# Table of Contents

## EXECUTIVE SUMMARY
- Study Goals
- Study Purpose
- Study Process
- Guiding Principles
- Report Contents
- Existing Transportation Issues
- Summary of Recommendations

## EXISTING CONDITIONS

## INTRODUCTION

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

## EXISTING TRANSPORTATION FEATURES
- Major Roadways in the Study Area
- Public Transportation
- WMATA Metrorail Service
- WMATA Metrobus Service
- Downtown Circulator
- Georgetown Metro Connection
- Georgetown University Transportation Shuttle (GUTS)
- Bus, Truck and Bicycle Restrictions
- Bicycle Facilities
- Existing Bicycle Trails/Facilities
- Ongoing and Proposed Trail development
- Bicycle Volumes
- Bicycle Crashes
- Pedestrian Facilities
- Pedestrian Volumes
- Pedestrian Crash Data
- Sidewalk Assessment
- Curb Ramp Assessment (for wheelchairs, strollers, persons with impaired vision, etc)
- Signs, Road Markings and Signals
- Pedestrian Activity and/or Deficiency
- Traffic Volumes
- Pavement Condition
- Traffic Operations/Capacity Analysis
- Land Use and Zoning
- Parking
- Crash Data - Vehicles

## TRANSPORTATION ISSUES BY MODE

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**Final Report**

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List of Tables

<table>
<thead>
<tr>
<th>TABLE</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LEVEL OF SERVICE STANDARDS FOR INTERSECTIONS</td>
<td>39</td>
</tr>
<tr>
<td>2</td>
<td>CAPACITY ANALYSIS SUMMARY – EXISTING CONDITIONS</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>AVERAGE ANNUAL NUMBER OF CRASHES BY INTERSECTION</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>TRANSPORTATION ISSUES BY MODE</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>PROJECTED DEVELOPMENT IN THE STUDY AREA</td>
<td>53</td>
</tr>
<tr>
<td>6</td>
<td>CAPACITY ANALYSIS SUMMARY – 2015 NO-BUILD CONDITIONS</td>
<td>57</td>
</tr>
<tr>
<td>7</td>
<td>TRANSPORTATION OPTIONS ANALYSIS</td>
<td>59</td>
</tr>
<tr>
<td>8</td>
<td>CAPACITY ANALYSIS SUMMARY – RECOMMENDED TRANSPORTATION IMPROVEMENTS</td>
<td>73</td>
</tr>
<tr>
<td>9</td>
<td>EXISTING, 2015 NO-BUILD AND 2015 RECOMMENDED TRANSPORTATION IMPROVS</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>Improvements Comparison</td>
<td></td>
</tr>
</tbody>
</table>

List of Figures

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STUDY AREA</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>FUNCTIONAL CLASSIFICATION</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>BUS ROUTES</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>BUS, TRUCK, AND BICYCLE RESTRICTIONS</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>BIKE TRAILS (EXISTING AND PROPOSED)</td>
<td>13</td>
</tr>
<tr>
<td>6A</td>
<td>PEDESTRIAN AND BICYCLE COUNT DATA</td>
<td>14</td>
</tr>
<tr>
<td>6B</td>
<td>PEDESTRIAN AND BICYCLE COUNT DATA</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>BICYCLE CRASH DATA</td>
<td>16</td>
</tr>
<tr>
<td>8</td>
<td>PEDESTRIAN CRASH DATA</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>SIDEWALK ASSESSMENT</td>
<td>22</td>
</tr>
<tr>
<td>10</td>
<td>SIDEWALK DEFICIENCIES</td>
<td>23</td>
</tr>
<tr>
<td>11</td>
<td>CURB RAMP ASSESSMENT</td>
<td>24</td>
</tr>
<tr>
<td>12A</td>
<td>SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)</td>
<td>25</td>
</tr>
<tr>
<td>12B</td>
<td>SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)</td>
<td>26</td>
</tr>
<tr>
<td>12C</td>
<td>SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)</td>
<td>27</td>
</tr>
<tr>
<td>12D</td>
<td>SIGN INVENTORY (PEDESTRIAN AND BIKE RELATED)</td>
<td>28</td>
</tr>
<tr>
<td>13</td>
<td>PEDESTRIAN ACTIVITY/DEFICIENCY LOCATIONS</td>
<td>29</td>
</tr>
<tr>
<td>14</td>
<td>WEEKDAY TRAFFIC VOLUMES ON M STREET, WISCONSIN AVENUE AND K ST</td>
<td>31</td>
</tr>
<tr>
<td>15</td>
<td>SATURDAY TRAFFIC VOLUMES ON M STREET, WISCONSIN AVENUE AND K ST</td>
<td>32</td>
</tr>
<tr>
<td>16</td>
<td>STUDY AREA INTERSECTION LANE DIAGRAMS</td>
<td>34</td>
</tr>
<tr>
<td>17</td>
<td>STUDY AREA INTERSECTIONS</td>
<td>35</td>
</tr>
<tr>
<td>18</td>
<td>EXISTING (2007) AM, PM, AND SATURDAY PEAK HOUR VOLUMES AND LEVEL OF SERVICE</td>
<td>36</td>
</tr>
<tr>
<td>19</td>
<td>GEORGETOWN AREA PAVEMENT CONDITION MAP</td>
<td>37</td>
</tr>
<tr>
<td>20</td>
<td>LOS DESIGNATIONS</td>
<td>39</td>
</tr>
<tr>
<td>21</td>
<td>LAND USE</td>
<td>43</td>
</tr>
<tr>
<td>22</td>
<td>COMPARISON OF CRASH NUMBERS AT STUDY INTERSECTIONS WITH AVERAGE CRASH NUMBERS FOR THE STUDY AREA</td>
<td>46</td>
</tr>
<tr>
<td>23</td>
<td>COMPARISON OF SIDESWIPE CRASH DENSITIES FOR INTERSECTIONS WITH AVERAGE SIDESWIPE CRASH DENSITY</td>
<td>47</td>
</tr>
<tr>
<td>24</td>
<td>COMPARISON OF REAR-END CRASH DENSITIES FOR INTERSECTIONS WITH AVERAGE REAR-END CRASH DENSITY</td>
<td>48</td>
</tr>
<tr>
<td>25</td>
<td>COMPARISON OF PARKED VEHICLE CRASH DENSITIES FOR INTERSECTIONS WITH AVERAGE PARKED VEHICLE CRASH DENSITY</td>
<td>48</td>
</tr>
<tr>
<td>26</td>
<td>TRANSPORTATION ISSUES</td>
<td>51</td>
</tr>
<tr>
<td>27</td>
<td>2015 PROJECTED VOLUMES AND LEVEL OF SERVICE AT SELECT INTERSECTIONS</td>
<td>55</td>
</tr>
<tr>
<td>28</td>
<td>RECOMMENDED TRANSPORTATION IMPROVEMENTS</td>
<td>75</td>
</tr>
<tr>
<td>29</td>
<td>2015 PROJECTED VOLUMES AND LEVEL OF SERVICE AT SELECT INTERSECTIONS INCLUDING THE RECOMMENDED TRANSPORTATION IMPROVEMENTS</td>
<td>76</td>
</tr>
</tbody>
</table>
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 these 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:
  - Construction of Smart Bike location
  - Completion of NPS bicycle facility connecting C&O Canal and Rock Creek Park
- Improved pedestrian facilities including:
  - Repaired/replaced sidewalks
  - Constructed/repaired/replaced curb ramps/medians
  - Construction of imprint and high visibility crosswalks
- Transit enhancements including:
  - Use of thicker pavement to reduce noise/vibration
  - Bus only lanes
- Alterations to traffic signal operation including:
  - Changes to splits, cycle lengths and phasing
  - All pedestrian phase
  - Installation of signals
- Alterations to traffic flow
- Increased enforcement including:
  - Traffic control officers on M Street at peak times/all days
  - 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 Park Commercial 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 37th 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 29th Street to the west, 23rd Street to the east, K Street to the south and M Street to the north. This study area overlaps the Georgetown Transportation Study from 29th Street to 27th 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 19th 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, 45th Street NW to the west, Reno Road NW/34th 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 27th 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
- 33rd Street
- 37th Street
- Whitehurst Freeway
- K Street
- Q Street
- 34th Street
- Pennsylvania Avenue
- Key Bridge
- M Street
- R Street
- 35th Street
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: DDOT, 2006
**Wisconsin Avenue**

Wisconsin Avenue\(^1\) is the main artery running north-south through the study area. Wisconsin Avenue is two-way 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 ¾ miles from Canal Street/M Street to 27\(^\text{th}\) 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\(^\text{th}\) 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\(^\text{th}\) Street to 32\(^\text{nd}\) Street. A signalized intersection exists at 37\(^\text{th}\) Street. The remaining intersections are controlled by all-way stop 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\(^\text{th}\) Street/Whitehurst Freeway. Parking is allowed in sections from 34\(^\text{th}\) Street to Wisconsin Avenue, and again from Wisconsin Avenue to 27\(^\text{th}\) 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\(^\text{th}\) 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\(^\text{th}\) Street. Parking is allowed on both sides of the street for most of the study area. Two signals exist on P Street at 28\(^\text{th}\) Street and 30\(^\text{th}\) Street. All other intersections are controlled by all-way stop signs.

\(^1\) 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 35th 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 28th Street, 29th Street, 30th Street, 31st Street, 33rd Street, 34th 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 28th Street to 38th 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.

**33rd Street**

33rd Street is a one way, one lane road that runs north from south of M Street to Wisconsin Avenue. Most of the buildings on 33rd Street are residences but at the intersection of 33rd 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.

**34th Street**

34th Street is a one way, one lane road that runs south from Wisconsin Avenue to south of M Street. Most of the buildings on 34th Street are residences, but the intersection of 34th 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 34th Street and M Street.

**35th Street**

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

**37th Street**

37th 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 28th 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. 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/31st 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 34th Street and stretch from M Street to Wisconsin Ave. The truck restrictions in the study area are on Potomac Street, 33rd Street, 34th Street, P Street and 37th Street. On Potomac Street, the restrictions stretch from M Street to O Street. On 33rd and 34th Streets, the restrictions stretch from M Street to Wisconsin Ave. On P Street, the restrictions stretch from 35th Street to Wisconsin Ave. On O Street, the restrictions stretch for the block between Potomac Street and Wisconsin Avenue. On 37th Street, the restrictions stretch from Reservoir Road to Tunlaw Road. Bike restrictions are present along O and P Streets from 35th 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.

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2 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 4: Bus and Truck Restrictions

Georgetown Transportation Study
Bus, Bike & Truck Restrictions

- Study Area Outline
- Restricted for bikes
- Restricted for buses
- Restricted for trucks

Final Report
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 weekday 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 29th 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.