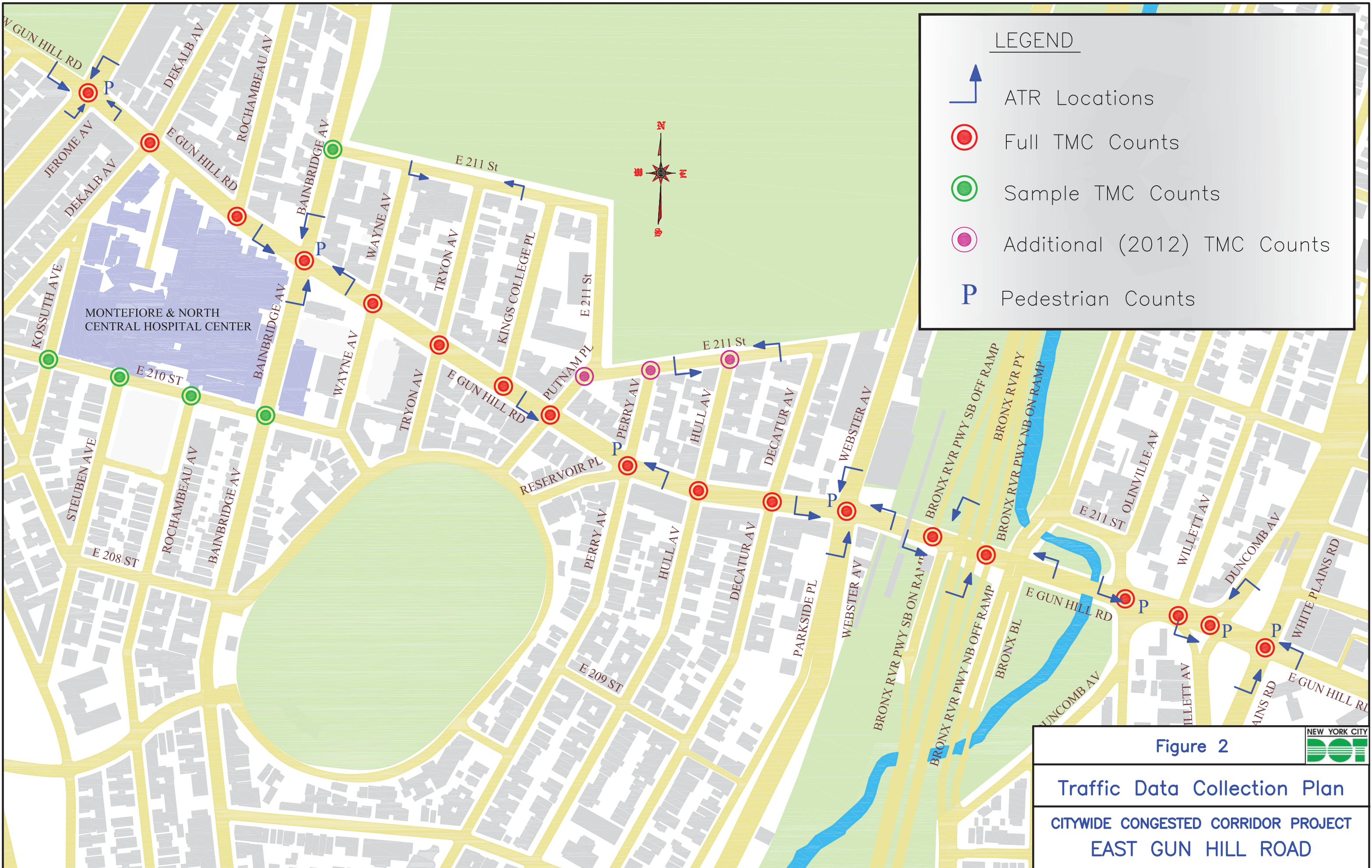
Manual turning movement count (TMC) data was collected at 26 intersections. Initially, full TMC by vehicle classification (passenger vehicle, trucks, buses and bikes) were conducted concurrent with ATR counts in May 2010 during the weekday AM (6:30-9:30 AM), midday (12:00-3:00 PM), PM (4:00-7:00 PM), and Saturday midday (12:00-2:00 PM) peak periods at all 18 intersections on East Gun Hill Road between Jerome Avenue and White Plains Road. In addition, sample TMC were conducted at five intersections – four along East 210<sup>th</sup> Street in the vicinity of the Montefiore Medical Center parking facility and one at East 211<sup>th</sup> Street and Bainbridge Avenue – as requested by hospital personnel and other stakeholders. These were also conducted in May 2010. Finally, additional full TMC were conducted in January 2012 at three intersections along East 211<sup>th</sup> Street as requested by community board members to determine the number of vehicles using East 211<sup>th</sup> Street as a westbound shortcut to Bainbridge Avenue, and to investigate the possibility of calming traffic by converting street directions.

The ATR and TMC data was used in developing balanced traffic flow maps for the weekday AM, midday, PM and Saturday midday peak hours.

Concurrent with ATR and TMC counts, travel time and delay runs using the “floating car technique” were conducted along East Gun Hill Road between Jerome Avenue and White Plains Road in May 2010. They were conducted on three weekdays during the AM, midday and PM periods, and one Saturday during the midday period. There were about six trials per period per day.

Pedestrian counts were conducted at seven selected intersections which were identified to have the highest pedestrian activities in May 2010. Pedestrian counts were conducted at crosswalks and street corners.

A detailed on-street parking data collection effort was undertaken on July 7, 2010 from 8:00 AM to 7:00 PM. Parking regulations, utilization, classification (passenger vehicle, commercial van, truck, police or emergency vehicle), parked or standing, double parking and other illegal parking, and loading and unloading, were documented and summarized. License plates were recorded to determine parking duration in order to quantify neighborhood perception of parkers illegally “feeding the meter.”



### 3. EXISTING CONDITIONS AND ANALYSIS

#### 3.1 ROADWAY NETWORK AND GEOMETRY

East Gun Hill Road within the study area is a two-way east-west roadway. The western section between Jerome Avenue and Webster Avenue is a 60-foot wide roadway consisting of two 11-foot travel lanes in each direction and curbside parking on both sides (Figure 3). The eastern section between Webster Avenue and White Plains Road consists mostly of three travel lanes in each direction. Parking is not permitted at any time on this section, except for a short block on the north curb between southbound White Plains Road and Willett Avenue. East Gun Hill Road has left-turn bays at intersections with the Bronx River Parkway northbound and southbound ramps. Outside the study area west of Jerome Avenue, East Gun Hill Road is a 42 feet wide roadway with one travel lane in each direction and parking on both sides.

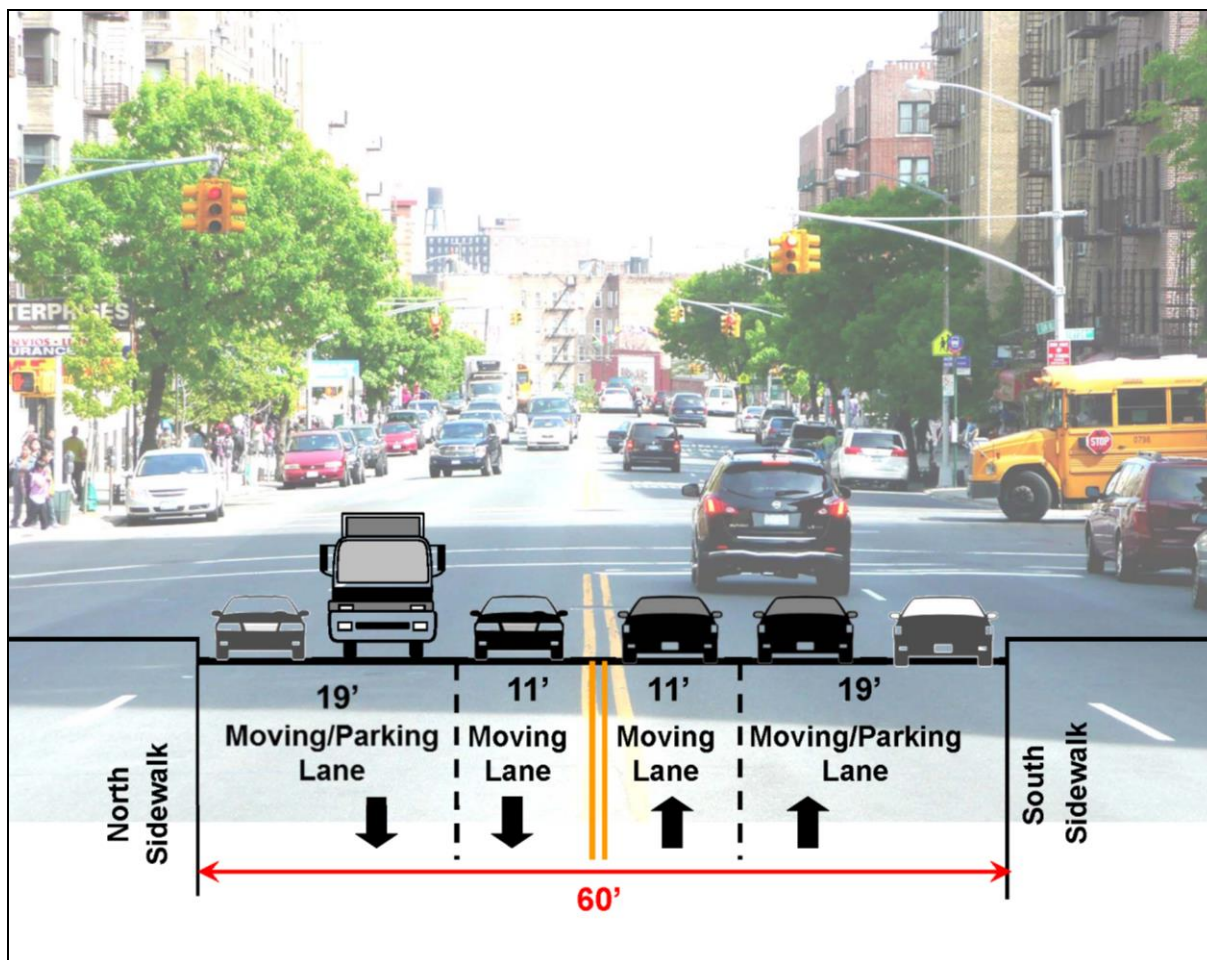


Figure 3: East Gun Hill Road Typical Cross Section between Jerome Avenue and Webster Avenue

There are 18 intersections within the study area. The major north-south roadways intersecting with East Gun Hill Road are Jerome Avenue, Bainbridge Avenue, Webster Avenue, Bronx River Parkway Interchange Ramps, and White Plains Road. Although these roadways are important and busy north-south connectors, the interchange with Bronx River Parkway is the main choke

point for traffic flow within the study area. This interchange is used by approximately 3,300 vehicles/hour (including ramp volumes) during the weekday AM Peak Hour, and 2,800 vehicles/hour during the weekday PM Peak Hour. Traffic volumes are substantially lower during the weekday midday and Saturday midday peak hours.

As shown in Figure 4, distances between on- and off-ramps are short, ramps are narrow and overall design elements of the interchange are substandard and do not provide sufficient capacity to meet existing traffic demand.



**Figure 4: Bronx River Parkway and East Gun Hill Road Interchange**

### 3.2 TRAFFIC VOLUMES

Directional average weekday daily traffic (AWDT) volumes vary at different points along East Gun Hill Road from approximately 7,700 vehicles/day to 21,500 vehicles/day. They generally increase from west to east, in both directions of travel, from Jerome Avenue to Olinville Avenue, then decrease from Olinville Avenue to White Plains Road. The highest 24-hour traffic volumes were recorded approaching the Olinville Avenue, with about 21,400 vehicles in the eastbound direction and about 22,500 vehicles in the westbound direction. Figures 5 and 6 present directional AWDT volumes.

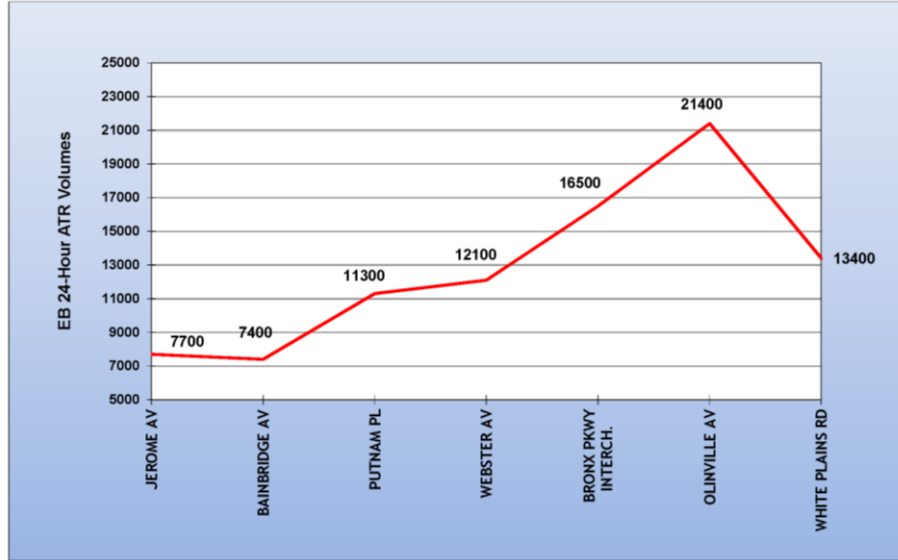


Figure 5: Eastbound Average Weekday Daily Traffic Volumes

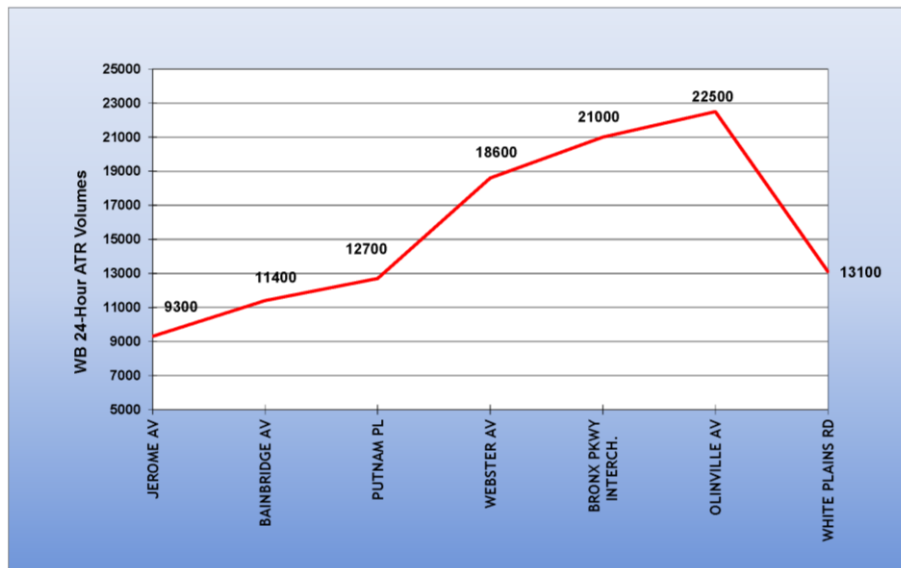


Figure 6: Westbound Average Weekday Daily Traffic Volumes



Hourly traffic volumes are shown in Figures 7 through 10 for weekday AM, midday, PM and Saturday midday peak hours, respectively, for both the eastbound and the westbound directions. Based on the traffic data collected, the peak hours were determined to be:

- Weekday AM peak: 7:45 AM to 8:45 AM
- Weekday midday peak: 12:30 PM to 1:30 PM
- Weekday PM peak: 4:00 PM to 5:00 PM
- Saturday midday peak: 1:45 PM to 2:45 PM

The weekday AM peak hour traffic volumes for each direction are shown in Figure 7. Westbound traffic volumes experience a significant increase between White Plains Road and the Bronx River Parkway southbound ramp, from about 700 to 1,650 vehicles/hour. From the Bronx River Parkway to Rochambeau Avenue, the westbound traffic volumes decrease significantly, from about 1650 to 600 vehicles/hour. Volumes then hold steady from Rochambeau Avenue to Jerome Avenue. Eastbound traffic volumes are significantly lower than the westbound traffic volumes, peaking at about 1050 vehicles/hour at Olinville Avenue. Eastbound peaking is also more spread out between Webster Avenue and Willet Avenue, compared to westbound traffic volumes.

As shown in Figure 9, the weekday PM peak hour westbound volumes are lower compared to the weekday AM peak hour, peaking at about 1250 vehicles/hour at the Bronx River Parkway southbound ramp. Eastbound PM peak hour volumes are higher compared to the weekday AM peak hour, peaking at about 1300 vehicles/hour at Olinville Avenue. This is attributed to the prevalence of work-based trips to the Montefiore Medical Center in the AM, and from the hospital in the PM.

As shown in Figures 8 and 10, weekday midday and Saturday midday traffic volumes follow a pattern where the westbound volumes slightly exceed the eastbound volumes. Generally, during all four peak hours, the highest traffic volumes are found between Webster Avenue and Olinville Avenue.

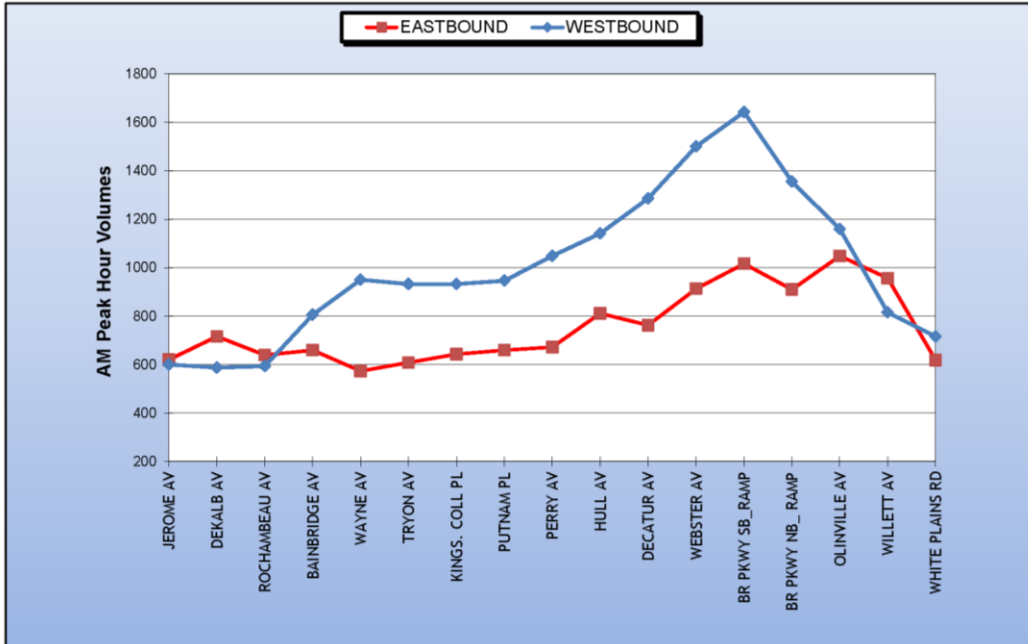


Figure 7: Weekday AM Peak Hour Traffic Volumes

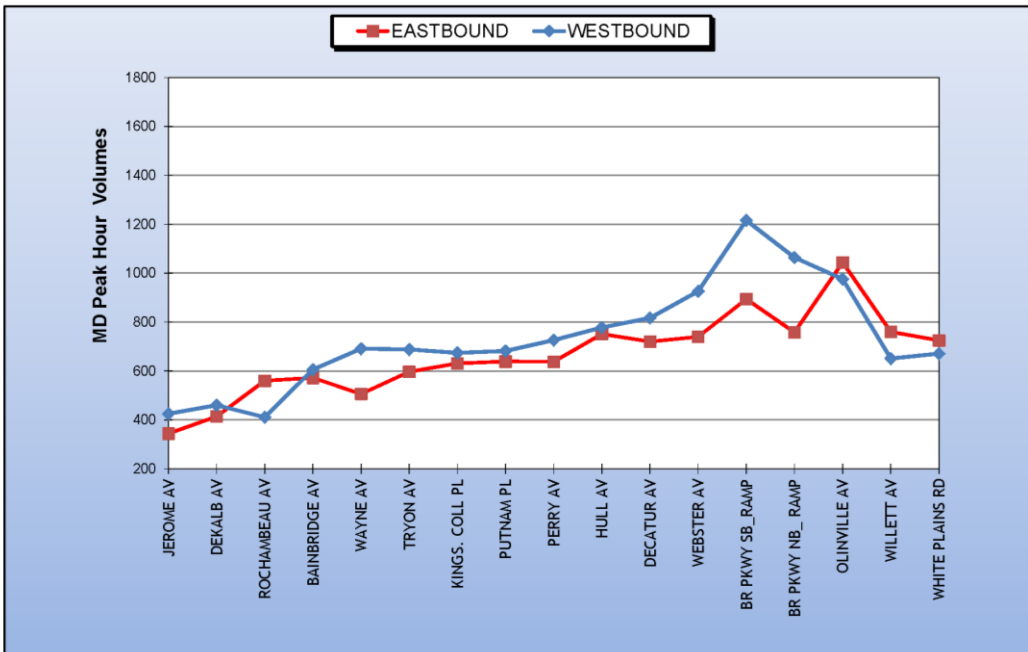


Figure 8: Weekday Midday Peak Hour Traffic Volumes

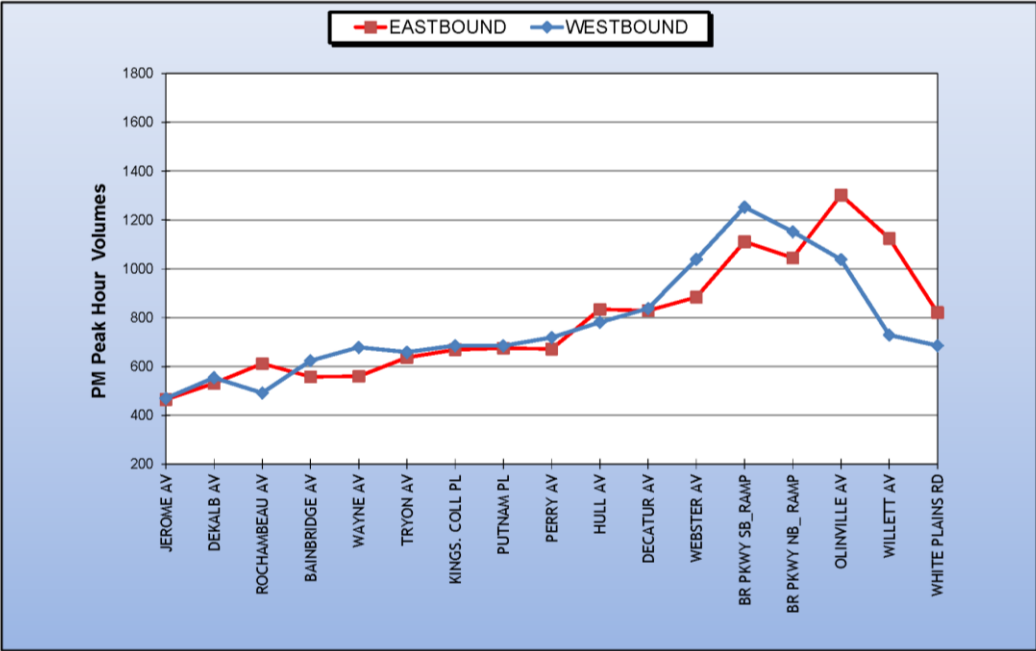


Figure 9: Weekday PM Peak Hour Traffic Volumes

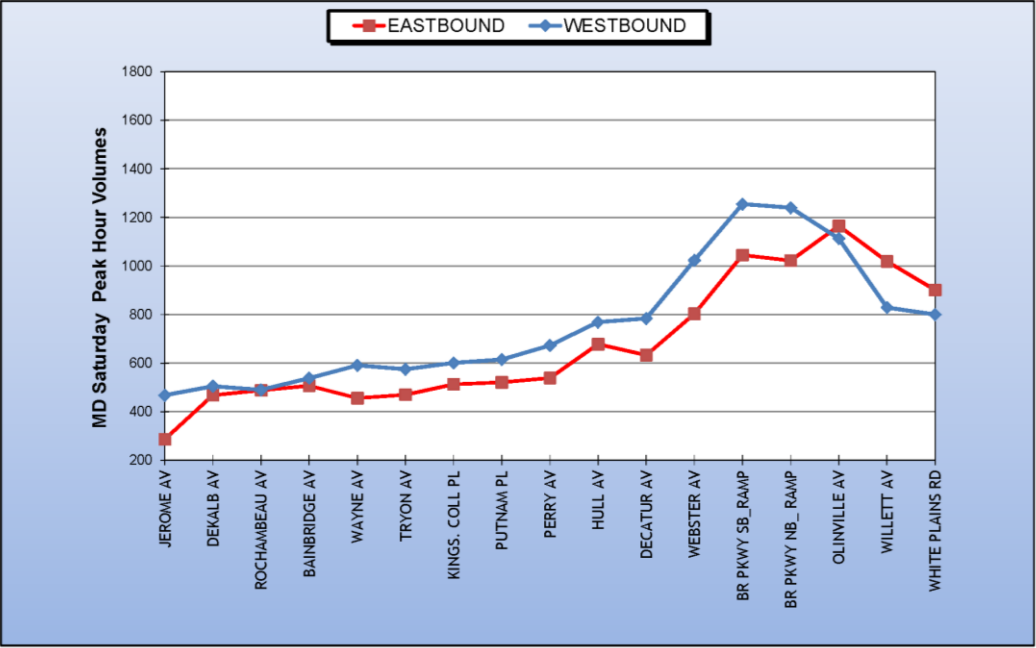
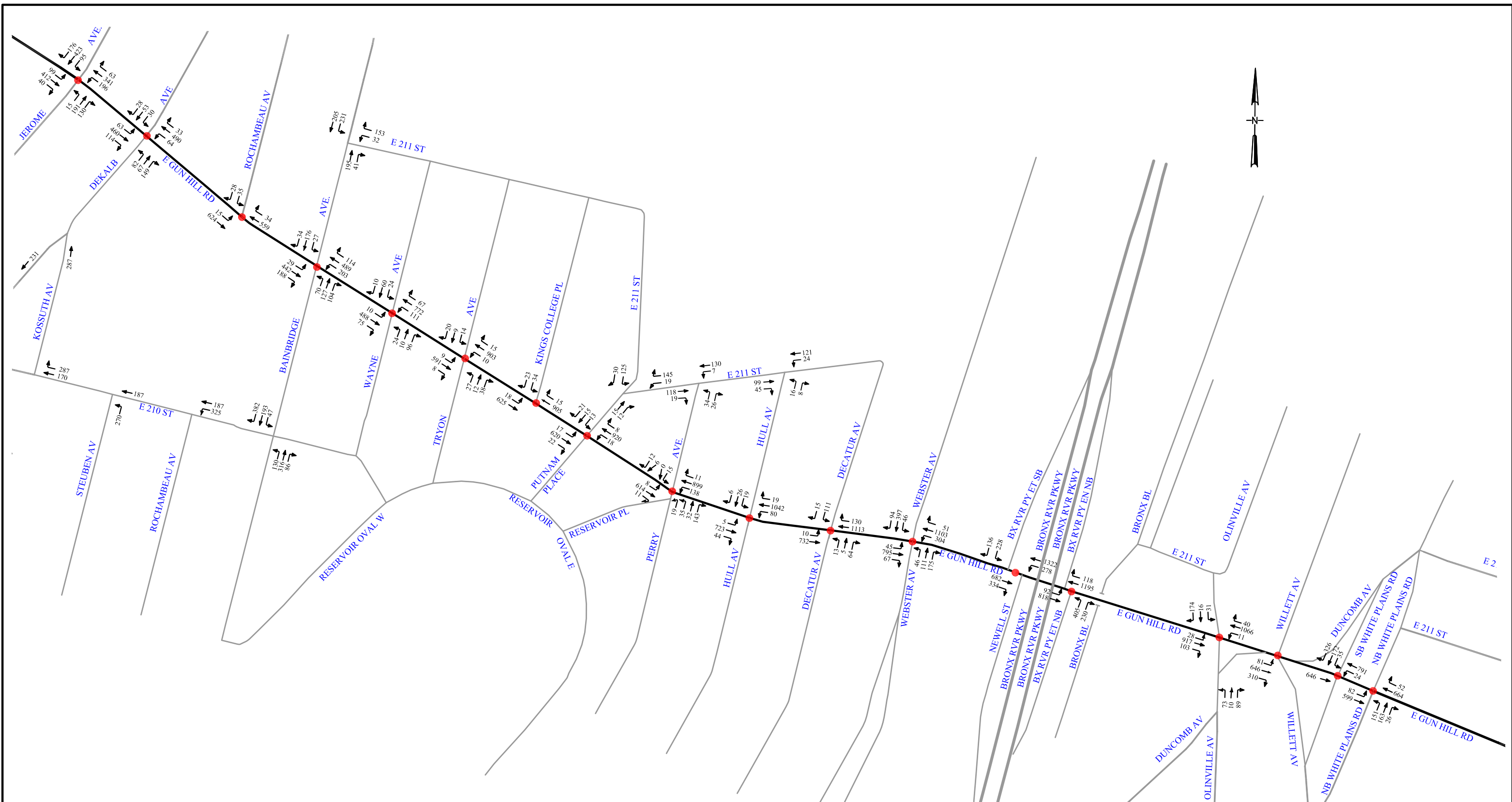



Figure 10: Saturday Midday Peak Hour Traffic Volumes

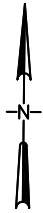
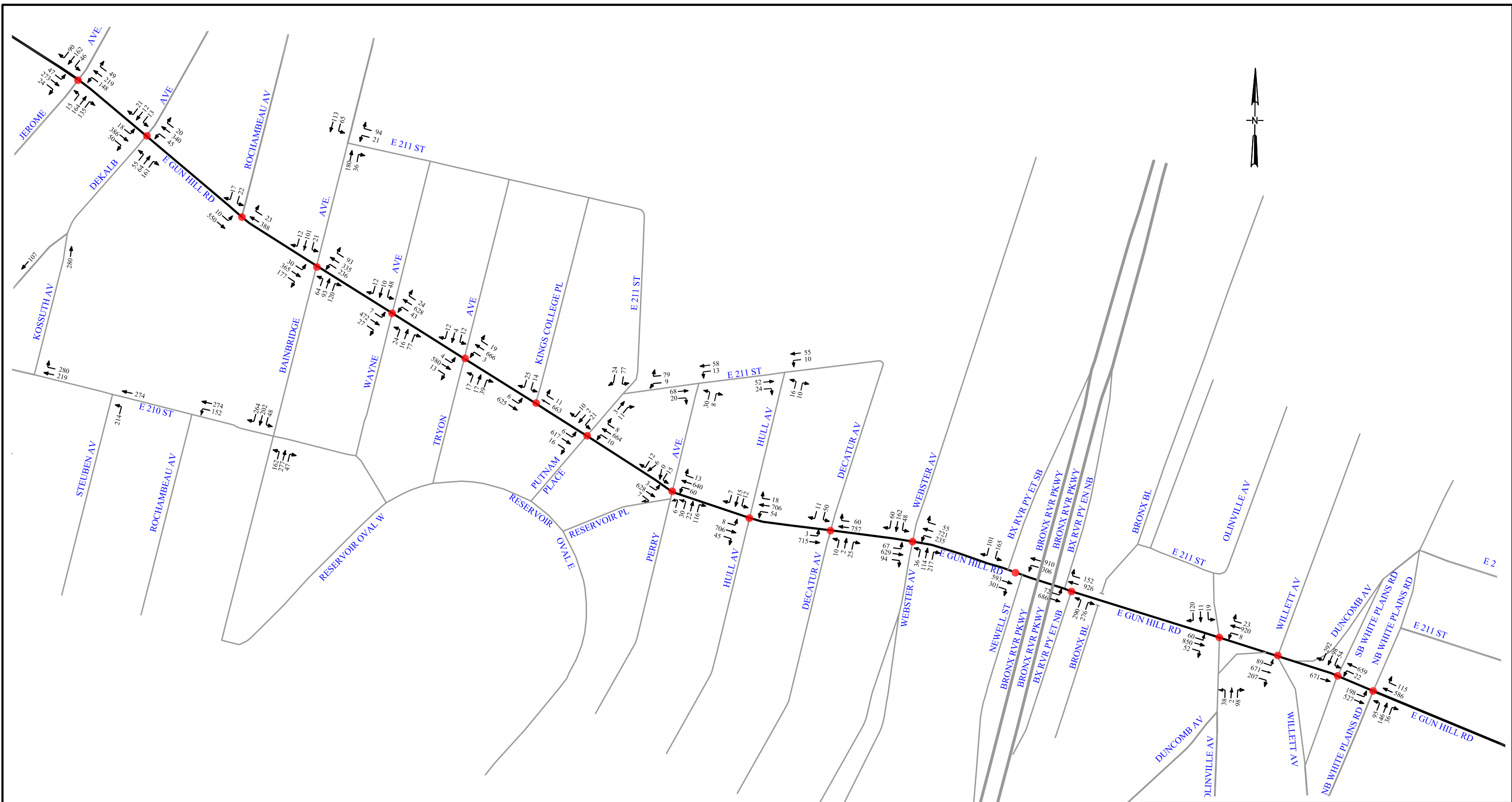
Balanced traffic flow maps, developed using both ATR and TMC data for the four peak hours, are shown in Figures 11 through 14.

East Gun Hill Road is a designated local truck route. There are also several bus routes along East Gun Hill Road, and along major cross streets – Jerome Avenue, Bainbridge Avenue, Webster Avenue and White Plains Road)

Heavy vehicle percentages were obtained from the vehicle classification counts. Generally, trucks comprise about 4% to 7% of the overall traffic, while buses comprise about 2% to 3% of the overall traffic volumes along East Gun Hill Road, depending on the location and time of day.

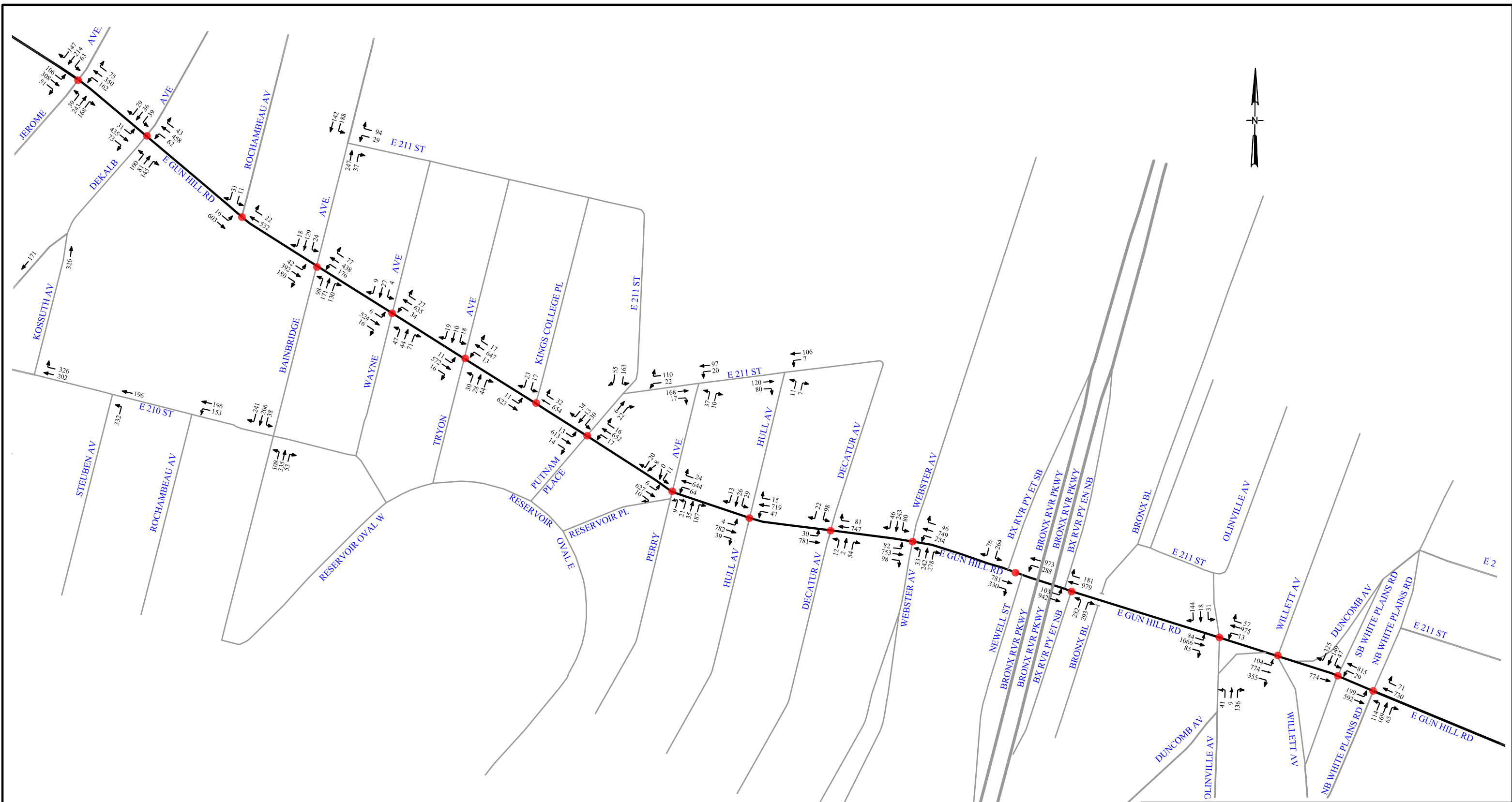



  
**Figure 11**  
**EXISTING VEHICULAR VOLUMES**  
**WEEKDAY AM PEAK HOUR (7:45AM-8:45AM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**



**Figure 12**  
**EXISTING VEHICULAR VOLUMES**  
**WEEKDAY MIDDAY PEAK HOUR (12:30PM-1:30PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**





**Figure 13**

**EXISTING VEHICULAR VOLUMES**  
**WEEKDAY PM PEAK HOUR (4:00PM-5:00PM)**

**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**







### 3.3 TRAVEL TIMES AND DELAY RUNS

Travel time and delay runs, using the “floating car” technique, were performed along the study corridor on three midweek days during the AM, midday, PM peak periods, and one Saturday midday peak period, concurrently with the ATR and TMC data collection. Elapsed travel times were recorded between signalized intersections. Stopped time delays were recorded and classified as the result of either congestion or traffic signals.

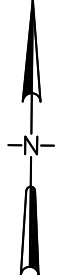
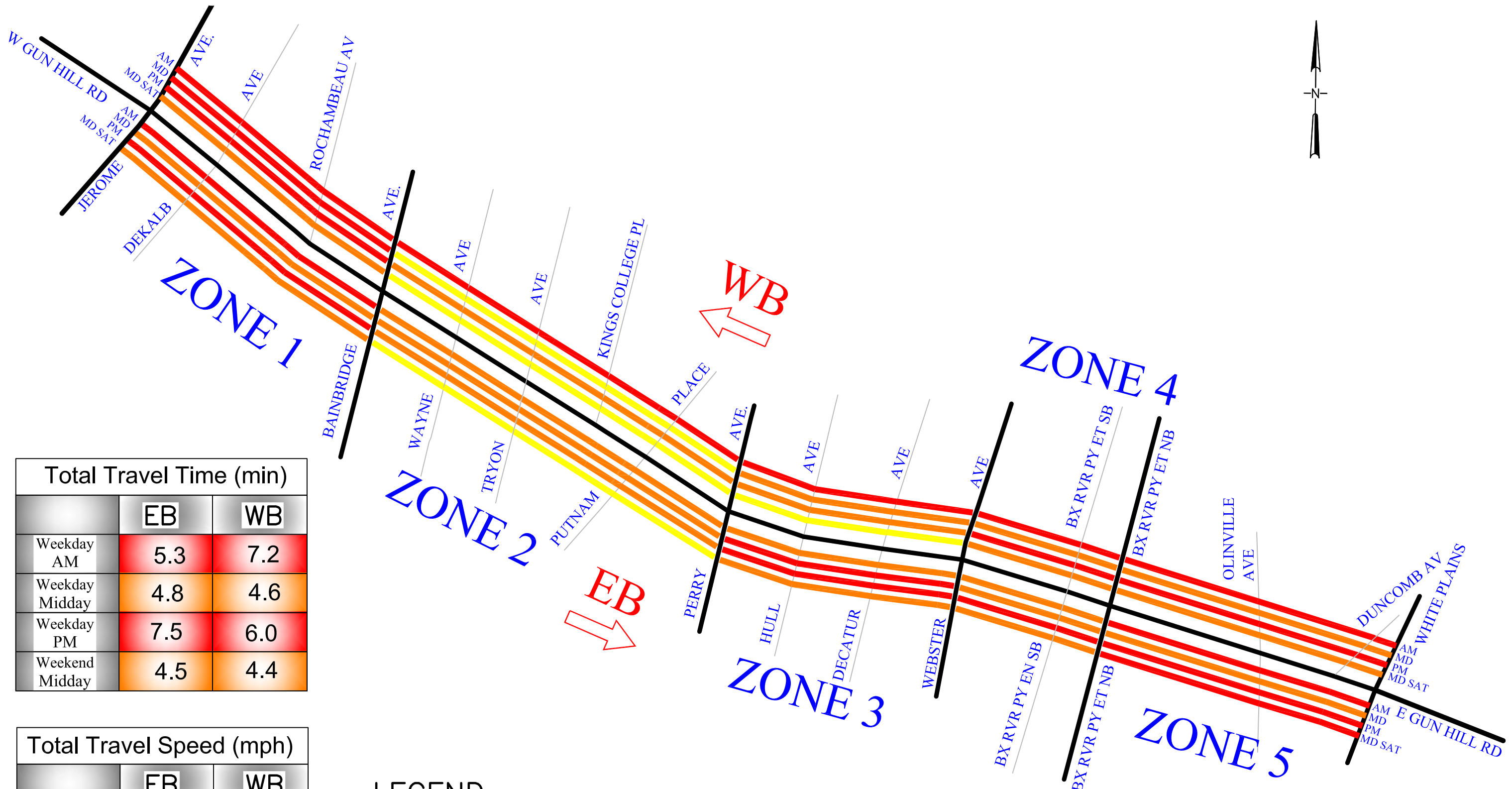
Tables 1 and 2 presents the details of the corridor travel times and travel speeds for each peak hour. Figure 15 illustrates an overview of the travel speeds on the corridor broken up into five zones.

<b>TABLE 1: EASTBOUND TRAVEL TIMES &amp; SPEEDS</b>									
<b>From</b>	<b>To</b>	<b>Weekday AM</b>		<b>Weekday Midday</b>		<b>Weekday PM</b>		<b>Saturday Midday</b>	
		Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)
Jerome Ave	Dekalb Ave	0.34	9.2	0.19	17.0	0.30	10.6	0.20	16.1
Dekalb Ave	Rochambeau Ave	0.68	6.6	0.37	12.1	0.43	10.5	0.35	12.8
Rochambeau Ave	Bainbridge Ave	0.51	6.5	0.45	7.3	0.43	7.7	0.32	10.3
Bainbridge Ave	Wayne Ave	0.31	10.5	0.25	13.0	0.25	13.0	0.19	16.9
Wayne Ave	Tryon Ave	0.13	23.2	0.25	12.5	0.19	16.8	0.20	15.3
Tryon Ave	Kings College Ave	0.21	14.3	0.20	15.7	0.24	12.7	0.32	9.6
Kings College Ave	Putnam Place	0.24	9.4	0.29	7.9	0.26	8.6	0.17	13.4
Putnam Place	Perry Ave	0.38	9.4	0.22	16.3	0.52	6.9	0.16	22.5
Perry Ave	Hull Ave	0.22	14.2	0.38	8.0	0.91	3.4	0.22	14.1
Hull Ave	Decatur Ave	0.32	9.4	0.26	11.8	0.59	5.1	0.36	8.4
Decatur Ave	Webster Ave	0.17	18.6	0.32	9.5	0.58	5.3	0.33	9.3
Webster Ave	Bronx River SB Ramp	0.27	14.7	0.48	8.3	0.91	4.4	0.28	14.1
Bronx River SB Ramp	Bronx River NB Ramp	0.22	9.0	0.16	12.4	0.24	7.9	0.13	15.2
Bronx River NB Ramp	Olinville Ave	0.55	10.1	0.34	16.6	0.74	7.6	0.65	8.6
Olinville Ave	SB White Plains Rd	0.26	9.8	0.49	5.1	0.39	6.3	0.32	7.9
SB White Plains Rd	NB White Plains Rd	0.55	6.6	0.20	18.6	0.50	7.3	0.37	9.8
<b>Corridor Total/Avg.</b>		<b>5.36</b>	<b>9.9</b>	<b>4.83</b>	<b>11.0</b>	<b>7.47</b>	<b>7.1</b>	<b>4.57</b>	<b>11.6</b>

**TABLE 2: WESTBOUND TRAVEL TIMES & SPEEDS**

From	To	Weekday AM		Weekday Midday		Weekday PM		Saturday Midday	
		Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)	Travel time (min)	Speed (mph)
NB White Plains Rd	SB White Plains Rd	0.27	7.79	0.14	15.29	0.25	8.41	0.14	15.29
SB White Plains Rd	Olinville Ave	0.94	4.41	0.25	16.87	0.56	7.45	0.41	10.12
Olinville Ave	Bronx River NB Ramp	0.85	6.58	0.60	9.28	0.70	7.95	0.69	8.07
Bronx River NB Ramp	Bronx River SB Ramp	0.38	5.09	0.13	15.20	0.17	11.13	0.17	11.59
Bronx River SB Ramp	Webster Ave	0.68	5.89	0.18	22.20	0.48	8.29	0.44	9.13
Webster Ave	Decatur Ave	0.45	6.82	0.25	12.27	0.25	12.14	0.24	12.78
Decatur Ave	Hull Ave	0.31	9.71	0.29	10.32	0.25	12.05	0.21	14.60
Hull Ave	Perry Ave	0.34	9.05	0.29	10.52	0.39	7.87	0.15	20.45
Perry Ave	Putnam Place	0.37	9.69	0.17	21.48	0.39	9.27	0.33	10.85
Putnam Place	Kings College Ave	0.29	7.84	0.11	19.83	0.22	10.33	0.12	19.14
Kings College Ave	Tryon Ave	0.50	6.17	0.20	15.50	0.13	23.01	0.23	13.15
Tryon Ave	Wayne Ave	0.29	10.68	0.13	23.81	0.34	9.15	0.15	20.55
Wayne Ave	Bainbridge Ave	0.34	9.43	0.50	6.50	0.39	8.30	0.15	21.59
Bainbridge Ave	Rochambeau Ave	0.37	8.86	0.39	8.41	0.29	11.41	0.31	10.55
Rochambeau Ave	Dekalb Ave	0.30	14.96	0.28	16.08	0.65	6.91	0.36	12.31
Dekalb Ave	Jerome Ave	0.59	5.41	0.78	4.09	0.58	5.45	0.34	9.36
<b>Corridor Total/Avg.</b>		<b>7.2</b>	<b>7.3</b>	<b>4.6</b>	<b>11.0</b>	<b>6.0</b>	<b>8.8</b>	<b>4.4</b>	<b>12.0</b>

As indicated in Tables 1 and 2 and in Figure 15, the lowest travel speeds in the westbound direction were recorded during AM Peak Hour (7.3 mph) and in the eastbound direction during PM Peak Hour (7.1 mph), which is consistent with field observations and capacity analysis results. It is attributed to prevalence of work-based trips to the Montefiore Medical Center in the AM, and from the hospital in the PM.



Total Travel Time (min)		
	EB	WB
Weekday AM	5.3	7.2
Weekday Midday	4.8	4.6
Weekday PM	7.5	6.0
Weekend Midday	4.5	4.4

Total Travel Speed (mph)		
	EB	WB
Weekday AM	9.9	7.3
Weekday Midday	11.0	11.3
Weekday PM	7.1	8.8
Weekend Midday	11.6	12.0

**LEGEND**

- < 10 mph
- < 10–15 mph
- < 15–25 mph
- > 25 mph

**Figure 15**  
**TRAVEL SPEEDS AND TRAVEL TIME RESULTS**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**

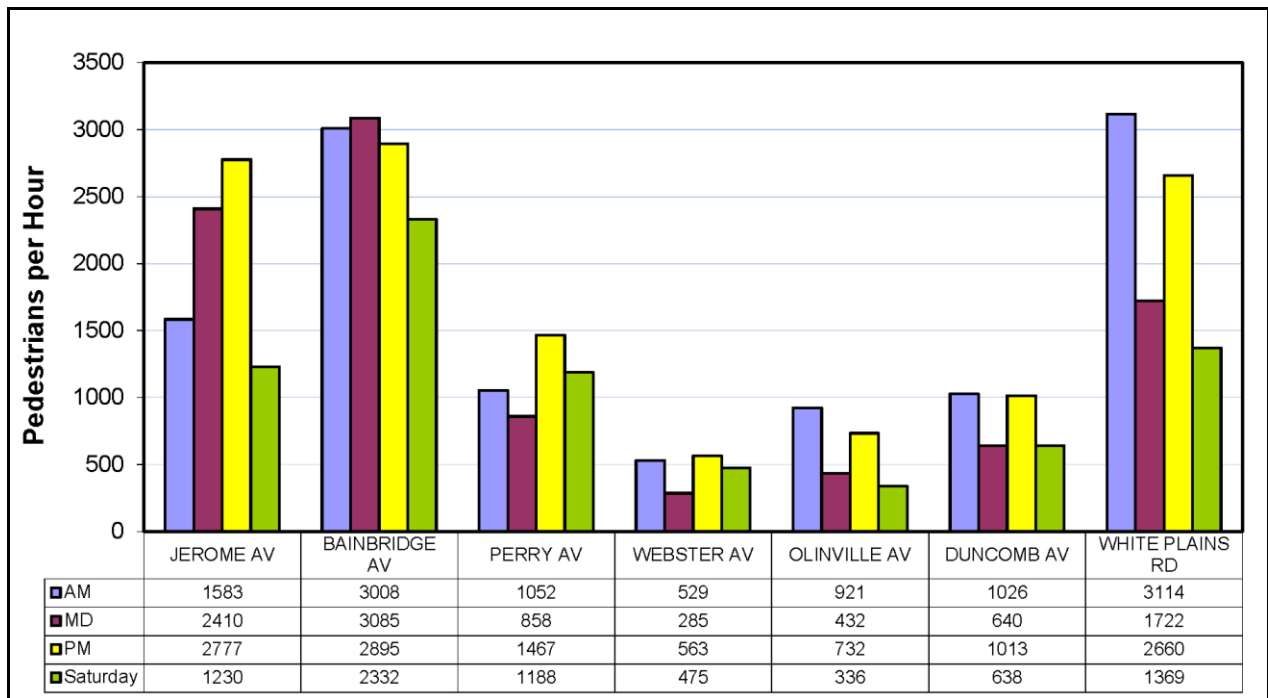


### 3.4 PEDESTRIANS

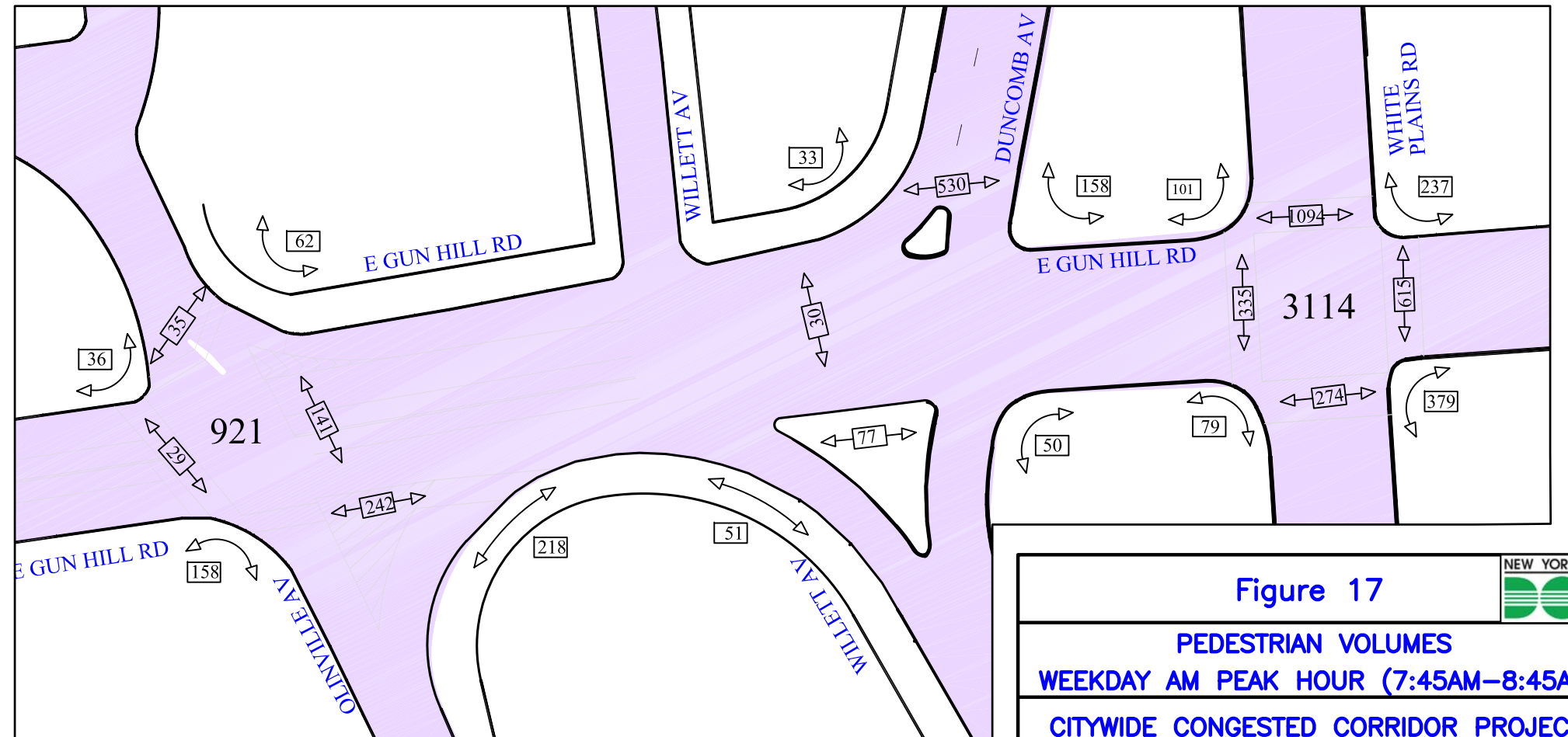
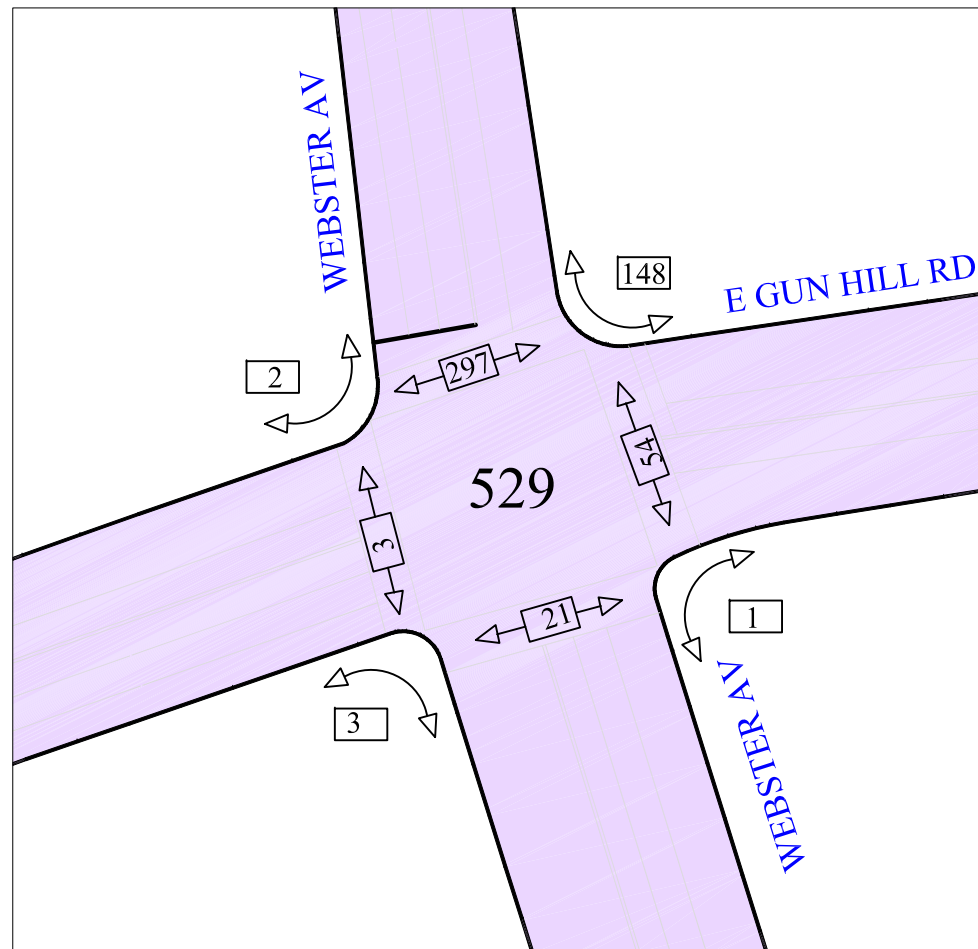
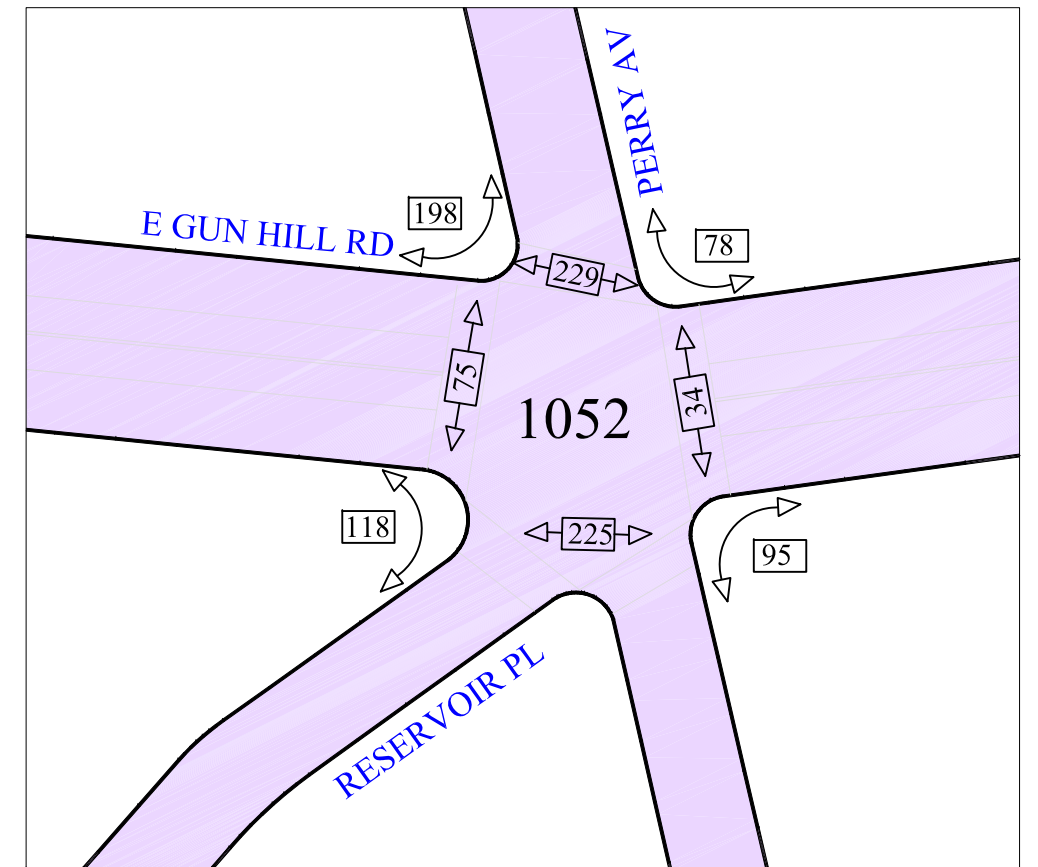
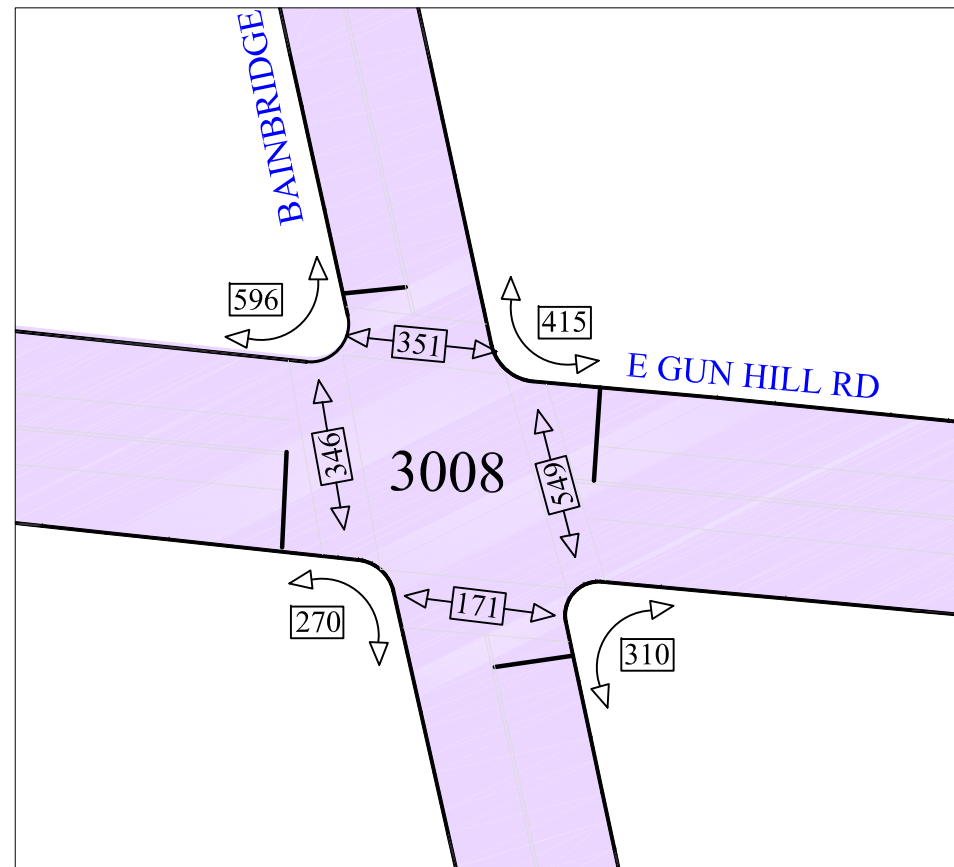
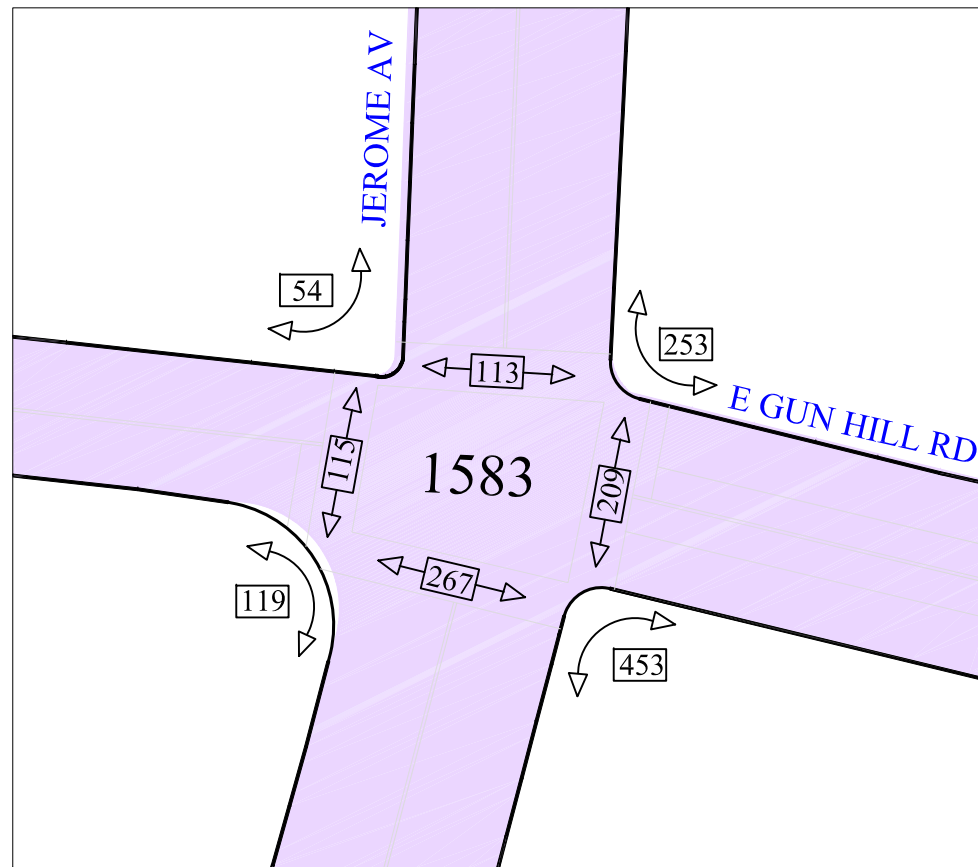
All of the signalized intersections in the study area have marked crosswalks and pedestrian signals. Currently, countdown signals exist at all intersections from Jerome Avenue to Putnam Place.

Pedestrian counts were conducted at seven intersections, which were selected based on field observations to have the highest pedestrian activities.

Figure 16 illustrates the pedestrian volumes during the weekday AM, midday, PM and Saturday midday peak hours (this includes all pedestrian movements at crosswalks and corners). Generally, the highest pedestrian volumes were at Bainbridge Avenue, White Plains Road and Jerome Avenue. Bainbridge Avenue had the highest number of pedestrians during all four peak hours combined, because of proximity to Montefiore Medical Center. The highest pedestrian volume during a single peak hour was 3,114 pedestrians/hour at White Plains Road during the AM peak hour. Detailed pedestrian counts by movement are illustrated in Figures 17 to 20 for weekday AM, midday, PM and Saturday midday peak hours, respectively.

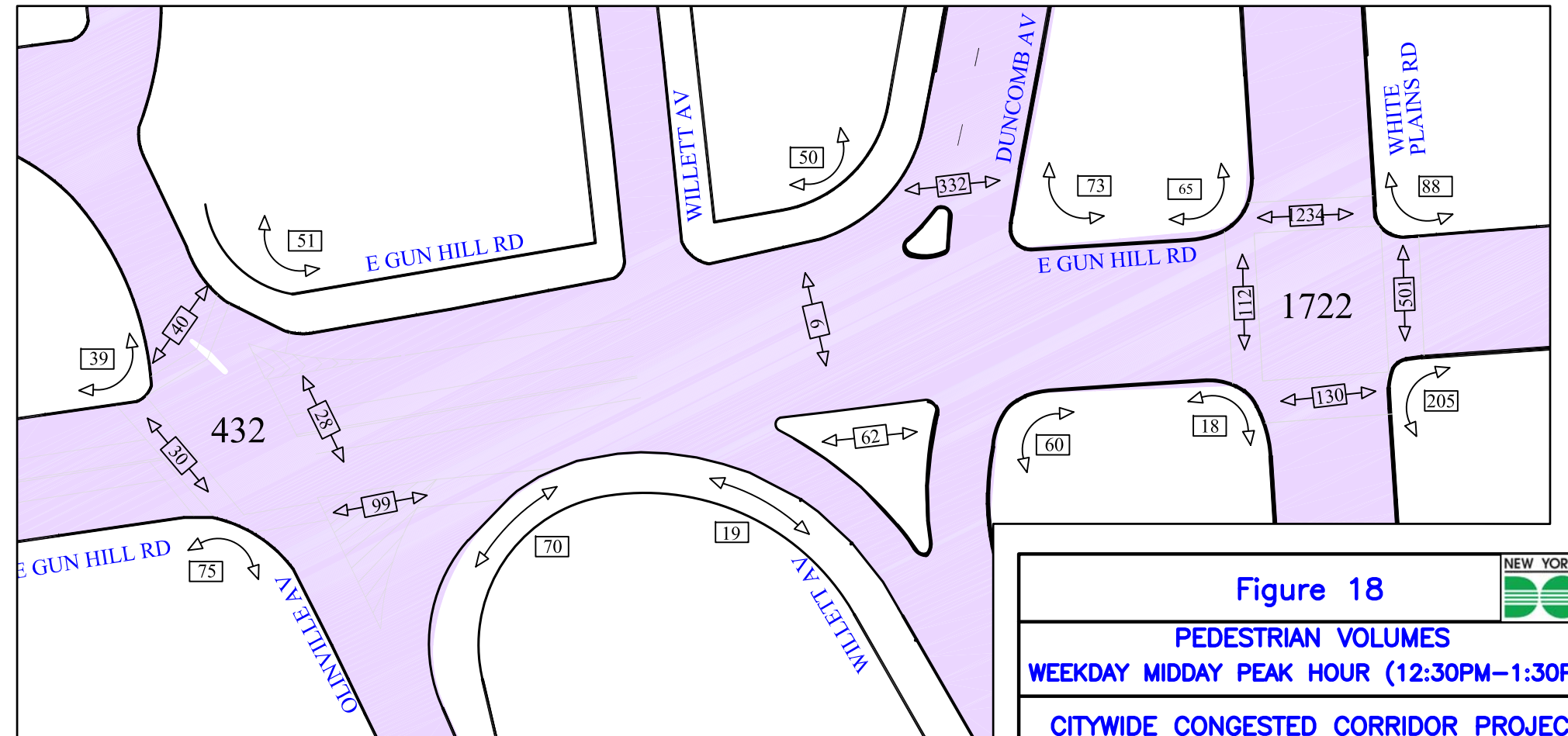
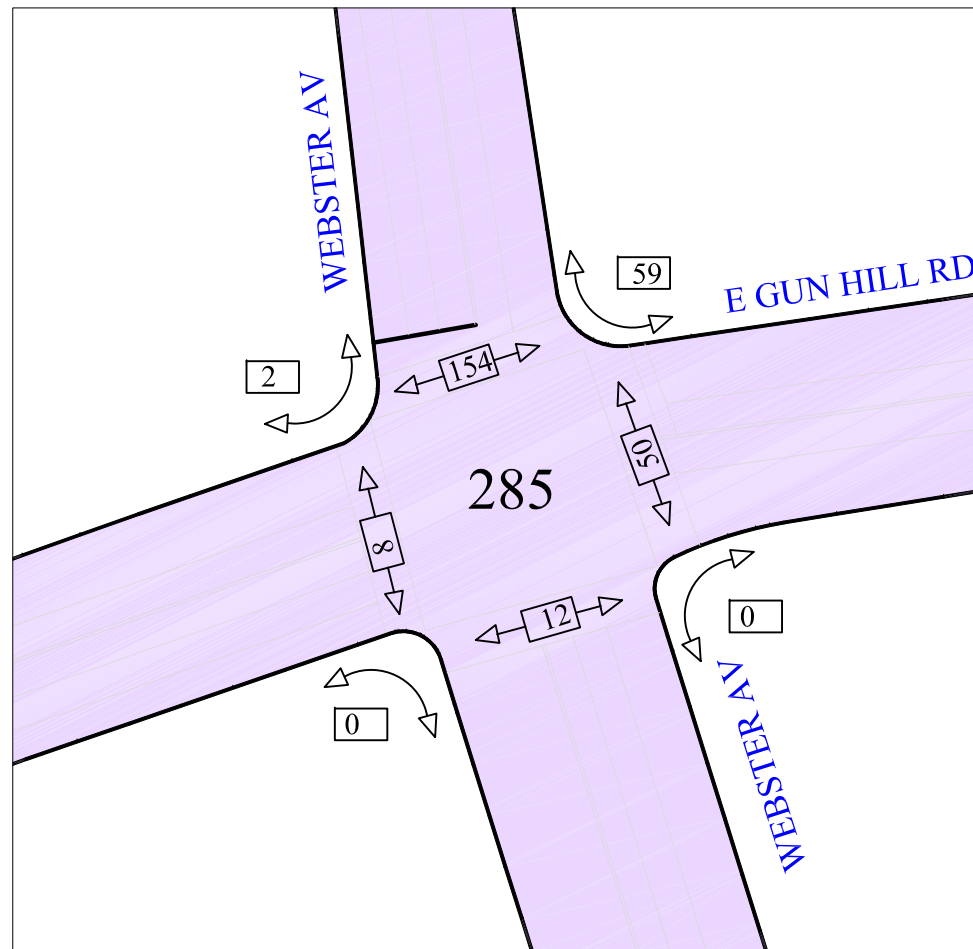
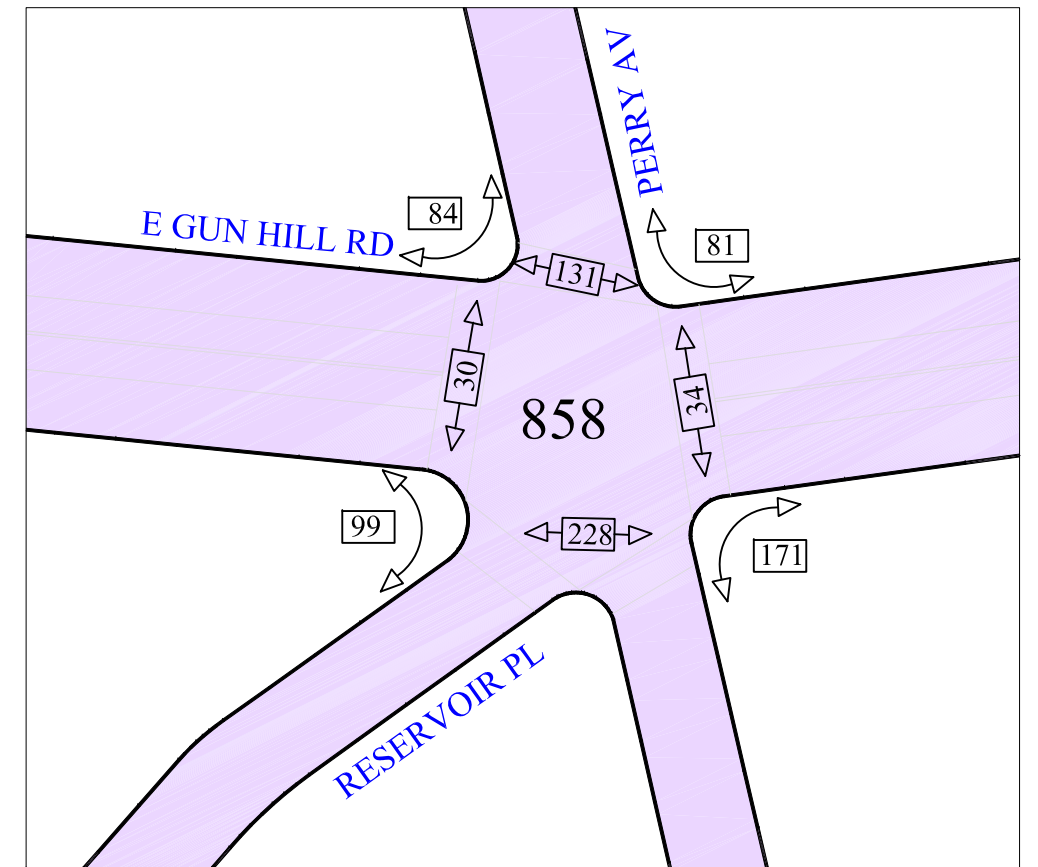
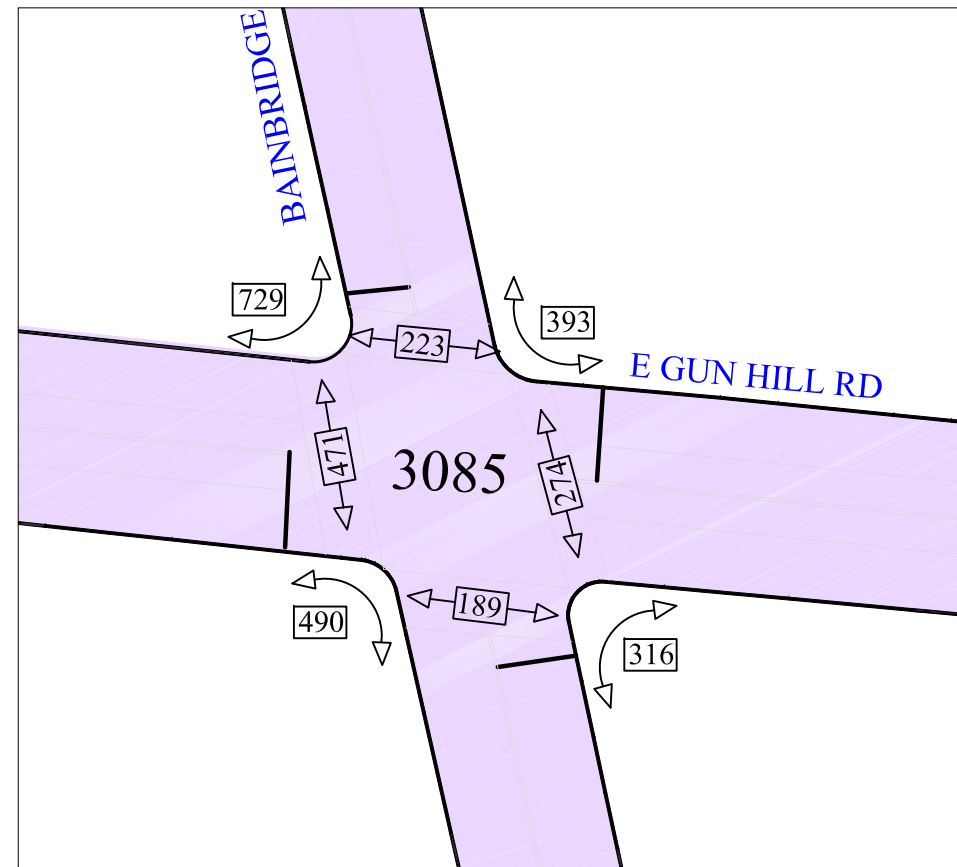
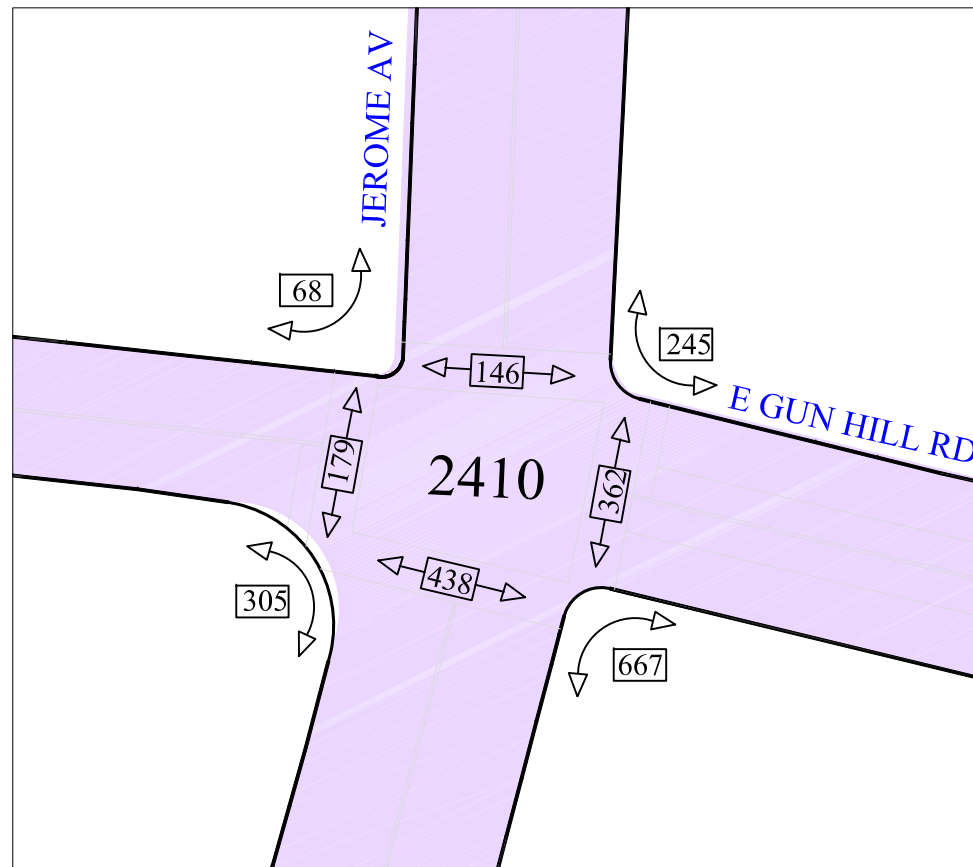


**Figure 16: Peak Hour Pedestrian Volumes**




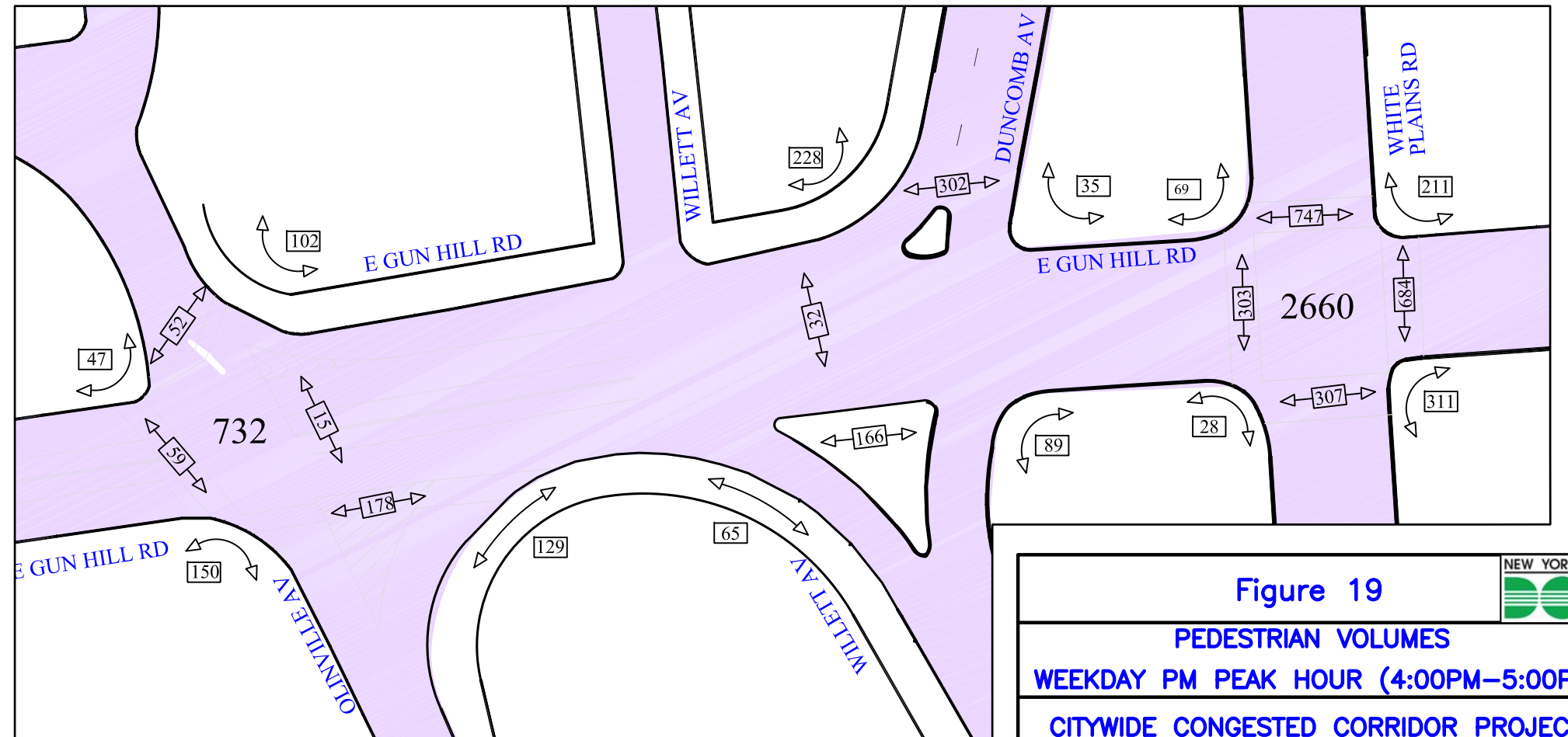
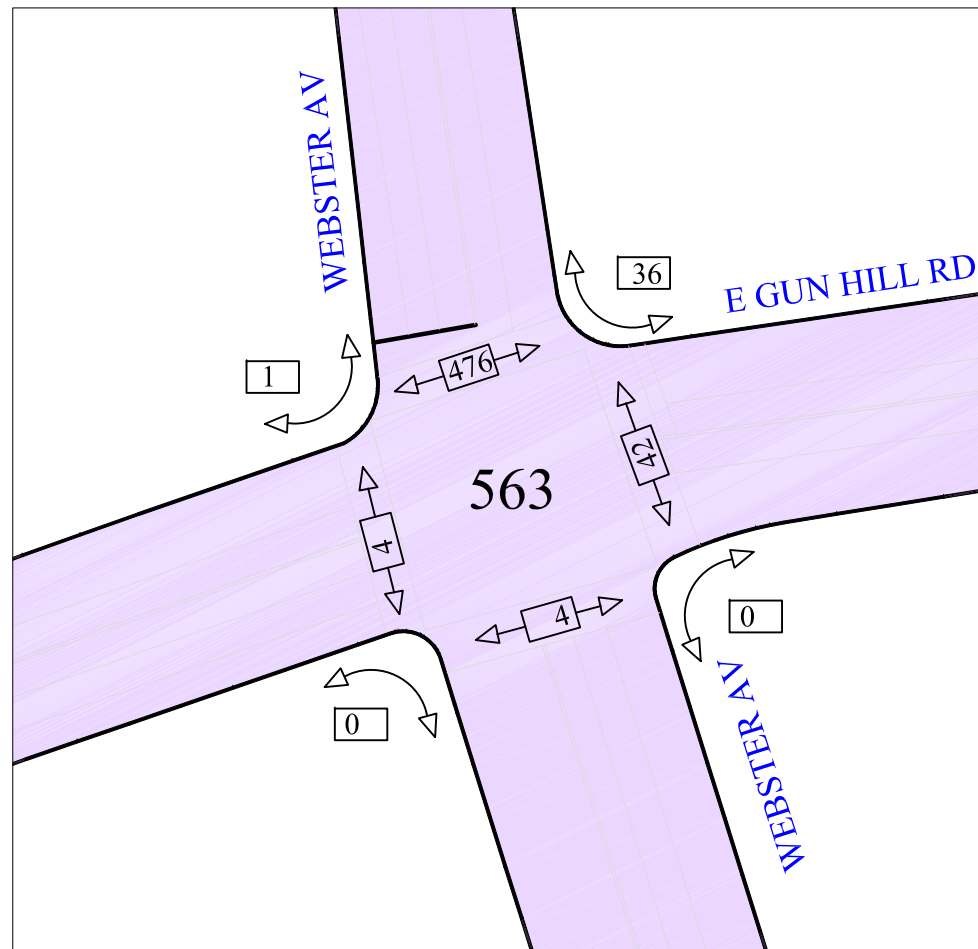
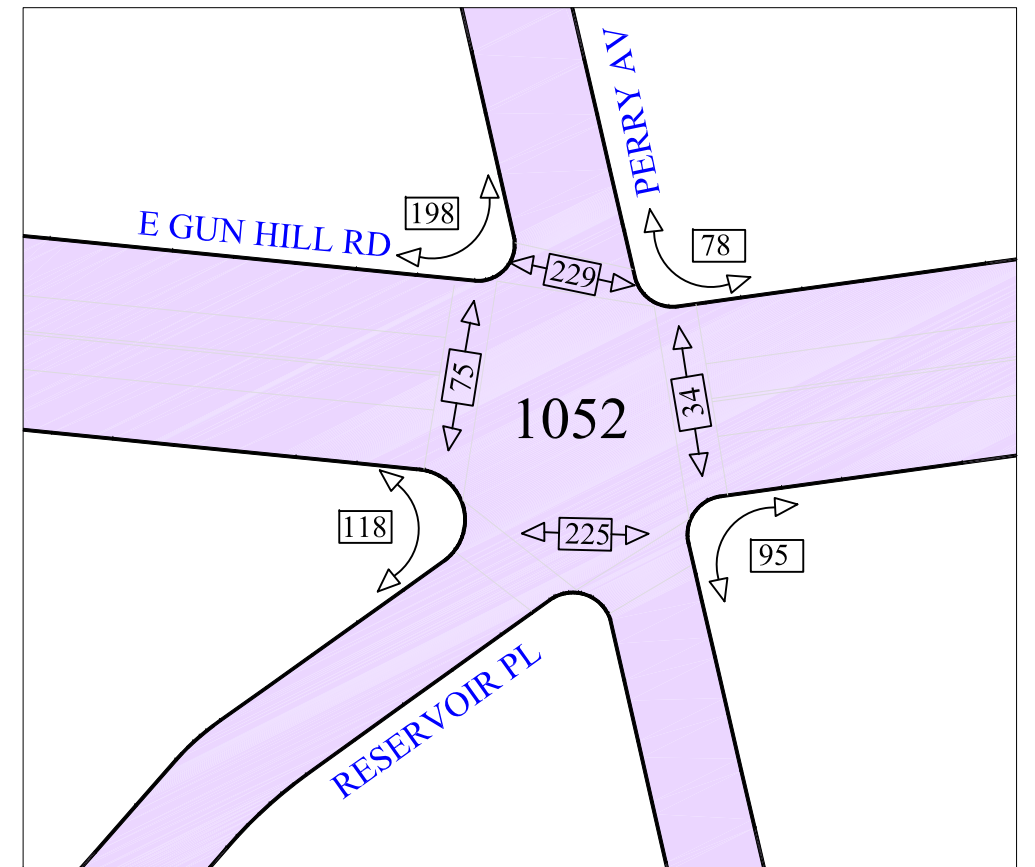
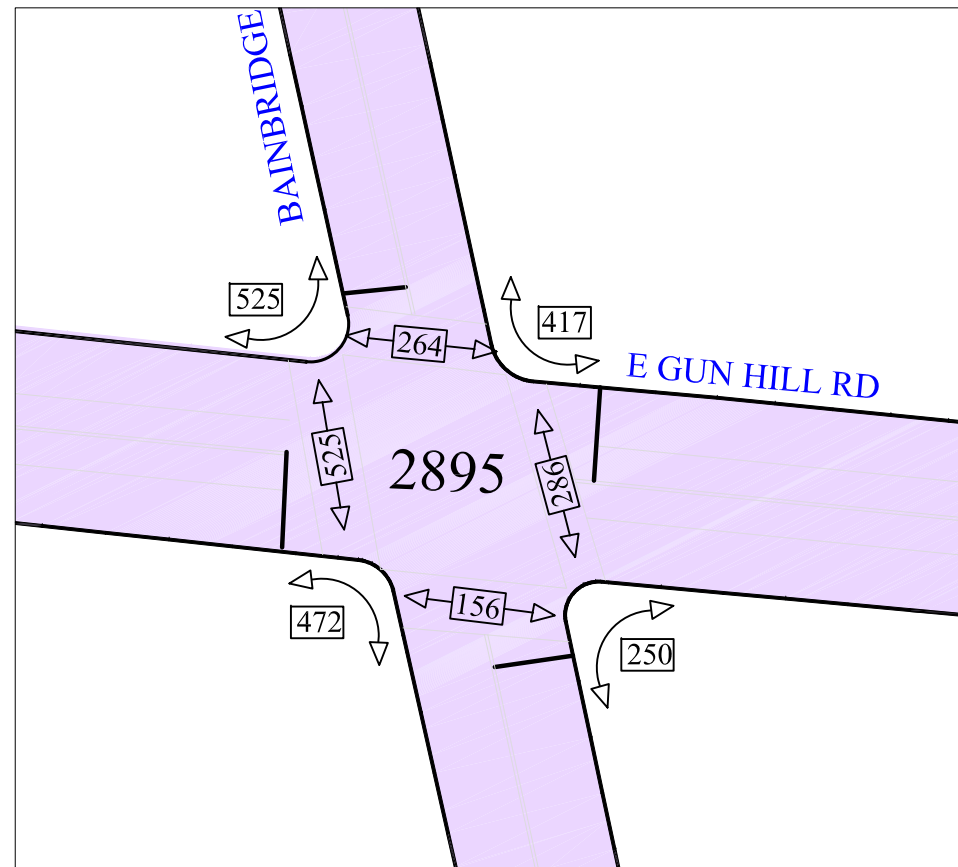
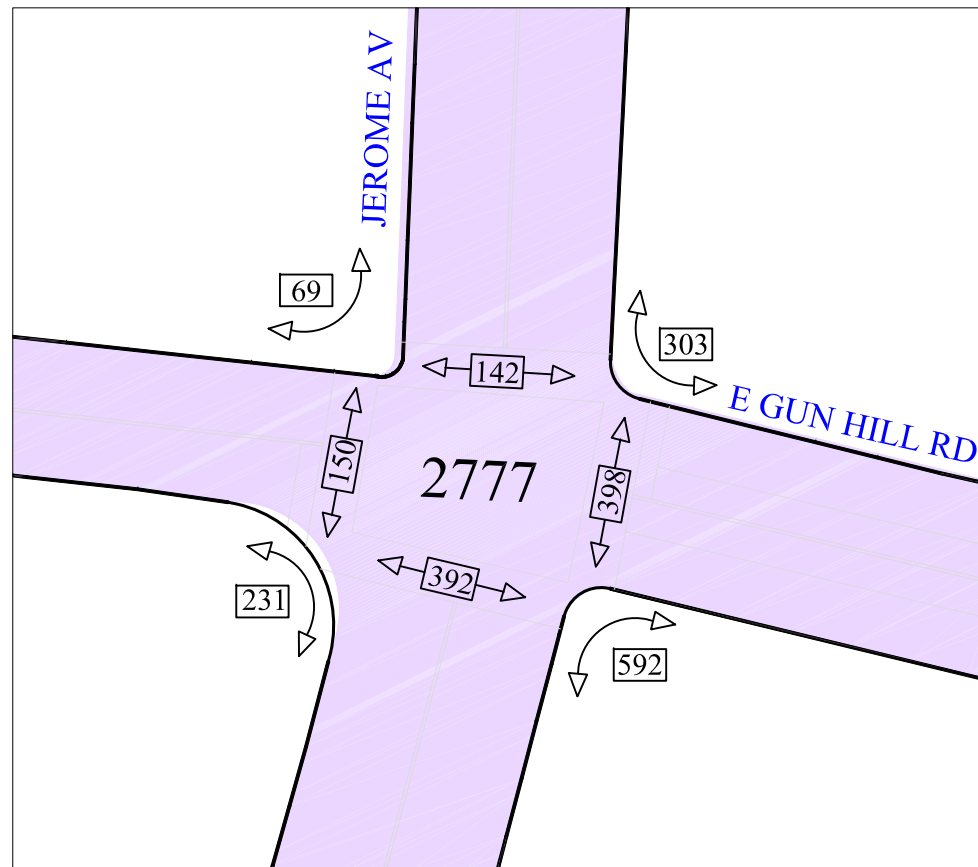
**Figure 17**  
**PEDESTRIAN VOLUMES**  
**WEEKDAY AM PEAK HOUR (7:45AM-8:45AM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**






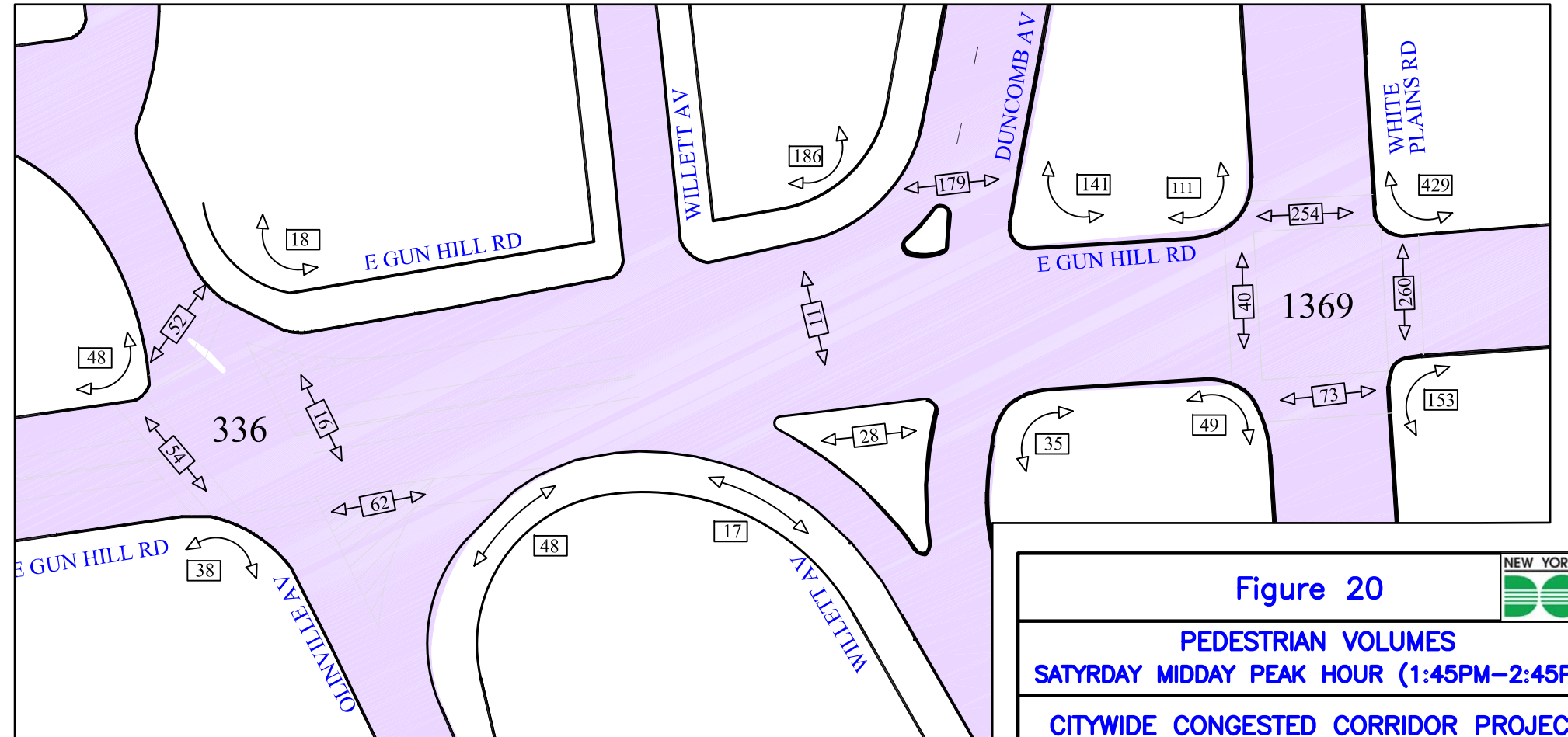
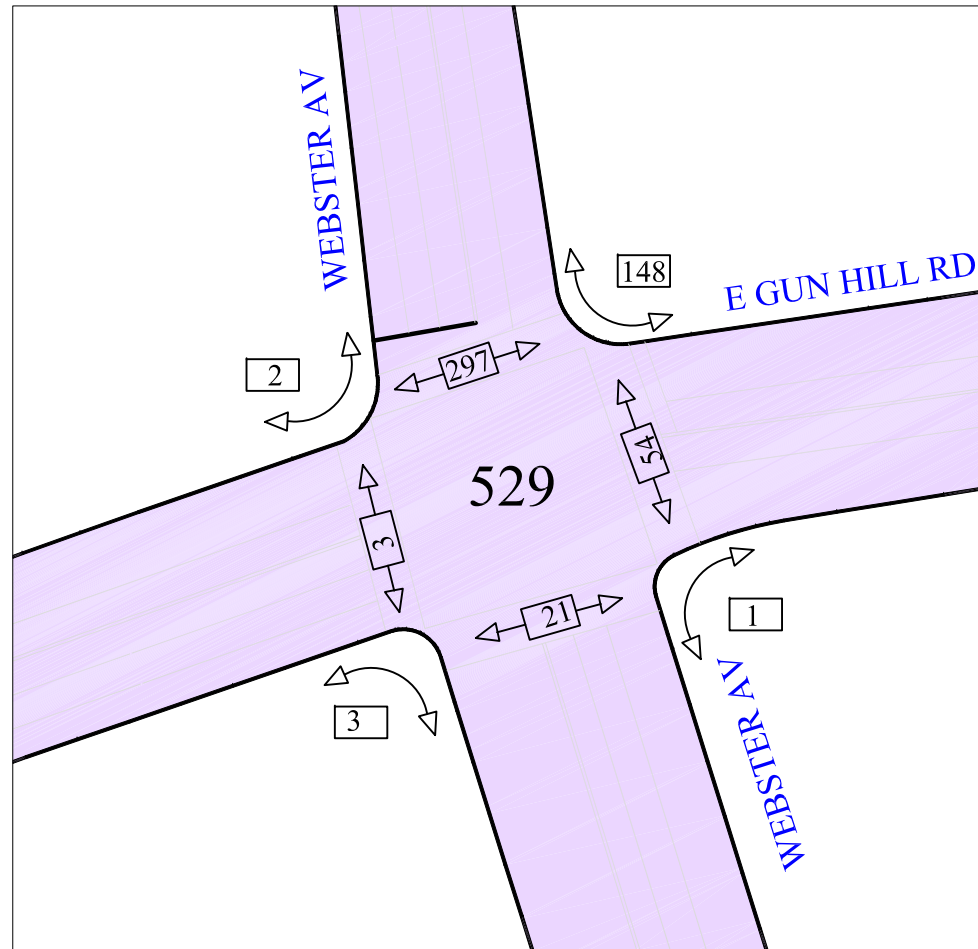
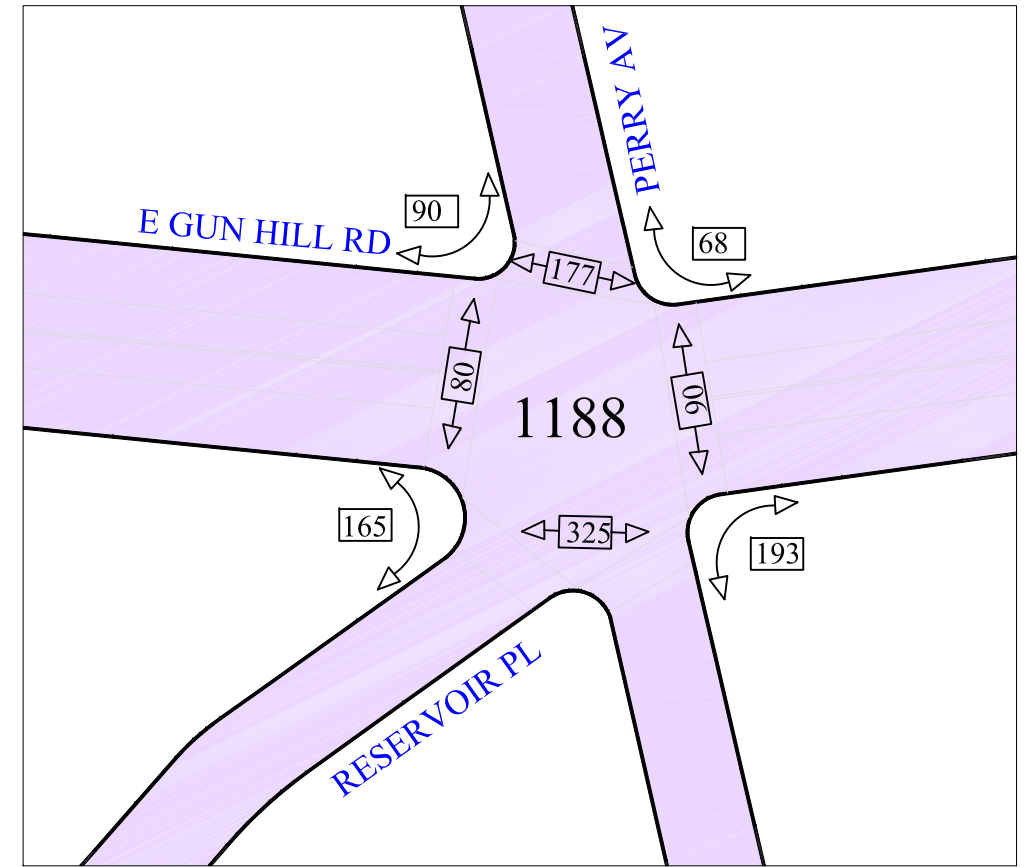
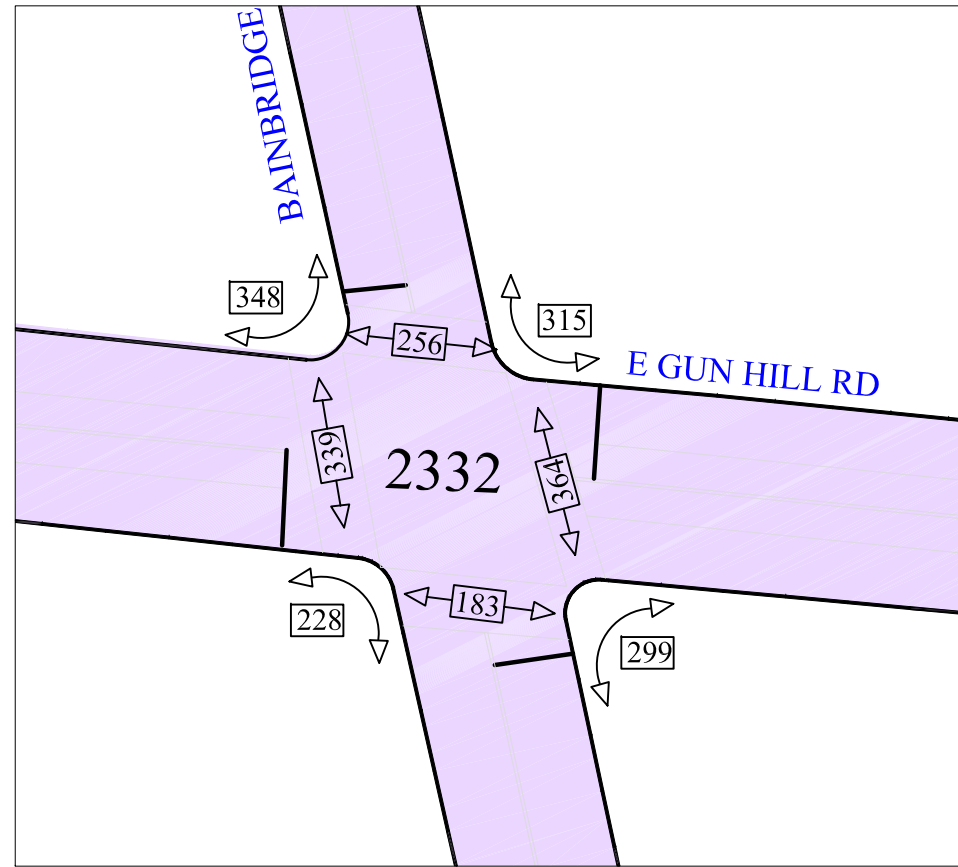
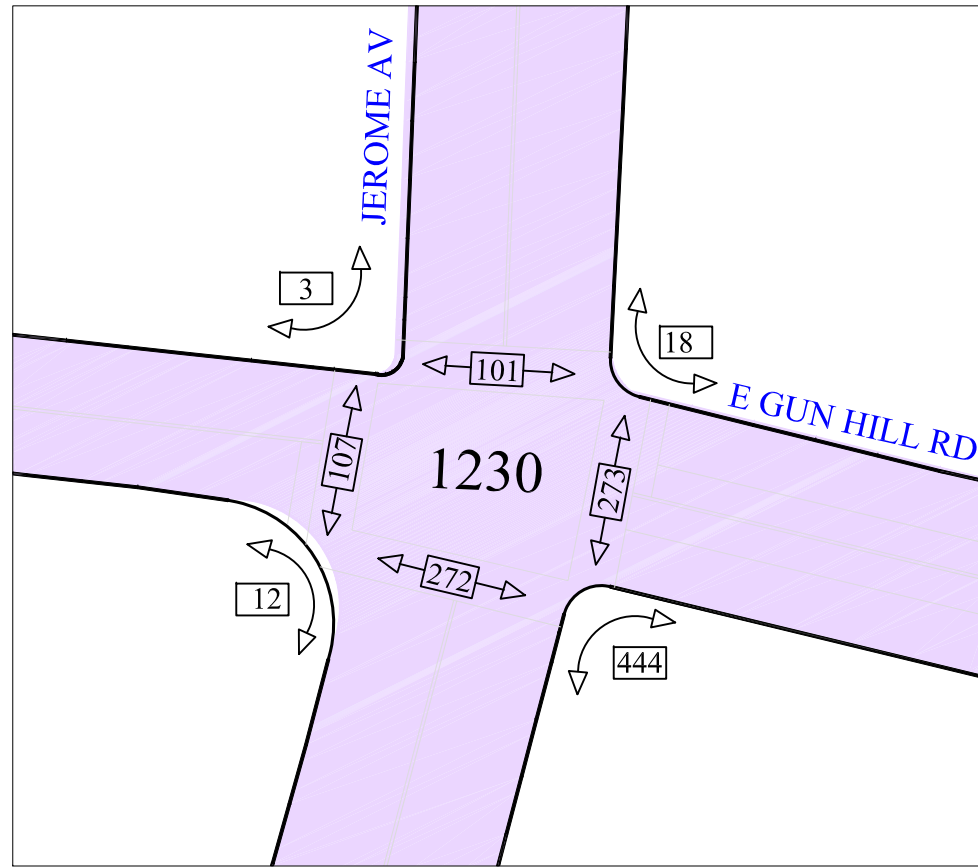
**Figure 18**  
**PEDESTRIAN VOLUMES**  
**WEEKDAY MIDDAY PEAK HOUR (12:30PM-1:30PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**





**Figure 19**  
**PEDESTRIAN VOLUMES**  
**WEEKDAY PM PEAK HOUR (4:00PM-5:00PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**





**Figure 20**  
**PEDESTRIAN VOLUMES**  
**SATURDAY MIDDAY PEAK HOUR (1:45PM-2:45PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**





Analysis of pedestrian flow involves quantifying the comfort level for pedestrians using level-of-service designations. Corners and crosswalks are analyzed using parameters such as pedestrian volume, effective street corner/crosswalk area, conflicting turning vehicles, obstructions, and pedestrian signal timings.

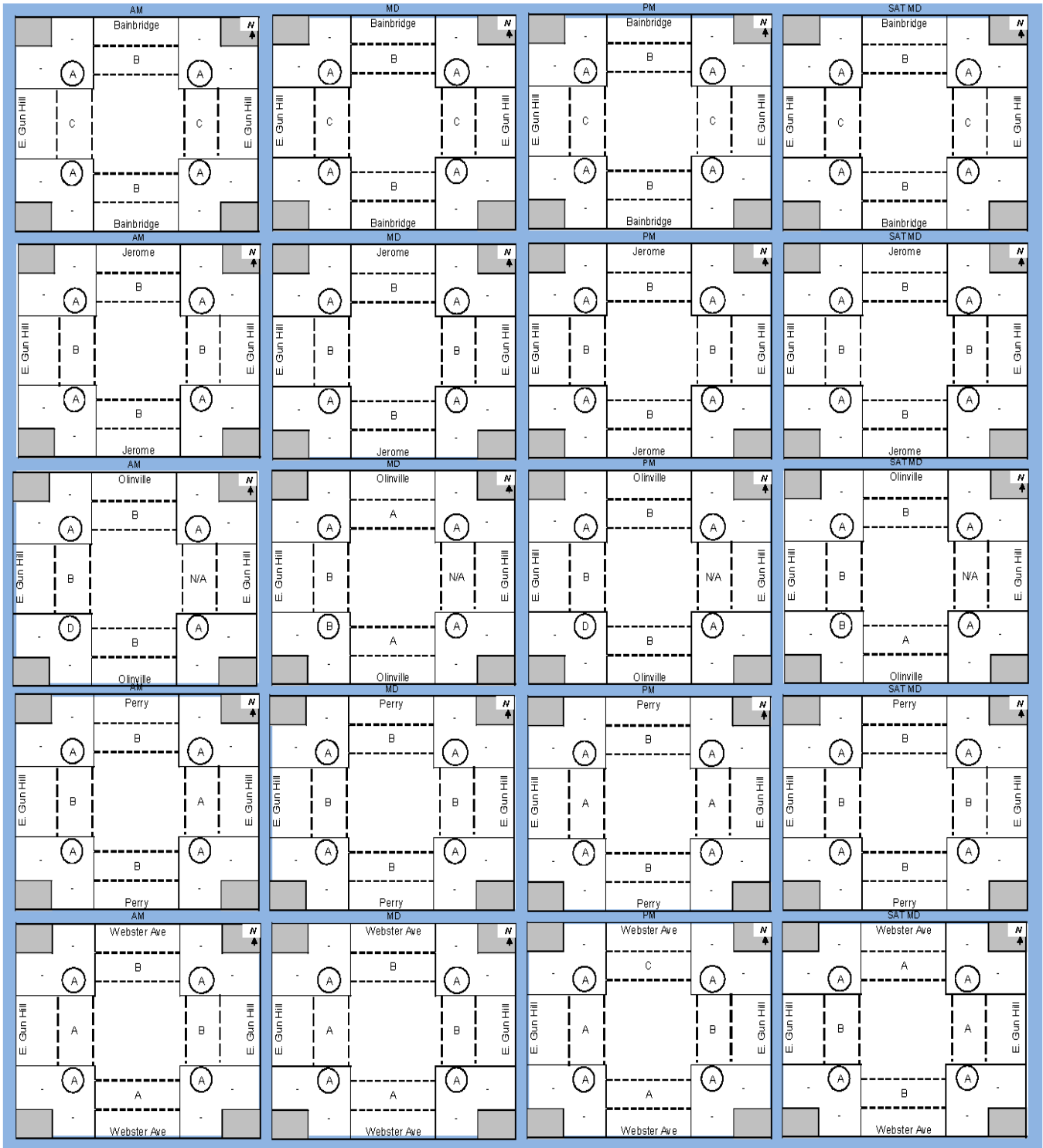
Pedestrian flow conditions were analyzed using the Highway Capacity Manual (HCM) methodology for corners and crosswalks. The methodology for these analyses is based on pedestrian spacing, expressed as square feet per pedestrian during the peak 15-minute period. The Level of Service (LOS) ranges for corners and crosswalks are shown below in Table 3.

**TABLE 3: LOS CRITERIA FOR CORNERS AND CROSSWALKS**

<b>LOS</b>	<b>SQUARE-FEET PER PEDESTRIAN</b>
A	> 60
B	>40-60
C	>24-40
D	>15-24
E	>8-15
F	≤ 8

Source: 2000 Highway Capacity Manual

Typically, mid LOS “D” or better is considered an acceptable operational level for urban areas. Figure 20 presents the existing levels-of-service for crosswalks and street corners at five selected intersections with substantial pedestrian volumes along the East Gun Hill Road corridor. All operate at LOS C or better.

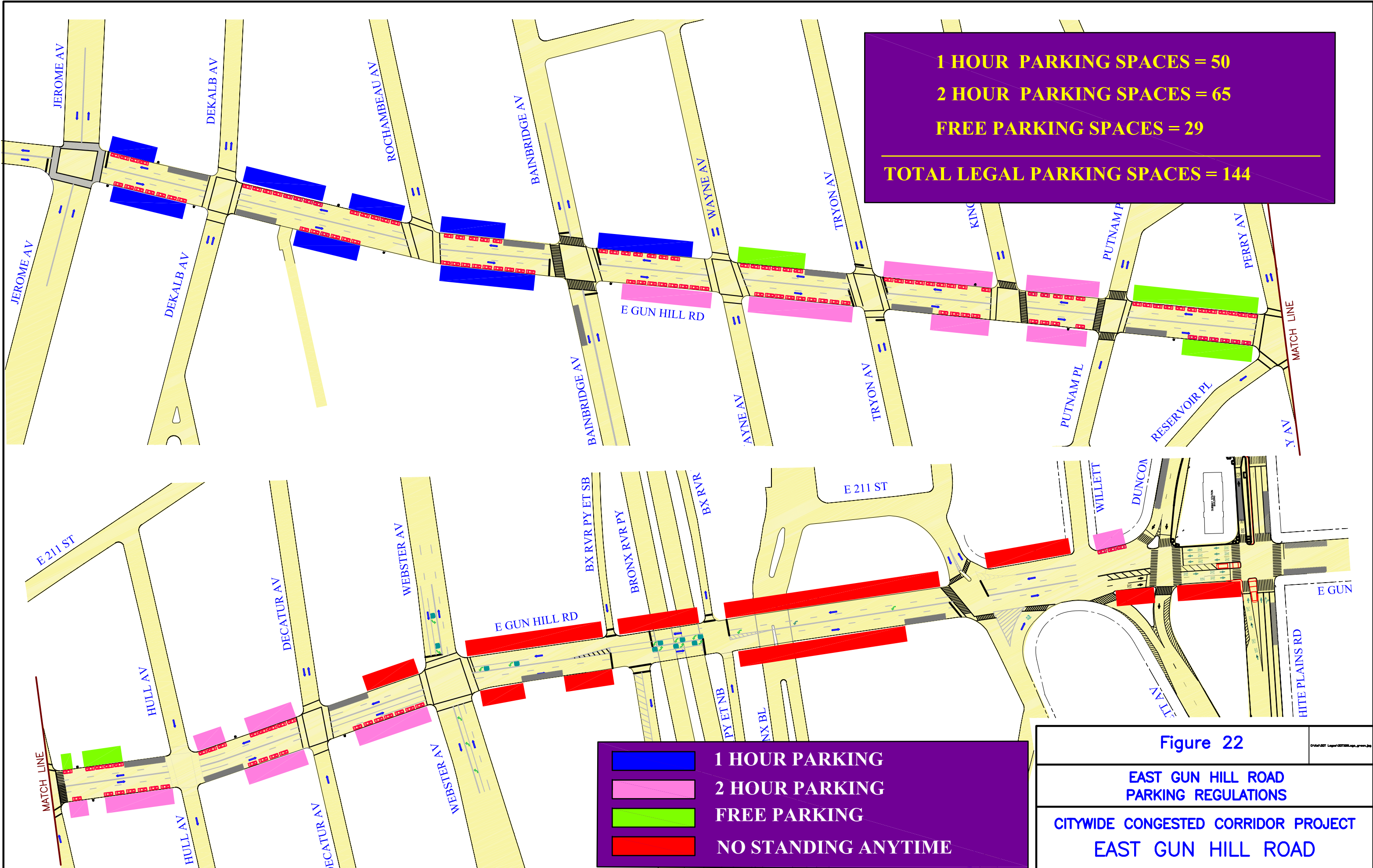


**Figure 21: Pedestrian LOS at Crosswalks and Sidewalk Corners**

### **3.5 PARKING**

An inventory of existing on-street parking was conducted along East Gun Hill Road between Jerome Avenue and Webster Avenue (parking is prohibited between Webster Avenue and White Plains Road with the exception of three parking spaces between southbound White Plains Road and Willet Avenue along the north curb). The details of the parking regulations are presented in Figure 22.

There are 144 legal parking spaces on East Gun Hill Road between Jerome Avenue and Webster Avenue. Seventy-four spaces are located along the north curb, and 70 are along the south curb. The hours for street cleaning when parking is not permitted are 8:30-9:00 AM along the north curb, and 8:00-8:30 AM along the south curb, every day except Sunday. The exception is the south side between Putnam Place and Perry Avenue which has no street cleaning regulations. Other parking prohibitions are between Decatur Avenue and Webster Avenue, with No Standing 7-9 AM and 4-7 PM (except Sunday) on the south side, and No Standing Anytime on the north side. Also, there are nine bus stops (five on the north side and four on the south side) where standing is not permitted anytime.



**1 HOUR PARKING SPACES = 50**  
**2 HOUR PARKING SPACES = 65**  
**FREE PARKING SPACES = 29**  


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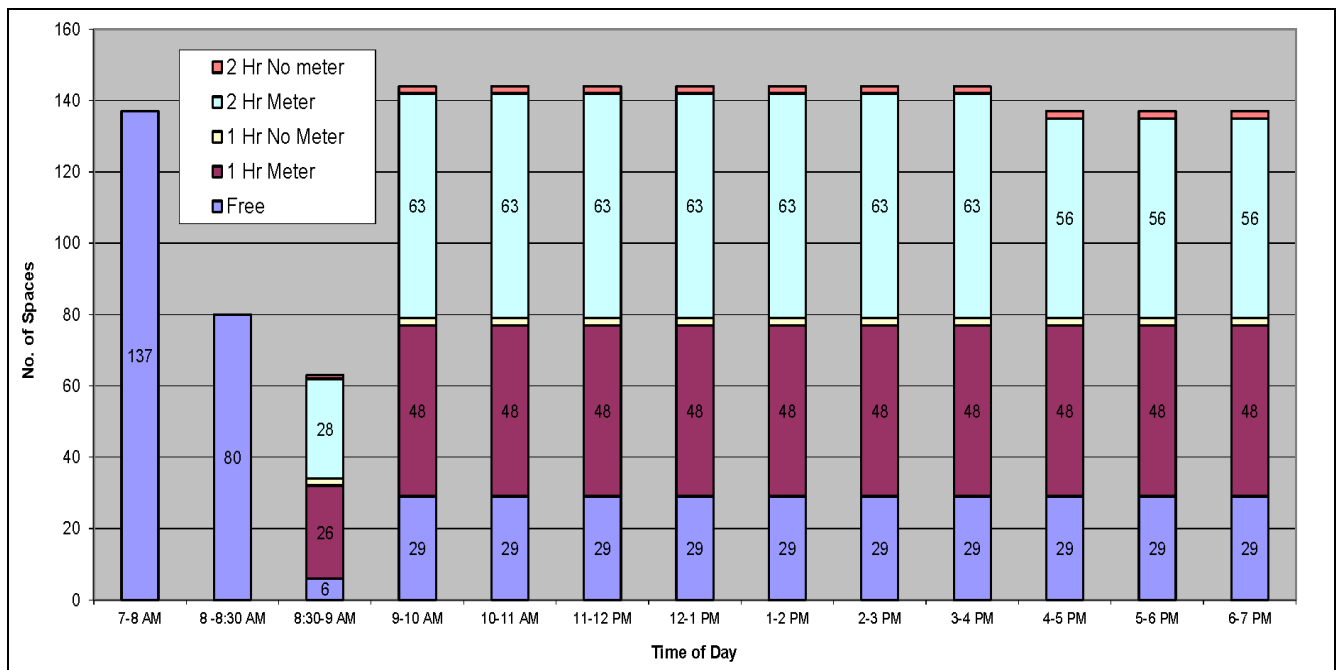
**TOTAL LEGAL PARKING SPACES = 144**

**1 HOUR PARKING**  
 **2 HOUR PARKING**  
 **FREE PARKING**  
 **NO STANDING ANYTIME**

**Figure 22**  
**EAST GUN HILL ROAD**  
**PARKING REGULATIONS**  
 CITYWIDE CONGESTED CORRIDOR PROJECT  
**EAST GUN HILL ROAD**

A summary of parking supply is presented in Figure 23. The 144 parking spaces fall into three categories: one-hour, two-hour and free. The one- and two-hour time limits are in effect every day except Sunday 9AM-7PM on the north side, 8:30AM-7PM on the south side (except for the south side between Decatur Avenue and Webster Avenue mentioned earlier, which are in effect 9AM-4PM). All spaces are free after 7PM.

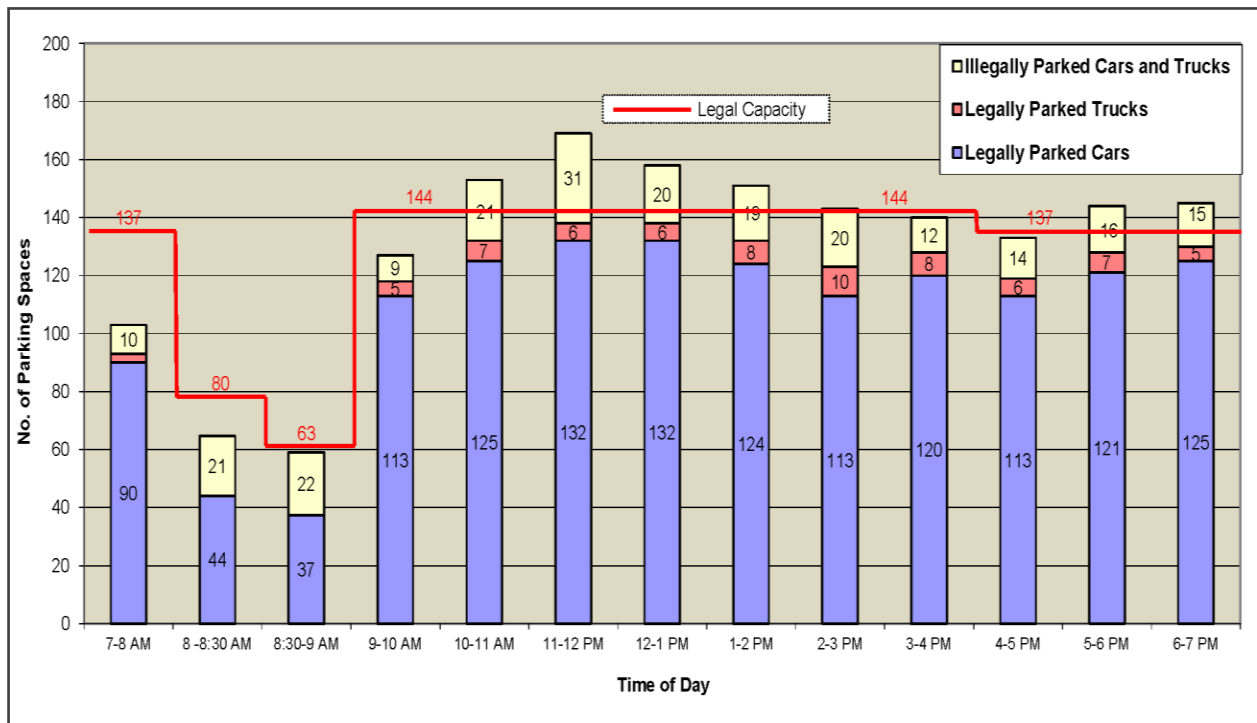
There are 48 one-hour metered spaces, and two spaces signed as 1-hour but with no meter. The one-hour spaces are at the western end of the corridor near Montefiore Medical Center. There are 63 two-hour metered spaces, and two spaces signed as two-hour but with no meter. The two-hour spaces are located east of the hospital between Bainbridge Avenue and Webster Avenue. The remaining 29 spaces are non-metered free parking, located in front of residential blocks.



**Figure 23: Weekday Parking Supply by Time of Day**

Parking activities were recorded in one hour tours on one midweek day between 7AM and 7PM in July 2010. Vehicle types were classified as passenger vehicle, commercial van, truck, police, fire or other emergency vehicle. Illegally parked vehicles were recorded as double parked, fire hydrant, standing in no-standing areas, etc. Hourly utilization was determined for each blockface. License plates were recorded to determine parking duration.

Figure 24 presents utilization results. Utilization levels at legal spaces reaches between 95-97% during the 11AM-1PM period. For each hour during the broader 10AM-7PM period, utilization levels at legal spaces exceed 80%. However, this may be somewhat misleading due to the fact that although there were occasional available spaces, these were often blocked by double parked vehicles, including trucks that cannot fit in these spaces. Further, some of these spaces were available only during the short time between successive vehicles leaving and arriving at a parking space. Figure 24 also indicates a significant number of illegally parked cars and trucks throughout the day, with at least 20 illegally parked vehicles from 10AM to 7PM, and as many as 37 between 11 AM and 12 PM. When considering illegally parked vehicles, the corridor operates at or over capacity from 10AM until 7PM.



**Figure 24: Parking Utilization**

Parking duration was determined for all vehicles that were parked at one- and two hour spaces in order to quantify the perception that vehicles illegally “feed the meter.” During the time meters were in effect, a total of 127 vehicles – 84 at the one-hour spaces and 43 at the two-hour spaces – exceeded the time limit. The breakdown is as follows:

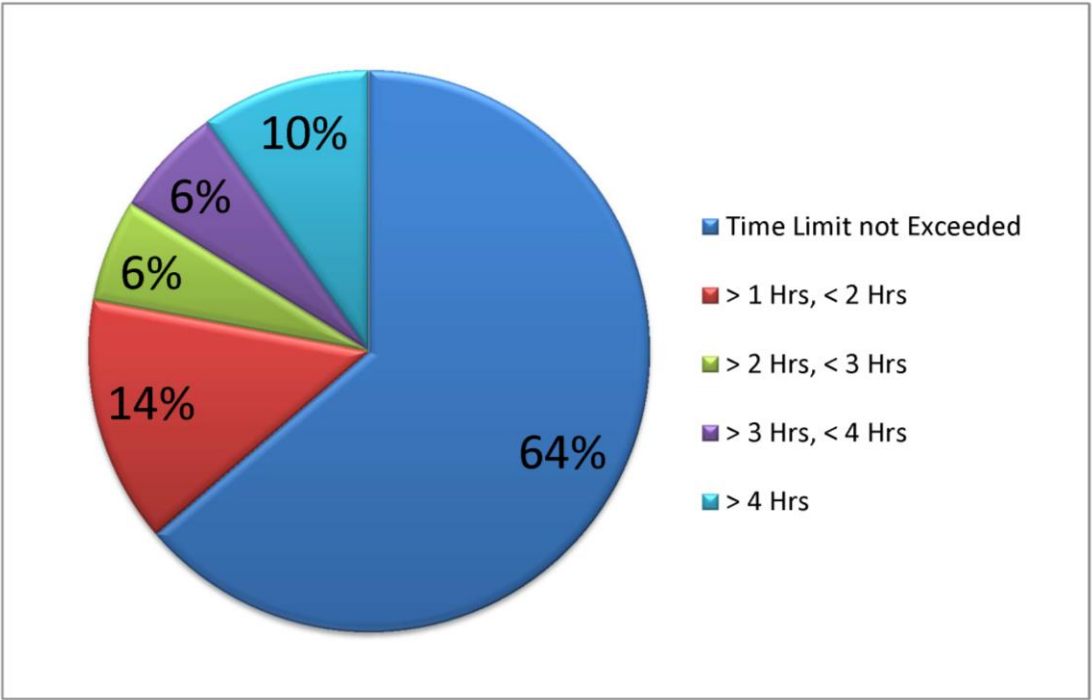
(50) One-Hour Parking Spaces

- 64% of the time meters are in effect, one-hour time limit was not exceeded.
- 52 vehicles parked between 1 and 2 hours, accounting for 14% of the time meters are in effect.
- 13 vehicles parked between 2 and 3 hours, accounting for 6% of the time meters are in effect.
- 10 vehicles parked between 3 and 4 hours, accounting for 6% of the time meters are in effect.
- 9 vehicles parked longer than 4 hours, accounting for 10% of the time meters are in effect.

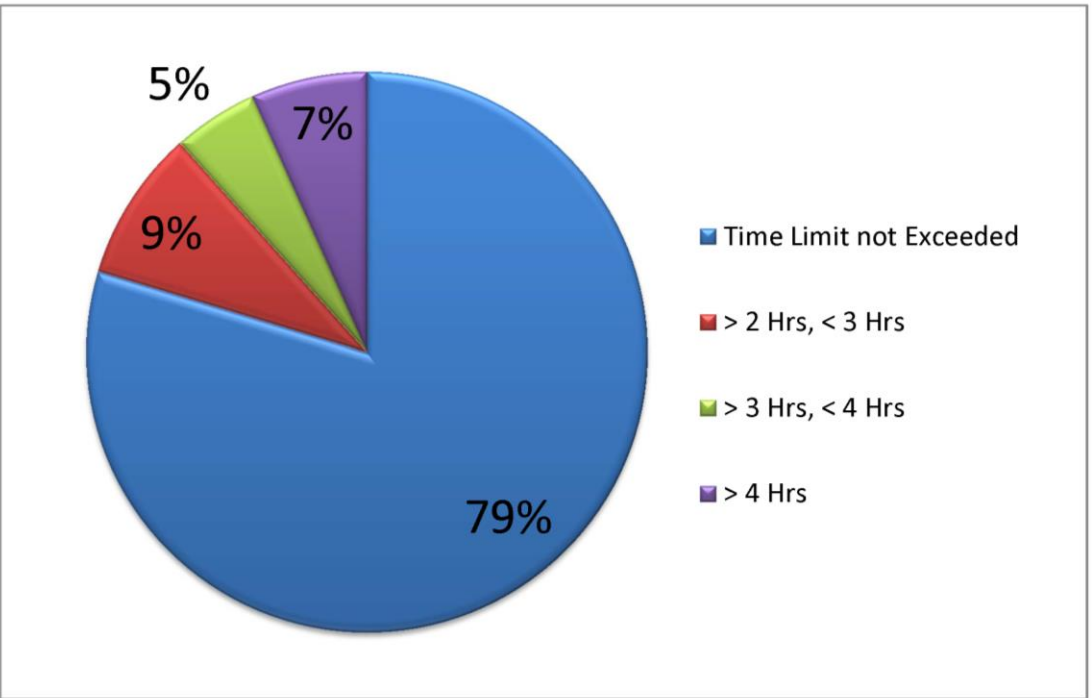
### (65) Two-Hour Parking Spaces

- 79% of the time meters are in effect, two-hour time limit was not exceeded.
- 25 vehicles parked between 2 and 3 hours, accounting for 9% of the time meters are in effect.
- 10 vehicles parked between 3 and 4 hours, accounting for 5% of the time meters are in effect.
- 8 vehicles parked longer than 4 hours, accounting for 7% of the time meters are in effect.

These results are illustrated in Figures 25 and 26.



**Figure 25: Parking Duration at (50) 1-Hour Parking Spaces (% of Time Meters in Effect)**



**Figure 26: Parking Duration at (65) 2-Hour Parking Spaces (% of Time Meters in Effect)**



Off-street parking facilities were not surveyed for this study. However, because of high parking demand due for Montefiore Medical Center and North Central Bronx Hospital, off-street parking garages and parking lots within the study area have been identified at the following locations:

- Montefiore Hospital Parking Garage with a capacity of 800 parking spaces located on East 210<sup>th</sup> Street between Rochambeau Avenue and Steuben Avenue;
- Montefiore Hospital Parking Garage with a capacity of 350 spaces located on Bainbridge Avenue between east 210<sup>th</sup> street and East Gun Hill Road;
- Montefiore Hospital Parking Garage with a capacity of 600 spaces on Wayne Avenue between East 210<sup>th</sup> Street and east Gun Hill Road (this garage is for private use with permits only)

Montefiore Hospital intends to build a 40-space stacker-lift type parking lot on Wayne Avenue just north of East Gun Hill Road.

### 3.6 SAFETY

Reportable crashes for the most recent three-year period were summarized for intersections and mid-block locations along East Gun Hill Road corridor. A reportable crash in New York State is defined as a crash involving death, injury or at least \$1,000 in property damage. These crashes were used to identify overall crash patterns and clusters along the study corridor.

#### Crash Frequency

Over the 3-year period, there were 361 reportable crashes along the corridor. Of these, 328 (90%) occurred at intersections while the remaining 33 crashes occurred at mid-block locations (see Figure 27).

The highest number of intersection crashes occurred at White Plains Road where 69 crashes occurred during the 3-year period. This was followed by Webster Avenue (65 crashes), Jerome Avenue (30 crashes) and Bainbridge Avenue (24 crashes). The high number of crashes at White Plains Road can be attributed to subway station for the Nos. 2 and 5 trains located at this intersection with pedestrians entering and exiting the station, the intersection configuration as well as being a transfer point between numerous buses.

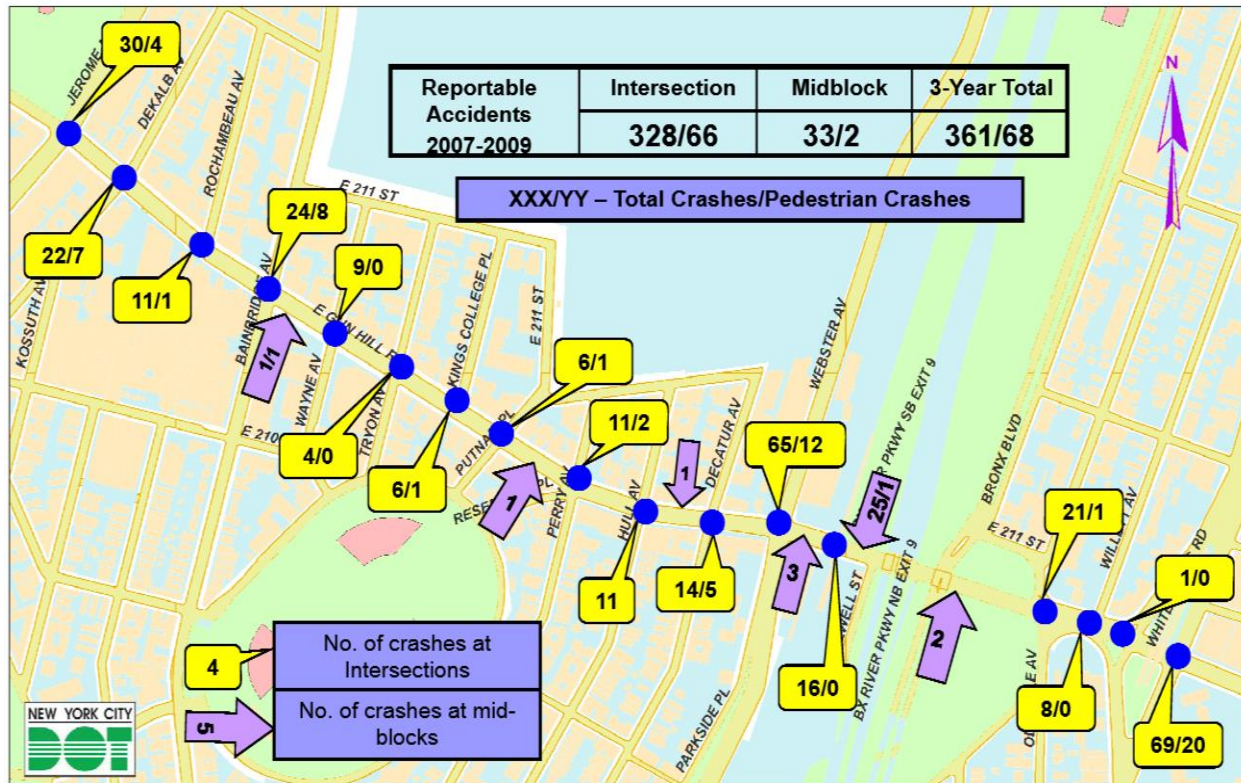
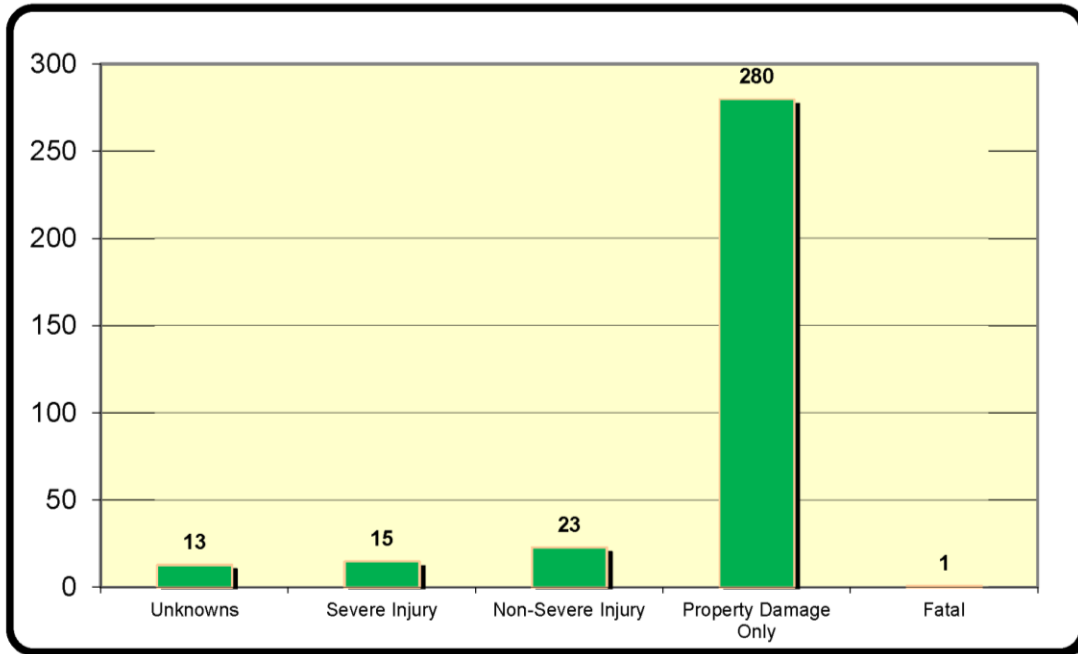


Figure 27: East Gun Hill Road Crashes

Crash data are classified in terms of severity and comprise the following categories: Fatal, Severe Injury, Non-severe Injury, and Property Damage Only (over \$1,000). There was one fatal crash during the 3-year analysis period. The fatal crash occurred at Webster Avenue on February 23, 2007 on the southern leg of the intersection. According to the police report the pedestrian

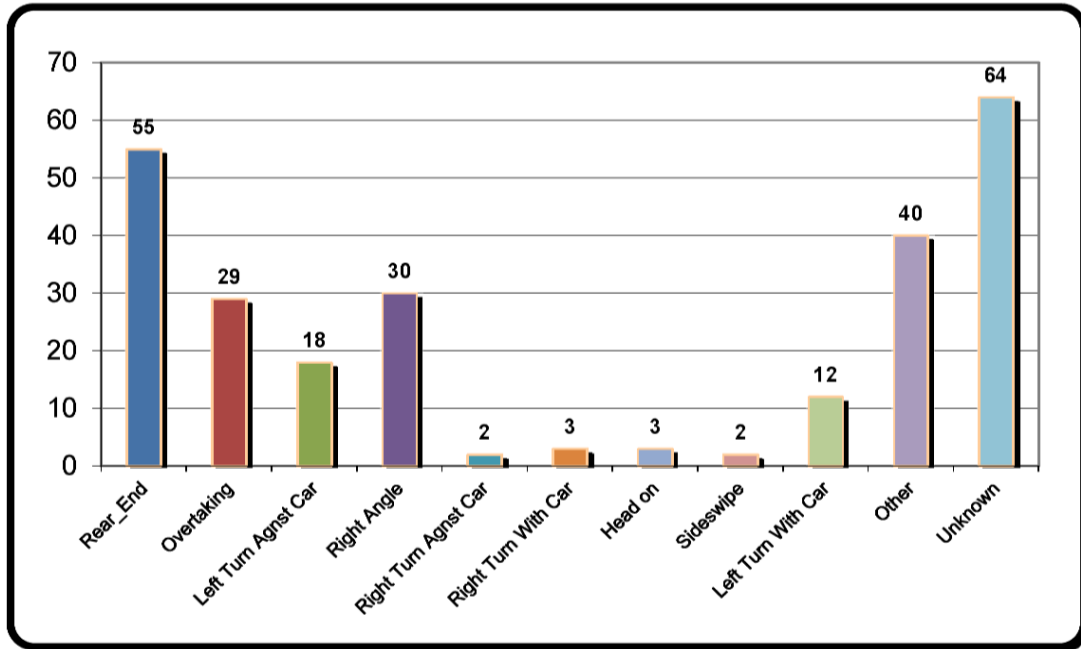
was crossing against the signal while the protected westbound left turn had green arrow. As shown in Figure 28, there were 15 crashes with severe injuries, 23 crashes with non-severe injuries and 280 crashes with property damage only.



**Figure 28: East Gun Hill Road Crashes Classified by Severity**

Crashes involving pedestrians were the predominant type along the corridor with 68 crashes, accounting for 19% of all crashes. The highest number of pedestrian crashes occurred at the intersection of East Gun Hill Road and White Plains Road (20 crashes), followed by Webster Avenue (12 crashes) and Bainbridge Avenue (8 crashes).

Collisions classified by crash type are shown in Figure 29. There were a total of 293 crashes that involved motor vehicles. The highest frequency of vehicular crashes was rear-ending collisions with a total of 55, accounting for 19% of all crashes followed by 30 right angle crashes (10%), 29 overtaking crashes (9.8%), 18 left turn against car crashes (6%), 12 left turn with car crashes (4%). A total of 104 vehicular crashes were classified as “other” or “unknown”.



**Figure 29: East Gun Hill Road Crashes Classified by Type**

### 3.7 GOODS MOVEMENT

Figure 30 illustrates the truck routes in the study area. East Gun Hill Road is designated as a local truck route throughout its length. In addition, Jerome Avenue, Webster Avenue and White Plains Road are also designated as local truck routes.



**Figure 30: Truck Routes**

Goods movement was observed and surveyed at selected locations along the study corridor concurrent with parking surveys. Temporal and spatial distribution of truck activities, compliance with curbside and other related regulations along the corridor (and major side-street approaches) were studied to determine the effect of truck traffic and loading/unloading activities on general traffic flow along the corridor. Curbside loading and unloading activities were observed and recorded via video recording at four locations for a period of 5 hours.

The following is a summary of the findings:

- The greatest concentration of trucks loading and unloading was observed on the south side of East Gun Hill Road between Jerome Avenue and Bainbridge Avenue (Photograph 1), and between Perry Avenue and Webster Avenue (Photograph 2).
- Loading and unloading is predominant during the weekday morning and midday periods.
- Trucks were observed to double park, exacerbating traffic congestion and causing lane changing maneuvers by buses and general traffic to bypass them.
- Double parked trucks often block available parking spaces, preventing other vehicles from accessing those spaces (Photograph 1).



*Photograph 1: Trucks unloading during midday between Jerome Avenue and Dekalb Avenue*



*Photograph 2: Truck loading/unloading between Perry Avenue and Hall Avenue*

### 3.8 TRANSIT

East Gun Hill Road is an important cross-town transit corridor in the northern portion of the Bronx. Five bus routes use segments of East Gun Hill Road. In addition, several bus routes cross East Gun Hill Road along Jerome Avenue, Bainbridge Avenue, Webster Avenue and White Plains Road. Detailed bus lines and travel routes within the study area are illustrated in Figure 31.



**Figure 31: Transit Routes**

East Gun Hill Road corridor is served by the following bus routes:

- Bx10 – Local service between Riverdale and Norwood
- Bx28 – Local service between Co-Op City and Fordham
- Bx30 – Local service between Co-Op City and Norwood
- Bx38 – Local service between Bay Plaza Shopping Center and Norwood
- Bx41- Local and Limited-Stop service between East Gun Hill Road/White Plains Road and the Hub (3 Avenue/149<sup>th</sup> Street)
- Bx55 – Limited-Stop weekday only service between East Gun Hill Road/White Plains Road and the Hub (3 Avenue/149<sup>th</sup> Street)

Table 4 presents the scheduled frequency of all bus routes operating along the East Gun Hill Road corridor.

**TABLE 4: BUS ROUTE FREQUENCY ALONG EAST GUN HILL ROAD**

Route #	Weekday (Buses/Hr)			Saturday/Sunday (Buses/Hr)
	AM	Midday	PM	Midday
Bx10	6	5	6	5
Bx28/38	5	4	4	4
Bx30	8	4	6	4
Bx41	14	7	12	10
Bx55	6	4	5	0
Westbound	AM	Midday	PM	Midday
Bx10	7	5	6	4
Bx28/38	5	4	4	4
Bx30	8	4	7	4
Bx41	13	7	11	10
Bx55	5	4	5	0

**TABLE 5: AVERAGE DAILY RIDERSHIP FOR BUS ROUTES EAST GUN HILL ROAD**

Route	Weekday (Avg. Passengers/Day)	Weekend (Avg. Passengers/Day)	Annual (Passengers/Year)
Bx10	10,353	4,618	3,134,940
Bx28/38	16,343	9,984	5,241,494
Bx30	9,264	4,052	2,795,486
Bx41	23,434	14,904	7,580,458
Bx55	15,223	2,704	4,142,276

Bus lines Bx16, Bx34 and BxM4 operate in the north-south direction, traveling along Bainbridge Avenue while crossing East Gun Hill Road. The bus routes are as follows:

- Bx16 – Local service between Pelham and Norwood
- Bx34 – Local weekday only service between Fordham and Woodlawn
- BxM4 – Express Service between Woodlawn, Bronx and Midtown, Manhattan



In addition, B-L4, B-L20 and B-L21 B-line buses connecting to Westchester County travel along Jerome Avenue while crossing East Gun Hill Road.

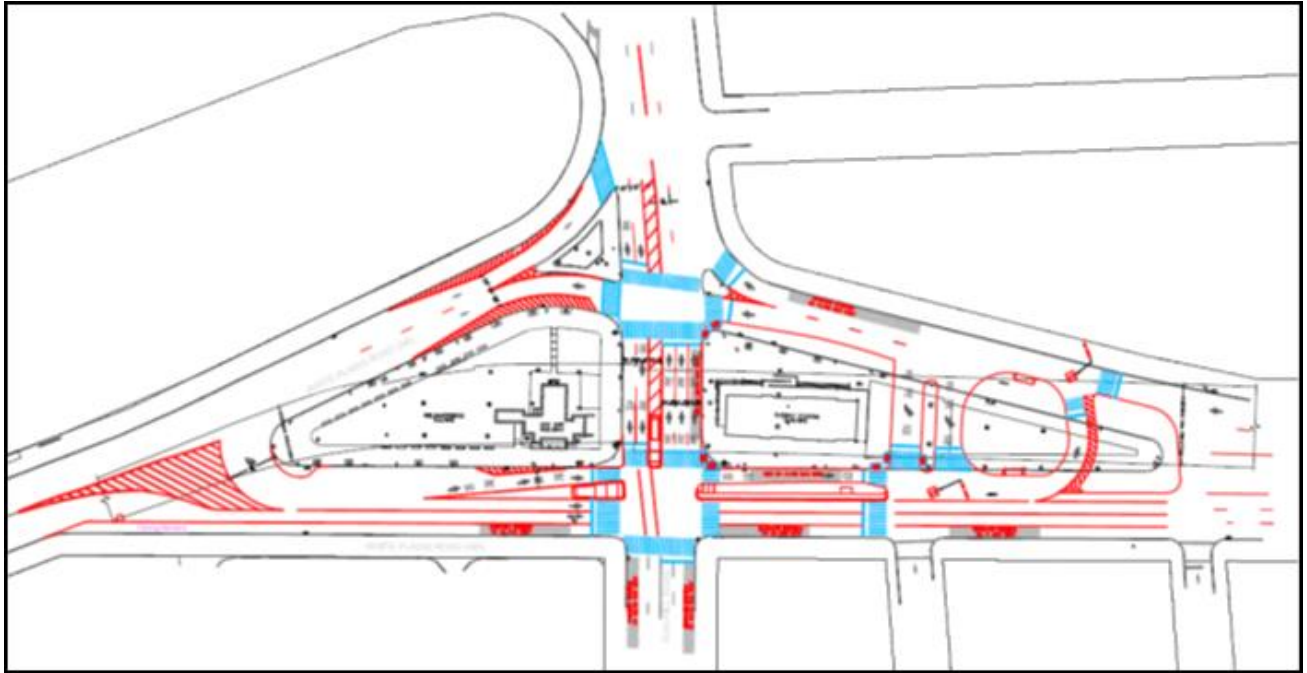
While no subway lines operate along East Gun Hill Road, two lines cross the corridor. The No. 4 train runs along Jerome Avenue, with stops at Mosholu Parkway and Woodlawn, a few blocks south and north of east Gun Hill Road, respectively. The Nos. 2 and 5 trains run along White Plains Road, with a stop at Gun Hill Road.

#### The Gun Hill Road Intermodal Station

The Metropolitan Transit Authority designed the Bronx borough's first "intermodal transport facility" next to the Gun Hill Road station on White Plains Road (see Figures 32 and 33). The estimated \$6 million enclosed station is designed to facilitate connections between the Nos. 2 and 5 subway lines with the many bus lines that run through the area. Transfers between subway and bus that previously involved crossing traffic-filled White Plains Road will now be accommodated in a more direct manner.



**Figure 32: Gun Hill Road Intermodal Facility Sketch**



**Figure 33: Gun Hill Road Intermodal Facility Plan**

### 3.9 EXISTING CONDITIONS TRAFFIC ANALYSIS

Baseline existing conditions traffic analysis was conducted using Synchro software. The base input parameters used to conduct the analysis (traffic volumes, peak hour factors, heavy vehicle percentages, etc.) were developed from TMC and ATR data. Geometry, pedestrian, parking and bus data information as well as multiple field observation and travel time and delay runs were utilized to calibrate the existing conditions model.

Level-of-service (LOS) analyses described in this report were performed in accordance with the procedures described in the *2000 Highway Capacity Manual (HCM)*. For signalized intersections, LOS is based on average control delay (in seconds per vehicle) by lane group for each peak hour evaluated. Control delays include stopped delay as well as delays associated with acceleration, deceleration, and queue move-up time at the intersection.

LOS A, B and C generally represent extremely favorable to moderate levels of traffic operations. At LOS “D”, delays are more noticeable. In urban areas, mid-LOS D or better is considered acceptable service. Level of service worse than mid-LOS D considered unacceptable. Table 6 shows the relationships between average control delay and LOS for signalized intersections.

**TABLE 6: LOS CRITERIA**

<b>LOS</b>	<b>Average Control Delay (seconds per vehicle) Signalized Intersections</b>
A	$\leq 10$
B	$> 10$ and $\leq 20$
C	$> 20$ and $\leq 35$
D	$> 35$ and $\leq 55$
E	$> 55$ and $\leq 80$
F	$> 80$

*Source: 2000 Highway Capacity Manual.*

LOS analyses were conducted for 15 of the 18 study intersections for the existing condition for weekday AM, midday and PM and Saturday midday peak hours. Results are not shown for Willet Avenue, southbound White Plains Road or northbound White Plains Road. These locations are analyzed under a separate study for White Plains Road. However, at these locations for this study, data was collected, qualitative observations were made, and improvements recommended. Table 7 shows the volume to capacity (v/c) ratios, delays and LOS for each lane group of the intersections that were analyzed.

**TABLE 7. 2010 EXISTING CONDITIONS LOS ANALYSIS**

Intersection Approach <sup>1</sup>	Mvmt <sup>2</sup>	Weekday AM Peak (7:45-8:45 am)			Weekday Midday Peak (12:30-1:30 pm)			Weekday PM Peak (5:00-6:00 pm)			Saturday Midday Peak (12:30-1:30 pm)		
		v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS
<b>1. East Gun Hill Road and Jerome Avenue</b>													
EB-East Gun Hill Road	LTR	0.81	90.1	F	0.75	32.2	C	0.75	35.5	D	0.76	33.5	C
WB-East Gun Hill Road	LTR	1.03dl	116.4	F	0.68	42.1	D	0.72	91.6	F	0.76	63.9	E
NB-Jerome Avenue	LTR	0.77	50.3	D	0.78	36.2	D	0.83	95.3	F	0.98	63.4	E
SB-Jerome Avenue	LTR	0.93	66.4	E	0.40	18.7	B	0.60	29.0	C	0.32	17.5	B
Overall Intersection			82.2	F		33.2	C		64.3	E		49.1	D
<b>2. East Gun Hill Road and DeKalb Avenue</b>													
EB-East Gun Hill Road	LTR	0.61	80.2	F	0.37	14.2	B	0.54	49.0	D	0.37	13.6	B
WB-East Gun Hill Road	LTR	0.55	58.8	E	0.35	3.4	A	0.60	60.5	E	0.44	2.1	A
NB-DeKalb Avenue	LTR	1.05	130.9	F	1.03	120.8	F	0.96	92.0	F	0.48	66.0	E
SB-DeKalb Avenue	LTR	0.37	39.3	D	0.16	25.8	C	0.30	28.0	C	0.12	26.1	C
Overall Intersection			78.5	E		36.1	D		61.0	E		0.0	A
<b>3. East Gun Hill Road and Rochambeau Avenue</b>													
EB-East Gun Hill Road	LT	0.56	9.6	A	0.49	10.4	B	0.54	18.3	B	0.43	7.4	A
WB-East Gun Hill Road	TR	0.46	17.3	B	0.33	8.6	A	0.43	14.0	B	0.41	6.2	A
SB-Rochambeau Avenue	LR	0.19	28.3	C	0.11	21.3	C	0.14	27.5	C	0.09	20.9	C
Overall Intersection			14.0	B		10.1	B		16.6	B		7.2	A
<b>4. East Gun Hill Road and Bainbridge Avenue</b>													
EB-East Gun Hill Road	LTR	0.83	17.7	B	0.73	10.6	B	0.82	18.7	B	0.52	7.7	A
WB-East Gun Hill Road	LTR	1.01	36.5	D	0.93dl	27.9	C	0.83	32.9	C	0.51	8.3	A
NB-Bainbridge Avenue	LTR	1.03	60.0	E	0.92	67.7	E	1.04	86.1	F	0.66	38.5	D
SB-Bainbridge Avenue	LTR	0.90	59.5	E	0.47	31.5	C	0.65	50.8	D	0.52	33.9	C
Overall Intersection			36.2	D		28.5	C		40.2	D		15.0	B
<b>5. East Gun Hill Road and Wayne Avenue</b>													
EB-East Gun Hill Road	LTR	0.48	11.2	B	0.40	8.4	A	0.51	16.9	B	0.33	2.3	A
WB-East Gun Hill Road	LTR	0.96	23.0	C	0.58	4.6	A	0.67	27.0	C	0.44	3.5	A
NB-Wayne Avenue	LTR	0.50	41.1	D	0.42	30.4	C	0.43	31.2	C	0.18	25.2	C
SB-Wayne Avenue	LTR	0.29	29.5	C	0.28	28.0	C	0.08	23.9	C	0.17	25.4	C
Overall Intersection			20.8	C		9.3	A		23.6	C		4.8	A
<b>6. East Gun Hill Road and Tryon Avenue</b>													
EB-East Gun Hill Road	LTR	0.48	11.1	B	0.47	6.7	A	0.48	6.1	A	0.35	3.2	A
WB-East Gun Hill Road	LTR	0.71	3.0	A	0.54	4.3	A	0.53	2.5	A	0.46	3.8	A
NB-Tryon Avenue	LTR	0.30	35.4	D	0.25	26.6	C	0.36	36.5	D	0.21	25.7	C
SB-Tryon Avenue	LTR	0.16	31.0	C	0.10	23.9	C	0.17	34.1	C	0.07	23.5	C
Overall Intersection			8.2	A		6.9	A		7.5	A		5.1	A
<b>7. East Gun Hill Road and Kings College Avenue</b>													
EB-East Gun Hill Road	LT	0.50	6.1	A	0.47	3.6	A	0.56	11.4	B	0.38	4.1	A
WB-East Gun Hill Road	TR	0.67	2.8	A	0.48	1.3	A	0.59	19.1	B	0.43	1.2	A
SB-Kings College Avenue	LR	0.19	33.6	C	0.13	25.7	C	0.10	24.1	C	0.05	23.8	C
Overall Intersection			5.2	A		3.1	A		15.6	B		2.9	A
<b>8. East Gun Hill Road and Putnam Place</b>													
EB-East Gun Hill Road	LTR	0.58	10.2	B	0.55	4.8	A	0.54	4.8	A	0.44	4.6	A
WB-East Gun Hill Road	LT	0.78	21.9	C	0.57	7.7	A	0.57	10.5	B	0.52	7.9	A
SB-Putnam Place	LTR	0.13	29.8	C	0.10	21.4	C	0.19	29.0	C	0.12	21.5	C
Overall Intersection			17.4	B		6.6	A		15.0	B		6.9	A
<b>9. East Gun Hill Road and Perry Avenue</b>													
EB-East Gun Hill Road	LT	0.54	6.9	A	0.49	2.2	A	0.59	8.4	A	0.39	2.5	A
WB-East Gun Hill Road	LTR	1.04	42.1	D	0.63	3.7	A	0.79	14.6	B	0.62	3.9	A
NB-Perry Avenue	LTR	0.62	38.4	D	0.61	37.3	D	0.63	35.6	D	0.67	39.9	D
SB-Perry Avenue	LTR	0.10	26.4	C	0.12	21.8	C	0.10	15.0	B	0.06	23.2	C
Overall Intersection			29.6	C		7.2	A		15.4	B		8.6	A

**TABLE 7. 2010 EXISTING CONDITIONS LOS ANALYSIS (CONTINUED)**

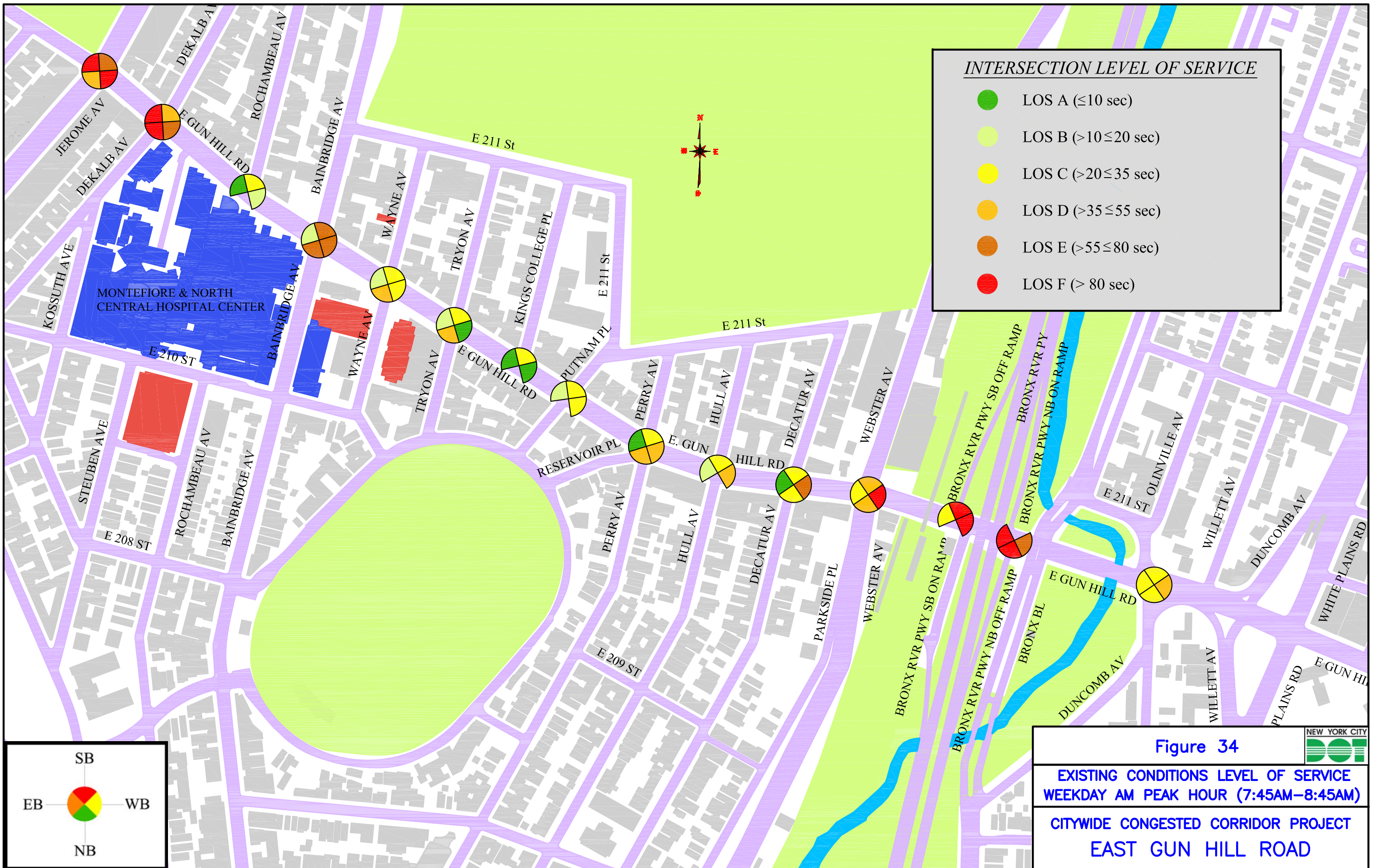
Intersection Approach <sup>1</sup>	Mvmt <sup>2</sup>	Weekday AM Peak (7:45-8:45 am)			Weekday Midday Peak (12:30-1:30 pm)			Weekday PM Peak (5:00-6:00 pm)			Saturday Midday Peak (12:30-1:30 pm)		
		v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS
<b>10. East Gun Hill Road and Hull Avenue</b>													
EB-East Gun Hill Road	TR	0.68	12.6	B	0.60	6.9	A	0.76	24.6	C	0.52	7.4	A
WB-East Gun Hill Road	LT	1.05	52.7	D	0.69	6.3	A	0.89	19.9	B	0.76	9.1	A
SB-Hull Avenue	LTR	0.13	24.1	C	0.11	21.5	C	0.16	22.6	C	0.10	23.8	C
<b>Overall Intersection</b>			<b>35.6</b>	<b>D</b>		<b>6.9</b>	<b>A</b>		<b>22.3</b>	<b>C</b>		<b>8.6</b>	<b>A</b>
<b>11. East Gun Hill Road and Decatur Avenue</b>													
EB-East Gun Hill Road	LT	0.63	9.6	A	0.53	3.1	A	0.89	55.2	E	0.47	2.9	A
WB-East Gun Hill Road	TR	1.05	65.1	E	0.62	7.5	A	0.78	24.6	C	0.58	7.9	A
NB-Decatur Avenue	LTR	0.25	28.1	C	0.14	25.4	C	0.22	27.8	C	0.41	30.8	C
SB-Decatur Avenue	LR	0.46	33.5	C	0.26	26.9	C	0.44	35.0	C	0.54	36.2	D
<b>Overall Intersection</b>			<b>43.1</b>	<b>D</b>		<b>6.7</b>	<b>A</b>		<b>39.6</b>	<b>D</b>		<b>9.4</b>	<b>A</b>
<b>12. East Gun Hill Road and Webster Avenue</b>													
EB-East Gun Hill Road	LTR	0.87	32.6	C	0.68	11.4	B	0.95	77.0	E	0.67	17.4	B
WB-East Gun Hill Road	L	1.03	81.1	F	0.97	63.2	E	1.01	82.5	F	1.05	86.8	F
	TR	0.99	66.7	E	0.58	6.4	A	0.80	25.4	C	0.53	5.8	A
NB-Webster Avenue	L	0.35	40.1	D	0.18	25.8	C	0.18	32.7	C	0.33	30.0	C
	TR	0.52	37.3	D	0.61	32.2	C	1.01dr	54.2	D	0.98dr	35.3	D
SB-Webster Avenue	LTR	0.60	37.6	D	0.34	25.9	C	0.51	36.1	D	0.49	28.3	C
<b>Overall Intersection</b>			<b>51.6</b>	<b>D</b>		<b>19.4</b>	<b>B</b>		<b>50.9</b>	<b>D</b>		<b>26.3</b>	<b>C</b>
<b>13. East Gun Hill Road and SB Bronx River Parkway Ramp</b>													
EB-East Gun Hill Road	T	0.69	24.9	C	0.55	14.7	B	0.72	36.4	D	0.74	17.9	B
	R	0.38	8.3	A	0.35	2.8	A	0.40	5.4	A	0.32	3.4	A
WB-East Gun Hill Road	L	0.89	84.9	F	0.72	79.2	E	0.67	86.4	F	0.93	103.3	F
	T	0.90	58.4	E	0.49	61.2	E	0.49	60.7	E	0.46	39.0	D
SB-Bronx River Pkwy Ramp	LTR	1.04	124.2	F	0.66	38.9	D	0.88	116.4	F	0.83	102.5	F
<b>Overall Intersection</b>			<b>55.8</b>	<b>E</b>		<b>42.0</b>	<b>D</b>		<b>56.7</b>	<b>E</b>		<b>45.1</b>	<b>D</b>
<b>14. East Gun Hill Road and NB Bronx River Parkway Ramp</b>													
EB-East Gun Hill Road	L	0.38	116.7	F	0.30	12.3	B	0.68	32.5	C	0.39	22.9	C
	T	0.55	23.9	C	0.47	7.2	A	0.72	12.5	B	0.67	10.1	B
WB-East Gun Hill Road	T	1.05	77.1	E	0.86	20.5	C	0.82	19.8	B	0.78	15.1	B
NB- Bronx River Pkwy Ramp	L	0.82	111.3	F	0.69	101.2	F	0.78	110.9	F	0.60	97.7	F
	R	0.71	50.6	D	0.94	70.4	E	0.91	71.0	E	0.75	43.6	D
<b>Overall Intersection</b>			<b>62.2</b>	<b>E</b>		<b>30.7</b>	<b>C</b>		<b>30.2</b>	<b>C</b>		<b>22.5</b>	<b>C</b>
<b>15. East Gun Hill Road and Olinville Avenue</b>													
EB-East Gun Hill Road	LTR	0.77	21.4	C	0.66	11.5	B	0.88	39.2	D	0.91	42.1	D
WB-East Gun Hill Road	LTR	0.85	52.6	D	0.55	9.4	A	0.57	10.9	B	0.68	9.7	A
NB-Olinville Avenue	LTR	0.28	26.9	C	0.16	22.8	C	0.19	31.9	C	0.28	24.9	C
SB-Olinville Avenue	LTR	0.56	33.8	C	0.44	28.1	C	0.62	44.3	D	0.56	31.7	C
<b>Overall Intersection</b>			<b>38.1</b>	<b>D</b>		<b>12.0</b>	<b>B</b>		<b>27.7</b>	<b>C</b>		<b>27.0</b>	<b>C</b>

The following is a summary of the findings:

- The East Gun Hill Road and Jerome Avenue intersection experiences severe congestion. During the weekday AM peak hour, both the eastbound and westbound approaches operate at LOS F, with delays of 90.1 and 116.4 seconds/vehicle, respectively. The southbound approach operates at LOS E with 66.4 seconds/vehicle delays. During the weekday PM peak hour, the northbound and westbound approaches operate at LOS F with delays of over 90 seconds/vehicle. During the Saturday midday peak hour, the northbound and westbound approaches operate at LOS E with delays of over 60 seconds/vehicle.
- The East Gun Hill Road and DeKalb Avenue intersection experiences long delays and failing LOS during the weekday AM peak hour. The eastbound and northbound approaches operate at LOS F, incurring delays 80.2 and 130.9 seconds/vehicle, respectively. The northbound

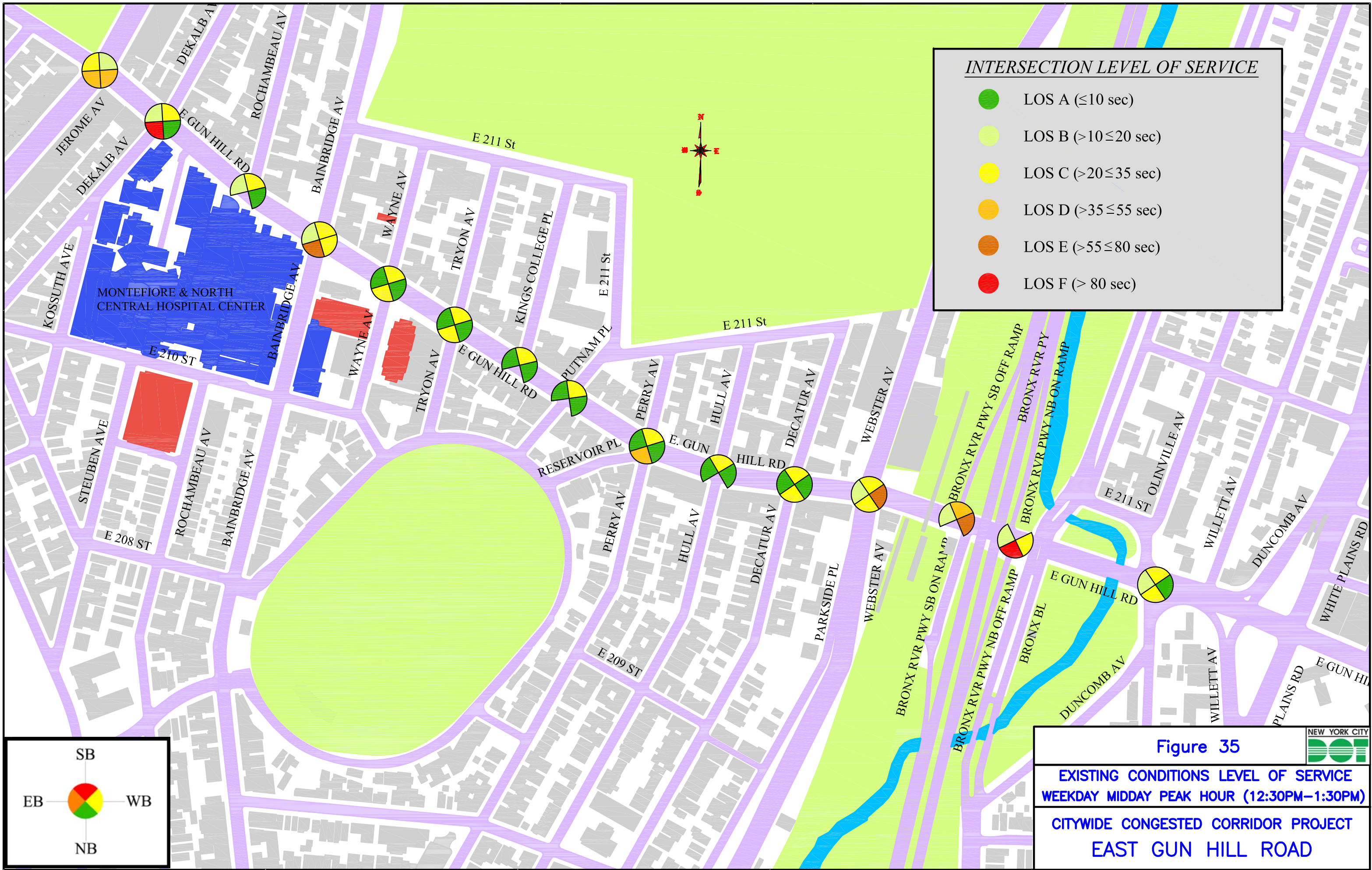
approach also operates poorly at LOS E or F during the weekday midday, PM, and Saturday midday peak hours.

- The northbound, westbound and southbound approaches at the intersection of Bainbridge Avenue and East Gun Hill Road operate at LOS E during the weekday AM peak hour. The northbound approach incurs 86.1 seconds/vehicle delay and operates at LOS F during the weekday PM peak hour.
- The intersection of Decatur Avenue and East Gun Hill Road operates at LOS E in the westbound direction during the weekday AM peak hour, and the eastbound direction during the weekday PM peak hour.
- The westbound approach at Webster Avenue and East Gun Hill Road operates at a failing LOS during all four peak hours, mostly due to heavy left turns and the conflicts created by heavy opposing traffic. During the weekday AM peak hour, the westbound left-turn operates at LOS F and incurs 88.4 seconds/vehicle delays, and the westbound through-right movement operates at LOS E and incurs 68.6 seconds/vehicle delay. The eastbound approach operates at LOS E during the weekday PM peak hour with 77.0 seconds/vehicle delay.
- The southbound approach at the intersection of East Gun Hill Road and the southbound Bronx River Parkway ramp operates at LOS F during the weekday AM, PM, and Saturday midday peak hours with delays of 124.2, 116.4 and 102.5 seconds/vehicle, respectively. The westbound-left lane group operates at LOS E or F during all four peak hours. The westbound through lane group operates at LOS E during weekday AM, midday and PM peak hours.
- The northbound-left lane group at the intersection of East Gun Hill Road and the northbound Bronx River Parkway ramp operates at LOS F during all four peak hours. This creates extensive spillback that extends to the Bronx River Parkway mainline. The eastbound-left lane group operates at LOS F with 117 seconds/vehicle delay during the weekday AM peak hour.



**Figure 34**  
**EXISTING CONDITIONS LEVEL OF SERVICE**  
**WEEKDAY AM PEAK HOUR (7:45AM–8:45AM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**





**INTERSECTION LEVEL OF SERVICE**

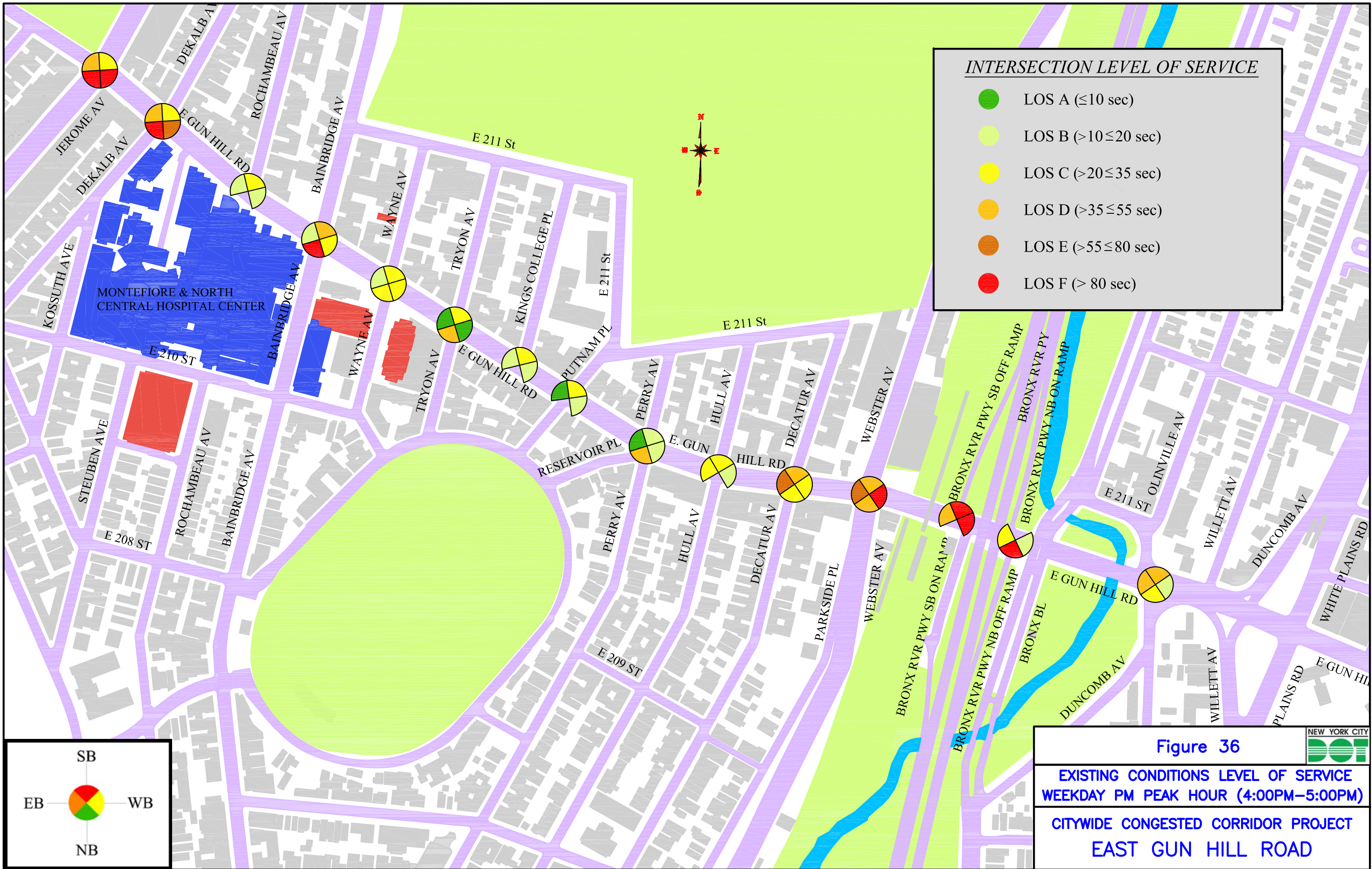
- LOS A ( $\leq 10$  sec)
- LOS B ( $> 10 \leq 20$  sec)
- LOS C ( $> 20 \leq 35$  sec)
- LOS D ( $> 35 \leq 55$  sec)
- LOS E ( $> 55 \leq 80$  sec)
- LOS F ( $> 80$  sec)

SB  
EB WB  
NB

**Figure 35**  
**EXISTING CONDITIONS LEVEL OF SERVICE**  
**WEEKDAY MIDDAY PEAK HOUR (12:30PM-1:30PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**







**Figure 36**  
**EXISTING CONDITIONS LEVEL OF SERVICE**  
**WEEKDAY PM PEAK HOUR (4:00PM–5:00PM)**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**



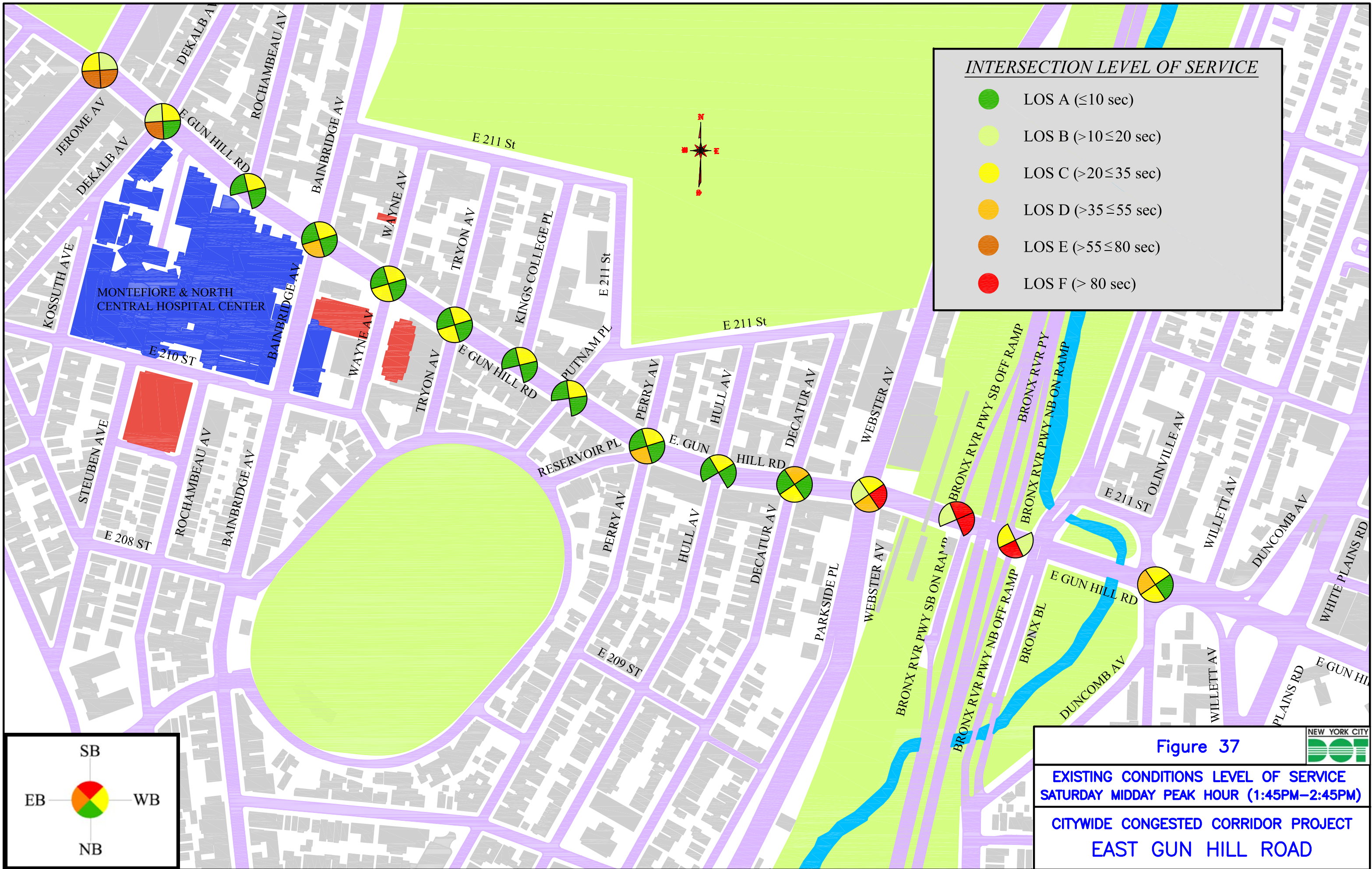


Figure 37

EXISTING CONDITIONS LEVEL OF SERVICE  
 SATURDAY MIDDAY PEAK HOUR (1:45PM–2:45PM)  
 CITYWIDE CONGESTED CORRIDOR PROJECT  
 EAST GUN HILL ROAD



### 3.10 SUMMARY OF EXISTING CONDITIONS

Based on field observations, public outreach and feedback, and data analysis, the following is a summary of the existing conditions for the East Gun Hill Road study area:

- Gun Hill Road is a major east-west connector traversing the northern section of the Bronx, which is used by a large number of passenger vehicles, trucks and buses.
- Montefiore Medical Center – with 1,490 beds, approximately 8,000 employees, and one of the five busiest Emergency Services in the nation – is a major trip generator in the study area.
- North Central Hospital, located within the same city block as Montefiore Medical Center, contains 232 beds and is another major trip generator.
- The intersection of East Gun Hill Road and Bainbridge Avenue provides the main access to Montefiore Medical Center and North Central Hospital parking facilities and emergency vehicles.
- East Gun Hill Road intersects with four major north-south connectors: Jerome Avenue, Bainbridge Avenue, Webster Avenue and White Plains Road. All four intersections experience traffic congestion due to heavy traffic volumes.
- The East Gun Hill Road and Bronx River Parkway interchange is the main choke point for traffic flow due to high east-west traffic volume along East Gun Hill Road, left-turns with short turning bays from East Gun Hill Road onto the Parkway, with short turning bays, and high volumes getting onto east Gun Hill Road from the Parkway.
- Double-parked vehicles, illegal U-turns and jaywalking are widespread, particularly between Bainbridge Avenue and Jerome Avenue.
- Gun Hill Road is a truck route between the New England Thruway (I-95) to the east and the Major Deegan Expressway (I-87) to the west.
- Most loading/unloading activities occur along the south curb between Jerome Avenue and Rochambeau Avenue and between Perry Avenue and Webster Avenue .

#### **4.0 FUTURE CONDITIONS WITHOUT IMPROVEMENTS**

This section presents quantitative assessments of future traffic conditions that could be expected in the study area without recommended improvements from this study, but includes other projects and improvements that have already been planned for implementation. For analysis purposes, the future horizon year for this study is 2020.

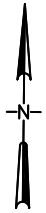
Recently completed studies in the vicinity of the East Gun Hill Road study area were reviewed to identify any pertinent recommendations that may be presented. Recommendations from these studies are described as follows:

- White Plains Road and East Gun Hill Road Intermodal Plaza, MTA, 2012 - The proposed plaza is primarily intended to serve as a transfer area between many buses and 2 and 5 subway lines, and improve safety conditions for pedestrians using the hub. However, it is not expected that the proposed plaza adds any traffic to the area; therefore, there was no volume increment for the year 2020 due to this project.
- Webster Avenue Rezoning, City Planning Commission, 2010 – is a rezoning study that includes a large area of Bedford Park and Norwood neighborhoods. The proposed rezoning is on Webster Area from East 193<sup>rd</sup> Street to East 211<sup>th</sup> Street. An Environmental Assessment Statement (EAS) has been conducted to determine potential adverse impacts. According to Traffic and Parking section of EAS, the Webster Avenue and East Gun Hill Road intersection is expected to be impacted by the proposed rezoning. The generated trips and traffic assignment were added to the Future Conditions without Improvements volumes for this intersection.
- P.S. 94 School Expansion, School Construction Authority – The school was expanded to reduce overcrowding of the classrooms, without increasing the number of students attending the school. Therefore, the school expansion is not expected to generate additional trips to the study area.

#### **4.1 TRAFFIC VOLUMES**

The 2020 Future without Improvement traffic volumes consists of an annual background increase, which is calculated based on the City Environmental Quality Review (CEQR) guidelines for the borough of the Bronx, and additional traffic volumes generated by the proposed developments in the area. The CEQR Manual specifies traffic growth rates of 0.25% per year for the first five years and 0.125% per year after five years. The resulting cumulative rate of background growth compounded over a 10-year period (2010 – 2020) is calculated to be approximately 2%. The calculated background growth is applied universally throughout the study area.

Future without Improvement volumes are presented in Figure 38 through 41.



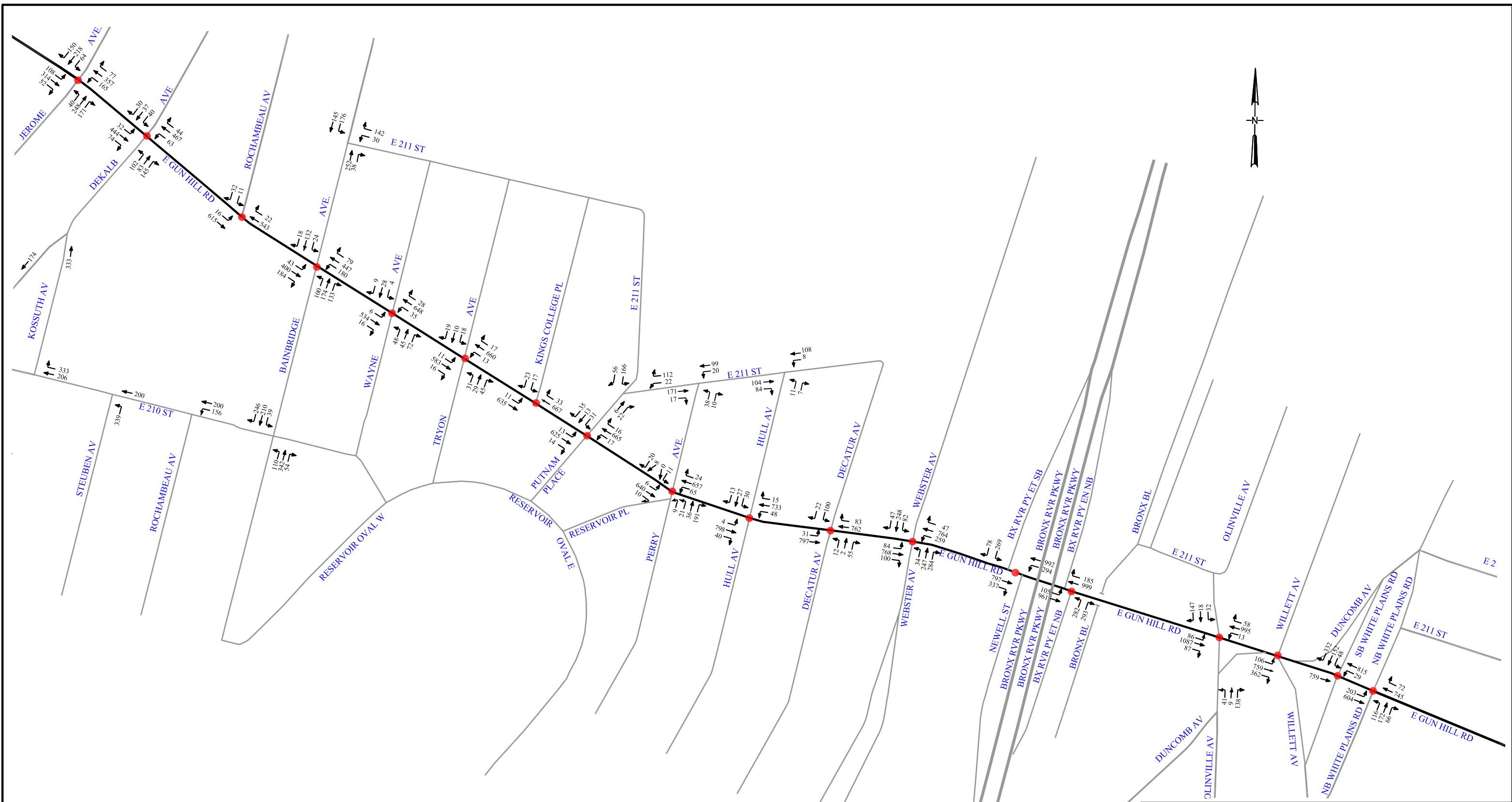
**Figure 38**


**FUTURE W/O IMPROVEMENTS VEHICULAR VOLUMES  
WEEKDAY AM PEAK HOUR**

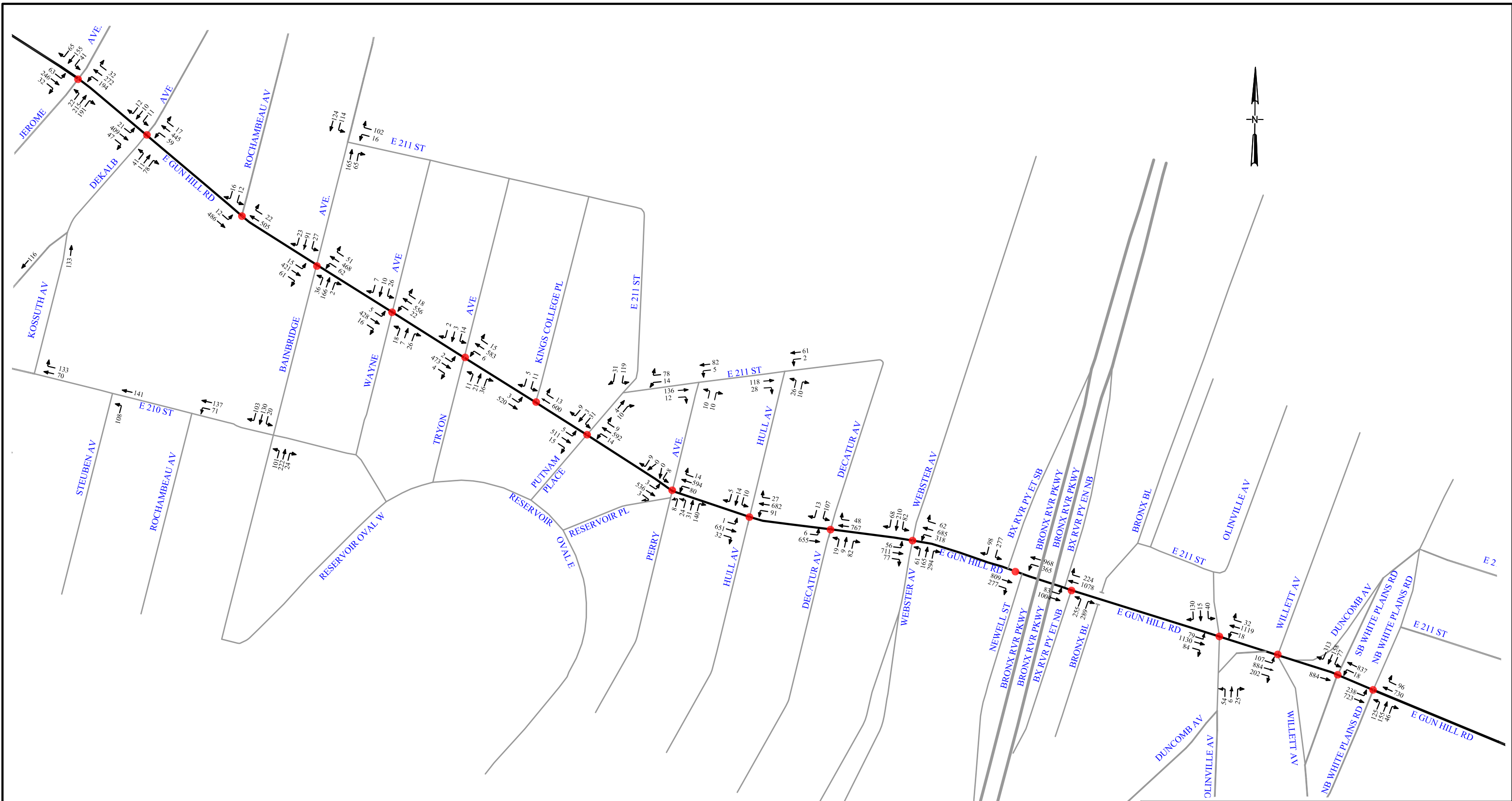
**CITYWIDE CONGESTED CORRIDOR PROJECT  
EAST GUN HILL ROAD**








  
**Figure 40**  
**FUTURE W/O IMPROVEMENTS VEHICULAR VOLUMES**  
**WEEKDAY PM PEAK HOUR**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**



**Figure 41**  
**FUTURE W/O IMPROVEMENTS VEHICULAR VOLUMES**  
**SATURDAY MIDDAY PEAK HOUR**  
**CITYWIDE CONGESTED CORRIDOR PROJECT**  
**EAST GUN HILL ROAD**

Source: Lyle Hill Associates, Inc.



## 4.2 INTERSECTION LEVELS OF SERVICE

Projected traffic volumes for year 2020 were used to update the Synchro analysis. No signal timing, roadway geometry or any other input parameters were changed or adjusted, except for the traffic volumes as described in the preceding section. Table 8 presents the LOS results for the signalized intersections for the future conditions without improvements.

**TABLE 8. 2020 FUTURE WITHOUT IMPROVEMENT CONDITIONS LOS ANALYSIS**

Intersection Approach <sup>1</sup>	Mvmt <sup>2</sup>	Weekday AM Peak (7:45-8:45 am)			Weekday Midday Peak (12:30-1:30 pm)			Weekday PM Peak (5:00-6:00 pm)			Saturday Midday Peak (12:30-1:30 pm)		
		v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS
<b>1. East Gun Hill Road and Jerome Avenue</b>													
EB-East Gun Hill Road	LTR	0.83	91.5	F	0.77	33.3	C	0.77	36.8	D	0.78	34.9	C
WB-East Gun Hill Road	LTR	1.07dl	117.1	F	0.70	44.8	D	0.74	91.6	F	0.78	70.8	E
NB-Jerome Avenue	LTR	0.78	53.6	D	0.80	37.4	D	0.84	96.1	F	1.00	68.7	E
SB-Jerome Avenue	LTR	0.95	76.5	E	0.40	18.8	B	0.61	29.7	C	0.33	17.6	B
Overall Intersection			87.2	F		34.6	C		65.0	E		53.1	D
<b>2. East Gun Hill Road and DeKalb Avenue</b>													
EB-East Gun Hill Road	LTR	0.63	80.3	F	0.38	14.3	B	0.56	54.2	D	0.38	13.6	B
WB-East Gun Hill Road	LTR	0.57	59.3	E	0.36	3.4	A	0.62	70.7	E	0.45	2.2	A
NB-DeKalb Avenue	LTR	1.08	131.0	F	1.05	131.0	F	0.98	93.7	F	0.49	74.7	E
SB-DeKalb Avenue	LTR	0.38	40.0	D	0.17	26.0	C	0.31	28.2	C	0.13	26.2	C
Overall Intersection			78.5	E		36.2	D		66.9	E		15.6	B
<b>3. East Gun Hill Road and Rochambeau Avenue</b>													
EB-East Gun Hill Road	LT	0.57	10.0	A	0.50	10.6	B	0.55	18.4	B	0.44	7.5	A
WB-East Gun Hill Road	TR	0.47	20.0	B	0.33	8.7	A	0.44	14.1	B	0.42	6.2	A
SB-Rochambeau Avenue	LR	0.19	28.4	C	0.12	21.3	C	0.14	27.5	C	0.09	20.9	C
Overall Intersection			15.5	B		10.2	B		16.8	B		7.2	A
<b>4. East Gun Hill Road and Bainbridge Avenue</b>													
EB-East Gun Hill Road	LTR	0.85	19.2	B	0.75	11.3	B	0.88	25.0	C	0.53	7.8	A
WB-East Gun Hill Road	LTR	1.03	45.1	D	0.96dl	29.7	C	0.83	33.5	C	0.52	8.6	A
NB-Bainbridge Avenue	LTR	1.05	69.0	E	0.95	72.9	E	1.13	113.5	F	0.68	39.4	D
SB-Bainbridge Avenue	LTR	0.93	62.3	E	0.48	31.8	C	0.66	50.8	D	0.53	34.1	C
Overall Intersection			41.8	D		30.3	C		47.6	D		15.2	B
<b>5. East Gun Hill Road and Wayne Avenue</b>													
EB-East Gun Hill Road	LTR	0.49	11.4	B	0.41	8.5	A	0.52	17.6	B	0.33	2.3	A
WB-East Gun Hill Road	LTR	0.99	27.8	C	0.59	4.8	A	0.69	27.1	C	0.45	3.6	A
NB-Wayne Avenue	LTR	0.51	41.3	D	0.43	30.5	C	0.44	31.4	C	0.18	25.2	C
SB-Wayne Avenue	LTR	0.29	29.6	C	0.28	28.1	C	0.09	24.2	C	0.17	25.4	C
Overall Intersection			23.5	C		9.5	A		23.9	C		4.8	A
<b>6. East Gun Hill Road and Tryon Avenue</b>													
EB-East Gun Hill Road	LTR	0.49	11.3	B	0.49	6.7	A	0.49	6.1	A	0.36	3.2	A
WB-East Gun Hill Road	LTR	0.72	3.2	A	0.55	4.4	A	0.54	2.6	A	0.47	3.8	A
NB- Tryon Avenue	LTR	0.31	35.7	D	0.26	26.6	C	0.37	36.7	D	0.22	25.8	C
SB-Tryon Avenue	LTR	0.16	31.2	C	0.11	24.0	C	0.17	34.4	C	0.07	23.5	C
Overall Intersection			8.4	A		7.0	A		7.6	A		5.1	A
<b>7. East Gun Hill Road and Kings College Avenue</b>													
EB-East Gun Hill Road	LT	0.51	6.2	A	0.48	3.8	A	0.58	11.5	B	0.39	4.1	A
WB-East Gun Hill Road	TR	0.69	2.8	A	0.49	1.4	A	0.60	18.9	B	0.44	1.2	A
SB-Kings College Avenue	LR	0.19	33.8	C	0.13	25.7	C	0.10	24.4	C	0.05	23.8	C
Overall Intersection			5.2	A	0.00	3.2	A	0.00	15.6	B	0.00	2.8	A
<b>8. East Gun Hill Road and Putnam Place</b>													
EB-East Gun Hill Road	LTR	0.59	10.4	B	0.56	4.8	A	0.56	4.9	A	0.45	4.6	A
WB-East Gun Hill Road	LT	0.79	29.9	C	0.58	8.0	A	0.58	10.6	B	0.52	8.0	A
SB-Putnam Place	LTR	0.13	29.9	C	0.10	21.5	C	0.19	29.5	C	0.13	21.5	C
Overall Intersection			21.5	C		6.8	A		16.2	B		7.0	A

**TABLE 8. 2020 FUTURE WITHOUT IMPROVEMENT CONDITIONS LOS ANALYSIS  
(CONTINUED)**

Intersection Approach <sup>1</sup>	Mvmt <sup>2</sup>	Weekday AM Peak (7:45-8:45 am)			Weekday Midday Peak (12:30-1:30 pm)			Weekday PM Peak (5:00-6:00 pm)			Saturday Midday Peak (12:30-1:30 pm)		
		v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS	v/c Ratio	Avg Delay	LOS
<b>9. East Gun Hill Road and Perry Avenue</b>													
EB-East Gun Hill Road	LT	0.56	7.0	A	0.50	2.2	A	0.61	8.6	A	0.40	2.5	A
WB-East Gun Hill Road	LTR	1.07	53.1	D	0.64	3.8	A	0.82	15.8	B	0.63	4.1	A
NB-Perry Avenue	LTR	0.63	39.5	D	0.62	37.9	D	0.65	36.3	D	0.68	40.4	D
SB-Perry Avenue	LTR	0.10	26.8	C	0.13	22.3	C	0.10	15.6	B	0.06	23.2	C
<b>Overall Intersection</b>			<b>35.5</b>	<b>D</b>		<b>7.2</b>	<b>A</b>		<b>16.1</b>	<b>B</b>		<b>8.8</b>	
<b>10. East Gun Hill Road and Hull Avenue</b>													
EB-East Gun Hill Road	TR	0.69	12.9	B	0.61	6.9	A	0.77	26.0	C	0.53	7.4	A
WB-East Gun Hill Road	LT	1.08	54.8	D	0.70	6.6	A	0.92	22.9	C	0.78	9.9	A
SB-Hull Avenue	LTR	0.13	24.5	C	0.11	21.6	C	0.16	22.8	C	0.10	23.8	C
<b>Overall Intersection</b>			<b>37.0</b>	<b>D</b>	<b>0.00</b>	<b>7.1</b>	<b>A</b>	<b>0.00</b>	<b>24.4</b>	<b>C</b>	<b>0.00</b>	<b>9.0</b>	<b>A</b>
<b>11. East Gun Hill Road and Decatur Avenue</b>													
EB-East Gun Hill Road	LT	0.64	10.0	A	0.54	3.2	A	0.92	69.2	E	0.48	2.9	A
WB-East Gun Hill Road	TR	1.08	66.2	E	0.64	7.6	A	0.80	29.0	C	0.59	8.1	A
NB-Decatur Avenue	LTR	0.25	28.3	C	0.14	25.4	C	0.23	28.2	C	0.42	31.2	C
SB-Decatur Avenue	LR	0.48	34.0	C	0.26	27.0	C	0.45	36.6	D	0.56	37.0	D
<b>Overall Intersection</b>			<b>43.2</b>	<b>D</b>		<b>6.8</b>	<b>A</b>		<b>48.1</b>	<b>D</b>		<b>9.6</b>	<b>A</b>
<b>12. East Gun Hill Road and Webster Avenue</b>													
EB-East Gun Hill Road	LTR	0.89	36.4	D	0.70	12.2	B	0.98	78.5	E	0.68	17.7	B
WB-East Gun Hill Road	L	1.07	90.8	F	1.01	72.3	E	1.04	89.9	F	1.09	99.0	F
	TR	1.00	67.6	E	0.59	6.5	A	0.81	29.5	C	0.54	5.9	A
NB-Webster Avenue	L	0.37	40.9	D	0.18	26.0	C	0.18	32.7	C	0.33	30.3	C
	TR	0.53	37.6	D	0.85dr	32.5	C	1.03dr	56.5	E	0.99dr	36.0	D
SB-Webster Avenue	LTR	0.61	38.0	D	0.35	26.0	C	0.52	36.4	D	0.50	28.6	C
<b>Overall Intersection</b>			<b>53.8</b>	<b>D</b>		<b>20.7</b>	<b>C</b>		<b>53.7</b>	<b>D</b>		<b>27.9</b>	<b>C</b>
<b>13. East Gun Hill Road and SB Bronx River Parkway Ramp</b>													
EB-East Gun Hill Road	T	0.71	26.1	C	0.56	15.1	B	0.74	41.0	D	0.75	18.7	B
	R	0.39	8.8	A	0.36	2.9	A	0.40	5.5	A	0.32	3.4	A
WB-East Gun Hill Road	L	0.92	85.1	F	0.75	80.2	F	0.87	100.6	F	0.97	105.4	F
	T	0.91	58.5	E	0.50	61.3	E	0.63	62.1	E	0.47	47.1	D
SB-Bronx River Pkwy Ramp	LTR	1.06	124.3	F	0.67	40.6	D	1.01	125.8	F	0.84	103.6	F
<b>Overall Intersection</b>			<b>56.0</b>	<b>E</b>		<b>42.5</b>	<b>D</b>		<b>61.2</b>	<b>E</b>		<b>48.4</b>	<b>D</b>
<b>14. East Gun Hill Road and NB Bronx River Parkway Ramp</b>													
EB-East Gun Hill Road	L	0.51	131.5	F	0.32	13.7	B	0.72	37.5	D	0.41	25.8	C
	T	0.57	27.5	C	0.48	7.3	A	0.73	13.5	B	0.68	10.5	B
WB-East Gun Hill Road	T	1.07	77.1	E	0.88	23.7	C	0.84	30.0	C	0.79	16.5	B
NB- Bronx River Pkwy Ramp	L	1.06	125.0	F	0.71	102.6	F	0.80	112.3	F	0.61	98.6	F
	R	0.73	51.5	D	0.95	74.2	E	0.92	74.0	E	0.77	44.8	D
<b>Overall Intersection</b>			<b>65.2</b>	<b>E</b>		<b>32.6</b>	<b>C</b>		<b>34.8</b>	<b>C</b>		<b>23.5</b>	<b>C</b>
<b>15. East Gun Hill Road and Olinville Avenue</b>													
EB-East Gun Hill Road	LTR	0.79	23.7	C	0.68	11.9	B	0.91	58.8	E	0.93	62.6	E
WB-East Gun Hill Road	LTR	0.87	64.0	E	0.56	9.5	A	0.59	11.5	B	0.69	9.9	A
NB-Olinville Avenue	LTR	0.29	27.2	C	0.16	22.8	C	0.19	31.9	C	0.28	25.0	C
SB-Olinville Avenue	LTR	0.57	34.2	C	0.46	28.4	C	0.63	44.8	D	0.57	32.2	C
<b>Overall Intersection</b>			<b>44.7</b>	<b>D</b>		<b>12.2</b>	<b>B</b>		<b>37.6</b>	<b>D</b>		<b>36.9</b>	<b>D</b>

As expected, delays are projected to experience minor increases at all intersections due to higher traffic volumes. No significant exacerbation of traffic conditions is expected. The following list presents traffic movements where the increase in average delays is greater than 10 seconds/vehicle:

### **AM Peak Hour**

- East Gun Hill Road and Jerome Avenue southbound delay increases from 66.4 to 76.5 seconds/vehicle.
- East Gun Hill Road and Perry Avenue westbound delay increases from 42.1 to 53.1 seconds/vehicle.
- East Gun Hill Road and Northbound Bronx River Parkway Off-Ramp eastbound left-turn delay increases from 116.7 to 131.5 seconds/vehicle.
- East Gun Hill Road and Olinville Avenue westbound delay increases from 52.6 to 64.0 seconds/vehicle.

### **MD Peak Hour**

- East Gun Hill Road and DeKalb Avenue northbound delay increases from 120.8 to 131.0 seconds/vehicle.

### **PM Peak Hour**

- East Gun Hill Road and DeKalb Avenue northbound delay increases from 60.5 to 70.7 seconds/vehicle.
- East Gun Hill Road and Bainbridge Avenue northbound delay increases from 86.1 to 113.5 seconds/vehicle.
- East Gun Hill Road and Decatur Avenue eastbound delay increases from 55.2 to 69.2 seconds/vehicle.
- East Gun Hill Road and Southbound Bronx River Parkway Off-Ramp westbound left-turn delay increases from 86.4 to 100.6 seconds/vehicle.
- East Gun Hill Road and Olinville Avenue eastbound delay increases from 39.2 to 58.8 seconds/vehicle.

### **Saturday MD Peak Hour**

- East Gun Hill Road and Webster Avenue westbound left-turn delay increases from 86.8 to 99.0 seconds/vehicle.
- East Gun Hill Road and Olinville Avenue eastbound delay increases from 42.1 to 62.6 seconds/vehicle.

### 4.3 EMISSIONS

Vehicular traffic emissions are demonstrated to be one of the significant sources of air quality degradation. The pollutants emitted by motor vehicles include carbon monoxide (CO), volatile organic compounds (VOC), and oxides of nitrogen (NOX), among others.

Traffic congestion increases the emission rates of these contaminants in the air mix. Traffic analysis conducted for the East Gun Hill Road corridor has shown that the congested traffic conditions during the weekday AM, midday, PM, and Saturday midday peak hours contribute to the high emission rates of CO, VOC and NOX (Table 9). During these peak hours, the CO emission rates range between 12.9 in midday to 23.7 kilograms per hour; the VOC emission rates range between 3.0 to 5.5 kilograms per hour; and, NOX emission rates range between 2.5 to 4.6 kilograms per hour.

**TABLE 9. 2010 EXISTING CONDITIONS EMISSIONS**

Intersection	Weekday AM Peak (7:45-8:45 am)				Weekday Midday Peak (12:30-1:30 pm)				Weekday PM Peak (5:00-6:00 pm)				Saturday Midday Peak (12:30-1:30 pm)			
	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)
<b>1. East Gun Hill Road and Jerome Avenue</b>																
Emissions	38	2633	513	611	17	1241	242	287	27	1895	369	438	21	1579	307	366
<b>2. East Gun Hill Road and DeKalb Avenue</b>																
Emissions	22	1501	292	348	14	918	179	212	19	1381	269	321	7	503	98	117
<b>3. East Gun Hill Road and Rochambeau Avenue</b>																
Emissions	9	632	123	146	7	522	102	121	11	768	149	178	5	381	74	88
<b>4. East Gun Hill Road and Bainbridge Avenue</b>																
Emissions	29	2066	402	479	18	1275	249	296	28	1947	378	451	10	715	139	166
<b>5. East Gun Hill Road and Wayne Avenue</b>																
Emissions	14	944	183	219	7	505	97	117	13	938	181	217	5	282	55	66
<b>6. East Gun Hill Road and Tryon Avenue</b>																
Emissions	8	540	105	125	6	441	86	102	7	497	98	115	4	292	56	68
<b>7. East Gun Hill Road and Kings College Avenue</b>																
Emissions	6	375	73	88	4	253	50	59	11	742	144	172	3	202	39	48
<b>8. East Gun Hill Road and Putnam Place</b>																
Emissions	10	671	132	156	5	377	73	87	9	591	115	137	4	339	65	78
<b>9. East Gun Hill Road and Perry Avenue</b>																
Emissions	16	1107	215	257	6	467	91	108	12	862	168	199	7	465	91	107
<b>10. East Gun Hill Road and Hull Avenue</b>																
Emissions	20	1321	257	306	6	475	92	109	16	1116	217	259	8	604	117	140
<b>11. East Gun Hill Road and Decatur Avenue</b>																
Emissions	25	1766	344	410	7	539	105	126	19	1324	257	306	9	675	131	158
<b>12. East Gun Hill Road and Webster Avenue</b>																
Emissions	44	3027	588	702	24	1648	321	383	41	2822	548	654	32	2249	437	522
<b>13. East Gun Hill Road and SB Bronx River Parkway Ramp</b>																
Emissions	32	2189	426	507	18	1227	239	285	25	1797	349	416	24	1704	333	395
<b>14. East Gun Hill Road and NB Bronx River Parkway Ramp</b>																
Emissions	46	3180	618	738	27	1867	363	433	32	2214	431	515	27	1841	359	426
<b>15. East Gun Hill Road and Olinville Avenue</b>																
Emissions	25	1752	341	406	17	1146	224	266	25	1762	343	409	23	1626	317	377
<b>TOTAL EMISSIONS</b>	<b>344</b>	<b>23.7</b>	<b>4.6</b>	<b>5.5</b>	<b>183</b>	<b>12.9</b>	<b>2.5</b>	<b>3.0</b>	<b>295</b>	<b>20.7</b>	<b>4.0</b>	<b>4.8</b>	<b>189</b>	<b>13.5</b>	<b>2.6</b>	<b>3.1</b>

In the 2020 Future without Improvements conditions, the CO emission rates for the weekday AM, midday, PM, and Saturday midday peak hours are projected to degrade to about 13.4 to 25.2 kilograms per hour. VOC emission rates are projected to degrade to about 3.1 to 5.8

kilograms per hour, and NOX to about 3.1 to 5.7 kilograms per hour. Any recommendations proposed for this project in reducing traffic congestion are expected to improve air quality of the study area. Please note that future projected emission rates do not account for improved emission standards or alternative fuels for new vehicles.

**TABLE 10. 2020 FUTURE WITHOUT IMPROVEMENT CONDITIONS EMISSIONS**

Intersection	Weekday AM Peak (7:45-8:45 am)				Weekday Midday Peak (12:30-1:30 pm)				Weekday PM Peak (5:00-6:00 pm)				Saturday Midday Peak (12:30-1:30 pm)			
	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)	Fuel (gall.)	CO (g/h)	NOx (g/h)	VOC (g/h)
<b>1. East Gun Hill Road and Jerome Avenue</b>																
Emissions	40	2782	541	646	19	1284	251	298	28	1958	381	454	24	1656	322	384
<b>2. East Gun Hill Road and DeKalb Avenue</b>																
Emissions	23	1599	312	371	15	962	187	223	21	1426	278	330	7	515	101	119
<b>3. East Gun Hill Road and Rochambeau Avenue</b>																
Emissions	9	657	127	152	7	536	105	124	11	785	153	182	6	393	76	91
<b>4. East Gun Hill Road and Bainbridge Avenue</b>																
Emissions	31	2223	433	515	20	1352	263	313	31	2180	425	506	10	733	143	169
<b>5. East Gun Hill Road and Wayne Avenue</b>																
Emissions	15	1056	206	246	7	518	101	120	13	953	187	222	5	288	56	67
<b>6. East Gun Hill Road and Tryon Avenue</b>																
Emissions	8	557	107	129	6	438	84	101	7	508	99	118	4	298	58	69
<b>7. East Gun Hill Road and Kings College Avenue</b>																
Emissions	6	384	74	89	4	260	51	60	11	772	150	180	3	206	41	48
<b>8. East Gun Hill Road and Putnam Place</b>																
Emissions	10	705	137	163	5	394	77	91	9	568	111	132	4	348	67	81
<b>9. East Gun Hill Road and Perry Avenue</b>																
Emissions	18	1317	256	305	7	476	93	110	14	946	185	219	7	476	94	111
<b>10. East Gun Hill Road and Hull Avenue</b>																
Emissions	24	1625	316	377	6	490	94	115	17	1181	230	274	8	642	125	149
<b>11. East Gun Hill Road and Decatur Avenue</b>																
Emissions	28	1968	383	457	8	560	109	130	20	1397	273	325	10	699	136	162
<b>12. East Gun Hill Road and Webster Avenue</b>																
Emissions	48	3370	656	780	25	1724	335	400	42	2989	582	692	33	2354	458	546
<b>13. East Gun Hill Road and SB Bronx River Parkway Ramp</b>																
Emissions	25	1691	330	392	19	1268	247	293	30	2084	404	482	25	1803	351	419
<b>14. East Gun Hill Road and NB Bronx River Parkway Ramp</b>																
Emissions	49	3413	663	790	28	1951	379	451	33	2322	451	538	28	1898	370	441
<b>15. East Gun Hill Road and Olinville Avenue</b>																
Emissions	26	1825	354	423	18	1196	232	278	27	1836	358	426	24	1727	335	400
<b>TOTAL EMISSIONS</b>	<b>360</b>	<b>25.2</b>	<b>4.9</b>	<b>5.8</b>	<b>194</b>	<b>13.4</b>	<b>2.6</b>	<b>3.1</b>	<b>314</b>	<b>21.9</b>	<b>4.3</b>	<b>5.1</b>	<b>198</b>	<b>14.0</b>	<b>2.7</b>	<b>3.3</b>

## 5.0 IMPROVEMENTS

East Gun Hill Road has a curb-to-curb right-of-way of 60 feet throughout most of the study area. Existing roadway geometric constraints, surrounding land uses, and traffic and parking demand do not provide an opportunity for significant roadway improvements that would increase roadway capacity. Operational improvement strategies include the following categories:

- Signal Timing and Offset
- Parking Regulations
- Street Directions
- Curb Extensions
- Turn Prohibitions
- Pavement Markings Changes

### 5.1 SIGNAL TIMING AND OFFSET

Table 11 presents a summary of recommended signal and offset improvements.

**TABLE 11: SIGNAL TIMING AND OFFSET IMPROVEMENTS**

<i>Location</i>	<i>Peak Hour</i>	<i>Existing Timing</i>	<i>Change to</i>
Jerome Avenue and East Gun Hill Road	Weekday AM	Offset 41 sec. N/S Direction	Offset 101 sec. N/S Direction
	Weekday Midday	Offset 51 sec. N/S Direction	Offset 6 sec. N/S Direction
	Weekday PM	Offset 35 sec. N/S Direction	Offset 105 sec. N/S Direction
	Saturday Midday	Offset 51 sec. N/S Direction	Offset 87 sec. N/S Direction
DeKalb and East Gun Hill Road	Weekday AM	N/S=42 / E/W=78sec	N/S=55 & E/W=65sec
	Weekday Midday	N/S=31/ E/W=59 sec	N/S=40 & E/W=50 sec
	Weekday PM	N/S=52/ E/W=68 sec	N/S=60/ E/W=60 sec
	Saturday Midday	N/S=31/ E/W=59 sec	N/S=35 & E/W=55 sec
Bainbridge Avenue and East Gun Hill Road	Weekday AM	N/S=42 /E/W=78sec	N/S=44/ E/W=76sec
	Weekday Midday	N/S=32/ E/W=58 sec	N/S=35/ E/W=55sec
	Weekday PM	N/S=42/ E/W=78 sec	N/S=46/ E/W=74sec
	Saturday Midday		
Webster Avenue and East Gun Hill Road	Weekday AM	N/S=43 /E/W=77sec	N/S=40 /E/W=80sec
	Weekday Midday	N/S=32 /E/W=58sec	N/S=30 /E/W=60sec
	Weekday PM	N/S=43 /E/W=77sec	N/S=41 /E/W=79sec
	Saturday Midday	----	---
NB Bronx River Pkwy Ramp Avenue and East Gun Hill Road		<ul style="list-style-type: none"> <li>• Remove WB right turning arrow from the existing signal</li> <li>• Remove westbound right turning phase from timing plan</li> </ul>	
Olinville Avenue and East Gun Hill Road		<ul style="list-style-type: none"> <li>• Reconfigure traffic signal (once intersection is redesigned)</li> </ul>	

## 5.2 PARKING REGULATIONS

As previously noted, parking is permitted on both sides of East Gun Hill Road from Jerome Avenue to Webster Avenue, except during street cleaning hours and at bus stops. The other exceptions are on the north side of East Gun Hill Road between Webster Avenue and Decatur Avenue where standing is prohibited at all times (due to the location two driveways), and on the south side of the same block where standing is prohibited 7-9 AM and 4-7 PM.

In absence of any possibility to increase capacity due to the roadway's physical constraints, converting parking lanes to travel lanes during peak periods was considered. Since East Gun Hill Road is a 60-foot wide roadway, it is possible to have three 10-foot travel lanes per direction. However, it is unrealistic to expect that the curb lane would be fully utilized as a third travel lane. It is more reasonable to expect that the curb lane will partially be used as a travel lane, but there would still be cars and trucks occasionally standing or parked. However, the "part time" third lane would still increase capacity, compared to existing conditions where there is never more than two lanes, and is frequently only one lane due to double parking.

Two alternatives have been developed for the proposed peak hour parking regulations:

### **Alternative 1**

Under this alternative parking would be prohibited from Webster Avenue to Jerome Avenue in the peak direction only, with "No Standing 7-9 AM, Mon-Fri" regulations in the westbound direction and "No Standing 4-7 PM, Mon-Fri" in the eastbound direction. The opposite direction would not be affected. A total of 74 parking spaces would be lost during weekday AM peak hour and 64 during the weekday PM Peak Hour. This alternative is illustrated in Figures 42 and 43 for weekday AM and PM peak periods, respectively.

This alternative has been presented to the public and community board members, and was rejected due to already saturated parking conditions. Therefore, this alternative is not recommended.

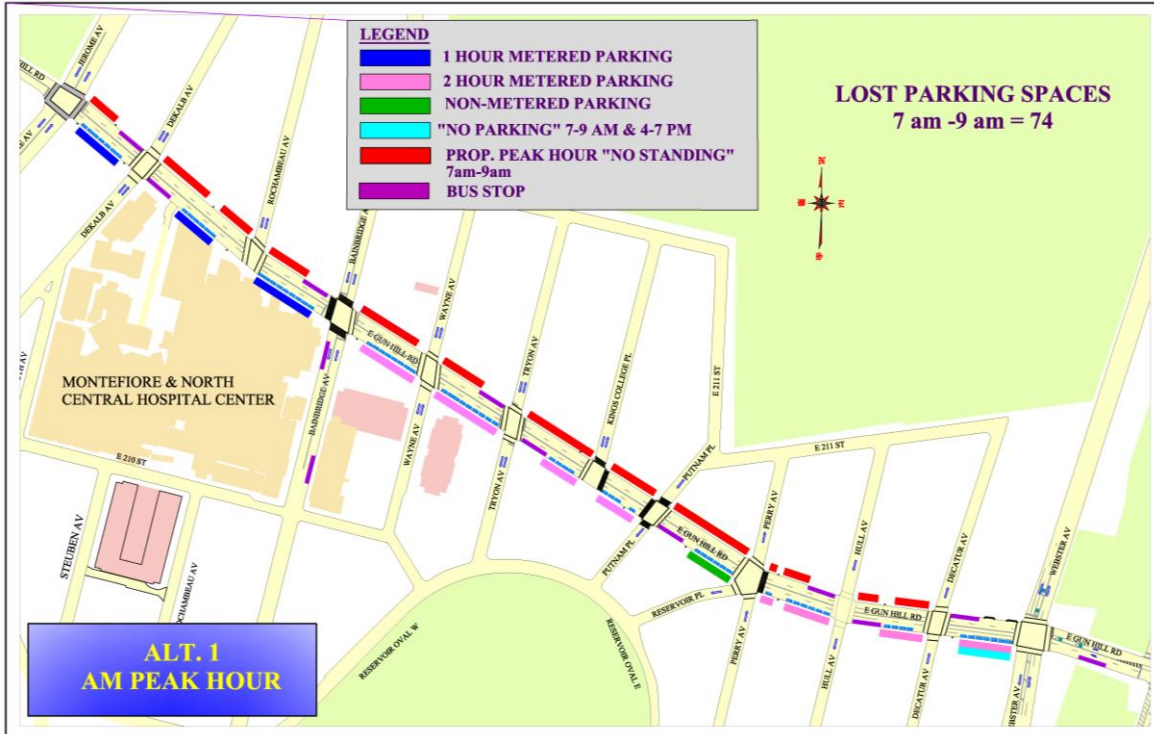


Figure 42: Alternative 1 - Proposed Weekday AM Peak Hour Parking Regulations

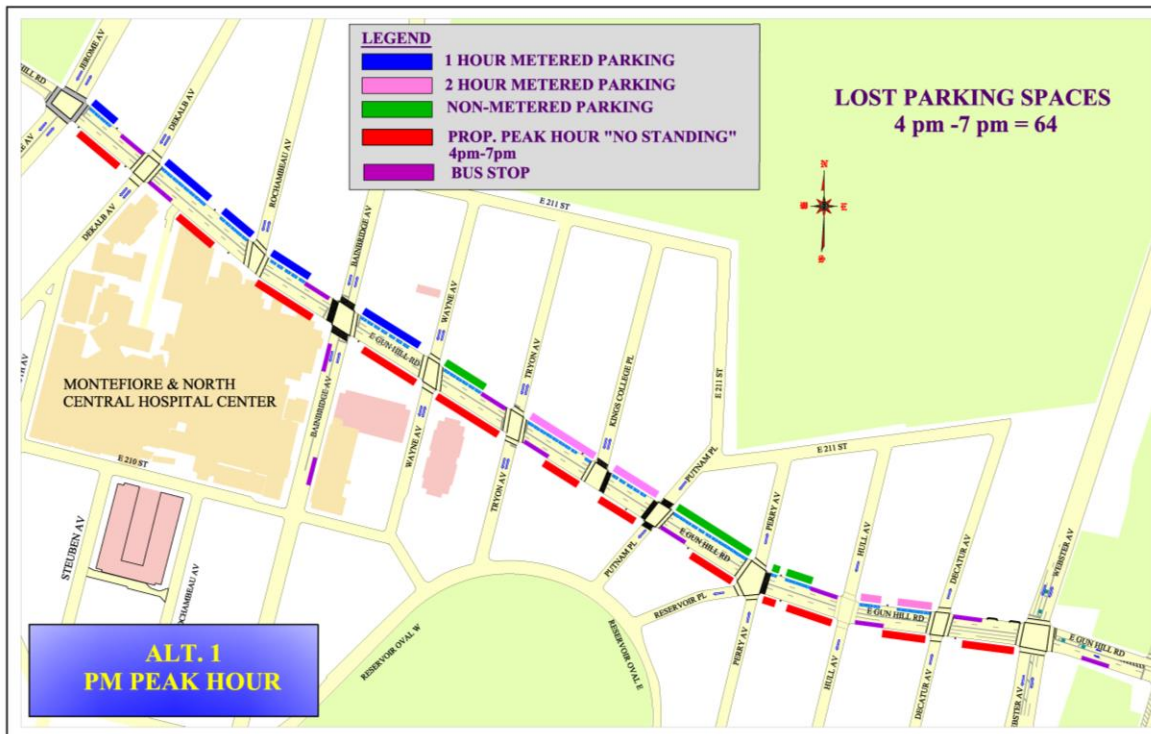


Figure 43: Alternative 1 – Proposed Weekday PM Peak Hour Parking Regulations

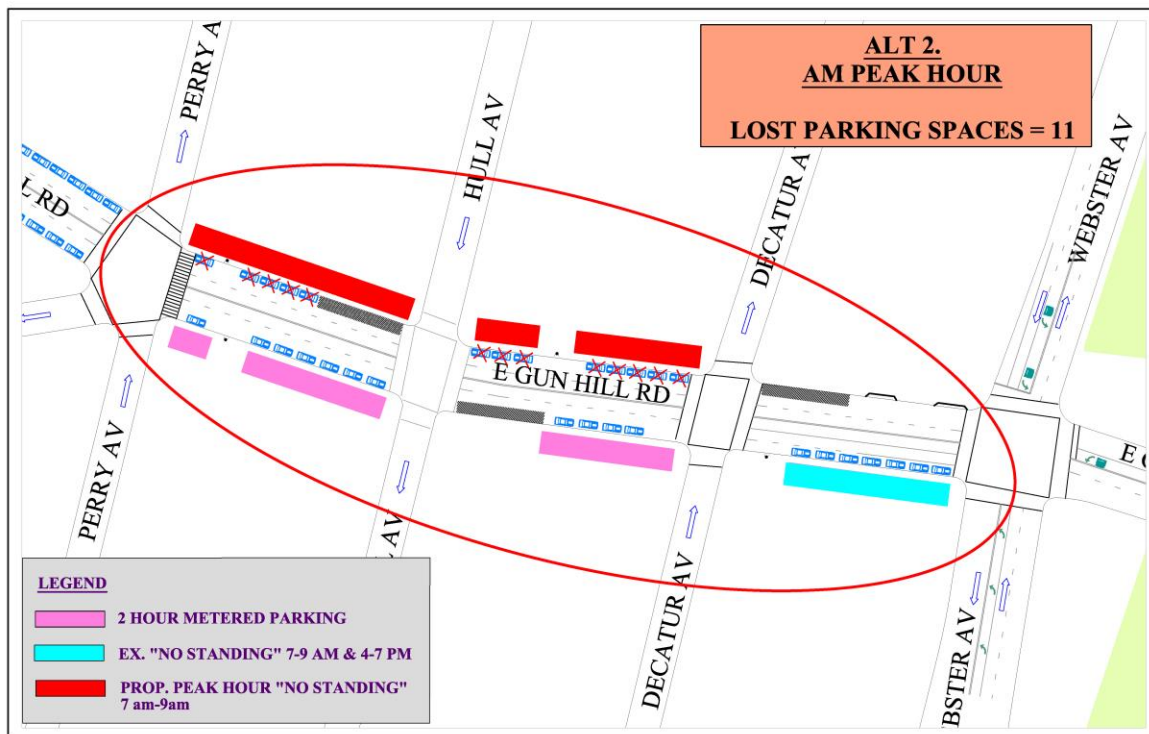


## Alternative 2

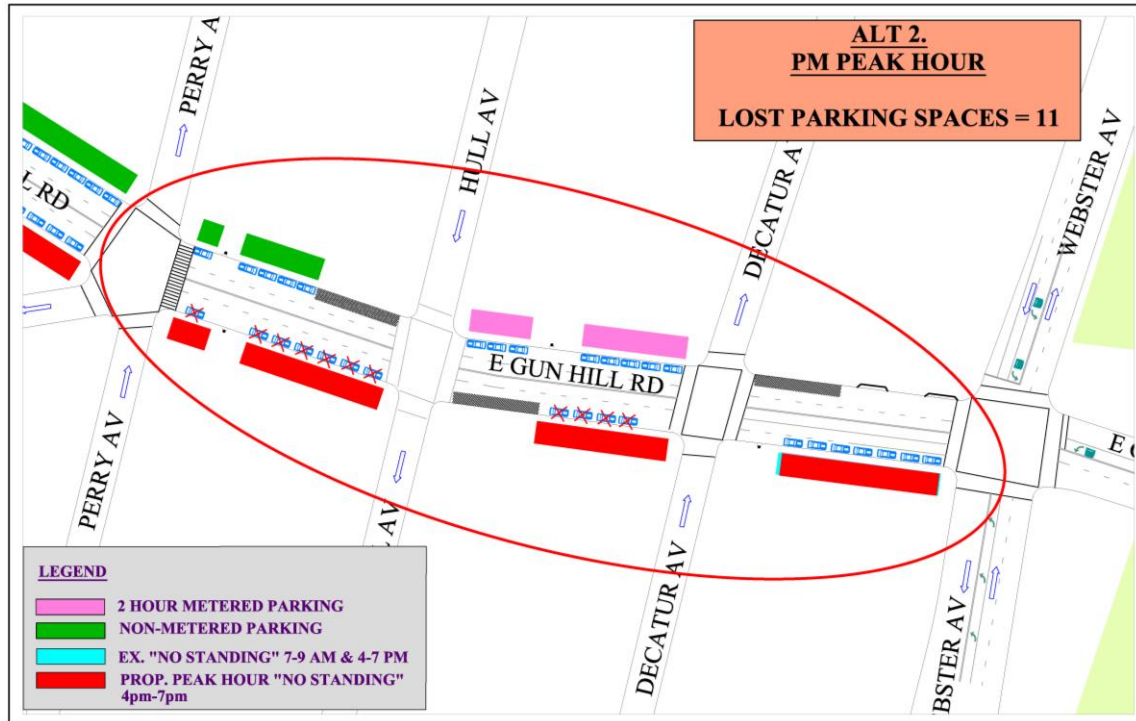
Under this alternative peak hour parking regulation would be enforced between Webster Avenue and Perry Avenue. Since there are already No Standing Anytime regulations on the north side between Webster Avenue and Decatur Avenue, and No Standing regulations during the weekday AM and PM peak periods on the south side of this block, the loss of parking space under this alternative would be considerably less than for Alternative 1. Effectively, parking spaces would be lost only between Decatur Avenue and Perry Avenue. As indicated in Figures 44 and 45, there would be a loss of 11 parking spaces during the AM and PM peak periods.

Both alternatives were presented to the public and community board through a series of public meetings. Because the loss of parking spaces under Alternative 2 is minimal, and could potentially bring about significant improvements in reducing congestion, it is recommended to be implemented as a pilot program.

The parking changes presented under this alternative have been incorporated into Future with Improvements analysis.



**Figure 44: Alternative 2 - Proposed Weekday AM Peak Hour Parking Regulations**



**Figure 45: Alternative 2 - Proposed Weekday PM Peak Hour Parking Regulations**

If the pilot program is successful, this section of East Gun Hill Road will be restriped to provide three ten foot lanes. The right lane would be used for parking, except during the peak direction as described above. It is recommended that at the section of East Gun Hill Road west of Perry Avenue, which would not be affected by the parking changes, be marked with a “parking stripe,” a four-inch solid white line to delineate the parking lane from the right travel lane. This may have the desired effect of reducing illegal double parking.

### 5.3 STREET DIRECTION

Most north-south streets crossing East Gun Hill Road are two-way streets, both on the north and the south side of East Gun Hill Road. However, the following streets are one-way south of East Gun Hill Road, and were previously two-way north of East Gun Hill Road: Decatur Avenue, Hull Avenue, Perry Avenue and Putnam Place. This is shown in Figure 46.

The typical curb-to-curb roadway width of these streets is typically 34 feet, with parking generally permitted on both sides. This resultant nine foot effective travel lanes are too narrow for safe two-way operation. It has been proposed that the two-way sections of the above noted streets, as well as East 211th Street, be converted to one-way as follows:

- Decatur Avenue – northbound
- Hull Avenue – southbound
- Perry Avenue – northbound
- Putnam Place – southbound
- East 211th Street – westbound

The conversion of street directions provides sufficient effective lane width, simplifies traffic circulation, and eliminates left turns at four intersections, as shown in Figure 47. The street direction change has been implemented in the fall of 2012. Follow-up contacts and correspondence with the Transportation Coordinator from CB 7 indicated that local residents and businesses are pleased with the change.

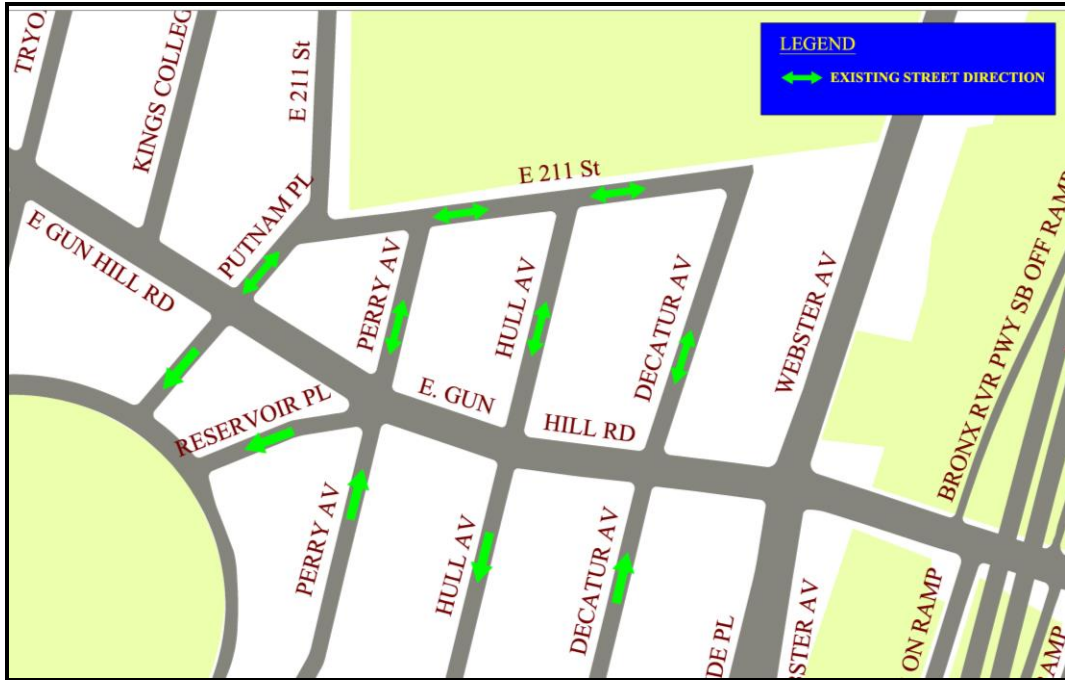


Figure 46: Previous Street Directions

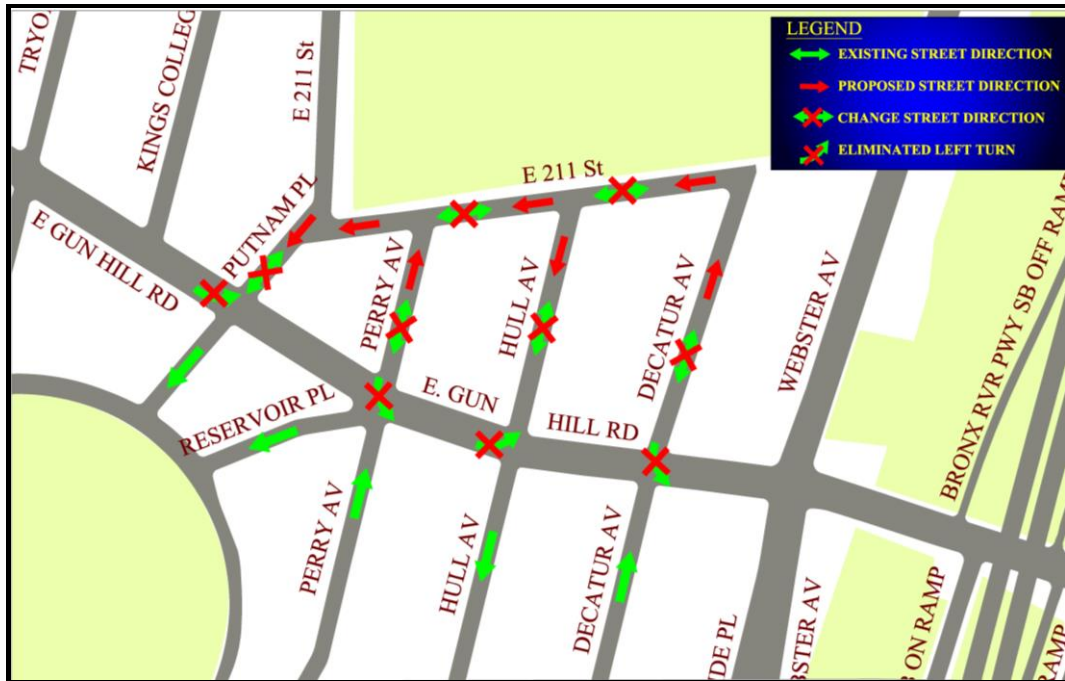


Figure 47: New Street Directions

At the request of residents and elected officials, an analysis has been conducted to assess the impacts on surrounding streets of reversing DeKalb Avenue from one-way northbound to one-way southbound. Analysis revealed that reversing DeKalb Avenue would result in diverting traffic to northbound Jerome Avenue, which already operates at poor level of services. Thus, it has been decided to retain DeKalb Avenue as one-way northbound.

## 5.4 INTERSECTION SPECIFIC IMPROVEMENTS

Below is the list of the recommended improvements specific to each intersection:

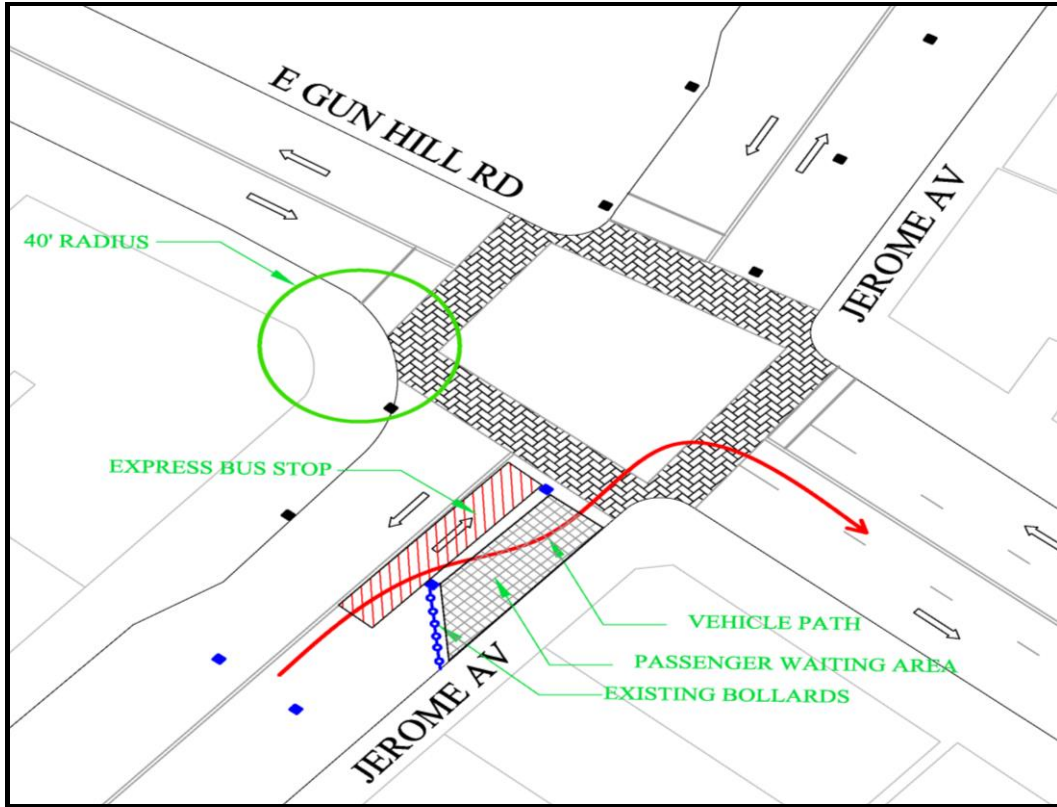
### 5.4.1 EAST GUN HILL ROAD AND JEROME AVENUE

#### Problems:

- Northbound right-turning traffic from Jerome Avenue onto eastbound East Gun Hill Road uses the same space as passengers waiting to board Westchester County bound buses, as shown in Photograph 3 and Figure 48. To help protect waiting passengers from moving vehicles originating from outside the columns, bollards have been installed as indicated in Photograph 3. However, vehicles are physically able to access this area from the travel lane inside the columns, using this section as a right-turn bay, which puts the waiting bus passengers in a hazardous situation.
- The radius at the southwest corner of East Gun Hill Road and Jerome Avenue is 40 feet, allowing vehicles to turn right at high speeds.



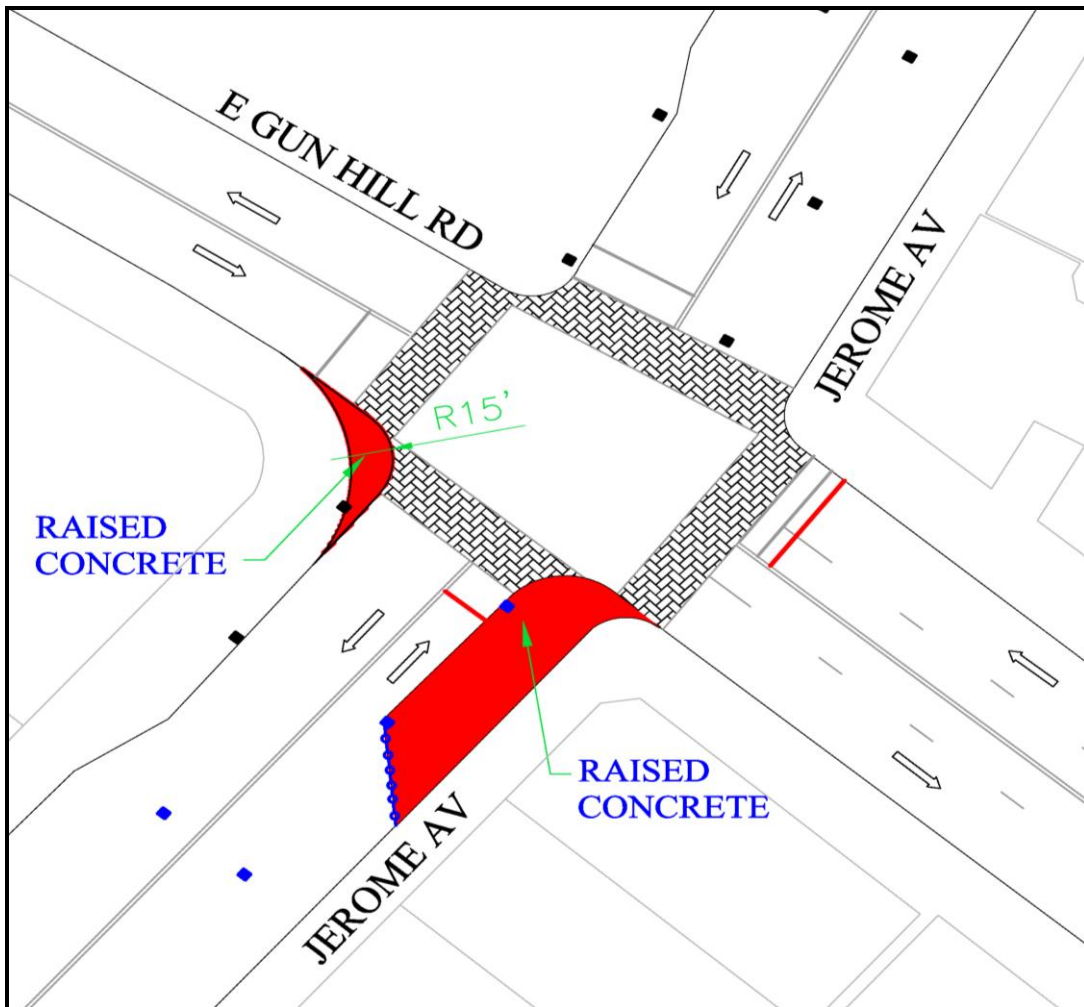
*Photograph 3 – Express Bus Stop on Northbound Jerome Avenue Approaching East Gun Hill Road, Looking South*



**Figure 48: East Gun Hill Road and Jerome Avenue Existing Conditions**

## Improvements

- Provide a raised concrete curb extension at the southeast corner of the East Gun Hill Road and Jerome Avenue, as indicated in in Figure 49.
- Change the existing 40-foot radius to the proposed 15-foot radius at the southwest corner of the intersection.
- Relocate STOP bars 10 feet from crosswalks at northbound and westbound approaches.



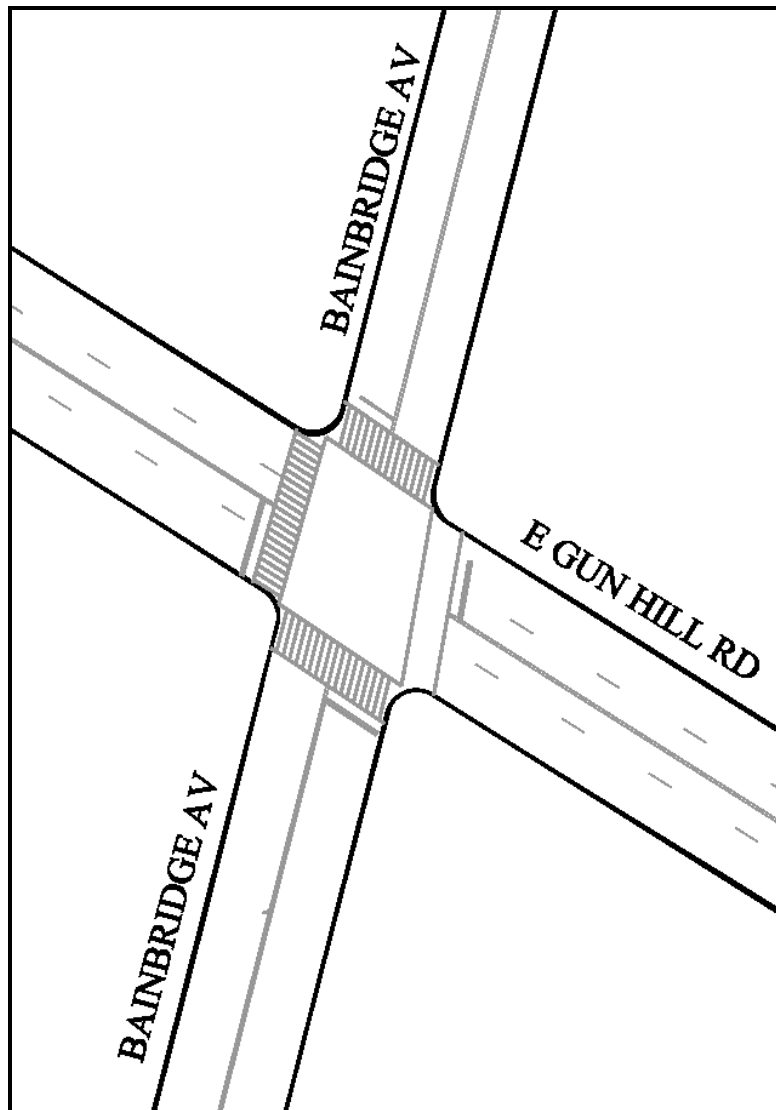
**Figure 49: East Gun Hill Road and Jerome Avenue Proposed Improvements**



## 5.4.2 EAST GUN HILL ROAD AND BAINBRIDGE AVENUE

### **Problem:**

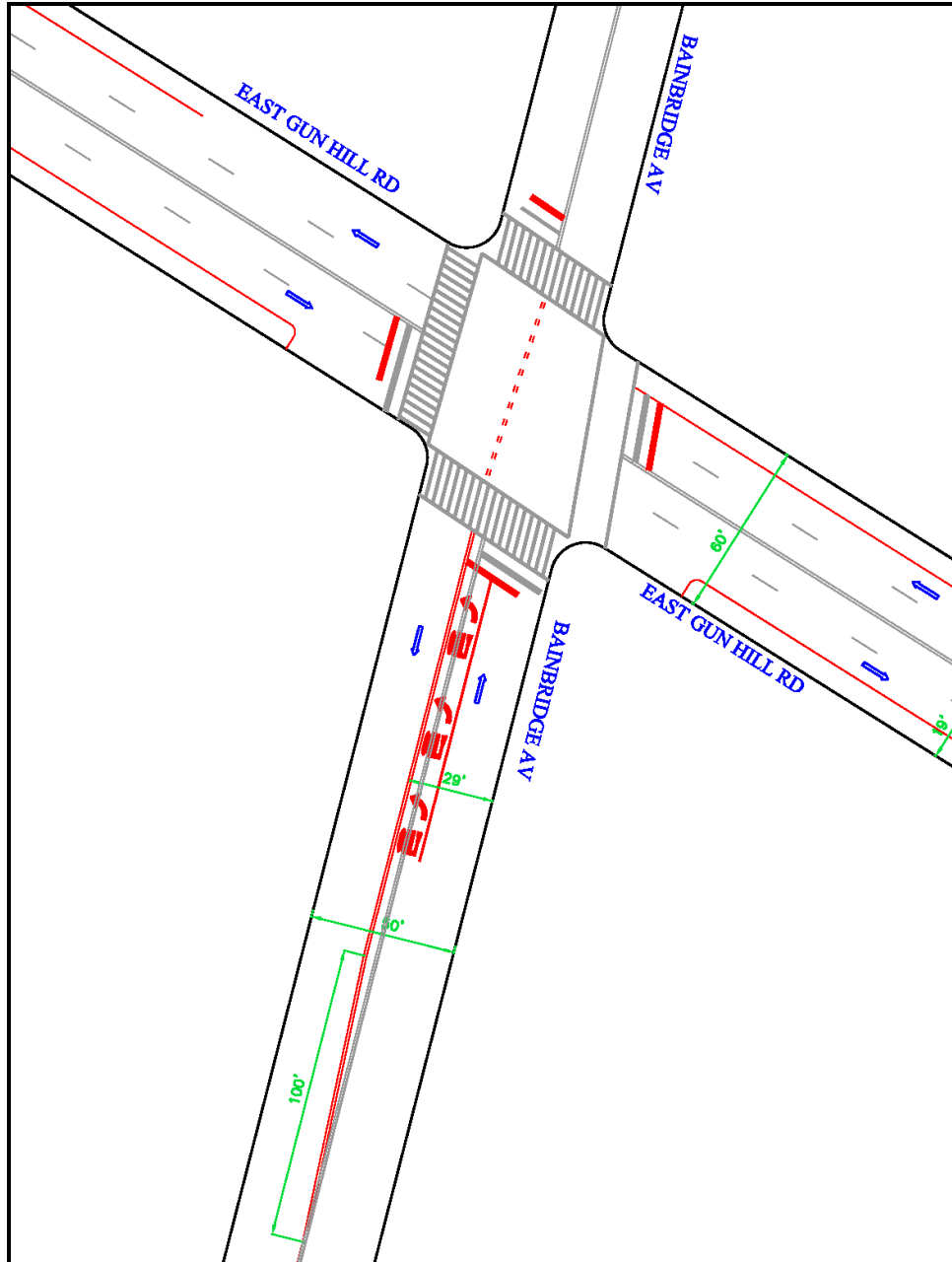
- High traffic volumes in the westbound and northbound directions.
- The northbound approach only has one lane, as shown in Figure 50. This is insufficient to handle the volume of left, through and right turning movements during peak hours.



**Figure 50: East Gun Hill Road and Bainbridge Avenue Existing Conditions**

**Improvements:**

- Restripe the northbound approach to provide a left-turn lane and a shared through-right lane as shown in Figure 51.
- Relocate STOP bars 10 feet from crosswalks.

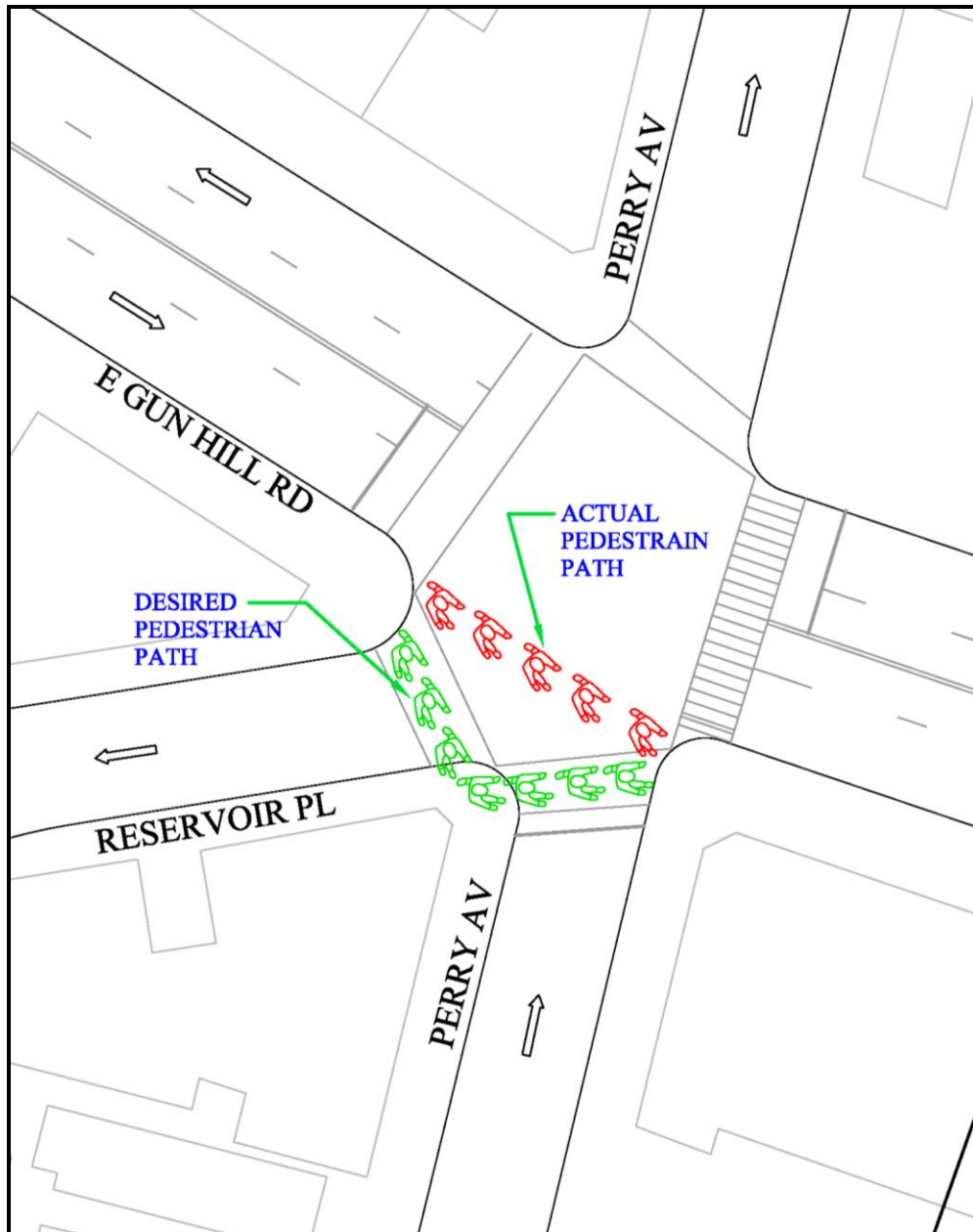


**Figure 51: East Gun Hill Road and Bainbridge Avenue Proposed Improvements**

### 5.4.3 EAST GUN HILL ROAD AND PERRY AVENUE

#### **Problem:**

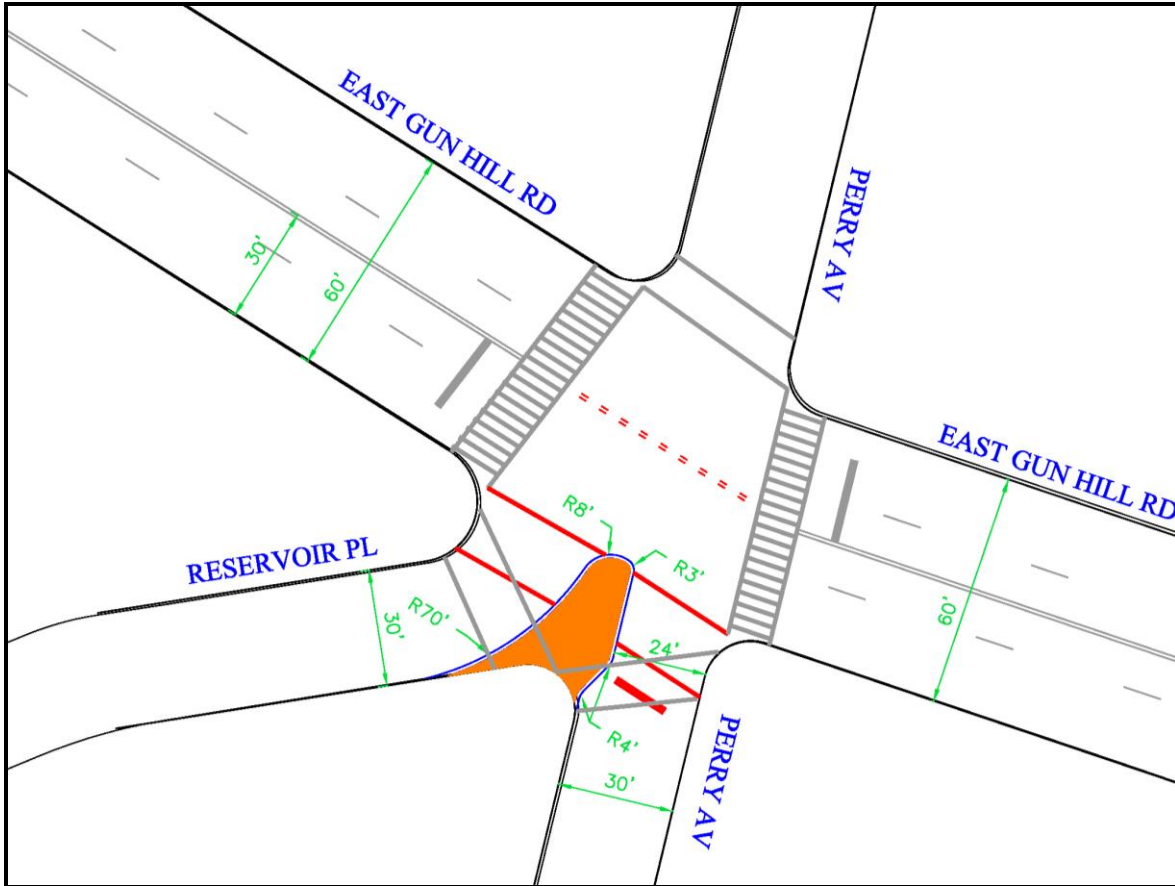
- Pedestrians walking along the south side of East Gun Hill Road at this intersection take a shortcut instead of following the striped crosswalk, as shown in Figure 52.
- Vehicles making the westbound left-turn speed through the intersection due to the slight angle of turn.



**Figure 52: East Gun Hill Road and Perry Avenue/Reservoir Place Existing Conditions**

**Improvements:**

- Extend the corner between Reservoir Place and Perry Avenue with truffle paint and delineators as shown in Figure 53.
- Realign crosswalk to provide a more direct route along the south side of East Gun Hill Road across Reservoir Place and Perry Avenue.
- Install new pedestrian ramps.

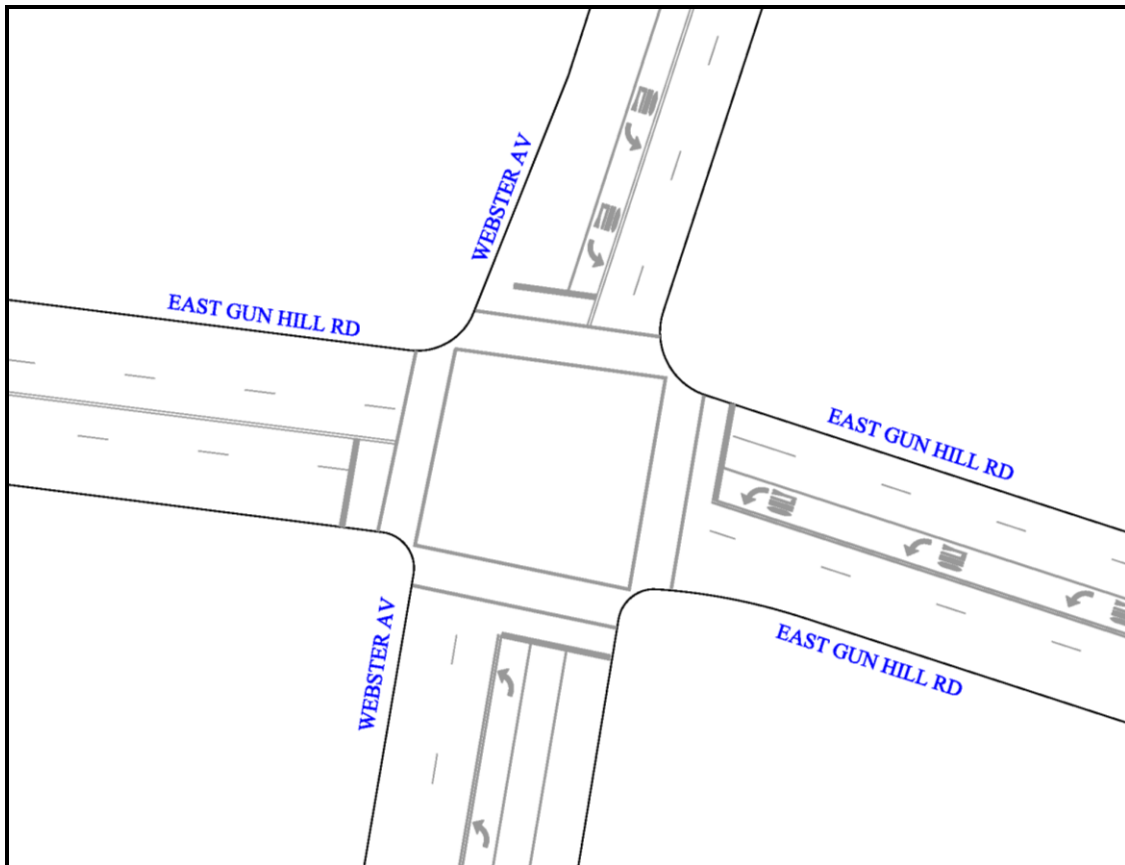


**Figure 53: East Gun Hill Road and Perry Avenue/Reservoir Place Recommended Improvements**

#### 5.4.4 EAST GUN HILL ROAD AND WEBSTER AVENUE

**Problem:**

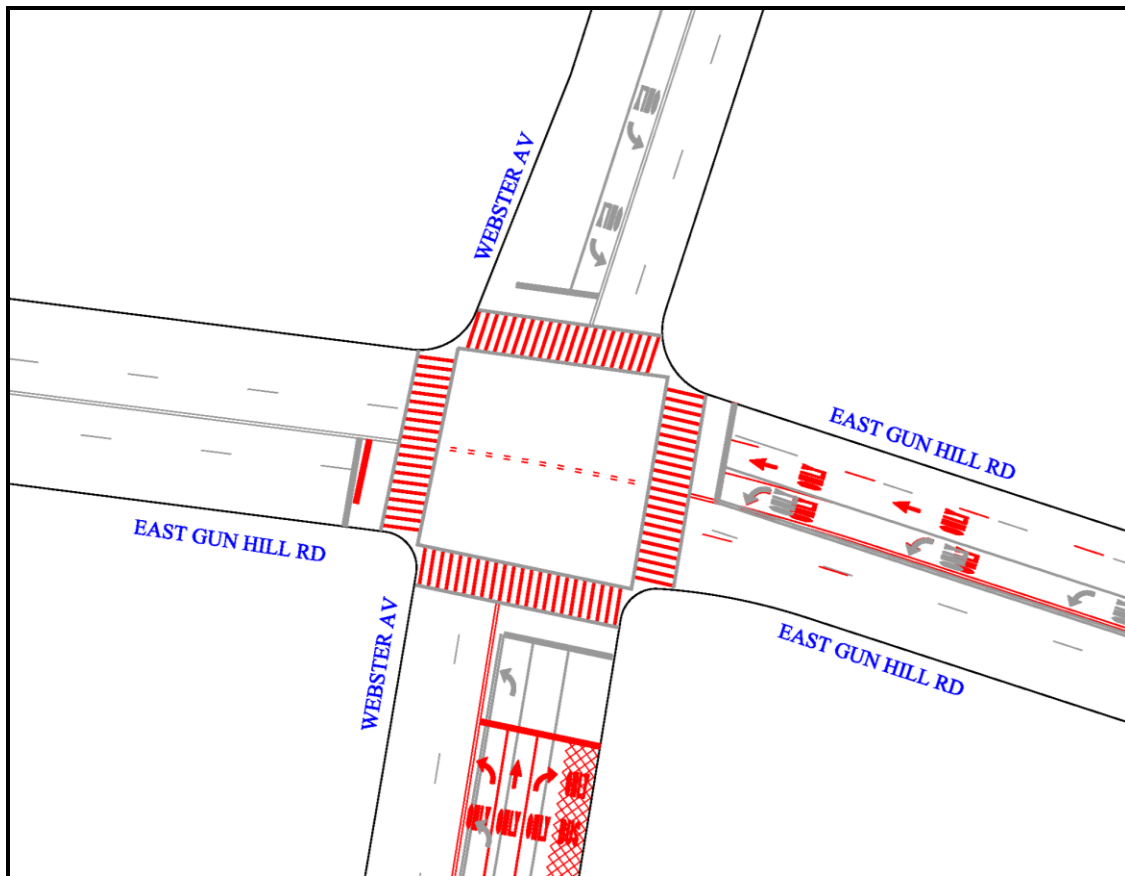
- Travel lanes are not properly aligned in the east-west direction, as shown in Figure 54.
- Eastbound right-turning vehicles, and westbound left-turning buses, often have difficulties due to northbound vehicles encroaching the crosswalk area.
- Unsafe feeling in crosswalks due to heavy turning traffic.



**Figure 54: East Gun Hill Road and Webster Avenue Existing Conditions**

### Improvements:

- Restripe the westbound approach for a better alignment, as shown in Figure 55.
- Install new high visibility crosswalks across all four legs of the intersection.
- Relocate northbound STOP bar 40 feet from the crosswalk to accommodate turning vehicles.
- Restripe northbound lane arrangement to accommodate the new proposed bus lane on Webster Avenue.



**Figure 55: East Gun Hill Road and Webster Avenue Proposed Improvements**

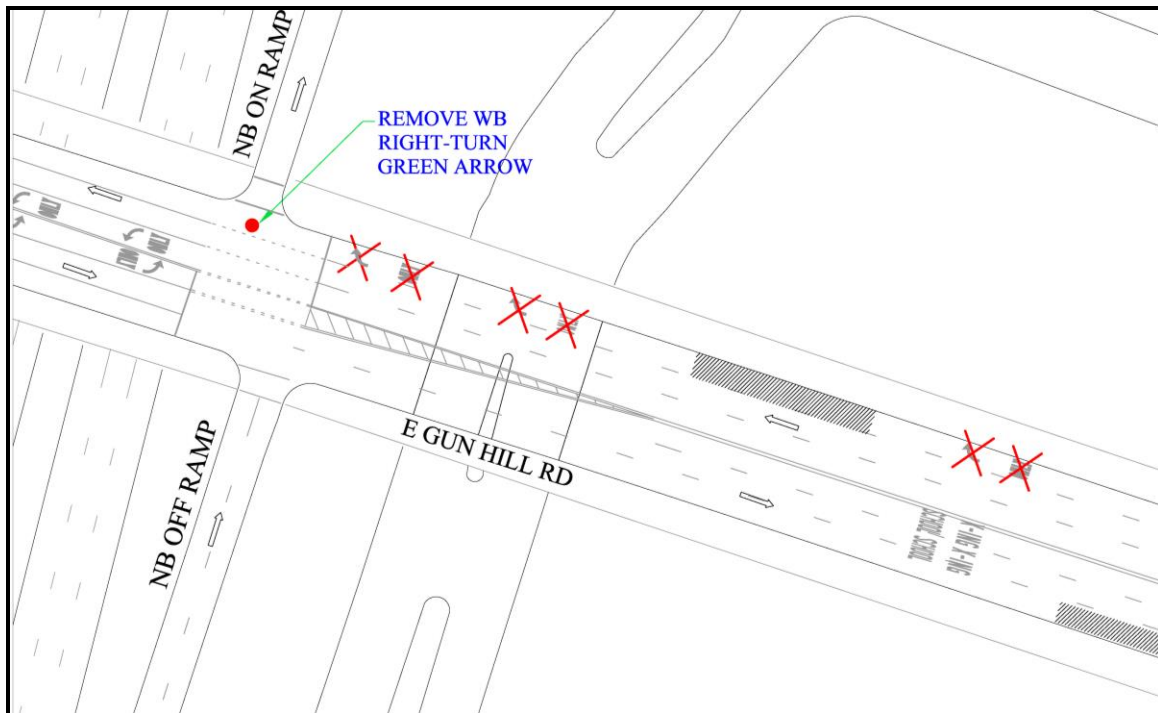
#### 5.4.5 EAST GUN HILL ROAD AND BRONX RIVER PARKWAY NORTHBOUND RAMP

##### **Problem:**

- Right lane in the westbound direction between Olinville Avenue and Bronx River Parkway Northbound Ramp is designated as right-turn lane.
- Right-turn arrow signal head provides westbound right-turn overlapping with northbound left-right phase.
- Drivers disregard the markings and signs, using the right lane for through movement.
- Westbound through traffic is already congested; it would be exacerbated if drivers heeded the signs and markings and did not use the right lane for through movements.

##### **Improvement:**

- Convert the right-turn-only lane into a shared through-right lane, as shown in Figure 56.
- Remove right-turn arrow signal head and the overlapping westbound right-turn phase.
- Remove “Right Turn Must Turn Right” signs.
- Scarify right-turn-only arrows and message from pavement markings.

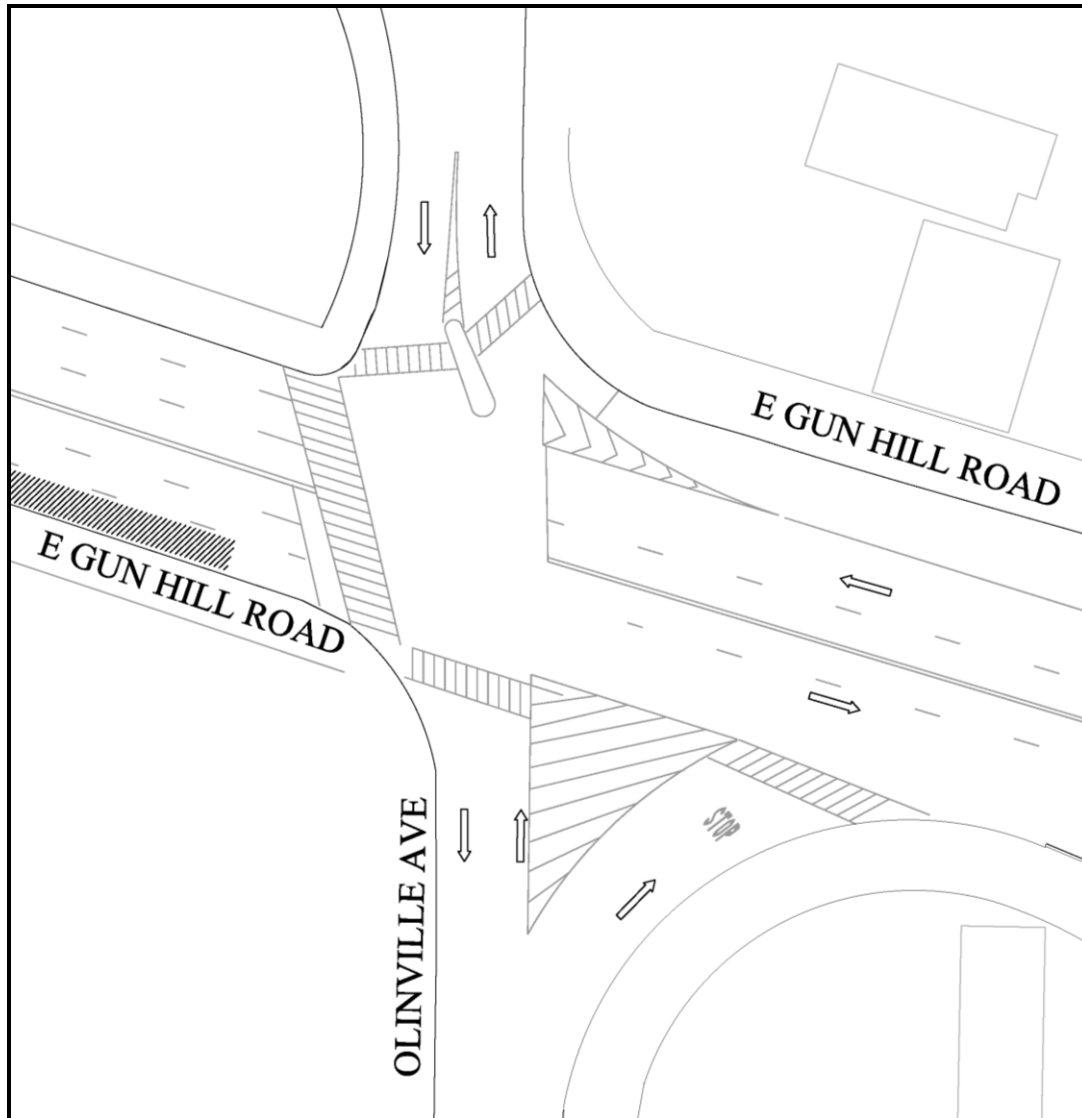


**Figure 56: East Gun Hill Road and Bronx River Pkwy Northbound Ramp Proposed Improvements**

#### 5.4.6 EAST GUN HILL ROAD AND OLINVILLE AVENUE

**Problem:**

- Substandard and confusing intersection geometry, as shown in Figure 57.
- Unsafe pedestrian crossings.
- No east crosswalk across East Gun Hill Road, but pedestrians routinely cross there.
- No pedestrian signal for south crosswalks.

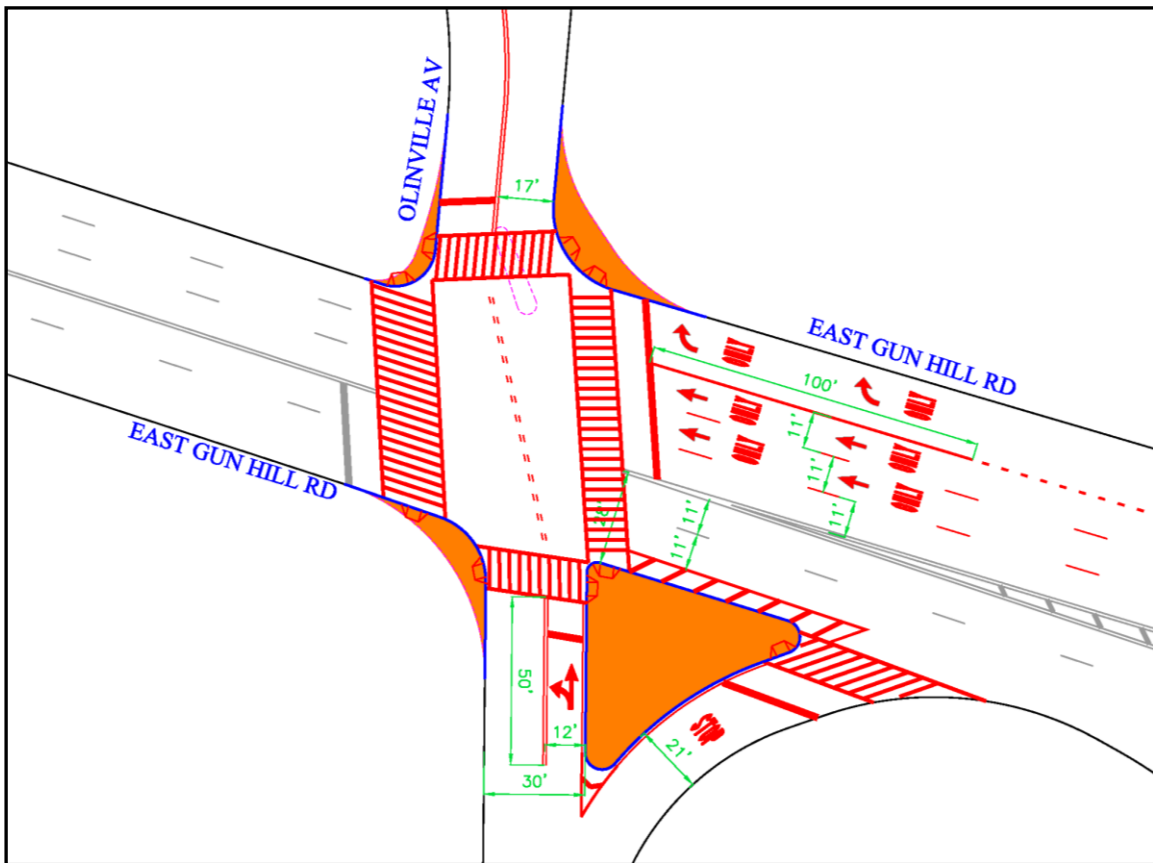


**Figure 57: East Gun Hill Road at Olinville Avenue Existing Conditions**



**Improvement:**

- Build a raised concrete island on the south leg of the intersection for northbound right-turn channelization, as shown in Figure 58.
- Provide curb extensions on the northwest, southwest and northeast corners to normalize the intersection and shorten crossing distance of north crosswalk.
- Provide a new crosswalk on the east side of the intersection
- Re-design the traffic signal to accommodate new lane arrangement.
- Locate STOP bars 10 feet from crosswalks.



**Figure 58: East Gun Hill Road and Olinville Avenue Proposed Improvements**

#### 5.4.7 EAST GUN HILL ROAD AND WILLETT AVENUE

##### **Problem:**

- Since eastbound left-turn at White Plains Road has been prohibited under new intersection redesign, traffic has been diverted to Willett Avenue, which prompted complaints by the local residents of drivers using their street as a short-cut.
- Eastbound left-turning vehicles block through traffic when waiting for gaps in opposing flow, as shown in Figure 59.



**Figure 59: A Left-Turning Vehicle from Eastbound East Gun Hill Road onto Willett Avenue**

##### **Improvement:**

- Prohibit the eastbound left-turn.
- Install “No Through Traffic” signs on Willett Road to discourage drivers from using the street as a short-cut.

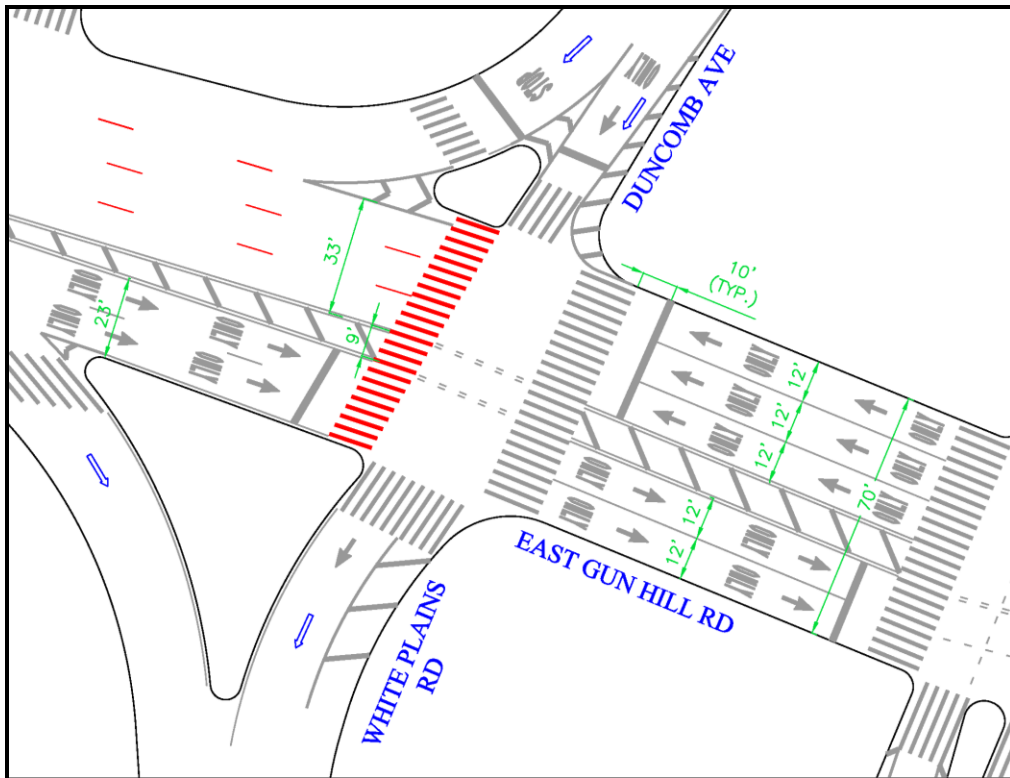
### 5.4.8 EAST GUN HILL ROAD AND SOUTHBOUND WHITE PLAINS ROAD

**Problem:**

- Currently there is no crosswalk on the west side of the intersection, although pedestrian have been observed to cross at this location.

**Improvement:**

- Install a new high visibility crosswalk across the East Gun Hill Road along the west side of southbound White Plains Road, as shown in Figure 60.



**Figure 60: Proposed new west crosswalk at East Gun Hill Road and SB White Plains Road**

## 5.5 IMPROVEMENT OPTIONS PROPOSED BUT NOT SELECTED

The following improvements were proposed, analyzed and presented to the public but have not been selected for implementation:

- **Peak Hour Parking Regulations between Jerome Avenue and Webster Avenue.** No Standing regulations have been proposed for the peak direction (westbound 7-9 AM eastbound 4-7 PM) between Webster Avenue and Jerome Avenue to create an additional travel lane. Detailed traffic analysis indicated that this would significantly improve traffic flow and reduce traffic congestion. However, the proposed regulations were rejected by the public and community board due to the fact that existing parking spaces are already insufficient to absorb parking demand. Instead, a modified plan was recommended as a trial (Alternative 2 in Section 5.2).
- **Conversion of DeKalb Avenue from one-way northbound to one-way southbound.** At the request of residents and elected officials, an analysis has been conducted to assess the impacts on surrounding streets of reversing DeKalb Avenue from one-way northbound to one-way southbound. Analysis revealed that reversing DeKalb Avenue would result in diverting traffic to northbound Jerome Avenue, which already operates at poor level of services. Thus, it has been decided to retain DeKalb Avenue as one-way northbound.
- **Bronx River Parkway Interchange with East Gun Hill Road.** As mentioned earlier, the main “choke point” of the study corridor is, and will remain for the foreseeable future, the intersection with the Bronx River Parkway. Various phasing and timing changes have been tested in an attempt to improve level of service, but the existing timing was found to be optimal given the severe constraints at this location. There is no low- to moderate-cost solution to provide this interchange with sufficient capacity to handle the traffic demand. Improving this intersection would require massive capital funds that are unavailable at this time. Only the relatively minor improvement in Section 5.4.6 was recommended.

## 6. EVALUATION

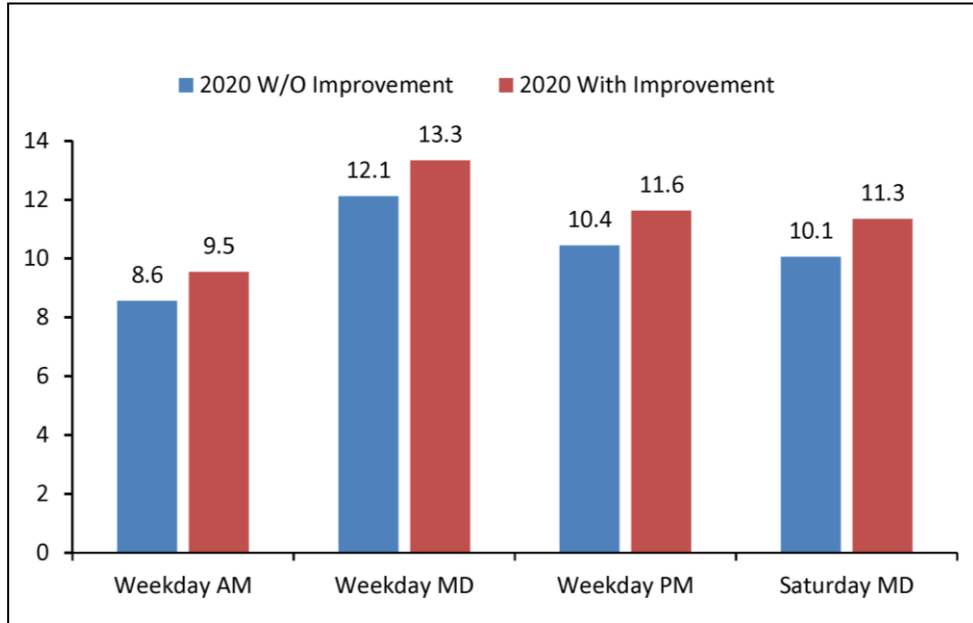
This section quantifies the benefits of the proposed improvements. Three service measures were projected: travel speeds, intersection levels of service, and emissions. Future without Improvements conditions were compared to Future with Improvements conditions.

### 6.1 TRAVEL SPEEDS

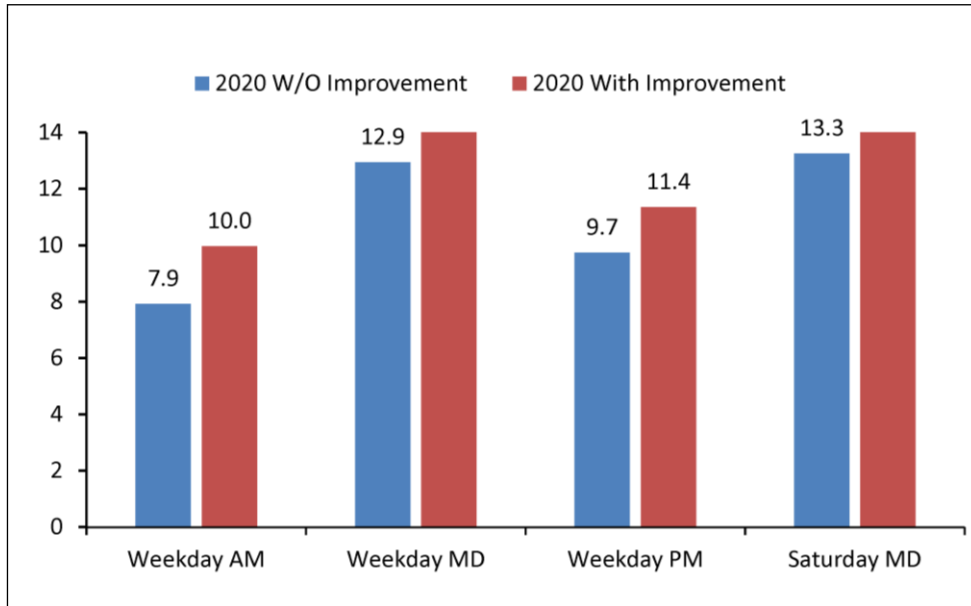
Table 12 and Figures 61 and 62 present the projected travel speeds on East Gun Hill Road between Jerome Avenue and White Plains Road for the Future without Improvements conditions compared to the Future with Improvements conditions for the year 2020. SimTraffic simulation software was used to determine projected speeds. For the eastbound direction, travel speeds in the weekday AM, midday, PM and Saturday midday peak hours are projected to improve by 11.5%, 10.1%, 11.3% and 12.9%, respectively. In westbound direction, the projected improvements are 25.8%, 11.4%, 16.7% and 13.0%, respectively.

**TABLE 12: FUTURE PROJECTED PEAK HOUR TRAVEL SPEEDS ON EAST GUN HILL ROAD**

	Eastbound			Westbound		
	2020 w/o Improvement (mph)	2020 with Improvement (mph)	Change %	2020 w/o Improvement (mph)	2020 with Improvement (mph)	Change %
Weekday AM	8.6	9.5	11.5%	7.9	10.0	25.8%
Weekday MD	12.1	13.3	10.1%	12.9	14.4	11.4%
Weekday PM	10.4	11.6	11.3%	9.7	11.4	16.7%
Saturday MD	10.1	11.3	12.9%	13.3	15.0	13.0%



**Figure 61: Future Projected Eastbound Peak Hour Travel Speeds for East Gun Hill Road**



**Figure 62: Future Projected Westbound Peak Hour Travel Speeds for East Gun Hill Road**

## 6.2 INTERSECTION LEVELS OF SERVICE

Table 13 presents the volume to capacity (v/c) ratio, delay, and LOS for each lane group for each intersection in the study area. Results are given for Future without Improvements conditions and Future with Improvements conditions for the year 2020.

**TABLE 13: FUTURE PROJECTED LOS**

Intersection Approach <sup>1</sup>	M <sub>vpc</sub>	Weekday AM Peak (7:45-8:45 am)						Weekday Midday Peak (12:30-1:30 pm)						Weekday PM Peak (5:00-6:00 pm)						Saturday Midday Peak (12:30-1:30 pm)					
		Future W/O Improv.			Future with Improv.			Future W/O Improv.			Future with Improv.			Future W/O Improv.			Future with Improv.			Future W/O Improv.			Future with Improv.		
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
<b>1. East Gun Hill Road and Jerome Avenue</b>																									
EB-East Gun Hill Road	LTR	0.83	91.5	F	0.83	44.8	D	0.77	33.3	C	0.77	33.3	C	0.77	36.8	D	0.77	38.6	D	0.78	34.9	C	0.78	34.9	C
WB-East Gun Hill Road	LTR	1.07d	117.1	F	1.07d	44.8	D	0.70	44.8	D	0.70	16.1	B	0.74	91.6	F	0.74	18.5	B	0.78	70.8	E	0.78	22.2	C
NB-Jerome Avenue	LTR	0.78	53.6	D	0.78	41.5	D	0.80	37.4	D	0.80	37.4	D	0.84	96.1	F	0.85	46.9	D	1.00	68.7	E	0.95	55.0	D
SB-Jerome Avenue	LTR	0.95	76.5	E	0.95	56.0	E	0.40	18.8	B	0.40	18.8	B	0.61	29.7	C	0.61	28.7	C	0.33	17.6	B	0.33	17.6	B
Overall Intersection			87.2	F		47.9	D		34.6	C		25.8	C		65.0	E		32.3	C		53.1	D		33.4	C
<b>2. East Gun Hill Road and Dekalb Avenue</b>																									
EB-East Gun Hill Road	LTR	0.63	80.3	F	0.78	33.1	C	0.38	14.3	B	0.45	14.3	B	0.56	54.2	D	0.64	31.9	C	0.78	13.6	B	0.41	15.4	B
WB-East Gun Hill Road	LTR	0.57	59.3	E	0.72	21.5	C	0.36	3.4	A	0.44	8.3	A	0.62	70.7	E	0.73	27.1	C	0.45	2.2	A	0.49	3.7	A
NB-Dekalb Avenue	LTR	1.08	131.0	F	0.80	48.0	D	1.05	131.0	F	0.78	39.6	D	0.98	93.7	F	0.84	47.6	D	0.49	74.7	E	0.42	28.0	C
SB-Dekalb Avenue	LTR	0.38	40.0	D	0.28	25.2	C	0.17	26.0	C	0.12	18.8	B	0.31	28.2	C	0.27	22.1	C	0.13	26.2	C	0.11	21.9	C
Overall Intersection			78.5	E		30.9	C		36.2	D		18.4	B		66.9	E		32.8	C		15.6	B		11.7	B
<b>3. East Gun Hill Road and Rochambeau Avenue</b>																									
EB-East Gun Hill Road	LT	0.57	10.0	A	0.57	13.1	B	0.50	10.6	B	0.81	19.1	B	0.55	18.4	B	0.55	14.1	B	0.44	7.5	A	0.44	6.6	A
WB-East Gun Hill Road	TR	0.47	20.0	B	0.47	19.8	B	0.33	8.7	A	1.04d	39.3	D	0.44	14.1	B	0.44	12.1	B	0.42	6.2	A	0.42	6.2	A
SB-Rochambeau Avenue	LR	0.19	28.4	C	0.19	28.4	C	0.12	21.3	C	0.43	28.2	C	0.14	27.5	C	0.14	27.5	C	0.09	20.9	C	0.09	20.9	C
Overall Intersection			15.5	B		16.9	B		10.2	B		30.6	C		16.8	B		13.6	B		7.2	A		6.8	A
<b>4. East Gun Hill Road and Bainbridge Avenue</b>																									
EB-East Gun Hill Road	LTR	0.85	19.2	B	0.88	25.3	C	0.75	11.3	B	0.88	27.6	C	0.88	25.0	C	0.95	40.7	D	0.53	7.8	A	0.53	7.0	A
WB-East Gun Hill Road	LTR	1.03	45.1	D	1.04	46.9	D	0.96d	29.7	C	0.96d	36.5	D	0.83	33.5	C	0.88	46.8	D	0.52	8.6	A	0.52	8.5	A
NB-Bainbridge Avenue	LTR	1.05	69.0	E	0.75	33.0	C	0.95	72.9	E	0.67	37.6	D	1.13	113.5	F	0.87	52.1	D	0.68	39.4	D	0.49	31.0	C
SB-Bainbridge Avenue	LTR	0.93	62.3	E	0.88	51.5	D	0.48	31.8	C	0.43	28.2	C	0.66	50.8	D	0.58	43.2	D	0.53	34.1	C	0.53	34.2	C
Overall Intersection			41.8	D		38.2	D		30.3	C		32.5	C		47.6	D		44.9	D		15.2	B		13.6	B
<b>5. East Gun Hill Road and Wayne Avenue</b>																									
EB-East Gun Hill Road	LTR	0.49	11.4	B	0.49	9.9	A	0.41	8.5	A	0.41	7.4	A	0.52	17.6	B	0.52	17.2	B	0.33	2.3	A	0.36	2.6	A
WB-East Gun Hill Road	LTR	0.99	27.8	C	0.99	29.3	C	0.59	4.8	A	0.59	4.9	A	0.69	27.1	C	0.69	26.5	C	0.45	3.6	A	0.46	3.7	A
NB-Wayne Avenue	LTR	0.51	41.3	D	0.51	41.3	D	0.43	30.5	C	0.43	30.5	C	0.44	31.4	C	0.44	30.5	C	0.18	25.2	C	0.18	25.2	C
SB-Wayne Avenue	LTR	0.29	29.6	C	0.29	29.6	C	0.28	28.1	C	0.28	28.1	C	0.09	24.2	C	0.09	24.2	C	0.17	25.4	C	0.17	25.4	C
Overall Intersection			23.5	C		24.2	C		9.5	A		9.1	A		23.9	C		23.3	C		4.8	A		5.0	A
<b>6. East Gun Hill Road and Tryon Avenue</b>																									
EB-East Gun Hill Road	LTR	0.49	11.3	B	0.49	11.6	B	0.49	6.7	A	0.49	8.0	A	0.49	6.1	A	0.49	6.0	A	0.36	3.2	A	0.36	3.3	A
WB-East Gun Hill Road	LTR	0.72	3.2	A	0.72	3.2	A	0.55	4.4	A	0.55	4.4	A	0.54	2.6	A	0.54	2.6	A	0.47	3.8	A	0.47	3.8	A
NB-Tryon Avenue	LTR	0.31	35.7	D	0.31	35.7	D	0.26	26.6	C	0.26	26.6	C	0.37	36.7	D	0.37	36.7	D	0.22	25.8	C	0.22	25.8	C
SB-Tryon Avenue	LTR	0.16	31.2	C	0.16	31.6	C	0.11	24.0	C	0.11	24.0	C	0.17	34.4	C	0.17	34.4	C	0.07	23.5	C	0.07	23.5	C
Overall Intersection			8.4	A		8.5	A		7.0	A		7.5	A		7.6	A		7.5	A		5.1	A		5.2	A
<b>7. East Gun Hill Road and Kings College Avenue</b>																									
EB-East Gun Hill Road	LT	0.51	6.2	A	0.51	6.3	A	0.48	3.8	A	0.48	3.0	A	0.58	11.5	B	0.58	11.5	B	0.39	4.1	A	0.39	4.1	A
WB-East Gun Hill Road	TR	0.69	2.8	A	0.68	2.6	A	0.49	1.4	A	0.49	1.7	A	0.60	18.9	B	0.60	19.8	B	0.44	1.2	A	0.44	1.5	A
SB-Kings College Avenue	LR	0.19	33.8	C	0.19	33.9	C	0.13	25.7	C	0.13	25.7	C	0.10	24.4	C	0.10	24.4	C	0.05	23.8	C	0.05	23.8	C
Overall Intersection			5.2	A		5.2	A		3.2	A		3.0	A		15.6	B		16.1	B		2.8	A		3.0	A
<b>8. East Gun Hill Road and Putnam Place</b>																									
EB-East Gun Hill Road	LTR	0.59	10.4	B	0.54	9.2	A	0.56	4.8	A	0.53	4.9	A	0.56	4.9	A	0.51	3.9	A	0.45	4.60	A	0.42	4.5	A
WB-East Gun Hill Road	LT	0.79	29.9	C	0.77	10.6	B	0.58	8.0	A	0.56	7.4	A	0.58	10.6	B	0.54	9.8	A	0.52	8.00	A	0.51	7.8	A
SB-Putnam Place	LTR	0.13	29.9	C	0.62	43.4	D	0.10	21.5	C	0.42	27.0	C	0.19	29.5	C	0.68	29.5	C	0.13	21.50	C	0.55	30.7	C
Overall Intersection			21.5	C		13.7	B		6.8	A		8.2	A		16.2	B		21.2	C		7.00	A		9.5	A
<b>9. East Gun Hill Road and Perry Avenue</b>																									
EB-East Gun Hill Road	LT	0.56	7.0	A	0.74	12.5	B	0.50	2.2	A	0.57	5.0	A	0.61	8.6	A	0.80	26.6	C	0.40	2.5	A	0.49	6.7	A
WB-East Gun Hill Road	LTR	1.07	53.1	D	0.62	3.1	A	0.64	3.8	A	0.65	4.2	A	0.82	15.8	B	0.86	17.1	B	0.63	4.1	A	0.63	4.2	A
NB-Perry Avenue	LTR	0.63	39.5	D	0.59	36.9	D	0.62	37.9	D	0.59	35.9	D	0.65	36.3	D	0.63	35.3	D	0.68	40.4	D	0.66	38.7	D
SB-Perry Avenue	LTR	0.10	26.8	C	0.00	0.0	-	0.13	22.3	C	0.00	0.0	-	0.10	15.6	B	0.00	0.0	-	0.06	23.2	C	0.00	0.0	-
Overall Intersection			35.5	D		12.1	B		7.2	A		8.0	A		16.1	B		24.1	C		8.8	A		9.8	A

**TABLE 13: FUTURE PROJECTED LOS (CONTINUED)**

Intersection Approach <sup>1</sup>	Mvmt	AM Peak (7:45-8:45 am)						MD Peak (12:30-1:30 pm)						PM Peak (5:00-6:00 pm)						Saturday Peak (12:30-1:30 pm)					
		NO BUILD			BUILD			NO BUILD			BUILD			NO BUILD			BUILD			NO BUILD			BUILD		
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
<b>10. East Gun Hill Road and Hull Avenue</b>																									
EB-East Gun Hill Road	TR	0.69	12.9	B	0.75	12.2	B	0.61	6.9	A	0.62	6.1	A	0.77	26.0	C	0.60	12.8	B	0.53	7.40	A	0.58	6.7	A
WB-East Gun Hill Road	LT	1.08	54.8	D	0.72	3.7	A	0.70	6.6	A	0.68	4.1	A	0.92	22.9	C	0.88	17.9	B	0.78	9.90	A	0.77	7.8	A
SB-Hull Avenue	LTR	0.13	24.5	C	0.09	26.6	C	0.11	21.6	C	0.09	15.2	B	0.16	22.8	C	0.04	8.9	A	0.10	23.80	C	0.05	21.8	C
<b>Overall Intersection</b>		37.0 D			7.9 A			7.1 A			5.3 A			24.4 C			15.0 B			9.00 A			7.4 A		
<b>11. East Gun Hill Road and Decatur Avenue</b>																									
EB-East Gun Hill Road	LT	0.64	10.0	A	0.75	8.7	A	0.54	3.2	A	0.59	2.9	A	0.92	69.2	E	0.76	12.6	B	0.48	2.9	A	0.56	2.7	A
WB-East Gun Hill Road	TR	1.08	66.2	E	0.90	63.4	E	0.64	7.6	A	0.64	5.1	A	0.80	29.0	C	0.80	30.7	C	0.59	8.1	A	0.60	5.6	A
NB-Decatur Avenue	LTR	0.25	28.3	C	0.25	28.1	C	0.14	25.4	C	0.14	25.3	C	0.23	28.2	C	0.22	27.8	C	0.42	31.2	C	0.40	30.4	C
SB-Decatur Avenue	LR	0.48	34.0	C	-	-	-	0.26	27.0	C	-	-	-	0.45	36.6	D	-	-	-	0.56	37.0	D	-	-	-
<b>Overall Intersection</b>		43.2 D			37.2 D			6.8 A			4.5 A			48.1 D			21.0 C			9.6 A			5.9 A		
<b>12. East Gun Hill Road and Webster Avenue</b>																									
EB-East Gun Hill Road	LTR	0.89	36.4	D	0.83	16.1	B	0.70	12.2	B	0.70	9.2	A	0.98	78.5	E	1.03	52.2	D	0.68	17.7	B	0.68	12.0	B
WB-East Gun Hill Road	L	1.07	90.8	F	1.03	77.1	E	1.01	72.3	E	0.91	47.8	D	1.04	89.9	F	0.92	58.0	E	1.09	99.0	F	1.09	96.8	F
	TR	1.00	67.6	E	0.96	54.2	D	0.59	6.5	A	0.57	4.3	A	0.81	29.5	C	0.79	28.0	C	0.54	5.9	A	0.54	4.8	A
NB-Webster Avenue	L	0.37	40.9	D	0.41	46.3	D	0.18	26.0	C	0.20	27.9	C	0.18	32.7	C	0.19	34.6	C	0.33	30.3	C	0.33	30.3	C
	TR	0.53	37.6	D	0.58	41.4	D	0.85dr	32.5	C	0.92dr	35.9	D	1.03dr	56.5	E	1.03dr	56.6	E	0.99dr	36.0	D	0.99dr	36.0	D
SB-Webster Avenue	TR	0.61	38.0	D	0.67	41.8	D	0.35	26.0	C	0.38	27.9	C	0.52	36.4	D	0.56	38.9	D	0.50	28.6	C	0.50	28.6	C
<b>Overall Intersection</b>		53.8 D			43.0 D			20.7 C			17.4 B			53.7 D			43.5 D			27.9 C			25.6 C		
<b>13. East Gun Hill Rd and SB Bronx River Pkwy Ramp</b>																									
EB-East Gun Hill Road	T	0.71	26.1	C	0.71	28.2	C	0.56	15.1	B	0.56	15.4	B	0.74	41.0	D	0.74	47.0	D	0.75	18.7	B	0.75	19.1	B
	R	0.39	8.8	A	0.39	9.0	A	0.36	2.9	A	0.36	2.9	A	0.40	5.5	A	0.40	5.6	A	0.32	3.4	A	0.32	3.5	A
WB-East Gun Hill Road	L	0.92	85.1	F	0.92	85.1	F	0.75	80.2	F	0.75	53.6	D	0.87	100.6	F	0.87	105.5	F	0.97	105.4	F	0.97	102.5	F
	T	0.91	58.5	E	0.91	53.6	D	0.50	61.3	E	0.50	4.8	A	0.63	62.1	E	0.63	30.4	C	0.47	47.1	D	0.47	3.6	A
SB-Bronx River Pkwy Ramp	LTR	1.06	124.3	F	1.06	123.2	F	0.67	40.6	D	0.67	40.6	D	1.01	125.8	F	1.01	125.8	F	0.84	103.6	F	0.84	103.6	F
<b>Overall Intersection</b>		56.0 E			55.5 E			42.5 D			17.5 B			61.2 E			52.1 D			48.4 D			33.8 C		
<b>14. East Gun Hill Rd and NB Bronx River Pkwy Ramp</b>																									
EB-East Gun Hill Road	L	0.51	131.5	F	0.38	111.1	F	0.32	13.7	B	0.30	14.9	B	0.72	37.5	D	0.68	31.5	C	0.41	25.8	C	0.39	51.8	D
	T	0.57	27.5	C	0.57	27.5	C	0.48	7.3	A	0.48	7.3	A	0.73	13.5	B	0.73	13.5	B	0.68	10.5	B	0.68	10.5	B
WB-East Gun Hill Road	R	1.07	77.1	E	0.82	24.0	C	0.88	23.7	C	0.72	19.9	B	0.84	30.0	C	0.70	12.7	B	0.79	16.5	B	0.68	14.4	B
NB- Bronx River Pkwy Ram	L	1.06	125.0	F	0.84	112.3	F	0.71	102.6	F	0.71	62.4	E	0.80	112.3	F	0.80	112.3	F	0.61	98.6	F	0.61	39.3	D
	R	0.73	51.5	D	0.73	51.5	D	0.95	74.2	E	0.95	74.2	E	0.92	74.0	E	0.92	74.0	E	0.77	44.8	D	0.77	44.8	D
<b>Overall Intersection</b>		65.2 E			41.8 D			32.6 C			27.5 C			34.8 C			29.2 C			23.5 C			19.3 B		
<b>15. East Gun Hill Road and Olinville Avenue</b>																									
EB-East Gun Hill Road	LTR	0.79	23.7	C	0.79	23.6	C	0.68	11.9	B	0.68	11.8	B	0.91	58.8	E	0.91	58.8	E	0.93	62.6	E	0.93	62.4	E
WB-East Gun Hill Road	LTR	0.87	64.0	E	0.87	44.7	D	0.56	9.5	A	0.56	9.5	A	0.59	11.5	B	0.59	11.5	B	0.69	9.9	A	0.69	9.9	A
NB-Olinville Avenue	LTR	0.29	27.2	C	0.29	27.2	C	0.16	22.8	C	0.16	22.8	C	0.19	31.9	C	0.19	31.9	C	0.28	25.0	C	0.28	25.0	C
SB-Olinville Avenue	LTR	0.57	34.2	C	0.57	34.2	C	0.46	28.4	C	0.46	28.4	C	0.63	44.8	D	0.63	44.8	D	0.57	32.2	C	0.57	32.2	C
<b>Overall Intersection</b>		44.7 D			35.1 D			12.2 B			12.2 B			37.6 D			37.6 D			36.9 D			36.7 D		

In Table 14, each intersection is classified into one of three categories according to its overall level of service: LOS A, B, C to mid-D (acceptable for urban areas); LOS mid-D to E (marginally unacceptable); and LOS F (unacceptable). Under the future with improvements scenario, the number of marginally unacceptable or unacceptable intersections is projected to be reduced from 22 to 11 during the weekday AM peak hour; from 7 to 4 during the weekday midday peak hour; from 17 to 9 during the weekday PM peak hour; and from 8 to 6 during the Saturday midday peak hour.



**TABLE 14: INTERSECTIONS CLASSIFIED BY LOS**

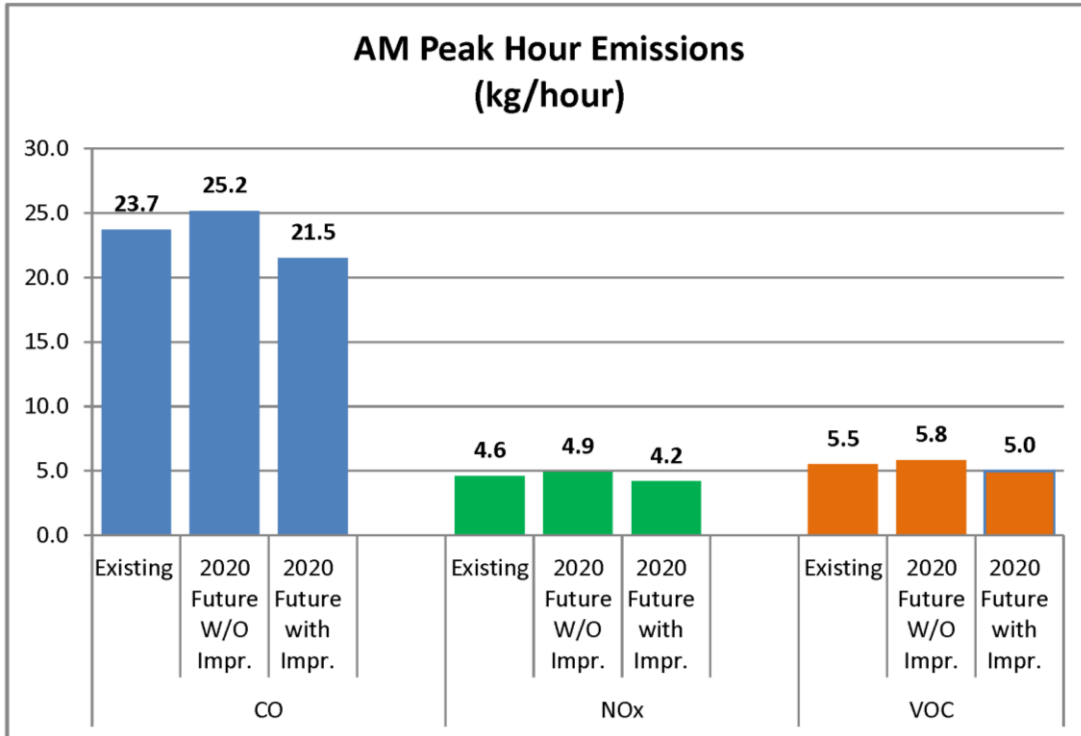
	FUTURE 2020 W/O IMPROVEMENTS			FUTURE 2020 WITH IMPROVEMENT		
	ACCEPTABLE LOS A, B, C to Mid-D	MARGINALLY UNACCEPTABLE LOS Mid-D to E	UNACCEPTABLE LOS F	ACCEPTABLE LOS A, B, C to Mid-D	MARGINALLY UNACCEPTABLE LOS Mid-D to E	UNACCEPTABLE LOS F
<b>Weekday AM Peak Hour</b>						
Jerome Avenue	0	1	3	3	1	
DeKalb Avenue	1	1	2	4		
Rochambeau Avenue	3			3		
Bainbridge Avenue	2	2		3	1	
Wayne Avenue	4			4		
Tryon Avenue	4			4		
Kings College Avenue	3			3		
Putnam Place	3			3		
Perry Avenue	3	1		3		
Hull Avenue	2	1		3		
Decatur Avenue	3	1		2	1	
Webster Avenue	4	1	1	4	2	
Bronx River Pkwy SB Ramp	2	1	2	2	1	2
Bronx River Pkwy NB Ramp	1	2	2	2	1	2
Olinville Avenue	3	1		4		
<b>TOTAL</b>	<b>38</b>	<b>12</b>	<b>10</b>	<b>47</b>	<b>7</b>	<b>4</b>
<b>Weekday Midday Peak Hour</b>						
Jerome Avenue	4			4		
DeKalb Avenue	3		1	4		
Rochambeau Avenue	3			3		
Bainbridge Avenue	3	1		4		
Wayne Avenue	4			4		
Tryon Avenue	4			4		
Kings College Avenue	3			3		
Putnam Place	3			3		
Perry Avenue	4			3		
Hull Avenue	3			3		
Decatur Avenue	4			3		
Webster Avenue	5	1		5	1	
Bronx River Pkwy SB Ramp	3	1	1	4	1	
Bronx River Pkwy NB Ramp	3	1	1	3	2	
Olinville Avenue	4			4		
<b>TOTAL</b>	<b>53</b>	<b>4</b>	<b>3</b>	<b>54</b>	<b>4</b>	<b>0</b>
<b>Weekday PM Peak Hour</b>						
Jerome Avenue	2		2	4		
DeKalb Avenue	1	2	1	4		
Rochambeau Avenue	3			3		
Bainbridge Avenue	2	1	1	3	1	
Wayne Avenue	4			4		
Tryon Avenue	4			4		
Kings College Avenue	3			3		
Putnam Place	3			3		
Perry Avenue	4			3		
Hull Avenue	3			3		
Decatur Avenue	3	1		3		
Webster Avenue	3	2	1	3	3	
Bronx River Pkwy SB Ramp	2	1	2	3		2
Bronx River Pkwy NB Ramp	3	1	1	3	1	1
Olinville Avenue	3	1		3	1	
<b>TOTAL</b>	<b>43</b>	<b>9</b>	<b>8</b>	<b>49</b>	<b>6</b>	<b>3</b>
<b>Saturday Midday Peak Hour</b>						
Jerome Avenue	2	2		3	1	
DeKalb Avenue	3	1		4		
Rochambeau Avenue	3			3		
Bainbridge Avenue	4			4		
Wayne Avenue	4			4		
Tryon Avenue	4			4		
Kings College Avenue	3			3		
Putnam Place	3			3		
Perry Avenue	4			3		
Hull Avenue	3			3		
Decatur Avenue	4			3		
Webster Avenue	5		1	5		1
Bronx River Pkwy SB Ramp	3		2	3		2
Bronx River Pkwy NB Ramp	4		1	4	1	
Olinville Avenue	3	1		3	1	
<b>TOTAL</b>	<b>52</b>	<b>4</b>	<b>4</b>	<b>52</b>	<b>3</b>	<b>3</b>

### 6.3 EMISSIONS

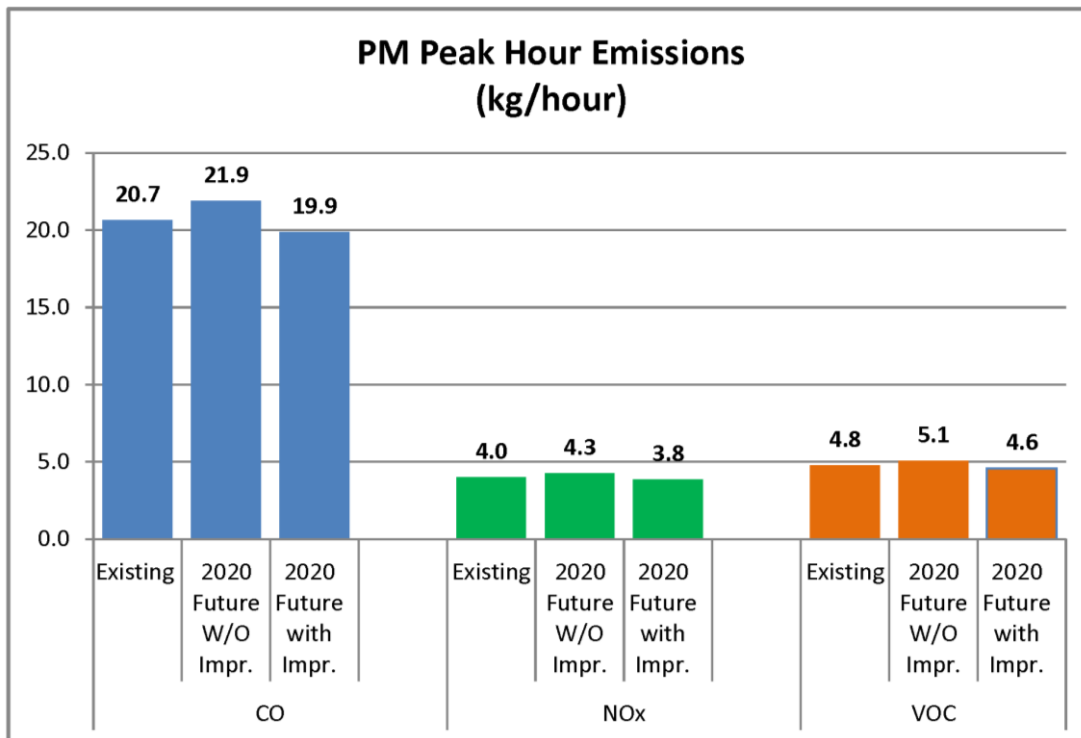
Table 15, Figures 63 and 64 present the comparative analysis of projected emissions in the study area under the 2020 Future without Improvements and 2020 Future with Improvements scenarios. The emissions improvements are projected to range from 4.9% to 14.6%, depending on type of emission and peak hour. The highest rates of decrease of emissions are projected to occur during the weekday AM peak hour at approximately 14.5%.

**TABLE 15: FUTURE PROJECTED EMISSIONS**

	Carbon Monoxide (CO) (kg/h)			Oxides of Nitrogen (NOX) (kg/h)			Volatile Organic Compounds (VOC) (kg/h)		
	Without Improvement	With Improvement	% Change	Without Improvement	With Improvement	% Change	Without Improvement	With Improvement	% Change
<b>AM</b>	25.2	21.5	-14.6%	4.9	4.2	-14.5%	5.8	5.0	-14.5%
<b>MD</b>	13.4	12.7	-4.9%	2.6	2.5	-4.9%	3.1	3.0	-4.9%
<b>PM</b>	21.9	19.9	-9.2%	4.3	3.8	-9.9%	5.1	4.6	-9.9%
<b>Saturday</b>	14.0	13.3	-5.2%	2.7	2.6	-5.3%	3.3	3.1	-5.2%



**Figure 63: Future Projected Emissions in the Weekday AM Peak Hour**



**Figure 64: Future Projected Emissions in the Weekday PM Peak Hour**

## 7. CONCLUSION

In the development of the recommended alternatives, the Complete Street concept was followed, and every attempt was made not only to reducing chronic congestion on East Gun Hill Road, but also to improve mobility and safety for all street users including pedestrians, cyclists, transit users and motorists.

Recommended improvements include signal timing and offset changes, parking regulation changes, street direction changes, curb extensions, turn prohibitions, and pavement marking changes. Most of proposed improvements were concentrated between Jerome Avenue and Webster Avenue. The main “choke point” within the study area is the Bronx River Parkway and East Gun Hill Road interchange. Multiple attempts have been made to develop a working model that would improve operations at this interchange, but given the severe constraints at this location, there is no low- to moderate-cost solution. Improving this intersection would require massive capital funds that are unavailable at this time.

Finally, for the recommended improvements to yield optimal benefits, stepped-up enforcement of traffic laws and regulations may be required. While traffic enforcement is not under the jurisdiction of NYCDOT, agency coordination and cooperation involving NYCDOT, NYPD, MTA and Montefiore Medical Center will be critical to ensure that maximum benefits are achieved from implementation of the recommended improvements for the East Gun Hill Road congested corridor.