# Georgetown Transportation Study

S

ransportation Study

**Final Report** 

October 2008

Prepared for: District Department of Transportation Transportation Planning and Policy Administration

Prepared by: HNTB





HNTB

# Georgetown Transportation Study

Final Report

October 2008

**Prepared for**: District Depatment of Transportation Transportation Planning and Policy Administration





Prepared by:









# Table of Contents

EXECUTIVE SUMMARY	I
Study Goals	i
Study Purpose	i
Study Process	i
Guiding Principles	i
Report Contents	i
Existing Transportation Issues	ii
Summary of Recommendations	ii
	1
INTRODUCTION	1
PREVIOUS STUDIES	1
Glover Park Transportation Study Final Report.	1
Lower West End Traffic Study	2
Whitehurst Freeway Deconstruction Feasibility Study	2
Wisconsin Avenue Corridor Transportation Study	2
	 ວ
Major Poadways in the Study Area	Z
Public Transportation	Z
MMATA Motrorail Sonvico	0 6
WWATA Metrobus Service	0
Nina ra meli obus Service	/
Coorgetown Motro Connection	/
Georgetown Metro Connection Shuttle (GUTS)	/
Bus Truck and Bicycle Restrictions	7
Biovole Facilities	/
Existing Riovale Trails/Eacilities	11
Ongoing and Proposed Trail development	11
Biovole Volumes	11
Bicycle Crashes	11
Pedestrian Facilities	17
Pedestrian Volumes	17
Pedestrian Crash Data	18
Sidewalk Assessment	18
Curb Ramp Assessment (for wheelchairs strollers persons with impaired vision etc)	18
Signs Road Markings and Signals	19
Pedestrian Activity and/or Deficiency:	19
Traffic Volumes	31
Pavement Condition	33
Traffic Operations/Capacity Analysis	39
Land Use and Zoning	42
Parking	42
Crash Data - Vehicles	45
TRANSPORTATION ISSUES BY MODE	50

# Table of Contents - Continued

FUTURE CONDITIONS	53
Projected traffic	53
Future Development in the Study Area	53
Background Traffic	53
ANALYSIS AND RECOMMENDATIONS	58
Bicycle	58
Pedestrian	67
Transit	69
Traffic/Automobile	70
Recommendations Summary	73
APPENDICES	77
APPENDIX A – WMATA TRANSIT ROUTE RIDERSHIP	79
APPENDIX B – SIDEWALKS, ROADS, AND ALLEYWAYS SCHEDULED IMPROVEMENTS	83
APPENDIX C – SUMMARY OF ANNUAL NUMBER OF CRASHES BY TYPE	85
APPENDIX D – SHORT-TERM, MID-TERM, AND LONG-TERM IMPROVEMENT OPTIONS CONSIDERED	87
TABLE D1: TRANSPORTATION ISSUES AND POTENTIAL IMPROVEMENTS	88
Short-Term Options Considered	94
SHORT-TERM OPTION 1 – NEW SIGNING	99
SHORT-TERM OPTION 2 – SIGNAL MODIFICATIONS	. 100
SHORT-TERM OPTION 3 – IMPRINT PAVING (ON CROSSWALKS)	. 101
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 1 of 4	. 102
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 2 of 4	. 103
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 3 of 4	. 104
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 4 of 4	. 105
SHORT-TERM OPTION 5 – CURB RAMP RECOMMENDATIONS	. 106
SHORT-TERM OPTION 6 – SIDEWALK RECOMMENDATIONS	. 107
SHORT-TERM OPTION 9 – INTERSECTION IMPROVEMENTS – WISCONSIN AVENUE & 35 <sup>TH</sup>	
STREET (GLOVER PARK TRANSPORTATION STUDY RECOMMENDATION)	. 108
Mid-Term Options Considered	94
MID-TERM OPTION 2 –INTERSECTION IMPROVEMENTS – M ST/33 <sup>RD</sup> ST INTERSECTION	. 109
MID-TERM OPTION 3 –INTERSECTION IMPROVEMENTS – 27 <sup>TH</sup> STREET/K STREET/	
WHITEHURST FREEWAY INTERSECTION	.110
MID-TERM OPTION 4 – ENFORCEMENT, SIGNING AND TRAFFIC CALMING	. 111
MID-TERM OPTION 5 – M STREET CORRIDOR (M STREET, 34TH STREET, 33RD STREET AND	
WISCONSIN AVENUE IMPROVEMENTS) – EXISTING CONDITIONS	. 112
MID-TERM OPTION 5A – M STREET CORRIDOR (M ST, 34TH ST, 33RD ST AND WISCONSIN	
AVE IMPROVEMENTS) OPTION A – 33RD STREET ONE-WAY SB	. 113
MID-TERM OPTION 5D – M STREET CORRIDOR (M ST, 34TH ST, 33RD ST AND WISCONSIN A)	√E
IMPROVEMENTS) OPTION D – 33RD STREET ONE-WAY SB, 34 <sup>m</sup> STREET ONE	
WAY NB TO PROSPECT STREET, BANK ALLEY NB	. 114
MID-TERM OPTION 5D1 –M STREET CORRIDOR (M ST, 34TH ST, 33RD ST AND WISCONSIN	_
AVE IMPROVEMENTS) OPTION D1 – 33RD STREET ONE-WAY SB, 34TH STREET	445
UNE WAY NE TO PROSPECT STREET, BANK ALLEY SE	.115
	. 116
MID-TERM OPTION / –INTERSECTION IMPROVEMENTS – WISCONSIN AVENUE/35 <sup>111</sup> STREET	. 117

# Table of Contents - Continued

MID-TERM OPTION 10 – INTERSECTION IMPROVEMENTS – M STREET/WISCONSIN AVENUE	118
MID-TERM OPTION 11 –INTERSECTION IMPROVEMENTS – M STREET/KEY BRIDGE (ALT 1)	119
MID-TERM OPTION 11 –INTERSECTION IMPROVEMENTS – M STREET/KEY BRIDGE (ALT 2)	120
MID-TERM OPTION 12 – SIDEWALK WIDENING & MEDIAN ALONG M ST AND WISCONSIN AVE	121
MID-TERM OPTION 13 – MEDIAN AND PEDESTRIAN REFUGE	122
Long-Term Options Considered	95
LONG-TERM OPTION 1 – PROPOSED BUS SHELTERS	123
LONG-TERM OPTION 2 – PROPOSED BUS BULB-OUT LOCATIONS	124
LONG-TERM OPTION 5 – M STREET PARKING MODIFICATIONS	125
LONG-TERM OPTION 7 – TRANSIT ONLY LANES ON M STREET EAST OF WISCONSIN AVENUE	
AND ALONG WISCONSIN AVENUE	126
Additional Options Considered	95
Improvement Options Not Recommended	96
APPENDIX E – PEDESTRIAN AND BICYCLE RECOMMENDATIONS BACKUP	127
TABLE E1: PEDESTRIAN SIGNAL TIMING ANALYSIS	128
	125
	133
APPENDIX G – PUBLIC COMMENTS AND RESPONSES	143
APPENDIX H – RECOMMENDED IMPROVEMENTS	181
SHORT-TERM OPTION 1 – NEW SIGNING	183
SHORT-TERM OPTION 2 – SIGNAL MODIFICATIONS	184
SHORT-TERM OPTION 3 – IMPRINT PAVING (ON CROSSWALKS)	185
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 1 of 4	186
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 2 of 4	187
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(Pedestrian Related) Page 3 of 4	188
SHORT-TERM OPTION 4 – SIGNS, SIGNALS AND PAVEMENT MARKINGS	
(PEDESTRIAN RELATED) PAGE 4 OF 4	189
SHORT-TERM OPTION 5 – CURB RAMP RECOMMENDATIONS	190
SHORT-TERM OPTION 6 – SIDEWALK RECOMMENDATIONS.	191
SHORT-TERM OPTION 9 – INTERSECTION IMPROVEMENTS – WISCONSIN AVENUE & 35 <sup>11</sup>	
STREET (GLOVER PARK TRANSPORTATION STUDY RECOMMENDATION)	192
MID-TERM OPTION 2 –INTERSECTION IMPROVEMENTS – M ST/33 <sup>KU</sup> ST INTERSECTION	193
MID-TERM OPTION 3 –INTERSECTION IMPROVEMENTS – 27 <sup>III</sup> STREET/K STREET/	
	194
MID-TERM OPTION 4 – ENFORCEMENT, SIGNING AND I RAFFIC CALMING	195
MID-TERM OPTION 6 – ONE WAY PAIR EAST OF WISCONSIN AVENUE	196
MID-TERM OPTION 7 –INTERSECTION IMPROVEMENTS – WISCONSIN AVENUE/35" STREET	197
MID-TERM OPTION 10 –INTERSECTION IMPROVEMENTS – M STREET/WISCONSIN AVENUE	198
MID-TERM OPTION 13 – MEDIAN AND PEDESTRIAN REFUGE	199
LONG-TERM OPTION 7 – I RANSIT ONLY LANES ON M STREET EAST OF WISCONSIN AVENUE	000
AND ALONG WISCONSIN AVENUE	200
APPENDIX I – PLANNING LEVEL IMPLEMENTATION COSTS	201
TABLE 11: PLANNING LEVEL QUANTITIES AND ESTIMATES	201

# Table of Contents - Continued

# List of Tables

TABLE 1: LEVEL OF SERVICE STANDARDS FOR INTERSECTIONS	39
TABLE 2: CAPACITY ANALYSIS SUMMARY – EXISTING CONDITIONS	40
TABLE 3: AVERAGE ANNUAL NUMBER OF CRASHES BY INTERSECTION	46
TABLE 4: TRANSPORTATION ISSUES BY MODE	50
TABLE 5: PROJECTED DEVELOPMENT IN THE STUDY AREA	53
TABLE 6: CAPACITY ANALYSIS SUMMARY – 2015 NO-BUILD CONDITIONS	57
TABLE 7: TRANSPORTATION OPTIONS ANALYSIS	59
TABLE 8: CAPACITY ANALYSIS SUMMARY – RECOMMENDED TRANSPORTATION IMPROVEME	INTS
(2015 INCLUDING SHORT-, MID-, AND LONG-TERM RECOMMENDATIONS)	73
TABLE 9: EXISTING, 2015 NO-BUILD AND 2015 RECOMMENDED TRANSPORTATION	
IMPROVEMENTS COMPARISON	74

# List of Figures

FIGURE 1:	STUDY AREA	3
FIGURE 2:	FUNCTIONAL CLASSIFICATION	4
FIGURE 3:	BUS ROUTES	9
FIGURE 4:	BUS, TRUCK, AND BICYCLE RESTRICTIONS	. 10
FIGURE 5:	BIKE TRAILS (EXISTING AND PROPOSED)	. 13
FIGURE 6A:	PEDESTRIAN AND BICYCLE COUNT DATA	. 14
FIGURE 6B:	PEDESTRIAN AND BICYCLE COUNT DATA	. 15
FIGURE 7:	BICYCLE CRASH DATA	. 16
FIGURE 8:	PEDESTRIAN CRASH DATA	.21
FIGURE 9:	SIDEWALK ASSESSMENT	. 22
FIGURE 10:	SIDEWALK DEFICIENCIES	. 23
FIGURE 11:	CURB RAMP ASSESSMENT	. 24
FIGURE 12A	: SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)	. 25
FIGURE 12B	: SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)	. 26
FIGURE 12C	: SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)	. 27
FIGURE 12D	: SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)	. 28
FIGURE 13:	PEDESTRIAN ACTIVITY/DEFICIENCY LOCATIONS	. 29
FIGURE 14:	WEEKDAY TRAFFIC VOLUMES ON M STREET, WISCONSIN AVENUE AND K ST	. 31
FIGURE 15:	SATURDAY TRAFFIC VOLUMES ON M STREET, WISCONSIN AVENUE AND K ST	. 32
FIGURE 16:	STUDY AREA INTERSECTION LANE DIAGRAMS	. 34
FIGURE 17:	STUDY AREA INTERSECTIONS	. 35
FIGURE 18:	EXISTING (2007) AM, PM, AND SATURDAY PEAK HOUR VOLUMES AND LEVEL	
	OF SERVICE	. 36
FIGURE 19:	GEORGETOWN AREA PAVEMENT CONDITION MAP	. 37
FIGURE 20:	LOS DESIGNATIONS	. 39
FIGURE 21:	LAND USE	. 43
FIGURE 22:	COMPARISON OF CRASH NUMBERS AT STUDY INTERSECTIONS WITH AVERAGE	
	CRASH NUMBERS FOR THE STUDY AREA	. 46
FIGURE 23:	COMPARISON OF SIDESWIPE CRASH DENSITIES FOR INTERSECTIONS WITH	
	AVERAGE SIDESWIPE CRASH DENSITY	. 47
FIGURE 24:	COMPARISON OF REAR-END CRASH DENSITIES FOR INTERSECTIONS WITH	
	AVERAGE REAR-END CRASH DENSITY	. 48
FIGURE 25:	COMPARISON OF PARKED VEHICLE CRASH DENSITIES FOR INTERSECTIONS	
	WITH AVERAGE PARKED VEHICLE CRASH DENSITY	. 48
FIGURE 26:	TRANSPORTATION ISSUES	. 51
FIGURE 27:	2015 PROJECTED VOLUMES AND LEVEL OF SERIVE AT SELECT INTERSECTIONS	. 55
FIGURE 28:	RECOMMENDED TRANSPORTATION IMPROVEMENTS	. 75
FIGURE 29:	2015 PROJECTED VOLUMES AND LEVEL OF SERVICE AT SELECT INTERSECTION	S
	INCLUDING THE RECOMMENDED TRANSPORTATION IMPROVEMENTS	.76

# **Executive Summary**

The District Department of Transportation (DDOT) conducted a study that evaluated transportation conditions within Georgetown, Hillandale and Burleith areas of Northwest Washington, DC.

# STUDY GOALS

The goals of this study are to improve pedestrian and bicycle mobility and safety, enhance transit service, improve traffic, and protect surrounding residential streets from traffic impacts.

# STUDY PURPOSE

Through this study, the District Department of Transportation (DDOT) is investigating transportation management and infrastructure improvements in the Georgetown area. These efforts are in response to citizen concerns regarding the volume of pedestrians and vehicles in the Georgetown area and the effect hese have on pedestrian safety. The purpose of the study is to examine existing transportation conditions in the study area and projected future transportation conditions related to peak hour traffic (AM peak, PM peak and Saturday evening peak) with emphasis on pedestrian and bicycle safety. It also aims to develop short-, mid-, and long-term improvements to the Georgetown area.

# STUDY PROCESS

The study was conducted with assistance from area residents and businesses. The Study Team held several meetings with area residents to discuss existing transportation issues. Area residents have provided additional input via e-mail, regular correspondence and meetings with DDOT. The Study Team has also held several meetings and teleconferences with representatives of key local agencies, including the Washington Metropolitan Area Transportation Authority (WMATA), Ride On, the District of Columbia Office of Planning and the National Park Service. Input from residents and public agency representatives have been important in the identification of key transportation issues.

# **GUIDING PRINCIPLES**

The guiding principles of the Georgetown Transportation Study are:

- Improve access for pedestrians, bicyclists and mass transit users.
- Incorporate resident's experiences and suggestions through an open community participation process.
- Ensure that all suggestions promote transportation safety for all modes of travel.
- Better manage personal vehicle traffic in Georgetown.

The Study Team used these principles to develop recommendations to address existing and future transportation issues.

# **REPORT CONTENTS**

This report summarizes the assessment of existing conditions in the study area and recommendations to address current and potential transportation issues. The existing conditions section of this report includes a description of the major roadways in the study area; information on pedestrian, bike and traffic volumes at select intersections; accidents; and vehicle level of service (LOS) at select intersections. It also describes the conditions of existing pedestrian facilities, parking facilities, public transportation, and bicycle facilities. The impact of expected developments and other projects in the study area are assessed in the Future Conditions section. The recommendations developed in this study are presented in the third section of this report, consisting of short-term recommendations: implementation horizon of up to 12 months; mid-term recommendations: 12 months to 6 years; and long-term recommendations: requiring more than 6 years to implement.

# **EXISTING TRANSPORTATION ISSUES**

The Study Team conducted an extensive data collection effort to gain an understanding of the existing conditions in the study area. A wide variety of existing transportation issues were identified.

General transit issues include:

- lack of transit service to selected areas
- inadequate pedestrian and bicycle access to locations within the study area

General pedestrian facilities and safety include:

- lack of sidewalks at critical locations
- narrow sidewalks at selected locations
- poor conditions of ADA access ramps
- lack of pedestrian signals and inadequate pedestrian timings
- conflicts between pedestrians and vehicles
- sub-standard signing near schools

General bicycle issues include:

- lack of bicycle routes to the Metro stations (Foggy Bottom, Rosslyn and Dupont Circle)
- lack of bicycle route signing for designated bicycle routes
- conflicts between vehicles and bicycles

General traffic operations issues and vehicular safety include:

- congestion along major roadways and at critical intersections
- speeding
- cut-through traffic
- lack of enforcement for rules of the road
- inadequate striping for parking and lack of parking enforcement
- lack of turn lanes at selected intersections
- non-optimized signal timings
- street pavement condition
- unsafe intersection geometry

# SUMMARY OF RECOMMENDATIONS

Below is a summary of recommendations made to address the transportation issues. Specifics on the recommendations can be found in **Appendix H**.

- Bicycle, pedestrian, and vehicle signing
- Improved bicycle facilities including:
  - o Construction of Smart Bike location
  - Completion of NPS bicycle facility connecting C&O Canal and Rock Creek Park
- Improved pedestrian facilities including:
  - o Repaired/replaced sidewalks
  - o Constructed/repaired/replaced curb ramps/medians
  - o Construction of imprint and high visibility crosswalks
- Transit enhancements including:
  - o Use of thicker pavement to reduce noise/vibration
  - o Bus only lanes

- Alterations to traffic signal operation including:
  - Changes to splits, cycle lengths and phasing
  - o All pedestrian phase
  - Installation of signals
- Alterations to traffic flow
- Increased enforcement including:
  - Traffic control officers on M Street at peak times/all days
  - o Red light and speed enforcement

# **Existing Conditions**

# INTRODUCTION

The District Department of Transportation (DDOT) conducted a study that evaluated transportation conditions within the Georgetown, Hillandale, and Burleith areas of Northwest Washington DC, referred to as Georgetown in this report. DDOT hired the consulting firm of HNTB (Consultant) to conduct the technical analysis for this study. In this report, work performed by either the Consultant or a combination of Consultant and DDOT staff is referred to as work performed by the "Study Team".

The purpose of this study is to examine existing transportation conditions in the study area, shown in **Figure 1**, and to project future transportation conditions in AM peak, PM peak and Saturday evening peak with emphasis on pedestrian safety, and to develop short-, mid-, and long-term transportation management and infrastructure improvements.

The study team solicited input from the community through a number of different means:

- The Study Team held several meetings with the technical advisory committee (TAC), which includes representatives from civic, business, and governmental organizations.
- The Study Team conducted public meetings in September 2007 with area residents to discuss study issues and existing conditions within the Georgetown area.
- A project website has been created where project materials and summaries of the public meetings are available.
- Area residents have provided additional input via email and regular correspondence.
- The Study Team also held several meetings and teleconferences with representatives of key local agencies, including the Washington Metropolitan Area Transportation Authority (WMATA), the District of Columbia Office of Planning, and the National Park Service.

Input from the residents, the TAC, and the public agency representatives has been helpful in the identification of key transportation issues.

This section summarizes the assessment of existing transportation conditions and describes the main transportation issues identified in the study area.

# **PREVIOUS STUDIES**

In the past, different studies have been conducted in and around Georgetown by the District of Columbia Department of Transportation (DDOT) and other government agencies. The previous studies reviewed for this project are:

- Glover Park Transportation Study Final Report
- Lower West End Traffic Study
- Whitehurst Freeway Deconstruction Feasibility Study
- Wisconsin Avenue Corridor Transportation Study

# Glover Park Transportation Study Final Report

The goal of this study was to investigate retail business improvement, public realm, pedestrian mobility and parking improvement strategies along Wisconsin Avenue within the Glover ParkCcommercial District. The Study Area included the buildings and lots that front Wisconsin Avenue from Whitehaven Parkway to Calvert Street as well as a few businesses with entrances on 37<sup>th</sup> Street. The study report suggested some improvements to the urban design, public realm, and pedestrian environment. Parking, both on-street and off-street was reviewed and recommendations given. The Study Area for this report was adjacent to the northern border of the Georgetown Transportation Study.

# Lower West End Traffic Study

The District Department of Transportation (DDOT) conducted the Lower West End Traffic Study to address existing traffic congestion and other transportation and traffic safety concerns in the Lower West End of the District of Columbia bounded by 29<sup>th</sup> Street to the west, 23<sup>rd</sup> Street to the east, K Street to the south and M Street to the north. This study area overlaps the Georgetown Transportation Study from 29<sup>th</sup> Street to 27<sup>th</sup> Street between K Street and M Street. The study report suggested short-term solutions to traffic congestion and other transportation and traffic safety concerns.

### Whitehurst Freeway Deconstruction Feasibility Study

DDOT conducted a study to determine the feasibility of removing the Whitehurst Freeway. Impacts associated with its removal were also assessed. Project limits included the Potomac River to the south, K Street to the southeast, Foxhall Road to the west, Reservoir Road to the north on the west side of Wisconsin Avenue, M Street to the north on the east side of Wisconsin Avenue and 19<sup>th</sup> Street on the east. Specific attention was directed to M and K Streets NW in relation to the traffic associated with these two streets currently and in the future if the Whitehurst Freeway was removed. The study report summarized existing conditions and provided a summary of three case studies where a freeway was deconstructed. The study considered a range of evaluation criteria that addressed potential impacts to traffic operations, neighborhood character, and cost. The evaluation indicated several alternatives that included the removal of the Whitehurst Freeway performed better than the No Build alternative. Improvements were seen in the traffic operations on M Street NW during peak hour periods, the visual environment, parking facilities, vehicular, pedestrian and bicycle access to Georgetown businesses and the waterfront area, the provision of positive impacts on property values, and enhancements in transit operations in the area.

# Wisconsin Avenue Corridor Transportation Study

The purpose of this study was to investigate the traffic management and pedestrian safety improvements in the Wisconsin Avenue corridor in response to citizen's concerns. It was also intended to provide short-, mid-, and long-term traffic management and infrastructure solutions. The study area was bounded by Fessenden Street NW to the north, 45<sup>th</sup> Street NW to the west, Reno Road NW/34<sup>th</sup> Street NW to the east and Whitehaven Parkway NW to the south. This study looked at the area directly north of the Georgetown Transportation Study northern boundary of Whitehaven Parkway. Solutions included: signage, pavement repair, pedestrian crossings, and accessible ramps.

# **EXISTING TRANSPORTATION FEATURES**

The Study Team conducted an extensive data collection effort to gain an understanding of existing conditions in the study area. In addition to collecting data for the quantitative assessment of the existing conditions, the Study Team conducted field evaluations throughout the study area during peak and off-peak hours, as well as Saturday hours. Data for all modes of transportation (bicycle and pedestrian, transit, vehicle) were collected. This section of the report summarizes the data collected for the study. Descriptions of transportation issues identified in the study area are provided in the Transportation Issues section of this report.

# MAJOR ROADWAYS IN THE STUDY AREA

The Study Area is located in Northwest Washington, DC, and is bounded by Whitehaven Parkway NW to the north, the Potomac River to the south, Glover-Archbold Parkway to the west and Rock Creek Parkway NW to the east except along K Street NW where the boundary is the intersection of K Street NW and 27<sup>th</sup> Street NW (See **Figure 1** for the Study Area and **Figure 2** for the Functional Classification of roadways within the Study Area). The following are the major roadways in the study area:

Wisconsin Avenue	Reservoir Road	P Street	■ 33 <sup>rd</sup> Street	37 <sup>th</sup> Street
Whitehurst Freeway	K Street	Q Street	34 <sup>th</sup> Street	Pennsylvania Avenue
Key Bridge	M Street	R Street	■ 35 <sup>th</sup> Street	

FIGURE 1: STUDY AREA





NOTE: Only roadways that are functionally classified are shown in this figure. Functional classification is the process by which streets and highways are grouped according to the character of service they are intended to provide based on the amount of vehicles utilizing them and the nature of any roadway to the movement of people and goods. Functionally classified roadways are eligible for federal funding. Source: DDDT, 2006

4

#### Wisconsin Avenue

Wisconsin Avenue<sup>1</sup> is the main artery running north-south through the study area. Wisconsin Avenue is twoway and of variable cross-section width. The curb lane in both the northbound and southbound directions converts to parking in non-peak hours. Two-hour, on-street metered parking is allowed on this street in certain areas throughout the study area but long term parking is not allowed. It has a posted speed limit of 25 mph. Sidewalks are provided on both sides of the street. Commuter use of this street is an issue for the study area residents, as well. Land use in the area is comprised of various single-use, attached buildings, including retail stores, food establishments, and residences.

The southernmost intersection in the study area is K Street/Wisconsin Avenue and the northernmost is Wisconsin Avenue/Whitehaven Parkway. The study area covers approximately a one-mile stretch of the road. Pedestrian activity is high through the study area with many signalized intersections along Wisconsin Avenue to allow for both pedestrian and vehicular movement.

#### Whitehurst Freeway

Whitehurst Freeway is a four-lane elevated roadway running east-west through the southern part of the study area for approximately <sup>3</sup>/<sub>4</sub> miles from Canal Street/M Street to 27<sup>th</sup> Street NW. There are two lanes in each direction, and parking is not allowed at any time. There is a concrete barrier in the middle that separates the two sides of the highway. The posted speed limit is 35 mph. The termini of this freeway are controlled by signals at Canal/M Street and 27<sup>th</sup> Street.

#### Key Bridge

The Key Bridge spans the Potomac River, connecting M Street in Georgetown to Rosslyn, Virginia. The termini of the bridge are controlled with signals. The only other access point along Key Bridge is to the Whitehurst Freeway (eastbound) and is only accessible to northbound vehicles.

#### Reservoir Road

Reservoir Road is an east-west artery that runs through the study area. There are two lanes, one running in each direction. Reservoir Road is primarily controlled by traffic signals, and parking is allowed on some sections of the road. In the study area, it stretches from 39<sup>th</sup> Street to 32<sup>nd</sup> Street. A signalized intersection exists at 37<sup>th</sup> Street. The remaining intersections are controlled by all-way sop signs.

#### K Street

In the study area, K Street is a four lane, east-west, minor arterial that runs under the Whitehurst Freeway. Controlled intersections with all-way stop signs run for the entirety of K Street, with the exception of the signalized intersection at K Street/27<sup>th</sup> Street/Whitehurst Freeway. Parking is allowed in sections from 34<sup>th</sup> Street to Wisconsin Avenue, and again from Wisconsin Avenue to 27<sup>th</sup> Street. The posted speed limit is 25 mph.

#### M Street

M Street is the main east-west artery through the study area from Canal Road to Rock Creek Parkway. Traffic flows in both directions, with three lanes either way, except east of 29<sup>th</sup> Street where M Street is one-way westbound. One lane of traffic in each direction is converted to parking in off-peak hours. Most of the intersections experience heavy pedestrian volumes. Illegal parking and high loading-unloading activity often cause delays on M Street. The majority of the land use along the street is commercial. Many of the intersections along M Street in the study area are signalized. The speed limit is 25 mph.

#### P Street

P Street is an east-west road with one lane in each direction that runs through the study area between Rock Creek Parkway and Wisconsin Avenue. Traffic flows one way westbound starting at Wisconsin Avenue. As P Street crosses Wisconsin Avenue the alignment of the street is offset resulting in turning movements on Wisconsin to continue on P Street. Housing lines P Street through the majority of the study area, however there are commercial establishments that serve the neighborhood at the intersection of P Street and 27<sup>th</sup> Street. Parking is allowed on both sides of the street for most of the study area. Two signals exist on P Street at 28<sup>th</sup> Street and 30<sup>th</sup> Street. All other intersections are controlled by all-way stop signs.

<sup>&</sup>lt;sup>1</sup> All streets in the study area are located in the northwest quadrant of the District. Therefore, throughout this report where the NW designation is omitted, it should be understood that the street is located in the northwest quadrant.

#### Q Street

Q Street is a two lane east-west road with one lane in each direction that runs through the study area from Rock Creek Parkway to Wisconsin Avenue and from Wisconsin Avenue to 35<sup>th</sup> Street. As Q Street crosses Wisconsin Avenue the alignment of the street is offset resulting in turning movements on Wisconsin to continue on Q Street. The street is surrounded by residences, with parking allowed on the north side of the street. Intersections are controlled with all way stop signs. Traffic signals control the intersections at 28<sup>th</sup> Street, 30<sup>th</sup> Street, 31<sup>st</sup> Street, 33<sup>rd</sup> Street, 34<sup>th</sup> Street, and Wisconsin Avenue.

#### R Street

R Street is a two lane east-west road with one lane in each direction that runs through the study area from 28<sup>th</sup> Street to 38<sup>th</sup> Street. As R Street crosses Wisconsin Avenue the alignment of the street is offset resulting in turning movements on Wisconsin to continue on R Street. Most of the buildings on R Street are residences. Parking is allowed on both sides of the street. Intersections are controlled with all-way stop signs with the exception of the signalized intersection at Wisconsin Avenue.

#### 33<sup>rd</sup> Street

33<sup>rd</sup> Street is a one way, one lane road that runs north from south of M Street to Wisconsin Avenue. Most of the buildings on 33<sup>rd</sup> Street are residences but at the intersection of 33<sup>rd</sup> Street and M Street retail stores exist. Parking is allowed on both sides of the road. Intersections are controlled with all-way stop signs with the exception of the signalized intersections at M Street and Q Street.

#### 34<sup>th</sup> Street

34<sup>th</sup> Street is a one way, one lane road that runs south from Wisconsin Avenue to south of M Street. Most of the buildings on 34<sup>th</sup> Street are residences, but the intersection of 34<sup>th</sup> Street and M Street has retail stores. Parking is allowed on both sides of the road for the majority of its stretch. Most intersections are controlled with all-way stop signs, with a traffic signal at the intersection of 34<sup>th</sup> Street and M Street.

### 35<sup>th</sup> Street

35<sup>th</sup> Street is a two lane street that runs north-south from M Street to Wisconsin Avenue. There are two oneway southbound segments along the road: from Wisconsin Avenue to Whitehaven Parkway and from Prospect Street to M Street. 35<sup>th</sup> Street is mostly residential. It is primarily controlled by all-way stop signs; however, there are traffic signals at Reservoir Road and Wisconsin Avenue.

#### 37<sup>th</sup> Street

37<sup>th</sup> Street is a two-lane street that runs north-south from Whitehaven Parkway to Reservoir Road. Parking is permitted on the east side of the road. The street is controlled by all-way stop signs and a traffic signal at Reservoir Road. Most of the buildings along the street are residential, and there is a school located at R Street.

#### Pennsylvania Avenue

Pennsylvania Avenue is a six-lane undivided principal arterial that consists of three lanes in each direction. It traverses a portion of the study area on a diagonal alignment northwest to southeast. Pennsylvania Avenue terminates at M Street, just east of the intersection of M Street and 28<sup>th</sup> Street. The posted speed limit is 25 mph. All intersections along Pennsylvania Avenue within the study area are signalized and include pedestrian crosswalks with countdown pedestrian signals on each signal arm.

# **PUBLIC TRANSPORTATION**

#### WMATA Metrorail Service

No Metrorail stations are located within the study area. Users of Metrorail walk to the study area or transfer to buses serving the area. Two stations are located near the study area: Foggy Bottom (Orange and Blue Line) located at 2301 I Street, and Dupont Circle (Red line) located at 1525 20th Street. Additionally, the Rosslyn Metro Station, located in Rosslyn, Virginia, is used by Metro passengers to access Georgetown across the Key Bridge.

### WMATA Metrobus Service

The Washington Metropolitan Area Transit Authority (WMATA) provides extensive bus service in the study area (See **Figure 3**). Twelve WMATA Routes provide service within the study area. Current price per ride is \$1.35 (or \$1.25 with a SmarTrip card). Other agencies providing transit service in the study area are described below.

As shown in **Figure 3**, twelve bus routes (Routes 38B, 30, 32, 34, 35, 36, G2, D2, D1, D3, D6 and D5) provide service within the study area primarily along Wisconsin Avenue and M Street<sup>2</sup>. The average headway for most of the WMATA buses is 15 to 30 minutes. **Appendix A** shows the boardings and alightings (passenger ons and offs) for each route during different times of the day. The 30's lines (30, 32, 34, 35, and 36) carry the most passengers throughout the study area (See **Appendix A**). Furthermore, the bus stops at M Street/Wisconsin Avenue (eastbound) and M Street/31<sup>st</sup> Street (westbound) are the most utilized within the study area.

# Downtown Circulator

The Downtown Circulator operates on Wisconsin Avenue and M Street between Whitehaven Street (near the Naval Observatory) and Union Station. It operates from 7:00AM to 9:00PM. The average headway between circulator buses is 10 minutes. Additional night service extending the hours to midnight on Sunday-Thursday and 2:00AM on Friday and Saturday began in March 2007.

# Georgetown Metro Connection

The Georgetown Metro Connection Route 2 (M Street Line) operates along the major corridors in the study area from 7:00AM to midnight Monday-Thursday, 7:00AM to 2:00AM Friday, 8:00AM to 2:00AM Saturday, and 8:00AM to midnight Sunday. Buses connect directly to the Rosslyn and Dupont Circle metro stations. The average headway for these buses is 10 minutes at a cost of \$1.50 or \$0.35 with a Metrorail transfer.

# Georgetown University Transportation Shuttle (GUTS)

The Georgetown University Transportation Shuttle (GUTS) provides transit service between the two Georgetown University campuses (Foggy Bottom and Mount Vernon) and other off-campus Georgetown University facilities along 5 routes. Buses operate between 5:00AM and midnight (with each route operating at different times) every 10 minutes with routes destined to Wisconsin Avenue, Dupont Circle, Rosslyn, Arlington Loop (along Lee Highway, Kirkwood, and Arlington Blvd), and the Law Center (operates only Monday – Friday). Total ridership by month is shown in **Appendix A**. For the past year (July 2006-June 2007), almost 1.5 million people utilized the GUTS system. Faculty, staff and students with a valid Georgetown University ID card can ride along any GUTS route at no charge. Physicians, staff and patients with valid GUH ID may ride the Rosslyn and Dupont shuttles. Visitors and persons doing business on campus may also ride free of charge and must show a picture ID at the time of boarding. Buses with handicapped access are available on all GUTS routes.

# **BUS, TRUCK AND BICYCLE RESTRICTIONS**

There are a number of bus and truck restrictions within the study area (See **Figure 4**). The bus restrictions are on 34<sup>th</sup> Street and stretch from M Street to Wisconsin Ave. The truck restrictions in the study area are on Potomac Street, 33<sup>rd</sup> Street, 34<sup>th</sup> Street, P Street and 37<sup>th</sup> Street. On Potomac Street, the restrictions stretch from M Street to O Street. On 33<sup>rd</sup> and 34<sup>th</sup> Streets, the restrictions stretch from M Street to Wisconsin Ave. On P Street, the restrictions stretch from 35<sup>th</sup> Street and Wisconsin Ave. On O Street, the restrictions stretch from Reservoir Road to Tunlaw Road. Bike restrictions are present along O and P Streets from 35<sup>th</sup> Street to Wisconsin Avenue and are in conjunction with the presence of the cobblestone streets and the existence of the historic tracks. Both of these items (cobblestones and tracks) make it difficult to ride a bicycle along the street. For safety reasons, these streets have been restricted from bicycle use.

<sup>&</sup>lt;sup>2</sup> The WMATA bus schedule changed significantly in late June 2008. As of the completion of this study and the final submittal of the study report, the only buses that operate on Wisconsin Avenue are bus routes 31, 32, and 36. Analysis completed in this report was based on routing prior to June 2008.



FIGURE 3: BUS ROUTES

Final Report

FIGURE 4: BUS AND TRUCK RESTRICTIONS



# **BICYCLE FACILITIES**

Getting around Georgetown can be done in more ways than one. Popular forms of alternative modes of transportation include walking and bicycle riding. There are many well-known biking and walking trails in the study area (See Figure 5), and it is clear that the preferred method of transportation within Georgetown is walking due to the close proximity of retail and commercial developments, good transit service, and limited parking.

# Existing Bicycle Trails/Facilities

Biking is a popular form of transportation within the study area and is aided by the presence of numerous trails including:

- Rock Creek Park Trail
- Capital Crescent Trail
- C&O Canal Towpath Trail (see figure to right)

The Capital Crescent and C&O Canal Towpath Trails run parallel to each other within the study area to the Key Bridge. The Capital Crescent Trail (extending to west Silver Spring in Montgomery County, MD) terminates just after the Key Bridge, and trail users either continue on K Street or on the C&O Towpath Trail towards the east connecting to the Rock Creek Park Trail. These trails provide convenient access to Georgetown from the east, west and north. Overall, the southern section of the study area is well served by bike facilities. Apart from these trails there are no other dedicated bike facilities within the study area.

# Ongoing and Proposed Trail development

The National Park Service is developing the trail system in the southern part of the study area (see Figure 5) which will eventually connect the Capital Crescent Trail to the Rock Creek Park Trail and the Kennedy Center. The project is being developed in four phases:

- Phase I currently under construction extends the Capital Crescent Trail along K Street from 34th Street to Wisconsin Avenue
- Phase II will extend the trail from Wisconsin Avenue to 31st Street along K Street
- Phase III will connect the waterfront to the Kennedy Center and F Street
- Phase IV will connect the trail to Rock Creek Park Trail south of K Street

# **Bicycle Volumes**

To assess the level of biking activity as well as related deficiencies the project team collected bike volumes at 25 locations throughout the study area. The data was collected during the morning and afternoon peak periods on an average week day as well as from 2:00 to 8:00 PM on Saturdays. The peak hour bicycle volumes are shown in Figure 6A and Figure 6B. The weekday

data indicated that in addition to the trails located in the southern and eastern parts of the study area M Street, K Street, Wisconsin Avenue and Reservoir Road are the main routes that

bicyclists use. During the weekday peak periods bicycle traffic averages over 30-50 riders per hour on M and K Streets. The present vehicular volumes and related traffic congestion on these streets means that conflicts between bicyclists and vehicles are an everyday occurrence (as shown in the figure above). Data collected on weekends (2:00 - 8:00 PM) indicated that bicycle trips on most corridors within the study area decrease significantly from weekday trips.

# Bicycle Crashes

In order to assess bicycle safety conditions in the study area, the Study Team obtained crash data during the period 2000 to 2006 from DDOT. The crash data is illustrated in Figure 7. (Note: Crash data for vehicles is given from 2004-2006.) Crashes involving bicyclists make up a small portion of the overall crashes in the study area, hence a longer period of time is reviewed to provide adequate sampling size for analysis. There were almost 60 reported bicycle accidents within the study area during the period 2000 to 2006 of which approximately 40 percent resulted in injury. The corridors that emerge as being most dangerous to traffic are M Street west of Wisconsin Avenue, Wisconsin Avenue between Reservoir Road and P Streets, and K Street between Wisconsin Avenue and 29<sup>th</sup> Street. The crash frequencies throughout the study area are greater along streets with high bicycle activity, high deficiencies, and a large number of conflicts between bicyclists and vehicles.

**C & O TOWPATH TRAIL** 



FAMILY CROSSING M STREET

