

# Harlem/Morningside Heights Transportation Study



## Technical Memorandum No. 1- Existing Conditions



Michael R. Bloomberg, Mayor  
The City of New York



New York City  
Department of Transportation  
Iris Weinshall, Commissioner



DEPARTMENT OF CITY PLANNING  
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# Harlem/Morningside Heights Transportation Study

## Technical Memorandum No. 1

### Existing Conditions 2003

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## **EXECUTIVE SUMMARY**

### **S.1 PROJECT DESCRIPTION**

The Harlem/Morningside Heights Transportation Study is a collaborative effort of the city Department of Transportation (DOT) and the Department of City Planning (DCP). The study was initiated in response to community concerns about development trends as well as increase in congestion and changes to neighborhood characteristics. The purpose of the study is to assess current and future land use development and transportation needs of the Harlem/Morningside Heights area. The study area is bounded by 135<sup>th</sup> Street to the north, 116<sup>th</sup> Street to the south, Hudson River to the west and Harlem River to the east. The study will investigate land use, zoning, demographics and other factors that influence traffic and transportation. The study seeks to provide effective solutions to the problems identified and to improve mobility, circulation, and safety of vehicular and pedestrian traffic in the study area.

### **S.2 DEMOGRAPHICS**

The Harlem Morningside study area cuts across three Community Districts: 9, 10 and 11 and consists of 40 Census Tracts. There are 24 tracts located entirely within the Study Area, while 16 are partially located in the study area.

The demographic analysis for the study area examined population trends from 1980 to 2000. The study area experienced a decline in population by 3.6% between 1980 and 1990 and increased by 9.8% between 1990 and 2000. The population over 20 years in the study area increased by 6.2%, slightly lower than the population growth experienced for the borough of Manhattan and New York City, which was 7.5% and 13%, respectively. The labor force for the study area increased by 6.5% between 1980 and 1990; it was higher than the Manhattan and New York City increases which were 3.7% and 3.4%, respectively. Between 1990-2000 labor force in New York City decreased by 3.9%, Manhattan decreased by 1.9% while in the study area labor force remained constant for this period. The number of households in the study area declined by 5.1% during 1980-1990 and increased by 8.8% between 1990-2000. In Manhattan the number of households increased over both decades by 1.7% and 3.1%, respectively; while for New York City, it

decreased by 19.5% during the first decade 1980-1990, but increased by 7.2% between 1990-2000. The median income for the residents in the study area grew from 1980 to 2000; however it was lower than the median income increase experienced for Manhattan and New York City residents. Distribution of journey to work by mode shows that the majority of the study area residents in year 2000 used public transportation (subway and buses) to work; a similar trend was observed for the New York City and Manhattan residents.

### **S.3 LAND USE AND ZONING**

A land use and zoning analysis of the study area was done by examining the existing land use, zoning patterns and trends. The land use analysis included categories such as residential, commercial, manufacturing, institutional, and parks. It included a review of existing land use maps and the New York City Zoning Resolution. It also looked at recent rezoning actions such as the West Harlem/Manhattanville, East Harlem, Frederick Douglass Boulevard and 125<sup>th</sup> Street.

The report shows that the predominant land use in the Harlem/Morningside study area is residential while the land use along 125<sup>th</sup> Street is mainly commercial, comprising of national chain stores, restaurants and fast food chain stores and offices.

### **S.4 TRAFFIC AND TRANSPORTATION**

The Existing 2003 traffic conditions were determined through field surveys conducted in October and November of 2003. The surveys included an inventory of street geometry, signal timing, traffic volumes and parking regulations. Manual turning movements and vehicle classification counts were conducted at many locations. In addition Automatic Traffic Recorders (ATR) machines were placed at seven locations to record 24 hours traffic volumes within the study area. The existing condition capacity and level of service analyses showed that there are intersections with poor level of service (LOS) throughout the study area. From a total of 39 intersections analyzed for the various peak hours about half experienced LOS D, E, and F in some or all lane groups. The following lists the number of locations that experienced LOS D, E or F for the respective peak hours:

- During the AM peak hour there are 13 locations;
- During the MD peak hour there are 4 locations;
- During the PM peak hour there are 10 locations; and
- During the Saturday peak hour there are 8 locations.

The most congested corridor in the study area is 125<sup>th</sup> Street as seen from the LOS and travel speed analysis. However the average travel speed along 125<sup>th</sup> Street is 11 miles per hour approximately, which is about 1.5 times faster than the other congested cross-town corridors in Manhattan.

## **S.5 PUBLIC TRANSPORTATION**

The study conducted a transit analysis within the area of study by examining the public transportation facilities and services (subway and bus services) under existing conditions. The capacity and ridership volumes on the buses were also analyzed. The study area is well served and has adequate bus service on all bus routes (a total of twenty-two local buses provide service within the area).

In addition, the existing conditions information for the subway stairwells, corridors, passageways and turnstiles volumes were included in the analysis. The study reveals that the study area is served by eleven subway lines along four routes and has eleven subway stations. All analyses are for peak 15-minute conditions during weekday morning, midday and evening and for Saturday midday. According to the results obtained all subway station elements operate at LOS A or B except for one subway station (125<sup>th</sup> Street and Lexington Avenue) which has elements operating at LOS C due to construction activities.

## **S.6 PARKING**

A parking analysis of the study area was done by examining existing on-street and off-street parking spaces, the extent to which parking is available and utilized under existing conditions. The study also inventoried and evaluated curb street parking regulations within the study area.

The study reveals that:

- There are 24 off-street privately owned parking facilities in the study area with a total capacity of 3, 932 parking spaces.
- The off-street public parking supply is adequate currently and can accommodate the existing demand.
- The on-street parking utilization on the avenues from 124<sup>th</sup> to 126<sup>th</sup> Streets shows very few empty parking spaces.

## **S.7 PEDESTRIAN AND BICYCLE ANALYSIS**

The pedestrian and bicycle analyses for the study area were conducted by examining the current conditions. The analysis included:

- the identification of high pedestrian volume locations along the street network generated by subway stations, bus stops, and adjacent land uses. It also provided an overview of general pedestrian concentration and flows at selected locations within the study area and assessed vehicle, pedestrian/bike conflicts and capacity problems that exist under current conditions.
- an overview of conditions on existing bicycle facilities listed in the New York City Bicycle Master Plan and the New York City Cycling Map within the area of study.

The data collection effort for pedestrians and bicycles included counts on one mid-week day (Tuesday, Wednesday or Thursday) during the morning, afternoon and evening peak hours. The pedestrian analysis also covered the level of service (LOS) analysis of sidewalks, corners and crosswalks and was done using the HCM methodology. The LOS analysis shows that the facilities at the 13 locations surveyed operate at a LOS A, except for two crosswalks which operate at a LOS B (the south crosswalk of Park Avenue and 125<sup>th</sup> Street during the evening peak period and the south crosswalk of Broadway and 116<sup>th</sup> Street during the midday peak period).

## **S.8 ACCIDENTS/SAFETY ANALYSIS**

A detailed accident analysis was conducted for thirteen locations in the study area where the average annual total accidents were 20 or more during the period from 1998 to 2000. A preliminary screening for the frequency of accidents showed that there was one location that averaged between 41 to 50 accidents per year, six locations with 31 to 40 accidents per year, and six locations with 20 to 30 accidents per year.

## **S.9 GOODS MOVEMENT**

Goods movement in the study area is a function of truck routes and the origin and destination of goods and services. The distribution of commercial/retail, residential, industrial, and manufacturing can be gleaned from the existing land use and zoning.

There is a significant concentration of commercial and office activities along 125<sup>th</sup> Street. There are also institutional uses in the study area that attract truck traffic as well. Deliveries are made mainly during the late morning and early afternoon hours from 10am to 3pm. Generally, inbound volumes are highest during the morning and midday peak. The number of trucks coming to Manhattan decreases after 4PM. Most of these trucks are medium size trucks such as the UPS trucks (2 axles, 6 wheels). The study area does not have any through truck route but is adequately served by local truck routes which provide connections to through routes. Truck activity in the study area is very high, particularly along the 125<sup>th</sup> Street corridor where many commercial/retail activities are located.

## **1.0 INTRODUCTION**

### **1.1 Setting the Context**

**Harlem/Morningside Heights** is located in the northern part of the borough of Manhattan, and is part of what is generally referred to as Harlem. Harlem area is bordered by Hudson River on the west, the Harlem River on the east, 110<sup>th</sup> Street to the south and the Manhattan Expressway which runs into the George Washington Bridge to the north. It is generally circumscribed by the Henry Hudson Parkway, the FDR/Harlem River Drive, 110<sup>th</sup> Street and 181<sup>st</sup> Streets. Harlem includes the communities of East Harlem, Spanish Harlem, Morningside Heights, and Manhattanville. Its proximity to the rivers has facilitated water-related land uses. Hence warehousing, light manufacturing, and terminal related facilities characterize section of the area. The area is also rich in institutional uses with many educational institutions such as Bank Street College of Education, Columbia University, Barnard College, Teacher's College, Manhattan School of Music, Union Theological Seminary, Jewish Theological Seminary, and the City College of the City University of New York. Other associations and institutions are The National Council of Churches, Riverside Church, Grotto of Notre Dame, North River Pollution Control Plant with the Riverbank State Park on its roof, and the St. Luke's Roosevelt Hospital Center.

Today, the Harlem area is experiencing enormous pressure for growth with its potential for new developments. In the past few years Harlem has become a center of attention for developers, organizations and public agencies that perceive and recognized the forthcoming economic expansion. Data shows than more than \$1.2 billion has been invested in new and rehabilitated housing since 1994 in Harlem. Big Box retails stores are coming to the area such as CostCo and Home Depot, as well as several smaller stores such as Duane Reade, Rite Aid pharmacies, Blockbuster Video and Starbucks Company.

### **1.2 Goals and Objectives**

The goal of the study is to assess the existing and future traffic and transportation conditions, identify any problems and generate recommendations to develop a package of improvement measures designed to safely accommodate future transportation needs. The study's main objectives are:

- To assess the existing transportation demand and needs of the study area;

- To pay special attention to the 125<sup>th</sup> Street Corridor;
- To project and assess the future (2015) conditions with respect to demographic, land use, traffic, transit, pedestrian and bicycle, parking, and good movement;
- To reduce vehicular congestion, improve safety for all users (vehicular and pedestrian); and
- To encourage the use of public transit / alternative modes.

The assessment will include an analysis in the areas of demographics, land use and zoning, traffic and transportation, parking, pedestrian and bicycle, transit, accidents and goods movement. The Department of City Planning is working on many rezoning initiatives within the study area, therefore land use and zoning will be given special importance.

To accomplish the goals and objectives a series of analyses will be conducted and the study will recommend measures of Transportation Systems Management (TSM) and/or Transportation Demand Management (TDM) to alleviate congestion and improve safety and mobility of pedestrian and vehicular traffic, thereby improving the quality of life of people who live and work in the area. Proposals for addressing the problems will include individual and packages of traffic and transportation measures. These proposed measures will be implemented in the near future and/or over a longer period of time up to the year 2015, which is the horizon year for the study.

### **1.3 The Study Area**

The study area is bounded by 135<sup>th</sup> Street to the north, 116<sup>th</sup> Street to the south, Harlem River to the east, and Hudson River to the west. The street network is more of a regular grid. The main north and south corridors are Broadway, Amsterdam Avenue, Frederick Douglass Boulevard, Lenox Avenue, Park Avenue and 2<sup>nd</sup> Avenue, while 125<sup>th</sup> Street and 116<sup>th</sup> Street are the main east and west arteries that service Harlem/Morningside Heights. 125<sup>th</sup> Street runs through the area from river to river in an east/west direction, connecting the Triborough Bridge and the FDR Drive on the east section with the Henry Hudson Parkway on the west side section of the study area. Exhibit 1-1 shows the boundaries of the study area and the insert shows the study area within the metropolitan region.

The Harlem/Morningside study area has experienced blight and decline over the past three decades, a trend that has been reversing in the past 3 to 4 years. The population trends in the study area show an approximately 4.0% decline from 1980 to 1990, and a recovery in 2000 as the population grew by almost 10.0%.

The study area is well-served by major highways and public transit. The major expressways in the immediate vicinity are the Harlem River Drive, FDR Drive and Henry Hudson Parkway. The major public transit operators providing service in the area are MTA's Metro-North and NYC Transit. Exhibits 1-2 and 1-3 show the study area with the subway lines and bus routes.

The study area has been experiencing major commercial/retail developments. The new developments will generate significant vehicle trips requiring an effective traffic and transportation plan to manage the increase in traffic.

The pressure for development is also reflected in some of the studies that are being undertaken in the area. The following highlights some of the studies.

#### **West Harlem Master Plan**

The West Harlem master plan which was prepared by NYCEDC in coordination with the local communities was completed in October 2002. The Master Plan is bounded by 135<sup>th</sup> Street to the north, 125<sup>th</sup> Street/St. Clair Place to the south, Marginal Street to the west and Broadway/Old Broadway to the east. The goals of the Master Plan are to stimulate new economic and cultural activity in the study area and improve access to the waterfront. Other components of the plan include a community center, retail facility and restaurant.

#### **Columbia University expansion/Manhattanville Rezoning**

This proposal is the rezoning of an approximately 35-acre area of Manhattanville in West Harlem in Manhattan. The rezoning supports the planning objectives of NYC EDC's 2002 West Harlem Master Plan. The rezoning would also allow Columbia to realize an Academic Mixed-Use Plan ("Academic Mixed Use Development") on approximately 17 acres within the 35-acre rezoning area.

The development located roughly between Broadway and Twelfth Avenue from the north of West 125<sup>th</sup> Street to north side of West 133<sup>rd</sup> Street would be built over an extended period of time. It would be approximately 6.4 million gross square feet, including academic building, laboratory/research facilities, parking, administrative offices and support space, recreational facilities, student and faculty housing and on site centralized steam and chilled water plant.

### **197-a Plan**

The Manhattan Community Board 9 (CB9) located in the west side of the study area is in the process of preparing a 197-a Plan. The plan which is a tool to address the community's vision for the entire district and be a catalyst in its implementation also provides a framework for collaborative community and property owner development. The issues that are driving the plan are:

- A need to improve the quality of life of its residents;
- A need to preserve historical building patterns and neighborhood scale;
- A need to encourage the creation and development of job intensive business to benefit local residents; and
- A need to allow for population growth

### **125<sup>th</sup> Street River to River Study**

EDC in conjunction with NYC Department of City Planning have launched the 125<sup>th</sup> Street River to River study to explore opportunities for planning and to provide short term and long term solutions and recommendations in the areas of transportation, culture, urban design, environment, and waterfront access.

To this end, an inter agency working group was established and regular meetings are being held. The purpose is to bring to the table all the public and private organizations, city and state agencies that will be involved in the design, planning and implementation of the final recommendations that emerge from the study.

The inter-agency working group is comprised of the following institutions:

NYC Economic Development Corporation

NYC Department of City Planning

NYC Department of Transportation

NYC Department of Parks & Recreation  
MTA NYC Transit Authority  
Upper Manhattan Empowerment Zone  
Cultural Affairs  
Housing Preservation and Development  
NYC Housing Authority  
125<sup>th</sup> Street Business Improvement District and  
Manhattan Borough President's Office

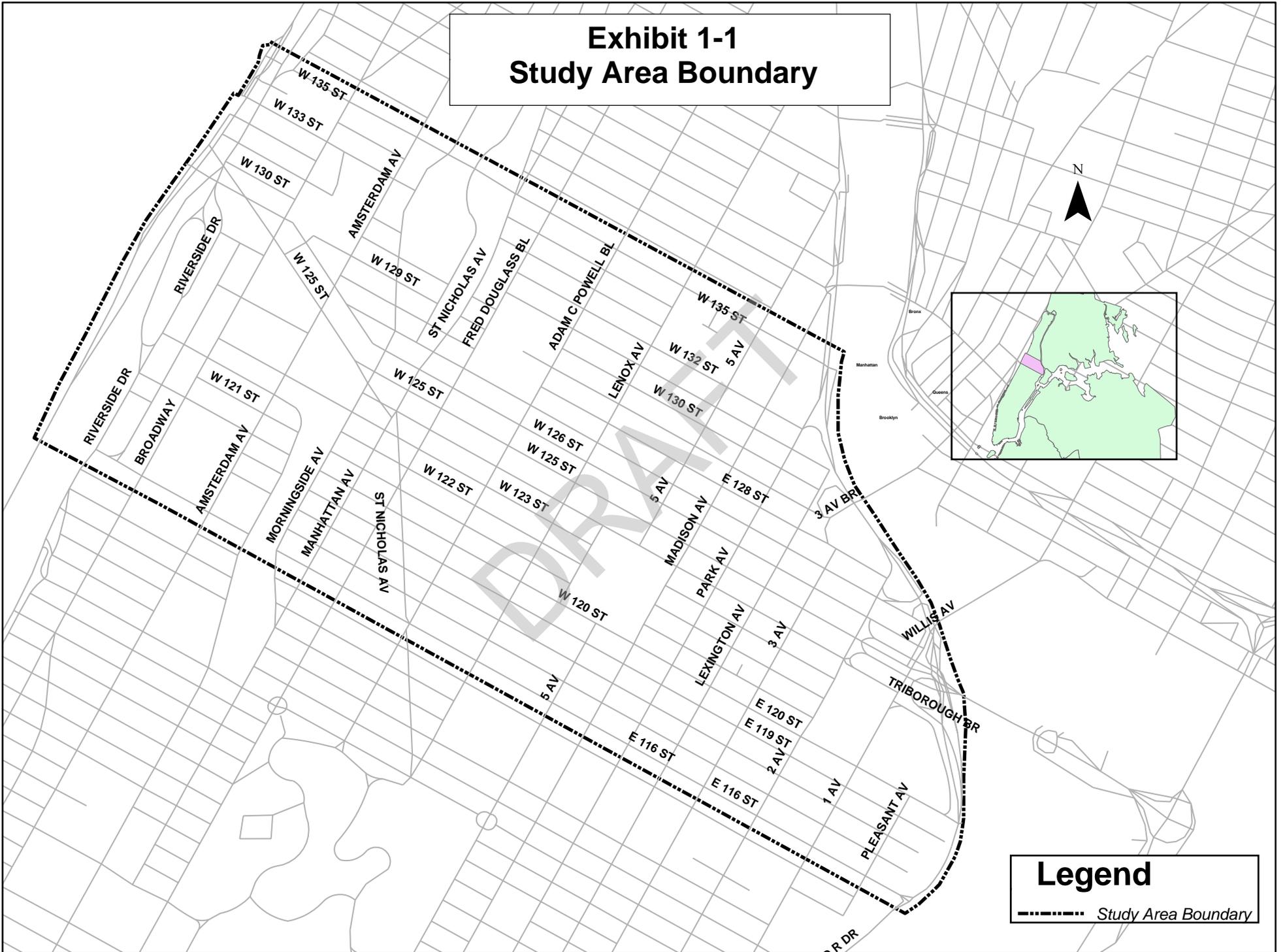
### **Other Projects**

In addition to the planning initiatives mentioned above many other major developments are being undertaken in the area such as the Pathmark Supermarket located on 125<sup>th</sup> Street and Lexington Avenue, the Harlem USA movie theater on 125<sup>th</sup> Street and Frederick Douglass Boulevard, the Victoria Theater located on the north side of West 125<sup>th</sup> Street between Adam Clayton Powell and Frederick Douglass Boulevards, the Harlem Center project, The Harlem Park Hotel, The Gateway and Gotham Plaza, Mart 125, The Harlem Auto Mall and the Randall's Island water park development.

There were other rezoning initiatives as well such as the Frederick Douglass Boulevard and the East Harlem rezoning. Then there is the reconstruction of the Willis Avenue and the Third Avenue Bridges. Some of these projects have been completed, some are on their way, and others are yet to be initiated. Exhibit 1-4 shows the study area with some of the projects conducted within the study area.

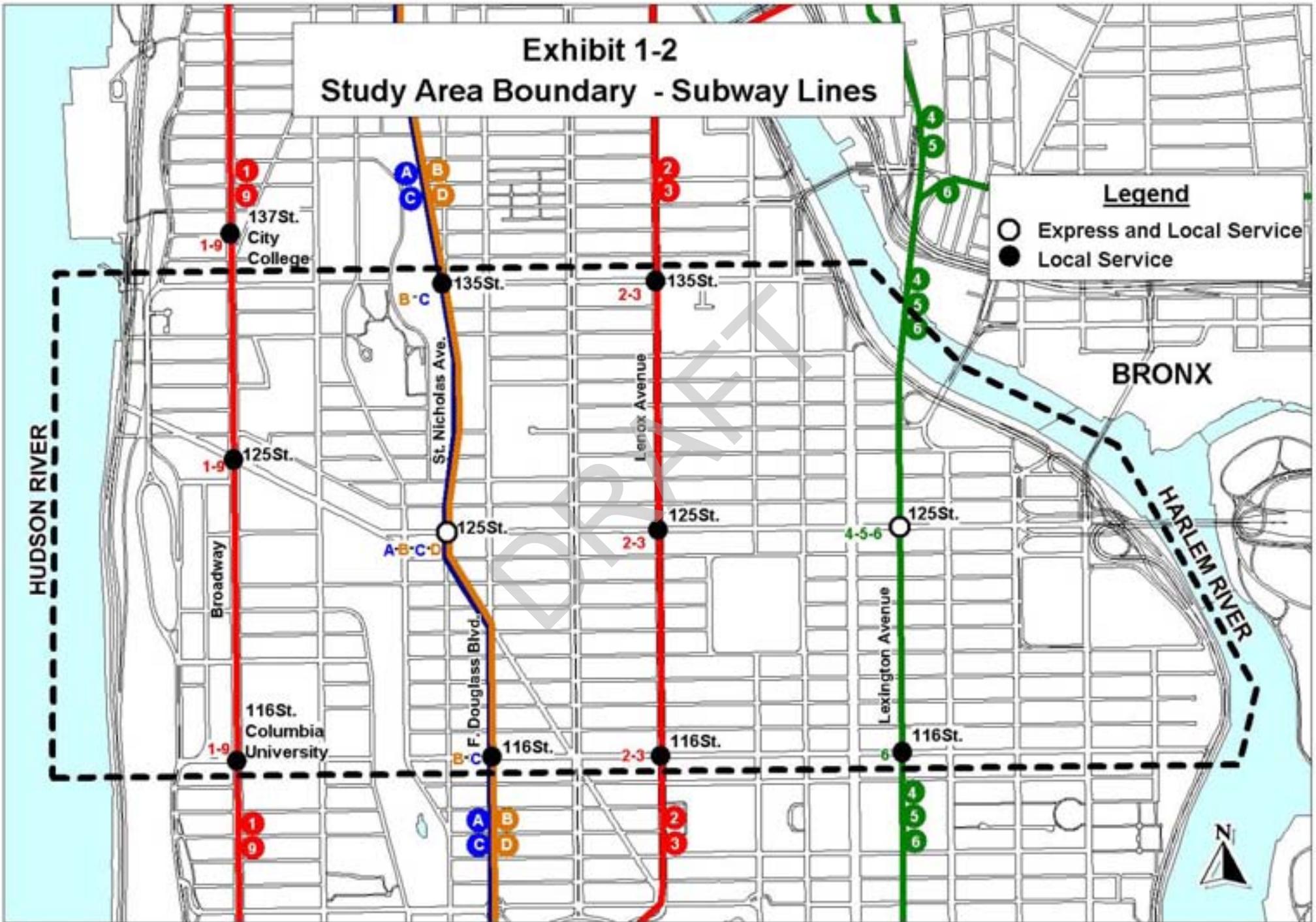
As a result the Harlem Morningside Heights study area will experience substantial changes by 2015, hence the need for a comprehensive analysis of the existing traffic and transportation conditions and reasonable forecasts of the future conditions.

# Exhibit 1-1 Study Area Boundary

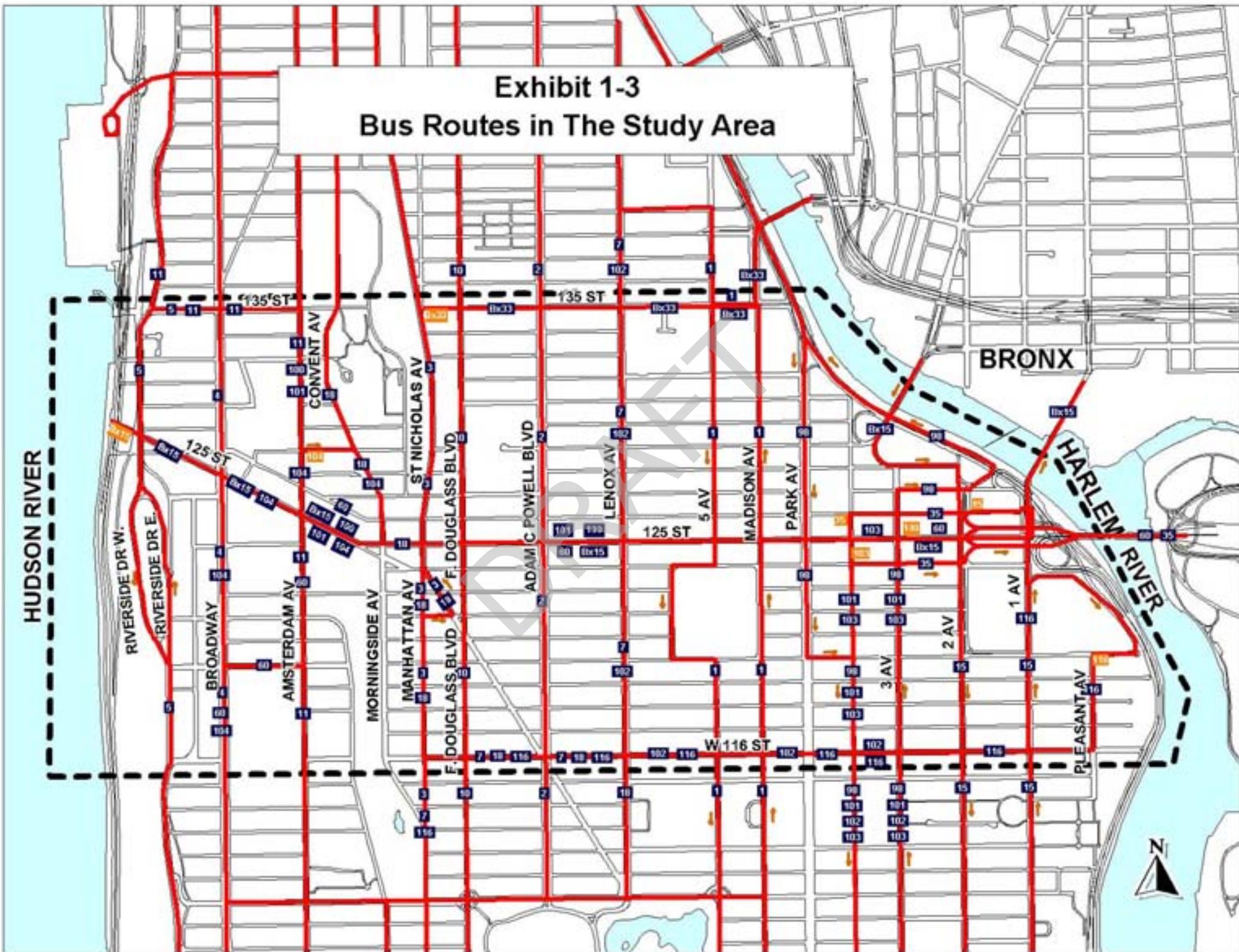


**Legend**  
----- Study Area Boundary

# Exhibit 1-2 Study Area Boundary - Subway Lines



# Exhibit 1-3 Bus Routes in The Study Area



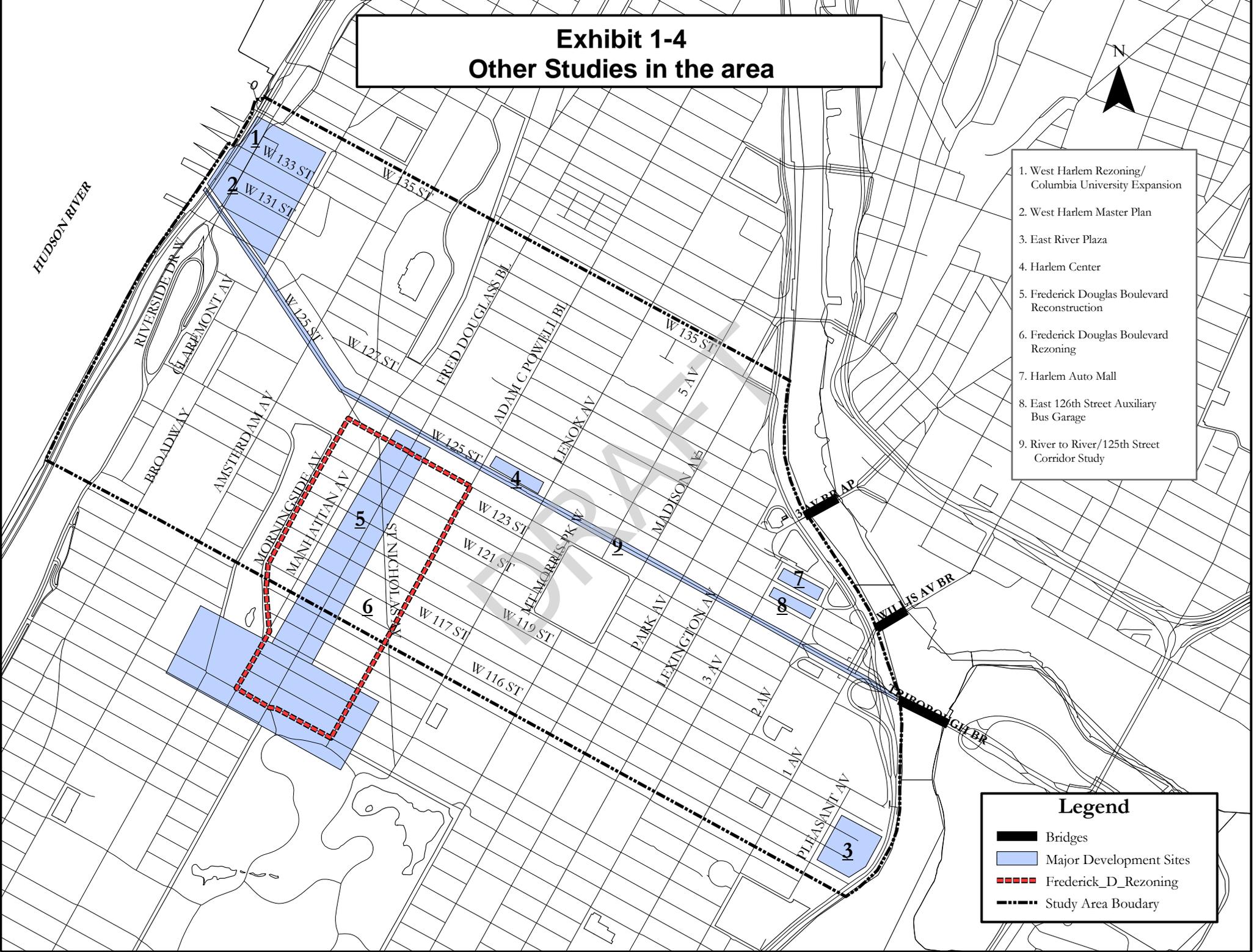
# Exhibit 1-4 Other Studies in the area



1. West Harlem Rezoning/ Columbia University Expansion
2. West Harlem Master Plan
3. East River Plaza
4. Harlem Center
5. Frederick Douglas Boulevard Reconstruction
6. Frederick Douglas Boulevard Rezoning
7. Harlem Auto Mall
8. East 126th Street Auxiliary Bus Garage
9. River to River/125th Street Corridor Study

### Legend

- Bridges
- Major Development Sites
- Frederick\_D\_Rezoning
- Study Area Boudary



## **1.4 Project Organization and Methodology**

The organization of the project is reflected in Exhibit 1-5. The project tasks are:

### **Task 1 – Project Organization and Management**

A detailed work program that outlines tasks, subtasks, task products and schedule has been developed including selection of Technical Advisory Committee (TAC) members.

### **Task 2 – Literature Search**

Relevant studies have been obtained from DOT's Environmental Impact Statement Library and from the Department of City Planning and other public and private agencies. Some of the studies reviewed were:

1. West Harlem Master Plan Traffic and Transportation Report, NYCEDC 2002
2. Reconstruction of Frederick Douglass Circle, Cathedral Parkway/West 110<sup>th</sup> Street, NYCDOT February 2003
3. Willis Avenue Bridge Reconstruction (ongoing project)
4. Harlem Center Project, NY Empire State Development Corporation-August 2000
5. Reconstruction of 145<sup>th</sup> Street Bridge over the Harlem River, NYCDOT -May 2001
6. Truck Route Study, NYCDOT (ongoing study)
7. East River Plaza, NY Empire State Development Corporation-August 1999
8. Harlem Auto Mall, Office of the Deputy Mayor for Economic Development and Rebuilding-April 2003

### **Task 3 – Data Collection and Identification of Issues**

Data was collected for demographic, land use and zoning, traffic, parking, pedestrians and bicycles, transit, accidents, and goods movement for the study area. Created an inventory of all the information for the existing conditions.

#### **Task 4 – Analysis of Existing Conditions**

Conducted a comprehensive analysis of the existing conditions (2003) in the areas of demographic, land use and zoning, traffic and transportation, parking, pedestrian and bicycle, transit, accidents and goods movement in the study area. Identified problems and issues based on analysis.

#### **Task 5 – Draft report for Existing Conditions (Technical Memorandum No.1.)**

#### **Task 6 – Analysis of Future Conditions**

Conduct an analysis of future (2015) conditions, for all issues studied for the existing conditions (demographics, land-use and zoning, traffic, parking, transit, pedestrian and bicycle, accidents and goods movements.)

#### **Task 7 – Development & Evaluation of Alternative Improvement Packages**

Generate recommendations and to develop a package of improvement measures designed to safely accommodate future transportation needs resulting from potential development and economic growth.

#### **Task 8 – Recommendations and Implementation Plan**

#### **Task 9 – Draft Final Report**

#### **Task 10 – Final Report**

Incorporate comments of the various agencies and community groups.

# Exhibit 1-5 HARLEM MORNINGSIDE HEIGHTS Process & Issues

## Inventory

## Issues

## Alternatives

## Plan

**Done by: D.O.T.**

**Demographics**

Population  
Characteristics:  
Age, Income,  
Household Size,  
Travel Patterns.

**Accident Analysis**

Collect Accident  
Records from  
NYSDMV, and  
NYSDOT.

**Goods Movement**

Truck Routes  
Locations of Retail,  
Industrial, and  
Manufacturing

**Traffic**

Traffic Network  
Accessibility

**Done by: D.C.P.**

**Land Use & Zoning**

Existing Land Use  
Development  
potentials and  
constraints.

**Parking**

Locations of On-  
Street and Off-Street  
Parking. Utilization  
and Capacity.

**Pedestrian / Bike**

Accessibility

**Transit Network**

Accessibility

Traffic Congestion  
Parking Availability  
Transit Service  
Pedestrian Mobility  
Air Quality/Noise  
Safety

Community Concerns  
CB 9, 10, 11  
and other groups

Coordination with EDC  
and DCP in the 125th  
River to River project

Develop  
Consensus  
IDEAS

Alt. 1

Alt. 2

Alt. 3

Comprehensive  
Transportation  
Plan

## 2.0 DEMOGRAPHIC ANALYSIS

The demographic/socioeconomic analysis of the study area examines population trends such as growth/decline, age distribution and sex, along with socioeconomic characteristics such as household size, employment, income and car ownership rate to identify trends and help determine future needs.

The demographic analysis relies on data from New York City Department of City Planning (NYCDCP), and computer files issued by the United States Department of Commerce – Bureau of the Census. Data were collected and analyzed for the years 1980, 1990 and 2000.

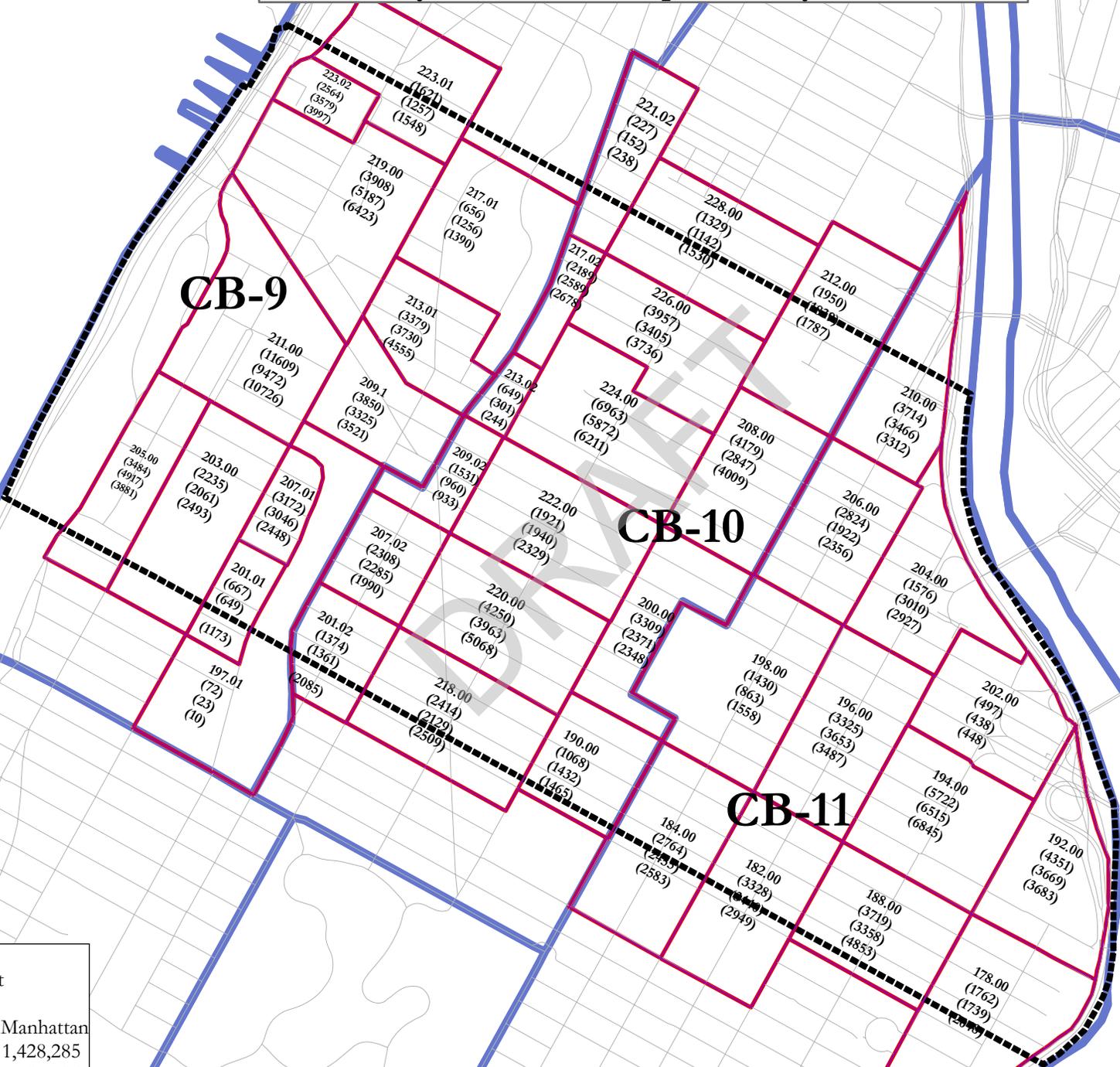
To better assess the population dynamics of the study area, comparisons were made with the Borough of Manhattan and New York City, where applicable.

The Harlem Morningside study area cuts across three Community Districts: 9, 10 and 11 and consists of the following Census Tracts (in whole or in part): 1780.00\*, 182.00\*, 184.00\*, 188.00\*, 190.00\*, 192.00, 194.00, 196.00, 197.01\*, 198.00, 200.00, 201.01\*, 201.02\*, 202.00, 203.00\*, 204.00, 205.00\*, 206.00, 207.01, 207.02, 208.00, 209.01, 209.02, 210.00\*, 211.00, 212.00\*, 213.01, 213.02, 217.01, 217.02, 218.00\*, 219.00, 220.00, 221.02\*, 222.00, 223.01\*, 223.02, 224.00, 226.00, 228.00\*. Twenty four tracts are located entirely within the study area, while 16 are partially located in the study area.

In the analysis of partial census tracts, it is assumed that the population and other related variables are evenly distributed geographically. Exhibit 2-1 shows the community districts boundaries and the census tracts with 1980, 1990 and 2000 population for the study area.

\* Tracts partially within the study area.

# Exhibit 2-1 Community Districts and Population by Census Tract



Legend	
219.00 Census Tract	
Population	
Study Area	Manhattan
(1980)- 111,788	1,428,285
(1990)- 107,819	1,487,536
(2000)- 118,374	1,537,195

## 2.1 Population Trends

The population analysis covers three decennial years 1980, 1990 and 2000 as shown in Table 2-1 below. The study area had a population of 111,788, 107,819, and 118,374 in 1980, 1990 and the year 2000, respectively. This shows a population increase of 6.2% over the 20 year period. The population decline by 3.6% between 1980 and 1990, while between 1990 and 2000 the population grew 9.8%. Comparing the population changes in the study area with the borough of Manhattan and New York City, analysis shows that both areas recorded a growth in population over the two decades. New York City grew by 13% and Manhattan grew by 7.5% over the 20 year period, respectively.

**Table 2-1: Population by Area**

Census Year	New York City	% Change	Manhattan	% Change	Study Area	% Change
1980	7,071,639		1,428,285		111,788	
1990	7,322,564	3.6	1,487,536	4.2	107,819	-3.6
2000	8,008,278	9.4	1,537,195	3.3	118,374	9.8

The travel needs and characteristics of the school-attending population is different from that of the working and retired population. To capture the difference the analysis was applied to six age groups: ages 0-4, 5-9, 10-14, 15-19, 20-64, 65+. This analysis reflects pre-school, elementary, and junior high school; employable; and retired population, respectively. The age of 19 was chosen as the cut-off for school age population because even though the legal working age is 16 years, DCP statistics show that less than 40% of the 0-17 year population is employed. Also the census shows that a significant number of the school population is between 19-25 years old. The age for the retired (65+) was supported by the fact that less than 20% of this population is employed according to DCP. The 0-19 age group is made up predominately of school attending population. Their trips tend to be made slightly outside of the work trip peak hours. The work trips are more directly related to the 20-64 age groups. The majority of the over 65 age group trips tend to be made outside of both the work trip and school trip peak

hours. Table 2-2 shows comparison in the age distribution among the study area, Manhattan and New York City.

**Table 2-2: Population by Area and Age Group**

Census Year & Age Group	New York City	% Share	Manhattan	% Share	Study Area	% Share
<b>1980</b>	7,071,639	100	1,428,285	100	111,788	100
0 - 4	470,694	6.7	69,152	4.8	7,072	6.3
5 - 9	447,327	6.3	62,687	4.4	6,635	6
10 - 14	506,283	7.2	72,059	5.0	8,330	7.5
15 - 19	563,492	8.0	86,072	6.0	10,902	10
20 - 64	4,132,111	58.4	933,878	65.4	65,110	58
65+	951,732	13.5	204,437	14.3	13,740	12.3
<b>1990</b>	7,322,564	100	1,487,536	100	107,819	100
0 - 4	509,740	7.0	78,590	5.3	8,288	7.7
5 - 9	457,477	6.2	66,340	4.5	7,444	7.0
10 - 14	450,072	6.1	63,563	4.3	7,165	6.6
15 - 19	470,786	6.4	72,557	4.9	8,511	8.0
20 - 64	4,481,172	61.2	1,009,102	68.0	62,712	58.2
65+	953,317	13.1	197,384	13.3	13,117	12.2
<b>2000</b>	8,008,278	100	1,537,195	100	118,374	100
0 - 4	540,878	6.8	76,048	4.9	7,848	6.6
5 - 9	561,115	7.0	73,358	4.8	8,982	7.6
10 - 14	530,816	7.0	69,288	5.0	8,290	7.0
15 - 19	520,641	7.0	75,186	5.0	9,192	8.0
20 - 64	4,916,971	61.4	1,056,539	68.7	70,933	60.0
65+	937,857	12.0	186,776	12.2	12,615	11.0

## 2.2 Labor Force

According to the U.S census bureau the labor force includes all persons in the civilian labor force plus members of the Armed Forces (persons 16 years and over on active duty with the U.S. Army, Navy, Air Force, Marine Corps, or Coast Guards). The “civilian labor force” consists of persons classified as employed or unemployed. Those not in the labor force are mainly students, housewives, retired workers, seasonal workers, inmates of institutions, disabled persons, and persons doing only incidental unpaid family work.

As expected the labor force fluctuates with changes in the total population. Table 2-3 shows the labor force distribution for 1980, 1990 and 2000 year.

Table 2-3 indicates that between 1980 and 1990 the percentage of people in the labor force in New York City increased by 3.4% even though the population of those over 16 years of age decreased by 11.2%. Manhattan's labor force and population over 16 years increased by 3.7% and 4.5% respectively during the same period. In the study area labor force increased by 6.5% however population over 16 years old decreased by 13.2% during this period. From 1980 to 1990 in New York City, civilians employed decreased by 7% while civilians unemployed increased by 16.5%, respectively. Manhattan experienced an increase of 9.3% and 17.5% in civilians employed and unemployed, while the study area civilians employed dropped by 1.5% and civilians unemployed increased by 14.3% for the same period.

Between 1990 and 2000 the percentage of people in the labor force in New York City decreased by 3.9% even though the population over 16 years of age increased by 7.4%. Manhattan's labor force decreased by 1.9% during the same period, the over 16 population increased by 3.1%. The study area labor force remained constant for this period, while the over 16 population decreased by 6.4%. Civilians employed and civilians unemployed from 1990 to 2000 increased by 0.6% and 7.6%, respectively for New York City. Manhattan remained almost constant for civilians employed, while civilians unemployed increased by 6.2%. In the study area the civilians employed dropped drastically by 10.2% and civilians unemployed increased by 18.5%, more than double the rate of Manhattan and New York City for the same period.

**Table 2-3: Labor Force Distribution**

Census Year	New York City	% change	Manhattan	% change	Study Area	% change
<b>1980 (Total pop)</b>	7,071,639		1,428,285		111,788	
Pop over 16 years	6,467,814	-	1,209,444	-	94,025	-
% in labor force of total pop 16 years & over	58.2%	-	62.6%	-	46.1%	-
Employed	3,487,013	-	698,727	-	37,706	-
Unemployed	269,009	-	55,324	-	5,572	-
<b>1990 (Total pop)</b>	7,322,564	3.6%	1,487,536	4.2%	107,819	-3.6%
Pop over 16 years	5,817,015	-11.2%	1,266,398	4.5%	83,084	-13.2%
% in labor force of total pop 16 years & over	61.6%	3.4%	66.3%	3.7%	52.6%	6.5%
Employed	3,257,637	-7%	770,084	9.3%	37,139	-1.5%
Unemployed	322,125	16.5%	67,074	17.5%	6,503	14.3%
<b>2000 (Total pop)</b>	8,008,278	9.4%	1,537,195	3.3%	118,374	9.8%
Pop over 16 years	6,279,431	7.4%	1,307,423	3.1%	78,098	-6.4%
% in labor force of total pop 16 years & over	57.7%	-3.9%	64.4%	-1.9%	52.6%	0.0%
Employed	3,277,825	0.6%	770,283	0.03%	33,354	-10.2%
Unemployed	346,741	7.6%	71,208	6.2%	7,705	18.5%

U.S. Census Bureau data 1980, 1990 and 2000

### 2.3 Household Characteristics

The number of households in the study area declined during the first decade (1980-1990) from 44,421 to 42,175, a 5.1% decrease, while between (1990-2000) the number increased by 8.8% to 45,889. However, the number of households in Manhattan increased over both decades, from 704,502 to 716,422 and from 716,422 to 738,644, representing 1.7% and 3.1% increase, respectively. In New York City the number of households decreased by 19.5% from 3,502,233 to 2,819,401 over 1980 to 1990, while between 1990-2000 the number increased by 7.2% to 3,021,588.

The average household size (persons/household) in the study area showed a marginal increase from 2.52 to 2.56 between 1980 to 1990, and a similar increase from 2.56 to 2.58 from 1990 to 2000. Manhattan’s household size showed a similar trend, increasing from 2.03 to 2.08 between 1980 to 1990, while remaining constant at 2.08 between 1990 and 2000. The average household size for New York City on the other hand increased during both decades from 2.02 to 2.60 between 1980 to 1990 and from 2.60 to 2.65 between 1990 and 2000 respectively. Table 2-4 shows the household characteristics for the New York City, Manhattan and the study area.

**Table 2-4: Household Characteristics**

Census Year	New York City	% Change	Manhattan	% Change	Study Area	% Change
1980 Population	7,071,639		1,428,285		111,788	
# of Households	3,502,233		704,502		44,421	
Persons Per Household	2.02		2.03		2.52	
1990 Population	7,322,564	3.6	1,487,536	4.2	107,819	-3.6
# of Households	2,819,401	-19.5	716,422	1.7	42,175	-5.1
Persons Per Household	2.60	28.6	2.08	2.4	2.56	1.6
2000 Population	8,008,278	9.4	1,537,195	3.3	118,374	9.8
# of Households	3,021,588	7.2	738,644	3.1	45,889	8.8
Persons Per Household	2.65	2.1	2.08	0.2	2.58	0.9

#### **2.4 Median Household Income**

The household income for the study area is best represented in comparison with New York City and Manhattan. Table 2-5 shows median income for the study area, Manhattan and New York City for the period 1980-2000.

**Table 2-5: Median Household Income by Area**

Census Year	New York City	% Change	Manhattan	% Change	Study Area	% Change
1980	\$13,854		\$13,904		\$7,370	
1990	\$32,262	132.9	\$29,823	114.5	\$14,781	100.6
2000	\$47,030	45.8	\$38,293	28.4	\$22,122	49.7

Household median income has grown in general over the 20 years at a faster rate for the borough and the City than for the study area. Not taking inflation into account, the income of New York City residents from 1980 to 1990 increased by 132.9%, by 114.5% for Manhattan residents and by 100.6% for residents in the study area. The 2000 median household income of the study area is \$22,122 which is approximately 58% of Manhattan median household income and 47% of New York City median household income. From 1990 to 2000 the residents of New York City, Manhattan and the study area experienced income increases of approximately 46%, 29% and 50%, respectively.

## **2.5 Vehicle Ownership**

Census data regarding vehicle ownership for the period of 1980 - 1990 was not available. This section will discuss the trends observed in vehicle ownership during the period 1990 to 2000 for New York City, Manhattan and the study area.

Between 1990 and 2000, vehicle ownership in New York City, Manhattan and the study area remained relatively constant as is shown in Table 2-6. In 1990, approximately 44% of New York City households owned vehicles. This percentage drops to approximately 22% for Manhattan and 16% for the study area. The demographic analysis shows that in New York City the number of households increased by 7.2% from 1990 to 2000, while number of household with vehicle increased by 0.2% over the same period. The number of households with no vehicles decreased slightly from 55.9% to 55.7%.

Between 1990 and 2000 the number of households in Manhattan increased by 3.1% while households with vehicles increased just by 0.4%. The study area's data show that from 1990 to 2000 the number of households increased by 8.8%, while households with vehicles increased by 2%. It was also observed that the number of households with no cars decreased from 83.9% to 82.1%.

The changes in population and vehicle ownership in the study area are insignificant, hence it is not anticipated that any significant increase in auto trips will be generated as a result of the resident population.

DRAFT

**Table 2-6: Vehicle Ownership per Household (1990 and 2000)**

	New York City (Five boroughs)				New York County (Manhattan)				Study Area			
Vehicles/Household	1990	%	2000	%	1990	%	2000	%	1990	%	2000	%
<b>Zero</b>	1,575,217	55.9	1,682,946	55.7	557,662	77.8	572,094	77.4	35,406	83.9	37,693	82.1
<b>One</b>	887,309	31.5	955,165	31.6	144,644	20.2	149,476	20.2	6,179	14.6	7,246	15.8
<b>Two</b>	282,593	10	305,267	10.10	12,090	1.7	13,172	1.8	475	1.1	835	1.8
<b>Three or more</b>	74,282	2.6	78,210	2.6	2,026	0.3	3,902	0.5	65	0.2	115	0.3
<b>Total Households w/vehicles</b>	1,244,184	44.1	1,338,642	44.3	158,760	22.2	166,550	22.6	6,719	15.9	8,196	17.9
<b>No of Households</b>	2,819,401	100	3,021,588	100	716,422	100	738,644	100	42,175	100	45,889	100

## **2.6 Travel Behavior**

### **2.6.1 Journey to work by Mode**

Journey to work by mode was analyzed for 1980, 1990 and 2000 census years. Tables 2-7, 2-8 and 2-9 show a summary of the journey to work by mode share.

The 1980 journey to work data for public transportation and other modes were not available at the same level of detail as for 1990 and 2000 census years. However, the data shows clearly the most commonly used modes for journey to work in the study area, Manhattan and New York City. The 1980 journey to work data reveal that for New York City, Manhattan and the study area the predominant mode used for journey to work was public transportation, representing 56.2%, 61.3% and 68.2%, respectively of the total trips. The journey by rail group (subway, elevated trains and rail road) trips represented approximately 42% in New York City, 43% in Manhattan and 51% in the study area.

Journey to work by automobiles represent the second most commonly used mode in New York City with 31% auto share comprised of 21% drive alone and 10% carpool. In Manhattan and the study area however the share drops substantially to 12% and 11%, respectively.

Walking represent 25.1% share and 19.2% share of journey to work trips in Manhattan and in the study area, respectively, while New York City share is just 11.7% of total trips. The use of other means for journey to work represents less than 2% of the trips in New York City, Manhattan and the study area.

The 1990 journey to work data show public transportation as the predominant mode as was in 1980. In 1990, New York City public transportation accounted for 54.5% of all work trips, while Manhattan and the study area accounted for 61.5% and 64.8%, respectively. Travel by subway was the most commonly used form of public transportation in the study area, accounting for 44.9% of all work trips. This trend is also observed in Manhattan and New York City with the subway share being 40.3% and 37.6%, respectively. Surface transit (Bus) represents the second most commonly used

mode of public transportation with the study area, Manhattan and New York City having 17.3%, 15.1% and 13% share, respectively.

About 1.4% of the study area residents use taxicabs while ferry and railroad are hardly used. Walking represents 21.9% share in the study area, while 24.3% was observed for Manhattan and 11% for New York City. The study area automobile share is 11.9% with 8.6% being drive alone and 3.3% carpool.

The 2000 journey to work data reveal a similar trend to 1990 with public transportation being the predominant mode, with New York City, Manhattan and the study area having 54.2%, 63.2% and 66.6% public transit share respectively. The study area has 51.8% of the trips made by subway and 11.3% made by buses. Taxicabs represent 1.8% of the work trip in the study area, 1.7% in New York City and Manhattan with a higher percentage share of 4.9%. Among the other modes, walking represents 18.9% in the study area, 23.3% in Manhattan and 10.7% in New York City. Automobile accounted for 13% of the total trips in the study area, 11.7% in Manhattan and 33.8% for New York City.

**Table 2-7: 1980 Journey To Work By Mode**

<b>1980 Census Year</b>	<b>New York City</b>	<b>Mode Share %</b>	<b>Manhattan</b>	<b>Mode Share %</b>	<b>Study Area</b>	<b>Mode Share %</b>
<b>Car, Truck or Van</b>						
Drove alone	567,774	20.7	41,721	6.6	2,329	6.7
Carpooled	278,273	10.2	31,791	5.1	1,587	4.5
<b>Total</b>	<b>846,047</b>	<b>30.9</b>	<b>73,512</b>	<b>11.7</b>	<b>3,915</b>	<b>11.2</b>
<b>Public Transportation</b>						
Bus or street car	384,393	14	113,059	18.1	5,892	16.8
Subway, elevated train or rail road	1,157,634	42.2	270,856	43.2	17,948	51.4
<b>Total</b>	<b>1,542,027</b>	<b>56.2</b>	<b>383,915</b>	<b>61.3</b>	<b>23,841</b>	<b>68.2</b>
<b>Walked only</b>	320,308	<b>11.7</b>	156,861	<b>25.1</b>	6,718	<b>19.2</b>
<b>Other means</b>	33,166	<b>1.2</b>	11,571	<b>1.8</b>	500	<b>1.4</b>
<b>Total Trips</b>	<b>2,741,548</b>	<b>100</b>	<b>625,859</b>	<b>100</b>	<b>34,974</b>	<b>100</b>

**Table 2-8: 1990 Journey To Work By Mode**

1990 Census Year	New York City	Mode Share %		Mode Share %	Study Area	Mode Share %
<b>Car, Truck or Van</b>						
Drove alone	765,151	24.6	59,097	8.3	2,827	8.6
Carpooled	271,503	8.7	28,415	4.0	1,070	3.3
<b>Total</b>	<b>1,036,654</b>	<b>33.3</b>	<b>87,512</b>	<b>12.3</b>	<b>3,897</b>	<b>11.9</b>
<b>Public Transportation</b>						
Bus	403,477	13.0	107,521	15.1	5,638	17.3
Subway	1,168,346	37.6	287,412	40.3	14,657	44.9
Railroad	54,716	1.8	8,336	1.2	402	1.2
Ferry	16,619	0.5	360	0.0	0	0.00
Taxicab	50,096	1.6	34,798	4.9	466	1.4
<b>Total</b>	<b>1,693,254</b>	<b>54.5</b>	<b>438,427</b>	<b>61.5</b>	<b>21,163</b>	<b>64.8</b>
<b>Other modes</b>						
Motorcycle	1,711	0.0	545	0.1	10	0.0
Bicycle	9,643	0.3	4,892	0.7	78	0.2
Walked	340,077	11.0	173,619	24.3	7,132	21.9
Other means	24,930	0.8	8,051	1.1	400	1.2
<b>Total</b>	<b>376,361</b>	<b>12.1</b>	<b>187,107</b>	<b>26.2</b>	<b>7,620</b>	<b>23.3</b>
<b>Total Trips</b>	<b>3,106,269</b>	<b>100</b>	<b>713,046</b>	<b>100</b>	<b>32,680</b>	<b>100.00</b>

**Table 2-9: 2000 Journey To Work By Mode**

2000 Census Year	New York City	Mode Share %	Manhattan	Mode Share %	Study Area	Mode Share %
<b>Car, Truck or Van</b>						
Drove alone	794,422	25.6	57,150	8.1	3,239	9.1
Carpooled	254,974	8.2	25,604	3.6	1,379	3.9
<b>Total</b>	<b>1,049,396</b>	<b>33.8</b>	<b>82,754</b>	<b>11.7</b>	<b>4,618</b>	<b>13.0</b>
<b>Public Transportation</b>						
Bus	364,408	11.8	75,859	10.7	4,030	11.3
Subway	1,199,226	38.7	328,426	46.3	18,412	51.8
Railroad	51,141	1.6	8,309	1.2	591	1.7
Ferry	11,193	0.4	411	0.1	3	0.00
Taxicab	53,781	1.7	35,187	4.9	632	1.8
<b>Total</b>	<b>1,679,749</b>	<b>54.2</b>	<b>448,192</b>	<b>63.2</b>	<b>23,668</b>	<b>66.6</b>
<b>Other modes</b>						
Motorcycle	1,488	0.0	437	0.1	80	0.2
Bicycle	15,024	0.5	6,410	0.9	269	0.8
Walked	332,264	10.7	164,934	23.3	6,713	18.9
Other means	21,998	0.7	6,714	0.9	220	0.6
<b>Total</b>	<b>370,774</b>	<b>11.9</b>	<b>178,495</b>	<b>25.2</b>	<b>7,282</b>	<b>20.5</b>
<b>Total Trips</b>	<b>3,099,919</b>	<b>100.00</b>	<b>709,441</b>	<b>100.00</b>	<b>35,568</b>	<b>100.00</b>

## 2.6.2 Auto Travel Characteristics

Table 2-10 shows a summary of auto travel by years observed in New York City, Manhattan and in the study area. The data indicate that between 1980 and 1990 drive alone increased substantially. New York City (five boroughs) had a 34.8% increase, Manhattan a 41.6% increase and the study area a 32.5% increase. Carpool on the other hand decreased by 2.4% in New York City, 10.6% in Manhattan and 27.7% in the study area for the same period. Travel by other means increased in New York City and Manhattan by 8.5% and 10.4%, respectively; while it decreased by 3.1% in the study area.

Comparing 1990 with 2000 drive alone increased at a slower rate than the previous decade, New York City drive alone increased by 3.8% and in the study area by 14.6%. In Manhattan it declined by 3.3%. Carpooling in New York City decreased by 6.1%, and in Manhattan by 9.9%; while in the study area it increased by 28.9%.

**Table 2-10: Auto Travel Characteristics**

Census Year & Driving characteristics	New York City	% Change	Manhattan	% Change	Study area	% Change
<b>1980</b>						
Drove Alone	567,774		41,721		2,329	
Carpool	278,273		31,791		1,587	
Other means	1,978,942		603,716		29,714	
<b>1990</b>						
Drove Alone	765,151	34.8	59,097	41.6	2,827	32.5
Carpool	271,503	-2.4	28,415	-10.6	1,070	-27.7
Other means	2,146,434	8.5	666,636	10.4	28,783	-3.1
<b>2000</b>						
Drove Alone	794,422	3.8	57,150	-3.3	3,239	14.6
Carpool	254,974	-6.1	25,604	-9.9	1,379	28.9
Other means	2,142,674	-0.2	670,360	0.6	30,950	7.5

### **3.0 LAND USE AND ZONING**

#### **Zoning**

The city is divided into three basic zoning districts: residential (R), commercial (C), and manufacturing (M). The three basic categories are further subdivided into lower, medium, and higher density residential, commercial and manufacturing districts. Development within these districts is regulated by use, building size, and parking regulations.

Here is a brief description of the three basic zoning districts according to the Zoning Handbook:

#### **Residential District (R)**

In New York City, there are ten standard residential districts, R1 through R10. The numbers refer to the permitted density (R1 having the lowest density and R10 the highest) and other controls such as required parking. A second letter or number signifies additional controls are required in certain districts. R1 and R2 districts allow only detached single-family residences and certain community facilities. The R3-2 through R10 districts accept all types of dwelling units and community facilities and are distinguished by differing bulk and density, height and setback, parking, and lot coverage or open space requirements.

#### **Commercial District (C)**

The commercial districts reflect the full range of commercial activity in the city from local retail and service establishments to high density, shopping, entertainment and office uses. There are eight basic commercial districts where two (C1 and C2 districts) are designed to serve local needs, one district (C4) is for shopping centers outside the central business district, two (C5 and C6 districts) are for the central business districts which embrace the office, retail, and commercial functions that serve the city and region, and three (C3, C7, and C8 districts) are designed for special purposes (waterfront activity, large commercial amusement parks and heavy repair services).

Variations in bulk, parking and loading requirements also exist in these commercial districts.

## **Manufacturing District (M)**

Manufacturing activities are grouped into three districts: M1, M2, and M3. These districts include performance standards which establish limits on the amount and type of industrial nuisances which may be created. The more noxious uses are restricted to M3 districts but they may be permitted in districts M1 and M2 if they comply with performance standards of those districts. Retail and commercial uses are permitted in manufacturing districts with some exceptions while residential and community facility uses are excluded from most manufacturing districts.

### **3.1 Residential Zoning Districts**

The Harlem/Morningside study area is predominantly zoned for residential use with districts ranging from R7 to R9. Exhibit 3-1: “Harlem/Morningside Zoning Map” shows the zoning within the study area.

R7-2 residential zoning districts occupy large portions of the study area. They are located north of 126<sup>th</sup> Street between Frederick D. Boulevard and Park Avenue and south of 124<sup>th</sup> Street between Morningside and Lexington Avenues. There is a R7-2 district west of St. Nicholas Park from St. Nicholas Terrace to Broadway that begins at 123<sup>rd</sup> Street and ends at 135<sup>th</sup> Street. This district extends south to 123<sup>rd</sup> Street between Morningside Avenue and Broadway (except for a few blocks south of 130<sup>th</sup> Street, west of Convent Avenue, north of 125<sup>th</sup> Street and east of Amsterdam Avenue which are zoned manufacturing).

There are two other areas zoned R7-2. They are located near the waterfront area of East Harlem. One area is bordered generally by 126<sup>th</sup> Street to the south, Park Avenue to the west and 128<sup>th</sup> Street to the north. The other area is bordered by 120<sup>th</sup> Street to the south, Second Avenue to the west, 126<sup>th</sup> Street to the north and the FDR Drive to the east.

An R7 district is a medium density apartment house district. In terms of the R7-2 district, parking is required for 50 percent of the new dwelling units.

R7A and R7B zoning districts provide greater lot coverage and lower height and setback regulations than R7 districts. Typically the buildings are six-to-eight story apartment houses that are compatible with existing buildings found in older neighborhoods.

In East Harlem a strip of blocks has been rezoned to R7A districts between Lexington and Third Avenues from 116<sup>th</sup> to 119<sup>th</sup> Streets. North of this strip is a R7B zoning district located between 119<sup>th</sup> and 122<sup>nd</sup> Streets. Other blocks on the east side are also rezoned to R7A districts. They are located between Third and Second Avenues from 116<sup>th</sup> to 122<sup>nd</sup> Streets, between Second and First Avenues from 118<sup>th</sup> to 120<sup>th</sup> Streets, and along Pleasant Avenue from 116<sup>th</sup> to 120<sup>th</sup> Streets. Three areas of East Harlem located in between the R7-A residential districts are rezoned to R7B. They are south of 120<sup>th</sup> Street between Second and First Avenue from 116<sup>th</sup> to 118<sup>th</sup> Streets, between First and Pleasant Avenues from 116<sup>th</sup> to 120<sup>th</sup> Streets, and east of Pleasant Avenue from 118<sup>th</sup> to 119<sup>th</sup> Streets.

In the central area of Harlem are two R7-A zoning districts and one R7-B district. The R7-A districts are generally located in between Morningside Avenue and Adam C. Powell Boulevard south of 124<sup>th</sup> Street. The R7-B district is bordered by 124<sup>th</sup> Street, Manhattan Avenue, 120<sup>th</sup> Street, and Morningside Avenue.

The only area in East Harlem rezoned to an R7-X district is located along First Avenue from 116<sup>th</sup> to 120<sup>th</sup> Streets and is characterized by more restrictive bulk regulations than the R7-2 zoning districts.

R8 zoning districts produce taller buildings than the R7 district with low lot coverage which are setback from the street. In West Harlem there is a large area zoned R8 located generally between Morningside and Riverside Drives from 116<sup>th</sup> and 123<sup>rd</sup> Streets and continues to extend north up to 125<sup>th</sup> Street, west of Broadway. Further north there is another area zoned R8 which lies generally between Broadway and Riverside Drive from 133<sup>rd</sup> to 135<sup>th</sup> Streets. There are four other small areas within the study area zoned R8: The first one is situated east of St. Nicholas Park between St. Nicholas Avenue and Frederick Douglass Boulevard from 125<sup>th</sup> to 135<sup>th</sup> Streets, the second area is a strip of blocks east of Morningside Park from 116<sup>th</sup> to 124<sup>th</sup> Streets, the third area is bordered by 124<sup>th</sup> Street, Adam C. Powell Boulevard, 123<sup>rd</sup> Street and Frederick Douglass Boulevard, and the last area covers a few lots located between Park and Lexington Avenues from 117<sup>th</sup> to 118<sup>th</sup> Streets and from 120<sup>th</sup> to 122<sup>nd</sup> Streets.

R8A zoning districts are along Frederick Douglass Boulevard and along Morningside Avenue between 116<sup>th</sup> And 124<sup>th</sup> Streets. Along these north-south corridors the built form is generally typified by high lot coverage residential buildings that range up to 6.0 FAR. A new R8-A residential zoning district now exists along Second Avenue within the study area between 116<sup>th</sup> and 122<sup>nd</sup> Streets.

An R9 zoning district exists only in the eastern part of Harlem between Third and Second Avenues from 122<sup>nd</sup> to 123<sup>rd</sup> Streets. The R9 zoning district typically produces 18-21 story buildings with low lot coverage that are set back from the street.

Table 3-1 below shows the floor area ratio (FAR) for each residential zoning district located within the Harlem/Morningside study area. (A building can contain floor area equal to the lot area multiplied by the floor area ratio of the district in which the lot is located.)

**Table 3-1: Residential Zoning Districts Located within the Study Area**

Zoning District	Maximum Residential FAR	Maximum Commercial FAR*	Maximum Community FAR
R7-2	3.44	2.00	6.50
R7A	4.00	2.00	4.00
R7B	3.00	-	3.00
R7X	5.00	2.00	5.00
R8	6.02	2.00	6.50
R8A	6.02	2.00	6.50
R9	7.52	2.00	6.50

\* Represents maximum FAR for commercial overlay district which permits a wide range of local retail and personal service establishments needed in a residential neighborhood. Typical uses include grocery stores, small dry cleaning establishments, restaurants and barber shops.

### 3.2 Commercial Zoning Districts

Commercial zoning is located in the center of Harlem/Morningside study area along 125<sup>th</sup> Street and consists mainly of C4 zoning districts. These permit major commercial centers located outside the central business districts. They include department stores, theaters and other commercial uses that serve a larger area. There are several subsidiaries of C4 which are

usually differentiated by FAR and parking requirements. C4-5 – C4-7 districts are usually exempt from parking requirements for commercial uses.

In the study area there are several C4-4 commercial districts. The first district is bordered north and south by 126<sup>th</sup> and 125<sup>th</sup> Streets and lies between Convent Avenue and Frederick Douglass Boulevard. This district extends south generally west of St Nicholas Avenue to 124<sup>th</sup> Street.

From 126<sup>th</sup> to 125<sup>th</sup> Streets between Frederick Douglass Boulevard and Adam C. Powell Boulevard, a C4-4 district is located and occupies the north western section of the block.

The second C4-4 commercial district is located generally between 125<sup>th</sup> and 124<sup>th</sup> Streets, from Frederick Douglass Boulevard to Lenox Avenue. It then fully encompasses the northern half of the block that is bordered by 124<sup>th</sup> and 123<sup>rd</sup> Streets from Adam C. Powell Boulevard to Lenox Avenue. Another C4-4 district extends generally from Lenox to Second Avenues between 126<sup>th</sup> and 124<sup>th</sup> Streets. Finally two small C4-4 zoning districts exist in East Harlem. One small C4-4 district includes properties facing Third Avenue from 124<sup>th</sup> to 122<sup>nd</sup> Streets. The other C4-4 zoning district is bounded generally by 119<sup>th</sup> Street on the north, FDR Drive on the east, 116<sup>th</sup> Street on the south and Pleasant Avenue on the west.

The C4-4A zoning district has a commercial FAR of 4.0 which is a higher than the regular C4-4 zoning district. It is located in eastern Harlem where its boundaries are 126<sup>th</sup> Street on the north, Park Avenue on the west, 125<sup>th</sup> Street on the south and Lexington Avenue on the east.

A new zoning district, the C4-4D replaces the C4-4 district along Third Avenue between 115<sup>th</sup> and 122<sup>nd</sup> Street. Another new commercial zoning district C4-4D replaces the C4-4 district along Frederick Douglass Boulevard, St. Nicholas Avenue, 122<sup>nd</sup> and 124<sup>th</sup> Streets. The C4-4D districts increase permitted residential densities, while retaining the same range of commercial uses currently allowed in a C4-4 district.

The study area includes a C4-5 zoning district bounded on the west by St. Nicholas Avenue, on the east by Frederick Douglass Boulevard, on the north by 125<sup>th</sup> Street and on the south by 124<sup>th</sup> Street which allows a residential FAR from 0.87 to 3.44.

The C4-5X zoning district has a commercial FAR of 4.0. This district has the following borders: on the north it is bounded by 117<sup>th</sup> Street, but at midblock the border becomes 116<sup>th</sup> Street, on the west by Lenox Avenue and on the south by 116<sup>th</sup> Street. Its western border ends at midblock on Fifth Avenue.

C4-6 zoning has a commercial FAR of 3.4 and a residential FAR of 10.0. This district in the study area is bounded on the north by 135<sup>th</sup> Street, on the south by 134<sup>th</sup> Street, on the west by St Nicholas Avenue and on the east by Frederick Douglass Boulevard.

A C4-7 district has no commercial parking requirements and has a 10.0 commercial FAR. It is generally bordered by 126<sup>th</sup> Street to the north, 125<sup>th</sup> Street to the south and Frederick Douglass Boulevard to the west. It extends to the east to the middle of the block after Lenox Avenue.

There is also a C1 zoning district that accommodates retail and personal service shops needed for residential neighborhoods. In a C1-9 zoning district parking is not required because shops in these districts attract and generate little automobile traffic. This district is located in eastern Harlem and is bounded on the north by 123<sup>rd</sup> Street, on the south by 122<sup>nd</sup> Street and on the west by Third Avenue. From Third Avenue it extends east for about ¼ of the block.

Automotive and other heavy commercial services are provided for in C8-3 zoning districts. Typical uses are automobile showrooms, automotive service facilities and warehouses. Such a district is located in the study area on a narrow strip which encompasses several blocks. It stretches from 132<sup>nd</sup> Street to 126<sup>th</sup> Street west of Park Avenue.

Table 3-2 below shows the floor area ratio (FAR) for each commercial zoning district located within the Harlem/Morningside study area. (A building can contain floor area equal to the lot area multiplied by the floor area ratio of the district in which the lot is located).

**Table 3-2: Commercial Zoning Districts Located within the Study Area**

Zoning District	Maximum Residential FAR	Maximum Commercial FAR	Maximum Community FAR
C4-4	3.44	3.4	6.5
C4-4A	4	4	4
C4-4D	6.02	3.4	6.5
C4-5	3.44	3.4	6.5
C4-5X	5	4	5
C4-6	10	3.4	10
C4-7	10	10	10
C1-9	10	2	10
C8-3	-	2	6.5
C1-4 overlay district	*	2	-
C1-5 overlay district	*	2	-
C2-4 overlay district	*	2	-

\*Maximum residential FAR in these commercial districts is governed by the regulations of the surrounding residential district.

### **Commercial Overlay Districts**

Commercial overlay districts exist in the Harlem/Morningside study area. They are the C1-4, C1-5 and C2-4 commercial districts. These commercial districts are mapped as overlays, generally along major avenues in residential districts. When these overlay districts are mapped in R1 to R5 and R6-B districts, the maximum commercial FAR is 1.0. When they are mapped as overlays in R6 to R10 districts, the maximum commercial FAR is 2.0 as such is the case in this study area.

The C1-4 commercial overlay districts are mapped generally in the residential districts along the following avenues:

- Broadway (between Tiemann and LaSalle Streets)
- Amsterdam Avenue (north of 129<sup>th</sup> Street and south of LaSalle Street)
- Frederick Douglass Boulevard (north of 126<sup>th</sup> Street and south of 122<sup>nd</sup> Street)
- Adam C. Powell Boulevard (north of 126<sup>th</sup> Street and south of 120<sup>th</sup> Street)
- Lenox Avenue (north of 132<sup>nd</sup> Street and south of 123<sup>rd</sup> Street)
- Fifth Avenue (mainly between 116<sup>th</sup> and 120<sup>th</sup> Streets; between 132<sup>nd</sup> and 135<sup>th</sup> Streets)

- Madison Avenue (between 132<sup>nd</sup> and 131<sup>st</sup> Streets; 127<sup>th</sup> and 129<sup>th</sup> Streets; south of 119<sup>th</sup> Street)
- Park Avenue (mainly between 116<sup>th</sup> and 129<sup>th</sup> Streets)
- Lexington Avenue (mainly between 116<sup>th</sup> and 120<sup>th</sup> Streets)
- Third Avenue (between 126<sup>th</sup> and 127<sup>th</sup> Streets)
- Second Avenue (between 122<sup>nd</sup> and 124<sup>th</sup> Streets)

A few C1-5 commercial overlay districts are located in the eastern part of the study area along Second Avenue from 116<sup>th</sup> Street to 122<sup>nd</sup> Street and along First Avenue from 116<sup>th</sup> to 120<sup>th</sup> Streets.

The C2-4 commercial overlay districts are mapped in general along the avenues through out the study area:

- Frederick Douglass Boulevard between 121<sup>st</sup> and 124<sup>th</sup> Streets
- Adam C. Powell Boulevard from 120<sup>th</sup> to 124<sup>th</sup> Streets
- Lenox Avenue from 126<sup>th</sup> to 135<sup>th</sup> Streets
- Park Avenue (between 116<sup>th</sup> and 120<sup>th</sup> Streets; between 122<sup>nd</sup> and 123<sup>rd</sup> Streets)
- Lexington Avenue from 120<sup>th</sup> to 124<sup>th</sup> Streets
- First Avenue (between 117<sup>th</sup> and 120<sup>th</sup> Streets).

There are also two blocks along 125<sup>th</sup> Street with C2-4 commercial overlay districts from Broadway to Morningside Avenue.

### **3.3 Manufacturing Zoning Districts**

Manufacturing zoning districts exist in the study area and are mainly concentrated in the western and eastern sections of the study area. They consist of M1 zoning districts which are light manufacturing-high performance zoning districts and M2 districts which have medium manufacturing of medium performance. Parking and loading requirements vary with the district and use.

A M1-1 district is located between 133<sup>rd</sup> and 136<sup>th</sup> Streets, from Marginal Street to 12<sup>th</sup> Avenue. The allowable FAR is 1.0. Another M1-1 manufacturing zoning district in the study

area is generally bounded by 130<sup>th</sup> Street to the north, by 125<sup>th</sup> Street to the south, by Amsterdam Avenue to the west and Convent Avenue to the east.

There are four light manufacturing-high performance districts in the northern section of Harlem that are zoned M1-2. The first is between 125<sup>th</sup> and 126<sup>th</sup> Streets between Third and Second Avenues. Another is between 125<sup>th</sup> and 127<sup>th</sup> Streets and stretches from First to Second Avenues to the middle of the block of Second and Third Avenue. The third M1-2 district is located on the west side generally between St Clair Place and 133<sup>rd</sup> Street from Broadway to 12<sup>th</sup> Avenue. This M1-2 district stretches into a narrow strip from 131<sup>st</sup> to 135<sup>th</sup> Streets along the western edge of the block between Broadway and Amsterdam Avenue. The final M1-2 manufacturing district is a strip that extends on the western side of the blocks from 125<sup>th</sup> to 131<sup>st</sup> Streets between Park and Lexington Avenues.

There is also a M1-4 manufacturing district located from 120<sup>th</sup> to 123<sup>rd</sup> Streets along a strip on the western section of the blocks between Park and Lexington Avenues.

There is a M2-2 zoning district in East Harlem. This waterfront manufacturing area is located in the northern section of East Harlem. The M2-2 zoning district is bordered by 127<sup>th</sup> Street, 125<sup>th</sup> Street and the FDR Drive.

The only M2-3 manufacturing zoning district in the study area is located on the west side and has an FAR of 2.0. This zoning district is generally bounded on the north by 133<sup>rd</sup> Street, on the south by 130<sup>th</sup> Street, on the east by 12<sup>th</sup> Avenue and on the west by the Hudson River.

There is also an M3-1 heavy manufacturing-low performance zoning district generally bounded on the north by 128<sup>th</sup> Street, on the south by 127<sup>th</sup> Street, on the west by Third Avenue and on the east by Second Avenue. Another M3-1 manufacturing district is in the western section of the block bordered by 133<sup>rd</sup> Street, Broadway, 132<sup>nd</sup> Street and 12<sup>th</sup> Avenue.

The Table 3-3 below shows the floor area ratio (FAR) for each manufacturing zoning district located within the Harlem/Morningside study area. (A building can contain floor area equal to the lot area multiplied by the floor area ratio of the district in which the lot is located.)

**Table 3-3: Manufacturing Zoning Districts Located within the Study Area**

<b>Zoning District</b>	<b>Maximum Commercial FAR</b>	<b>Maximum Manufacturing FAR</b>
M1-2	2.00	2.00
M1-4	2.00	2.00
M2-2	5.00	5.00
M2-3	2.00	2.00
M3-1	2.00	2.00

### **3.4 Areas of Rezoning**

#### East Harlem Rezoning

The East Harlem rezoning plan was adopted by the City Council on June 24, 2003. The approved zoning amendments affect 57 blocks in East Harlem. It is the first comprehensive revision of East Harlem zoning since the last major revision of the Zoning Resolution in 1961. The objectives of the rezoning were to foster new opportunities for residential development, ensure that future developments are consistent with neighborhood character, preserve the scale of midblocks, and encourage ground floor retail and service uses.

The area in East Harlem that has been rezoned is located between East 99<sup>th</sup> and East 122<sup>nd</sup> Streets, east of Lexington Avenue. The rezoned area that is part of the Harlem/Morningside Transportation Study lies between 116<sup>th</sup> and 122<sup>nd</sup> Streets. Prior to the zoning proposal this area was mainly zoned C4-4 and R7-2.

There was a modification in the East Harlem Rezoning proposal that was adopted by the City Council where the midblock bounded by 119<sup>th</sup> Street, 120<sup>th</sup> Street, Pleasant Avenue and First Avenue was removed from the proposal.

#### Frederick Douglass Boulevard Rezoning

The Frederick Douglass Boulevard rezoning plan was adopted by the City Council on November 6, 2003. The Department of City Planning proposed a zoning map amendment that would affect 44 blocks in south-central Harlem. It is the first comprehensive revision of south-central Harlem zoning since the last major revision of the Zoning Resolution in 1961. The rezoning strategy balances growth and preservation in south-central Harlem's residential

core and its goals are to: foster new opportunities for residential development; promote building forms that are more compatible with the existing urban fabric; expand opportunities for new ground floor commercial uses.

The area that was rezoned is generally bounded by Central Park North, 124<sup>th</sup> Street, Morningside Avenue and a point 100 feet west of Adam C. Powell Boulevard in Manhattan's Community Districts 9 and 10. The area that falls within the Harlem/Morningside study area is generally bounded by 116<sup>th</sup> Street, 124<sup>th</sup> Street, Morningside Avenue and Adam C. Powell Boulevard.

Rezoning of area bordered by 124<sup>th</sup> Street/Park Avenue/125<sup>th</sup> Street - Harlem Park Hotel development)

The proposed Harlem Park Hotel site is located on the west side of Park Avenue between East 124<sup>th</sup> and 125<sup>th</sup> Street and the proposed project is a mixed residential/commercial office building with hotel and ground floor retail space.

On September 8, 2004, the City Planning Commission approved the developer's request for the following:

- a) A zoning map amendment to rezone the proposed hotel site with adjoining property from C4-4, R7-2 and R7-2/C1-2 zoning districts to a C4-7 district which allows high-density residential, commercial and community facility development up to 10 FAR;
- b) A special permit to modify regulations regarding height, setback, aggregate street wall in C4-7 zoning districts; and
- c) A special permit to allow 369-space public parking garage.

The requested action would facilitate the development of the Harlem Park Hotel.

Rezoning of area bordered by 116<sup>th</sup> Street/Pleasant Avenue/119<sup>th</sup> Street/FDR Drive - East River Plaza development

The development of a large-scale retail center is planned on portions of three blocks bounded by East 116<sup>th</sup> Street, East 119<sup>th</sup> Street, Pleasant Avenue and the Franklin D. Roosevelt (FDR) Drive in East Harlem. The proposed project, East River Plaza, includes two big-box retail

stores CostCo and Home Depot (475,000 sq. ft.), several smaller stores, a 1,250 parking space facility and office space (33,000 sq. ft.).

The developer requested the following actions:

- a) The approval of a special permit to allow the location of the proposed retail center with modifications to height, setback and yard regulations;
- b) The approval of a zoning map amendment to rezone the project site from M2-2 and R7-2 to C4-4. The proposed rezoning would prohibit manufacturing uses, and enhance the commercial development potential of the site by allowing a wider range of commercial uses than that which is currently allowed;
- c) Provision of a special permit to allow an accessory parking facility with a capacity in excess of that permitted by the applicable zoning regulations and to allow parking on the roof of a building;
- d) The approval of another zoning map amendment which requires the shortening and, demapping of portions of East 117th and East 118th Street; and
- e) The disposition of one city-owned lot within the proposed development site.

The project was approved by the City Planning Commission on September 7, 1999 with substantial revisions in terms of urban design, accessing the project, garage design and landscaping.

Rezoning of area bordered by 125<sup>th</sup> Street/Second Avenue/128<sup>th</sup> Street/Third Avenue - East 125<sup>th</sup> Street Outlet Mall development

The development of a potential mixed use development is planned for the area generally bounded by East 125<sup>th</sup> and East 128<sup>th</sup> Streets, Second and Third Avenues as part of the city's Uptown New York initiative by the Economic Development Corporation (EDC). The mall site is zoned C4-4, M1-2 and R7-2. The outlet mall will include a car dealer facility. The Metropolitan Transit Authority (MTA) proposes a bus garage below grade in the area bounded by East 126<sup>th</sup> and East 127<sup>th</sup> Streets, Second and Third Avenues. This would enable the proposed retail complex to be built above it and provide commercial frontage on Second Avenue.

Required ULURP (Uniform Land Use Review Procedure) actions are to be taken and include zoning map amendments, the acquisition of privately-owned property and disposition of city-owned property. Other actions include the approval of special permits by the City Planning Commission for accessory parking and an amendment to the Harlem-East Harlem Large Scale Residential Development Plan.

Rezoning of area bordered by 125<sup>th</sup> Street/Lexington Avenue/ 126<sup>th</sup> Street/Park Avenue - Gateway II development

“Gateway II,” a commercial development of 36,844 sq. ft. has been proposed for an area bounded by East 125<sup>th</sup> and East 126<sup>th</sup> Streets, Lexington and Park Avenues. The developer requested the rezoning of the site from M1-2 and C4-4 zoning districts to a C4-4A zoning district. The proposed change in zone would permit an FAR of 4.0 for commercial uses and eliminate on-site parking requirements.

West Harlem/Manhattanville Rezoning Proposal

Columbia University is seeking to propose a rezoning to allow for a great range of uses in West Harlem north of 125<sup>th</sup> Street. These uses would include research facilities, academic and administrative spaces as well as housing for students and faculty. The first phase of Columbia University's comprehensive plan would be the development of new facilities along 125<sup>th</sup> Street and would gradually develop towards the north of the area over time.

Rezoning of 125<sup>th</sup> Street

A study of the entire 125<sup>th</sup> Street corridor between the Hudson and Harlem rivers is being done in response to recent and anticipated development activity in Harlem.



## Land Use

### 3.5 Residential Land Use

The predominant land use in the Harlem/Morningside study area is residential. Housing characteristics of this area are multi-family walk-up apartment buildings, elevator buildings, mixed residential/commercial buildings and one and two-family houses (Refer to Exhibit 3-2: “Harlem/Morningside Land Use Map”).

#### Residential Buildings

Large housing developments which include the New York City Housing Authority (NYCHA) housing complexes are concentrated in four sections of the Harlem/Morningside study area and represent 26 % of the housing stock. These sections are the following:

- In West Harlem north of 123rd Street between Broadway and Morningside Avenue are located the Mitchell-Lama-Morningside Garden Houses, General Grant Public Housing Developments, and the Manhattanville Housing Development (4,749 residential units);
- In Central Harlem in the area bordered by 131<sup>st</sup> Street, Adam C. Powell Boulevard, 127<sup>th</sup> Street and Frederick Douglass Boulevard are sited the St. Nicholas Houses (1,523 residential units);
- In the northern part of East Harlem, north of 132<sup>nd</sup> Street between Lenox and Park Avenues are the Abraham Lincoln Houses, and Lenox Terrace (1,966 residential units); and
- In East Harlem in the area, north of 120<sup>th</sup> Street and east of Second Avenue are located the Senator R. Wagner, Sr. Houses (2,810 residential units).

The buildings of the housing complexes are in general grouped on one or more large blocks and are 20 to 21 stories high on the west side. In the central and eastern sections of the study area they are 14 to 16 stories high.

Most of the residential neighborhoods of the study area, excluding the large housing complexes, consist of residential apartment buildings which are either walk-ups or elevator

buildings. The walk-up buildings are generally 3-stories high. They exist mainly along the east-west streets, except for 125<sup>th</sup> Street. The buildings with elevators are 8 stories high on average and scattered throughout the study area. There is a concentration of these buildings in West Harlem (west of Broadway) and in East Harlem on Lexington Avenue.

Many of the residential buildings are mixed residential/commercial buildings and exist mainly on the avenues. The mixed residential/commercial buildings along the avenues are located:

- Between 116<sup>th</sup> and 119<sup>th</sup> Streets along Pleasant, First, Second, Third, Lexington, Park, Fifth and Madison Avenues;
- On several blocks including Lenox Avenue, Adam Clayton Powell Boulevard; Frederick Douglass Boulevard, Manhattan Avenue, St Nicholas Avenue and Amsterdam Avenue; and
- On Broadway between 123<sup>rd</sup> and 126<sup>th</sup> Streets.

There is also a concentration of mixed residential/commercial buildings located on:

- 125<sup>th</sup> Street between Lenox and Park Avenues and between Broadway and Morningside Avenue;
- 135<sup>th</sup> Street from St Nicholas Park to Lenox Avenue; and
- 116<sup>th</sup> Street.

### One and Two-Family Residences

Scattered throughout the study area are one and two-family residences. They are located along the east-west streets between Morningside and Park Avenues. Many are also sited between 116<sup>th</sup> and 120<sup>th</sup> Streets east of First Avenue. They represent only 2.6% of the housing stock of the study area.

### **3.6 Commercial Land Use**

The land use on 125<sup>th</sup> Street, one of the most well known shopping streets, is predominantly commercial with national chain stores, clothing stores, restaurants and fast food chain stores. The blocks between St. Nicholas Avenue and Lenox Avenue including the Harlem Center

have numerous large retail stores such as Old Navy, Lazarus, Marshall's and Lane Bryant. To the east located at the corner of Lexington Avenue is Pathmark a major food shopping center. Many smaller chain stores such as Dr. Jay's and Jimmy Jazz also contribute to the retail activity on 125<sup>th</sup> Street.

Additionally, there are several buildings occupied by offices and businesses on 125<sup>th</sup> Street. The Adam C Powell State Office Building is located on the northeast corner of 125<sup>th</sup> Street and Adam C. Powell Boulevard. Between Lenox and Fifth Avenues, there is the 55 West 125<sup>th</sup> Street building where the office of former President Clinton is located. There is also the Consolidated Edison building on the same block. Further west closer to Adam C. Powell Boulevard is another major office building at 215 West 125<sup>th</sup> Street.

Another type of commercial land use in Harlem is the theater, culture and entertainment use. The famous Apollo Theater is on 125<sup>th</sup> Street between Frederick Douglass Boulevard and Adam C. Powell Boulevard, as well as the Studio Museum of Harlem located at Malcolm X Boulevard.

### **3.7 Manufacturing Land Use**

On the west side in West Harlem, the predominant land use in the manufacturing district is auto related (repair shops, garages, a gas station), warehousing (food storage, furniture and hardware storage) and light manufacturing. Several empty and decayed industrial buildings are present in the area mainly between West 129<sup>th</sup> and West 132<sup>nd</sup> Streets west of Broadway. Some of these types of uses also exist in the area between Amsterdam and Convent Avenues from West 127<sup>th</sup> to West 130<sup>th</sup> Streets.

On West 133<sup>rd</sup> Street, there is the Manhattanville MTA bus depot where more than 230 transit agency buses are based. On Amsterdam Avenue between West 128<sup>th</sup> and West 129<sup>th</sup> Street the New York City Department of Transportation garage for vehicle storage and maintenance is located.

Within the manufacturing district near the waterfront the Fairway Market an active and thriving business can be found underneath the viaducts (Henry Hudson Parkway and the Amtrak Empire Corridor). The North River Water Pollution Control Plant and the marine waste-transfer station, which is planned for reopening by the Bloomberg administration as part of the new waste management plan for New York City is located on the pier at West 135<sup>th</sup> Street.

In the eastern section of the study area, the manufacturing uses are mainly concentrated on Third Avenue and Park Avenue north of East 126<sup>th</sup> Street. Those on Third Avenue include paint shops, cabinet shops etc. with storage space above. Also there are several buildings occupied by light manufacturing (factories) while others are vacant. Those on Park Avenue include automotive related services (at East 129<sup>th</sup> Street), warehouses and industrial buildings (at East 130<sup>th</sup> Street). On East 126<sup>th</sup> Street between Second and First Avenues is another MTA bus depot which accommodates 187 transit buses.

Finally east of Pleasant Avenue between East 116<sup>th</sup> and 118<sup>th</sup> Streets is the site of the former Washburn Wire Factory which has been abandoned and is planned for demolition to be replaced by the East River Plaza proposed development.

### **3.8 Community Facilities**

West Harlem is home to two major educational institutions attracting hundreds of students to the area each day. Occupying several blocks, City College of The City University of New York campus is located in the northern section of the study area. It is bordered by Convent Avenue, 130<sup>th</sup> Street, St Nicholas Terrace and 142<sup>nd</sup> Street. The other, Columbia University is located in the southern part of West Harlem. It is surrounded by a cluster of different educational or learning institutions, such as Barnard College, Teachers' College, the Jewish Theology Seminary, the Union Theology Seminary and the Manhattan School of Music.

Several hospitals are also located in the study area. The Harlem Hospital Center is located at the corner of 135<sup>th</sup> Street and Lenox Avenue. The North General Hospital is located across from Marcus Garvey Park between 121<sup>st</sup> Street and 122<sup>nd</sup> Street, and St Luke's – Roosevelt Hospital is situated just south of 116<sup>th</sup> Street in West Harlem.

Many public/private elementary and secondary schools serve the study area. There are a total of 58 schools in the study area:

- PS 36 - 123 Morningside Drive
- PS 129 – 425 W. 130<sup>th</sup> Street
- PS/IS 223 – 131 Convent Avenue
- PS 125 - 425 W. 123<sup>rd</sup> Street
- PS 161 – 499 W. 133<sup>rd</sup> Street
- IS 195 – 625 W. 133<sup>rd</sup> Street
- IS 286 – 509 W. 129<sup>th</sup> Street
- IS 172 – 509 W. 129<sup>th</sup> Street
- PS 207 – 41 W. 117<sup>th</sup> Street
- PS 149 – 41 W. 117<sup>th</sup> Street
- Great Tomorrow USA School – 38 W. 123<sup>rd</sup> Street
- PS 197 – 2230 Fifth Avenue
- PS 242 – 134 W.122<sup>nd</sup> Street
- PS 175 – 175 W.134<sup>th</sup> Street
- PS 76 - 220 W. 121<sup>st</sup> Street
- PS 154 – 250 W. 127<sup>th</sup> Street
- PS 92 – 222 W. 134<sup>th</sup> Street
- PS 180 – 370 W. 120<sup>th</sup> Street
- JHS 275 – 175 W. 134<sup>th</sup> Street
- IS 136 – 6 Edgecombe Avenue
- Wadleigh Secondary School – 215 W. 114<sup>th</sup> Street
- PS 162 – 34 W. 118<sup>th</sup> Street
- Amber Charter School – 310 Lenox Avenue
- Sisulu Children’s Charter School – 125 W. 115<sup>th</sup> Street
- John A. Reisenbach Charter School – 257-67 W. 117<sup>th</sup> Street
- PS 155 – 319 E. 117<sup>th</sup> Street
- PS 133 – 2121 Fifth Avenue
- PS 7 – 160 E. 120<sup>th</sup> Street
- PS 30 – 144 E. 128<sup>th</sup> Street

- PS 96 – 216 E. 120<sup>th</sup> Street
- PS 112 – 535 E. 119<sup>th</sup> Street
- PS 206 – 508 E. 120<sup>th</sup> Street
- JHS 45 – 2351 First Avenue
- Choir Academy of Harlem – 2005 Madison Avenue
- Pregnant & Parenting Students – 22 E. 128<sup>th</sup> Street
- Manhattan Center for Science – 280 Pleasant Avenue
- Urban Peace Academy – 2351 First Avenue
- PS 79 - 55 E. 120<sup>th</sup> Street
- PS 138 – 144 E. 128<sup>th</sup> Street
- Harlem Day Charter School – 240 E. 123<sup>rd</sup> Street
- St Joseph School – 168 Morningside Avenue
- Annunciation School - 461 W. 131<sup>st</sup> Street
- Corpus Christi School – 535 W. 121<sup>st</sup> Street
- Riverside Church Weekday School – 490 Riverside Drive
- Cooke Center School – 475 Riverside Drive
- St Benedict Day, Nursery & Kindergarten – 21 W. 124<sup>th</sup> Street
- Fellowship of Learning School – 70 W. 126<sup>th</sup> Street
- Sr. Clara Muhammed Es – 102 W. 116<sup>th</sup> Street
- St Aloysius School – 223 W. 132<sup>nd</sup> Street
- Christ Crusader Academy – 302 W. 124<sup>th</sup> Street
- Rice High School – 74 W. 124<sup>th</sup> Street
- St Paul School - 114 E. 118<sup>th</sup> Street
- Children’s Storefront School – 70 E. 129<sup>th</sup> Street
- All Saints School – 52 E. 130<sup>th</sup> Street
- Mont Carmel – Holy Rosary School – 371 Pleasant Avenue
- King’s Academy (The) – 2341 Third Avenue
- Manhattan Psych. Center – 600 E. 125<sup>th</sup> Street.

The residents of the Harlem/Morningside study area have access to several libraries and cultural institutions such as the George Bruce Library on 125<sup>th</sup> Street in West Harlem, the

Harlem Library on 124<sup>th</sup> Street, the Schomburg Center on Lenox Avenue in Central Harlem, and the One Twenty-Fifth Street Library in East Harlem.

### **3.9 Recreational Facilities, Parks and Open Space**

The Harlem/Morningside Heights study area is well served by recreational facilities, parks and open spaces. Two large linear parks, St Nicholas Park and Morningside Park are located on steeply-rising banks in West Harlem. There are also the Riverside Park along the Hudson River and the Marcus Garvey Park in Central Harlem. Also, The Manhattan Waterfront Greenway Path can be accessed on the west side from 125<sup>th</sup> Street and on the east side from 120<sup>th</sup> Street.

Several playgrounds, small parks and open spaces are spread throughout the study area:

- Sakura Park – Riverside Drive, Claremont Avenue to 122<sup>nd</sup> Street
- Annunciation Park – Convent and Amsterdam Avenues, W. 135<sup>th</sup> Street
- PS 125 Playground – Morningside Avenue, W. 123<sup>rd</sup> and W. 124<sup>th</sup> Streets
- Broadway Center Malls – 116<sup>th</sup> to 122<sup>nd</sup> Streets
- Roosevelt Square – W. 125<sup>th</sup> Street, Morningside Avenue
- Playground - Fifth Avenue, W. 130<sup>th</sup> to W. 131<sup>st</sup> Streets
- St Nicholas North Playground – Adam C. Powell Blvd , W. 130<sup>th</sup> Street
- St Nicholas South Playground – Adam C. Powell Blvd between 127<sup>th</sup> and 129<sup>th</sup> Streets
- William McCray Playground – W. 138<sup>th</sup> Street, Lenox and Fifth Avenues
- Hancock Park – St Nicholas and Manhattan Avenues, W. 123<sup>rd</sup> Street
- A. Philip Randolph Square-Adam C. Powell Blvd, St Nicholas Avenue, W 117<sup>th</sup> Street
- Dorrence Brook Square- W. 136<sup>th</sup> to W. 137<sup>th</sup> Streets, St Nicholas Avenue and Edgecombe
- Parks Council Success Garden- W. 134<sup>th</sup> Street, Lenox Avenue, Adam C. Powell Blvd
- Pleasant Village Community Garden – Pleasant Avenue between 118<sup>th</sup> and 119<sup>th</sup> Streets

- 132<sup>nd</sup> Street Block Association Park – W. 132<sup>nd</sup> Street, Lenox Avenue
- Collyer Brothers Park – Fifth Avenue, 128<sup>th</sup> Street
- Louis Cuvillier Park - E. 125<sup>th</sup> Street, First Avenue, FDR Drive
- McNair Park – Lexington Avenue between 122<sup>nd</sup> – 123<sup>rd</sup> Streets
- Alice Kornegay Triangle – Lexington Avenue, 128<sup>th</sup> and 129<sup>th</sup> Streets
- PS 79 Playground – Park Avenue, E. 120<sup>th</sup> to E. 121<sup>st</sup> Streets
- PS 155 Playground - E. 117<sup>th</sup> to E. 118<sup>th</sup> Streets, First to Second Avenues
- Harlem River Park – E. 128<sup>th</sup> Street, Second to Third Avenues, Harlem River Drive
- Dream Street Park – E. 124<sup>th</sup> Street between Second and Third Avenues
- Abraham Lincoln Houses Playground – Fifth Avenue and E. 135<sup>th</sup> Street
- Wagner Houses Pool – E. 124<sup>th</sup> Street between First and Second Avenues
- JHS 45, Wagner Houses Recreational Area – 120<sup>th</sup> Street between First and Second Avenues
- PS 133 Recreational Area – Madison Avenue, E. 130<sup>th</sup> and 131<sup>st</sup> Streets
- East Harlem Art Park – E. 120<sup>th</sup> Street and Sylvan Place
- Unity Gardens – W. 128<sup>th</sup> Street Lenox and Fifth Avenues

### **3.10 Vacant Land**

Within the study area, vacant properties represent 9.18 percent of the total land area. There are more vacant properties in the eastern section of the study area compared to the western section.



**Exhibit 3-2 Harlem/Morningside Land Use Map**

- (01) One and Two Family Residences
- (02) Multi-Family Walk-Up Buildings
- (03) Multi-Family Elevator Buildings
- (04) Mixed Residential and Commercial Buildings
- (05) Commercial and Office Buildings
- (06) Industrial and Manufacturing
- (07) Transportation and Utility
- (08) Public Facilities and Institutions
- (09) Open Space and Outdoor Recreation
- (10) Parking Facilities
- (11) Vacant Land

## **4.0 TRAFFIC AND TRANSPORTATION**

### **4.1 Existing Conditions**

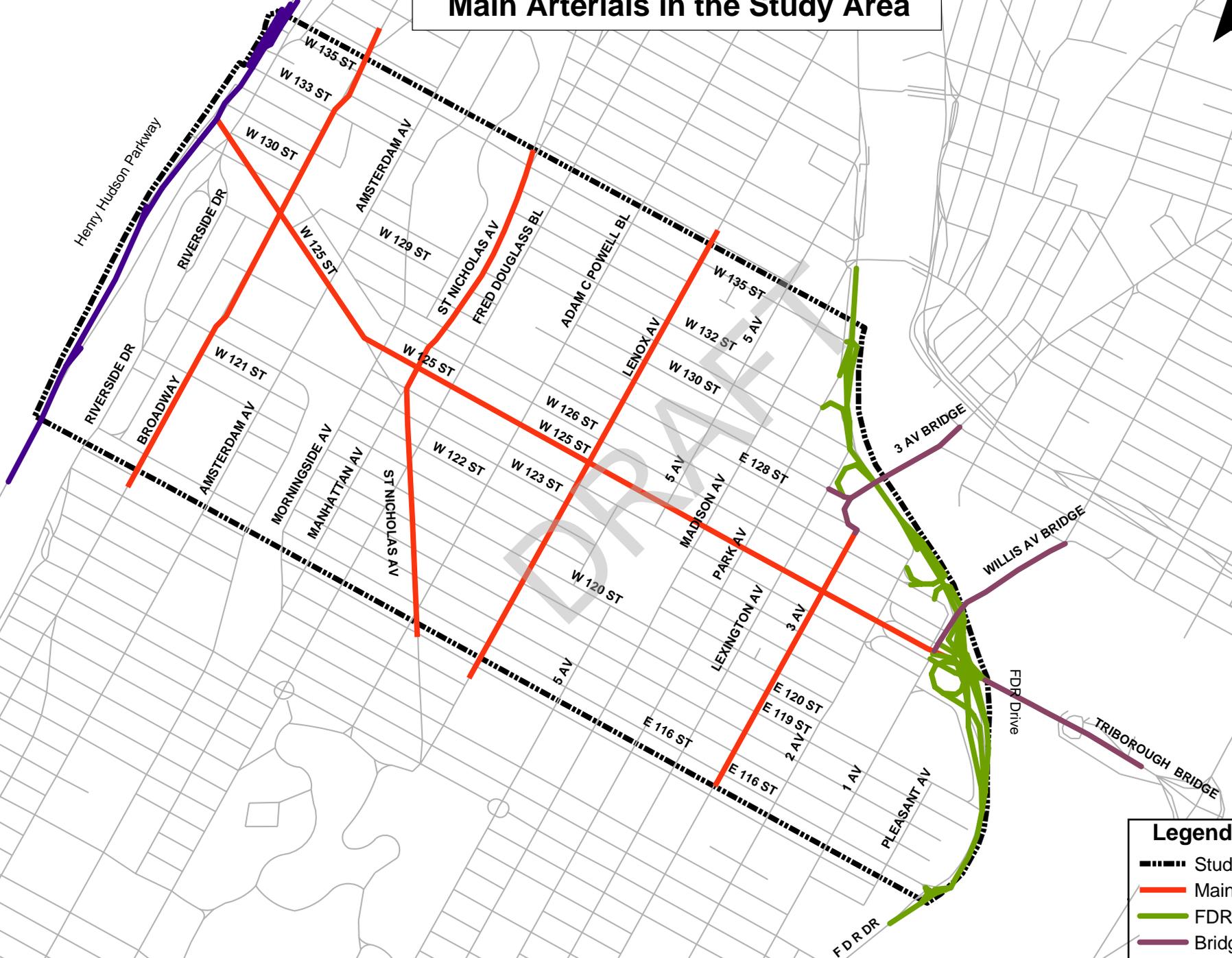
The study area is bounded by 135<sup>th</sup> Street to the north, 116<sup>th</sup> Street to the south, Franklin D. Roosevelt Drive (FDR)/Harlem River Drive to the east, and Henry Hudson Parkway (HHP) to the west. It has a grid-like arterial network system, with 125<sup>th</sup> Street and 126<sup>th</sup> Street west of Morningside Avenue running at a diagonal. The main east/west corridor traversing the study area is 125<sup>th</sup> Street. Henry Hudson Parkway, Broadway, Adam Clayton Powell Boulevard, Lenox Avenue, Park Avenue, Third Avenue, Second Avenue, and the FDR/Harlem River Drive are the main north/south arterials. Exhibit 4-1 shows some of the main arterials in the study area with the Henry Hudson Parkway and the FDR Drive providing regional access.

#### **Street System**

The street network provides fairly adequate vehicular access to the study area. The study area can be accessed mainly from Franklin D. Roosevelt Drive (FDR)/Harlem River Drive and Henry Hudson Parkway/Route 9A on the eastern and western limits respectively of the study area. These are the major north-south uninterrupted flow facilities in the study area. FDR Drive connects Financial District and Sherman Creek in Manhattan. In the study area, access to and from the Bronx and Queens is provided by Willis Avenue, Third Avenue and Triborough Bridges. Henry Hudson Parkway/Route 9A running along the western edge of Manhattan connects Lincoln Square and Inwood in Manhattan.

*125<sup>th</sup> Street* is the main east/west corridor passing through the study area. It divides the area into a north half and south half. This is the main cross-town street providing access to the bridges leading to other boroughs (Queens and Bronx). *125<sup>th</sup> Street* comprises of two moving lanes and one parking lane in each direction and provides access to the FDR Drive/Harlem River Drive and Henry Hudson Parkway. The street is approximately 70 feet wide from Riverside Drive to Morningside Avenue, and 60 feet wide from Morningside Avenue to First Avenue.

# Exhibit 4-1 Main Arterials in the Study Area



- Legend**
- Study Area
  - Main Arterials
  - FDR
  - Bridges
  - Henry Hudson PWY

The street is truly mixed use in character, there are commercial, residential and major entertainment centers (e.g. Apollo Theater) located along this corridor.

There are many north/south corridors in the study area, but the following represent the principal arterials:

*Broadway:* This is a busy four and three lane north/south corridor with the northbound and southbound lanes divided by the elevated subway tracks. The tracks are elevated from 122<sup>nd</sup> Street to 135<sup>th</sup> Street. The 1/9 subway station, a landmark elevated structure, is located at the intersection of West 125<sup>th</sup> Street and Broadway. Parking is allowed in the median under the elevated structure, adjacent to the intersection of West 125th Street and Broadway.

*Adam Clayton Powell Boulevard:* This is a two way north-south corridor with three lanes and a parking lane in each direction. Northbound and southbound lanes are divided by 10-foot raised median. There is a mixture of residential and commercial/retail land use along this corridor.

*Lenox Avenue:* This is a two way north-south corridor with a 150 feet ROW, with 80-foot wide pavement and 35-foot wide sidewalks on both side and a four feet wide traffic median. The boulevard has two traveling lanes and one parking lane in each direction.

*Park Avenue:* This is a north/south collector that extends from Harlem uptown to Union Square downtown. *Park Avenue's* northbound and southbound lanes are divided by the elevated viaduct of Metro North Rail road. It has one moving lane in each direction outside of the viaduct columns of 19 feet width that sometimes operates as two lanes under congested conditions. The area under the Metro North viaduct is not accessible to the public. There is a mixture of commercial/retail and residential uses along this corridor in the study area.

*Third Avenue:* This is a one-way northbound corridor from the East Village downtown to East Harlem uptown. In the study area, Third Avenue is approximately 70 feet wide and consists in five effective moving lanes and one parking lane on each side. There is a mixture of commercial/retail and residential use along this corridor in the study area.

*Second Avenue*: This is a one-way southbound corridor running from East Harlem uptown (East 128<sup>th</sup> Street) to the East Village downtown at East Houston Street. In the study area, it has four effective moving lanes and a parking lane on both sides with approximately 60 feet wide from curb to curb. There is a mixture of commercial/retail and residential use along this corridor in the study area.

#### **4.2 Activity Centers & The Transportation Network**

Peak hour vehicle trips in the study area are primarily work and shopping oriented. The trips leaving the area in the AM are home based trips (origins) while those coming into the area constitute a high share of non-home based trips (destinations). The reverse pattern is somewhat evident in the PM peak. The area's economic activity, local retail/offices and entertainment centers make this area a destination point. Intra-area trips are distributed throughout the study area but these are not significant due to the size of the study area. On the other hand a significant amount of through trips traverses the area from the north and south via the FDR Drive and the Henry Hudson Parkway. Also a significant number of through trips use the 125<sup>th</sup> Street corridor with direct access to the other boroughs via the Tri-Borough Bridge.

In general, trips destined to the study area are concentrated in five main locations. These locations are referred to as activity centers. The five major activity centers in the study area are as follow:

Activity Center # 1: is concentrated along West 135<sup>th</sup> Street between Adam C. Powell and 5<sup>th</sup> Avenue. This area contains the Harlem Hospital Center, a library, the Harlem YMCA center and the Thurgood Marshall academic institution. The area is easily accessible by automobile and very well served by transit with three public bus lines (M102, M7, and Bx33), and two subway lines (2 and 3) that stop adjacent to the hospital.

Activity Center # 2: is located near the Hudson River Waterfront in the vicinity of Marginal Street between West 125<sup>th</sup> Street to West 133<sup>rd</sup> Street. This activity center hinges on waterfront access, a food shopping center including the *Fairway Supermarket* at West 132<sup>nd</sup> Street @ Marginal Street. This major retail center attracts vehicular and pedestrian traffic and can

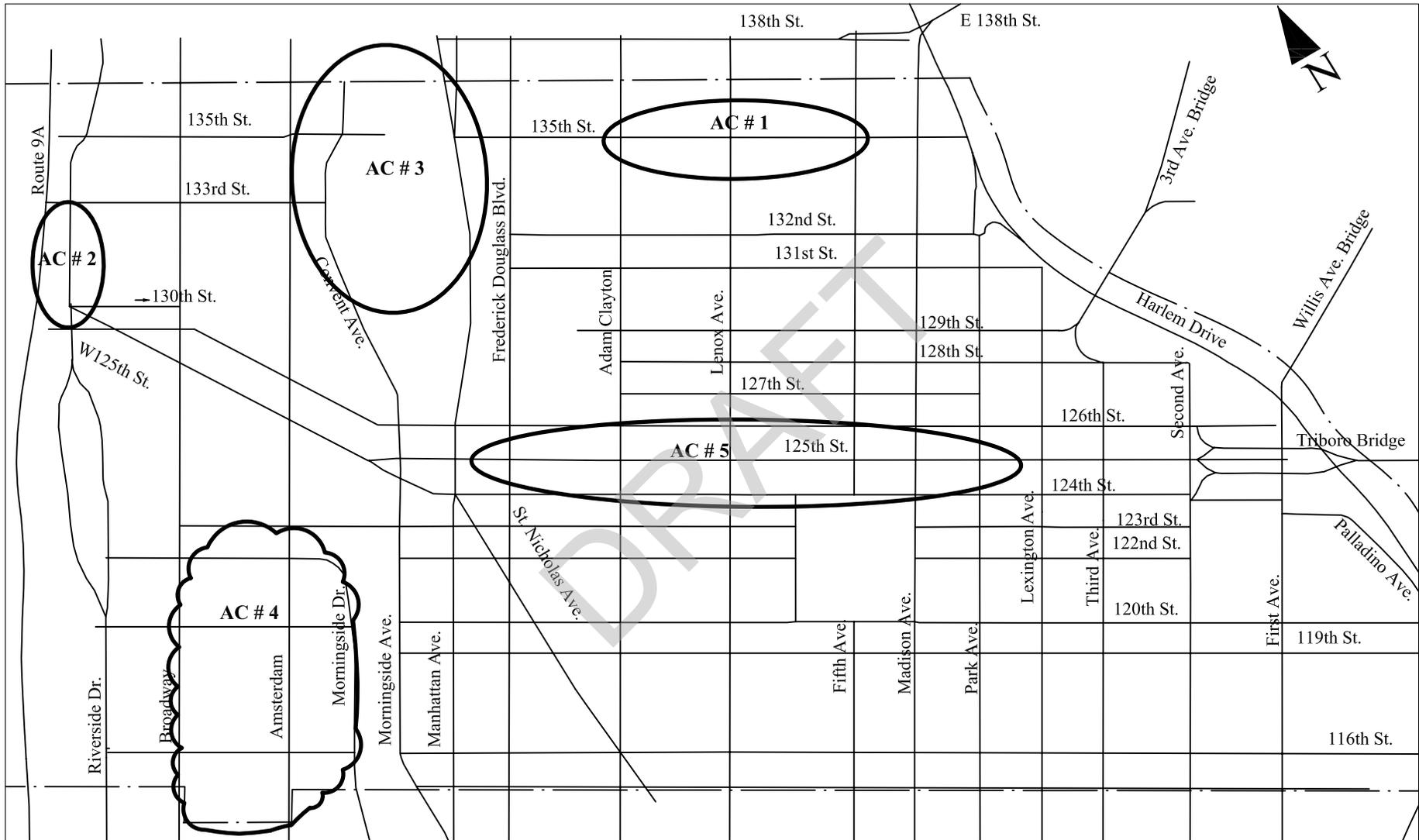
be access by two public bus lines (M5, and Bx15), and two subway lines 1 and 9 at the 125<sup>th</sup> Street Station which is approximately 1,000 feet from the supermarket. Regional access by automobile is easily available with entrance and exit ramps to and from the Henry Hudson Parkway in the immediately vicinity of the retail activity.

Activity Center # 3: is generally located between Saint Nicholas, Amsterdam Avenue and West 131<sup>st</sup> Street and West 140<sup>th</sup> Street. It is predominantly institutional and residential in character with City College of The City University of New York north and south campus generating significant trips, and the Saint Nicholas Park as a recreational meeting place. Contributing to the liveliness of the area there are three public bus lines (M18, M100, and M101), and four subway lines 1 and 9 at 137<sup>th</sup> Street Station, and the B and C lines with a station at 135<sup>th</sup> Street. Like most parts of the study area activity center #3 is easily accessible by automobile.

Activity Center # 4: is generally located between Claremont Avenue/Broadway/ Morningside Drive and West 114<sup>th</sup> Street and West 122<sup>nd</sup> Street. Similar to activity center #3 it is dominated by academic, institutional and residential buildings representing Columbia University's campus. It has four public bus lines (M4, M11, M60, and M104), and two subway lines 1 and 9 (116<sup>th</sup> Street Station) providing services to the area. It is also accessible by automobile.

Activity Center # 5: is the *125<sup>th</sup> Street Corridor* between Manhattan Avenue and Lexington Avenue. This section of the corridor is predominately commercial in nature with retail activity on the ground floor. There are shoes and clothing stores, restaurants/fast food national chains, grocery stores, national chain stores (PathMark, HVM, Modell's, KeG, and Staples), entertainment and banking. The corridor which functions as a hub is well served by public transit with bus lines (100, 101, Bx15, and M60), and eleven subway lines (1, 2, 3, 4, 5, 6, 9, A, B, C, and D) with stops along 125<sup>th</sup> Street. It is easily accessible by automobile being the gateway to the area. Exhibit 4-2 shows the activity centers in the study area.

## Exhibit 4-2 Activity Centers in the Study Area



- Activity Centers:**
1. Harlem Hospital Center/ Others
  2. Fairway Supermarket/ Waterfront access
  3. City College of New York
  4. Columbia University
  5. 125th Street Corridor

**LEGEND**

— Study Area Boundary

○ Activity Centers #

### **4.3 Data Collection & Traffic Operations**

#### **Data Collection**

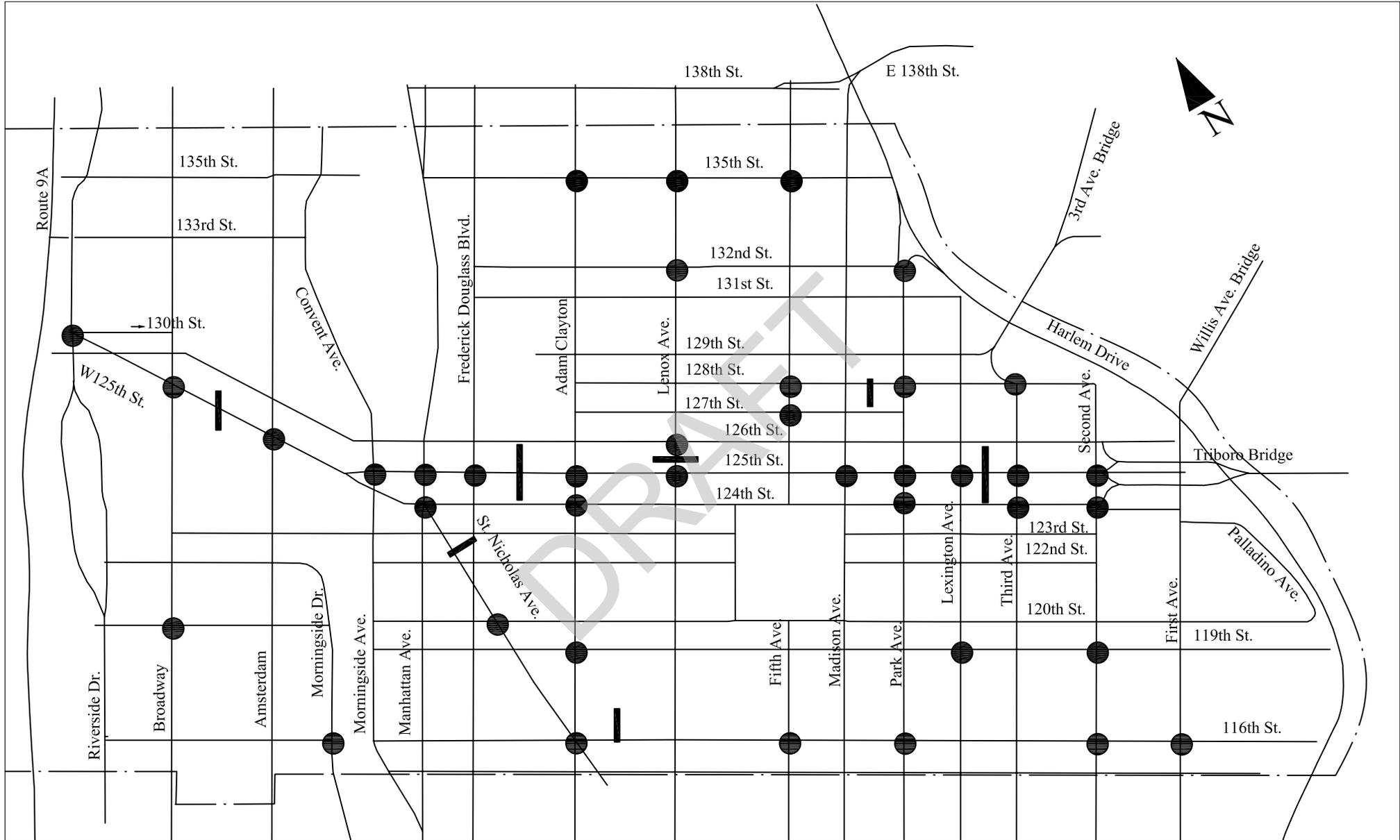
Existing traffic conditions were defined through field surveys conducted in October and November 2003, and supplemented with information from recent environmental impact statements (EIS) conducted for proposed projects within the study area, as well as from other studies such as Malcolm X Boulevard Streetscape Enhancement Project, Harlem Center Project, West Harlem Master Plan, and Central Harlem Environmental Assessment.

Traffic volume counts included vehicle classification and turning movements for three midweek days (Tuesday, Wednesday, and Thursday) during the AM, midday, and PM peak hours and for the Saturday Midday peak hour. Automatic Traffic Recording (ATR) machines were placed at seven locations for the duration of seven days. Exhibit 4-3 shows the ATR and traffic manual count locations in the study area. Speed and delay runs were also conducted for the various peak hours.

Automatic Traffic Recorders (ATR) were placed at the following seven locations:

- 125<sup>th</sup> St. between Lexington and 3<sup>rd</sup> avenues, East and West bounds
- 125<sup>th</sup> St. between Broadway and Amsterdam Avenue, East and West bounds
- 128<sup>th</sup> St. between Madison and Park avenues, Eastbound
- 125<sup>th</sup> St between Fredrick D. and Adam Clayton avenues, East and West bounds
- Lenox Ave. between 126<sup>th</sup> and 125<sup>th</sup> streets, North and South bounds
- 116<sup>th</sup> St. between Lenox and Adam Clayton avenues, Westbound
- St. Nicholas Avenue between 122<sup>nd</sup> and 123<sup>rd</sup> streets, Northbound

# Exhibit 4-3 ATR and Manual Count Locations



- LEGEND**
- Study Area Boundary
  - Manual counts Loc
  - ▬ ATR Counts Loc

Vehicle classification and turning movement counts were conducted for the various peak periods at the following 38 signalized and one un-signalized location:

Signalized intersections:

1. 2nd Avenue @ 116<sup>th</sup> Street
2. 5th Avenue @ 127<sup>th</sup> Street
3. 5th Avenue @ 116<sup>th</sup> Street
4. 5th Avenue @ 135<sup>th</sup> Street
5. Adam C. Powell, Jr Boulevard @ 124<sup>th</sup> Street
6. Adam C. Powell, Jr Boulevard @ 135<sup>th</sup> Street
7. Morningside Drive @ 116<sup>th</sup> Street
8. Broadway @ 120<sup>th</sup> Street
9. 1st Avenue @ E 116<sup>th</sup> Street
10. 2nd Avenue @ E 119<sup>th</sup> Street
11. 2nd Avenue @ E 124<sup>th</sup> Street
12. 3rd Avenue @ E 124<sup>th</sup> Street
13. 3rd Avenue @ E 125<sup>th</sup> Street
14. Lexington Avenue @ E 119<sup>th</sup> Street
15. Lexington Avenue @ E 125<sup>th</sup> Street
16. Park Avenue @ E 116<sup>th</sup> Street
17. Park Avenue @ E 124<sup>th</sup> Street
18. Park Avenue @ E 125<sup>th</sup> Street
19. Park Avenue @ E 128<sup>th</sup> Street
20. Park Avenue @ E 132<sup>nd</sup> Street
21. Madison Avenue @ E 125<sup>th</sup> Street
22. 5th Avenue @ 128<sup>th</sup> Street
23. Lenox Avenue @ W 125<sup>th</sup> Street
24. Lenox Avenue @ W 126<sup>th</sup> Street
25. Lenox Avenue @ W 132<sup>nd</sup> Street
26. Lenox Avenue @ W 135<sup>th</sup> Street
27. 7th Avenue/Adam Clayton @ W 116<sup>th</sup> Street

28. 7th Avenue/Adam Clayton @ W 119<sup>th</sup> Street
29. 7th Avenue/Adam Clayton @ W 125<sup>th</sup> Street
30. ST Nicholas Avenue @ W 120<sup>th</sup> Street
31. Morningside/Covenant Avenue @ W 125<sup>th</sup> Street
32. Amsterdam Avenue @ W 125<sup>th</sup> Street
33. Morningside Avenue @ W 125<sup>th</sup> Street
34. Manhattan Avenue/St Nicholas @ W 125<sup>th</sup> Street
35. Manhattan Avenue @ St Nicholas Avenue/124<sup>th</sup> Street
36. 8th Avenue/Frederick Douglas @ W 125<sup>th</sup> Street
37. Broadway @ W 125<sup>th</sup> Street
38. Riverside Drive @ W 125<sup>th</sup> Street

Unsignalized intersection:

1. 3rd Avenue @ E 128<sup>th</sup> Street

Parking Data

On and off street parking facilities data was collected as well as on street meter parking and non-meter parking regulations.

Accident Data

Accident data from NYSDOT and DMV records was analyzed for the 13 locations identify in the study area from year 1998 to 2000.

#### **4.4 Network Traffic Volumes**

Balanced traffic networks for the various peak periods were prepared using the ATRs and the manual turning movement counts. This information has been plotted on traffic flow maps for the AM (7:45 - 8:45), midday (12:15 - 1:15), PM (4:45 - 5:45), and Saturday midday (1:00 - 2:00) peak hours. Exhibits 4-4, 4-5, 4-6, and 4-7 present the 2003 existing peak hour traffic volumes for the four peak hours, respectively.

Data collected from the Automatic Traffic Recorders (ATR) showed that the 125<sup>th</sup> Street corridor processed the highest number of vehicles for all four peak periods. The traffic volume data analysis revealed the following:

1. The eastbound 125th Street between Broadway and Amsterdam Avenue carries approximately 690, 684, 786, and 746 vehicles per hour (vph) in the AM, midday, PM, and Saturday midday peak hours, respectively; while the westbound carries approximately 511, 449, 565, and 560 vph, for the respective peak hours.

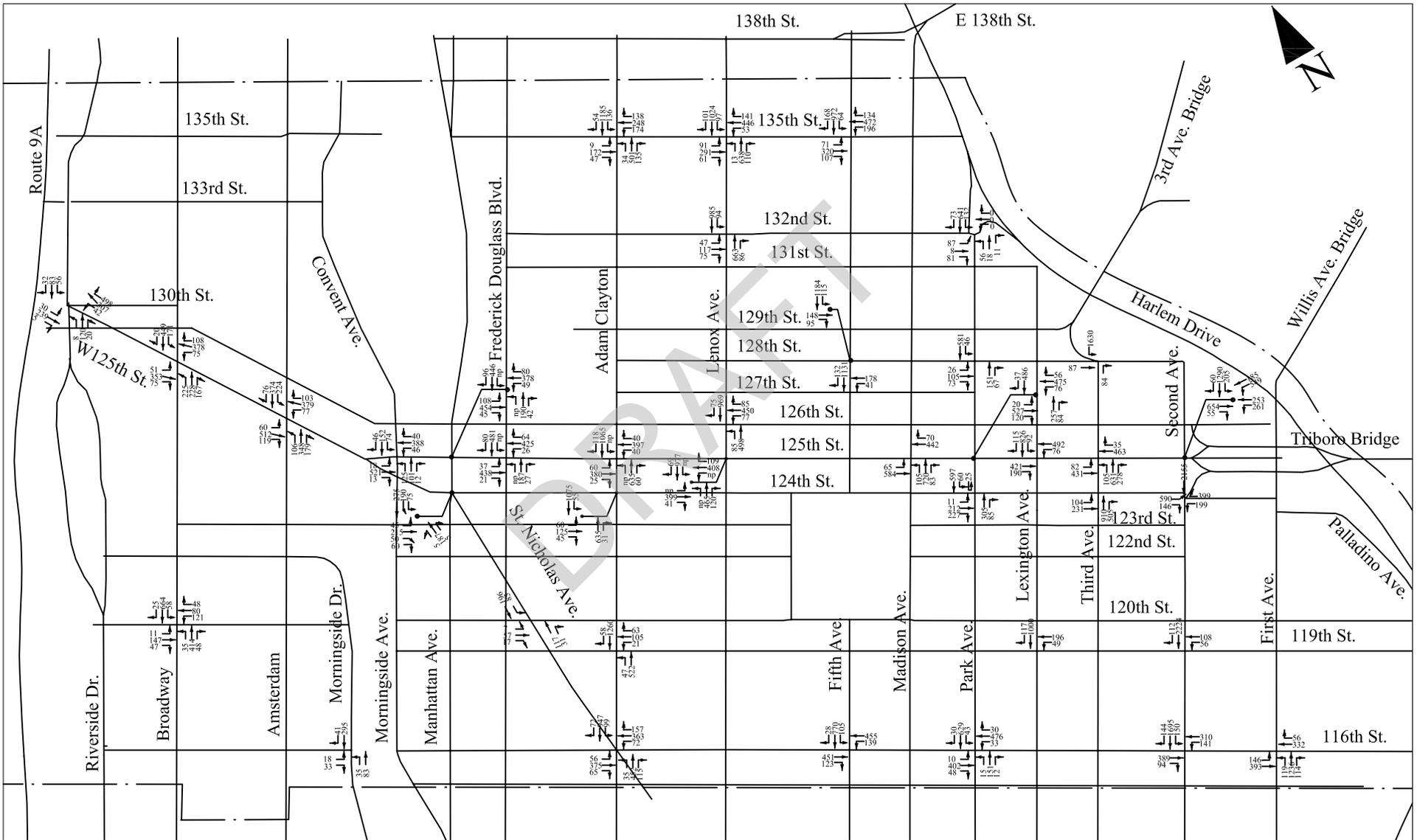
2. In the eastbound direction between Lexington Avenue and Third Avenue traffic volumes were approximately 513, 490, 561, and 476 vehicles per hour (vph) in the AM, midday, PM, and Saturday midday peak hours, respectively; while the westbound were approximately 568, 483, 465, and 545 vehicles per hour (vph) for the respective hours.

Exhibits 4-4 to 4-7 show the balanced traffic network volumes for the various peak hours.

Because of the complexity of the traffic network within the study area and its connection to major access roads and bridges such as the Henry Hudson Parkway, FDR Drive/Harlem River Drive and the Willis Avenue, Third Avenue and tri-borough Bridges a review of the traffic on these regional facilities was done to have a better understanding of the traffic coming in and out of the local street network. The regional traffic volumes maps for the AM, MD and PM peak hours are shown in Appendix A.

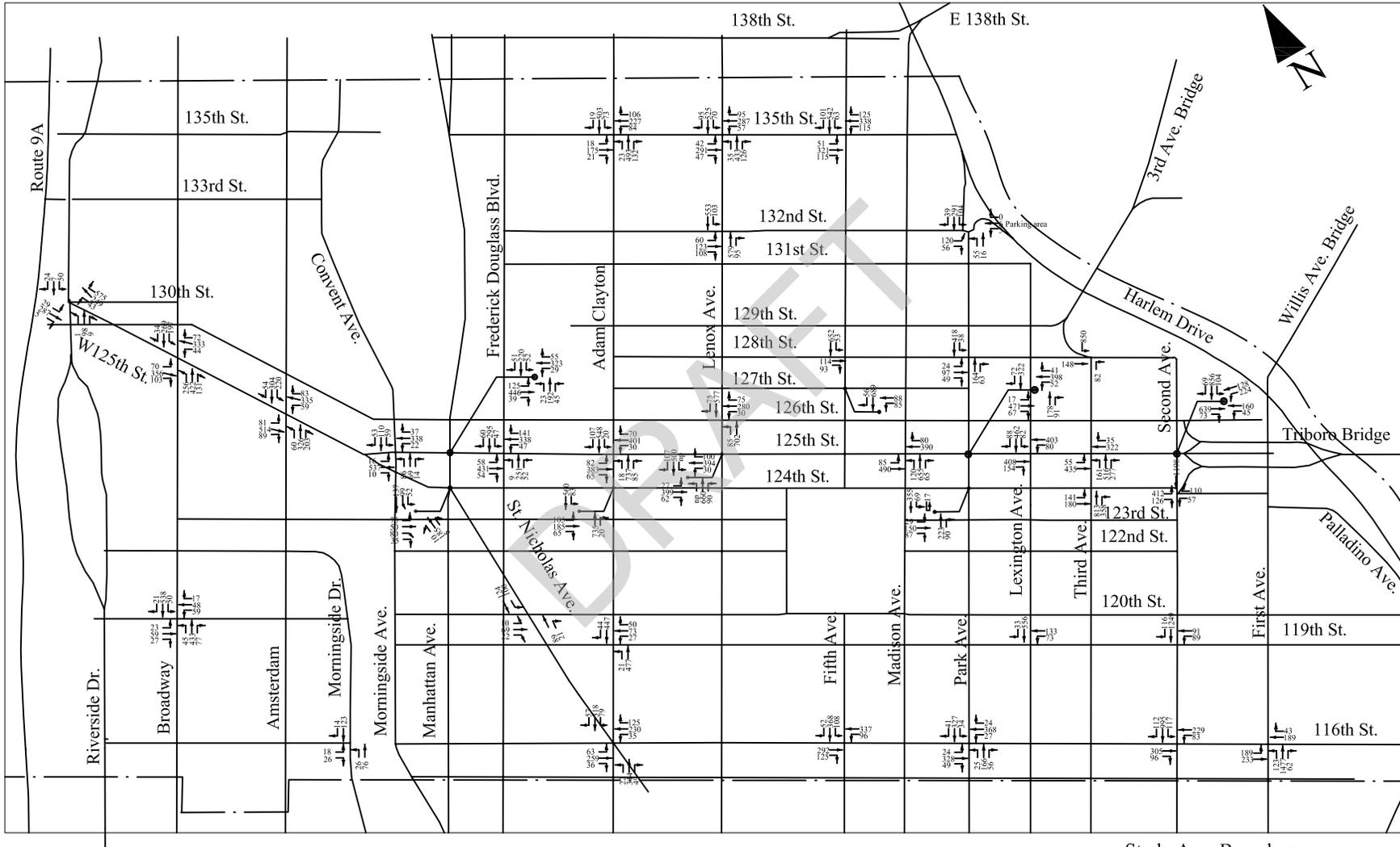
# Exhibit 4-4 AM Peak Hour Volume

## HARLEM/MORNINGSIDE HEIGHTS TRANSPORTATION STUDY



— Study Area Boundary  
 AM PEAK  
 7:45am-8:45am

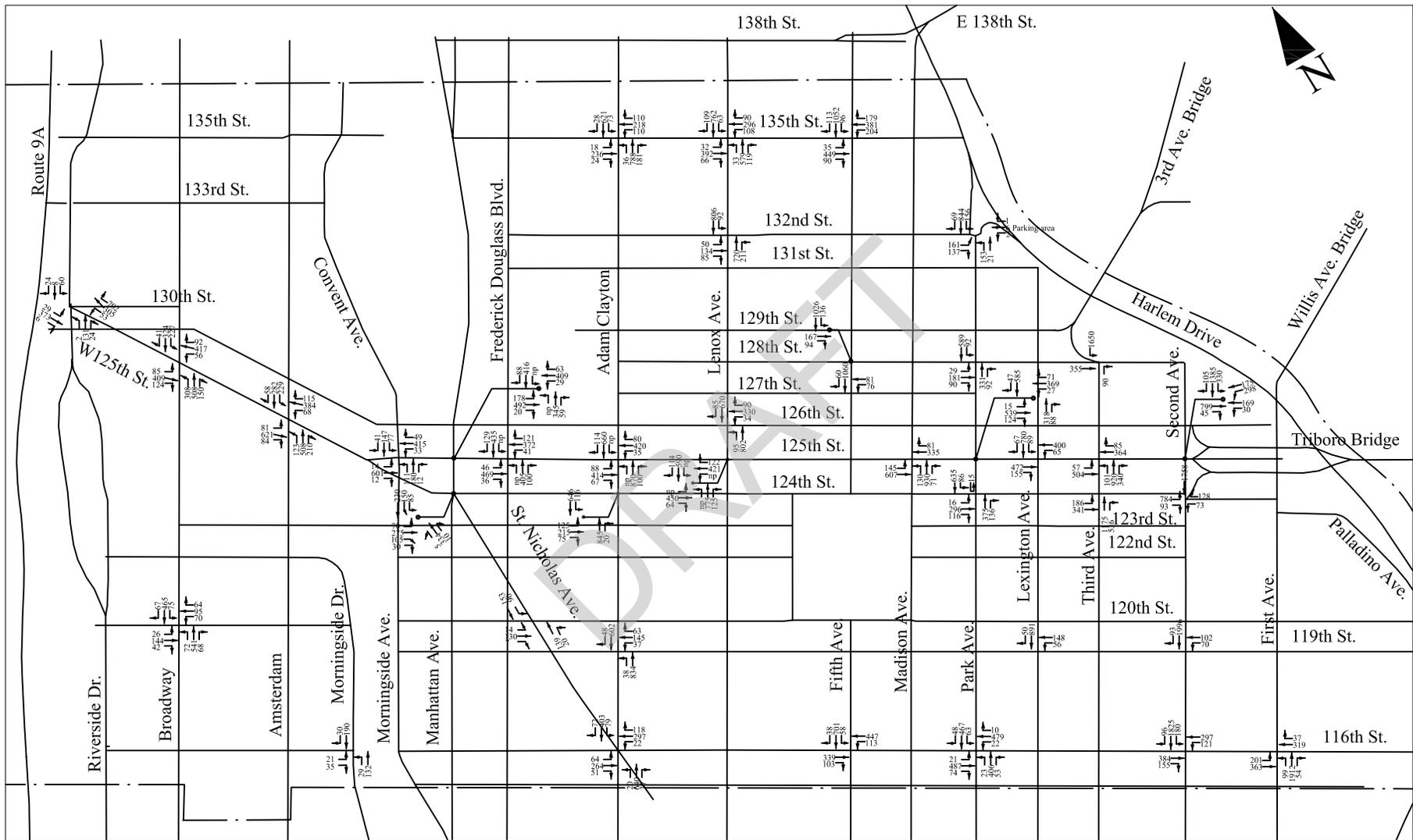
# Exhibit 4-5 Midday Peak Hour Volume HARLEM/MORNINGSIDE HEIGHTS TRANSPORTATION STUDY



— Study Area Boundary  
 MD PEAK  
 12:15pm-1:15pm

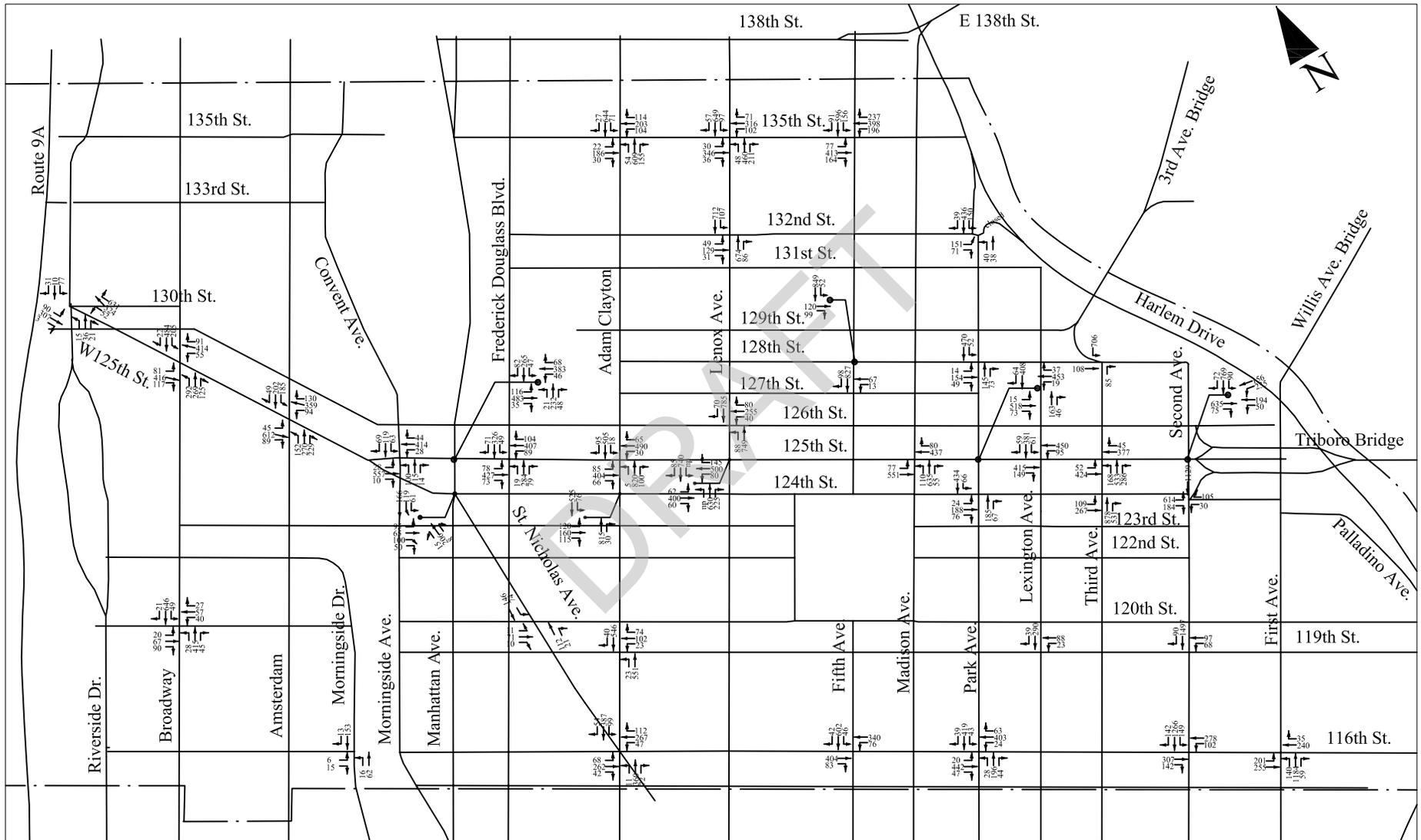
# Exhibit 4-6 PM Peak Hour Volume

## HARLEM/MORNINGSIDE HEIGHTS TRANSPORTATION STUDY



— Study Area Boundary  
 PM PEAK  
 4:45pm-5:45pm

# Exhibit 4-7 Sat. Midday Peak Hour Volume HARLEM/MORNINGSIDE HEIGHTS TRANSPORTATION STUDY



— Study Area Boundary  
 SAT PEAK  
 1:00pm-2:00pm

#### **4.5 Street Capacity & Level of Service (LOS)**

The capacity of the roadways is the maximum rate of flow which may pass through a section of roadway under prevailing traffic, roadway and signalization conditions. The capacity of a roadway is determined by several factors including turning movements, signal timing, geometric design of the intersection, pedestrian movements, type of vehicle, illegal and/or double parking, grade, roadway conditions, and weather. In determining street capacity within the Study Area the 2000 Highway Capacity Manual methodology was used. The methodology requires the use of official signal timings, street geometry, and other relevant information for performing capacity and LOS analyses. The study area contains 38 signalized and one un-signalized intersection. Visits to the field were conducted in order to gather the prevailing conditions of the intersection.

The traffic flow characteristics are measured in terms of the volume-to-capacity (v/c) ratios and delays. The quality of the flow is expressed in terms of LOS, which is based on an average delay experienced by a vehicle. When the v/c ratio exceeds 1.0, a facility or intersection operates at or over capacity. In this situation severe congestion occurs in traffic with stop-and-start conditions, and extensive vehicle queuing and delays. Volume-to-capacity ratios of less than 0.85 are considered to be reflective of acceptable traffic conditions, with average delays of 45 seconds or less. The following are level of service criteria as specified in the 2000 HCM Methodology.

## SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Level of Service	Control Delay Per Vehicle	Description of Traffic Condition
A	$\leq 10.0$	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 to 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 to 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 to 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 to 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;  
National Research Council, Washington D.C., 2000;  
New York City Department of Transportation;  
New York State Department of Transportation.

Note: Control delay is measured in terms of seconds per vehicle.

In the case of un-signalized intersections, capacity analysis at Two-Way Stopped-Controlled (TWSC) intersection depends on a clear understanding of the interaction between the drivers from the minor and major street approach. Level of service (LOS) for a TWSC intersection is determined by the measure of the average control delay defined for each of the minor movement. LOS is not defined for the intersection as a whole. The following are level of service criteria as specified in the 2000 HCM Methodology for TWSC intersections.

**TWSC UNSIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA**

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

**4.6 Existing Traffic Conditions**

Problem intersections were identified and analyzed for roadway capacity using the 2000 Highway Capacity Manual (HCM) methodology. A balanced traffic network for the weekday AM, Midday, PM, peak hours and Saturday Midday peak hour were developed and volume-to-capacity (v/c) ratios, vehicular delay, and level-of-service (LOS) for the respective peak hours were determined.

Table 4-1 shows the 2003 Existing Conditions, v/c ratios, delays, and level of service (LOS) for AM, midday, PM, and Saturday midday peak hours for the 38 signalized intersections analyzed in the study area.

The analysis shows that most intersections operated at an acceptable level of service (LOS) B or better during the AM, midday, PM, and Saturday midday peak hours. However, some

intersections experienced LOS D, E, and F for some or all lane groups during some peak hours.

The intersections with approaches or lane groups with mid LOS D (equal to 45 sec/veh.) or worse are listed below and shown in Exhibits 4-8, 4-9, 4-10, and 4-11.

- 1<sup>st</sup> Avenue @ E 116<sup>th</sup> St (AM, MD, PM, and Sat. midday)
- 2nd Avenue @ 116<sup>th</sup> St (AM)
- 2nd Avenue @ E 125<sup>th</sup> St (AM, MD, PM, and Sat. midday)
- Park Avenue @ E 116<sup>th</sup> St (AM)
- Park Avenue @ E 128<sup>th</sup> St (PM)
- Park Avenue @ E 132<sup>nd</sup> St (PM)
- Madison Avenue @ E 125<sup>th</sup> St (PM)
- 5th Avenue @ 116<sup>th</sup> Street (AM)
- 5th Avenue @ 135<sup>th</sup> Street (AM, PM, and Sat. midday)
- Lenox Avenue @ W 125<sup>th</sup> St (Sat. midday)
- Lenox Avenue @ W 126<sup>th</sup> St (AM, and Sat. midday)
- Lenox Avenue @ W 135<sup>th</sup> St (AM)
- 7<sup>th</sup> Avenue/Adam Clayton Blvd @ W 116<sup>th</sup> St (AM)
- 7<sup>th</sup> Avenue/Adam Clayton Blvd @ W 135<sup>th</sup> St (AM, and MD)
- Manhattan Avenue @ W 125<sup>th</sup> St (AM, MD, PM, and Sat. Midday)
- Amsterdam Avenue @ W 125<sup>th</sup> St (AM, PM, and Sat. midday)
- Broadway @ W 120<sup>th</sup> St (AM, and PM)
- Broadway @ W 125<sup>th</sup> St (PM and Sat. Midday)

**TABLE 4-1**  
**TRAFFIC CAPACITY ANALYSIS FOR SIGNALIZED INTERSECTIONS**  
**2003 EXISTING CONDITIONS**

INTERSECTION	Lane Group		AM			MID			PM			SAT			
			V/C	DELAY	LOS										
<b>1ST Avenue @ E 116TH ST</b>	EB	LT	1.00	66.0	E				1.04	78.9	E				
		DefL				0.85	56.9	E				0.89	62.0	E	
	WB	TR	0.55	26.6	C	0.59	30.3	C	0.48	25.2	C	0.60	30.0	C	
		NB	LTR	0.58	14.5	B	0.32	22.7	C	0.81	19.6	B	0.35	23.1	C
	<b>Intersection LOS</b>				28.2	C	0.67	16.2	B		31.5	C	0.53	13.9	B
							21.6	C					21.7	C	
<b>2nd Avenue @116th Street</b>	EB	TR	0.64	28.4	C	0.48	25.1	C	0.63	28.0	C	0.52	25.7	C	
	WB	LT	0.98	63.6	E	0.64	29.8	C	0.84	40.7	D	0.69	31.5	C	
	SB	LTR	0.79	18.9	B	0.52	13.8	B	0.80	19.1	B	0.60	14.8	B	
		<b>Intersection LOS</b>				27.8	C		18.9	B		23.8	C		19.6
<b>2ND Avenue @ E 119TH ST</b>	WB	LT	0.46	26.5	C	0.46	26.2	C	0.45	26.0	C	0.45	25.9	C	
	SB	TR	0.95	28.8	C	0.57	14.4	B	0.81	19.3	B	0.62	15.2	B	
		<b>Intersection LOS</b>				28.6	C		15.9	B		19.9	B		16.4
<b>2ND Avenue @ E 124TH ST</b>	EB	L	0.72	30.8	C	0.53	26.1	C	0.92	44.8	D	0.74	31.8	C	
		R	0.54	30.7	C	0.35	24.5	C	0.27	23.0	C	0.53	29.0	C	
	WB	L	0.47	26.5	C	0.14	20.9	C	0.17	21.3	C	0.09	20.3	C	
		R	0.31	11.8	B	0.09	10.0	A	0.11	10.1	B	0.08	9.9	A	
	SB	T	0.80	19.2	B	0.46	13.1	B	0.63	15.3	B	0.41	12.5	B	
		<b>Intersection LOS</b>				21.3	C		16.7	B		23.5	C		19.7
<b>2ND Avenue @ E 125TH ST</b>	EB	TR	1.04	82.5	F	1.03	79.4	E	1.04	79.6	E	1.03	78.4	E	
		R	0.28	33.0	C	0.37	35.4	D	0.24	32.2	C	0.39	36.1	D	
	WB	DefL	1.03	100.6	F										
		LT	0.81	53.6	D	0.66	42.7	D	0.53	36.2	D	0.76	47.3	D	
	SB-2ave	LTR	0.75	26.0	C	0.57	22.8	C	0.93	35.0	D	0.49	21.7	C	
		<b>Intersection LOS</b>				48.3	D		43.6	D		47.2	D		44.3
	SB-Bridge	TR	1.03	77.2	E	0.65	37.9	D	0.74	40.4	D	0.69	39.0	D	
				77.2	E		59.0	E		59.6	E		58.3	E	
<b>3RD Avenue @ E 124TH ST</b>	WB	LT	0.36	23.0	C	0.36	23.0	C	0.52	25.3	C	0.43	24.0	C	
	NB	TR	0.49	13.3	B	0.43	12.6	B	0.55	14.0	B	0.46	12.9	B	
		<b>Intersection LOS</b>				15.2	B		14.9	B		16.8	B		15.6
<b>3RD Avenue @ E 125TH ST</b>	EB	LT	0.78	32.7	C	0.66	26.6	C	0.76	30.5	C	0.68	27.4	C	
	WB	TR	0.58	24.5	C	0.46	22.0	C	0.58	24.3	C	0.57	24.2	C	
	NB	LTR	0.38	14.3	B	0.40	14.5	B	0.54	16.1	B	0.44	15.0	B	
		<b>Intersection LOS</b>				21.5	C		19.2	B		21.0	C		20.1
<b>LEXINGTON Avenue @ E 119TH ST</b>	WB	LT	0.68	34.0	C	0.60	30.9	C	0.54	28.5	C	0.30	23.3	C	
	SB	TR	0.95	34.6	C	0.47	13.7	B	0.73	18.9	B	0.26	11.3	B	
		<b>Intersection LOS</b>				34.5	C		18.5	B		20.7	C		14.4
<b>LEXINGTON Avenue @ E 125TH ST</b>	EB	TR	0.76	30.3	C	0.67	26.9	C	0.75	29.2	C	0.67	26.4	C	
	WB	LT	0.83	35.5	D	0.82	35.4	D	0.66	26.9	C	0.80	33.6	C	
	SB	LTR	0.92	34.2	C	0.58	17.8	B	0.76	22.4	C	0.44	15.6	B	
		<b>Intersection LOS</b>				33.4	C		25.9	C		25.6	C		25.3
<b>PARK Avenue @ E 116TH ST</b>	EB	LTR	0.57	24.4	C	0.56	24.1	C	0.68	26.1	C	0.65	25.8	C	
	WB	LTR	0.68	27.3	C	0.52	23.2	C	0.57	24.1	C	0.62	25.2	C	
	NB	LTR	0.32	14.7	B	0.46	17.0	B	0.75	25.0	C	0.48	17.4	B	
		SB	LTR	1.04	68.1	E	0.67	22.2	C	0.93	43.1	D	0.81	28.8	C
	<b>Intersection LOS</b>				40.1	D		22.1	C		29.8	C		25.2	C
<b>PARK Avenue @ E 124TH ST</b>	EB	LTR	0.44	21.5	C	0.70	32.0	C	0.39	20.7	C	0.55	24.9	C	
	NB	TR	0.33	14.2	B	0.45	16.2	B	0.42	15.2	B	0.36	14.9	B	
		SB	LT	0.63	19.0	B	0.74	24.9	C	0.70	21.0	C	0.66	20.7	C
	<b>Intersection LOS</b>				18.5	B		24.0	C		19.1	B		20.4	C
<b>PARK Avenue @ E 125TH ST</b>	EB	LTR	0.59	16.0	B	0.55	15.3	B	0.67	17.6	B	0.51	14.5	B	
	WB	LTR	0.66	18.2	B	0.54	15.3	B	0.45	13.6	B	0.43	13.3	B	
	NB	TR	0.45	24.7	C	0.35	23.1	C	0.49	25.1	C	0.26	21.8	C	
		SB	TR	0.58	26.7	C	0.53	25.9	C	0.70	29.5	C	0.56	26.3	C
	<b>Intersection LOS</b>				20.6	C		19.1	B		21.5	C		18.3	B

**TABLE 4-1**  
**TRAFFIC CAPACITY ANALYSIS FOR SIGNALIZED INTERSECTIONS**  
**2003 EXISTING CONDITIONS**

INTERSECTION	Lane Group		AM			MID			PM			SAT		
			V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
PARK Avenue @ E 128TH ST Intersection LOS	EB	LTR	0.62	34.5	C	0.58	32.9	C	0.81	45.5	D	0.23	34.0	C
	NB	TR	0.30	10.1	B	0.31	10.1	B	0.46	11.9	B	0.27	9.8	A
	SB	LT	0.85	26.4	C	0.65	16.5	B	0.99	48.7	D	0.81	24.0	C
				24.0	C		18.2	B		36.3	D		22.9	C
PARK Avenue @ E 132ND ST Intersection LOS	EB	LTR	0.30	25.3	C	0.50	29.7	C	0.51	28.5	C	0.38	26.3	C
	NB	LTR	0.45	16.4	B	0.30	11.4	B	1.02	92.2	F	0.29	11.3	B
	SB	LTR	0.58	13.2	B	0.59	14.7	B	0.71	15.7	B	0.91	31.1	C
				15.6	B		18.3	B		26.6	C		28.4	C
MADISON Avenue @ E 125TH ST Intersection LOS	EB	LT	0.72	25.3	C	0.71	25.4	C	0.96	46.2	D	0.77	27.5	C
	WB	TR	0.5	19.4	B	0.49	19.4	B	0.42	18.2	B	0.52	19.8	B
	NB	LTR	0.59	20.3	C	0.56	19.8	B	0.71	22.7	B	0.52	19.2	B
				21.6	C		21.3	C		29.5	C		22.0	C
5th Avenue @ 116th Street Intersection LOS	EB	TR	0.65	26.0	C	0.45	21.8	C	0.44	21.6	C	0.55	23.5	C
	WB	LT	1.04	75.8	E	0.56	24.3	C	0.76	31.1	C	0.65	26.7	C
	SB	LTR	0.49	15.7	B	0.31	13.7	B	0.42	14.9	B	0.37	14.4	B
				36.1	D		19.5	B		21.6	C		20.6	C
5th Avenue @ 127th Street Intersection LOS	WB	LT	0.46	25.8	C	0.46	26.0	C	0.44	25.3	C	0.19	21.5	C
	SB	TR	0.97	38.4	D	0.61	16.1	B	0.84	23.3	C	0.70	17.9	B
				36.4	D		18.2	B		23.7	C		18.2	B
5TH Avenue @ 128TH ST Intersection LOS	EB	TR	0.63	30.4	C	0.54	28.2	C	0.65	31.9	C	0.56	28.8	C
	SB	LT	0.92	28.7	C	0.56	15.0	B	0.86	24.6	C	0.66	17.0	B
				29.0	C		18.2	B		26.1	C		19.5	B
5th Avenue @ 135th Street Intersection LOS	EB	LTR	0.78	30.0	C	0.64	23.0	C	0.64	22.5	C	0.93	43.4	D
	WB	LTR	1.00	55.3	E	0.85	34.1	C	1.03	64.5	E	1.00	56.2	E
	SB	LTR	1.02	56.5	E	0.70	23.8	C	1.03	59.0	E	0.77	25.9	C
				50.7	D		26.9	C		52.3	D		41.6	D
LENOX Avenue @ W 125TH ST Intersection LOS	EB	TR	0.4	17.9	B				0.54	20.4	C			
		LTR				0.56	20.9	C				0.72	26.0	C
	WB	TR	0.55	20.5	C				0.69	24.6	C			
		LTR				0.67	23.7	C				1.01	61.3	E
	NB	TR	0.61	21.6	C	0.78	26.9	C	0.95	43.4	D	0.94	42.4	D
	SB	TR	0.73	23.6	C	0.67	23.5	C	0.80	28.8	C	0.87	33.5	C
LENOX Avenue @ W 126TH ST Intersection LOS	WB	LTR	0.4	17.6	B	0.24	15.9	B	0.27	16.2	B	0.25	15.9	B
	NB	L	1.03	130.5	F	0.49	26.4	C	0.66	39.2	D	0.74	52.5	D
		T	0.43	18.2	B	0.62	21.7	C	0.71	24.0	C	0.65	22.3	C
	SB	TR	0.9	34.3	C	0.58	20.7	C	0.67	22.7	C	0.75	25.1	C
				29.8	C		20.3	C		22.5	C		23.5	C
LENOX Avenue @ W 132ND ST Intersection LOS	EB	LTR	0.77	43.5	D	0.80	44.4	D	0.73	39.0	D	0.63	34.6	C
	NB	TR	0.63	14.3	B	0.50	12.0	B	0.65	14.6	B	0.54	12.5	B
	SB	L	0.46	16.7	B	0.45	15.5	B	0.58	22.7	C	0.55	20.2	C
		T	0.7	15.6	B	0.36	10.3	B	0.49	11.7	B	0.44	11.2	B
LENOX Avenue @ W 135TH ST Intersection LOS				18.3	B		17.5	B		17.2	B		15.2	B
	EB	LTR	0.91	50.9	D	0.64	29.6	C	0.65	29.0	C	0.56	26.8	C
	WB	LTR	0.95	51.6	D	0.71	31.4	C	0.88	44.0	D	0.86	42.4	D
	NB	L	0.14	12.8	B	0.17	11.8	B	0.23	13.4	B	0.23	12.8	B
		TR	0.59	15.7	B	0.44	13.3	B	0.50	14.1	B	0.55	14.9	B
	SB	L	0.49	20.5	C	0.34	14.6	B	0.32	14.7	B	0.45	18.2	B
	TR	0.82	22.3	C	0.52	14.4	B	0.63	16.2	B	0.52	14.3	B	
			30.8	C		20.3	C		23.2	C		22.4	C	

**TABLE 4-1**  
**TRAFFIC CAPACITY ANALYSIS FOR SIGNALIZED INTERSECTIONS**  
**2003 EXISTING CONDITIONS**

INTERSECTION	Lane		AM			MID			PM			SAT		
	Group		V/C	DELAY	LOS									
7TH Avenue/ADAM CLAYTON @ W 116TH ST	EB	LTR	0.86	41.8	D	0.69	31.8	C	0.70	31.9	C	0.65	29.8	C
	WB	LTR	1.02	69.9	E	0.71	31.8	C	0.66	29.7	C	0.64	29.2	C
	NB	LTR	0.41	12.8	B	0.24	11.1	B	0.39	12.5	B	0.25	11.1	B
	SB	LTR	0.67	16.6	B	0.31	11.7	B	0.38	12.4	B	0.34	12.0	B
<b>Intersection LOS</b>				31.3	C		21.2	C		19.8	B		19.6	B
7TH Avenue/ADAM CLAYTON @ W 119TH ST	WB	LTR	0.59	31.1	C	0.50	28.2	C	0.72	36.9	D	0.64	33.0	C
	NB	LT	0.37	12.3	B	0.29	11.5	B	0.52	14.0	B	0.32	11.7	B
	SB	TR	0.64	15.8	B	0.24	11.0	B	0.31	11.6	B	0.29	11.4	B
	<b>Intersection LOS</b>				16.4	B		13.8	B		16.4	B		14.9
Adam C. Powell, Jr Boulevard @ 124th Street	EB	LTR	0.39	21.6	C	0.72	34.0	C	0.77	34.1	C	0.79	37.4	D
	NB	TR	0.37	14.4	B	0.39	12.4	B	0.47	14.9	B	0.40	12.5	B
	SB	LT	0.68	19.2	B	0.43	13.0	B				0.37	12.4	B
		Defl T							0.64	31.0	C			
<b>Intersection LOS</b>				17.9	B		17.1	B		20.1	C		17.9	B
7TH Avenue/ADAM CLAYTON @ W 125TH ST	EB	LTR	0.53	20.3	C	0.74	26.8	C	0.81	30.7	C	0.71	25.4	C
	WB	LTR	0.55	20.7	C	0.62	22.6	C	0.68	24.2	C	0.61	21.8	C
	NB	TR	0.41	17.7	B				0.61	20.7	C			
	SB	LTR				0.57	20.2	C				0.56	19.9	B
<b>Intersection LOS</b>				20.4	C		21.6	C		22.8	C		20.9	C
Adam C. Powell, Jr Boulevard @ 135th Street	EB	LTR	0.56	28.9	C	0.53	28.0	C	0.63	30.7	C	0.58	29.1	C
	WB	L	0.86	60.3	E	0.38	26.9	C	0.59	36.0	D	0.49	30.2	C
		TR	1.03	81.8	F	0.87	48.9	D	0.84	44.8	D	0.81	41.9	D
	NB	LTR	0.48	13.7	B	0.39	12.5	B	0.62	15.8	B	0.53	14.4	B
<b>Intersection LOS</b>				33.1	C		21.4	C		21.7	C		20.3	C
ST NICHOLAS Avenue @ W 120TH ST	EB	LTR	0.33	30.1	C	0.42	31.9	C	0.50	33.6	C	0.37	30.7	C
	NB	TR	0.22	7.6	A	0.16	7.2	A	0.22	7.6	A	0.20	7.4	A
	SB	LT	0.43	10.1	B	0.38	9.7	A	0.41	10.0	A	0.36	9.2	A
<b>Intersection LOS</b>				12.8	B		14.7	B		15.6	B		13.3	B
8TH Avenue/FREDERICK DOUGLAS @ W 125TH ST	EB	LTR	0.60	21.8	C	0.58	16.1	B	0.60	21.7	C	0.65	17.7	B
	WB	LTR	0.65	23.3	C	0.60	16.5	B	0.67	23.9	C	0.71	19.5	B
	NB	TR	0.24	16.1	B				0.51	19.5	B			
	SB	LTR				0.45	24.8	C				0.53	26.0	C
<b>Intersection LOS</b>				20.9	C		20.5	C		21.3	C		22.6	C
MANHATTAN Avenue/ST @ W 125TH ST	EB	LTR	0.73	20.6	C	0.73	20.7	C	0.80	24.0	C	0.65	17.5	B
	WB	L	0.23	12.6	B	0.14	11.2	B	0.13	11.0	B	0.17	11.5	B
		TR	0.78	25.7	C	0.76	24.3	C	0.78	25.4	C	0.70	20.8	C
	NB	TR	0.53	27.6	C				0.80	38.6	D			
<b>Intersection LOS</b>				76.3	E		32.7	C		68.6	E		33.9	C
<b>Intersection LOS</b>				37.8	D		29.9	C		37.4	D		33.0	C
MANHATTAN Avenue @ ST NICHOLAS Avenue/124 St	EB	LTR	0.68	26.1	C	0.51	21.4	C	0.87	39.0	D	0.61	24.1	C
	NB	LTR	0.32	17.4	B	0.33	17.7	B	0.55	21.7	C	0.39	18.5	B
	SB	LT	0.85	35.5	D	0.48	20.1	C	0.80	31.8	C	0.56	22.0	C
<b>Intersection LOS</b>				29.1	C		19.9	B		31.8	C		21.9	C
MORNINGSIDE/COVENA NT Avenue @ W 125TH ST	EB	LTR	0.51	14.3	B	0.48	13.9	B	0.47	13.7	B	0.48	13.9	B
	WB	LTR	0.49	14.2	B	0.39	12.9	B	0.50	14.3	B	0.43	13.3	B
	NB	Defl	0.64	36.6	D	0.40	27.0	C				0.56	32.5	C
		TR	0.26	22.4	C	0.20	21.6	C				0.34	23.3	C
<b>Intersection LOS</b>				25.9	C		24.3	C		24.7	C		24.4	C
<b>Intersection LOS</b>				19.0	B		16.8	B		18.0	B		17.9	B

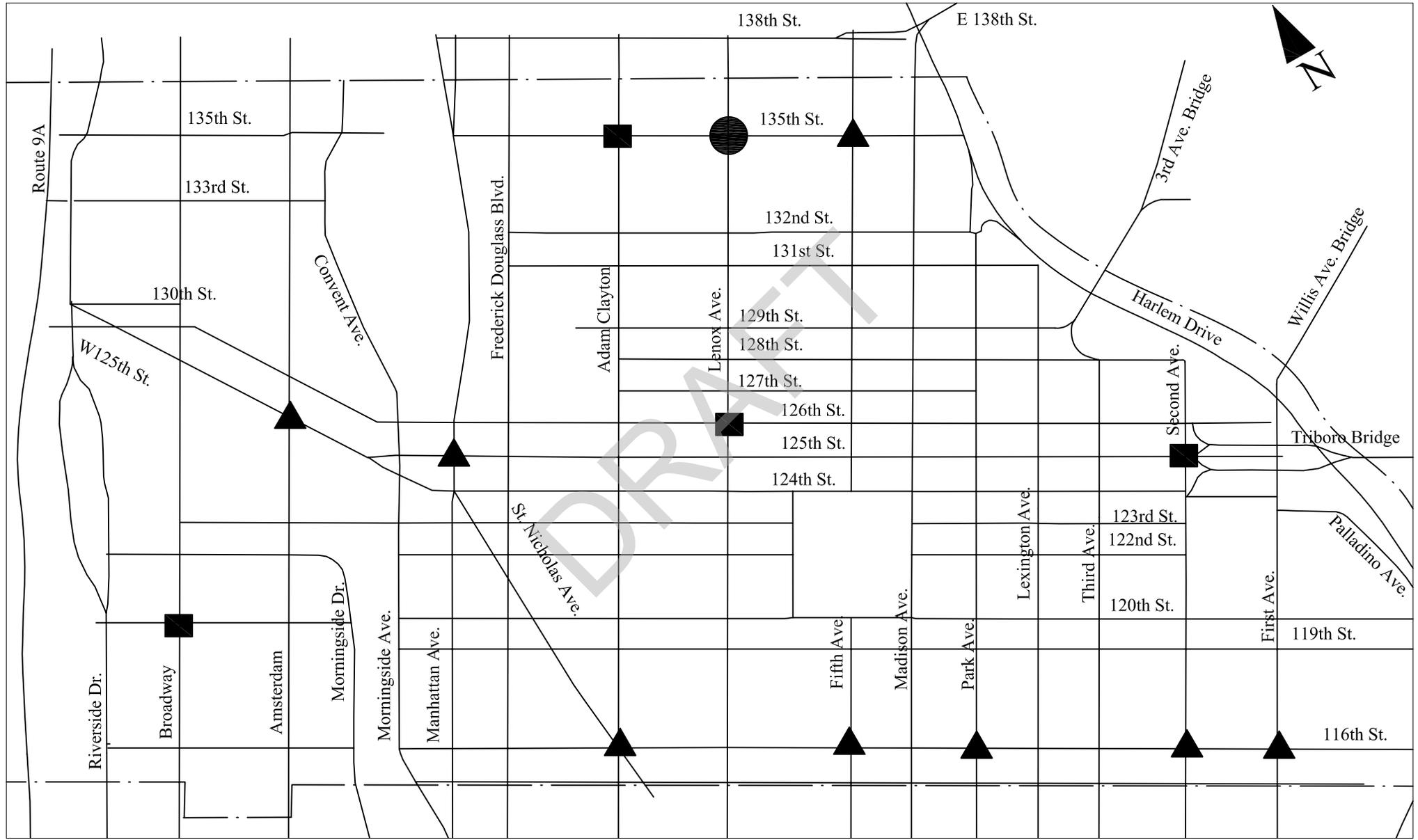
**TABLE 4-1  
TRAFFIC CAPACITY ANALYSIS FOR SIGNALIZED INTERSECTIONS  
2003 EXISTING CONDITIONS**

INTERSECTION	Lane Group		AM			MID			PM			SAT		
			V/C	DELAY	LOS									
<b>Morningside Drive @116th Street</b>	EB	LR	0.23	27.1	C	0.18	26.0	C	0.23	26.7	C	0.09	24.7	C
	NB	LT	0.23	8.7	A	0.17	8.1	A	0.24	8.7	A	0.12	7.7	A
	SB	TR	0.48	11.6	B	0.19	8.3	A	0.31	9.3	A	0.24	8.7	A
	<b>Intersection LOS</b>			12.5	B		11.1	B		11.6	B		9.7	A
<b>AMSTERDAM Avenue @ W 125TH ST</b>	EB	L	0.52	37.2	D	0.60	40.5	D	0.63	44.0	D	0.36	29.7	C
		TR	0.87	41.2	D	0.78	34.6	C	0.86	39.0	D	0.87	39.9	D
	WB	L	0.80	72.8	E	0.56	42.5	D	0.80	76.3	E	1.01	123.2	F
		TR	0.70	31.6	C	0.63	29.3	C	0.68	30.7	C	0.68	30.8	C
	NB	Defl	0.31	13.8	B							0.35	13.4	B
		TR	0.68	27.2	C							0.64	26.0	C
		LTR				0.65	25.9	C	0.85	33.8	C			
	SB	Defl	0.64	26.7	C	0.64	28.1	C	0.73	38.5	D	0.52	20.1	C
		TR	0.59	25.0	C	0.86	44.9	D	0.79	37.3	D	0.57	26.7	C
	<b>Intersection LOS</b>			32.1	C		32.8	C		36.8	D		33.5	D
<b>Broadway @ 120th Street</b>	EB	LTR	0.34	26.6	C	0.22	25.1	C	0.37	27.0	C	0.37	27.3	C
	WB	LTR	1.03	95.6	F	0.57	36.2	D	0.96	78.3	E	0.52	33.4	C
	NB	LTR	0.22	8.5	A	0.26	8.8	A	0.47	11.0	B	0.20	8.4	A
	SB	LTR	0.44	10.6	B	0.37	9.9	A	0.42	10.4	B	0.43	10.4	B
<b>Intersection LOS</b>			24.3	C		13.2	B		21.2	C		13.8	B	
<b>BROADWAY @ W 125TH ST</b>	EB	L	0.31	26.1	C	0.39	27.9	C	0.55	36.6	D	0.51	34.1	C
		TR	0.54	26.2	C	0.61	28.0	C	0.70	30.4	C	0.70	30.6	C
	WB	L	0.41	28.4	C	0.27	24.9	C	0.39	29.4	C	0.37	28.7	C
		TR	0.64	28.7	C	0.53	26.0	C	0.66	29.2	C	0.63	28.3	C
	NB	L	0.70	42.1	D	0.84	54.2	D	0.91	62.6	E	0.91	63.9	E
		LTR	0.51	31.6	C	0.66	34.6	C	0.73	36.3	D	0.49	31.1	C
	SB	L	0.44	32.2	C	0.52	34.2	C	0.59	36.1	D	0.54	34.6	C
		LTR	0.77	40.6	D	0.55	33.3	C	0.62	35.0	C	0.82	43.4	D
<b>Intersection LOS</b>			32.6	C		33.4	C		36.4	D		36.8	D	
<b>RIVERSIDE DRIVE/ 12 Ave @ W 125TH ST</b>	EB	LTR	0.25	13.4	B	0.29	13.8	B	0.36	14.6	B	0.52	17.5	B
	WB	L	0.12	12.6	B	0.14	12.9	B	0.18	13.6	B	0.17	13.3	B
		TR	0.69	20.4	C	0.78	23.7	C	0.93	35.6	D	0.83	26.0	C
	NB	LTR	0.28	20.0	C	0.20	19.0	B	0.30	20.4	C	0.15	18.4	B
	SB	LT	0.27	20.0	B	0.07	17.5	B	0.17	18.9	B	0.20	19.1	B
<b>Intersection LOS</b>			18.7	B		20.3	C		27.7	C		22.6	C	

Approach with mid LOS D or worse

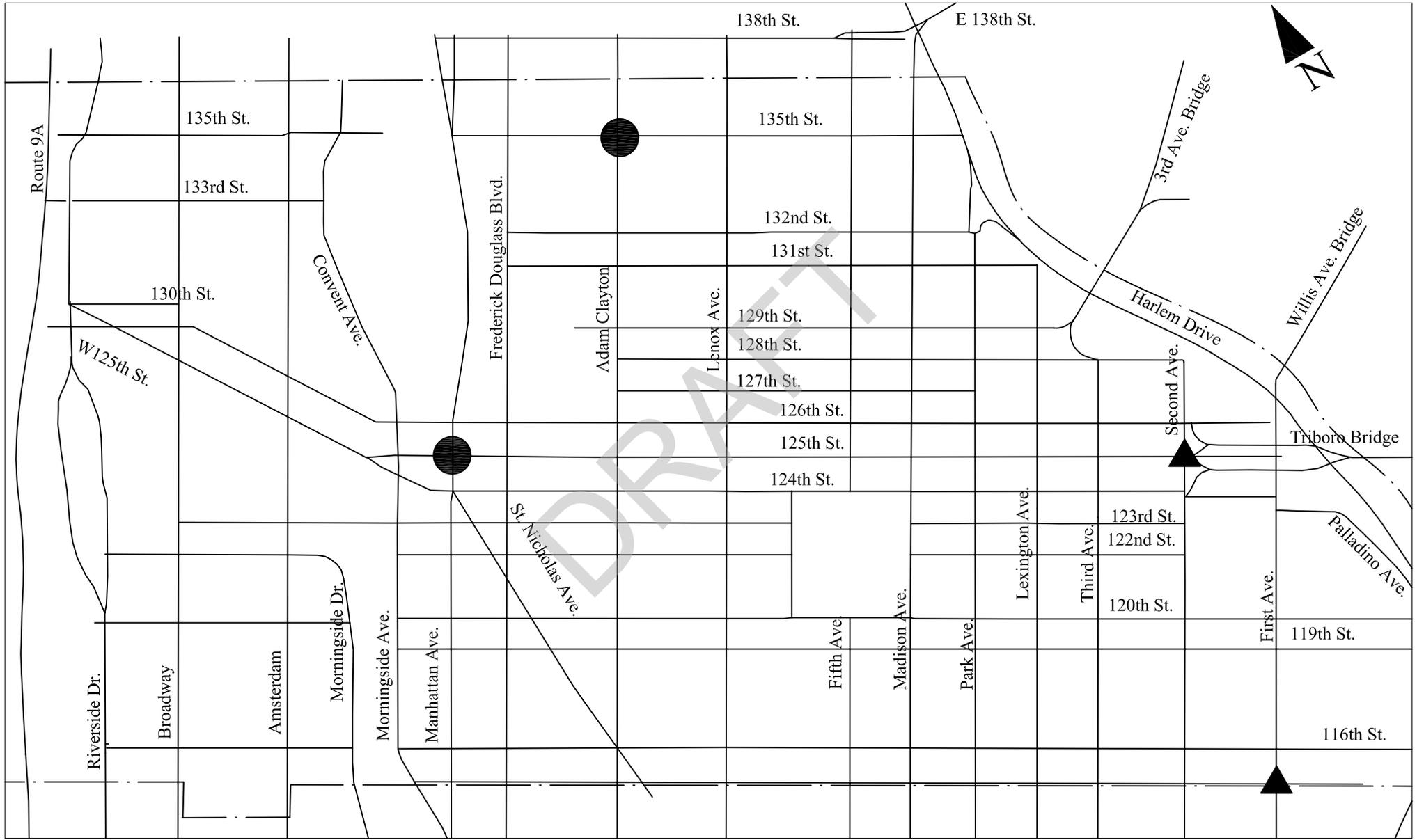


# Exhibit 4-8 (Intersections with LOS D, E, and F (AM Peak Hour))



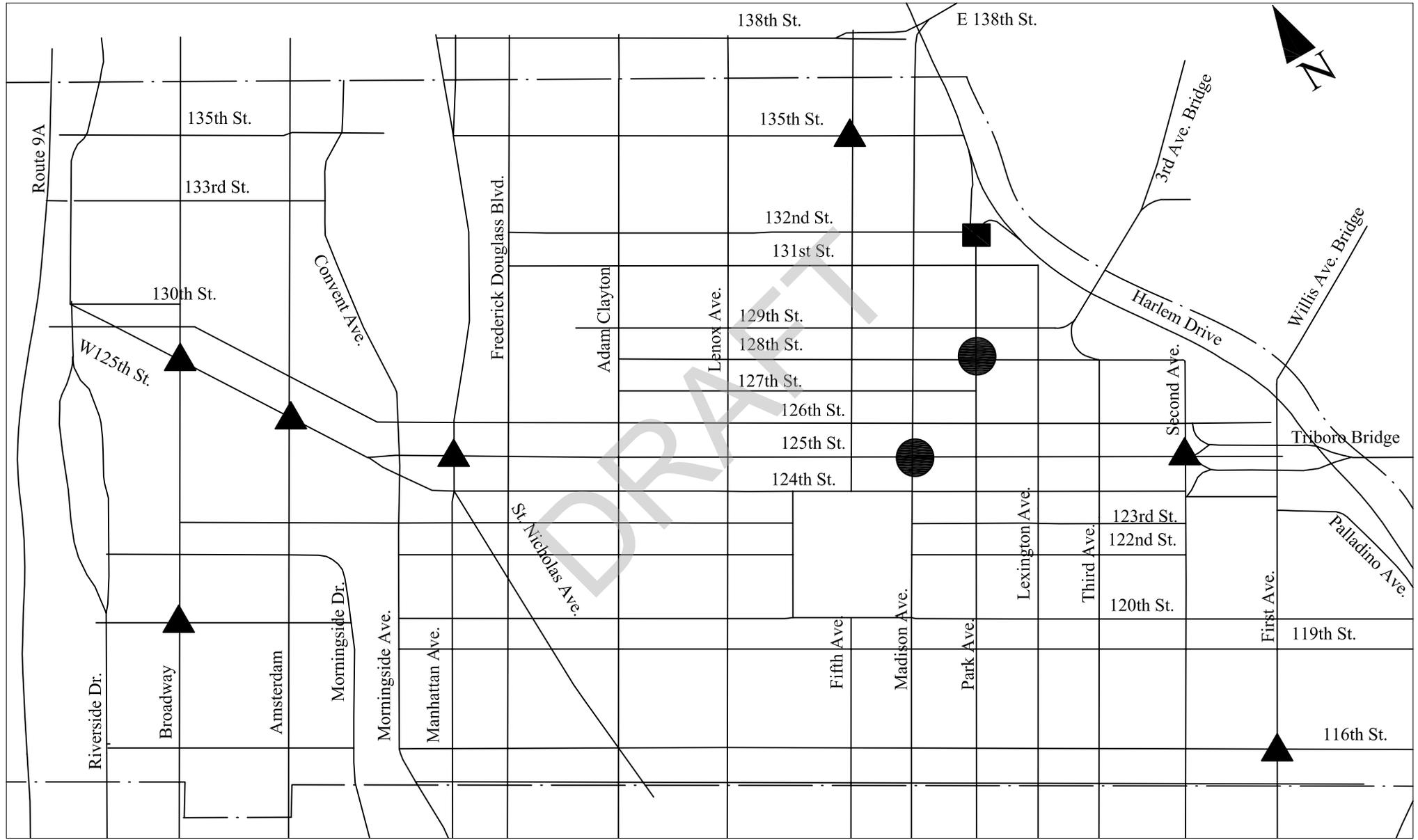
- Legend:
-  Study Area Boundary
  -  LOS D (Delay > 45 sec)
  -  LOS E
  -  LOS F

Exhibit 4-9 (Intersections with LOS D, E, and F (MD Peak Hour))



- Legend:
-  Study Area Boundary
  -  LOS D (Delay > 45 sec)
  -  LOS E
  -  LOS F

# Exhibit 4-10 (Intersections with LOS D, E, and F (PM Peak Hour))



- Legend:
- LOS D (Delay > 45 sec)
  - ▲ LOS E
  - LOS F

# Exhibit 4-11 (Intersections with LOS D, E, and F (Sat Midday Peak Hour))

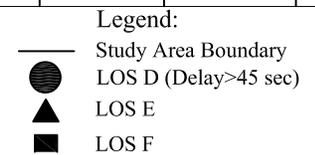
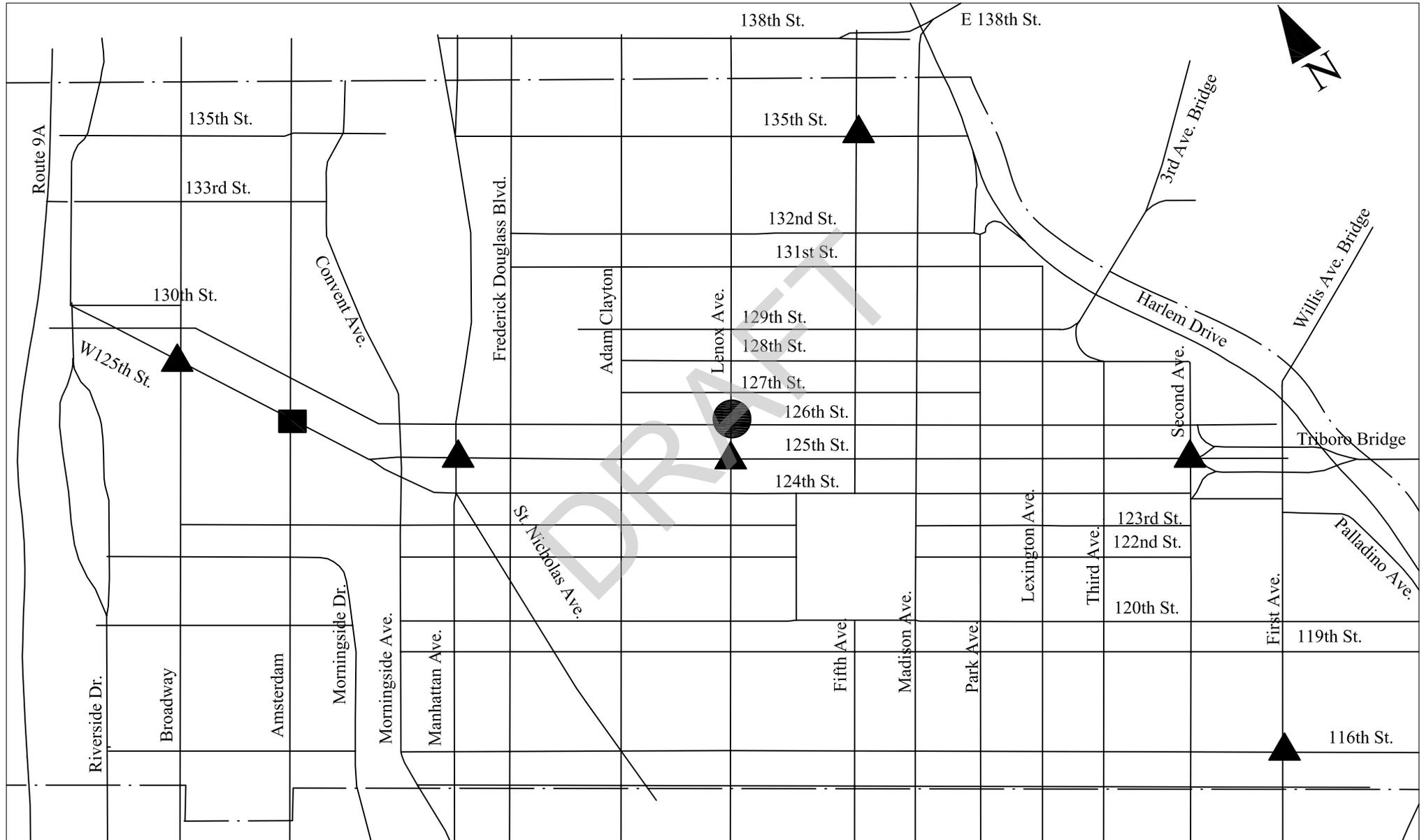
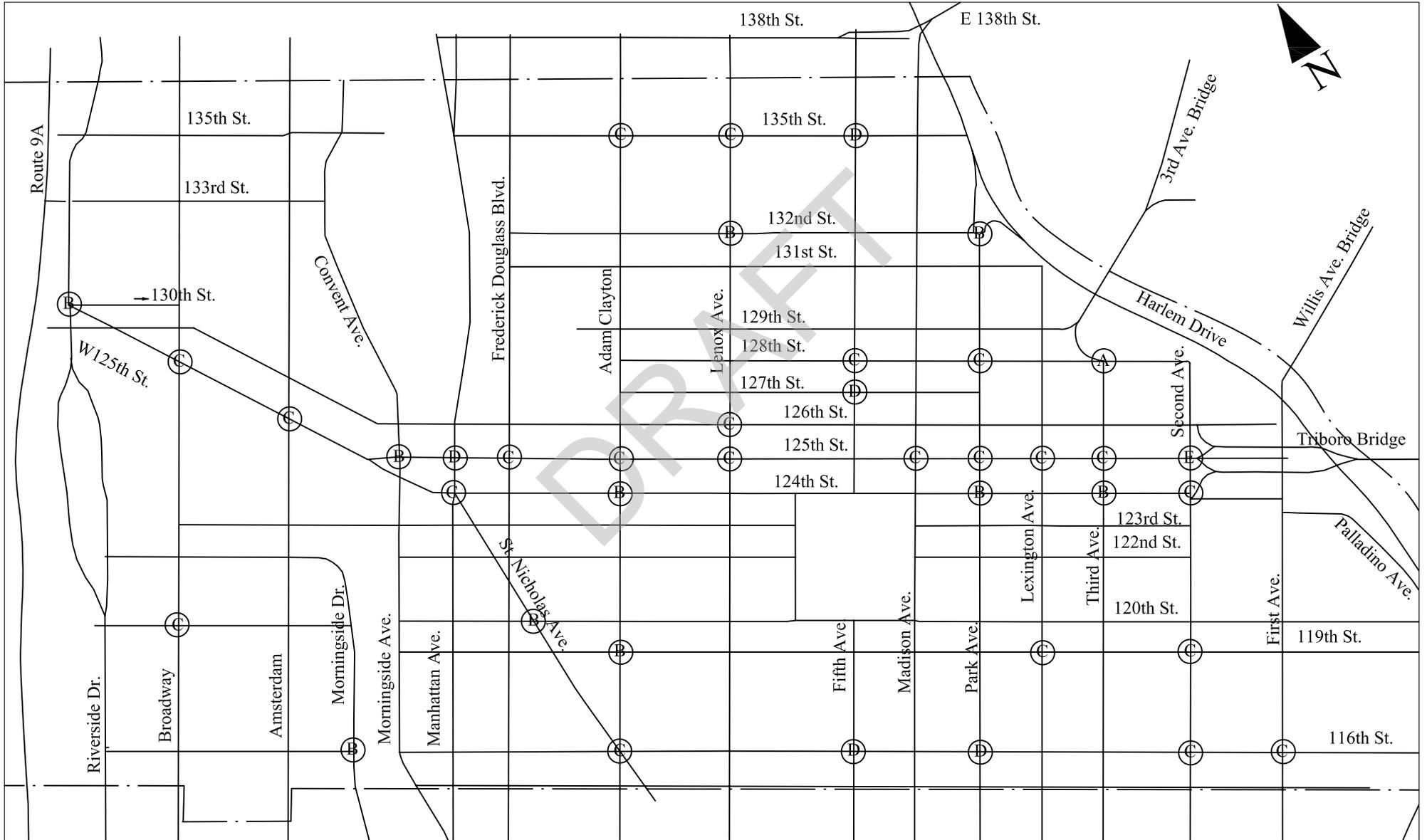


Table 4-2 shows the 2003 Existing Conditions v/c ratios, delays, and level of service (LOS) for AM, midday, PM, and Saturday midday peak hours for the unsignalized intersection of 3<sup>rd</sup> Avenue @ East 128<sup>th</sup> Street. The analysis showed the intersection operates at an acceptable level of service with LOS B or better during the AM, midday, PM, and Saturday midday peak hours. Exhibits 4-12, 4-13, 4-14, and 4-15 show the overall LOS for all of the intersections in the study area.

**Table 4-2: LOS Summary for 3<sup>rd</sup> Avenue @ E 128<sup>th</sup> St**

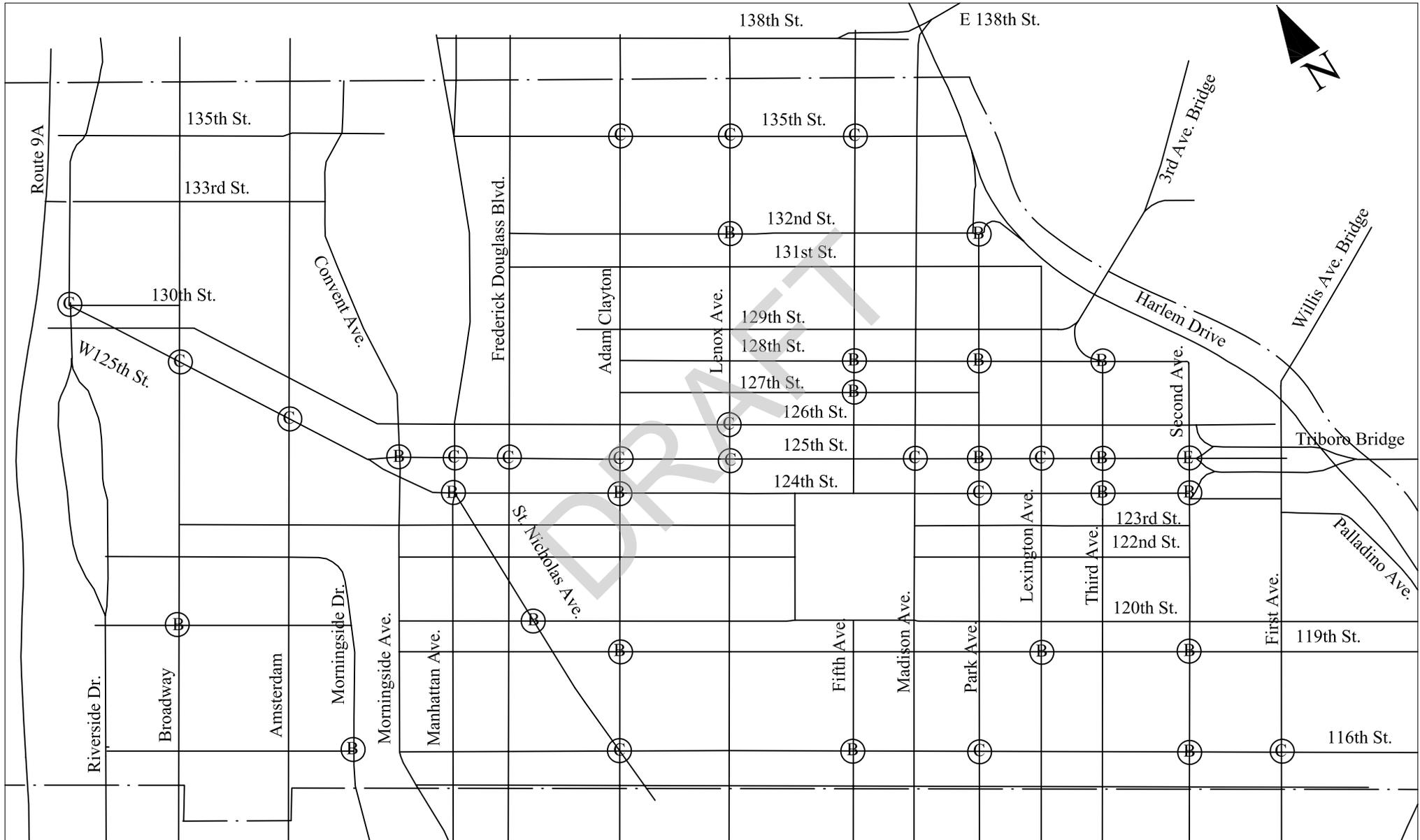
INTERSECTION	Lane Group		AM			MD		
			V/C	DELAY	LOS	V/C	DELAY	LOS
3 <sup>rd</sup> Avenue @ 128th Street	EB (T)	Major	-	-	-	-	-	-
	NB (RT)	Minor	0.06	9.70	A	0.12	10.20	B
	Lane Group		PM			SAT		
			V/C	DELAY	LOS	V/C	DELAY	LOS
	EB (T)	Major	-	-	-	-	-	-
NB (RT)	Minor	0.17	12.40	B	0.11	9.90	A	

Exhibit 4-12 (Overall LOS-AMPeak Hour)



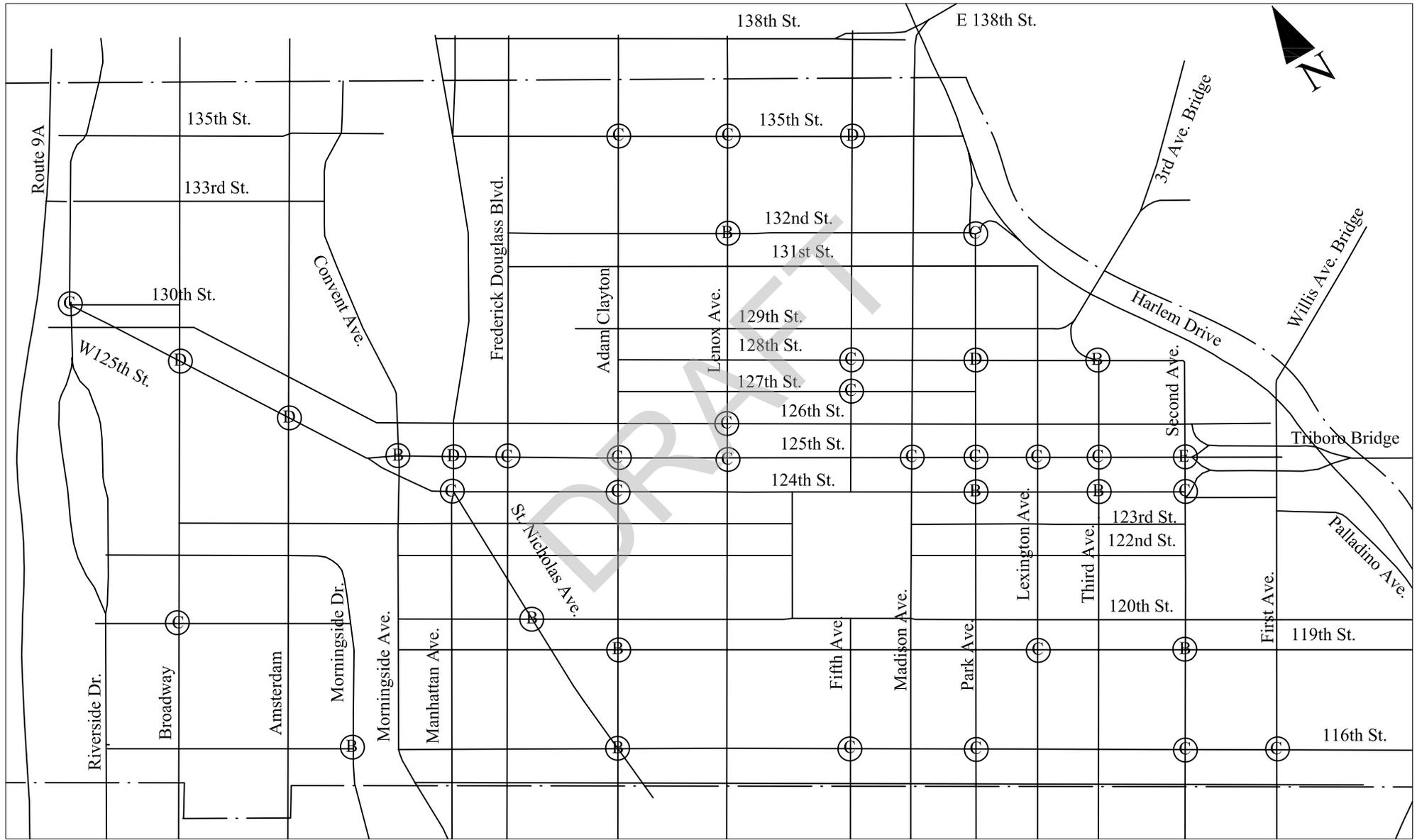
— Study Area Boundary  
LOS AM PEAK  
7:45am-8:45am

# Exhibit 4-13 (Overall LOS-Midday Peak Hour)

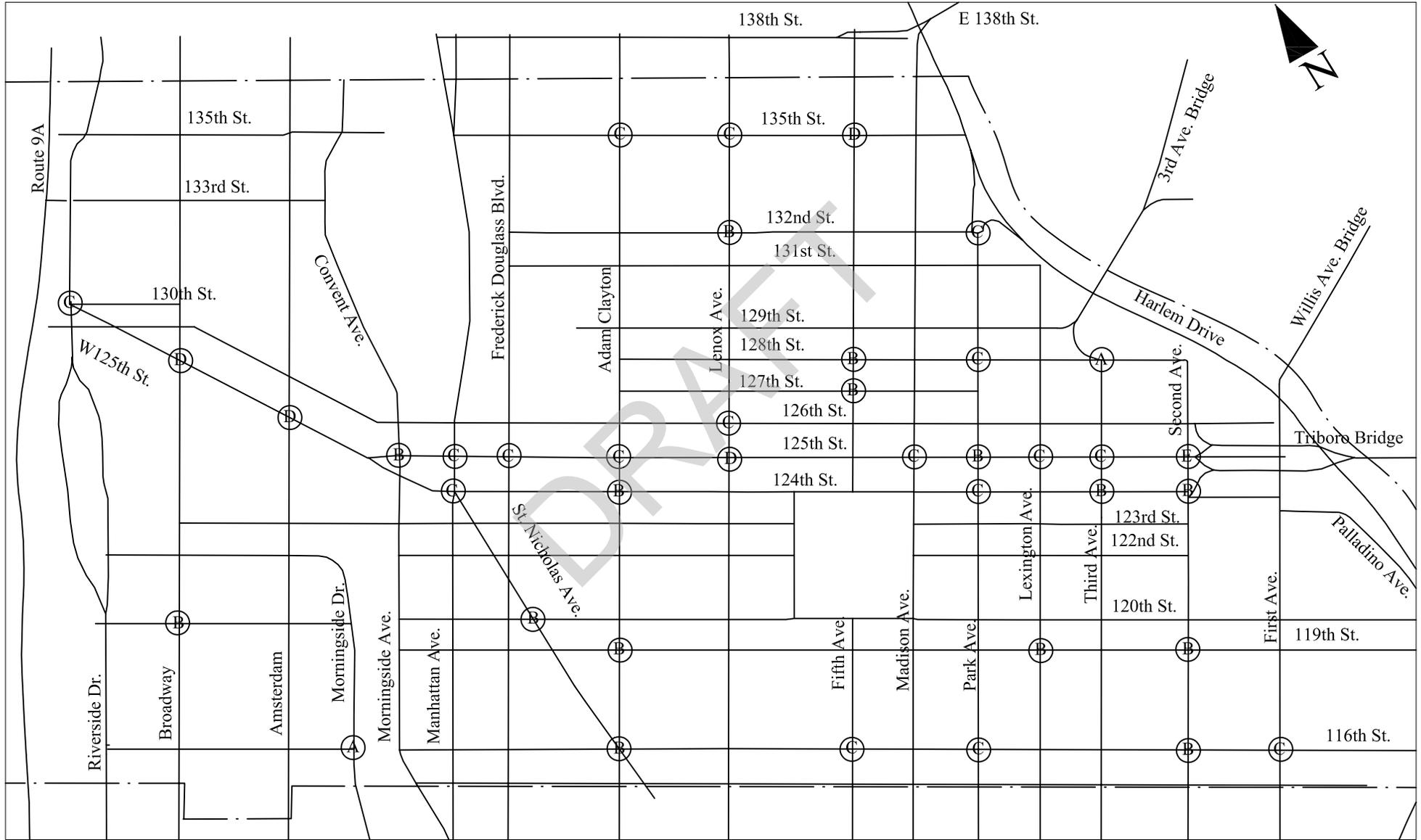


— Study Area Boundary  
 LOS MD PEAK  
 12:15pm-1:15pm

Exhibit 4-14 (Overall LOS-PM Peak Hour)



### Exhibit 4-15 (Overall LOS-Sat Midday Peak Hour)



— Study Area Boundary  
 LOS Sat. midday PEAK  
 1:00pm-2:00pm

#### **4.7 Vehicle Speeds**

Congestion occurs on several roadways in the study area, particularly during the peak hours. The 125<sup>th</sup> Street corridor experiences congestion almost through out the day. Congestion is attributed to several factors including bus/car/truck/pedestrian conflicts, and illegal curbside and double parking and standing which reduce roadway capacity and result in delays and reduced travel speeds.

To measure peak hour travel time, vehicle speeds in the study area and identify locations with traffic delay, speed and travel time runs were conducted. The “floating car” method (a technique whereby a field vehicle travels at speeds under prevailing traffic conditions) was used to obtain peak hour travel speeds on the following corridors:

1. 125<sup>th</sup> Street from Marginal Street to 1<sup>st</sup> Avenue (east and westbound)
2. Third Avenue from East 116<sup>th</sup> Street to East 128<sup>th</sup> Street (northbound)
3. Lenox Avenue from West 116<sup>th</sup> Street to West 135<sup>th</sup> Street (north and southbound)
4. St. Nicholas Avenue from West 116<sup>th</sup> Street to West 135<sup>th</sup> Street (north and southbound)
5. Broadway from West 116<sup>th</sup> Street to West 135<sup>th</sup> St (north and southbound)

Travel time runs were conducted for each peak period for three consecutive weekdays, and a Saturday for the weekend peak hour, concurrently with traffic volume data collection. Three travel runs were performed for each corridor during each peak travel period.

Travel speeds throughout the study area for the various peak periods range from 10 mph to 27 mph approximately. The corridor with the lowest travel speed is 125<sup>th</sup> Street, ranging from 10 mph to 14 mph during the four peak hours. Exhibit 4-16 shows the speed run corridors and Table 4-3 and 4-4 display a summary of average link and corridor travel speeds.



**Table 4-3  
CORRIDOR TRAVEL SPEEDS**

**125th Street-Corridor 1  
(from Marginal Street to 1st Avenue)**

Direction-Eastbound	Speed (MPH)				
	Links	Dist. (ft.)	AM	MD	PM
Marginal Street to Riverside Drive	258	4.8	6.4	5.1	17.8
Riverside Dr to Broadway	1,031	25.8	12.5	20.2	27.8
Broadway to Old Broadway	232	10.0	22.1	17.1	17.0
Old Broadway to Amsterdam Avenue	779	10.0	7.8	13.7	14.3
Amsterdam Avenue to Morningside Avenue	983	6.6	14.1	21.5	11.4
Morningside Avenue to St. Nicholas Avenue	450	11.7	6.9	4.6	11.8
St Nicholas Avenue to Fr. Douglass Blvd	450	6.3	4.3	7.9	2.8
Fr Douglass Blvd to Adam C. Powell	899	22.4	12.3	4.0	4.0
Adam C Powell to Lenox Avenue	901	12.9	7.8	10.3	4.8
Lenox Avenue to 5th Avenue	1,019	8.3	5.8	7.4	3.4
5th Avenue to Madison Avenue	511	7.4	10.6	7.8	6.6
Madison Avenue to Park Avenue	510	16.4	21.9	20.6	18.5
Park Avenue to Lexington Avenue	512	8.2	3.4	3.6	9.5
Lexington Avenue to 3rd Avenue	507	10.4	17.2	2.8	21.8
3rd Avenue to 2nd Avenue	707	3.6	3.7	2.6	4.1
2nd Avenue to 1st Avenue	757	6.3	6.9	22.3	29.6
<b>Tot Dist &amp; Eastbound Average Travel Speed</b>	<b>10,506</b>	<b>10.6</b>	<b>10.2</b>	<b>10.7</b>	<b>12.8</b>

Direction-Westbound	Speed (MPH)				
	Links	Dist. (ft.)	AM	MD	PM
1st Avenue to 2nd Avenue	757	8.1	7.0	8.9	12.7
2nd Avenue to 3rd Avenue	707	15.7	17.4	24.8	6.8
3rd Avenue to Lexington Avenue	507	3.2	3.9	1.5	13.0
Lexington Avenue to Park Avenue	512	18.5	5.3	26.0	10.7
Park Avenue to Madison Avenue	510	6.0	14.1	5.3	10.2
Madison Avenue to 5th Avenue	511	8.3	7.1	6.2	4.1
5th Avenue to Lenox Avenue	1,019	12.9	3.4	22.2	4.6
Lenox Avenue to Adam C. Powell	901	17.5	12.4	8.0	16.4
Adam C Powell to Fr. Douglass Blvd	899	11.6	7.5	6.3	11.3
Fr Douglass Blvd to St. Nicholas Avenue	450	12.1	6.5	9.1	5.8
St Nicholas Avenue to Morningside Avenue	450	16.4	10.8	19.5	20.6
Morningside Avenue to Amsterdam Avenue	983	15.1	10.8	13.3	8.8
Amsterdam Avenue to Old Broadway	779	13.7	13.3	13.2	15.6
Old Broadway to Broadway	232	16.5	19.3	23.2	18.0
Broadway to Riverside Rd	1,031	25.2	33.7	15.8	24.4
Riverside Dr to Marginal Street	258	4.5	7.1	14.3	13.2
<b>Tot Dist &amp; Westbound Average Travel Speed</b>	<b>10,506</b>	<b>12.8</b>	<b>11.2</b>	<b>13.6</b>	<b>12.3</b>

**Table 4-3  
CORRIDOR TRAVEL SPEEDS**

**3rd Avenue-Corridor 2  
(from E 116th Street to E 128th Street)**

Direction-Norhtbound	Speed (MPH)				
Links	Dist. (ft.)	AM	MD	PM	Sat MD
E 116 ST to E 117 ST	262	<u>12.5</u>	<u>5.8</u>	<u>9.0</u>	<u>6.0</u>
E 117 ST to E 118 ST	262	<u>17.1</u>	<u>16.4</u>	<u>17.9</u>	<u>18.1</u>
E 118 ST to E 119 ST	262	<u>33.6</u>	<u>21.8</u>	<u>27.7</u>	<u>19.9</u>
E 119 ST to E 120 ST	262	<u>15.6</u>	<u>19.4</u>	<u>12.9</u>	<u>23.1</u>
E 120 ST to E 121 ST	262	<u>12.9</u>	<u>20.9</u>	<u>13.4</u>	<u>24.9</u>
E 121 ST to E 122 ST	262	<u>19.9</u>	<u>24.5</u>	<u>9.0</u>	<u>17.4</u>
E 122 ST to E 123 ST	262	<u>17.1</u>	<u>26.5</u>	<u>11.4</u>	<u>25.6</u>
E 123 ST to E 124 ST	262	<u>14.9</u>	<u>26.5</u>	<u>14.9</u>	<u>20.3</u>
E 124 ST to E 125 ST	282	<u>14.3</u>	<u>24.4</u>	<u>25.7</u>	<u>25.7</u>
E 125 ST to E 126 ST	280	<u>20.2</u>	<u>22.9</u>	<u>27.9</u>	<u>27.4</u>
E 126 ST to E 127 ST	260	<u>9.4</u>	<u>20.6</u>	<u>29.6</u>	<u>20.0</u>
E 127 ST to E 128 ST	260	<u>14.8</u>	<u>19.8</u>	<u>27.5</u>	<u>20.1</u>
<b>Tot Dist &amp; Northbound Average Travel Speed</b>	<b>3,176</b>	<b>16.8</b>	<b>20.8</b>	<b>18.9</b>	<b>18.4</b>

**Table 4-3  
CORRIDOR TRAVEL SPEEDS**

**Lenox Avenue-Corridor 3  
(from W 116th Street to W 135th Street)**

Direction-Northbound		Speed (MPH)			
Links	Dist. (ft.)	AM	MD	PM	Sat MD
W 116 St to W 117 ST	261.83	<u>15.8</u>	<u>15.5</u>	<u>14.7</u>	<u>17.9</u>
W 117 ST to W 118 ST	261.84	<u>18.8</u>	<u>24.9</u>	<u>27.0</u>	<u>23.5</u>
W 118 ST to W 119 ST	261.83	<u>29.0</u>	<u>25.6</u>	<u>33.8</u>	<u>26.0</u>
W 119 ST to W 120 ST	261.84	<u>31.9</u>	<u>14.9</u>	<u>29.9</u>	<u>25.9</u>
W 120 ST to W 121 ST	261.83	<u>30.4</u>	<u>24.9</u>	<u>28.4</u>	<u>31.9</u>
W 121 ST to W 122 ST	261.83	<u>12.8</u>	<u>27.7</u>	<u>31.9</u>	<u>23.5</u>
W 122 ST to W 123 ST	261.84	<u>23.0</u>	<u>30.7</u>	<u>11.6</u>	<u>29.4</u>
W 123 ST to W 124 ST	261.83	<u>25.4</u>	<u>17.6</u>	<u>20.6</u>	<u>15.2</u>
W 124 ST to W 125 ST	281.83	<u>19.9</u>	<u>3.2</u>	<u>8.5</u>	<u>9.5</u>
W 125 ST to W 126 ST	279.83	<u>25.1</u>	<u>21.5</u>	<u>9.9</u>	<u>11.3</u>
W 126 ST to W 127 ST	259.83	<u>21.4</u>	<u>20.7</u>	<u>15.5</u>	<u>19.4</u>
W 127 ST to W 128 ST	259.84	<u>18.0</u>	<u>14.2</u>	<u>19.5</u>	<u>24.3</u>
W 128 ST to W 129 ST	259.83	<u>33.2</u>	<u>32.6</u>	<u>24.9</u>	<u>24.9</u>
W 129 ST to W 130 ST	259.84	<u>31.6</u>	<u>16.6</u>	<u>17.6</u>	<u>33.6</u>
W 130 ST to W 131 ST	259.84	<u>33.6</u>	<u>27.5</u>	<u>21.9</u>	<u>23.1</u>
W 131 ST to W 132 ST	259.83	<u>26.8</u>	<u>27.5</u>	<u>17.8</u>	<u>24.9</u>
W 132 ST to W 133 ST	259.84	<u>33.6</u>	<u>35.6</u>	<u>17.1</u>	<u>23.9</u>
W 133 ST to W 134 ST	259.84	<u>19.6</u>	<u>32.6</u>	<u>27.2</u>	<u>11.5</u>
W 134 ST to W 135 ST	259.83	<u>17.1</u>	<u>11.5</u>	<u>17.2</u>	<u>15.4</u>
<b>Tot Dist &amp; Northbound Average Travel Speed</b>	<b>4,995</b>	<b>24.6</b>	<b>22.4</b>	<b>20.8</b>	<b>21</b>

Direction-Southbound		Speed (MPH)			
Links	Dist. (ft.)	AM	MD	PM	Sat MD
W 135 ST to W 134 ST	259.83	<u>13.7</u>	<u>22.2</u>	<u>20.0</u>	<u>13.2</u>
W 134 ST to W 133 ST	259.84	<u>25.2</u>	<u>25.9</u>	<u>23.8</u>	<u>23.8</u>
W 133 ST to W 132 ST	259.84	<u>28.2</u>	<u>32.6</u>	<u>29.6</u>	<u>14.7</u>
W 132 ST to W 131 ST	259.83	<u>35.6</u>	<u>32.6</u>	<u>19.8</u>	<u>26.0</u>
W 131 ST to W 130 ST	259.84	<u>12.5</u>	<u>16.8</u>	<u>14.6</u>	<u>25.9</u>
W 130 ST to W 129 ST	259.84	<u>13.2</u>	<u>14.4</u>	<u>20.1</u>	<u>16.5</u>
W 129 ST to W 128 ST	259.83	<u>25.8</u>	<u>25.9</u>	<u>17.9</u>	<u>23.8</u>
W 128 ST to W 127 ST	259.84	<u>27.2</u>	<u>20.1</u>	<u>9.5</u>	<u>23.8</u>
W 127 ST to W 126 ST	259.83	<u>18.2</u>	<u>29.6</u>	<u>4.5</u>	<u>12.8</u>
W 126 ST to W 125 ST	279.83	<u>23.1</u>	<u>17.5</u>	<u>9.7</u>	<u>21.0</u>
W 125 ST to W 124 ST	281.83	<u>27.9</u>	<u>29.9</u>	<u>23.4</u>	<u>20.2</u>
W 124 ST to W 123 ST	261.83	<u>30.4</u>	<u>35.8</u>	<u>27.7</u>	<u>17.4</u>
W 123 ST to W 122 ST	261.84	<u>23.3</u>	<u>35.8</u>	<u>32.9</u>	<u>13.2</u>
W 122 ST to W 121 ST	261.83	<u>20.9</u>	<u>35.8</u>	<u>26.1</u>	<u>13.3</u>
W 121 ST to W 120 ST	261.83	<u>26.0</u>	<u>35.8</u>	<u>32.9</u>	<u>26.1</u>
W 120 ST to W 119 ST	261.84	<u>25.1</u>	<u>17.3</u>	<u>24.5</u>	<u>25.6</u>
W 119 ST to W 118 ST	261.83	<u>29.3</u>	<u>30.7</u>	<u>25.4</u>	<u>27.7</u>
W 118 ST to W 117 ST	261.84	<u>21.9</u>	<u>32.9</u>	<u>30.7</u>	<u>35.2</u>
W 117 ST to W 116 ST	261.83	<u>22.0</u>	<u>13.3</u>	<u>27.9</u>	<u>20.9</u>
<b>Tot Dist &amp; Southbound Average Travel Speed</b>	<b>4,995</b>	<b>23.6</b>	<b>26.6</b>	<b>22.2</b>	<b>21.1</b>

**Table 4-3  
CORRIDOR TRAVEL SPEEDS**

**St Nicholas Avenue-Corridor 4  
(from W 116th to W 135th Street)**

Direction-Northbound	Speed (MPH)					Direction-Southbound	Speed (MPH)						
	Links	Dist. (ft.)	AM	MD	PM		Sat MD	Links	Dist. (ft.)	AM	MD	PM	Sat MD
	W 117 ST to W 118 ST	261.83	<u>11.3</u>	<u>13.8</u>	<u>8.2</u>	<u>9.8</u>		W 135 ST to W 134 ST	259.83	<u>9.9</u>	<u>12.9</u>	<u>6.4</u>	<u>8.4</u>
	W 118 ST to W 119 ST	261.84	<u>22.0</u>	<u>22.4</u>	<u>17.5</u>	<u>21.6</u>		W 134 ST to W 133 ST	259.84	<u>20.8</u>	<u>25.4</u>	<u>23.3</u>	<u>23.3</u>
	W 119 ST to W 120 ST	261.83	<u>22.0</u>	<u>23.5</u>	<u>21.6</u>	<u>21.1</u>		W 133 ST to W 130 ST	979.33	<u>39.2</u>	<u>40.2</u>	<u>36.7</u>	<u>32.9</u>
	W 120 ST to W 121 ST	261.84	<u>3.3</u>	<u>1.6</u>	<u>3.1</u>	<u>17.6</u>		W 130 ST to W 129 ST	259.84	<u>33.3</u>	<u>33.6</u>	<u>36.6</u>	<u>29.1</u>
	W 121 ST to W 122 ST	261.83	<u>10.1</u>	<u>22.0</u>	<u>15.6</u>	<u>21.0</u>		W 129 ST to W 128 ST	259.84	<u>22.5</u>	<u>31.6</u>	<u>25.8</u>	<u>33.2</u>
	W 122 ST to W 123 ST	261.83	<u>19.2</u>	<u>20.9</u>	<u>15.5</u>	<u>22.6</u>		W 128 ST to W 127 ST	259.83	<u>12.4</u>	<u>24.9</u>	<u>17.1</u>	<u>24.6</u>
	W 123 ST to W 124 ST	261.84	<u>10.9</u>	<u>3.4</u>	<u>2.6</u>	<u>3.9</u>		W 127 ST to W 126 ST	259.84	<u>13.2</u>	<u>7.0</u>	<u>9.8</u>	<u>6.5</u>
	W 124ST to W 125 ST	261.83	<u>8.5</u>	<u>10.7</u>	<u>7.7</u>	<u>9.7</u>		W 126 ST to W 125 ST	259.83	<u>18.3</u>	<u>18.6</u>	<u>15.7</u>	<u>11.6</u>
	W 125 ST to W 126 ST	281.83	<u>20.2</u>	<u>22.6</u>	<u>13.0</u>	<u>16.1</u>		W 125 ST to W 124 ST	279.83	<u>17.8</u>	<u>22.3</u>	<u>18.8</u>	<u>20.9</u>
	W 126 ST to W 127 ST	279.83	<u>26.8</u>	<u>26.8</u>	<u>24.3</u>	<u>27.7</u>		W 124 ST to W 123 ST	281.83	<u>15.1</u>	<u>19.8</u>	<u>22.4</u>	<u>20.4</u>
	W 127 ST to W 128 ST	259.83	<u>23.3</u>	<u>24.3</u>	<u>28.2</u>	<u>30.2</u>		W 123 ST to W 122 ST	261.83	<u>13.2</u>	<u>22.0</u>	<u>15.1</u>	<u>26.0</u>
	W 128 ST to W 129 ST	259.84	<u>24.9</u>	<u>15.5</u>	<u>29.1</u>	<u>26.8</u>		W 122 ST to W 121 ST	261.84	<u>4.7</u>	<u>1.6</u>	<u>4.3</u>	<u>11.0</u>
	W 129 ST to W 130 ST	259.83	<u>31.1</u>	<u>23.1</u>	<u>33.6</u>	<u>23.3</u>		W 121 ST to W 120 ST	261.83	<u>7.0</u>	<u>9.8</u>	<u>9.4</u>	<u>17.5</u>
	W 130 ST to W 133 ST	979.33	<u>26.0</u>	<u>26.4</u>	<u>23.8</u>	<u>15.7</u>		W 120 ST to W 119 ST	261.83	<u>17.4</u>	<u>13.4</u>	<u>18.4</u>	<u>24.5</u>
	W 133 ST to W 134 ST	259.83	<u>20.9</u>	<u>28.2</u>	<u>23.1</u>	<u>25.4</u>		W 119 ST to W 118 ST	261.84	<u>18.3</u>	<u>20.7</u>	<u>19.4</u>	<u>20.4</u>
	W 134 ST to W 135 ST	259.84	<u>19.8</u>	<u>25.4</u>	<u>21.8</u>	<u>19.7</u>		W 118 ST to W 117 ST	261.83	<u>22.6</u>	<u>14.9</u>	<u>23.5</u>	<u>17.6</u>
								W 117 ST to W 116 ST	261.83	<u>14.9</u>	<u>9.1</u>	<u>11.3</u>	<u>12.2</u>
<b>Tot Dist &amp; Northbound Average Travel Speed</b>	<b>4,935</b>	<b>18.8</b>	<b>19.4</b>	<b>18.1</b>	<b>19.5</b>		<b>Tot Dist &amp; Southbound Average Travel Speed</b>	<b>5,193</b>	<b>17.6</b>	<b>19.3</b>	<b>18.5</b>	<b>20.0</b>	

**Table 4-3  
CORRIDOR TRAVEL SPEEDS**

**Broadway-Corridor 5  
(from W 116th Street to W 135th Street)**

Direction-Northbound	Speed (MPH)					Direction-Southbound	Speed (MPH)				
Links	Dist. (ft.)	AM	MD	PM	Sat MD	Links	Dist. (ft.)	AM	MD	PM	Sat MD
W 116 ST to W 117 ST	276.83	<u>8.7</u>	<u>9.3</u>	<u>7.8</u>	<u>21.5</u>	W 135 ST to W 133 ST	259.83	<u>10.6</u>	<u>10.4</u>	<u>5.4</u>	<u>6.9</u>
W 117 ST to W 118 ST	276.83	<u>26.3</u>	<u>30.1</u>	<u>30.1</u>	<u>44.2</u>	W 133 ST to W 132 ST	259.83	<u>26.9</u>	<u>23.9</u>	<u>20.6</u>	<u>32.1</u>
W 118 ST to W 119 ST	276.83	<u>30.1</u>	<u>26.6</u>	<u>27.4</u>	<u>24.8</u>	W 132 ST to W 131 ST	259.83	<u>26.8</u>	<u>22.9</u>	<u>23.5</u>	<u>27.2</u>
W 119 ST to W 120 ST	276.83	<u>28.7</u>	<u>37.4</u>	<u>28.9</u>	<u>33.2</u>	W 131 ST to W 130 ST	259.83	<u>25.4</u>	<u>12.0</u>	<u>22.3</u>	<u>28.2</u>
W 120 ST to W 121 ST	276.83	<u>28.6</u>	<u>22.2</u>	<u>27.4</u>	<u>26.7</u>	W 130 ST to W 129 ST	259.83	<u>4.4</u>	<u>4.9</u>	<u>9.1</u>	<u>3.1</u>
W 121 ST to W 122 ST	261.83	<u>25.9</u>	<u>20.6</u>	<u>27.4</u>	<u>28.4</u>	W 129 ST to W 125 ST	300.25	<u>18.8</u>	<u>6.4</u>	<u>7.9</u>	<u>23.5</u>
W 122 ST to Lasalle ST	805.5	<u>9.8</u>	<u>13.0</u>	<u>10.6</u>	<u>24.2</u>	W 125 ST to Tiemann Pl	275.21	<u>14.7</u>	<u>19.5</u>	<u>18.8</u>	<u>19.7</u>
Lasalle ST to Tiemann Pl	559.67	<u>8.1</u>	<u>15.9</u>	<u>12.5</u>	<u>17.4</u>	Tiemann Pl to Lasalle ST	559.67	<u>19.2</u>	<u>21.1</u>	<u>19.9</u>	<u>22.2</u>
Tiemann Pl to W 125 ST	275.21	<u>3.9</u>	<u>1.0</u>	<u>4.2</u>	<u>1.6</u>	Lasalle ST to W 122 ST	805.5	<u>13.0</u>	<u>7.7</u>	<u>8.8</u>	<u>17.3</u>
W 125 ST to W 126 ST	300.25	<u>4.3</u>	<u>10.2</u>	<u>2.4</u>	<u>3.9</u>	W 122 ST to W 121 ST	261.83	<u>13.4</u>	<u>20.1</u>	<u>22.6</u>	<u>17.4</u>
W 126 ST to W 130 ST	259.83	<u>19.8</u>	<u>23.8</u>	<u>19.4</u>	<u>26.8</u>	W 121 ST to W 120 ST	276.83	<u>26.3</u>	<u>21.9</u>	<u>21.1</u>	<u>25.9</u>
W 130 ST to W 131 ST	259.83	<u>22.4</u>	<u>17.1</u>	<u>23.5</u>	<u>28.2</u>	W 120 ST to W 119 ST	276.83	<u>34.3</u>	<u>24.8</u>	<u>28.6</u>	<u>36.8</u>
W 131 ST to W 132 ST	259.83	<u>21.0</u>	<u>23.5</u>	<u>17.4</u>	<u>23.3</u>	W 119 ST to W 118 ST	276.83	<u>24.8</u>	<u>22.8</u>	<u>19.8</u>	<u>35.8</u>
W 132 ST to W 133 ST	259.83	<u>20.0</u>	<u>21.4</u>	<u>18.8</u>	<u>31.6</u>	W 118 ST to W 117 ST	276.83	<u>26.6</u>	<u>33.7</u>	<u>33.7</u>	<u>37.4</u>
W 133 ST to W 135 ST	259.83	<u>9.1</u>	<u>9.8</u>	<u>6.8</u>	<u>12.5</u>	W 117 ST to W 116 ST	276.83	<u>21.0</u>	<u>8.9</u>	<u>4.1</u>	<u>30.1</u>
<b>Tot Dist &amp; Northbound Average Travel Speed</b>	<b>5,186</b>	<b>18.1</b>	<b>19.5</b>	<b>17.8</b>	<b>17.8</b>	<b>Tot Dist &amp; Southbound Average Travel Speed</b>	<b>5,186</b>	<b>21.3</b>	<b>18.7</b>	<b>19.2</b>	<b>25.4</b>

**Table 4-4  
Corridor Travel Speeds Summary**

No	Corridors	Time	Direction	Existing Conditions
				Average Speed (mph)
1	125th Street (Marginal St to 1st Avenue)	AM	EB	10.6
			WB	12.8
		MD	EB	10.2
			WB	11.2
		PM	EB	10.7
			WB	13.6
Sat MD	EB	12.8		
	WB	12.3		
2	Third Avenue (E 116 St to E 128 St)	AM	NB	16.8
		MD	NB	20.8
		PM	NB	18.9
		Sat MD	NB	18.4
3	Lenox Avenue (W 116 St to W 135 St)	AM	NB	24.6
			SB	23.6
		MD	NB	22.4
			SB	26.6
		PM	NB	20.8
			SB	22.2
Sat MD	NB	21		
	SB	21.1		
4	St Nicholas Avenue (W 117 St to W 135 St)	AM	NB	18.8
			SB	17.6
		MD	NB	19.4
			SB	19.3
		PM	NB	18.1
			SB	18.5
Sat MD	NB	19.5		
	SB	20		
5	Broadway (W 116 St to W 135 St)	AM	NB	18.1
			SB	21.3
		MD	NB	19.5
			SB	18.7
		PM	NB	17.8
			SB	19.2
Sat MD	NB	17.8		
	SB	25.4		

## 5.0 PUBLIC TRANSPORTATION

### 5.1 Subway Service

The Metropolitan Transportation Authority - New York City Transit (MTA-NYCT) operates within the study area eleven subway lines along four routes and serving eleven subway stations. Table 5-1: “Subway Service” below lists the subway lines and stations. Exhibit 5-1: “Subway Service” shows the subway routes and locations.

**Table 5-1: Subway Service**

LINES	ROUTES	STATIONS
1 & 9 (Local)	Broadway	<ul style="list-style-type: none"> <li>• West 116<sup>th</sup> Street</li> <li>• West 125<sup>th</sup> Street</li> <li>• West 137<sup>th</sup> Street/City College</li> </ul>
A, B, C & D (Express & Local)	Frederick Douglass Boulevard/St. Nicholas Avenue (6 <sup>th</sup> & 8 <sup>th</sup> Avenues)	<ul style="list-style-type: none"> <li>• West 116<sup>th</sup> Street (B &amp; C)</li> <li>• West 125<sup>th</sup> Street (A, B, C &amp; D)</li> <li>• West 135<sup>th</sup> Street (B &amp; C)</li> </ul>
2 & 3 (Local)	Lenox Avenue (Broadway Express)	<ul style="list-style-type: none"> <li>• West 116<sup>th</sup> Street</li> <li>• West 125<sup>th</sup> Street</li> <li>• West 135<sup>th</sup> Street</li> </ul>
4, 5 & 6 (Express & Local)	Lexington Avenue	<ul style="list-style-type: none"> <li>• East 116<sup>th</sup> Street (6)</li> <li>• East 125<sup>th</sup> Street (4, 5 &amp; 6)</li> </ul>

These subway lines connect the study area to the Bronx and to the rest of Manhattan: northern section of Manhattan, Midtown Manhattan, and Lower Manhattan.

#### Subway Line Description:

- No.1 subway line on Broadway/7<sup>th</sup> Avenue runs local from 242<sup>nd</sup> Street (Bronx) to South Ferry (Manhattan). The No. 9 subway line also runs on this route and alternates subway stops (skip-stops) with the No. 1 subway line during rush hours in the peak direction. This line operates at all times.
- No. 2 subway line on 7<sup>th</sup> Avenue runs express from 241<sup>st</sup> Street (Bronx) to Flatbush Avenue (Brooklyn). This line operates at all times.
- No. 3 subway line on 7<sup>th</sup> Avenue goes express from 148<sup>th</sup> Street (Manhattan) to New Lots Avenue (Brooklyn). This line does not operate overnight.

- No. 4 subway line on Lexington Avenue runs express from Woodlawn (Bronx) to Utica Avenue (Brooklyn). This line operates at all times. Overnight the No. 4 runs local in Manhattan.
- No. 5 subway line on Lexington Avenue goes express from Dyre Avenue or 241<sup>st</sup> Street (Bronx) to Flatbush Avenue (Brooklyn) during rush hours. During off-peak hours it goes to Bowling Green (Manhattan). Overnight the No. 5 only operates in the Bronx.
- No. 6 Lexington Avenue subway line is local from Pelham Bay Park or Parkchester (Bronx) to Brooklyn Bridge/City Hall (Manhattan). During rush hours in the peak direction some of the trains run express in the Bronx.
- The “A” subway line on 8<sup>th</sup> Avenue runs express from 207<sup>th</sup> Street (Manhattan) to Lefferts Boulevard or Far Rockaway (Queens). This line operates at all times. Overnight, the “A” trains replace the “C” trains and operate local in Brooklyn and in Manhattan.
- The “C” subway line on 8<sup>th</sup> Avenue goes local from 168<sup>th</sup> Street/Washington Heights (Manhattan) to Euclid Avenue (Brooklyn). This line operates as local at all times, but does not operate overnight (see “A” line service above).
- The “B” subway line on 6<sup>th</sup> Avenue travels from Bedford Park (Bronx) to Brighton Beach (Brooklyn). This train operates local in the Bronx and upper Manhattan. It runs express in the Bronx (peak direction), in midtown Manhattan and in Brooklyn. The “B” line does not operate late nights or on weekends.
- The “D” subway line on 6<sup>th</sup> Avenue runs express from 205<sup>th</sup> Street/Norwood (Bronx) to Coney Island/Stillwell Avenue (Brooklyn). The “D” line operates express in the Bronx (peak direction), in Manhattan and in Brooklyn. This line operates at all times.

Passenger and pedestrian volumes were collected at all subway station fare control areas and at all stairs leading to street level on weekdays from 7:30 to 9:30 AM in the morning, from 11:30 AM to 1:30 PM in the midday and from 4:30 to 6:30 PM in the evening. Saturday volumes were collected between 12:00 and 2:00 PM in the midday.

The subway station analysis was prepared using the design capacities for stairs, escalators, turnstiles, fare control array turnstiles and agent controlled service gates as specified in the

NYCT *Station Planning and Design Guidelines* (January 2001), and according to the procedures set forth in *Pedestrian Planning and Design* by John J. Furin (1971). All analyses reflect peak 15-minute conditions for the weekday during the morning, midday and evening and for Saturday during the midday. The analysis was conducted using the Furin pedestrian level of service methodology, which equates pedestrian flow per minute per foot of stairway width with qualitative measures of pedestrian comfort. Based on calculated values of pedestrian volumes per minute per foot width of stair, Furin defined six levels of service (LOS), designated by the letters A through F. Level of service A represents free flowing conditions without pedestrian conflicts, while LOS F indicates significant capacity limitations and inconvenience (See Table 5-2: “Stairway Level of Service – Definitions”).

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Demand levels were estimated for various subway station elements, and passenger volumes were compared with the computed volume that each subway station element is capable of handling. Various capacity reducing factors were applied to these station elements to account for pedestrian flow characteristics, such as friction caused by bi-directional flow, width reductions in stairwells prompted by handrails and peaking characteristics generated by surge periods in the peak hour.

The service volume flow rate at the midpoint of LOS C and LOS D (SVCD), which is the level employed by NYCT, was used to determine the adequacy of various station elements to accommodate demand levels at acceptable LOS. When actual or projected demands are less than the calculated SVCD, the LOS D is considered acceptable.

**Table 5-2: Stairway Level of Service – Definitions**

<b>LOS</b>	<b>Pedestrian Foot per Minute (PFM)</b>	<b>Description:</b>
<b>A</b>	Up to 7	Free flow conditions
<b>B</b>	7 to 10	Minor reverse flow will cause minor conflicts
<b>C</b>	10 to 15	Slight restrictions in speed and difficulties in reverse flow
<b>D</b>	15 to 20	Significant restriction in speed and difficulties in reverse flows
<b>E</b>	20 to 25	Reductions of speeds, serious reverse traffic conflicts and intermittent stoppages
<b>F</b>	More than 25	Complete breakdown in traffic flow

**Source:** CEQR Technical Manual, City of New York (October 2001)

The following Table 5-3 shows the Volume/SVCD (V/SVCD) ratios with the corresponding LOS. V/SVCD ratios between 0.00 and 0.45 represent LOS A, while V/SVCD ratios between 0.46 and 0.7 describe LOS B. V/SVCD ratio between 0.71 to 1.00 represents LOS C, while LOS D indicates a moderate degree of congestion with V/SVCD ratio ranging between 1.01 to 1.33. The V/SVCD ratio range between 1.34 and 1.67 represent LOS E, this indicates severely restricted walking speeds and congestion. Finally, excessive delays occur at LOS F which is represented by a V/SVCD ratio equal to or greater than 1.68. LOS F indicates that demand exceeds capacity of the element.

**Table 5-3: V/SVCD Ratio Definitions**

<b>LOS</b>	<b>V/SVCD</b>	<b>Description:</b>
<b>A</b>	< 0.45	Unrestricted
<b>B</b>	0.46 to 0.70	Slightly restricted, on impact on speed
<b>C</b>	0.71 to 1.00	Speeds reduced, difficult to pass
<b>D</b>	1.01 to 1.33	Restricted, reverse flow conflicts
<b>E</b>	1.34 to 1.67	Severely restricted
<b>F</b>	1.68 >	Many stoppages, no discernible flow
<b>Source:</b> <i>CEQR Technical Manual</i> , City of New York (October 2001)		

Tables 5-4 through 5-14 present the results of the existing conditions analysis of subway station elements during the four peak hours at the eleven subway stations. According to the results obtained all subway station elements operate at LOS A or B, except for one subway station (125<sup>th</sup> Street and Lexington Avenue) which has some elements operating at LOS C, due to construction activities that closed one stairway from the street level to the fare control area.

Subway Station Description and Level of Service Analysis:

**116<sup>th</sup> Street and Broadway (1/9)**

The station is designed with a mezzanine at the north end of the station with one central fare control area for both the uptown and downtown service. Access to the subway station from street level is possible at the northwest and northeast corners of West 116<sup>th</sup> Street. Towards the southern end of the uptown platform is a high-wheel turnstile which is the only turnstile that allows passengers to exit the station at the northeast corner of West 115<sup>th</sup> Street.

After completion of data collection, this station was reconstructed. One new high-wheel exit only turnstile was added at the mezzanine level near the downtown stairs and also near the stairs at the northwest corner.

The existing conditions for pedestrian flow at the fare control area R173 in Table 5-4 were analyzed for this station. All of the station's fare control elements and stairs operate at LOS B or better.

### **125<sup>th</sup> Street and Broadway (1/9)**

125<sup>th</sup> Street station is an elevated station with the fare control area in the mezzanine area under the platforms of the station. The station can be accessed from one stairway located at the southeast corner of West 125<sup>th</sup> Street and from three escalators. The escalator on the east side of Broadway carries subway riders up to the mezzanine; the other two escalators are on the west side of Broadway between West 124<sup>th</sup> and 125<sup>th</sup> Streets. These escalators operate in pair: one goes up while the other goes down.

During the collection of data, the subway station was under reconstruction. The fare control area, the stairway and the three escalators were not closed or restricted at the time.

The existing conditions for the pedestrian flow at the fare control area R174, the stairway and the escalators were analyzed for this station in Table 5-5. All of the station's fare control elements, stairs and escalators operate at LOS B or better.

### **137<sup>th</sup> Street/City College and Broadway (1/9)**

This station has two fare control areas, one for each subway platform: the downtown and uptown platforms. Stairway access to the downtown platform is from the southwest and northwest corners of 137<sup>th</sup> Street (west side of Broadway). Two stairways from the east side of Broadway between 137<sup>th</sup> and 138<sup>th</sup> Streets provide access to the uptown platform and fare control area.

The existing conditions for the pedestrian flow at the fare control areas R175 and R176, and four stairways were analyzed in Table 5-6 for this station. All of the station's fare control elements and stairs operate at LOS B or better.

### **116<sup>th</sup> Street/Frederick Douglass Boulevard (B/C)**

This station has two fare control areas, one for the downtown and one for the uptown subway platform. Stairway access to the downtown platform is located at the southwest and northwest corners of 116<sup>th</sup> Street (west side of Frederick Douglass Boulevard). Stairways to the uptown

platform and fare control area are located at the other two corners of 116<sup>th</sup> Street (east side of Frederick Douglass Boulevard).

The existing conditions for the pedestrian flow at the fare control areas N29 and N30, and four stairways were analyzed for this station in Table 5-7. All of the station's fare control elements and stairs and operate at LOS B or better.

### **125<sup>th</sup> Street/St. Nicholas Avenue (A/B/C/D)**

This station has two fare control areas to both the downtown and uptown platforms. The first fare control area which is located at West 125<sup>th</sup> Street has stairway access from each of the four corners of the intersection. At the north end of the station at West 127<sup>th</sup> Street, there is a second fare control area which is accessible through two stairways located at the southwest and southeast corners. This fare control area is closed overnight.

NYCT is currently installing three elevators to this station making it ADA accessible: one elevator accessible from the street level to the fare control area at West 125<sup>th</sup> Street and the other two elevators will each provide access to each of the subway's platforms.

The existing conditions for the pedestrian flow at the fare control areas N25 and N26 and six stairways were analyzed for this station in Table 5-8. All of the station's fare control elements and stairs are operating at LOS B or better.

### **135<sup>th</sup> Street/St. Nicholas Avenue (B/C)**

This subway station has four access locations for the two subway platforms (uptown and downtown platforms). Each platform is accessible through two fare control areas. The main fare control areas are located at West 135<sup>th</sup> Street while the fare control areas with no staff are located at West 137<sup>th</sup> Street. Here are more details about the fare control areas:

### Downtown platform

- The main fare control area at 135<sup>th</sup> Street has one stairway.
- The secondary fare control area at 137<sup>th</sup> Street also has a stairway that provide access to a part-time staffed fare control area (morning rush hours only) and to the high-wheel entrance/exit turnstiles at other times.

### Uptown platform

- The main fare control area at 135<sup>th</sup> Street has three stairways: one at the northeast corner and two at the southeast corner.
- The secondary control area at 137<sup>th</sup> Street has one stairway (southeast corner) that leads to a fare control area (not staffed) with high-wheel entrance/exit turnstiles.

In the fall of 2003, the part-time staffed fare control area at the downtown platform at West 137<sup>th</sup> Street was closed and the low turnstiles were replaced with additional high-wheel entrance/exit turnstiles.

The existing conditions for the pedestrian flow at the four fare control areas (N22, N23, N24, and a fare control location without a number) and six stairways were analyzed for this station in Table 5-9. All of the station's fare control elements and stairs operate at LOS A.

### **116<sup>th</sup> Street/Lenox Avenue (2/3)**

This subway station has two fare control areas, one for each platform: uptown and downtown platforms. Each side has two stairways, from the north and south corners of 116<sup>th</sup> Street and Lenox Avenue.

The existing conditions for the pedestrian flow at the fare control areas (R302 and R303) and four stairways were analyzed for this station, in Table 5-10. All of the station's fare control elements and stairs operate at LOS A.

### **125<sup>th</sup> Street/Lenox Avenue (2/3)**

This station has two fare control areas, one for the uptown and the other for the downtown subway platform. Each side has two stairways, from the north and south corners of 125<sup>th</sup> Street and Lenox Avenue.

The existing conditions for the pedestrian flow at the fare control areas (R304 and R305) and four stairways were analyzed for this station in Table 5-11. All of the station's fare control elements and stairs operate at LOS A.

### **135<sup>th</sup> Street/Lenox Avenue (2/3)**

This station has two fare control areas, one for each subway platform (uptown and downtown platforms). Each side has two stairways located at the north and south corners of 135<sup>th</sup> Street and Lenox Avenue.

The existing conditions for the pedestrian flow at the fare control areas (R306 and R307) and four stairways were analyzed for this station in Table 5-12. All of the station's fare control elements and stairs operate at LOS A.

### **116<sup>th</sup> Street/Lexington Avenue (6)**

This station has two fare control areas, one each for the uptown and another for the downtown subway platform. Each platform has two stairways that are located at the north and south corners of 116<sup>th</sup> Street and Lexington Avenue.

During the collection of data, the station was under reconstruction. At the time the fare control area and the four stairways were not closed and did not have any restriction in terms of use.

The existing conditions for the pedestrian flow at the fare control areas (R256 and R257) and four stairways were analyzed for this station in Table 5-13. All of the station's fare control elements and stairs operate at LOS B or better.

### **125<sup>th</sup> Street/Lexington Avenue (4/5/6)**

This station has one central mezzanine area from street level to the fare control area which leads to the bi-level station platforms. Stairways are located at each corner of East 125<sup>th</sup> Street and Lexington Avenue.

During data collection the subway station was undergoing reconstruction. The fare control area and an array of turnstiles were restricted or closed including the stairway at the northeast corner. In addition the elevator from the street level to the mezzanine fare control area and the elevator to the platforms were also out of service due to the reconstruction of the station.

The existing conditions for the pedestrian flow at the fare control area (R258) and three stairways were analyzed for this station in Table 5-14.

All of the station's fare control elements and stairs operate at LOS C or better.

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**Table 5-4: 116<sup>th</sup> Street Subway Station (1 & 9)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE				
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	
116 <sup>th</sup> Street and Broadway			Up/Down Volumes												
S1 (SW)	4.8	3.8	155	70	160	90	0.30	0.14	0.21	0.18	A	A	A	A	
S3 (NW)	4.8	3.8	135	50	145	75	0.26	0.10	0.28	0.15	A	A	A	A	
S2 (SE)	4.8	3.8	230	135	28	155	0.45	0.26	0.55	0.30	A	A	B	A	
S4 (NE)	4.8	3.8	165	75	185	100	0.32	0.15	0.36	0.18	A	A	A	A	
Fare Control Area: R173			In/Out Volumes												
Turnstile	6	2	460	215	555	305	0.18	0.08	0.21	0.12	A	A	A	A	
Service Gate	1	2	50	45	40	20	0.07	0.07	0.06	0.03	A	A	A	A	
High Wheel	2	1	175	70	175	95	0.22	0.09	0.22	0.12	A	A	A	A	
115 <sup>th</sup> Street and Broadway			Up Volumes												
S5 (NE)	4.8	3.8	80	50	65	45	0.16	0.10	0.13	0.09	A	A	A	A	
Exit Only Control Area			Out Volumes												
High Wheel	1	1	80	50	65	45	0.20	0.12	0.16	0.11	A	A	A	A	

**Table 5-5: 125<sup>th</sup> Street Subway Station (1 & 9)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE				
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	
			Up/Down Volumes												
S1 (SE)	4.8	3.8	110	70	125	85	0.21	0.14	0.24	0.17	A	A	A	A	
M2 & M3	4.8	3.8	110	70	125	85	0.21	0.14	0.24	0.17	A	A	A	A	
E101 (SW-Down)	2.0	2.0	85	30	110	65	0.33	0.12	0.43	0.25	A	A	A	A	
E102 (NW-Up)	2.0	2.0	135	90	60	100	0.53	0.35	0.24	0.39	B	A	A	A	
E103 (SE-Up)	2.0	2.0	100	45	60	75	0.39	0.18	0.24	0.29	A	A	A	A	
Fare Control Area:			In/Out Volumes												
Turnstiles	5	1	425	235	355	320	0.20	0.11	0.16	0.15	A	A	A	A	
Service Gate	1	2	5	0	0	5	0.01	0.00	0.00	0.01	A	A	A	A	

**Table 5-6: 137<sup>th</sup> Street/City College Subway Station (1 & 9)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 137 <sup>th</sup> St and Broadway			Up/Down Volumes											
S2 (SW)	5.5	4.5	300	40	100	200	0.49	0.07	0.16	0.33	B	A	A	A
M2	5.8	4.8	300	40	100	200	0.46	0.06	0.15	0.31	B	A	A	A
S1&M1	5.5	4.5	215	120	140	145	0.35	0.20	0.23	0.24	A	A	A	A
Fare Control Area: R176			In/Out Volumes											
Turnstiles	5	2	515	145	240	345	0.24	0.07	0.11	0.16	A	A	A	A
Service Gate	1	2	0	5	0	0	0.00	0.01	0.00	0.00	A	A	A	A
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Uptown 137 <sup>th</sup> Street and Broadway			Up/Down Volumes											
S4&M4 (SE)	5.5	4.5	165	120	225	155	0.27	0.20	0.37	0.26	A	A	A	A
S3 (NE)	5.1	4.1	80	55	150	100	0.14	0.10	0.27	0.18	A	A	A	A
M3	5.3	4.3	80	55	150	100	0.14	0.09	0.26	0.17	A	A	A	A
Fare Control Area: R175			In/Out Volumes											
Turnstiles	5	2	245	170	315	215	0.11	0.08	0.15	0.10	A	A	A	A
Service Gate	1	2	0	5	60	40	0.00	0.01	0.09	0.06	A	A	A	A

**Table 5-7: 116<sup>th</sup> Street Subway Station (B & C)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE				
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	
Downtown 116 <sup>th</sup> St & F.Douglass Blvd			Up/Down Volumes												
S1 (SW)	5.8	4.8	230	20	45	155	0.35	0.03	0.07	0.24	A	A	A	A	
P1 AB	10.0	9.0	230	20	45	155	0.19	0.02	0.04	0.13	A	A	A	A	
S2 (NW)	5.8	4.8	85	30	70	50	0.13	0.05	0.11	0.08	A	A	A	A	
P2 AB	10.0	9.0	85	30	70	50	0.07	0.02	0.06	0.04	A	A	A	A	
Fare Control Area:	Number	One/Two Way	In/Out Volumes												
N30															
Turnstiles	3	2	315	50	115	205	0.24	0.04	0.09	0.16	A	A	A	A	
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A	
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT	
Uptown 116 <sup>th</sup> St & F.Douglass Blvd			Up/Down Volumes												
S6 (SE)	5.7	5.6	45	50	80	55	0.07	0.08	0.13	0.09	A	A	A	A	
P6 AB	10.0	9.0	45	50	80	55	0.04	0.04	0.07	0.05	A	A	A	A	
P7 AB	9.2	8.2	45	50	80	55	0.04	0.05	0.07	0.05	A	A	A	A	
S5 (NE)	5.8	4.8	15	15	75	55	0.02	0.02	0.12	0.08	A	A	A	A	
P5 AB	10.0	9.0	15	15	75	55	0.01	0.21	0.06	0.05	A	A	A	A	
Fare Control Area:	Number	One/Two Way	In/Out Volumes												
N29															
Turnstiles	3	2	60	65	150	105	0.05	0.05	0.12	0.08	A	A	A	A	
Service Gate	1	2	0	0	5	5	0.00	0.00	0.01	0.01	A	A	A	A	

**Table 5-8: 125<sup>th</sup> Street Subway Station (A, B, C & D)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
125 <sup>th</sup> Street and St. Nicolas Avenue			Up/Down Volumes											
S9 (SW)	5.8	4.8	215	90	280	210	0.33	0.14	0.43	0.32	A	A	A	A
M10	6.8	5.8	215	90	280	210	0.27	0.11	0.36	0.27	A	A	A	A
S8 (NW)	5.8	4.8	190	95	275	210	0.29	0.15	0.42	0.32	A	A	A	A
M9 AB	10.2	9.2	190	95	275	210	0.15	0.08	0.22	0.17	A	A	A	A
S2 (SE)	5.8	4.8	300	215	295	230	0.46	0.33	0.46	0.35	B	A	B	A
M2	6.9	5.9	300	215	295	230	0.38	0.27	0.37	0.29	A	A	A	A
S3 (NE)	5.8	4.7	125	125	160	115	0.19	0.19	0.25	0.18	A	A	A	A
M2 AB	10.2	9.2	125	125	160	115	0.10	0.10	0.13	0.09	A	A	A	A
Fare Control Area: N26			In/Out Volumes											
Turnstiles	8	2	760	515	950	715	0.22	0.15	0.27	0.21	A	A	A	A
Service Gate	1	2	70	10	60	50	0.10	0.01	0.09	0.07	A	A	A	A
127 <sup>th</sup> Street and St. Nicolas Avenue			Up/Down Volumes											
S6 (SW)	5.8	4.8	155	55	135	110	0.24	0.08	0.21	0.17	A	A	A	A
M7	8.6	7.6	155	55	135	110	0.15	0.05	0.13	0.11	A	A	A	A
S5 (SE)	4.9	3.9	95	55	60	65	0.18	0.10	0.11	0.12	A	A	A	A
M6	8.6	7.6	95	55	60	65	0.09	0.05	0.06	0.06	A	A	A	A
Fare Control Area: N25			In/Out Volumes											
Turnstiles	3	2	235	90	140	165	0.11	0.04	0.06	0.08	A	A	A	A
Service Gate	1	2	5	15	5	0	0.01	0.02	0.01	0.00	A	A	A	A
High Wheel	2	1	10	5	50	10	0.01	0.01	0.06	0.01	A	A	A	A

**Table 5-9: 135<sup>th</sup> Street Subway Station (B & C)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 135 <sup>th</sup> St and St. Nicholas Ave			Up/Down Volumes											
S9 (SW)	13.1	12.1	180	45	55	90	0.11	0.03	0.03	0.06	A	A	A	A
Fare Control Area: N24	Number	One/Two Way	In/Out Volumes											
Turnstiles	3	2	180	45	55	90	0.14	0.03	0.04	0.07	A	A	A	A
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 137 <sup>th</sup> St. and St. Nicolas Ave.			Up/Down Volumes											
S6 (SW)	13.5	12.5	80	15	20	10	0.05	0.01	0.01	0.01	A	A	A	A
Fare Control Area: N22	Number	One/Two Way	In/Out Volumes											
Turnstiles	3	2	45	0	0	0	0.03	n/a	n/a	n/a	A	n/a	n/a	n/a
Service Gate	1	2	0	0	0	0	0.00	n/a	n/a	n/a	A	n/a	n/a	n/a
High Wheel	2	2	35	15	20	10	0.06	0.03	0.04	0.02	A	A	A	A
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Uptown 135 <sup>th</sup> St. and St. Nicolas Ave.			Up/Down Volumes											
S7 (SE/S)	5.9	4.9	15	10	30	10	0.02	0.02	0.05	0.02	A	A	A	A
S6 (SE/E)	5.8	4.8	20	10	35	10	0.03	0.02	0.05	0.02	A	A	A	A
P5 AB	12.0	11.0	35	20	65	20	0.02	0.01	0.04	0.01	A	A	A	A
S5 (NE)	5.9	4.8	50	10	35	25	0.08	0.02	0.05	0.04	A	A	A	A
P4 AB	12.8	11.8	50	10	35	25	0.03	0.01	0.02	0.02	A	A	A	A
Fare Control Area: N23	Number	One/Two Way	In/Out Volumes											
Turnstiles	3	2	85	30	100	45	0.07	0.02	0.08	0.03	A	A	A	A
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Uptown 137 <sup>th</sup> St. and St. Nicolas Ave.			Up/Down Volumes											
S4 (SE)	7.9	6.9	20	15	40	20	0.02	0.02	0.04	0.02	A	A	A	A
P3	7.7	6.6	20	15	40	20	0.02	0.02	0.04	0.02	A	A	A	A
Fare Control Area	Number	One/Two Way	In/Out Volumes											
High Wheel	1	2	10	0	5	0	0.04	0.00	0.02	0.00	A	A	A	A
High Wheel-Out	2	1	10	15	35	20	0.01	0.02	0.04	0.02	A	A	A	A

**Table 5-10: 116<sup>th</sup> Street Subway Station (2 & 3)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 116 <sup>th</sup> St and Lenox Ave.			Up/Down Volumes											
S1 (SW)	5.6	4.6	115	50	60	80	0.19	0.08	0.10	0.13	A	A	A	A
S3 (NW)	5.1	4.1	190	65	95	130	0.34	0.12	0.17	0.23	A	A	A	A
Fare Control Area: R302			In/Out Volumes											
Turnstiles	5	2	285	95	110	200	0.13	0.04	0.05	0.09	A	A	A	A
Service Gate	1	2	5	5	5	0	0.01	0.01	0.01	0.00	A	A	A	A
High Wheel	3	1	15	15	40	10	0.01	0.01	0.03	0.01	A	A	A	A
Stair Location: Uptown 116 <sup>th</sup> Street and Lenox Ave.			Up/Down Volumes											
S2 (SE)	5.8	4.8	60	40	115	80	0.09	0.06	0.18	0.12	A	A	A	A
P2 ABC	11.8	10.8	60	40	115	80	0.04	0.03	0.08	0.05	A	A	A	A
S4 (NE)	5.8	4.8	85	15	130	95	0.13	0.07	0.20	0.15	A	A	A	A
P4 ABC	11.6	10.6	85	15	130	95	0.06	0.03	0.09	0.07	A	A	A	A
Fare Control Area: R303			In/Out Volumes											
Turnstiles	5	2	100	50	140	100	0.08	0.04	0.11	0.08	A	A	A	A
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
High Wheel	3	1	45	35	105	75	0.06	0.04	0.13	0.09	A	A	A	A

**Table 5-11: 125<sup>th</sup> Street Subway Station (2 & 3)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 125 <sup>th</sup> St and Lenox Ave.			Up/Down Volumes											
S1 (SW)	6.0	5.0	155	70	110	110	0.23	0.10	0.16	0.16	A	A	A	A
S3 (NW)	6.0	5.0	225	125	165	165	0.33	0.19	0.24	0.24	A	A	A	A
Fare Control Area: R304			In/Out Volumes											
Turnstiles	3	2	265	155	230	190	0.12	0.07	0.11	0.09	A	A	A	A
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
High Wheel	3	1	115	40	45	85	0.09	0.03	0.04	0.07	A	A	A	A
Stair Location: Uptown 125 <sup>th</sup> Street and Lenox Ave.			Up/Down Volumes											
S2 (SE)	5.8	4.8	105	85	120	80	0.16	0.13	0.19	0.12	A	A	A	A
P2 ABC	11.8	10.8	105	85	120	80	0.07	0.06	0.08	0.05	A	A	A	A
S4 (NE)	6.0	5.0	105	125	190	140	0.16	0.19	0.28	0.21	A	A	A	A
P4 ABC	12.0	11.0	105	125	190	140	0.07	0.08	0.13	0.09	A	A	A	A
Fare Control Area: R305			In/Out Volumes											
Turnstiles	3	2	125	120	200	145	0.10	0.09	0.15	0.11	A	A	A	A
Service Gate	1	2	0	0	10	5	0.00	0.00	0.01	0.01	A	A	A	A
High Wheel	3	1	85	90	100	70	0.07	0.07	0.08	0.06	A	A	A	A

**Table 5-12: 135<sup>th</sup> Street Subway Station (2 & 3)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 135 <sup>th</sup> St and Lenox Ave.			Up/Down Volumes											
S1 (SW)	6.2	5.2	260	40	120	175	0.37	0.06	0.17	0.25	A	A	A	A
S3 (NW)	6.2	5.2	290	130	185	190	0.41	0.19	0.26	0.27	A	A	A	A
Fare Control Area: R306			In/Out Volumes											
Turnstiles	5	2	460	150	215	305	0.21	0.07	0.10	0.14	A	A	A	A
Service Gate	1	2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
High Wheel	3	1	90	20	90	60	0.07	0.02	0.07	0.05	A	A	A	A
Stair Location: Uptown 135 <sup>th</sup> Street and Lenox Ave.			Up/Down Volumes											
S2 (SE)	6.0	5.0	75	70	120	80	0.11	0.10	0.18	0.12	A	A	A	A
P1 ABC	14.6	13.6	75	70	120	80	0.04	0.04	0.07	0.04	A	A	A	A
S4 (NE)	6.8	5.8	170	85	155	100	0.22	0.11	0.20	0.13	A	A	A	A
P2 ABC	14.6	13.6	170	85	155	100	0.09	0.05	0.08	0.05	A	A	A	A
Fare Control Area: R307			In/Out Volumes											
Turnstiles	3	2	115	85	145	95	0.09	0.07	0.11	0.07	A	A	A	A
Service Gate	1	2	0	0	5	0	0.00	0.00	0.01	0.00	A	A	A	A
High Wheel	3	1	130	70	125	85	0.11	0.06	0.10	0.07	A	A	A	A

**Table 5-13: 116<sup>th</sup> Street Subway Station (6)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
Downtown 116 <sup>th</sup> St and Lexington Ave.			Up/Down Volumes											
S1 (SW)	5.3	4.3	395	110	130	295	0.68	0.19	0.22	0.51	B	A	A	B
P1 AB	11.6	10.6	395	110	130	295	0.28	0.08	0.09	0.21	A	A	A	A
S3 (NW)	5.6	4.6	250	80	130	180	0.40	0.13	0.21	0.29	A	A	A	A
P3 AB	11.6	10.6	250	80	130	180	0.17	0.06	0.09	0.13	A	A	A	A
Fare Control Area: R256			In/Out Volumes											
Turnstiles	4	2	640	175	260	475	0.37	0.10	0.15	0.27	A	A	A	A
Service Gate	1	2	5	15	0	0	0.01	0.02	0.00	0.00	A	A	A	A
Uptown 116 <sup>th</sup> St. and Lexington Ave.			Up/Down Volumes											
S2 (SE)	5.3	4.3	115	80	160	125	0.20	0.14	0.28	0.22	A	A	A	A
P2 AB	11.3	10.3	115	80	160	125	0.08	0.06	0.12	0.09	A	A	A	A
S4 (NE)	5.3	4.3	105	95	205	145	0.18	0.16	0.35	0.25	A	A	A	A
P4 AB	11.3	10.3	105	95	205	145	0.08	0.07	0.15	0.10	A	A	A	A
Fare Control Area: R257			In/Out Volumes											
Turnstiles	4	2	220	170	330	245	0.13	0.10	0.19	0.14	A	A	A	A
Service Gate	1	2	0	5	35	25	0.00	0.01	0.05	0.04	A	A	A	A

**Table 5-14: 125<sup>th</sup> Street Subway Station (4, 5 & 6)**

SUBWAY STATION ELEMENTS			15- MINUTE PEDESTRIAN VOLUME				V/SCD RATIO				LEVEL OF SERVICE			
Stair Location:	Width	Eff. Width	AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
125 <sup>th</sup> Street and Lexington Ave.			Up/Down Volumes											
S1 (SW)	5.6	4.6	185	220	330	215	0.30	0.32	0.53	0.35	A	A	B	A
M1 AB	10.5	9.5	185	220	330	215	0.14	0.16	0.26	0.17	A	A	A	A
S3 (NW)	5.6	4.6	420	320	485	315	0.68	0.52	0.78	0.51	B	B	C	B
M3 AB	10.5	9.5	420	320	485	315	0.33	0.25	0.38	0.25	A	A	A	A
S2 (SE)	5.7	4.7	570	180	325	210	0.90	0.28	0.51	0.33	C	A	B	A
M2 AB	7.2	6.2	570	180	325	210	0.68	0.22	0.39	0.25	B	A	A	A
S4 (NE)	5.7	4.7	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
M4 AB	7.2	6.2	0	0	0	0	0.00	0.00	0.00	0.00	A	A	A	A
Fare Control Area: R258			In/Out Volumes											
Turnstiles	5	2	765	535	770	480	0.35	0.25	0.36	0.22	A	A	A	A
Service Gate	1	2	315	155	335	215	0.47	0.23	0.50	0.32	B	A	B	A
High Wheel	1	1	95	10	25	25	0.23	0.02	0.06	0.06	A	A	A	A

Notes: The Capacity for Stairs = 17 persons per minute per foot  
 The Capacity for Turnstiles = 32 persons per minute per foot  
 The Capacity for Service Gate = 50 persons per minute per foot  
 The Capacity for High Entrance/Exit Turnstile = 20 persons per minute per foot  
 The Capacity for High Exit Turnstile = 30 persons per minute per foot

Source: New York City Transit, Station Operations Planning Division  
 City Environmental Review Quality Review Technical Manual  
 Environmental Assessment and Review Division; NYC Department of City Planning, October 2001

## 5.2 Bus Service

Twenty-two New York City Transit (NYCT) local bus routes provide service within the study area as indicated in Exhibit 5-2: “Local Bus Routes”. These bus routes operate on all avenues (north-south direction) as well as on the three major cross-town streets (116<sup>th</sup>, 125<sup>th</sup> and 135<sup>th</sup> Streets). The majority of the bus routes within the study area can be characterized by the loading and unloading activity of many bus riders transferring to and from other routes. Whereas the M35 and M60 are feeder routes (see route description) which have much lower ridership turnover and where most passengers have a common origin or destination.

Reviewing the “*Summary of Ridership and Average Passengers per Trip*” data provided by the NYCT for the bus routes that serve the Harlem/Morningside Heights study area, it is evident that the area is well served and has adequate bus service on all the bus routes. The frequency of bus service varies greatly; reflecting different user patterns within the area of study (see Table 5-15 below).

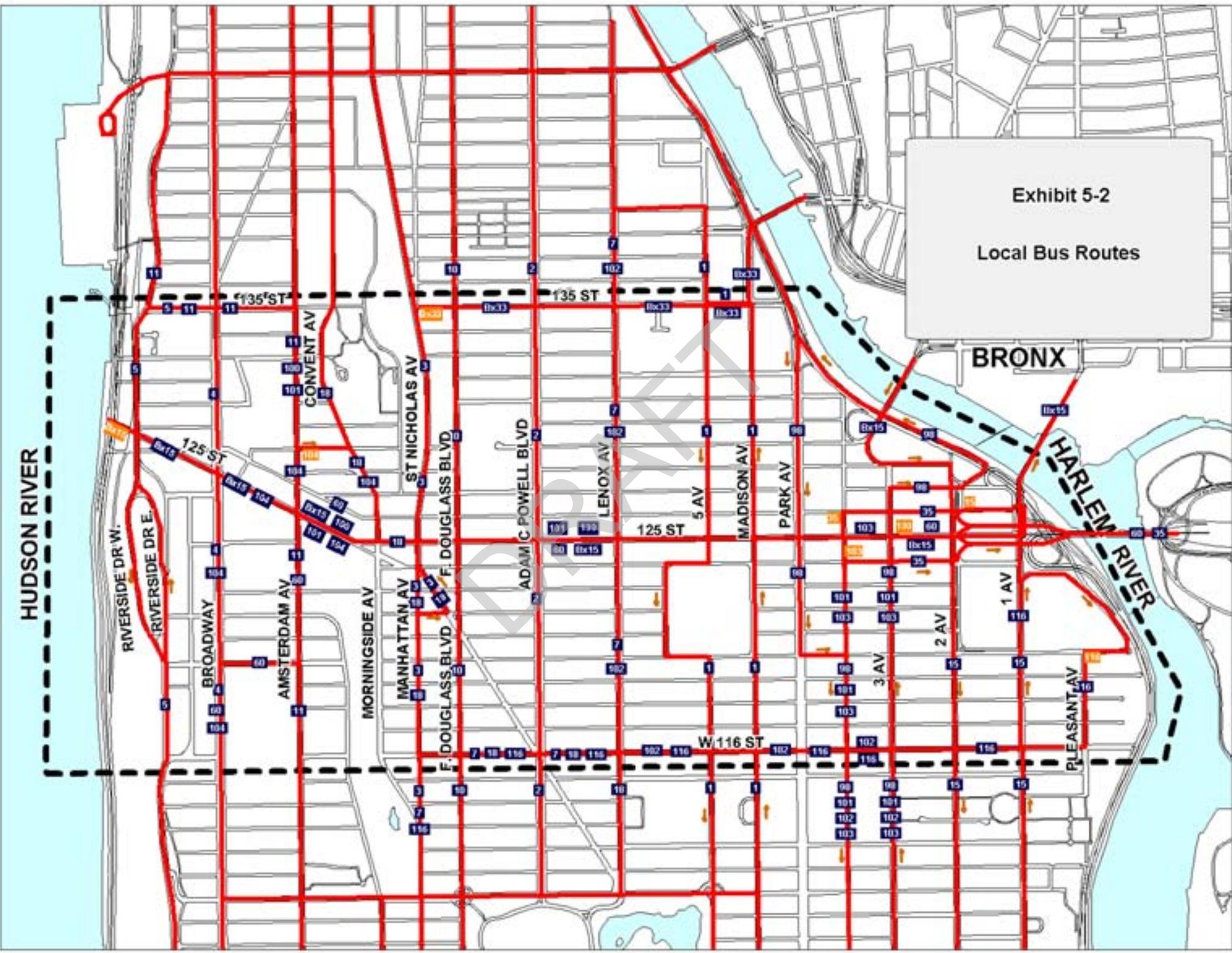
**Table 5-15: Average Frequency of NYCT Bus Service (in minutes)**

Route	Weekday					Saturday					Sunday						
	AM	Noon	PM	Eve	Night	AM	Noon	PM	Eve	Night	AM	Noon	PM	Eve	Night		
M1	8	9	8	10	60	12	9	9	11	60	20	10	9	13	60		
M2	Use M2L			9	60	12	Use M2L			12	60	24	Use M2L			15	60
M2L	7	10	6	ns	ns	Ns	10	10	ns	ns	ns	12	12	ns	ns		
M3	9	10	8	11	ns	12	9	9	12	ns	20	11	9	13	ns		
M4	7	9	8	10	ns	12	9	9	12	ns	17	10	9	13	ns		
M5	Use M5L			7	ns	12	10	11	12	ns	17	9	10	13	ns		
M5L	7	10	9	ns	ns	No Weekend Service											
M7	9	9	8	9	60	10	8	6	10	60	13	9	7	9	60		
M10	9	1	9	9	30	11	8	9	9	ns	15	10	10	11	ns		
M11	9	8	10	9	ns	13	10	9	10	ns	15	10	8	9	ns		
M15	5	6	6	7	30	8	4	5	7	30	9	5	5	7	30		
M15L	4	8	5	8	ns	Ns	10	10	14	ns	ns	10	10	15	ns		
M18	20	30	30	ns	ns	30	30	30	ns	ns	30	30	30	ns	ns		
M35	11	15	12	12	ns	12	15	15	14	ns	17	15	15	15	ns		
M60	9	11	9	9	ns	12	12	10	10	ns	15	10	10	10	ns		
M98	8	ns	11	ns	ns	No Weekend Service											
M100	8	9	9	10	ns	10	10	10	10	ns	13	11	11	12	ns		
M101	6	6	6	9	60	11	10	10	12	60	10	10	10	12	60		
M101L	6	6	6	ns	ns	11	10	10	ns	ns	10	10	10	ns	ns		
M102	7	12	10	12	60	15	12	10	12	60	20	12	13	13	60		
M103	10	12	10	12	60	15	12	10	13	60	15	11	11	15	60		
M104	4	5	5	6	45	11	5	4	5	45	15	6	5	8	45		
M116	6	11	10	17	ns	20	15	12	18	ns	20	15	12	18	ns		
Bx15	7	8	7	10	60	9	8	9	10	60	10	9	8	11	60		
Bx33	12	12	12	15	ns	20	20	20	30	ns	30	20	20	30	Ns		

**Notes:** Time Periods: AM= 7-9 AM, Noon= 11 AM-1 PM, PM= 4-7 PM, Eve= 7-9 PM and Night= Midnight - 4 AM  
ns = no service during time period.

Headway in minutes

Exhibit 5-2  
Local Bus Routes



A summary of existing conditions for the local bus routes analyzed in this study is provided in Tables 5-16a, 5-16b, 5-17a, and 5-17b. The following is a brief description of each bus route and the frequency of their services within the study area:

### **M1 Fifth and Madison Avenues**

The M1 operates between East 8<sup>th</sup> Street/Fourth Avenue in the East Village and West 146<sup>th</sup> Street/Lenox Avenue in Harlem at all times. On weekdays some buses continue downtown to South Ferry and head uptown from South Ferry. The bus service to and from South Ferry is provided from the morning to the evening rush hours. Frequency of this bus service occurs every 8 to 15 minutes.

In the study area the M1 operates northbound on Madison Avenue and southbound on Fifth Avenue.

### **M2 and M2 Limited Fifth and Madison Avenues/Adam C. Powell Boulevard**

The M2 operates between East 8<sup>th</sup> Street/4<sup>th</sup> Avenue in the East Village and West 168<sup>th</sup> Street/Broadway in Washington Heights at all times. Limited-stop service is provided during the day and the M2 limited bus service operates south of 110<sup>th</sup> Street. For local service use other NYCT bus routes.

Within the study area the M2 operates in both directions along Adam Clayton Powell Boulevard.

### **M3 Fifth and Madison Avenues/St. Nicholas Avenue**

The M3 operates between East 8<sup>th</sup> Street/Fourth Avenue and West 193<sup>rd</sup> Street/St. Nicholas Avenue. Daily service is provided from early morning through late in the evening, but there is no overnight service.

The M3 travels on Manhattan and St. Nicholas Avenues in both directions within the study area.

### **M4 Fifth and Madison Avenues/Broadway**

The M4 operates between West 32<sup>nd</sup> Street/Seventh Avenue (Penn Station) and Fort Tryon Park in Washington Heights every day. Limited-stop service is provided during the weekday

rush hours: downtown beginning at West 157<sup>th</sup> Street and uptown to West 157<sup>th</sup> Street. No overnight service on this route.

Within the study area the M4 travels in both directions on Broadway.

#### **M5 and M5 Limited Fifth and Sixth Avenues/Riverside Drive**

The M5 operates daily between Houston Street/West Broadway in Greenwich Village and West 178<sup>th</sup> Street/Broadway (George Washington Bus Terminal) in Washington Heights. Limited-stop areas are on Broadway between 157<sup>th</sup> and 135<sup>th</sup> Streets and south of 72<sup>nd</sup> Street. Buses make all stops on Riverside Drive between 135<sup>th</sup> and 72<sup>nd</sup> Streets. No overnight service on this route. In the study area the M5 travels on Riverside Drive.

#### **M7 Columbus/Amsterdam/Lenox/Sixth and Seventh Avenues/Broadway**

The M7 operates between Union Square and West 147<sup>th</sup> Street/Adam Clayton Powell Boulevard, every day at all times.

Within the study area the M7 travels on Lenox Avenue and across West 116<sup>th</sup> Street to Manhattan Avenue.

#### **M10 Central Park West/ Frederick Douglass Boulevard**

The M10 operates daily between West 31<sup>st</sup> Street/Seventh Avenue (Penn Station) and West 159<sup>th</sup> Street/Frederick Douglass Boulevard. No weekend overnight service provided.

The M10 operates on Frederick Douglass Boulevard within the study area.

#### **M11 Ninth (Columbus) and Tenth (Amsterdam) Avenues**

The M11 operates between Bethune/Hudson Streets (Abingdon Square) and West 135<sup>th</sup> Street/Broadway from about 5 AM to midnight. Service is extended daily to Riverbank State Park at West 145<sup>th</sup> Street from about 8 AM to 9 PM. No overnight service.

The M11 travels on Amsterdam Avenue in both directions within the study area.

### **M15 and M15 Limited First and Second Avenues**

The M15 operates between Second Avenue/East 126<sup>th</sup> Street and South Ferry at all times. Some of the buses end at Park Row/City Hall on weekdays only and others end at Houston Street. Limited stop service is provided every day.

In the study area northbound M15 travels on First Avenue and southbound service is on Second Avenue.

The M15 Limited operates in both directions on weekdays. On Saturdays and Sundays limited service is provided from mid-morning through the evening hours.

### **M18 Convent Avenue**

The M18 operates between West 168<sup>th</sup> Street/Broadway and East 110<sup>th</sup> Street (Central Park North)/Fifth Avenue every day. No overnight service on this route.

The M18 travels on 116<sup>th</sup> Street, Manhattan and Convent avenues within the study area.

### **M35 Randall's and Ward's Islands**

The M35 operates daily between East 125<sup>th</sup> St/Lexington Avenue and Randall's/Ward's Islands. No overnight service on this route.

Within the study area the M35 travels westbound from the Triborough Bridge along West 126<sup>th</sup> Street to Lexington Avenue and West 124<sup>th</sup> Street to the bridge. No overnight service is provided.

### **M60 LaGuardia Airport via 125<sup>th</sup> Street**

The M60 operates daily between West 106<sup>th</sup> Street/Broadway and LaGuardia Airport. No overnight service.

In the study area the M60 crosses 125<sup>th</sup> Street from Second Avenue/Triborough Bridge to travel on Amsterdam Avenue, West 120<sup>th</sup> Street, Broadway to West 106<sup>th</sup> Street.

### **M98 Limited Washington Heights/Midtown**

Limited-stop service operates between West 193<sup>rd</sup> Street/Fort Washington Avenue (Fort Tryon Park) and East 34<sup>th</sup> Street/Lexington Avenue via Fort Washington Avenue, Harlem River Drive, Lexington and Third Avenues on weekdays during rush hours only.

In the southbound direction the M98 travels on Park and Lexington Avenues and in the northbound direction on Third Avenue and Harlem River Drive.

### **M100 Amsterdam Avenue/Broadway/125<sup>th</sup> Street**

The M100 operates between West 220<sup>th</sup> Street/Broadway and East 125<sup>th</sup> Street/ Second Avenue every day. No overnight service provided.

The M100 travels on Amsterdam Avenue and 125<sup>th</sup> Street within the study area.

### **M101 and M101 Limited Third/Lexington/Amsterdam Avenues**

The M101 operates daily between West 193<sup>rd</sup> Street/Amsterdam Avenue and East 8<sup>th</sup> Street via Amsterdam Avenue, 125<sup>th</sup> Street, Lexington and Third Avenues. The M101 limited-stop service operates between East 116<sup>th</sup> Street and East 8<sup>th</sup> Street in both directions.

In the study area the M101 bus route operates on Amsterdam Avenue and 125<sup>th</sup> Street (both directions), on Lexington Avenue (southbound direction), and on Third Avenue (northbound direction).

### **M102 Third/Lexington/Lenox Avenues**

The M102 operates daily between West 147<sup>th</sup> Street/Adam Clayton Powell Boulevard and East 8<sup>th</sup> Street/Third Avenue via Malcolm X Boulevard (Lenox Avenue), 116<sup>th</sup> Street, Lexington and Third Avenues.

Within the study area the M102 travels on Malcolm X Boulevard (Lenox Avenue) and 116<sup>th</sup> Street.

### **M103 Third/Lexington Avenues**

The M103 operates between East 125<sup>th</sup> Street/Lexington Avenue and Park Row/City Hall every day. Within the study area the M103 travels southbound on Lexington Avenue and northbound on Third Avenue.

**M104 Broadway/42<sup>nd</sup> Street**

The M104 operates daily between West 129<sup>th</sup> Street/Amsterdam Avenue and East 42<sup>nd</sup> Street/First Avenue (United Nations) via Broadway and 42<sup>nd</sup> Street. The M104 travels on Broadway and a two block section of 125<sup>th</sup> Street within the study area.

**M116 116<sup>th</sup> Street Crosstown**

The M116th Street operates between West 106<sup>th</sup> Street/Broadway and East 120<sup>th</sup> Street/Pleasant Avenue everyday. No overnight service.

In the study area the M116 travels on 116<sup>th</sup> Street (both directions), on First Avenue northbound and on Paladino and Pleasant Avenues.

**Bx15 125<sup>th</sup> Street Crosstown**

The Bx15 crosses the Harlem River westbound via the Third Avenue Bridge and eastbound via the Willis Avenue Bridge and also travels along 125<sup>th</sup> Street to Riverside Drive. Within the study area the Bx15 travels across 125<sup>th</sup> Street.

**Bx33 East 138<sup>th</sup>/West 135<sup>th</sup> Streets**

The Bx33 operates daily between East 132<sup>nd</sup> Street/Locust Avenue, Port Morris (Bronx) and St. Nicholas Avenue/West 135<sup>th</sup> Street (Manhattan). The Bx33 crosses the Harlem River via Madison Avenue Bridge. No overnight bus service on this route.

Within the study area, the Bx33 travels across 135<sup>th</sup> Street.

**Table 5-16a: 2003 Existing Bus Conditions (AM-MD)**

Route/Direction		AM					Midday				
		Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity	Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity
M1	SB	8	560	356	45	204	7	490	207	30	283
M1L	SB	7	490	265	52	125	--	--	--	--	--
M1	NB	5	350	154	31	196	7	490	198	28	292
M1L	NB	--	--	--	--	--	--	--	--	--	--
M2	SB	10	700	395	40	305	6	420	148	25	272
M2	NB	7	490	148	21	342	6	420	111	19	309
M3	SB	7	490	336	48	154	7	490	209	30	281
M3	NB	6	420	135	23	285	7	490	181	26	309
M4	SB	13	910	521	40	389	8	560	222	28	338
M4L	SB	5	350	194	39	156	--	--	--	--	--
M4	NB	13	910	366	28	544	8	560	161	20	399
M4L	NB	--	--	--	--	--	--	--	--	--	--
M5	SB	--	--	--	--	--	--	--	--	--	--
M5L	SB	11	770	520	47	250	6	420	138	23	282
M5	NB	--	--	--	--	--	--	--	--	--	--
M5L	NB	4	280	160	40	120	6	420	128	21	292
M7	SB	8	560	367	46	193	6	420	137	23	283
M7	NB	4	280	150	38	130	7	490	202	29	288
M10	SB	8	560	340	43	220	6	420	163	27	257
M10	NB	8	560	124	16	436	6	420	165	28	255
M11	SB	7	490	307	44	183	7	490	166	24	324
M11	NB	9	630	402	45	228	7	490	161	23	329
M15	SB	15	1050	580	34	542	10	700	262	26	438
M15L	SB	21	1470	1055	50	415	10	700	395	40	305

**Table 5-16b: 2003 Existing Bus Conditions (AM-MD)**

Route/Direction		AM					Midday				
		Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity	Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity
M15	NB	14	980	706	50	274	10	700	299	30	401
M15L	NB	17	1190	733	43	457	10	700	314	31	386
M18	SB	3	210	40	13	170	2	140	11	6	129
M18	NB	2	140	6	3	134	2	140	5	3	135
M60	EB	6	420	307	51	113	6	420	210	25	210
M60	WB	7	490	235	34	255	4	280	107	27	173
M98	SB	7	490	417	60	73	--	--	--	--	--
M98	NB	3	210	62	21	148	--	--	--	--	--
M100	SB	6	420	392	65	28	7	490	196	28	294
M100	NB	7	490	336	48	154	6	420	203	34	217
M101	SB	11	770	522	47	248	11	770	326	30	444
M101	NB	10	700	566	57	134	10	700	268	27	432
M102	SB	6	420	273	46	147	5	350	152	30	198
M102	NB	6	420	212	35	208	5	350	142	28	208
M103	SB	6	420	221	37	199	6	420	151	25	269
M103	NB	6	420	205	34	215	5	350	189	38	161
M104	SB	17	1190	527	31	663	12	840	341	28	499
M104	NB	7	490	217	31	273	12	840	295	25	545
M116	EB	14	980	658	47	322	5	350	113	23	237
M116	WB	6	420	325	54	95	5	350	126	25	224
Bx15	SB	9	630	468	52	162	7	490	284	41	206
Bx15	NB	7	490	397	57	93	7	490	271	39	219
Bx33	EB	4	280	95	24	185	6	420	43	7	377
Bx33	WB	6	420	155	26	265	6	420	56	9	364

Notes: Peak hours; 8-9 AM, 12-1 Midday, 5-6 PM & Hourly capacity guideline of 70 passengers per bus.

**Table 5-17a: 2003 Existing Bus Conditions (PM-Sat MD)**

Route/Direction		PM					Saturday (Midday)				
		Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity	Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity
M1	SB	6	420	263	44	157	7	490	270	39	220
M1L	SB	--	--	--	--	--	--	--	--	--	--
M1	NB	8	560	324	41	236	6	420	117	20	303
M1L	NB	5	350	173	35	177	--	--	--	--	--
M2	SB	11	770	262	24	508	6	420	135	23	285
M2	NB	8	560	396	50	164	6	420	129	22	291
M3	SB	9	630	310	34	320	7	490	182	26	308
M3	NB	7	490	228	33	262	5	350	145	29	205
M4	SB	7	490	299	43	191	9	630	201	22	429
M4L	SB	--	--	--	--	--	--	--	--	--	--
M4	NB	8	560	335	42	225	8	560	211	26	249
M4L	NB	6	420	237	40	183	--	--	--	--	--
M5	SB	--	--	--	--	--	7	490	181	26	309
M5L	SB	7	490	169	24	321	--	--	--	--	--
M5	NB	--	--	--	--	--	6	420	155	26	265
M5L	NB	6	420	221	37	199	--	--	--	--	--
M7	SB	8	560	255	32	305	8	560	209	26	351
M7	NB	9	630	338	38	292	6	420	207	35	213
M10	SB	7	490	193	28	297	8	560	173	22	387
M10	NB	7	490	272	39	218	8	560	170	21	390
M11	SB	7	490	265	38	225	6	420	144	24	276
M11	NB	7	490	260	37	230	6	420	192	32	228
M15	SB	10	700	462	46	238	12	840	331	28	509
M15L	SB	13	910	517	40	393	6	420	236	39	184

**Table 5-17b: 2003 Existing Bus Conditions (PM-Sat MD)**

Route/Direction		PM					Saturday (Midday)				
		Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity	Buses per Hour	Hourly Capacity	Hourly Volume	Avg Vol per Bus	Available Capacity
M15	NB	14	980	578	41	402	12	840	228	19	612
M15L	NB	15	1050	519	35	531	5	350	147	29	203
M18	SB	3	210	34	11	176	2	140	10	5	130
M18	NB	2	140	7	4	133	2	140	10	5	130
M60	EB	5	350	270	54	80	5	350	204	41	146
M60	WB	6	420	259	43	161	5	350	137	27	213
M98	SB	2	140	31	16	109	--	--	--	--	--
M98	NB	8	560	336	42	224	--	--	--	--	--
M100	SB	8	560	207	26	353	6	420	155	26	264
M100	NB	6	420	333	56	87	6	420	164	27	256
M101	SB	12	840	459	38	381	7	490	255	36	235
M101	NB	12	840	591	49	249	6	420	208	35	212
M102	SB	7	490	185	26	305	7	490	145	21	345
M102	NB	6	420	289	48	131	7	490	183	26	307
M103	SB	7	490	163	23	324	7	420	116	17	374
M103	NB	7	490	308	44	182	6	420	178	30	242
M104	SB	12	840	392	33	448	15	1050	453	30	597
M104	NB	14	980	553	40	427	13	910	413	32	497
M116	EB	6	420	257	43	163	4	280	105	26	175
M116	WB	6	420	305	51	115	4	280	96	24	184
Bx15	SB	7	490	296	42	194	7	490	278	40	212
Bx15	NB	7	490	392	56	98	8	560	250	31	310
Bx33	EB	4	280	123	31	157	3	210	57	19	153
Bx33	WB	6	420	83	14	337	3	210	48	16	162

Notes: Peak hours' 5-6 PM and 1-2 PM Saturday & Hourly capacity guideline of 70 passengers per bus.

## **6.0 PARKING**

### **6.1 Off-Street Public Parking**

An inventory of all publicly accessible parking lots and garages serving the study area has been done. The inventory shows that parking facilities are located throughout the study area. Exhibit 6-1 illustrates and maps out the location of the off-street parking facilities.

There are 24 privately owned off-street parking facilities within the study area with a total capacity of 3,932 parking spaces (see Table 6-1). The off-street parking facilities range in capacity from 38 to 360 spaces; there are eight facilities with capacities of 200 spaces or more.

Two public parking facilities licensed by the New York City Department of Consumer Affairs are located along Park Avenue at 118<sup>th</sup> and 119<sup>th</sup> Streets. They are unattended lots that only permit monthly parking.

#### Utilization of Off-Street Public Parking Facilities

On weekdays the midday parking utilization rate is 88%, with an approximate availability of 468 spaces. The overnight parking utilization rate during weekdays is also 88%, with an availability of approximately 457 spaces.

The off-street public parking supply is adequate currently and can accommodate the existing demand.

### **6.2 Off-Street Accessory Parking**

A sub-area with accessory off-street parking garage/lots locations has been identified and mapped within the study area. It is bordered to the south by the entire length of 122<sup>nd</sup> Street, to the north on the west side by 133<sup>rd</sup> Street from the Hudson River to St. Nicholas Avenue and to the north on the east side by 128<sup>th</sup> Street all the way to the Harlem River. The accessory parking garages and lots were identified by site visits to the sub-area (see Exhibit 6-2). The exact number of spaces and utilization of these accessory parking lots were not possible due to access restrictions.

There are at least 21 garages/lots that are classified as accessory parking locations within the sub-area (see Table 6-2). Among these garages/lots only 12 are primarily used for residential parking; one is a roof-top commercial parking and eight locations are for governmental or institutional parking. The 12 residential lots have approximately 693 parking spaces (at three of the locations, counts for the number spaces could not be taken). Five of the lots are associated with the New York City Housing Authority (NYCHA) projects. Based on observations of the majority of the 12 residential lots, the utilization at various times during the week appears to be 100%.

The accessory commercial parking lot identified, Pathmark Supermarket, is located at Lexington Avenue between East 124<sup>th</sup> and 125<sup>th</sup> Streets. The determination of the number of parking spaces and utilization could not be done because of restrictions on access.

The eight governmental or institutional parking garages/lots provided for agency staff and for the parking of agencies' vehicles appear to have an utilization rate of 100% at each location.



**Table 6-1: Off-Street Public Parking Facilities**

Map #	Name	Location	License #	# of Spaces	Midday Occupancy		Overnight Occupancy	
					%	Ava Cap	%	Ava Cap
1	Solo Parking Inc	316-320 West 118 <sup>th</sup> St	0886059	130	80	26	100	0
2	The New Uptown Garage	160 Malcolm X Blvd.	427520	175	100	0	100	0
3	Claremont Parking	480 Riverside Drive	906438	200	80	40	80	40
4	Morningside Heights Housing	3100 Broadway	469448	291	100	0	100	0
5	Easy Cross Parking	225 St. Nicholas Ave	955730	160	90	16	90	16
6	West 129 <sup>th</sup> Street LLC	605 West 129 <sup>th</sup> Street	959388	134	75	34	90	13
7	MTP 3300 Broadway Corp	627 West 129 <sup>th</sup> Street	974364	200	100	0	100	0
8	NOHA Repair Shop	613 west 129 <sup>th</sup> Street	980175	88	100	0	100	0
9	Champion 126 LLC	162 East 126 <sup>th</sup> Street	1125593	204	80	41	80	41
10	Hudson River Garage 3	500 Riverside Drive	1110688	175	80	35	80	35
11	MTP Park	631-635 West 131 <sup>st</sup> St	1117939	100	100	0	90	10
12	Edison Riverside Corp	3333 Broadway	761734	360	80	72	80	72
13	Y&H Enterprises	526 West 134 <sup>th</sup> Street	735702	175	100	0	80	35
14	Viaduct Parking System	2130 ACPowell Jr Blvd	910323	70	100	0	100	0
15	Park Inn	260 West 126 <sup>th</sup> Street	1157098	160	80	32	80	32
16	Central Parking System NY	121 West 125 <sup>th</sup> Street	999363	304	100	0	100	0
17	IMPARK 125 LLC	215 West 125 <sup>th</sup> Street	1102349	38	100	0	90	4
18	GMC 532 W122	532 West 122 <sup>nd</sup> Street	921479	180	80	36	80	36
19	Columbia Water Front	69 St Clair Place	1115799	70	60	28	20	56
20	Taino Towers Garage	221 East 122 <sup>nd</sup> Street	1005064	200	80	40	80	40
21	E-Z Parking Management	1824 Park Avenue	1096449	135	80	27	80	27
22	E-Z2 Park Management	1845-65 Park Avenue	1132808	275	85	41	0	0
23	118 Parking Corp	1668 Park Ave	1097849	50	0	0	0	0
24	100 Parking Copr	1831 Madison Ave	1129272	58	0	0	0	0
<b>Totals:</b>				<b>3932</b>		<b>468</b>		<b>457</b>

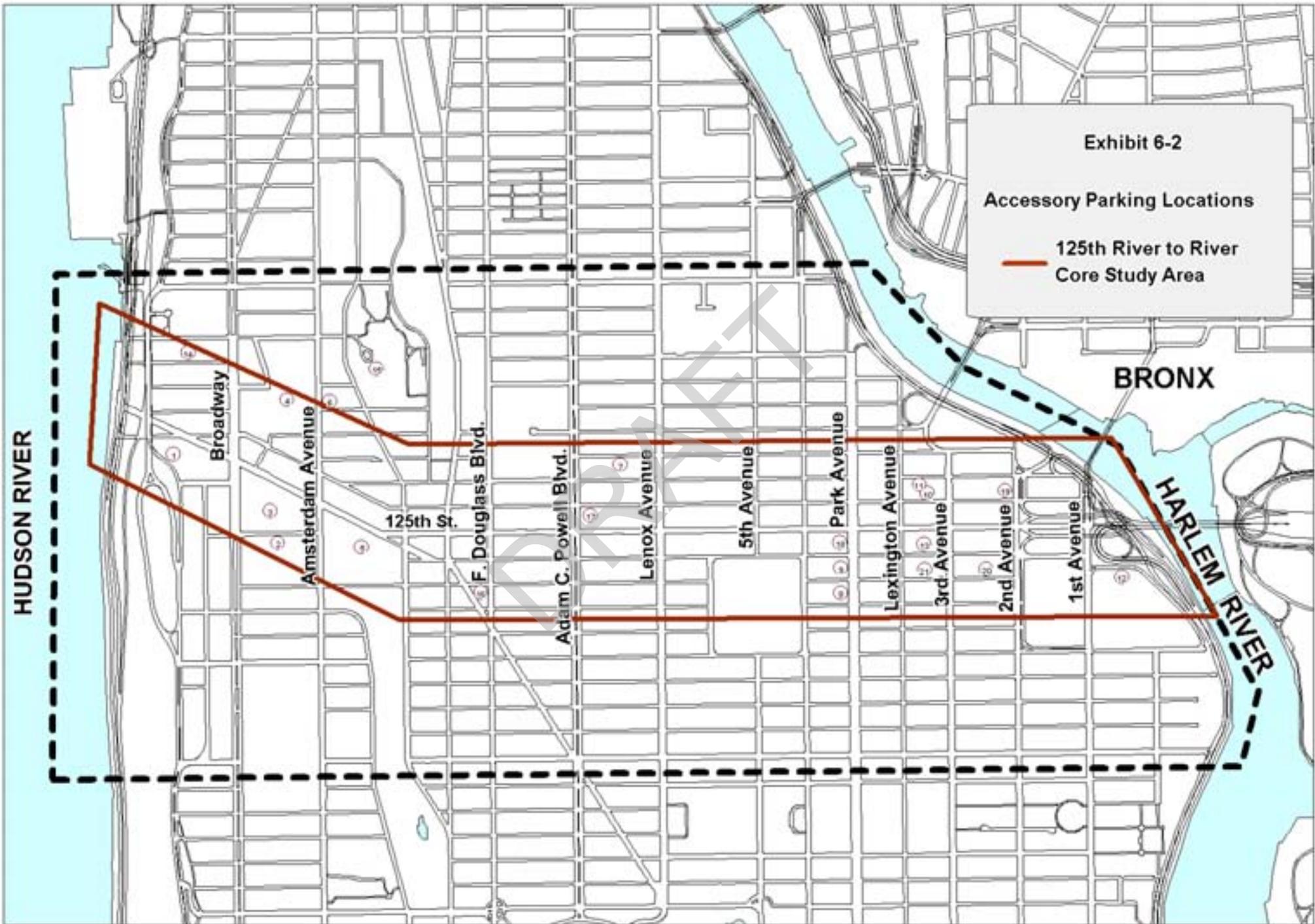


Exhibit 6-2

Accessory Parking Locations

- 125th River to River
- Core Study Area

HUDSON RIVER

BRONX

HARLEM RIVER

Broadway

Amsterdam Avenue

125th St.

F. Douglass Blvd.

Adam C. Powell Blvd.

Lenox Avenue

5th Avenue

Park Avenue

Lexington Avenue

3rd Avenue

2nd Avenue

1st Avenue

**Table 6-2: Off-Street Accessory Parking Garages/Lots**

	Name	Address or Location	Estimated # Spaces
<b>Residential</b>			
1	Columbia University Garage	564 Riverside Drive	N/A
2	NYCHA Morningside Houses	LaSalle St (between Broadway & Amsterdam Avenue)	85
3	NYCHA General Grant Houses-West	3 locations	93
4	NYCHA Manhattanville Houses	4 locations	123
5	NYCHA General Grant Houses-East	2 locations	63
6	--	499 West 130 <sup>th</sup> Street	38
7	Heart of Harlem	W. 128 <sup>th</sup> Street (A.C Powell Blvd. & Lenox Avenue)	13
8	--	W. side of Park Avenue (bet E. 122 <sup>nd</sup> & 123 <sup>rd</sup> streets)	86
9	--	W. side of Park Avenue (bet E. 123 <sup>rd</sup> & 124 <sup>th</sup> streets)	86
10	--	East 126 <sup>th</sup> Street (Lexington & 3 <sup>rd</sup> avenues) (behind bldg.)	N/A
11	--	East 127 <sup>th</sup> Street (Lexington & 3 <sup>rd</sup> avenues) (behind bldg.)	N/A
12	NYCHA Sen. Robert F. Wager Sr. Houses	2 locations	106
<b>Commercial (public use)</b>			
13	Pathmark	East 124 <sup>th</sup> Street (Lexington & 3 <sup>rd</sup> avenues) (rooftop)	N/A
<b>Governmental/Institutional</b>			
14	MTA-NYCT Manhattanville Depot	666 West 133 <sup>rd</sup> Street (rooftop)	N/A
15	City College	Entrance West 133 <sup>rd</sup> Street & Convent Avenue	various lots
16	NYPD 28 Pct. & lot (across street)	West 122 <sup>nd</sup> Street (St. Nicholas & F. Douglass Blvds.)	N/A
17	New York State Harlem Office Bldg	West 126 <sup>th</sup> Street (AC Powell Blvd. & Lenox Avenue)	N/A
18	New York College of Podiatric Medicine	W. side of Park Avenue (East 124 <sup>th</sup> Streets)	N/A
19	MTA-NYCT 126 <sup>th</sup> Street Depot	2 locations across street from depot along 2 <sup>nd</sup> Avenue	N/A
20	NYPD Housing District #5	East 123 <sup>rd</sup> Street (3 <sup>rd</sup> & 2 <sup>nd</sup> avenues)	N/A
21	NYC Dept. of Sanitation	East 123 <sup>rd</sup> Street (Lexington & 3 <sup>rd</sup> Avenues)	N/A

### 6.3 On-Street Parking and Issues

This section summarizes the existing on-street parking conditions in the study area. The analysis includes an inventory of on-street parking spaces and their regulations; it provides both a quantitative and qualitative analysis of the parking in the study area. The on-street parking regulations vary greatly in the area. They range from alternate side of the street parking regulations on residential streets to restricted parking on commercial streets including metered-parking, time restricted parking, no standing zones, bus stops, fire hydrants, authorized parking zones, loading bays, etc.

The curb use regulations on 125<sup>th</sup> Street, a major commercial corridor, provide for the most parking as possible for commercial, governmental and residential uses along this street. In both directions a NYCT bust stop is provided on the far side of each intersection to permit the boarding and alighting of passengers from the many buses that travel across 125<sup>th</sup> Street (see Exhibit 6-3a and 6-3b for more details of the curb regulations along 125<sup>th</sup> Street).

The following summarizes the curb regulations along 125<sup>th</sup> Street:

- From Riverside Drive to Morningside/Convent Avenue, they are mainly non-restrictive parking rules except residential street cleaning rules, with some restricted locations for commercial loading/unloading, curb-cuts for building loading bays and for governmental permit zones.
- The blocks from Morningside/Convent Avenue to Lexington Avenue have one hour metered-parking with restricted zones for governmental permit zones, New York City Press, and for ambulances/ambulettes, etc. These blocks are located in the commercial core of the 125<sup>th</sup> Street, corridor where the highest incidents of double parking occur.
- From Lexington to Third Avenues, the curb regulations are mainly restricted during the hours of the day for governmental permits with a few parking spaces that are assigned for residential alternate side of the street parking cleaning rules.

- From Third to First Avenues during the rush hour periods “No Parking/No Standing” curb regulations are enforced to permit an easier flow of traffic to and from the Harlem River Bridges. At other times, the curb regulations are for commercial loading/unloading and for non-restrictive parking rules. The south side of East 125<sup>th</sup> between Second and First Avenues has: “No Parking-No Standing Anytime”.

#### 124<sup>th</sup> Street (Morningside to First Avenues) Curb Use Regulations

- The curb use regulations along this section of 124<sup>th</sup> Street are street cleaning rules or “No Parking/No Standing” regulations. Generally 124<sup>th</sup> Street has residential buildings with commercial, industrial and governmental uses. One NYCT bus route (Lexington to Second Avenue) uses 124<sup>th</sup> Street. At the far side of each intersection there is a local bus stop.
- The block from Morningside to St. Nicholas Avenues is regulated by 90-minute street cleaning rules twice a week for both sides of the street.
- The curb use regulations on the south side of 124<sup>th</sup> Street from St. Nicholas to Lenox Avenues do not permit parking from 8:00AM to 6:00PM on weekdays. The north side does not permit parking from 8:00AM to 6:00PM except on Sundays. At all other times parking is permitted.
- Lenox to Madison Avenues: The curb regulations for these two blocks are limited to 90-minute street cleaning rules (twice a week for both sides of the street). Due to the changes of the street grid in this section of 124<sup>th</sup> Street, the street operates in the westbound direction between Lenox and Fifth Avenues.
- On both sides of the street from Madison to Second Avenues, “No Parking” signs exist from 7:00AM to 7:00PM. “No Standing” including “No Standing Anytime” is in effect from 4:00PM to 7:00PM on weekdays. These rules are in place to increase capacity to the Triborough Bridge for those exiting the Manhattan traffic.
- Second to First Avenue: This one block of 124<sup>th</sup> Street is regulated by 90-minute street cleaning rules twice a week for both sides of the street.

## 126<sup>th</sup> Street (Broadway to First Avenue) Curb Use Regulations

- On 126<sup>th</sup> Street which is one way westbound from First Avenue to Broadway, the curb use regulations range from street cleaning rules, “No Parking/No Standing” and various governmental parking permit zones. The western and central portions of 126<sup>th</sup> Street are mostly residential with some government offices, back doors of commercial buildings, community facilities and parking lots. The eastern end of 126<sup>th</sup> Street is used for MTA-NYCT bus storage, employee parking with vacant lots.
- From Broadway to Frederick Douglass Boulevard: 90-minute street cleaning rules are in place (twice a week for both sides of the street).
- The blocks from Frederick Douglass Boulevard to Lenox Avenue have “No Parking” signs from 7:00AM to 7:00PM on weekdays with some spots for official governmental permit zones on both sides of the street.
- Lenox to Second Avenues: Both sides of the street have “No Parking” signs from 7:00AM to 7:00PM and “No Standing” signs from 7:00AM to 10:00AM on weekdays.
- From Second to First Avenues, the south side of the street has 90-minute street cleaning regulations (twice a week) and the north side is a continuous bus stop and bus layover area which is near the NYC Transit’s 126<sup>th</sup> Street Bus Depot.

The following summarizes the curb regulations along the avenues:

- On Marginal Street (from St. Clair Place to West 133<sup>rd</sup> Street) the curb use regulations are: “No Standing Anytime” on both sides of the street.
- Twelfth Avenue (under Riverside Drive viaduct) from St. Clair Place to West 133<sup>rd</sup> Street has curb regulations for both sides of the avenue. They are one and half hour street cleaning regulations, except for the east side between West 132<sup>nd</sup> and 133<sup>rd</sup> Streets where there are “No Standing Anytime” signs.
- The curb regulations on Broadway between LaSalle and West 133<sup>rd</sup> Streets on the west side of the street south of 125<sup>th</sup> Street include bus stops, “No standing” regulations and truck loading zones. On this street north of 125<sup>th</sup> Street up to 126<sup>th</sup> Street are one hour metered-parking spaces with one and a half hour street cleaning regulations. The east side of Broadway has street cleaning regulations. Under the Broadway elevated subway tracks parking is allowed including street cleaning regulations from LaSalle

Street to West 125th Street. However, north of West 126<sup>th</sup> Street parking is limited to authorized parking.

- Amsterdam Avenue from LaSalle to West 133<sup>rd</sup> Streets on both sides has one and a half hour street cleaning regulations where one block allows one-hour metered parking.
- Morningside Ave (Covent Ave) and Manhattan Avenue (West 122<sup>nd</sup> to 124<sup>th</sup> streets) the curb regulations are one and half hour street cleaning regulations.
- St. Nicholas Avenue curb regulations on the west side are restricted to authorized parking, “No Standing - Bus Stop”, one hour metered parking and one and a half hour street cleaning regulations. On the east side of the avenue parking regulations are restricted to authorized parking, “No Standing - Bus Stop”, taxi stand, two hour metered parking and one and a half hour street cleaning regulations.
- The curb regulations on Frederick Douglass Boulevard are limited to one and a half hour street cleaning rules, two-hour metered parking, authorized parking zones and a small truck loading zone on the west side (between West 124<sup>th</sup> and 125<sup>th</sup> Streets).
- On the west side of Adam Clayton Powell, Jr. Boulevard are one and a half hour street cleaning regulations and one-hour metered parking. This applies to one block north and to one block south of West 125<sup>th</sup> Street. The east side of the boulevard has curb regulations which are: street cleaning rules, one-hour metered parking, authorized parking and “No Parking Anytime”. During the evening peak hours “No Standing” regulations are in effect (weekdays: 4:00 to 7:00 PM) from West 122<sup>nd</sup> to 125<sup>th</sup> Streets.
- On the west side of Lenox Avenue, the curb regulations are limited to: “No Standing” and “No Parking Anytime”, street cleaning rules and one-hour metered parking. The east side regulations are the same, except that during the evening peak hours the curb lane “No Standing” regulations are enforced from West 123<sup>rd</sup> to 125<sup>th</sup> Streets (except on Sundays: 4:00 to 7:00 PM).
- The parking rules for Fifth Avenue/Mt Morris Park West are limited to one and a half hour street cleaning regulations. However, two blocks facing south and one block face north of 125<sup>th</sup> Street are truck loading zones (weekdays: 7:00 to 10:00 AM).
- Both sides of Madison Avenue provide for one and a half hour street cleaning regulations. The west side of the avenue between East 122<sup>nd</sup> and 124<sup>th</sup> Streets permits angle parking.

- Park Avenue parking regulations are split between one and a half hour street cleaning regulations and “No Parking Anytime” signs which are located on each side of the avenue. There is no public parking under the Metro-North Railroad elevated structure.
- Street cleaning rules, “No Parking” (7:00AM to 7:00 PM) and “No Parking-Bus Stop” (for two blocks) are the curb regulations on the west side of Lexington Avenue. The regulations on the east side of Lexington Avenue are: street cleaning rules and truck loading zones from East 125<sup>th</sup> to 126<sup>th</sup> Streets.
- On the west side of Third Avenue the curb use regulations permit one hour metered parking and provide for one and a half hour street cleaning regulations. In addition, there is one block with restricted authorized parking. The east side of the avenue also has street cleaning rules, except for one block from East 125<sup>th</sup> and 126<sup>th</sup> Streets where there is a truck loading zone (weekdays: 7:00 AM to 7:00 PM).
- On the west side of Second Avenue from East 122<sup>nd</sup> to East 125<sup>th</sup> Streets, “No Parking” rules are in effect during the morning rush hours (weekdays: 7:00 to 10:00 AM). On the east side of the avenue street cleaning regulations are to be observed until the evening rush hours when “No Parking” regulations are enforced (weekdays: 4:00 to 7:00 PM). North of East 125<sup>th</sup> Street all curb regulations on Second Avenue are: “No Standing Anytime”.
- On the west side of First Avenue from East 122<sup>nd</sup> to East 124<sup>th</sup> Streets are street cleaning regulations. Other regulations on this avenue are “No Parking” or “No Standing Anytime” up to the Willis Avenue Bridge ramp. The service roads to the bridge ramp also have street cleaning signs (on the west side). The east side of the service roads has “No Standing Anytime” signs.

### **On Street Utilization/Demand**

Observation of on-street parking utilization along 125<sup>th</sup> Street, along the streets parallel to 125<sup>th</sup> Street (124<sup>th</sup> and 126<sup>th</sup> Streets), and along the north/south avenues, indicate that there are very few empty parking spaces. Even before the New York City Department of Sanitation is done with the task of picking up the garbage and cleaning the street at the curb, vehicles are already quickly filling up the parking spaces. Metered parking spaces are continuously being filled up as soon as a vehicle leaves.

### **Double Parking Issue**

Double parking on 125<sup>th</sup> Street is a problem in the core shopping area of 125<sup>th</sup> Street (from St. Nicholas to Fifth Avenues). The metered parking spaces along 125<sup>th</sup> Street have frequent turnover (except when people feed the meters). The cause of double parking on 125<sup>th</sup> Street is due to the limited supply of on street parking spaces relative to the demand. Even though there are several public parking facilities within a block of 125<sup>th</sup> Street, private vehicles tend to double park on 125<sup>th</sup> Street to make quick purchases, rather than spend additional time and money to park off-street. There is an absence of loading/unloading zones along 125<sup>th</sup> Street for commercial deliveries. In addition, very few buildings have a rear or side door for receiving deliveries, while many stores along 125<sup>th</sup> Street receive goods via large trucks. The building entrances on 125<sup>th</sup> Street are the only available option for deliveries.

DRAFT

**Exhibit 6-3a**

**Curb Use Regulations**

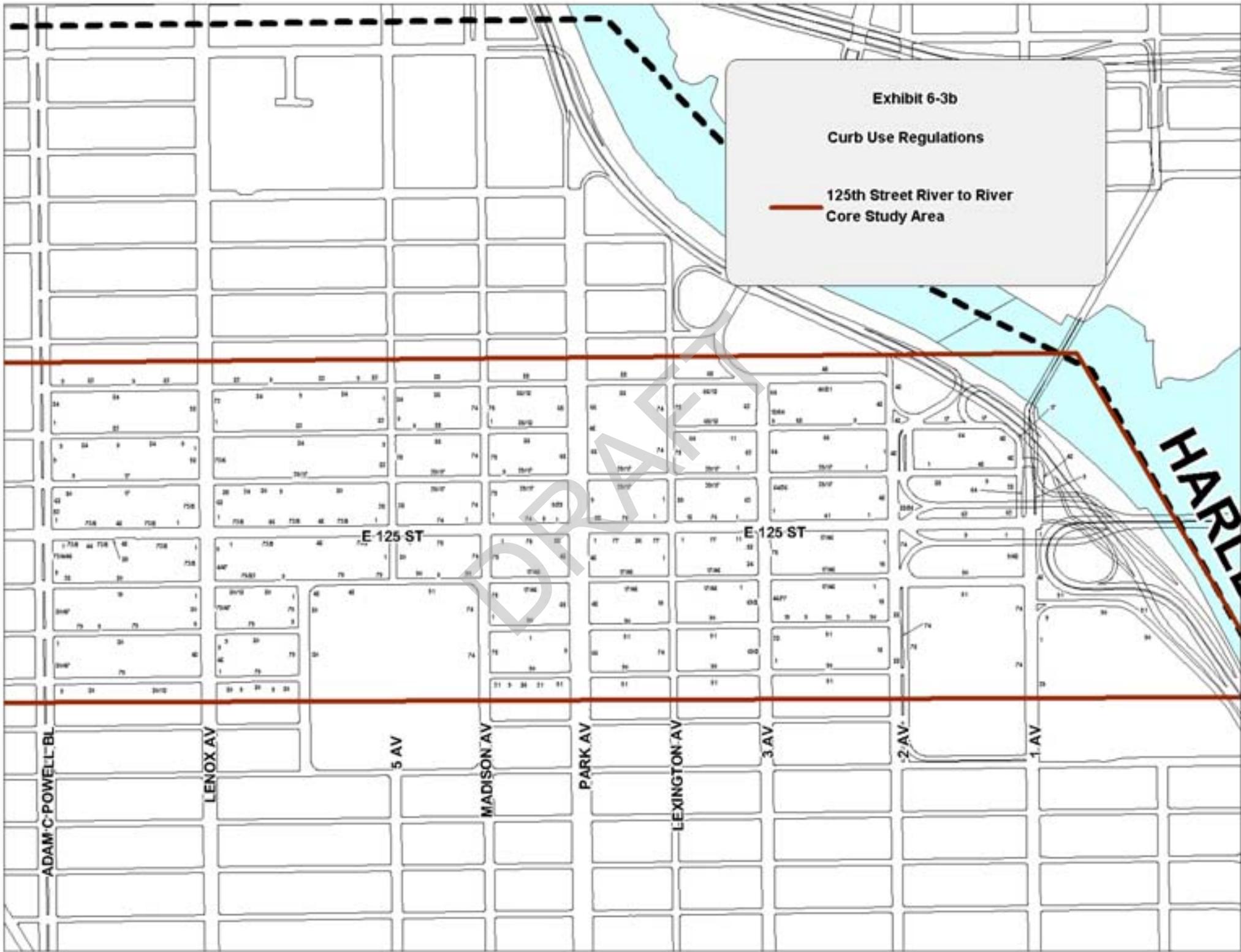
**125th Street River to River  
Core Study Area**



Exhibit 6-3b

Curb Use Regulations

125th Street River to River  
Core Study Area



**Table 6-3: On-Street Curb Regulations Key**

1	Bus Stop			47	NS	400p-700p	xSunday
2	1 Hour Meter	800a-700p	xSunday	48	No Standing Anytime		
3	1 Hour Meter	830a-700p	xSunday	49	NSAT	700a-700p	Mon-Fri
4	1 Hour Meter	900a-400p	xSunday	50	NSAT xAuth Bus		
5	1 Hour Meter	900a-700p	xSunday	51	NSAT xDOH	800a-500p	Mon-Fri
6	1 Hour Meter	900a-1000p	xSunday	52	NSAT xFDNY		
7	2 Hour Meter	900a-700p	xSunday	53	NSAT x Harlem Bus Tours		
8	2 Hour Meter	1000a-700p	xSunday	54	NSAT xNYPress		
9	No Parking Anytime			55	NSAT xMOC		
10	NPAT xDPR			56	NSAT xNYPD		
11	NP xDMV	700a-700p	Mon-Fri	57	NSAT xTaxi		
12	NP xDOE	700a-400p	Sch Dys	58	NSAT xTaxi Stand		
13	NP xDOE	700a-700p	Sch Dys	59	NSAT x Truck L/UL		
14	NP xFac Vech	700a-400p		60	NSAT x Truck L/UL	700a-300p	xSunday
15	NP	700a-1000a	Mon-Fri	61	NSAT x Truck L/UL	700a-700p	Mon-Fri
16	NP	700a-1000a	xSunday	62	NSAT xUS Congress		
17	NP	700a-700p	Mon-Fri	63	SCR	430a-600a	Mon&Thu
18	NP	700a-700p	xSunday	64	SCR	430a-600a	Tue&Fri
19	NP	800a-600p	Mon-Fri	65	SCR	530a-700a	Mon&Thu
20	NP	800a-600p	xSunday	66	SCR	530a-700a	Tue&Fri
21	NP	1000a-400p	Mon-Fri	67	SCR	730a-800a	Mon&Thu
22	NP	400p-700p	Mon-Fri	68	SCR	730a-800a	Tue&Fri
23	NS Bus Layover	700a-700p	Sunday	69	SCR	730a-800a	xSunday
24	NS Fire Zone			70	SCR	800a-830a	Mon&Thu
25	NS xACS	700a-700p	Mon-Fri	71	SCR	800a-830a	Tue&Fri
26	NS xAmbulete			72	SCR	800a-830a	xSunday
27	NS xAmbulete	700a-700p	Mon-Fri	73	SCR	800a-900a	xSunday
28	NS xAmbulete	800a-600p	Mon-Fri	74	SCR	800a-930a	Mon&Thu
29	NS xAmbulete	800a-800p	xSunday	75	SCR	800a-930a	Tue&Fri
30	NS xConul/Diplomat			76	SCR	830a-900a	Mon&Thu
31	NS xDr Vech			77	SCR	830a-900a	Tue&Fri
32	NS xDr Vech	800a-600p	Mon-Fri	78	SCR	830a-900a	xSunday
33	NS xHPD	700a-700p	Mon-Fri	79	SCR	830a-1000a	Mon&Thu
34	NS xNYS Liquor Auth	700a-700p	Mon-Fri	80	SCR	830a-1000a	Tue&Fri
35	NS xTruck L/UL	700a-1000a	Mon-Fri	81	SCR	900a-1030a	Mon&Thu
36	NS xTruck L/UL	700a-700p	Mon-Fri	82	SCR	900a-1030a	Tue&Fri
37	NS xTruck L/UL	700a-700p	xSunday	83	SCR	930a-1130a	Mon&Thu
38	NS xTruck L/UL	800a-600p	Mon-Fri	84	SCR	930a-1130a	Tue&Fri
39	NS	700a-1000a	Mon-Fri	85	SCR	1000a-1130a	Mon&Thu
40	NS	7-10a&4-7p	Mon-Fri	86	SCR	1000a-1130a	Tue&Fri
41	NS	700a-1000a	xSunday	87	SCR	1100a-1230p	Mon&Thu
42	NS	700a-400p	Mon-Fri	88	SCR	1100a-1230p	Tue&Fri
43	NS	700a-400p	Sch Dys	89	SCR	1100a-1230p	Wednesday
44	NS	700a-700p	All Days	90	SCR	1130a-100p	Mon&Thu
45	NS	700a-700p	Mon-Fri	91	SCR	1130a-100p	Tue&Fri
46	NS	400p-700p	Mon-Fri	92	No Signage		

Notes: NP(AT)-No Parking (Anytime); NS(AT)-No Standing (Anytime); SCR-Street Cleaning Regulations

## **7.0 PEDESTRIAN AND BICYCLE ANALYSIS**

### **7.1 Pedestrian Level of Service Analysis**

This section of the analysis will determine and measure existing pedestrian volumes, pedestrian flow patterns and level of service. The pedestrian analysis includes the capacity of sidewalks, intersection corners (where pedestrians queue for a green light, enabling them to cross the street), and crosswalks.

Pedestrian counts were conducted in October of 2003 at 13 locations selected along the major pedestrian corridors in the study area. The criteria used to select these locations were based on:

- a. The level of pedestrian activity on the sidewalks generated by the type of land use in the adjacent area such as major employment centers, major institutions, commercial/retail activity, large residential developments.
- b. The location of major subway stations and bus transfer stops.

The locations are:

- St Nicholas Avenue and 135th Street
- Adam C. Powell Boulevard and 135th Street
- Lenox Avenue and 135th Street
- Amsterdam Avenue and 138th Street
- St Nicholas Avenue and 125th Street
- Adam C. Powell Boulevard and 125th Street
- Lenox Avenue and 125th Street
- Park Avenue and 125th Street
- Lexington Avenue and 125th Street
- Broadway and 116th Street
- Amsterdam Avenue and 116th Street
- Lenox Avenue and 116th Street
- Lexington Avenue and 116th Street

## Level of Service Analysis and Methodology

Pedestrian volumes for the LOS analysis were collected in 15-minute increments during the peak hours of the day: in the morning (7:45 - 8:45 AM), midday (12:15 - 1:15PM) and in the evening (4:45 - 5:45PM).

The highest 15-minute volumes were counted at Lexington Avenue and 125<sup>th</sup> Street, Lexington and 116<sup>th</sup> Street, Broadway and 116<sup>th</sup> Street, Lenox Avenue and 125<sup>th</sup> Street and St Nicholas Avenue and 125<sup>th</sup> Street. (see details in Table 7-2).

Lexington Avenue and 125<sup>th</sup> Street had the highest 15-minute volumes at the northwest corner in the morning with 437 pedestrians on Lexington Avenue and 380 pedestrians on 125<sup>th</sup> Street. This includes the number of subway and bus riders using the walkway.

The pedestrian level of service (LOS) analysis was done by applying the methodologies presented in the Highway Capacity Manual Software “HiCAP 2000-US Customary Unit Version”. The pedestrian LOS is measured as the pedestrian flow rate per minute per foot of width (p/min/ft). This indicates the quality of pedestrian movement and comfort, and is defined in a density-comfort relationship reported in Table 7-1. The level of service on street corners and crosswalks is measured in terms of square feet of space per pedestrian, as indicated in Table 7-1.

**Table 7-1: Level of Service Definitions for Pedestrians**

LOS	Description	Space (ft <sup>2</sup> /p)	Flow Rate (p/min/ft)	Speed (ft/s)	v/c Ratio
A	Unrestricted	> 60	< or = 5	> 4.25	< or = 0.21
B	Slightly restricted	> 40-60	> 5-7	> 4.17-4.25	> 0.21-0.31
C	Restricted but fluid	> 24-40	> 7-10	> 4.00-4.17	> 0.31-0.44
D	Restricted; necessary to continuously alter walking stride and direction	> 15-24	> 10-15	> 3.75-4.00	> 0.44-0.65
E	Severely restricted	> 8-15	> 15-23	> 2.50-3.75	> 0.65-1.0
F	Forward progress only by shuffling; no reverse movement possible	< or = 8	variable	< or = 2.50	variable

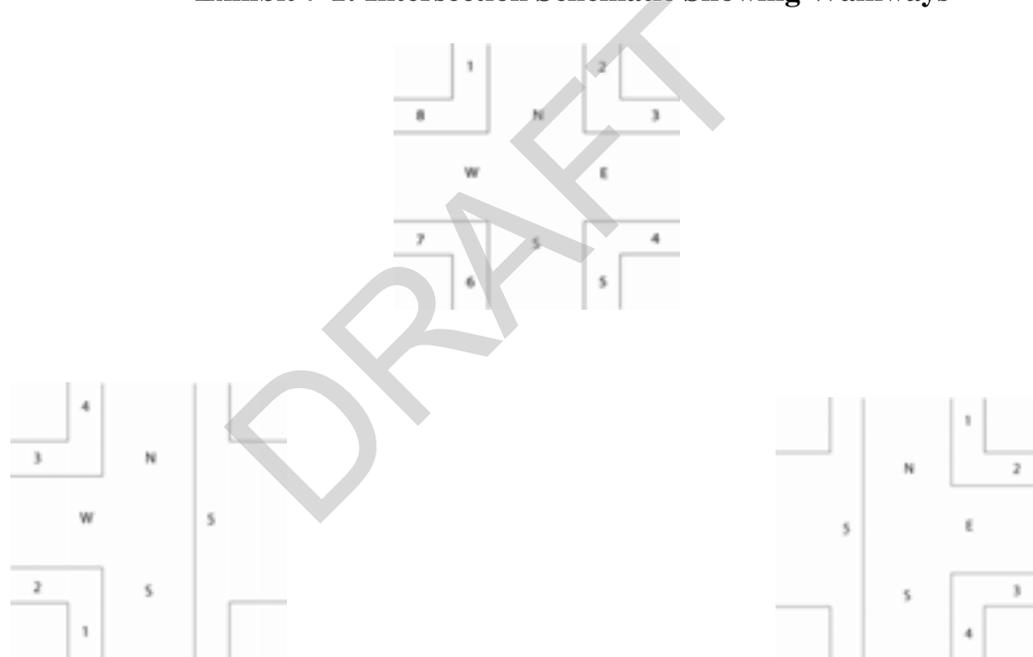
Source: Highway Capacity Manual, Transportation Research Board, National Research Council, Washington, D.C. 2000

A. Sidewalk Analysis

The sidewalk midblock analysis determines both the walkway's average flow rate LOS as well as the platoon LOS, which usually occurs when transit vehicles release a large group of pedestrians in a short period of time. Exhibit 7-1 below is a schematic diagram showing the numbering system for the analyzed location or walkways. The T-shaped intersections have a different numbering system (see other two figures below).

According to the LOS analysis that was done for the sidewalks of the 13 locations mentioned previously, these facilities operate at LOS A during all three peak periods. Table 7-2 shows a summary of the LOS results.

**Exhibit 7-1: Intersection Schematic Showing Walkways**



Intersection Schematic for:  
Broadway/116<sup>th</sup> Street  
Amsterdam Avenue/138<sup>th</sup> Street

Intersection Schematic for:  
Amsterdam Avenue/116<sup>th</sup> Street  
St Nicholas Avenue/135<sup>th</sup> Street

**Table 7-2: Sidewalks Level of Service (1 of 4)**

Intersection	Walkway	AM				MD			PM		
		15 Min Vol. Two-Way	Effective Walkway Width	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate	
				p/m/f	LOS		p/m/f	LOS		p/m/f	LOS
St Nicholas Avenue @ 135th Street (T-Shape Intersection)	1	60	20	0.2	A	34	0.1	A	20	0.1	A
	2	76	20	0.3	A	33	0.1	A	34	0.1	A
	3	77	20	0.3	A	26	0.1	A	19	0.1	A
	4	72	20	0.2	A	31	0.1	A	14	0	A
	5	199	20	0.7	A	93	0.3	A	133	0.4	A
AC Powell Boulevard @ 135th Street	1	41	25	0.1	A	41	0.1	A	20	0.1	A
	2	54	25	0.1	A	27	0.1	A	42	0.1	A
	3	88	20	0.3	A	52	0.2	A	15	0.1	A
	4	31	20	0.1	A	21	0.1	A	13	0	A
	5	68	25	0.2	A	69	0.2	A	51	0.1	A
	6	60	25	0.2	A	10	0	A	24	0.1	A
	7	23	20	0.1	A	28	0.1	A	28	0.1	A
	8	48	20	0.2	A	26	0.1	A	34	0.1	A
Lenox Avenue @ 135th Street	1	139	35	0.3	A	77	0.1	A	95	0.2	A
	2	209	35	0.4	A	337	0.6	A	323	0.6	A
	3	95	20	0.3	A	77	0.3	A	65	0.2	A
	4	145	20	0.5	A	115	0.4	A	133	0.4	A
	5	104	35	0.2	A	196	0.4	A	133	0.3	A
	6	157	35	0.3	A	114	0.2	A	72	0.1	A
	7	37	20	0.1	A	69	0.2	A	50	0.2	A
	8	69	20	0.2	A	33	0.1	A	52	0.2	A
Amsterdam Avenue @138th Street (T-Shape Intersection)	1	38	20	0.1	A	26	0.1	A	59	0.2	A
	2	76	13	0.4	A	125	0.6	A	143	0.7	A
	3	12	13	0.1	A	93	0.5	A	26	0.1	A
	4	92	20	0.3	A	70	0.2	A	67	0.2	A
	5	71	20	0.2	A	180	0.6	A	152	0.5	A

**Table 7-2: Sidewalks Level of Service (2 of 4)**

Intersection	Walkway	AM				MD			PM		
		15 Min Vol. Two-Way	Effective Walkway Width	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate	
				p/m/f	LOS		p/m/f	LOS		p/m/f	LOS
St Nicholas Avenue @ 125th Street	1	143	20	0.5	A	48	0.2	A	132	0.4	A
	2	132	20	0.4	A	133	0.4	A	275	0.9	A
	3	134	15	0.6	A	168	0.7	A	304	1.4	A
	4	164	15	0.7	A	237	1.1	A	378	1.7	A
	5	187	20	0.6	A	189	0.6	A	290	1	A
	6	127	20	0.4	A	94	0.3	A	148	0.5	A
	7	118	15	0.5	A	162	0.7	A	163	0.7	A
	8	149	15	0.7	A	148	0.7	A	175	0.8	A
AC Powell Boulevard @ 125th Street	1	68	25	0.2	A	61	0.2	A	91	0.2	A
	2	29	25	0.1	A	55	0.1	A	49	0.1	A
	3	47	15	0.2	A	130	0.6	A	149	0.7	A
	4	79	15	0.4	A	165	0.7	A	217	1	A
	5	113	25	0.3	A	90	0.2	A	40	0.1	A
	6	100	25	0.3	A	47	0.1	A	89	0.2	A
	7	92	15	0.4	A	243	1.1	A	200	0.9	A
	8	184	15	0.8	A	187	0.8	A	285	1.3	A
Lenox Avenue @ 125th Street	1	252	35	0.5	A	57	0.1	A	242	0.5	A
	2	150	35	0.3	A	211	0.4	A	216	0.4	A
	3	194	15	0.9	A	229	1	A	310	1.4	A
	4	140	15	0.6	A	277	1.2	A	183	0.8	A
	5	194	35	0.4	A	112	0.2	A	239	0.5	A
	6	55	35	0.1	A	151	0.3	A	128	0.2	A
	7	100	15	0.4	A	194	0.9	A	363	1.6	A
	8	177	15	0.8	A	210	0.9	A	308	1.4	A

**Table 7-2: Sidewalks Level of Service (3 of 4)**

Intersection	Walkway	AM				MD			PM		
		15 Min Vol. Two-Way	Effective Walkway Width	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate	
				p/m/f	LOS		p/m/f	LOS		p/m/f	LOS
Park Avenue @ 125 <sup>th</sup> Street	1	23	12	0.1	A	24	0.1	A	22	0.1	A
	2	151	12	0.8	A	158	0.9	A	59	0.3	A
	3	273	20	0.9	A	245	0.8	A	231	0.8	A
	4	237	15	1.1	A	165	0.7	A	243	1.1	A
	5	21	12	0.1	A	54	0.2	A	39	0.2	A
	6	30	12	0.1	A	22	0.1	A	16	0.1	A
	7	110	20	0.4	A	147	0.5	A	166	0.6	A
	8	103	20	0.3	A	145	0.5	A	162	0.5	A
Lexington Avenue @ 125 <sup>th</sup> Street	1	437	12.5	2.3	A	183	1	A	314	1.7	A
	2	219	12.5	1.2	A	212	1.1	A	201	1.1	A
	3	122	12	0.7	A	171	1	A	109	0.6	A
	4	235	20	0.8	A	275	0.9	A	327	1.1	A
	5	127	12.5	0.7	A	164	0.9	A	123	0.7	A
	6	316	12.5	1.7	A	216	1.2	A	356	1.9	A
	7	285	20	1	A	201	0.7	A	308	1	A
	8	380	20	1.3	A	350	1.2	A	345	1.2	A
Broadway @ 116 <sup>th</sup> Street (T-Shape Intersection)	1	305	24	0.8	A	353	1	A	373	1	A
	2	48	20	0.2	A	110	0.4	A	89	0.3	A
	3	84	20	0.3	A	80	0.3	A	85	0.3	A
	4	346	24	1	A	278	0.8	A	320	0.9	A
	5	562	18	2.1	A	830	3.1	A	889	3.3	A
Amsterdam Avenue @ 116 <sup>th</sup> Street (T-Shape Intersection)	1	35	20	0.1	A	128	0.4	A	116	0.4	A
	2	36	20	0.1	A	384	1.3	A	110	0.4	A
	3	49	20	0.2	A	63	0.2	A	46	0.2	A
	4	94	20	0.3	A	175	0.6	A	122	0.4	A
	5	293	20	1	A	484	1.6	A	483	1.6	A

**Table 7-2: Sidewalks Level of Service (4 of 4)**

Intersection	Walkway	AM				MD			PM		
		15 Min Vol. Two-Way	Effective Walkway Width	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate		15 Min Vol.	Pedestrian Flow Rate	
				p/m/f	LOS		p/m/f	LOS		p/m/f	LOS
Lexington Avenue @ 116th Street	1	223	18.5	0.8	A	92	0.3	A	122	0.4	A
	2	76	18.5	0.3	A	114	0.4	A	105	0.4	A
	3	160	15	0.7	A	151	0.7	A	319	1.4	A
	4	192	15	0.9	A	196	0.9	A	242	1.1	A
	5	138	18.5	0.5	A	104	0.4	A	159	0.6	A
	6	195	18.5	0.7	A	155	0.6	A	199	0.7	A
	7	98	15	0.4	A	121	0.5	A	150	0.7	A
	8	83	15	0.4	A	102	0.5	A	90	0.4	A
Lenox Avenue @ 116th Street	1	149	35	0.3	A	80	0.2	A	90	0.2	A
	2	162	35	0.3	A	128	0.2	A	195	0.4	A
	3	57	15	0.3	A	72	0.3	A	96	0.4	A
	4	58	15	0.3	A	76	0.3	A	122	0.5	A
	5	98	35	0.2	A	50	0.1	A	124	0.2	A
	6	87	35	0.2	A	55	0.1	A	117	0.2	A
	7	66	15	0.3	A	76	0.3	A	93	0.4	A
	8	89	15	0.4	A	100	0.4	A	129	0.6	A

## B. Corner Analysis

The analysis of street corners is more complex as it involves sidewalk flows, pedestrian crossings, and other queued pedestrians waiting for the traffic signal to change. Analysis of the existing corners indicates that all corners operate at LOS A for all peak periods as shown in Table 7-3 below.

**Table 7-3: Corners Level of Service**

Intersection	Corner	AM		MD		PM	
		SF/P	LOS	SF/P	LOS	SF/P	LOS
St Nicholas Avenue @ 135th Street (T-Shape Intersection)	Northeast	466.6	A	1027.4	A	827	A
	Southeast	520.2	A	1400.6	A	958.8	A
AC Powell Boulevard @ 135th Street	Northwest	684.3	A	1076.2	A	1822.5	A
	Northeast	524	A	1116.7	A	1145.1	A
	Southeast	513.4	A	1253	A	966.4	A
	Southwest	721.3	A	1686.7	A	1628.7	A
Lenox Avenue @ 135th Street	Northwest	1215.7	A	1215.3	A	1175.8	A
	Northeast	765.9	A	527	A	644.1	A
	Southeast	634.5	A	481.6	A	603.8	A
	Southwest	755.5	A	891.4	A	1055.9	A
Amsterdam Avenue @ 138th Street (T-Shape Intersection)	Northwest	536.7	A	370.3	A	429.2	A
	Southwest	322.8	A	254.9	A	247.8	A
St Nicholas Avenue @ 125th Street	Northwest	307.2	A	304.1	A	267.7	A
	Northeast	333.1	A	234.6	A	168.3	A
	Southeast	286.3	A	208.9	A	147.4	A
	Southwest	410.9	A	342.4	A	248.2	A
AC Powell Boulevard @ 125th Street	Northwest	311.6	A	273.7	A	267	A
	Northeast	448.8	A	329.9	A	296.2	A
	Southeast	681.2	A	242.6	A	220.7	A
	Southwest	552.6	A	234.3	A	256.8	A
Lenox Avenue @ 125th Street	Northwest	443.9	A	478.8	A	290.7	A
	Northeast	419.1	A	408.2	A	313.4	A
	Southeast	466.1	A	329.4	A	338.1	A
	Southwest	643.6	A	354	A	364.5	A
Park Avenue @ 125th Street	Northwest	190.6	A	200.5	A	212.9	A
	Northeast	129.7	A	129.1	A	179.9	A
	Southeast	209.6	A	188.3	A	136	A
	Southwest	246.7	A	235.1	A	147.3	A
Lexington Avenue @ 125th Street	Northwest	122.8	A	221.5	A	156.5	A
	Northeast	212.9	A	189.6	A	207.7	A
	Southeast	218	A	204	A	185.5	A
	Southwest	142.1	A	202.3	A	142.5	A
Broadway @ 116th Street (T-Shape Intersection)	Northwest	249.7	A	198	A	196.4	A
	Southwest	231.5	A	161.5	A	188.3	A
Amsterdam Avenue @ 116th Street (T-Shape Intersection)	Northeast	862.9	A	173.6	A	282.7	A
	Southeast	776.9	A	226.9	A	412.3	A

Intersection	Corner	AM		MD		PM	
		SF/P	LOS	SF/P	LOS	SF/P	LOS
Lexington Avenue @ 116th Street	Northwest	199.5	A	219.1	A	168.8	A
	Northeast	210.4	A	177.7	A	140.3	A
	Southeast	197.2	A	192	A	142.9	A
	Southwest	157.2	A	228.8	A	168.5	A
Lenox Avenue @116th Street	Northwest	946.1	A	869	A	622.5	A
	Northeast	805.8	A	738.6	A	516.1	A
	Southeast	878.2	A	840.5	A	571.7	A
	Southwest	1030.5	A	900.3	A	678.8	A

### C. Crosswalk Analysis

Similar to the corner analysis, the crosswalk analysis is more complex than the sidewalk analysis, taking into account the sidewalk flows, pedestrian crossings, and other queued pedestrians waiting for the traffic signal to change. Analysis of the existing crosswalks indicates that they are operating at LOS A during the three peak periods, except for two crosswalks which operate at LOS B. They are: the south crosswalk at the intersection of Park Avenue and 125<sup>th</sup> Street (evening peak period) and the south crosswalk at the intersection of Broadway and 116<sup>th</sup> Street (midday peak period). See Table 7-4 below.

**Table 7-4: Crosswalks Level of Service**

Intersection		AM		MD		PM	
		Crosswalk Space		Crosswalk Space		Crosswalk Space	
		SF/P	LOS	SF/P	LOS	SF/P	LOS
St Nicholas Avenue @ 135th Street (T-Shape Intersection)	North	133.66	A	316.73	A	219.78	A
	East	962.24	A	2753.56	A	2557.18	A
	South	156.87	A	417.32	A	325.74	A
AC Powell Boulevard @ 135th Street	North	261.39	A	407.33	A	909.35	A
	East	327.01	A	934.54	A	878.68	A
	South	282.45	A	608.73	A	719.38	A
	West	447.81	A	1094.30	A	1608.23	A
Lenox Avenue @ 135th Street	North	245.99	A	495.38	A	258.19	A
	East	342.40	A	134.55	A	220.01	A
	South	141.41	A	308.60	A	239.29	A
	West	550.21	A	370.19	A	609.80	A
Amsterdam Avenue @ 138th Street (T-Shape Intersection)	North	1307.28	A	143.64	A	253.27	A
	South	202.87	A	88.70	A	107.07	A
	West	507.42	A	1145.60	A	717.31	A
St Nicholas Avenue @ 125th Street	North	255.43	A	131.18	A	180.27	A
	East	735.69	A	355.07	A	298.03	A
	South	382.17	A	191.50	A	153.53	A
	West	596.65	A	527.19	A	424.30	A
AC Powell Boulevard @ 125th Street	North	122.63	A	111.62	A	98.99	A
	East	1601.58	A	410.18	A	383.06	A
	South	339.33	A	90.92	A	95.95	A
	West	402.72	A	288.68	A	307.43	A
Lenox Avenue @ 125th Street	North	177.29	A	153.91	A	82.37	A
	East	245.35	A	188.81	A	205.60	A
	South	215.34	A	101.80	A	126.47	A
	West	363.56	A	234.86	A	235.27	A
Park Avenue @ 125th Street	North	64.89	A	71.69	A	85.21	A
	East	303.36	A	198.82	A	202.16	A
	South	85.64	A	89.46	A	54.00	B
	West	694.02	A	550.56	A	303.34	A
Lexington Avenue @ 125th Street	North	237.42	A	171.95	A	188.45	A
	East	186.32	A	205.38	A	174.75	A
	South	164.89	A	164.96	A	184.99	A
	West	211.06	A	300.40	A	186.48	A
Broadway @ 116th Street (T-Shape Intersection)	North	313.25	A	142.09	A	142.99	A
	South	196.53	A	51.12	B	83.27	A
	West	128.89	A	127.95	A	125.56	A
Amsterdam Avenue @ 116th Street (T-Shape Intersection)	North	283.60	A	84.88	A	98.26	A
	East	835.28	A	106.84	A	258.29	A
	South	225.81	A	173.45	A	176.47	A
Lexington Avenue @ 116th Street	North	146.64	A	127.44	A	171.52	A
	East	217.95	A	179.04	A	158.83	A
	South	110.99	A	146.59	A	91.41	A
	West	211.07	A	269.92	A	256.60	A
Lenox Avenue @ 116th Street	North	134.73	A	119.05	A	77.90	A
	East	402.94	A	431.33	A	265.51	A
	South	145.06	A	121.08	A	94.40	A

## 7.2 Pedestrian Corridors and Volumes

Pedestrian corridors in the study area have been identified and they are in general linked to subway stations and major bus transfer points, employment centers, retail/commercial centers and high density residential areas. The corridors within the study area are either along a street or an avenue and have 15-minute peak period volumes of 20 pedestrians or more.

These corridors are: 125th Street, sections of 116th Street, 135th Street and 138<sup>th</sup> Street which are east-west streets. Other corridors, north-south avenues, are on Lenox Avenue, Adam C. Powell Boulevard, sections of Broadway, Amsterdam Avenue and Lexington Avenue (See Exhibit 7-2).

125th Street is a major corridor for pedestrian traffic. Most of the pedestrians on 125<sup>th</sup> Street are concentrated between Morningside Avenue and Third Avenue where the commercial/retail activities such as clothing chain stores, big box retail stores, fast food restaurants, local restaurants, etc. are concentrated. According to a sample of pedestrian volumes collected during the three peak periods of a typical weekday, 15-minute pedestrian peak volumes range on average from 100 to 300 in the core area of 125<sup>th</sup> Street (see Table 7-5 below).

**Table 7-5: 15-Minute Peak Pedestrian Volumes on 125<sup>th</sup> Street**

Locations	AM Peak Period		MD Peak Period		PM Peak Period	
	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk
West of St Nicholas Ave.	149	118	148	162	175	163
East of St Nicholas Ave.	134	164	168	237	304	378
West of AC Powell Blvd.	184	92	187	243	285	200
East of AC Powell Blvd.	47	79	130	165	149	217
West of Lenox Ave.	177	100	210	194	308	363
East of Lenox Ave.	194	140	229	277	310	183
West of Park Ave.	103	110	145	147	162	166
East of Park Ave.	273	237	245	165	231	243
West of Lexington Ave.	380	285	350	201	345	308
East of Lexington Ave.	122	235	171	275	109	327

Other corridors considered as secondary pedestrian corridors are along avenues such as Lenox Avenue with a mixture of residential and commercial/retail activity (local stores, laundromats/dry cleaners, grocery stores, pharmacies, household items stores etc). 15-minute peak pedestrian volumes on these corridors range on average from 60 to 375 pedestrians. Parts of Lexington Avenue where there are major bus/subway transfer stations (125<sup>th</sup> and 116<sup>th</sup> Streets) also have this level of peak pedestrian volumes. Adam C. Powell Boulevard on the other hand has much lower volumes with 15 to 100 pedestrians on average per 15-minute peak, these are close to the volumes on the east-west streets, see Table 7-6a below.

**Table 7-6a: 15-Minute Pedestrian Peak Volumes on the Avenues**

Locations	AM Peak Period		MD Peak Period		PM Peak Period	
	West Sidewalk	East Sidewalk	West Sidewalk	East Sidewalk	West Sidewalk	East Sidewalk
Lenox Ave, north of 135th St	139	209	77	337	95	323
Lenox Ave, south of 135th St	157	104	114	196	72	133
Lenox Ave, north of 125th St	252	150	57	211	242	216
Lenox Ave, south of 125th St	55	194	151	112	128	239
Lenox Ave, north of 116th St	149	162	80	128	90	195
Lenox Ave, south of 116th St	87	98	55	50	117	124
AC Powell Blvd, north of 135th St	41	54	41	27	20	42
AC Powell Blvd, south of 135th St	60	68	10	69	24	51
AC Powell Blvd, north of 125th St	68	29	61	55	91	49
AC Powell Blvd, south of 125th St	100	113	47	90	89	40
Lexington Ave, north of 125th St	437	219	183	212	314	201
Lexington Ave, south of 125th St	316	127	216	164	356	123
Lexington Ave, north of 116th St	223	76	92	114	122	105
Lexington Ave, south of 116th St	195	138	155	104	199	159

The other east-west streets represent a third category of pedestrian corridors where 15-minute peak volumes range on average from 20 to 125 pedestrians, except on 116<sup>th</sup> Street at Lexington Avenue where 15-minute peak volumes are higher and reach 319 in the evening. The streets which fall under this category are 135<sup>th</sup> and 116<sup>th</sup> Streets. For more details see Table 7-6b.

**Table 7-6b: 15-Minute Peak Pedestrian Volumes on the Streets**

Locations	AM Peak Period		MD Peak Period		PM Peak Period	
	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk
135th St, west of Lenox Ave	69	37	33	69	52	50
135th St, east of Lenox Ave	95	145	77	115	65	133
135th St, west of AC Powell Blvd.	48	23	26	28	34	28
135th St, east of AC Powell Blvd.	88	31	52	21	15	13
116th St, west of Lenox Avenue	89	66	100	76	129	93
116th St, east of Lenox Avenue	57	58	72	76	96	122
116th St, west of Lexington Avenue	83	98	102	121	90	150
116th St, east of Lexington Avenue	160	192	151	196	319	242

Areas with major institutions such as universities and hospitals have on the east-west streets 15-minute peak sidewalk volumes that are close to the pedestrian volumes found in the third category of pedestrian corridors (except on 116<sup>th</sup> Street at Amsterdam Avenue where the volumes get to 384 pedestrians in the midday). On the avenues the 15-minute peak volumes are much higher with volumes reaching 889 pedestrians on Broadway at 116<sup>th</sup> Street. These institutions are located at 116<sup>th</sup> Street/Amsterdam Avenue/Broadway, 138<sup>th</sup> Street/Amsterdam Avenue and 135<sup>th</sup> Street/Lenox Avenue.

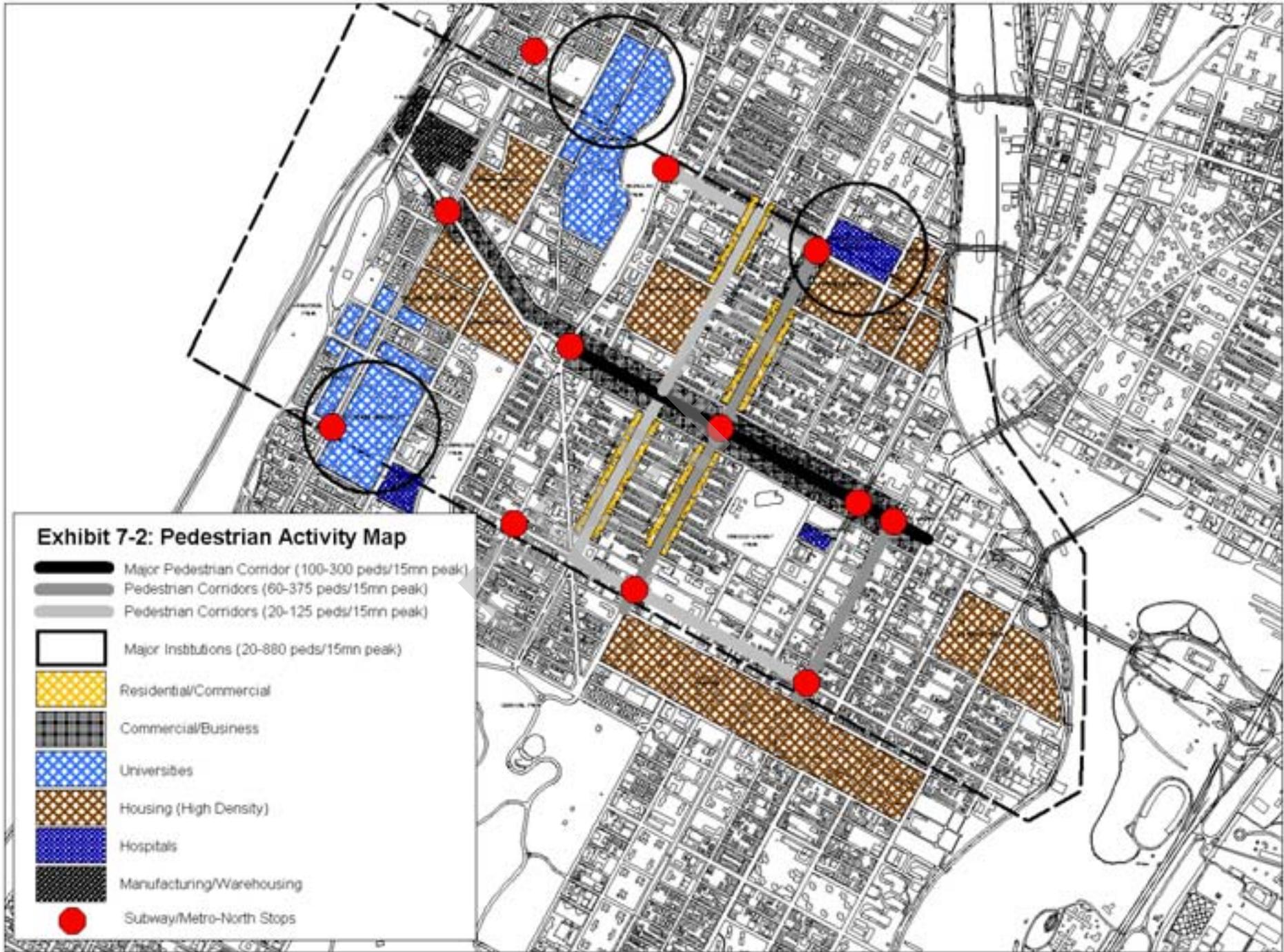
**Table 7-7a: 15-minute Peak Pedestrian Volumes near Major Institutions**

Locations	AM Peak Period		MD Peak Period		PM Peak Period	
	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk	North Sidewalk	South Sidewalk
116th St, west of Broadway	84	48	80	110	85	89
116th St, east of Amsterdam Avenue	36	49	384	63	110	46
138th St, west of Amsterdam	12	76	93	125	26	143
135th St, east of St Nicholas Avenue	76	77	33	26	34	19
135th St, west of Lenox Ave	69	37	33	69	52	50
135th St, east of Lenox Ave	95	145	77	115	65	133

**Table 7-7b: 15-minute Peak Pedestrian Volumes near Major Institutions**

Locations	AM Peak Period		MD Peak Period		PM Peak Period	
	West Sidewalk	East Sidewalk	West Sidewalk	East Sidewalk	West Sidewalk	East Sidewalk
Broadway, north of 116th St	346		278		320	
Broadway, south of 116th St	305	562	353	830	373	889
Amsterdam Ave, north of 116th St		35		128		116
Amsterdam Ave, south of 116th St	293	94	484	175	483	122
Amsterdam Ave, north of 138th St	92		70		67	
Amsterdam Ave, south of 138th St	38	71	26	180	59	152
St Nicholas Ave, north of 135th St		60		34		20
St Nicholas Ave, south of 135th St	199	72	93	31	133	14
Lenox Ave, north of 135th St	139	209	77	337	95	323
Lenox Ave, south of 135th St	157	104	114	196	72	133

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### **7.3 Quality of Pedestrian Environment**

The sidewalks, corners and crosswalks are the focus of the pedestrian analysis. In addition to the level of service analysis the walkways are surveyed and analyzed in terms of use and in terms of the quality of the pedestrian environment.

#### **A. Sidewalk Dimensions**

##### Along the Avenues

The walkways along the avenues within the study area are located in a section of Manhattan where the sidewalks are wide in general in comparison to other parts of Manhattan where the sidewalks are generally less than 20 feet wide.

The widths range from 20 to 25 feet in West Harlem. In the central area of Harlem they are even wider and go up to 35 feet in width on Lenox Avenue.

However, on Madison Avenue, Park Avenue and Third Avenue they are in general 13 to 15 feet wide and those on Lexington Avenue are 18.5 feet wide (See Appendix B).

##### Along the Streets

In general the widths of the east-west sidewalks are 13 to 15 feet wide. But a few of these sidewalks are much wider such as those on:

- 125<sup>th</sup> Street and most of 116<sup>th</sup> Street which measure 20 feet wide,
- 122<sup>nd</sup> Street is 19 feet wide west of Amsterdam Avenue, and
- part of 116<sup>th</sup> Street is 25 feet wide between Amsterdam Avenue and Morningside Drive.

#### **B. Use of Sidewalks**

In the study area street vendors take up sidewalk space with displays, however they are mainly concentrated along 125<sup>th</sup> Street between Morningside and Third Avenues. The highest number of vendors based on site visits done in April of 2004, tend to congregate on the south side of 125<sup>th</sup> Street between St Nicholas and Lenox Avenues. The sidewalks of 125<sup>th</sup> Street between Morningside and Third Avenues are 20 feet wide. The street vendors take up approximately 5 feet in width reducing the sidewalk width to 15 feet approximately. They are often located adjacent to the curb where a 5-foot strip of street furniture currently exists. However several

vendors setup in front of the retail stores reducing the effective sidewalk width at that particular location to 10 feet.

A different type of street vendor is located on 125<sup>th</sup> Street between Madison Avenue and Park Avenue. These vendors sell used items and clothing similar to what one would find at a yard sale and have their items displayed directly on the sidewalk. They usually take up more of the sidewalk space compared to the other street vendors (from 5 to 10 feet approximately which is about half the width of the sidewalk).

Street vendors are important to the street life and the experience of 125<sup>th</sup> Street however sufficient space must be made available for pedestrian circulation.



125<sup>th</sup> Street near Frederick Douglass Blvd



125<sup>th</sup> Street and Lenox Avenue

### **C. Use of Corners**

Some corners are cluttered with newspaper boxes and other street furniture such as trash cans etc. which can contribute to corner congestion and reduce the corner space available for circulation.

A survey was done at those corners where pedestrian volumes were counted and/or at corners near a subway station entrance/exit and a bus stop. The following corners were cluttered with some newspaper boxes or street furniture:

- 135<sup>th</sup> Street and Lenox Avenue- Northwest corner (clutter of newspaper boxes)
- Broadway and 125<sup>th</sup> Street – Northeast corner (clutter of newspaper boxes)

- St Nicholas Avenue and 125<sup>th</sup> Street – Northwest corner (newspaper stand placed adjacent to the subway entrance, reducing the sidewalk width of St Nicholas Avenue at the subway entrance to 4-5 feet)



Broadway and 125<sup>th</sup> Street – NE corner



St Nicholas Avenue and 125<sup>th</sup> Street



125<sup>th</sup> Street and Frederick D. Boulevard

Other locations have cluttered corners. They are:

- 125<sup>th</sup> Street and Amsterdam Avenue – Northwest corner (clutter of newspaper boxes),
- 125<sup>th</sup> Street and Frederick D. Boulevard – Northeast corner (clutter of newspaper boxes).

The following locations were found to have a grouping of newspaper boxes on the sidewalk; however, they were not blocking the pedestrian walkway and could be brought together into one centralized system. They are:

- 125<sup>th</sup> Street and Adam C. Powell Boulevard – On Adam C. Powell Boulevard, near the northeast corner,
- 125<sup>th</sup> Street and Park Avenue – South median, between the staircases that lead to the elevated Metro-North platform.



125<sup>th</sup> Street and Adam C. Powell Blvd

#### **D. Pedestrian Street Lighting**

In terms of street lighting for pedestrians, the core area of the 125<sup>th</sup> Street commercial corridor between Frederick D. Boulevard and Fifth Avenue has better lighting levels. The luminaries which are a mixture of “cobra heads” and type “BB- Brooklyn Bridge” are attached to the street lamp posts at about 14 feet high. Approximately six luminaries are placed on each side of the street on each block (blocks on average are 800 feet long).

However other sidewalks and/or the areas under the elevated structures listed below are less well lit:

- Henry Hudson Parkway (close to the waterfront);
- Amtrak Rail Lines (close to the waterfront);
- Riverside Drive (12th Avenue);
- IRT Elevated Subway Line (Broadway);
- MetroNorth Rail Line (Park Avenue); and
- West Harlem between Marginal Street and Broadway

## **E. Midblock Neckdowns**

### Description

Midblock crossings for pedestrians which include neckdowns (extension of sidewalk into the roadbed taking up parking space) exist on 125<sup>th</sup> Street between:

- Frederick Douglass Boulevard and Adam C. Powell Boulevard;
- Adam C. Powell Boulevard and Lenox Avenue; and
- Lenox Avenue and Fifth Avenue.

They were put in by the New York City Department of Transportation (NYCDOT) at the request of the community in the early nineties. The New York City Economic Development Corporation (NYCEDC) worked in collaboration with local organizations and businesses to get them implemented. The reason for these midblock crossings according to NYCEDC:

- a) These blocks are long (800 feet) compared to the other blocks along 125<sup>th</sup> Street and pedestrians wanting to cross midblock had to walk to the end of the block before crossing to walk back to the midblock location on the other side.
- b) Often pedestrians would jaywalk midblock on 125<sup>th</sup> Street to avoid the long walk. This is considered dangerous, risky and against the traffic regulations,
- c) Several pedestrian accidents had occurred at the midblock locations (see Table 7-9a: “Pedestrian Accidents at Midblock Locations”), and
- d) According to the 125<sup>th</sup> Street BID, several businesses were complaining that shoppers could not easily access their stores on the other side, and that the situation possibly affects their businesses.

With these midblock crossings pedestrians have a safe and clearly defined crossing facility which promotes a more pedestrian friendly environment in the area. Each neckdown is approximately 110 feet long and 8 feet wide. In addition the midblock pedestrian crossings are clearly defined with a ladder crosswalk which measures approximately 30 feet wide. According to NYCEDC at the time they thought of discouraging double parking by suggesting the placement of fire hydrants at the neckdowns, however only one neckdown between Lenox Avenue and Fifth Avenue has a fire hydrant.

### Analysis of Midblock Neckdowns

An analysis of the midblock crossings has been done in terms of current use by pedestrians and in terms of pedestrian accidents that occurred at midblock locations prior to and after the installation of the neckdowns.

#### a. Midblock Neckdowns - Use and Volumes

Pedestrian volumes at the neckdowns were collected over a period of two days: on April 27, 2004 (1:00 - 2:00PM) and on June 15, 2004 (2:30 - 4:00PM).

The first count was done to assess the volume of pedestrians crossing midblock at the neckdowns:

- 1<sup>st</sup> Block: Between Frederick Douglass Boulevard and Adam C. Powell Boulevard a total of 205 pedestrians crossed in one hour.
- 2<sup>nd</sup> Block: Adam C. Powell Boulevard and Lenox Avenue a total of 271 pedestrians crossed in one hour.
- 3<sup>rd</sup> Block: Lenox Avenue and Fifth Avenue a total of 172 pedestrians crossed in one hour.

These counts reveal that on average 5 pedestrians cross per cycle during the midday peak period.

The second count was done to determine the percentage of school children using these midblock crossings. Here are the results (see table 7-8 below):

- 1<sup>st</sup> Block: Between Frederick Douglass Boulevard and Adam C. Powell Boulevard, 16% of the total users were school children.
- 2<sup>nd</sup> Block: Between Adam C. Powell Boulevard and Lenox Avenue, 25% of the total users were school children.
- 3<sup>rd</sup> Block: Between Lenox Avenue and Fifth Avenue, 11% of the total users were school children.

**Table 7-8: Midblock Pedestrian Volumes**

Locations	Collected on April 27, 2004*	Collected on June 15, 2004**	
	Adults	School Children	Total Pedestrians
Midblock Neckdown Volumes between Frederick D. Blvd and Adam C Powell Blvd	205	39	239
Midblock Neckdown Volumes between Adam C Powell Blvd and Lenox Ave	271	107	418
Midblock Neckdown Volumes between Lenox Ave and Fifth Ave	172	19	171

\*Counts done from 1:00 to 2:00PM.

\*\* Counts done from 2:30 to 4:00PM

**b. Midblock Neckdowns - Pedestrian Accidents**

Accident data for the midblock locations are provided here in this section in addition to the “Accidents/Safety Analysis” section of this document (section 8.0) in order to better analyze accident trends prior to and after the installation of the neckdowns.

As we analyze and compare midblock pedestrian accidents for the years prior to and after the installation of the midblock crossings, the number of pedestrian accidents per location did decrease with the installation of the neckdowns. See Tables 7-9a and 7-9b below for more details.

**Table 7-9a: Pedestrian Accidents at Midblock Locations (without neckdowns)**

Locations	1987	1988	1989	1990
<b>Frederick D. Boulevard and AC Powell Boulevard</b>	6	2	2	4
<b>AC Powell Boulevard and Lenox Avenue</b>	4*	1	0	5
<b>Lenox Avenue and Fifth Avenue</b>	3**	4	3	4

\*Two pedestrians were hit at the same time by one vehicle during an accident on Sept. 11, 1987.

\*\*Two pedestrians were hit at the same time by one vehicle during an accident on Dec. 22, 1987.

**Table 7-9b: Pedestrian Accidents at Midblock Locations**

<b>Locations</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
<b>Frederick D. Boulevard and AC Powell Boulevard</b>	0	1	0	2	2
<b>AC Powell Boulevard and Lenox Avenue</b>	0	3*	2	3***	0
<b>Lenox Avenue and Fifth Avenue</b>	0	1	4**	2	1

\*Two pedestrians were hit at the same time by one vehicle during an accident on Feb 27, 1998.

\*\*Two pedestrians were hit at the same time by one vehicle during an accident on Jan 30, 1999.

\*\*\*Three pedestrians were hit at the same time by one vehicle during an accident on Jan 12, 2000.

#### **7.4 Pedestrian Accidents – Description of Accident Locations**

Another aspect of the pedestrian analysis is to look into pedestrian safety issues and to study pedestrian accident locations within the area of study.

In section 8.0 of this document: “Accidents/Safety Analysis”, locations with the highest number of pedestrian accidents for the years 1998, 1999, and 2000 were determined and analyzed in order to identify safety issues and to address traffic accident problems. The accident history of the study area was also examined in section 8.0 to see if there were any patterns in the accidents.

However, the pedestrian analysis section of this study will further analyze each location to see if there are any other factors or conditions that could have contributed to the pedestrian accidents.

- Pedestrian Accidents for the Year 1998

For the year 1998 the highest pedestrian accident location was Lexington Avenue and 125<sup>th</sup> Street where six pedestrian accidents occurred. The locations of Amsterdam Avenue/125<sup>th</sup> Street, Lenox Avenue/125<sup>th</sup> Street, Second Avenue/116<sup>th</sup> Street followed with five pedestrian accidents each.

- Pedestrian Accidents for the Year 1999

For the year 1999 the highest pedestrian accident location was Lexington Avenue and 125<sup>th</sup> Street where eight pedestrian accidents occurred. The location of Amsterdam Avenue and 125<sup>th</sup> Street followed with six pedestrian accidents.

- Pedestrian Accidents for the Year 2000

For the year 2000 the highest pedestrian accident location was Amsterdam Avenue and 125<sup>th</sup> Street where nine pedestrian accidents occurred. The location of Lexington Avenue and 125<sup>th</sup> Street followed with five pedestrian accidents.

**Description of the Pedestrian Accident Locations:**

125<sup>th</sup> Street and Lexington Avenue (refer to Exhibit 7-3 for a diagram of this intersection)

Lexington Avenue is a one-way street. It has two southbound moving lanes and two parking lanes. One of the buses on Lexington Avenue (M35 Bus), which stops north of 125<sup>th</sup> Street, takes a large number of people to and from Randall's/Ward's Island regularly, causing large crowds on the sidewalk at the northwest corner of the intersection. Sidewalk volumes (15-minute peak volumes) near the M35 bus stop in the morning peak hour reach 437, in the midday: 183 pedestrians and in the evening: 314 pedestrians. The sidewalks on Lexington Avenue are 18.5 feet wide.

According to the community and based on field visits the northwest corner of Lexington Avenue and 125<sup>th</sup> Street is characterized with a poor quality of pedestrian visual environment especially at the bus stop of the M35 where many people are loitering or idling about on a daily basis. The community is concerned about the appearance of this intersection and also about potential impacts of proposed developments to this intersection which is already crowded.

125<sup>th</sup> Street has two moving lanes and a parking lane in each direction. The M60 bus stops on 125<sup>th</sup> Street near Lexington Avenue. The M60 bus is a preferred Manhattan route to/from LaGuardia Airport. Passengers often enter the subway station as they get off the westbound M60 bus. Sidewalk volumes (15-minute peak volumes) at this location are 380 in the morning, 350 in the midday and 345 in the evening. Also contributing to the crowding conditions at this intersection are the subway station exits for the 4, 5 and 6 trains. The exits at all four corners

let subway riders off on Lexington Avenue, which has a narrower sidewalk compared to 125<sup>th</sup> Street which has a 20 foot wide sidewalk.

At this intersection conflicts can occur between motorists and pedestrians when vehicles are making a left or a right turn while pedestrians are crossing in the north-south or east-west direction. When traffic on Lexington Avenue has the green light two turning movements take place. In the morning peak hour, vehicular turning volumes from Lexington Avenue are 92 (LT) and 115 (RT), midday peak hour turning volumes are 82 (LT) and 88 (RT) and the evening peak hour volumes are 89 (LT) and 67 (RT). The 15-minute peak volumes of pedestrians in the east and west crosswalks are 117 and 135 in the morning, 83 and 123 during the midday, and 134 and 144 in the evening.

When the light changes to green for traffic on 125<sup>th</sup> Street, two turning movements take place. In the morning during the peak hour, volumes for turning vehicles are 190 (EB-RT) and 76 (WB-LT), during the midday 154 (EB-RT) and 80 (WB-LT), and during the evening 155 (EB-RT) and 65 (WB-LT). Pedestrians crossing in the south crosswalk would most likely be affected by vehicles making turns from 125<sup>th</sup> Street. The 15-minute peak volumes of pedestrians in the south crosswalks are 119 in the morning, 121 in the midday and 107 in the evening (See pedestrian volumes in Appendix B).

125<sup>th</sup> Street and Amsterdam Avenue (refer to Exhibit 7-4 for a diagram of this intersection)

125<sup>th</sup> Street gets wider west of Morningside Avenue and measures 70 feet. It includes a left turn bay in each direction in addition to the parking lane and the two travel lanes. The sidewalks are 15 feet wide.

Amsterdam Avenue is a 20 foot wide street and has two moving lanes and a parking lane in each direction of traffic. To shorten the crossing distance for those crossing 125<sup>th</sup> Street a curb extension has been put in place with bollards at the southwest corner of the intersection. The sidewalks of Amsterdam Avenue have a width of 20 feet.

Pedestrian volumes in this section of 125<sup>th</sup> Street are lighter compared to the core area of 125<sup>th</sup> Street where 15-minute peak pedestrian volumes range on average from 100 to 300 during the three peak periods of the day. (See pedestrian volumes in Appendix B).

As vehicles make a turn at this location conflicts can occur between motorists and pedestrians as they are crossing at the intersection. The following is a listing of all vehicular turning movements collected during the peak hours of the day at the intersection of 125<sup>th</sup> Street and Amsterdam Avenue:

<b>Movements</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>
Westbound Traffic (right turn)	103	83	115
Westbound Traffic (left turn)	77	59	68
Eastbound Traffic (right turn)	119	89	84
Eastbound Traffic (left turn)	60	81	81
Northbound Traffic (right turn)	179	203	210
Northbound Traffic (left turn)	106	60	123
Southbound Traffic (right turn)	76	54	58
Southbound Traffic (left turn)	224	220	229

125<sup>th</sup> Street and Lenox Avenue (refer to Exhibit 7-5 for a diagram of this intersection)

125<sup>th</sup> Street is a major arterial in the study area and has two travel lanes and a parking lane in the eastbound and westbound direction of traffic. It is a 60 foot wide street and the sidewalks are 20 feet wide.

Lenox Avenue which is an 80-foot wide avenue includes a parking lane, two travel lanes and a left turn bay in each direction. A median approximately 4 feet wide is located in the middle of Lenox Avenue, however, it ends just before the crosswalk at the approach of the intersection and offers no refuge for pedestrians crossing Lenox Avenue. Pedestrians crossing this avenue especially the elderly hardly make it in time to the other side of the street before the “Don’t Walk” light starts flashing. The green time for pedestrians crossing Lenox Avenue is 24 seconds and the “Don’t Walk Flashing” period is 21 seconds (cycle length = 90 seconds). The following volumes give an idea of how many pedestrians cross Lenox Avenue at this intersection on a typical weekday: in the morning we have 131 pedestrians in the north crosswalk and 109 in the south crosswalk, in the midday the north crosswalk has 150 pedestrians and the south crosswalk 226, in the evening the north crosswalk has 274 pedestrians and the south crosswalk has 183. These are 15-minute peak volumes (See pedestrian volumes in Appendix B).

Subway station entrances are located near all four corners of this intersection and are placed adjacent to the curb line. They unload passengers onto the sidewalks of Lenox Avenue which are 35 feet wide. Pedestrian volumes on the sidewalks of Lenox Avenue are:

<b>Movements</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>
West sidewalk (north of intersection)	252	57	242
West sidewalk (south of intersection)	55	151	128
East sidewalk (north of intersection)	150	211	216
East sidewalk (south of intersection)	194	112	239

At this intersection left and right turns are made from both streets where conflicts occur between motorists and pedestrians. However, the left turns from both Lenox Avenue and 125<sup>th</sup> Street are prohibited during the peak hours.

The following volumes represent how this intersection is used by vehicles:

<b>Movements</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>
Westbound Traffic (right turn)	109	100	122
Westbound Traffic (left turn)	Not permitted	30	Not permitted
Eastbound Traffic (right turn)	41	62	64
Eastbound Traffic (left turn)	Not permitted	27	Not permitted
Northbound Traffic (right turn)	120	90	125
Northbound Traffic (left turn)	Not permitted	Not permitted	Not permitted
Southbound Traffic (right turn)	69	107	114
Southbound Traffic (left turn)	Not permitted	Not permitted	Not permitted

Pedestrian crosswalk volumes at 125<sup>th</sup> Street and Lenox Avenue: in the morning the west crosswalk has 76 pedestrians and the east crosswalk has 111, in the midday the west crosswalk has 116 pedestrians and the east crosswalk has 144, in the evening the west crosswalk has 116 pedestrians and the east crosswalk has 132. These are 15-minute peak volumes. Volumes of pedestrians crossing Lenox Avenue are indicated in the previous paragraph (See pedestrian volumes in Appendix B).

116<sup>th</sup> Street and Second Avenue (refer to Exhibit 7-6 for a diagram of this intersection)

116<sup>th</sup> Street is a two-way street with two travel lanes and a parking lane in each direction. This street has a width of 60 feet with sidewalks 20 feet wide. Second Avenue has four southbound travel lanes and two parking lanes. It is 60 feet wide and the sidewalks measure 20 feet. During vehicular turns pedestrians are sometimes in conflict with motorists at this intersection. The right and left turn volumes from Second Avenue during the morning peak hour are

respectively 144 and 150 vehicles, during the midday peak hour 112 and 117 vehicles, during the evening peak hour 96 and 180 vehicles. Vehicles traveling on 116<sup>th</sup> Street can turn at Second Avenue. The turning volumes are as follows; 94 (EB-RT), and 141 (WB-LT) in the morning peak hour, 96 (EB-RT) and 83 (WB-LT) in the midday peak hour, and 155 (EB-RT) and 121 (WB-LT) in the evening peak hour.

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THE M35 BUS TRANSPORTS A LARGE NUMBER OF PEOPLE TO AND FROM WARD'S ISLAND AND THE BUS STOP IS LOCATED AT THE NORTHEAST CORNER ON LEXINGTON AVENUE. IT IS OFTEN CROWDED AND PEDESTRIAN CIRCULATION IS DIFFICULT AT THE CORNER.

IN ADDITION BUS PASSENGERS ARE SEEN LOITERING AT THE CORNER AND REDUCING SPACE AVAILABLE FOR PEDESTRIAN CIRCULATION.

SIDEWALKS = 18.5 FEET

CONSTRUCTION OF AN ELEVATOR TO ACCESS THE SUBWAY STATION LIMITS THE WIDTH OF THE SIDEWALK AVAILABLE FOR PEDESTRIANS ON THE NORTH SIDE OF 125TH STREET TO HALF ITS WIDTH.

M80 BUS STOP

M35 BUS STOP

125TH STREET

SUBWAY STATION ENTRANCES/EXITS

ELEVATOR TO SUBWAY STATION

SIDEWALKS = 20 FEET

M101, M103 BUS STOPS

M100, M60, BX15 BUS STOPS

LEXINGTON AVENUE

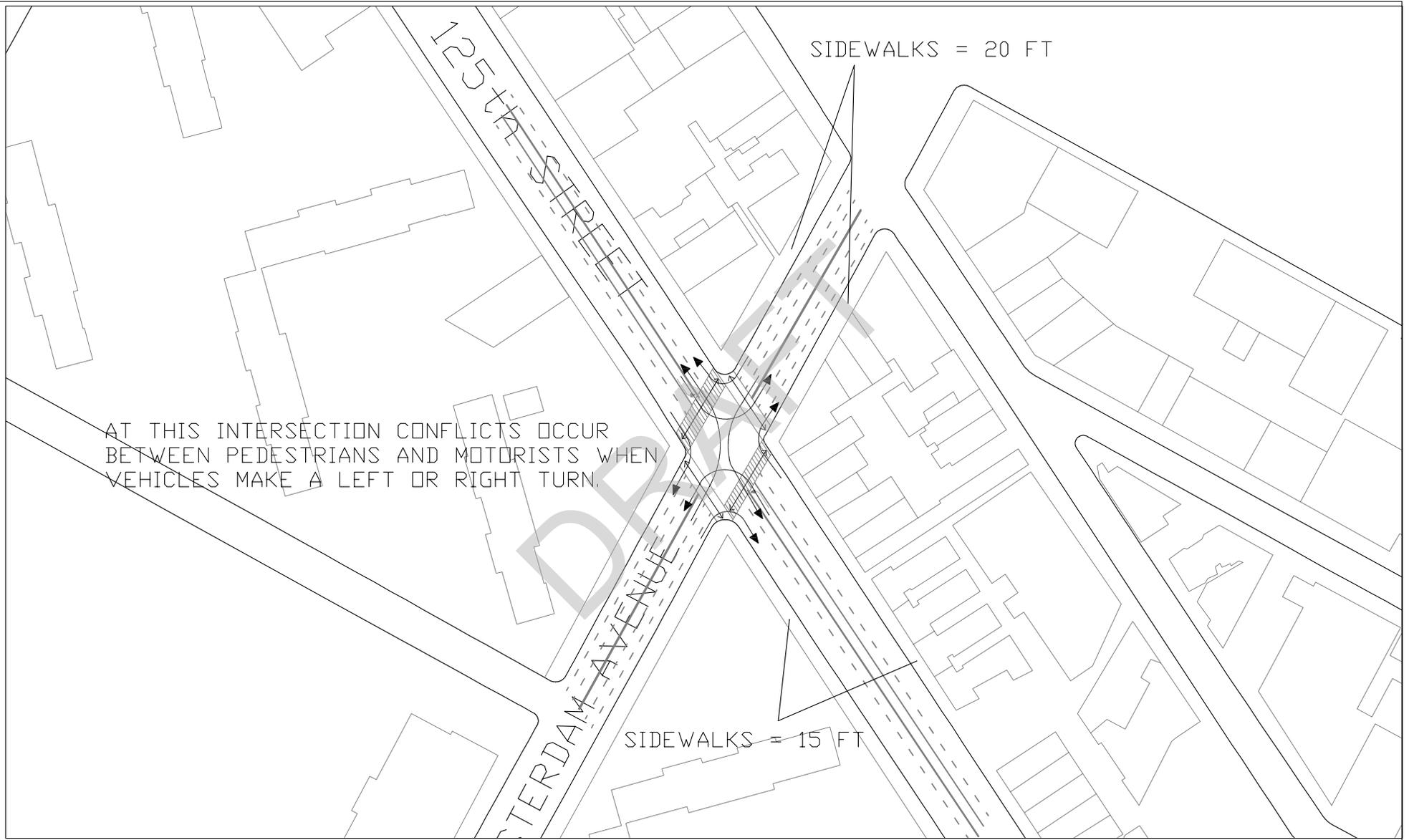
Location: 125th Street and Lexington Avenue  
Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-3

Note: NOT TO SCALE



Location: 125th Street and Amsterdam Avenue  
 Existing Conditions (Pedestrian Analysis)

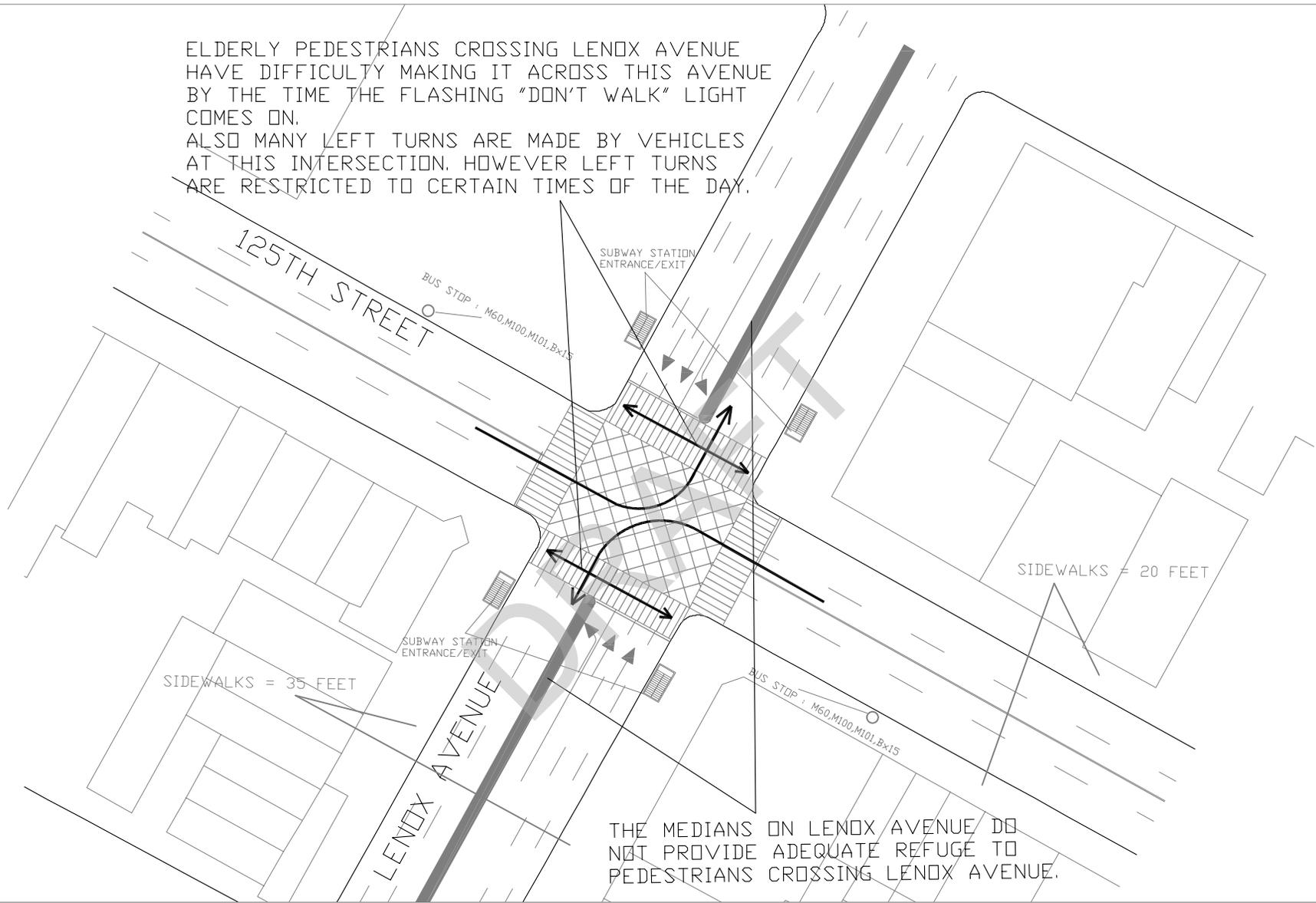
Harlem/Morningside Transportation Study



Exhibit: 7-4

Note: NOT TO SCALE

ELDERLY PEDESTRIANS CROSSING LENOX AVENUE HAVE DIFFICULTY MAKING IT ACROSS THIS AVENUE BY THE TIME THE FLASHING "DON'T WALK" LIGHT COMES ON. ALSO MANY LEFT TURNS ARE MADE BY VEHICLES AT THIS INTERSECTION. HOWEVER LEFT TURNS ARE RESTRICTED TO CERTAIN TIMES OF THE DAY.



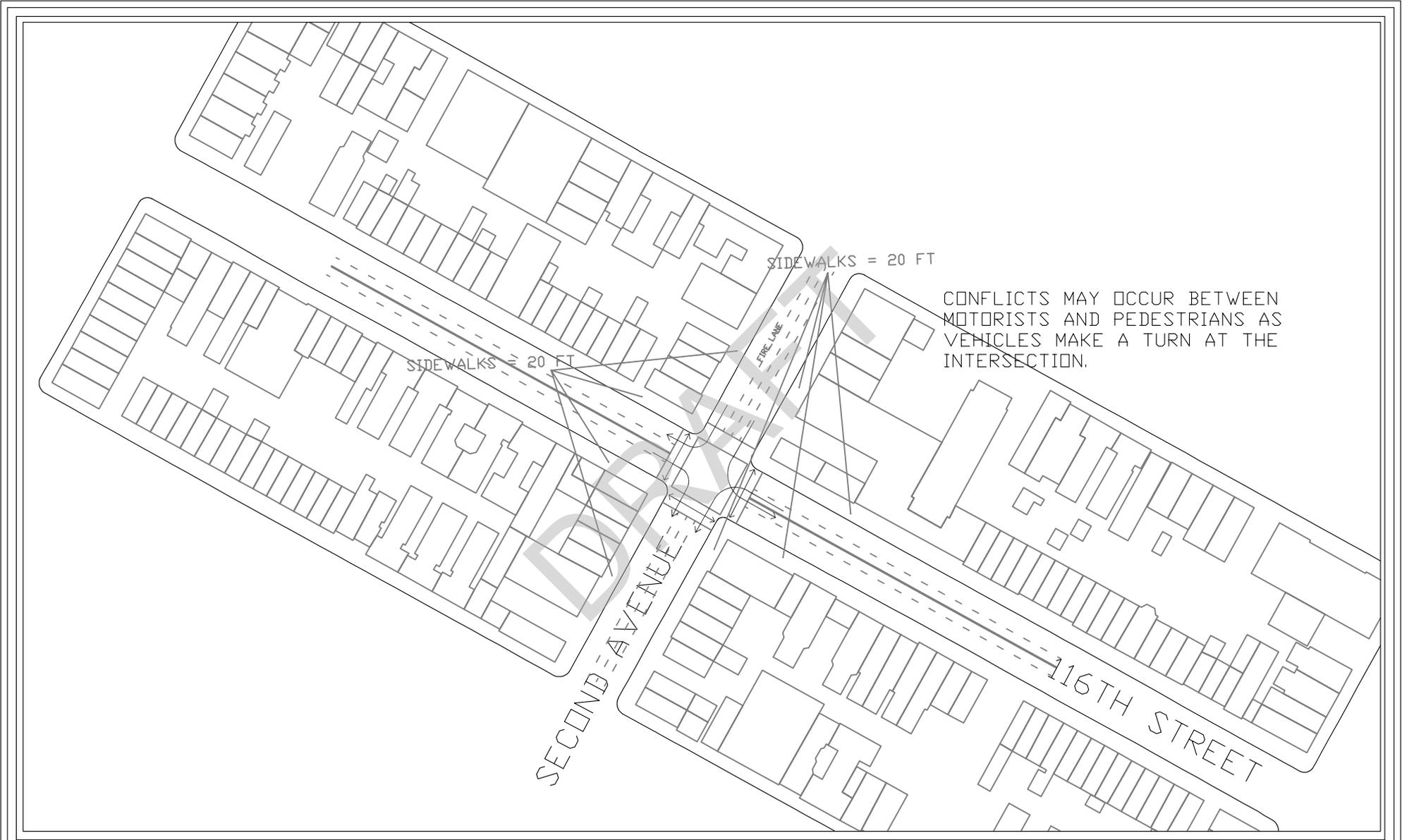
Location: 125th Street and Lenox Avenue  
Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-5

Note: NOT TO SCALE



Location: 116th Street and Second Avenue  
Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-6

Note: NOT TO SCALE

## 7.5 Community Concerns in terms of Pedestrian Safety

In addition there are a few locations within the study area which are of concern to the community in terms of pedestrian circulation and safety. They are:

- 125<sup>th</sup> Street and Broadway
- 125<sup>th</sup> Street and St Nicholas Avenue
- 135<sup>th</sup> Street and Madison Avenue

125<sup>th</sup> Street and Broadway (refer to Exhibits 7-7a and 7-7b for diagrams of this intersection).

125<sup>th</sup> Street has two moving lanes, a parking lane and a left turn bay in each direction. It is 70 feet wide with 15-foot wide sidewalks. Broadway has two northbound and two southbound moving lanes during the construction.

The reconstruction/renovation work by the MTA at the 125<sup>th</sup> Street train station has been completed and the intersection operates with four lanes northbound and three lanes southbound. The entrances to the elevated train station are located at the southwest and southeast corners of the intersection.

Pedestrian conflicts at this intersection are due first of all to vehicles from Broadway and from 125<sup>th</sup> Street making left and right turns at this intersection. Motorists do not always yield the right-of-way to pedestrians. The following volumes indicate the number of peak hour vehicular turns that take place at the intersection on a typical day:

<b>Movements</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>
Westbound Traffic (right turn)	108	72	92
Westbound Traffic (left turn)	75	44	56
Eastbound Traffic (right turn)	75	103	124
Eastbound Traffic (left turn)	51	70	85
Northbound Traffic (right turn)	167	131	150
Northbound Traffic (left turn)	225	256	308
Southbound Traffic (right turn)	20	34	41
Southbound Traffic (left turn)	171	197	227

The community is concerned that pedestrians crossing Broadway seem not to have enough time to cross comfortably. There is a median in the middle of Broadway that extends into the crosswalks; however the refuge for pedestrians could be improved. The green time for pedestrians crossing Broadway is 8 seconds while the “Don’t Walk Flashing” period lasts 21 seconds. In addition Broadway is one of the largest arterials in the study area and measures 102 feet north of 125<sup>th</sup> Street and 114 feet south of 125<sup>th</sup> Street.

These perceptions are stated in the West Harlem Master Plan done by EDC with their consultant “The Sam Schwartz Company”.

Finally, according to the 197-a plan of Community Board 9 a recommendation was made to consider increasing pedestrian safety at several intersections which included 125<sup>th</sup> Street and Broadway.

125<sup>th</sup> Street and St Nicholas Avenue (refer to Exhibit 7-8 for a diagram of this intersection)

On 125<sup>th</sup> Street, there are two travel lanes, one parking lane and a left-turn bay to accommodate left turning vehicles in each direction. This major traffic corridor is 60 feet wide.

St Nicholas Avenue is 60 feet wide. There are in each direction of traffic: a parking lane, a bicycle lane and a travel lane. St Nicholas Avenue also has dedicated left turn bays at this intersection. These left turns often create conflicts with pedestrians, however left turns from St Nicholas Avenue are limited depending on the time of the day. Here are the peak-hour turning volumes for the intersection:

<b>Movements</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>
Westbound Traffic (left turn)	49	29	29
Eastbound Traffic (left turn)	108	125	178
Northbound Traffic (left turn)	Not permitted	23	Not permitted
Southbound Traffic (left turn)	Not permitted	52	Not permitted

The pedestrian volumes crossing St Nicholas Avenue as vehicles turn from 125<sup>th</sup> Street on a typical day are: 71 pedestrians in the north crosswalk and 48 in the south crosswalk during the 15-minute peak pedestrian volumes of the morning, 137 pedestrians in the north crosswalk and

95 in the south crosswalk during the midday, 100 pedestrians in the north crosswalk and 118 in the south crosswalk during the evening (See pedestrian volumes in Appendix B).

At the time of the field visit a portion of the south sidewalk at the southwest corner and part of the parking lane was closed for construction on the sidewalk of 125<sup>th</sup> Street which measures 20 feet wide. The MTA is putting in a new elevator at that corner to increase access to the subway station below ground. Therefore the sidewalk at that location is reduced to about five to six feet wide and creates a temporary bottleneck. The 15-minute peak pedestrian volumes on the sidewalk of 125<sup>th</sup> Street at the southwest corner on a typical day are: 118 pedestrians in the morning, 162 pedestrians in the midday and 163 pedestrians in the evening (See pedestrian volumes in Appendix B).

At the northwest corner adjacent to the subway entrance there is a newspaper/magazine stand (approximately 5 feet by 7 feet). It narrows the 20 feet wide sidewalk on St Nicholas Avenue and creates congestion for pedestrians exiting or entering the subway and for those walking on the sidewalk. Here are the 15-minute peak pedestrian volumes on the sidewalks of St Nicholas Avenue at the northwest corner: 143 pedestrians in the morning, 48 pedestrians in the midday and 132 pedestrians in the evening (See pedestrian volumes in Appendix B).

There is a subway entrance/exit for the 8<sup>th</sup> Avenue subway line (A, C, B, D) at each corner of this intersection which allows passengers in and out of the subway station from St Nicholas Avenue. One of the concerns expressed by the community is that it is difficult to figure out after exiting the subway station how to navigate into the surrounding area from this intersection.

#### 135<sup>th</sup> Street and Madison Avenue (refer to Exhibit 7-9 for a diagram of this intersection)

At this intersection pedestrians crossing at 135<sup>th</sup> Street and Madison Avenue from/to the northwest corner to/from the northeast encounter many eastbound cars making left turns from 135<sup>th</sup> Street and westbound cars from the Harlem River Drive turning right onto the Madison Avenue Bridge.

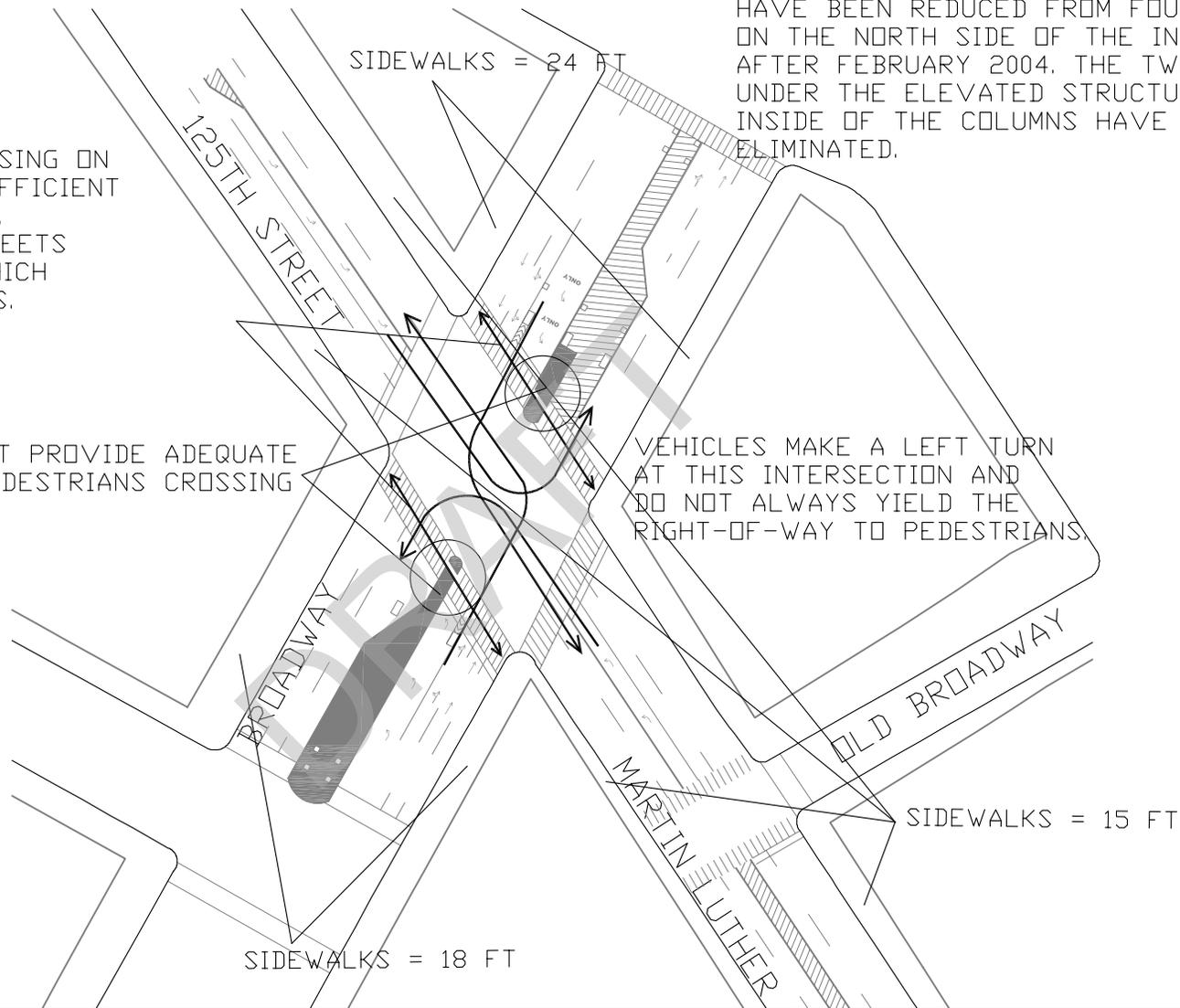
At the end of 135<sup>th</sup> Street at Madison Avenue there is a ramp that takes motorists to the Harlem River Drive. It includes a pedestrian/bicycle path that provides access to the Harlem River Park. This path is located on the north side of the ramp. Access to the Madison Avenue Bridge is also possible from this intersection and has a path for pedestrians and cyclists on the south side of the bridge. However, there are no signs at this intersection indicating the existence of this path.

DRAFT

ELDERLY PEDESTRIANS CROSSING ON BROADWAY DO NOT HAVE SUFFICIENT TIME TO CROSS THE STREET. IN ADDITION, TWO WIDE STREETS INTERSECT AT AN ANGLE WHICH CREATES LONGER CROSSWALKS.

MEDIANS DO NOT PROVIDE ADEQUATE REFUGE FOR PEDESTRIANS CROSSING BROADWAY.

CURRENTLY THE NUMBER OF TRAVEL LANES HAVE BEEN REDUCED FROM FOUR TO TWO ON THE NORTH SIDE OF THE INTERSECTION AFTER FEBRUARY 2004. THE TWO LANES UNDER THE ELEVATED STRUCTURE ON THE INSIDE OF THE COLUMNS HAVE BEEN ELIMINATED.



Location: 125th Street and Broadway  
Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-7a

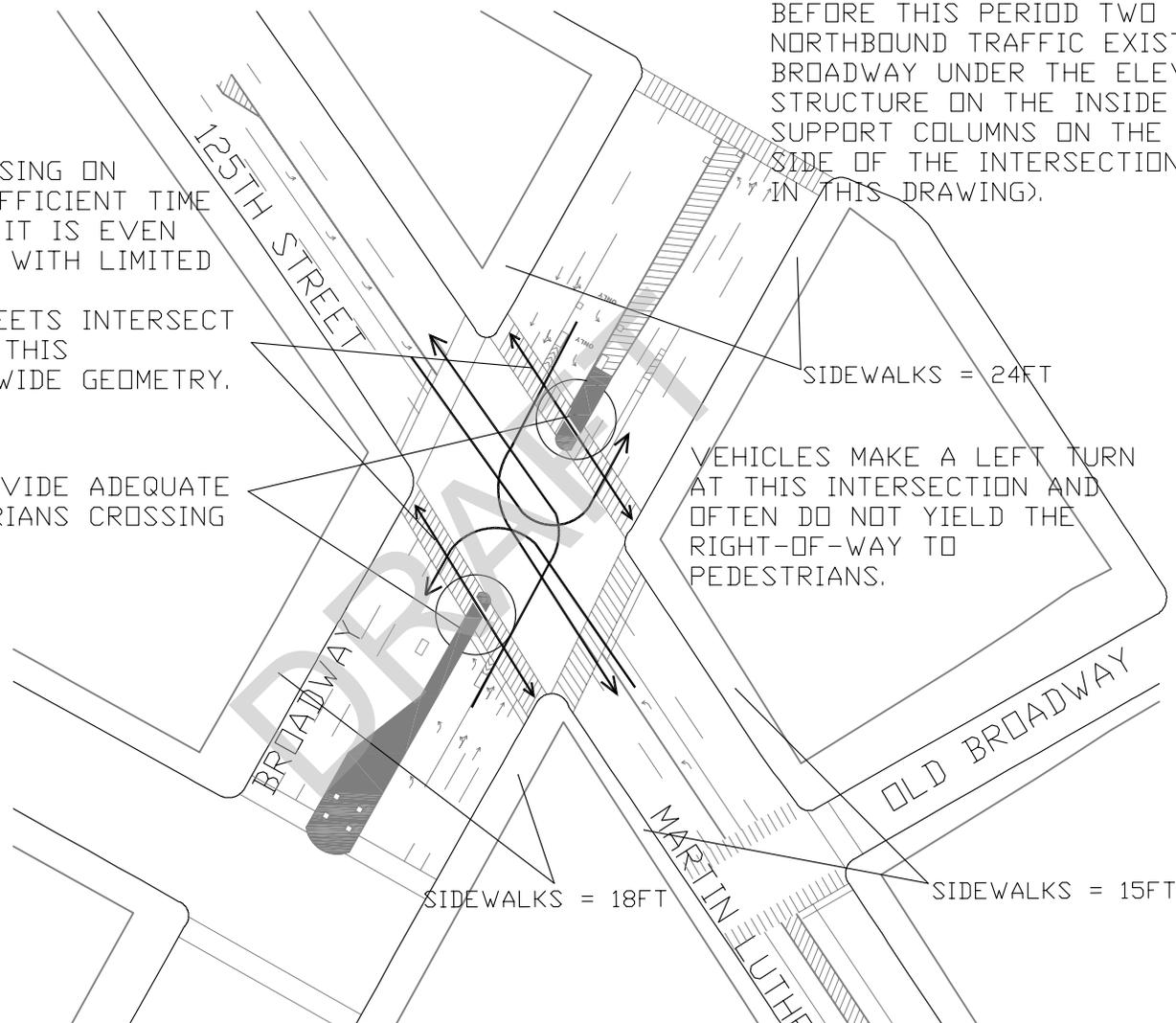
Note: NOT TO SCALE

ELDERLY PEDESTRIANS CROSSING ON BROADWAY DO NOT HAVE SUFFICIENT TIME TO CROSS THE STREET AND IT IS EVEN MORE DIFFICULT FOR THOSE WITH LIMITED MOBILITY.  
 IN ADDITION TWO WIDE STREETS INTERSECT AT AN ANGLE WHICH GIVES THIS INTERSECTION AN UNUSUAL WIDE GEOMETRY.

MEDIANS DO NOT PROVIDE ADEQUATE REFUGE FOR PEDESTRIANS CROSSING BROADWAY.

THE NUMBER OF TRAVEL LANES HAVE CHANGED ON THE NORTH SIDE OF THE INTERSECTION SINCE FEBRUARY 2004. BEFORE THIS PERIOD TWO LANES OF NORTHBOUND TRAFFIC EXISTED ON BROADWAY UNDER THE ELEVATED STRUCTURE ON THE INSIDE OF THE SUPPORT COLUMNS ON THE NORTH SIDE OF THE INTERSECTION (AS SHOWN IN THIS DRAWING).

VEHICLES MAKE A LEFT TURN AT THIS INTERSECTION AND OFTEN DO NOT YIELD THE RIGHT-OF-WAY TO PEDESTRIANS.



Location: 125th Street and Broadway  
 Existing Conditions Prior to March 2004  
 (Pedestrian Analysis)  
 Harlem/Morningside Transportation Study



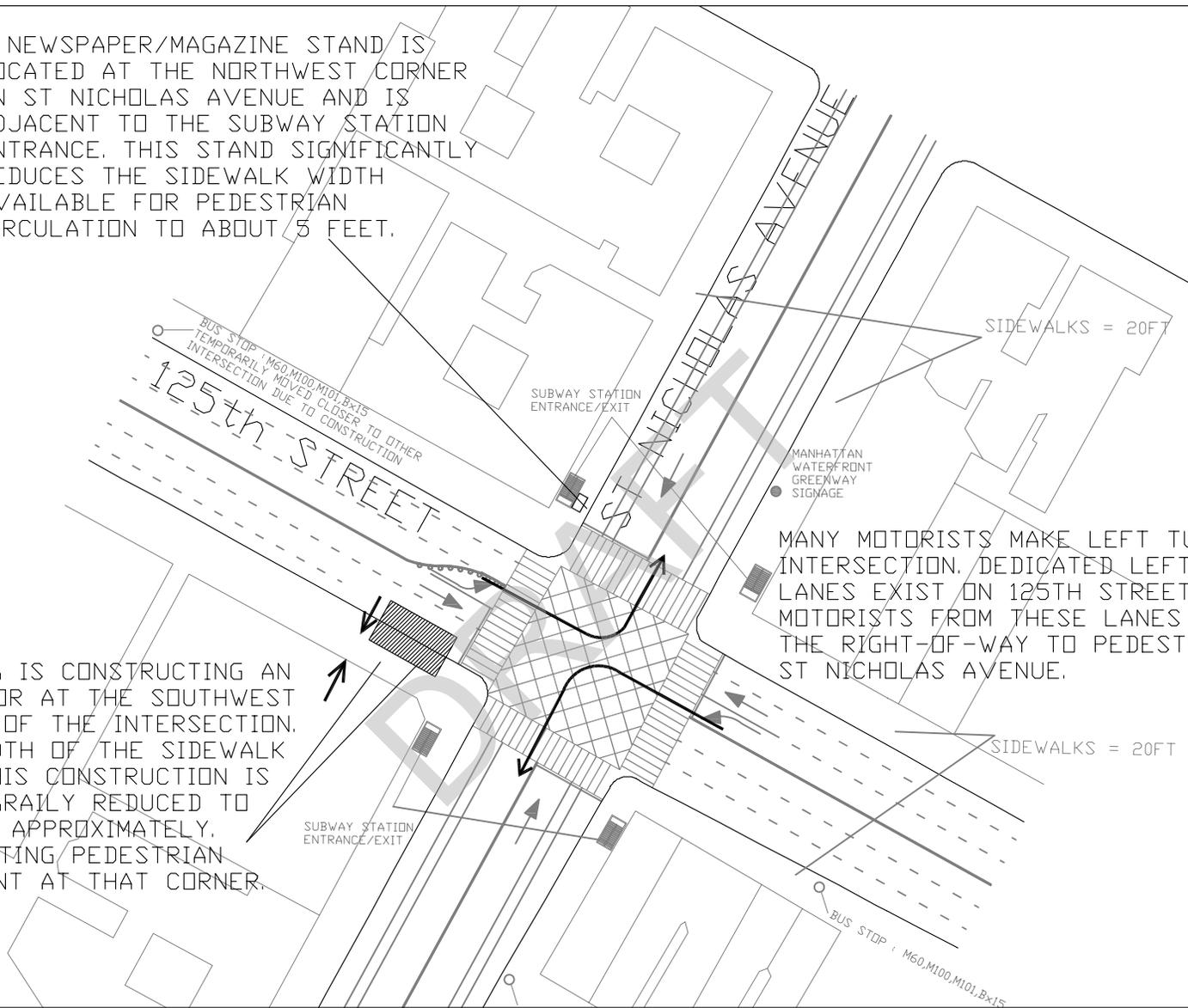
Exhibit: 7-7b

Note: NOT TO SCALE

A NEWSPAPER/MAGAZINE STAND IS LOCATED AT THE NORTHWEST CORNER ON ST NICHOLAS AVENUE AND IS ADJACENT TO THE SUBWAY STATION ENTRANCE. THIS STAND SIGNIFICANTLY REDUCES THE SIDEWALK WIDTH AVAILABLE FOR PEDESTRIAN CIRCULATION TO ABOUT 5 FEET.

THE MTA IS CONSTRUCTING AN ELEVATOR AT THE SOUTHWEST CORNER OF THE INTERSECTION. THE WIDTH OF THE SIDEWALK WITH THIS CONSTRUCTION IS TEMPORARILY REDUCED TO 10 FEET APPROXIMATELY, RESTRICTING PEDESTRIAN MOVEMENT AT THAT CORNER.

MANY MOTORISTS MAKE LEFT TURNS AT THIS INTERSECTION. DEDICATED LEFT TURN LANES EXIST ON 125TH STREET AND OFTEN MOTORISTS FROM THESE LANES FAIL TO YIELD THE RIGHT-OF-WAY TO PEDESTRIANS CROSSING ST NICHOLAS AVENUE.



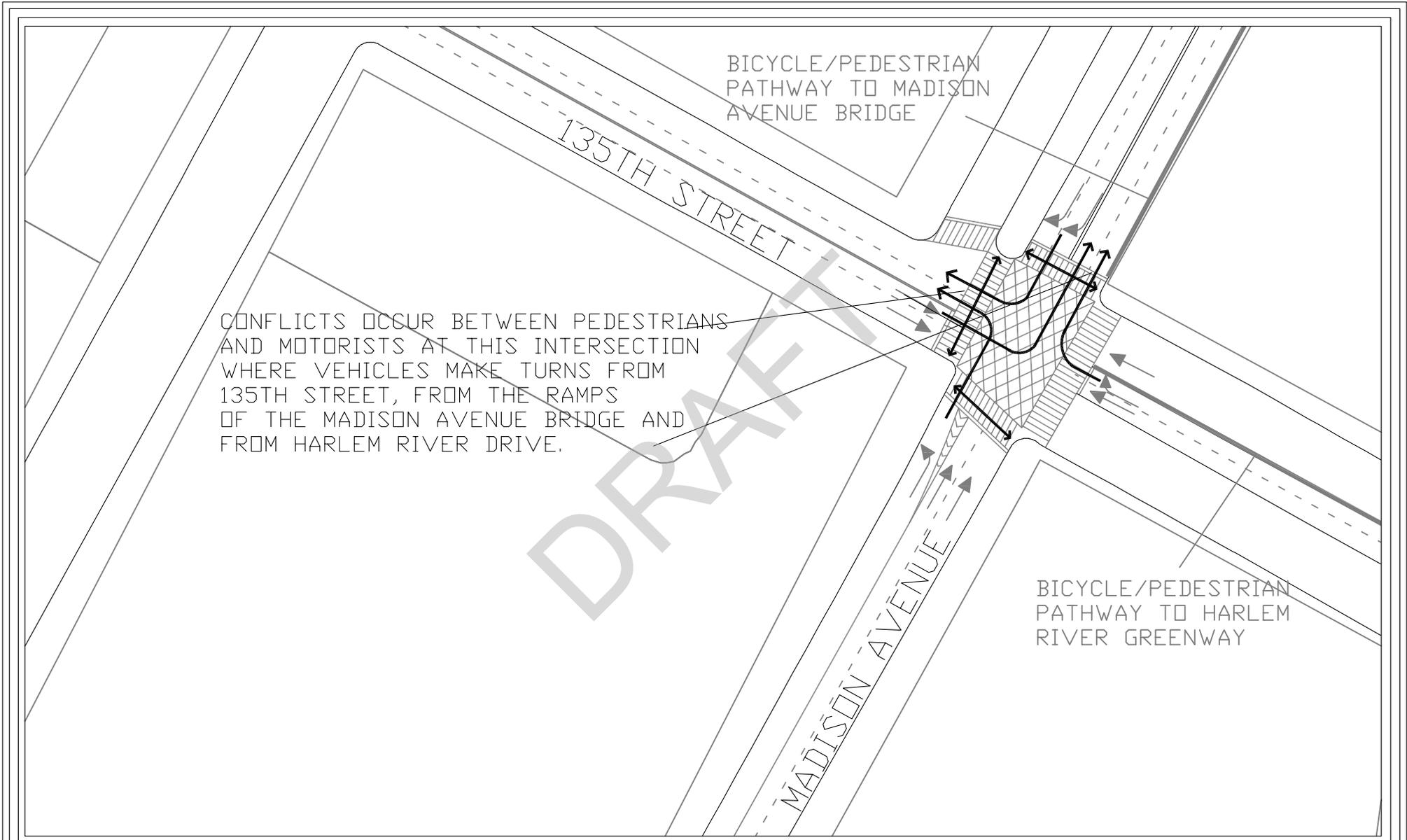
Location: 125th Street and St Nicholas Avenue  
Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-8

Note: NOT TO SCALE



Location: Madison Avenue Bridge - 135th Street/Madison Avenue  
 Existing Conditions (Pedestrian Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-9

Note: NOT TO SCALE

## **7.6 Bicycle Lanes and Paths - Network System and Use**

A network of bicycle lanes and greenway paths exist within the area of study (See Exhibit: 7-10 below). An inventory of existing bicycle routes has been done and is described below. It includes information such as where the facility starts and ends within the study area, the width of the facility etc.

### On-Street Facilities

There are two on-street facilities which run north-south. One travels through the western section of Harlem on St Nicholas Avenue from 118<sup>th</sup> Street to 135<sup>th</sup> Street. Bicycle lanes on Frederick Douglass Boulevard and Adam Clayton Powell Boulevard link with St Nicholas Avenue in the southern portion of the study area. The other north-south on-street bicycle facility runs on First Avenue from 116<sup>th</sup> to 125<sup>th</sup> Streets in East Harlem.

Recently, two east-west on-street bicycle lanes were implemented on 120<sup>th</sup> Street and on 119<sup>th</sup> Street. They are part of the Manhattan Waterfront Greenway Plan and connect the East River Greenway to the St Nicholas Avenue bicycle lane.

These bicycle lanes are 5 feet wide except for the First Avenue bicycle lane which is 4 feet wide and was striped in 1981. At the time the “1978 Bikeway Planning and Policy Guidelines for New York City”, was released two years prior to the AASHTO guidelines, recommended a minimum bicycle lane width of 3 feet 6 inches, and a recommended width of 4 feet. The First Avenue lane was based on this guideline (Source: “New York City Bicycle Master Plan”, page 37). The AASHTO guidelines recommend a width of 5 feet for a bicycle lane.

In addition, St Nicholas Avenue and Adam C. Powell Boulevard, which are two-way streets, have a bicycle lane in each direction (see Table 7-10a).

### Off-Street Facilities

The off-street greenway paths are located along the waterfront: On the west side of the study area there is the Hudson River Greenway and on the east side the East River Greenway. Both are also part of the Manhattan Waterfront Greenway and are used by pedestrians and cyclists.

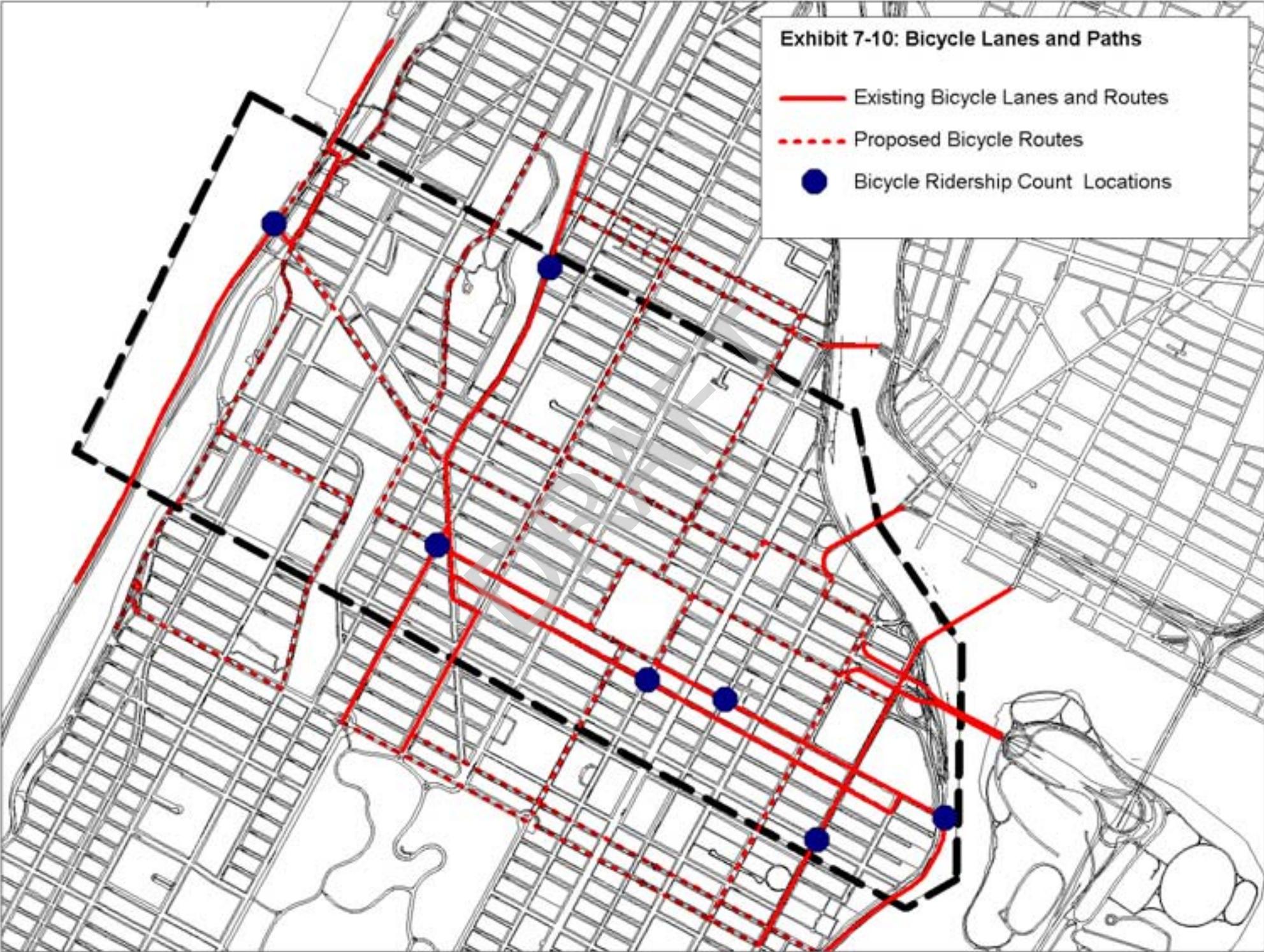
Within the area of study the East River Greenway exists only from 116<sup>th</sup> Street to 126<sup>th</sup> Street. North of 126<sup>th</sup> Street it is a proposed greenway path. The existing path is approximately 8 -12 feet wide. On the west side the Henry Hudson Greenway travels along the waterfront from

116<sup>th</sup> Street to 125<sup>th</sup> Street. The multi-use greenway path is approximately 8 feet wide and is commonly called the “Cherry Walk Bicycle Trail”. From 125<sup>th</sup> Street to 135<sup>th</sup> Street there is a gap in the greenway path and a temporary on-street signed bicycle route is in place on 12<sup>th</sup> Avenue to provide a connection for users (see Table 7-10b).

DRAFT

**Exhibit 7-10: Bicycle Lanes and Paths**

- Existing Bicycle Lanes and Routes
- - - Proposed Bicycle Routes
- Bicycle Ridership Count Locations



**Table 7-10a: Inventory of On-Street Bicycle Lanes**

<u>Bicycle Lane</u>	<u>From Street</u>	<u>To Street</u>	<u>Lane Width</u>	<u>Bicycle Lane Buffer Width (if any)</u>	<u>Observations</u>
St Nicholas Avenue	135th Street	118th Street	5 ft	No Buffer	A bicycle lane in each direction (north-south)
AC Powell Boulevard	118th Street	116th Street	5 ft	No Buffer	A bicycle lane in each direction (north-south)
Frederick Douglass Blvd	121st Street	116th Street	5 ft	No Buffer	Northbound traffic, lane on west side of street
First Avenue	125th Street	116th Street	4ft	No Buffer	Northbound traffic, lane on west side of street
120th Street	St Nicholas Avenue	East River Greenway	5 ft	No Buffer	Eastbound traffic, lane on northside of street
119th Street	St Nicholas Avenue	Pleasant Avenue	5 ft	No Buffer	Westbound traffic, lane on southside of street

**Table 7-10b: Inventory of Greenway Paths**

<u>Greenway Path</u>	<u>From Street</u>	<u>To Street</u>	<u>Total Path Width</u>	<u>Bicycle Path Width</u>	<u>Pedestrian Path Width (if designated)</u>	<u>Buffer Width</u>	<u>Observations</u>
East River Greenway	116th Street	126th Street	8 - 12ft	8 - 12ft	8 - 12ft	No Buffer	Shared-use path
East River Greenway	126th Street	135th Street	N/A	N/A	N/A	N/A	Recommended path
Henry Hudson Greenway	116th Street	125th Street	8ft (multi-use)	4ft	4ft	No Buffer	Named "Cherry Walk Bicycle Trail"
Henry Hudson Greenway	125th Street	135th Street	N/A	N/A	N/A	N/A	Recommended path
Marginal Street - Temporary path (under the Hudson River Parkway)	125th Street	135th Street	N/A	N/A	N/A	N/A	On-street signed bicycle route

## 7.7 Bicycle Ridership Volumes

Bicycle ridership volumes were collected in September and in October of 2003 in an effort to survey user volumes of the bicycle facilities within the area of study. The volumes were collected during the following three peak hours of the day:

- Morning Peak Period: 7:45 – 8:45 AM
- Midday Peak Period: 12:15 -1:15 PM
- Evening Peak Period: 4:45 – 5:45 PM.

The highest volumes were observed to be on the bicycle facilities located on First Avenue, St Nicholas Avenue and Frederick D. Boulevard. The volumes in the morning peak hour range from 15 to 32 cyclists, in the midday peak hour from 19 to 27 cyclists and in the evening peak hour from 26 to 36 cyclists. The other two facilities which run on 119<sup>th</sup> and 120<sup>th</sup> Streets have an average volume of 8 cyclists in the morning and the midday peak hour and an average of 14 cyclists in the evening peak hour. This is due to the fact that the bicycle facilities on 119<sup>th</sup> and 120<sup>th</sup> Streets were only implemented in the summer of 2003 and were not known by many users.

The bicycle volumes along the greenways were also collected. On average the volume of cyclists on the East River was about 13 for each peak hour while on the Hudson River Greenway the average volume per peak hour was about 58.

In comparison to other locations along the Manhattan waterfront greenway that are surveyed, every year these volumes are much lower due to a trend of a much lower bicycle ridership in Upper Manhattan compared to Lower Manhattan where bicycle volumes range from 100 to 200 and to Midtown Manhattan where bicycle ridership range from 155 to 270 during the peak hours of the day (see Table 7-11).

**Table 7-11: Bicycle Ridership Volumes ( 1- hour count)**

<b>On-Street Locations</b>	<b>Total Cyclists 7:45 - 8:45 AM</b>	<b>Total Cyclists 12:15 - 1:15 PM</b>	<b>Total Cyclists 4:45 - 5:45 PM</b>
First Avenue at 116th Street	15	27	36
St Nicholas Avenue at 135th Street	32	22	26
Frederick Douglass Blvd at 120th Street	26	19	29
119th Street at Madison Avenue	4	9	14
120th Street at Lexington Avenue	12	10	15

<b>Greenway Locations</b>	<b>Total Cyclists 7:45 - 8:45 AM</b>	<b>Total Cyclists 12:15 - 1:15 PM</b>	<b>Total Cyclists 4:45 - 5:45 PM</b>
East River Park at 116th Street	10	18	11
Route 9A at 125th Street	54	46	74

**Table 7-11: Bicycle Ridership Volumes (2- hour counts)**

<b>Greenway Locations</b>	<b>Total Cyclists 7:30 - 9:30 AM</b>	<b>Total Cyclists 12:00 - 2:00 PM</b>	<b>Total Cyclists 4:30 - 6:30 PM</b>
East River Park at 116th Street	13	35	29
Route 9A at 125th Street	91	83	136

### **7.8 Proposed Bicycle Lanes and Routes**

An ongoing effort is to continue the development of a network of bicycle lanes in the city and within the area of study. This can further encourage the use of bicycles and provide an environmentally safe way of getting around the city.

Several streets in the study area consistent with the city-wide bicycle master plan have been proposed for the installation of new bicycle lanes and routes. They include 124th Street, 127th Street, Riverside Drive, Morningside Drive, Convent Avenue, Adam Clayton Powell Boulevard, Fifth Avenue, and Second Avenue (Refers to Exhibit 7-10).

A feasibility analysis is underway in order to determine the possibility of implementing these proposed bicycle facilities.

## **7.9 Bicycle Accidents – Description of Accident Locations**

As it was done for the pedestrian analysis, bicyclists' safety issues are taken into consideration and locations with the highest number of bicycle accidents per year that are specified in section 8.0: “Accidents/Safety Analysis” of the document are further analyzed here:

- Bicycle Accidents for the Year 1998

For the year 1998, the location with the highest number of bicycle accidents was Lexington Avenue and 125<sup>th</sup> Street with three bicycle accidents.

- Bicycle Accidents for the Year 1999

For the year 1999, the location with the highest number of bicycle accidents was Adam C. Powell Boulevard and 116<sup>th</sup> Street with three bicycle accidents.

- Bicycle Accidents for the Year 2000

For the year 2000, the location with the highest number of bicycle accidents was Lenox Avenue and 135<sup>th</sup> Street with two bicycle accidents.

### **Description of the Bicycle Accident Locations:**

125<sup>th</sup> Street and Lexington Avenue (refer to Exhibit 7-11 for a diagram of the intersection).

Lexington Avenue is a 38 foot wide one-way street. It has two southbound moving lanes and two parking lanes. 125th Street on the other hand is a two-way street with two moving lanes and a parking lane in each direction. It is 60 feet wide. There are no bicycle facilities on these streets.

At this intersection conflicts can occur between motorists and bicyclists when vehicles are making a left or a right turn while cyclists are crossing in the north-south or east-west direction. When traffic on Lexington Avenue has the green light two turning movements take place. In the morning the peak hour vehicular turning volumes are 92 and 115, midday peak hour turning volumes are 77 and 88 and the evening peak hour volumes are 89 and 67. When the street traffic light changes to green for 125<sup>th</sup> Street traffic, two turning movements take place: a left turn and a right turn. The peak hour vehicular turning volumes for 125<sup>th</sup> Street are 190 and 75 in the morning, 156 and 80 during the midday and 145 and 69 in the evening.

116<sup>th</sup> Street and Adam C. Powell Boulevard/ St Nicholas Avenue (refer to Exhibit 7-12 for a diagram of the intersection).

Vehicular traffic on St Nicholas Avenue, north of 116<sup>th</sup> Street, travels only in the southbound direction. This section of St Nicholas Avenue easily accommodates two travel lanes and vehicles are allowed to park on the north side of St Nicholas Avenue perpendicular to the curb (diagonal parking). South of 116<sup>th</sup> Street, vehicles travel northbound. St Nicholas Avenue at this intersection measures 55 feet wide. Adam C. Powell Boulevard is a 100-foot wide two-way street with a 10-foot wide median in the middle of the roadway. 116<sup>th</sup> Street is a two-way street with two lanes of moving lanes in each direction. It is 60 feet wide.

There is an existing on-street bicycle lane on Adam C. Powell Boulevard, one in each direction. These bicycle lanes are 5 feet wide and adjacent to the parking lane. Conflicts occur between motorists and cyclists traveling on Adam C. Powell Boulevard as motorists make a turn onto 116<sup>th</sup> Street or St Nicholas Avenue. In the morning peak hour the number of vehicle turns made from Adam C. Powell Boulevard are 72 and 99 (SB turns), 35 and 115 (NB turns), in the midday peak hour the number of vehicle turns are 57 and 79 (SB turns), 22 and 49 (NB turns), in the evening peak hour the number of vehicle turns are 72 and 79 (SB turns), 20 and 37 (NB turns).

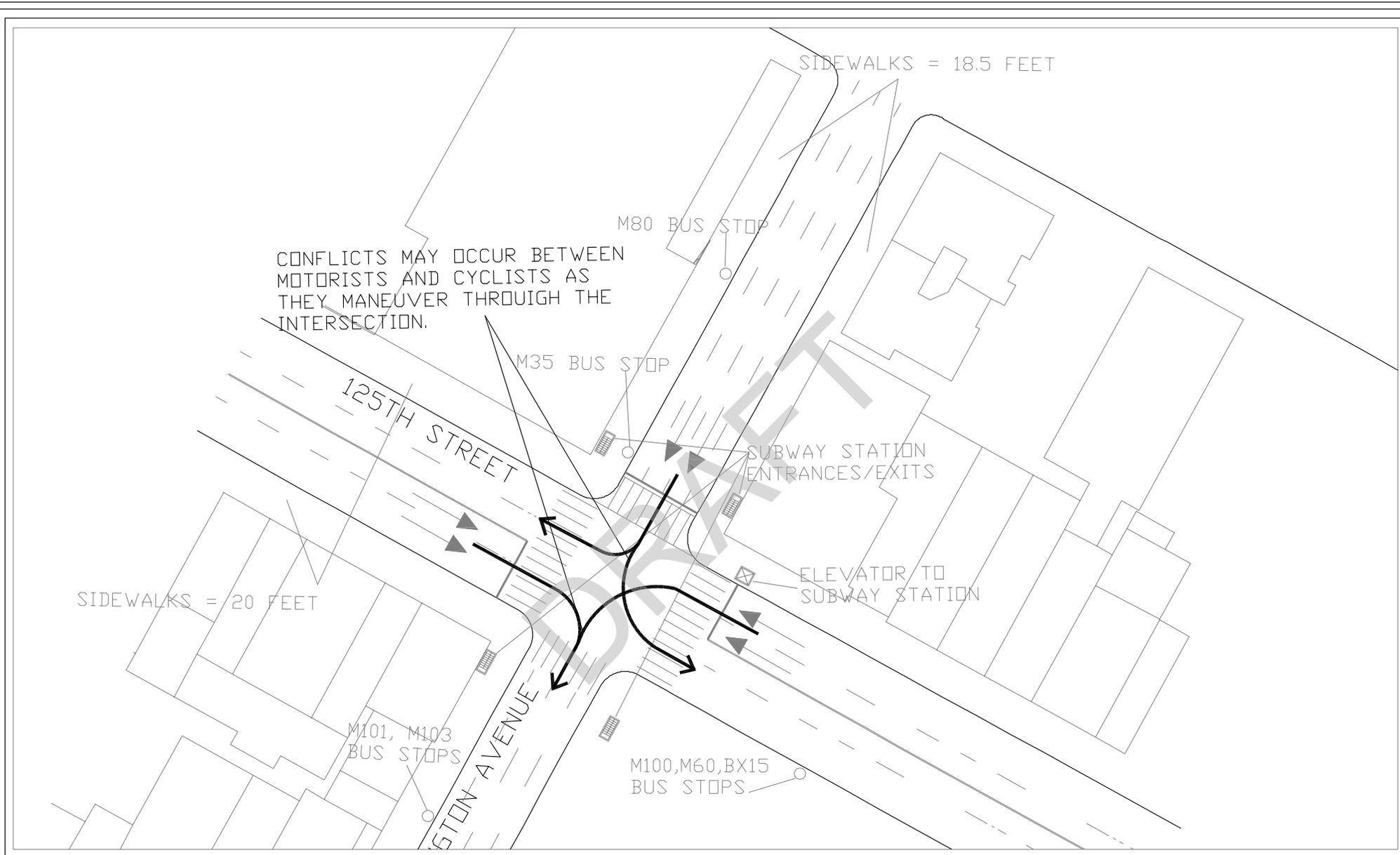
Bicycle ridership volumes were collected in September of 2003 near this location at 113<sup>th</sup> Street on Adam C. Powell Boulevard to determine ridership volumes on a typical day during the peak hours: in the morning peak hour 14 cyclists were counted, 28 cyclists in the midday peak hour and 36 cyclists in the evening peak hour. There is also a connection to the St Nicholas Avenue bicycle lane at 118<sup>th</sup> Street for cyclists traveling on Adam C. Powell Boulevard.

135<sup>th</sup> Street and Lenox Avenue (refer to Exhibit 7-13 for a diagram of the intersection).

135<sup>th</sup> Street is 60 feet wide with two moving lanes and a parking lane in each direction. Lenox Avenue has in each direction of traffic, two moving lanes, one parking lane and a left-turn bay. In the middle of Lenox Avenue there is a 4 foot wide median. Lenox Avenue is a wide avenue and measures 80 feet.

There are no bicycle facilities on these streets and no connections provided from these streets to the bicycle network. However, cyclists travel through this intersection and conflicts can occur between motorists and cyclists.

DRAFT



Location: 125th Street and Lexington Avenue  
 Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study

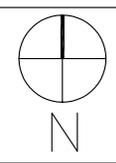
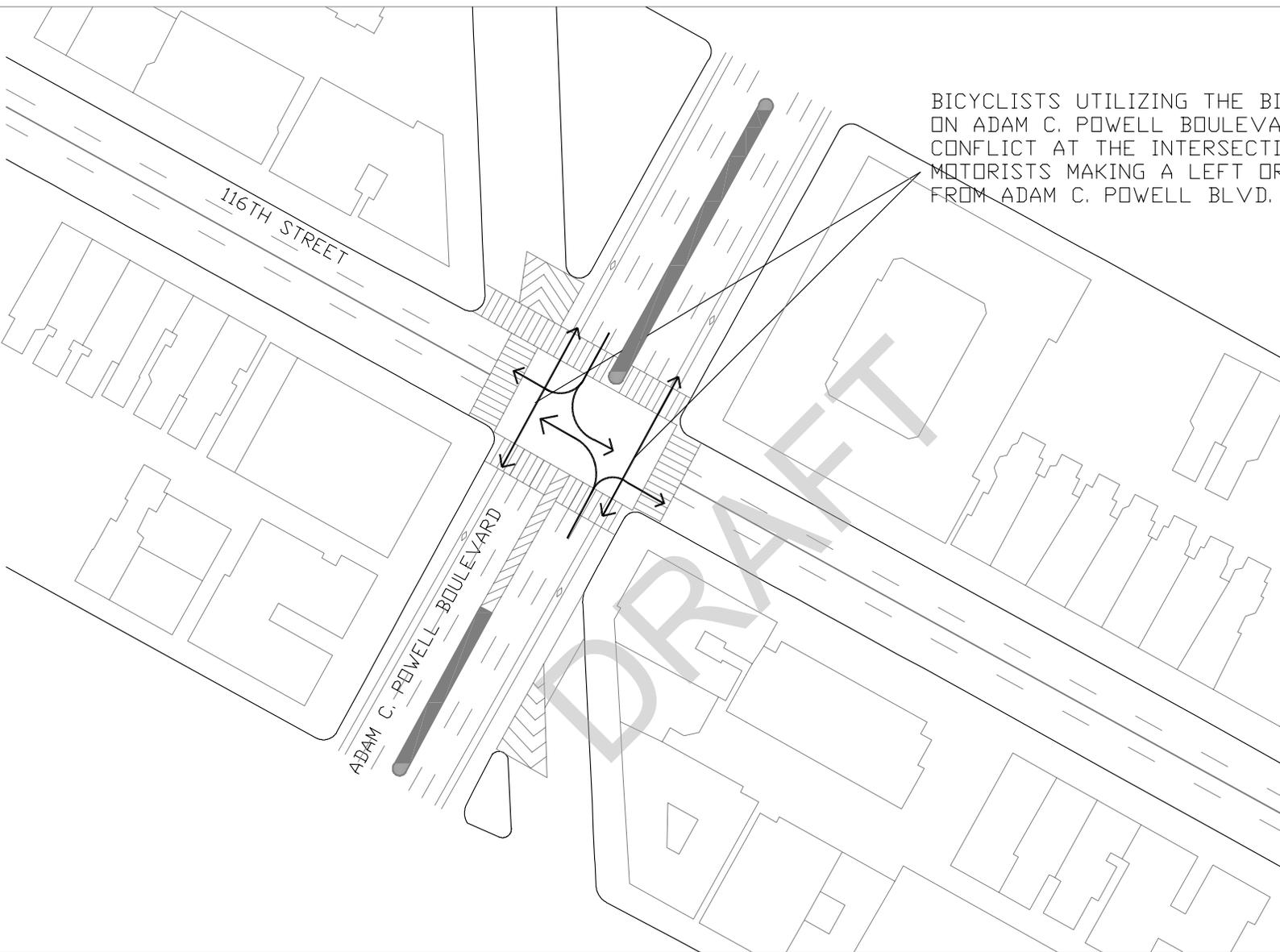


Exhibit: 7-11

Note: NOT TO SCALE



BICYCLISTS UTILIZING THE BICYCLE LANE ON ADAM C. POWELL BOULEVARD ARE IN CONFLICT AT THE INTERSECTION WITH MOTORISTS MAKING A LEFT OR RIGHT TURN FROM ADAM C. POWELL BLVD.

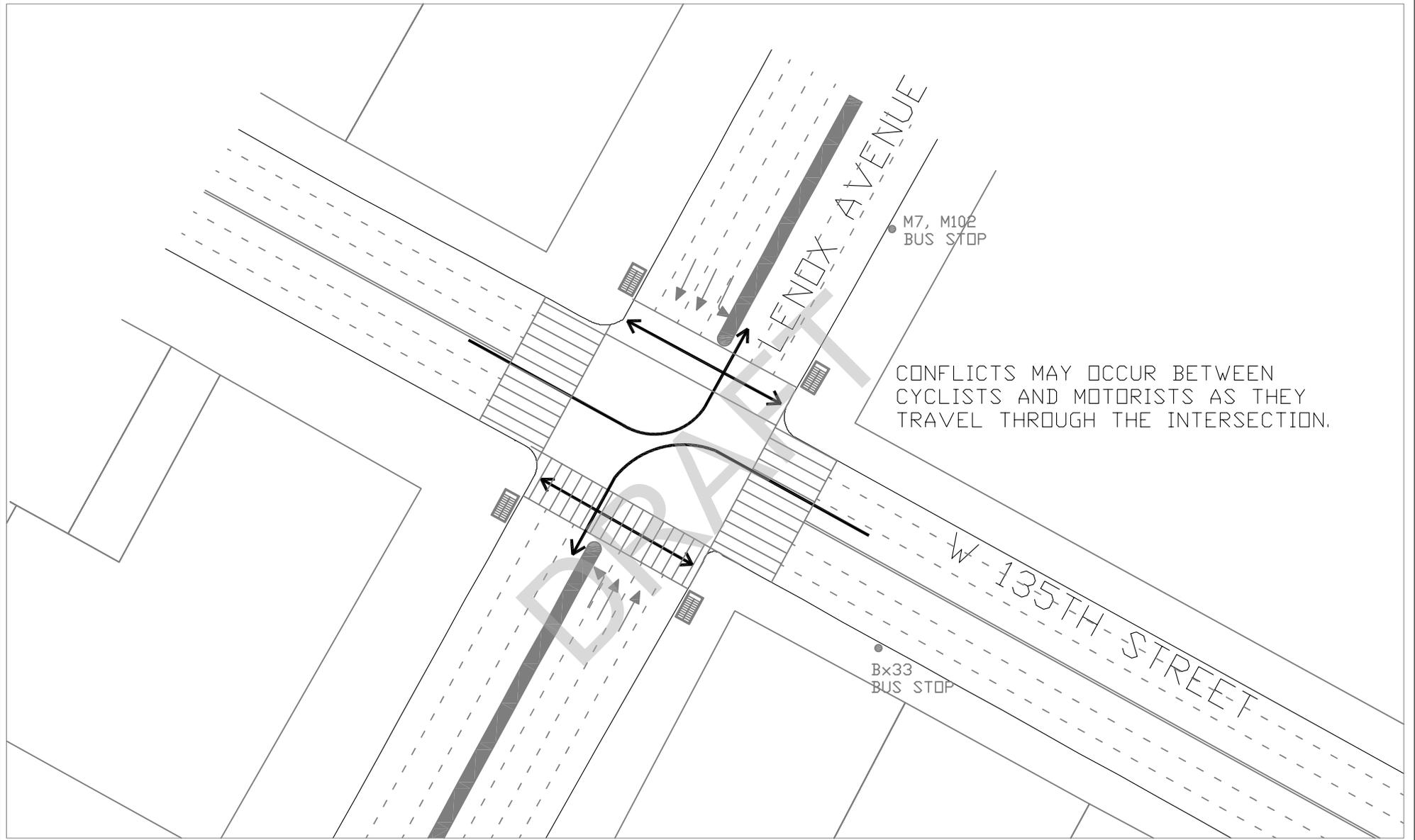
Location: 116th Street and St Nicholas Ave./Adam C. Powell Blvd.  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-12

Note: NOT TO SCALE



CONFLICTS MAY OCCUR BETWEEN CYCLISTS AND MOTORISTS AS THEY TRAVEL THROUGH THE INTERSECTION.

Location: 135th Street and Lenox Avenue  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study

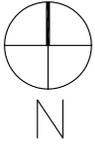


Exhibit: 7-13

Note: NOT TO SCALE

## 7.10 Bridge Access to Bicyclists and Pedestrians

In addition locations at or near bridge entrances on the East River were also studied and analyzed in terms of access to bicyclists and pedestrians. They are:

- Madison Avenue Bridge: Fifth Avenue and 138<sup>th</sup> Street
- Madison Avenue Bridge and Harlem River Park: Madison Avenue and 135<sup>th</sup> Street
- Third Avenue Bridge: Third Avenue and 128<sup>th</sup> Street
- Triborough Bridge: A Bridge Access Study is to be done by the NYCDOT Transportation Division. We are studying and analyzing existing conditions on and to the Triborough Bridge and to Randall's Island for bicyclists and pedestrians.
- Willis Avenue Bridge

Madison Avenue Bridge (refer to Exhibits 7-14a and 7-14b for a diagram of the intersection).

- Access from 138<sup>th</sup> Street and Fifth Avenue

A pedestrian/bicycle path on the Madison Avenue Bridge can be accessed from 138<sup>th</sup> Street at Fifth Avenue. This path runs on the north side of the bridge.

A connection to the Madison Avenue bridge has been proposed in the New York City Bicycle Master Plan by recommending the installation of dedicated bicycle routes on 138<sup>th</sup> Street (eastbound) and 139<sup>th</sup> Street (westbound). These proposed routes will also link cyclists to the St Nicholas Avenue bicycle lane.

- Access from 135<sup>th</sup> Street and Madison Avenue (includes accessing Harlem River Park)

At the end of 135<sup>th</sup> Street at Madison Avenue, a ramp leading to the Harlem River Drive includes a pedestrian/bicycle path that provides access to the Harlem River Park. This path is located on the north side of the ramp. Access to the Madison Avenue Bridge also exists for pedestrians and cyclists on the south side of the bridge. However, no signs at this intersection indicate the existence of a path on the bridge for pedestrians and cyclists.

A link to this location has been recommended in the New York City Bicycle Master Plan for cyclists traveling in the north-south direction. It is proposed for Fifth Avenue from Marcus Garvey Park to 135<sup>th</sup> Street.

Third Avenue Bridge – Access from 128<sup>th</sup> Street and Third Avenue (refer Exhibit 7-15 for a diagram of the intersection).

Entrance to the bicycle/pedestrian path of the Third Avenue Bridge is located at the northwest corner of 128<sup>th</sup> Street and Third Avenue. This path is located on the south side of the bridge's exit ramp.

To get on the Third Avenue Bridge pathway from the south side of the intersection, the cyclist or pedestrian needs to use a pedestrian overpass (pedestrian bridge) from the southwest corner of the intersection to get to the north side of the intersection. This overpass is not handicapped accessible and a cyclist has to dismount his bicycle to get across. The overpass was built for school children and pedestrians in order to create a safer crossing of 128<sup>th</sup> Street.

This intersection is regulated by stop signs; however vehicles exiting the bridge are not required to stop at the intersection. These vehicles speed off the bridge and rarely stop or slow down as they get on 128<sup>th</sup> Street. Before the reconstruction of the bridge, cyclists were seen often crossing 128<sup>th</sup> Street at street level where conflicts would occur between motorists and cyclists at the intersection. The volumes of vehicles exiting from the Third Avenue Bridge are 1,630 during the morning peak hour, 850 during the midday peak hour, and 1,650 during the evening peak hour.

A connection to the Third Avenue Bridge has been proposed in the New York City Bicycle Master Plan by recommending the installation of a bicycle lane or route on Third Avenue between the bridge and the closest proposed east-west bicycle route.

Currently, during the reconstruction of the bridge pedestrians and cyclists have to use a temporary path on the north side of the Third Avenue Bridge, accessible from the intersection of Lexington Avenue and 129<sup>th</sup> Street.

Triborough Bridge - 125<sup>th</sup> Street and Second Avenue (refer to Exhibit 7-16 for a diagram of the intersection).

125<sup>th</sup> Street is a two-way arterial with two travel lanes and a parking lane in each direction. Second Avenue is a 60-foot wide avenue. At this location it has four southbound travel lanes and restricted parking regulations at the curb. South of 124<sup>th</sup> Street it becomes a 105-foot wide

avenue until 120<sup>th</sup> Street with a service road on the east side. In the New York City Bicycle Master Plan, a bicycle lane has been proposed on Second Avenue to connect cyclists from/to the Triborough Bridge pathways from/to Midtown Manhattan. Also in the east-west direction on-street bicycle lanes have been proposed on 124<sup>th</sup> Street and on 127<sup>th</sup> Street.

Entrances to the Triborough Bridge bicycle and pedestrian pathways exist at 126<sup>th</sup> Street/Second Avenue and 124<sup>th</sup> Street/Second Avenue. There are no signs at the approaches indicating that these paths exist on the bridge and can be accessed from those locations. Also, more crosswalks can be provided to make connections to the path from 124<sup>th</sup> Street or 126<sup>th</sup> Street. In addition, cyclists wanting to ride on the bridge using the bicycle/pedestrian pathways have to dismount from their bicycles in order to cross the bridge. Signs have been posted by the MTA Bridges and Tunnels Authority.

Willis Avenue Bridge - 125<sup>th</sup> Street and First Avenue (refer to Exhibit 7-17 for a diagram of the intersection).

The intersection of 125<sup>th</sup> Street and First Avenue has an unusual geometry. At this intersection First Avenue comes to an end and vehicles can access secondary streets which lead either to the Harlem River Drive, 126<sup>th</sup> Street or 125<sup>th</sup> Street.

At this intersection is the entrance to the Willis Avenue Bridge. First Avenue traffic (five lanes) feeds directly into the bridge entrance, while those who wish to bypass the bridge can stay in an eastern lane on First Avenue so as to enter a side road that turns left under the bridge onto 126<sup>th</sup> Street. There is a bicycle lane on First Avenue on the west side of the road; however, the bicycle lane ends suddenly at 124<sup>th</sup> Street. Vehicles making left turns from First Avenue are often in conflict with cyclists and do not always yield to cyclists trying to get on the Willis Avenue Bridge. Also, there are no signs or pavement markings informing motorists of the presence of bicyclists at the intersection.

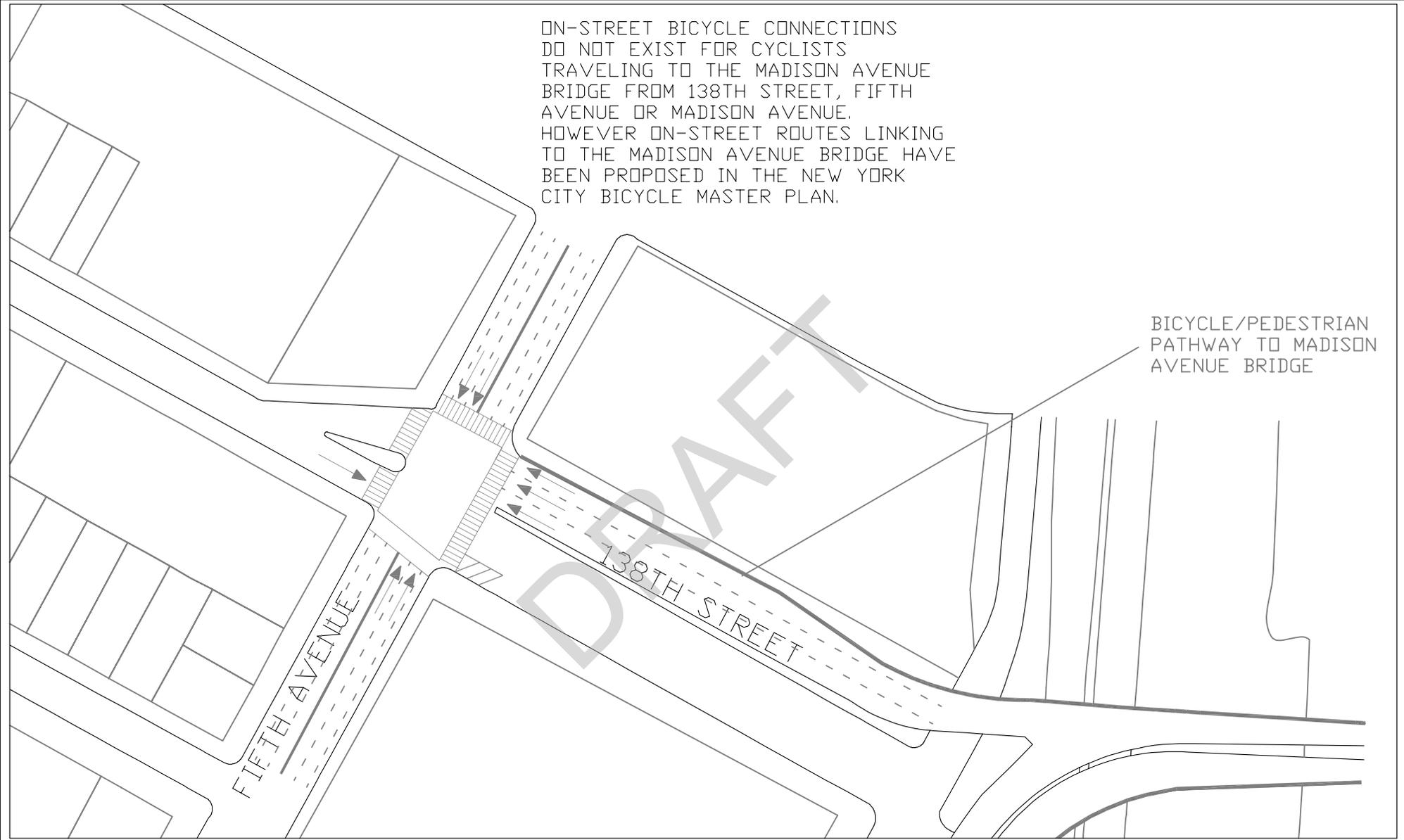
After its intersection with First Avenue, 125<sup>th</sup> Street curves south to provide access to the FDR southbound lanes. There is also a Department of Sanitation (DOS) hauling road, which runs under the Triborough Bridge and is used to access the salt piles that currently sit on the shore

of the Harlem River. On the western side of the Willis Avenue Bridge is a southbound road from which cars can only turn onto 125th Street.

A new Willis Avenue Bridge is planned to be built in the near future just south of the existing bridge. It will include a bicycle/pedestrian path on the north side of the bridge and still will be accessible from 125<sup>th</sup> Street and First Avenue.

DRAFT

ON-STREET BICYCLE CONNECTIONS DO NOT EXIST FOR CYCLISTS TRAVELING TO THE MADISON AVENUE BRIDGE FROM 138TH STREET, FIFTH AVENUE OR MADISON AVENUE. HOWEVER ON-STREET ROUTES LINKING TO THE MADISON AVENUE BRIDGE HAVE BEEN PROPOSED IN THE NEW YORK CITY BICYCLE MASTER PLAN.



BICYCLE/PEDESTRIAN PATHWAY TO MADISON AVENUE BRIDGE

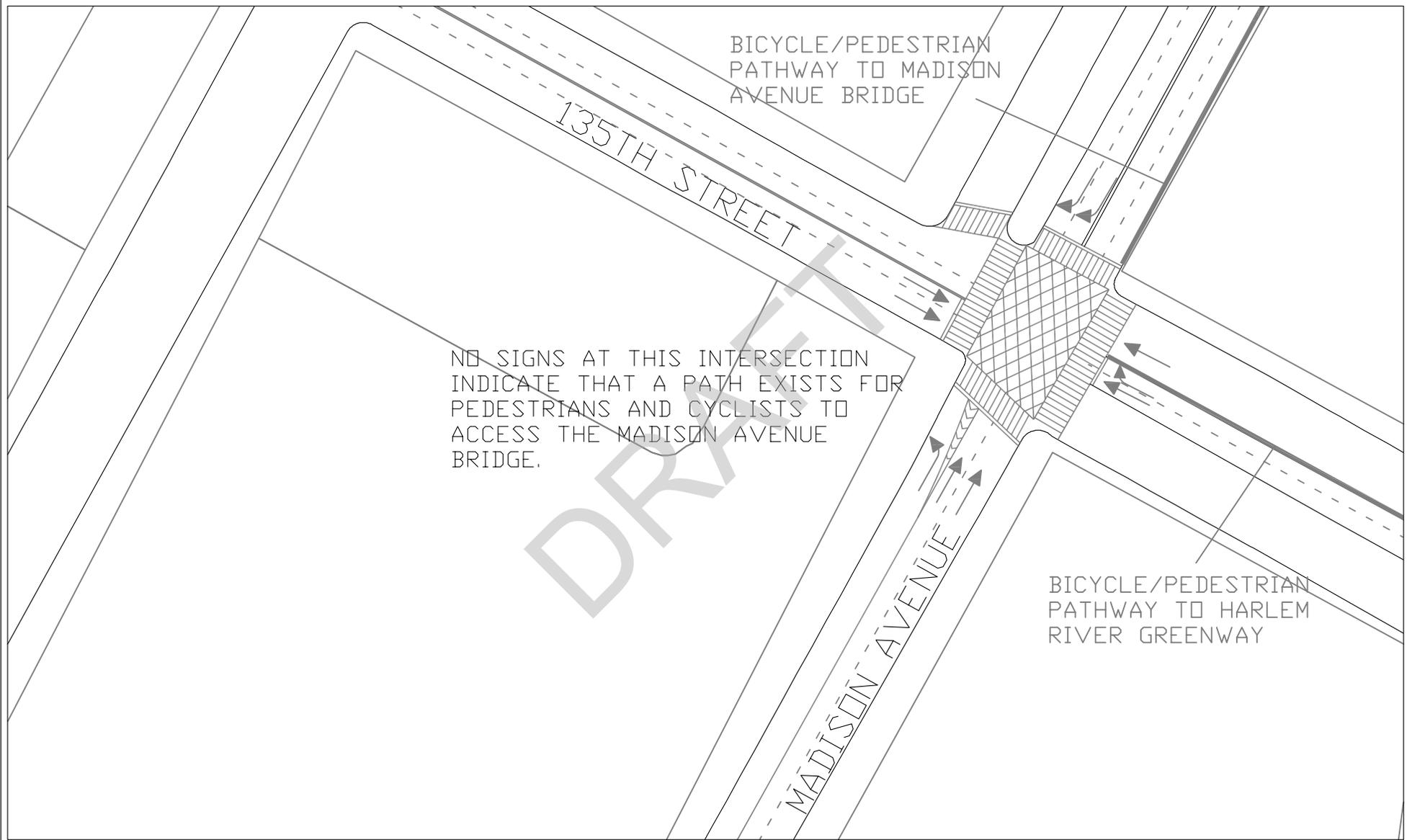
Location: Madison Avenue Bridge at 138th Street/Fifth Avenue  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-14a

Note: NOT TO SCALE



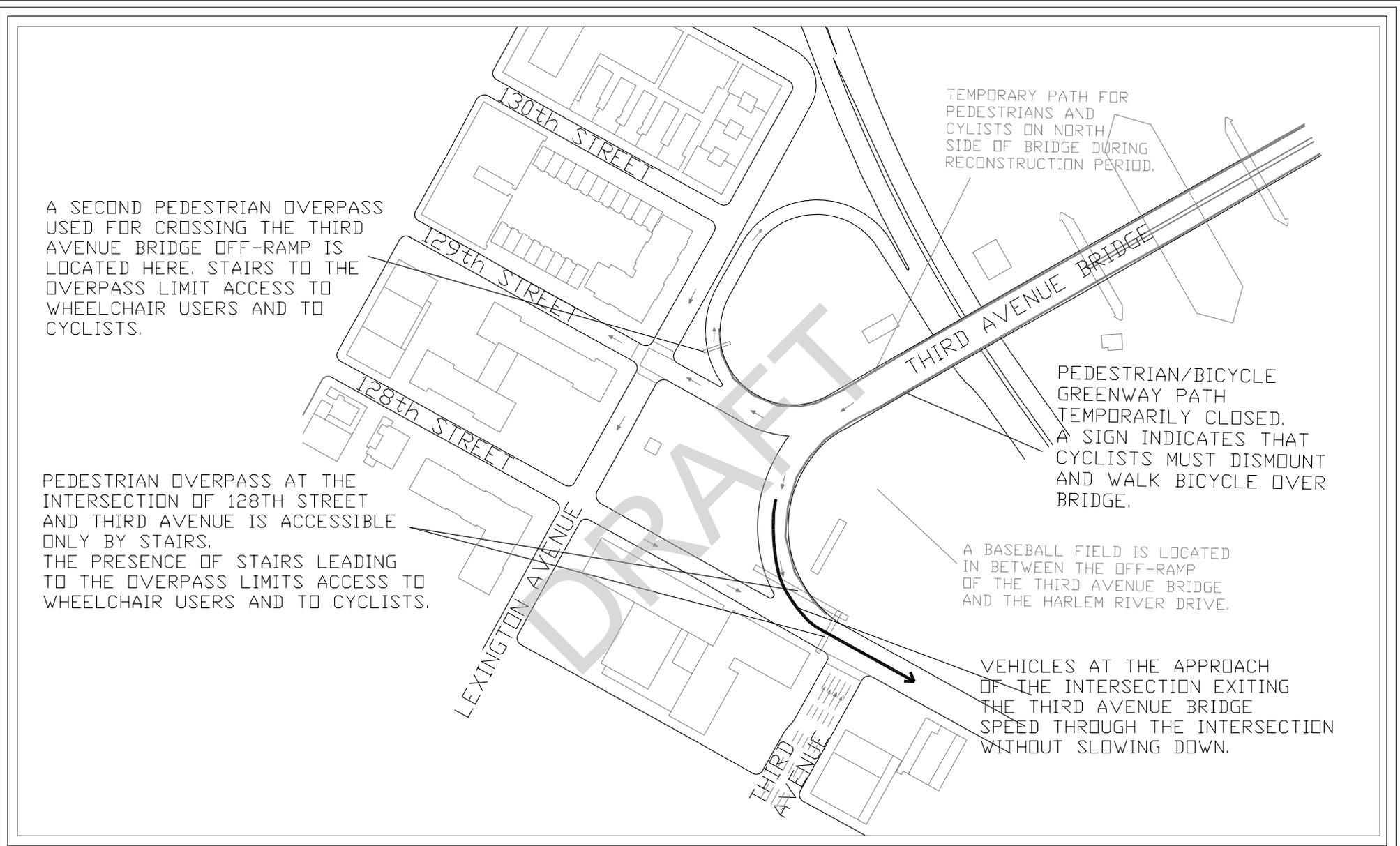
Location: Madison Avenue Bridge - 135th Street/Madison Avenue  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-14b

Note: NOT TO SCALE



Location: 128th Street and Third Avenue (Third Avenue Bridge)  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study

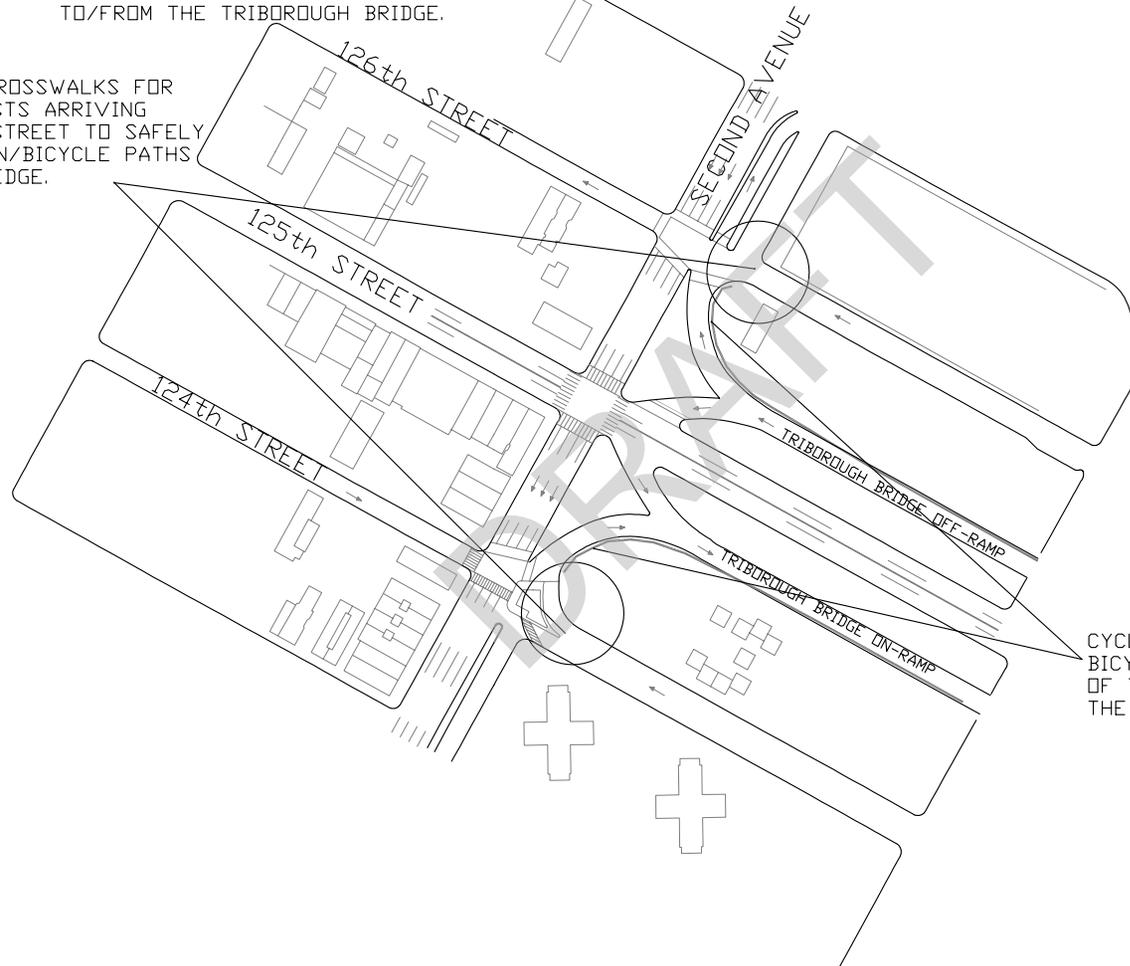


Exhibit: 7-15

Note: NOT TO SCALE

NO CONNECTION OR FACILITY PROVIDED  
ON SECOND AVENUE OR THE EAST-WEST  
STREETS FOR CYCLISTS TRAVELING  
TO/FROM THE TRIBOROUGH BRIDGE.

THERE IS A LACK OF CROSSWALKS FOR  
PEDESTRIANS OR CYCLISTS ARRIVING  
FROM 126TH OR 124TH STREET TO SAFELY  
ACCESS THE PEDESTRIAN/BICYCLE PATHS  
OF THE TRIBOROUGH BRIDGE.



CYCLISTS HAVE TO DISMOUNT FROM THEIR  
BICYCLES IN ORDER TO USE EITHER ONE  
OF THE PEDESTRIAN/BICYCLE PATHS OF  
THE TRIBOROUGH BRIDGE.

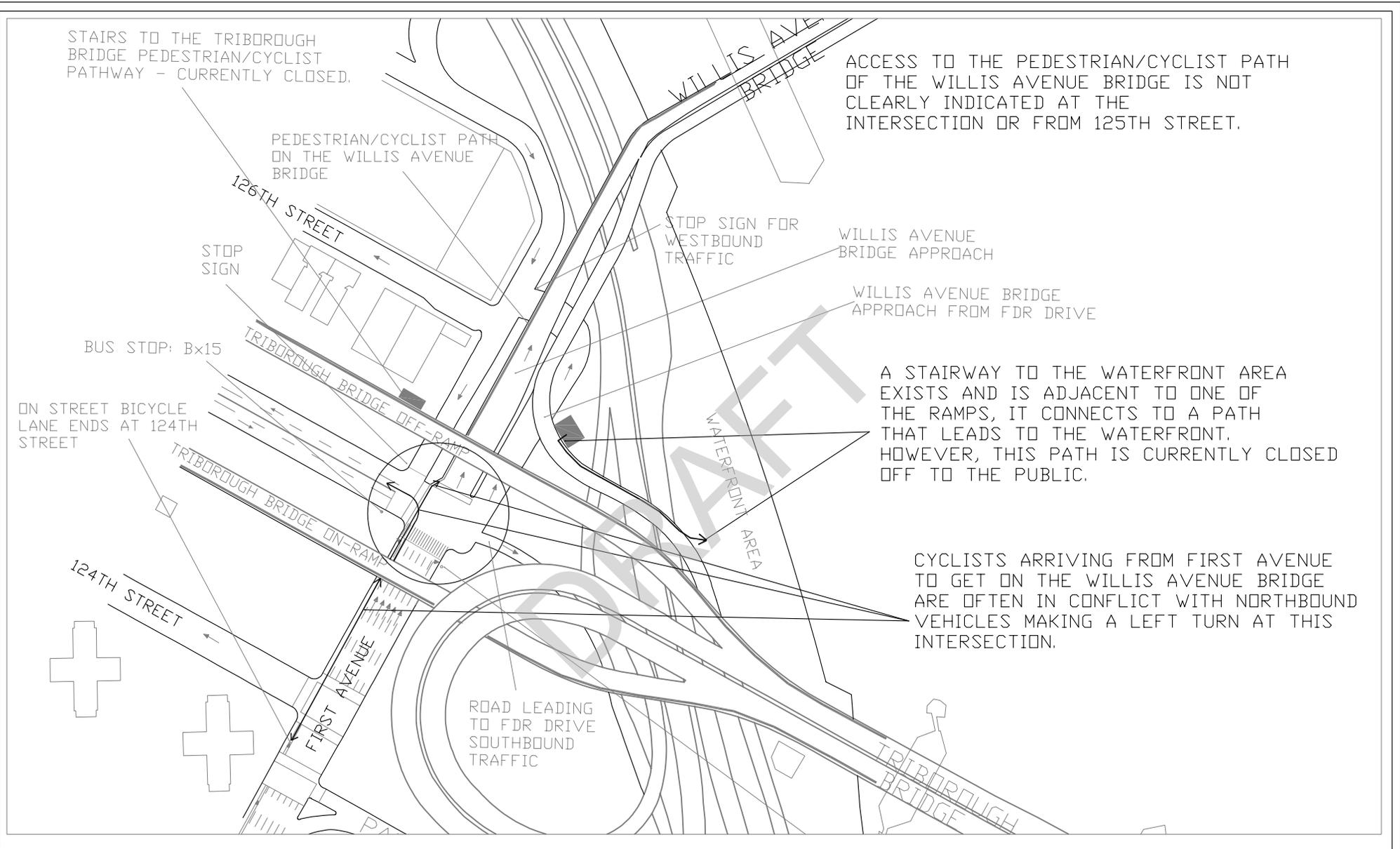
Location: 125th Street and Second Avenue  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-16

Note: NOT TO SCALE



Location: 125th Street and First Avenue  
Existing Conditions (Bicycle Analysis)

Harlem/Morningside Transportation Study



Exhibit: 7-17

Note: NOT TO SCALE

## 7.11 Waterfront Access

In this report we will also explore ways to improve bicycle and pedestrian access to the waterfront area at the eastern and at the western end of 125<sup>th</sup> Street. Projects planned for these areas will also be taken into consideration as we study the existing conditions and develop recommendations.

### East River Waterfront Area (East Side)

Accessing the waterfront is limited and difficult at the end of 125<sup>th</sup> Street with the presence of the “spaghetti” of ramps leading to the Triborough and Willis Avenue Bridges, the FDR Drive and the Harlem River Drive. Currently, the only way possible to access the waterfront is by using a stairway which is adjacent to the Willis Avenue Bridge ramp and leads to the bridge’s pedestrian pathway. During a field visit in March of 2004, it was observed that the bridge’s path to the waterfront was in disrepair, with a fence in poor condition and blocks of fallen concrete in the pathway. The southern end of this pathway leads to the waterfront and is currently closed to the public due to the salt piles stored on the waterfront and the bridge repair underway by the New York City Department of Transportation.



Fence of pathway in poor condition



Pathway leads to waterfront

In terms of the salt piles, a ULURP application has been filed by the New York City Department of Sanitation with the New York City Department of City Planning in order to be able to move the salt piles to a nearby park the Louis Guvillier Park and have it stored in a structure that will be constructed for this purpose.

The waterfront area north of the Triborough Bridge will be closed for 12 years and used as a construction staging area until the year 2016 due to the Harlem River Bridges reconstruction undertaken by NYCDOT. This will limit access to the waterfront for the residents. During this bridge reconstruction period the community including Community Board 11 expressed their desire to have some kind of interim waterfront access. NYCDOT for safety reasons cannot permit it and the waterfront will remain closed to the public. Once the repairs are completed by NYCDOT the waterfront site will be turned over to the New York City Department of Parks and Recreation who will then work on developing the greenway path and the waterfront area for recreational purposes.

#### Hudson River Waterfront (West Side)

On the west side, access to the waterfront from 125<sup>th</sup> Street is limited. There is no information available on 125<sup>th</sup> Street on how to get to the waterfront and the greenway path. Also, the sidewalks on 125<sup>th</sup> Street west of Broadway leading to the waterfront are narrower and deserted compared to the rest of 125<sup>th</sup> Street where the sidewalks are wider and more inviting. The median on Broadway at 125<sup>th</sup> Street which is on the way to the waterfront is poorly designed and can be improved for pedestrians.

Accessing the waterfront from a secondary street, St Clair Place is also difficult due to the lack of sidewalks on the south side of St Clair Place near 12<sup>th</sup> Avenue. It is currently dirt and grass. There are no crosswalks along St Clair Place west of 12<sup>th</sup> Avenue, except for the south crosswalk which exists at Marginal Street. This crosswalk unfortunately is in poor condition. During field visits it was also observed that curb cuts do not exist or have deteriorated along St Clair Place.

The New York City Economic Development Corporation has published a Master Plan, the “West Harlem Master Plan” that proposes to transform the West Harlem Piers/Waterfront area into a park and a recreational area which includes a fishing pier, a plaza, restaurants, market square etc. This plan hopefully will bring open space to the area, reconnect the neighborhood to the waterfront and attract investment in West Harlem.

Streetscape improvements have also been proposed in this master plan for 125<sup>th</sup> Street, 12<sup>th</sup> Avenue and the Broadway viaduct that can improve local streets and create a more hospitable connection to the waterfront. It includes:

- extending the park like character of the waterfront to Broadway,
- incorporating an on-street bicycle lane,
- improving street lighting,
- adding new lighting that can transform the 12<sup>th</sup> Avenue viaduct into a luminous gateway, and
- possible closing or narrowing of Marginal Street, between 132<sup>nd</sup> and 133<sup>rd</sup> Streets.

A Request for Proposal has already been released in July of 2004 for submission of consulting services for the planning and design of 125<sup>th</sup> Street in terms of streetscape and intermodal improvements.

Columbia University plans to expand their campus in the Manhattanville neighborhood on West Harlem and has recommended street improvements which reinforce EDC’s plans. They are the following:

- install new street lighting, furniture and trees,
- widen sidewalks,
- provide “neckdowns”,
- establish a bicycle-pedestrian path, and
- improve underside of the IRT viaduct

## 8.0 ACCIDENTS/SAFETY ANALYSIS

### 8.1 Introduction

The loss of life and property damage due to traffic and other transportation related accidents bring safety issues into the center of the traffic and transportation planning debate.

To identify safety issues and address traffic accidents problems, it was necessary first to examine the accident history in the study area and to see if there are any patterns. Consequently, all existing accident data for a three year period (1998, 1999 and 2000) was assembled and analyzed. These records were collected from the NYSDMV and NYSDOT. This data provide information such as location, severity type, accident type, collision type, time of the accident, and weather conditions among other criteria. The data was used to identify critical locations with high accident frequency and or severity in the study area.

After reviewing all the intersections on the main corridors the intersections with 20 or more average annual accidents for the analysis period were subjected to a detailed accident analysis. There are thirteen locations that met the criteria and are listed and shown in Exhibit 8-1 and Table 8-1.

**Table 8-1: Three Year Accident History**

No	Node #	Main St	Cross St	1998	1999	2000	Total	Average
1	10047	LEXINGTON AV	E 125TH ST	39	47	39	125	42
2	1187	AMSTERDAM AV	W 125TH ST	32	31	51	114	38
3	9266	MANHATTAN AV/ST	W 125TH ST	36	31	32	99	33
4	10086	3RD AV	E 125TH ST	32	25	41	98	33
5	9345	7TH AV/Adam Clayton	W 125TH ST	42	28	27	97	32
6	9368	LENOX AV	W 125TH ST	36	35	26	97	32
8	9377	LENOX AV	W 116TH ST	30	25	38	93	31
7	1149	BROADWAY NB	W 125TH ST	39	30	16	85	28
10	9391	5TH AV	125TH ST	28	27	22	77	26
11	9354	7TH AV/Adam Clayton	W 116TH ST	22	29	24	75	25
9	1369	LENOX AV	W 135TH ST	20	26	27	73	24
12	9943	MADISON AV	E 125TH ST	17	28	19	64	21
13	10129	2ND AV	E 116TH ST	21	21	22	64	21



The data showed that of the 13 locations, eight are along the 125<sup>th</sup> Street corridor. The intersection of E 125<sup>th</sup> Street and Lexington Avenue had the highest frequency with an average of 42 accidents per year over the three years. The location with the second most frequent accident was Amsterdam Avenue and W 125<sup>th</sup> Street with an average of 38 accidents per year. The study area data showed one location in the category with an average between 41 to 50 accidents per year, six locations with between 31 to 40 accidents, and six locations that averaged between 20 to 30 accidents per year.

Over the three year period (1998-2000) a total of 1161 accidents occurred at the 13 locations. The total accidents include both reportable (490) and non-reportable (671). Of the total reportable accidents, 614 were injuries and one fatality. There were 128 pedestrians and 28 bicyclists involved in the accidents during the three year period. The highest number of accidents involving pedestrians was observed at Amsterdam Avenue and W 125<sup>th</sup> Street and Lexington Avenue and E 125<sup>th</sup> street with 20 and 19 accidents respectively. Both intersections represented approximately 32% of the total accidents. Table 8-2 summaries the accident history by years for the study area.

**Table 8-2: Summary of the Accident History by Year**

<b>Year</b>	<b>Total Acc</b>	<b>Reportable</b>	<b>Non-Reportable</b>	<b>Fatalities</b>	<b>Injuries</b>	<b>Pedestrian</b>	<b>Bicyclist</b>
1998	394	141	253	0	188	44	11
1999	383	183	200	1	212	47	12
2000	384	166	218	0	214	37	5
<b>Total</b>	<b>1161</b>	<b>490</b>	<b>671</b>	<b>1</b>	<b>614</b>	<b>128</b>	<b>28</b>

## **8.2 Cost Analysis of Accidents**

Accidents are classified as either reportable or non-reportable. According to New York State Vehicle and Traffic Law, all accidents involving death, injury or resulting in property damage in excess of \$1,000 must be report to the NYS Department of Motor Vehicle (DMV) by police agencies, hence they are reportable accidents.

Non-Reportable accidents are defined as any accident that costs under \$1,000 in property damage.

There is a cost associated with all accidents, reportable and non-reportable. For reportable accidents, a cost is assigned based on the severity of personal injury and the amount of property damage sustained in the accident. There are three classifications for personal injury, Type A, Type B, and Type C; Type C being the least severe and Type A being the most severe form of injury.

Property damage is considered only when public or private properties such as buildings, houses, business stores or other assets are damaged due the accident but do not include damage or injuries to the cars, pedestrians or bicyclists involved in the accident. Table 8-3 shows average cost of accidents by class.

**Table 8-3: Average Cost of Accidents by Class**

Accidents Class	Average Cost	Relative Weight
Non-Reportable (NR)	\$1,000	1
Property Damage (PD)	\$3,800	4
Injury-Class C (IC)	\$96,000	96
Injury-Class B (IB)	\$385,000	385
Injury-Class A (IA)	\$1,548,000	1,548
Fatal Accidents (FA)	\$3,468,000	3,468

Table 8-4 shows the total cost for accidents occurring at Adam Clayton Blvd@W 125<sup>th</sup> Street for the year 1998.

**Table 8-4: Total Cost of Accidents at Adam Clayton Blvd / W 125<sup>th</sup> Street (1998)**

No. of Accidents	Accidents Class	Average Cost	Total Cost
30	Non-Reportable	\$1,000	\$30,000
0	Property Damage	\$3,800	\$0
10	Injury-Class C	\$96,000	\$960,000
2	Injury-Class B	\$385,000	\$770,000
2	Injury-Class A	\$1,548,000	\$3,096,000
0	Fatal Accident	\$3,468,000	\$0
<b>Total Cost:</b>			<b>\$4,856,000</b>

The analysis shows that the total cost for the 42 accidents that occurred at this intersection in 1998 was approximately \$4.8 million with the highest cumulative cost resulting from two Class A injuries.

### 8.3 Frequency and Severity of Accidents

Frequency and severity are two critical factors in the analysis of accidents. These two factors allow for a better understanding of the problems at the study locations. The NYCDOT Safety Division developed a set of equations to help determine the severity and frequency of accidents at a location.

#### *Severity Factor*

The severity factor (SF) indicates whether or not a location tends to have accident with significant levels of damage. A value can be assigned between 0 and 10, ten being the highest level of severity and zero the lowest level. Various levels of severity can be determined from the relative weight assigned to each accident class based on the accident cost. Table 8-5 shows the severity factor calculation for Adam Clayton Boulevard @ West 125<sup>th</sup> street intersection for year 1998.

**Table 8-5: Severity Factor at Adam Clayton Blvd@W 125<sup>th</sup> Street (1998)**

Accidents Class	Relative Weight	Frequency (1998)	Total Relative Weight
Non-Reportable (NR)	1	30	30
Property Damage (PD)	4	0	0
Injury-Class C (IC)	96	10	960
Injury-Class B (IB)	385	2	770
Injury-Class A (IA)	1,548	2	3,096
Fatal accidents (FA)	3,468	0	0
		Total	4,856
		<b>SF=Ln (Total)</b>	<b>8.49</b>

The severity factor of 8.49 indicates that this location tends to have accident with significant levels of damage with the likelihood of accidents resulting in Class C injuries.

### ***Frequency Factor***

The frequency at which accidents occur at a location (frequency factor (FF)) is an additional tool to help understand accidents at a location. The frequency factor is based in part on the accident records supplied by NYSDMV and NYSDOT Centralized Local Accident Surveillance System (CLASS). This value assigned ranges from 0 to 10, representing 10 the highest level of frequency accidents for the intersection.

The critical factors (frequency and severity), based on Index Equations developed by the NYCDOT Safety Division, is helpful for determining the frequency or likelihood, and severity of traffic accidents.

### ***Composite Index***

The composite index represents the ratio of the severity factor to the frequency factor  $CI=SF/FF$ . If the complexity index is greater than 1.0 then the location's accidents will be skewed toward severity; if the factor is less than 1.0 then accidents will be skewed toward frequency. With a severity factor greater than 7.0, a frequency factor greater than 6.0, and a composite index greater than 1.0, accidents with a fatality or Type A injuries are likely to happen at that location. Table 8-6 shows an interpretation summary of the severity factors, frequency factors, and composite index values that correspond to the type of injury and damage that is sustained in an accident.

**Table 8-6: Interpretation of the Critical Factors in Accidents**

Severity Factor 7-10	Frequency Factor 7-10	Composite Index >1.0
This scenario indicates the likelihood of fatal accidents or Type A injuries, or random accidents.		
Severity Factor 7-10	Frequency Factor 7-10	Composite Index <1.0
This scenario indicates Type A and B injuries, no fatalities, but significant damages.		
Severity Factor 7-10	Frequency Factor 7-10	Composite Index =1.0
This scenario illustrates fatal accidents or Type A or B injuries, there is both frequency and severity.		
Severity Factor 4-7	Frequency Factor 4-7	Composite Index <1.0
This scenario illustrates Type C injuries and non-reportable accidents.		
Severity Factor 4-7	Frequency Factor 4-7	Composite Index >1.0
This scenario illustrates Type C injuries and non-reportable accidents.		

## 8.4 Annual Accident Analysis

### Year 1998

During 1998 there were a total of 394 accidents, of which 253 were non-reportable and 141 reportable. Of the 141 reportable accidents, 17 resulted in Class A injuries, 18 Class B injuries and 135 Class C injuries. No fatalities were reported for this year. Table 8-7 shows the total number of accidents by location, fatalities and class with corresponding frequency and severity factors and composite index. Table 8-8 shows the break down of accidents by collision types with pedestrians and bicyclist involved.

The *7<sup>th</sup> Avenue/Adam Clayton Blvd and W 125<sup>th</sup> Street* intersection had 42 accidents, the highest number for that year. There were 12 reportable accidents and 30 non-reportable. From the 12 reportable accidents two were class A injury, two class B and ten class C injury. Eleven percent of the total annual accidents in the study area occurred at this intersection. This intersection also had the highest frequency factor (FF) of 7.48 for the year.

The intersections of *E 125<sup>th</sup> Street/Lexington Avenue and W 125<sup>th</sup> Street/Broadway* were tied for second in the frequency of accidents each accounting for approximately 10% of the annual accidents. The intersection with the highest number of injuries (30) and severity factor (SF) of 9.14 was *Lenox Avenue/W 116<sup>th</sup> Street* with a total of 17 reportable accidents. From the 17 reportable accidents five were class A injury, five resulted in class B and twenty-three resulted in class C injury.

**Table 8-7  
1998 Traffic Accident Analysis**

Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frecuency Factor	Composite Index
9345	7TH AV/Adam Clayton	W 125TH ST	0	2	2	10	0	30	42	8.25	7.48	1.10
10047	LEXINGTON AV	E 125TH ST	0	0	0	14	2	21	39	7.00	7.33	0.95
1149	BROADWAY NB	W 125TH ST	0	0	0	16	2	31	39	7.13	7.33	0.97
9266	MANHATTAN AV/ST	W 125TH ST	0	3	1	8	1	25	36	8.43	7.17	1.18
9368	LENOX AV	W 125TH ST	0	2	2	13	0	21	36	8.30	7.17	1.16
1187	AMSTERDAM AV	W 125TH ST	0	1	3	7	0	19	32	7.89	6.93	1.14
10086	3RD AV	E 125TH ST	0	2	2	7	0	22	32	8.19	6.93	1.18
9377	LENOX AV	W 116TH ST	0	5	5	23	0	13	30	9.14	6.80	1.34
9391	5TH AV	125TH ST	0	0	3	6	0	19	28	7.23	6.66	1.09
9354	7TH AV/Adam Clayton	W 116TH ST	0	0	0	12	1	13	22	6.83	6.18	1.11
10129	2ND AV	E 116TH ST	0	1	0	8	0	13	21	7.51	6.09	1.23
1369	LENOX AV	W 135TH ST	0	0	0	5	0	15	20	5.98	5.99	1.00
9943	MADISON AV	E 125TH ST	0	1	0	6	1	11	17	7.43	5.67	1.31

Note: Calculation for Severity Factor, Frequency Factor, and Composite index is based on safety index equations developed by NYCDOT Safety Division utilizing NYC accident records supplied by NYS-DMV, NYSDOT Class System and accident cost research.

**Table 8-8  
1998 Traffic Accident History**

Node #	Main St	Cross St	Total Acc	Reportable	Non-Reportable	Fatal	Injury	Pedestrian	Bicyclist	Fixed Object	Wet Road	Night	Left Turn	Rear End	Overtaking	Right Angle	Righth Turn	Head On	Sideswipe	Other
9345	7TH AV/Adam Clayton	W 125TH ST	42	12	30	0	20	4	1	0	2	5	1	2	0	1	0	0	0	8
10047	LEXINGTON AV	E 125TH ST	39	18	21	0	17	6	3	0	2	4	3	2	0	1	0	0	1	11
1149	BROADWAY NB	W 125TH ST	39	8	31	0	16	1	0	0	1	5	1	1	1	0	1	0	0	4
9266	MANHATTAN AV/ST	W 125TH ST	36	11	25	0	14	4	0	0	3	6	2	1	1	1	0	0	0	6
9368	LENOX AV	W 125TH ST	36	15	21	0	18	5	2	0	3	8	2	5	1	0	0	0	0	7
1187	AMSTERDAM AV	W 125TH ST	32	13	19	0	12	5	1	0	4	6	2	1	2	0	0	0	0	8
10086	3RD AV	E 125TH ST	32	10	22	0	12	3	1	0	2	6	1	1	1	2	0	0	0	5
9377	LENOX AV	W 116TH ST	30	17	13	0	33	4	0	0	1	5	0	0	2	10	0	0	0	5
9391	5TH AV	125TH ST	28	9	19	0	9	3	0	0	4	3	3	1	0	0	0	0	0	5
9354	7TH AV/Adam Clayton	W 116TH ST	22	9	13	0	14	0	1	0	1	6	3	1	0	2	0	0	0	3
10129	2ND AV	E 116TH ST	21	8	13	0	10	5	0	0	0	3	0	0	0	1	1	0	0	6
1369	LENOX AV	W 135TH ST	20	5	15	0	5	3	1	0	0	4	0	0	0	1	0	0	0	4
9943	MADISON AV	E 125TH ST	17	6	11	0	8	1	1	0	1	2	0	2	0	1	0	0	0	3

### Accidents Involving Pedestrians and Bicyclists

In 1998 there were 44 accidents involving pedestrians at various locations throughout the study area. The highest pedestrian accident location was *Lexington Avenue/E 125<sup>th</sup> Street* where six occurred. The locations of *Amsterdam Avenue/W 125<sup>th</sup> Street*, *Lenox Avenue/W 125<sup>th</sup> Street* and *2<sup>nd</sup> Avenue/E 116<sup>th</sup> Street* followed with five pedestrian accidents each. There were 11 accidents involving bicyclists in the study area. The location with the highest number of accidents involving bicyclists was *Lexington Avenue/ E 125<sup>th</sup> Street* with three accidents.

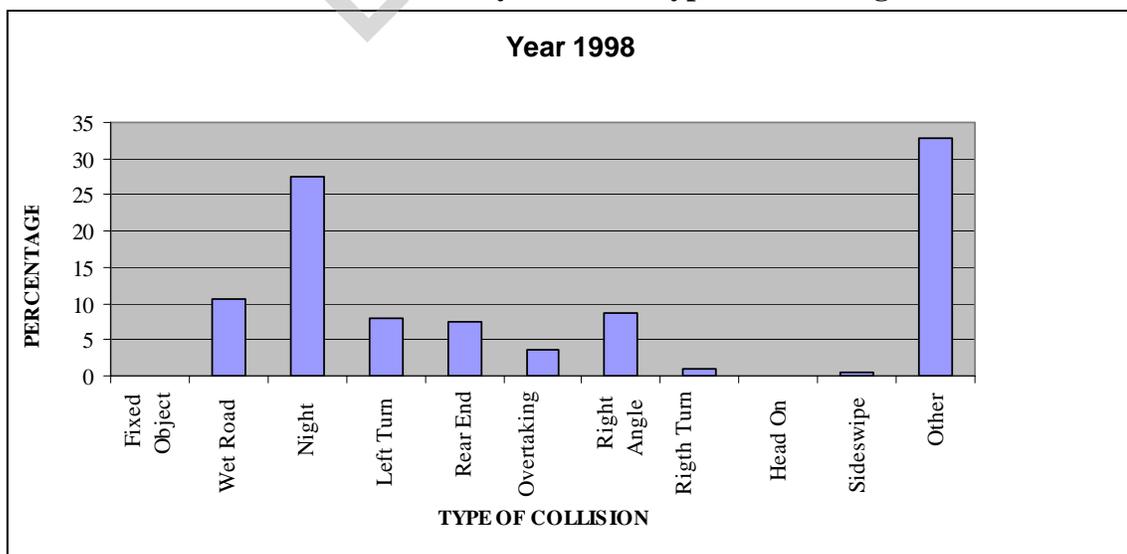
### Accidents by Collision Type and driving Conditions

As shown in Exhibit 8-2, during 1998, 28% of the accidents occurred during night time and 11% occurred under wet roadway conditions. The distribution of accidents by collision type showed that 9% were right angle, 8% left turn, and 7% rear end. The location with the highest frequency of accident with right angle collision type was *Lenox Avenue/W 116<sup>th</sup> Street* representing with 50% of the total.

The highest frequency of rear end collision was observed at *Lenox Avenue/ W 125<sup>th</sup> Street* with 30% of the total. Left turn collision type was relatively low and evenly distribute throughout the study area.

Exhibit 8-2 shows the distribution of reportable accidents in 1998 and driving conditions.

**Exhibit 8-2: 1998 Accidents by Collision Type and Driving Conditions**



### Severity and Frequency of Accidents

During 1998 of the 13 locations studied 11 intersections had a severity factor greater than 7.0, and 11 with frequency factor greater than 6.0. The composite index for 11 of the 13 intersections was greater than 1.0. This indicates that the majority of the accidents that occurred at these locations were skewed toward severity. Table 8-7 shows the severity factor, frequency factor and the composite index for all analyzed intersections in year 1998.

### **Year 1999**

During 1999 there were a total of 383 accidents, of which 200 were non-reportable and 183 were reportable. Of the 183 reportable accidents, 14 resulted in Class A injuries, 24 resulted in Class B injuries and 167 resulted in Class C injuries. One fatality was reported for this year at *Lenox Avenue/W 125<sup>th</sup> Street*. Table 8-9 shows the total number of accidents by location, fatalities and injury class with corresponding frequency factor, severity factor and composite index. Table 8-10 shows the break down of accidents by collision types with pedestrians and bicyclist involved.

The intersection of *Lexington Avenue/E 125<sup>th</sup> Street* had the highest number of accidents with 47. There were 24 reportable accidents and 23 non-reportable. From the 24 reportable accidents, four resulted in class A injury, five in class B and twenty-five in class C injury. Twelve percent of the total annual accidents occurred at this intersection, with the highest frequency factor (FF) of 7.70 and the highest severity factor (SF) of 9.02 from all the locations in the study area.

The intersection of *W 125<sup>th</sup> Street/Lenox Avenue* was ranked second in frequency with 35 accidents, being approximately 9% of the total. Of the 35 accidents, 13 were reportable with one class A injury, sixteen class C injury and one fatality.

**Table 8-9  
1999 Traffic Accident Analysis**

Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frecuency Factor	Composite Index
10047	LEXINGTON AV	E 125TH ST	0	4	5	25	0	23	47	9.02	7.70	1.17
9368	LENOX AV	W 125TH ST	1	1	0	16	0	22	35	8.55	7.11	1.20
1187	AMSTERDAM AV	W 125TH ST	0	1	0	10	0	17	31	7.60	6.87	1.11
9266	MANHATTAN AV/ST	W 125TH ST	0	0	4	14	0	13	31	7.74	6.87	1.13
1149	BROADWAY NB	W 125TH ST	0	0	1	10	0	18	30	6.99	6.80	1.03
9354	7TH AV/Adam Clayton	W 116TH ST	0	3	4	13	0	12	29	8.67	6.73	1.29
9345	7TH AV/Adam Clayton	W 125TH ST	0	0	1	18	0	11	28	7.43	6.66	1.12
9943	MADISON AV	E 125TH ST	0	1	4	3	0	19	28	7.89	6.66	1.18
9391	5TH AV	125TH ST	0	0	0	11	0	16	27	6.75	6.59	1.02
1369	LENOX AV	W 135TH ST	0	0	2	17	0	15	26	7.55	6.52	1.16
10086	3RD AV	E 125TH ST	0	1	0	10	0	13	25	7.59	6.44	1.18
9377	LENOX AV	W 116TH ST	0	2	1	13	2	9	25	8.23	6.44	1.28
10129	2ND AV	E 116TH ST	0	1	2	7	0	12	21	7.77	6.09	1.28

Note: Calculation for Severity Factor, Frecuency Factor, and Composite index is based on safety index equations developed by NYCDOT Safety Division utilizing NYC accident records supplied by NYS-DMV, NYSDOT Class System and accident cost research.

**Table 8-10  
1999 Traffic Accident History**

Node #	Main St	Cross St	Total Acc	Reportable	Non-Reportable	Fatal	Injury	Pedestrian	Bicyclist	Fixed Object	Wet Road	Night	Left Turn	Rear End	Overtaking	Right Angle	Righth Turn	Head On	Sideswipe	Other
10047	LEXINGTON AV	E 125TH ST	47	24	23	0	35	8	2	0	8	12	1	6	2	1	1	0	1	12
9368	LENOX AV	W 125TH ST	35	13	22	1	17	3	0	0	3	6	3	3	1	2	0	0	0	4
1187	AMSTERDAM AV	W 125TH ST	31	14	17	0	11	6	0	0	3	5	0	4	0	0	1	0	0	9
9266	MANHATTAN AV/ST	W 125TH ST	31	18	13	0	19	5	1	0	3	10	3	2	1	1	2	0	1	8
1149	BROADWAY NB	W 125TH ST	30	12	18	0	11	1	1	0	2	5	2	1	3	0	3	0	0	3
9354	7TH AV/Adam Clayton	W 116TH ST	29	17	12	0	20	5	3	0	1	5	0	4	2	2	0	0	0	9
9345	7TH AV/Adam Clayton	W 125TH ST	28	17	11	0	19	3	0	0	2	6	1	9	2	0	0	1	0	4
9943	MADISON AV	E 125TH ST	28	9	19	0	9	4	2	0	3	1	0	2	1	0	0	0	0	6
9391	5TH AV	125TH ST	27	11	16	0	11	5	0	0	1	5	2	1	3	0	0	0	0	5
1369	LENOX AV	W 135TH ST	26	11	15	0	21	1	2	0	1	6	0	1	1	4	0	0	0	5
10086	3RD AV	E 125TH ST	25	12	13	0	12	1	0	0	1	1	1	4	1	2	2	0	0	2
9377	LENOX AV	W 116TH ST	25	16	9	0	17	2	0	0	5	7	1	4	1	4	1	0	0	5
10129	2ND AV	E 116TH ST	21	9	12	0	10	3	1	0	1	2	1	1	0	2	0	0	0	5

### Accidents Involving Pedestrians and Bicyclists

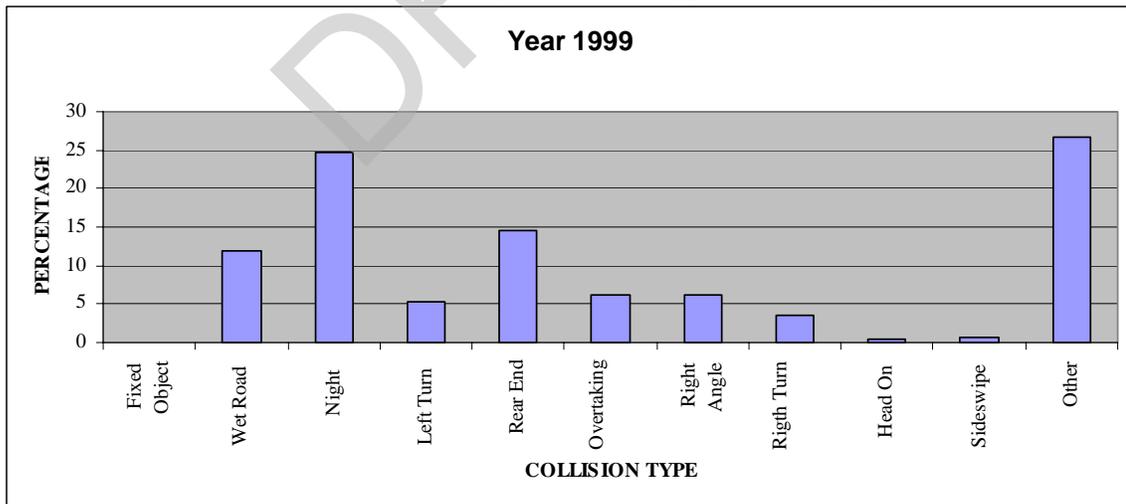
In 1999 there were 47 pedestrian accidents at various locations in the study area. The location with the highest pedestrian accident was *Lexington Avenue/E 125<sup>th</sup> Street* with eight accidents. The location of *Amsterdam Avenue/W 125<sup>th</sup> Street* followed with six pedestrian accidents. There were twelve accidents involving bicyclists in the study area. The location with the highest bicyclist accident was *Adam Clayton Blvd/ W 116<sup>th</sup> Street* with three accidents.

### Accidents by Collision Type and driving Conditions

As shown in Exhibit 8-3 during 1999, 25% of the accidents occurred during night time and 12% occurred under wet roadway conditions. The distribution of accidents by collision types showed that 15% were rear end, 6% right angle, and 6% overtaking. The location with the highest frequency of rear end collision type was *Adam Clayton Blvd/W 125<sup>th</sup> Street* with nine accidents representing 22 % of the total occurred.

The distribution of right angle and overtaking collision accidents were distributed evenly throughout the area. Exhibit 8-3 shows the distribution of reportable accidents and driving conditions for 1999.

**Exhibit 8-3: 1999 Accidents by Collision Type and Driving Conditions**



### Severity and Frequency of Accidents

During 1999 of the 13 locations studied 11 intersections had a severity factor greater than 7.0, and all the 13 intersections had a frequency factor greater than 6.0. The composite index for the 13 intersections was greater than 1.0. This indicates that the majority of the accidents that occurred at these locations were skewed toward severity. Table 8-9 shows the severity factor, frequency factor and the composite index for all analyzed intersections for the year 1999.

### **Year 2000**

During 2000 there were a total of 384 accidents, of which 218 were non-reportable and 166 were reportable. Of the 166 reportable accidents, 15 resulted in Class A injuries, 15 resulted in Class B injuries and 175 resulted in Class C injuries. No fatalities were reported for this year. Table 8-11 shows the total number of accidents by location, fatalities and injury class with corresponding frequency factor, severity factor and composite index. Table 8-12 shows the break down of accidents by collision types with pedestrians and bicyclist involved.

The location of *Amsterdam Avenue/W 125<sup>th</sup> Street* had the highest number of accidents with 51 during the year. There were 26 reportable accidents and 25 non-reportable. From the 26 reportable accidents at this intersection, one resulted in class A injury, five resulted in class B injury and seventeen resulted in class C injury. Approximately thirteen percent of the total annual accidents occurred at this intersection. This intersection had the highest frequency factor (FF) of 7.86 for the year.

The intersection of *E 125<sup>th</sup> Street/3<sup>rd</sup> Avenue* was second in frequency with 41 accidents, which represented 11% of the annual total accidents. The intersection of *Lenox Avenue/W 116<sup>th</sup> Street* had the highest severity factor (SF) of 9.17 with six class A injuries type of accident for the year 2000.

**Table 8-11  
2000 Traffic Accident Analysis**

Node #	Main St	Cross St	Fatal	Injury A	Injury B	Injury C	Property Damage	Non-Reportable	Total Accident	Severity Factor	Frequency Factor	Composite Index
1187	AMSTERDAM AV	W 125TH ST	0	1	5	17	0	25	51	8.31	7.86	1.06
10086	3RD AV	E 125TH ST	0	1	0	26	0	22	41	8.07	7.43	1.09
10047	LEXINGTON AV	E 125TH ST	0	4	2	12	0	27	39	8.76	7.33	1.20
9377	LENOX AV	W 116TH ST	0	6	3	18	0	19	38	9.17	7.28	1.26
9266	MANHATTAN AV/ST	W 125TH ST	0	0	1	7	1	24	32	6.76	6.93	0.98
9345	7TH AV/Adam Clayton	W 125TH ST	0	1	0	12	0	19	27	7.67	6.59	1.16
1369	LENOX AV	W 135TH ST	0	0	0	19	0	16	27	7.28	6.59	1.10
9368	LENOX AV	W 125TH ST	0	0	0	12	0	18	26	6.83	6.52	1.05
9354	7TH AV/Adam Clayton	W 116TH ST	0	0	4	14	0	11	24	7.73	6.36	1.22
9391	5TH AV	125TH ST	0	0	0	11	0	14	22	6.74	6.18	1.09
10129	2ND AV	E 116TH ST	0	2	0	9	0	15	22	8.05	6.18	1.30
9943	MADISON AV	E 125TH ST	0	0	0	10	1	8	19	6.65	5.89	1.13
1149	BROADWAY NB	W 125TH ST	0	0	0	8	0	0	16	6.42	5.55	1.16

Note: Calculation for Severity Factor, Frequency Factor, and Composite index is based on safety index equations developed by NYCDOT Safety Division utilizing NYC accident records supplied by NYS-DMV, NYSDOT Class System and accident cost research.

**Table 8-12  
2000 Traffic Accident History**

Node #	Main St	Cross St	Total Acc	Reportable	Non-Reportable	Fatal	Injury	Pedestrian	Bicyclist	Fixed Object	Wet Road	Night	Left Turn	Rear End	Overtaking	Right Angle	Righth Turn	Head On	Sideswipe	Other
1187	AMSTERDAM AV	W 125TH ST	51	26	25	0	24	9	1	0	7	5	2	7	4	0	1	0	2	10
10086	3RD AV	E 125TH ST	41	19	22	0	28	2	1	0	2	7	5	0	4	4	1	1	0	4
10047	LEXINGTON AV	E 125TH ST	39	12	27	0	22	5	1	0	2	5	0	2	1	1	0	1	0	7
9377	LENOX AV	W 116TH ST	38	19	19	0	27	2	0	0	3	8	1	1	0	11	1	0	0	5
9266	MANHATTAN AV/ST	W 125TH ST	32	8	24	0	8	3	0	0	2	1	0	1	2	0	1	0	0	4
9345	7TH AV/Adam Clayton	W 125TH ST	27	8	19	0	13	1	0	0	0	2	1	1	0	3	0	0	0	3
1369	LENOX AV	W 135TH ST	27	11	16	0	19	2	2	0	2	4	2	3	2	1	0	0	0	3
9368	LENOX AV	W 125TH ST	26	8	18	0	12	4	0	0	2	2	0	3	0	1	0	0	0	4
9354	7TH AV/Adam Clayton	W 116TH ST	24	13	11	0	18	1	0	0	1	4	1	2	3	4	0	0	0	3
9391	5TH AV	125TH ST	22	8	14	0	14	2	0	0	1	2	1	2	0	1	0	0	0	4
10129	2ND AV	E 116TH ST	22	7	15	0	11	3	0	0	0	4	0	1	1	2	0	0	0	3
9943	MADISON AV	E 125TH ST	19	11	8	0	10	2	0	0	3	4	1	3	1	1	1	0	0	4
1149	BROADWAY NB	W 125TH ST	16	16	0	0	8	1	0	0	2	3	2	4	3	3	1	0	0	3

### Accidents Involving Pedestrians and Bicyclists

In 2000 there were 37 pedestrian accidents at various locations throughout the study area. The highest pedestrian accident location was *Amsterdam Avenue/W 125<sup>th</sup> Street* with nine accidents. *Lexington Avenue/E 125<sup>th</sup> Street* followed with five pedestrian accidents. There were five accidents involving bicyclists in the study area with *Lenox Avenue/W 135<sup>th</sup> Street* recording two accidents.

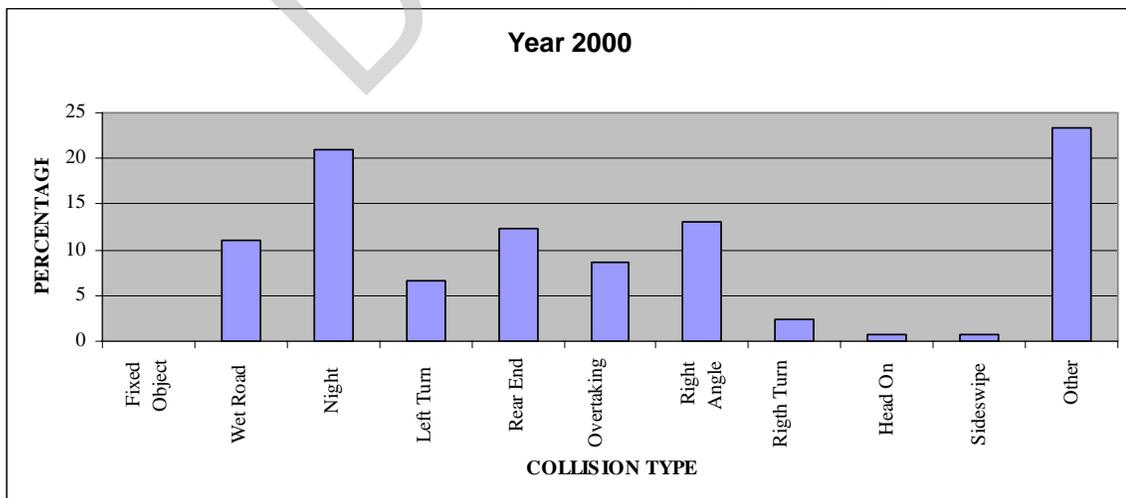
### Accidents by Collision Type and driving Conditions

As shown in Exhibit 8-4 during 2000, 21% of the accidents occurred during night time and 11% occurred under wet roadway condition. The distribution of accidents by collision types showed that 13% were right angle, 12% rear end and 9% overtaking. The location with the most frequent right angle collision type was *Lenox Avenue/W 116<sup>th</sup> street* with eleven accidents or 34% of the total.

The location of *Amsterdam Avenue/W 125<sup>th</sup> Street* had the highest rear end collision type accident with nine. It was observed that overtaking collision type was distributed evenly among all the locations analyzed in the study area.

Exhibit 8-4 shows the distribution of reportable accidents and driving conditions for year 2000.

**Exhibit 8-4: 2000 Accidents by Collision Type and Driving Conditions**



### Severity and Frequency of Accidents

During 2000, of the 13 intersections studied 8 had a severity factor greater than 7.0, and 11 intersections had a frequency factor greater than 6.0. The composite index for 12 of the 13 intersections analyzed was greater than 1.0. This indicates that the majority of the accidents that occurred at these locations were skewed toward severity. Table 8-11 shows the severity factor, frequency factor and the composite index for all analyzed intersection in year 2000.

### **8.5 Analysis of other factors that may cause Accidents at these locations**

The causes of accidents can be many and varied. Factor that can contribute to accidents include the geometry of the intersection, traffic controls, poor signage, road surface and climate. Studies show that the main cause of most accidents is driver errors.

In analyzing the accident locations in more detail to determine possible causes of the accidents, a three year summary analysis (1998-2000) was undertaken to look for common patterns that may emerge. For this analysis factors as surface conditions, collision type, time of the accident, lighting conditions, season of the year and whether pedestrians or bicyclist were involved were considered. Table 8-13 shows this summary.

#### **Time of Day**

Using the three year accident data, the accidents were sorted by peak hours. During the morning from 7am to 10am, midday from 11am to 2pm and afternoon from 4pm to 7pm. The accident analysis shows that most of the accidents occurred outside the peak periods.

There were 490 reportable accidents in the study area and approximately 56% occurred outside the peak hour period. Of 13 locations studied 11 had less than 50% of the accidents during the peak period, except for *Lexington Avenue @ E 125<sup>th</sup> Street* and *Madison Avenue @ E 125<sup>th</sup> Street* where percentage were 56% and 58% respectively.

#### **Light Conditions**

From the accident summary the majority of the 490 reportable accidents occurred during daylight conditions accounting for 51.22% of the total reportable accidents.

Approximately 31.42 % reportable accidents occurred during dark conditions. The difference of 17.36% percent accounted for the dawn, dust and unknown light conditions.

### **Surface**

Over 75% of the reportable accidents occurred under dry road surface conditions

### **Collision Type**

The most frequent collision type accident was rear end which accounted for 18.16% of the total 490 reportable accidents. The intersection of *7th Avenue/Adam Clayton @ W 125<sup>th</sup> Street* had the higher number of rear end collision type with 32% of its total accidents.

### **Season**

In general, the time of year or season does not seem to be a significant factor in the occurrence of accidents. They are more or less evenly distributed throughout the year.

### **Collision With**

When an accident occurs, the given collision can take place between a car and a tree or between a car and other elements of the roadway such as a fire hydrant, utility pole, sign post, the median/barrier or with another vehicle. In general, the accident occurred at the studied locations were between vehicle and vehicle accounting for over 88% of the accidents.

**Table 8-13: Summary of Accidents (1998-2000)**

No	Node #	Main St	Cross St	Total Accident	Reportable	% During Peak hour	Light Condition	Surface	Collision type	Collision With	Season	% Ped Involved	% Bic Involved
1	10047	LEXINGTON AV	E 125TH ST	125	54	56	52% (daylight) 28% Dark lit	67% (dry)	6% LT 6% RAN 19% REND	93% Veh	31% Fall 21% Spring 22% Sum 26% Win	15	5
2	1187	AMSTERDAM AV	W 125TH ST	114	53	43	60% (daylight) 26% Dark lit	70% (dry)	8% LT 11% OVER 23% REND	100% Veh	27% Fall 18% Spring 29% Sum 26% Win	18	2
3	9266	MANHATTAN AV/ST NICOLAS	W 125TH ST	99	37	43	43% (daylight) 40% Dark lit	70% (dry)	8% LT 11% OVER 11% REND	92% Veh	30% Fall 30% Spring 15% Sum 25% Win	12	1
4	10086	3RD AV	E 125TH ST	98	41	34	61% (daylight) 29% Dark lit	83% (dry)	15% OVER 20% RAN 12% REND	100% Veh	34% Fall 23% Spring 15% Sum 28% Win	6	2
5	9345	7TH AV/Adam Clayton	W 125TH ST	97	37	43	54% (daylight) 30% Dark lit	78% (dry)	8% LT 11% RAN 32% REND	100% Veh	29% Fall 19% Spring 26% Sum 26% Win	8	1
6	9368	LENOX AV	W 125TH ST	97	36	39	47% (daylight) 36% Dark lit	72% (dry)	8% LT 8% RAN 31% REND	100% Veh	21% Fall 24% Spring 26% Sum 29% Win	12	2
7	9377	LENOX AV	W 116TH ST	93	52	48	37% (daylight) 33% Dark lit	71% (dry)	6% OVER 48% RAN 10% REND	100% Veh	21% Fall 24% Spring 26% Sum 29% Win	9	0
8	1149	BROADWAY NB	W 125TH ST	85	36	39	58% (daylight) 28% Dark lit	83% (dry)	11% RT 19% OVER 17% REND	93% Veh	19% Fall 16% Spring 34% Sum 31% Win	4	1
9	9391	5TH AV	125TH ST	77	28	43	46% (daylight) 32% Dark lit	68% (dry)	18% LT 11% OVER 14% REND	100% Veh	21% Fall 21% Spring 31% Sum 27% Win	13	0
10	9354	7TH AV/Adam Clayton	W 116TH ST	75	39	41	36% (daylight) 33% Dark lit	77% (dry)	13% OVER 21% RAN 18% REND	100% Veh	15% Fall 33% Spring 32% Sum 20% Win	8	5
11	1369	LENOX AV	W 135TH ST	73	27	41	48% (daylight) 48% Dark lit	85% (dry)	11% OVER 22% RAN 15% REND	100% Veh	30% Fall 26% Spring 26% Sum 18% Win	8	7
12	10129	2ND AV	E 116TH ST	64	24	46	63% (daylight) 25% Dark lit	88% (dry)	4% OVER 21% RAN 8% REND	100% Veh	31% Fall 16% Spring 23% Sum 30% Win	17	1
13	9943	MADISON AV	E 125TH ST	64	26	58	69% (daylight) 23% Dark lit	73% (dry)	8% OVER 8% RAN 27% REND	88% Veh	21% Fall 24% Spring 26% Sum 29% Win	11	5

LT-Left turn, RAN-Right angle, REND-Rear end, OVER-Overtaking

## **9.0 GOODS MOVEMENT**

### **9.1 Introduction**

New York City, more so than nearly any major city in the world, is heavily dependant on trucks to supply the city with the resources needed to make it run. Thousands of local and through truck trips traverse the city daily, providing the city with all the goods and services required for its residential communities, commercial enterprises and daily businesses.

Given the reliance upon trucks for goods movement in New York City, the need to analyze truck traffic as part of traffic and transportation studies is amplified. Although trucks provide a vital service, their movement within the city arterial system can create significant problems on the street network affecting flows, their presence affects congestion, accessibility and obstructing traffic while loading and unloading. There are also numerous quality of life issues which must be explored, including noise and air pollution. Truck traffic can also compromise pedestrian and other road users' safety due to the size of trucks and the type of materials being transported. Within New York City, one must also take into account the age of the transportation infrastructure, and the changing sizes of these types of vehicles.

This component of the overall study undertakes a preliminary assessment of the impact of truck traffic in the study area. For that purpose field data was gathered and other studies were consulted to effectively assess this issue. Currently New York City Department of Transportation (NYCDOT) together with its consultants, Edwards & Kelcey, Inc is conducting the *Citywide Truck Route Management & Community Impact Reduction Study*. The purpose and goals of the Truck Route Management & Community Impact Reduction Study is to respond to citywide concerns about impacts of truck traffic on quality of life, traffic congestion, and the regional transportation system and goods movement. The study will provide recommendations to address the needs of both NYC's residential and business communities while seeking to mitigate many of the negative consequences of truck traffic yet ensuring that the overall management of truck movement in the city is maximized. The Harlem/Morningside Heights Transportation study hopes to draw on some of the ideas and preliminary conclusions from the Truck Route Management & Community Impact Reduction Study.

The basic rules and regulations governing truck traffic in New York City can be found in the New York City Traffic Rules and Regulations (Chapter 4 of Title 34 of the Rules of the City of New York). As a whole, this document stipulates all the rules and regulations governing the movement of motorized vehicles in New York City, including curb-side and parking regulations. The sections that directly pertain to trucks can be found in Section 4-13 and section 4-15, wherein the rules governing trucks and commercial vehicles are defined and the routes stipulated, as well as dimensional restrictions for these vehicles.

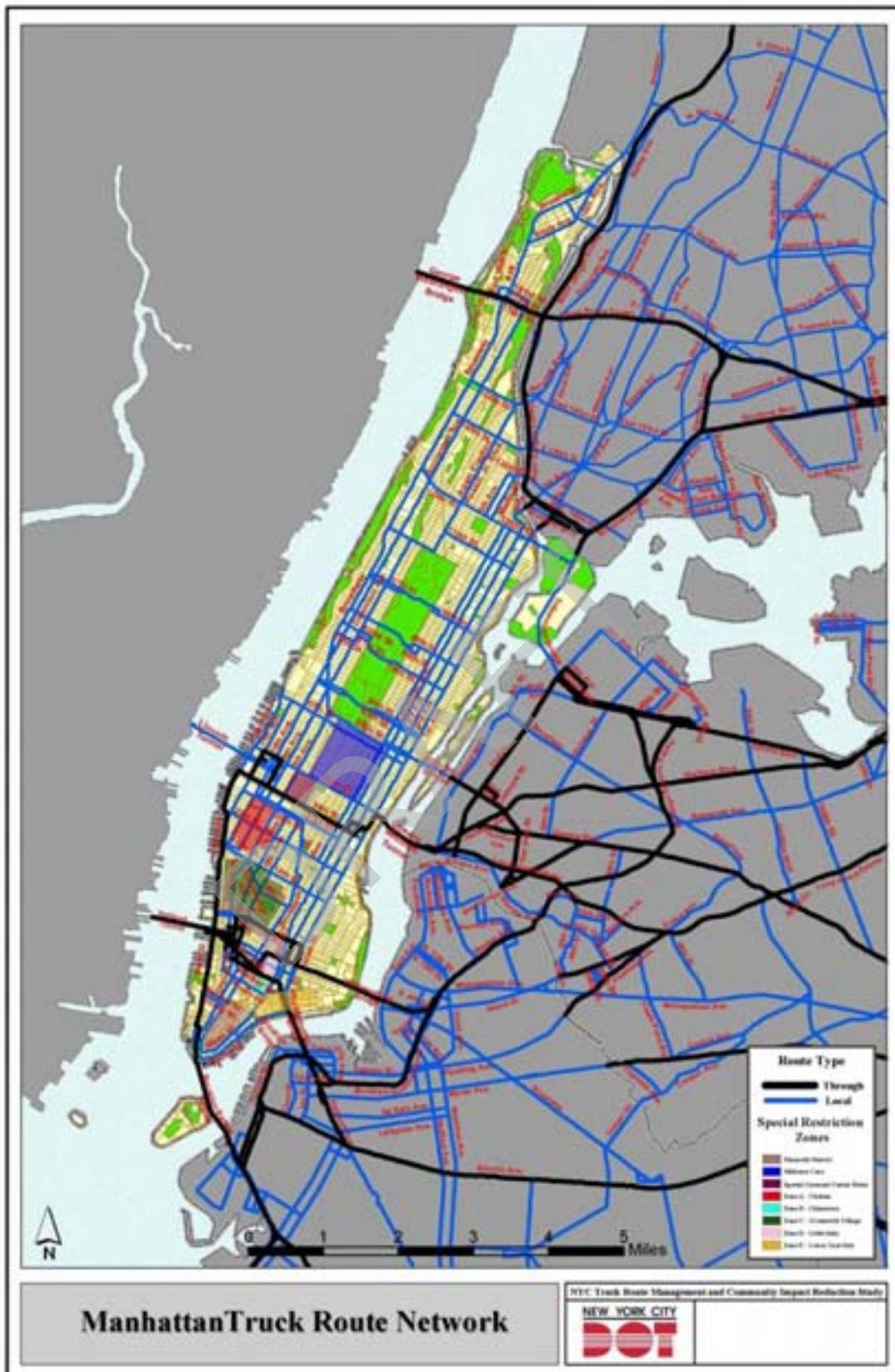
According to section 4-13 of the New York City Traffic Rules and Regulations, a truck generally is defined as any vehicle or combination of vehicle designed for the transportation of property which has two axels- six tires or three or more axles.

In New York City, trucks as defined above should confine themselves to the local and through truck route system in order to access their destinations, and utilize the local street network only to directly access those facilities, usually at the intersection closest to their destination. By definition, local routes should be used by an operator of a truck, with an origin or destination for the purpose of delivery, loading or servicing within the borough, shall only operate such vehicle on a designated local street, except that in order to arrive at their destination, in which they should take the most direct route and utilize the intersection closest to their destination.

Through truck routes are to be utilized for vehicles with neither and origin nor destination within the borough that it is crossing. There are not through truck routes in the study area.

Exhibit 9-1 shows the truck routes (local and through) for the borough of Manhattan.

Exhibit 9-1: Through and Local Manhattan Truck Routes



## **9.2 Truck routes in the Study area**

Overall, the area is well served by numerous local truck routes, mainly serving the north-south corridors of Manhattan. Given that the Parkway system in Manhattan (the Henry Hudson Parkway and FDR Drive) does not allow commercial vehicles or trucks, these north-south routes provide access for vehicles traveling to/from Upper Manhattan, the Bronx, and points north. Exhibit 9-2 shows the local truck route network in the study area. The local truck routes in the study area are:

### **North-South local truck routes:**

- Amsterdam Avenue from W116th Street to W 135<sup>th</sup> Street
- Broadway from W116th Street to W 135<sup>th</sup> Street
- Madison Avenue from E 125th Street to E 135<sup>th</sup> Street
- Lexington Avenue from E 116th Street to E 125<sup>th</sup> Street
- Adam C. Powell Boulevard from W116th Street to W 135<sup>th</sup> Street
- 1<sup>st</sup> Avenue from E116th Street to E 126<sup>th</sup> Street/Willis Ave Bridge
- 2<sup>nd</sup> Avenue from E116th Street to E 128<sup>th</sup> Street
- 3<sup>rd</sup> Avenue from E116th Street to E 125<sup>th</sup> Street
- 5<sup>th</sup> Avenue from W125th Street to W 135<sup>th</sup> Street

### **West-East local truck routes:**

- 125<sup>th</sup> Street from Broadway to 1<sup>st</sup> Avenue
- W 116<sup>th</sup> Street from Adam C. Powell to 1<sup>st</sup> Avenue
- East 128<sup>th</sup> Street from 2<sup>nd</sup> Avenue to 3<sup>rd</sup> Avenue Bridge

Based on the information gathered through the *Citywide Truck Route Management & Community Impact Reduction Study*, field observations and the distribution of commercial establishment, there are a significant number of trucks coming to the study area for delivery purposes. Given that many of these properties are retail in nature, the primary delivery times are in the late morning and early afternoon from 10am to 3pm. Generally, inbound volumes are highest during the morning and midday peak. The number of trucks coming to the city decreases after 4PM. Most of these trucks are medium size trucks such as the UPS trucks.



### ***East-west local truck route access***

Truck activity in the study area is very high, particularly along the 125<sup>th</sup> Street corridor where there are many businesses and offices. Exhibit 9-2 shows the local truck routes in the study area.

The 125<sup>th</sup> Street corridor functions as the primary east-west corridor providing cross-town access to several major arteries and bridges. It provides access in the east to the Triborough Bridge, Willis Avenue Bridge and Third Avenue Bridge. The Triborough Bridge is a two-way bridge operated by MTA Bridges and Tunnels that processed in 2002 an average daily traffic (ADT) of 95,000 vehicles. Truck traffic represent about 2.7% of the ADT which translates into approximately 2,565 trucks daily coming in and out of the bridge. The Willis Avenue Bridge accommodates one-way traffic towards the Bronx, an ADT of 70,037 vehicles representing outbound traffic of which 2,657 are trucks. Third Avenue Bridge accommodates one-way inbound traffic to Manhattan. In 2002 it processed a total of 58,949 vehicles daily of which 2,384 are trucks entering the city. Presently both the Willis Avenue Bridge and Third Avenue Bridge are under construction. The data presented do not take account of the temporary conditions due to the construction of the bridges.

Another truck route is W 116<sup>th</sup> Street which is further to the south from Adam C. Powell Boulevard to 1<sup>st</sup> Avenue. If using 116<sup>th</sup> Street trucks must turn either north or southbound on Adam C Powell Boulevard before continuing west.

### ***North-south local truck route access***

There are more local north-south truck routes providing access within the study area than east-west routes. Exhibit 9-2 shows the truck routes in the study area.

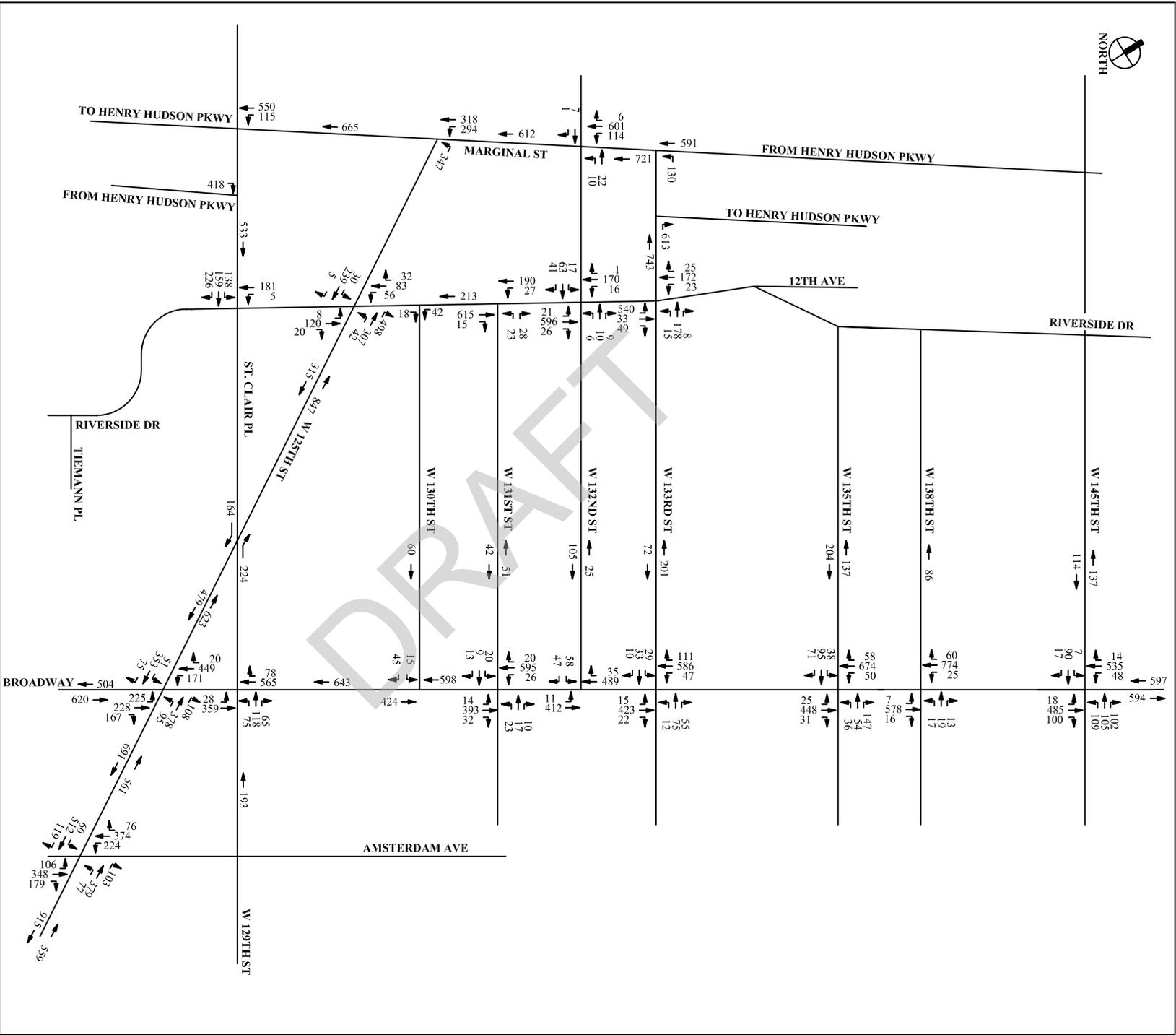
In the western part of the study area the following corridors make up the north/south local routes, Broadway, Amsterdam Avenue and Adam C Powell Blvd. These roadways are two-way streets running through the study area from 116<sup>th</sup> Street to 135<sup>th</sup> Street. Trucks traveling along Amsterdam Avenue or Broadway northbound have access to George Washington Bridge en route to New Jersey State or the Cross Bronx Expressway to eastern Bronx. 125<sup>th</sup> street provide opportunities for trucks on Broadway, Amsterdam Avenue and Adam C Powell Boulevard to turn and access eastbound or westbound routes.

In the eastern part of the study area there are no continuous north-southbound local routes. Trucks would have to use sections of 125<sup>th</sup> Street before continuing their north-south journey.

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**APPENDIX A : Regional Volumes for the AM, MD and PM peak Hours**

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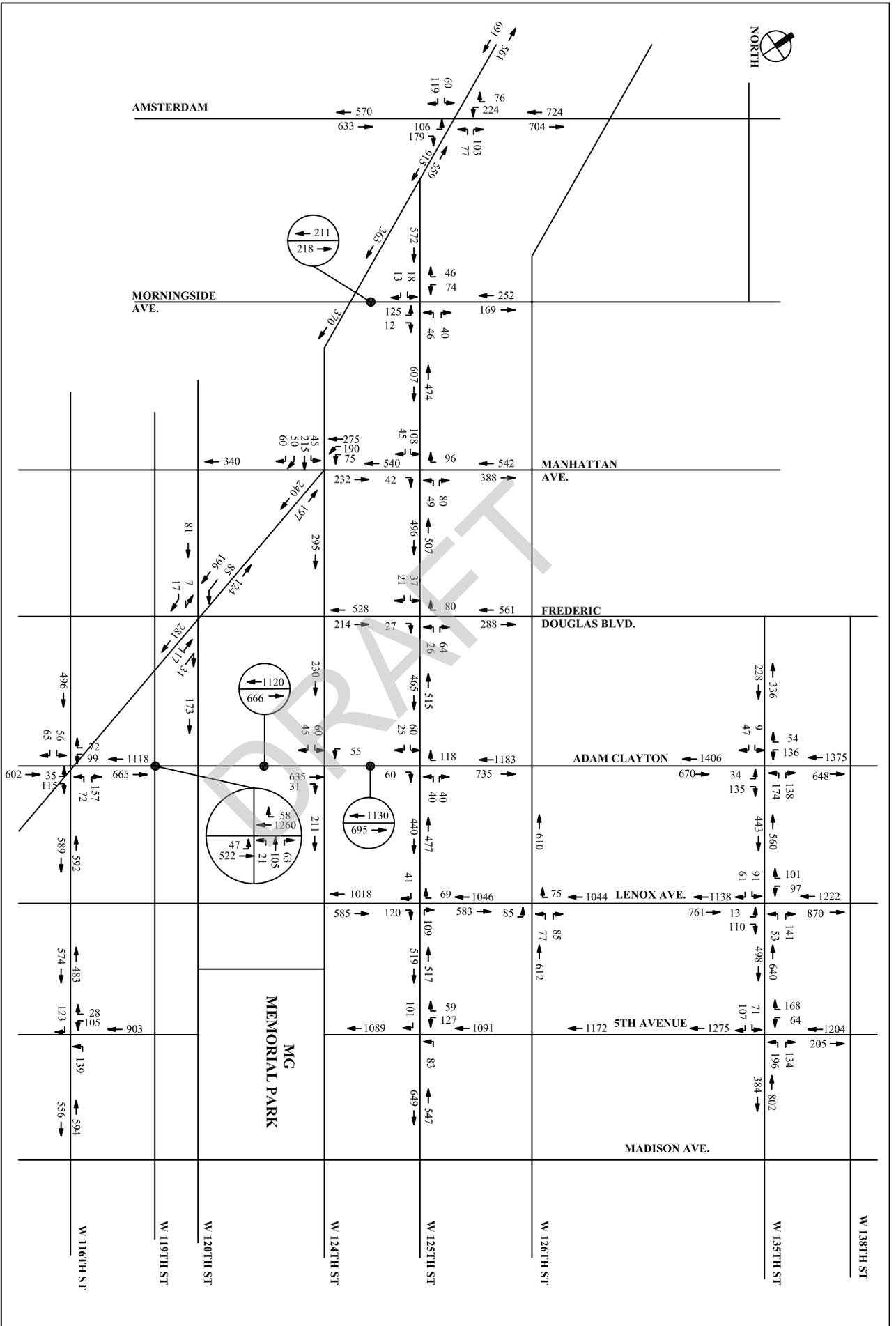
**HARLEM/MORNINGSIDE  
HEIGHTS TRANSPORTATION  
STUDY  
Section-1**

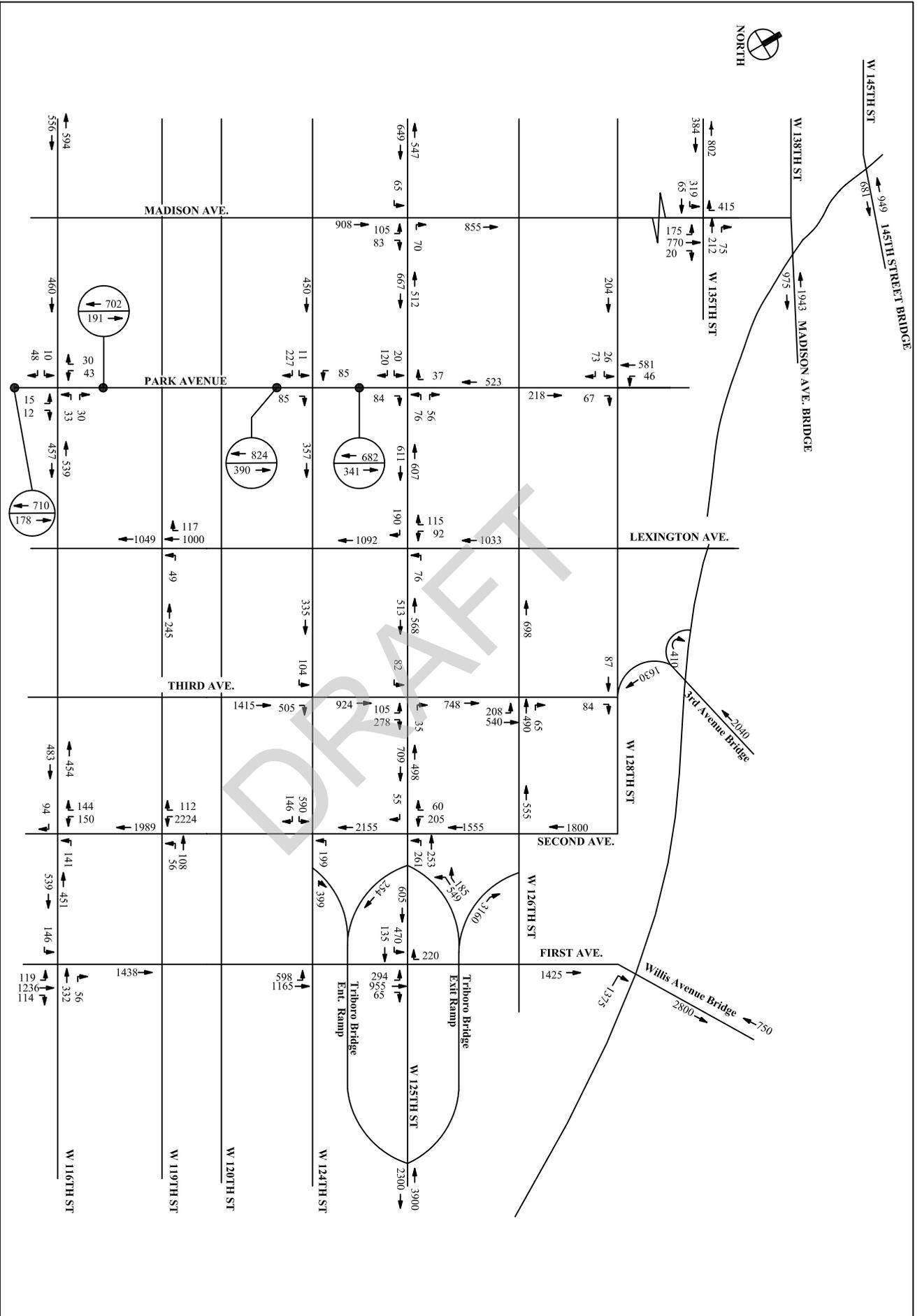
**2003 AM PEAK REGIONAL  
TRAFFIC VOLUME  
7:45AM - 8:45 AM**

**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-II**

**2003 AM PEAK REGIONAL  
TRAFFIC VOLUME  
7:45AM -8:45 AM**

NOT TO SCALE

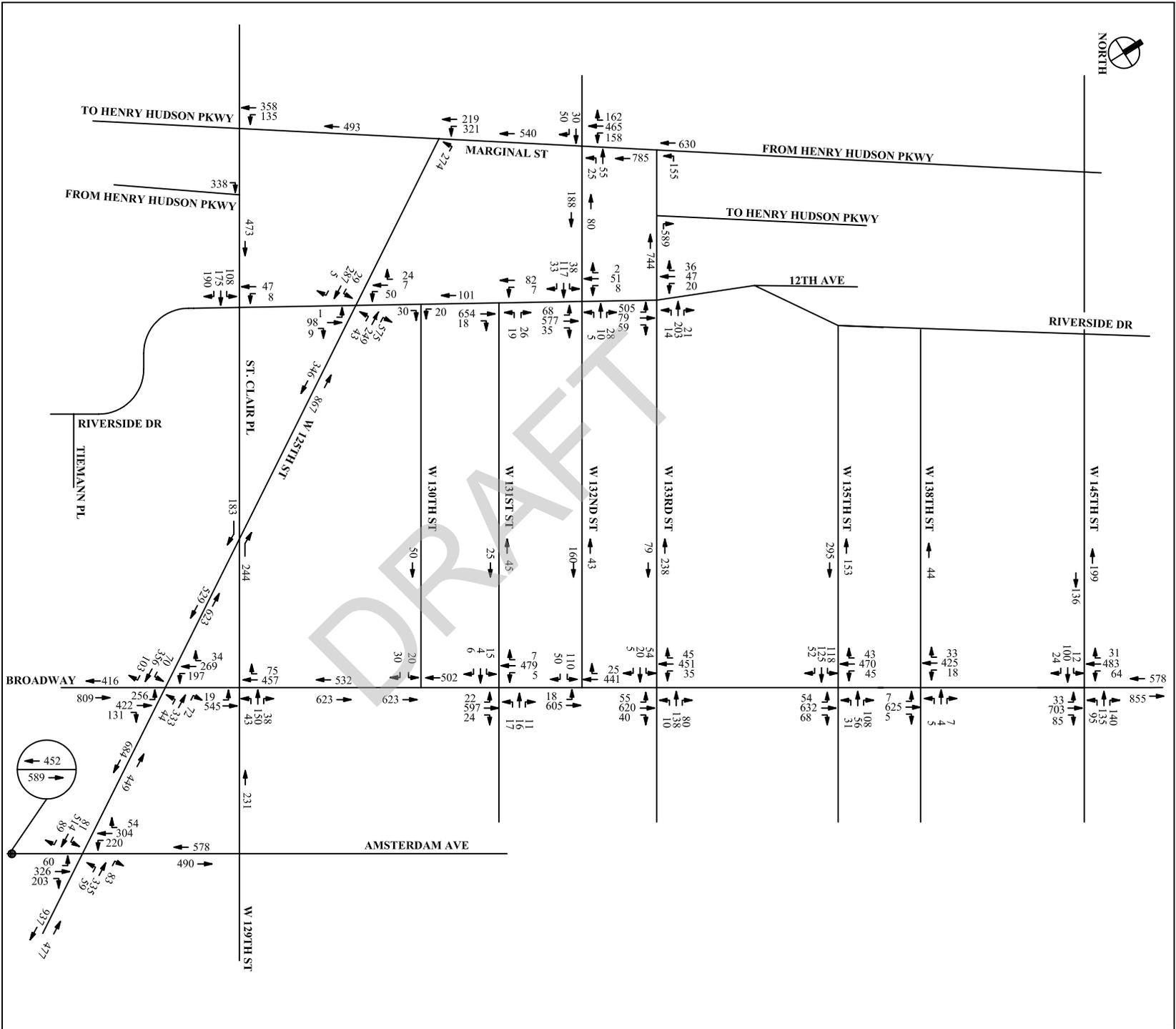




**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-III**

**2003 AM PEAK REGIONAL  
TRAFFIC VOLUME  
7:45AM -8:45 AM**

NOT TO SCALE



NOT TO SCALE

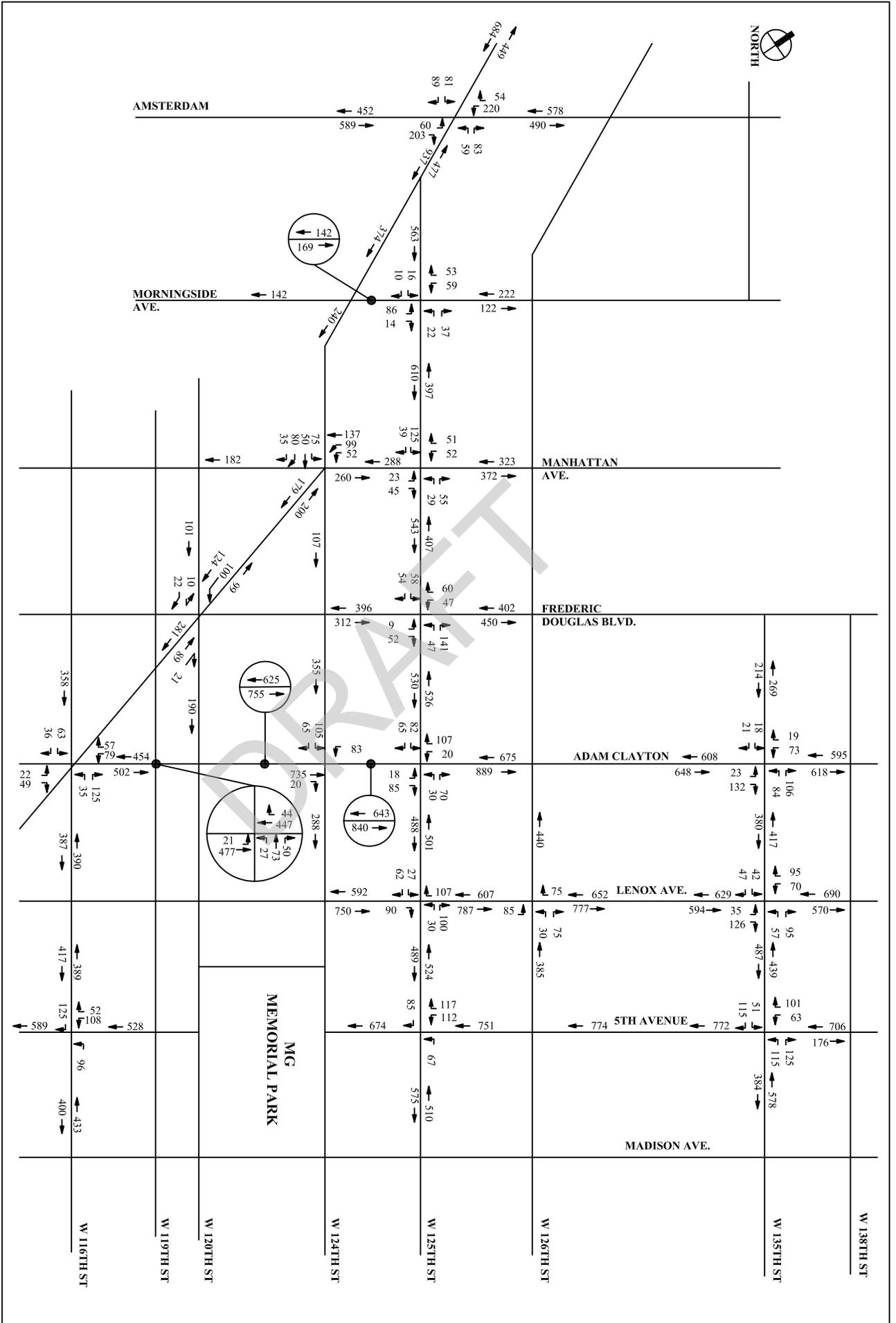
**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-1**

**2003 MIDDAY PEAK REGIONAL  
TRAFFIC VOLUME  
12:15AM - 1:15 AM**

**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-II**

**2003 MIDDAY PEAK REGIONAL  
TRAFFIC VOLUME  
12:15PM -1:15 PM**

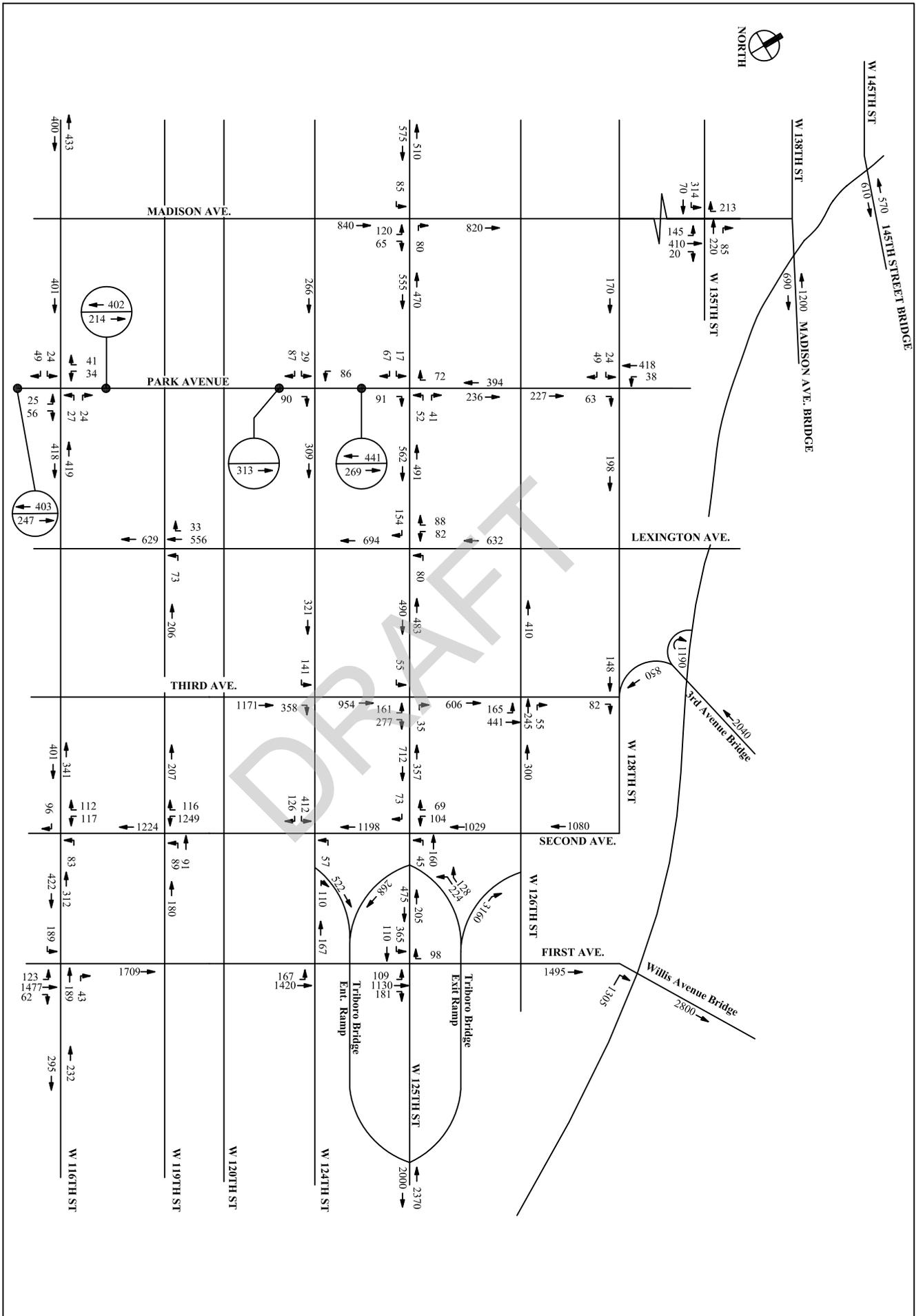
NOT TO SCALE

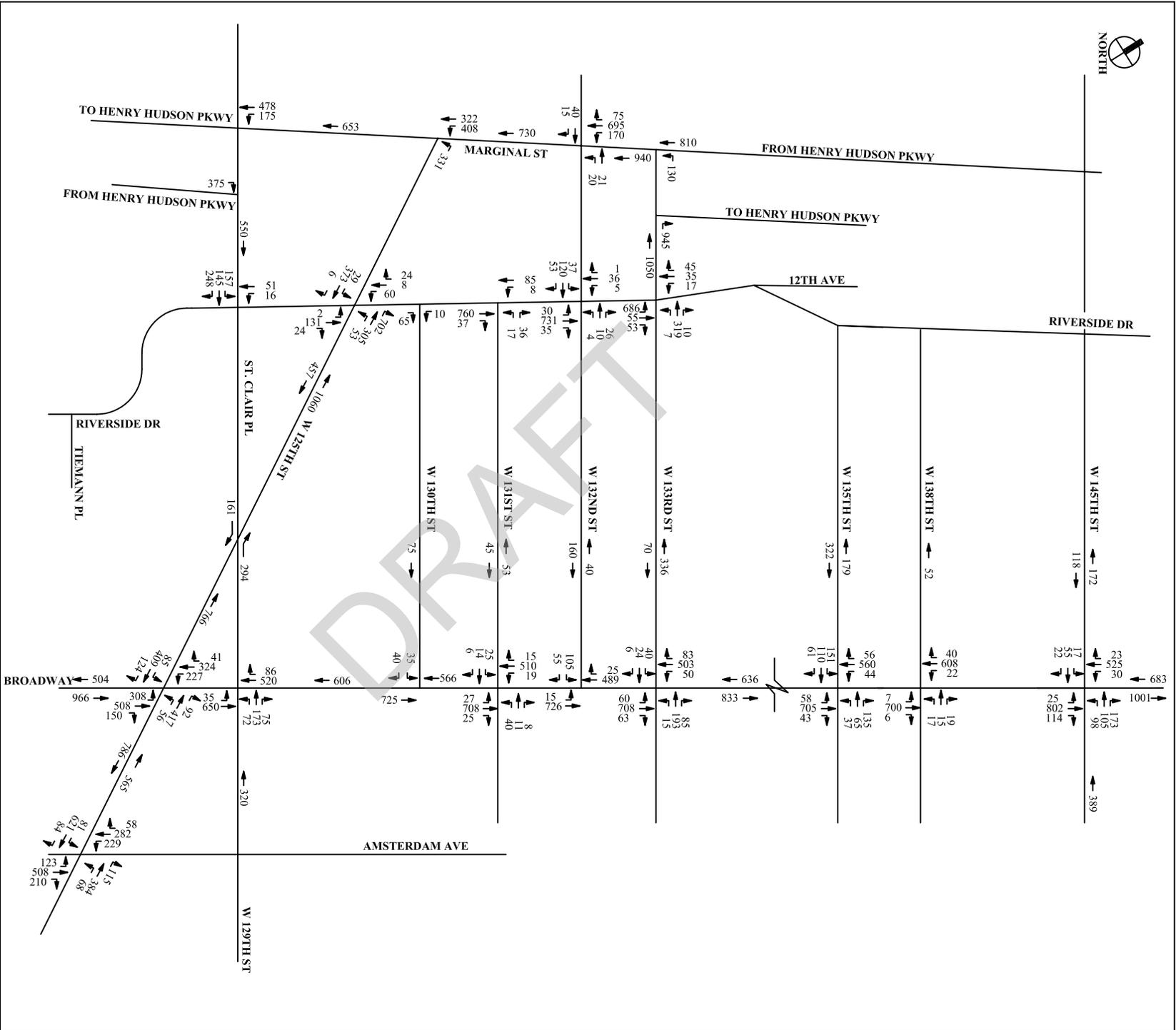


**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-III**

**2003 MIDDAY PEAK REGIONAL  
TRAFFIC VOLUME  
12:15PM -1:15 PM**

NOT TO SCALE





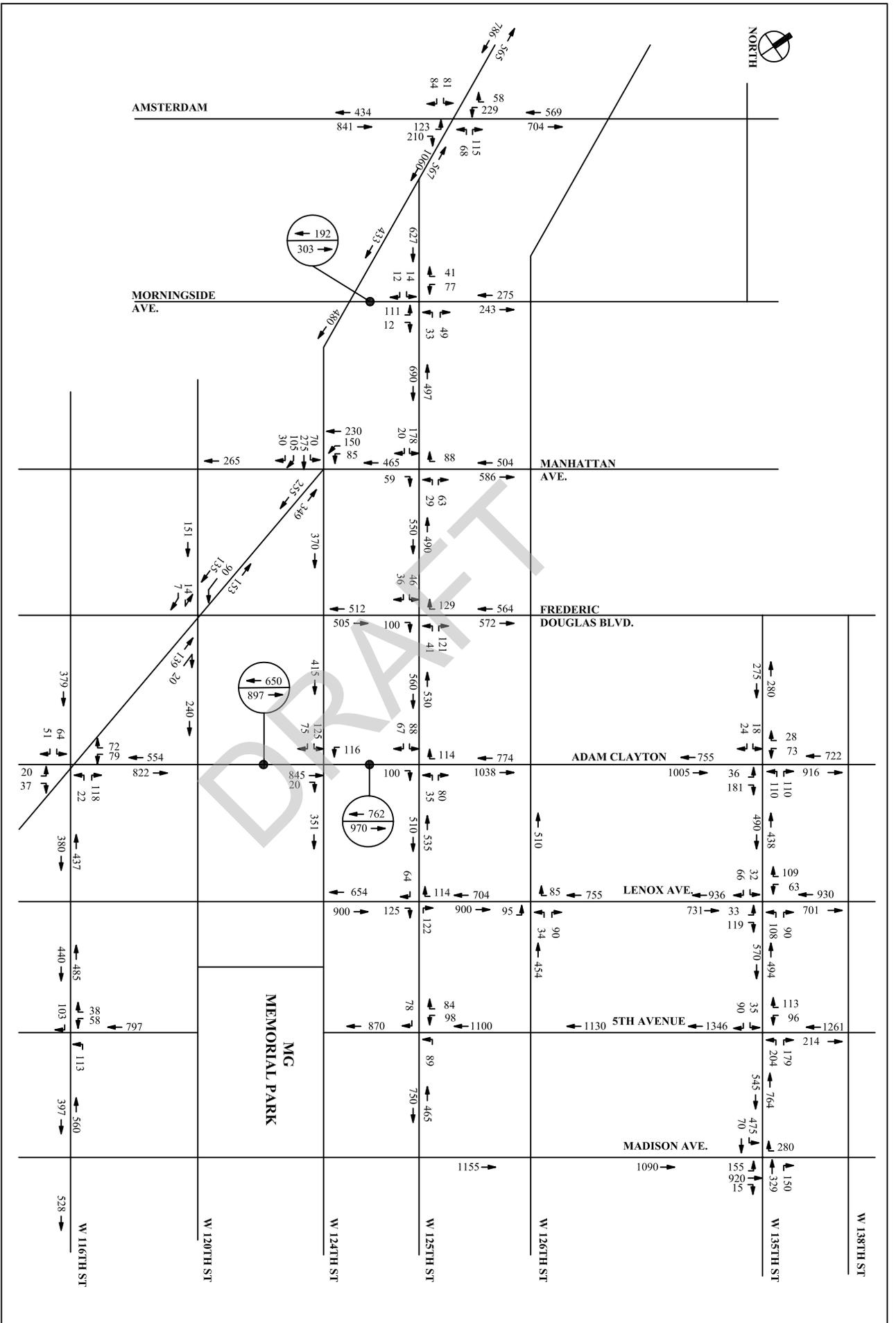
**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY**  
Section-1

**2003 PM PEAK REGIONAL  
TRAFFIC VOLUME**  
4:45 PM - 5:45 PM

**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-II**

**2003 PM PEAK REGIONAL  
TRAFFIC VOLUME  
4:45PM -5:45 PM**

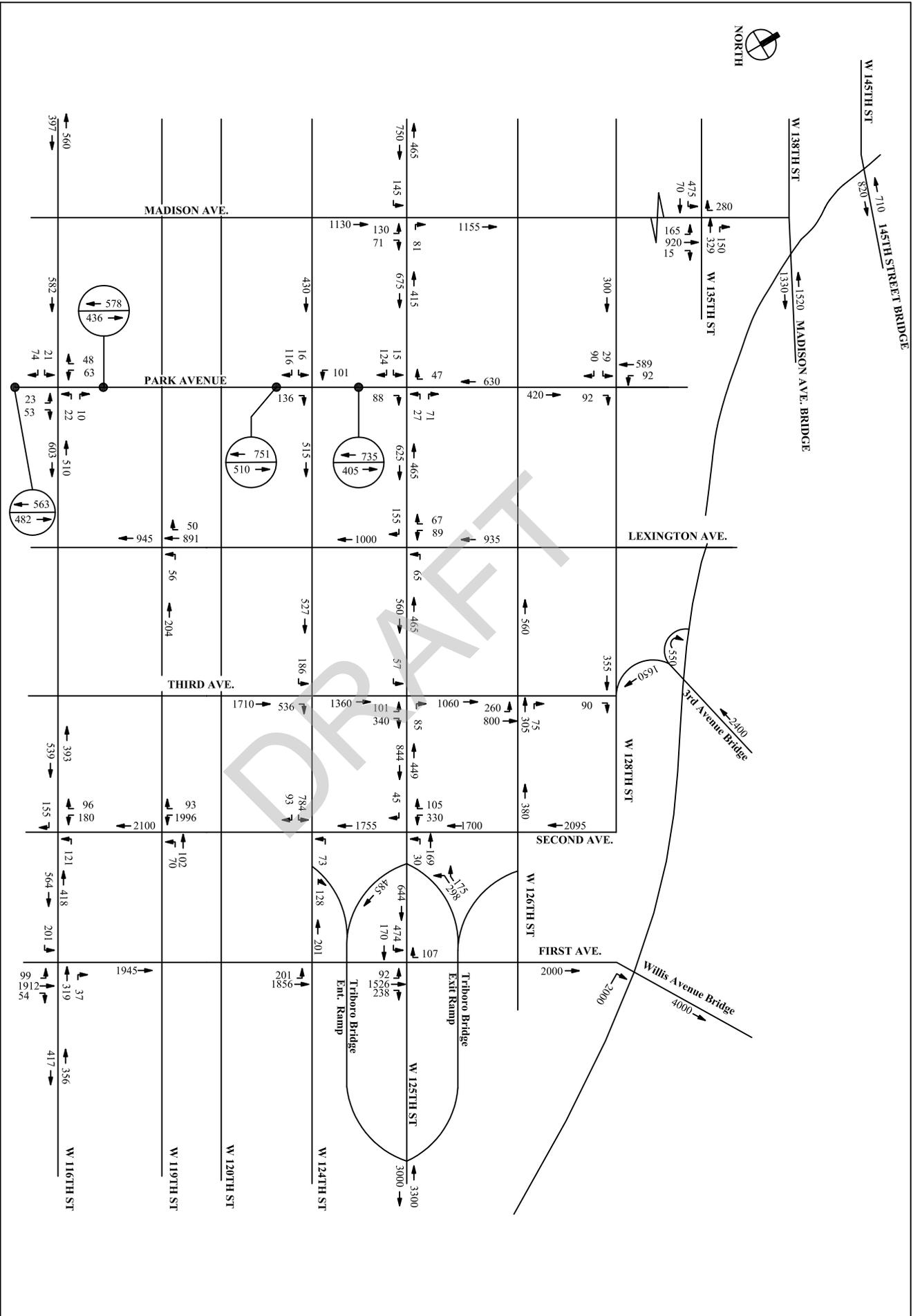
NOT TO SCALE



**HARLEM/MORNINGSIDE HEIGHTS  
TRANSPORTATION STUDY  
Section-III**

**2003 PM PEAK REGIONAL  
TRAFFIC VOLUME  
4:45PM -5:45 PM**

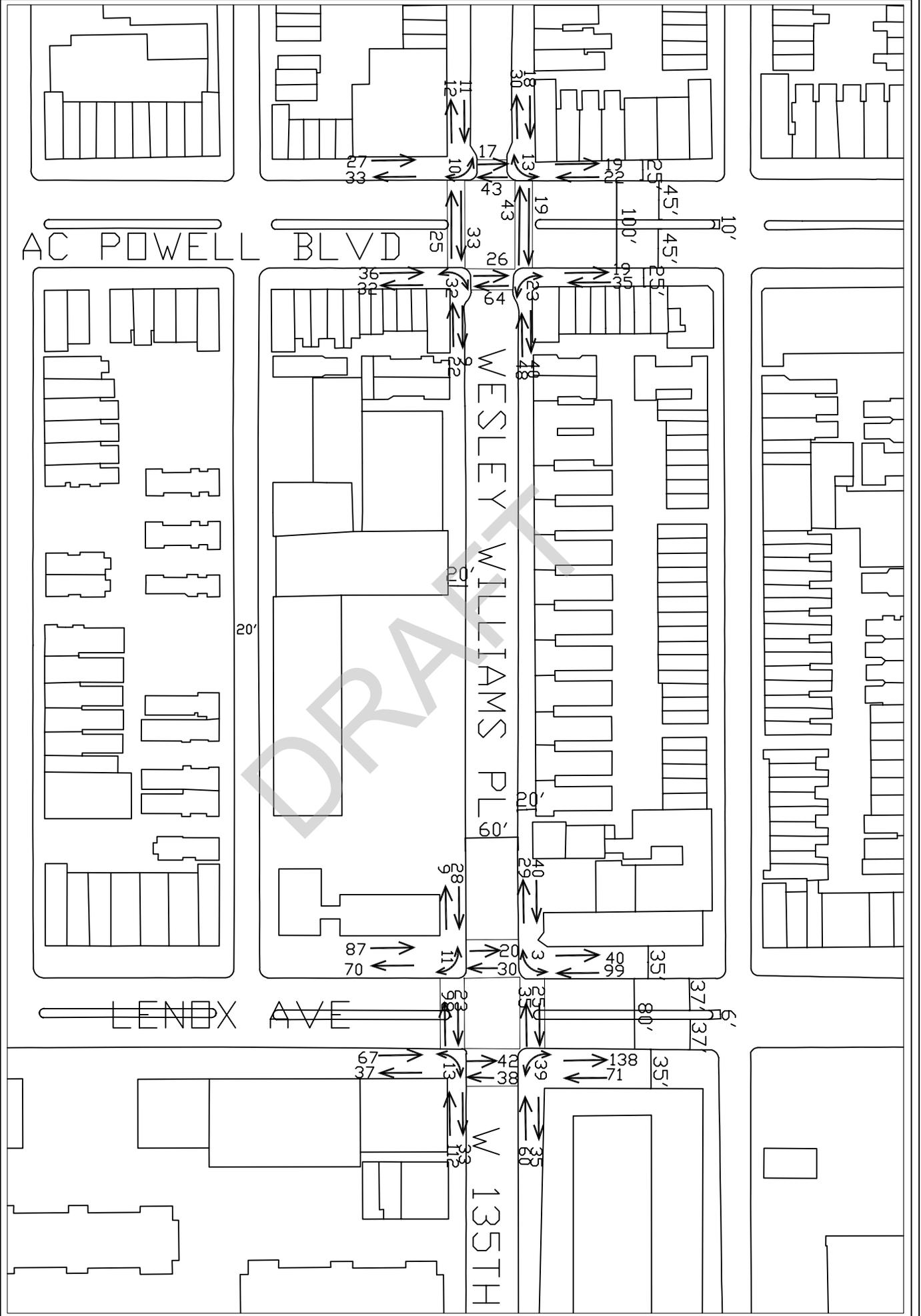
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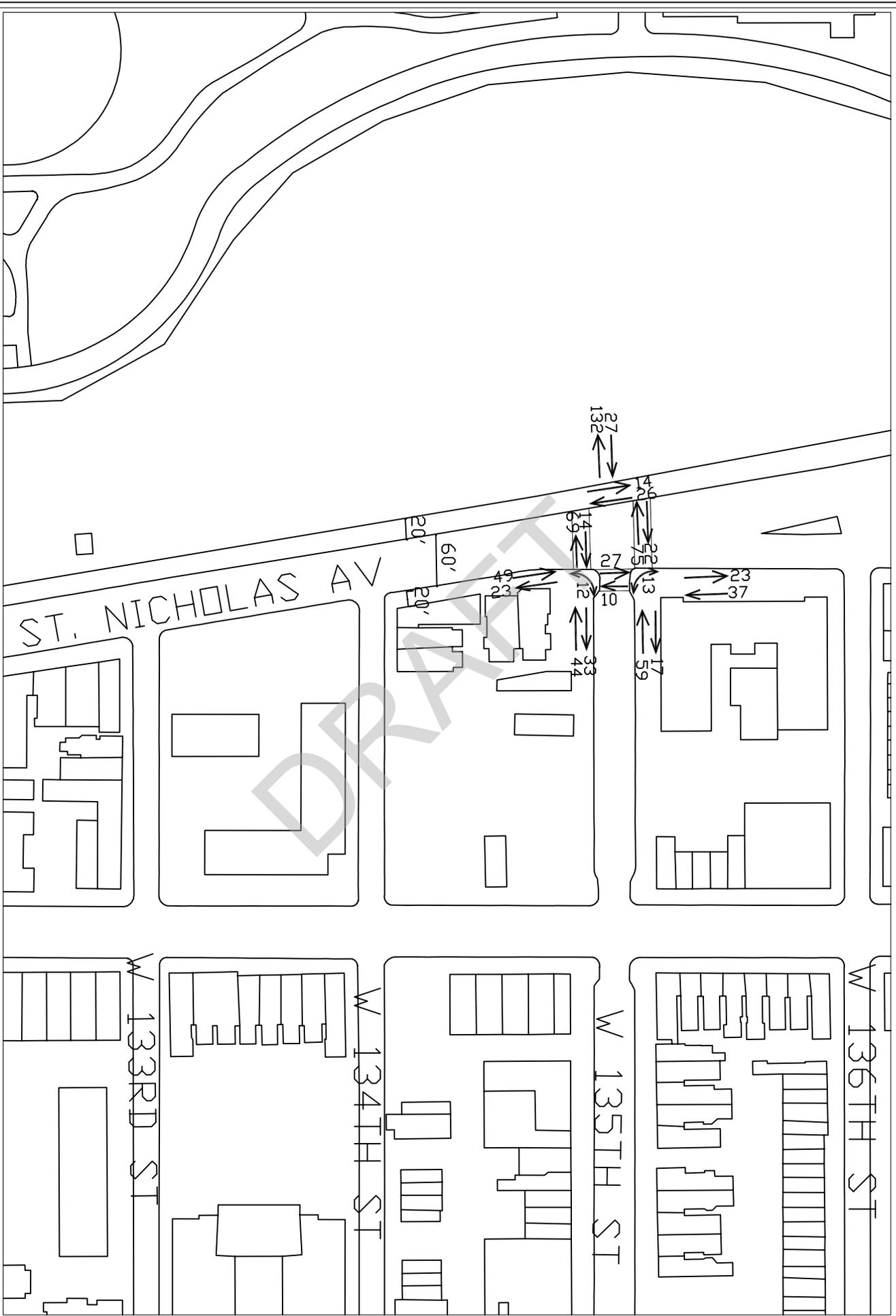


**APPENDIX B: Pedestrian Volumes and Street/Sidewalk Widths**

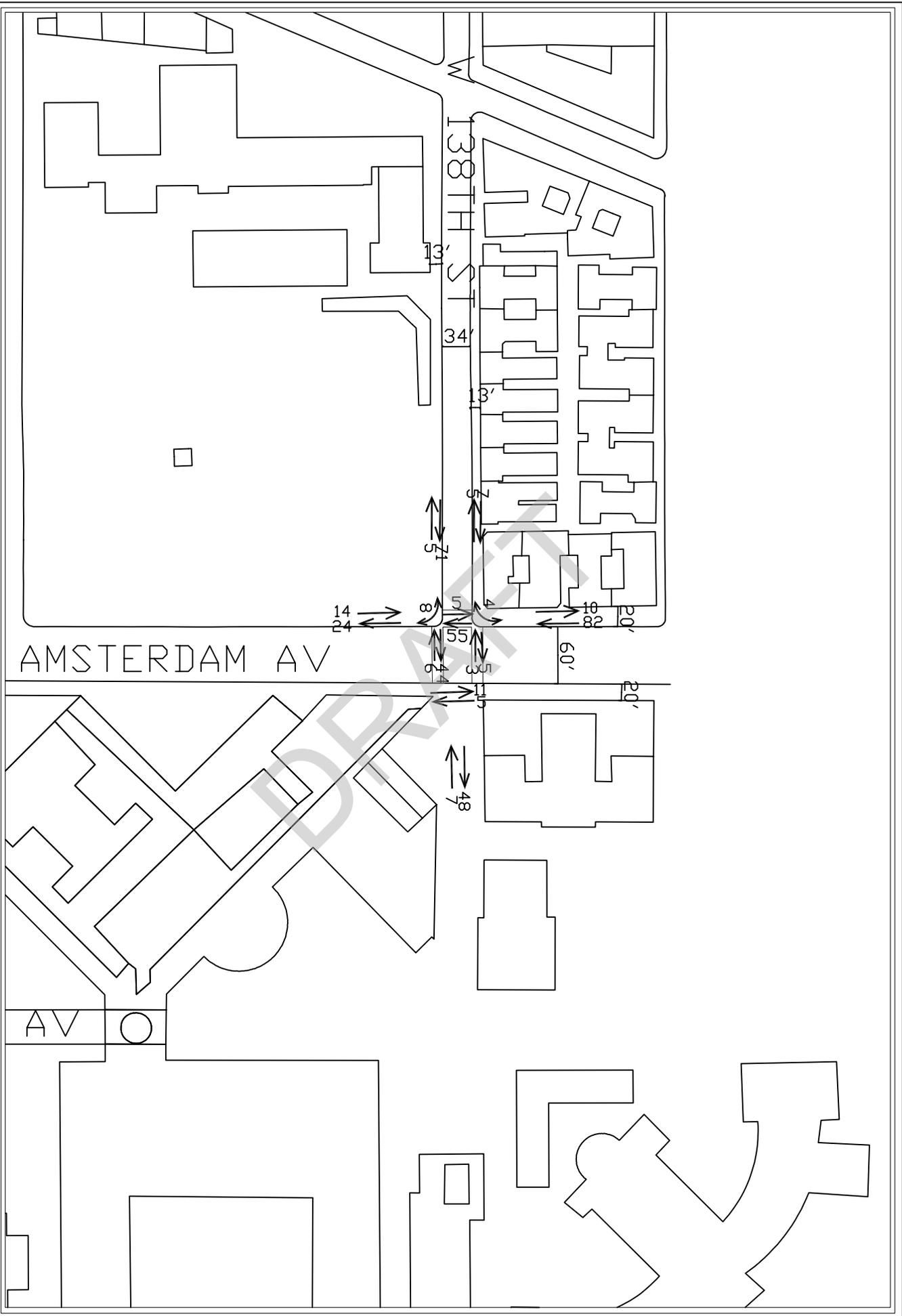
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Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION I - Locations: 135th St and AC Powell Blvd.  
 135th St and Lenox Ave.





Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION II - Locations: 135th St and St Nicholas Ave

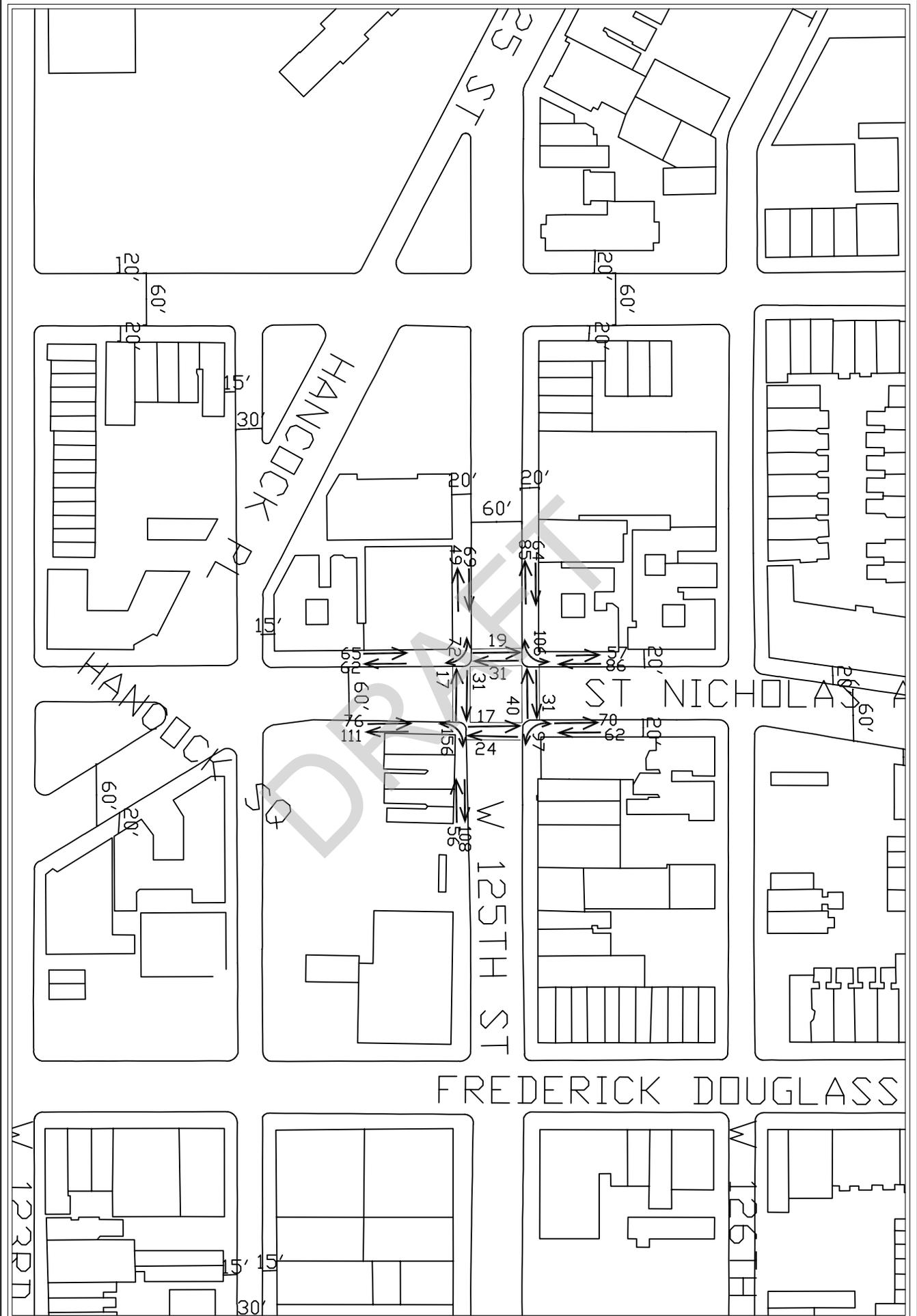


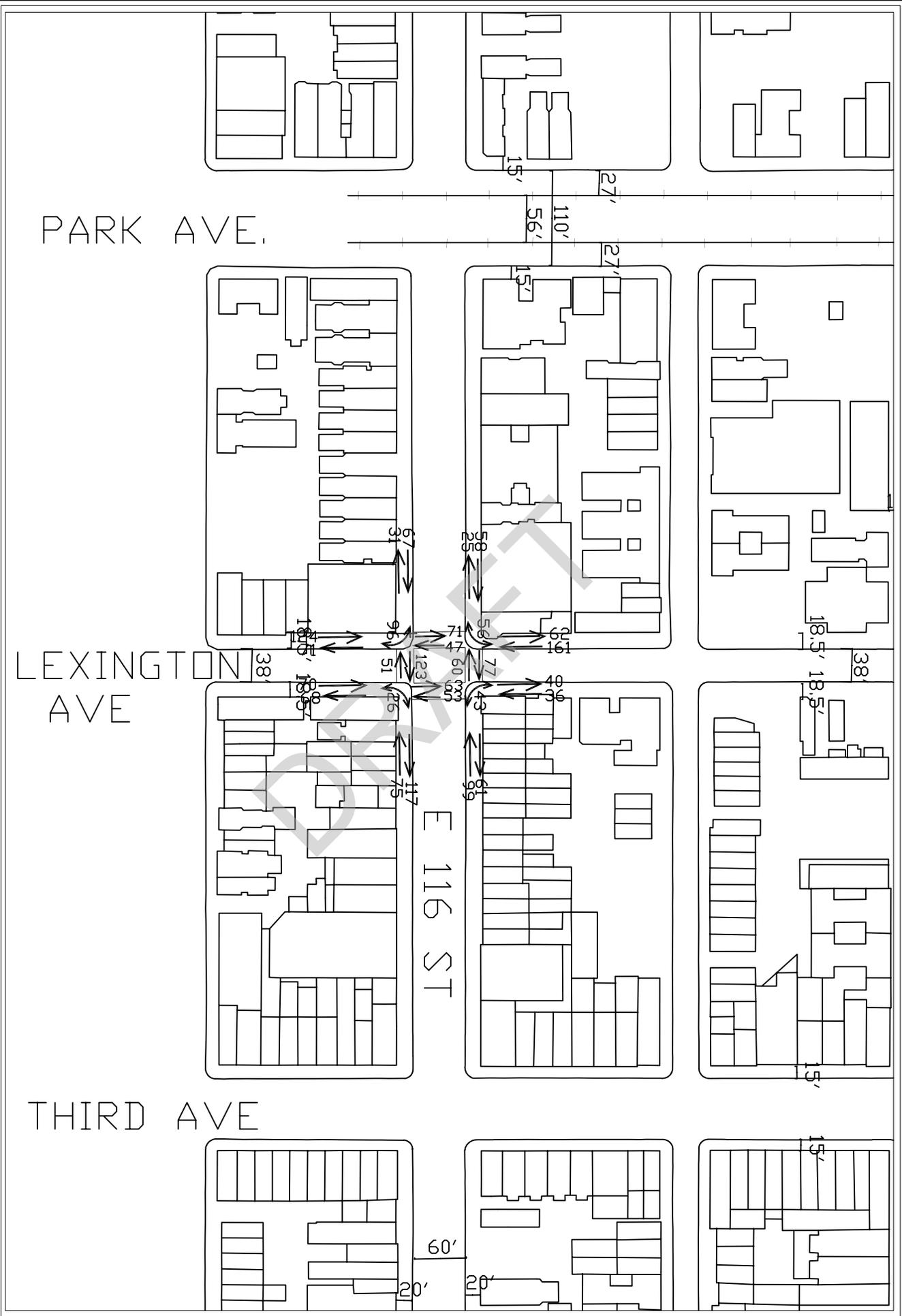
Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION III - Locations: 138th St and Amsterdam Ave



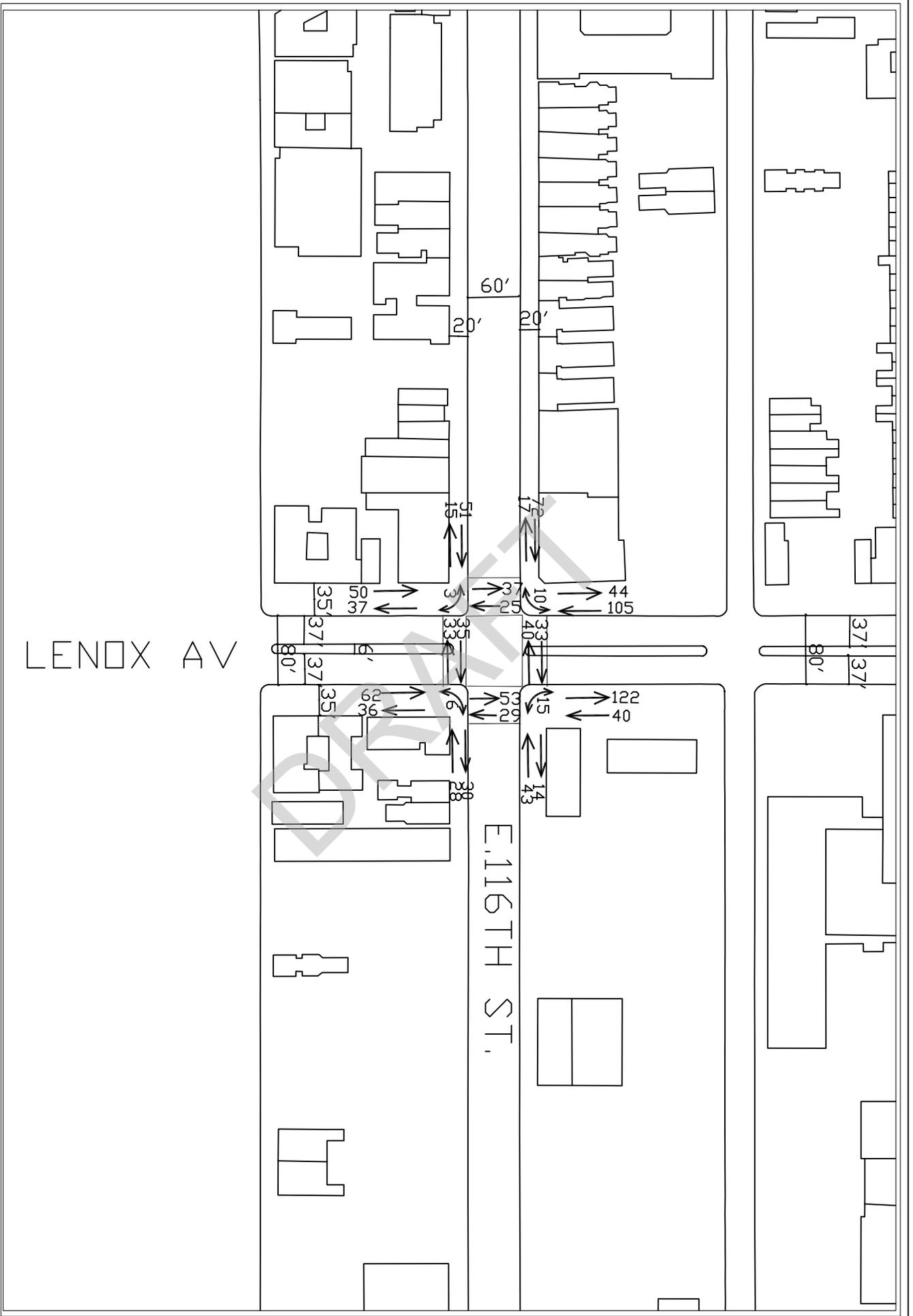


Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION VI - Locations: 125th St and St Nicholas Ave





Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION VII - Locations: 116th St and Lexington Ave



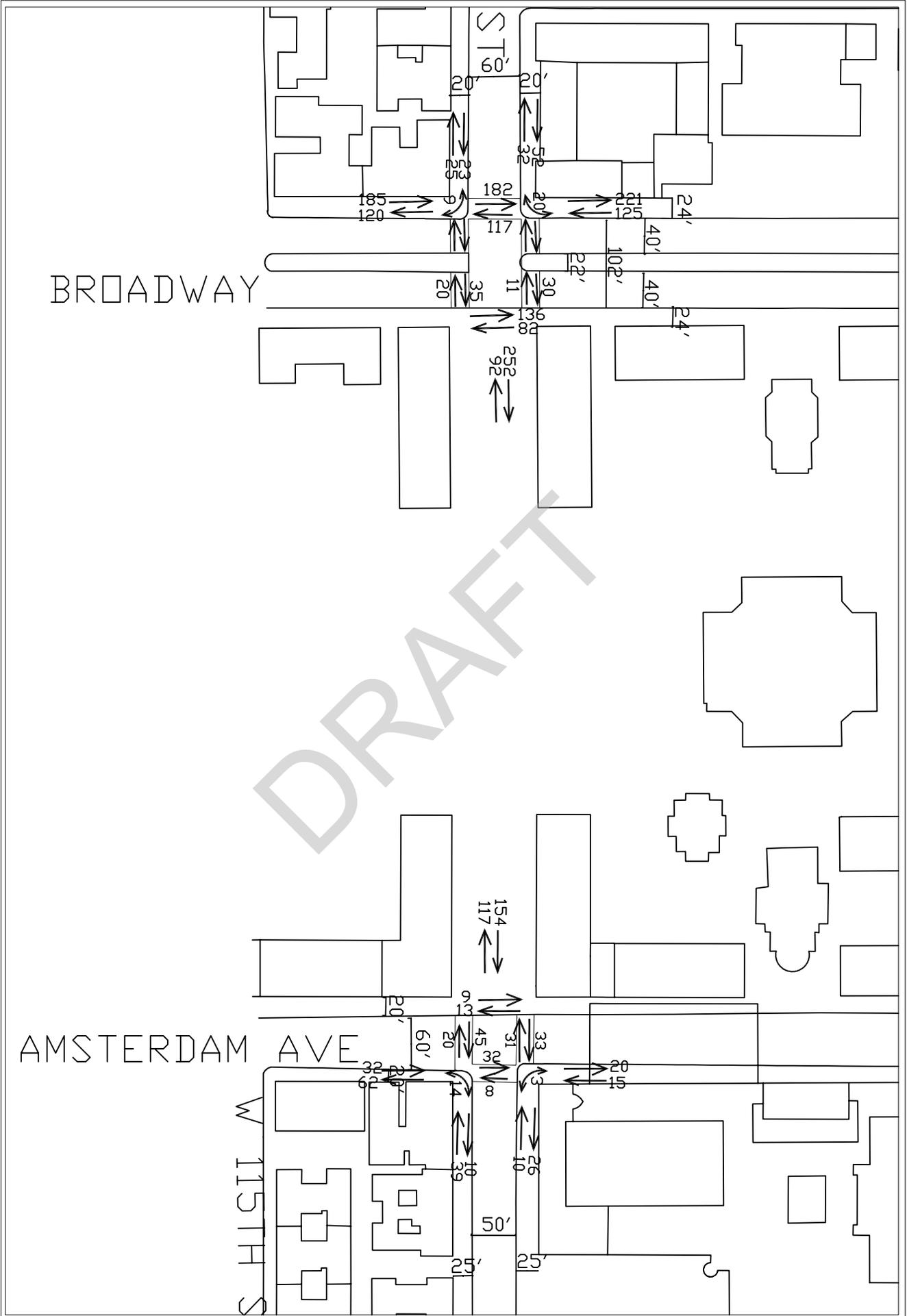
Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
 SECTION VIII - Locations: 116th St and Lenox Ave

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BROADWAY

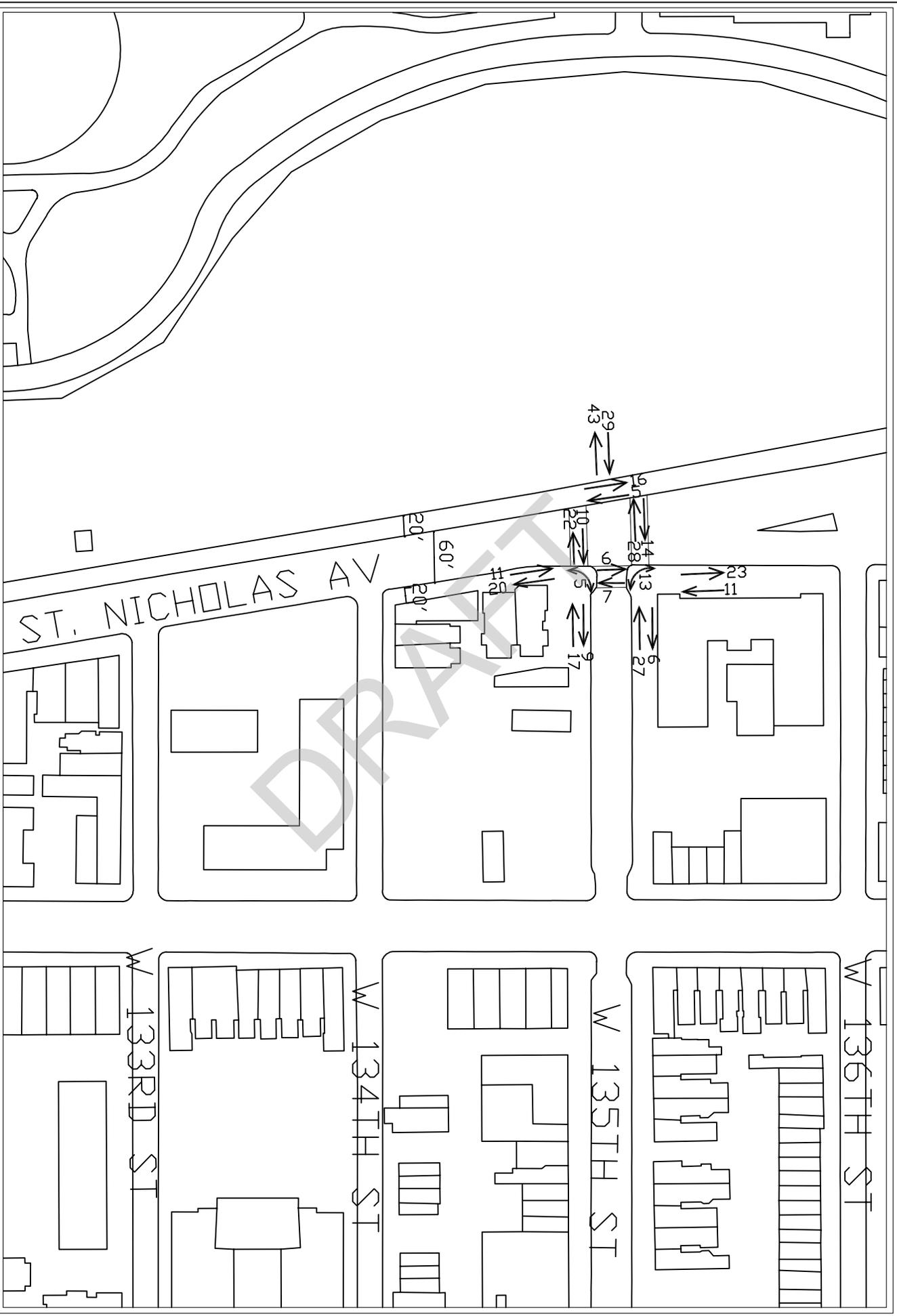
AMSTERDAM AVE

W 115TH S



Pedestrian Volumes and Street/Sidewalk Widths - AM Peak (7:45AM-8:45AM)  
SECTION IX - Locations: 116th St and Broadway  
116th St and Amsterdam Ave

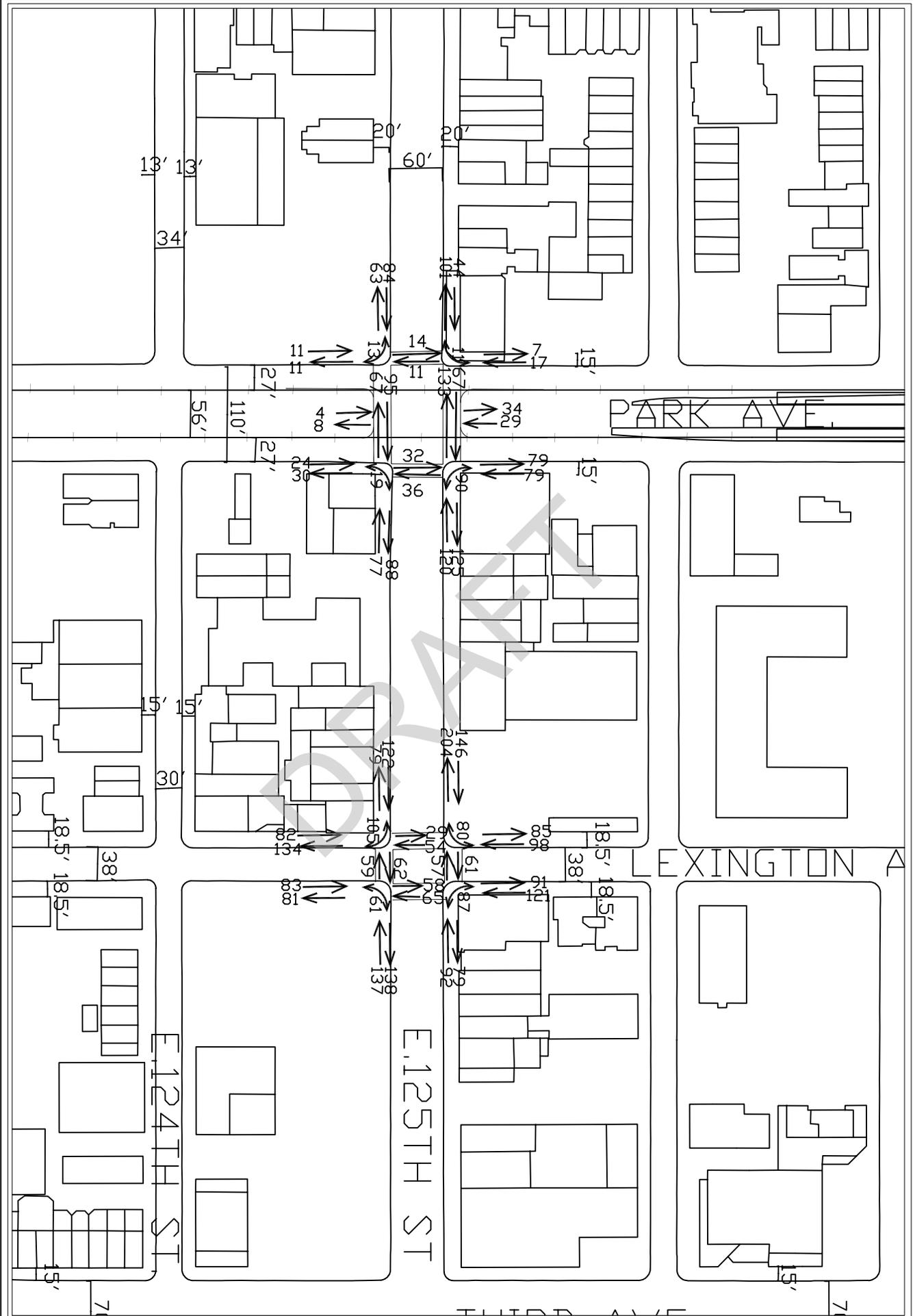




Pedestrian Volumes and Street/Sidewalk Widths - MD Peak (12:15PM-1:15PM)  
 SECTION II - Locations: 135th St and St Nicholas Ave



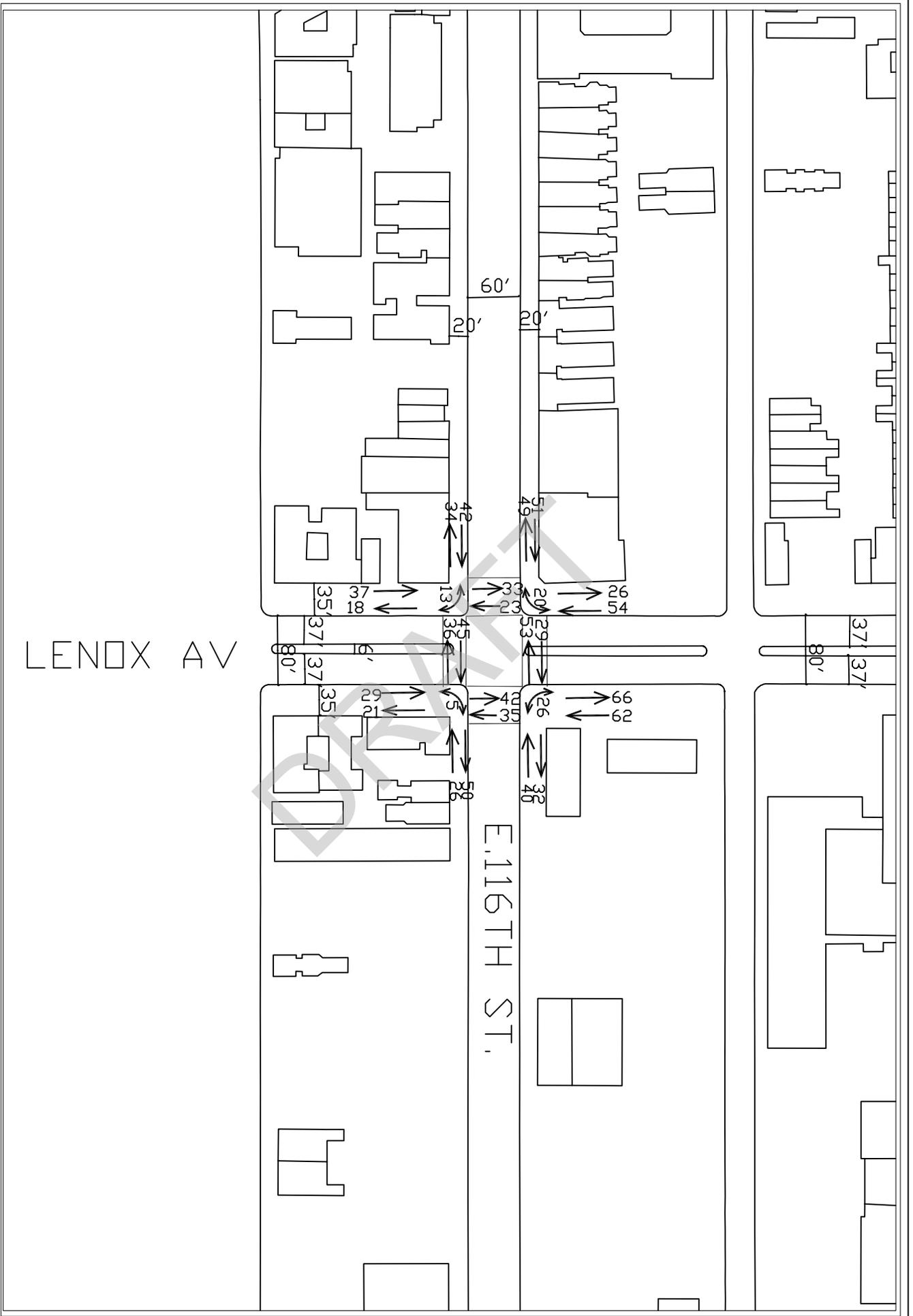
Pedestrian Volumes and Street/Sidewalk Widths - MD Peak (12:15PM-1:15PM)  
 SECTION IV - Locations: 125th St and Park Ave  
 125th St and Lexington Ave











LENOX AV

E. 116TH ST.

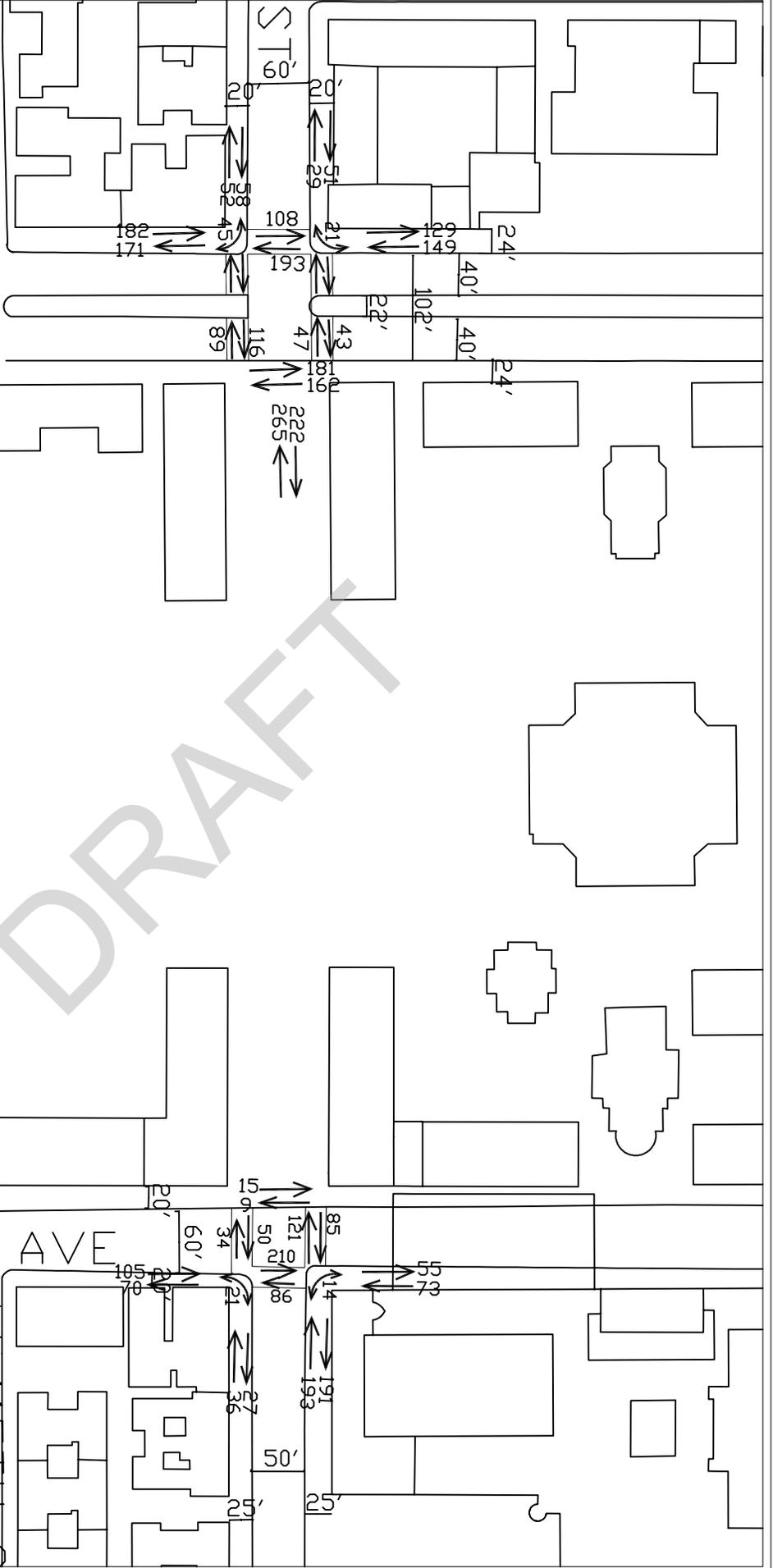
Pedestrian Volumes and Street/Sidewalk Widths - MD Peak (12:15PM-1:15PM)  
 SECTION VIII - Locations: 116th St and Lenox Ave

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BROADWAY

AMSTERDAM AVE

W 115TH S



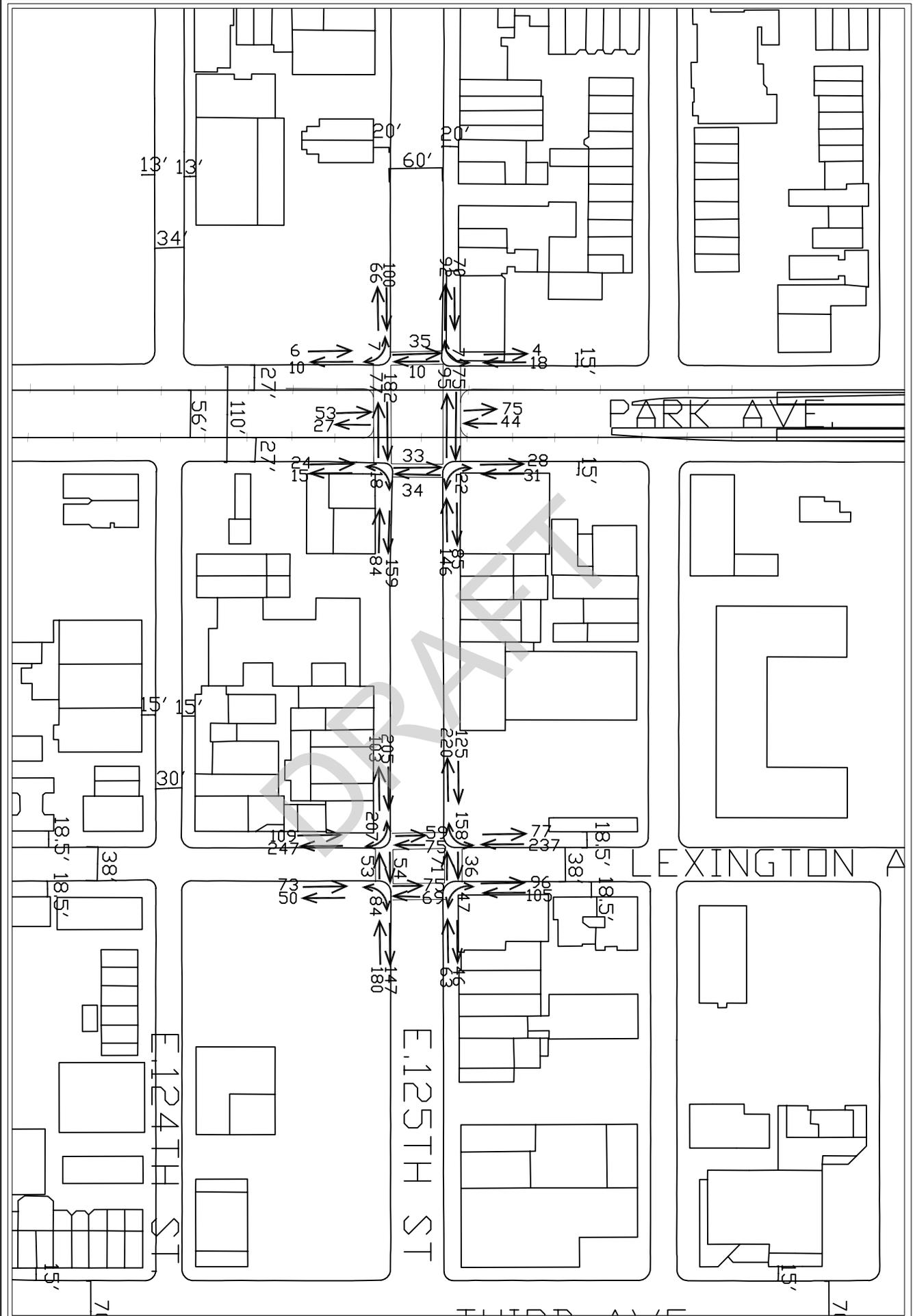
Pedestrian Volumes and Street/Sidewalk Widths - MD Peak (12:15PM-1:15PM)  
SECTION IX - Locations: 116th St and Broadway  
116th St and Amsterdam Ave







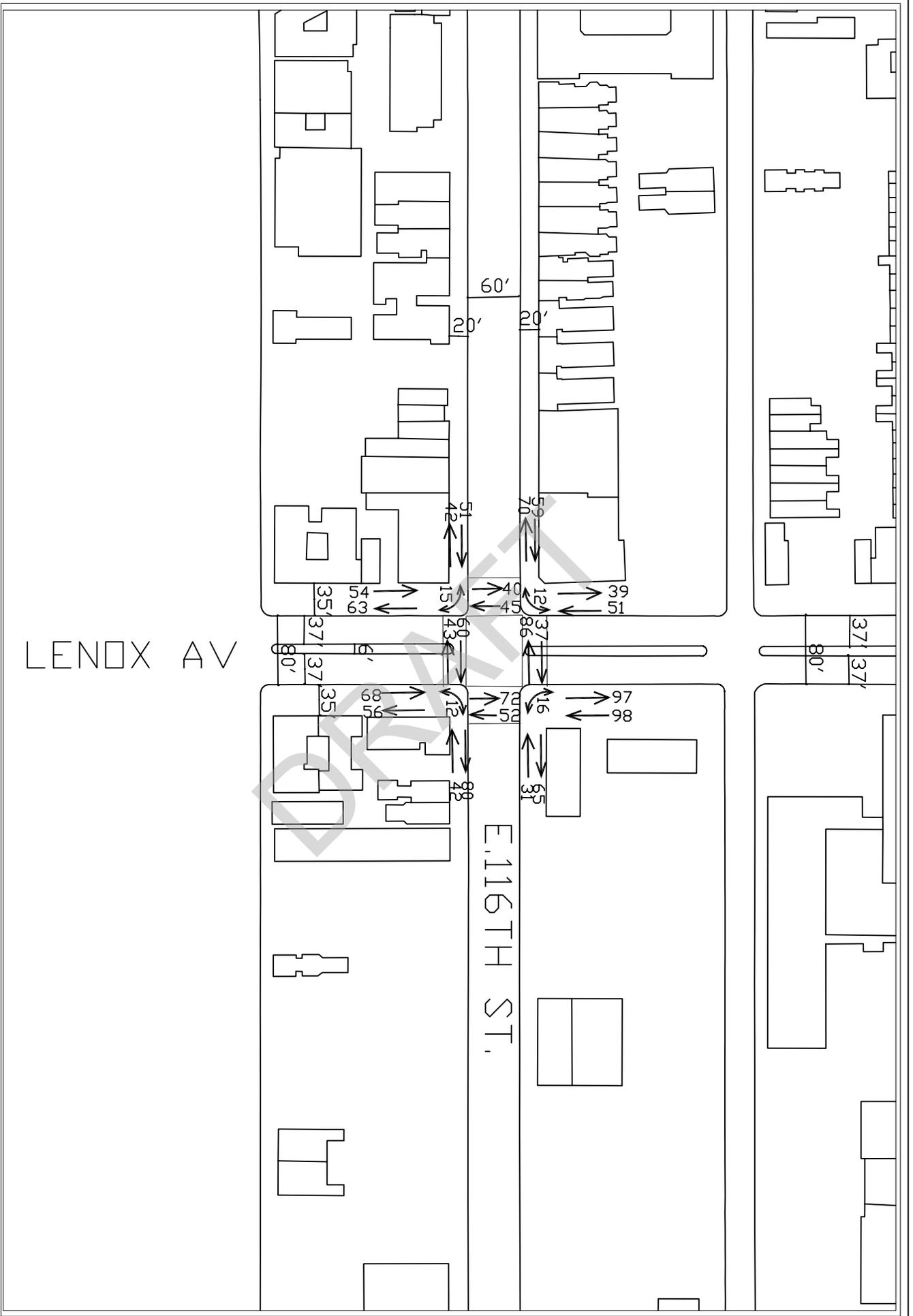
Pedestrian Volumes and Street/Sidewalk Widths - PM Peak (4:45PM-5:45PM)  
 SECTION IV - Locations: 125th St and Park Ave  
 125th St and Lexington Ave











LENOX AV

E. 116TH ST.

Pedestrian Volumes and Street/Sidewalk Widths - PM Peak (4:45PM-5:45PM)  
 SECTION VIII - Locations: 116th St and Lenox Ave

