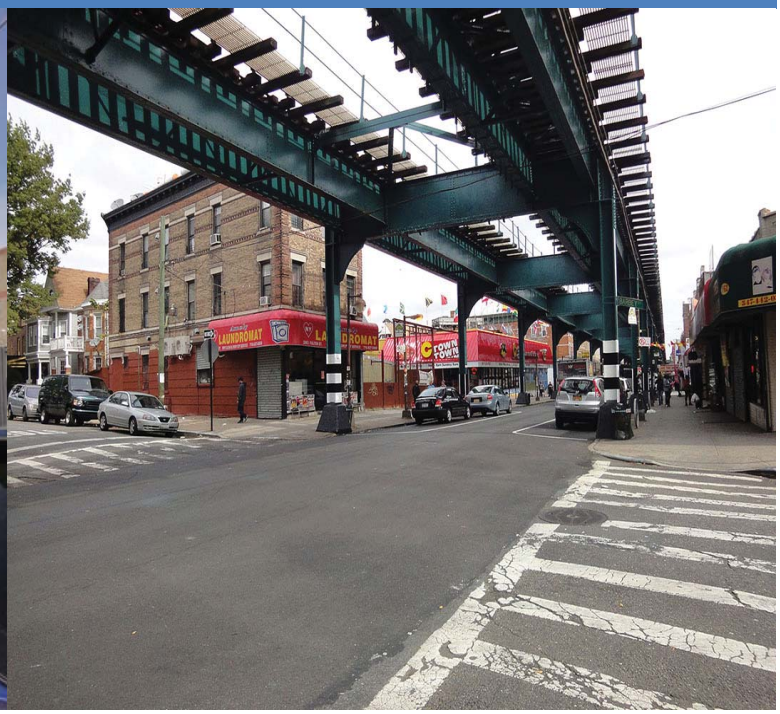
HIGHLAND PARK-EAST NEW YORK TRANSPORTATION STUDY

Final Report

JUNE 2015



Bill de Blasio
Mayor

Polly Trottenberg
Commissioner

NYMTC
NEW YORK METROPOLITAN TRANSPORTATION COUNCIL

Highland Park-East New York Transportation Study

PTDT14D00.G04

The preparation of this report has been financed through the U.S. Department of Transportation's Federal Transit Administration and Federal Highway Administration. This document is disseminated under the sponsorship of the New York Metropolitan Transportation Council in the interest of information exchange. The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Transit Administration, Federal Highway Administration or the State of New York. This report does not constitute a standard, specification or regulation.

Highland Park-East New York Study, was funded through the New York Metropolitan Transportation Council SFY (2014) Unified Planning Work Program project (PTDT14D00.G04), which was funded through matching grants from the Federal Transit Administration and from the Federal Highway Administration.

Acknowledgements:

New York City Department of Transportation

Polly Trottenberg, Commissioner
Lori A. Ardito, First Deputy Commissioner
Ryan Russo, Deputy Commissioner
Keith Bray, Brooklyn Borough Commissioner
Naim Rasheed, Senior Project Director
Michael Griffith, Deputy Project Director
Carren Simpson, Project Manager
Eva Marin, Project Manager
Hau Cho Li (Joe), Highway Transportation Specialist
Harvey Lareau, City Planner
Md Sharif Al Kamal, Construction Project Manager

TABLE OF CONTENTS

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

S.1 Introduction

The Highland Park-East New York Transportation Study was undertaken with the goals of improving safety and mobility for motorists, pedestrians, and cyclists; reducing congestion; and complementing other transportation and planning initiatives in the study area. It assesses current (2012) and future (2022) travel conditions and proposes improvement measures to address identified problems. The study process involved extensive collaboration with other city agencies (Department of City Planning and New York City Transit) as well as other stakeholders such as the Local Development Corporation of East New York (LDCENY).

The study area is bounded by Bushwick Avenue and Highland Boulevard on the north, Cleveland Street on the east, Sutter Avenue on the south, and Mother Gaston Boulevard and Eastern Parkway Extension on the west. It falls in Community Districts 5 and 16 and is predominantly residential with over 30,000 residents; however, industrial uses are also dispersed throughout the area with the bulk of it in the East Brooklyn Industrial Business Zone.

With accidents/crashes being the number one priority of the administration, traffic safety issues at critical intersections and along major corridors were emphasized. The intersections of note are Jackie Robinson Parkway/Jamaica Avenue/Bushwick Avenue/Pennsylvania Avenue, Atlantic/Pennsylvania Avenue, Atlantic Avenue/Eastern Parkway Extension, and East New York/Jamaica/Alabama Avenues/Broadway/Fulton Street. The critical corridors are Atlantic Avenue and Pennsylvania Avenue. A major challenge for cyclists, motorists, and pedestrians is the barrier created by the Long Island Railroad (LIRR) and the elevation of Atlantic Avenue between Eastern Parkway Extension and Georgia Avenue. For pedestrians, the most direct route to traverse Atlantic Avenue to/from the Broadway Junction station is the Long Island Railroad East New York station (Atlantic Avenue Service Road/Van Sinderen Avenue) underpass. However, the station is not well lit and maintained, making the surrounding area unappealing with a perception of being unsafe. The physical barrier created by the LIRR tracks also creates the need for wayfinding signs to assist visitors and travelers in navigating the area north and south of Atlantic Avenue.

The study's existing and future conditions analyses examined demographics, land use and zoning, traffic and transportation, parking, public transportation, pedestrians and bicyclists, crashes, and goods movement from a planning and operational viewpoint. Additionally, the scale of the Industrial Business Zone in the study area warrants special attention, to which a section was devoted.

S.2 Demographics

According to the 2010 census, the study area's population was approximately 31,000; and it decreased by 2% between 2000 and 2010 in contrast to Brooklyn and New York City whose population grew by 2%. The average household size in the study area was 3.27 and the median household income was $31,376. The study area's median household income was approximately 28% and 38% less than that of Brooklyn and New York City, respectively. About 46% of households own one or more vehicles. In 2010, the predominant journey to work mode choice was public transit (65%) which was higher than both Brooklyn (61%) and New York City (55%); auto ownership (40%) in the study area was slightly less than both Brooklyn (43%) and New York City (45%). For the future 2022, it is expected that the study area will begin to experience population growth triggered by the East New York Rezoning Plan.

S.3 Land Use and Zoning

The study area has a mix of residential, commercial, and manufacturing uses. Most of the area is zoned for residential, followed by industrial and commercial uses. The area zoned for residential use is located primarily in the eastern section of the study area between Sheffield Avenue and Cleveland Street and within this area are commercial pockets (overlays and higher density). The commercial overlays are located along Jamaica Avenue, Fulton Street and Pitkin and Sutter Avenue while the areas zoned for high-density commercial use are located primarily along Atlantic and Pennsylvania Avenues. Approximately a third of the area is zoned and occupied by manufacturing uses in what is the Industrial Business Zone (IBZ).

The existing residential land use includes a mix of primarily low density residences (one and two family homes) and a few medium/high density multi-family buildings dispersed throughout the study area. The currently proposed rezoning aims at increasing density, residential and commercial, along Atlantic Avenue, Fulton Street, Liberty Avenue, and Pitkin Avenue.

S.4 Traffic and Transportation

The traffic and transportation analysis examined the 2012

existing and 2022 future traffic conditions. The traffic data collection plan which included automatic traffic recorders, manual turning movement, vehicle classification, and pedestrian counts for the AM and PM was executed. In addition roadway geometry, signal timing, parking activity and travel speed were collected to assist the traffic capacity analysis.

The traffic analysis was done for 38 intersections for two peak hours – AM (7:45-8:45) and PM (4:30-5:30). Half of the intersections operated at acceptable LOS D or better under existing conditions. However, the others had lane groups or approaches operated at LOS E or F during some peak periods. Travel speeds d along three main corridors ranged from 6 to 19 MPH during the AM peak period and from 9 to 14 MPH during the PM peak period.

The 2022 Future Conditions analysis shows an additional 9 and 11 locations where overall level of service (LOS) will deteriorate from LOS D to LOS E or F during the AM and PM future peak hours, respectively. In general, intersections along East New York Avenue/Jamaica Avenue, Atlantic Avenue, and Pennsylvania Avenue will experience higher delays under future conditions.

The study area has one through truck route - Atlantic Avenue and six local truck routes – Broadway, Fulton Street (a segment), Van Sinderen Avenue (a segment), Herkimer Street (a segment), East New York/Jamaica Avenues (a segment), and, Pennsylvania Avenue.

S.5 Crashes/Safety

A detailed crash/safety analysis was conducted for the study area for the years 2010 to 2012, and fatalities up to 2014. Over 1,800 reportable accidents with nine fatalities occurred in the area involving over 250 pedestrians and 80 bicyclists that resulted in 2,380 injuries. There were five high crash locations – Atlantic/Pennsylvania Avenues, Atlantic/ Eastern Parkway Extension, Fulton Street/Pennsylvania Avenue, Fulton Street/East New York Avenue, and Jamaica/ Bushwick Avenues. The Atlantic/Pennsylvania Avenues intersection was ranked a high crash location each year.

S.6 Parking

The parking analysis for on-street and off-street facilities along major corridors in the study area examined existing parking supply and demand for the AM/PM peak hours. There were approximately 2,600 on-street spaces with less than 200 spaces being metered parking. The existing average parking utilization is approximately 61% and 64% during the AM and PM peak hours, respectively. However, close to the transit hub and in the vicinity of the Bus Depot, parking demand is above capacity, primarily due to employee parking (NYCT). In the Industrial Business Zone, parking demand is also below capacity, except in the vicinity of the NYPD station on Snediker Avenue.

The area's off-street facilities had a combined capacity of 1,699 spaces. They are accessory to banks, restaurants, supermarkets, laundromats, etc.). Most are located on Fulton Street, Pitkin, Liberty, and Atlantic Avenues. Additionally, there are three privately owned (paid) parking lots in the study area.

S.7 Pedestrians and Cyclists

The pedestrian analysis examined existing pedestrian travel conditions, pedestrian/vehicular conflicts, and pedestrian impact on traffic operation. Crosswalk analyses were conducted for sixteen intersections along major corridors for the AM and PM peak hours. The pedestrian analysis excluded the increased pedestrian volumes resulting from the East New York Rezoning. Sidewalk width is anticipated to be an issue on Atlantic Avenue where some sections are very narrow. It is expected that provision will be made for building setback to provide adequate and continuous sidewalk.

S.8 Transit

The Broadway Junction is a rich transit hub where the MTA-NYCT operates five subway lines (A, C, J, Z, and L) making stops at five stations and seven bus lines (Q56, Q24, B12, B14, B20, B25, and B83) in the study area. The Broadway Junction station processes the most commuters in the study area. There is one Long Island Railroad train stop (East New York). The Transit analysis also focused on bus circulation in the vicinity of the East New York Bus Depot and made recommendations to address terminus and layover needs for the B12 and B25 buses while improving safety and overall traffic operations.

S.9 Industrial Business Zone

The East Brooklyn Industrial Business Zone constitutes approximately one-sixth of the study area. It is bounded by East New York/Atlantic Avenue to the north, Sheffield Avenue to the east, Sutter Avenue to the south, and Powell Street/ Christopher Avenue to the west. The Industrial Business Zone (IBZ) covers a 49-block area of approximately 100 acres. The current zoning (M1-4 and M3-2) limits building size to low density manufacturing with some commercial and residential uses. There are approximately 100 businesses – mainly in the sectors of transportation, warehousing, educational services, health care and social assistance, steel and metal

fabrication, woodworking, and manufacturing. To thoroughly understand the traffic and transportation needs of businesses in the IBZ, DOT held meetings with some business owners and conducted questionnaire surveys. Their main issues were adequate parking and general accessibility for trucks.

S.10 Public Participation

A series of Technical Advisory Committee and Public meetings were held to provide the stakeholders and community members opportunities to raise issues and express their concerns. The public outreach effort sought to obtain input from all stakeholders, including residents, business owners, civic associations, and community representatives. The meetings facilitated the identification of traffic and transportation problems and the development of improvement measures. Three Technical Advisory Committee (TAC), and three public meetings (in each Community District) were held (nine meetings in total). Additionally, two meetings were held with members of the business community (Industrial Business Zone).

S.11 Recommendations

Based upon analysis and community input, recommendations were developed to enhance safety and improve traffic operations at some locations in the study area. These recommendations include geometric, parking and signal timing changes as well as bus circulation and pedestrian safety improvements.

Some of the presented recommendations have already been implemented. Other short-term recommendations will be implemented in the next three years.

INTRODUCTION

1. INTRODUCTION

The Highland Park-East New York Transportation Study was initiated to address the traffic and transportation issues raised by the community in the Brownsville, East New York, and Cypress Hills. These communities experience daily traffic congestion on the main arterials (Atlantic Avenue, Pennsylvania Avenue, and Jamaica/East New York Avenues) during peak and off-peak hours. The core of the area is a transit hub served by NYCT subways and buses (with a depot) and the LIRR. The pedestrian activity and volumes resulting there-from add to the traffic dynamics at adjacent intersections. The area also functions as a destination, particularly for transit workers and the NYPD, thus creating significant parking demand.

The study area which has primarily low density residential and manufacturing districts appears ripe for redevelopment. To that end the Department of City Planning has conducted the Sustainable Communities East New York Study, a precursor to rezoning at higher densities for residential and commercial uses. With the Sustainable Communities East New York Study completed, it is also anticipated that these communities will undergo significant development changes in the near future. Since any land use changes increasing development densities will generate more trips; the impact on traffic and transportation issues in an area cannot be overemphasized. The aim of this study therefore is to assess the existing traffic and transportation infrastructure and develop a comprehensive plan to relieve congestion, enhance safety, and accommodate future travel demand.

This report documents the analysis of the existing and future traffic conditions in the study area. The study focuses on traffic congestion that stems from primarily three sources: (a) through traffic from regional facilities like the Jackie Robinson Parkway and Atlantic Avenue, (b) destination and transfer trips/mode change (the East New York/Broadway Junction and Alabama Avenue subway stations, and LIRR-East New York station), and, (c) the bus traffic associated with the New York City Transit Bus Depot located on Jamaica Avenue (between Fanchon Place and Broadway). The traffic analysis herein is also intended to inform the various initiatives being undertaken in the area.

The Study Area

The study area for the Highland Park-East New York Transportation Study encompasses portions of the Brownsville, East New York, and Cypress Hills neighborhoods. The study area, shown in Figure 1-1, is bounded by Highland Boulevard and Bushwick Avenues on the north, Cleveland Street on the east, Sutter Avenue on the south, and Mother

Figure 1-1: Study Area

Gaston Boulevard and Eastern Parkway Extension on the west. It lies within Brooklyn's Community Districts 5 and 16. The study area has direct connection to Jackie Robinson Parkway (a regional facility) as well as principal arterials such as Atlantic Avenue, Pennsylvania Avenue, Liberty Avenue, and Jamaica Avenue.

The study area could be considered a low- to middle-income neighborhood characterized by low density residences (one to two-family homes) with some multi-story residential buildings dispersed throughout. Commercial activities are concentrated along some of the main corridors, and there is an Industrial Business Zone (IBZ) which is approximately one-quarter of the study area. The area is well served by mass transit with access to five subway lines – A, C, J, L, and Z and seven bus lines – Q56, Q24, B12, B14, B20, B25, and B83. There is also a LIRR station – East New York.

Goals and Objectives

The study's goals are to (1) develop measures to relieve traffic congestion, enhance safety, and accommodate future travel demand; and, (2) facilitate the coordination of the various transportation and planning initiatives in the study area.

The study's main objectives are:

- To identify the travel and traffic characteristics and assess existing and future traffic conditions and transportation demand/ travel needs of the area;
- To determine future travel demand and analyze projected future traffic conditions;
- Develop recommendations and improvement measures to address existing (2012) and future (2022) conditions needs by reducing vehicular congestion; improving traffic circulation and enhancing safety;
- Complement intra and inter-agency initiatives.

Other Studies/Projects in the Study Area

In recent years the area has been the focus of various initiatives as highlighted below:

Broadway Junction Transportation Study (DCP). This study, completed in 2008, sought to assess the unused existing and future transit capacity of the five subway lines (A, C, J/Z, and L), six bus routes (B12, B20, B25, B83, Q24, and Q56), and the LIRR serving the study area. The boundaries for this study are: north – Bushwick Avenue, the Cemetery of Evergreens, and Crosby Avenue; east – Jackie Robinson Parkway service road/Vermont Avenue; south – Liberty Avenue; and west – Mother Gaston Boulevard, Eastern Parkway, Mother Gaston Boulevard north of Eastern Parkway Extension, Somers Street, Broadway, and De Sales Place.

Broadway Junction Transportation Enhancement Project (DOT). The objective of this project is to redesign and reconstruct Van Sinderen Avenue in front of the Broadway Junction station (between Broadway and Fulton Street) to improve pedestrian safety, pedestrian and vehicle circulation, and streetscape. The reconstruction of the roadway and related improvements are expected to be completed in Fall of 2014.

East New York Intermodal & Transit Access Improvement (DOT). The initiative sought to address the transportation challenges faced by low-income persons seeking to obtain and maintain employment; and to expand the transportation mobility options for the elderly and people with disabilities. The resultant Job Access Reverse Commute/New Freedom (JARC/NF) project focused on the area bounded by Bushwick Avenue, Pennsylvania Avenue, Liberty Avenue, and Mother Gaston Boulevard/Eastern Parkway Extension. The objective of the project was to remove physical barriers to mobility and accessibility by enhancing safety, pedestrian access, and improving overall traffic operations. Improvements included neckdowns, medians, and median tips as well as sidewalk reconstruction and street lighting upgrades.

Sustainable Communities East New York Study (DCP). This initiative sought to support the development of livable communities and growth centers around existing transit/rail networks. It lays the foundation for future work to revitalize the neighborhoods in East New York and Cypress Hills with a plan for sustainable growth and development. The study explored opportunities for new mixed-income (affordable) housing, access to job opportunities, access to healthy food choices, improved environmental quality and energy efficiency, as well as an improved street environment that facilitates pedestrian and bicycle movements.

Area-Wide Intermodal Transportation Analysis – Brooklyn and Queens (DOT). This study was initiated in 2014 to evaluate the factors that impact traffic and transportation operating conditions in the study area and to develop recommendations to relieve congestion and enhance safety. The study area is bounded by Fulton Street to the north, 80th Street to the east, New Lots Avenue and Loring Avenue to the south, and Cleveland Street to the west. It spans portions East New York, Cypress Hills, and Ozone Park.

Project Organization and Methodology

The study will examine both existing and future traffic and transportation conditions by analyzing the following:

- Demographics
- Zoning and Land Use
- Traffic and Transportation
- Pedestrians and Bicycles
- Crashes and Safety
- Parking
- Public Transportation
- Goods Movement

The following tasks will be undertaken for the study:

Task 1 - Project Organization and Management
Establish Technical Advisory Committee (TAC) and develop a detailed work program that outlines tasks, subtasks, and products.

Task 2 - Literature Search
Identify relevant studies of projects in the study area.

Task 3: Data Collection & Identification of Issues
Collect data for demographic, land use and zoning, traffic, parking, pedestrians and bicycles, transit, crashes and goods movement to assess travel and traffic conditions.

Task 4 - Public Participation
Conduct public meetings to insure the involvement of community stakeholders.

Task 5 - Existing Conditions Analysis
Analyze the existing conditions (2012) for demographics, land use and zoning, traffic and transportation, parking, pedestrians and cyclists, transit, and crashes.

Task 6 - Future Conditions Analysis
Analyze the future (2022) conditions for all areas examined for the existing conditions.

Task 7 - Prepare a draft report with Existing and Future Conditions analysis.

Task 8 – Development & Evaluation of Improvement Measures
Generate improvement measures to address traffic and transportation deficiencies.

Task 9 - Prepare Draft Final and Final Report

Task 10 – Prepare an Implementation Plan

DEMOGRAPHIC ANALYSIS

2. DEMOGRAPHICS

An examination of the demographic trends (population, household size, median income, and journey to work) in the study area is necessary to understand the community's travel needs. The demographic analysis relies on data from both the New York City Department of City Planning, the United States Department of Commerce (Census Bureau), and the New York Metropolitan Transportation Council. Available data for two census decades (2000 and 2010) were analyzed and used to project the future (2020) conditions for the study area. In order to contextualize the demographic realities in the study area, some comparisons were made with the Borough of Brooklyn and New York City.

Between 2000 and 2010 the boundaries of the census tracts within the study area changed. In 2000 there were 22 census tracts in the study area; they were redrawn in the 2010 Census resulting in 18 census tracts. In the 2000 Census the study area had the following census tracts: 365.02*, 367, 405*, 906*, 908, 1134*, 1136, 1138, 1140, 1142.01*, 1142.02*, 1146, 1148, 1150, 1152, 1154, 1156*, 1158*, 1160*, 1162*, 1170*, and 1172.01*. Twelve of these census tracts (*) were partially located in the study area and ten wholly. Of the 18 census tracts that currently make up the study area, nine are wholly within the boundaries and nine partially. They are: 365.02*, 367, 405*, 908, 1134*, 1142.01*, 1142.02*, 1144, 1146, 1150, 1152, 1156*, 1158*, 1160*, 1162*, 1170*, 1172.01*, and 1198. The analysis of the census tracts that are partially located in the study area assumes that the population and other variables are evenly distributed geographically. Figure 2-1 shows the study area census tracts.

Population Trends

The study area's total population in 2010 was 34,423. The population increased significantly (8.7%) between 2000 and 2010 compared to Brooklyn's and New York City's 2% average increase. The New York Metropolitan Transportation Council's projections for 2020 shows New York City and Brooklyn populations will increase by 3.6% and 2.6%, respectively. Between 2000 and 2010, the study area's population grew approximately four times faster than Brooklyn and New York City. Consequently, the study area's 2020 population is projected to grow at least twice as fast in Brooklyn. Table 2-1 summarizes the population trends between 2000 and 2020.

Population and Household Characteristics

Between 2000 and 2010, the population of seven census tracts grew between 10.3% and 47.2% (258 to 832) while another seven census tracts declined between -1.3% and

Figure 2-1: Study Area Census Tracts

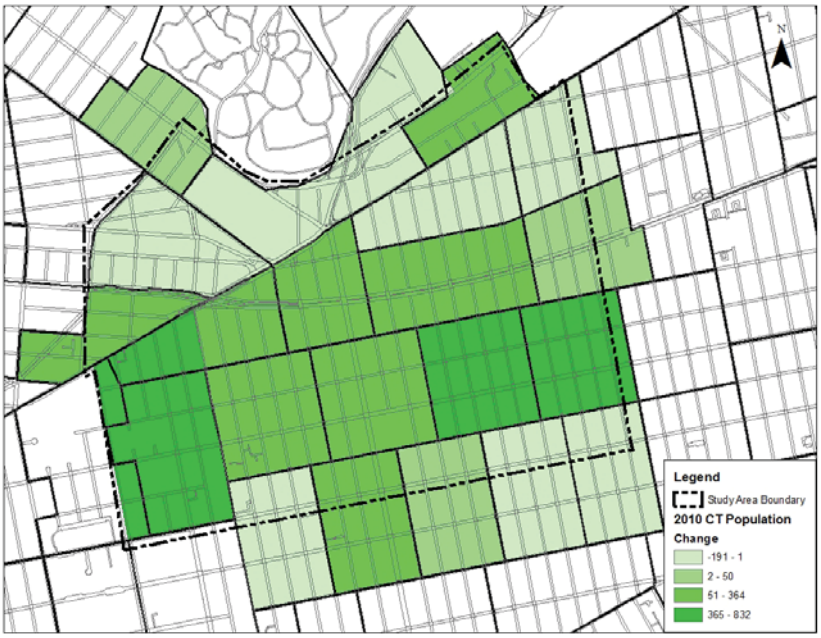


Table 2-1: Population by Area (2000-2020)

Area	Total Population			Population & Percent Change			
				2000-2010		2010-2020	
	2000	2010	2020*	Number	Percent	Number	Percent
New York City	8,008,278	8,175,133	8,469,800	166,855	2.08%	294,667	3.60%
Brooklyn	2,465,326	2,504,700	2,570,200	39,374	1.60%	65,500	2.62%
Study Area	31,674	34,423	36,488	2,749	8.70%	2,065	6.00%

*projected

Source: US Census Bureau

-9.1% (between 38 and 158 persons). Four census tracts had average growth between 1.8% and 7.4%. While the study area's population declined between 2000 and 2010, the number of household increased from 9,500 to 10,514. In 2000, the average household size in 17 of 22 census tracts was greater than 3.0, while it is 3.27 for the study area. By 2010 the average household size declined to 3.15.

Median Household Income

The study area's median income in 2000 was $24,706 which was less than that of Brooklyn ($32,135) and New York City ($38,293). In 2010 the study area's median income increased to $31,376 (27%) and the difference with Brooklyn and New York City increased by 12% and 8%, respectively. Figure 2-2 provides details on the study area's existing and projected median household income as well as that of Brooklyn and New York City.

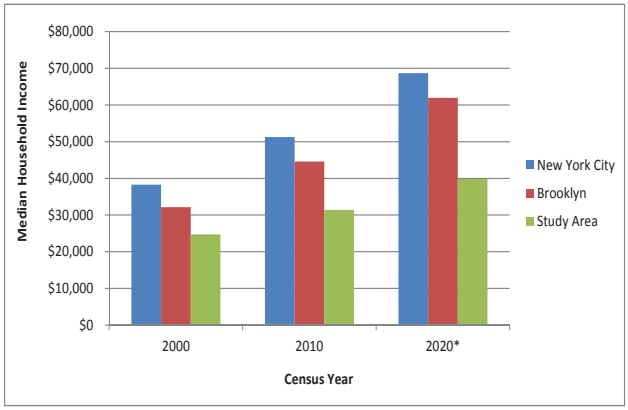


Figure 2-2: Median Household Income

Vehicle Ownership

Vehicle ownership in the study area was consistently lower than that of Brooklyn and New York City. In 2000, 32% of the study area's population owned one or more vehicles compared to 43% for Brooklyn and 44% for New York City. By 2010, the vehicle ownership in the study area grew to 40% with Brooklyn and New York City having 43% and 45%, respectively. See Table 2-2 for details on vehicle ownerships. Vehicle ownership in Brooklyn and New York City remained relatively constant while in the study area it increased approximately 8%; however, no significant change in vehicle ownership is anticipated by 2020.

Journey to Work

The 2010 Census shows automobile use for Journey to Work was 27% in the study area, 25% for Brooklyn and 28% for New York City. Journey to Work by transit represented 60% while approximately nine percent either walked or cycled; commuter rail represented 1%. Table 2-3 provides details on Journey to Work. The automobile share in the study area declined 3% between 2000 and 2010. No significant changes in Journey to Work are expected by 2020.

Table 2-2: Total Vehicle Ownership by Area

Household/ Vehicles	Study Area			Brooklyn			NYC		
	2000	2010	2020	2000	2010	2020	2000	2010	2020
Households	9,500	10,514	11,403	880,727	916,856	955,957	3,021,588	3,109,784	3,233,293
	Percent Share			Percent Share			Percent Share		
No vehicle	67.7%	60.1%	59.5%	57.0%	57.1%	57.1%	55.7%	55.1%	55.0%
1 vehicle	24.7%	30.6%	31.0%	33.1%	32.6%	32.5%	31.6%	31.3%	31.0%
2 vehicles	6.1%	7.6%	7.5%	8.2%	8.5%	8.4%	10.1%	10.7%	11.0%
>3 vehicles	1.6%	1.8%	2.0%	1.8%	1.8%	2.0%	2.6%	3.0%	2.5%

*projected

Source: US Census Bureau

Table 2-3: Journey to Work Patterns (2000-2020)

Mode	Study Area			Brooklyn			New York City		
	2000	2010	2020	2000	2010	2020	2000	2010	2020
Workers	12,665	14,815	14,963	901,027	1,068,006	1,078,686	3,192,070	3,658,527	3,695,112
Car	29.6%	25.2%	25.0%	30.4%	24.4%	24.0%	32.9%	28.0%	28.0%
Public transportation	60.6%	64.8%	65.0%	57.4%	60.8%	60.5%	52.8%	55.4%	54.9%
Taxicab	1.2%	0.8%	0.7%	0.7%	0.4%	0.5%	1.7%	1.1%	1.0%
Motorcycle	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%
Bicycle	0.2%	0.4%	0.3%	0.5%	1.1%	1.8%	0.5%	0.7%	1.5%
Walked	7.4%	7.0%	7.0%	8.8%	8.7%	8.6%	10.4%	10.3%	10.0%
Other means	0.7%	0.1%	0.3%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Worked at home	1.5%	1.7%	1.6%	2.3%	3.9%	4.0%	2.9%	3.9%	4.0%

*projected

Source: US Census Bureau

LAND USE & ZONING

3. LAND USE & ZONING

The existing zoning and land use in the study area was examined because different land uses attract or generate different trip patterns. Field surveys as well as the Department of City Planning's resources were used to understand the study area's zoning and land use characteristics.

Zoning

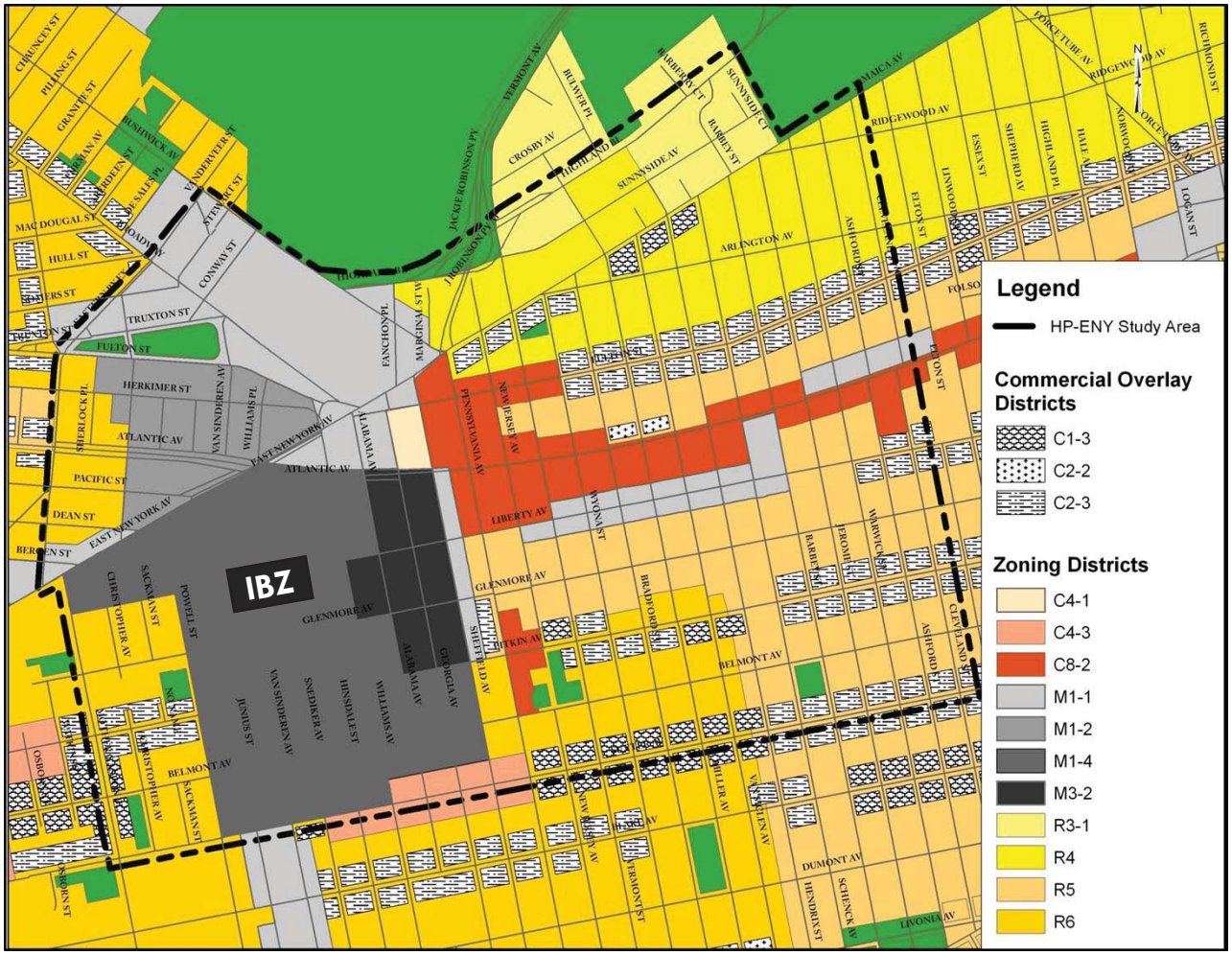
New York City has three zoning districts - residential (R), commercial (C) and manufacturing (M). These are further subdivided to differentiate and allow low, medium and high density developments. Development within these districts is regulated by zoning resolutions that governs use, building size, and parking.

Study Area Zoning Districts

There are four residential (R3-1, R4, R5, and R6), six commercial (C1-3, C2-2, C2-3, C4-1, C4-3, and C8-2), and four manufacturing (M1-1, M1-2, M1-4, and M3-2) zoning districts within the study area. Figure 3-1 shows the existing zoning districts within the study area.

Residential Districts. Approximately 50% of the study area is zoned for residential use. The residential zoning districts are R3-1, R4, R5, and R6. The areas zoned for residential use are primarily located east of Pennsylvania Avenue and the industrial business zone. Other areas zoned for residential use are located east of Mother Gaston Boulevard and Eastern Parkway and west of the industrial districts.

Figure 3-1: Study Area Zoning



Commercial Districts. There are three commercial districts (C4-1, C4-3, and C8-2) and three commercial overlay districts (C1-3, C2-2, and C2-3) in the study area. The commercial zoning districts are located mainly along Fulton Street (east of Pennsylvania Avenue), Pennsylvania Avenue, Pitkin Avenue, Sutter Avenue, and Atlantic Avenue. The C4-1 district is very small constituting only one superblock bounded by Fulton Street, Sheffield Avenue, Atlantic Avenue, and Georgia Avenue. The C4-3 district is located on Sutter Avenue (ten block faces) between Pennsylvania and Snediker Avenues. This district includes one or more of the following businesses: fast food restaurants, supermarket, nail/hair salon, laundromat, dry cleaner, deli, barbershop, and liquor store. The C8-2 district is mapped primarily along Atlantic Avenue (east of Georgia Avenue) with segments along Pennsylvania Avenue and Fulton Street. This district includes a bank, service shops (metal works, plumbing, etc), restaurants, delis, furniture stores, hardware stores, and auto service shops. The C1-3, C2-2, and C2-3 commercial overlays districts are mapped along Fulton Street, Pitkin Avenue, and Sutter Avenue.

Manufacturing Districts. The manufacturing districts are located primarily in the western section of the study area. Approximately three-quarter of the area west of Pennsylvania Avenue is zoned for industrial/manufacturing use. The Industrial Business Zone makes up the bulk of the manufacturing district with the most intense zoning districts (M1-4 and M3-2). The areas zoned for lighter industrial use (M1-1 and M1-2) are located north of the industrial business zone and Atlantic Avenue. Other areas zoned for industrial use are located west of Pennsylvania Avenue along Liberty and Atlantic Avenues and is zoned M1-1.

Land Use

The zoning districts in the study area permit various types of development uses and densities that are reflected in the existing land uses. The existing land uses in the study area (shown in Figure 3-2) includes one and two family buildings, office space, retails stores, educational institutions, banks, medical centers, transit facilities, churches and other uses.

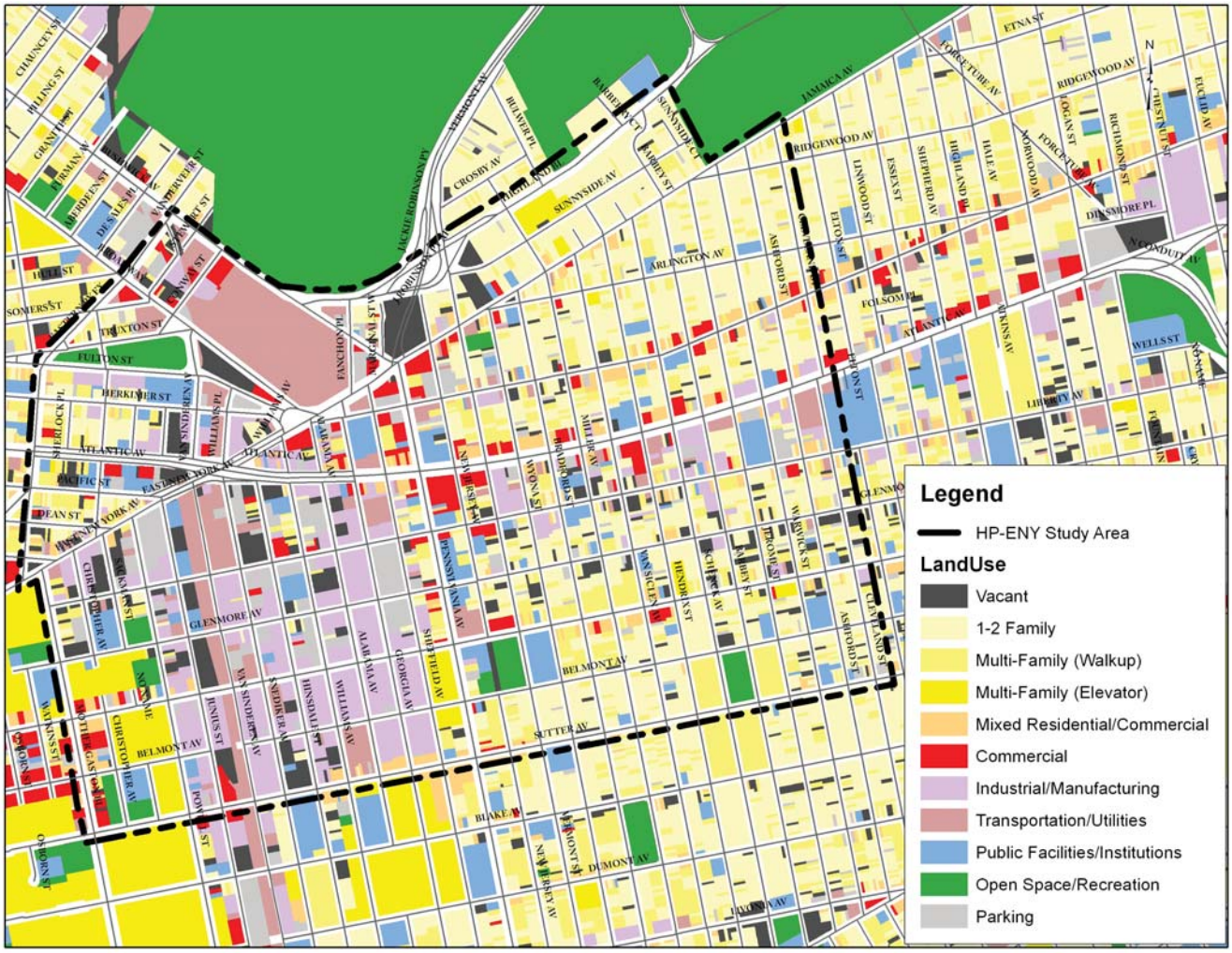
Residential Uses

Residential uses in the study area are dispersed around the industrial business zone. Majority of the residential use is one- to two-family homes with some mixed use and mid- to high density multi-family buildings. The pictures below show typical residential uses in the study area.

The picture above and below are examples of the mid to high density residential buildings in the study area

The pictures below show examples of the low-density residential uses in the study area.

Figure 3-2: Study Area Land Use



Low-density residential uses - one to two-family attached homes

Commercial Uses

Within the study area, commercial uses are concentrated along Fulton Street, Atlantic Avenue, Pennsylvania Avenue, Pitkin Avenue, Liberty Avenue, and Sutter Avenue. The commercial uses include grocery stores, fast food restaurants, supermarkets, furniture stores, and nail/hair salons; some examples are shown below.

Industrial Uses

Industrial/manufacturing uses in the study area are concentrated primarily in the Industrial Business Zone (IBZ). The East Brooklyn Industrial Business Zone lies within an area bounded by Atlantic Avenue/East New York Avenue, Sheffield Avenue, Sutter Avenue, Powell Street, Liberty Avenue, and Mother Gaston Boulevard (shown in Figure 3-1). There are over 100 businesses in the IBZ doing a variety of things such as steel and metal fabrication, transportation facilities (school bus parking and maintenance), warehouse and distribution, woodworking, and vinyl manufacturing. The businesses in the IBZ provide more than 1,000 industrial and manufacturing jobs. Examples of industrial use in the study area are shown below.

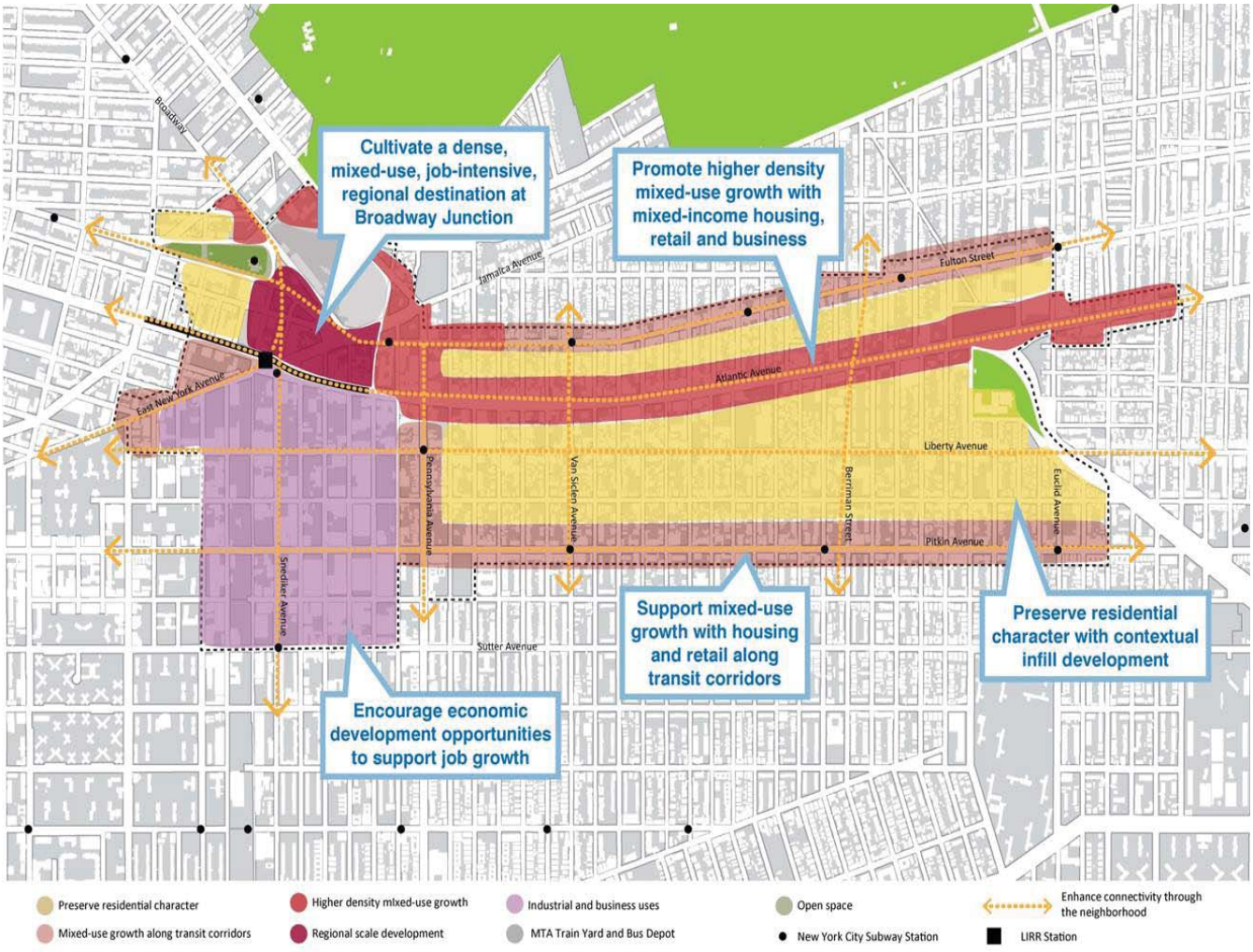
Institutional Uses

There are several instituional/community facilities dispersed throuthout the study area. These include schools, churches, and hospital/clinic, police precinct, fire house, and government offices.

Future Zoning/Land Use Actions
(Sustainable Communities East New York)

The 2022 future zoning and land use in the study area will be highly influenced by zoning recommendations made by the Department of City Planning's the Sustainable Communities East New York Study. Approximately half of the study area for this study falls within the Highland Park-East New York study area. Broadly, the study's goals are to "identify opportunities for new mixed-income housing, improved access to job centers, helping to create more pedestrian activity and safer streets, improving availability of healthy food options, improved environmental quality, and energy efficiency." Since the completion of the study, the Department of City Planning has indicated that zoning and land use changes will occur throughout the study area. Preliminary projections show growth in residential and commercial use with intensified developments along major corridors (Atlantic Avenue, Pitkin Avenue, Fulton Street, and Liberty Avenue). The land use vision for the study area is shown in next Figure 3-3.

Figure 3-3: DCP Development Proposal for East New York



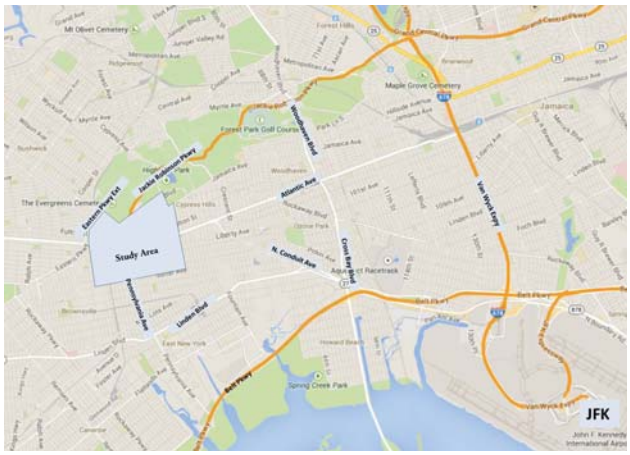
Source: DCP

TRAFFIC ANALYSIS

4. TRAFFIC & TRANSPORTATION

The study area is traversed by major regional and principal arterials such as Jackie Robinson Parkway, Atlantic Avenue, Eastern Parkway, Pennsylvania Avenue, and Bushwick Avenue as shown in Figure 4-1. Traffic congestion in the study area is generated by mainly three sources: (a) through traffic from regional facilitates like the Jackie Robinson Parkway and Atlantic Avenue, (b) destination and mode transfers at East New York/Broadway Junction, Alabama Avenue, and LIRR-East New York stations/transit stops all being major transfer points and, (c) bus traffic associated with New York City Transit Bus Depot located in the transit hub.

Figure 4-1: Regional Traffic Network



EXISTING TRAFFIC CONDITIONS

Street System and Roadway Characteristics

The study area street network has two distinct patterns. South of East New York Avenue/Jamaica Avenue to Sutter Avenue (southern boundary) it is a grid-like pattern. However, north of East New York Avenue/Jamaica Avenue the streets follow a radial pattern with varying block sizes.

The ***East New York Avenue/Jamaica Avenue*** corridor configuration, traffic operation and land use vary within the study area. From Mother Gaston Boulevard to Sackman Street, East New York Avenue operates two-way with one moving lane and one parking lane in each direction. From Sackman Street to Junius Street/Pacific Street it operates one-way eastbound with parking on both sides. Then from Junius Street/Pacific Street to Williams Avenue it is two-way with a main line of two moving lanes in each direction and a service road with one moving lane and a parking lane (with mainline under Atlantic Avenue). At Broadway/Alabama Avenue, East New York Avenue becomes Jamaica Avenue with a raised median and three moving lanes in each direction with no parking up to Pennsylvania Avenue/Bushwick Avenue.

The land use on East New York/Jamaica Avenue from Mother Gaston Boulevard to Pennsylvania Avenue/Bushwick Avenue is predominately manufacturing/industrial with very little commercial. East of Pennsylvania Avenue/Bushwick Avenue to the eastern boundary (Cleveland Street), Jamaica Avenue operates two-way with one moving lane and one parking lane in each direction and is predominately residential in character with some commercial uses.

Atlantic Avenue, the main east-west corridor in the study area process the highest traffic volume, approximately 2,635 vehicles westbound during the AM peak hour. It is the only east-west through truck route across Brooklyn, and within the study area is mostly zoned for manufacturing and commercial use. From Eastern Parkway Extension to Georgia Avenue it is configured as a two-way street with a main line and a service road in both directions. The elevated mainline has two moving lanes in each direction and the service roads operate as one or two moving lanes in each direction, when parking is not permitted. From Georgia Avenue eastward it has three moving lanes in each direction with parking on each side and a raised center median that varies from 3 to 12 feet wide. In parts the median is continuous and restricts north/south connectivity to through traffic.

Fulton Street is a corridor that runs parallel to Atlantic Avenue and carries one-eighth of its traffic volume. Between Eastern Parkway Extension and East New York/Williams Avenue, it operates two-way with one moving lane and has a bus route. From Alabama Avenue to Cleveland Street, it operates eastbound only and runs under the elevated train tracks. From Alabama to Pennsylvania Avenue, it operates with two or three moving lanes with parking where permitted. However, from Pennsylvania Avenue to Cleveland Street operates as one moving lane with parking on both sides.

Liberty Avenue has one moving lane with parking lane in each direction. The corridor from Sheffield Avenue to

Christopher Avenue falls in the East New York Industrial Business Zone. Most of the corridor is zoned as manufacturing, but some commercial and residential uses are found in the center and eastern section. A shared bike lane was recently added to this corridor from Mother Gaston Boulevard to Miller Avenue. Traffic volumes are generally low ranging from approximately 150 to 450 vehicles eastbound/ westbound during the peak hours, respectively.

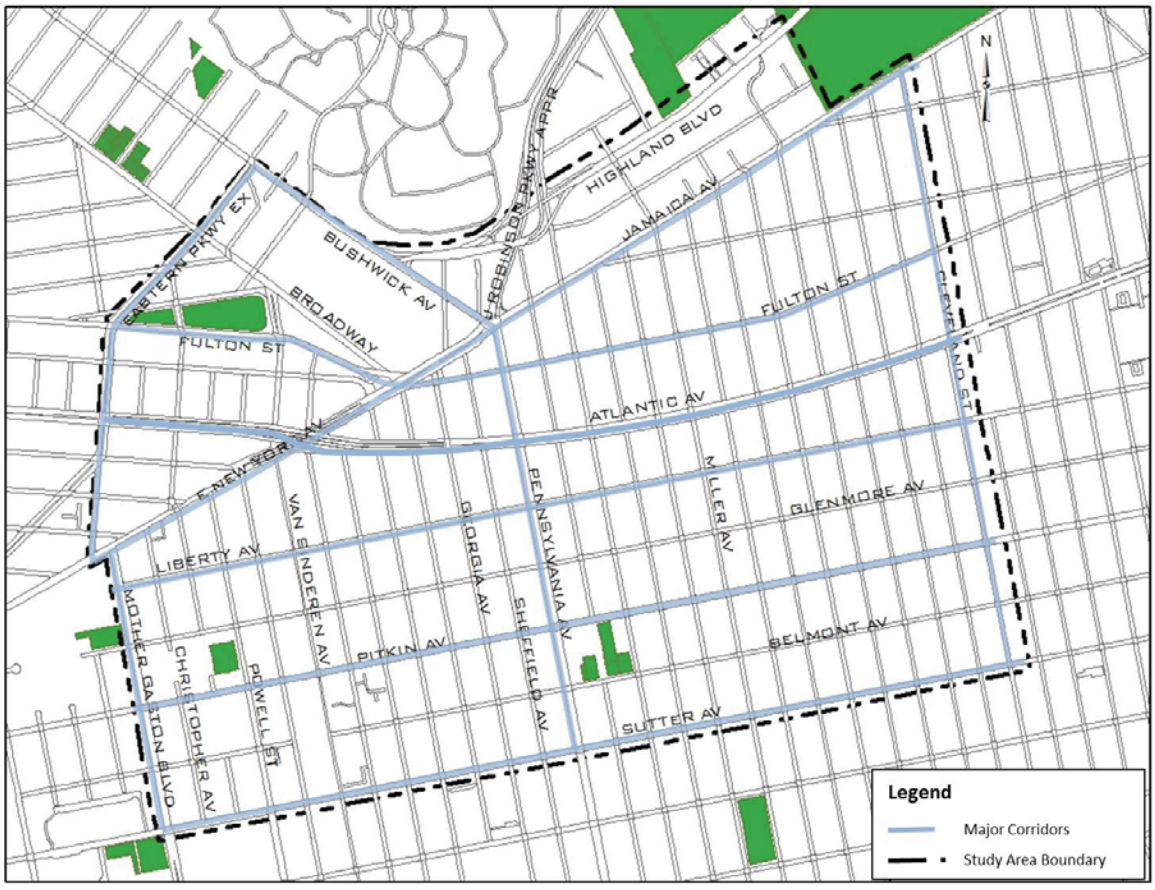
Pitkin Avenue, similar to Liberty Avenue, has one moving lane and one parking lane in each direction. Recently, a shared bike lane was added to the corridor. Outside the Industrial Business Zone, the corridor is mainly residential with commercial overlay districts. Traffic volumes range from approximately 270 to 600 vehicles eastbound and westbound during the peak hours.

Broadway which runs under the elevated "J" train structure operates as a two-way street with one moving lane and one parking lane in each direction between Eastern Parkway and Van Sinderen Avenue/Truxton Street. From Van Sinderen Avenue to Jamaica Avenue, it operates one-way westbound with one moving lane and parking on both sides. It is also a local truck route in the study area.

Pennsylvania Avenue is the main north-south corridor in the study area. It connects major east-west arterials and regional facilities such as the Jackie Robinson Parkway and the Belt Parkway. It operates as a two-way street with two moving lanes and a parking lane in each direction, except in the segment between Jamaica Avenue and Atlantic Avenue where it operates with three moving lanes on the approaches. Traffic volumes are high along this corridor with approximately 1,090 and 950 vehicles during the AM and PM peak hours. It is a local truck route and bus route within the study area. North of Liberty Avenue it is mostly commercial, but south of Liberty Avenue it has a mixture of commercial and residential uses.

Mother Gaston Boulevard which is part of the western boundary has two-way operation. Between Sutter and Pitkin Avenues, it has left turn bays, a shared bike lane and

Figure 4-2: Main Arterials in the Study Area



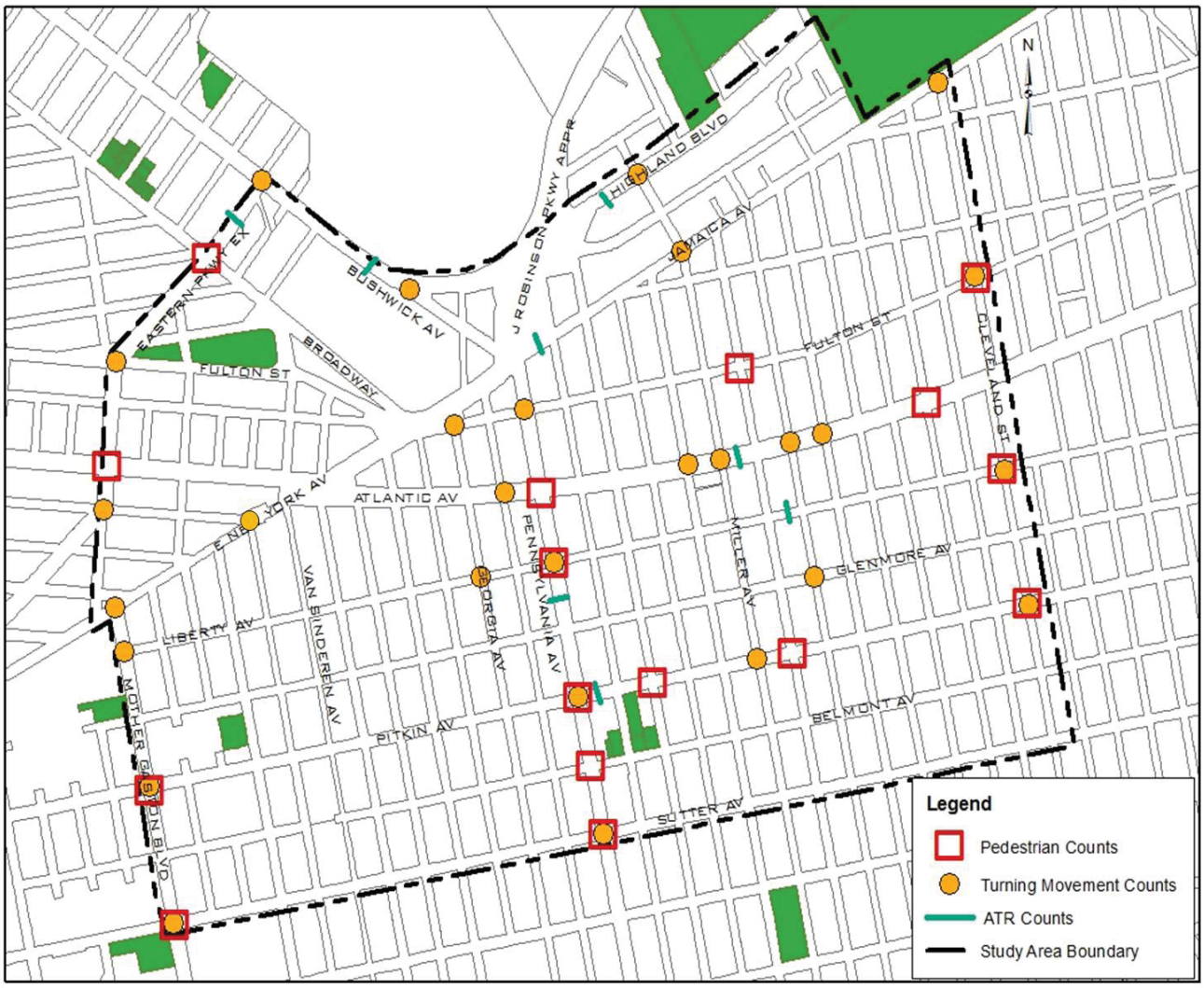
a parking lane in each direction. From Pitkin Avenue to East New York Avenue the shared bike lane becomes a Class 2 bike lane with one moving lane and a parking lane per direction. North of East New York Avenue to Pacific Street, it operates as one moving lane and one parking lane in each direction. At Pacific Street the corridor merges with Eastern Parkway Extension. Mother Gaston Boulevard is primarily a residential corridor with commercial overlay south of Pitkin Avenue. During the AM and PM peak hours, northbound and southbound traffic volumes range from 200 to 400 vehicles, respectively.

Cleveland Street which is the eastern boundary of the study area runs from Jamaica Avenue to Sutter Avenue. It is a 30-foot wide roadway operating one-way southbound with one moving lane and parking on both sides. Traffic volumes range from 100 and 120 vehicles per hour during the AM and PM periods which are low compared to other corridors. It is mostly residential with few commercial uses. Figure 4-2 shows the main arterials in the study area.

Traffic Data Collection

Existing traffic conditions were determined from field surveys conducted in September 2012, and supplemented with information from previous studies and projects within the study area. Traffic volume counts were collected through ATRs machines and manual counts. Manual Turning

Figure 4-3: Traffic Data Collection Plan



Movement and Classification (MTMC) counts were conducted at 27 locations for one weekday (Tuesday, Wednesday or Thursday) during the AM (7:00-9:00) and PM (4:00-6:00) peaks in 15-minutes intervals. Six of the twenty-seven intersections are unsignalized (U).

Automatic Traffic Recorders (ATRs) were placed at eight locations for one week to collect 24-hour traffic counts in 15-minute intervals.

Pedestrian crosswalks counts were conducted at sixteen locations during AM (7:00-9:00) and PM (4:00-6:00) peaks in 15-minutes intervals:

Travel speed and delay surveys were conducted during the weekday AM (7:00-9:00) and PM (4:00-6:00) peaks period on the following three major corridors in the study area:

1. Atlantic Avenue between Eastern Parkway Extension & Cleveland Street (mainline and service road)
2. East New York/Jamaica Avenues between Mother Gaston Boulevard & Cleveland Street
3. Bushwick/Pennsylvania Avenues between Eastern Parkway Extension & Sutter Avenue

Figure 4-3 shows ATRs, Manual Turning Movement (MTM) and Pedestrian count locations in the study area.

Existing Network Traffic Volumes

Balanced traffic networks for the AM and PM peak hours were prepared using the ATRs and manual turning movement counts. The traffic volumes were plotted on traffic flow maps for the AM (7:45-8:45) and PM (4:30-5:30) peak hours. In addition to the 27 locations selected for traffic counts and the 11 locations with data from previous projects and studies in the area, two new locations were selected later for additional analysis (4A and 5A) and added to the traffic network. Figures 4-4 and 4-5 show the 2012 existing peak hour traffic volumes at 40 locations in the study area.

Pennsylvania Avenue between Jamaica Avenue and Sutter Avenue experiences the highest northbound and southbound volumes, between 950 and 1,165 vehicles during the AM and PM peak hours. Atlantic Avenue has the highest eastbound and westbound volumes, between 1,240 and 2,000 vehicles during the AM and PM peak hours.

Jamaica Avenue, east of Pennsylvania/Bushwick Avenue, carries between 220 and 460 vehicles in both directions during the AM and PM peak hours. However, west of this intersection, traffic volume increases substantially due to traffic to and from Jackie Robinson Parkway. In this area, volumes range from 750 to 1,395 vehicles in both directions during the peak hours. With the Bus Depot on the north side of Jamaica Avenue between Georgia and Alabama Avenues the corridor experiences high bus traffic.

Street Capacity and Level of Service

The HCS+/2000 Highway Capacity Manual (HCM) methodology and Synchro analysis were used to determine street capacity within the study area. The methodology requires the use of official signal timings, street geometry, and other relevant information for performing capacity and level of service (LOS) analyses.

Traffic flow characteristics are measured in terms of volume-to-capacity (v/c) ratios and delays. The quality of flow is expressed in terms of level of service (LOS), which is based on an average delay experienced per vehicle. When the v/c ratio exceeds 1.0, a facility or intersection is operating at or over capacity. In this situation, traffic congestion occurs with stop-and-start conditions with extensive queuing and delays. Volume-to-capacity ratios of less than 0.85 reflect acceptable traffic conditions, with average delays per vehicle of 45 seconds or less.

Existing Traffic Conditions

The analysis showed that half of the intersections analyzed operated at acceptable level of service (LOS) D or better during the AM and PM peak in all their approaches. However, the other half experienced LOS E or F for some or all lanes groups during one or more peak hour. Appendix A shows the 2012 Existing Conditions v/c ratios, delays, and level of service (LOS) tables for the signalized and unsignalized intersections during the AM and PM peak hours.

The intersection overall Level of Service (LOS) for the AM and PM peak hours are shown in Figures 4-6 and 4-7. Intersections with lane groups experiencing LOS E or F (55 or more seconds of delay) are shown in Figures 4-8 and 4-9.

Figure 4-4a: Existing Traffic Volumes - AM Peak Hour

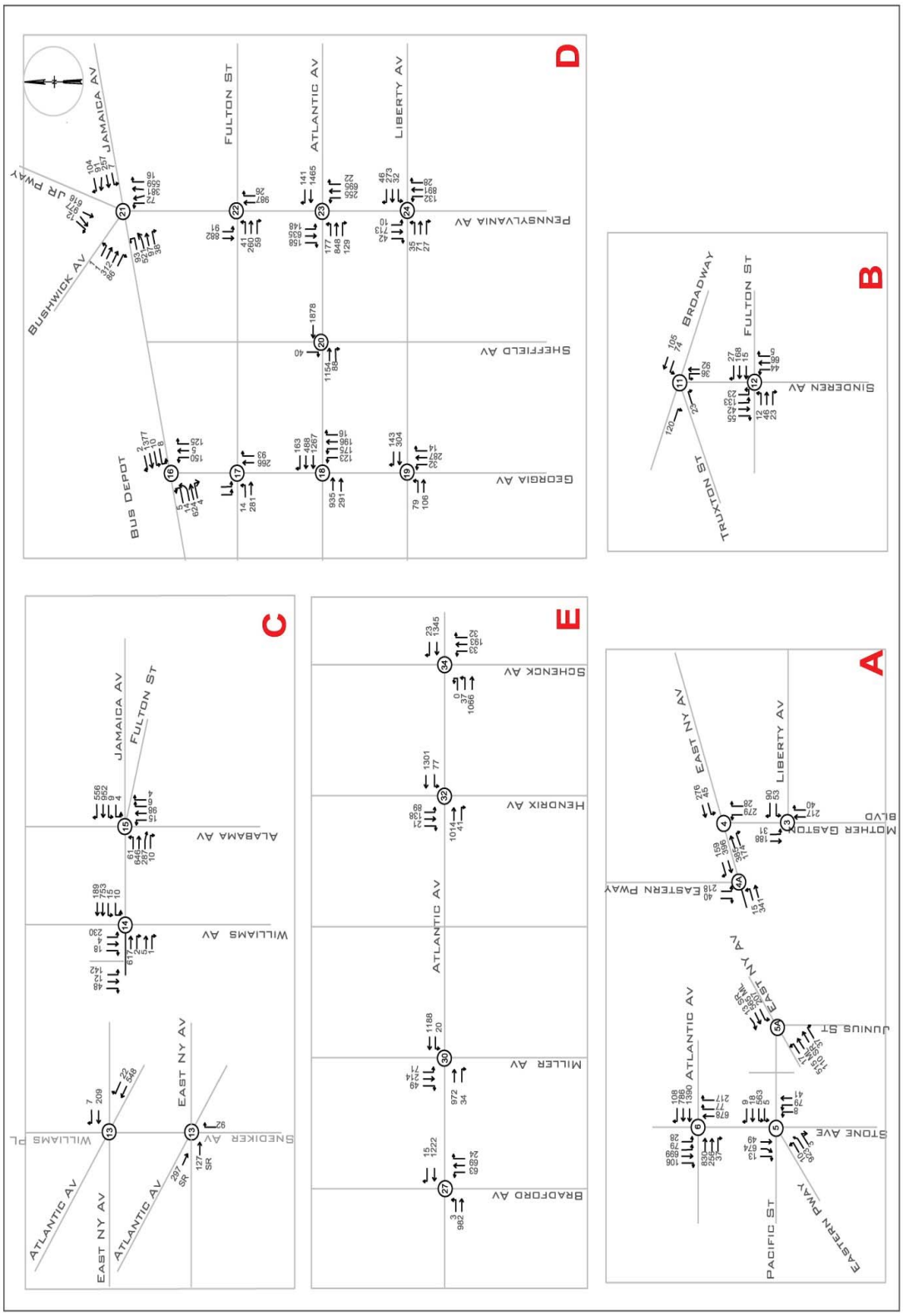
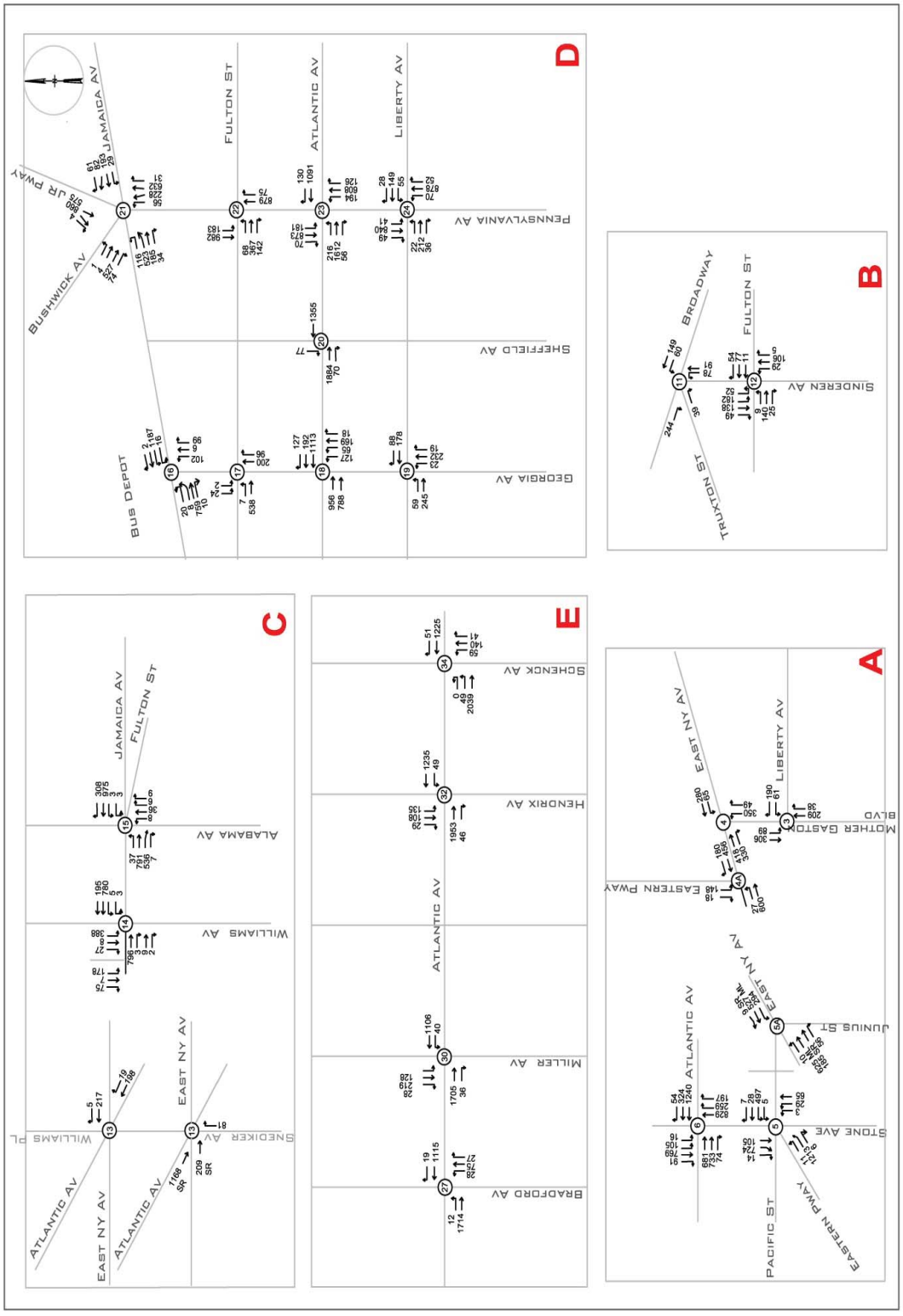


Figure 4-4b: Existing Traffic Volumes - AM Peak Hour

Figure 4-5a: Existing Traffic Volumes - PM Peak Hour



Fiaure 4-5b: Existina Traffic Volumes - PM Peak Hour

Figure 4-6: Existing Overall Intersection LOS – AM Peak Hour

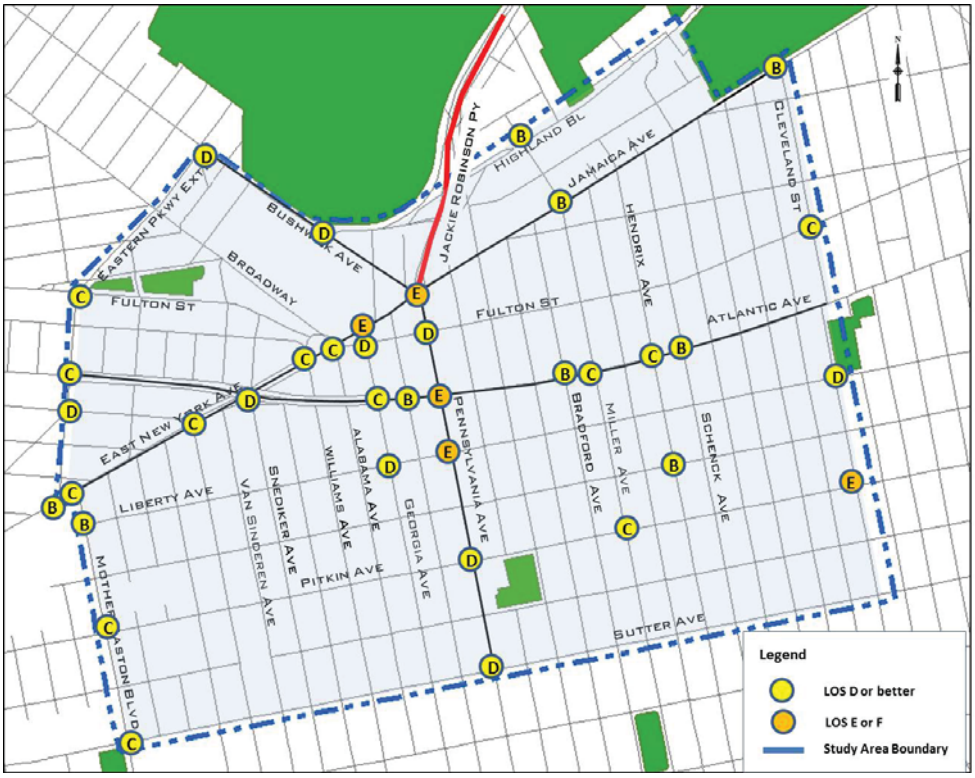


Figure 4-7: Existing Overall Intersection LOS – PM Peak Hour

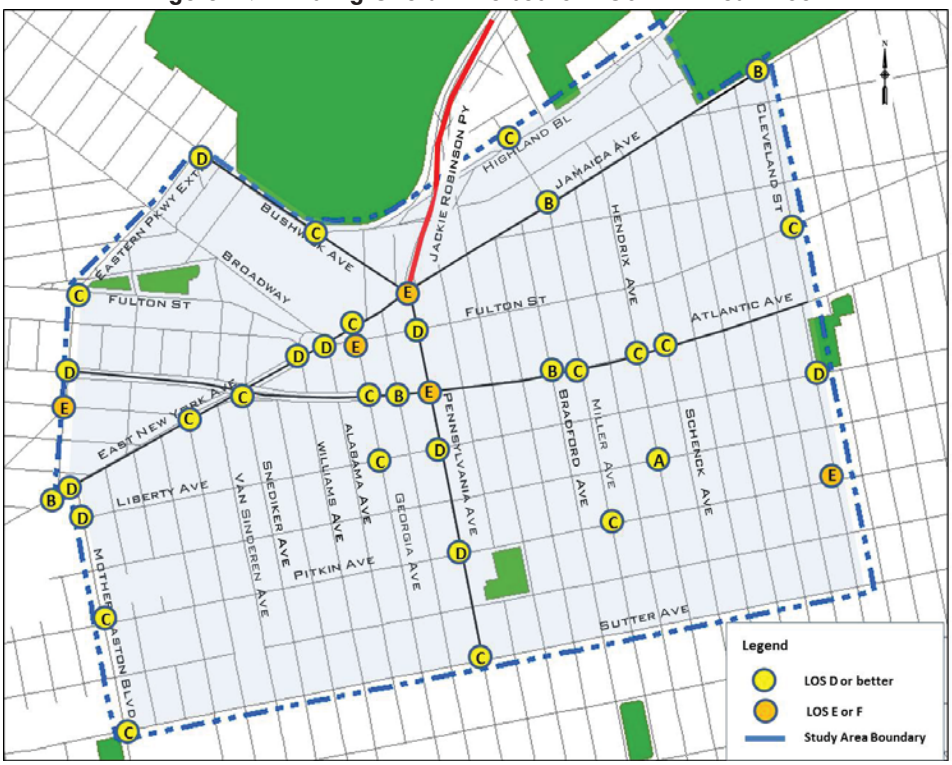


Figure 4-8: Approaches/Lane Groups with LOS E or worse – AM Peak (Existing)

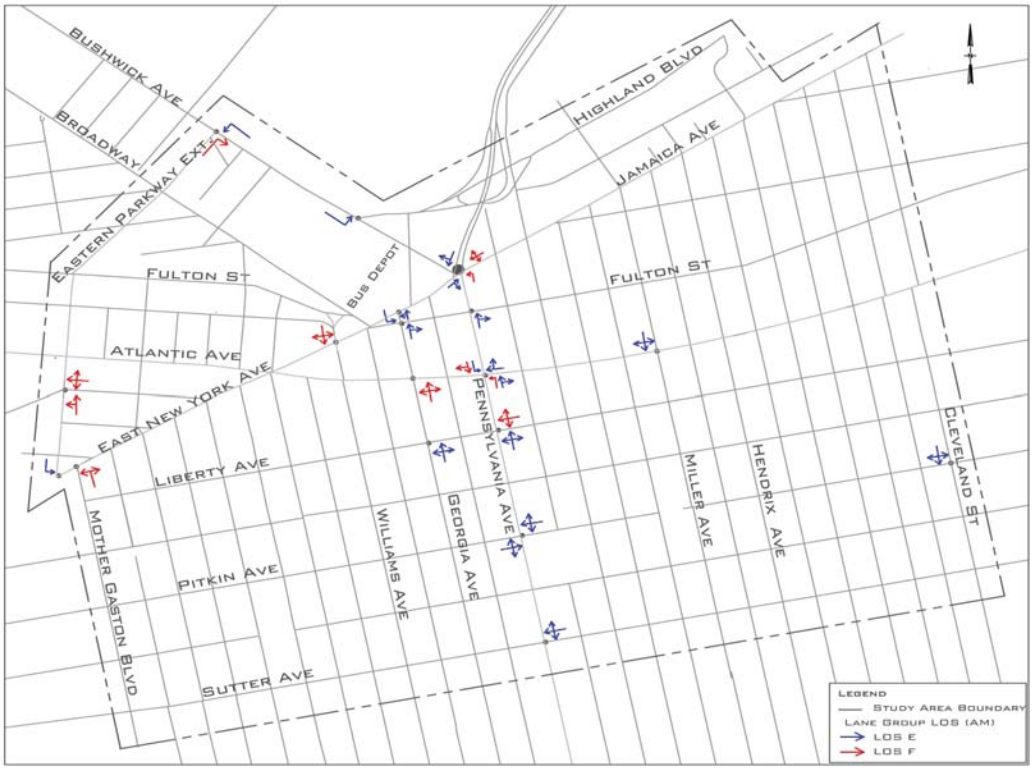
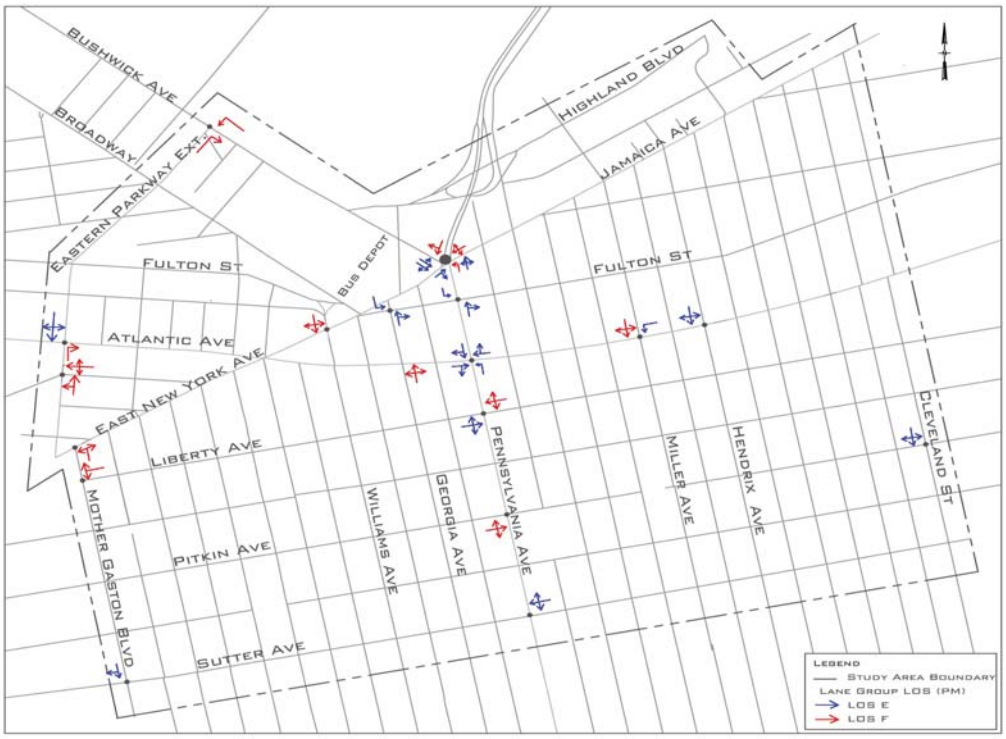


Figure 4-9: Approaches/Lane Groups with LOS E or worse – PM Peak (Existing)



Vehicular Speeds

Corridors within the study area experience congestion particularly during peak rush hours. Factors that contribute to the congestion are vehicle/pedestrian conflicts, illegal curbside use (double parking and standing) that reduce roadway capacity resulting in delays and lower travel speeds.

To measure peak hour travel time, vehicle speeds along the three major corridors (listed below) were assessed. The "floating car" method (a technique whereby a field vehicle travels at speeds under prevailing traffic conditions) was used to conduct travel speeds surveys. Three travel time runs were performed for each corridor during the weekday AM (7:00-9:00) and PM (4:00-6:00) peak period.

- Atlantic Avenue between Eastern Parkway Extension & Cleveland Street (Mainline & Service Rd)
- East New York/Jamaica Avenues between Mother Gaston Boulevard & Cleveland Street
- Bushwick/Pennsylvania Avenues between Eastern Parkway Extension & Sutter Avenue

Travel speeds along these corridors ranged from 6-19 mph and 9-14 mph during the AM and PM peak periods, respectively. Figures 4-10 a/b show the speed run corridors and average speed along these corridors during the AM and PM peak hours.

Figure 4-10a: Existing Travel Speeds – AM Peak

Figure 4-10b: Existing Travel Speeds – PM Peak

FUTURE TRAFFIC CONDITIONS

Future Traffic Network Volumes 2022

To establish 2022 future traffic volumes a background growth of 0.50% per year for the first 5 years and 0.25% for the next five years was applied to the existing traffic volumes, plus trips from known developments were added. As a result of the East New York Sustainable Communities Study and the East New York Rezoning permitting increased residential and commercial density over the next 10 to 15 years additional trips will be generated in the study area.

For the planning purpose of this study some preliminary numbers were projected to account for some of the expected growth in number of dwelling units (DUs), commercial space and community facilities.

The preliminary projection is for 11,628 new dwelling units (DUs), 828,212 square footage of commercial (regional and local retail) and 151,051 new square feet of community facilities.

Using some transportation planning assumptions a total number of trips were estimated for the study area and assigned to the traffic network major arterials, see Table 4-7.

Table 4-7: Estimated Trips by Mode

Total Trips		In	Out	Total
Peak Hour	AM	541	2,193	2,734
	PM	2,176	1,131	3,307

The trip assignment was determined from the existing condition traffic patterns and applied to the future trips to derive the 2022 AM and PM peak hour volumes. See Appendix A for the detail steps of the transportation planning assumption with trip distribution maps.

Figure 4-11 and 4-12 show the 2022 traffic volume maps for the 40 intersections studied during the AM (7:45 – 8:45) and PM (4:30 – 5:30) peak hours.

2022 Street Capacity and Level of Service (LOS)

The future conditions capacity and level of service (LOS) analysis were performed using the 2000 Highway Capacity Manual (HCM) methodology similar to the Existing Conditions. The analysis shows an additional 9 and 11 intersections level of service (LOS) will deteriorate from LOS D to LOS E or F during the AM and PM peak hours, respectively.

Overall, intersections along East New York Avenue/Jamaica Avenue, Atlantic Avenue, and Pennsylvania Avenue will experience more delays in the future under prevailing conditions. Figures 4-13 and 4-14 show the intersection level of service (LOS); and Figures 4-15 and 4-16 show lane groups with LOS E or F for the AM and PM peak hours, respectively.

Appendix A shows the 2022 Future Conditions v/c ratios, delays, and level of service (LOS) tables for the signalized and unsignalized intersections during the AM and PM peak hours.

Future Travel Speeds

The 2022 future travel speeds along the study area's major corridors were calculated using HCS future delays and measured existing speeds. The existing travel time and delays as well as future delays were used to project future travel speeds which is one factor used in determining future congestion. The travel speed corridors are listed below:

East-West Corridors:

- Atlantic Avenue between Eastern Parkway Extension & Cleveland Street
- East New York/Jamaica Avenues between Mother Gaston Boulevard & Cleveland Street

North-South Corridors

- Bushwick/Pennsylvania Avenues between Eastern Parkway Extension & Sutter Avenue

The analysis shows the 2022 future average travel speeds during the AM and PM peak hours would decrease.

Pennsylvania Avenue northbound during the AM peak would decrease from 9 to 5 mph; and during the PM the northbound and southbound direction would decrease from 9 to 4 mph and 13 to 5 mph, respectively. Atlantic Avenue eastbound would decrease from 12 to 6 mph during the future PM peak.

Future travel speeds would range from 4 to 17 mph throughout the study area for the various peaks. Figures 4-17 and 4-18 show the future travel speeds along selected corridors.

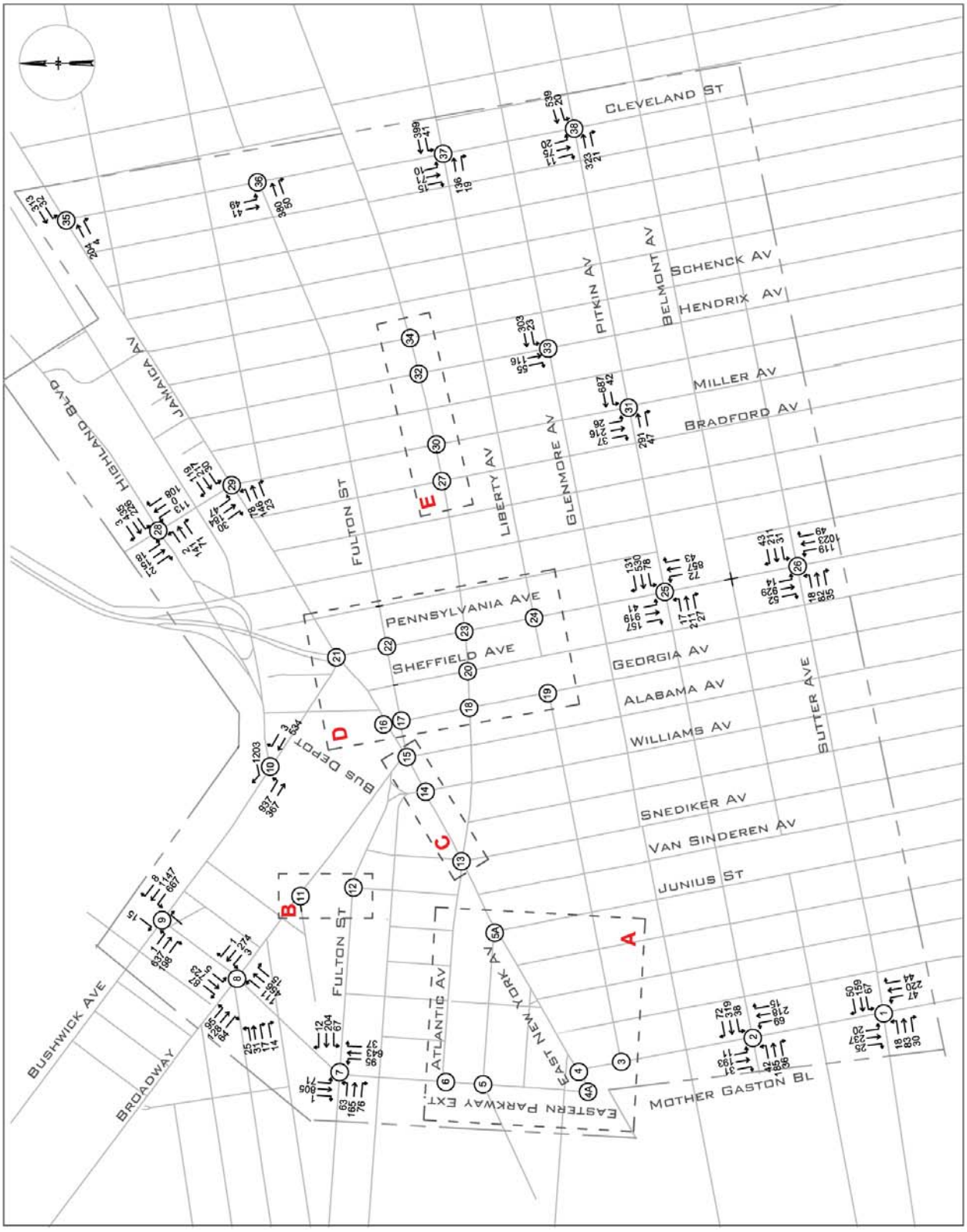


Figure 4-11a: 2022 Future Traffic Volume – AM Peak

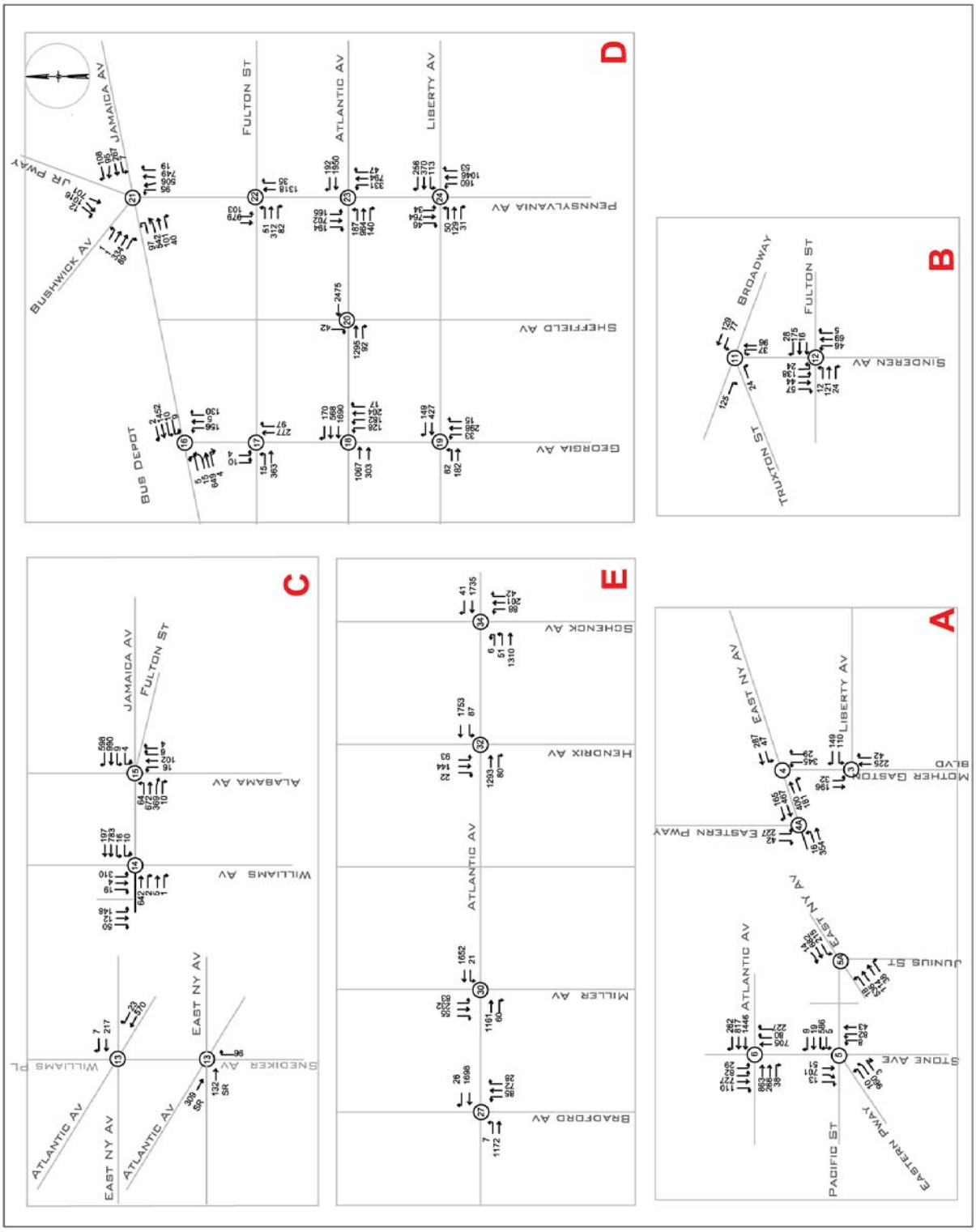


Figure 4-11b: 2022 Future Traffic Volume – AM Peak

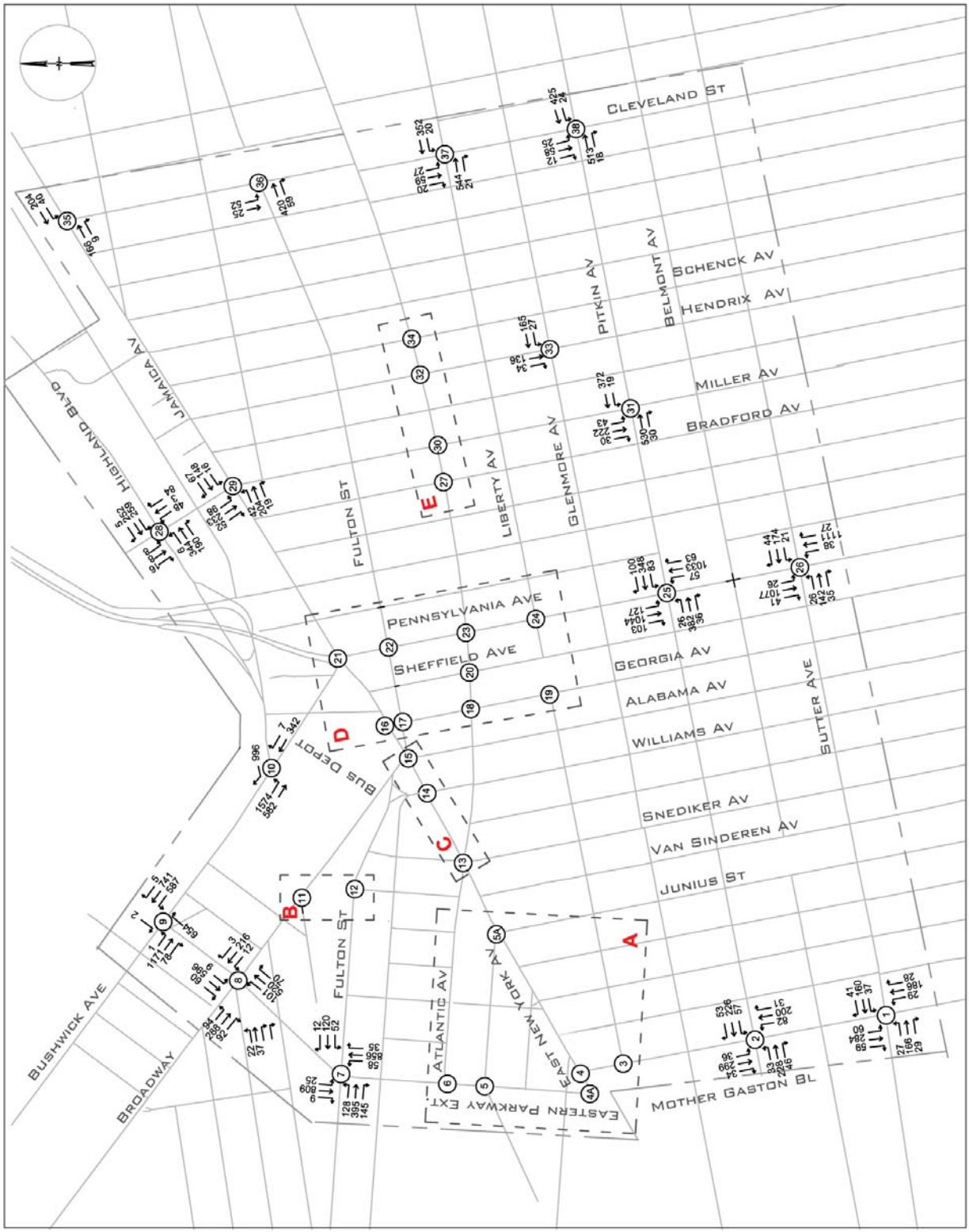


Figure 4-12a: 2022 Future Traffic Volume – PM Peak

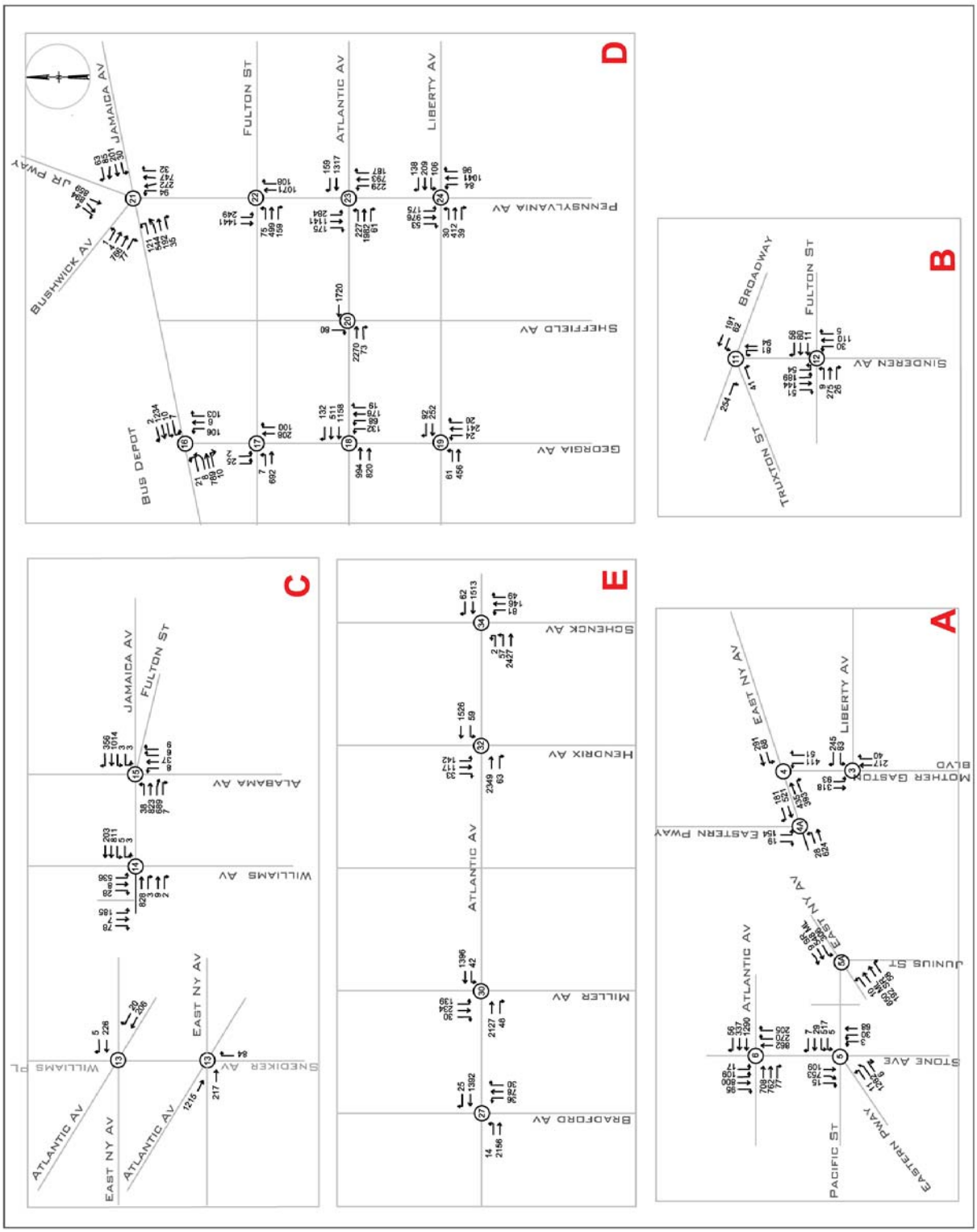


Figure 4-12b: 2022 Future Traffic Volume – PM Peak

Figure 4-13: 2022 Future Intersection Level of Service –AM

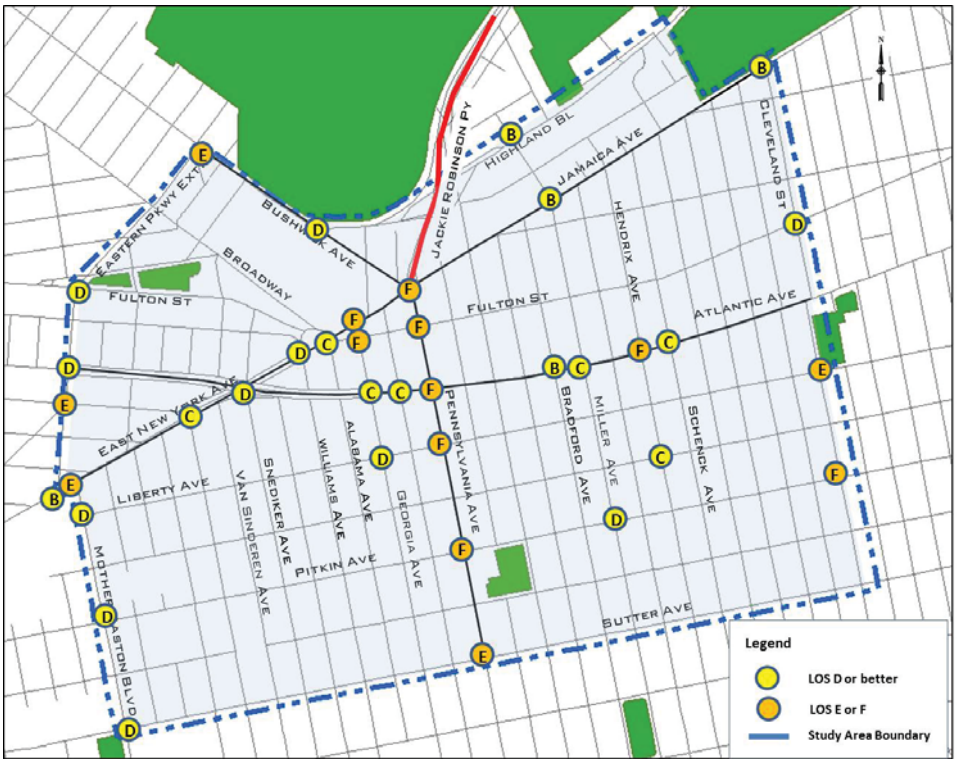


Figure 4-14: 2022 Future Intersection Level of Service – PM

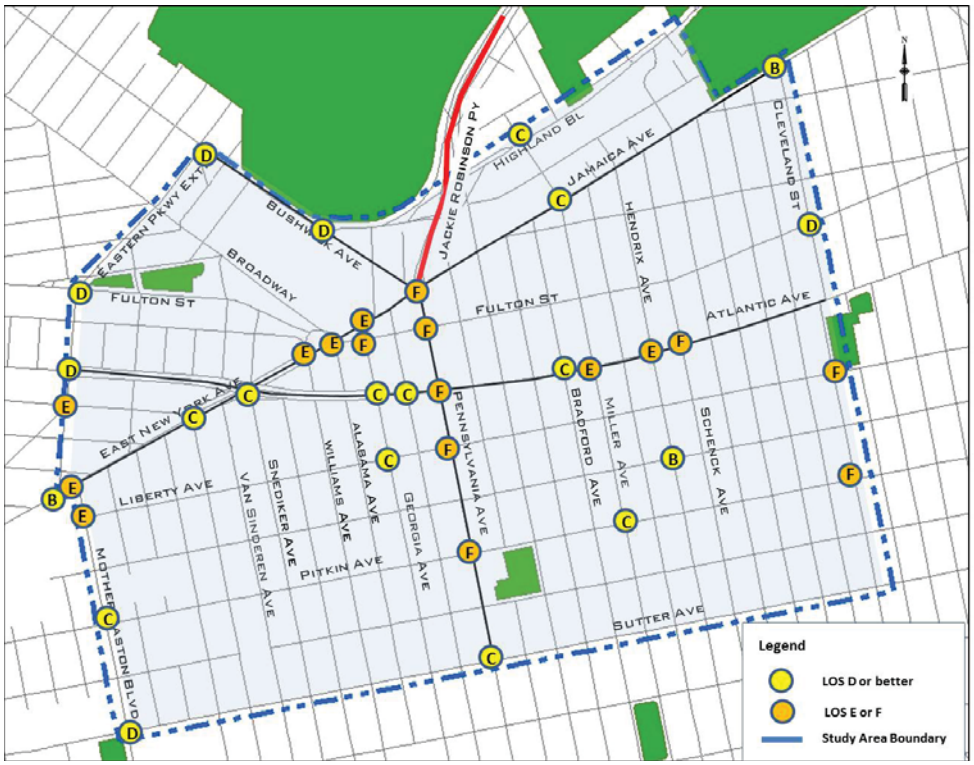


Figure 4-15: 2022 Future Lane Group LOS - AM

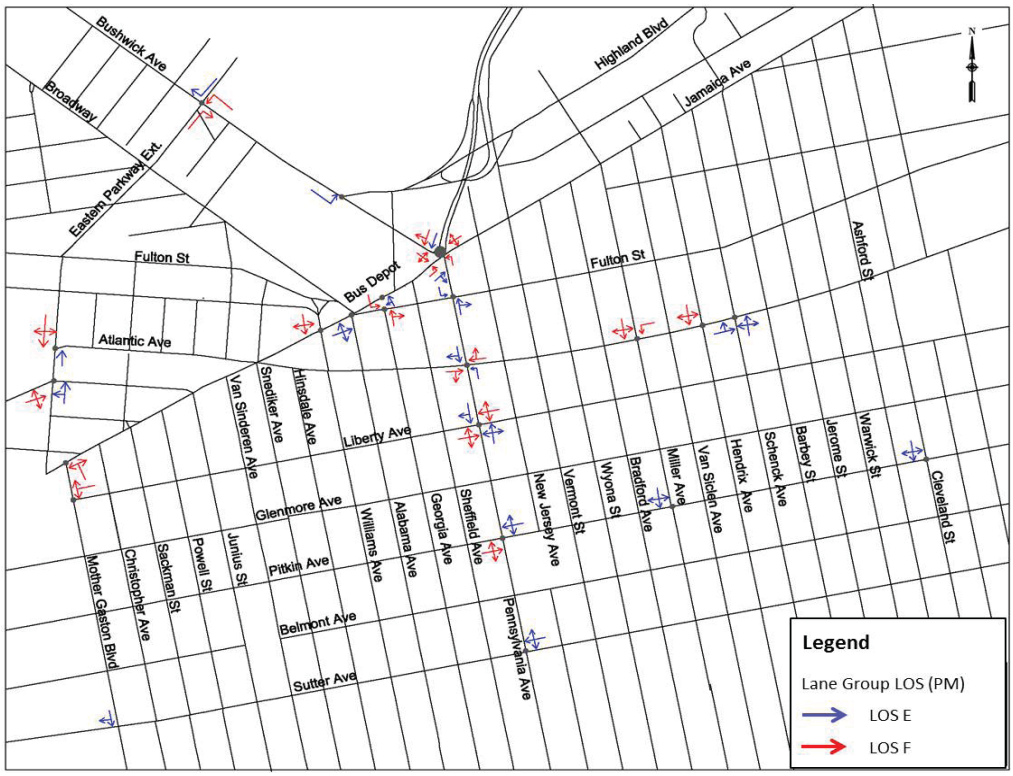


Figure 4-16: 2022 Future Lane Group LOS - PM

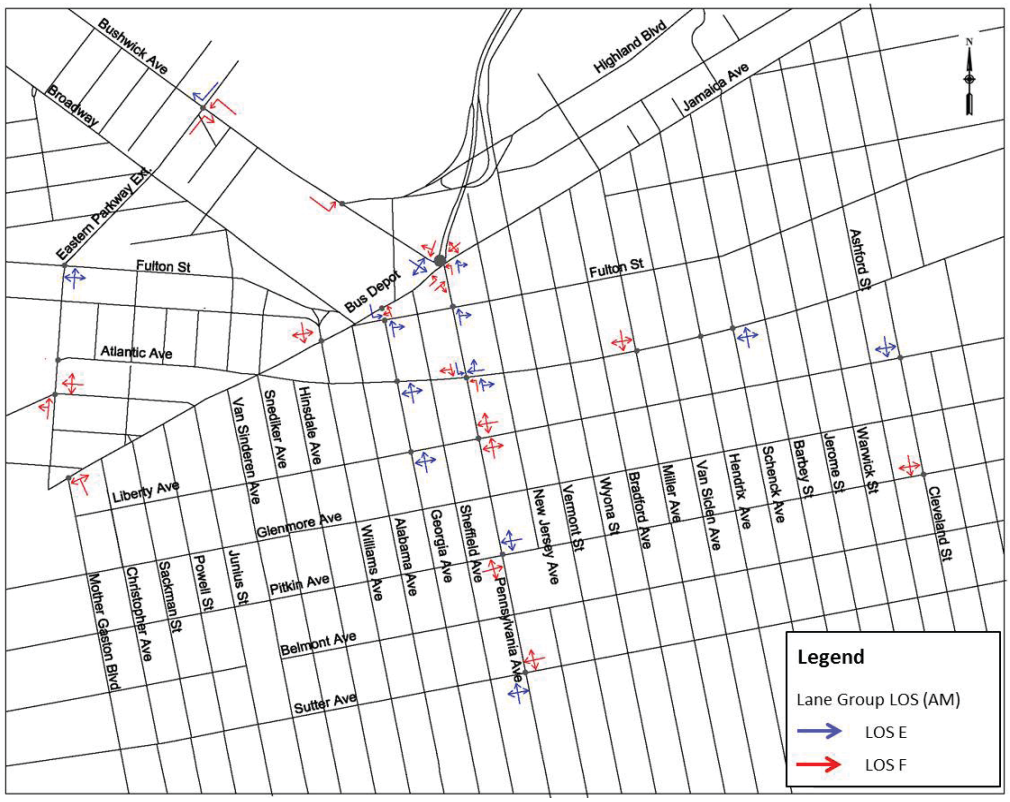


Figure 4-17: 2022 Future Travel Speeds – AM

Figure 4-18: 2022 Future Travel Speeds – PM

Goods Movement

Since New York City is heavily dependent on trucks to supply necessary goods and services their presence and potential impact in the traffic stream cannot be ignored. Truck traffic can contribute to congestion, noise and air pollution, and increase safety risks. Consequently at all levels efforts should be made to reduce the externalities associated with truck traffic.

Trucks are generally defined as any vehicle or combination of vehicles designed for transportation of property which has two axles and six tires, or three or more axles. In New York City trucks are confined to designated routes (local and through) except on reaching their origin or destination. They must leave a designated truck route at the nearest intersection that provides the most direct route to their destination.

Truck Routes in the Study Area

There is one through truck route - Atlantic Avenue (an east-west corridor); and, there are six local truck routes – Broadway, Fulton Street (segment), Van Sinderen Avenue (segment), Herkimer Street (segment), East New York/ Jamaica Avenues (segment), and Pennsylvania Avenue. The local truck routes are both north-south and east-west corridors. The truck local routes are shown in Figure 4-19.

Truck Traffic in the Study Area

Truck volume counts were conducted at 35 locations during the AM and PM peak hours; the observed share was similar in each peak hour with 3.4% and 3%, respectively.

The highest truck volumes were observed during the AM peak hour. Figure 4-20 shows the percentage of trucks in the traffic stream at the thirty-five intersections analyzed. The location with the highest percentage of trucks during the AM peak was Miller/Pitkin Avenues with 8.7%.

To address some of the truck issues and accommodate their vital function, curb usage by truck must be provided for to avoid, if not minimize double parking. Policies to incentivize off-peak deliveries should be developed and implemented. Recommendations addressing some of these issues are reflected in the Traffic and Parking sections.

Figure 4-19: Truck Routes in the Study Area

Figure 4-20: Truck Volumes in the Study Area

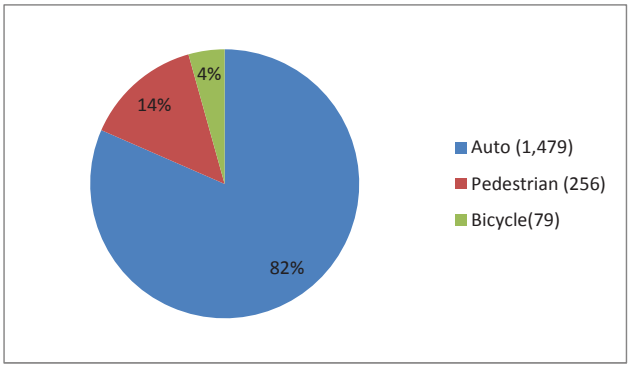
CRASHES

5. CRASHES

To identify high crash locations and address safety issues, crash history for the three most recent years were compiled and analyzed. Traffic crash data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the three most recent years (2010 to 2012) for which data is available. The data obtained quantify the total number of reportable crashes (involving fatality, injury, or property damage exceeding $1,000) as well as a yearly breakdown of pedestrian and bicycle-related crashes at each location.

New York State Department of Transportation defines a high crash location as one where there are five or more pedestrian/bicyclist-related crashes or, 23 or more crashes in any consecutive 12 months within the most recent 3-year period. From 2010 to 2012 there were 1,814 reportable crashes along the major corridors including six fatalities and 2,379 injuries, and involving 256 pedestrians and 79 bicyclists. Table 5-1 summarizes the crash characteristics along these corridors; and Figure 5-1 shows a graphic summary of the crashes.

Figure 5-1: Summary of Crashes



Between 2010 and 2012 total crashes in the study area declined 5%, from 623 in 2010 to 589 in 2012. Pedestrian-related crashes declined 17% (from 92 to 76) between 2010 and 2011, but increased 15% (from 76

Table 5-1: Corridor Crash Summary (2010-2012

	Study Period					Crashes by Year					
	Crashes by Year					Pedestrian			Bicycle		
Corridor	2010	2011	2012	Fatalities	Injuries	2010	2011	2012	2010	2011	2012
Arlington Ave	17	19	27		84	6	1	4	2	1	0
Atlantic Ave	189	166	173	2	670	13	15	9	4	4	3
Belmont Ave	29	25	20		111	6	7	5	1	2	1
Broadway	7	6	12		25	0	0	5	0	0	0
Bushwick Ave	41	41	21	1	127	1	2	0	0	0	1
East New York Ave	24	29	26	1	118	2	3	8	1	0	0
Fulton St	67	57	55		219	21	12	14	3	3	4
Glenmore Ave	36	32	30		137	5	3	0	1	0	2
Herkimer St	2	7	9		19	0	2	3	1	0	3
Highland Bl	8	7	7	1	23	0	1	2	0	1	0
Jamaica Ave	43	42	42		200	9	2	6	2	2	4
Liberty Ave	47	52	52		191	5	10	10	1	0	4
Pitkin Ave	50	66	63		232	12	9	12	3	10	6
Sunnyside Ave	2	3	0		4	1	0	0	0	1	0
Sutter Ave	56	55	52		219	10	9	11	3	3	2
Total	**618**	**607**	**589**	**5**	**2,379**	**91**	**76**	**89**	**22**	**27**	**30**

to 89) between 2011 and 2012. Bicycle-related crashes increased 11% (from 27 to 30) between 2010 and 2012.

There were five high crash/high pedestrian crash locations. The Atlantic/Pennsylvania Avenues intersection had the highest number of crashes (average 40/year); this was followed by the intersection of Atlantic Avenue/Eastern Parkway Ext that had an average of 33 crashes per year. Table 5-2 details the crash history at each of the five high crash locations.

The Fulton Street/East New York Avenue/Broadway intersection had five pedestrian-related crashes in 2012. Two of these crashes occurred due to pedestrian error, while the cause of the other three was unknown. There were also ten pedestrian-related crashes for the study period; five crashes occurred due to driver inattention, two occurred due to pedestrian error, and the cause of the other three was unknown.

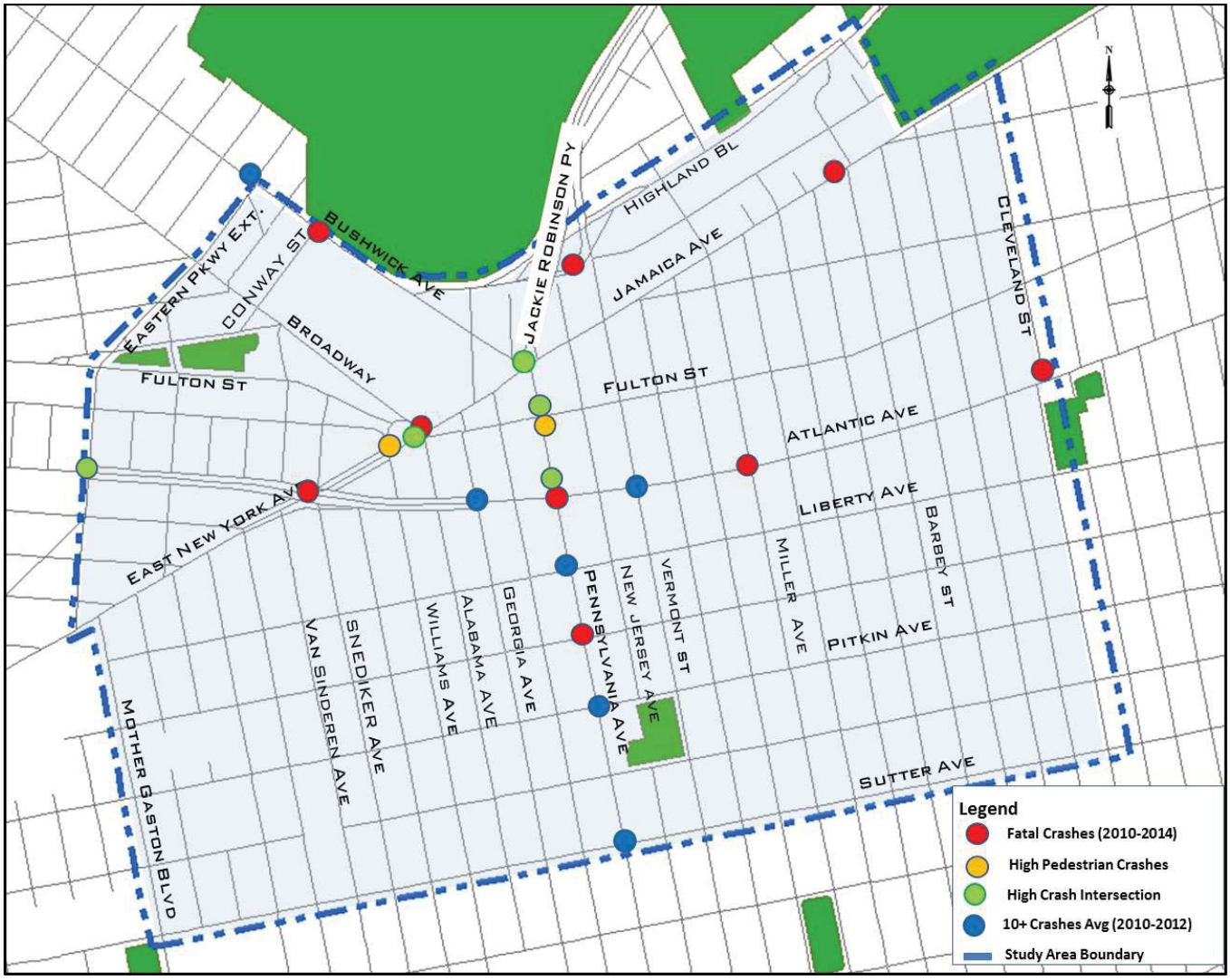
There were nine intersections in the study area that averaged ten or more crashes for the period analyzed.

Five fatalities occurred between 2010 and 2012 - two in 2010 and three in 2012. The fatalities did not include any motorists – only pedestrians (4) and a motorcyclist. Figure 5-2 shows the intersections with fatalities (from 2010 -2014) as well as the high pedestrian and vehicular crash locations.

Table 5-2: High Crash Locations

Intersection	Reportable Accident			Pedestrians			Bicycle		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Atlantic/Pennsylvania Aves	41	38	42	4	3	1	1	2	0
Atlantic Av/Eastern Pkwy Ext	36	32	31	1	2	1	1	1	0
Fulton St/Pennsylvania Ave	9	13	13	1	4	5	0	0	1
Fulton St/East New York Ave	3	6	9	0	0	5	0	0	0
Jamaica Ave/Bushwick Ave	34	0	0	4	0	0	0	0	0

Figure 5-2: High Crash and Fatality Locations



PARKING

6. PARKING

The parking study assessed both on-street and off-street parking facilities along the major corridors in the study area. On-street parking is generally permitted on all streets in the study area except where it is prohibited by parking regulation to facilitate street cleaning or traffic movement. Off-street parking facilities are primarily accessory parking associated to residential, commercial/retail, and industrial uses in the study area; however, there are a few private parking lots. The goal of the parking study was to make a quantitative assessment of the parking spaces available for use during the two weekday peak hours analyzed.

On-Street Parking

An on-street parking inventory was conducted along major corridors with commercial/retail activities during the weekday AM and PM peak hours (7:45-8:45AM, and 4:30-5:30PM) to determine parking regulations, parking type, number of legal parking spaces, and the demand. The parking inventory was conducted in Spring 2013. It included five north-south corridors (Mother Gaston Boulevard/Eastern Parkway, Pennsylvania Avenue, Bushwick Avenue, Broadway, and Cleveland Street) and six east-west corridors (Atlantic Avenue, Fulton Street, Jamaica Avenue/ East New York Avenue, Pitkin Avenue, Liberty Avenue, and Sutter Avenue). Figure 6-1 shows the corridors along which the parking survey was conducted.

The use of on-street parking spaces is generally regulated by parking meters and posted signs. Although the on-street parking regulations vary, they generally fall in one of the following overarching categories:

1. "No Standing Anytime"
2. "No Parking Anytime"
3. No parking during a specific time period
4. No standing except truck loading and unloading during a specific time period
5. One-hour parking during a specific time period

The on-street parking inventory revealed that there are approximately 2,600 parking spaces along the corridors studied. The total parking spaces available along the

Figure 6-1: On-Street Parking Survey Corridors

corridors surveyed was determined by counting each parked vehicle (when a vehicle was present) and estimating (when parking is permitted but no vehicle was present) the number of legal parking spaces on each block face where parking is permitted. Varying time of day regulations results in varied total capacity and use. Consequently, the number of legal on-street parking spaces along the major corridors is 2,578 and 2,622 during the AM and PM peak hours, respectively. Metered parking can be found along Atlantic Avenue (78 spaces), Mother Gaston Boulevard (59 spaces), and Fulton Street (13 spaces).

Utilization along the corridors was also assessed during the AM and PM peak periods. Parking regulations on each block face were recorded along with the number of legal spaces (capacity), the number of vehicles parked legally and illegally, as well as utilization rates (as a percentage of the estimated legal spaces). The utilization survey tabulated the number of vehicles parked, legally or illegally, along the corridor. Illegally parked vehicles include those that were double parked or parked on the sidewalk. Table 6-1 provides detailed parking capacity and utilization data during the AM and PM peak hours by corridor. Parking utilization varied along each corridor and by peak hour. Broadway and Bushwick Avenue showed the highest utilization rates. The utilization along both corridors is directly linked to illegal parking activities by MTA/NYCT employees who work at facilities abutting both streets.

Metered Parking

Metered parking spaces accounts for approximately 5% of the total spaces available along the corridors studied.

Table 6-1: On-Street Parking Supply & Demand

Location	Direction	Capacity		Parking		Occupancy		Utilization (%)	
		AM	PM	Metered	Non-Metered	AM	PM	AM	PM
Sutter Ave	North	170	170	-	170	138	126	81.2	74.1
	South	183	183	-	183	69	92	37.7	50.3
Pitkin Ave	North	223	223	-	223	139	119	62.3	53.4
	South	189	189	-	189	54	101	28.6	53.4
Liberty Ave	North	164	164	-	164	154	113	93.9	68.9
	South	204	204	-	204	109	115	53.4	56.4
Atlantic Ave	North	133	133	51	82	43	89	32.3	66.9
	South	102	102	27	75	33	37	32.4	36.3
Fulton St	North	162	162	7	155	114	95	70.4	58.6
	South	168	168	6	162	64	108	38.1	64.3
Jamaica Ave/East New York Ave	North	84	84	-	87	71	53	84.5	63.1
	South	97	97	-	97	47	72	48.5	74.2
Cleveland St	East	164	164	-	164	48	74	29.3	45.1
	West	143	143	-	143	143	101	100.0	70.6
Pennsylvania Ave	East	61	61	-	61	54	46	88.5	75.4
	West	43	43	-	43	21	43	48.8	100.0
Mother Gaston Blvd	East	114	114	28	86	79	102	69.3	89.5
	West	95	139	31	119	62	95	65.3	68.3
Broadway	North	29	29	-	29	55	47	189.7	162.1
	South	19	19	-	19	41	27	215.8	142.1
Bushwick Ave	North	13	13	-	13	1	5	7.7	38.5
	South	18	18	-	18	42	15	233.3	83.3
Total		2,578	2,622	150	2,486	1,581	1,675	-	-

Metered parking (150 spaces) exists only along three corridors - Atlantic Avenue, Fulton Street, and Mother Gaston Boulevard. The limit and rates for the meters are generally 1-2 hours at $0.25/15 minutes.

Off-Street Parking

Off-street parking lots facilities along the major corridors in the study area were inventoried and most of them provide service for the exclusive use of customers or employees. Although there were residential off-street parking facilities, they were not part of the survey as it focused on those sites related to commercial, industrial, and government establishments. The lots surveyed were associated with banks, restaurants, supermarkets, laundromats, etc. The capacity of the facilities was determined by counting the number of marked spaces in each lot. The location and capacity of the lots surveyed are shown in Figure 6-2.

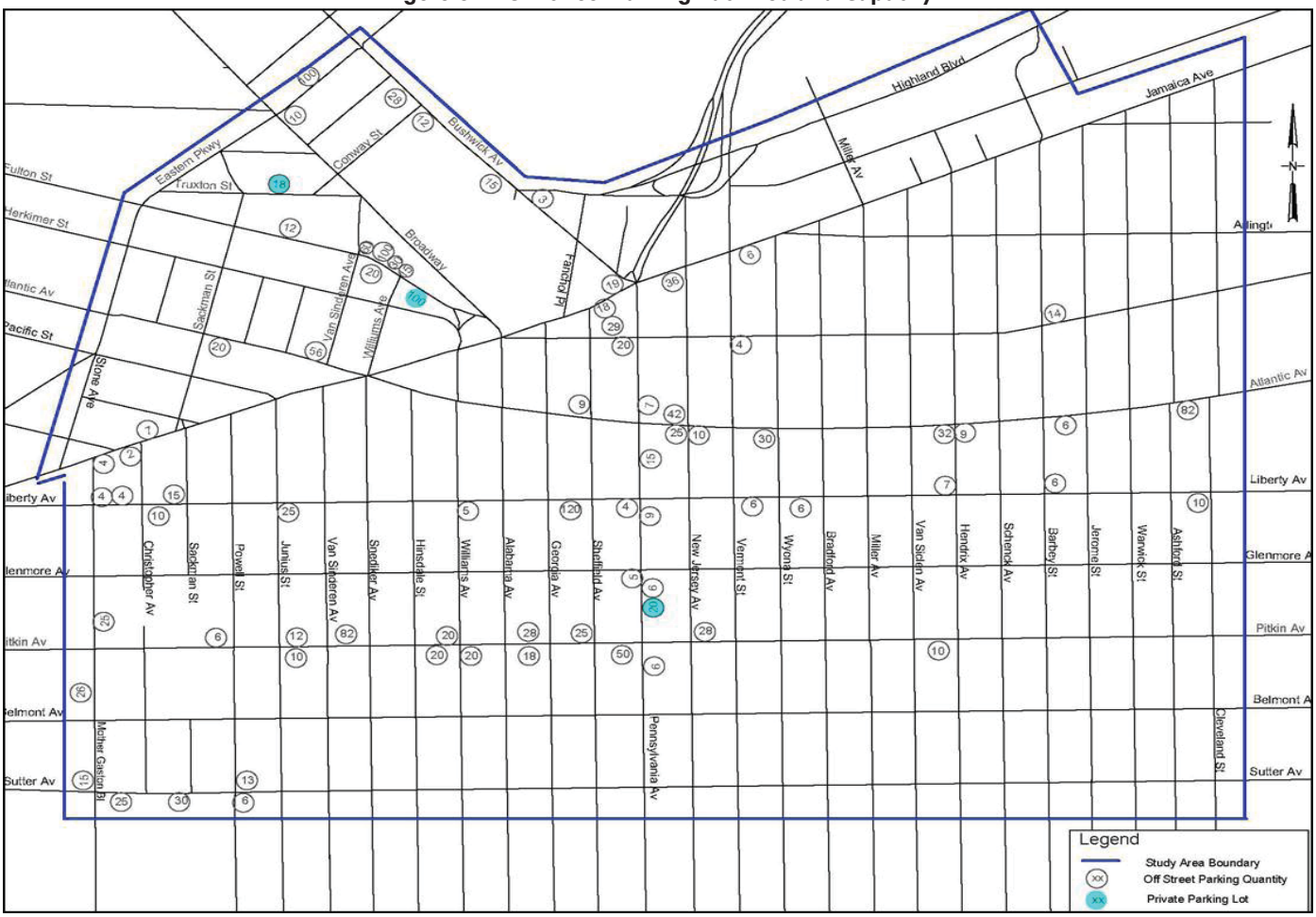
It showed that there are 73 off-street accessory parking facilities – utilized for commercial/retail, industrial, as well as institutional/government uses. These lots had a combined capacity of 1,699 spaces. Most of these facilities are located on Pitkin Avenue, Liberty Avenue, Atlantic Avenue, and Fulton Street.

There are three privately owned (fee-structured) parking lots in the study area. These lots are located on:

- Pennsylvania Avenue between Liberty and Pitkin Avenues (capacity - 20)
- Fulton Street between Van Sinderen and East New York Avenues (capacity - 100)
- Truxton Street between Sackman and Conway Streets (capacity - 18)

Seven off-street parking lots are accessory to government-operated facilities (NYCT, US Post office, NYPD), fifty-four to commercial establishments (banks, restaurants, supermarkets, etc.), and twelve for private parking. The largest off-street parking facility (120 spaces) is located on Liberty Avenue and is used for parking school buses.

Figure 6-2: Off-Street Parking Facilities and Capacity



PEDESTRIANS & CYCLISTS

7. PEDESTRIANS & CYCLISTS

Trips associated with residential, commercial, and institutional uses account for a majority of the pedestrian traffic within the study area. Each pedestrian trip contributes to the pedestrian traffic seen in crosswalks, corners, and sidewalks. The highest pedestrian volumes in the study area were observed in proximity to subway stations and large multi-family buildings. Some of these locations are:

- Fulton Street & Van Sinderen Avenue
- Mother Gaston Boulevard & Sutter Avenue
- Fulton Street & Cleveland Street
- Pennsylvania Avenue & Liberty Avenue

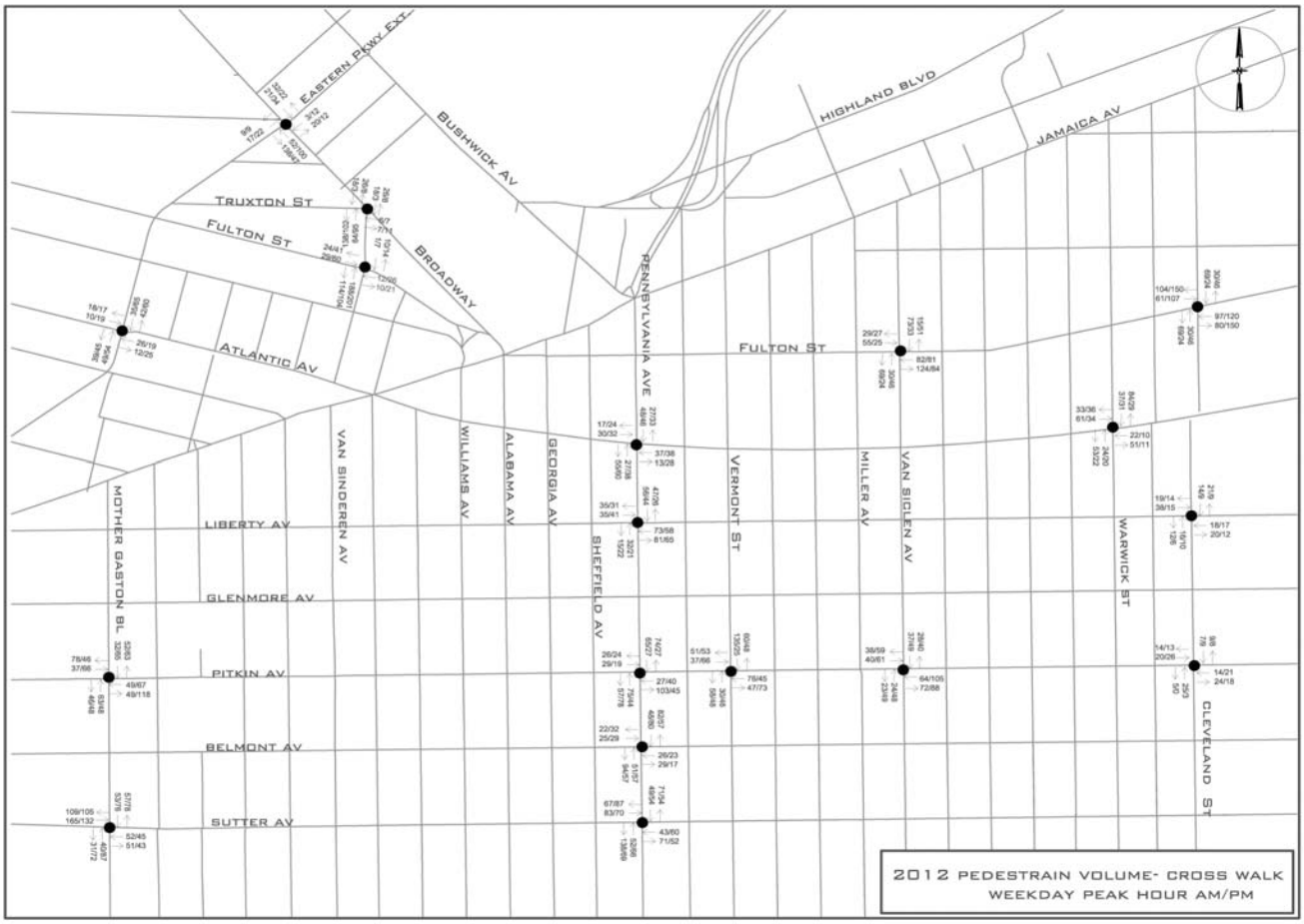
Existing Conditions Pedestrian Analysis

The pedestrian analysis focused on the crosswalks at select intersections (major corridors, adjacent to schools, subway, or transfer points). Pedestrian counts were conducted at 16 intersections along major corridors during the weekday AM and PM peak hours (7:45-8:45AM and 4:30-5:30PM) in 15-minute increments. The weekday AM and PM peak hour pedestrian volumes for crosswalks are shown in Figure 7-1. In general, the pedestrian volumes at the intersections studied were low, averaging under 200 persons/crosswalk/peak hour.

Level of Service Analysis & Methodology

The Highway Capacity Manual methodology was used to determine pedestrian level of service at the crosswalks for the sixteen intersections selected. The analysis examined the crosswalk level of service (LOS) for the AM and PM peak hours. The pedestrian LOS is measured in terms of square feet of space per pedestrian (SF/P), as indicated in Figure

Figure 7-1: 2012 Pedestrian Volumes - AM/PM Peak Hour



7-2. This indicates the quality of pedestrian movement and comfort, and is defined in a density-comfort relationship. The analysis showed all the crosswalks analyzed have LOS A, except the west crosswalk at the intersection of Warwick Street and Atlantic Avenue that have LOS B during the AM peak. See Appendix B for crosswalk LOS analysis.

Bicycle Lanes and Paths

The existing and planned facilities indicate the potential for the provision of an extensive bicycle network in the study area. Figure 7-3 shows the existing and proposed routes according to the 2014 Bicycle Map. Changes were made to the network in May 2013 with the addition of new shared and on-street lanes. A shared lane designation was made on Mother Gaston Boulevard between Liberty and Sutter Avenues and along Pitkin Avenue between Mother Gaston Boulevard and Pennsylvania Avenue. Additionally, on-street lanes were added on Pitkin Avenue between Pennsylvania Avenue and Cleveland Street.

Figure 7-3: 2014 Bicycle Map in the Study Area

Figure 7-2 - Pedestrian Level of Service

LOS A
Pedestrian Space > 60 ft²/p *Flow Rate* ≤ 5 p/min/ft
At a walkway LOS A, pedestrians move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.

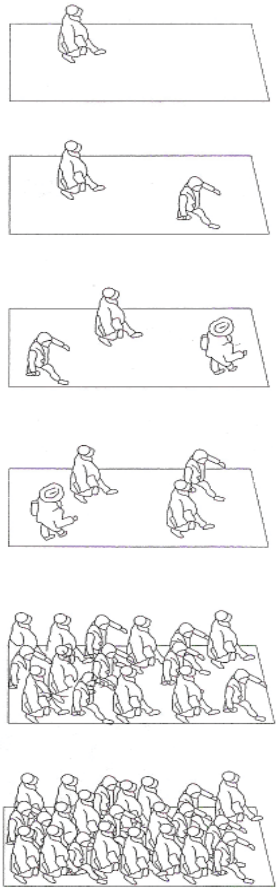
LOS B
Pedestrian Space > 40-60 ft²/p *Flow Rate* > 5-7 p/min/ft
At LOS B, there is sufficient area for pedestrians to select walking speeds freely, to bypass other pedestrians, and to avoid crossing conflicts. At this level, pedestrians begin to be aware of other pedestrians, and to respond to their presence when selecting a walking path.

LOS C
Pedestrian Space > 24-40 ft²/p *Flow Rate* > 7-10 p/min/ft
At LOS C, space is sufficient for normal walking speeds, and for bypassing other pedestrians in primarily unidirectional streams. Reverse-direction or crossing movements can cause minor conflicts, and speeds and flow rate are somewhat lower.

LOS D
Pedestrian Space > 15-24 ft²/p *Flow Rate* > 10-15 p/min/ft
At LOS D, freedom to select individual walking speed and to bypass other pedestrians is restricted. Crossing or reverse-flow movements face a high probability of conflict, requiring frequent changes in speed and position. The LOS provides reasonably fluid flow, but friction and interaction between pedestrians is likely.

LOS E
Pedestrian Space > 8-15 ft²/p *Flow Rate* > 15-23 p/min/ft
At LOS E, virtually all pedestrians restrict their normal walking speed, frequently adjusting their gait. At the lower range, forward movement is possible only by shuffling. Space is not sufficient for passing slower pedestrians. Cross0 or reverse-flow movements are possible only with extreme difficulties. Design volumes approach the limit of walkway capacity, with stoppages and interruptions to flow.

LOS F
Pedestrian Space ≤ 8 ft²/p *Flow Rate* varies p/min/ft
At LOS F, all walking speeds are severely restricted, and forward progress is made only by shuffling. There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.



The recent changes to the bicycle network on Pitkin Avenue and Mother Gaston Boulevard are shown in the Figures 7-4 a, b, and c.

Figure 7-4a: Mother Gaston Boulevard Bicycle Facilities

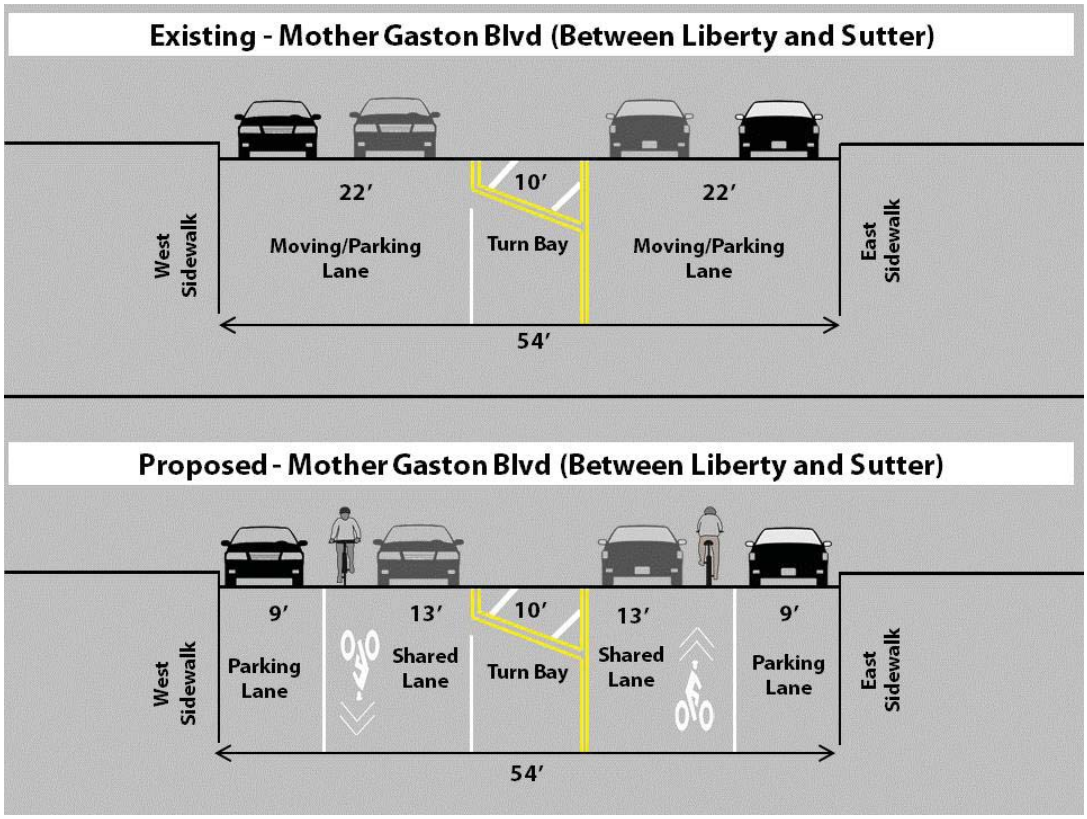


Figure 7-4b: Pitkin Avenue Bicycle Facilities

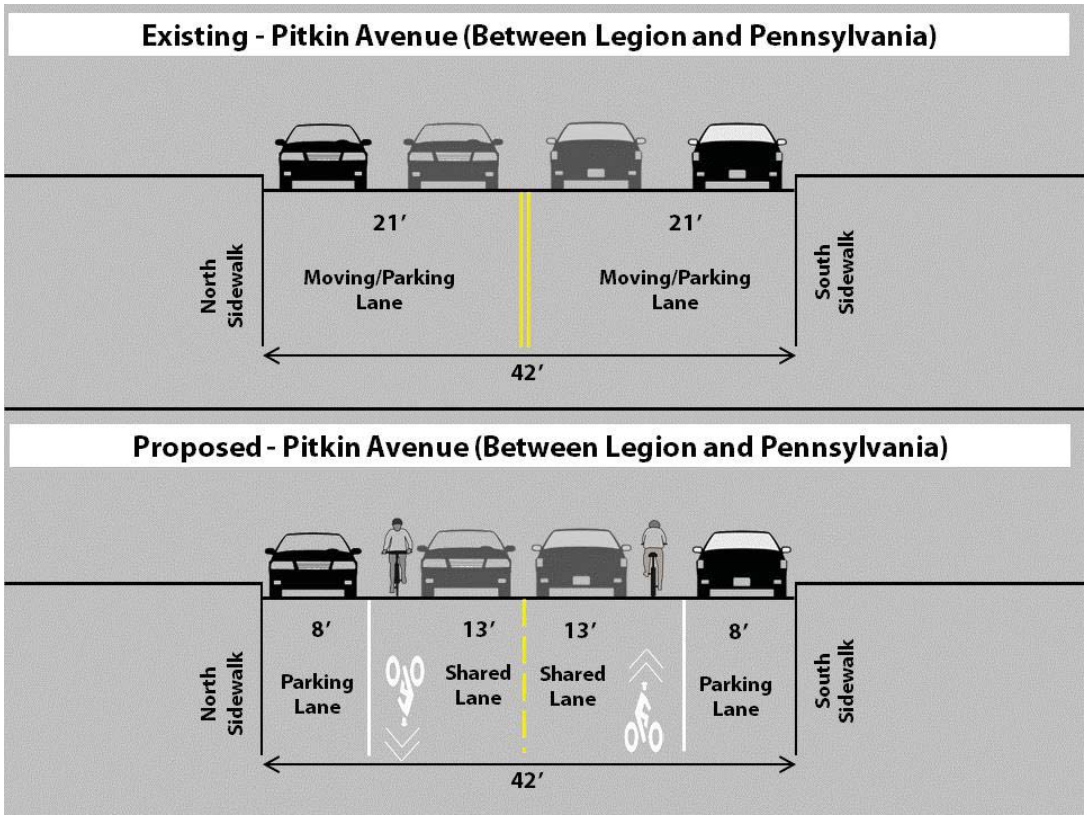
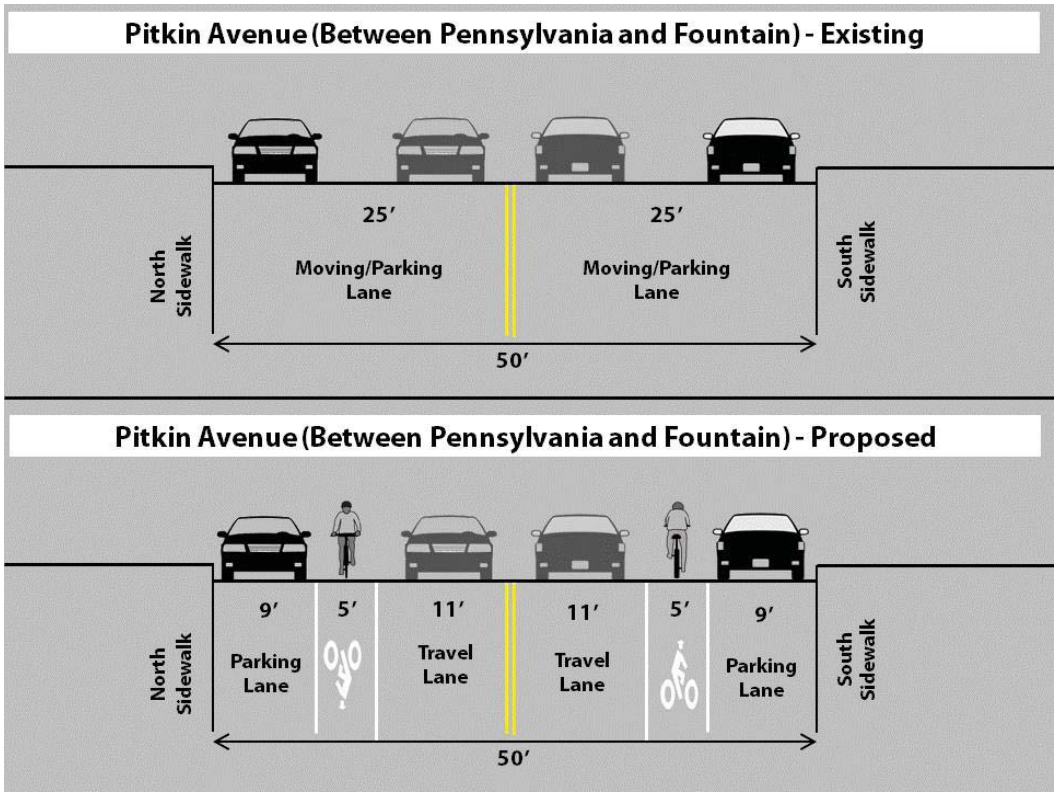


Figure 7-5c: Pitkin Avenue Bicycle Facilities



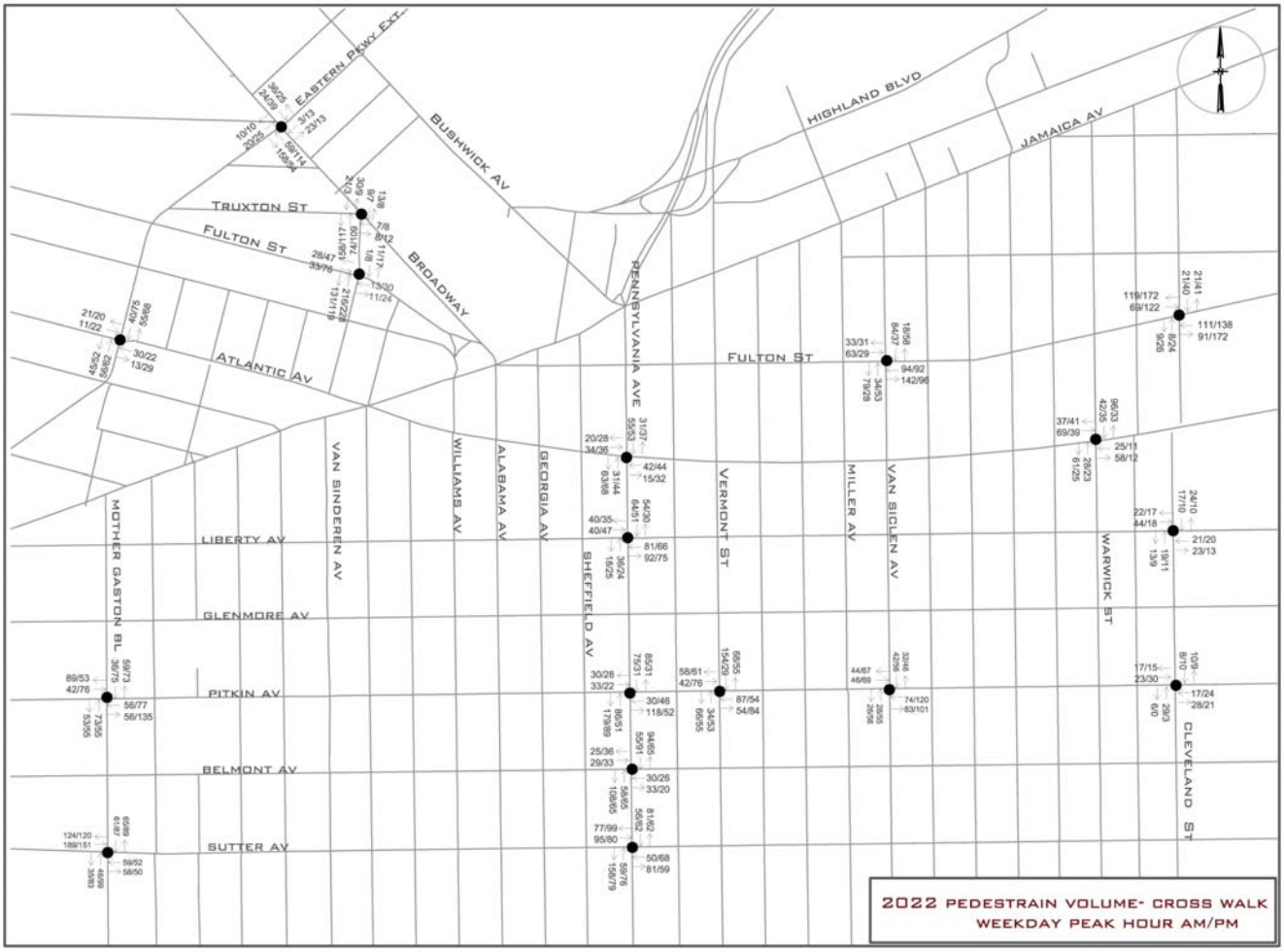
Future Conditions Pedestrian Analysis

The 2022 future pedestrian volumes were projected using the same growth rate applied to traffic volume (0.5% per year for the first five years and 0.25% per year for the next five years).

The results of the future condition crosswalk analysis for the two peak periods reveal that all crosswalks would operate at LOS A or B. Figure 7-6 shows the 2022 pedestrian volumes for the AM and PM peak hours. Appendix B shows the future crosswalk level of service analysis table.

Pedestrian volumes are also expected to increase in the study area resulting from economic growth and new developments that can outcome from East New York Rezoning. This could result in even higher pedestrian volumes that are not reflected in the analysis. However, this should not create any significant pedestrian impacts.

Figure 7-6: 2022 Future Pedestrian Volume – AM/PM Peak Hour



TRANSIT

8. TRANSIT

New York City Transit provides both bus and subway service in the study area. There is bus or train service on every major east-west corridor (Jamaica Avenue, Fulton Street, Liberty Avenue, and Sutter Avenue) as well as the major north-south corridor (Pennsylvania Avenue). Seven bus lines (Q56, Q24, B12, B14, B20, B25, and B83), five subway lines (A, C, J, Z, and L), and one Long Island Railroad line (City Zone Branch - East New York stop) operate within the study area.

Broadway Junction-East New York is the main station in the transit hub. Five subway lines (A, C, J, L, and Z) and five bus routes (B20, B25, B83, Q24, and Q56) serve the station. According to the most recent data (2012) the station processes more than 2.75 million commuters per year.

Subway and Commuter Rail (LIRR)

The area is served by five subway lines with nine subway stations. They are: Broadway Junction (A, C, J, Z, and L), Van Siclen Avenue (C), Van Siclen Avenue (J and Z), Sutter Avenue (L), Atlantic Avenue (L), Liberty Avenue (C), Alabama Ave (J), and Cleveland Street (J). Figure 8-1 shows the subway lines and stops, LIRR station, and bus lines in the study area..

Subway lines serving the area:

The A Train (8th Avenue-Fulton Street Express) operates from 207th Street, Inwood to Lefferts Boulevard or Far Rockaway; and Rockaway Park, Queens during rush hours. It stops only at the Broadway Junction station during regular weekday and weekend operations; and makes local stops (Liberty Avenue and Van Siclen Avenue) after 11PM.

The C Train (8th Avenue-Fulton Street Local) operates from 168th Street, Manhattan to Euclid Avenue, Brooklyn from approximately 6:00AM to 11:00PM seven days a week. It provides service to Broadway Junction, Liberty Avenue, and Van Siclen Avenue.

The J/Z Train (Nassau Street-Broadway-Jamaica) operates from Broad Street, Manhattan to Jamaica Center-Parsons/ Archer Avenue, Queens. In the study area, it provides service to four stations – Broadway Junction, Alabama Avenue, Van Siclen Avenue, and Cleveland Street.

The L Train (14th Street-Canarsie Local) makes all stops between 14th Street-8th Avenue, Manhattan and Rockaway Parkway, Brooklyn. In the study area, it provides service to three stations – Broadway Junction, Atlantic Avenue, and Sutter Avenue.

The Commuter Rail – LIRR has one station (East New York) in the study area located on Atlantic Avenue/East New York Avenue. It provides connections to Jamaica Center (Queens) and Atlantic Avenue/Barclay Center (Downtown Brooklyn).

2012 Subway Ridership

The Broadway Junction (A, C, J, Z, and L) station has the highest ridership in the study area. It is ranked 167 out of 421 stations with over 2,860,000 annual riders. The Atlantic Avenue (L) station has the lowest ridership in the study area and ranks 407 with approximately 445,000 annual riders.

Surface Transit

There are seven bus routes in the study area. The major transfer point along each route is Broadway Junction with access to the A, C, J, Z, and L trains; as well as LIRR.

Buses serving the area:

The **B12** runs between Brownsville and Prospect–Lefferts Gardens at all times. B12 buses run frequently with 3 to 7-minute intervals during peak hours. Within the study area, it operates along East New York Avenue.

The **B14** runs between Brooklyn General Mail Facility and Crown Heights at all times. Within the study area, it operates along Sutter Avenue, Pitkin Avenue and Mother Gaston Boulevard.

The **B20** runs between Brooklyn General Mail Facility and Ridgewood, Queens. Within the study area, it operates along Pennsylvania Avenue, Fulton Street and Broadway. This bus does not provide overnight service. As a result

Figure 8-1: Transit Service in the Study Area

of the reconstruction of Van Sinderen Avenue (between Broadway and Fulton Street), the northbound stop on Van Sinderen Avenue will be relocated to Fulton Street (at Van Sinderen Avenue). Additionally, the northbound route in the vicinity of Broadway Junction will change slightly; instead of making a left from Fulton Street onto Van Sinderen Avenue, buses will proceed on Fulton Street to Eastern Parkway (right) to Broadway (left).

The **B25** runs between East New York and Fulton Landing at all times. Within the study area, it operates along Fulton Street.

The **B83** runs between East New York and Gateway Center Mall. Within the study area, it operates along Pennsylvania Avenue, Jamaica Avenue, Broadway, Van Sinderen Avenue, and Fulton Street. This bus does not provide overnight service.

The **Q24** runs between Jamaica, Queens and Broadway Junction, Brooklyn at all times. Within the study area, it operates along Atlantic Avenue, Pennsylvania Avenue, Fulton Street, and Broadway. Like the B20, the Q24 will be impacted by the reconstruction of Van Sinderen Avenue (between Broadway and Fulton Street) and the route changes will be the same.

The **Q56** runs between Jamaica, Queens and East New York, Brooklyn at all times. Within the study area, it operates along Jamaica Avenue and Fulton Street.

Bus Circulation and the East New York Bus Depot

NYCT buses command a higher than average share of the traffic in the study area and more so in the Broadway Junction transit hub. There are seven bus lines in the area that facilitate connection to the subway and LIRR. This transit convenience and opportunity however pose some real challenges for traffic operation and safety in the area.

Six of the seven bus lines serving the study area operate within the vicinity of the East New York Bus Depot located on Jamaica Avenue (between Fanchon Place and Broadway). In addition to bus traffic associated with the seven routes, there are additional bus trips generated by the Bus Depot. A survey of buses operating in the area during the AM peak period showed that a significant portion (39%) of the bus traffic in the area entered or exited the Bus Depot.

The B12, B20, B25, B83, Q24, and Q56 buses operating along Jamaica Avenue, Fulton Street, and East New York Avenue attract significant pedestrian traffic, especially for

intermodal transfers to/from the Alabama Avenue subway station (J/Z trains). Most of the intermodal transfers occur between the B12 and B25 buses that terminate and start their routes in the vicinity of the Depot (on Fulton Street and East New York Avenue). .

Bus Circulation Issues

A field reconnaissance of bus operations in the vicinity of the Bus Depot revealed the need for a detailed bus circulation survey to quantitatively assess and evaluate traffic operations and safety. The reconnaissance identified issues to be addressed such as:

1. Pedestrian safety concerns in crossing East New York Avenue/Jamaica Avenue for intermodal connections between subway, B12, and B25.
2. Vehicular safety associated with the B12 loop (turnaround) to start its WB route on East New York Avenue.
3. Vehicular safety associated with the B25 loop (turnaround) from East New York Avenue EB to Fulton Street WB.
4. Many "near misses" and accidents between buses and other vehicles at the intersection of Georgia and Jamaica Avenues.

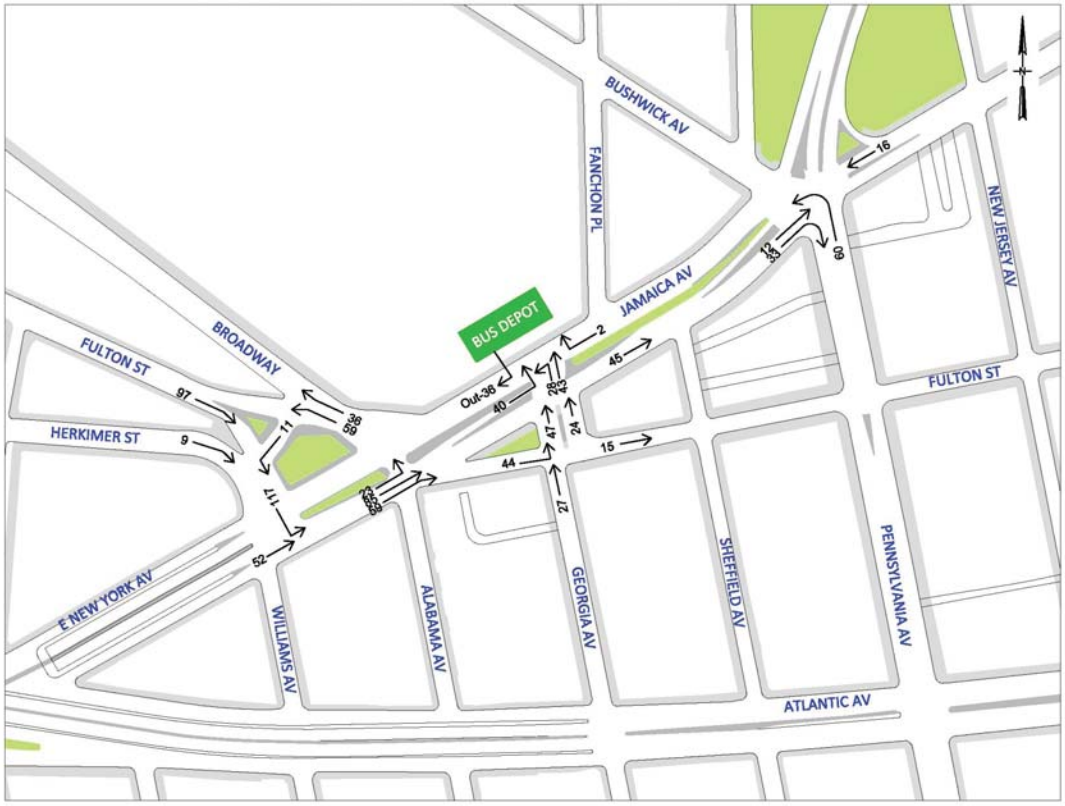
Bus Circulation Survey & Proposals

A bus circulation survey was conducted for a three-hour period (7:30 – 10:30AM) during peak demand to document bus traffic travel paths and dwell times in stops or layovers, see Appendix XX for survey details . The data was collected at seven control points listed below. The survey locations were:

1. East New York Avenue/Herkimer & Fulton Streets
2. Broadway/Jamaica Avenue
3. East New York Avenue/Fulton Street/Alabama Avenue
4. Jamaica Avenue/Georgia Avenue
5. Fulton Street/Georgia Avenue
6. Jamaica Avenue & Pennsylvania Avenue, and
7. Broadway/Fulton Street

Figure 8-2 shows the AM peak period (7:30 – 10:30) bus volumes around the East New York Bus Depot area. The heaviest bus traffic converging on the area originated from Fulton Street (west of East New York Avenue).

Figure 8-2: Bus Traffic Volumes (AM 3-Hour Peak)



B12 Loop and Conflicts

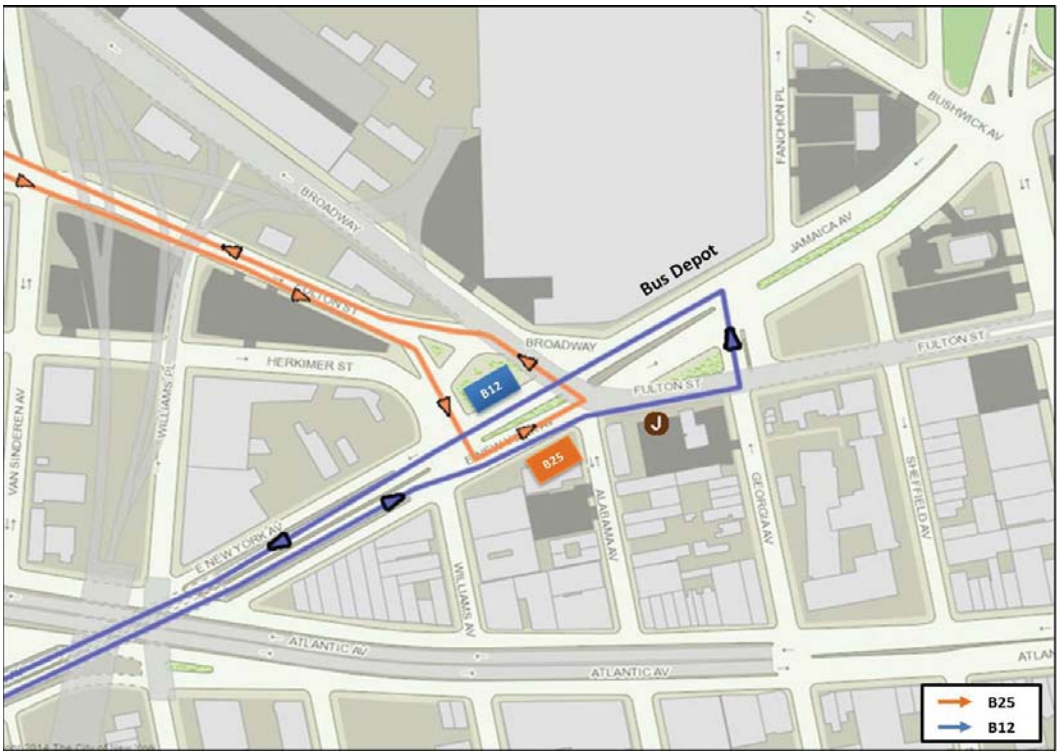
The B12 terminates its eastbound route at the intersection of Fulton Street/Georgia Avenue and begins the westbound route at the intersection of East New York Avenue/Fulton Street. After passengers disembark (Fulton Street/Georgia Avenue), buses make a left onto Georgia Avenue then another left onto Jamaica Avenue to commence their route. This turnaround poses safety concerns for both passengers and bus drivers. For passengers/pedestrians, the risk is most apparent as they cross East New York Avenue (sometimes against the signal) from the Alabama Avenue station to connect to the B12 westbound at East New York Avenue/Fulton Street. For bus drivers, traversing the wide, unsignalized Georgia Avenue/Jamaica Avenue intersection is also fraught with challenges. See existing B12/B25 turnaround in Figure 8-3.

B25 Loop and Conflicts

The B25 terminates and begins at the intersection of East New York Avenue/Alabama Avenue (south-west corner). The B25 loop is problematic in that it makes a permitted left turn that conflicts with a prohibited through movement that is regularly violated.

To mitigate safety risks associated with the B12 and B25 bus loops, geometric and operational changes were developed in three alternatives as discussed below.

Figure 8-3: Existing B12/B25 Bus Loop



B12/B25 Loop Proposal - Alternative 1

Alternative 1, shown in Figure 8-4, proposes the following:

- B12: Consolidate the last and first stop at Fulton Street/ Georgia Avenue similar to the B25 and, signalize the Georgia Avenue/Jamaica Avenue intersection.
- B25: Retain the current bus loop, layover, as well as first and last stops. Convert Alabama Avenue from two-way to one-way operation NB between East New York Avenue and Atlantic Avenue; reconfigure Alabama Avenue NB approach to accommodate a right turn only lane.

B12/B25 Loop Proposal - Alternative 2

Alternative 2 shown in Figure 8-5, proposes the following:

- B12: Maintain the current last and first stop as well as layover. Instead of using Georgia Avenue for the turnaround, buses continue to Pennsylvania Avenue NB and left to Jamaica Avenue WB.
- B25: Convert Alabama Avenue from two-way operation to one-way SB between East New York Avenue and Atlantic Avenue; convert Williams Avenue between Atlantic Avenue and East New York Avenue to one-way northbound.

Figure 8-4: B12/B25 Bus Loop Proposal - Alternative 1

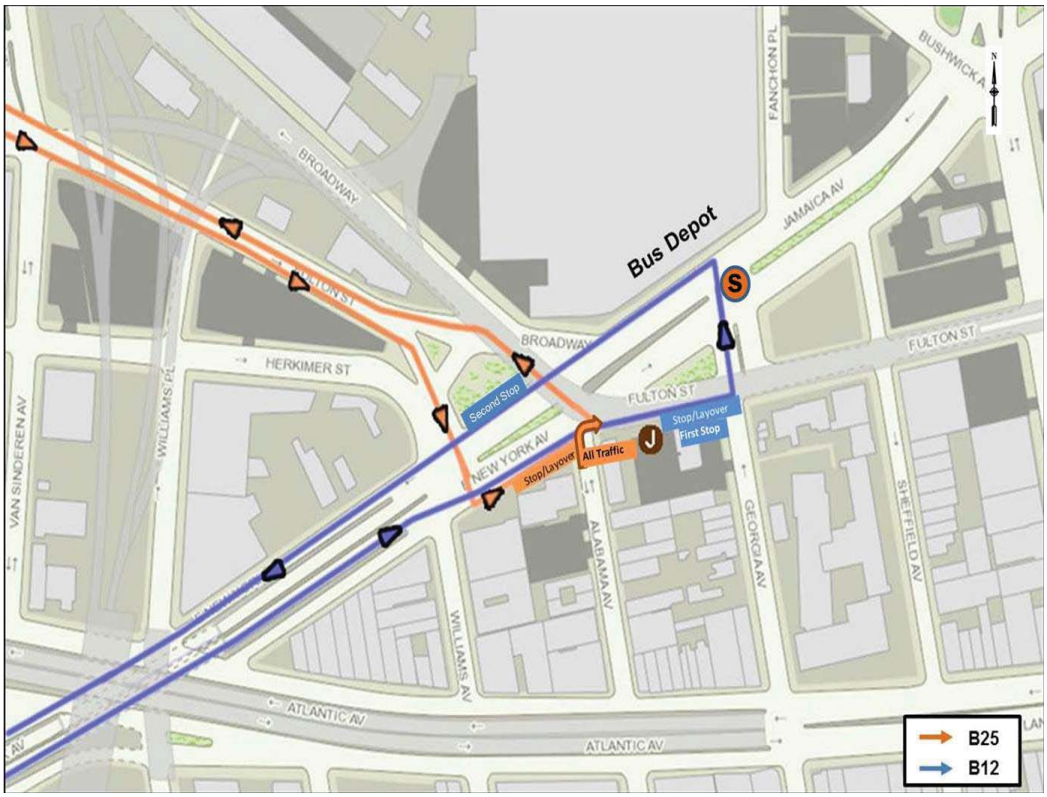
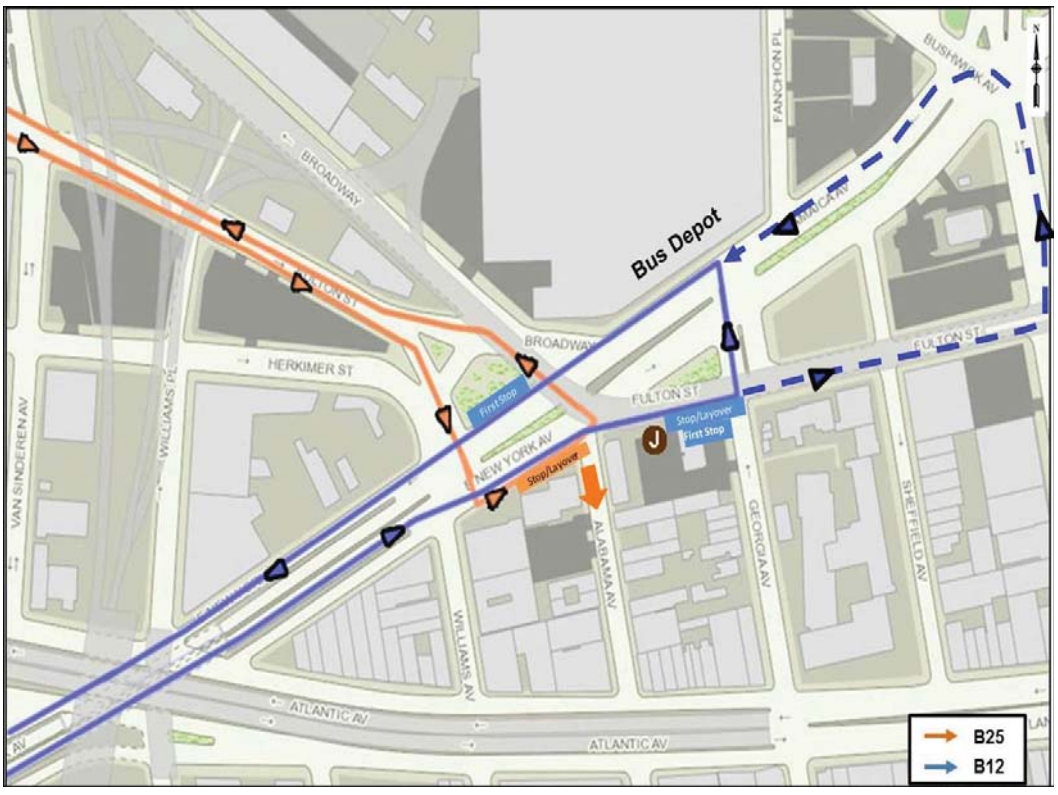


Figure 8-5: B12/B25 Bus Loop Proposal - Alternative 2

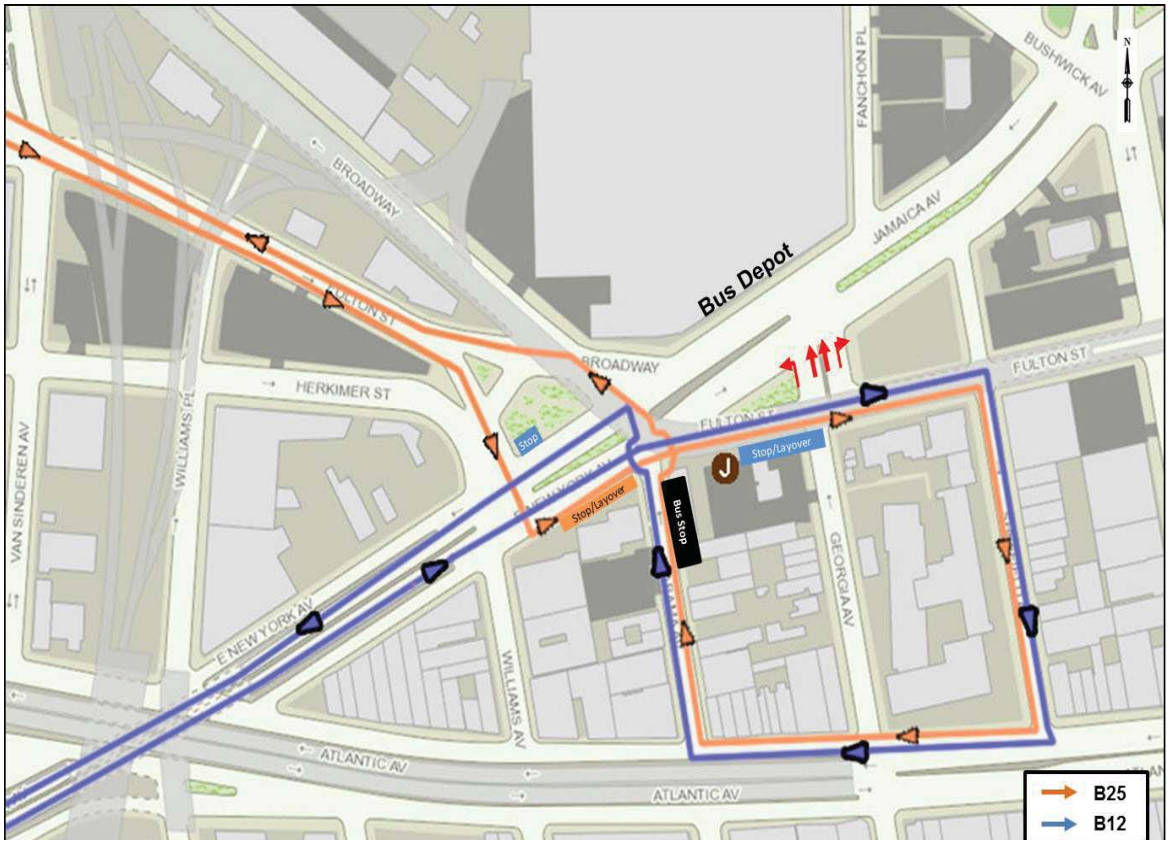


B12/B25 Loop Proposal - Alternative 3 (preferred)

Alternative 3, shown in Figure 8-6, proposes the following:

- B12/B25: Relocate the first stop for both buses to the southeast curb on Alabama Avenue/Fulton Street. The new turnaround would be Sheffield Avenue, Atlantic Avenue, and Alabama Avenue before proceeding on their normal WB route. The layover location would remain the same for both buses.

Figure 8-6: B12/B25 Bus Loop Proposal - Alternative 3



INDUSTRIAL BUSINESS ZONE

9. INDUSTRIAL BUSINESS ZONE

The East Brooklyn Industrial Business Zone (IBZ) constitutes about one-sixth (1/6) of the Highland Park-East New York Transportation Study area. It is bounded by East New York/Atlantic Avenue to the north, Sheffield Avenue to the east, Sutter Avenue to the south, and Powell Street/ Christopher Avenue to the west. Figure 9-1 shows the IBZ within the study area. Because the characteristics of the trips generated by industrial and manufacturing uses in the IBZ differ from the general trips in the study area, special effort was made to identify, define, and evaluate problems relating to roadway conditions, traffic, public transportation and parking needs impacting the businesses and to address their concerns.

Existing Conditions

The IBZ covers a 49-block area of approximately 100 acres. The current zoning (M1-4 and M3-2) limits building size to low density manufacturing with some commercial and residential uses. There are approximately 100 businesses – mainly in the sectors of transportation, warehousing, educational services, health care and social assistance, steel and metal fabrication, woodworking, and manufacturing. A DCP survey has shown that employment in the IBZ increased about 34% between 2002 and 2011 (from 2,996 to 4,013 jobs). Almost half of the businesses in the IBZ are in the industrial and manufacturing sector. Some of the current businesses in the area are scrap yard, metal works, candle manufacturing, bus parking and storage.

Street Network

The street network in the IBZ is a regular grid with narrow (30' feet wide) one-way northbound/southbound streets permitting parking on both sides. The east-west streets operate two-way except for Glenmore and Belmont Avenues, which operate one-way eastbound. The two-way corridors (Liberty, Pitkin and Sutter Avenues) are between 36' to 41' feet wide with one moving lane and parking lane in each direction.

Transportation

The IBZ area is served by NYCT buses and subway as well as commuter rail. The NYCT L train (two stations in the IBZ); Broadway Junction subway station (Van Sinderen Avenue/ Fulton Street), and Long Island Rail Road (LIRR) East New York station (East New York Avenue/Atlantic Avenue) are

Figure 9-1: East Brooklyn Industrial Business Zone

all located within walking distance. Two bus lines operate on the periphery of the IBZ – the B12 and B14 along East New York Avenue and Sutter Avenue, respectively. In terms of goods movement, Atlantic Avenue – a through truck route, is the only truck route in close proximity to the IBZ. Figure 9-2 shows transit access and truck route in proximity to the IBZ area.

Parking

A detailed IBZ parking supply and demand survey was done. Generally parallel on-street parking is permitted in the IBZ. However, as shown in the pictures below diagonal parking was observed on a few blocks along Snediker Avenue, Glenmore Avenue, and Sutter Avenue (adjacent to NYPD stations). On-street parking is generally permitted on all streets in the study area except where and when prohibited by street cleaning regulations for traffic operations. The parking regulations range from alternate side parking, metered parking, time-restricted parking, and authorized vehicles parking zones.

The IBZ parking survey revealed varying utilization with some areas having surplus parking spaces and others parking shortfall. In the areas where parking is in high demand, it is not unusual to see vehicles parked diagonally (on the sidewalk), particularly adjacent to NYPD facilities on Snediker and Sutter Avenues.

Additionally, parking capacity varies by time of day depending on parking regulations. There are approximately 1,874 on-street parking spaces in the IBZ; however, only 1,840 and 1,810 are available during the AM and PM peak hours, respectively. The average parking utilization is approximately 83.3% and 62.5%, see table 9-1.

DOT/Community Engagement Initiatives

To assist in determining the needs of the businesses in the IBZ, in addition to the general public outreach meeting DOT specifically met with the business community and conducted a business questionnaire survey.). Two meetings were held – one with a group of business owners including representatives from the East Brooklyn Business Improvement District and the Local Development Corporation and the second with one business owner.

The first meeting on March 20, 2014 members of the East Brooklyn Business Improvement District focused on traffic, trucks, and safety issues in the IBZ. In attendance were several business owners and representatives from the Local Development Corporation of East New York. The main issues raised are as follows:

- The need for enforcement at major intersections (such as Atlantic Avenue/Pennsylvania Avenue and Jackie Robinson Parkway/Jamaica Avenue/Pennsylvania Avenue/Bushwick Avenue) and along major corridors, particularly during rush hours, for traffic enforcement and maintaining traffic flow.
- Concern about illegally parked NYPD/NYPD personnel vehicles that impacted traffic flow and business operations. NYPD parks on sidewalks and corners, thus preventing trucks and school buses from easily navigating turns. They requested that DOT intervene to help address these issues.
- The need for additional enforcement to clear illegally parked vehicles on Pennsylvania Avenue (Jamaica Avenue to Pitkin Avenue) that contributes to congestion on the corridors.
- Public transportation connecting Brooklyn and Queens is inadequate.
- Interest in having angled parking installed in the IBZ to increase the number of available parking spaces.
- Concern about the potential traffic impact of a planned residential development on Junius Street (between Liberty and Glenmore Avenues) and asked what DOT can do to mitigate the potential traffic impacts.
- Request to review the parking regulations on Junius Street (from Liberty Ave southward) when sanitation regulations are in effect both day and night.

The second meeting with the Consolidated Bus Company (one of the largest businesses in the IBZ), brought to light the following:

- Traffic has increased on Liberty Avenue as motorists try to avoid congestion on Atlantic Avenue.
- Vehicles parked too close to business entrance (where buses enter/exit) causes accidents
- High traffic volume on Liberty Avenue makes it difficult for school buses to exit the site on Liberty Avenue (between Sheffield and Georgia Avenues).
- The Liberty Avenue/Georgia Avenue intersection is congested.
- Angled parking would be desirous to help meet parking demands.
- Bus standing only parking regulations (similar to what exists in Williamsburg) is desirous.
- The planned affordable income development on Junius Street will reduce the number of on-street parking spaces for businesses making the situation worse.

Table 9-1: IBZ Parking Utilization

SL	Roadway Street/Avenue	Metered Spaces	Non-Metered Spaces	Total Capacity	Capacity		Occupancy		Utilization Rate	
					AM	PM	AM	PM	AM	PM
1	Sheffield Ave bet. Atlantic Ave and Sutter Ave		164	164	164	164	152	133	92.7	81.1
2	Georgia Ave bet. Atlantic Ave and Sutter Ave		161	161	161	161	158	102	98.1	63.4
3	Alabama Ave bet. Atlantic Ave and Sutter Ave		127	127	127	97	86	67	67.7	69.1
4	Williums Ave bet. Atlantic Ave and Sutter Ave		155	155	153	153	123	99	80.4	64.7
5	Hinsdale Ave bet. Atlantic Ave and Sutter Ave		156	156	134	134	114	80	85.1	59.7
6	Snediker Ave bet. Atlantic Ave and Sutter Ave		145	145	145	145	174	167	120.0	115.2
7	Van Sinderen Ave bet. ENY Ave and Sutter Ave		0	0	0	0	0	0	0.0	0.0
8	Junious St bet. ENY Ave and Sutter Ave		111	111	111	111	111	60	100.0	54.1
9	Powell St bet. ENY Ave and Liberty Ave		152	152	152	152	127	75	83.6	49.3
10	Sackman St bet. ENY Ave and Liberty Ave		32	32	32	32	31	25	96.9	78.1
11	Christopher St bet. E NY Ave and Liberty Ave		29	29	29	29	19	12	65.5	41.4
12	East NY Ave bet. Christopher Ave and Snediker Ave		33	33	33	33	26	28	78.8	84.8
13	Atlantic Ave bet. Snediker Ave and Sheffield Ave	5		5	5	5	15	4	300.0	80.0
14	Liberty Ave bet. Sheffield Ave and Christopher Ave		145	145	135	135	126	73	93.3	54.1
15	Glenmore Ave bet. Sheffield Ave and Powell St		113	113	113	113	87	59	77.0	52.2
16	Pitkin Ave bet. Sheffield Ave and Powell St		134	134	134	134	66	45	49.3	33.6
17	Belmont Ave bet. Sheffield Ave and Powell St		100	100	100	100	48	27	48.0	27.0
18	Sutter Ave bet. Sheffield Ave and Powell St		112	112	112	112	69	76	61.6	67.9
	Total	5	1869	1874	1840	1810	1532	1132	83.3	62.5

IBZ Business Survey & Issues

The questionnaire survey was designed to identify the specific traffic and transportation needs of the businesses, see Appendix C. The survey focused primarily on parking needs, freight shipments and deliveries by the type and time, loading and unloading areas and other general traffic or transportation problems businesses are facing currently.

Survey Summary:

One hundred questionnaires were distributed and twenty-one responses were received. The results are summarized below:

- The majority of the businesses (about 18 of them) receive or ship deliveries using UPS, FedEx or privates trucks,
- The number of truck trips generated by the businesses either incoming and/or outgoing varies: five businesses have approximately between one to five trucks weekly in and out, another five businesses have between six to ten trucks weekly, two businesses have between 11 to 15 trucks in and out every week and about seven businesses have more than 16 trucks per week in and out,
- Shipments occur mainly during weekdays throughout the entire day in general,
- Ten businesses have on-street loading/unloading operation next to their site, six businesses have on-site loading/unloading, and five businesses do loading/unloading on-site and on-street,
- Twelve of the 21 businesses have approximately 388 employees drive to work and park in the IBZ, and
- Overall the survey identified a need for more curb space for truck loading/unloading.

Business Owners General Comments:

- Need for curb space on Snediker Avenue between Pitkin and Glenmore Avenues,
- Need to restrict parking adjacent to business driveways to facilitate entry and exit of large vehicles,
- Restrict parking on Pitkin Avenue to commercial parking to facilitate business pickup and drop-off,
- NYPD parked vehicles make it difficult for large trucks or buses to turn,
- More loading/unloading space is needed in the area,
- Sometimes it is necessary to block off curb space to facilitate truck deliveries,
- Street sweeping should be done during the night, and
- More enforcement of parking regulations is needed to prevent illegal long-term parking that impacts business operation.

In response to the BID and business specific concerns, DOT undertook to:

- Evaluate existing parking regulations to potentially increase parking supply in the IBZ area.
- Conduct field visit and inventory streets and locations with missing names and parking regulation signs.
- Investigate daylighting entrances to business. Trucks and school buses on some street segments have a hard time navigating turns due to parked vehicles.
- Identify and survey sidewalks sections in the IBZ needing repair and develop a plan for reconstruction.
- Investigate the feasibility of increasing parking supply with more angled parking spaces. The survey revealed that most of the north-south streets in the IBZ are 30 feet wide; streets less than 40 feet wide do not meet the design requirements for angled parking.
- Re-examine locations with congestion and approaches with delays and develop improvement measures for implementation where feasible.
- Bring to the attention of management the impact of NYPD parking has on business operations.

Figure 9-2 maps a summary of the traffic and transportation issues in the IBZ. This includes roadway condition, congested intersections and roadway segments, slow travel speed, high accident locations, missing street names and parking signs and parking regulation issues related to business operation inside the IBZ. Some of the issues observed are:

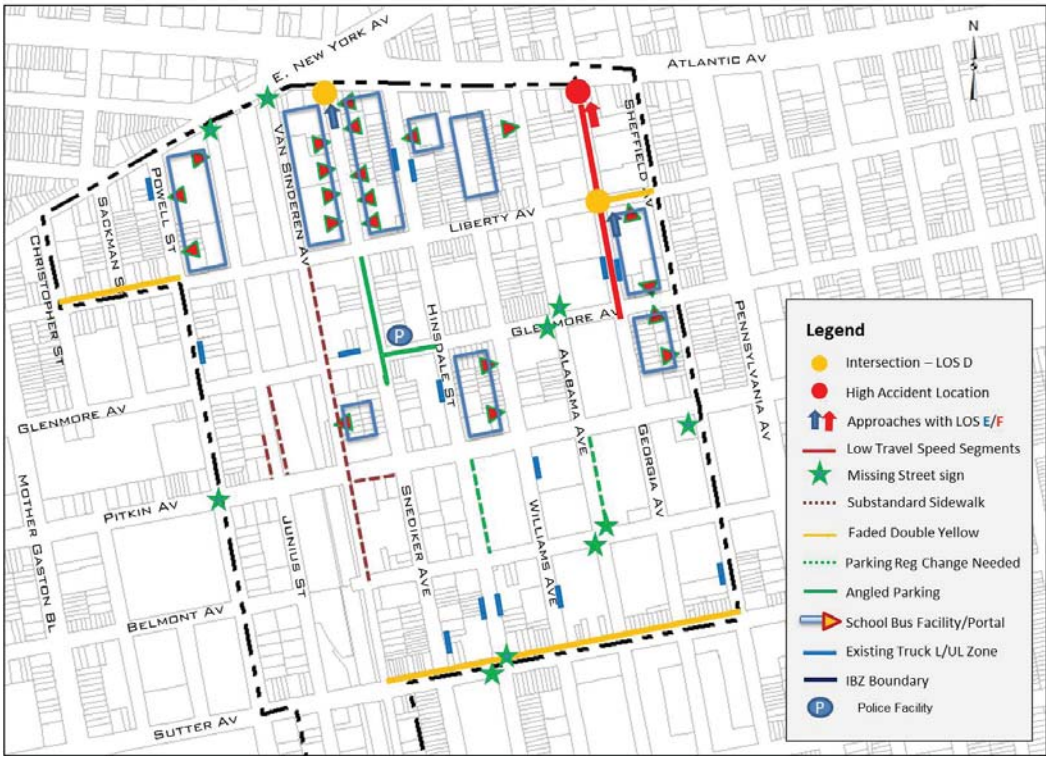
Substandard Sidewalks along:

- Van Sinderen Avenue – East New York and Liberty Avenues, Liberty and Glenmore Avenues, and Pitkin and Belmont Avenues.
- Junius Street (east and west curbs) - Glenmore and Pitkin Avenues.
- Pitkin Avenue (south curb) - Van Sinderen and Snediker Avenues.

Missing Street Signs:

- Powell Street/Pitkin Avenue - southwest corner.
- Junius Street/East New York Avenue - southwest corner
- Van Sinderen/East New York Avenues - southwest corner.
- Alabama/Glenmore Avenues – southwest and northeast corners.
- Alabama/Belmont Avenues – southwest and northeast corners.
- Sheffield/Pitkin Avenues – southwest corner.

Figure 9-2: Summary of Traffic and Transportation Issues in the IBZ



PUBLIC PARTICIPATION

10. PUBLIC PARTICIPATION

To provide the community and stakeholders the opportunity to bring to NYCDOT's attention their concerns and issues, a series of meetings (Technical Advisory Committee and Public) were held. The public outreach effort sought to obtain input from all stakeholders – elected officials, residents, business owners, civic associations, and community representatives. This served to assist in identifying traffic and transportation problems in the study area and the development of improvement measures. Three Technical Advisory Committee (TAC) meetings were held along with three public meetings in each of the study area's Community Districts (5 and 16). Additionally, two meetings were conducted with the business community of which notes are included in the Industrial Business Zone chapter. The meetings and dates are listed below. Detailed notes of the meetings are in Appendix D.

1. TAC Kickoff Meeting – March 28, 2013
2. Public Meeting #1 CB16 – May 9, 2013
3. Public Meeting #1 CB5 – May 22, 2013 (Re-scheduled)
4. Public Meeting #1 CB5 – June 25, 2013
5. TAC Meeting #2 – May 20, 2014
6. Public Meeting #2 CB16 – June2, 2014
7. Public Meeting #2 CB5 – June 5, 2014
8. TAC Meeting #3 – December 3, 2014
9. Public Meeting #3 CB5 – December 17, 2014
10. Public Meeting #3 CB16 – December 23, 2014
11. Meeting #4 with CB5-Transportation Committee – March 23, 2015
12. Public Meeting #5 CB5 – March 25, 2015

RECOMMENDATIONS

11. RECOMMENDATIONS

Drawing on the analyses, field observations, transit and traffic issues as well as community input, areas for potential improvements were identified in the study area. Figure 11-1 shows a combination of transportation issues present such as areas with traffic congestion, poor level of service, low travel speeds, high crash locations, pedestrian safety issues, bus circulation conflicts, and heavy truck volumes.

The recommendations were developed to enhance traffic operation and safety for all street users in the study area. These recommendations includes traffic capacity enhancements, parking regulation changes, signal timing changes, pedestrian safety and bus circulation enhancements. Figure 11-2 identifies the locations for improvements.

The improvement locations with description of their traffic issues and recommended improvements follows.

Figure 11-1: Study Area Traffic Issues

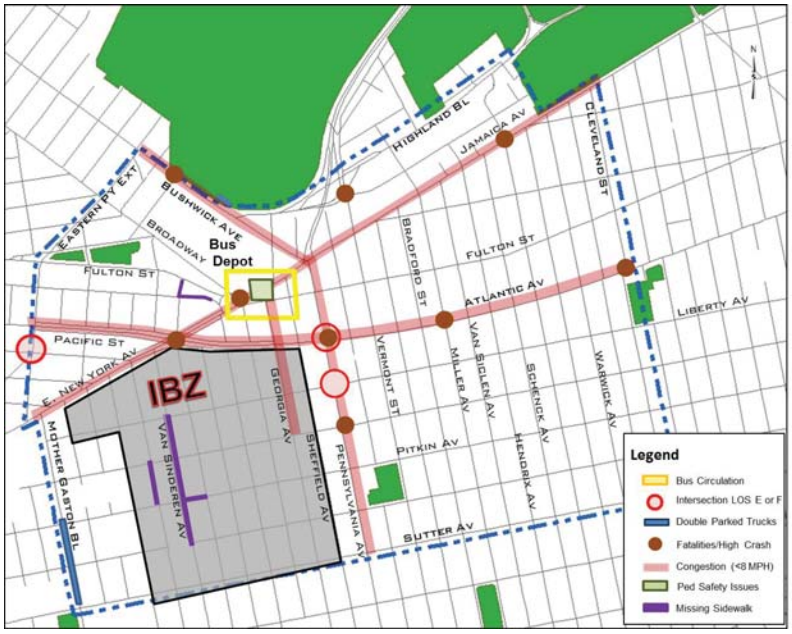
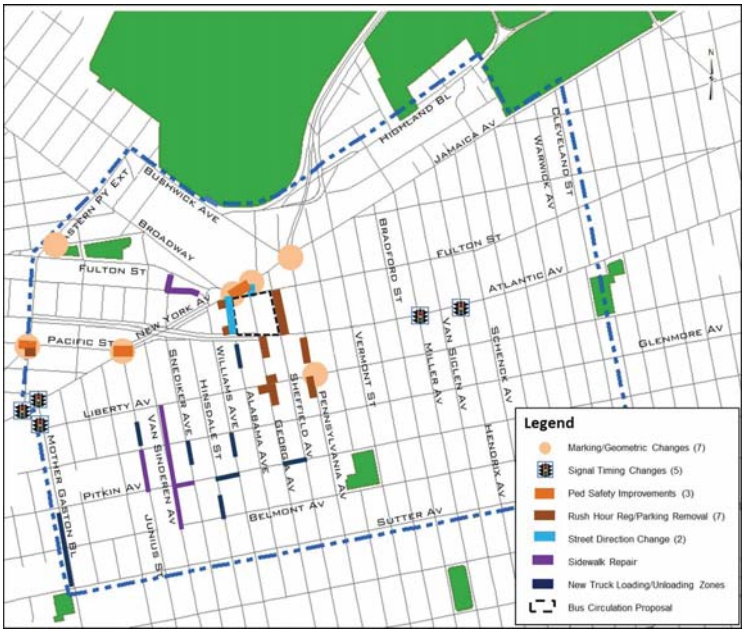


Figure 11-2: Improvement Locations



Georgia Avenue & Jamaica Avenue

Issues: Conflicts between buses entering the Bus Depot and SB traffic from Jamaica Avenue onto Georgia Avenue southbound making left turn onto Fulton Street. The existing and proposed conditions are shown in Figures 11-3a and 11-3b, respectively.

Proposal:

- Convert Georgia Avenue between Jamaica Avenue and Fulton Street from two- way street to one way northbound,
- Install stop sign and pedestrian crosswalk on Fulton Street and Georgia Avenue,
- Extend south-west curb of island and widen median, and
- Install pedestrian fence on median on Jamaica Avenue to discourage jaywalking.

Figure 11-3a: Georgia & Jamaica Avenues - Existing

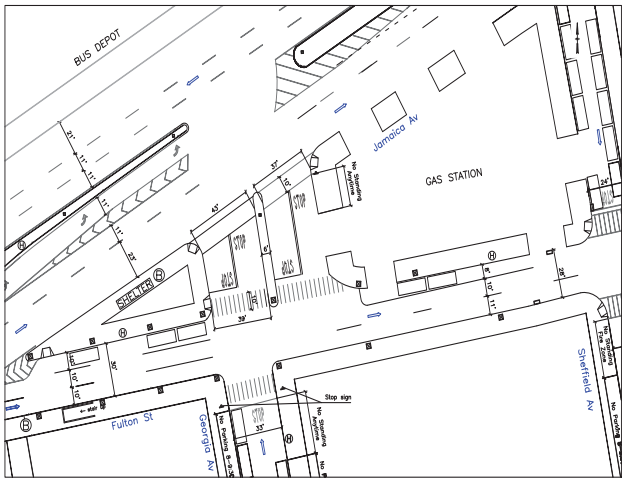
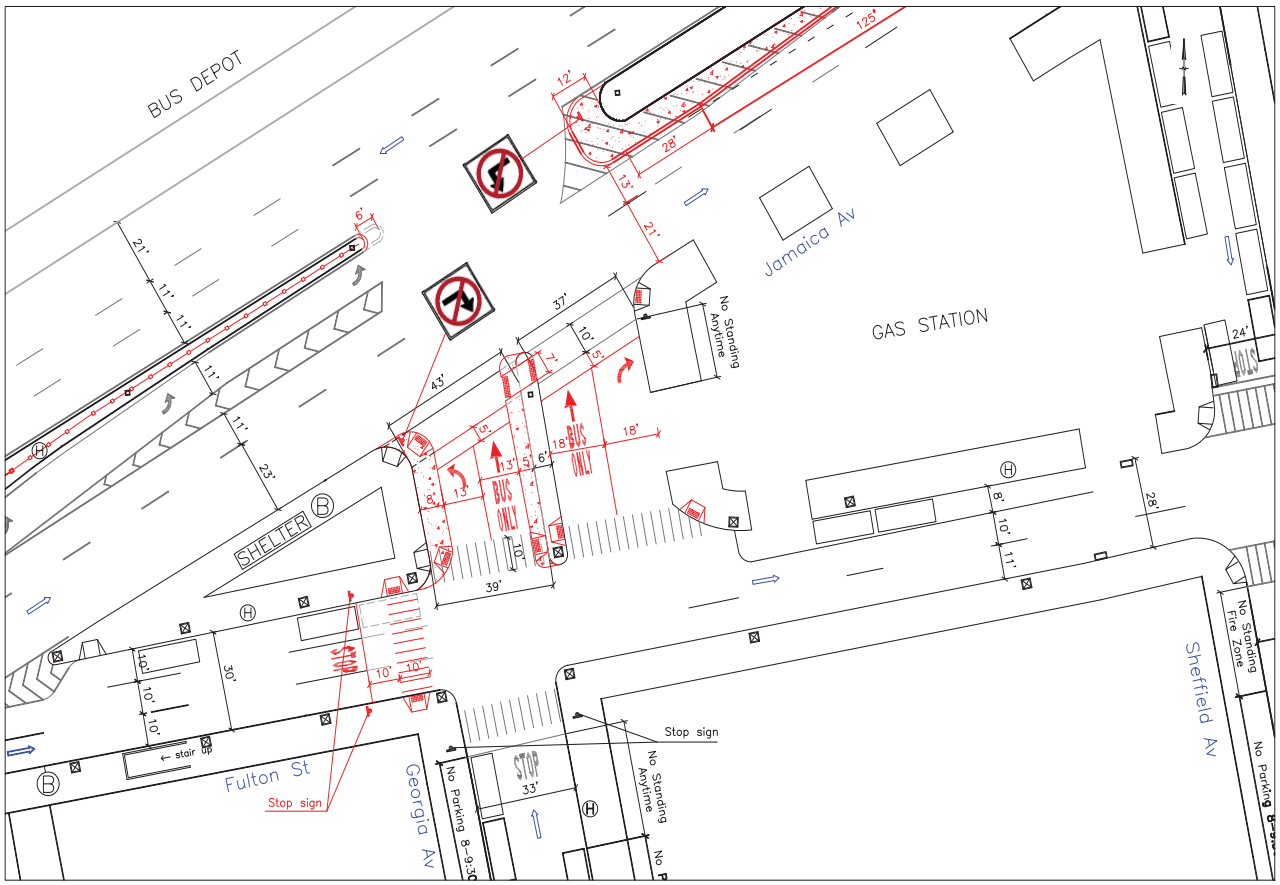


Figure 11-3b: Georgia & Jamaica Avenues - Proposed



Jamaica Avenue/East New York Avenue & Alabama Avenue

Issues: Conflicts between buses turning and thru traffic with pedestrians crossing Jamaica Avenue to transfer between subway and buses. The existing and proposed conditions are shown in Figures 11-4a and 11-4b, respectively.

Proposal:

- Convert Alabama Avenue from two-way operation to one-way northbound
- Extend south-west corner of Alabama Avenue to provide more pedestrian space
- Extend island (between Broadway and Fulton Street) to shorten east crosswalk
- Refurbish pavement marking, and
- Install pedestrian fence center median on Jamaica Avenue/ENY Avenue to discourage jaywalking.

Figure 11-4a: Jamaica/East New York Avenues & Alabama Avenue - Existing

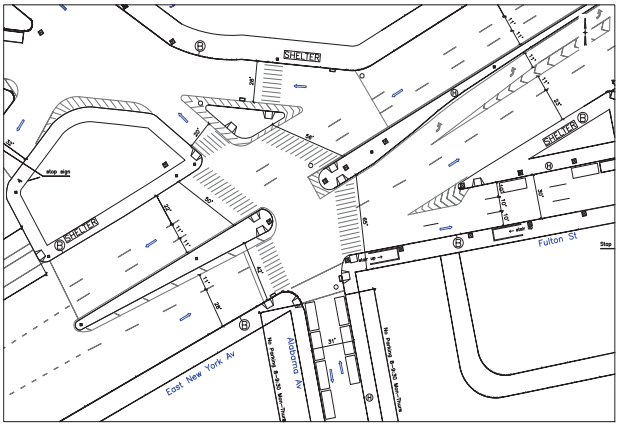
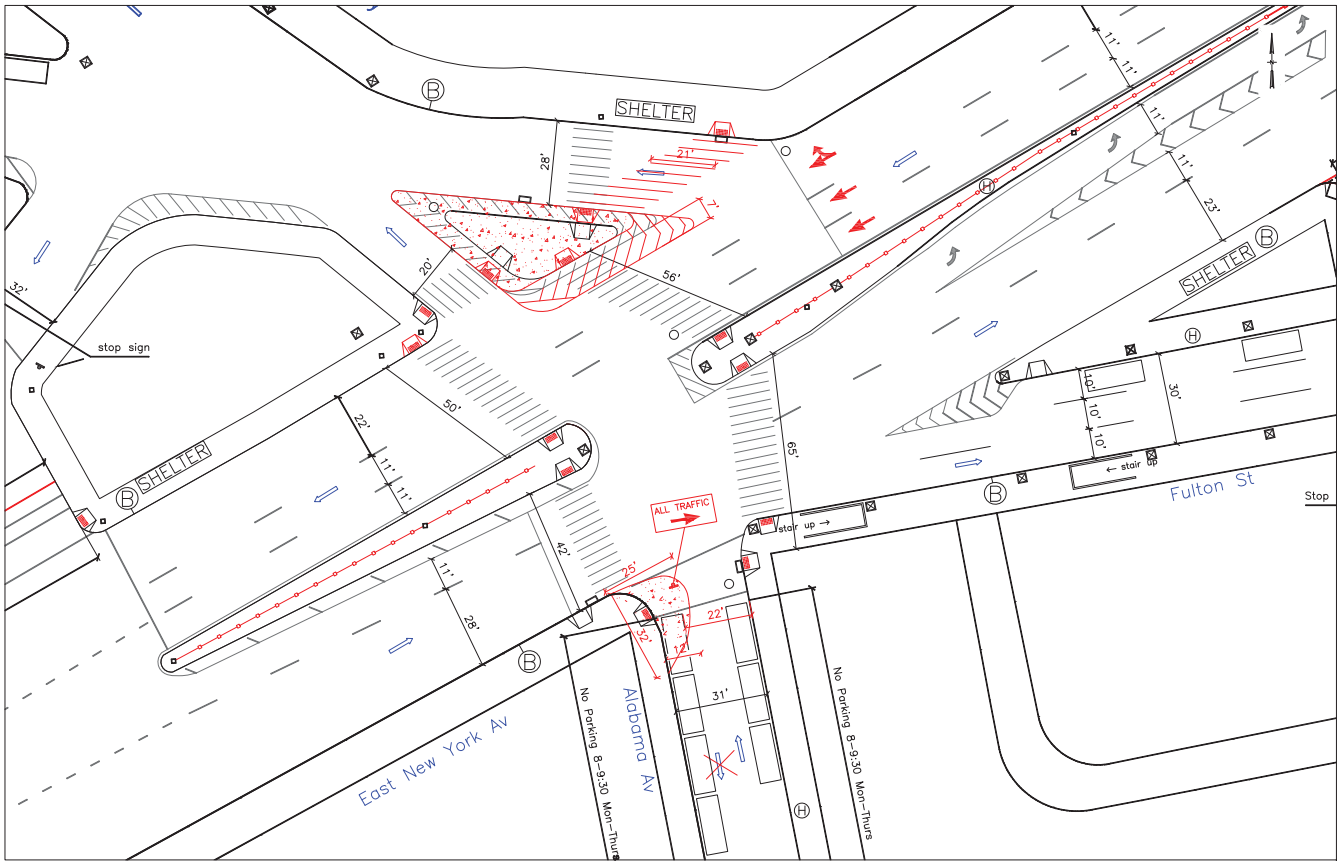


Figure 11-4b: Jamaica/East New York Avenues & Alabama Avenue - Proposed



Pennsylvania/Jamaica/Bushwick Avenues & Jackie Robinson Parkway

Issues: Conflicting northbound center lane markings and signal phasing; and heavy congestion. The existing and proposed conditions are shown in Figures 11-5a and 11-5b, respectively.

Proposal:

- Align signal phase with pavement markings by designating northbound center lane thru only (to Jackie Robinson Parkway),
- Install lane directional sign on northbound approach, and
- Install Qwick Kurb on Pennsylvania Avenue from Jamaica Avenue to Fulton Street.

Figure 11-5a: Pennsylvania/Jamaica/Bushwick Avenues & Jackie Robinson Parkway - Existing

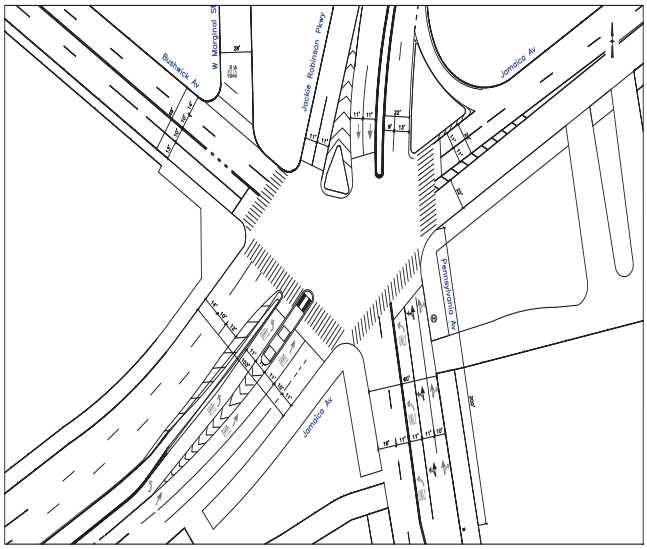
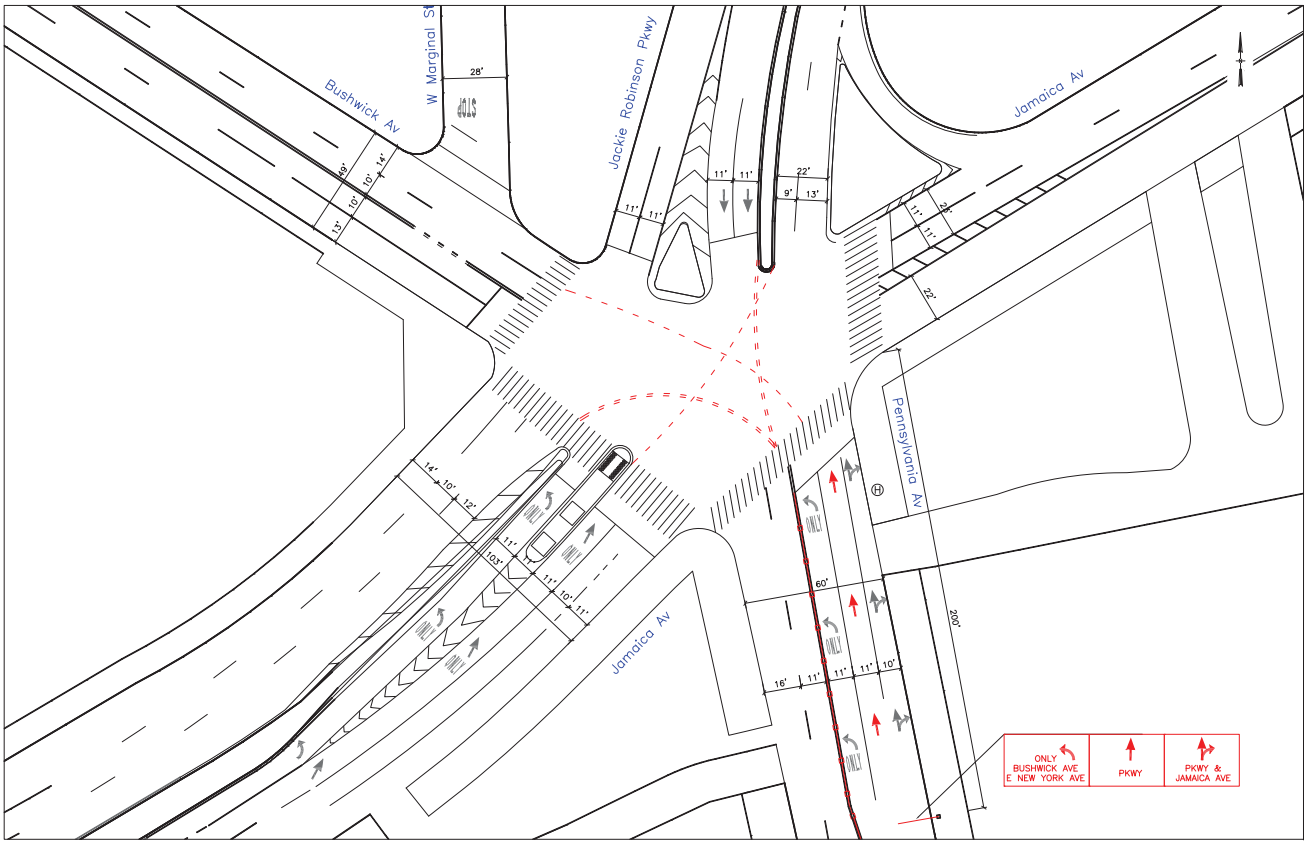


Figure 11-5b: Pennsylvania/Jamaica/Bushwick Avenues & Jackie Robinson Parkway - Proposed



Pennsylvania Avenue & Liberty Avenue

Issues: Congestion due to heavy north/south traffic and left turn demand. The existing and proposed conditions are shown in Figures 11-6a and 11-6b, respectively.

Proposal:

- Provide an exclusive northbound and southbound left turn bay and phase
- Prohibit parking on the west curb 100' feet from intersection to provide two receiving lanes (south leg)

Figure 11-6a: Pennsylvania Avenue & Liberty Avenue - Existing

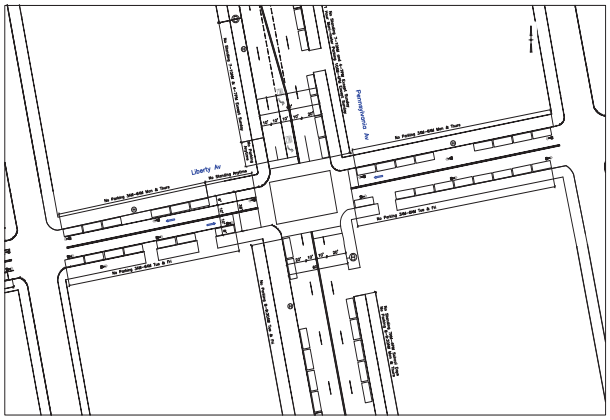
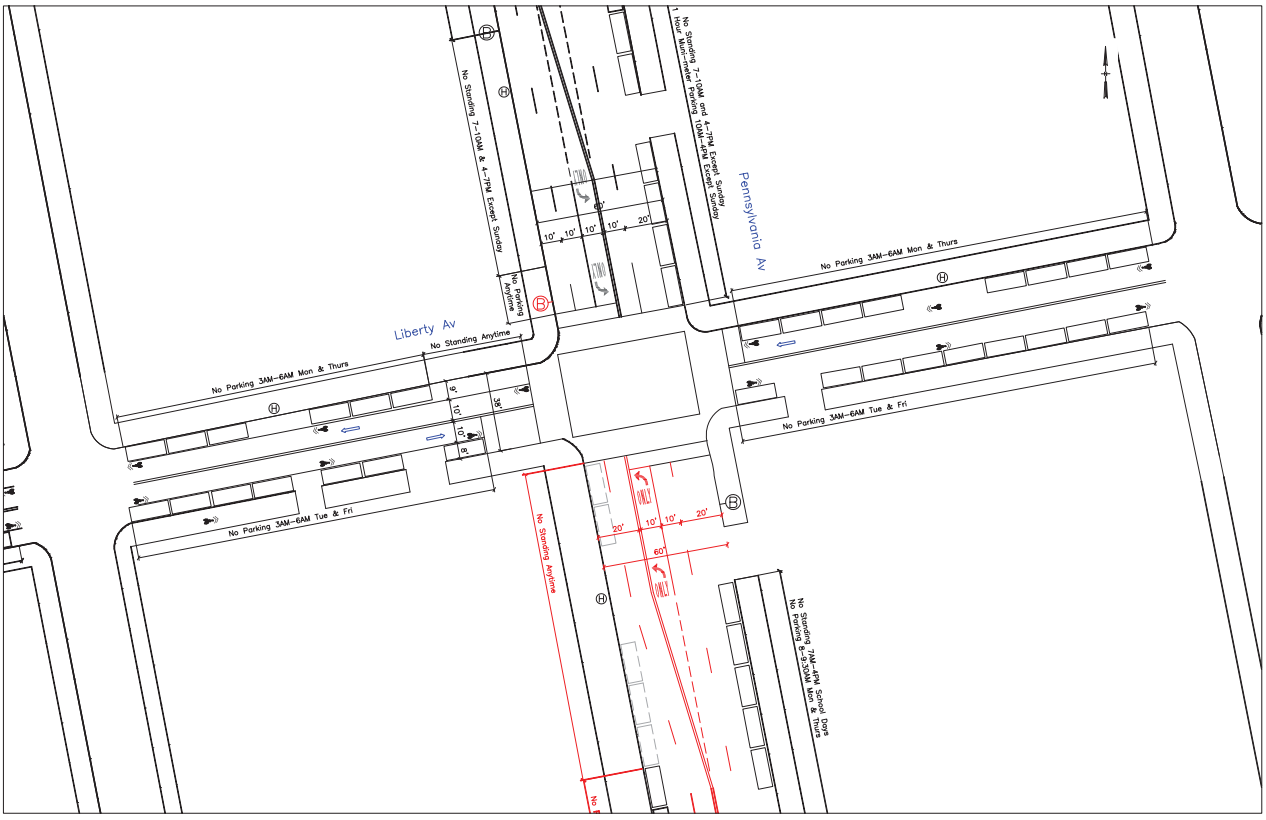


Figure 11-6b: Pennsylvania Avenue & Liberty Avenue - Proposed



Georgia Avenue & Liberty Avenue

Issues: Congestion on northbound, westbound and eastbound approaches. The existing and proposed conditions are shown in Figures 11-7a and 11-7b, respectively.

Proposal:

- Prohibit parking during rush hour on the northbound, westbound and eastbound approaches 60' feet from the intersection, and install a No parking sign 7AM-10AM and 4PM-7PM Monday to Friday.

Figure 11-7a: Georgia Avenue & Liberty Avenue - Existing

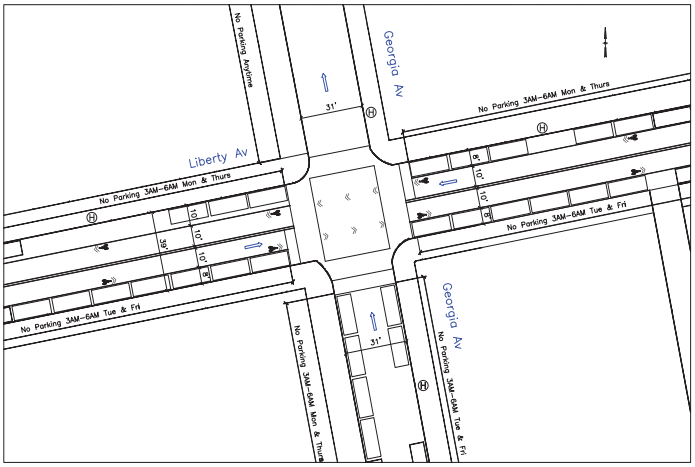
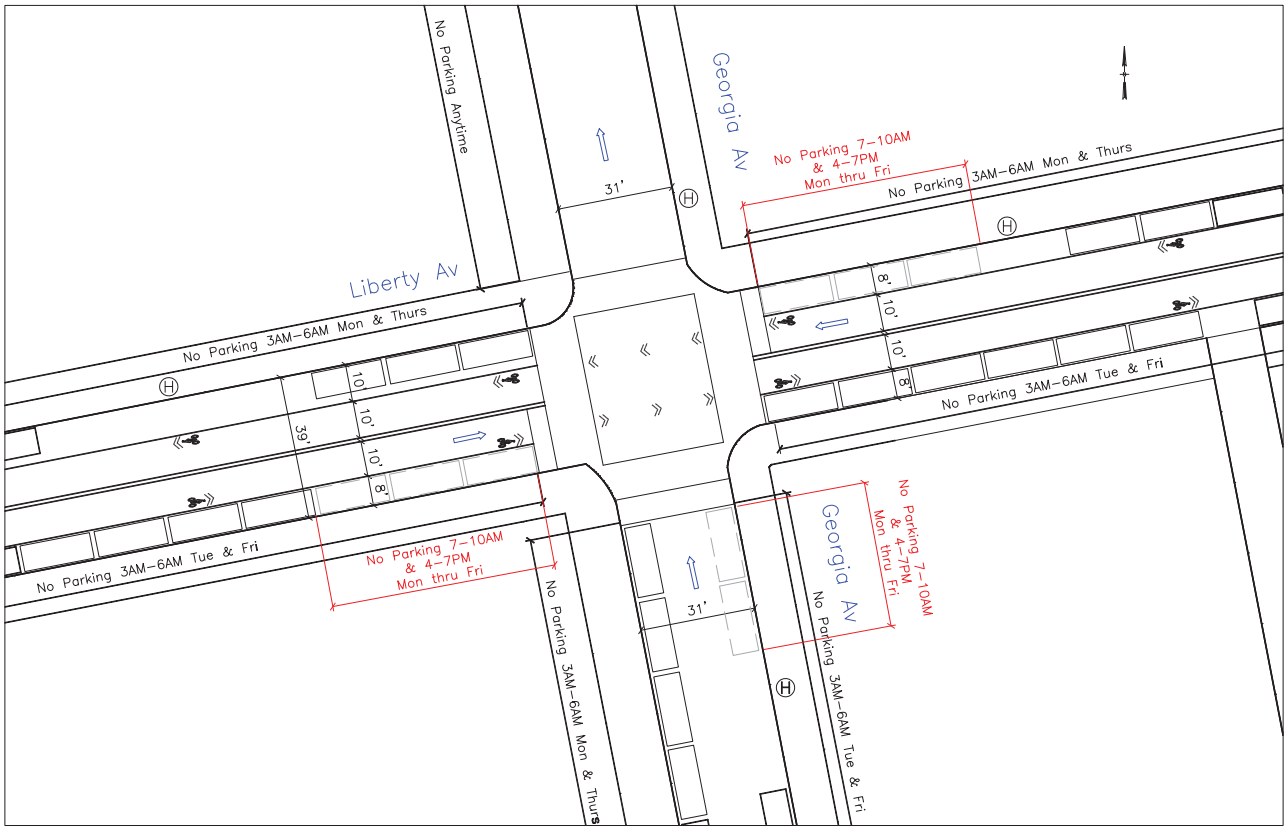


Figure 11-7b: Georgia Avenue & Liberty Avenue - Proposed



Georgia Avenue & Atlantic Avenue

Issues: Congestion on northbound approach and missing/no parking restriction sign on Georgia Avenue east curb near intersection. The existing and proposed conditions are shown in Figures 11-8a and 11-8b, respectively.

Proposal:

- Prohibit parking during rush hour on the north-bound (east curb) 100' feet from the intersection to provide additional lane, install a No parking sign 7AM-10AM and 4PM-7PM Monday to Friday.
- Install sanitation-cleaning parking regulation on east-curb of Georgia Avenue

Figure 11-8a: Georgia Avenue & Atlantic Avenue - Existing

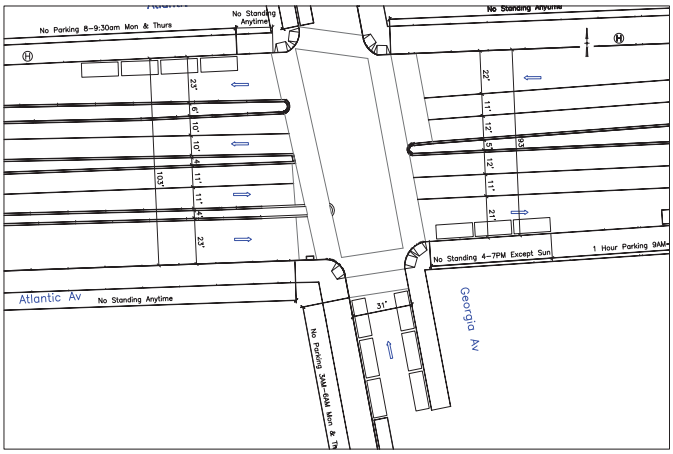
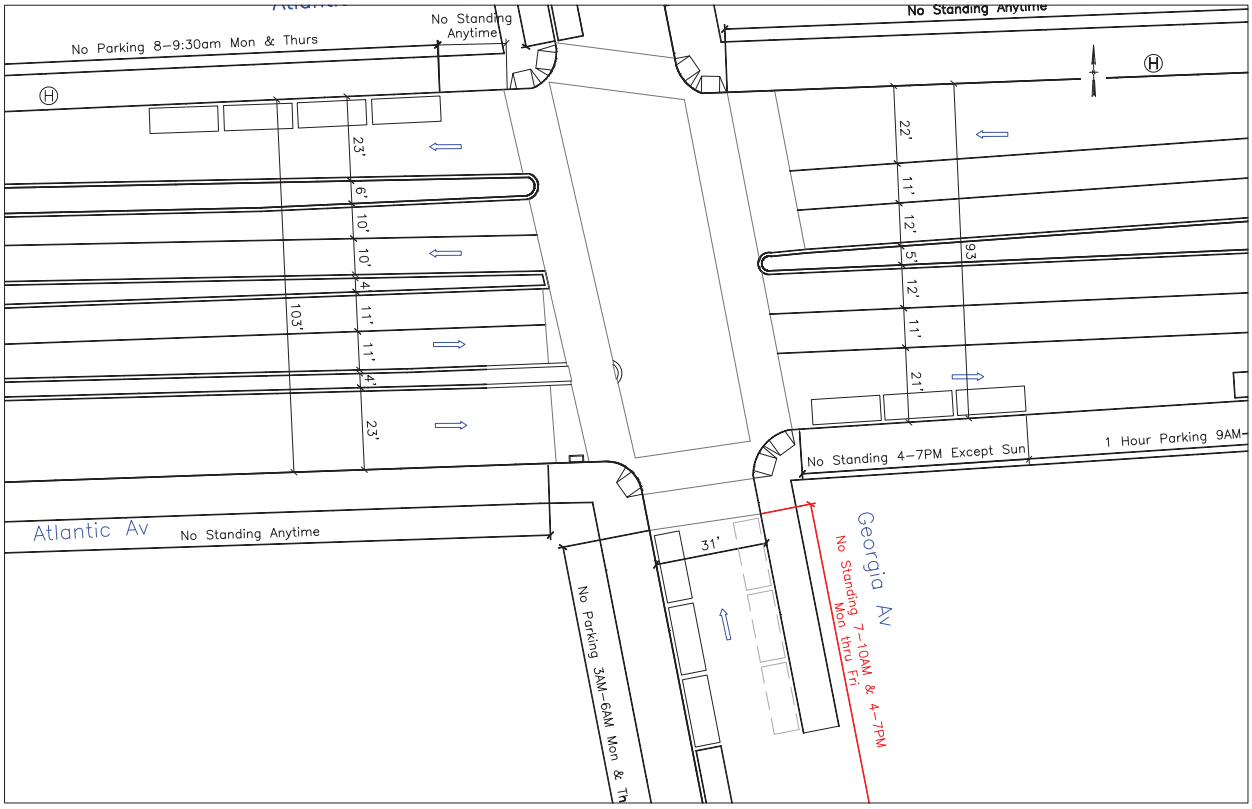


Figure 11-8b: Georgia Avenue & Atlantic Avenue - Proposed



Mother Gaston Boulevard & East New York Avenue

Issues: Congestion on northbound and southbound approaches; lack of right turn phases to complement pavement markings. The existing and proposed conditions are shown in Figures 11-9a and 11-9b, respectively.

Proposal:

- Install pavement marking to designate right turn lane on the eastbound and westbound approaches, and
- Shift three seconds of green time from the EB/WB phase to the NB/SB phase.

Figure 11-9a: Mother Gaston Boulevard & East New York Avenue - Existing

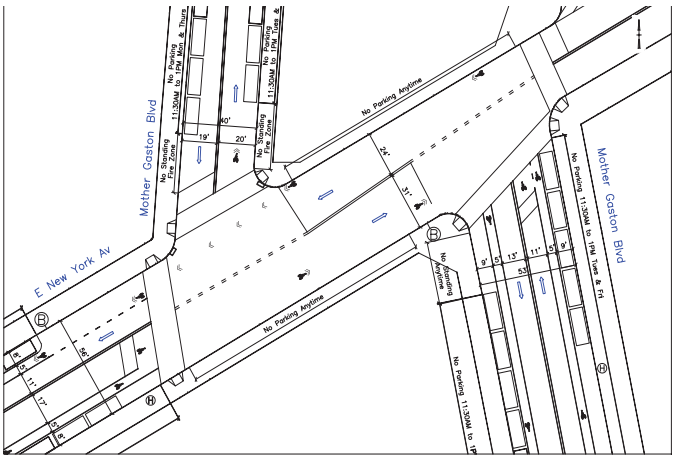
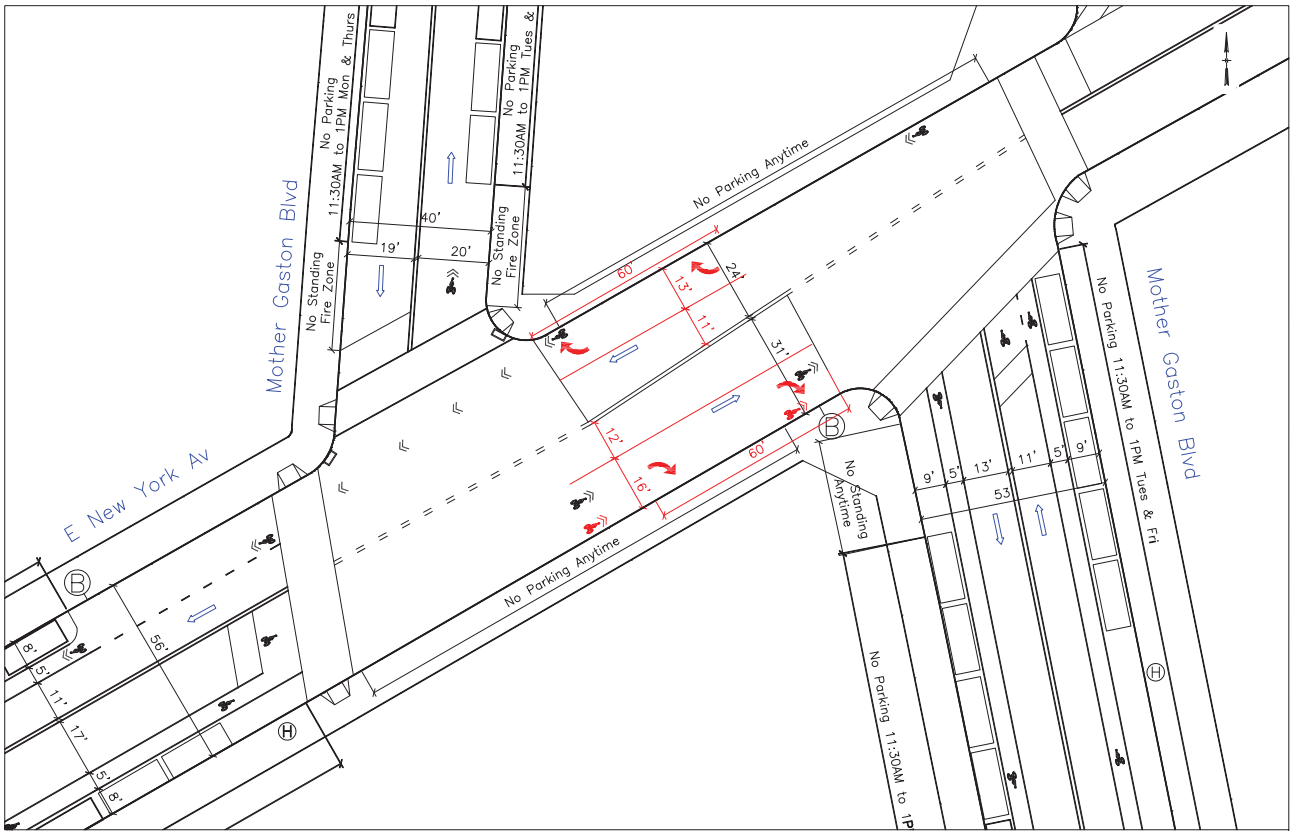


Figure 11-9b: Mother Gaston Boulevard & East New York Avenue - Proposed



Somers/Sackman Streets & Eastern Parkway Extension

Issues: **Wide streets with long pedestrian crosswalks.** **The** existing and proposed conditions are shown in Figures 11-10a and 11-10b, respectively.

Proposal:

- Install painted neckdowns to shorten crosswalks,
- Remove one parking space on the north curb, west leg of intersection on Somers Street, and install a No Standing Anytime sign.

Figure 11-10a: Somers/Sackman Streets & Eastern Parkway Extension - Existing

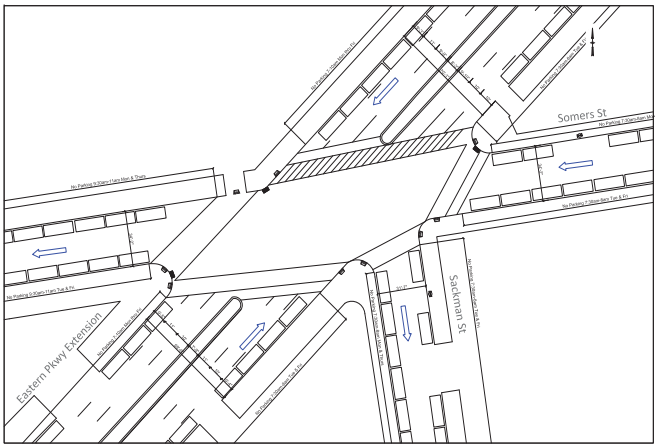
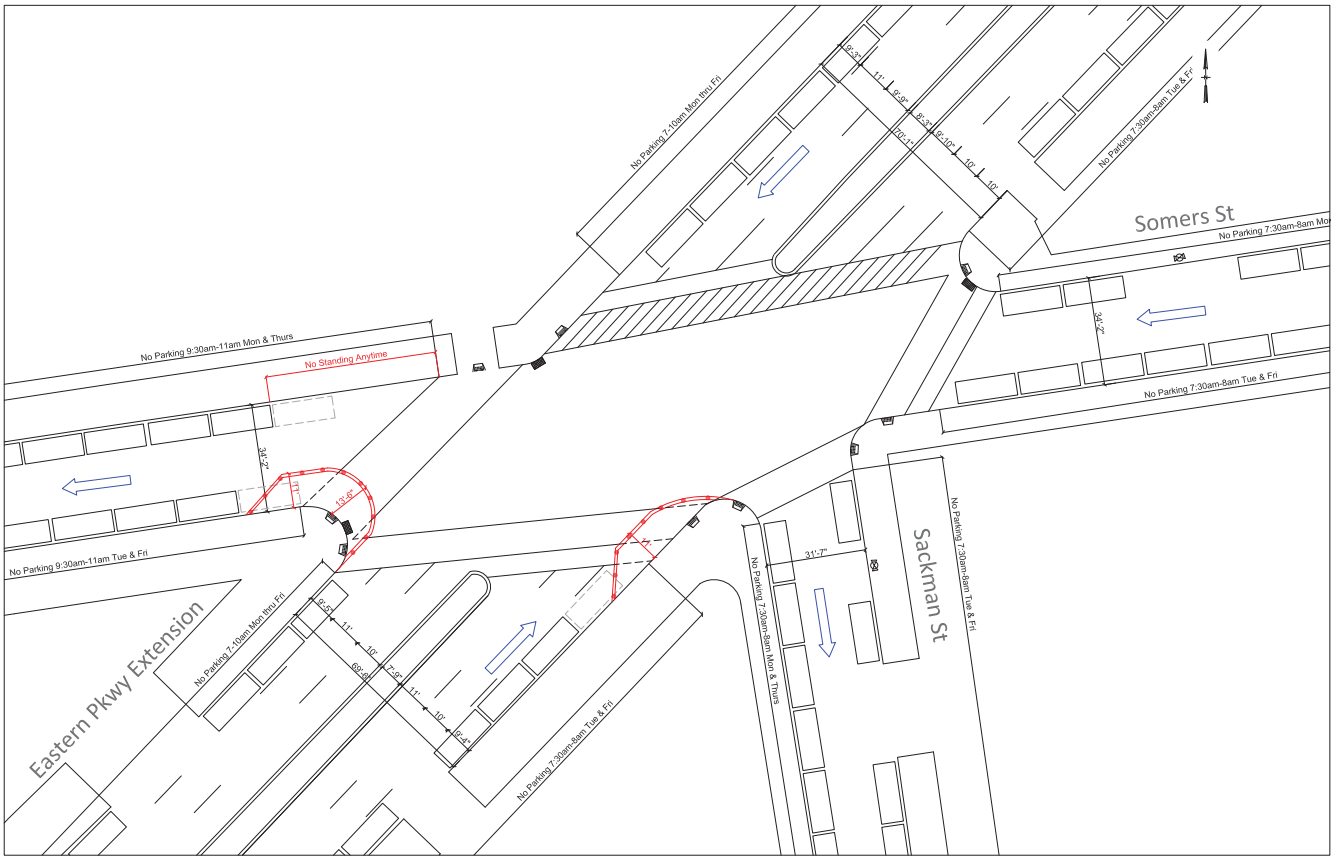


Figure 11-10b: Somers/Sackman Streets & Eastern Parkway Extension - Proposed



East New York Avenue & Junius Street

Issues: The east crosswalk on East New York Avenue is long having pedestrian crossing thru six lanes, and jaywalking to access LIRR and subway station entrance. The existing and proposed conditions are shown in Figures 11-11a and 11-11b, respectively.

Proposal:

- Create a new refuge island while extending the median tip and widening the east crosswalk,
- Install a fence to prevent mid-block crossing on East New York Avenue,
- Install a left turn lane on the mainline of East New York westbound approach while prohibiting the left turn from the service road to Junius Street (all traffic WB from service road must go thru) to eliminate conflicts,
- Install painted sidewalk extension with bollards at the East New York Avenue and Pacific St corner, and

Remove one parking space from the north curb of Pacific Street and East New York Avenue and install a No Standing Anytime sign.

Figure 11-11a: East New York Avenue & Junius Street - Existing

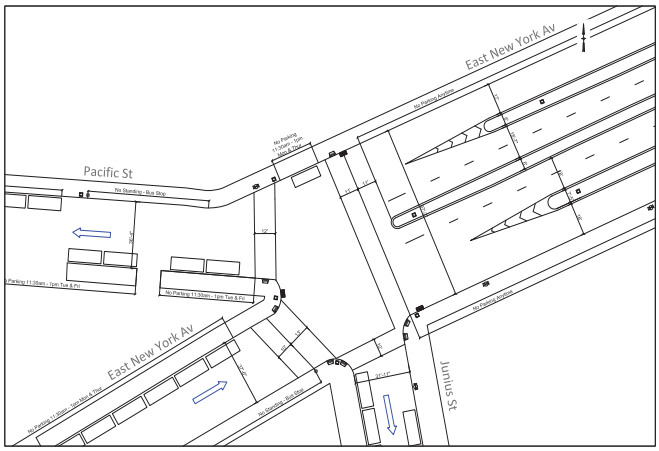
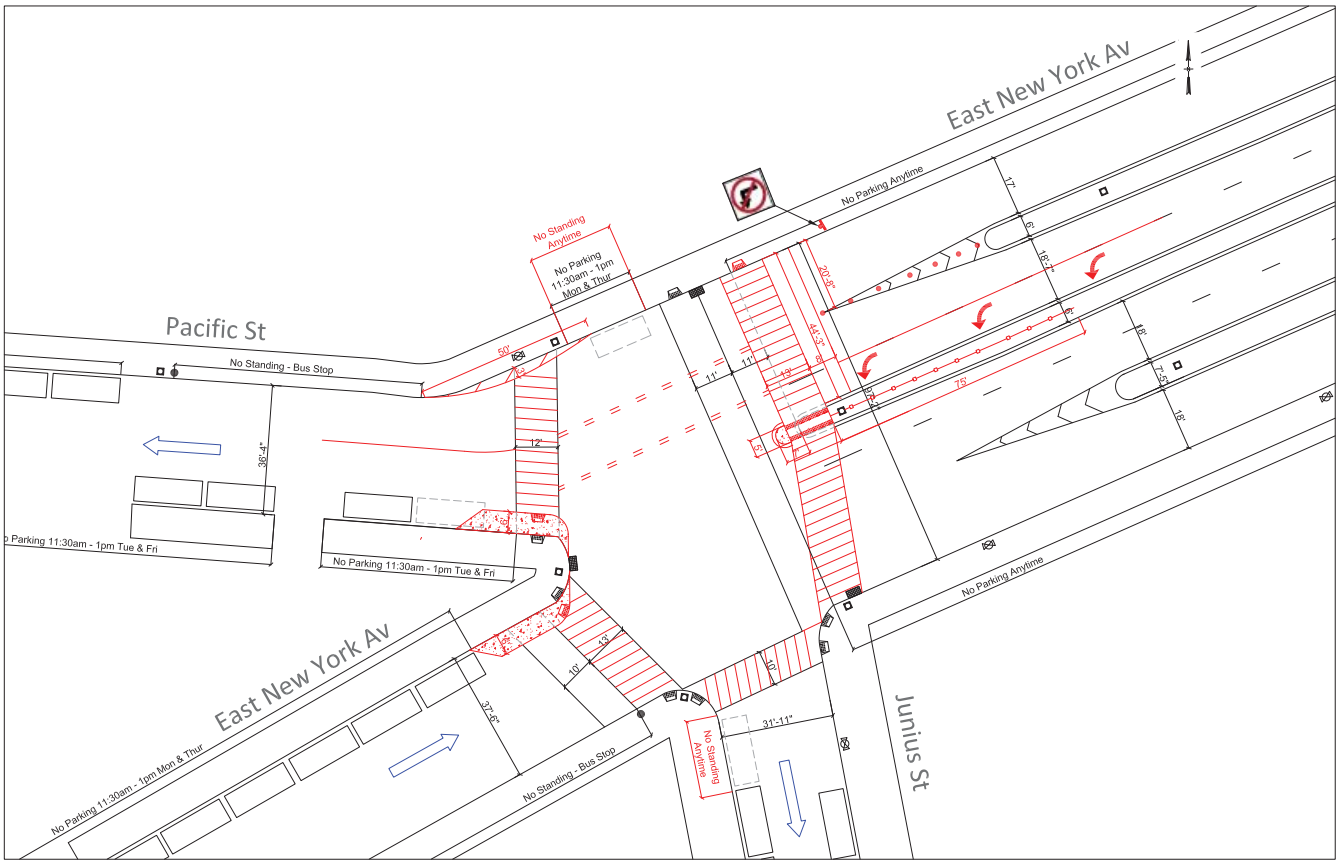


Figure 11-11b: East New York Avenue & Junius Street - Proposed



Eastern Parkway Extension/Mother Gaston Boulevard & Pacific Street

Issues: Congested westbound and southbound approaches; complex intersection with long crosswalks; and ineffective parking regulation signage. The existing and proposed conditions are shown in Figures 11-12a and 11-12b, respectively.

Proposal:

- Extend the south-west curb of Mother Gaston Boulevard and Eastern Parkway to shorten pedestrian crosswalks,
- Widen the median cut-thru on the south leg on Eastern Parkway Extension and install ADA tactile strips,
- Install rush hour regulation on south curb of Pacific Street 100' feet from the intersection to create additional westbound moving lane (NP 7-10AM & 4-7PM, M-F), and
- Install effective parking regulation sign on the east curb of Mother Gaston Boulevard.

Figure 11-12a: Eastern Parkway Extension/Mother Gaston Boulevard & Pacific Street - Existing

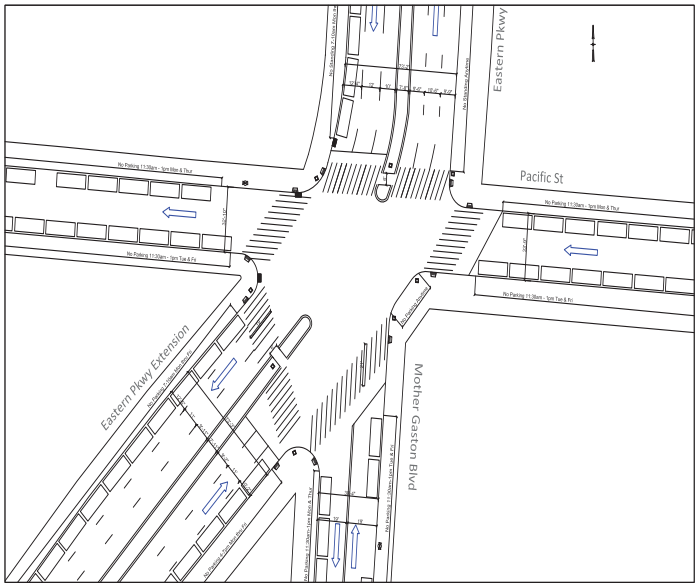
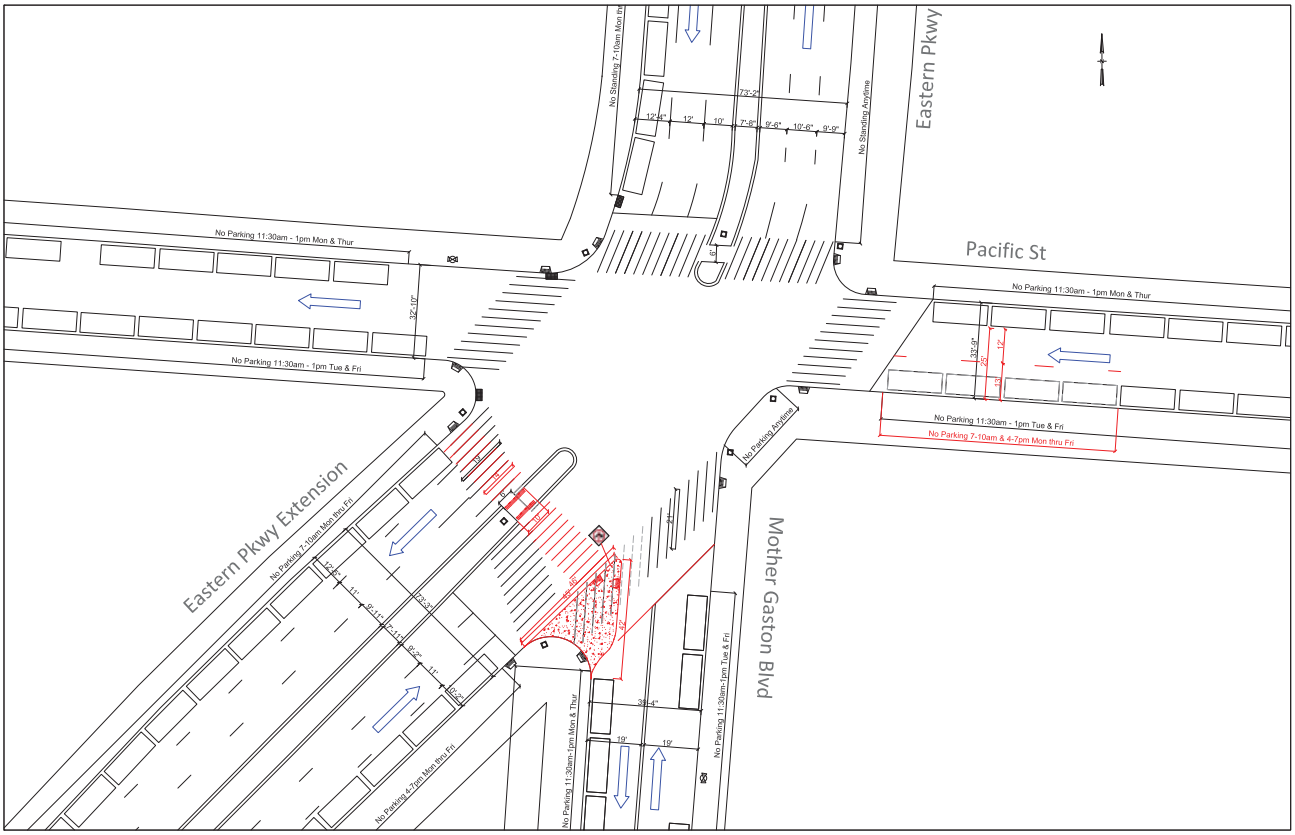


Figure 11-12b: Eastern Parkway Extension/Mother Gaston Boulevard & Pacific Street - Proposed

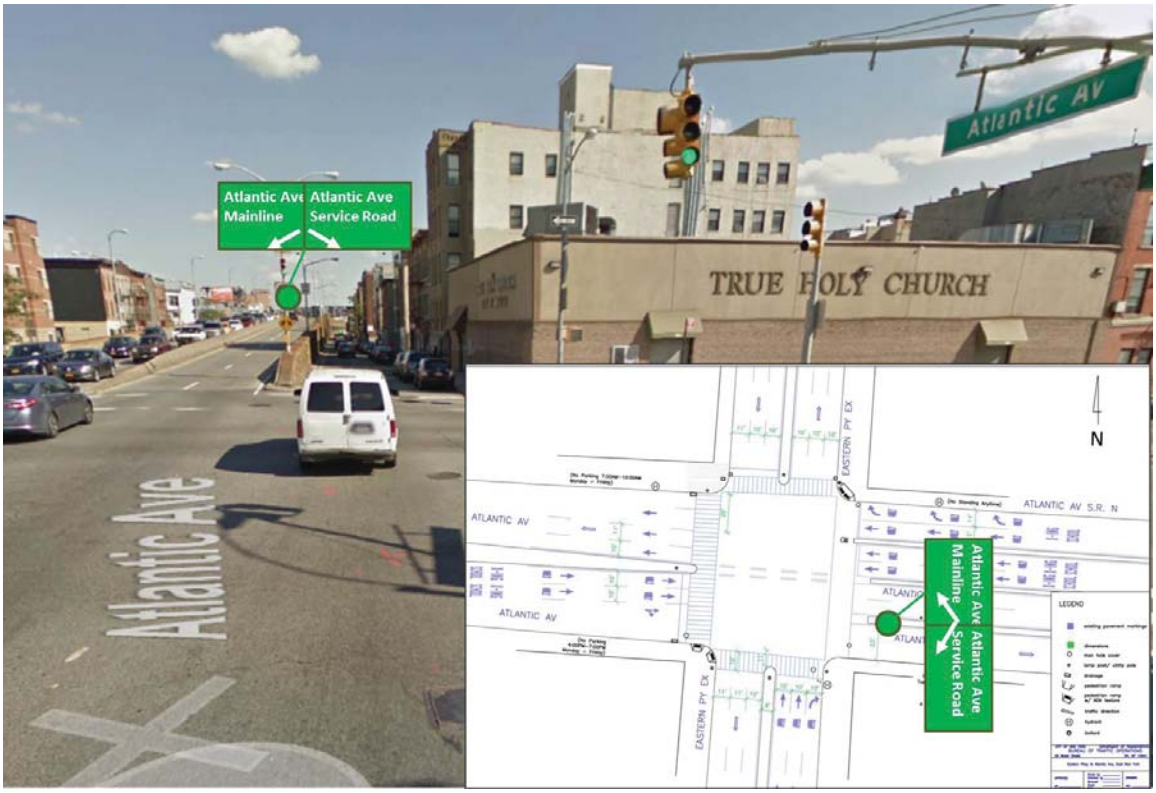


Enhanced Signage - EB Atlantic Avenue at Eastern Parkway Extension and WB Atlantic Avenue at Georgia Avenue

To improve traffic operations and reduce driver confusion, the addition of roadway assignment for the service roads and mainline signs on the approach to the elevated segment of Atlantic Avenue would be beneficial. The figures below illustrate the ideal location for the placement of these signs. The existing and proposed conditions are shown in Figures 11-13a and 11-13b, respectively.

Figure 11-13a: Atlantic Avenue/Georgia Avenue - Enhanced Signage

Figure 11-13b: Atlantic Avenue/Eastern Parkway Extension - Enhanced Signage



B12/B25 Bus Loop Proposal

Issues: The bus turnaround and layover operation for the B12/B25 buses have conflicts that could be reduced or eliminated in the interest of safety and improved operation. The existing B12 operation involves crossing a six-lane un-signalized roadway. It also necessitates pedestrians crossing the six-lane roadway for intermodal transfers. The existing B25 operation involves a partially uncontrolled left turn. The existing and proposed operations are shown in Figures 11-14a and 11-14b, respectively.

Proposal:

- Create a new turn around and layover condition for both buses that reduce conflicts and improve safety for bus drivers, pedestrians, and vehicular traffic.

Figure 11-14a: B12/B25 Existing Bus Loop

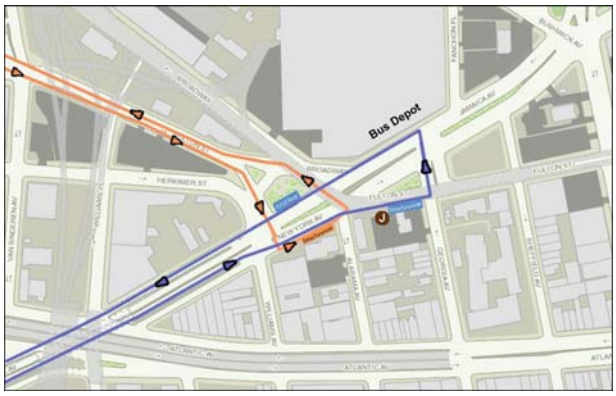
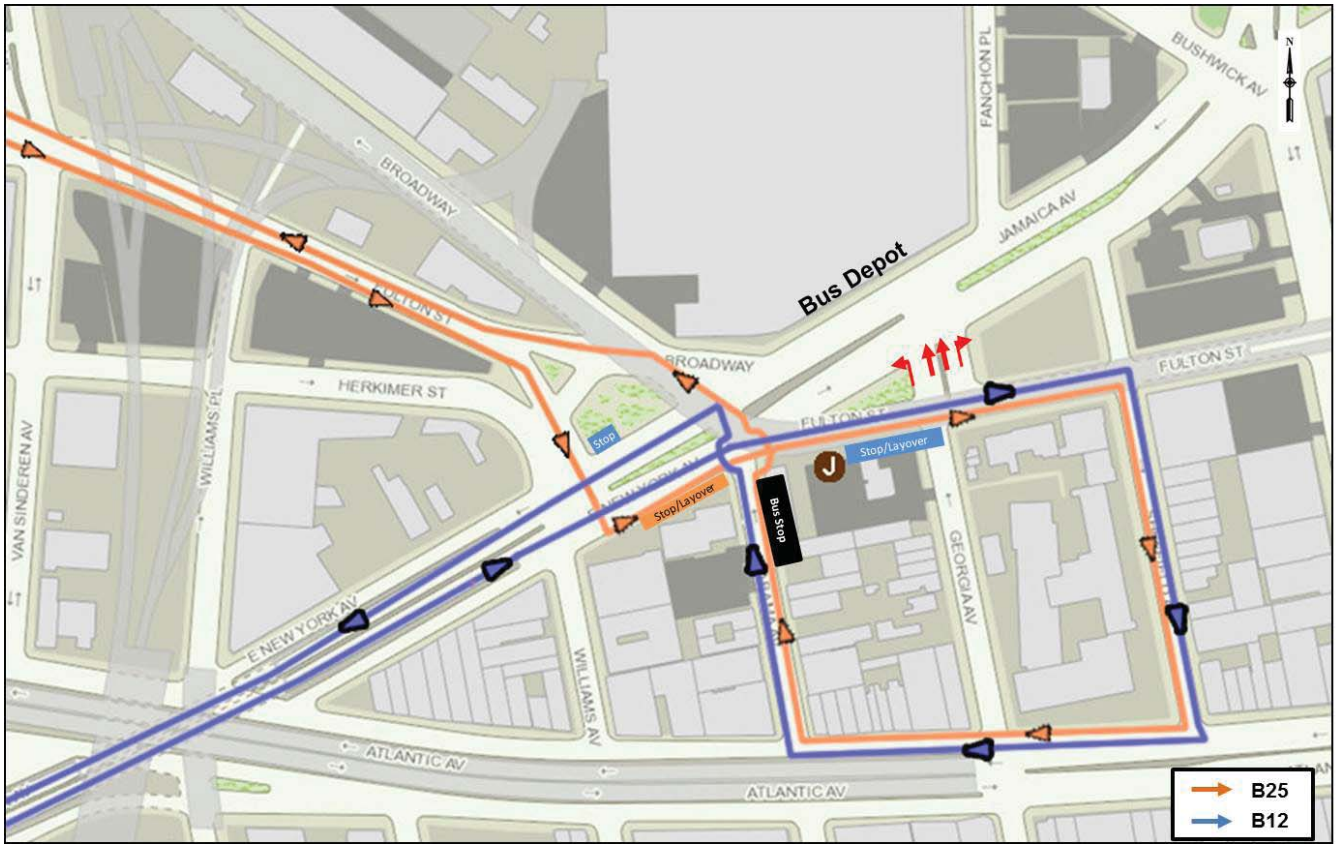


Figure 11-14a: B12/B25 Proposed Bus Loop



Industrial Business Zone (IBZ)

The Industrial Business Zone (IBZ) has its own traffic and transportation challenges that impact business bottom line. After meeting with some of the business owners and based on the analyses and field observations, the following is a summary of some of the main issues associated with the IBZ. See Figure 11-15 for the location of the IBZ in the study area.

The main issues observed in the IBZ are the following:

- Larger commercial vehicles find it difficult to turn at some intersections in the IBZ due to parked vehicles
- Missing street names
- Missing or faded parking regulation signs
- Faded crosswalks and roadway markings

In order to address these issues the recommendations in the IBZ focused on roadway design, daylighting, installation or replacement of missing parking regulation signs and street names and changes to parking regulations in response to parking demand. Figure 11-16 shows these proposals.

Figure 11-15: East Brooklyn Industrial Business Zone

Figure 11-16: Recommendations in the Industrial Business Zone

Other Recommendations/Issues

The following recommendations primarily address quality of life issues/concerns in the study area:

1. Install Wayfinding Signs/Kiosks

There are three transit stations/stops (two NYCT and one LIRR) in the Broadway Junction/East New York area. First time visitors to the area arriving at any of these stations (Broadway Junction and Atlantic Avenue (NYCT) and East New York (LIRR)) would greatly benefit from directional aids to navigate the neighborhood.

2. Repair/Upgrade LIRR East New York Station Underpass

To traverse the barrier created by the LIRR tracks and the elevation of Atlantic Avenue between Georgia Avenue and Eastern Parkway Extension, many pedestrians use the LIRR East New York Station underpass at Van Sinderen Avenue for north/south access. However, the underpass is generally poorly lit, filthy, and under-maintained. For the safety of pedestrians and commuters, it is recommended that LIRR repair the stairs leading to the station and upgrade the lighting. Also, install directional/wayfinding signs along Atlantic Avenue to the station.

3. IBZ- NYPD Parking Conflicts

As part of the public outreach process, DOT met with business owners in the Industrial Business Zone. A major concern for some owners in close proximity to the NYPD station on Snediker Avenue (at Glenmore Avenue) is obstruction created by parked NYPD personnel vehicles. Efforts should be made to identify an off-street parking facility(ies) to reduce the impact of NYPD personnel parked vehicles on surrounding business.

4. Van Sinderen Avenue

Van Sinderen Avenue is a north-south corridor in the study area that is adjacent to the elevated tracks of the L train. The corridor is within the Industrial Business Zone so majority of the uses opposite the tracks are industrial/manufacturing, vacant lots, or abandoned buildings. From East New York Avenue to Linden Boulevard the width of the street varies from 11 to 23 feet. Majority of the sidewalks along the corridor are substandard or non-existent. To better serve residents, workers, and visitors to the area, a capital program to repair the deficiencies along the corridor should be initiated.

5. Atlantic Avenue Corridor Project -Vision Zero Initiative

Towards the conclusion of the study, Atlantic Avenue was identified by the Mayor as the first Vision Zero corridor. The primary objective of Vision Zero is to eliminate pedestrian fatalities by implementing policies such as reduction of the speed limit citywide to 25 mph. Consequently, a capital project to address safety issues and realize Vision Zero objectives was initiated. As the design for capital improvements to address safety and operational needs between Pennsylvania and Logan Avenues was being drafted, the study provided a framework that informed the process and identified critical issues such as truck access to the Industrial Business Zone. A preliminary design is shown in Appendix E.

APPENDICES

APPENDIX A

Traffic Chapter

Collected Traffic Data

Manual Turning Movement and Classification (MTMC) Count Locations:

1. Pennsylvania Avenue & Fulton Street
2. Pennsylvania Avenue & Liberty Avenue
3. Pennsylvania Avenue & Pitkin Avenue
4. Pennsylvania Avenue & Sutter Avenue
5. Mother Gaston Boulevard & Sutter Avenue
6. Mother Gaston Boulevard & Pitkin Avenue
7. Mother Gaston Boulevard & Liberty Avenue
8. Mother Gaston Boulevard & East New York Avenue
9. Mother Gaston Boulevard/Pacific Street & Eastern Parkway Extension
10. Eastern Parkway Extension & Fulton Street
11. Eastern Parkway Extension & Bushwick Avenue
12. Bushwick Avenue & Highland Boulevard
13. Highland Boulevard & Miller Avenue
14. Jamaica Avenue & Miller Avenue
15. Atlantic Avenue & Miller Avenue
16. Pitkin Avenue & Miller Avenue
17. Georgia Avenue & Liberty Avenue
18. Cleveland Street & Jamaica Avenue (U)
19. Cleveland Street & Fulton Street (U)
20. Cleveland Street & Liberty Avenue (U)
21. Cleveland Street & Pitkin Avenue (U)
22. Fulton Street & Georgia Avenue (U)
23. Atlantic Avenue & Sheffield Avenue (U)
24. Glenmore Avenue & Hendrix Street (U)
25. Atlantic Avenue & Schenck Avenue
26. Atlantic Avenue & Hendrix Street
27. Atlantic Avenue & Bradford Street

Automatic Traffic Recorders (ATRs) Locations:

1. Eastern Parkway Extension between Cook Court & Broadway (NB/SB)
2. Bushwick Avenue between Conway Street & Highland Boulevard (NB/SB)
3. Highland Boulevard between Vermont Street & Miller Avenue (EB/WB)
4. Jamaica Avenue between Jackie Robinson Parkway & Marginal Street East/New Jersey Avenue (EB/WB)
5. Liberty Avenue between Van Siclen Avenue & Hendrix Street (EB/WB)
6. Pennsylvania Avenue between Liberty Avenue & Glenmore Avenue (NB/SB)
7. Pitkin Avenue between Pennsylvania Avenue & New Jersey Avenue (EB/WB)
8. Atlantic Avenue between Miller Avenue & Van Siclen Avenue (EB/WB)

Pedestrian Count Locations:

1. Mother Gaston Boulevard & Pitkin Avenue
2. Mother Gaston Boulevard & Sutter Avenue
3. Pennsylvania Avenue & Atlantic Avenue
4. Pennsylvania Avenue & Liberty Avenue

5. Pennsylvania Avenue & Pitkin Avenue
6. Pennsylvania Avenue & Belmont Avenue
7. Pennsylvania Avenue & Sutter Avenue
8. Pitkin Avenue & Vermont Avenue
9. Pitkin Avenue & Van Siclen Avenue
10. Pitkin Avenue & Cleveland Street
11. Fulton Street & Van Siclen Avenue
12. Atlantic Avenue & Warwick Street
13. Broadway & Eastern Parkway Extension
14. Atlantic Avenue & Eastern Pkwy Extension
15. Cleveland Street & Fulton Street
16. Cleveland Street & Liberty Street

LOS Criteria

LOS criteria as specified in the 2000 HCM for unsignalized and signalized locations.

Unsignalized Intersection Level of Service (LOS) Criteria (TWSC & AWSC)

Level of Service	Average Control Delay (s/veh)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	> 35-50
F	> 50
Source: Highway Capacity Manual 2000, TRB	
Note: Average Control delay is measured in terms of seconds per vehicle.	

Signalized Intersection Level of Service Criteria (LOS)

Level of Service	Control Delay	Description
A	< 10.0	LOS A describes operations with low control delay, up to 10 s/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	>10 - 20	LOS B describes operations with control delay greater than 10 and up to 20 s/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	>20 - 35	LOS C describes operations with control delay greater than 20 and up to 35 s/veh. These higher delays may result from only fair progression, longer cycle lengths or both. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	>35 - 55	LOS D describes operations with control delay greater than 35 and up to 55 s/veh. The influence of congestion becomes more noticeable at this level. Longer delays may result from a combination of unfavorable progression, long cycle lengths, and/or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	>55 - 80	LOS E describes operations with control delay greater than 55 and up to 80 s/veh. These higher delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	>80	LOS F describes operations with delay in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.
Sources: Highway Capacity Manual, Transportation Research Board, Natioanl Research Council, Washington D.C., 2007		

Existing Conditions Analysis 2012

Traffic Capacity Analysis for Signalized Intersections (1 of 4)

No.	Intersection	Appr	AM				PM			
			Lane Group	V/ C Ratio	Avg Delay	LOS	Lane Group	V/ C Ratio	Avg Delay	LOS
1	Mother Gaston Bl @ Sutter Ave	NB	L	0.34	36.1	D	L	0.27	34.8	C
			TR	0.77	49.8	D	TR	0.53	38.3	D
		SB	L	0.22	32.9	C	L	0.34	35.7	D
			TR	0.66	43.3	D	TR	0.87	60.3	E
		EB	LTR	0.22	11.8	B	LTR	0.31	12.8	B
		WB	LTR	0.50	16.3	B	LTR	0.37	13.6	B
		Overall			32.0	C			33.1	C
2	Mother Gaston Bl @ Pitkin Ave	NB	L	0.22	24.6	C	L	0.47	32.5	C
			TR	0.49	29.4	C	TR	0.48	29.3	C
		SB	L	0.05	21.8	C	L	0.17	23.8	C
			TR	0.41	27.5	C	TR	0.63	33.8	C
		EB	LTR	0.60	25.7	C	LTR	0.55	23.8	C
		WB	LTR	0.87	42.0	D	LTR	0.66	27.4	C
		Overall			32.6	C			28.7	C
3	Mother Gaston Bl @ Liberty Ave	NB	TR	0.37	10.5	B	TR	0.33	9.9	A
		SB	LT	0.33	10.1	B	LT	0.59	14.9	B
		WB	LR	0.61	49.2	D	LR	0.99	95.0	F
		Overall			19.0	B			35.2	D
4	Mother Gaston Bl NB @ East New York Ave	NB	LR	1.04	109.5	F	LR	1.05	106.2	F
		EB	TR	0.54	10.1	B	TR	0.75	15.5	B
		WB	LT	0.35	7.7	A	LT	0.42	8.6	A
		Overall			33.3	C			36.7	D
4A	Mother Gaston Bl SB @ East New York Ave	SB	L	0.79	64.4	E	L	0.57	50.4	D
			R	0.22	41.6	D	R	0.12	39.6	D
		EB	LT	0.33	7.4	A	LR	0.60	11.1	B
		WB	TR	0.28	6.7	A	TR	0.32	6.9	A
		Overall			18.7	B			13.9	B
5	Eastern Pkwy (EP) @ Pacific St/ Mother Gaston Bl (MGB)	NB(EP)	LTR	0.75	27.2	C	LTR	0.61	22.2	C
		NB(MGB)	LT	0.83	84.0	F	LT	0.85	95.4	F
		SB(EP)	R	0.54	9.7	A	R	0.94	35.9	D
			T	0.22	46.1	D	T	0.56	55.0	D
		WB	LTR	1.05	96.9	F	LTR	1.05	100.3	F
		Overall			51.3	D			63.3	E
5A	East New York Ave @ Pacific St-Junius St	EB	LTR	0.64	24.0	C	LTR	0.76	27.9	C
		WB	DefL	0.71	38.1	D	DefL	0.83	53.6	D
			T	0.37	9.9	A	T	0.30	9.2	A
		Overall			20.5	C			26.4	C
6	Atlantic Ave @ Eastern Pkwy Ext	NB	T	0.62	31.2	C	T	0.77	36.0	D
			R	0.76	42.7	D	R	1.02	84.2	F
		SB	LTR	0.90	45.5	D	LTR	1.05	78.8	E
		EB	TR	0.76	28.1	C	TR	0.66	24.4	C
		WB	T	0.91	34.2	C	T	0.67	24.7	C
			R	0.19	17.8	B	R	0.12	16.9	B
		Overall			34.7	C			41.2	D
7	Eastern Pkwy Ext @ Fulton St	NB	LTR	0.99	53.9	D	LTR	0.80	26.9	C
		SB	LTR	0.57	18.6	B	LTR	0.42	16.0	B
		EB	LTR	0.41	30.8	C	LTR	0.89	51.7	D
		WB	LTR	0.46	31.6	C	LTR	0.36	29.9	C
		Overall			34.5	C			29.6	C

Traffic Capacity Analysis for Signalized Intersections (2 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/C Ratio	Avg Delay	LOS	Lane Group	V/C Ratio	Avg Delay	LOS
9	Eastern Pkwy Ext @ Bushwick Ave	NB	R	1.01	86.0	F	R	1.05	95.1	F
		SB	R	n/a	n/a	n/a	R	n/a	n/a	n/a
		EB	LTR	0.53	11.1	B	LTR	0.74	15.5	B
		WB	L	1.04	69.1	E	L	1.05	82.8	F
			LTR	0.96	24.4	C	LTR	0.67	5.9	A
		Overall			41.2	D			41.3	D
10	Bushwick Ave @ Highland Bl	SB	R	0.77	20.8	C	R	0.53	8.5	A
		EB	L	1.05	67.3	E	L	1.05	54.9	D
			LT	0.13	0.1	A	LT	0.20	0.1	A
		WB	T	0.60	38.1	D	T	0.56	47.9	D
		Overall			35.4	D			31.4	C
14a	E. New York/ Jamaica Ave @ Fulton St	SB	LTR	0.90	77.5	E	LTR	1.05	104.9	F
		EB	TR	0.40	19.4	B	TR	0.50	21.0	C
		WB	LT	0.55	21.8	C	LT	0.52	21.3	C
		Overall			28.2	C			36.8	D
14b	E. New York/ Jamaica Ave @ Herkimer St	SB	LTR	1.01	111.4	F	LTR	1.05	117.9	F
		EB	TR	0.40	19.4	B	TR	0.50	21.0	C
		WB	LT	0.55	21.8	C	LT	0.52	21.3	C
		Overall			31.1	C			33.3	C
15	Broadway @ Jamaica Ave/ Fulton St/ Alabama Av	NB	LTR	0.48	44.0	D	LTR	0.34	40.6	D
		EB	LTR	0.85	22.5	C	LTR	1.03	51.5	D
		WB	LT	0.54	21.6	C	LT	0.60	22.8	C
		Overall			23.4	C			39.0	D
18	Atlantic Ave @ Georgia Ave	NB	LTR	1.05	93.9	F	LTR	1.03	94.5	F
		EB	T	0.45	11.8	B	T	0.62	14.2	B
		WB	TR	0.66	14.9	B	TR	0.50	12.4	B
		Overall			24.4	C			21.6	C
19	Liberty Ave @ Georgia Ave	NB	LTR	0.92	68.4	E	LTR	0.76	50.6	D
		EB	LT	0.43	15.0	B	LT	0.52	16.4	B
		WB	TR	0.76	24.6	C	TR	0.45	14.7	B
		Overall			36.9	D			26.7	C
21	Pennsylvania Ave (PA) @ Bushwick Ave (BA)/ Jackie Robinson Pkwy (JRP)/ Jamaica Ave (JA)	NB (PA)	L	1.05	103.7	F	L	1.00	94.0	F
			LTR	0.80	50.2	D	LTR	0.93	62.4	E
		SB(BA)	LTR	0.68	46.8	D	LTR	0.91	60.7	E
		SB(JRP)	TR	1.04	76.7	E	TR	1.05	84.5	F
		EB	L	0.34	43.2	D	L	0.38	43.4	D
			TR	0.97	73.7	E	TR	0.98	72.8	E
		WB	LTR	1.04	111.2	F	LTR	0.97	96.1	F
		Overall			75.4	E			71.1	E

Traffic Capacity Analysis for Signalized Intersections (3 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/ C Ratio	Avg Delay	LOS	Lane Group	V/ C Ratio	Avg Delay	LOS
22	Pennsylvania Ave @ Fulton St	NB	TR	0.98	59.6	E	TR	0.99	61.4	E
		SB	L	0.37	40.6	D	L	0.72	57.1	E
			T	0.63	21.1	C	T	0.73	24.2	C
		EB	L	0.14	25.3	C	L	0.22	26.6	C
			TR	0.43	29.4	C	TR	0.74	37.6	D
		Overall			39.1	D			42.0	D
23	Atlantic Ave @ Pennsylvania Ave	NB	L	1.05	119.2	F	L	0.76	62.0	E
			TR	0.96	66.5	E	TR	0.80	40.5	D
		SB	L	0.75	65.8	E	L	0.66	50.7	D
			TR	1.05	90.5	F	TR	0.95	55.2	E
		EB	L	0.23	36.5	D	L	0.31	39.7	D
			TR	0.75	26.4	C	TR	1.05	72.5	E
		WB	TR	1.02	65.1	E	TR	1.02	72.8	E
		Overall			63.2	E			61.6	E
24	Pennsylvania Ave @ Liberty Ave	NB	LTR	1.05	64.9	E	LTR	1.00	49.4	D
		SB	L	0.07	9.2	A	L	0.28	13.3	B
			TR	0.84	26.5	C	TR	0.99	47.9	D
		EB	LTR	0.61	47.6	D	LTR	0.94	79.1	E
		WB	LTR	1.05	106.0	F	LTR	0.95	84.0	F
		Overall			57.2	E			54.9	D
25	Pennsylvania Ave @ Pitkin Ave	NB	LTR	0.88	28.4	C	LTR	0.98	43.3	D
		SB	LTR	0.79	21.0	C	LTR	1.01	50.8	D
		EB	LTR	0.89	73.3	E	LTR	1.03	99.5	F
		WB	LTR	0.95	66.4	E	LTR	0.84	53.7	D
		Overall			38.2	D			53.8	D
26	Pennsylvania Ave @ Sutter Ave	NB	LTR	1.02	54.4	D	LTR	0.77	19.8	B
		SB	LTR	0.64	15.7	B	LTR	0.78	20.4	C
		EB	LTR	0.50	41.5	D	LTR	0.70	50.2	D
		WB	LTR	0.93	75.1	E	LTR	0.78	56.0	E
		Overall			41.9	D			26.1	C
27	Atlantic Ave @ Bradford Ave	NB	LTR	0.60	44.3	D	LTR	0.50	40.5	D
		EB	LT	0.47	12.2	B	LT	0.80	19.5	B
		WB	TR	0.56	13.4	B	TR	0.50	12.4	B
		Overall			15.4	B			18.0	B
28	Highland Blvd @ Miller Ave	NB	LTR	0.57	21.8	C	LTR	0.38	17.7	B
		SB	LTR	0.25	16.4	B	LTR	0.13	14.8	B
		EB	LTR	0.36	9.6	A	LTR	0.90	29.3	C
		WB	L	0.57	14.2	B	L	0.88	40.7	D
			TR	0.62	13.9	B	TR	0.42	10.4	B
		Overall			14.8	B			25.5	C

Traffic Capacity Analysis for Signalized Intersections (4 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/ C Ratio	Avg Delay	LOS	Lane Group	V/ C Ratio	Avg Delay	LOS
29	Jamaica Ave @ Miller Ave	SB	LTR	0.60	21.5	C	LTR	0.80	29.3	C
		EB	LTR	0.49	12.1	B	LTR	0.48	11.4	B
		WB	LTR	0.61	14.2	B	LTR	0.48	11.5	B
		Overall			16.1	B			19.2	B
30	Atlantic Ave @ Miller Ave	SB	LTR	0.95	77.9	E	LTR	1.03	97.8	F
		EB	T	0.56	13.7	B	T	0.94	31.3	C
			R	0.07	8.6	A	R	0.05	8.5	A
		WB	L	0.13	10.1	B	L	0.75	74.4	E
			T	0.69	16.3	B	T	0.67	16.1	B
		Overall			23.2	C			34.1	C
31	Pitkin Ave @ Miller Ave	SB	LTR	0.82	35.8	D	LTR	0.91	48.0	D
		EB	TR	0.37	9.6	A	TR	0.50	11.3	B
		WB	LT	0.85	22.9	C	LT	0.51	11.6	B
		Overall			22.9	C			22.7	C
32	Atlantic Ave @ Hendrix Ave	SB	LTR	0.70	47.7	D	LTR	0.92	74.1	E
		EB	TR	0.48	12.3	B	TR	0.88	23.5	C
		WB	LT	0.86	23.5	C	LT	0.81	20.5	C
		Overall			21.6	C			26.4	C
34	Atlantic Ave @ Schenck Ave	NB	LTR	0.78	54.3	D	LTR	0.77	54.0	D
		EB	LT	0.60	14.4	B	LT	1.01	43.3	D
		WB	TR	0.58	13.8	B	TR	0.58	13.8	B
		Overall			18.2	B			33.5	C

Traffic Capacity Analysis for Unsignalized Intersections

No.	Intersection	Appr	AM			PM		
			Lane Group	Avg Delay	LOS	Lane Group	Avg Delay	LOS
13a	ENY SR @ Williams/ Atlantic Ave							
		SB	TR	27.5	D	TR	15.1	C
13b	ENY SR @ Snediker Ave							
		NB	R	14.3	B	R	15.1	C
16	Georgia Ave @ Jamaica Ave							
		NB	LT	45.9	E	LT	34.6	D
			TR	11.3	B	TR	12.1	B
		EB	L	14.3	B	L	12.9	B
		WB	LT	9.2	A	LT	9.6	A
		overall		29.9	D		23.7	C
17	Georgia Ave @ Fulton St							
		NB	TR	32.9	D	TR	37.8	E
		SB	L	31.8	D	L	39.5	E
		EB	LT	8.0	A	LT	7.9	A
20	Atlantic Ave @ Sheffield Ave							
		SB	R	11.5	B	R	13.3	B
33	Glenmore Av @ Hendrix St							
		SB	TR	11.1	B	TR	9.5	A
		WB	LT	15.3	C	LT	9.8	A
		overall		13.8	B		9.6	A
35	Cleveland st @ Jamaica Ave							
		SB	TR	10.8	B	TR	10.2	B
36	Fulton St @ Cleveland St							
		SB	LT	19.7	C	LT	19.1	C
37	Liberty Ave @ Cleveland St							
		SB	LTR	34.9	D	LTR	30.2	D
		WB	LT	8.3	A	LT	8.7	A
38	Pitkin Ave @ Cleveland St							
		SB	LTR	44.1	E	LTR	38.7	E
		WB	LT	8.6	A	LT	8.9	A

Future Conditions Analysis 2022

Traffic Capacity Analysis for Signalized Intersections (1 of 4)

No.	Intersection	Appr	AM				PM			
			Lane Group	V/C Ratio	Avg Delay	LOS	Lane Group	V/C Ratio	Avg Delay	LOS
1	Mother Gaston Bl @ Sutter Ave	NB	L	0.47	43.5	D	L	0.33	37.6	D
			TR	0.80	52.3	D	TR	0.55	38.9	D
		SB	L	0.24	33.6	C	L	0.36	36.4	D
			TR	0.85	57.3	E	TR	0.96	75.0	E
		EB	LTR	0.24	11.9	B	LTR	0.33	13.0	B
		WB	LTR	0.52	16.8	B	LTR	0.40	14.1	B
		Overall			37.6	D			38.1	D
2	Mother Gaston Bl @ Pitkin Ave	NB	L	0.27	26.0	C	L	0.54	35.8	D
			TR	0.51	30.0	C	TR	0.50	29.8	C
		SB	L	0.06	21.9	C	L	0.17	24.0	C
			TR	0.55	31.1	C	TR	0.70	36.6	D
		EB	LTR	0.64	27.2	C	LTR	0.58	24.5	C
		WB	LTR	0.91	46.5	D	LTR	0.68	28.6	C
		Overall			35.1	D			30.2	C
3	Mother Gaston Bl @ Liberty Ave	NB	TR	0.39	10.7	B	TR	0.34	10.1	B
		SB	LT	0.34	10.3	B	LT	0.62	15.7	B
		WB	LR	1.10	128.9	F	LR	1.28	196.4	F
		Overall			49.9	D			71.8	E
4	Mother Gaston Bl NB @ East New York Ave	NB	LR	1.26	188.4	F	LR	1.21	163.4	F
		EB	TR	0.56	10.4	B	TR	0.84	20.0	C
		WB	LT	0.37	7.9	A	LT	0.45	9.1	A
		Overall			57.8	E			55.4	E
4A	Mother Gaston Bl SB @ East New York Ave	SB	L	0.83	68.1	E	L	0.59	51.4	D
			R	0.24	41.9	D	R	0.12	39.6	D
		EB	LT	0.35	7.6	A	LR	0.62	11.6	B
		WB	TR	0.32	7.0	A	TR	0.35	7.2	A
		Overall			19.1	B			14.1	B
5	Eastern Pkwy (EP) @ Pacific St/ Mother Gaston Bl (MGB)	NB(EP)	LTR	0.78	28.4	C	LTR	0.63	22.7	C
		NB(MGB)	LT	0.86	88.8	F	LT	0.91	108.8	F
		SB(EP)	T	0.23	46.3	D	T	0.58	55.8	E
			R	0.56	10.0	A	R	0.98	44.2	D
		WB	LTR	1.09	110.3	F	LTR	1.09	113.1	F
		Overall			57.1	E			72.3	E
5A	East New York Ave @ Pacific St-Junius St	EB	LTR	0.67	25.0	C	LTR	0.79	29.2	C
		WB	DefL	0.75	42.9	D	DefL	0.89	63.1	E
			T	0.45	10.8	B	T	0.31	9.3	A
		Overall			21.3	C			28.8	C
6	Atlantic Ave @ Eastern Pkwy Ext	NB	T	0.64	31.9	C	T	0.80	37.4	D
			R	0.79	45.0	D	R	1.07	97.2	F
		SB	LTR	0.95	52.1	D	LTR	1.09	93.1	F
		EB	TR	0.79	29.3	C	TR	0.69	25.0	C
		WB	T	0.94	37.9	D	T	0.70	25.3	C
			R	0.46	22.4	C	R	0.12	16.9	B
		Overall			37.5	D			45.5	D
7	Eastern Pkwy Ext @ Fulton St	NB	LTR	1.05	69.9	E	LTR	0.85	29.5	C
		SB	LTR	0.60	19.3	B	LTR	0.44	16.2	B
		EB	LTR	0.54	33.5	C	LTR	1.05	86.1	F
		WB	DefL				LTR	0.61	53.9	D
			LTR	0.51	33.1	C				
			TR					0.32	29.6	C
		Overall			40.9	D			41.7	D

Traffic Capacity Analysis for Signalized Intersections (2 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/C Ratio	Avg Delay	LOS	Lane Group	V/C Ratio	Avg Delay	LOS
9	Eastern Pkwy Ext @ Bushwick Ave	NB	R	1.05	97.2	F	R	1.09	109.0	F
		SB	R	n/a	n/a	n/a	R	n/a	n/a	n/a
		EB	LTR	0.61	12.5	B	LTR	0.77	16.4	B
		WB	L	1.13	105.3	F	L	1.09	96.0	F
			LTR	1.04	44.0	D	LTR	0.74	7.7	A
		Overall			57.0	E			46.9	D
10	Bushwick Ave @ Highland Bl	SB	R	0.80	22.1	C	R	0.55	8.7	A
		EB	L	1.09	81.3	F	L	1.10	70.2	E
			LT	0.14	0.1	A	LT	0.21	0.2	A
		WB	T	0.65	39.4	D	T	0.65	50.5	D
		Overall			40.2	D			38.6	D
14a	E. New York/ Jamaica Ave @ Fulton St	SB	LTR	1.17	155.6	F	LTR	1.40	240.1	F
		EB	TR	0.41	19.6	B	TR	0.53	21.5	C
		WB	LT	0.57	22.3	C	LT	0.55	21.7	C
		Overall			42.7	D			71.0	E
14b	E. New York/ Jamaica Ave @ Herkimer St	SB	LTR	0.97	101.7	F	LTR	1.09	130.8	F
		EB	TR	0.41	19.6	B	TR	0.53	21.5	C
		WB	LT	0.57	22.3	C	LT	0.55	21.7	C
		Overall			30.0	C			35.2	D
15	Broadway @ Jamaica Ave/ Fulton St/ Alabama Av	NB	LTR	0.50	44.7	D	LTR	0.34	40.7	D
		EB	LTR	0.96	34.9	C	LTR	1.18	106.9	F
		WB	LT	0.56	22.1	C	LT	0.62	23.4	C
		Overall			29.8	C			71.2	E
18	Atlantic Ave @ Georgia Ave	NB	LTR	1.09	107.5	F	LTR	1.07	108.3	F
		EB	T	0.51	12.5	B	T	0.64	14.6	B
		WB	TR	0.83	19.6	B	TR	0.63	14.3	B
		Overall			27.7	C			23.3	C
19	Liberty Ave @ Georgia Ave	NB	LTR	0.95	74.7	E	LTR	0.80	53.0	D
		EB	LT	0.65	21.3	C	LT	0.86	31.8	C
		WB	TR	0.95	45.7	D	TR	0.57	17.3	B
		Overall			47.7	D			32.7	C
21	Pennsylvania Ave (PA) @ Bushwick Ave (BA)/ Jackie Robinson Pkwy (JRP)/ Jamaica Ave (JA)	NB (PA)	L	1.40	238.7	F	L	1.27	187.5	F
			LTR	1.07	96.1	F	LTR	1.09	103.7	F
		SB(BA)	LTR	0.77	50.8	D	LTR	1.39	228.7	F
		SB(JRP)	TR	1.12	106.2	F	TR	1.29	179.5	F
		EB	L	0.35	43.6	D	L	0.40	43.8	D
			TR	1.01	83.3	F	TR	1.01	82.0	F
		WB	LTR	1.08	123.9	F	LTR	1.01	104.8	F
		Overall			114.8	F			139.3	F

Traffic Capacity Analysis for Signalized Intersections (3 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/ C Ratio	Avg Delay	LOS	Lane Group	V/ C Ratio	Avg Delay	LOS
22	Pennsylvania Ave @ Fulton St	NB	TR	1.31	183.7	F	TR	1.23	148.5	F
		SB	L	0.43	45.3	D	L	1.00	102.5	F
			T	0.70	22.9	C	T	1.07	74.0	E
		EB	L	0.17	25.8	C	L	0.25	27.0	C
			TR	0.54	31.7	C	TR	0.94	54.4	D
		Overall			96.8	F			93.7	F
23	Atlantic Ave @ Pennsylvania Ave	NB	L	1.35	232.6	F	L	0.84	72.7	E
			TR	1.14	121.8	F	TR	1.00	64.6	E
		SB	L	0.83	76.8	E	L	1.24	188.2	F
			TR	1.20	143.8	F	TR	1.35	202.4	F
		EB	L	0.20	43.4	D	L	0.25	43.6	D
			TR	0.84	31.0	C	TR	1.27	161.3	F
		WB	TR	1.37	205.6	F	TR	1.15	119.2	F
		Overall			140.6	F			139.0	F
24	Pennsylvania Ave @ Liberty Ave	NB	LTR	1.34	180.2	F	LTR	1.48	245.3	F
		SB	L	0.34	17.2	B	L	1.76	393.6	F
			TR	0.91	32.9	C	TR	1.14	98.2	F
		EB	LTR	1.29	205.2	F	LTR	1.78	405.1	F
		WB	LTR	2.72	826.6	F	LTR	3.21	1055.0	F
		Overall			297.7	F			348.9	F
25	Pennsylvania Ave @ Pitkin Ave	NB	LTR	1.04	60.8	E	LTR	1.26	146.3	F
		SB	LTR	0.99	43.8	D	LTR	1.68	334.5	F
		EB	LTR	1.22	175.0	F	LTR	1.58	318.8	F
		WB	LTR	1.17	136.3	F	LTR	1.07	99.4	F
		Overall			82.5	F			230.7	F
26	Pennsylvania Ave @ Sutter Ave	NB	LTR	1.19	115.3	F	LTR	0.94	33.0	C
		SB	LTR	0.73	18.3	B	LTR	0.87	25.7	C
		EB	LTR	0.53	42.7	D	LTR	0.73	52.1	D
		WB	LTR	0.96	82.4	F	LTR	0.81	59.2	E
		Overall			70.1	E			33.8	C
27	Atlantic Ave @ Bradford Ave	NB	LTR	0.71	49.9	D	LTR	0.55	42.1	D
		EB	LT	0.57	13.8	B	LT	1.03	48.1	D
		WB	TR	0.78	18.5	B	TR	0.62	14.4	B
		Overall			19.0	B			34.5	C
28	Highland Blvd @ Miller Ave	NB	LTR	0.60	22.4	C	LTR	0.40	17.9	B
		SB	LTR	0.27	16.7	B	LTR	0.13	14.8	B
		EB	LTR	0.38	9.8	A	LTR	0.93	34.1	C
		WB	L	0.60	15.1	B	L	0.94	53.9	D
			TR	0.65	14.5	B	TR	0.44	10.6	B
		Overall			15.4	B			30.1	C

Traffic Capacity Analysis for Signalized Intersections (4 of 4)

No.	Intersection	Approach	AM				PM			
			Lane Group	V/ C Ratio	Avg Delay	LOS	Lane Group	V/ C Ratio	Avg Delay	LOS
29	Jamaica Ave @ Miller Ave									
		SB	LTR	0.63	22.2	C	LTR	0.83	31.8	C
		EB	LTR	0.52	12.7	B	LTR	0.50	11.9	B
		WB	LTR	0.64	14.8	B	LTR	0.50	11.9	B
		Overall			16.7	B			20.5	C
30	Atlantic Ave @ Miller Ave									
		SB	LTR	1.06	105.6	F	LTR	1.11	121.6	F
		EB	T	0.67	15.9	B	T	1.18	108.3	F
			R	0.12	9.1	A	R	0.07	8.6	A
		WB	L	0.19	12.0	B	L	0.78	81.1	F
			T	0.95	32.8	C	T	0.85	22.6	C
		Overall			34.4	C			77.9	E
31	Pitkin Ave @ Miller Ave									
		SB	LTR	0.87	41.5	D	LTR	0.96	57.1	E
		EB	TR	0.45	10.5	B	TR	0.80	19.4	B
		WB	LT	1.03	55.1	E	LT	0.64	14.3	B
		Overall			41.4	D			27.2	C
32	Atlantic Ave @ Hendrix Ave									
		SB	LTR	0.73	49.5	D	LTR	0.98	88.6	F
		EB	TR	0.63	14.8	B	TR	1.07	62.0	E
		WB	LT	1.24	135.2	F	LT	1.05	59.0	E
		Overall			82.1	F			62.8	E
34	Atlantic Ave @ Schenck Ave									
		NB	LTR	1.03	98.9	F	LTR	0.90	68.6	E
		EB	LT	0.85	23.1	C	LT	1.30	161.9	F
		WB	TR	0.76	17.9	B	TR	0.72	16.7	B
		Overall			28.4	C			101.8	F

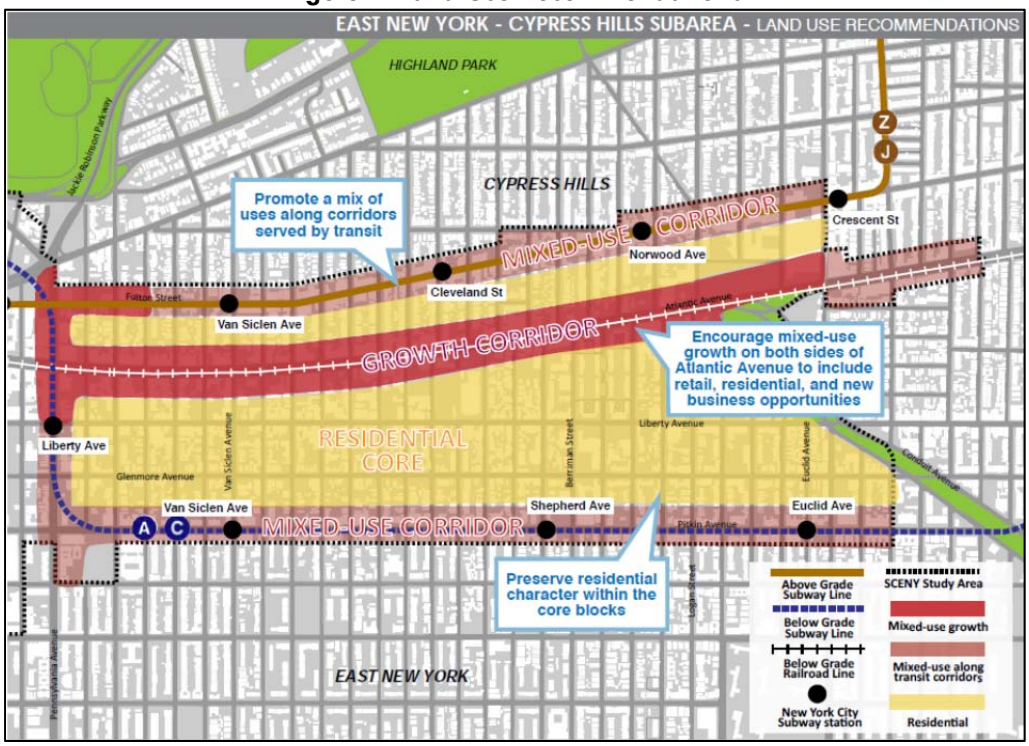
Traffic Capacity Analysis for Un-Signalized Intersections

No.	Intersection	Appr	AM			PM		
			Lane Group	Avg Delay	LOS	Lane Group	Avg Delay	LOS
13a	ENY SR @ Williams/ Atlantic Ave							
		SB	TR	30.7	D	TR	15.6	C
13b	ENY SR @ Snediker Ave							
		NB	R	14.6	B	R	15.4	C
16	Georgia Ave @ Jamaica Ave							
		NB	LT	60.6	F	LT	40.6	E
			TR	11.9	B	TR	12.6	B
		EB	L	15.3	C	L	13.5	B
		WB	LT	9.3	A	LT	9.7	A
		overall		38.0	E		27.1	D
17	Georgia Ave @ Fulton St							
		NB	TR	60.4	F	TR	91.7	F
		SB	L	53.8	F	L	99.3	F
		EB	LT	8.0	A	LT	7.9	A
20	Atlantic Ave @ Sheffield Ave							
		SB	R	17.9	C	R	18.1	C
33	Glenmore Av @ Hendrix St							
		SB	TR	11.8	B	TR	9.8	A
		WB	LT	19.1	C	LT	10.3	B
		overall		16.7	C		10.0	B
35	Cleveland st @ Jamaica Ave							
		SB	TR	11.0	B	TR	10.3	B
36	Fulton St @ Cleveland St							
		SB	LT	29.6	D	LT	25.1	D
37	Liberty Ave @ Cleveland St							
		SB	LTR	38.3	E	LTR	173.7	F
		WB	LT	8.3	A	LT	10.0	B
38	Pitkin Ave @ Cleveland St							
		SB	LTR	82.5	F	LTR	91.1	F
		WB	LT	9.0	A	LT	9.6	A

Transportation Planning Assumptions

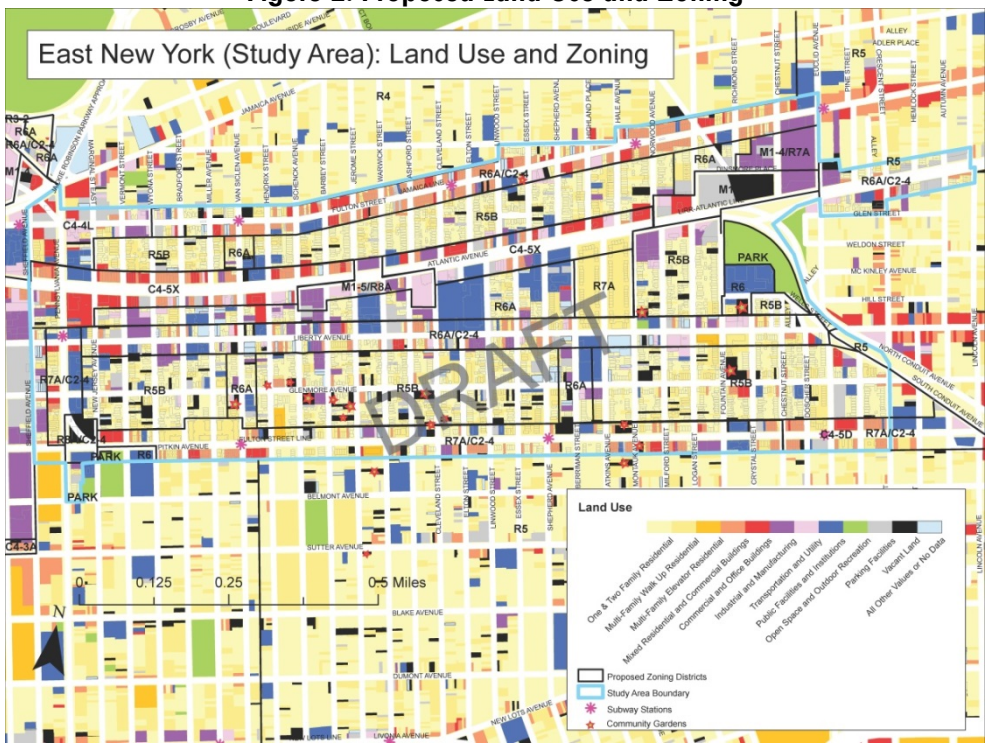
The new zoning action under consideration by the Department of City Planning is bounded by Fulton Street on the north, Pitkin Avenue on the south, Sheffield Avenue to the east and Euclid Avenue/Crescent Street to the west. Figures 1 and 2 show DCP's preliminary land use and zoning recommendations.

Figure 1: Land Use Recommendations



Source: NYCDCP

Figure 2: Proposed Land Use and Zoning

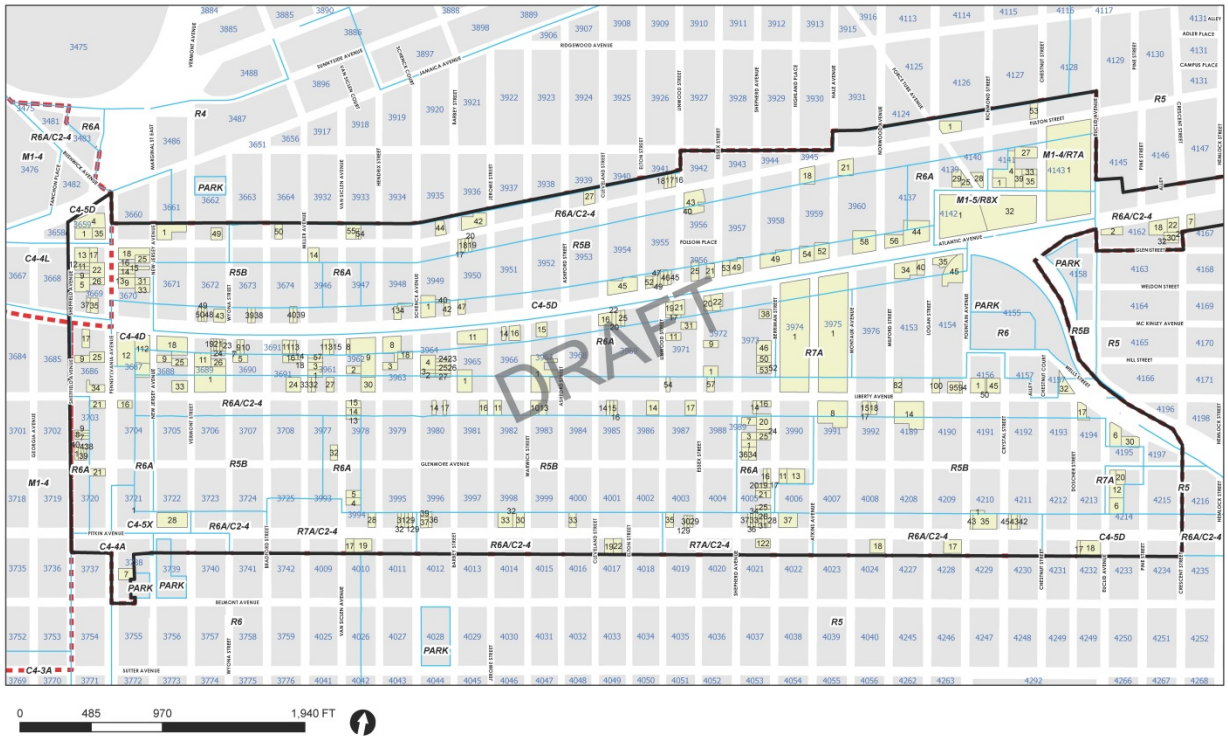


Source: NYCDCP

The travel demand projections in the analysis assume a worst case scenario where all the preliminary projected soft sites will be developed by 2022. These projections do not represent or reflect DCP's final EIS. The main objective however denies a reasonable estimate of the various land uses increase in floor area and the future traffic demand resulting there from.

Overall, the proposed East New York Rezoning provides primarily for increased residential, commercial and community facility uses. Figure 3 illustrates preliminary estimates of projected soft sites for potential development.

Figure 3: East New York Area Projected Soft Sites



Source: NYCDCP- July 2014

The preliminary proposal for the rezoning action included approximately 88 projected soft sites in about 95 blocks – of which about half are located in the Highland Park-East New York study area. The preliminary projected dwelling units (DUs) and commercial square footage (regional and local retail) and Community facilities are shown in Table 1.

Table 1: Total Number of projected growth

New Residential Units Dwelling Units	***New Community Facility (square feet)***	***New Total Commercial – Destination + Local Retail – (Square feet)***
11,628	***151,051***	***828,212***

**The worst case scenario analysis is just for the purpose of the planning analysis only, it does not represent DCP's final development plan*

Table 2 shows the transportation planning assumptions for the East New York Rezoning worst case scenario. Consistent with the CEQR Technical Manual, the assumptions are based on established travel demand factors published in the CEQR Technical Manual, ITE Trip Generation, and various approved EIS. Table 2 below provides the person trip generation rate, temporal distribution, mode split, directional distribution and vehicle occupancy for residential, commercial retail (local and destination), community facilities, as well as truck trips associated with commercial retail.

Table 2: Transportation Planning Factors -Travel Demand Assumptions

Land Use	Residential		Regional/Destination Retail		Local/Neigborhood Retail		Community Facilities	
Person Trips Generation								
Daily Trip Rate (weekday)	8.075		78.2		205		48	
N/A of link trip credit	Trips/Unit		Trips per 1,000 sf		Trips per 1,000 sf		Recreational Comm Center per 1000 sf	
Temporal Distribution								
AM	10%		3%		3%		7%	
PM	11%		9%		10%		7%	
Modal Split	(AM/PM)		(AM/PM)		(AM/PM)		(AM/PM)	
Auto	29%		20%		2%		5%	
Taxi	1%		1%		3%		1%	
Subway	39%		23%		6%		3%	
Bus	20%		33%		6%		6%	
Walk	9%		23%		83%		85%	
Rail	2%		0%		0%		0%	
	100%		100%		100%		100%	
In/Out Splits	In	Out	In	Out	In	Out	In	Out
AM	15%	85%	61%	39%	50%	50%	61%	39%
PM	70%	30%	47%	53%	50%	50%	29%	71%
Vehicle Occupancy								
Auto	1.15		2		1.65		1.65	
Taxi	1.4		2		1.4		1.4	
Truck Trips Generation	Residential		Regional/Destination Retail		Local/Neigborhood Retail		Community Facilities	
Daily Trip Rate (weekday)	0.06 per DU		0.35 per 1,000sf		0.35 per 1,000sf		0.29 per 1,000sf	
Temporal Distribution								
AM	12%		8%		8%		10%	
PM	2%		2%		2%		1%	
Delivery Direction	In	Out	In	Out	In	Out	In	Out
AM/PM	50%	50%	50%	50%	50%	50%	50%	50%

Sources: 1. 2010 CEQR Technical Manual
2. Seward Park Mix-Use Development Project
3. NYU Core DEIS
4. The Jamaica Plan EIS

Table 3 summarizes the vehicle trips generated by the proposed rezoning. Approximately 541 trips "in" and 2,193 trips "out" during the AM peak and 2,176 trips "in" and 1,131 "out" during the PM peak hour. The proposed would add 2,734 and 3,307 trips to the network during AM and PM peak, respectively.

Table 3: Estimated Trips by Mode

Land Use		Peak Hour		Auto	Taxi	Truck	Total
Residential	11,628 Dwelling Units	AM	In	355	10	42	407
			Out	2013	57	21	2091
			Total	2368	67	63	2498
		PM	In	1823	52	7	1882
			Out	781	22	3	806
			Total	2604	74	10	2688
Commercial Local Retail	331,285 sf	AM	In	12	22	5	39
			Out	12	22	5	39
			Total	24	44	10	78
		PM	In	41	73	1	115
			Out	41	73	1	115
			Total	82	146	2	230
Commercial Regional Retail	496,927 sf	AM	In	71	4	7	82
			Out	45	2	7	54
			Total	116	6	14	136
		PM	In	164	8	2	174
			Out	185	9	2	196
			Total	349	17	4	370
Community Facilities	151,051 sf	AM	In	9	2	2	13
			Out	6	1	2	9
			Total	15	3	4	22
		PM	In	4	1	0	5
			Out	11	3	0	14
			Total	15	4	0	19

TOTAL TRIPS		***IN***	***OUT***	***Total***
Peak Hour	***AM***	***541***	***2193***	***2734***
	PM	***2176***	***1131***	***3307***

Trip Distribution and Assignment

The AM and PM peak hour generated trips were assigned major arterials, then allocated to more specific streets and particular intersections. Figures 4 and 5 show the AM and PM percentage distribution. The trip assignment was derived from the existing condition traffic pattern applied to the future generated trips to derive the 2022 AM and PM peak hour volumes.

Figure 4: AM Percentage Distribution

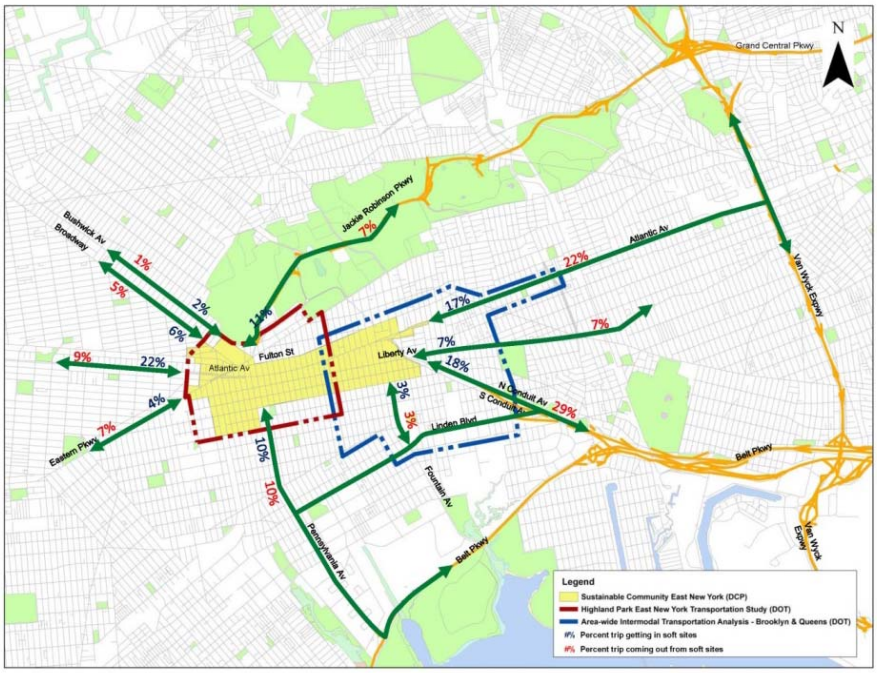
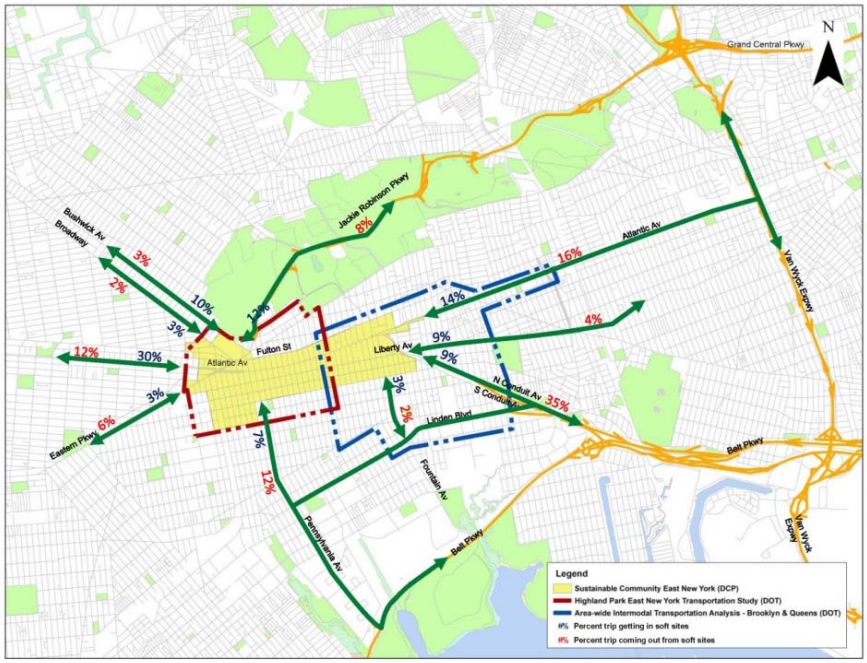


Figure 5: PM Percentage Distribution



APPENDIX B

Pedestrian Chapter

Existing Conditions Analysis 2012

Pedestrian Level-of-Service – Existing (Page 1 of 2)

Loc. #	Intersection	Crosswalk	AM		PM	
			SF/P	LOS	SF/P	LOS
1	Eastern Pkwy Ext & Atlantic Ave	North	990.0	A	1646.6	A
		South	1049.1	A	1582.1	A
		East	263.4	A	532.6	A
		West	668.7	A	927.4	A
2	Mother Gaston Blvd & Pitkin Ave	North	415.8	A	410.5	A
		South	537.8	A	348.5	A
		East	339.5	A	405.4	A
		West	419.1	A	279.8	A
3	Mother Gaston Blvd & Sutter Ave	North	192.5	A	198.9	A
		South	521.5	A	542.1	A
		East	270.8	A	118.7	A
		West	217.9	A	164.6	A
4	Pennsylvania Ave & Atlantic Ave	North	415.5	A	192.4	A
		South	367.1	A	294.8	A
		East	105.6	A	162.4	A
		West	78.2	A	189.1	A
5	Pennsylvania Ave & Liberty Ave	North	279.7	A	222.3	A
		South	115.7	A	152.8	A
		East	1185.9	A	1671.8	A
		West	591.3	A	1054.6	A
6	Pennsylvania Ave & Pitkin Ave	North	262.8	A	421.6	A
		South	150.6	A	179.5	A
		East	430.2	A	432.5	A
		West	405.7	A	767.0	A
7	Pennsylvania Ave & Belmont Ave	North	367.6	A	292.4	A
		South	273.6	A	449.8	A
		East	381.2	A	456.0	A
		West	452.0	A	441.4	A

Pedestrian Level-of-Service – Existing (Page 2 of 2)

Loc. #	Intersection	Crosswalk	AM		PM	
			SF/P	LOS	SF/P	LOS
8	Pennsylvania Ave & Sutter Ave	North	137.3	A	154.8	A
		South	147.1	A	196.8	A
		East	431.3	A	590.4	A
		West	523.6	A	606.1	A
9	Vermont St & Pitkin Ave	North	495.5	A	375.9	A
		South	487.5	A	501.1	A
		East	385.3	A	345.8	A
		West	188.6	A	450.5	A
10	Van Siclen Ave & Pitkin Ave	North	678.4	A	434.9	A
		South	424.6	A	306.3	A
		East	548.0	A	281.9	A
		West	383.5	A	288.4	A
11	Warwick St & Atlantic Ave	North	277.0	A	479.1	A
		South	277.9	A	1588.9	A
		East	155.1	A	329.3	A
		West	55.9	B	134.7	A
12	Van Sinderen Ave & Fulton St	North	503.3	A	536.0	A
		South	1495.7	A	652.8	A
		East	1364.5	A	566.5	A
		West	95.3	A	98.7	A

Future Conditions Analysis 2022

Future (2022) Crosswalk Level of Service (Page 1 of 2)

Location	Intersection	Crosswalk	AM		PM	
			SF/P	LOS	SF/P	LOS
1	Eastern Pkwy Ext & Broadway	North	265.0	A	241.1	A
		South	69.7	A	93.7	A
		East	1053.4	A	1031.8	A
		West	602.7	A	671.6	A
2	Eastern Pkwy Ext & Atlantic Ave	North	812.9	A	694.1	A
		South	906.4	A	667.5	A
		East	300.4	A	220.4	A
		West	274.3	A	274.8	A
3	Mother Gaston Blvd & Pitkin Ave	North	363.2	A	355.1	A
		South	469.4	A	302.8	A
		East	379.2	A	243.1	A
		West	280.0	A	349.1	A
4	Mother Gaston Blvd & Sutter Ave	North	167.6	A	173.0	A
		South	458.3	A	406.2	A
		East	190.8	A	143.1	A
		West	233.1	A	103.5	A
5	Pennsylvania Ave & Atlantic Ave	North	293.0	A	168.7	A
		South	319.1	A	254.0	A
		East	94.0	A	142.9	A
		West	51.1	B	127.7	B
6	Pennsylvania Ave & Liberty Ave	North	173	A	167.6	A
		South	92.4	A	118.9	A
		East	604.5	A	935.9	A
		West	1011.0	A	1290.3	A
7	Pennsylvania Ave & Pitkin Ave	North	228.0	A	350.6	A
		South	125.6	A	154.5	A
		East	425.4	A	741.0	A
		West	172.7	A	307.0	A
8	Pennsylvania Ave & Belmont Ave	North	317.6	A	257.4	A
		South	236.9	A	388.5	A
		East	396.7	A	387.4	A
		West	336.3	A	395.2	A
9	Pennsylvania Ave & Sutter Ave	North	118.9	A	134.9	A
		South	127.3	A	172.8	A
		East	527.4	A	583.7	A
		West	315.9	A	463.2	A

Future (2022) Crosswalk Level of Service (Page 2 of 2)

Location	Intersection	Crosswalk	AM		PM	
			SF/P	LOS	SF/P	LOS
10	Vermont St & Pitkin Ave	North	435.7	A	326	A
		South	424.6	A	428.3	A
		East	172.2	A	408.6	A
		West	334.9	A	286.4	A
11	Van Siclen Ave & Pitkin Ave	North	587.6	A	383.1	A
		South	367.2	A	266.9	A
		East	340.8	A	252.9	A
		West	472.5	A	244.5	A
12	Warwick St & Atlantic Ave	North	244.4	A	418.4	A
		South	242.9	A	1449.7	A
		East	57.3	B	139.4	A
		West	104.4	A	246.0	A
13	Van Sinderen Ave & Fulton St	North	302.4	A	204.7	A
		South	712.6	A	484.1	A
		East	1800.0	A	977.5	A
		West	91.9	A	60.9	A

APPENDIX C

Industrial Business Zone Survey

Highland Park-East New York Transportation Study
East Brooklyn Business Improvement District - Business Survey
March 2014

1. Please provide the location (street name and cross streets) of your business
   _____.

2. Does your business receive or dispatch deliveries? Y or N

3. How are your freight shipments/deliveries handled?
   a. ___UPS/FedEx/USPS
   b. ___Private trucking company
   c. ___Other (please specify)

4. On average, how many truck trips are generated (incoming and outgoing) by your business weekly?
   Incoming: (a) ___ (1-5) (b) ___ (6-10) (c) ___ (11-15) (d) ___ >16
   Outgoing: (a) ___ (1-5) (b) ___ (6-10) (c) ___ (11-15) (d) ___ >16

5. What days and times are shipments/deliveries normally made/received?
   Day of Week: ___Mon ___Tues ___Wed ___Thurs ___Fri ___Weekend
   Time of Day: ___AM (7-11) ___Mid (12-3) ___PM (4-7) ___ Other (please specify)

6. Does the loading or unloading activity take place on-site or on the street?
   ___on-site ___on the street

7. Please describe your delivery needs (curb space for truck loading and unloading, time frame for deliveries) and any current issues you may have.

8. Do the parking regulations outside your business support business operation? If not, please explain.

9. Are there any traffic or transportation issues that affect your business operation that you would like to see addressed in our study? Please specify.

10. How many employees drive and park in the EBBID? _____

11. On average, how many parking tickets, if any, does your company receive at your facility monthly?_____

APPENDIX D

Public Participation Chapter

Technical Advisory Committee Kick-off Meeting Notes

March 28, 2013

NYCDOT's Traffic Planning unit conducted the first Technical Advisory Committee meeting for the study on March 28, 2013 (10:00 AM) at the Brooklyn Borough Commissioner's office, 16 Court Street, Brooklyn. The meeting was attended by representatives from Community Board 16, Department of City Planning (DCP), and New York City Transit (NYCT).

The objective of the meeting was to present the draft scope of the study and to receive technical input from the TAC. The presentation identified the study area boundaries and the various subjects and issues to be examined. During the comment/question period many issues were raised and suggestions made as follows:

- A representative from CB16 pointed out that the subway stations in the study area are not handicap accessible, even the Broadway Junction station. NYCT responded that Federal law does not require every station to be ADA accessible and that the effort to make subway stations ADA accessible is on-going.
- A representative from CB16 said that Powell Street (between Liberty and East New York Avenues) often experience congestion due to ingress/egress at the school bus parking lot. This route is often used to access the Jackie Robinson Parkway and is thus problematic. Also, 0headway could be shortened. DOT urged residents to make requests for benches and shelters through the community board.
- DCP provided an update of the Sustainable East New York Study which includes a part of the Highland Park-East New York study area and beyond. The Sustainable East New York Study is expected to be completed early 2014, and presentations were made to CB 5 and 16.
- DOT expressed the need to work together to effectively assess the true traffic impacts of the rezoning proposal and to develop a comprehensive response to the increased traffic the land use changes will generate in the area.
- NYCT expressed a willingness to work with DOT to find planning and operational solutions to address traffic issues adjacent to the East New York Bus Depot.

Public Meeting #1- CB#16 Notes

May 9, 2013

NYCDOT Traffic Planning conducted the first public meeting with Community Board 16 for the study on Thursday, May 9, 2013 (6:30 PM) at the Community Board 16 District Office. The meeting was attended by the community board members, residents, Brownsville Partnership representatives, the Local Development Corporation of East New York, and a Department of Health & Mental Hygiene representative.

The purpose of the meeting was to introduce the study, present the scope of work, and receive community input. A presentation was made highlighting the study area boundaries, goals and objectives and the various topics to be examined.

The community response was very positive as they raised several issues concerning traffic congestion, traffic operations, missing signs, bike lanes, parking, bus operations and accessibility for the disabled. They identified specific locations that they would like to see improved. Pertinent comments and questions are summarized below.

- A resident stated that at the intersection of Pennsylvania/Jamaica/Bushwick Avenues and Jackie Robinson Parkway the signal phase for northbound left is too short; the left turn prohibition from Bushwick Avenue and Jackie Robinson Parkway onto Jamaica Avenue eastbound is often violated.
- The eastbound buses on Jamaica Avenue that turns right onto Pennsylvania Avenue causes congestion because buses usually have difficulty making the turn as they are blocked by traffic. These buses should be routed to Fulton Street.
- A representative from the Local Development Corporation commented that parking regulations in the Industrial Business Zone should be studied to ensure that the needs of the business are being met.
- A CB16 member indicated that a new residential facility being constructed on Junius Street (between Glenmore and Liberty) will add more vehicular traffic to the network and its impact should be considered.
- Vehicles trying to access the McDonald's drive-thru (Pennsylvania Avenue/Jamaica Avenue) from northbound Pennsylvania Avenue must contend with constant southbound traffic; this causes congestion.
- The Local Development Corporation representative (Bill Wilkins) stated that bike lanes should not be on all three major east-west corridors (Pitkin, Liberty, and Sutter) in the Industrial Business Zone; the bike lane on Pitkin Avenue should be a shared bike lane; bike lanes should not be on all three corridors that connect Brownsville to East New York. It was stated that a bike lane will be installed on Mother Gaston Boulevard.
- It was stated that there are several locations with missing street names and stop signs (e.g. Hinsdale Street and Belmont Avenue).
- A complaint was made about congestion in the study area caused by traffic in/out of school bus parking lots. Specifically, attention was drawn to a lot on Powell Street between Glenmore and East New York Avenues. It was also stated that there should be a designated staging/layover area for school buses to help facilitate parking operations after pick-up/drop-off of students.
- Recent improvements at Pacific Street/East New York Avenue intersection appear to be overkill.
- A few questions were asked regarding areas of con-

cern outside the study area. They included:

* Will a study be done in the Gateway Mall area?

* Will Linden Boulevard be resurfaced soon as it is in terrible condition?

* At Linden Boulevard/Bristol Street the exit from the main line to the service road is very dangerous as vehicles always speed resulting in horrible accidents.

- The representative from DOHMH submitted a sheet with the results of a survey in relation to four schools in the area identifying issues related to safe routes to schools.

Public Meeting #1- CB#5 Notes
June 25, 2013

NYCDOT Traffic Planning conducted the first public meeting with Community Board 5 for the study on June 25, 2013, at the Community Board 5 District Office. The purpose of the meeting was to present and to inform stakeholders in Community District 5 about the study. In attendance were representatives from Community Board 5, residents, Brooklyn Borough Commissioner's office, and DOT. A presentation was made that identified the study area boundaries, goals/objectives, and the subjects that will be studied as part of the analysis. There were limited comments on particular traffic issues in the study area. Other pertinent comments are listed below.

- A CB5 representative questioned how funds to conduct the study were obtained. The person stated that Community Board 5 had approached DOT on many occasions regarding the need for capital improvements in the area, and the response was always that no budget was available for those improvements.

- A DOT representative responded that the funding source/process for planning studies differs from that for capital projects.

Meeting attendees were asked to send additional questions and comments to the contact email address for the study.

Technical Advisory Committee Meeting #2 Notes
May 20, 2014

The second Technical Advisory Committee (TAC) meeting for the study conducted by NYCDOT Traffic Planning was held on May 20, 2014 (10:00AM) at the Brooklyn Borough Commissioner's Office. In attendance were representatives from the Community Board 16, NYCTCC, NYCDCP, NYSDOT, MTA, and NYCDOT.

NYCDOT representative Michael Griffith opened the meeting by outlining the objectives of the meeting, providing a brief background to the study, and invited attendees to introduce themselves.

Carren Simpson (project manager) delivered a Power Point presentation that identified the study area boundaries, goals/objectives, the subjects studied and areas of analysis, the existing and future conditions as well as the community issues and the possible improvement locations. Michael Griffith then detailed the proposed bus circulation plan for the B12 and B25 bus loops.

After the presentation, the following questions/comments were made:

- A representative of NYCDCP asked if the future conditions took the potential development from the Sustainable East New York Study into account. NYCDOT replied that they have a general insight into the study but lack specific details and should coordinate with DCP on these details with the understanding that increased development density leads to increased conflicts between pedestrians and vehicles.

- A representative of NYCDCP asked about the effect of putting additional buses onto Atlantic Avenue as a result of the proposed bus circulation proposal.

- NYCDOT replied that the buses would only be on Atlantic Avenue for two blocks and this route would avoid all left turn conflicts.

- A representative of NYCDCP asked if DOT will be striping the crosswalks around the bus depot for safer crossings. He stated that DCP has several proposals for pedestrian improvements in that area and DOT should coordinate with DCP on this matter.

- A representative of NYCDCP asked if NYCDOT will be making changes/improvements to the Georgia Ave/Fulton Street intersection including the possibility of closing one of the two way segments. NYCDOT replied that the intersection will be turned into one-way northbound with allowable vehicle movements striped. Closing one of the segments is not preferred given the heavy bus usage at this intersection.

- A representative of NYCDCP asked if NYCDOT could get transit employees to stop illegally parking in areas around the bus depot. Additionally, police parking in the area is causing problems. NYCDOT replied that various options are being considered including hatched striping on the street to act as a visible deterrent to parking in the area and that police parking is a known issue that has been raised in the past.

- State DOT asked if the study had any proposals at the Bushwick Avenue/Jackie Robinson Parkway intersection. NYCDOT replied that some improvements were recently made, but that it is a very difficult intersection to improve due its complexity.

- A representative of NYCDCP stated that due to the amount of fatalities and crashes in the study area perhaps more should be done from a safety standpoint in the study

area. NYCDOT replied that the Vision Zero initiative would be making improvements along Atlantic Avenue.

- A representative of NYCDCP asked if truck access was an issue that arose through the Industrial Business Zone survey. NYCDOT replied that the main complaint from the survey was concerned with parking; truck access was not a major complaint heard from the businesses.

Public Meeting #2- CB#16 Notes

June 2, 2014

NYCDOT Traffic Planning held the second public meeting in Community District 16 on June 02, 2014 (6:30PM) at District office. Attendees included representatives from CB 16 and DOT. The community was updated on the progress of the study with results of the existing and future conditions analysis, preliminary recommendations, and the next steps. After the presentation, attendees raised the following questions and concerns:

- The community expressed concerns about problems with the existing signal timing/short lights for pedestrian and motorists at the Jackie Robinson Parkway/Pennsylvania/Jamaica/Bushwick Avenues intersection. It was noted that some signal timing progression irregularities exists particularly during the Saturday peaks.
- An attendee inquired about the standard procedure to have count down signals installed. The person noted that the Brownsville area doesn't have any count down signal. The District Manager (Ms. Green) stated that there are countdown signals at Howard Ave/Pitkin Ave and Eastern Parkway/Howard Ave. The desire for more pedestrian count down signals installed in the area including the Jackie Robinson Pkwy/Pennsylvania/Jamaica/Bushwick Avenues intersection was expressed. DOT staff explained that pedestrian counts down signals are usually installed along a corridor instead of per intersection with few exceptions.
- A request was made to clarify the definition of a high crash location. It was clarified that a high crash location is an intersection that has 23 reportable crashes or 5 pedestrian crashes in a year.

Public Meeting #2- CB#5 Notes

June 5, 2014

The second public meeting within Community Board 5 was held on June 05, 2014 (6:30PM) at the District Office (127 Pennsylvania Avenue). The meeting was attended by representatives from the community, the District Manager, and NYCDOT. A PowerPoint presentation that outlined the progress of the study, showed results of the existing condition analysis, and highlighted some of preliminary recommendations together with next steps was made by the project manager (Carren Simpson). The following issues were raised during the presentation:

- The District Manager (DM) expressed concern about congestion during the rush hours in the vicinity of the Van Sinderen Avenue/Fulton Street (in front of the Broadway Junction station); and he expressed hope that the planned improvements (Broadway Junction Reconstruction) would solve some of the existing problems. He also suggested that enforcement is needed for illegally parked (transit employees) and double parked vehicles.
- The DM also expressed concerns about illegal parking activities (including by NYPD) in the IBZ. The DM also suggested that the construction of a new "triple decker" off-street parking facility would help to alleviate the problem of illegal/double parked vehicles. DOT responded that they don't have sufficient funds to support such project. The DM also indicated that some commuters (LIRR and others) regularly park their cars on the neighborhood streets (Snediker/Liberty Avenues), thus creating additional parking shortages in the area.
- The community raised concerns about traffic and safety issues at the intersection of Jackie Robinson Parkway and Jamaica/Bushwick/Pennsylvania Avenues. The community felt that there are no directions for drivers to navigate through the intersection; additionally it was noted that there is not enough time (short signal) for northbound vehicles on Pennsylvania Avenue making a left onto Jamaica Avenue; and that there was no pedestrian signal on the east crosswalk (crossing Jamaica Avenue and Jackie Robinson Parkway). NYCDOT responded that authorizing pedestrians to cross that crosswalk is deemed unsafe and that is why it is not sanctioned with a pedestrian signal (although pedestrians do cross there). The DM questioned if there was a posted sign informing pedestrians not to use that crosswalk.
- The community suggested that the existing westbound near side bus stop on Jamaica Avenue at Jackie Robinson Parkway/Pennsylvania Avenue should be relocated to the far side of the intersection.
- Disagreement was expressed with the NYCDOT/NYCT proposal that involves rerouting the B25/B12 buses. Concerns opposing the proposal included: Sheffield Avenue being too narrow street for bus maneuvers; existence of the rehabilitation center on the middle block of Sheffield Avenue; potential conflicts with car wash activities at the corner of Atlantic/Sheffield Avenues (chemicals from car wash may create slippery roadway condition for buses; vehicular conflicts along Atlantic Avenue main and service roads; and, the existence of a homeless facility on Alabama Avenue/East New York Avenue where the new bus stop/layover is proposed.
- The community questioned how NYCDOT will replace lost parking on Sheffield Avenues if proposal is implemented.
- The DM expressed the desire to have the B12 line ex-

tended to Liberty Avenue, as was previously the case and that the wait time for the B12 is too long.

- The community questioned why the southbound B20/B83 stop that was located on the far side of Pennsylvania/Liberty Avenues was relocated to midblock Pennsylvania Avenue (close to Atlantic Avenue). The new stop location impedes traffic operation.

Technical Advisory Committee Meeting #3 Notes

December 3, 2014

The third and final Technical Advisory Committee (TAC) meeting was held on December 3, 2014 at the Brooklyn Borough Commissioner's Office. In attendance were representatives from the Borough President's Office, Council Member Darlene Mealy's Office, NYCDCP, NYCT, NYCTCC, and NYCDOT. The purpose of the meeting was to present the study's recommendations and improvement measures.

Michael Griffith started the Power Point presentation given a brief overview of study's background, outlined the objectives of the meeting and presented the summary of the issues and findings of the study.

Eva Marin continued presenting the general recommendations and the detailed propose improvements for 12 locations and various street segments in the study area. These improvements includes geometric, signal timing and rush hour and parking regulations changes as well as street direction changes, sidewalk repair and new proposals for truck loading and unloading zones.

Carren Simpson (project manager) delivered the last section of the Power Point presentation illustrating the detailed proposal for the Bus circulation plan for the B12 and B25 bus loops and recommendations to improve business operation in the Industrial Business Zone of the study area.

After the presentation, the following questions/comments were made:

- A representative of NYCDOT Brooklyn office asked about the implications of removing parking under the new bus B12/B25 loop proposal.

NYCDOT replied that the proposal is still under revision between NYCDOT and MTA and that it will be presented to the community as well for comments and feasibility analysis.

- A representative of NYCDCP asked about the time frame for some of these recommendations.

NYCDOT responded that to move forward to implementation with these recommendations will depend on the feasibility of each of them. For example most of the signal timing changes can be probably implemented very soon, but other will require more coordination and detailed analysis before being implemented.

- A representative of CB 5 asked if these recommendations came from the community.

DOT explained that these recommendations came from the study but also respond to the community concerns and comments provided by CB 5 and CB 16 at the public meetings.

- A representative of NYCDCP raised pedestrian's concerns at the location on East New York by the LIRR entrance.

NYCDOT replied that DOT is aware of the problems at this location, and currently is being reviewed to analyze how can be improved.

- A participant asked about how the Vision Zero plan had been included in the study.

NYCDOT replied that the study is aware of the Vision Zero initiative coming with a set of improvements along Atlantic Avenue; therefore the study is not proposing major recommendations along this corridor.

- NYCDCP representative asked what then happen between the draft and final report and if DOT need capital money to do the implementation.

NYCDOT replied that between the draft and final planning report changes are made to incorporate comments and concerns from TAC members and the community. From the funding point of view money for implementation comes from different sources such as from DOT itself or other agencies like transit in this case for the bus proposal, it will depend on each improvement itself and what is required to be implemented.

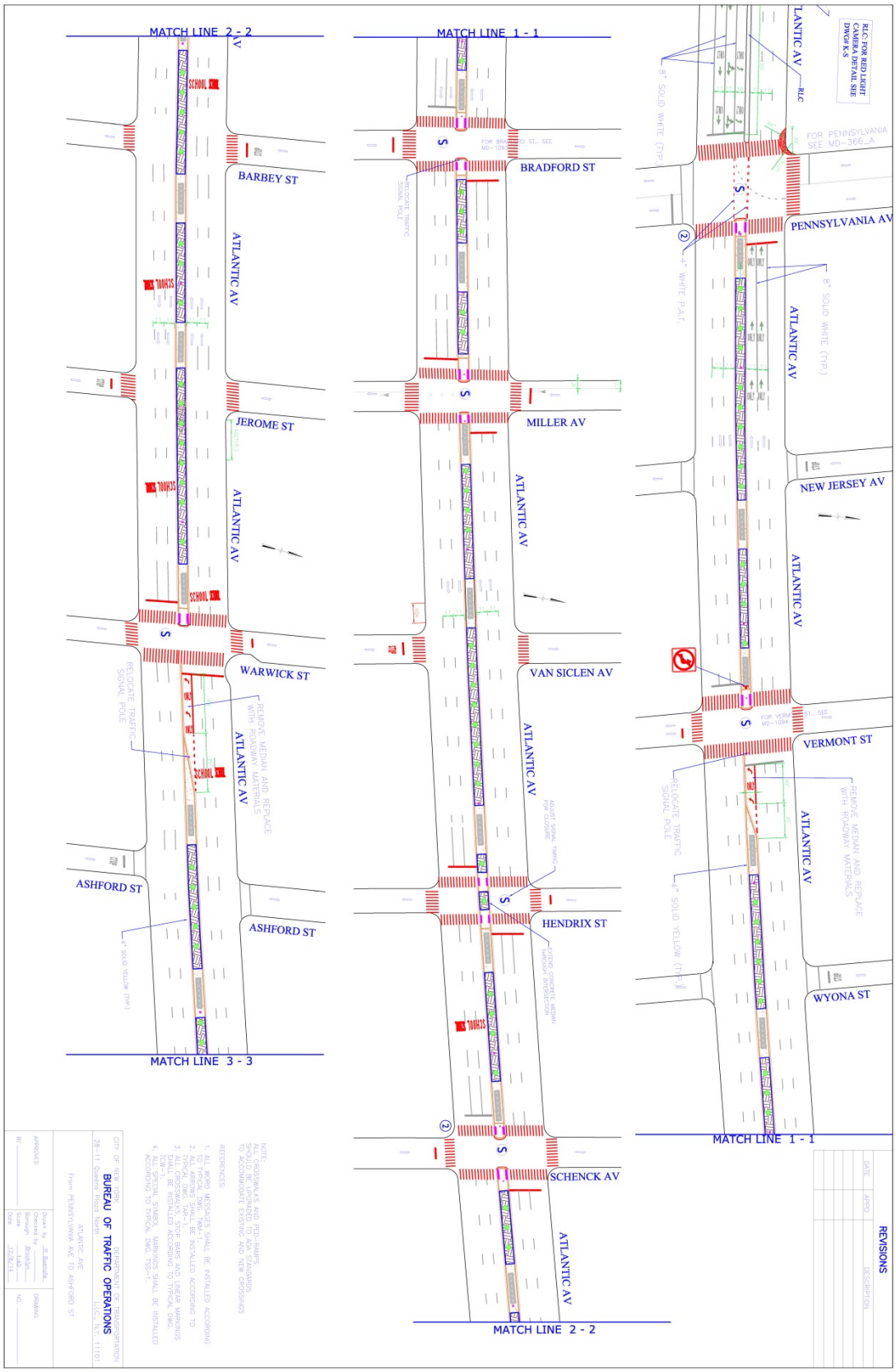
Public Meeting #3- CB#5 & CB#16 Notes

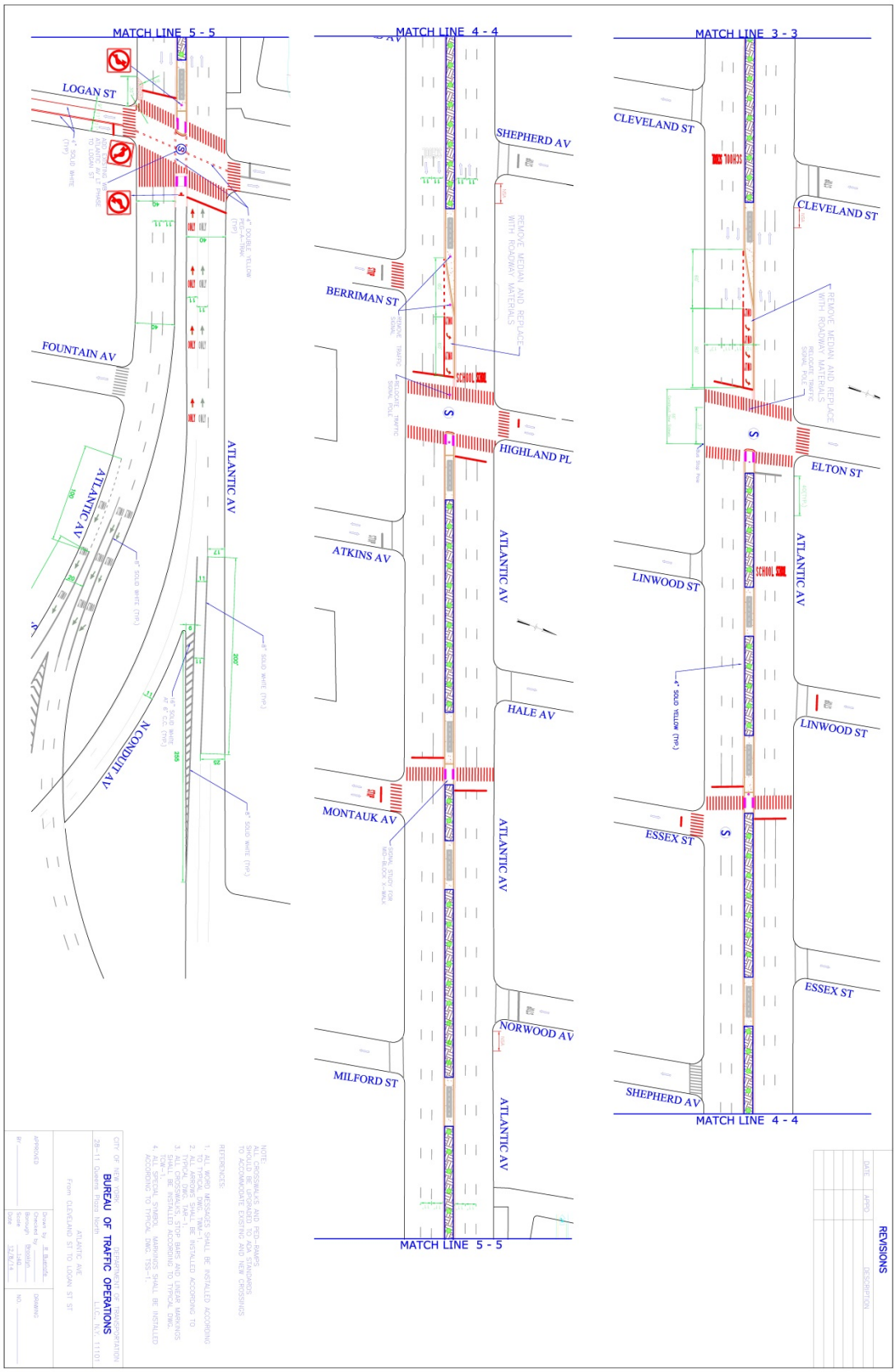
December, 2014

The third final public meetings with Community BoardS 5 and 16 were held on December 17 and 23, 2014, respectively. The draft final recommendations for the study were presented to each Community Board at the meetings. The recommendations include geometry changes, transit access changes, safety enhancements, parking and signal timing changes. There were not comments from the public.

APPENDIX E

Atlantic Avenue Safety Improvement Project


MATCH LINE 2 - 2
MATCH LINE 1 - 1
MATCH LINE 3 - 3
MATCH LINE 1 - 1
MATCH LINE 2 - 2
BARBEY ST
JEROME ST
WARWICK ST
ASHFORD ST
ASHFORD ST
BRADFORD ST
MILLER AV
VAN SICLEN AV
HENDRIX ST
SCHENCK AV
PENNSYLVANIA AV
NEW JERSEY AV
VERMONT ST
WYONA ST
ATLANTIC AV
SCHOOL ZONE
RELOCATE TRAFFIC SIGNAL POLE
REMOVE MEDIAN AND REPLACE WITH ROADWAY MATERIALS
4" SOLID YELLOW (TYP.)
8" SOLID WHITE (TYP.)
4" WHITE P.A.T.
R.L.C.: FOR RED LIGHT CAMERA DETAIL SEE DWGS K-3
CITY OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC OPERATIONS
28-11 Queens Plaza North
L.I.C., N.Y. 11101
ATLANTIC AVE
From PENNSYLVANIA AVE TO ASHFORD ST
APPROVED
Drawn by
Checked by
Borough
Scale
Date
DRAWING
NO.
REVISIONS
DATE
APPD
DESCRIPTION


MATCH LINE 5 - 5
LOGAN ST
FOUNTAIN AV
ATLANTIC AV
N CONDUIT AV
MATCH LINE 4 - 4
SHEPHERD AV
BERRIMAN ST
HIGHLAND PL
ATKINS AV
HALE AV
MONTAUK AV
NORWOOD AV
MILFORD ST
MATCH LINE 3 - 3
CLEVELAND ST
ELTON ST
LINWOOD ST
ESSEX ST
SCHOOL ZONE
REMOVE MEDIAN AND REPLACE WITH ROADWAY MATERIALS
RELOCATE TRAFFIC SIGNAL POLE
4" SOLID YELLOW (TYP.)
REVISIONS
DATE
APPD.
DESCRIPTION

Appendix E - 3