



WELLS + ASSOCIATES

# COLUMBIAN QUARTER AT POPLAR POINT

## COMPREHENSIVE TRANSPORTATION REVIEW

August 2017

ZONING COMMISSION  
District of Columbia  
CASE NO. 16-20  
EXHIBIT NO. 17A1

**TABLE OF CONTENTS**

|  | <u>PAGE</u> |
|--|-------------|
| <b>INTRODUCTION</b> .....  | <b>1</b>    |
| Overview .....   | 1           |
| <i>Table 1: Project Summary</i> .....  | 2           |
| Study Scope .....  | 2           |
| <b>EXISTING TRANSPORTATION FACILITIES</b> .....                                  | <b>3</b>    |
| Roadway Network.....   | 3           |
| <i>Table 2: Roadway Segment Details</i> .....                                    | 4           |
| Non-Auto Transportation Facilities.....  | 4           |
| Public Transportation Facilities and Services.....                               | 4           |
| <i>Table 3: Metrorail Headways (in minutes)</i> .....                            | 5           |
| <i>Table 4: Metrobus Headways (in minutes)</i> .....                             | 6           |
| Pedestrian Facilities .....  | 8           |
| Table 5: Pedestrian Inventory by Intersection.....                               | 8           |
| Bicycle Facilities .....   | 10          |
| Capital Bikeshare.....   | 10          |
| Car Sharing Services.....  | 11          |
| <b>EXISTING CONDITIONS ANALYSIS</b> .....  | <b>11</b>   |
| Traffic Volumes .....  | 11          |
| Capacity Analysis.....   | 12          |
| <i>Table 6: Level of Service Summary</i> .....                                   | 13          |
| Queue Analysis.....  | 19          |
| <i>Table 7: Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)</i> ..... | 20          |
| Safety Analysis .....  | 24          |
| <i>Table 8: Crash Data Summary</i> .....   | 25          |
| <u>Howard Road/I-295 Off Ramp</u> .....  | 25          |
| <u>Howard Road/Firth Sterling Avenue</u> .....                                   | 26          |
| <u>Howard Road/MLK Jr. Avenue/Sheridan Road</u> .....                            | 26          |
| <u>Firth Sterling Avenue/Suitland Parkway</u> .....                              | 26          |
| <u>Firth Sterling Avenue/Barry Road/Sumner Road</u> .....                        | 26          |
| <u>Firth Sterling Avenue/South Capitol Street/Defense Boulevard</u> .....        | 27          |
| <u>MLK Jr. Avenue/Sumner Road</u> .....  | 27          |
| <b>FUTURE BACKGROUND CONDITIONS</b> .....  | <b>27</b>   |
| Traffic Volumes .....  | 27          |
| Overview .....   | 27          |
| Pipeline Developments .....  | 28          |
| Background Forecasts.....  | 28          |
| Background Roadway Network .....   | 28          |
| Capacity Analysis.....   | 29          |



**TABLE OF CONTENTS (CONTINUED)**

Queue Analysis..... 30

**SITE ANALYSIS** ..... **31**

Overview ..... 31

Site Access ..... 31

    Vehicular Circulation..... 31

    Pedestrian Circulation..... 32

    Proposed Mid-Block Pedestrian Crosswalk ..... 32

Crosswalk Warrant Analysis..... 32

Crosswalk Treatment ..... 33

Signalization ..... 34

    Bicycle Circulation ..... 34

Trip Generation Analysis ..... 34

    Overview ..... 34

    Total Trips ..... 34

*Table 8: Site Trip Generation Summary* ..... 35

    Non-Auto Mode Split ..... 36

    Pass-by Trips ..... 36

    Net Vehicle Trips ..... 36

    Site Trip Distribution and Assignment ..... 37

*Table 9: Site Trip Distributions* ..... 37

Proposed Parking ..... 37

    Vehicular Parking ..... 37

*Table 10: Parking Summary* ..... 38

    Bicycle Parking ..... 38

*Table 11: Long-Term Bicycle Parking Summary*..... 39

*Table 12: Short-Term Bicycle Parking Summary* ..... 39

Proposed Loading ..... 40

*Table 13: Loading Summary*..... 40

**TOTAL FUTURE CONDITIONS** ..... **40**

Traffic Forecasts ..... 40

Capacity Analysis..... 41

Queue Analysis..... 42

Improvement Analysis ..... 43

    Howard Road/Suitland Parkway ..... 43

    Howard Road/Anacostia Metro Station Parking Garage ..... 43

    Howard Road/Firth Sterling Avenue ..... 44

    Howard Road/MLK Jr. Avenue/Sheridan Road ..... 44

    Firth Sterling Avenue/Suitland Parkway ..... 44

    MLK Jr. Avenue/Sumner Road ..... 45



**TABLE OF CONTENTS (CONTINUED)**

|  |           |
|--|-----------|
| MLK Jr. Avenue/Suitland Parkway NB Off-Ramp.....                               | 45        |
| I-295 NB Ramps/Suitland Parkway .....  | 45        |
| Memorial Bridge/East Oval .....  | 46        |
| Suitland Parkway/East Oval .....   | 46        |
| <i>Table 14: Level of Service Summary Total Future with Improvements</i> ..... | 47        |
| <i>Table 15: 95<sup>th</sup> Percentile Queue Summary (in feet)</i>            |           |
| <i>Total Future with Improvements</i> .....                                    | 52        |
| <b>TRANSPORTATION DEMAND MANAGEMENT</b> .....                                  | <b>56</b> |
| <b>CONCLUSIONS AND RECOMMENDATIONS</b> .....                                   | <b>58</b> |



**LIST OF FIGURES**

| <u>FIGURE</u> | <u>TITLE</u>                          |
|---------------|---------------------------------------|
| 1             | Site Location Map                     |
| 2A            | Site Plan – R0 Level Plan             |
| 2B            | Site Plan – First Level Plan          |
| 3             | Multi-Modal Transportation Options    |
| 4             | One Quarter Mile Walk Shed            |
| 5             | One Mile Bike Shed                    |
| 6             | Existing Peak Hour Traffic Volumes    |
| 7             | Existing Peak Hour Pedestrian Volumes |
| 8             | Existing Lane Use and Traffic Control |
| 9             | Existing Volumes with Regional Growth |
| 10            | Pipeline Locations                    |
| 11            | Pipeline Traffic Forecasts            |
| 12            | 2021 Background Traffic Forecasts     |
| 13A           | Site Circulation – G2 Level Plan      |
| 13B           | Site Circulation – G1 Level Plan      |
| 13C           | Site Circulation – R0 Level Plan      |
| 13D           | Site Circulation – First Level Plan   |
| 14            | Removed Office and Retail Site Trips  |
| 15            | Residential Site Trips                |
| 16A           | Retail Site Trips                     |
| 16B           | Pass-By Retail Site Trips             |
| 17            | Total Site Trips                      |
| 18            | 2021 Total Future Traffic Forecasts   |

**LIST OF APPENDICES**

| <u>APPENDIX</u> | <u>TITLE</u>   |
|-----------------|--|
| A               | Scoping Document                                     |
| B               | Pedestrian Master Plan Excerpts                      |
| C               | Traffic Count Data                                   |
| D               | DDOT Traffic Signal Timings                          |
| E               | Level of Service (LOS) Descriptions                  |
| F               | LOS and Queue Reports for Existing Conditions        |
| G               | Pipeline Developments                                |
| H               | LOS and Queue Reports for 2021 Background Conditions |
| I               | Autoturn Diagrams                                    |
| J               | 2021 Total Future LOS and Queue Reports              |
| K               | Total Future with Improvements LOS and Queue Reports |

## INTRODUCTION

### Overview

This report presents a Comprehensive Transportation Review (CTR) conducted in support of the Planned Unit Development (PUD) application filed by Redbrick LMD (herein referred to as the Applicant). The proposed mixed-use project will be located along Howard Road in southeast Washington, DC. The site is situated on Square 5860 (Lots 97, 1025-1031, 1036, and 1037) and Square 5861 (Lot 91). The site is zoned MU-14 and is generally located along the north and south sides of Howard Road between Suitland Parkway and Interstate 295. On the south side of Howard Road, the site is bounded by an existing school to the east. A site location map is included as Figure 1.

The Applicant proposes to develop the site with a mixed-use project, known as Columbian Quarter at Poplar Point, to include approximately 710 residential dwelling units, approximately 49,980 SF of retail, and approximately 1,679,510 SF of office.<sup>1</sup> The proposed development will be entitled as a First-Stage Planned Unit Development (PUD) and associated Zoning Map Amendment. In conjunction with the PUD, the Applicant proposes to rezone the property from the MU-14 District to the MU-9 District.

As shown on the site plan included as Figure 2, the total development would consist of five mixed-use buildings: three north of Howard Road and two south of Howard Road. Though the buildings will function as five separate buildings from a design and operations perspective, from a zoning perspective, the project will be classified as two buildings (one on the north side of Howard Road and one on the south side of Howard Road) since the below grade structure will extend across multiple buildings.

A summary of the phasing and development programs for each building of the project is provided on the next page in Table 1. Full size plans are included in Appendix A.

Approximately 921 off-street parking spaces are proposed with the project and a total of eight loading berths and four service/delivery spaces will serve the proposed development. Access to the parking and loading facilities for the buildings on the north side of Howard Road are proposed via two new private roadways and a service alley. Access to the buildings on the south side of Howard Road will be provided via two curb cuts.

The purpose of this report is to identify potential traffic impacts resulting from the proposed redevelopment project and recommend improvements required to mitigate the impact at full build out (2030).

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<sup>1</sup> Note the current development program has decreased since the traffic analysis was conducted. The most recent development program includes 683 dwelling units, 49,980 SF of retail, and 1,608,190 SF of office.

Table 1  
Project Summary

| Parcel | Building | Development Program                       | Phase |
|--------|----------|---|-------|
| North  | A        | 601,970 SF office<br>9,200 SF of retail   | 3     |
|        | B        | 20,500 SF retail<br>429 residential units | 3     |
|        | C        | 10,000 SF retail<br>281 residential units | 1     |
| South  | D        | 6,800 SF retail<br>583,290 SF office      | 2     |
|        | E        | 3,480 SF retail<br>494,250 SF office      | 2     |

## Study Scope

This study was conducted to assess the impacts of the proposed development on the surrounding roadway network. The scope of the study and proposed methodologies were approved by the District Department of Transportation (DDOT) prior to beginning the study. The agreed upon scoping document is included in Appendix B.

The study area was selected based on those intersections that potentially could be affected by the proposed project. The following existing intersections were identified for detailed analysis and agreed to by DDOT:

- Howard Road/Suitland Parkway,
- Howard Road/Anacostia Metro Station parking garage,
- Howard Road/I-295 Off-ramp,
- Howard Road/Firth Sterling Avenue,
- Howard Road/Anacostia Metro Station bus driveway (west and east),
- Howard Road/MLK Jr. Avenue/Sheridan Road,
- Firth Sterling Avenue/Suitland Parkway,
- Firth Sterling Avenue/Barry Road/Sumner Road,
- Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road,
- Firth Sterling Avenue/South Capitol Street/Defense Boulevard, and
- MLK Jr. Avenue/Sumner Road.

Due to proposed alterations to the roadway network under DDOT's South Capitol Street Corridor Project, the following proposed intersections were identified for detailed analysis



and agreed to by DDOT:

- MLK Jr. Avenue/Suitland Parkway,
- I-295 NB Ramps/Suitland Parkway,
- I-295 SB Ramps/Suitland Parkway,
- Memorial Bridge/East Oval,
- South Capitol Street/East Oval,
- Suitland Parkway/East Oval,
- Anacostia Drive/East Oval,
- Howard Road/Site Driveway 1,
- Howard Road/Site Driveway 2,
- Howard Road/Site Driveway 3, and
- Howard Road/Site Driveway 4.

The objectives of this study were to:

- Evaluate existing traffic conditions,
- Evaluate future traffic conditions without the proposed redevelopment,
- Evaluate future traffic conditions with the proposed redevelopment,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed redevelopment,
- Evaluate effectiveness of the proposed loading facilities, and
- Recommend transportation improvements (including roadway, operational, and demand management strategies) to mitigate the impact of the redevelopment and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed redevelopment.

## EXISTING TRANSPORTATION FACILITIES

### Roadway Network

General details regarding the surrounding roadway segments, including functional classification, average daily traffic volume (ADT), and speed limit are summarized in Table 2. All roadways in the study area operate as two-way streets.

As part of the proposed project, the Applicant will reconstruct Howard Road adjacent to the site to provide one travel lane in each direction, a two-way cycle track, and new sidewalks. A typical street section and details are included in Appendix C. The Applicant will continue to work with DDOT to transition the proposed street section to the existing street section east of the site and to the proposed South Capitol Street section to the west of the site.

Table 2  
Roadway Segment Details

| Roadway                              | Functional Classification | Average Daily Traffic* (vehicles per day) | Speed Limit (miles per hour) |
|--------------------------------------|---------------------------|---|------------------------------|
| Howard Road                          | Collector                 | 14,200                                    | 25 <sup>†,‡</sup>            |
| Suitland Parkway                     | Freeway/Expressway        | 55,500                                    | 45                           |
| Firth Sterling Avenue                | Collector                 | 11,500                                    | 25                           |
| MLK Jr. Avenue                       | Minor Arterial            | 12,300                                    | 25 <sup>§</sup>              |
| Sheridan Road                        | Collector                 | 5,700                                     | 25 <sup>†</sup>              |
| St. Elizabeth's Avenue <sup>  </sup> | N/A                       | N/A                                       | 25                           |
| Stevens Road                         | Local                     | N/A                                       | 25 <sup>†</sup>              |
| Barry Road <sup>¶</sup>              | Local                     | N/A                                       | 25 <sup>†</sup>              |
| South Capitol Street                 | Minor Arterial            | 18,700                                    | 35                           |
| Defense Boulevard                    | Local                     | N/A                                       | 25 <sup>†</sup>              |
| Sumner Road                          | Local <sup>**</sup>       | N/A                                       | 25 <sup>†,‡</sup>            |
| Interstate 295                       | Interstate                | 95,200                                    | 50                           |

\* The ADT volume is based on DDOT historical traffic volume data collected in 2014, which are the most recent data available.  
<sup>†</sup> Speed limit unposted in the study area; assumed to be 25 mph.  
<sup>‡</sup> A 15 mph School Speed Limit from 8:30 AM to 4:00 PM is posted for traffic on Howard Road near Cedar Tree Academy.  
<sup>§</sup> A 15 mph School Speed Limit from 8:30 AM to 4:00 PM is posted for traffic on MLK Jr. Avenue near Thurgood Marshall Academy and Excel Academy Public Charter School.  
<sup>||</sup> St. Elizabeth's Avenue is not included on DDOT's functional classification or ADT maps.  
<sup>¶</sup> The Barry Road leg of the Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road intersection has been removed.  
<sup>#</sup> A 15 mph School Speed Limit from 8:30 AM to 4:00 PM is posted for traffic on Sumner Road near the Excel Academy Public Charter School.  
<sup>\*\*</sup> Sumner Road becomes Stanton Road east of MLK Jr. Avenue. Stanton Road is classified as a collector.

## Non-Auto Transportation Facilities

### Public Transportation Facilities and Services

The subject site is served by public transportation, including both bus and Metrorail, as shown on Figure 3. The subject site is approximately 0.3 miles from the Anacostia Metro Station, which provides access to the Metro Green line. Riders can transfer to the Blue, Orange, Silver, and Yellow lines at the L'Enfant Plaza Metro Station or to the Red line at the Gallery Place-Chinatown Metro Station. The minimum and maximum headways for the Green Line are summarized in Table 3.

Table 3  
Metrorail Headways (in minutes)

| Headway*  | AM Rush<br>5:00 AM –<br>9:30 AM | Midday<br>9:30 AM –<br>3:00 PM | PM Rush<br>3:00 PM –<br>7:00 PM | Evening<br>7:00 PM –<br>9:30 PM | Late Night<br>9:30 PM –<br>Close | Weekend<br>Open –<br>9:30 PM | Weekend<br>9:30 PM –<br>Close |
|---|---------------------------------|--------------------------------|---------------------------------|---------------------------------|----------------------------------|------------------------------|-------------------------------|
| <b>Green Line (Anacostia Station)</b>                       |                                 |                                |                                 |                                 |                                  |                              |                               |
| <b>Min</b>  | 0:06                            | 0:12                           | 0:06                            | 0:12                            | 0:20                             | 0:12                         | 0:20                          |
| <b>Max</b>  | 0:06                            | 0:12                           | 0:06                            | 0:12                            | 0:20                             | 0:15                         | 0:20                          |
| * Headways presented represent headways in both directions. |                                 |                                |                                 |                                 |                                  |                              |                               |

As part of the benefits and amenities package for the PUD, the Applicant has been coordinating with the Washington Metropolitan Area Transit Authority (WMATA) on Anacostia Metro Station improvements. The Applicant anticipates the station improvements will include:

- Demolition of the parking deck vehicular ramp and relocation of the outdoor Kiss n’ Ride surface lot to facilitate the design of a new plaza entrance,
- Pedestrian and bicycle improvements to enhance connections between the Anacostia Metro Station and Howard Road,
- Creation of a pocket park adjacent to the station entrance and proposed mixed-use residential building,
- Additional landscaping and hardscaping around the plaza entrance,
- Amenities and features to serve the Metro Station, such as a Capital Bikeshare Station, bike racks, benches, and local art installations, and
- Potential integration of retail areas within the proposed plaza entrance area.

The Applicant will continue to work with WMATA, the Office of Planning (OP), and DDOT to finalize the design of these improvements, as a number of items fall within public space. Details of these improvements are included in Appendix C.

WMATA currently provides Metrobus service near the site at the Anacostia Metro Station east of I-295. There are 17 Metrobus routes that provide service to the Anacostia Metro Station, including:

- U Street – Garfield Line (Route 90)
- Stanton Road Line (Route 94)
- Anacostia – Congress Heights Line (Routes A2, A6, A7, and A8)

- Anacostia – Fort Drum Line (Routes A4 and W5)
- Anacostia High School Line (Route A33)
- Bladensburg Road – Anacostia Line (Route B2)
- Anacostia – Eckington Line (Route P6)
- Capitol Heights – Minnesota Avenue Line (Route V2)
- United Medical Center – Anacostia Line (Routes W2 and W3)
- Deanwood – Alabama Avenue Line (Route W4)
- Garfield – Anacostia Loop Line (Routes W6 and W8)

In addition, the Anacostia Metro Station is served by the Potomac Avenue – Skyland Circulator Line. The Circulator stops at Howard Road directly adjacent to the metro station. The bus stops located proximate to the subject site are shown on Figure 3.

Table 4 presents the minimum, maximum and average headways for Metrobus and DC Circulator routes in the site vicinity. As the area west of I-295 redevelops, it is anticipated that bus service would be extended to better serve the area, including the subject site.

Table 4  
Metrobus Headways (in minutes)

| HEADWAY   | Northbound/Westbound |                    |                   | Southbound/Eastbound |                    |                   |
|---|----------------------|--------------------|-------------------|----------------------|--------------------|-------------------|
|   | AM Peak Period       | Midday Period      | PM Peak Period    | AM Peak Period       | Midday Period      | PM Peak Period    |
|   | 7:00 AM – 10:00 AM   | 10:00 AM – 4:00 PM | 4:00 PM – 7:00 PM | 7:00 AM – 10:00 AM   | 10:00 AM – 4:00 PM | 4:00 PM – 7:00 PM |
| <b>U Street – Garfield Line (90)</b>                      |                      |                    |                   |                      |                    |                   |
| Min   | 0:10                 | 0:20               | 0:12              | 0:15                 | 0:15               | 0:02              |
| Max   | 0:20                 | 0:20               | 0:29              | 0:20                 | 0:20               | 0:22              |
| Avg   | 0:14                 | 0:20               | 0:20              | 0:17                 | 0:17               | 0:11              |
| <b>Stanton Road Line (94)</b>                             |                      |                    |                   |                      |                    |                   |
| Min   | 0:10                 | 0:14               | 0:11              | 0:10                 | 0:14               | 0:12              |
| Max   | 0:32                 | 0:37               | 0:14              | 0:36                 | 0:37               | 0:14              |
| Avg   | 0:16                 | 0:27               | 0:13              | 0:19                 | 0:25               | 0:13              |
| <b>Anacostia – Congress Heights Line (A2, A6, A7, A8)</b> |                      |                    |                   |                      |                    |                   |
| Min   | 0:00                 | 0:01               | 0:00              | 0:00                 | 0:00               | 0:00              |
| Max   | 0:09                 | 0:14               | 0:10              | 0:12                 | 0:10               | 0:10              |
| Avg   | 0:04                 | 0:07               | 0:05              | 0:05                 | 0:06               | 0:03              |

Table 4 (continued)  
Metrobus Headways (in minutes)

| HEADWAY   | Northbound/Westbound |                    |                   | Southbound/Eastbound |                    |                   |
|---|----------------------|--------------------|-------------------|----------------------|--------------------|-------------------|
|   | AM Peak Period       | Midday Period      | PM Peak Period    | AM Peak Period       | Midday Period      | PM Peak Period    |
|   | 7:00 AM – 10:00 AM   | 10:00 AM – 4:00 PM | 4:00 PM – 7:00 PM | 7:00 AM – 10:00 AM   | 10:00 AM – 4:00 PM | 4:00 PM – 7:00 PM |
| <b>Anacostia – Fort Drum Line (A4, W5)</b>  |                      |                    |                   |                      |                    |                   |
| Min   | 0:03                 | 0:03               | 0:03              | 0:02                 | 0:05               | 0:04              |
| Max   | 0:16                 | 0:16               | 0:14              | 0:16                 | 0:17               | 0:11              |
| Avg   | 0:06                 | 0:14               | 0:06              | 0:07                 | 0:14               | 0:05              |
| <b>Anacostia High School Line (A33)*</b>  |                      |                    |                   |                      |                    |                   |
| Min   | N/A                  | N/A                | N/A               | N/A                  | N/A                | N/A               |
| Max   | N/A                  | N/A                | N/A               | N/A                  | N/A                | N/A               |
| Avg   | N/A                  | N/A                | N/A               | N/A                  | N/A                | N/A               |
| <b>Bladensburg Road – Anacostia Line (B2)</b>   |                      |                    |                   |                      |                    |                   |
| Min   | 0:05                 | 0:10               | 0:10              | 0:06                 | 0:02               | 0:01              |
| Max   | 0:12                 | 0:16               | 0:12              | 0:15                 | 0:16               | 0:12              |
| Avg   | 0:07                 | 0:14               | 0:11              | 0:11                 | 0:14               | 0:09              |
| <b>Anacostia – Eckington Line (P6)</b>  |                      |                    |                   |                      |                    |                   |
| Min   | 0:12                 | 0:16               | 0:16              | 0:15                 | 0:15               | 0:11              |
| Max   | 0:20                 | 0:20               | 0:25              | 0:31                 | 0:24               | 0:22              |
| Avg   | 0:15                 | 0:19               | 0:18              | 0:17                 | 0:20               | 0:16              |
| <b>Capitol Heights – Minnesota Avenue Line (V2)</b>   |                      |                    |                   |                      |                    |                   |
| Min   | 0:15                 | 0:13               | 0:13              | 0:04                 | 0:16               | 0:16              |
| Max   | 0:30                 | 0:30               | 0:25              | 0:27                 | 0:34               | 0:20              |
| Avg   | 0:20                 | 0:25               | 0:18              | 0:13                 | 0:29               | 0:18              |
| <b>United Medical Center – Anacostia Line (W2, W3)</b>  |                      |                    |                   |                      |                    |                   |
| Min   | 0:18                 | 0:09               | 0:09              | 0:08                 | 0:20               | 0:16              |
| Max   | 0:24                 | 0:32               | 0:18              | 0:22                 | 0:32               | 0:20              |
| Avg   | 0:19                 | 0:25               | 0:11              | 0:13                 | 0:31               | 0:18              |
| <b>Deanwood – Alabama Avenue Line (W4)</b>  |                      |                    |                   |                      |                    |                   |
| Min   | 0:10                 | 0:10               | 0:10              | 0:03                 | 0:15               | 0:10              |
| Max   | 0:22                 | 0:22               | 0:21              | 0:23                 | 0:22               | 0:16              |
| Avg   | 0:13                 | 0:17               | 0:16              | 0:12                 | 0:21               | 0:14              |
| <b>Garfield – Anacostia Loop Line (W6, W8)</b>  |                      |                    |                   |                      |                    |                   |
| Min   | 0:12                 | 0:16               | 0:16              | 0:12                 | 0:16               | 0:16              |
| Max   | 0:30                 | 0:30               | 0:20              | 0:30                 | 0:30               | 0:20              |
| Avg   | 0:18                 | 0:27               | 0:18              | 0:17                 | 0:26               | 0:18              |
| * Timetables for this route not available on WMATA website. Headways could not be calculated. |                      |                    |                   |                      |                    |                   |

### Pedestrian Facilities

The District of Columbia Pedestrian Master Plan (the Pedestrian Plan) strives to make Washington, DC safer and more walkable by improving sidewalks, roadway crossings, and the quality of the pedestrian environment as well as by ensuring that the District’s policies and procedures support walking.

The Pedestrian Plan provides an overview of existing pedestrian conditions, recommends new pedestrian projects and programs, establishes performance measures, and provides a plan for implementation through 2018. As part of the Pedestrian Plan, eight priority corridors (one in each ward) were identified based on areas of heavy pedestrian traffic and deficient walking conditions. The priority corridor in Ward 8 is Alabama Avenue SE between MLK Jr. Boulevard SE and Naylor Road SE, which does not fall within the study area.

A summary of the pedestrian facilities at each of the study intersections is presented in Table 5. Pedestrian facilities and likely walking routes to the Metro Station and nearest bus stops within a ¼ mile of the site are shown on Figure 4. Figure 4 also shows pedestrian activity and deficiency according to the Pedestrian Master Plan.

Table 5  
Pedestrian Inventory by Intersection

| Intersection  | Pedestrian Heads/ Countdown | Type of Crosswalks                                | One Ramp/ Crosswalk | Tactile Warning Strip |
|---|-----------------------------|---|---------------------|-----------------------|
| Howard Road/Suitland Parkway (Partially Signalized)   | Note 1                      | Note 2  | No                  | No                    |
| Howard Road/Anacostia Metro Station parking garage (Signalized)   | No                          | South Leg – High Visibility                       | Yes                 | Yes                   |
| Howard Road/I-295 Off-ramp (Signalized)   | Yes<br>Note 3               | South and West Legs – High Visibility<br>Note 4   | Yes                 | Yes                   |
| Howard Road/Firth Sterling Avenue (Signalized)  | Note 5                      | West Leg – High Visibility<br>East Leg – Standard | No<br>Note 6        | Yes                   |
| <ol style="list-style-type: none"> <li>One pedestrian countdown head is present at the intersection.</li> <li>One crosswalk connecting the north side of Howard Road with the median has faded. No other crosswalks are installed at the intersection.</li> <li>Pedestrian countdown heads are present on the southern and western legs.</li> <li>Both crosswalks have faded.</li> <li>Pedestrian countdown heads are only present on the western side of Howard Road.</li> <li>Ramps are only present on the western side of Howard Road.</li> </ol> |                             |   |                     |                       |

Table 5 (continued)  
Pedestrian Inventory by Intersection

| Intersection  | Pedestrian Heads/ Countdown | Type of Crosswalks   | One Ramp/ Crosswalk | Tactile Warning Strip |
|---|-----------------------------|--|---------------------|-----------------------|
| Howard Road/Anacostia Metro Station bus driveway west (Unsignalized)  | N/A                         | West Leg – High Visibility   | Yes                 | Yes                   |
| Howard Road/Anacostia Metro Station bus driveway east (Signalized)  | Note 7                      | South and West Legs – High Visibility                                | Note 8              | Yes                   |
| Howard Road/MLK Jr. Avenue/Sheridan Road (Signalized)   | Yes                         | All Legs – Standard<br>Howard Road slip lane – High Visibility       | Yes                 | Yes                   |
| Firth Sterling Avenue/Suitland Parkway (Signalized)   | Note 9                      | South Leg – High Visibility  | Yes                 | Note 10               |
| Firth Sterling Avenue/Barry Road/Sumner Road (Signalized)   | Note 3                      | South and West Legs – High Visibility                                | Yes                 | Yes                   |
| Firth Sterling Avenue/St. Elizabeth’s Avenue/Stevens Road/Barry Road (Signalized)   | Yes                         | North, East, West, and Northeast Legs – High Visibility              | Yes                 | Yes                   |
| Firth Sterling Avenue/South Capitol Street/Defense Boulevard (Signalized)   | Note 3                      | South and West Legs – High Visibility                                | Yes                 | Yes                   |
| MLK Jr. Avenue/Sumner Road (Signalized)   | Yes                         | North, East, and West Legs – High Visibility<br>South Leg – Standard | Yes                 | No                    |
| <ol style="list-style-type: none"> <li>1. One pedestrian countdown head is present at the intersection.</li> <li>2. One crosswalk connecting the north side of Howard Road with the median has faded. No other crosswalks are installed at the intersection.</li> <li>3. Pedestrian countdown heads are present on the southern and western legs.</li> <li>4. Both crosswalks have faded.</li> <li>5. Pedestrian countdown heads are only present on the western side of Howard Road.</li> <li>6. Ramps are only present on the western side of Howard Road.</li> <li>7. One pedestrian countdown head is present on the western leg of the intersection for northbound pedestrians.</li> <li>8. One ramp is missing on the southeast corner of the intersection.</li> <li>9. Pedestrian countdown heads are only present on the southern leg of the intersection.</li> <li>10. Tactile warning strips are present on the islands but missing on the ramps on the southwest and southeast corners of the intersection.</li> </ol> |                             |  |                     |                       |

## **Bicycle Facilities**

The District of Columbia Bicycle Master Plan (the Bicycle Plan) seeks to create a more bicycle-friendly city by establishing high-quality bicycle facilities and programs that are safe and convenient.

The Bicycle Plan provides bicycle levels of service (BLOS) for roadways in the District where bicycles share the road with vehicles. The Bicycle Plan also reports the number of bicycle crashes that occurred between 2000 and 2002.

Finally, the Bicycle Plan identifies areas and corridors that are barriers to cyclists. These barriers include “freeways, railroad and highway grade separations, neighborhoods with heavy traffic, and other impediments to bicycle travel.” No such barriers exist in the vicinity of the site.

Bicycle facilities and likely biking routes to the Metro Station and nearest bus stops within one mile of the site are shown on Figure 5. Figure 5 also shows the BLOS for roadways in the study area and the reported bicycle crashes in the study area, per the Bicycle Plan.

The Anacostia Riverwalk Trail is a planned 28-mile trail that will provide a pedestrian and bicycle connection between the Tidal Basin and Bladensburg Marina Park in Maryland when completed. Approximately 19 miles of the Riverwalk Trail have been constructed and are currently open to the public. The trail currently runs along the west side of South Capitol Street and terminates at Firth Sterling Avenue. The Oxon Run segment of the trail is not yet constructed, but would continue south of the study area.

While no dedicated bicycle lanes exist in the vicinity of the subject site, the reconstruction of Howard Road by the Applicant will provide new sidewalks and a two-way cycle track adjacent to the subject site. The Applicant will continue to work with DDOT to transition the cycle track to align with the extension of the Anacostia Riverwalk Trail around the proposed oval west of the site.

## **Capital Bikeshare**

Capital Bikeshare is an automated bicycle rental or bicycle sharing program that provides approximately 3,500 bicycles at over 400 stations across Washington, DC, Arlington, Alexandria and Fairfax, VA and Montgomery County, MD.

Membership, which is required to use Capital Bikeshare, includes four options for joining: 24 hours (\$8), three days (\$17), 30 days (\$28), or one year (\$85). The first 30 minutes of use are free; users then are charged a usage fee for each additional 30-minute period. Bicycles can be returned to any station with an available dock.



As shown on Figure 3, the closest Bikeshare station is located within ½ mile from the site at the Anacostia Metro Station. This station includes 11 docks. One additional station at Pleasant Street/MLK Avenue contains 11 docks.

The District of Columbia Capital Bikeshare Development Plan outlines a system-wide expansion plan including 99 new Bikeshare stations by the end of 2018 and 21 existing stations to be expanded by the end of 2017. In the vicinity of the site, the nearest new Bikeshare station is identified near Barry Farm and is slated for completion in 2017.

### **Car Sharing Services**

Three car-sharing providers currently operate in the District. Zipcar requires a \$25 application fee and members can choose from four plans: occasional driving plan - \$70 per year (pay as you go based on the standard hourly or daily rate), monthly plan - \$7 per month (pay as you go based on the standard hourly or daily rate), 10/10 plan - \$10 per month and receive \$10 in free driving every month (pay as you go based on a discounted hourly or daily rate), and the works - \$10 per month and receive one free day on a three day weekend rental with Budget. Cars must be returned to the same designated parking spaces from which they were picked up.

No Zipcars currently are located proximate to the site.

Car2Go requires a one-time \$35 application fee. Once registered, a member card is issued, which enables members to access and available car. No reservation is required and car usage is charged by the minute, with hourly and daily maximum fees. Unlike Zipcar, a Car2Go vehicle does not have to be returned to its original location. A Car2Go vehicle can be parked in any unrestricted curbside parking space, in any metered/paystation curbside parking space (without paying meter/paystation fees), or in any residential permit parking space. Car2Go currently has 500 vehicles in the District.

Enterprise CarShare has a \$40 annual membership fee. Cars can be reserved by the hour or day (hourly and daily fees are charged per usage). In the District, cars must be returned to their original location. Seven Enterprise CarShare vehicles are located within ¼ mile of the site, as shown on Figure 3.

## **EXISTING CONDITONS ANALYSIS**

### **Traffic Volumes**

Existing vehicular turning movement, bicycle, and pedestrian counts were conducted on Thursday, May 12, 2016, from 7:00 AM to 10:00 AM and from 3:00 PM to 7:00 PM. For purposes of volume balancing, common peak hours were selected for the study area. Small volume adjustments were necessary at some locations to ensure a reasonable balancing of volumes, thus adjustment factors were calculated for some movements. AM and PM peak hours for each of the study intersections were determined individually and the adjustment

factors were applied to the movements identified to provide the most conservative peak hour analysis.

Existing vehicular peak hour traffic volumes are shown on Figure 6. Pedestrian volumes are shown on Figure 7. Traffic count data are included in Appendix D.

## Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 8, existing traffic volumes shown on Figure 6, existing pedestrian volumes shown on Figure 7, and existing traffic signal timings obtained from DDOT, included in Appendix E.

Synchro software (Version 9) was used to evaluate levels of service at the study intersections during the peak hours. Synchro is a macroscopic model used to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings and to optimize traffic signal timings. The levels of service reported were taken from the Highway Capacity Manual 2000 (HCM) reports generated by Synchro.<sup>2</sup> Level of service descriptions are included in Appendix F.

In addition to the intersection analyses, a weave analysis was conducted for Interstate 295 Northbound, between the Suitland Parkway on- and off-ramps, using the Highway Capacity Software 2010 (HCS) Weaving Module Version 6.1. Diverge analyses were conducted for the Interstate 295 Southbound off-ramps at Howard Road and Suitland Parkway, and a merge analysis was conducted for Interstate 295 Northbound at the Howard Road on-ramp using the Highway Capacity Software 2010 (HCS) Ramps Module Version 6.1

The results of the analyses are summarized in Table 6. Capacity analysis worksheets, including the weave/diverge/merge analyses, are included in Appendix G.

As shown in Table 6, under existing conditions, two of the signalized study intersections operate at an overall level of service E or F. The following is a summary of the various intersections that currently operate at an overall LOS E or LOS F:

- Howard Road/MLK Jr. Avenue/Sheridan Road – LOS F during the AM and PM peak hours;
- Firth Sterling Avenue/South Capitol Street/Defense Boulevard – LOS E during the PM peak hour.

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<sup>2</sup> Highway Capacity Manual 2010 methodology could be used at some intersections, but several atypical intersections in the study area cannot be analyzed with the 2010 methodology. For the sake of consistency, the 2000 methodology was used.

Table 6  
Level of Service Summary

| Approach   | Existing Conditions |          | Background Conditions |          | Total Future Conditions |                  |
|--|---------------------|----------|-----------------------|----------|-------------------------|------------------|
|  | AM Peak             | PM Peak  | AM Peak               | PM Peak  | AM Peak                 | PM Peak          |
| <b>1. Howard Road/Suitland Parkway</b>   |                     |          |                       |          |                         |                  |
| WBR  | A                   | A        | D                     | C        | F (642.8)               | F (293.2)        |
| NBT  | C                   | B        | A                     | A        | A                       | A                |
| NBR  | A                   | A        | A                     | A        | A                       | A                |
| <b>2. Howard Road/Anacostia Metro Station parking garage</b>   |                     |          |                       |          |                         |                  |
| EBLT   | B                   | C        | A                     | A        | A                       | F (292.2)        |
| WBTR   | A                   | A        | A                     | A        | B                       | A                |
| SBLR   | C                   | D        | C                     | C        | C                       | C                |
| <b>Overall</b>   | <b>A</b>            | <b>B</b> | <b>A</b>              | <b>A</b> | <b>B</b>                | <b>F (203.1)</b> |
| <b>3. Howard Road/I-295 Off-ramp*</b>  |                     |          |                       |          |                         |                  |
| EBT  | A                   | A        | -                     | -        | -                       | -                |
| WBT  | B                   | C        | -                     | -        | -                       | -                |
| SBL  | B                   | C        | -                     | -        | -                       | -                |
| SBR  | B                   | B        | -                     | -        | -                       | -                |
| <b>Overall</b>   | <b>B</b>            | <b>C</b> | <b>-</b>              | <b>-</b> | <b>-</b>                | <b>-</b>         |
| <b>4. Howard Road/Firth Sterling Avenue</b>  |                     |          |                       |          |                         |                  |
| EBLT   | C                   | B        | B                     | A        | B                       | A                |
| EBR  |                     |          | B                     | C        | A                       | B                |
| NBL  | D                   | B        | D                     | C        | E (67.5)                | E (64.0)         |
| NBTR   | F (111.2)           | B        |                       |          |                         |                  |
| SBLT   | D                   | B        | C                     | B        | C                       | B                |
| SBR  | D                   | A        | C                     | B        | C                       | C                |
| <b>Overall</b>   | <b>D</b>            | <b>B</b> | <b>C</b>              | <b>C</b> | <b>D</b>                | <b>C</b>         |
| <b>5. Howard Road/Anacostia Metro Station bus driveway (West)</b>  |                     |          |                       |          |                         |                  |
| EBTR   | A                   | A        | A                     | A        | A                       | A                |
| WBLT   | A                   | A        | A                     | A        | A                       | A                |
| NBLR   | B                   | B        | C                     | B        | C                       | C                |
| <b>6. Howard Road/Anacostia Metro Station bus driveway (East)</b>  |                     |          |                       |          |                         |                  |
| EBTR   | A                   | B        | A                     | B        | A                       | B                |
| WBLT   | A                   | A        | A                     | A        | A                       | A                |
| NBLR   | D                   | D        | D                     | D        | D                       | D                |
| <b>Overall</b>   | <b>A</b>            | <b>B</b> | <b>A</b>              | <b>A</b> | <b>A</b>                | <b>B</b>         |
| * Intersection removed with South Capitol Street Corridor Project.<br>[x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                     |          |                       |          |                         |                  |

Table 6 (continued)  
Level of Service Summary

| Approach   | Existing Conditions |                  | Background Conditions |                  | Total Future Conditions |                  |
|--|---------------------|------------------|-----------------------|------------------|-------------------------|------------------|
|  | AM Peak             | PM Peak          | AM Peak               | PM Peak          | AM Peak                 | PM Peak          |
| <b>7. Howard Road/MLK Jr. Avenue/Sheridan Road</b>   |                     |                  |                       |                  |                         |                  |
| NBL  | D                   | D                | B                     | D                | D                       | E (57.4)         |
| NBTR   | B                   | C                | B                     | B                | B                       | C                |
| SBLTR  | F (218.9)           | F (138.9)        | F (132.7)             | F (411.3)        | F (211.3)               | F (443.6)        |
| EBLT   | E (78.3)            | F (80.6)         | F (147.7)             | F (214.2)        | F (192.7)               | F (458.9)        |
| EBR  | D                   | C                | E (62.2)              | B                | C                       | B                |
| NWLTR  | F (246.9)           | F (312.8)        | E (62.4)              | D                | E (62.4)                | D                |
| <b>Overall</b>   | <b>F (116.8)</b>    | <b>F (129.1)</b> | <b>F (87.0)</b>       | <b>F (261.2)</b> | <b>F (124.9)</b>        | <b>F (294.4)</b> |
| <b>8. Firth Sterling Avenue/Suitland Parkway</b>   |                     |                  |                       |                  |                         |                  |
| EBL  | F (93.5)            | F (162.4)        | E (67.0)              | F (3179.2)       | F (87.0)                | F (3181.4)       |
| EBT  |                     |                  | C                     | F (84.0)         | C                       | F (141.4)        |
| EBR  | F (98.7)            | F (101.9)        | D                     | F (91.6)         | C                       | F (129.3)        |
| WBL  | C                   | F (227.8)        | C                     | D                | C                       | F (152.7)        |
| WBTR   | C                   | E (61.3)         | C                     | F (103.8)        | C                       | F (531.4)        |
| NBL  | B                   | E (59.6)         | E (71.4)              | D                | E (77.2)                | D                |
| NBT  | D                   | B                | F (241.0)             | C                | F (323.9)               | C                |
| NBR  | A                   | A                |                       |                  |                         |                  |
| SBL  | C                   | B                | D                     | B                | F (242.3)               | D                |
| SBT  | C                   | D                | E (78.6)              | F (289.5)        | F (88.3)                | F (282.9)        |
| SBR  | C                   | B                | C                     | B                | C                       | B                |
| <b>Overall</b>   | <b>C</b>            | <b>D</b>         | <b>F (155.7)</b>      | <b>F (290.6)</b> | <b>F (210.9)</b>        | <b>F (343.6)</b> |
| <b>9. Firth Sterling Avenue/Barry Road/Sumner Road</b>   |                     |                  |                       |                  |                         |                  |
| EBTR   | A                   | A                | A                     | A                | A                       | A                |
| WBLT   | A                   | A                | A                     | A                | A                       | A                |
| NBLR   | E (55.3)            | D                | D                     | D                | D                       | D                |
| SBL  | E (60.6)            | D                | D                     | C                | D                       | C                |
| SBTR   | D                   | D                | D                     | C                | D                       | C                |
| <b>Overall</b>   | <b>B</b>            | <b>A</b>         | <b>A</b>              | <b>A</b>         | <b>A</b>                | <b>A</b>         |
| <b>10. Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road</b>  |                     |                  |                       |                  |                         |                  |
| EBTR   | B                   | B                | B                     | C                | B                       | C                |
| WBL  | A                   | A                | B                     | C                | B                       | D                |
| WBT  | A                   | A                | B                     | B                | B                       | B                |
| NBL  | D                   | C                | D                     | C                | D                       | C                |
| NBR  | D                   | C                | E (74.5)              | E (73.1)         | E (77.7)                | E (77.1)         |
| <b>Overall</b>   | <b>B</b>            | <b>B</b>         | <b>C</b>              | <b>C</b>         | <b>C</b>                | <b>D</b>         |
| [x.x] = unsignalized intersection control delay in sec/veh<br>[x.x] = signalized intersection control delay in sec/veh |                     |                  |                       |                  |                         |                  |

Table 6 (continued)  
Level of Service Summary

| Approach   | Existing Conditions  |                 | Background Conditions |                 | Total Future Conditions |                  |
|--|--|-----------------|-----------------------|-----------------|-------------------------|------------------|
|  | AM Peak  | PM Peak         | AM Peak               | PM Peak         | AM Peak                 | PM Peak          |
| <b>11. Firth Sterling Avenue/South Capitol Street/Defense Boulevard</b>  |  |                 |                       |                 |                         |                  |
| EBL  | D  | D               | D                     | D               | D                       | D                |
| EBT  | D  | D               | D                     | E (65.0)        | D                       | E (65.0)         |
| EBR  | D  | D               | D                     | D               | D                       | D                |
| WBL  | C  | F (137.7)       | D                     | C               | D                       | C                |
| WBTR   | D  | C               | F (359.3)             | F (132.5)       | F (360.7)               | F (132.5)        |
| NBL  | B  | C               | B                     | D               | B                       | D                |
| NBTR   | D  | C               | C                     | C               | D                       | C                |
| SBL  | F (200.6)  | C               | F (1072.8)            | E (59.7)        | F (1107.7)              | E (65.0)         |
| SBTR   | B  | D               | B                     | E (73.1)        | B                       | E (73.1)         |
| <b>Overall</b>   | <b>D</b>   | <b>E (59.0)</b> | <b>F (183.6)</b>      | <b>E (71.3)</b> | <b>F (186.3)</b>        | <b>E (71.3)</b>  |
| <b>12. MLK Jr. Avenue/Sumner Road</b>  |  |                 |                       |                 |                         |                  |
| EBL  | E (64.7)   | E (59.5)        | D                     | D               | D                       | E (55.1)         |
| EBTR   |  |                 |                       |                 |                         |                  |
| WBLTR  | C  | C               | D                     | D               | D                       | D                |
| NBLTR  | B  | B               | A                     | F (128.8)       | A                       | F (181.1)        |
| SBLTR  | A  | A               | A                     | B               | A                       | B                |
| <b>Overall</b>   | <b>B</b>   | <b>B</b>        | <b>A</b>              | <b>E (72.6)</b> | <b>A</b>                | <b>F (96.2)</b>  |
| <b>13A. MLK Jr. Avenue/Suitland Parkway (North)</b>  |  |                 |                       |                 |                         |                  |
| NBL  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |                 | A                     | A               | A                       | A                |
| NBT  |  |                 | A                     | A               | A                       | A                |
| SBTR   |  |                 | D                     | F (158.9)       | D                       | F (331.4)        |
| NWL  |  |                 | D                     | E (68.8)        | D                       | E (68.8)         |
| NWR  |  |                 | D                     | D               | D                       | D                |
| <b>Overall</b>   |  |                 | <b>B</b>              | <b>E (71.5)</b> | <b>B</b>                | <b>F (161.3)</b> |
| <b>13B. MLK Jr. Avenue/Suitland Parkway (South)</b>  |  |                 |                       |                 |                         |                  |
| NBT  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |                 | D                     | D               | D                       | D                |
| NBR  |  |                 | D                     | D               | D                       | D                |
| SBLT   |  |                 | A                     | B               | A                       | C                |
| SEL  |  |                 | D                     | D               | D                       | D                |
| SER  |  |                 | C                     | C               | C                       | C                |
| <b>Overall</b>   |  |                 | <b>C</b>              | <b>C</b>        | <b>C</b>                | <b>C</b>         |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |  |                 |                       |                 |                         |                  |

Table 6 (continued)  
Level of Service Summary

| Approach   | Existing Conditions  |         | Background Conditions |                  | Total Future Conditions |                  |
|--|--|---------|-----------------------|------------------|-------------------------|------------------|
|  | AM Peak  | PM Peak | AM Peak               | PM Peak          | AM Peak                 | PM Peak          |
| <b>14. I-295 NB Ramps/Suitland Parkway</b>   |  |         |                       |                  |                         |                  |
| EBL  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | E (77.9)              | E (60.1)         | F (80.5)                | E (59.6)         |
| EBT  |  |         | A                     | B                | B                       | B                |
| WBT  |  |         | F (92.5)              | C                | F (145.9)               | C                |
| WBR  |  |         | B                     | B                | B                       | D                |
| NEL  |  |         | F (88.1)              | E (74.7)         | F (110.6)               | E (78.3)         |
| NER  |  |         | D                     | F (81.0)         | D                       | F (87.5)         |
| <b>Overall</b>   |  |         | <b>D</b>              | <b>C</b>         | <b>F (81.5)</b>         | <b>D</b>         |
| <b>15. I-295 SB Ramps/Suitland Parkway</b>   |  |         |                       |                  |                         |                  |
| SETR   | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | C                     | F (147.1)        | C                       | F (164.2)        |
| NWL  |  |         | C                     | C                | C                       | D                |
| NWT  |  |         | A                     | A                | A                       | A                |
| NER  |  |         | D                     | F (199.4)        | D                       | F (199.4)        |
| <b>Overall</b>   |  |         | <b>B</b>              | <b>F (130.7)</b> | <b>B</b>                | <b>F (135.4)</b> |
| <b>16A. Memorial Bridge/East Oval</b>  |  |         |                       |                  |                         |                  |
| SBT  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | A                     | E (72.2)         | A                       | F (82.5)         |
| NWL  |  |         | A                     | A                | A                       | A                |
| NWR  |  |         | F (112.9)             | A                | F (120.7)               | A                |
| <b>Overall</b>   |  |         | <b>D</b>              | <b>D</b>         | <b>D</b>                | <b>D</b>         |
| <b>16B. South Capitol Street/East Oval</b>   |  |         |                       |                  |                         |                  |
| NBR  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | F (280.8)             | F (547.8)        | F (301.1)               | F (552.6)        |
| SBL  |  |         | C                     | B                | C                       | B                |
| SBT  |  |         | A                     | F (84.5)         | A                       | F (85.8)         |
| <b>Overall</b>   |  |         | <b>F (132.0)</b>      | <b>F (213.0)</b> | <b>F (136.9)</b>        | <b>F (212.5)</b> |
| <b>16C. Suitland Parkway/East Oval</b>   |  |         |                       |                  |                         |                  |
| EBL  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | C                     | B                | C                       | B                |
| EBR  |  |         | A                     | A                | A                       | A                |
| NBT  |  |         | F (309.7)             | F (189.9)        | F (327.5)               | F (262.4)        |
| <b>Overall</b>   |  |         | <b>F (157.7)</b>      | <b>E (63.7)</b>  | <b>F (162.7)</b>        | <b>F (92.2)</b>  |
| <b>17. Anacostia Drive/East Oval</b>   |  |         |                       |                  |                         |                  |
| WBR  | Intersection proposed<br>with South Capitol<br>Street Corridor Project |         | F (226.0)             | F (126.6)        | F (226.0)               | F (132.6)        |
| NBT  |  |         | A                     | B                | A                       | C                |
| <b>Overall</b>   |  |         | <b>B</b>              | <b>C</b>         | <b>C</b>                | <b>C</b>         |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |  |         |                       |                  |                         |                  |

Table 6 (continued)  
Level of Service Summary

| Approach   | Existing Conditions  |          | Background Conditions                                   |          | Total Future Conditions                                 |           |
|--|--|----------|---|----------|---|-----------|
|  | AM Peak  | PM Peak  | AM Peak   | PM Peak  | AM Peak   | PM Peak   |
| <b>18. Howard Road/Site Driveway 1</b>   |  |          |   |          |   |           |
| EBTR   | -  | -        | -   | -        | A   | A         |
| WBLT   | -  | -        | -   | -        | A   | A         |
| NBLR   | -  | -        | -   | -        | C   | D         |
| <b>19. Howard Road/Site Driveway 2</b>   |  |          |   |          |   |           |
| EBLT   | -  | -        | -   | -        | A   | A         |
| WBTR   | -  | -        | -   | -        | A   | A         |
| SBLR   | -  | -        | -   | -        | F (61.4)  | F (605.0) |
| <b>20. Howard Road/Site Driveway 3</b>   |  |          |   |          |   |           |
| EBTR   | -  | -        | -   | -        | A   | A         |
| WBLT   | -  | -        | -   | -        | A   | A         |
| NBLR   | -  | -        | -   | -        | F (63.4)  | F (401.5) |
| <b>21. Howard Road/Site Driveway 4</b>   |  |          |   |          |   |           |
| EBLT   | -  | -        | -   | -        | A   | A         |
| WBTR   | -  | -        | -   | -        | A   | A         |
| SBLR   | -  | -        | -   | -        | F (191.5)   | F (Error) |
| <b>Interstate 295 Northbound between Suitland Parkway On ramp and Exit 3B</b>  |  |          |   |          |   |           |
| Weave  | E {35.6}   | B {19.1} | To be removed with South Capitol Street Corridor Street |          | To be removed with South Capitol Street Corridor Street |           |
| <b>Suitland Parkway WB between MLK Jr. Avenue Off Ramp and Firth Sterling Avenue</b>   |  |          |   |          |   |           |
| Weave  | Intersection proposed with South Capitol Street Corridor Project |          | E {47.0}  | B {17.9} | E {50.7}  | B {18.7}  |
| <b>Interstate 295 Northbound On Ramp at Howard Road Upstream</b>   |  |          |   |          |   |           |
| Merge Ramp   | D {29.6}   | C {21.3} | To be removed with South Capitol Street Corridor Street |          | To be removed with South Capitol Street Corridor Street |           |
| <b>Interstate 295 Southbound On Ramp at Howard Road Downstream</b>   |  |          |   |          |   |           |
| Diverge Ramp   | B {16.1}   | C {21.7} | To be removed with South Capitol Street Corridor Street |          | To be removed with South Capitol Street Corridor Street |           |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh<br>{xx} = density in pc/mi/ln |  |          |   |          |   |           |

Table 6 (continued)  
Level of Service Summary

| Approach  | Existing Conditions  |          | Background Conditions |          | Total Future Conditions |          |
|---|--|----------|-----------------------|----------|-------------------------|----------|
|   | AM Peak  | PM Peak  | AM Peak               | PM Peak  | AM Peak                 | PM Peak  |
| <b>Interstate 295 Northbound On Ramp at Suitland Parkway WB Upstream</b>    |  |          |                       |          |                         |          |
| Merge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | C {24.6}              | B {17.5} | C {25.4}                | C {20.9} |
| <b>Interstate 295 Northbound On Ramp at Suitland Parkway WB Downstream</b>  |  |          |                       |          |                         |          |
| Merge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | C {24.0}              | B {17.5} | C {24.8}                | C {20.9} |
| <b>Interstate 295 Southbound Off Ramp at Suitland Parkway WB Upstream</b>   |  |          |                       |          |                         |          |
| Diverge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | E {38.7}              | E {45.0} | E {38.7}                | E {45.0} |
| <b>Interstate 295 Southbound Off Ramp at Suitland Parkway WB Downstream</b> |  |          |                       |          |                         |          |
| Diverge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | C {24.7}              | D {33.1} | C {25.6}                | D {33.4} |
| <b>Interstate 295 Southbound Off Ramp at Suitland Parkway EB Upstream</b>   |  |          |                       |          |                         |          |
| Diverge Ramp  | B {19.5}   | C {23.5} | B {11.8}              | B {15.7} | B {11.8}                | B {15.7} |
| <b>Interstate 295 Southbound Off Ramp at Suitland Parkway EB Downstream</b> |  |          |                       |          |                         |          |
| Diverge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | B {11.8}              | B {15.7} | B {11.8}                | B {15.7} |
| <b>Interstate 295 Southbound On Ramp at Suitland Parkway EB Upstream</b>    |  |          |                       |          |                         |          |
| Merge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | C {21.6}              | C {24.8} | C {21.9}                | C {25.8} |
| <b>Interstate 295 Southbound On Ramp at Suitland Parkway EB Downstream</b>  |  |          |                       |          |                         |          |
| Merge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | C {22.3}              | C {27.5} | C {22.5}                | D {28.5} |
| <b>Interstate 295 Northbound Off Ramp at Suitland Parkway EB Upstream</b>   |  |          |                       |          |                         |          |
| Diverge Ramp  | Intersection proposed with South Capitol Street Corridor Project |          | D {28.4}              | C {20.9} | D {28.7}                | C {21.0} |
| {xx} = density in pc/mi/ln  |  |          |                       |          |                         |          |



Table 6 (continued)  
Level of Service Summary

| Approach  | Existing Conditions  |         | Background Conditions |          | Total Future Conditions |          |
|---|--|---------|-----------------------|----------|-------------------------|----------|
|   | AM Peak  | PM Peak | AM Peak               | PM Peak  | AM Peak                 | PM Peak  |
| <b>Interstate 295 Northbound Off Ramp at Suitland Parkway EB Downstream</b> |  |         |                       |          |                         |          |
| <b>Diverge Ramp</b>   | Intersection proposed with South Capitol Street Corridor Project |         | D {28.4}              | C {20.9} | D {28.7}                | C {21.0} |
| <b>Suitland Parkway EB Off ramp at MLK Jr. Avenue Southbound</b>            |  |         |                       |          |                         |          |
| <b>Diverge Ramp</b>   | Intersection proposed with South Capitol Street Corridor Project |         | B {10.3}              | C {21.8} | B {10.4}                | C {22.5} |
| <b>Suitland Parkway WB On ramp at MLK Jr. Avenue Southbound</b>             |  |         |                       |          |                         |          |
| <b>Merge Ramp</b>   | Intersection proposed with South Capitol Street Corridor Project |         | C {25.5}              | B {13.9} | C {26.7}                | B {14.2} |
| <b>Suitland Parkway EB On ramp at MLK Jr. Avenue Northbound</b>             |  |         |                       |          |                         |          |
| <b>Merge Ramp</b>   | Intersection proposed with South Capitol Street Corridor Project |         | B {10.5}              | D {28.9} | B {10.9}                | D {31.0} |
| <b>Suitland Parkway EB Off ramp at MLK Jr. Avenue Northbound</b>            |  |         |                       |          |                         |          |
| <b>Diverge Ramp</b>   | Intersection proposed with South Capitol Street Corridor Project |         | D {29.2}              | B {11.9} | D {31.4}                | B {12.6} |
| {xx} = density in pc/mi/ln  |  |         |                       |          |                         |          |

### Queue Analysis

A queue analysis was conducted for existing conditions. Synchro was used to conduct the analyses, using the 95<sup>th</sup> percentile queue lengths. The results are summarized in Table 7. Queue reports are provided in Appendix G.

As shown in Table 7, the following lane groups have 95<sup>th</sup> percentile queues that exceed the available storage under existing conditions:

- Howard Road/I-295 Off-ramp – southbound left;
- Howard Road/Firth Sterling Avenue – eastbound approach and northbound through/right;
- Howard Road/Anacostia Metro Station bus driveway (east) – eastbound approach;
- Howard Road/MLK Jr. Avenue/Sheridan Road – northbound left and eastbound left/through;

- Firth Sterling Avenue/Suitland Parkway – eastbound left/through and southbound through;
- Firth Sterling Avenue/Barry Road/Sumner Road – northbound approach;
- Firth Sterling Avenue/South Capitol Street/Defense Boulevard – eastbound left, westbound left, westbound through/right, and northbound through/right and;
- MLK Jr. Avenue/Sumner Road – northbound approach.

Queues that extend to adjacent intersections are typical in urban environments where intersections are closely spaced.

Table 7  
Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)

| Approach  | Available Storage <sup>†</sup> | Existing Conditions |         | Background Conditions |         | Total Future Conditions |         |
|---|--------------------------------|---------------------|---------|-----------------------|---------|-------------------------|---------|
|   |                                | AM Peak             | PM Peak | AM Peak               | PM Peak | AM Peak                 | PM Peak |
| <b>1. Howard Road/Suitland Parkway</b>  |                                |                     |         |                       |         |                         |         |
| WBR   | 60'/1,010'                     | 0                   | 0       | 80                    | 46      | 983                     | 858     |
| NBT   | 330'                           | 97                  | 10      | 0                     | 0       | 0                       | 0       |
| NBR   | 195'                           | 5                   | 3       | 0                     | 0       | 0                       | 0       |
| <b>2. Howard Road/Anacostia Metro Station parking garage</b>  |                                |                     |         |                       |         |                         |         |
| EBLT  | 270'/955'                      | 33                  | 39      | 8                     | 32      | 56                      | 963     |
| WBTR <sup>§</sup>   | 530'                           | 6                   | 10      | 34                    | 85      | 637                     | 181     |
| SBLR  | 255'/1190'                     | 15                  | 120     | 36                    | 114     | 36                      | 114     |
| <b>3. Howard Road/I-295 Off-ramp*</b>   |                                |                     |         |                       |         |                         |         |
| EBT   | 40'                            | 0                   | 6       | -                     | -       | -                       | -       |
| WBT   | 400'                           | 177                 | 99      | -                     | -       | -                       | -       |
| SBL   | 500'                           | 136                 | 662     | -                     | -       | -                       | -       |
| SBR   | 500'                           | 122                 | 122     | -                     | -       | -                       | -       |
| <b>4. Howard Road/Firth Sterling Avenue</b>   |                                |                     |         |                       |         |                         |         |
| EBLT  | 440'                           | 539                 | 186     | 220                   | 41      | 448                     | 74      |
| EBR   | 440'                           |                     |         | 8                     | 8       | 2                       | 54      |
| NBL   | 55'/320'                       | 204                 | 66      | 229                   | 185     | 427                     | 298     |
| NBTR  | 55'/320'                       | 856                 | 119     |                       |         |                         |         |
| SBLT  | 400'                           | 161                 | 64      | 42                    | 23      | 73                      | 129     |
| SBR   | 215'                           | 31                  | 10      | 26                    | 47      | 43                      | 439     |
| <sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.<br>* Intersection removed with South Capitol Street Corridor Project.<br>§ Under existing conditions, the available storage is 40 feet. Storage increases under background and total future conditions as the adjacent intersection is removed with the South Capitol Street Corridor Project. |                                |                     |         |                       |         |                         |         |

Table 7 (continued)  
Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)

| Approach  | Available Storage <sup>†</sup> | Existing Conditions |         | Background Conditions |         | Total Future Conditions |         |
|---|--------------------------------|---------------------|---------|-----------------------|---------|-------------------------|---------|
|   |                                | AM Peak             | PM Peak | AM Peak               | PM Peak | AM Peak                 | PM Peak |
| <b>5. Howard Road/Anacostia Metro Station bus driveway (West)</b> |                                |                     |         |                       |         |                         |         |
| EBTR  | 20'                            | 0                   | 0       | 0                     | 0       | 0                       | 0       |
| WBLT  | 265'                           | 3                   | 3       | 2                     | 1       | 2                       | 1       |
| NBLR  | 480'                           | 2                   | 2       | 7                     | 5       | 7                       | 6       |
| <b>6. Howard Road/Anacostia Metro Station bus driveway (East)</b> |                                |                     |         |                       |         |                         |         |
| EBTR  | 105'                           | 34                  | 121     | 37                    | 105     | 33                      | 235     |
| WBLT  | 190'                           | 150                 | 91      | 23                    | 65      | 78                      | 121     |
| NBLR  | 110'                           | 59                  | 59      | 28                    | 27      | 28                      | 27      |
| <b>7. Howard Road/MLK Jr. Avenue/Sheridan Road</b>                |                                |                     |         |                       |         |                         |         |
| NBL   | 200'                           | 446                 | 156     | 35                    | 79      | 195                     | 133     |
| NBTR  | 690'/770'                      | 268                 | 178     | 112                   | 145     | 122                     | 154     |
| SBLTR   | 240'/565'                      | 407                 | 498     | 387                   | 916     | 467                     | 954     |
| EBLT  | 190'                           | 294                 | 401     | 428                   | 583     | 485                     | 868     |
| EBR   | 190'                           | 123                 | 145     | 16                    | 34      | 55                      | 252     |
| NWLTR   | 240'/800'                      | 625                 | 562     | 268                   | 138     | 268                     | 138     |
| <b>8. Firth Sterling Avenue/Suitland Parkway</b>                  |                                |                     |         |                       |         |                         |         |
| EBL   | 395'                           | 436                 | 504     | 202                   | 854     | 226                     | 841     |
| EBT   | 395'                           |                     |         | 87                    | 455     | 93                      | 521     |
| EBR   | 25'                            | 28                  | 245     | 1                     | 346     | 1                       | 353     |
| WBL   | 50'                            | 13                  | 398     | 29                    | 41      | 46                      | 235     |
| WBTR  | 440'                           | 73                  | 431     | 85                    | 631     | 126                     | 1445    |
| NBL   | 440'                           | 94                  | 131     | 315                   | 45      | 312                     | 44      |
| NBT   | 2475'                          | 814                 | 179     | 1593                  | 484     | 1738                    | 521     |
| NBR   | 420'                           | 0                   | 0       |                       |         |                         |         |
| SBL   | 205'                           | 25                  | 16      | 127                   | 62      | 377                     | 168     |
| SBT   | 745'                           | 346                 | 1173    | 918                   | 3045    | 918                     | 3045    |
| SBR   | 220'                           | 45                  | 0       | 139                   | 162     | 139                     | 162     |
| <b>9. Firth Sterling Avenue/Barry Road/Sumner Road</b>            |                                |                     |         |                       |         |                         |         |
| EBTR  | 415'                           | 14                  | 31      | 7                     | 85      | 7                       | 89      |
| WBLT  | 395'                           | 60                  | 44      | 38                    | 52      | 38                      | 38      |
| NBLR  | 55'                            | 88                  | 55      | 34                    | 78      | 34                      | 78      |
| SBL   | 255'                           | 71                  | 83      | 27                    | 20      | 27                      | 20      |
| SBTR  | 255'                           | 64                  | 52      | 0                     | 0       | 0                       | 0       |

<sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.

Table 7 (continued)  
Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)

| Approach   | Available Storage <sup>†</sup> | Existing Conditions  |         | Background Conditions |         | Total Future Conditions |         |
|--|--------------------------------|--|---------|-----------------------|---------|-------------------------|---------|
|  |                                | AM Peak  | PM Peak | AM Peak               | PM Peak | AM Peak                 | PM Peak |
| <b>10. Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road</b>  |                                |  |         |                       |         |                         |         |
| EBTR   | 220'                           | 149  | 137     | 45                    | 226     | 48                      | 240     |
| WBL  | 240'                           | 77   | 28      | 86                    | 333     | 86                      | 362     |
| WBT  | 240'                           | 137  | 166     | 303                   | 199     | 304                     | 207     |
| NBL  | 225'                           | 31   | 222     | 150                   | 209     | 150                     | 209     |
| NBR  | 225'                           | 0  | 33      | 181                   | 419     | 185                     | 426     |
| <b>11. Firth Sterling Avenue/South Capitol Street/Defense Boulevard</b>  |                                |  |         |                       |         |                         |         |
| EBL  | 80'                            | 97   | 171     | 164                   | 186     | 164                     | 186     |
| EBT  | 165'/310'                      | 126  | 226     | 119                   | 317     | 119                     | 317     |
| EBR  | 165'/310'                      | 0  | 143     | 0                     | 44      | 0                       | 44      |
| WBL  | 220'                           | 147  | 687     | 121                   | 155     | 126                     | 173     |
| WBTR   | 220'                           | 324  | 164     | 863                   | 557     | 861                     | 557     |
| NBL  | 140'                           | 42   | 4       | 60                    | 44      | 60                      | 44      |
| NBTR   | 700'/1455'                     | 742  | 144     | 533                   | 91      | 539                     | 92      |
| SBL  | 200'                           | 114  | 60      | 502                   | 393     | 505                     | 401     |
| SBTR   | 945'/1640'                     | 132  | 586     | 152                   | 752     | 152                     | 752     |
| <b>12. MLK Jr. Avenue/Sumner Road</b>  |                                |  |         |                       |         |                         |         |
| EBLTR  | 70'/320'                       | 172  | 266     | 58                    | 101     | 58                      | 109     |
| WBLTR  | 70'/350'                       | 0  | 0       | 22                    | 14      | 22                      | 14      |
| NBLTR  | 250'/370'                      | 414  | 146     | 348                   | 812     | 446                     | 896     |
| SBLTR  | 55'/770'                       | 24   | 22      | 280                   | 506     | 280                     | 516     |
| <b>13A. MLK Jr. Avenue/Suitland Parkway (North)</b>  |                                |  |         |                       |         |                         |         |
| NBL  | 80'                            | Intersection proposed with South Capitol Street Corridor Project |         | 31                    | 0       | 21                      | 0       |
| NBT  | 80'                            |  |         | 24                    | 588     | 22                      | 633     |
| SBTR   | 175'                           |  |         | 90                    | 410     | 102                     | 648     |
| NWL  | 220'                           |  |         | 168                   | 105     | 168                     | 105     |
| NWR  | 385'                           |  |         | 53                    | 23      | 53                      | 23      |
| <b>13B. MLK Jr. Avenue/Suitland Parkway (South)</b>  |                                |  |         |                       |         |                         |         |
| NBT  | 340'                           | Intersection proposed with South Capitol Street Corridor Project |         | 572                   | 323     | 633                     | 347     |
| NBR  | 125'                           |  |         | 50                    | 89      | 38                      | 93      |
| SBLT   | 80'                            |  |         | 27                    | 37      | 33                      | 135     |
| SEL  | 275'                           |  |         | 114                   | 101     | 114                     | 101     |
| SER  | 660'                           |  |         | 415                   | 531     | 464                     | 577     |
| <sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection. |                                |  |         |                       |         |                         |         |

Table 7 (continued)  
Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)

| Approach   | Available Storage <sup>†</sup> | Existing Conditions  |         | Background Conditions |         | Total Future Conditions |         |
|--|--------------------------------|--|---------|-----------------------|---------|-------------------------|---------|
|  |                                | AM Peak  | PM Peak | AM Peak               | PM Peak | AM Peak                 | PM Peak |
| <b>14. I-295 NB Ramps/Suitland Parkway</b>   |                                |  |         |                       |         |                         |         |
| EBL  | 400'                           | Intersection proposed with South Capitol Street Corridor Project | 80      | 265                   | 73      | 266                     |         |
| EBT  | 495'                           |  | 310     | 904                   | 439     | 1069                    |         |
| WBT  | 200'                           |  | 1369    | 389                   | 1621    | 609                     |         |
| WBR  | 200'                           |  | 556     | 686                   | 876     | 1479                    |         |
| NEL  | 510'                           |  | 574     | 332                   | 640     | 353                     |         |
| NER  | 510'                           |  | 77      | 334                   | 113     | 359                     |         |
| <b>15. I-295 SB Ramps/Suitland Parkway</b>   |                                |  |         |                       |         |                         |         |
| SET  | 660'                           | Intersection proposed with South Capitol Street Corridor Project | 378     | 1315                  | 440     | 1384                    |         |
| NWL  | 295'                           |  | 173     | 133                   | 197     | 245                     |         |
| NWT  | 665'                           |  | 0       | 0                     | 0       | 0                       |         |
| NER  | 2410'                          |  | 531     | 1359                  | 548     | 1359                    |         |
| <b>16A. Memorial Bridge/East Oval</b>  |                                |  |         |                       |         |                         |         |
| SBT  | 1860'                          | Intersection proposed with South Capitol Street Corridor Project | 309     | 1858                  | 359     | 1927                    |         |
| NWL  | 265'                           |  | 0       | 0                     | 0       | 0                       |         |
| NWR  | 265'                           |  | 1740    | 149                   | 1930    | 178                     |         |
| <b>16B. South Capitol Street/East Oval</b>   |                                |  |         |                       |         |                         |         |
| NBR  | 725'/1725'                     | Intersection proposed with South Capitol Street Corridor Project | 1325    | 1550                  | 1381    | 1559                    |         |
| SBL  | 440'                           |  | 453     | 405                   | 592     | 429                     |         |
| SBT  | 440'                           |  | 596     | 2110                  | 623     | 2122                    |         |
| <b>16C. Suitland Parkway/East Oval</b>   |                                |  |         |                       |         |                         |         |
| EBL  | 150'                           | Intersection proposed with South Capitol Street Corridor Project | 490     | 185                   | 461     | 182                     |         |
| EBR  | 150'                           |  | 0       | 607                   | 0       | 660                     |         |
| NBT  | 270'                           |  | 1561    | 913                   | 1615    | 1069                    |         |
| <sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection. |                                |  |         |                       |         |                         |         |

Table 7 (continued)  
Synchro 95<sup>th</sup> Percentile Queue Summary (in feet)

| Approach   | Available Storage <sup>†</sup> | Existing Conditions  |         | Background Conditions |         | Total Future Conditions |         |
|--|--------------------------------|--|---------|-----------------------|---------|-------------------------|---------|
|  |                                | AM Peak  | PM Peak | AM Peak               | PM Peak | AM Peak                 | PM Peak |
| <b>17. Anacostia Drive/East Oval</b>   |                                |  |         |                       |         |                         |         |
| WBR  | 785'                           | Intersection proposed with South Capitol Street Corridor Project |         | 535                   | 433     | 535                     | 444     |
| NBTR   | 180'/460'                      |  |         | 310                   | 409     | 421                     | 481     |
| <b>18. Howard Road/Site Driveway 1</b>   |                                |  |         |                       |         |                         |         |
| EBTR   | 60'                            | -  | -       | -                     | -       | 0                       | 0       |
| WBLT   | 230'/915'                      | -  | -       | -                     | -       | 0                       | 0       |
| NBLR   | 90'                            | -  | -       | -                     | -       | 13                      | 167     |
| <b>19. Howard Road/Site Driveway 2</b>   |                                |  |         |                       |         |                         |         |
| EBLT   | 230'/350'                      | -  | -       | -                     | -       | 36                      | 5       |
| WBTR   | 130'/660'                      | -  | -       | -                     | -       | 0                       | 0       |
| SBLR   | 165'                           | -  | -       | -                     | -       | 58                      | 918     |
| <b>20. Howard Road/Site Driveway 3</b>   |                                |  |         |                       |         |                         |         |
| EBTR   | 130'/530'                      | -  | -       | -                     | -       | 0                       | 0       |
| WBLT   | 185'/480'                      | -  | -       | -                     | -       | 30                      | 10      |
| NBLR   | 240'                           | -  | -       | -                     | -       | 52                      | 661     |
| <b>21. Howard Road/Site Driveway 4</b>   |                                |  |         |                       |         |                         |         |
| EBLT   | 185'/760'                      | -  | -       | -                     | -       | 4                       | 7       |
| WBTR   | 255'                           | -  | -       | -                     | -       | 0                       | 0       |
| SBLR   | 80'                            | -  | -       | -                     | -       | 242                     | Error   |
| <sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.<br>* Intersection removed with South Capitol Street Corridor Project.<br><sup>§</sup> Under existing conditions, the available storage is 40 feet. Storage increases under background and total future conditions as the adjacent intersection is removed with the South Capitol Street Corridor Project. |                                |  |         |                       |         |                         |         |

## Safety Analysis

Crash data at the study intersections were obtained from DDOT. The information provided by DDOT included the total number of crashes over the latest three years of available data (i.e. 2013, 2014, and 2015) at each intersection and was further categorized by type of crash. Based on the data, Table 8 shows the overall intersection crash rates at each of the study intersections.

As shown in Table 8, crash rates at seven of the intersections in the study area are above 1.0, which is considered high by DDOT.

As noted in the Final South Capitol Street Transportation Technical Report, several local roads in the study area serve both commuter and local traffic due to the existing configuration of the Suitland Parkway/Howard Road/Firth Sterling Avenue Interchange with I-295. The resulting poor levels of service and congestion may contribute to high crash rates observed in the study area.

Table 8  
Crash Data Summary

| Intersection   | Type of Control | No. of Crashes (3 Years) | ADT (veh/day) | Crash Rate (MEV) |
|--|-----------------|--------------------------|---------------|------------------|
| Howard Road/Suitland Parkway   | Signal          | N/A                      | 3,380         | N/A              |
| Howard Road/Anacostia Metro Station parking garage *                 | Free Flow       | N/A                      | 5,630         | N/A              |
| Howard Road/I-295 Off-ramp   | Signal          | 41                       | 12,080        | 3.10             |
| Howard Road/Firth Sterling Avenue                                    | Signal          | 77                       | 19,250        | 3.65             |
| Howard Road/Anacostia Metro Station bus driveway (West) *            | One-way Stop    | N/A                      | 10,090        | N/A              |
| Howard Road/Anacostia Metro Station bus driveway (East) *            | Signal          | N/A                      | 9,570         | N/A              |
| Howard Road/MLK Jr. Avenue/Sheridan Road                             | Signal          | 76                       | 16,050        | 4.32             |
| Firth Sterling Avenue/Suitland Parkway                               | Signal          | 132                      | 37,440        | 3.22             |
| Firth Sterling Avenue/Barry Road/Sumner Road                         | Signal          | 29                       | 9,970         | 2.66             |
| Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road | Signal          | 9                        | 11,450        | 0.72             |
| Firth Sterling Avenue/South Capitol Street/Defense Boulevard         | Signal          | 33                       | 26,960        | 1.12             |
| MLK Jr. Avenue/Sumner Road   | Signal          | 32                       | 15,250        | 1.92             |
| *Data not available for street intersections with driveways          |                 |                          |               |                  |

Each intersection with crash rates higher than a 1.0 is summarized below:

#### Howard Road/I-295 Off-ramp

A review of the crash types at the Howard Road/I-295 Off-ramp intersection reveals that the majority of the crashes at the intersection were rear end collisions (37 percent). Two other categories that made up at least 10 percent of the crashes included side swipe collisions (27 percent) and fixed object collisions (15 percent). One crash involved a motorcycle.

As part of the South Capitol Street Corridor Project, this intersection would be removed to restore Howard Road to a roadway serving local traffic.

### Howard Road/Firth Sterling Avenue

A review of the crash types at the Howard Road/Firth Sterling Avenue intersection reveals that the majority of the crashes at the intersection involved side swipe collisions (31 percent). Two other categories that made up at least 10 percent of the crashes included rear end collisions (25 percent) and left turn collisions (12 percent). Five crashes involved pedestrians and one crash involved a motorcycle.

In addition, the majority of collisions (73 percent) occurred during the daytime. The majority of collisions (79 percent) also occurred under clear weather conditions. More information regarding the direction of travel would be required to make recommendations to improve safety.

### Howard Road/MLK Jr. Avenue/Sheridan Road

A review of the crash types at the Howard Road/Martin Luther King Jr. Avenue/Sheridan Road intersection reveals that the majority of the crashes at the intersection involved side swipe collisions (33 percent). Rear end collisions made up 26 percent of crashes at the intersection. Seven crashes involved pedestrians and three crashes involved bicycles.

In addition, the majority of collisions (63 percent) occurred during the daytime. The majority of collisions (82 percent) also occurred under clear weather conditions. More information regarding the direction of travel would be required to make recommendations to improve safety.

### Firth Sterling Avenue/Suitland Parkway

A review of the crash types at the Firth Sterling Avenue/Suitland Parkway intersection reveals that the majority of crashes at the intersection were rear end collisions (26 percent). Two other categories that made up at least 10 percent of the crashes included left turn collisions (23 percent) and side swipe collisions (12 percent). Two crashes involved pedestrians.

In addition, the majority of collisions (54 percent) occurred during the daytime. The majority of collisions (82 percent) also occurred under clear weather conditions. More information regarding the direction of travel would be required to make recommendations to improve safety.

### Firth Sterling Avenue/Barry Road/Sumner Road

A review of the crash types at the Firth Sterling Avenue/Barry Road/Sumner Road intersection reveals that the majority of the crashes at the intersection (24 percent) were rear end collisions. Two other categories that made up at least 10 percent of the crashes included left turn collisions and side swipe collisions (17 percent each). One crash involved bicycles.



In addition, the majority of collisions (73 percent) occurred during the daytime. The majority of collisions (77 percent) also occurred under clear weather conditions. More information regarding the direction of travel would be required to make recommendations to improve safety.

#### Firth Sterling Avenue/South Capitol Street/Defense Boulevard

A review of the crash types at the Firth Sterling Avenue/South Capitol Street/Defense Boulevard intersection reveals that the majority of the crashes at the intersection were left turn collisions (27 percent). Three other categories that made up at least 10 percent of the crashes included rear end collisions (21 percent), and side swipe collisions (18 percent). One crash involved bicycle.

In addition, the majority of collisions (61 percent) occurred during the daytime. The majority of collisions (97 percent) also occurred under clear weather conditions. More information regarding the direction of travel would be required to make recommendations to improve safety.

#### MLK Jr. Avenue/Sumner Road

A review of the crash types at the Martin Luther King Jr. Avenue/Sumner Road intersection reveals that the majority of the crashes at the intersection (33 percent) were side swipe collisions. Left turn collisions made up 15 percent of crashes at the intersection. Three crashes involved pedestrians and two crashes involved bicycles.

In addition, the majority of collisions (75 percent) occurred during the daytime. The majority of collisions (81 percent) also occurred under clear weather conditions. Given this and the number of side swipe collisions, parking on both sides of the street and the narrowness of Sumner Road may contribute to crashes at the intersection. More information regarding the direction of travel would be required to make recommendations to improve safety.

## **FUTURE BACKGROUND CONDITIONS**

### **Traffic Volumes**

#### **Overview**

As part of the South Capitol Street Supplemental Final Environmental Impact Statement, the Final South Capitol Street Transportation Technical Report included 2020 and 2040 traffic volumes for the proposed roadway design. In addition to regional land use forecasts, the future peak hour forecasts incorporated the following projects:

- Barry Farm/Park Chester/Wade Road Redevelopment,
- Joint Base Anacostia-Bolling employment and housing changes,
- Poplar Point redevelopment of approximately six million SF,
- Sheridan Station,
- Department of Homeland Security Headquarters consolidation, and
- Poplar Point Place along Howard Road (site).

To obtain 2030 traffic volumes, an average of the 2020 and 2040 traffic volumes was calculated for each study intersection, as agreed upon during the scoping process. The resulting volumes are shown on Figure 9 and the applicable volume excerpts from the South Capitol Street study are included in Appendix H.

### **Pipeline Developments**

One new development not included in the 2020 and 2040 traffic forecasts was identified during the scoping process as being proximate to the study area. The Four Points Planned Unit Development (PUD) is bounded by MLK Jr. Avenue to the east, Shannon Place to the west, Railroad Avenue to the south, and U Street to the north. The mixed-use development will include approximately 918,000 SF of office, 166,000 SF of retail, and up to 340 residential apartments. Stage 1 of the PUD received approval from the Zoning Commission in September 2013. It is anticipated full build-out of the site will be completed by 2030 prior to full build-out of the subject site.

Site trip assignments for the development were taken from the Curtis Properties Traffic Impact Study prepared by Gorove/Slade. According to the study, the development will generate an estimated 961 AM peak hour vehicle trips and 1,264 PM peak hour vehicle trips. Traffic associated with this pipeline development is shown at each of the study intersections on Figure 10.

### **Background Forecasts**

Background 2030 traffic forecasts (without the proposed development) were developed by combining the average traffic volumes from the Final South Capitol Street Transportation Technical Report (shown on Figure 9) with the pipeline traffic volumes shown on Figure 10. The resulting 2030 background traffic forecasts are shown on Figure 11.

### **Background Roadway Network**

A number of roadway network changes are included with the South Capitol Street Corridor Project. Within the study area, these improvements will alter the roadway network between the proposed Frederick Douglass Memorial Bridge to the interchange of I-295 and Suitland Parkway. These improvements are slated for completion in 2019 and have, therefore, been included in the background and total future scenarios. As requested by

DDOT, a number of proposed intersections have been added to the background and total future study areas, including:

- MLK Jr. Avenue/Suitland Parkway,
- I-295 NB Ramps/Suitland Parkway,
- I-295 SB Ramps/Suitland Parkway,
- Memorial Bridge/East Oval,
- South Capitol Street/East Oval,
- Suitland Parkway/East Oval, and
- Anacostia Drive/East Oval,

## Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the future lane use and traffic control shown on Figure 12, future background traffic forecasts shown on Figure 11, and DDOT traffic signal timings for existing intersections. For those intersections that will be added or modified as part of the South Capitol Street Corridor Project, signal timings were modeled based on information available in the Synchro printouts from the Final South Capitol Street Transportation Technical Report. From these printouts, phasing, cycle lengths, and green time could be determined.

The level of service results for the 2030 background conditions without the Columbian Quarter at Poplar Point PUD are presented in Appendix I and summarized in Table 6. As shown in Table 6, under background conditions ten of the signalized study intersections are projected to operate at an overall LOS E or F. The following is a summary of the various intersections that are projected to operate at an overall LOS E or LOS F under background conditions:

- Howard Road/MLK Jr. Avenue/Sheridan Road – LOS F during the AM and PM peak hours;
- Firth Sterling Avenue/Suitland Parkway – LOS F during the AM and PM peak hours;
- Firth Sterling Avenue/South Capitol Street/Defense Boulevard – LOS F during the AM peak hour and LOS E during the PM peak hour;
- MLK Jr. Avenue/Sumner Road – LOS E during the PM peak hour;
- MLK Jr. Avenue/Suitland Parkway (North) – LOS E during the PM peak hour;
- I-295 SB Ramps/Suitland Parkway – LOS F during the PM peak hour;
- South Capitol Street/ East Oval (south of Frederick Douglass Memorial Bridge) – LOS F during the AM and PM peak hours; and
- South Capitol Street/ East Oval (at Howard Road) – LOS F during the AM peak hour and LOS E during the PM peak hour.

As shown in Table 6, a number of lane groups at the study intersections also would operate at a LOS E or LOS F during the AM and PM peak hours under background conditions.

## Queue Analysis

A queue analysis was conducted for 2030 conditions without the Columbian Quarter at Poplar Point PUD. Synchro was used to conduct the analyses, using the 95<sup>th</sup> percentile queue lengths. The results are summarized in Table 7. Queue reports are provided in Appendix I.

As shown in Table 7, the following lane groups have 95<sup>th</sup> percentile queues that exceed the available storage under background conditions:

- Howard Road/Anacostia Metro Station parking garage – westbound through/right;
- Howard Road/MLK Jr. Avenue/Sheridan Road – southbound approach and eastbound left/through;
- Firth Sterling Avenue/Suitland Parkway – eastbound left, eastbound through, westbound through/right, and southbound through;
- Firth Sterling Avenue/Barry Road/Sumner Road – northbound approach;
- Firth Sterling Avenue/St. Elizabeth’s Avenue/ Stevens Road/ Barry Road– eastbound approach, westbound approach, and northbound right;
- Firth Sterling Avenue/South Capitol Street/Defense Boulevard – eastbound left, eastbound through, westbound through/right, and southbound left;
- MLK Jr. Avenue/Sumner Road – northbound approach;
- MLK Jr. Avenue/Suitland Parkway (North) – northbound through and southbound through/right;
- MLK Jr. Avenue/Suitland Parkway (South) – northbound through;
- I-295 NB Ramps/ Suitland Parkway – eastbound through, westbound through, westbound right, northeastbound left;
- I-295 SB Ramps/ Suitland Parkway – southeastbound through/right;
- South Capitol Street/East Oval (at Frederick Douglass Memorial Bridge) – northwestbound right;
- South Capitol Street/East Oval (south of Frederick Douglass Memorial Bridge) – southbound left and southbound through and;
- South Capitol Street/East Oval (at Howard Road) – eastbound left, eastbound right, and northbound through.

## SITE ANALYSIS

### Overview

The subject site is situated on Square 5860 (Lots 97, 1025-1031, 1036, and 1037) and Square 5861 (Lot 91) and is generally located along the north and south sides of Howard Road east of Suitland Parkway and west of Interstate 295. The site is currently zoned MU-14.

The Applicant proposes to develop the site with a mixed-use development, which would include approximately 710 residential dwelling units, approximately 49,980 SF of retail, and approximately 1,679,510 SF of office.<sup>3</sup> The project will be entitled through a Planned Unit Development (PUD) and related map amendment, which would rezone the property from the MU-14 District to the MU-9 District.

### Site Access

As shown on Figures 13A and 13B, vehicular, pedestrian, and bicycle circulation options have been considered for each component of the proposed development. These circulation patterns are discussed in further detail below.

### Vehicular Circulation

Currently, three curb cuts and a 15-foot wide public alley provide access to the site north of Howard Road, and five curb cuts provide access to the site south of Howard Road. All of the curb cuts currently are gated.

In conjunction with the proposed development, the public alley on the north side of Howard Road will be closed and two private streets with a public access easement will be created along with a service drive to the rear of the property. Parking access for the office building (Building A) on the north side of Howard Road is proposed via the western-most private roadway, and parking access for the residential buildings (Buildings B and C) on the north side of Howard Road is proposed via the service alley. Loading and service access to all three buildings is proposed via the alley. On the south side of Howard Road, two curb cuts would provide access to the parking and loading, which will be shared for both buildings (Buildings D and E).

Trucks and service vehicles for both the northern and southern parcels will enter the site front-first from Howard Road and will back into one of the loading berths or the service/delivery spaces from the alley. Trucks will then exit the site onto Howard Road front-first. Diagrams showing the truck maneuvers in and out of the loading areas are included in Appendix J.

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<sup>3</sup> Note the current development program has decreased since the traffic analysis was conducted. The most recent development program includes 683 dwelling units, 49,980 SF of retail, and 1,608,190 SF of office.

## Pedestrian Circulation

As shown on Figure 13A, pedestrians can access both the northern and southern building lobby via the Howard Road sidewalk, which will be reconstructed and widened as part of the PUD. Per DDOT's request during the scoping process, the Applicant has explored the potential of providing a mid-block pedestrian crossing, including a signalized crossing. Details regarding the preliminary pedestrian warrant analysis are included in Appendix K and are described in the subsequent section.

### Proposed Mid-Block Pedestrian Crosswalk

Due to the anticipated significant pedestrian activity between the northern and southern block of the site, a mid-block pedestrian crossing was evaluated for suitability, need, and safety. A review of the Pedestrian Master Plan indicated that no specific pedestrian facilities were recommended along Howard Road along the site frontage. However, some of the Pedestrian Master Plan recommendations indicate the following:

- Real estate development projects should include safe and convenient pedestrian facilities,
- Sidewalks should be constructed on all streets for pedestrian connectivity,
- Pedestrian access and safety should be improved at uncontrolled crossings, intersections, and bus stops.

As shown on Figure 13A, the proposed sidewalks along Howard Road on the northern and southern sides will be connected by a proposed mid-block pedestrian crossing. This proposed mid-block pedestrian crosswalk improves pedestrian access to the northern building from the Anacostia Metro Station and provides more opportunities for pedestrian circulation between the northern and southern buildings on Howard Road.

### Crosswalk Warrant Analysis

The proposed crosswalk was evaluated for its suitability and need using the Pedestrian Master Plan's Crosswalk Marking Decision Matrix. Based on this matrix, the need for a crosswalk at an uncontrolled crossing location is justified by the following factors:

- Average Daily Traffic (ADT) <1,500 vehicles per day - Proceed to next step if NO
- Crossing is a Multi-Use Path Crossing - Proceed to next step if NO
- Meets the following minimum pedestrian volume thresholds – Proceed to next step if YES
  - 20 pedestrians per hour in any hour, or
  - 18 pedestrians per hour in any two hours, or
  - 15 pedestrians per hour in any three hours
- Nearest marked or protected crossing >300 feet away – Proceed to next step if YES

- Adequate stopping sight distance (eight times the speed limit) – Proceed to next step is YES
- Review the Uncontrolled Crosswalk Engineering Treatments to determine the appropriate crosswalk treatment.

A review of the proposed site plan indicates the following:

- Average Daily Traffic (ADT) <1,500 vpd – NO

The ADT on Howard Road was obtained by growing the existing PM peak hour volume at a rate of one percent per year and adding the trips generated by the development. Under 2030 total future conditions with the development, Howard Road is anticipated to carry approximately 18,130 vpd. Therefore, the ADT is not less than 1,500 vpd.

- Crossing a Multi-Use Path Crossing - NO

No, the proposed crossing is a pedestrian crosswalk, not a multi-use path crossing.

- Meets minimum pedestrian volume thresholds

Internal capture rates and non-auto mode splits were considered to estimate pedestrian volumes with the proposed development. When accounting for internal capture, 14 pedestrian trips would be made during the AM peak hour and 98 pedestrian trips would be made during the PM peak hour. When accounting for the non-auto mode splits, it was assumed 40 percent of transit or pedestrian trips would use the mid-block crossing. Therefore, the total pedestrian volumes during the AM and PM peak hours were estimated to be 314 and 458 pedestrians, respectively. As such, it is expected the pedestrian volume thresholds will easily be met.

- Nearest marked or protected crossing >300 feet away – YES

The nearest crosswalks to the east and west are located approximately 1,135 feet and 330 feet, respectively, from the proposed crosswalk location.

- Adequate stopping sight distance (eight times the speed limit) – YES

The sight distance required is 200 feet. The provided sight distance exceeds 200 feet.

### Crosswalk Treatment

A review of the Uncontrolled Crosswalk Engineering Treatments, Table 1 of the Pedestrian Master Plan, also indicates that “Treatment B” is appropriate. Treatment B includes an in-street ‘Stop for Pedestrians’ sign and/or traffic calming. DDOT’s Traffic Calming Assessment Application indicates a raised intersection is appropriate for all classification of

streets and can be located at mid-block crossings. Therefore, it is proposed the mid-block crossing be a raised crossing with an in-street 'Stop for Pedestrians' sign.

The pertinent excerpts from the Uncontrolled Crosswalk Engineering Treatments and DDOT Traffic Calming Assessment Application are included in Appendix K.

### Signalization

A preliminary pedestrian signal warrant analysis was conducted and details are provided in Appendix K. Signalization is not warranted under existing or background conditions, but may be warranted under total future conditions with the proposed development. It is important to note signalization would have an impact on vehicular traffic along Howard Road. Given the crosswalk is proposed to be a raised crossing with an in-street 'Stop for Pedestrians' sign, the mid-block crossing significantly aids in prioritizing pedestrian traffic. Therefore, installation of a signal is not recommended at this time.

### **Bicycle Circulation**

As discussed in previous sections of this report, the Applicant intends to reconstruct Howard Road to provide new sidewalks and bike lanes adjacent to the subject site. A two-way cycle track is proposed on the north side of Howard Road to provide 4.5-foot bike lanes and a three-foot buffer between the bike lane and adjacent parking lane.

As shown on Figures 13A and 13B, access to long-term bicycle parking spaces can be accommodated via the proposed parking garage entrances. The main building entrances also provide access to the elevators serving P1, where long-term bicycle parking spaces are provided for residents, employees, and other daily commuters.

## **Trip Generation Analysis**

### **Overview**

The total number of trips generated by the proposed development would be comprised of vehicular trips, pedestrian/bicycle trips, and transit trips. Additionally, the total number of trips would be made up of both internal (occurring within the confines of the site) and external trips. While internal trips were used to estimate pedestrian volumes for the proposed mid-block crossing, internal capture was not included in the trip generation analysis, per DDOT's request during the scoping process.

### **Total Trips**

The total number of trips anticipated to be generated by the proposed development was estimated based on ITE's Trip Generation Manual. Land Use Code LUC 220 (Apartment), LUC 820 (Retail), and LUC 710 (Office) were used to estimate the total number of trips



to/from the proposed project. The square footages of the retail and office uses and the number of dwelling units for the residential use were used as the independent variables.

The trip generation for the proposed development is summarized in Table 8. As shown, the proposed development would generate 2,282 **total** AM peak hour trips and 2,744 **total** PM peak hour trips based on standard ITE rates/equations.

Table 8  
Site Trip Generation Summary

| Land Use  | AM Peak Hour      |       |       | PM Peak Hour |     |       |       |
|---|-------------------|-------|-------|--------------|-----|-------|-------|
|   | In                | Out   | Total | In           | Out | Total |       |
| <b>Proposed Development</b>   |                   |       |       |              |     |       |       |
| 710 DU<br>Apartment<br>(LUC 220)  | Total Trips       | 70    | 282   | 352          | 265 | 143   | 408   |
|   | Non-auto Trips    | 39    | 155   | 194          | 146 | 79    | 225   |
|   | Transit           | 37    | 146   | 183          | 138 | 75    | 213   |
|   | Bicycle           | 1     | 3     | 4            | 3   | 1     | 4     |
|   | Pedestrian        | 1     | 6     | 7            | 5   | 3     | 8     |
|   | New Vehicle Trips | 31    | 127   | 158          | 119 | 64    | 183   |
| 49,980 SF<br>Retail<br>(LUC 820)  | Total Trips       | 63    | 39    | 102          | 181 | 195   | 376   |
|   | Non-auto Trips    | 19    | 12    | 31           | 54  | 59    | 113   |
|   | Transit           | 17    | 11    | 28           | 49  | 53    | 102   |
|   | Bicycle           | 1     | 0     | 1            | 2   | 2     | 4     |
|   | Pedestrian        | 1     | 1     | 2            | 3   | 4     | 7     |
|   | Pass-by Trips     | 7     | 5     | 12           | 43  | 46    | 89    |
|   | New Vehicle Trips | 37    | 22    | 59           | 84  | 90    | 174   |
| 1,679,510 SF<br>Office<br>(LUC 710)   | Total Trips       | 1,609 | 219   | 1,828        | 333 | 1,627 | 1,960 |
|   | Non-auto Trips    | 483   | 66    | 549          | 100 | 488   | 588   |
|   | Transit           | 434   | 60    | 494          | 90  | 439   | 529   |
|   | Bicycle           | 16    | 2     | 18           | 3   | 16    | 19    |
|   | Pedestrian        | 33    | 4     | 37           | 7   | 33    | 40    |
|   | Vehicle Trips     | 1,126 | 153   | 1,279        | 233 | 1,139 | 1,372 |
| Total Proposed<br>Development   | Total Trips       | 1,742 | 540   | 2,282        | 779 | 1,965 | 2,744 |
|   | Non-auto Trips    | 541   | 233   | 774          | 300 | 626   | 926   |
|   | Transit           | 488   | 217   | 705          | 277 | 567   | 844   |
|   | Bicycle           | 18    | 5     | 23           | 8   | 19    | 27    |
|   | Pedestrian        | 35    | 11    | 46           | 15  | 40    | 55    |
|   | New Vehicle Trips | 7     | 5     | 12           | 43  | 46    | 89    |
|   | Vehicle Trips     | 1,194 | 302   | 1,496        | 436 | 1,293 | 1,729 |
| <sup>1</sup> Note the current development program has decreased since the traffic analysis was conducted. The most recent development program includes 683 dwelling units, 49,980 SF of retail, and 1,608,190 SF of office. |                   |       |       |              |     |       |       |

## Non-Auto Mode Split

A portion of the trips generated by the proposed development would be made via non-auto modes of transportation. The percentage of site-generated trips that would use public transportation is dependent on the proximity of the site to transit stops, the walkability of the surrounding area, and the degree to which the use of public transit is encouraged, such as by implementation of a transportation demand management (TDM) program.

According to US Census data, approximately 64 percent of residents in the vicinity of the site take transit, two percent walk, and one percent bike to work. An additional five percent carpool and four percent work at home. As agreed by DDOT during the scoping process, the residential non-auto mode split was assumed to be 55 percent. Also determined during the scoping process, the non-auto mode split for the retail and office components was estimated to be 30 percent. These estimates were based on equations from WMATA's 2005 Development-Related Ridership Survey, the walkability of the site, and proposed improvements to the streetscape on Howard Road.

The non-auto trips will be comprised of transit, pedestrian, and bicycle trips. The estimates for the specific modes were based on data contained in the 2005 Development-Related Ridership Survey.

Based on these mode split estimates, the project is expected to generate 774 AM peak hour trips and 926 PM peak hour trips by non-auto modes of transportation.

## Pass-by Trips

A portion of the trips generated by retail and service uses are made by vehicles already using the adjacent streets to reach a different destination but stop at the site in passing. This type of trip is called a pass-by trip, and is defined by Trip Generation Manual as a trip in which the retail or service destination is the secondary part of a primary trip, such as a work-to-shopping-to-home trip. An example of a pass-by trip would be one in which a driver stops at the retail or service uses on his/her way home from work. Pass-by rates were taken from the Trip Generation Manual and the AM peak pass-by rate was assumed to be half the PM. As shown on Table 8, the project is expected to generate 12 AM peak hour and 89 PM peak hour pass-by trips.

## New Vehicle Trips

Taking into account the non-auto mode split and pass-by trips, the proposed development would generate an estimated 1,496 new AM peak hour vehicular trips and 1,729 new PM peak hour vehicular trips, as shown on Table 8.

### Site Trip Distribution and Assignment

The distribution of new peak hour site trips generated by the proposed development was based on traffic patterns in the study area, changes to the roadway network resulting from the South Capitol Street Corridor Project, and general knowledge of commuter routes to/from the site.

The trip distributions shown in Table 9 were applied to the new vehicle trip generation for the proposed redevelopment. The resulting traffic assignments for the proposed development are shown on Figures 14A-E.

Table 9  
Site Trip Distributions

| Roadway                            | Direction | Residential | Retail | Office |
|------------------------------------|-----------|-------------|--------|--------|
| Frederick Douglass Memorial Bridge | West      | 40%         | 10%    | 15%    |
| Suitland Parkway                   | East      | 10%         | 10%    | 20%    |
| I-295                              | North     | 30%         | 10%    | 35%    |
|                                    | South     | 10%         | 0%     | 10%    |
| MLK Jr. Avenue                     | North     | 5%          | 25%    | 10%    |
|                                    | South     | 5%          | 20%    | 10%    |
| South Capitol Street               | South     | 0%          | 25%    | 0%     |

### Proposed Parking

#### Vehicular Parking

Based on parking requirements prescribed in the 2016 Zoning Regulations (ZR16), a total of 560 parking spaces are required for the entire development when accounting for the allowable reduction due to proximity to metro. A summary of the parking required and provided for each building is shown in Table 10. As shown on Table 10, a total of approximately 921 parking spaces are proposed with the project.



Table 10  
Parking Summary

| Building <sup>4</sup> | Required                       |                               |                                 |   | Proposed          |
|-----------------------|--------------------------------|-------------------------------|---------------------------------|---|-------------------|
|                       | Residential <sup>1</sup>       | Retail <sup>2</sup>           | Office <sup>3</sup>             | Total                                   |                   |
| A                     | N/A                            | <u>9,200 SF</u><br>8 spaces   | <u>601,970 SF</u><br>300 spaces | 308 spaces; 154 with reduction          | 263 spaces        |
| B                     | <u>429 units</u><br>142 spaces | <u>20,500 SF</u><br>23 spaces | N/A                             | 165 spaces; 83 with reduction           | 299 spaces        |
| C                     | <u>281 units</u><br>92 spaces  | <u>10,000 SF</u><br>9 spaces  | N/A                             | 101 spaces; 51 with reduction           |                   |
| D                     | N/A                            | <u>6,800 SF</u><br>5 spaces   | <u>583,290 SF</u><br>290 spaces | 295 spaces; 148 with reduction          | 359 spaces        |
| E                     | N/A                            | <u>3,480 SF</u><br>1 space    | <u>494,250 SF</u><br>246 spaces | 247 spaces; 124 with reduction          |                   |
| <b>Total</b>          | <b>234 spaces</b>              | <b>46 spaces</b>              | <b>836 spaces</b>               | <b>1,116 spaces; 560 with reduction</b> | <b>921 spaces</b> |

<sup>1</sup> Parking requirement calculated as 1 per 3 dwelling units in excess of 4 units.  
<sup>2</sup> Parking requirement calculated as 1.33 per 1,000 SF in excess of 3,000 SF.  
<sup>3</sup> Parking requirement calculated as 0.5 per 1,000 SF in excess of 3,000 SF.  
<sup>4</sup> Note the current development program has decreased since the traffic analysis was conducted. The most recent development program includes 683 dwelling units, 49,980 SF of retail, and 1,608,190 SF of office.

### Bicycle Parking

Based on bicycle parking requirements prescribed in ZR16 and codified in district law<sup>4</sup>, a total of 653 long-term spaces and 93 short-term spaces are required. A summary of the long-term bike parking required and provided for each building is shown in Table 11. A summary of the short-term bike parking requirements is shown in Table 12.

Long-term bicycle parking is proposed on the first below-grade level of the garages on the north and south sides of Howard Road. Conceptual locations for short-term bicycle parking are shown Figure 13. Locations will be finalized during the zoning approval and public space processes for each individual building.

<sup>4</sup> District law required that one bicycle parking space be provided for every three residential dwelling units. See D.C. Code § 50-1641.05(b)(1).

Table 11  
Long-term bicycle Parking Summary

| Building <sup>4</sup> | Required                 |                             |                                 |                   | Proposed          |
|-----------------------|--------------------------|-----------------------------|---------------------------------|-------------------|-------------------|
|                       | Residential <sup>1</sup> | Retail <sup>2</sup>         | Office <sup>3</sup>             | Total             |                   |
| A                     | N/A                      | <u>9,200 SF</u><br>1 space  | <u>601,970 SF</u><br>145 spaces | 146 spaces        | 151 spaces        |
| B                     | <u>710 units</u>         | <u>30,500 SF</u>            | N/A                             | 145 spaces        | 244 spaces        |
| C                     | 143 spaces               | 2 spaces                    |                                 | 95 spaces         |                   |
| D                     | N/A                      | <u>6,800 SF</u><br>1 space  | <u>583,290 SF</u><br>142 spaces | 143 spaces        | 247 spaces        |
| E                     | N/A                      | <u>3,480 SF</u><br>0 spaces | <u>494,250 SF</u><br>124 spaces | 124 spaces        |                   |
| <b>Total</b>          | <b>237 spaces</b>        | <b>5 spaces</b>             | <b>411 spaces</b>               | <b>653 spaces</b> | <b>642 spaces</b> |

<sup>1</sup> Parking requirement calculated as 1 per 3 dwelling units.  
<sup>2</sup> Parking requirement calculated as 1 per 10,000 SF. After the first 50 bicycle spaces are provided, additional spaces are required at one half the specified ratio.  
<sup>3</sup> Parking requirement calculated as 1 per 2,500 SF. After the first 50 bicycle spaces are provided, additional spaces are required at one half the specified ratio.  
<sup>4</sup> The most recent program includes 683 dwelling units, 49,980 SF retail, and 1,608,190 SF office.

Table 12  
Short-term bicycle Parking Summary

| Building     | Required                      |                              |                                |                  |
|--------------|-------------------------------|------------------------------|--------------------------------|------------------|
|              | Residential <sup>1</sup>      | Retail <sup>2</sup>          | Office <sup>3</sup>            | Total            |
| A            | N/A                           | <u>9,200 SF</u><br>3 spaces  | <u>601,970 SF</u><br>15 spaces | 18 spaces        |
| B            | <u>429 units</u><br>22 spaces | <u>20,500 SF</u><br>6 spaces | N/A                            | 28 spaces        |
| C            | <u>281 units</u><br>14 spaces | <u>10,000 SF</u><br>3 spaces | N/A                            | 17 spaces        |
| D            | N/A                           | <u>6,800 SF</u><br>2 spaces  | <u>583,290 SF</u><br>15 spaces | 17 spaces        |
| E            | N/A                           | <u>3,480 SF</u><br>1 space   | <u>494,250 SF</u><br>12 spaces | 13 spaces        |
| <b>Total</b> | <b>36 spaces</b>              | <b>15 spaces</b>             | <b>42 spaces</b>               | <b>93 spaces</b> |

<sup>1</sup> Parking requirement calculated as 1 per 20 dwelling units. After the first 50 bicycle spaces are provided, additional spaces are required at one half the specified ratio.  
<sup>2</sup> Parking requirement calculated as 1 per 3,500 SF. After the first 50 bicycle spaces are provided, additional spaces are required at one half the specified ratio.  
<sup>3</sup> Parking requirement calculated as 1 per 40,000 SF. After the first 50 bicycle spaces are provided, additional spaces are required at one half the specified ratio.  
<sup>4</sup> The most recent program includes 683 dwelling units, 49,980 SF retail, and 1,608,190 SF office.

## Proposed Loading

The loading requirements for the proposed redevelopment are prescribed by the ZR16, and are summarized in Table 13 along with the proposed loading facilities.

Table 13  
Loading Summary

| Building  | Required <sup>†</sup>   | Proposed                            |
|---|---|-------------------------------------|
| A   | <u>601,970 SF office</u><br>>200,000 SF = 3 Loading Berths, 1 Delivery Space        | 3 Loading Berths, 1 Delivery Space  |
| B   | <u>20,500 SF retail</u><br>20,000 – 100,000 SF = 2 Loading Berths, 1 Delivery Space | 2 Loading Berths, 1 Delivery Space  |
| C   | <u>281 dwelling units</u><br>>50 dwelling units = 1 Loading Berth, 1 Delivery Space | 1 Loading Berth, 1 Delivery Space   |
| D   | <u>1,077,540 SF office</u><br>>200,000 SF = 3 Loading Berths, 1 Delivery Space      | 3 Loading Berths, 1 Delivery Space  |
| E   |   |                                     |
| Total   | 8 Loading Berths, 3 Delivery Spaces   | 9 Loading Berths, 4 Delivery Spaces |
| <sup>†</sup> Loading requirement calculated based on the use category with the highest loading requirement.<br><sup>‡</sup> The most recent program includes 683 dwelling units, 49,980 SF retail, and 1,608,190 SF office. |   |                                     |

The loading facilities for buildings A, B, and C on the north side of Howard Road are planned at-grade and accessed via the service drive to the rear of the property. The loading facilities for buildings D/E are planned below-grade and accessed via the eastern curb cut proposed on the south side of Howard Road. All loading berths are proposed to be 30 feet in depth. Based on the proposed design, trucks can enter and exit the site front first. As shown in Table 13, the Applicant is not requesting relief from the loading requirements.

## TOTAL FUTURE CONDITIONS

### Traffic Forecasts

While traffic forecasts associated with the proposed development were theoretically included in the background traffic volumes shown on Figure 9 (taken from the Final South Capitol Street Transportation Technical Report), trip generation and distribution assumptions were made more generally based on a regional model and, as such, specific turning movements (particularly at intersections closest to the site) do not necessarily explicitly account for site-generated traffic. Therefore, total future traffic forecasts were determined by combining the 2030 background traffic forecasts shown on Figure 11 with

the site traffic volumes shown on Figure 14E to yield the 2030 total future traffic forecasts shown on Figure 15.

## Capacity Analysis

Capacity analyses were performed at the study intersections using the lane use and traffic controls shown on Figure 12, the total future peak hour traffic forecasts shown on Figure 15, and background signal timings. The level of service results for the 2030 total future conditions with the proposed redevelopment are included in Appendix L and summarized in Table 6.

By comparing total future levels of service to background levels of service, the impact of the proposed development can be identified. In accordance with the methodology outlined during the scoping process, an impact is defined as follows:

- Degradation in approach or overall level of service to LOS E or LOS F or
- Increase in overall intersection delay by more than five seconds when compared to background conditions for intersections operating at an overall LOS E or LOS F under background conditions.

As shown on Table 6, a number of the study intersections operate with unacceptable levels of service (LOS E or F) under background conditions. Under total future conditions, these intersections are projected to experience increases in delay. Specifically, the impacts are as follows:

- Howard Road/Suitland Parkway – westbound approach drops to a LOS F during both peak hours.
- Howard Road/Anacostia Metro Station parking garage – overall intersection and eastbound approach drop to a LOS F during the PM peak hour.
- Howard Road/Firth Sterling Avenue – northbound approach drops to a LOS E during both peak hours.
- Howard Road/MLK Jr. Avenue/Sheridan Road – overall intersection delay increases by more than five seconds during both peak hours. Northbound left drops to a LOS E during the PM peak hour.
- Firth Sterling Avenue/Suitland Parkway – overall intersection delay increases by more than five seconds during both peak hours. Eastbound left, southbound left, and southbound through drop to a LOS E during the AM peak hour. Westbound approach drops to a LOS F during the PM peak hour.
- MLK Jr. Avenue/Sumner Road – overall intersection LOS drops to a LOS F during the PM peak hour. Eastbound approach drops to a LOS E during the PM peak hour.
- MLK Jr. Avenue/Suitland Parkway (North) – overall intersection LOS drops to a LOS F during the PM peak hour.
- I-295 NB Ramps/Suitland Parkway – overall intersection LOS drops to a LOS F during the AM peak hour.

- South Capitol Street/East Oval (at Frederick Douglass Memorial Bridge) – southbound approach drops to a LOS F during the PM peak hour.
- South Capitol Street/East Oval (at Howard Road) – overall intersection LOS drops to a LOS F during the PM peak hour.

## Queue Analysis

A queue analysis was conducted for 2030 total future conditions. Synchro was used to conduct the analyses, using the 95<sup>th</sup> percentile queue lengths. The results are summarized in Table 7 and queue reports are provided in Appendix L.

By comparing total future queues to background queues, the impact of the proposed development can be identified. In accordance with the methodology outlined during the scoping process, an impact is defined as an increase in the 95<sup>th</sup> percentile queue greater than 150 feet when compared to background conditions. As shown in Table 7, the queueing impacts are as follows:

- Howard Road/Suitland Parkway – westbound approach during both peak hours.
- Howard Road/Anacostia Metro Station parking garage – eastbound approach during the PM peak hour and westbound approach during the AM peak hour.
- Howard Road/Firth Sterling Avenue – eastbound left/through and northbound approach during the AM peak hour. Southbound right during the PM peak hour.
- Howard Road/MLK Jr. Avenue/Sheridan Road – northbound left during the AM peak hour. Eastbound approach during the PM peak hour.
- Firth Sterling Avenue/Suitland Parkway – southbound left during the AM peak hour. Westbound approach during the PM peak hour.
- MLK Jr. Avenue/Suitland Parkway (North) – southbound approach during the PM peak hour.
- I-295 NB Ramps/Suitland Parkway – westbound approach during both peak hours. Eastbound through during the PM peak hour.
- South Capitol Street/East Oval (at Frederick Douglass Memorial Bridge) – northwest right during the AM peak hour.
- South Capitol Street/East Oval (at Howard Road) – northbound through during the PM peak hour.



## Improvement Analysis

To mitigate the impact of the proposed development, the Applicant is committed to implementing a Transportation Demand Management (TDM) plan, details of which are included in a subsequent section. The proposed plan is presented in the subsequent section and is intended to reduce the development's trip generation by 30 percent during the peak hours. The peak hour volumes with the 30 percent reduction are shown on Figure 16.

After accounting for the 30 percent reduction in traffic as a result of the TDM plan, additional improvements were necessary to offset any remaining impacts associated with the development. Results of the analyses are summarized in Tables 14 and 15. For comparison purposes, the background and total future conditions (without improvements) also are provided in Tables 14 and 15.

### Howard Road/Suitland Parkway

During the AM and PM peak hours, the westbound approach at this intersection is projected to drop from acceptable levels of service (LOS D or better) to a LOS F. Peak hour traffic signal warrants were examined to determine whether signalization of this intersection would be appropriate in the future. Based on the peak hour warrants identified by the Manual on Uniform Traffic Control Devices (MUTCD), Background and Total Future peak hour traffic forecasts would meet the threshold required for signalization. Signal warrant details are included in Appendix M.

Note as part of the South Capitol Street Supplemental Final Environmental Impact Statement the Howard Road/Suitland Parkway intersection was identified as a potential location for signalization to accommodate pedestrians and right-turning traffic. In addition to signalization, dual westbound right turn lanes are recommended.

With these proposed improvements, nearly all level of service impacts are mitigated and all queues are contained within available storage. During the AM peak hour, the westbound right turn is projected to operate at a LOS E. However, the timings were established to ensure that the queues on the northbound approach do not spillback into the adjacent intersection.

### Howard Road/Anacostia Metro Station parking garage

During the PM peak hour, the eastbound approach at this intersection is projected to drop from a LOS A to a LOS F. Subsequently, the overall intersection LOS is also projected to drop to a LOS F.

In addition to providing two eastbound lanes (a through and a shared through/left lane), the signal timings were adjusted to reflect a more reasonable cycle length. Under background conditions, shorter cycle lengths were assumed with the South Capitol Street Corridor Project. As the adjacent intersections are expected to operate with 120 second

cycle lengths, the signal timings at this intersection were modified to also operate with 120 second cycles.

These improvements were modeled during the AM and PM peak hours and mitigate all remaining level of service and queueing impacts. To accommodate the two eastbound lanes at the intersection, parking on the south side of the street would need to be restricted.

### **Howard Road/Firth Sterling Avenue**

During the AM and PM peak hours, the northbound, Howard Road, approach is projected to drop from a LOS D to a LOS E. To mitigate the impact of the proposed development, a northbound advanced left turn phase on Howard Road with concurrent eastbound right turn overlap should be implemented. During the AM peak hour, this phase was modeled with a duration of 10 seconds and during the PM peak hour with a duration of 11 seconds.

In addition, the westbound through/right lane on Firth Sterling Avenue at its intersection with Suitland Parkway should be extended to the intersection with Howard Road. This will allow the southbound right turn from Howard Road to operate as a free-flow right turn.

As shown in Tables 14 and 15, the proposed improvements mitigate all remaining level of service and queueing impacts at the intersection.

### **Howard Road/MLK Jr. Avenue/Sheridan Road**

During the AM and PM peak hours, the overall intersection delay is projected to increase by more than five seconds. In addition, the northbound left is projected to drop from a LOS D to a LOS E during the PM peak hour. The following signal timing adjustments are recommended:

- During the AM peak hour, shift two seconds of green time from the northwestbound phase (phase 3) to the eastbound phase (phase 4).
- During the PM peak hour, shift two seconds of green time from the northbound left phase (phase 1) to the southbound through phase (phase 2) and shift one second of green time from the northwestbound phase (phase 3) to the eastbound phase (phase 4).

As shown in Table 14, the proposed improvements mitigate all remaining level of service impacts during the PM peak hour. During the AM peak hour, the overall intersection delay decreases by 16 seconds and is improved when compared to existing conditions.

### **Firth Sterling Avenue/Suitland Parkway**

During the AM and PM peak hours, the overall intersection delay is projected to increase by more than five seconds. In addition, the eastbound (Firth Sterling) left, southbound (Suitland) left, and southbound (Suitland) through are expected to drop to a LOS F during

the AM peak hour and the westbound (Firth Sterling) left is projected to drop to a LOS F during the PM peak hour.

To mitigate the impact of the proposed development, it is recommended an eastbound left turn phase on Firth Sterling Avenue with concurrent southbound right turn overlap be added to run concurrently with the westbound left turn phase.

As shown in Table 14, the proposed improvements mitigate the eastbound left level of service impact, reduce the southbound left delay by 127 seconds, and reduce the overall intersection delay by 15.6 seconds. During the PM peak hour, the overall intersection delay is mitigated and the westbound left delay is reduced by 63.2 seconds.

### **MLK Jr. Avenue/Sumner Road**

During the PM peak hour, the overall intersection is projected to drop from a LOS E to a LOS F and the eastbound approach is projected to drop to a LOS E. To mitigate the impact of the proposed development, separate eastbound left and right turn lanes should be provided. This improvement will require the removal of approximately three to four on-street parking spaces on the north and south sides of Sumner Road (note that on the north side of Sumner Road, parking already is restricted from 7:00 AM to 5:00 PM School Days).

The proposed improvements mitigate the overall intersection delay and improve the eastbound approach level of service to a LOS D.

### **MLK Jr. Avenue/Suitland Parkway NB off-ramp**

During the PM peak hour, the overall intersection is projected to drop from a LOS E to a LOS F. To mitigate the impacts of the proposed development, the following signal timing adjustments are recommended:

- During the PM peak hour, shift six seconds of green time from the northbound (MLK Avenue) phase to the southbound (MLK Avenue) phase and shift one second of green time from the northwestbound (off-ramp) phase to the southbound (MLK Avenue) phase.

As shown in Table 14, the proposed improvements largely mitigate the overall intersection delay.

### **I-295 NB Ramps/Suitland Parkway**

During the AM peak hour, the overall intersection is projected to drop from a LOS D to a LOS F and the eastbound left is projected to drop from a LOS E to a LOS F. To mitigate the impact of the proposed development, it is recommended the second northeast right turn lane be converted to a left turn lane during the AM peak hour. This improvement will require appropriate signage to convey the different lane usage during the AM peak hour. In addition, the following signal timing adjustments are recommended:

- During the AM peak hour, shift four seconds of green time from the northeastbound(off-ramp) phase (phase 4) to the Suitland Parkway phases. Three of the seconds shifted from phase 4 should be allotted to the mainline through phase (phase 2+6) and the remaining one second should be shifted to the eastbound left phase (phase 2+5).
- During the PM peak hour, shift four seconds of green time from the eastbound left phase (phase 5) to the westbound phase (phase 6).

As shown in Table 14, the proposed improvements mitigate the eastbound left level of service and improve the overall intersection to a LOS E during the AM peak hour.

### **Memorial Bridge/East Oval**

During the PM peak hour, the southbound (Memorial Bridge) approach is projected to drop from a LOS E to a LOS F. To mitigate the impact of the proposed development, it is recommended that one of the two exclusive northwestbound left turn lanes be converted to a third right turn lane. In addition, the following signal timing adjustments are recommended:

- During the PM peak hour, shift one second of green time from phase 1 (Oval) to phase 2 (Memorial Bridge).

As shown in Tables 14 and 15, the proposed improvements mitigate all remaining level of service and queueing impacts at the intersection.

### **Suitland Parkway/East Oval**

During the PM peak hour, the overall intersection is projected to drop from a LOS E to a LOS F. To mitigate the impact of the proposed development, the following signal timing adjustments are recommended:

- During the AM peak hour, shift one second of green time from phase 1 (Oval) to phase 2 (Suitland Parkway) and shift one second of green time from phase 4 (Oval) to phase 2 (Suitland Parkway).
- During the PM peak hour, shift two seconds of green time from phase 1 (Oval) to phase 2 (Suitland Parkway) and shift two seconds of green time from phase 4 (Oval) to phase 2 (Suitland Parkway).

As shown in Tables 14 and 15, the proposed improvements mitigate all remaining level of service and queueing impacts at the intersection.

The Synchro reports for level of service and queue improvement analyses are provided in Appendix M.

Table 14  
Level of Service Summary – Total Future with Improvements

| Approach   | Background Conditions |          | Total Future Conditions |                  | Total Future with Improvements |          |
|--|-----------------------|----------|-------------------------|------------------|--------------------------------|----------|
|  | AM Peak               | PM Peak  | AM Peak                 | PM Peak          | AM Peak                        | PM Peak  |
| <b>1. Howard Road/Suitland Parkway</b>   |                       |          |                         |                  |                                |          |
| WBR  | D                     | C        | F (642.8)               | F (293.2)        | E (77.8)                       | D        |
| NBTR   | A                     | A        | A                       | A                | A                              | B        |
| <b>Overall</b>   | -                     | -        | -                       | -                | <b>B</b>                       | <b>A</b> |
| <b>2. Howard Road/Anacostia Metro Station parking garage</b>   |                       |          |                         |                  |                                |          |
| EBLT   | A                     | A        | A                       | F (292.2)        | A                              | A        |
| WBTR   | A                     | A        | B                       | A                | A                              | A        |
| SBLR   | C                     | C        | C                       | C                | D                              | D        |
| <b>Overall</b>   | <b>A</b>              | <b>A</b> | <b>B</b>                | <b>F (203.1)</b> | <b>A</b>                       | <b>A</b> |
| <b>3. Howard Road/I-295 Off-ramp*</b>  |                       |          |                         |                  |                                |          |
| <b>4. Howard Road/Firth Sterling Avenue</b>  |                       |          |                         |                  |                                |          |
| EBLT   | B                     | A        | B                       | A                | C                              | A        |
| EBR  | B                     | C        | A                       | B                | B                              | A        |
| NBL  | D                     | C        | E (67.5)                | E (64.0)         | D                              | C        |
| NBTR   |                       |          |                         |                  |                                |          |
| SBLT   | C                     | B        | C                       | B                | C                              | C        |
| SBR  | C                     | B        | C                       | C                | A                              | A        |
| <b>Overall</b>   | <b>C</b>              | <b>C</b> | <b>D</b>                | <b>C</b>         | <b>C</b>                       | <b>B</b> |
| <b>5. Howard Road/Anacostia Metro Station bus driveway (West)</b>  |                       |          |                         |                  |                                |          |
| EBTR   | A                     | A        | A                       | A                | A                              | A        |
| WBLT   | A                     | A        | A                       | A                | A                              | A        |
| NBLR   | C                     | B        | C                       | C                | C                              | B        |
| <b>6. Howard Road/Anacostia Metro Station bus driveway (East)</b>  |                       |          |                         |                  |                                |          |
| EBTR   | A                     | B        | A                       | B                | A                              | B        |
| WBLT   | A                     | A        | A                       | A                | A                              | A        |
| NBLR   | D                     | D        | D                       | D                | D                              | D        |
| <b>Overall</b>   | <b>A</b>              | <b>A</b> | <b>A</b>                | <b>B</b>         | <b>A</b>                       | <b>B</b> |
| * Intersection removed with South Capitol Street Corridor Project.<br>[x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                       |          |                         |                  |                                |          |

Table 14 (continued)  
Level of Service Summary – Total Future with Improvements

| Approach   | Background Conditions |                  | Total Future Conditions |                  | Total Future with Improvements |                  |
|--|-----------------------|------------------|-------------------------|------------------|--------------------------------|------------------|
|  | AM Peak               | PM Peak          | AM Peak                 | PM Peak          | AM Peak                        | PM Peak          |
| <b>7. Howard Road/MLK Jr. Avenue/Sheridan Road</b>   |                       |                  |                         |                  |                                |                  |
| NBL  | B                     | D                | D                       | E (57.4)         | D                              | D                |
| NBTR   | B                     | B                | B                       | C                | B                              | D                |
| SBLTR  | F (132.7)             | F (411.3)        | F (211.3)               | F (443.6)        | F (187.2)                      | F (394.6)        |
| EBLT   | F (147.7)             | F (214.2)        | F (192.7)               | F (458.9)        | F (143.6)                      | F (353.6)        |
| EBR  | E (62.2)              | B                | C                       | B                | D                              | B                |
| NWLTR  | E (62.4)              | D                | E (62.4)                | D                | E (72.4)                       | D                |
| <b>Overall</b>   | <b>F (87.0)</b>       | <b>F (261.2)</b> | <b>F (124.9)</b>        | <b>F (294.4)</b> | <b>F (108.9)</b>               | <b>F (261.6)</b> |
| <b>8. Firth Sterling Avenue/Suitland Parkway</b>   |                       |                  |                         |                  |                                |                  |
| EBL  | E (67.0)              | F (3179.2)       | F (87.0)                | F (3181.4)       | E (57.2)                       | F (505.5)        |
| EBT  | C                     | F (84.0)         | C                       | F (141.4)        | D                              | F (133.7)        |
| EBR  | D                     | F (91.6)         | C                       | F (129.3)        | D                              | F (129.1)        |
| WBL  | C                     | D                | C                       | F (152.7)        | C                              | F (89.5)         |
| WBTR   | C                     | F (103.8)        | C                       | F (531.4)        | D                              | F (840.8)        |
| NBL  | E (71.4)              | D                | E (77.2)                | D                | E (61.5)                       | D                |
| NBT  | F (241.0)             | C                | F (323.9)               | C                | F (310.4)                      | C                |
| NBR  |                       |                  |                         |                  |                                |                  |
| SBL  | D                     | B                | F (242.3)               | D                | F (115.3)                      | C                |
| SBT  | E (78.6)              | F (289.5)        | F (88.3)                | F (282.9)        | F (88.3)                       | F (282.9)        |
| SBR  | C                     | B                | C                       | B                | B                              | A                |
| <b>Overall</b>   | <b>F (155.7)</b>      | <b>F (290.6)</b> | <b>F (210.9)</b>        | <b>F (343.6)</b> | <b>F (195.3)</b>               | <b>F (285.6)</b> |
| <b>9. Firth Sterling Avenue/Barry Road/Sumner Road</b>   |                       |                  |                         |                  |                                |                  |
| EBTR   | A                     | A                | A                       | A                | A                              | A                |
| WBLT   | A                     | A                | A                       | A                | A                              | A                |
| NBLR   | D                     | D                | D                       | D                | D                              | D                |
| SBL  | D                     | C                | D                       | C                | D                              | C                |
| SBTR   | D                     | C                | D                       | C                | D                              | C                |
| <b>Overall</b>   | <b>A</b>              | <b>A</b>         | <b>A</b>                | <b>A</b>         | <b>A</b>                       | <b>A</b>         |
| <b>10. Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road</b>  |                       |                  |                         |                  |                                |                  |
| EBTR   | B                     | C                | B                       | C                | B                              | C                |
| WBL  | B                     | C                | B                       | D                | A                              | D                |
| WBT  | B                     | B                | B                       | B                | A                              | B                |
| NBL  | D                     | C                | D                       | C                | D                              | C                |
| NBR  | E (74.5)              | E (73.1)         | E (77.7)                | E (77.1)         | E (76.4)                       | E (76.4)         |
| <b>Overall</b>   | <b>C</b>              | <b>C</b>         | <b>C</b>                | <b>D</b>         | <b>C</b>                       | <b>D</b>         |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                       |                  |                         |                  |                                |                  |

Table 14 (continued)  
Level of Service Summary – Total Future with Improvements

| Approach   | Background Conditions |                 | Total Future Conditions |                  | Total Future with Improvements |                 |
|--|-----------------------|-----------------|-------------------------|------------------|--------------------------------|-----------------|
|  | AM Peak               | PM Peak         | AM Peak                 | PM Peak          | AM Peak                        | PM Peak         |
| <b>11. Firth Sterling Avenue/South Capitol Street/Defense Boulevard</b>  |                       |                 |                         |                  |                                |                 |
| EBL  | D                     | D               | D                       | D                | D                              | D               |
| EBT  | D                     | E (65.0)        | D                       | E (65.0)         | D                              | E (65.0)        |
| EBR  | D                     | D               | D                       | D                | D                              | D               |
| WBL  | D                     | C               | D                       | C                | C                              | C               |
| WBTR   | F (359.3)             | F (132.5)       | F (360.7)               | F (132.5)        | F (352.2)                      | F (132.5)       |
| NBL  | B                     | D               | B                       | D                | B                              | D               |
| NBTR   | C                     | C               | D                       | C                | C                              | C               |
| SBL  | F (1072.8)            | E (59.7)        | F (1107.7)              | E (65.0)         | F (1107.7)                     | E (63.3)        |
| SBTR   | B                     | E (73.1)        | B                       | E (73.1)         | B                              | E (73.1)        |
| <b>Overall</b>   | <b>F (183.6)</b>      | <b>E (71.3)</b> | <b>F (186.3)</b>        | <b>E (71.3)</b>  | <b>F (184.5)</b>               | <b>E (71.3)</b> |
| <b>12. MLK Jr. Avenue/Sumner Road</b>  |                       |                 |                         |                  |                                |                 |
| EBL  | D                     | D               | D                       | E (55.1)         | D                              | E (55.5)        |
| EBTR   |                       |                 |                         |                  | D                              | D               |
| WBLTR  | D                     | D               | D                       | D                | D                              | D               |
| NBLTR  | A                     | F (128.8)       | A                       | F (181.1)        | A                              | F (136.4)       |
| SBLTR  | A                     | B               | A                       | B                | A                              | A               |
| <b>Overall</b>   | <b>A</b>              | <b>E (72.6)</b> | <b>A</b>                | <b>F (96.2)</b>  | <b>A</b>                       | <b>E (71.4)</b> |
| <b>13A. MLK Jr. Avenue/Suitland Parkway (North)</b>  |                       |                 |                         |                  |                                |                 |
| NBL  | A                     | A               | A                       | A                | A                              | D               |
| NBT  | A                     | A               | A                       | A                | A                              | E (55.3)        |
| SBTR   | D                     | F (158.9)       | D                       | F (331.4)        | D                              | F (103.8)       |
| NWL  | D                     | E (68.8)        | D                       | E (68.8)         | D                              | E (75.8)        |
| NWR  | D                     | D               | D                       | D                | D                              | D               |
| <b>Overall</b>   | <b>B</b>              | <b>E (71.5)</b> | <b>B</b>                | <b>F (161.3)</b> | <b>B</b>                       | <b>E (76.7)</b> |
| <b>13B. MLK Jr. Avenue/Suitland Parkway (South)</b>  |                       |                 |                         |                  |                                |                 |
| NBT  | D                     | D               | D                       | D                | D                              | D               |
| NBR  | D                     | D               | D                       | D                | D                              | D               |
| SBLT   | A                     | B               | A                       | C                | A                              | D               |
| SEL  | D                     | D               | D                       | D                | D                              | D               |
| SER  | C                     | C               | C                       | C                | C                              | C               |
| <b>Overall</b>   | <b>C</b>              | <b>C</b>        | <b>C</b>                | <b>C</b>         | <b>C</b>                       | <b>D</b>        |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                       |                 |                         |                  |                                |                 |

Table 14 (continued)  
Level of Service Summary – Total Future with Improvements

| Approach   | Background Conditions |                  | Total Future Conditions |                  | Total Future with Improvements |                  |
|--|-----------------------|------------------|-------------------------|------------------|--------------------------------|------------------|
|  | AM Peak               | PM Peak          | AM Peak                 | PM Peak          | AM Peak                        | PM Peak          |
| <b>14. I-295 NB Ramps/Suitland Parkway</b>   |                       |                  |                         |                  |                                |                  |
| EBL  | E (77.9)              | E (60.1)         | F (80.5)                | E (59.6)         | E (73.1)                       | E (75.8)         |
| EBT  | A                     | B                | B                       | B                | A                              | B                |
| WBT  | F (92.5)              | C                | F (145.9)               | C                | F (111.2)                      | C                |
| WBR  | B                     | B                | B                       | D                | B                              | C                |
| NEL  | F (88.1)              | E (74.7)         | F (110.6)               | E (78.3)         | E (60.9)                       | E (76.9)         |
| NER  | D                     | F (81.0)         | D                       | F (87.5)         | D                              | F (85.0)         |
| <b>Overall</b>   | <b>D</b>              | <b>C</b>         | <b>F (81.5)</b>         | <b>D</b>         | <b>E (60.7)</b>                | <b>C</b>         |
| <b>15. I-295 SB Ramps/Suitland Parkway</b>   |                       |                  |                         |                  |                                |                  |
| SETR   | C                     | F (147.1)        | C                       | F (164.2)        | C                              | F (158.7)        |
| NWL  | C                     | C                | C                       | D                | C                              | C                |
| NWT  | A                     | A                | A                       | A                | A                              | A                |
| NER  | D                     | F (199.4)        | D                       | F (199.4)        | D                              | F (199.4)        |
| <b>Overall</b>   | <b>B</b>              | <b>F (130.7)</b> | <b>B</b>                | <b>F (135.4)</b> | <b>B</b>                       | <b>F (133.7)</b> |
| <b>16A. Memorial Bridge/East Oval</b>  |                       |                  |                         |                  |                                |                  |
| SBT  | A                     | E (72.2)         | A                       | F (82.5)         | A                              | E (79.4)         |
| NWL  | A                     | A                | A                       | A                | A                              | A                |
| NWR  | F (112.9)             | A                | F (120.7)               | A                | A                              | A                |
| <b>Overall</b>   | <b>D</b>              | <b>D</b>         | <b>D</b>                | <b>D</b>         | <b>A</b>                       | <b>D</b>         |
| <b>16B. South Capitol Street/East Oval</b>   |                       |                  |                         |                  |                                |                  |
| NBR  | F (280.8)             | F (547.8)        | F (301.1)               | F (552.6)        | F (274.0)                      | F (469.9)        |
| SBL  | C                     | B                | C                       | B                | C                              | B                |
| SBT  | A                     | F (84.5)         | A                       | F (85.8)         | A                              | F (81.2)         |
| <b>Overall</b>   | <b>F (132.0)</b>      | <b>F (213.0)</b> | <b>F (136.9)</b>        | <b>F (212.5)</b> | <b>F (126.2)</b>               | <b>F (186.5)</b> |
| <b>16C. Suitland Parkway/East Oval</b>   |                       |                  |                         |                  |                                |                  |
| EBL  | C                     | B                | C                       | B                | C                              | B                |
| EBR  | A                     | A                | A                       | A                | A                              | A                |
| NBT  | F (309.7)             | F (189.9)        | F (327.5)               | F (262.4)        | F (292.7)                      | F (183.9)        |
| <b>Overall</b>   | <b>F (157.7)</b>      | <b>E (63.7)</b>  | <b>F (162.7)</b>        | <b>F (92.2)</b>  | <b>F (147.4)</b>               | <b>E (64.6)</b>  |
| <b>17. South Capitol Street/Anacostia Drive Ramps</b>  |                       |                  |                         |                  |                                |                  |
| WBR  | F (226.0)             | F (126.6)        | F (226.0)               | F (132.6)        | F (226.0)                      | F (131.6)        |
| NBT  | A                     | B                | A                       | C                | A                              | B                |
| <b>Overall</b>   | <b>B</b>              | <b>C</b>         | <b>C</b>                | <b>C</b>         | <b>B</b>                       | <b>C</b>         |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                       |                  |                         |                  |                                |                  |



Table 14 (continued)  
Level of Service Summary – Total Future with Improvements

| Approach   | Background Conditions |         | Total Future Conditions |           | Total Future with Improvements |           |
|--|-----------------------|---------|-------------------------|-----------|--------------------------------|-----------|
|  | AM Peak               | PM Peak | AM Peak                 | PM Peak   | AM Peak                        | PM Peak   |
| <b>18. Howard Road/Site Driveway 1</b>   |                       |         |                         |           |                                |           |
| EBTR   | -                     | -       | A                       | A         | A                              | A         |
| WBLT   | -                     | -       | A                       | A         | A                              | A         |
| NBLR   | -                     | -       | C                       | D         | B                              | C         |
| <b>19. Howard Road/Site Driveway 2</b>   |                       |         |                         |           |                                |           |
| EBLT   | -                     | -       | A                       | A         | A                              | A         |
| WBTR   | -                     | -       | A                       | A         | A                              | A         |
| SBLR   | -                     | -       | F (61.4)                | F (605.0) | D                              | F (142.8) |
| <b>20. Howard Road/Site Driveway 3</b>   |                       |         |                         |           |                                |           |
| EBTR   | -                     | -       | A                       | A         | A                              | A         |
| WBLT   | -                     | -       | A                       | A         | A                              | A         |
| NBLR   | -                     | -       | F (63.4)                | F (401.5) | C                              | F (50.2)  |
| <b>21. Howard Road/Site Driveway 4</b>   |                       |         |                         |           |                                |           |
| EBLT   | -                     | -       | A                       | A         | A                              | A         |
| WBTR   | -                     | -       | A                       | A         | A                              | A         |
| SBLR   | -                     | -       | F (191.5)               | F (Error) | D                              | F (117.9) |
| [x.x] = unsignalized intersection control delay in sec/veh<br>(x.x) = signalized intersection control delay in sec/veh |                       |         |                         |           |                                |           |

Table 15  
95<sup>th</sup> Percentile Queue Summary (in feet) – Total Future with Improvements

| Approach   | Available Storage <sup>†</sup> | Background Conditions |         | Total Future Conditions |         | Total Future with Improvements |         |
|--|--------------------------------|-----------------------|---------|-------------------------|---------|--------------------------------|---------|
|  |                                | AM Peak               | PM Peak | AM Peak                 | PM Peak | AM Peak                        | PM Peak |
| <b>1. Howard Road/Suitland Parkway</b>   |                                |                       |         |                         |         |                                |         |
| WBR  | 60'/1,010'                     | 80                    | 46      | 983                     | 858     | 323                            | 317     |
| NBTR   | 330'                           | 0                     | 0       | 0                       | 0       | 327                            | 269     |
| <b>2. Howard Road/Anacostia Metro Station parking garage</b>   |                                |                       |         |                         |         |                                |         |
| EBLT   | 270'/955'                      | 8                     | 32      | 56                      | 963     | 22                             | 152     |
| WBTR   | 530'                           | 34                    | 85      | 637                     | 181     | 131                            | 145     |
| SBLR   | 255'/1190'                     | 36                    | 114     | 36                      | 114     | 64                             | 202     |
| <b>3. Howard Road/I-295 Off-ramp*</b>  |                                |                       |         |                         |         |                                |         |
| <b>4. Howard Road/Firth Sterling Avenue</b>  |                                |                       |         |                         |         |                                |         |
| EBLT   | 440'                           | 220                   | 41      | 448                     | 74      | 281                            | 52      |
| EBR  | 440'                           | 8                     | 8       | 2                       | 54      | 0                              | 29      |
| NBL  | 55'/320'                       | 229                   | 185     | 427                     | 298     | 246                            | 180     |
| NBTR   | 55'/320'                       |                       |         |                         |         |                                |         |
| SBLT   | 400'                           | 42                    | 23      | 73                      | 129     | 72                             | 139     |
| SBR  | 215'                           | 26                    | 47      | 43                      | 439     | 0                              | 44      |
| <b>5. Howard Road/Anacostia Metro Station bus driveway (West)</b>  |                                |                       |         |                         |         |                                |         |
| EBTR   | 20'                            | 0                     | 0       | 0                       | 0       | 0                              | 0       |
| WBLT   | 265'                           | 2                     | 1       | 2                       | 1       | 2                              | 1       |
| NBLR   | 480'                           | 7                     | 5       | 7                       | 6       | 7                              | 5       |
| <b>6. Howard Road/Anacostia Metro Station bus driveway (East)</b>  |                                |                       |         |                         |         |                                |         |
| EBTR   | 105'                           | 37                    | 105     | 33                      | 235     | 35                             | 192     |
| WBLT   | 190'                           | 23                    | 65      | 78                      | 121     | 58                             | 137     |
| NBLR   | 110'                           | 28                    | 27      | 28                      | 27      | 28                             | 27      |
| <b>7. Howard Road/MLK Jr. Avenue/Sheridan Road</b>   |                                |                       |         |                         |         |                                |         |
| NBL  | 200'                           | 35                    | 79      | 195                     | 133     | 154                            | 135     |
| NBTR   | 690'/770'                      | 112                   | 145     | 122                     | 154     | 118                            | 285     |
| SBLTR  | 240'/565'                      | 387                   | 916     | 467                     | 954     | 444                            | 926     |
| EBLT   | 190'                           | 428                   | 583     | 485                     | 868     | 452                            | 776     |
| EBR  | 190'                           | 16                    | 34      | 55                      | 252     | 53                             | 179     |
| NWLTR  | 240'/800'                      | 268                   | 138     | 268                     | 138     | 289                            | 139     |
| <sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.<br>* Intersection removed with South Capitol Street Corridor Project. |                                |                       |         |                         |         |                                |         |

Table 15 (continued)  
95<sup>th</sup> Percentile Queue Summary (in feet) – Total Future with Improvements

| Approach  | Available Storage <sup>†</sup> | Background Conditions |         | Total Future Conditions |         | Total Future with Improvements |         |
|---|--------------------------------|-----------------------|---------|-------------------------|---------|--------------------------------|---------|
|   |                                | AM Peak               | PM Peak | AM Peak                 | PM Peak | AM Peak                        | PM Peak |
| <b>8. Firth Sterling Avenue/Suitland Parkway</b>                                |                                |                       |         |                         |         |                                |         |
| EBL   | 395'                           | 202                   | 854     | 226                     | 841     | 141                            | 672     |
| EBT   | 395'                           | 87                    | 455     | 93                      | 521     | 137                            | 499     |
| EBR   | 25'                            | 1                     | 346     | 1                       | 353     | 9                              | 348     |
| WBL   | 50'                            | 29                    | 41      | 46                      | 235     | 65                             | 190     |
| WBTR  | 440'                           | 85                    | 631     | 126                     | 1445    | 218                            | 1384    |
| NBL   | 440'                           | 315                   | 45      | 312                     | 44      | 312                            | 44      |
| NBT   | 2475'                          | 1593                  | 484     | 1738                    | 521     | 1694                           | 511     |
| NBR   | 420'                           |                       |         |                         |         |                                |         |
| SBL   | 205'                           | 127                   | 62      | 377                     | 168     | 304                            | 137     |
| SBT   | 745'                           | 918                   | 3045    | 918                     | 3045    | 918                            | 3045    |
| SBR   | 220'                           | 139                   | 162     | 139                     | 162     | 70                             | 108     |
| <b>9. Firth Sterling Avenue/Barry Road/Sumner Road</b>                          |                                |                       |         |                         |         |                                |         |
| EBTR  | 415'                           | 7                     | 85      | 7                       | 89      | 7                              | 87      |
| WBLT  | 395'                           | 38                    | 52      | 38                      | 38      | 162                            | 40      |
| NBLR  | 55'                            | 34                    | 78      | 34                      | 78      | 34                             | 78      |
| SBL   | 255'                           | 27                    | 20      | 27                      | 20      | 27                             | 20      |
| SBTR  | 255'                           | 0                     | 0       | 0                       | 0       | 0                              | 0       |
| <b>10. Firth Sterling Avenue/St. Elizabeth's Avenue/Stevens Road/Barry Road</b> |                                |                       |         |                         |         |                                |         |
| EBTR  | 220'                           | 45                    | 226     | 48                      | 240     | 47                             | 236     |
| WBL   | 240'                           | 86                    | 333     | 86                      | 362     | 39                             | 352     |
| WBT   | 240'                           | 303                   | 199     | 304                     | 207     | 95                             | 265     |
| NBL   | 225'                           | 150                   | 209     | 150                     | 209     | 150                            | 209     |
| NBR   | 225'                           | 181                   | 419     | 185                     | 426     | 183                            | 424     |
| <b>11. Firth Sterling Avenue/South Capitol Street/Defense Boulevard</b>         |                                |                       |         |                         |         |                                |         |
| EBL   | 80'                            | 164                   | 186     | 164                     | 186     | 164                            | 186     |
| EBT   | 165'/310'                      | 119                   | 317     | 119                     | 317     | 119                            | 317     |
| EBR   | 165'/310'                      | 0                     | 44      | 0                       | 44      | 0                              | 44      |
| WBL   | 220'                           | 121                   | 155     | 126                     | 173     | 108                            | 168     |
| WBTR  | 220'                           | 863                   | 557     | 861                     | 557     | 857                            | 557     |
| NBL   | 140'                           | 60                    | 44      | 60                      | 44      | 60                             | 44      |
| NBTR  | 700'/1455'                     | 533                   | 91      | 539                     | 92      | 537                            | 92      |
| SBL   | 200'                           | 502                   | 393     | 505                     | 401     | 505                            | 399     |
| SBTR  | 945'/1640'                     | 152                   | 752     | 152                     | 752     | 152                            | 752     |

<sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.

Table 15 (continued)  
95<sup>th</sup> Percentile Queue Summary (in feet) – Total Future with Improvements

| Approach  | Available Storage <sup>†</sup> | Background Conditions |         | Total Future Conditions |         | Total Future with Improvements |         |
|---|--------------------------------|-----------------------|---------|-------------------------|---------|--------------------------------|---------|
|   |                                | AM Peak               | PM Peak | AM Peak                 | PM Peak | AM Peak                        | PM Peak |
| <b>12. MLK Jr. Avenue/Sumner Road</b>               |                                |                       |         |                         |         |                                |         |
| EBL   | 70'/320'                       | 58                    | 101     | 58                      | 109     | 52                             | 79      |
| EBR   | 70'/320'                       |                       |         |                         |         | 23                             | 48      |
| WBLTR   | 70'/350'                       | 22                    | 14      | 22                      | 14      | 22                             | 14      |
| NBLTR   | 250'/370'                      | 348                   | 812     | 446                     | 896     | 411                            | 853     |
| SBLTR   | 55'/770'                       | 280                   | 506     | 280                     | 516     | 279                            | 217     |
| <b>13A. MLK Jr. Avenue/Suitland Parkway (North)</b> |                                |                       |         |                         |         |                                |         |
| NBL   | 80'                            | 31                    | 0       | 21                      | 0       | 21                             | 481     |
| NBT   | 80'                            | 24                    | 588     | 22                      | 633     | 17                             | 660     |
| SBTR  | 175'                           | 90                    | 410     | 102                     | 648     | 101                            | 450     |
| NWL   | 220'                           | 168                   | 105     | 168                     | 105     | 168                            | 119     |
| NWR   | 385'                           | 53                    | 23      | 53                      | 23      | 53                             | 23      |
| <b>13B. MLK Jr. Avenue/Suitland Parkway (South)</b> |                                |                       |         |                         |         |                                |         |
| NBT   | 340'                           | 572                   | 323     | 633                     | 347     | 615                            | 377     |
| NBR   | 125'                           | 50                    | 89      | 38                      | 93      | 43                             | 105     |
| SBLT  | 80'                            | 27                    | 37      | 33                      | 135     | 32                             | 402     |
| SEL   | 275'                           | 114                   | 101     | 114                     | 101     | 114                            | 101     |
| SER   | 660'                           | 415                   | 531     | 464                     | 577     | 450                            | 566     |
| <b>14. I-295 NB Ramps/Suitland Parkway</b>          |                                |                       |         |                         |         |                                |         |
| EBL   | 400'                           | 80                    | 265     | 73                      | 266     | 74                             | 276     |
| EBT   | 495'                           | 310                   | 904     | 439                     | 1069    | 344                            | 966     |
| WBT   | 200'                           | 1369                  | 389     | 1621                    | 609     | 1510                           | 494     |
| WBR   | 200'                           | 556                   | 686     | 876                     | 1479    | 791                            | 1279    |
| NEL   | 510'                           | 574                   | 332     | 640                     | 353     | 346                            | 344     |
| NER   | 510'                           | 77                    | 334     | 113                     | 359     | 206                            | 351     |
| <b>15. I-295 SB Ramps/Suitland Parkway</b>          |                                |                       |         |                         |         |                                |         |
| SET   | 660'                           | 378                   | 1315    | 440                     | 1384    | 449                            | 1363    |
| NWL   | 295'                           | 173                   | 133     | 197                     | 245     | 206                            | 204     |
| NWT   | 665'                           | 0                     | 0       | 0                       | 0       | 0                              | 0       |
| NER   | 2410'                          | 531                   | 1359    | 548                     | 1359    | 544                            | 1359    |
| <b>16A. Memorial Bridge/East Oval</b>               |                                |                       |         |                         |         |                                |         |
| SBT   | 1860'                          | 309                   | 1858    | 359                     | 1927    | 343                            | 1906    |
| NWL   | 265'                           | 0                     | 0       | 0                       | 0       | 0                              | 0       |
| NWR   | 265'                           | 1740                  | 149     | 1930                    | 178     | 145                            | 229     |

<sup>†</sup> All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.

Table 15 (continued)  
95<sup>th</sup> Percentile Queue Summary (in feet) – Total Future with Improvements

| Approach  | Available Storage <sup>†</sup> | Background Conditions |         | Total Future Conditions |         | Total Future with Improvements |         |
|---|--------------------------------|-----------------------|---------|-------------------------|---------|--------------------------------|---------|
|   |                                | AM Peak               | PM Peak | AM Peak                 | PM Peak | AM Peak                        | PM Peak |
| <b>16B. South Capitol Street/East Oval</b>  |                                |                       |         |                         |         |                                |         |
| NBR   | 725'/1725'                     | 1325                  | 1550    | 1381                    | 1559    | 1353                           | 1520    |
| SBL   | 440'                           | 453                   | 405     | 592                     | 429     | 548                            | 457     |
| SBT   | 440'                           | 596                   | 2110    | 623                     | 2122    | 612                            | 2148    |
| <b>16C. Suitland Parkway/East Oval</b>  |                                |                       |         |                         |         |                                |         |
| EBL   | 150'                           | 490                   | 185     | 461                     | 182     | 473                            | 186     |
| EBR   | 150'                           | 0                     | 607     | 0                       | 660     | 0                              | 544     |
| NBT   | 270'                           | 1561                  | 913     | 1615                    | 1069    | 1541                           | 974     |
| <b>17. Anacostia Drive/East Oval</b>  |                                |                       |         |                         |         |                                |         |
| WBR   | 785'                           | 535                   | 433     | 535                     | 444     | 535                            | 442     |
| NBTR  | 180'/460'                      | 310                   | 409     | 421                     | 481     | 268                            | 403     |
| <b>18. Howard Road/Site Driveway 1</b>  |                                |                       |         |                         |         |                                |         |
| EBTR  | 60'                            | -                     | -       | 0                       | 0       | 0                              | 0       |
| WBLT  | 230'/915'                      | -                     | -       | 0                       | 0       | 0                              | 0       |
| NBLR  | 90'                            | -                     | -       | 13                      | 167     | 7                              | 65      |
| <b>19. Howard Road/Site Driveway 2</b>  |                                |                       |         |                         |         |                                |         |
| EBLT  | 230'/350'                      | -                     | -       | 36                      | 5       | 21                             | 4       |
| WBTR  | 130'/660'                      | -                     | -       | 0                       | 0       | 0                              | 0       |
| SBLR  | 165'                           | -                     | -       | 58                      | 918     | 21                             | 353     |
| <b>20. Howard Road/Site Driveway 3</b>  |                                |                       |         |                         |         |                                |         |
| EBTR  | 130'/530'                      | -                     | -       | 0                       | 0       | 0                              | 0       |
| WBLT  | 185'/480'                      | -                     | -       | 30                      | 10      | 52                             | 5       |
| NBLR  | 240'                           | -                     | -       | 52                      | 661     | 15                             | 174     |
| <b>21. Howard Road/Site Driveway 4</b>  |                                |                       |         |                         |         |                                |         |
| EBLT  | 185'/760'                      | -                     | -       | 4                       | 7       | 2                              | 5       |
| WBTR  | 255'                           | -                     | -       | 0                       | 0       | 0                              | 0       |
| SBLR  | 80'                            | -                     | -       | 242                     | Error   | 55                             | 163     |
| † All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection. |                                |                       |         |                         |         |                                |         |

## TRANSPORTATION DEMAND MANAGEMENT

Traffic and parking congestion can be solved in one of two ways: 1) increase supply or 2) decrease demand. Increasing supply requires building new roads, widening existing roads, building more parking spaces, or operating additional transit service. These solutions are often infeasible in constrained conditions in urban environments and, where feasible, can be expensive, time consuming, and in many instances, unacceptable to businesses, government agencies, and/or the general public. The demand for travel and parking can be influenced by Transportation Demand Management (TDM) plans implemented by those in the private sector. Typical TDM measures include incentives to use transit or other non-auto modes of transportation, bicycle and pedestrian amenities, parking management, alternative work schedules, telecommuting, and better management of existing resources. TDM plans are most effective when tailored to a specific project or user group.

TDM measures have proven to be effective in reducing vehicle travel and parking demand. As indicated in Arlington County's [Residential Building Performance Monitoring Study](#), vehicle ownership and vehicle travel has decreased in residential projects where TDM measures were employed and where transit is prevalent. Additionally, Wells + Associates' own experience in the Washington, DC metropolitan area shows that TDM plans reduce the number of vehicle trips generated by developments with TDM plans.

While the location of the proposed development adjacent to the Anacostia Metro Station, 17 Metrobus routes, and other transportation options will naturally encourage the use of non-auto modes of transportation, the Applicant also has developed a TDM plan with strategies to reduce the number of vehicles at the proposed project. Both the residential and office components of the project would include:

1. A member of the property management team will be designated as the Transportation Management Coordinator (TMC). The TMC will be responsible for ensuring that information is disseminated to tenants of the building. The position may be part of other duties assigned to the individual.
2. An electronic display will be provided in a common, shared space in each building of the project and will provide public transit information such as nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital BikeShare locations indicating the number of bicycles available at each location.
3. The property management website will include information on and/or links to current transportation programs and services, such as:
  - Capital Bikeshare,
  - Car-sharing services,
  - Uber,
  - Ridescout,

- Commuter Connections Rideshare Program, which provides complimentary information on a variety of commuter programs to assist in determining which commuting options work best for commuters,
  - Commuter Connections Guaranteed Ride Home, which provides commuters who regularly (twice a week) carpool, vanpool, bike, walk or take transit to work with a free and reliable ride home in an emergency, and
  - Commuter Connections Pools Program, which incentivizes commuters who currently drive alone to carpool. Participants can earn money for carpooling to work and must complete surveys and log information about their experience.
4. Convenient and covered secure bike parking facilities will be provided in accordance with the minimum required by ZR16.
  5. A bicycle repair facility will be provided on the P1 level of each garage.
  6. Two electric car charging stations will be provided in the garage on the north parcel and the garage on the south parcel .
  7. Two spaces in each garage will be designated for a car sharing service, subject to demand from a service provider.

Specific TDM measures for the residential component would include:

8. Property management staff will provide personalized outreach to new residents of the building informing them of available transportation options. Such outreach will include a one-on-one meeting to review options and answer questions.
9. Convenient and covered secure bike parking facilities will be provided with storage for at least the minimum required by ZR16.
10. The cost of parking spaces for residents will be unbundled from leases.

Specific TDM measures for the office component would include:

11. Shower and changing facilities will be provided in the building for employees who bike, walk, or jog to work.
12. Designated parking for carpools and/or vanpools will be located in convenient locations in the garage near the elevator lobby.
13. The cost of parking spaces for tenants will be unbundled from leases.

To ensure that the proposed project will achieve the desired trip reduction goals, annual transportation monitoring studies will be conducted and submitted to DDOT. The purpose of the annual monitoring studies will be to measure the number of trips actually generated by the project. Specific details regarding the monitoring studies will be developed in conjunction with the 2<sup>nd</sup> Stage PUD applications.

## CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are as follows:

1. The subject site is served by a number of transportation facilities and services, including Metrorail, Metrobus, Capital Bikeshare, and car sharing services.
2. The proposed mixed-use development will consist of five buildings, with three on the north side of Howard Road and two on the south side of Howard Road. Note, that from a zoning perspective, the project will be considered as two buildings since the development on the north side of Howard Road will share one below-grade parking structure. Likewise, the development on the south side of Howard Road will share one below-grade garage. At full-build out, the project will include approximately 710 residential dwelling units, 49,980 SF of retail, and 1,679,510 SF of office.
3. Approximately 921 off-street parking spaces and 642 long-term bike parking spaces are proposed with the project. Vehicular access to the building on the south side of Howard Road will be provided via two curb cuts and vehicular access to the buildings on the north side of Howard Road will be provided via two private streets with a public access easement.
4. The proposed development is anticipated to generate 1,496 net new AM peak hour vehicle trips and 1,729 net new PM peak hour vehicle trips.
5. In conjunction with the proposed redevelopment, the Applicant intends to reconstruct Howard Road to provide new sidewalks, bike lanes, and other streetscape improvements adjacent to the subject site. The Applicant also has proposed a raised mid-block pedestrian crossing with an in-street 'Stop for Pedestrians' sign.
6. As part of the benefits and amenities package for the PUD, the Applicant has been and will continue to coordinate with WMATA, DDOT, and OP on improvements to the Anacostia Metro Station adjacent to the site.
7. A number of improvements and changes will be made to the surrounding roadway network as a result of the South Capitol Street Corridor Project. Traffic volumes, Synchro printouts, and conceptual plans from the Final South Capitol Street Transportation Technical Report have been incorporated in the transportation analysis to ensure consistency with other planning studies that have been conducted in the study area.
8. In order to mitigate the impact of the proposed redevelopment, the following improvements are recommended:
  - Implement the proposed Transportation Demand Management (TDM) Plan to encourage the use of non-auto modes of travel to/from the site. The Applicant will conduct monitoring studies to ensure the TDM Plan is effectively reducing the number of vehicular trips to the site. Specific details



of the monitoring studies will be developed at the time of the 2<sup>nd</sup> Stage PUD applications.

- Install a traffic signal at the Howard Road/Suitland Parkway intersection, including the provision of dual westbound right turn lanes.
- Provide a separate eastbound through lane at the Howard Road/Anacostia Metro Station parking garage intersection and implement signal timing improvements.
- Modify the phasing at the Howard Road/Firth Sterling Avenue intersection to include a northbound left/eastbound right overlap phase. In addition, extend the storage for the westbound through/right turn lane at the Firth Sterling/Suitland Parkway intersection to Howard Road so that the southbound right turn lane can operate as a free-flow right turn lane.
- Modify the phasing at Firth Sterling Avenue/Suitland Parkway intersection to include an eastbound left turn phase on Firth Sterling Avenue with concurrent southbound right turn overlap to run concurrently with the westbound left turn phase.
- Provide a separate eastbound left turn lane at the MLK Jr. Avenue/Sumner Road intersection.
- Implement minor signal timing adjustments at the MLK Jr. Avenue/Suitland Parkway NB off-ramp intersection.
- At the I-295 NB Ramps/Suitland Parkway intersection, convert the second northeast right turn lane to a left turn lane during the AM peak hour only and implement minor signal timing adjustments. Install appropriate signage to convey the different lane usage for the AM peak period.
- At the South Capitol Street/East Oval (at Frederick Douglass Memorial Bridge) intersection, convert the exclusive northwestbound left turn lane to a third right turn lane and implement minor signal timing adjustments.
- Implement minor signal timing adjustments at the South Capitol Street/East Oval (at Howard Road) intersection.