General Services Administration and Department of Homeland Security

THE DHS HEADQUARTERS CONSOLIDATION AT ST. ELIZABETHS

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX D Part 2 of 2

WASHINGTON, DC

AUGUST 2020

Attachments to
Appendix D
Traffic Technical Report

ATTACHMENT A
Assumptions and
Methodology Framework

U.S. Department of Homeland Security Headquarters at St. Elizabeths West Campus Master Plan Amendment 2 Supplemental Environmental Impact Statement

Assumptions and Methodology Framework Document for SEIS Transportation Technical Report

Final

August 3, 2020

Prepared by
Jacobs Engineering Group Inc.

On Behalf of
U.S. General Services Administration

Prepared for
District Department of Transportation

U.S. Department of Homeland Security Headquarters at St. Elizabeths West Campus Master Plan Amendment 2 Supplemental Environmental Impact Statement

Document Title:	**Assumptions and Methodology Framework Document for SEIS Transportation Technical Report**
Revision:	Final Version
Date:	August 3, 2020
Client Name:	U.S. General Service Administration
Project Manager:	Paul Kohler
Author:	George Lu
File Name:	St.Elizabeths_WestCampus_MPA2_SEIS_TTR_Framework_20190419_v5.docx

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Contents

1. Introduction

This framework document outlines the methodology and assumptions for the data collection, existing conditions traffic volumes, future traffic demand forecasting and traffic operational analysis associated with the Transportation Technical Report (TTR) of the Supplement Environmental Impact Statement (SEIS) to support the to support the U.S. Department of Homeland Security (DHS) Headquarters Consolidation at St. Elizabeths West Campus Master Plan Amendment #2 (MPA #2).

The study will follow methodology from the following guideline documents:

- Federal Highway Administration (FHWA) Traffic Analysis Toolbox (TAT) Volume III: Guidelines for applying traffic microsimulation modeling software
- National Cooperative Highway Research Program (NCHRP) Report 765 – Analytical Travel Forecasting Approaches for Project-Level Planning and Design
- District Department of Transportation (DDOT) Guidelines for Comprehensive Transportation Review (CTR)

The following sections outline the methodology and assumptions in additional detail.

2. Project Background

2.1 St. Elizabeths West Campus History

St. Elizabeths campuses are located in the Anacostia neighborhood of southeast Washington, DC. Originally, they were the campuses for a formerly self-contained mental health community – St Elizabeths Hospital. The U.S. Department of Health and Human Services (HHS) and its predecessors owned and operated the hospital from its founding in 1855 until 1987 when the East Campus and hospital operations were transferred to the District of Columbia. St. Elizabeths continues to operate as an inpatient mental hospital on the southern portion of the East Campus. Portions of the West Campus were used for outpatient services until 2003 when it closed operations (outpatient care continued on the East Campus). In January 2001, HHS determined that it no longer needed the West Campus and declared the property "excess to its needs." The U.S. General Services Administration (GSA) took over the West Campus in December 2004 and has since stabilized the vacant buildings.

Since 2008 the 176-acre West Campus has been under redevelopment for use as headquarters for DHS and its component agencies. The remainder of the East Campus owned by the District is slated for redevelopment into mixed-use neighborhoods of retail, office, housing, open space, and cultural amenities.

St. Elizabeths (both West and East campuses together) was designated a National Historic Landmark (NHL) in 1990. GSA's approved the 2008 West Campus Master Plan called for a combination of rehabilitation of historic buildings and construction of new buildings to house the headquarters of DHS.

2.2 Previous Master Plans and Transportation Studies

2.2.1 2008 Final Master Plan and FEIS

On January 8, 2009, the National Capital Planning Commission (NCPC) approved the Final Master Plan for the DHS Headquarters Consolidation and the U.S. Commission of Fine Arts (CFA) approved the Final Master Plan on November 20, 2008. The Final Master Plan provides the development framework for accommodating 4.5 million gross square feet of office space for the DHS headquarters on both the West and East campuses. The Final Master Plan outlines 3.8 million gross square feet (GSF) of office space on the West Campus and 750,000 GSF of office space on a portion of the East Campus (identified as East Campus, North Campus Parcel). The development will be consistent with a DHS Interagency Security

Committee (ISC) Level V campus to house mission-critical Federal agencies. Part of the master planning process includes an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA), and compliance with the Section 106 regulations under the National Historic Preservation Act (NHPA).

2.2.2 2012 Master Plan Amendment #1, FEIS and TTR

In 2012 GSA amended the 2008 Final Master Plan to include detailed planning, a Tier II EIS and an additional NHPA assessment for the East Campus, North Campus Parcel, including the widening of Martin Luther King, Jr. Avenue SE. to accommodate a left turn lane, a streetcar lane, and improved pedestrian-friendly sidewalks, collectively known as the Master Plan Amendment #1 (MPA #1). Consistent with the 2008 Final Master Plan, the MPA #1 provided a framework for the future development considering historic and natural resources, site characteristics, circulation and access, and massing and density while meeting the programmatic needs of the DHS Consolidation.

A comprehensive transportation study was performed as part of the MPA #1. The results were documented in the 2012 Transportation Technical Report (2012 TTR) as an appendix of the 2012 Final EIS (2012 FEIS). Through this study, a number of transportation improvements were committed in 2012 MPA #1 as follows:

- Interchange modifications at I-295 interchange with Malcolm X Avenue – these improvements would provide direct ramps to the proposed West Campus Access Road and would help separate local traffic from traffic associated with the DHS Headquarters. The interchange modifications would also eliminate existing unsafe weaving conditions on I-295 and reduce the number of merge points onto I-295 northbound.
- West Campus Access Road Construction – this three-lane road would run parallel to I-295 to its East between the Malcolm X Avenue interchange and Firth Sterling Avenue. This new road would connect to the proposed access modifications at Malcolm X Avenue and provide access to the West Campus portion of the DHS Headquarters consolidation.
- Firth Sterling Avenue / West Campus Access Road Intersection Improvements – these improvements will connect the West Campus Access Road with existing Firth Sterling Avenue and provide improvements and modifications to Firth Sterling Avenue and its side streets.
- Martin Luther King Jr. Avenue Improvements – these improvements include two travel lanes in each direction, an additional turn lane, median, and sidewalks along Martin Luther King Jr. Avenue to mitigate traffic associated with FEMA and Gates 1 and 2 on the West Campus.

2.3 Master Plan Amendment #2

GSA is currently amending the 2008 Final Master Plan and the 2012 MPA #1 to more efficiently house DHS and its operating components on the St. Elizabeths West Campus. The key actions in this second amendment (MPA #2) that will change the previous 2012 MPA #1 are as follows:

- Eliminate the development on the East Campus including buildings for 3100 seats and a parking garage of 710 spaces.
- Increase the space utilization of West Campus by the following actions:
  - Increase the number of seats in the West Campus from 10,600 to 12,800
  - Increase the building development from 3.8 million GSF to 4.2 million GSF.
- Update the Master Plan with a focus on the Plateau Area and Office of Intelligence and Analysis (I&A) Site.

To support the MPA #2, a Supplemental EIS (SEIS) is being prepared with an updated Transportation Technical Report (2019 TTR) under the regulations of NEPA as required by NCPC.

3. Study Purpose

The purpose of the transportation and traffic study for the 2019 TTR is to evaluate the transportation impacts of the GSA's proposed action to relocate the Department of Homeland Security to St. Elizabeths Campus, as proposed in the Master Plan Amendment #2 and the corresponding SEIS. This analysis will be built upon previous analyses and documentation in 2012 FEIS/TTR with updates of newly collected traffic data, employee information as well as an updated transportation network and land use forecasts. The primary purpose of GSA's action is to develop 4.2 million GSF of secure office space and parking, in the West Campus to accommodate the Consolidated Headquarters of DHS and its components, in accordance with the DHS mission requirements and housing plan.

The TTR document will provide detailed technical information, analysis results and recommended improvements for reference by a regulatory approval document: the St. Elizabeths Master Plan Amendment #2 SEIS. As such, it will be an appendix of the SEIS document.

4. Project Location and Study Area Limits

4.1 St. Elizabeths West Campus Project Location

The St. Elizabeths Campus is located the Southeast quadrant of the District of Columbia, within Ward 8, directly south of the Historic Anacostia neighborhood. The project location is shown in **Figure 1**. The West Campus, currently partially vacant, is a 176-acre former mental health facility that is bounded by residential communities to the north and south by Barry Farm and Congress Heights, respectively; Martin Luther King Jr. Avenue to the east; I-295 to the west; and Shepherd Parkway (National Park Service lands) to the southwest.

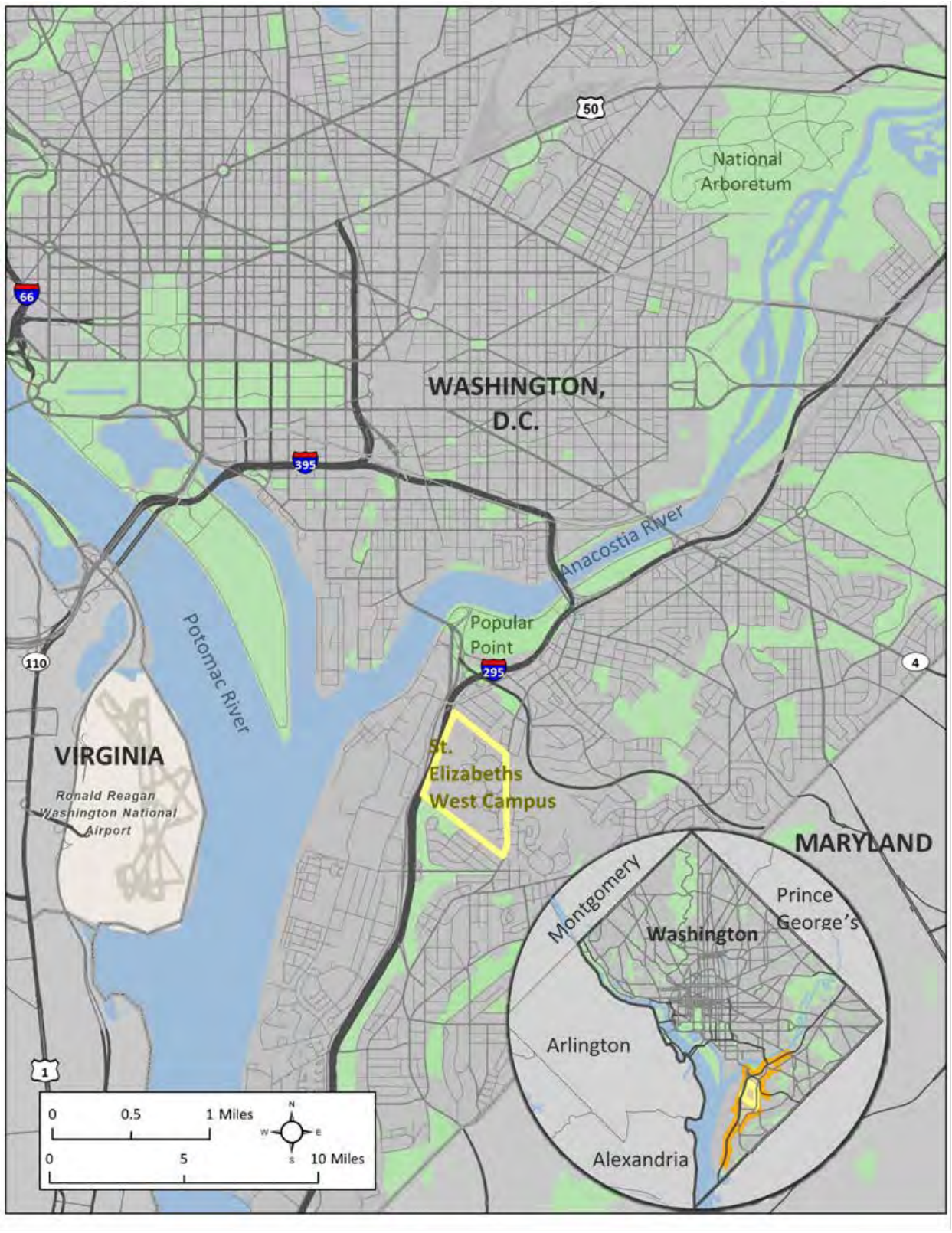


Figure 1: St. Elizabeths West Campus Project Location Map

4.2 Transportation Study Area Limits

The transportation study area for the 2019 TTR encompasses major freeway segments, local arterials and intersections around the St. Elizabeths West Campus, as illustrated in **Figure 2**. These intersections and freeway segments are directly associated with the proposed action and impacted by the DHS Headquarters consolidation at St. Elizabeths.

The following roadways bound the study area:

- 11th Street Bridges to the northeast
- Frederick Douglass Bridge (South Capitol Street) to the northwest
- I-295 interchange at the Naval Research Laboratory to the southwest
- The divergence of South Capitol Street and Martin Luther King Jr. Avenue to the south
- The interchange of Suitland Parkway and Stanton Road to the southeast

Major roadways within the study area include the following:

- Limited Access Facilities:
  - I-295 from the Naval Research Laboratory Road Interchange to the 11th Street Bridges Interchange
  - South Capitol Street from Martin Luther King Jr. Avenue to the Frederick Douglass Bridge
  - Suitland Parkway from the Martin Luther King Jr. Avenue interchange to South Capitol Street
- Arterials:
  - Martin Luther King Jr. Avenue from South Capitol Street to the 11th Street Bridges
  - Malcolm X Avenue from Joint Base Anacostia-Bolling (JBAB) entrance to east of Martin Luther King Jr. Avenue
  - Good Hope Road from Martin Luther King Jr. Avenue to Minnesota Avenue
  - Alabama Avenue from Martin Luther King Jr. Avenue to Wheeler Road
  - Firth Sterling Avenue from South Capitol Street to Howard Road
  - Howard Road from Martin Luther King Jr. Avenue to South Capitol Street
  - 13th Street / Pleasant Street from Martin Luther King Jr. Avenue to 11th Street Bridges

The study area also includes the Anacostia Metrorail Station.

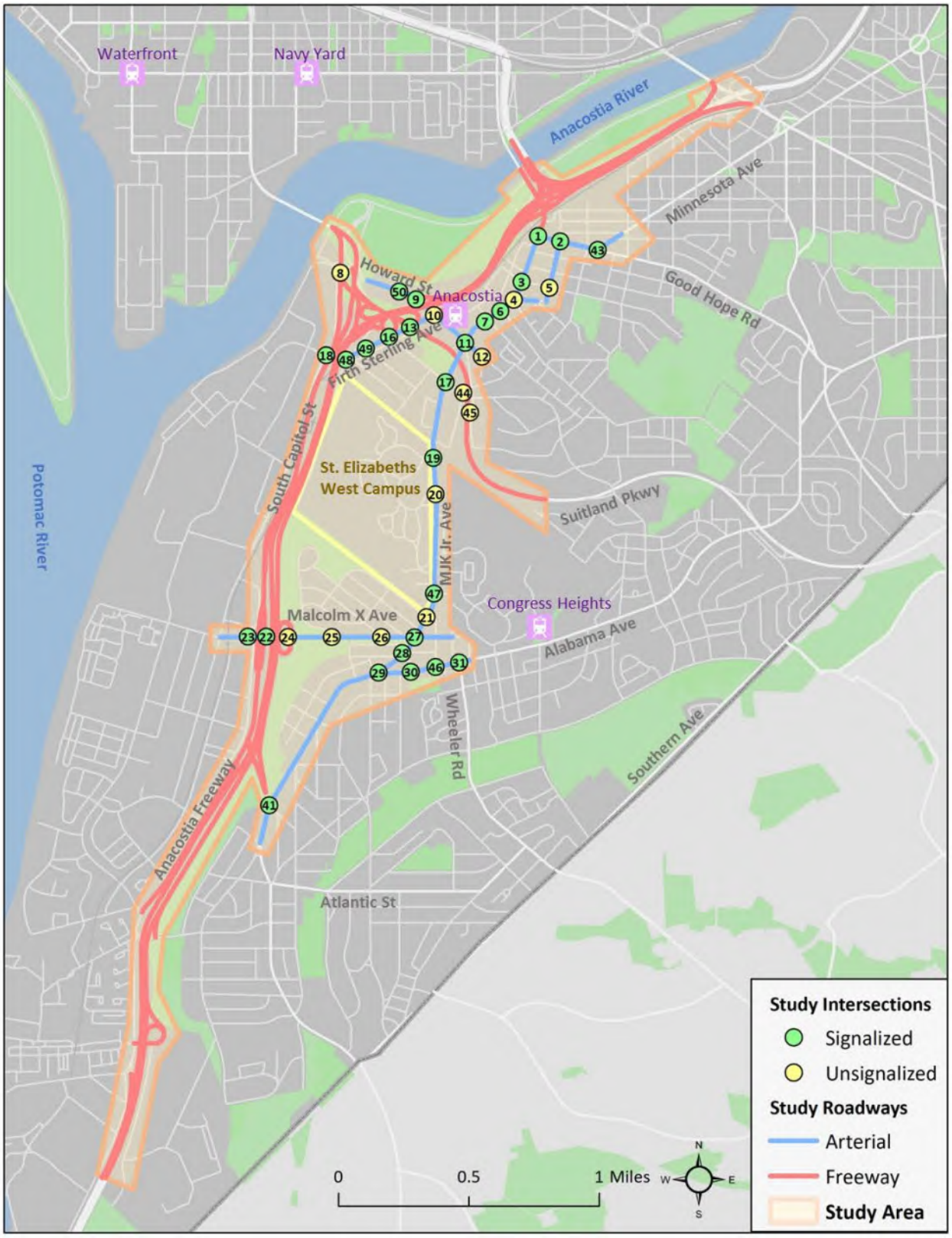


Figure 2: Transportation Study Area

5. Data Collection Plan

The section presents the scope of the data collection program for the St. Elizabeths West Campus Traffic Technical Report study. The data collection field work was conducted during the period between November 2018 and March 2019. The overall data collection is grouped into the following categories:

- Traffic counts
  - 13-hour intersections turning movement counts (TMC) between 6 AM and 7 PM
  - 48-hour continuous counts with vehicle classifications
    - Freeway mainlines
    - Freeway interchange ramps
    - Arterials
- Travel time runs/field observations
- St. Elizabeths West Campus Gate 4 dwell times
- INRIX travel speed data
- Traffic signal timing data
- Historical crash data

5.1 Traffic Counts

The traffic count program for this study involved collecting 13-hour turning movement counts at all intersections, as well as 48-hour continuous traffic counts on freeway mainlines, interchange ramps and on all key arterials within the study area as described in Section 4.2. The traffic counts were performed on non-public holidays when the District of Columbia public schools were open and when weather conditions were favorable, such that traffic volumes and other travel characteristics represented typical working days. **Figure 3** presents the traffic counts data collection map.

5.1.1 Intersections Turning Movement Counts

Table 1 lists the fifty locations and dates of collecting intersection turning movement counts for this study. The counts were performed over a 13-hour period (6 AM – 7 PM) on weekdays (i.e., Tuesday-Wednesday-Thursday), using a combination of video equipment and manual/electronic count boards. The data were recorded in 15-minute intervals and captured vehicular volumes along with pedestrian and bicycle movements.

5.1.2 Continuous Counts on Freeways, Ramps and Arterials

Continuous traffic volumes were counted using a combination of video equipment and pneumatic tubes at 44 locations within the study area including freeway mainlines, interchange ramps, and arterials. These data locations, the number of lanes for each location and dates are listed in **Table 2**. The data were recorded in 15-minute intervals and a six-bin vehicle classification as illustrated in **Figure 4**.

Figure 3: Data Collection Map

Table 1: Intersection TMC Locations

ID	Location	Data Collection Date
1	Martin Luther King Jr. Avenue and Good Hope Road	11/29/2018
2	Good Hope Road and 13th Street	11/29/2018
3	Martin Luther King Jr. Avenue and W Street	12/12/2018
4	Martin Luther King Jr. Avenue and Pleasant Street/Maple View Place	12/12/2018
5	W Street and 13th Street	11/29/2018
6	Martin Luther King Jr. Avenue and Morris Road	12/12/2018
7	Martin Luther King Jr. Avenue and Talbert Street	12/12/2018
8	Suitland Parkway and South Capitol Street	12/13/2018
9	Howard Road and I-295 southbound off ramp	2/5/2019
10	Howard Road and Firth Sterling Avenue/I-295 northbound on-ramp	2/5/2019
11	Martin Luther King Jr. Avenue and Howard Road/Sheridian Road	12/12/2018
12	Howard Road and Sayles Place	12/13/2018
13	Suitland Parkway and Firth Sterling Avenue	2/5/2019
14	Suitland Parkway east Off Ramp and Stanton Road	2/14/2019
15	Suitland Parkway west Off and On Ramps and Irving Street	2/13/2019
16	Firth Sterling Avenue and Barry Road/ Sumner Road	12/20/2018
17	Martin Luther King Jr. Avenue and Sumner Road/Stanton Road	12/6/2018
18	South Capitol Street and Defense Boulevard/Firth Sterling Avenue	12/20/2018
19	Martin Luther King Jr. Avenue and Gate 2 Entrance to East Campus/Golden Raintree Drive	12/6/2018
20	Martin Luther King Jr. Avenue and Redwood Drive	12/6/2018
21	Martin Luther King Jr. Avenue and Lebaum Street	12/4/2018
22	Malcolm X Avenue and South Capitol Street northbound	12/19/2018
23	Malcolm X Avenue and South Capitol Street southbound	12/19/2018
24	Malcolm X Avenue and I-295 northbound ramps	12/18/2019
25	Malcolm X Avenue and 2nd Street	11/27/2018
26	Malcolm X Avenue and Oakwood Street	11/27/2018
27	Martin Luther King Jr. Avenue and Malcolm X Avenue	12/4/2018
28	Martin Luther King Jr. Avenue and Raleigh Place	12/4/2018
29	Martin Luther King Jr. Avenue and Alabama Avenue	12/18/2018
30	Alabama Avenue and Randle Place	11/27/2018
31	Alabama Avenue and Wheeler Road	11/27/2018
32	Alabama Avenue and 11th Place	2/13/2019
33	Alabama Avenue and 13th Street	2/13/2019
34	Alabama Avenue and Congress Street	2/13/2019
35	Alabama Avenue and Stanton Road	3/6/2019
36	Alabama Avenue and Stanton Terrace / 21st Street	2/7/2019
37	Alabama Avenue and 22nd Street	2/7/2019
38	Alabama Avenue and 23rd Street	2/7/2019
39	Alabama Avenue and Suitland Parkway east off-ramp	2/7/2019
40	Alabama Avenue and 24th Street	2/7/2019
41	Martin Luther King Jr. Avenue and South Capitol Street/Halley Place	11/27/2018
42	Irving Street and Alabama Avenue	2/7/2019
43	Good Hope Road and Minnesota Avenue	11/29/2018
44	Stanton Road and Dunbar Road/Suitland Parkway east on-ramp	12/6/2018
45	Sheridan Road and Suitland Parkway west off-ramp	12/6/2108
46	Alabama Avenue and 7th Street	11/27/2018
47	Martin Luther King Jr. Avenue and Gate 4 Entrance to East Campus	12/4/2018
48	Firth Sterling Avenue and Street. Elizabeths Avenue	12/20/2018
49	Firth Sterling Avenue and Eaton Road	12/20/2018
50	Howard Road and Anacostia Metro Garage Entrance	2/5/2019

Table 2: ATR/Tube Count Locations

ID	Location	Type	No. of Lanes	Data Collection Date
1	Pennsylvania Avenue eastbound to I-295 southbound	Ramp	1	3/12/2019
2	I-295 northbound to Pennsylvania Avenue eastbound	Ramp	1	3/12/2019
3	I-295 Between I-695 and Pennsylvania Avenue	Freeway	7	3/12/2019
4	I-295 and I-695 Interchange	10 Ramps	18	2/5/2019
5	I-295 southbound off-ramp to Howard Road	Ramp	2	2/13/2019
6	I-295 northbound on-ramp from Firth Sterling Avenue	Ramp	2	2/13/2019
7	Martin Luther King Jr. Avenue – north of Howard Road	Arterial	4	12/12/2018
8	I-295 northbound off-ramp to Suitland Parkway westbound	Ramp	1	2/13/2019
9	South Capitol Street northbound – South of Douglas Bridge	Arterial	3	12/12/2018
10	South Capitol Street southbound – South of Douglas Bridge	Arterial	3	12/12/2018
11	I-295 southbound off-ramp to Suitland Parkway eastbound	Ramp	1	2/13/2019
12	I-295 southbound on-ramp from Suitland Parkway westbound	Ramp	1	2/13/2019
13	South Capitol Street northbound – North of Firth Sterling Avenue	Arterial	3	12/12/2018
14	South Capitol Street southbound – North of Firth Sterling Avenue	Arterial	2	12/12/2018
15	I-295 northbound on-ramp from Suitland Parkway eastbound	Ramp	1	2/13/2019
16	I-295 northbound off-ramp to Firth Sterling Avenue	Ramp	1	2/13/2019
17	Firth Sterling Avenue – East of St. Elizabeths Avenue	Arterial	4	12/12/2018
18	Martin Luther King Jr. Avenue – South of Pomeroy Road	Arterial	4	3/6/2019
19	Suitland Parkway – East of Sheridan Road	Arterial	4	12/18/2018
20	Suitland Parkway – East of Alabama Avenue/Southern Avenue Interchange	Arterial	4	3/6/2019
21	I-295 southbound off-ramp to South Capitol Street	Ramp	2	2/13/2019
22	Martin Luther King Jr. Avenue – North of Lebaum Street, SE	Arterial	4	3/6/2019
23	Alabama Avenue – East of 11th Street, SE	Arterial	4	3/6/2019
24	Malcolm X Avenue – West of South Capitol Street/Entrance to JBAB	Arterial	6	12/19/2018
25	South Capitol Street southbound off-ramp to Malcolm X Avenue	Ramp	2	3/12/2019
26	Malcolm X Avenue westbound to South Capitol Street northbound on-ramp	Ramp	2	3/12/2019
27	Malcolm X Avenue westbound to South Capitol Street southbound on-ramp	Ramp	2	3/12/2019
28	South Capitol Street northbound off-ramp to Malcolm X Avenue	Ramp	2	3/12/2019
29	I-295 northbound off-ramp to Malcolm X Avenue	Ramp	1	12/18/2018
30	I-295 northbound off-ramp to Malcolm X Avenue eastbound	Ramp	1	12/18/2018
31	I-295 northbound on-ramp from Malcolm X Avenue	Ramp	1	12/18/2018
32	I-295 northbound on-ramp from Malcolm X Avenue westbound	Ramp	1	12/18/2018
33	Malcolm X Avenue – East of I-295 Interchange	Arterial	4	12/18/2018
34	I-295 southbound on-ramp from South Capitol Street/Overlook Avenue	Ramp	1	12/18/2018
35	I-295 northbound on-ramp from South Capitol Street northbound	Ramp	1	12/18/2018
36	South Capitol Street – South of I-295 interchange	Arterial	4	11/28/2018
37	Martin Luther King Jr. Avenue – North of South Capitol Street	Arterial	4	11/28/2018
38	I-295 southbound off-ramp to Overlook Avenue	Ramp	2	11/28/2018
39	I-295 northbound on-ramp from Chesapeake Street	Ramp	1	11/28/2018
40	I-295 northbound on-ramp from Oberlin Avenue/Cooley Avenue	Ramp	1	11/28/2018
41	I-295 northbound off-ramp to Oberlin Avenue/Cooley Avenue	Ramp	1	11/28/2018
42	Laboratory Road/Overlook Avenue on-ramp to I-295 southbound	Ramp	1	11/28/2018
43	I-295 – South of Laboratory Road/Overlook Avenue on-ramp	Freeway	6	In-progress
44	Gate 4 to DHS Campus	Gate	4	3/6/2019

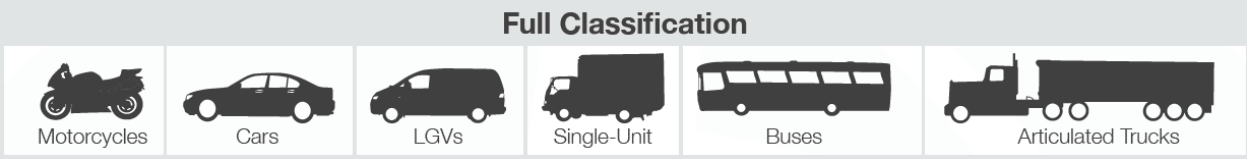


Figure 4: 6-Bin Classification

5.2 Travel Time/Field Reconnaissance

Typical travel times were collected along I-295 mainline and Martin Luther King Jr. Avenue using floating car techniques with multiple runs completed within each peak period. The travel time runs are intended to provide a better understanding of the causes of congestion and locations of bottlenecks during weekdays when recurring congested conditions are expected along these roadways. Travel time runs were conducted in each direction during the AM and PM peak periods, from 6:00 to 9:00 AM and 4:00 to 7:00 PM.

5.3 Gate Access/Vehicle Dwell Time

Data collection was conducted to obtain the entry and exit vehicle processing/dwell times at the Campus Gate 4 on West Access Road. The observations were performed during the AM and PM peak periods on a typical weekday.

5.4 Freeway INRIX Speed Data

Jacobs will acquire INRIX speed and travel time data from the University of Maryland CATT Lab's RITIS system (https://www.ritis.org/). A full year of data will be collected to provide an understanding of the frequency and magnitude of delays over the course of a year, along with seasonal variation patterns. INRIX data will also be used to confirm both recurring and non-recurring travel congestions on the corridor and validate it against the actual days of data collection and field observations for study. The data will be presented in the form of "heat maps" that show the average speeds for each segment of roadway in 15-minute intervals in a color-coded format. From this, the typical start and end time of congestion can be detected, along with build-up and dissipation of queues.

5.5 Traffic Signal Timing Plans

It is anticipated that current signal timing plans at all signalized intersections within the study area will be available from DDOT.

5.6 Historical Crash Data

The most recent three-year crash data available in DDOT's database within the study area for a safety analysis will be requested.

6. Analysis Years, Scenarios and Background Projects

6.1 Analysis Years and Scenarios

The proposed analysis years for the study are the existing year (2019) and the design year 2035. The design year assumption is consistent with the 2012 FEIS analysis to ensure that a comparative analysis can be made between the 2012 study and the current study. The traffic analysis will include an assessment of typical weekday AM and PM peak hour operations. The following scenarios will be analyzed:

- Travel demand forecasts
  - Existing year conditions (2019)
  - Design year conditions (2035) with MPA #2
- Traffic operational analysis using VISSIM microsimulation
  - Existing year conditions (2019)
    The VISSIM models for this study will be developed from the calibrated models in the previous 2012 FEIS study. Therefore, a detailed recalibration will not be performed with the

updated “Existing Conditions” models. They will be updated with latest transportation improvements in the study area and will be qualitatively validated against the 2018/2019 field conditions to ensure that the models reflect current traffic conditions.

– Design year (2035) No-Action scenario (with 2012 FEIS transportation improvements) This microsimulation will be used to identify locations within the study area where traffic operations deteriorate significantly compared to the 2012 study and identify locations where transportation improvements are necessary.

– Design year (2035) Action Scenarios (with 2019 SEIS modified transportation improvements) This microsimulation will be used to screen the alternatives of transportation improvements and select the preferred alternative to mitigate the traffic operational issues identified in the 2035 No-Action scenario.

6.2 Analysis Time Periods

All measures of effectiveness (MOEs) from traffic operational analysis will be reported to represent a typical weekday one-hour traffic conditions during the AM and PM peak periods. Based on a preliminary analysis of freeway mainline throughputs at multiple locations along the study corridor, the system peak hour in each period has been determined as follows:

- **AM peak hour: 7:15 – 8:15 AM**
- **PM peak hour: 5:00 – 6:00 PM**

The AM peak hour is slightly later than the previous AM peak hour in the 2012 FEIS/TTR (7 – 8 AM); while the PM peak hour is the same as the previous one, 5 – 6 PM. These time periods represent typical operational conditions on the roadway networks within the study (for comparison between the 2035 No-Action and Action scenarios), and the worst case scenario for assessing the Peak of the Peak.

6.3 Land Use and Transportation Assumptions

Table 3 summarizes major assumptions regarding land use and transportation improvements for the 2019 TTR transportation study in the design year 2035. Note that these are preliminary recommendations based on the review of the 2012 FEIS/TTR, the latest MWCOG 2018 CLRP and Round 9.1 Cooperative Land Use Forecasts. The final recommendations will be discussed with GSA and DDOT.

Table 3: Preliminary Recommended Transportation and Land Use Assumptions for 2019 SEI/TTR

Transportation or Land Use Improvement	2012 FEIS/TTR Assumption	Current Status	Assumption made for 2019 SEIS/TTR
Transportation Improvements to be Completed by Other Agencies			
DC Streetcar – Anacostia Initial Segment (DDOT)	Construction completed and in operation by 2020	Partially constructed but not in operations.	Include in design year model (2035)
DC Streetcar – Anacostia Extension (DDOT)	Construction completed and in operation by 2020 Operates within mixed traffic on Howard Road and Martin Luther King Jr. Avenue	Partially constructed but not in operations. Proposed alignment does not operate on Howard Road or Martin Luther King Jr. Avenue	Include in design year model (2035) Revise to match the proposed alignment
South Capitol Street Bridge Project (DDOT)	Complete by West Campus opening year (2020)	Preferred Alternative revised since 2012 FEIS Currently under construction	Include Preferred Alternative in design year model (2035) Revise models to match Preferred Alternative configuration
St Elizabeths East Campus Roadway Network (DDOT / DMPED)	Construction completed and in operation by 2020	Under development by DMPED	Include network changes associated with East Campus in design year model (2035)

Transportation or Land Use Improvement	2012 FEIS/TTR Assumption	Current Status	Assumption made for 2019 SEIS/TTR
2012 FEIS Transportation Improvements			
Martin Luther King Jr. Avenue Improvements	Construction completed and in operation by 2020	No change	Recommendations will be made based on the traffic analysis results in 2019 TTR
Firth Sterling Avenue Improvements	Construction completed and in operation by 2020	Currently complete	No change
West Campus Access Road	Construction completed and in operation by 2020	Northern section (Gate 4 to Firth Sterling Ave) complete Southern section under construction	No change
I-295 / Malcolm X Avenue Interchange	Construction completed and in operation by 2020	Currently under construction Project completion date: Spring 2022	No change
East Campus North Parcel Transportation Improvements	Construction completed and in operation by 2020	FEMA Headquarters incorporated into West Campus	Exclude improvements in the design year models
Land Use			
St. Elizabeths East Campus Master Plan (DDOT / DMPED)	Construction completed and in operation by 2020 Office: 1.8 million SF Residential: 1,300 units Retail: 206,000 SF Hospitality: 330,000 SF Civic & Educational 250,000 SF	Currently under development	Include full build out in design year travel demand model (2035) and include associated transportation network changes in VISSIM models for traffic operational analysis
St. Elizabeths East Campus North Parcel	FEMA Headquarters complete by 2020 750,000 SF of development 3,100 seats 775 parking spaces	MPA #2 proposes moving FEMA Headquarters to West Campus No plan to develop North Parcel in short term Zoning would allow 1.6M SF of development	Assume maximum development allowed by zoning in design year model Assume development consistent with East Campus mixed-use development by DMPED/DDOT (2035)
St. Elizabeths West Campus	MPA #1: 3,830,386 GSF of building development 10,900 seats 3,459 parking spaces	MPA #2: 4,142,740 GSF of building development 13,800 seats 4,045 parking spaces	Include in design year model (2035)
Background Land Use Forecasts and Travel Demand Model Version	Land Use Forecasts: MWCOG Round 7.2A Travel Demand Model: Version 2.2	Land Use Forecasts: MWCOG Round 9.1 Travel Demand Model: Version 2.3	Update land use forecasts from MWCOG Round 9.1 for 2035 Retain Version 2.2 model

DDOT – District Department of Transportation
DMPED – Office of the Deputy Mayor for Planning and Economic Development
FEMA – Federal Emergency Management Agency
MWCOG – Metropolitan Washington Council of Governments
GSF – gross square feet

7. Overview Methodology for Traffic Technical Report

Figure 5 illustrates a flow chart of the traffic analysis methodology for this study.

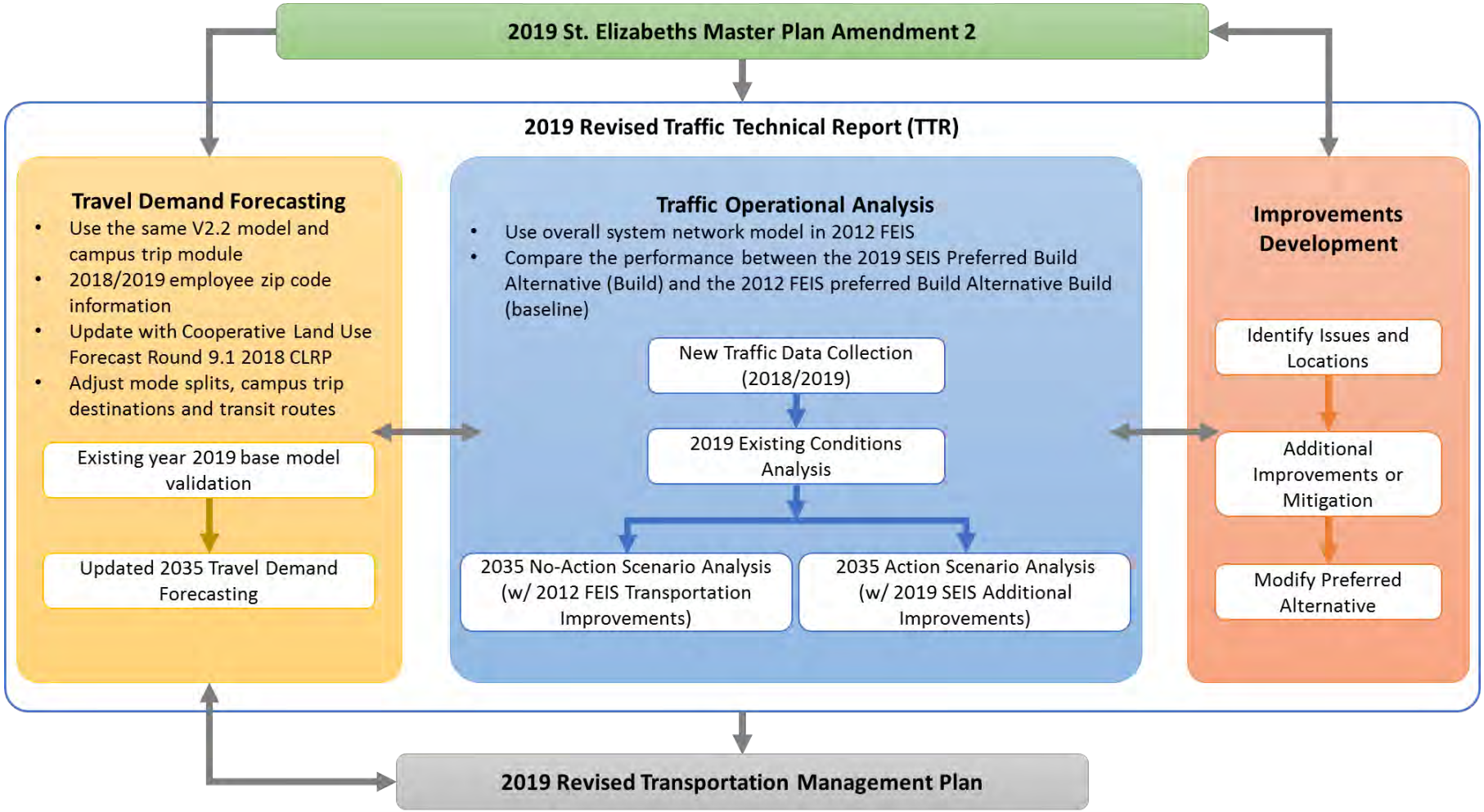


Figure 5: Traffic Analysis Methodology Flow Chat

8. Travel Demand Forecasting Methodology

8.1 Travel Demand Modeling Approach

Travel demand forecasting for the 2012 FEIS/TTR was conducted using an application that was based on the Version 2.2 regional travel demand model developed by the Metropolitan Washington Council of Governments / National Capital Region Transportation Planning Board (MWCOG/TPB). The major components of the MWCOG/TPB model were retained to forecast background traffic and were fused with a set of project-specific submodels based on the 2010 DHS Employee Survey conducted specifically to support development of the 2012 Transportation Management Plan (TMP).

Since completion of the original travel demand modeling for the 2012 FEIS/TTR, there have been two major changes in the MWCOG/TPB modeling process for the development of the current Version 2.3 model. The first major change was the modification from a 2,191 Traffic Analysis Zone (zone or TAZ) system to a 3,722 zone system. The second major change is that the Version 2.3 model has been calibrated with the newly-collected travel survey data from the 2007/2008 Household Travel Survey. The Version 2.2 model was based on the 1994 Household Travel Survey. Additionally, the land use inputs to the Version 2.3 model have been revised in the annual Regional Cooperative Land Use Forecasting Program.

The proposed approach for travel demand forecasting for the MPA #2 base scenario is to utilize the customized version of the MWCOG model developed, which has been calibrated for the 2012 FEIS and 2016 Enhanced Plan Transportation Study (EPTS 2016). Using the same model version would allow a direct comparison between the 2012 FEIS/TTR results and the 2019 SEIS/TTR results. While changes have occurred in the MWCOG/TPB modeling process between Version 2.2 and Version 2.3, the modifications made for the 2012 FEIS model to represent the latest employee information, land use changes and transportation improvements specifically for the MPA #2 make it the best model to use.

8.2 Update of Model Inputs

The project specific submodels can be applied to the 2019 TTR utilizing available information on assigned staff and the information already available from the 2010 survey. The information in the 2010 survey still reasonably represents the travel behavior characteristics needed for the model inputs. Both the socio-economic characteristics of households and long-term travel options for current plans are not expected to change. This, with updated origin (home location) and agency affiliation (DHS, CCI, USCG, FEMA etc.), should provide a reasonable basis for quantifying the travel demand forecasts.

The inputs required for the DHS employee travel submodels are:

- Origin of trip (zip code of residence location)
- Arrival gate (partially controlled by travel mode and originally linked to agency affiliation)
- Mode of travel (drive alone, carpools, bus, train, etc.)
- Time period of travel (AM, PM, midday, night)

Spreadsheets developed for the model application will translate input data into site-specific estimates of patterns and routes of DHS employee trips.

Per the discussion with GSA and DHS, it's likely the only new input that will be available will be employee zip code and major agency affiliation. This data will be combined with information from the 2010 survey (mode, timing of trip, agency to assign arrival gate). This combined database would address all data requirements described above to robustly estimate the volume of total trips from each zone to each campus gate.

9. Traffic Operational Analysis Methodology

9.1 Analysis Tools

The study area for the St. Elizabeths West Campus includes I-295, one of the most congested freeway corridors in the District. Within the study area, it connects with multiple congested arterials including Martin Luther King Jr. Avenue, Malcolm X Avenue, Firth Sterling Avenue, Suitland Parkway, and South Capitol Street. There are multiple closely spaced interchanges and ramps where frequent merge, diverge and weaving maneuvers occur. Traffic flow on the transportation network within the study area during weekday peak hours is constantly affected by several bottlenecks in the peak direction, resulting in severe congestion and queuing conditions. Hence, the traffic flows on these corridors during peak hours are typically under “oversaturated” conditions.

Based on the FHWA’s guideline in traffic analysis tools, and in recognition of the limitations of deterministic analytical models such as Highway Capacity Software, microsimulation analysis has been determined to the appropriate evaluation tool for traffic operations and performance in the study Interstate corridor. Specifically, VISSIM software (Version 11) has been selected as the primary tool to provide a microscopic level of traffic operation analysis with an integrated consideration of upstream and downstream impacts. Synchro (Version 10) software will be used to develop optimized traffic signal timing for all future scenarios. However, Synchro will not be used to analyze and report intersection operations. All results will be reported from VISSIM outputs.

9.2 Measures of Effectiveness

Measures of Effectiveness (MOEs) will be shown in both tabular and depictive graphic formats. The following MOEs will be used to assess the operations of the roadway network in the study area:

- Freeway mainline segments:
  - Average density (vehicles per mile per lane)
  - Freeway congestion levels (based on HCM Level of Service (LOS) density thresholds)
  - Throughputs or served demand (vehicles per hour)
  - Unserved demand (vehicles per hour)
  - Average travel times (seconds per vehicle)
  - Average travel speed (miles per hour)
- Arterials and intersections:
  - Average approach control delay (seconds per vehicle)
  - Average intersection control delay (seconds per vehicle)
  - Intersection level of service (based on control delay)
  - Average queue length by movement (feet)
  - Maximum queue length by movement (feet)

Operational conditions of different facilities will be categorized into four congestion levels by comparing the corresponding MOE values to the LOS thresholds established in the Highway Capacity Manual 2010. Namely, these MOEs are density for freeway segments and control delay for intersections. **Table 4** presents the MOE thresholds and color scheme for congestion levels.

Table 4: MOE Thresholds for Congestion Levels

Congestion Level	Freeway		Intersection	
	Basic Segment	Weave, Merge, and Diverge	Signalized Control	Stop Control
	Density (veh/mi/ln)		Control delay (sec/veh)	
Light Traffic	<=26	<=28	<=35	<=25
Moderate Traffic	>26-35	>28-35	>35-55	>25-35
Heavily Congested Traffic	>35-45	>35-45	>55-80	>35-50
Severely Congested Traffic	>45	>45	>80	>50

9.3 Modeling Approach and Parameters

FHWA's TAT will be followed for VISSIM microsimulation modeling, including model calibration methodology, seeding time, determination of the number of simulation model runs, simulation parameters, and MOE outputs. **Table 5** summarizes the VISSIM model parameters and assumptions.

Table 5: VISSIM model parameters and assumptions

Parameter	Existing (2019)	Future No-Action (2035)	Future Action (2035)
VISSIM Version	Version 11		
Simulation Resolution	10 time steps/second		
Simulation Duration	5400 seconds (1800 seconds seeding and 3600 seconds MOE recording)		
Number of Simulation Runs	TBD based on FHWA's TAT guidelines		
Vehicle Types	Car, HGV and Bus		
Vehicle Fleet	Based on MWCOG's 2014 regional vehicle "census"		
Vehicle Compositions	From existing volumes	From travel demand forecasts	
Arterial Car Following Model	Wiedemann 74		
Freeway Car Following Model	Wiedemann 99		
Driver Behavior	Default or adjust for calibration	If No-Action improvements significantly changes segment, use engineering judgment to roll back calibration adjustment; otherwise same as existing	If proposed Alternative significantly changes segment, use engineering judgment to roll back calibration adjustment; otherwise same as No-Action
Signal Controller Type	Based on timing sheet data (RBC)	Same as existing. New/Modified intersections will assume actuated-coordinated (RBC)	
Signal Controller Frequency	10 per second		
Signal Timings/Offsets	Existing signal timing data obtained from DDOT	Optimized from Synchro	
Desired Speed on Freeways	Posted speed +10/-3 mph	Based on future No-Action improvement plans; otherwise same as existing	Based on proposed Action plans; otherwise same as No-Action
Desired Speed on Arterials	Posted speed +5/- 3 mph	Based on future No-Action improvement plans; otherwise same as existing	Based on proposed Action plans; otherwise same as No-Action
Ramp Curve Speed	Use Reduced Speed Areas as per as-built plans or based on field observations; otherwise use AASHTO Exhibit 3-16	For future No-Action improvements use AASHTO Exhibit 3-16; otherwise same as existing	For future No-Action improvements use AASHTO Exhibit 3-16; otherwise same as No-Action
Intersection Turning Speed	Use Reduced Speed Areas for right (11-13 mph) and left (13-17 mph) turns. For non-standard radius use AASHTO Exhibit 3-16 or based on field observations.	For future No-Action improvements use AASHTO Exhibit 3-16; otherwise same as existing	For future No-Action improvements use AASHTO Exhibit 3-16; otherwise same as No-Action

Parameter	Existing (2019)	Future No-Action (2035)	Future Action (2035)
Lane Change Distance	Freeways based on exit sign location and arterials default 656 ft. Adjust for calibration.	If No-Action improvement significantly changes segment, use engineering judgment to roll back calibration adjustment; otherwise same as Existing	If proposed design significantly changes segment, use engineering judgment to roll back calibration adjustment; otherwise same as No-Action

9.4 Simulation Seeding Time

A VISSIM model starts with zero vehicles on the network, which would incorrectly model how the peak hour begins in the field. Therefore, seeding time must be added to the start of the simulation period to allow vehicles to be on the network by the time performance statistics collection begins. The guidance from FHWA TAT suggests that seeding time should be determined based on either the existing peak hour travel time to traverse between the farthest points of the study network in the peak direction of travel or twice the off-peak travel time between the network study limits.

Under free flow conditions, the travel times on I-295, Firth Sterling Avenue and Suitland Parkway based on distance and posted speed for both directions varies between 3 – 5 minutes. Based on the average field travel time during peak hours on these corridors in the previous years (2015 -2017), they varied between 3 and 15 minutes depending on directions and peak periods, but all within 30 minutes. The field data are summarized in **Table 6**. Therefore, seeding time was determined to be the first 30 minutes (1800 seconds) for both AM and PM peak hours.

Table 6: Peak Hour Travel Time on Key Corridors (Minutes per Vehicle)

Corridors	2015 Field Data	2016 Field Data	2017 Field Data
AM Peak Hour			
Northbound Access Rd and Firth Sterling Ave From Gate 4 to Howard Rd	4.4 - 6.8	3.8 - 8.0	4.0 - 6.5
Southbound Firth Sterling Ave and Access Rd From Howard Rd to Gate 4	2.5 - 3.6	2.6 - 4.8	2.2 - 4.0
Northbound I-295 From Malcolm X Ave interchange to I-695/DC 295 interchange	3.1 - 7.1	3.1 - 9.7	3.0 - 9.9
Southbound I-295 From I-695/DC 295 interchange to Malcolm X Ave interchange	3.3 - 3.7	3.2 - 3.5	3.1 - 3.8
PM Peak Hour			
Northbound Access Rd and Firth Sterling Ave From Gate 4 to Howard Rd	3.7 - 10.2	3.4 - 11.4	3.4 - 7.5
Southbound Firth Sterling Ave and Access Rd From Howard Rd to Gate 4	3.1 - 6.6	2.7 - 5.8	3.0 - 6.6
Northbound I-295 From Malcolm X Ave interchange to I-695/DC 295 interchange	2.9 - 4.9	3 - 9	2.9 - 5.2
Southbound I-295 From I-695/DC 295 interchange to Malcolm X Ave interchange	3.6 - 15.2	3.7 - 6.6	4.5 - 7.1

9.5 Existing Conditions Model Validation

As mentioned previously, the VISSIM models for this study will be developed from the calibrated models from the 2012 FEIS transportation study. Therefore, a detailed recalibration will not be performed with the updated “Existing Conditions” models. The models will be updated with latest transportation improvements in the study area and will be qualitatively validated against the 2018/2019 field conditions. The validation will be based on the FHWA’s TAT calibration guidance to validate the MOEs criteria at key locations within the study.

9.5.1 Model Validation MOEs

The following criteria will be used to verify the adequacy of the model validation:

- Capacity criteria:
  - Throughput volumes served on freeway segments, interchange ramps
- System performance criteria:
  - Travel time or travel speed on the freeway mainlines
  - Key bottleneck locations (by visual comparison with field observations)

Table 7 shows the detailed criteria and acceptance targets used. For this study, the updated Existing Conditions models will be validated at several key locations including I-295, Martine Luther King Jr. Avenue, Malcolm X Avenue and Firth Sterling Avenue.

Table 7: FHWA Recommended Calibration Criteria[1]

Criteria and Measures	Acceptance Target
Hourly Flows, Model vs. Observed	
Individual Link Flows	
Within 15%, for 700 veh/h < Flow < 2700 veh/h	> 85% of cases
Within 100 veh/h, for Flow < 700 veh/h	> 85% of cases
Within 400 veh/h, for Flow > 2700 veh/h	> 85% of cases
Sum of All Link Flows	Within 5% of sum of all link counts
GEH Statistics* < 5 for Individual Link Flows	> 85% of cases
GEH Statistics for Sum of All Link Flows	GEH < 4 for sum of all link counts
Travel Times, Model vs. Observed	
Journey Time, Network	
Within 15% (or 1 min, if higher)	> 85% of cases
Visual Audit	
Individual Link Speeds	
Visually Acceptable Speed-Flow Relationship	To analyst's satisfaction
Bottlenecks	
Visually Acceptable Queuing	To analyst's satisfaction

* Note: GEH $= \text{Square Root } \frac{(E-V)^2}{(E+V)/2}$, where E = model estimated volume, V =field count.

9.5.2 Model Validation Process

Model calibration is a process used to achieve adequate reliability or validity of the model by establishing suitable parameter values so that the model replicates local traffic conditions as closely as possible. The FHWA's TAT recommended a three-step strategy for calibration, (1) capacity calibration, (2) route choice calibration, and (3) system performance calibration. The route choice calibration will be incorporated in the volume and O-D development using travel demand models. Therefore, a customized three-step strategy will be applied. In order of priority, the three steps are:

- **Capacity Calibration**

  VISSIM model parameters will be adjusted to meet the calibration criteria of the throughput volumes. These candidate model parameters include driving behavior parameters (car-following parameters and lane-changing parameters), and lane change distances for different facilities.

- **System Performance Calibration**

  Travel time and speed profiles from VISSIM model results will then be compared to field measurements. Link free flow speed and capacity related parameters will be further refined to better match field conditions.

[1] Source: *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software*, p. 63. Federal Highway Administration, June 2004.

- **Visual Review**

  VISSIM simulation animation will be reviewed to compare queuing and congestion conditions at key bottleneck locations between the model and the field observations.

As mentioned in the previous section, two field measurements: throughput volumes on all links and freeway mainline travel time will be used as the key targets in the base model validation procedure for this study. Throughput volumes will be used as the primary capacity target. Travel time and speed profiles on freeway mainlines will be used as the system performance target. In addition, the congestion bottlenecks will be qualitatively checked between simulation results.

9.6 Future Scenarios Models

To maintain a consistent base for traffic operational analyses of all the scenarios, driver behavior parameters in the calibrated base models will be retained in the future No-Action and Action models. In the case where significant changes in roadway geometry are made, the driving behavior parameters at those locations will be rolled back to the default values first, and further adjustments will be made based on test runs and engineering judgment. New roadway geometry, lane configurations, and future traffic volumes will be updated in 2019, 2035 No-Action and/or Action models. Initial model assessments will be performed by reviewing simulation outputs and visually inspecting simulation animations to ensure that the future models generate reasonable outputs.

10. Safety Analysis Methodology

A qualitative evaluation of the most recent available three-year crash history on Martin Luther King Jr. Avenue, Malcolm X Avenue and Alabama Avenue will be performed to identify hot-spot locations and crash patterns. At locations where transportation improvements are required, safety factors will be incorporated in the alternative design process.

ATTACHMENT B
DDOT Comprehensive Transportation Technical Review

District Department of Transportation (DDOT)
Comprehensive Transportation Review (CTR) Scoping Form

The purpose of the Comprehensive Transportation Review (CTR) study is to evaluate potential impacts to the transportation network that can be expected to result from an approved action of the Zoning Commission (ZC), Board of Zoning Adjustment (BZA), Public Space Committee (PSC), a Federal action, or DDOT project. The Scoping Form accompanies the *Guidance for Comprehensive Transportation Review* and provides the Applicant an opportunity to propose a scope of work to evaluate the potential transportation impacts of the project.

Directions: The CTR Scoping Form contains study elements that an Applicant is expected to complete in order to determine the scope of the analysis. An Applicant should fill out this Form with a proposed scope of analysis commensurate with the requested action and submit to DDOT for review and concurrence. Accordingly, not all elements and figures identified in the Scoping Form are required for every action, and there may be situations where additional analyses and figures may be necessary. Once a completed Scoping Form is returned, DDOT will provide feedback on the initial parameters of an appropriate analysis scope. After the Scoping Form has been finalized and agreed to by DDOT, the Applicant is required to expand upon the elements outlined in this Form within the CTR study.

Scoping Information	
Date(s) Scoping Form Submitted to DDOT:	**April 24, 2019**
DDOT Case Manager:	**Aaron Zimmerman**
Date(s) Scoping Form Comments Submitted to Applicant:	**May 6, 2019 – Jacobs Response on May 31, 2019**
Date Scoping Form Finalized:	

Project Overview		Proposed Development Program	
Project Name:	**St. Elizabeths West Campus Master Plan Amendment 2**	**Use(s)**	
Street Address:	**2703 Martin Luther King Jr Ave SE, Washington, DC 20593**	**Residential (dwelling units):**	**0**
Square & Block / ANC:	**8C**	**Retail (square feet):**	**0**
Applicant Name:	**U.S. General Services Administration (GSA)**	**Office (square feet):**	**4.14M GSF**
Transportation Consultant:	**Jacobs Engineering**	**Hotel (rooms):**	**0**
Land Use Counsel:	**TBD**	**Other:**	**Parking garages**
Case Type & No. (ZC, BZA, PSC, etc.):	**Federal action**	**# of Vehicle Parking Spaces:**	**TBD**
Prior Related Action(s) (ZC, BZA, PSC, etc.):	**Federal action**	**# of Carshare spaces:**	**TBD**
Current Zoning and/or Overlay District:	**Federal public**	**# of Electric Vehicle Stations:**	**TBD**
Estimated Date of Hearing:	**DSEIS in Fall 2019, FSEIS in Spring 2020**	**# of Bicycle Parking Spaces (long- and short-term)**	
Projected Build-Out Year:	**2035**	**Long-term:**	**More than 200**
Small Area Plan (if applicable):	**N/A**	**Short-term:**	**TBD**
Livability Study (if applicable):	**N/A**	**Loading Berths/Spaces:**	**50 service vehicle lots**

Existing Site and Description of Action: *Describe the type(s) of regulatory approval(s) being requested and any background information on the project relevant to the requested action such as the existing uses, amount of vehicle parking, and other notable proposed changes on-site.*

St. Elizabeths Campuses are located in the Anacostia neighborhood of southeast Washington, DC. Originally, they were the campuses for a formerly self-contained mental health community – St Elizabeths Hospital. The U.S. Department of Health and Human Services (HHS) and its predecessors controlled and operated the hospital from its founding in 1855 until 1987 when the East Campus and hospital operations were transferred to the District of Columbia. St. Elizabeths continues to operate as an inpatient mental hospital on the southern portion of the East Campus. Portions of the West Campus were used for outpatient services until 2003 when it closed operations (outpatient care continued on the East Campus). In January 2001, HHS determined that it no longer had a need for the West Campus and declared the property "excess to its needs." The U.S. General Services Administration (GSA) took control of the West Campus in December 2004 and has since stabilized the vacant buildings.

Since 2008 the 176-acre West Campus has been under redevelopment for use as headquarters for the U.S. Department of Homeland Security (DHS) and its component agencies. The remainder of the East Campus owned by the District is slated for redevelopment into mixed-use neighborhoods of retail, office, housing, open space, and cultural amenities..

St. Elizabeths (both West and East campuses together) was designated a National Historic Landmark (NHL) in 1990. GSA's approved 2009 West Campus Master Plan called for a combination of rehabilitation of historic buildings and construction of new buildings to house the headquarters of the DHS.

GSA is currently amending the 2009 DHS Consolidation Final Master Plan and the 2012 DHS Consolidation Final Master Plan Amendment (MPA #1) to more efficiently house DHS and its operating components on the St. Elizabeths West Campus. The key actions in this second amendment (MPA #2) that will change the previous 2012 MPA #1 are:

- Eliminate the development on the East Campus including buildings for 3100 seats and a parking garage of 710 spaces.
- Increase the space utilization of West Campus including the following key actions:
    - Increase the number of seats on West Campus from 10,600 to 12,800
    - Increase the building development from 3.8M GSF to 4.2M GSF.
- Update the Master Plan with a focus on the Plateau Area and Office of Intelligence and Analysis (I&A) Site.

The location of St. Elizabeths West Campus, the existing development site and the proposed development plans are shown in **Attachment 1**.

Previous Conditions and Commitments: *List all relevant conditions and proffers still in effect from a previous approval (Campus Master Plan, First Stage PUD, etc.) and status of completion.*

2008/2009 Master Plan

On January 8, 2009, the National Capital Planning Commission (NCPC) approved the Final Master Plan for the DHS Headquarters Consolidation and the U.S. Commission of Fine Arts (CFA) approved the Final Master Plan on November 20, 2008. The Final Master Plan provides the development framework for accommodating 4.5 million gross square feet of office space for the DHS headquarters on both the St. Elizabeths West and East campuses. The Final Master Plan outlines 3.8 million gross square feet of office space on the West Campus and 750,000 gross square feet of office space on a portion of the East Campus (identified as East Campus, North Campus Parcel). The development will be consistent with a DHS Interagency Security Committee (ISC) Level V campus to house mission-critical Federal agencies. Part of the master planning process includes an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA), and compliance with the Section 106 regulations under the National Historic Preservation Act (NHPA).

2012 Master Plan Amendment #1

In 2012 GSA amended the DHS Consolidation Final Master Plan to include detailed planning, a Tier II Final EIS (FEIS) and an additional NHPA assessment for the East Campus, North Campus Parcel, including the widening of Martin Luther King, Jr. Avenue SE. to accommodate a left turn lane, a streetcar lane, and pedestrian-friendly sidewalks (collectively known as the Master Plan Amendment). Consistent with the Final Master Plan, the Master Plan Amendment #1 provided a framework for the future development considering historic and natural resources, site characteristics, circulation and access, and massing and density while meeting the programmatic needs of the DHS Consolidation.

Transportation improvements committed in 2012 MPA #1 and FEIS include:

- Interchange modifications at I-295 interchange with Malcolm X Avenue – these improvements would provide direct ramps to the proposed West Campus Access Road and would help separate local traffic from traffic associated with the DHS Headquarters. The interchange modifications would also eliminate existing unsafe weaving conditions on I-295 and reduce the number of merge points onto I-295 northbound.
- West Campus Access Road Construction – this three-lane road would run parallel to I-295 to its east between the Malcolm X Avenue interchange and Firth Sterling Avenue. This new road would connect to the proposed access modifications at Malcolm X Avenue and provide access to the West Campus portion of the DHS Headquarters consolidation.
- Firth Sterling Avenue / West Campus Access Road Intersection Improvements – these improvements will connect the West Campus Access Road with existing Firth Sterling Avenue and provide improvements and modifications to Firth Sterling Avenue and its side streets.
- Martin Luther King Jr. Avenue Improvements – these improvements include two travel lanes in each direction, an additional turn lane, median, and sidewalks along Martin Luther King Jr. Avenue to mitigate traffic associated with FEMA and Gates 1 and 2 on the West Campus.

The development concepts of 2008 Master Plan, 2012 MPA #1 and current 2018/2019 MPA #2 are summarized in **Attachment 2**.

Section 1: SITE DESIGN

DDOT reviews the site plan to evaluate consistency with DDOT's standards, policies, and approach to access as documented in the most recent Design and Engineering Manual (DEM). If the proposal for use of public space is found to be inconsistent with the agency approach, DDOT will note this regardless of its relevance to the action. It is DDOT's position that issues regarding public space should be addressed at the earliest possible opportunity to minimize concerns that may result from proposed access design.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Site Access Show site access points for vehicles, pedestrians and bicyclists, including proposed curb cut locations, curb cuts to be closed, access controls (e.g., right-in/out, signalized), sight distance analysis from access points, driveway widths and spacing, on- and off-site parking garage locations, inter-parcel connections, and public/private status of driveways, alleys, and streets. *DDOT requires access be located off an alley if available, otherwise it should be located off the lower volume street. Note any proposed deviations from DDOT standards with justification and if conceptual approval by the Public Space Committee (PSC) has/is being sought.* *DDOT will not support curb cut design relief unless there is a physical impossibility preventing an Applicant from meeting all standards. Additionally, all proposed private streets must be built to DDOT standards and have a public access easement.* ☒ *Scoping/CTR Figure – Project Location Map* ☐ *Scoping/CTR Figure – Site Circulation Plan*	Unchanged from the previous Master Plan, the West Campus site will have six gates, three on West Access Road, and three on MLK Ave. **Access Road** / **Gate** / **Purpose** Martin Luther King, Jr. Avenue: 1 – Employee vehicles/pedestrian (on foot or bicycle) 2 – Visitors/pedestrians (nonemployee entrance) on foot 3 – Employee pedestrian (on foot)/Emergency Vehicles West Access Road: 4 – Employee vehicles/employees (on foot or bicycle)/ employees arriving via shuttle or commuter bus 5 – Drop-off and pick-up for daycare center 6 – Warehouse delivery/services A site access map with locations of six gates is shown in **Attachment 3**.	
Loading Discuss and show the quantity and sizes of loading berths/delivery spaces, trash storage locations, on- and off-site loading locations, turnaround design, nearby commercial loading zones, and anticipated demand, operations, and routing of delivery and trash vehicles. Identify the sizes of trucks anticipated to serve the site and design vehicles to be used in truck turning diagrams. *DDOT requires head-in and head-out vehicle movements through public space (DEM 31.5) and that direct internal connections be provided between retail bays and loading facilities. Note any proposed deviations or requested relief from ZR16 or DDOT standards with justification and whether a loading management plan will be included. A template loading management plan can be provided upon request.* ☒ *Scoping/CTR Figure – Loading Area Design* ☐ *CTR Figure(s) – Truck Turning Diagrams (on the site and to/from designated truck routes and alleys)*	Service vehicles and delivery trucks traffic will only be allowed through Gate 6 on West Access Road. A new design concept for Gate 6 operations has been studied to ensure no impacts on external roadways will occur. The Gate 6 Reconfiguration plan and traffic analysis technical memorandum are in **Attachment 4**. Alternative 2 in the technical memorandum was selected as the preferred alternative and will be carried forward for engineering and construction. All loading areas will be located inside the West Campus for each building with no interface with external roadways. The detailed design of actual loading areas will be developed in a later engineering phase.	

☐ *CTR Figure – Truck Routing To and From Site (when a grocer or big box retailer is proposed)*		
Streetscape & Public Realm Provide a conceptual layout of the streetscape and public realm including at minimum: curb cuts, vaults, sidewalk widths, street trees, grade changes, building projections, short-term bicycle parking and any existing bus stops. Also provide the permit tracking numbers and PSC hearing date, if known, for any approved public space designs. *DDOT expects new developments to rehabilitate the streetscape between the curb and property lines and meet all public space design standards. These are documented in the DEM, Public Realm Design Manual, and corridor Streetscape Guidelines (if applicable).* *All building entrances must be at-grade with the adjacent sidewalk.* *Note any non-compliant public space elements requiring a DCRA code modification, DDOT design waiver, or PSC approval.* ☐ *Scoping Figure – Preliminary Public Space Design Concept* ☐ *CTR Figure – Public Space Design Concept*	Streetscape is currently not available.	DDOT Comment 5.6.19: Clarify where the ROW and land will come from for MLK widening? **Jacobs response:** GSA property on the west side and east side north parcel DDOT Comment 5.6.19: Ensure that sidewalks on both sides of MLK Avenue meet DDOT standards and are ADA accessible. **Jacobs response:** Sidewalks on both sides will be included during design of MLK improvements. Adequate ROW will be allocated for the sidewalk improvements DDOT Comment 5.6.19: Ensure all curb ramps and crosswalks on MLK Avenue are brought up to ADA compliance. **Jacobs response:** ADA compliance will be ensured during design of MLK improvements.
Curbside Management Propose a curbside management plan that is consistent with DDOT standards. The curbside management plan should delineate existing and proposed on-street parking designations/restrictions, including but not limited to building entrance zones, commercial loading zones, multi-space meters, and net change in # of on-street spaces as a result of the proposal. *Note that the preliminary curbside management plan will not be approved by DDOT during the zoning process. Applicant must submit a more detailed signage and marking plan via TOPS for formal review and approval by DDOT-PGTD during public space permitting. DDOT expects the Applicant to fund the installation of multi-space meters on blocks where meters are required.* ☒ *CTR Figure – Existing Curbside Designations* ☐ *CTR Figure – Preliminary Proposed Curbside Management Plan* ☐ *CTR Figure – Preliminary Proposed Signage and Marking Plan*	The Existing Curbside Street Parking Maps in 2012 FEIS and its Traffic Technical Report (TTR) are shown in **Attachment 5**. The study team will revisit the site and update the parking maps where appropriate. There is no plan to change the curbside management along the Martin Luther King Jr. Avenue at this time. Details will be provided during the transportation improvement development stage for the MPA #2.	

Motorcoaches Propose methodology for data collection and analysis. Describe and show the parking locations, anticipated demand, existing areas on- and off-site for loading and unloading (and desired loading times restrictions, if any), and potential routes to and from designated truck routes. This is typically required for uses that generate significant tourist activity (hotels, museums, cruises, etc.). ☐ *CTR Figure – Motor Coach Loading Areas* ☐ *CTR Figure – Motor Coach Routing*	Motorcoach bus service will be provided for employees at West Campus. Detailed information is currently not available.	
Sustainable Transportation Elements Identify all sustainable transportation elements, such as electric vehicle charging stations proposed to be included in the project. *DDOT recommends 1 per 50 vehicle spaces be served by an EV station.*	Electric vehicle charging stations will be provided inside the West Campus. Detailed information is currently not available.	
Heritage Trees Heritage Trees are defined as having a circumference of 100 inches or more and are typically located on private property. They are protected by District law and must be preserved if non-hazardous. Special Trees are between 44 inches and 99 inches in circumference and may be removed with a permit. *Note whether there are existing Heritage Trees located on-site or in the adjacent public space. The presence of Heritage Trees will impact site design since they may not be removed.*	St. Elizabeths West Campus Cultural Landscape Report (CLR) dated April 2009 documented the 2007 existing tree and shrub inventory for the entire campus and focuses on detailed analysis of the ornamental landscape conditions. Existing conditions vegetation plans, Plans VI.3 to VI.6, in Chapter VI, show the 2007 tree and shrub locations and corresponding assessment codes that describe genus, species, diameter, and canopy, trunk, and root condition for trees within each of the four quadrants of the core campus. They are included in **Attachment 6.**	

Section 2: TRAVEL ASSUMPTIONS

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Strategic Planning Elements Identify relevant planning efforts and demonstrate how the proposed action is consistent with District-wide planning documents, as well as localized studies. The evaluation should consider at least the following high level/District-wide documents: • MoveDC and its relevant modal elements • DDOT Livability Study (relevant to the project) • OP Small Area Plans (relevant to the project) • District of Columbia Comprehensive Plan • State Transportation Improvement Plan (STIP) • Vision Zero Action Plan • Capital Bikeshare Development Plan • Washington Metropolitan Area Transit Authority's (WMATA) Metrorail and Metrobus Plans • DDOT Corridor studies (e.g., Transit Development Plan, Streetscape Design Plans and Guidelines)	The West Campus Transportation Study for MPA #2 will be consistent with the vehicular traffic, pedestrian, bicycle and transit improvement elements in district's planning documents within the study area, including: • MWCOG Constrained Long-Range Plan (CLRP) • MoveDC • District of Columbia Comprehensive Plan • State Transportation Improvement Plan (STIP) • Vision Zero Action Plan • Capital Bikeshare Development Plan • Washington Metropolitan Area Transit Authority's (WMATA) Metrorail and Metrobus Plans • Anacostia Waterfront Transportation Master Plan	
Transportation Network Improvements List and map all roadway, transit, bicycle, and pedestrian projects funded by DDOT or WMATA, or proffered by developers, in the vicinity of the study area and expected to open for public use prior to the proposal's anticipated build-out year. ☐ *Scoping/CTR Figure – Map showing locations of background transportation network improvements*	Consistent with the 2012 FEIS and TTR for MPA #1, the study will account for approved and funded transportation improvement projects within the study area. This includes all projects shown on the latest update to the Anacostia Waterfront Transportation Master Plan, as well as the CLRP. The major roadway improvements within the study include: **Transportation Improvements in Other Programs** 1. DC Streetcar – excluded from this study 2. South Capitol Street Bridge – includes the full build-out project 3. East Campus Roadway Network – includes the street network for the full East Campus build-out **2012 FEIS and TTR Transportation Improvements** 4. I-295 / Malcolm X Avenue Interchange – improvements to existing interchange that would provide direct freeway access to the proposed West Campus Access Road (currently under construction). 5. West Campus Access Road Construction – three-lane road that would run parallel to I-295 to its east between the Malcolm X Avenue interchange and Firth Sterling Avenue. This road would connect to the proposed access modifications at the I-295 / Malcolm X Avenue interchange and	DDOT Comment 5.6.19: What are the current and projected ADTs on MLK Avenue? **Jacobs response:** The current ADTs on MLK Avenue vary between 9,335 and 16,311 as follows • b/w W St and Howard Rd 12,386 • b/w Howard Rd and Gate 1 16,311 • b/w Gate 1 and Lebaum St 16,179 • b/w Lebaum St and Malcolm X 13,826 • b/w Malcolm X and S Cap 9,335 The projected ADTs are still under development using travel demand forecasting models and will provide them once available.

	provide access to the West Campus. The West Campus Access Road between Firth Sterling Avenue and Gate 4 has been completed. 6. Firth Sterling Avenue / West Campus Access Road Intersection Improvements – these improvements will connect the West Campus Access Road with existing Firth Sterling Avenue and provide improvements and modifications to Firth Sterling Avenue and its side streets. These improvements have been completed. 7. Martin Luther King Jr. Avenue Improvements – these improvements include two travel lanes in each direction, an additional turn lane, median, and sidewalks along Martin Luther King Jr. Avenue to improve access to both the East and West Campus portions of the consolidation. Martin Luther King Jr. Avenue improvements continue south of St. Elizabeths Campus to Alabama Avenue. Improvements include wider sidewalks, on-street parking, and continuation of two travel lanes in each direction with turn pockets. 8. East Campus North Parcel Transportation Improvements – these include improvements to Pine Street and Pecan Street to accommodate access to the portion of the DHS consolidation that will occur at the East Campus North Parcel (FEMA Headquarters). Bus bays would be built along Pecan Street to accommodate shuttles from the Congress Heights Metrorail Station. A pedestrian tunnel would be constructed underneath Martin Luther King Jr. Avenue. Note that projects 7 and 8 were from the previous study and its conclusions. With the MPA #2, we will be looking at different alternatives in this study.	
Local Traffic Growth List and map developments to be analyzed as local background growth. This should include anticipated matter-of-right and zoning-approved developments within ¼ mile of site and ones more than ¼ mile from site if traffic distributed through study intersections. Include portions of developments anticipated to open by the projected build-out year. ☐ *Scoping/CTR Figure – Map showing background development projects near study area* ☐ *Scoping/CTR Figure – Table showing completion amounts of background developments* ☐ *CTR Figure – Table showing trip generation assumptions for background developments* ☐ *CTR Figure(s) – Assignment of Background Traffic (for each development)*	All local traffic growth will be estimated based on regional travel demand models (detailed modeling methodology described below) including all the projects programmed in the latest CLRP. Consistent with the 2012 FEIS and TTR methodology, MWCOG Regional Travel Demand Model will be used to include all of the major developments within and in the vicinity of the study area as land use inputs. The background developments included in the study include: • Anacostia Square • Bethlehem Baptist Church PUD • Anacostia Metro Station Area Redevelopment • Matthew Memorial Terrace • Park Chester • Sheridan Station • Curtis Properties • Poplar Point Place • Poplar Point • Bolling Air Force Base and Anacostia Naval Air Station • DHS HQ Consolidation at St Elizabeths (West Campus) • DC OP/DMPED Master Plan for St Elizabeths East Campus • Barry Farm PUD	DDOT Comment 5.6.19: Assume full build out of the East Campus including the parcels previously to be developed by GSA. The City is working on backfilling these parcels with other tenants. **Jacobs response:** For the East Campus land use and demographic assumptions, the latest round of forecasts in 2035 from COG will be used.

Regional Traffic Growth Propose a methodology to account for growth in regional travel demand passing through the study area. An appropriate methodology could include reviewing MWCOG model growth rates, historic DDOT AADT traffic counts, or data from other planning studies. These sources should only be used as a guide. Map proposed growth rates by facility, direction, and time of day. *Generally, maximum annually compounding growth rates of 0.5% in peak direction and 2.0% in non-peak direction are acceptable. Growth rates based on historical data should look at 10+ years of data. Adjustments to the rates may be necessary depending on the amount of traffic assumed from local background developments or if there were recent changes to the roadway network.* ☐ *Scoping/CTR Figure(s) – Table and map showing projected regional growth assumptions (dependent on methodology)*	All local traffic growth will be estimated based on regional travel demand models including all the projects programmed in the latest CLRP and latest land use forecasting. The study will account for through traffic within the study area from future developments that do not have origins or destinations within the study area. The methodology adopted in this study proposes to not incorporate the typical growth rate method to be applied to the existing traffic to estimate future traffic. We propose to use the same TDM approach in 2012 FEIS and TTR and make necessary revisions to update the transportation network (consistent with the latest CLRP) and land use assumptions (consistent with the latest round of the Cooperative Forecasts) in order to capture regional traffic growth and trends.	
Vehicle Parking Identify parking locations and justify the amount of on-site vehicle parking, including a comparison to the number of spaces required by ZR16 and any previous approvals. Use the *DDOT Park Right DC* tool to assess vehicle parking demand for residential over retail projects. Provide parking calculations and parking ratios by land use, including any eligible ZR16 vehicle parking reductions (e.g., within ¼ mile of Priority Bus Route, within ½ mile of Metrorail Station, providing carshare spaces, located within a D zone, etc.). *Confirm that the proposed vehicle parking provision is in line with the vehicle trip generation estimates. If vehicle parking ratios are not in line with the context of the neighborhood where the site is located, then adjustments to the trip generation calculations and additional TDM commitments will be required.* *Confirm whether ZR16 TDM Mitigations will be required, per Subtitle C § 707.3, for providing more than double the amount of required vehicle parking. Coordinate with the Zoning Administrator as early in the process as possible for an official determination.* *For BZA parking relief cases, per Subtitle C § 703.4, a TDM Plan is required when providing fewer than the ZR16 required number of spaces. Also, if relief is being requested from 5 or more spaces, then a Parking Occupancy Study is required (see Impact Assessment section).* ☒ *Scoping/CTR Figure – ZR16 Vehicle Parking Calculations and Proposed Parking Ratios by Land Use*	The MPA #2 will comply with the prescribed parking ratios contained in the NCPC comprehensive plan that require the preferred alternative to achieve a 1:4 employee parking ratio for standard daily employees and a 1:3 employee parking ratio for 24-hour shift employees. Visitor and official (pool) vehicle parking spaces are not required to achieve the prescribed NCPC employee parking ratios. Visitor and official vehicle parking will be accommodated through 685 additional spaces provided on the West Campus. They are not included under the requirements of the overall employee parking ratio calculation. The 527 visitor spaces will be accessible through Gate 2. Gate 4 garage has been constructed and is fully operational, including the largest number of parking spaces for a variety of different users, totaling 1,985 parking spaces. Gate 6 will provide access to a small surface lot of 50 spaces for DHS official vehicles and GSA employees. The parking garage location map is included in **Attachment 7**.	DDOT Comment 5.6.19: Delta in parking from 2012 Amendment #1 to 2019 Amendment #2 is still not clear. Clarify the amount currently approved and approximate amount proposed. DDOT prefers no additional parking be added to west campus above and beyond 2012 Master Plan. **Jacobs response:** The 2012 Amendment #1 proposed totally 4,234 parking spaces, of which 3,459 are in the west campus and 775 are in the east campus. Based on the parking ratio agreed by NCPC (1:4 for regular employees and 1:3 for shift employees), Amendment #2 will propose 4,058 parking spaces, all on the west campus. This is effectively 176 parking spaces lower than the total spaces approved in Amendment #1

Bicycle Parking

Identify the locations of proposed bicycle parking and justify the amount of long- and short-term spaces proposed. Provide a calculation of the number of spaces required by ZR16.

Long-term bicycle parking spaces should be easily accessible from building lobby or located in the parking garage level closest to the ground floor. Lockers and showers must be included with non-residential long-term bicycle storage rooms, per Subtitle C § 706. Provide calculations for required lockers and showers.

Short-term bicycle parking should be accommodated by installing inverted U-racks along the perimeter of the site in private or public space, near the site entrance(s).

☐ *Scoping/CTR Figure – ZR16 calculations for bicycle parking and shower/locker Facilities*

☐ *Scoping/CTR Figure – Locations of internal bicycle parking spaces, routing to these spaces, and related support facilities including locker rooms, showers, storage areas, and service repair room*

Motorcycle and bicycle parking will be available at the Gate 4 garage. Bicycle parking is planned for selected areas throughout the west campus including 200+ bicycles and 20+ motorcycles.

DDOT Comment 5.6.19: In addition to short-term bicycle racks, provide secure indoor bicycle parking rooms with showers, lockers, and changing facilities. Look to the 2016 Zoning Regulations (DCMR 11, Subtitle C, sections 802 and 806) for guidance on how many of each is appropriate.

Jacobs response: These facilities will be ensured during design of buildings and parking garages.

Mode Split

Provide mode split assumptions with sources and justification. Sources of data could include the most recent *Census Transportation Planning Products (CTPP)* or the *2005 WMATA Development-Related Ridership Survey*. Note that the walking mode share will account for internal trip synergies for mixed use developments.

The agreed upon mode split assumptions should not be revised between scoping and CTR submission without DDOT concurrence.

☒ *Scoping/CTR Figure – Mode Split Assumptions*

As part of the March 2012 FEIS and Transportation Management Plan (TMP) Amendment, mode share goals were developed in order to meet the required parking ratios established by NCPC and minimize the impacts to surrounding transportation networks for the 2035 Build scenario. The ratios were established in part through data compiled from employee surveys on current and "expected" travel modes with the planned expansion.

Mode	Transition (%)	2035 Full Build (%)
SOV	15	15
Carpool with non-DHS (arrive SOV)	4	4
Carpool/vanpool (HOV)	18	18
Drop off/kiss-and-ride	1	1
Commuter/express bus	2	8
Shuttle from Metrorail station	45	30
Metrobus	4	6
Walk from home or Metrorail station	2	5
Bicycle	1	1
Motorcycle	1	1
Work from home/telework	2	9
Did not work (vacation/sick)	2	2
Total	100	**100**

The model split goal will largely remain unchanged for the MPA #2.

DDOT Comment 5.6.19: How frequent will the shuttles run from Congress Heights and L'Enfant? Will need to provide frequent service to ensure the non-auto mode share targets are met.

Jacobs response: Currently a shuttle service is provided by WMATA (Route A4/W5) with 10-minute headways during peak periods between the campus and Anacostia metro station.

Trip Generation

Provide site-generated trip generation estimates, utilizing the most recent version of ITE *Trip Generation Manual* or another agreed upon methodology such as manual doorway or driveway counts at similar facilities. Estimates must be provided by mode, type of trip, land use, and development phase. Modes include transit (rail and bus), bicycle, walk, and automobile. Existing site trips should be based on visual counts and not estimated based on trip generation calculations.

A vehicle capacity analysis is required when a development generates 25 or more peak hour vehicle trips in the peak direction (higher of either inbound or outbound vehicles in highest peak hour). Existing site traffic, pass-by, TDM, and internal capture reductions should not be applied when calculating whether a CTR is required. They may be used in the multi-modal trip generation summary and assignment of trips within the CTR, as appropriate.

DDOT TripsDC tool should be used to determine trip generation estimates for residential over retail projects.

Adjustments to trip generation may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.

Pass-by rates in the District are minimal and should only apply to major retail-dominant destinations, grocery stores, and gas stations. An adjusted pass-by/diverted trips methodology should be developed if proposed uses are not located on a road classified as arterial or higher.

The agreed upon trip generation estimates should not be revised between scoping and CTR submission without DDOT concurrence.

☐ *Scoping Figure – Vehicle Trip Generation Calcs for CTR Threshold*

☐ *Scoping/CTR Figure – Multi-Modal Trip Generation*

The site trip generation methodology will be consistent with 2012 FEIS/TTR under MPA #1 travel demand forecasting.

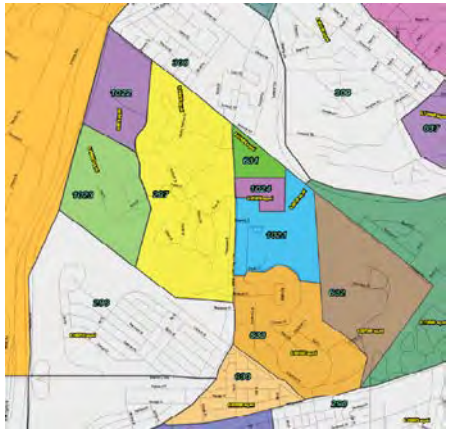
Travel demand forecasting for the 2012 FEIS/TTR was conducted using an application that was based on the Version 2.2 regional travel demand model developed by the Metropolitan Washington Council of Governments / National Capital Region Transportation Planning Board (MWCOG/TPB). Since completion of the original travel demand modeling for the 2012 FEIS, there have been two major changes in the MWCOG/TPB modeling process for the development of the current Version 2.3 model.

The first major change was the modification from a 2,191 Traffic Analysis Zone (zone or TAZ) system to a 3,722 zone system. The second major change is that the Version 2.3 model has been calibrated with the newly-collected travel survey data from the 2007/2008 Household Travel Survey. The Version 2.2 model was based on the 1994 Household Travel Survey. Additionally, the land use inputs to the Version 2.3 model have been revised in the annual Regional Cooperative Land Use Forecasting Program.

The proposed approach for travel demand forecasting for the MPA #2 transportation study is to utilize the customized version of the MWCOG model developed and calibrated for the 2012 FEIS. Using the same model version would allow a direct comparison between the 2012 FEIS results and the MPA #2 transportation study results. While changes have occurred in the MWCOG/TPB modeling process between Version 2.2 and Version 2.3, the modifications made for the 2012 FEIS model to represent the land use changes and transportation improvements specifically for the MPA #2 transportation study make it the best model to use.

DDOT Comment 5.6.19: were TAZs in the immediate vicinity of the site been broken into smaller TAZs and centroid connectors added where site driveways exist? Doing both could significantly improve the accuracy of the projections. Include graphics in scoping attachments showing screenshots of the stick transportation network and TAZs.

Jacobs response: Yes, the single TAZ for both campuses (shown in the first figure below) was further split into 3 TAZs in West Campus and 5 TAZs in East Campus with added centroid connectors (shown in the second figure below).



		DDOT Comment 5.6.19: have the existing and future land use assumptions from the COG model been confirmed? Consider overriding with better/more accurate assumptions. **Jacobs response:** We will use the most current land use information on both campus in the Existing COG model. Also, the future land use information based on Amendment #2 will be used on West Campus. For the East Campus, the latest round of land use forecasts from COG will be used. DDOT Comment 5.6.19: provide an estimate of trip generation changes on using the ITE methodology (-3,100 employees on East Campus and +1,900 on West Campus) so DDOT can understand the order of magnitude of changes. These should then be compared to the model outputs. **Jacobs response:** about 4000 reduction in trip ends at the daily level. AM inbound and PM outbound trips reduce by about 500 trips. If we consider west campus, the daily trips increase by 6300. AM peak increase by 800, PM trips increase by 725.

Trip Distribution Provide sources and justification for proposed percentage distribution of site-generated trips. Additionally, document proposed pass-by distributions and the re-routing of existing or future vehicles based on any changes to the transportation network. *Percentage distributions should be shown turning at intersections throughout the transportation network and at site driveways and garage entrances.* *The agreed upon percentage distribution of trips should not be revised between scoping and CTR submission without DDOT concurrence.* ☐ *Scoping/CTR Figure – Percentage Distribution Map(s) by Land Use, Direction, and Time of Day* ☐ *CTR Figure – Assignment of Site-Generated Trips* ☐ *CTR Figure – Assignment of Pass-By or Re-Routed Trips, as needed*	The trip distribution will be estimated based on the O-D information from the latest employee residential zip code information as well as the trip distribution process in MWCOG TPB travel demand forecasting model. A separate framework document will describe the detailed travel demand forecasting methodology. **Attachment 8** is Figure 6-2 in 2012 TMP showing the trip distribution. It will be updated through the MPA #2 Transportation Study based on the current employee residential zip code information and latest campus development plan.	

Section 3: IMPACT ASSESSMENT

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Traffic Impact Analysis (TIA) **Study Area and Data Collection** Identify study intersections commensurate with the impact of the proposed project and the travel demand it will generate. Study area should include all major signalized and unsignalized intersections, intersections expected to realize large numbers of new traffic, and intersections that may experience changing traffic patterns. *Turning Movement Counts (TMC) should be collected during the weekday morning (6:30 AM to 9:30 AM) and evening (4:00 PM to 7:00 PM) peak periods while schools and Congress are in session, unless otherwise agreed upon. The Saturday mid-day peak period should be studied if development program is retail-heavy. TMCs should include vehicles, pedestrians, bicyclists, and % truck traffic. Previously collected TMCs may be used if they are less than 2 years old, unless a significant change to the transportation network has occurred.* *Provide hard copies of TMCs in CTR appendix and electronic copies in DDOT-preferred format at time of submission.* ☒ *Scoping/CTR Figure – Study Intersections*	A study area map is attached and includes the following: • I-295 (between Shepherd Parkway SW/Overlook Avenue SW interchange and I-695 / DC-295 interchange) • Firth Sterling Avenue (between South Capitol Street SW and Suitland Parkway) • St. Elizabeths Avenue SE (between Firth Sterling Avenue SE and Gate 4) • Martin Luther King Jr. Avenue SE (between Alabama Avenue SE and 11th Street SE bridge) • Suitland Parkway (between South Capitol Street SE and Stanton Road SE on-ramp) • Malcolm X Avenue SE (between South Capitol Street SE and Martin Luther King Jr. Avenue SE) • South Capitol Street SE (between Frederick Douglass Memorial Bridge and Martin Luther King Jr. Avenue SE) • Alabama Avenue SE (between Martin Luther King Jr. Avenue SE and Wheeler Road SE) The data collection map and list are included in **Attachment 9**.	
TIA Study Scenarios Propose an appropriate set of scenarios to analyze. Note the anticipated build-out year and project phasing. Analysis scenarios should consider: • *Existing Conditions* • *Background Conditions (No-Build)* • *Total Future Conditions (With Development)* • *Total Future Conditions (With Mitigation)* • *Total Future Conditions (+5 Years), as necessary* • *Additional Scenarios For Each Phase, as necessary* • *Long Range 25+ Years Planning Scenario for Larger Projects* *Note that the Background (No-Build) scenarios for multi-phase projects should not include site-generated traffic from earlier phases of development.*	The Build-Out for MPA #2 is 2035. The following scenarios will be analyzed: • Existing Conditions (2018/2019) • 2035 No-Action Scenario (with 2012 MPA #1 development) • 2035 Action Scenarios (with 2019 MPA #2 development) • 2035 Action Scenario with Transportation Improvements (with 2019 MPA #2 development and mitigations)	DDOT Comment 5.6.19: As noted previously, the former East Campus sites should be assumed to be developed in the future. Since these will be back-filled by the City, include them in the 2035 No-Action Scenario. The 2035 Action Scenarios will be testing 1,900 additional employees to the West Campus. **Jacobs response:** For the East Campus land use and demographic assumptions, the latest round of forecasts from COG will be used.

TIA Methodology Propose an appropriate methodology for the capacity analysis including the type of software program to be used. Per DEM 38.3.5.1, HCM methodology should be used to determine Level of Service (LOS) and vehicle queue lengths. DDOT requires Synchro software for LOS analysis and SimTraffic (10 simulations averaged) for queue lengths. *Provide hard copies of simulation analyses in CTR appendix and electronic copies of analysis files at time of submission.* ☐ *CTR Figure(s) – TMCs for Existing, Background, and Total Future Scenarios* ☐ *CTR Figure(s) – Synchro LOS Results for Existing, Background, and Total Future Scenarios* ☐ *CTR Figure(s) – SimTraffic Queuing Results for Existing, Background, and Total Future Scenarios*	The St. Elizabeths Transportation Analysis Study will use two traffic operation software packages. • VISSIM version 11 will be used as the primary analysis tool to assess intersection level of service (LOS) and delay, arterial travel times, and freeway LOS and densities. • Synchro version 10 will be utilized as a traffic data information database as well as the basis for future-year signal timing and optimization. A brief description of each analysis tool is provided below. A separate framework document will describe the methodology, assumptions and performance measures used to assess traffic conditions.	
Pedestrian Network Propose methodology for evaluating the condition of the existing pedestrian network and determining the project's impact. Evaluate, at a minimum, sidewalk widths, network completeness, whether facilities meet DDOT and ADA standards, whether pedestrian signal timings are adequate, and identifying critical walking routes. *Study area should include, at a minimum, all roadway segments and multi-use trails within a ¼ mile radius from the site, including routes to Metrorail, transit stops, schools, and major activity centers.* ☐ *Scoping/CTR Figure – Pedestrian Study Area and Walking Routes to Transit, Schools, Activity Centers* ☒ *CTR Figure – Pedestrian Network Existing Conditions* ☐ *CTR Figure – Pedestrian Network Future Conditions (if improvements are programmed/proffered by others or proposed by the Applicant)*	The 2012 existing pedestrian network map within the study area from 2012 TTR is included in **Attachment 10**. The map will be updated based on 2019 existing conditions.	DDOT Comment 5.6.19: The ped network analysis needs to be more robust in the study. Note which sidewalk connections w/in ¼ mile of the West Campus and along the frontage meet DDOT standards, are missing, or are substandard. Which will be improved by GSA? [no changes]
Bicycle Network Propose methodology for evaluating the condition of the existing bicycle network and determining the project's impact, including impacts to Capital Bikeshare. Evaluate, at a minimum, network completeness and adequacy of Capital Bikeshare locations and availability. *Study area should include, at a minimum, all roadway segments and multi-use trails within a ½ mile radius from the site, including routes to Metrorail, transit stops, schools, and major activity centers.* *Note where bike lanes conflict with access to the site or on-street loading movements associated with the project.*	The 2012 existing bicycle network map within the study area from 2012 TTR is included in **Attachment 11**. The map will be updated based on 2019 existing conditions.	DDOT Comment 5.6.19: In CTR provide cross-sections for future MLK Avenue that include feasible bicycle facilities (preferably physically separated lanes rather than painted lanes). Bicycle lanes should be accommodated before providing additional lanes for traffic. **Jacobs response:** Typical cross sections of MLK improvements will be developed as a recommendation of the study.

If a Capital Bikeshare station is located along the site frontage, the Applicant must assume the station will stay in place after the development has been constructed and must be designed into the public space plans. If it is not physically possible to stay in place, then DDOT expects the Applicant to demonstrate this hardship, propose a viable alternative location, and fund the station relocation. The minimum size of a new Capital Bikeshare station is 19 docks. ☐ *Scoping/CTR Figure – Bicycle Study Area and Bicycling Routes to Transit, Schools, Activity Centers* ☒ *CTR Figure – Bicycle Network Existing Conditions* ☐ *CTR Figure – Bicycle Network Future Conditions (if improvements are programmed/proffered by others or proposed by the Applicant)*		
Transit Network Propose methodology and metrics for evaluating and determining the transit impacts of the project. Evaluate, at a minimum, existing transit stop locations, adjacent bus routes and Metro headways, planned transit improvements, and an assessment of existing transit stop conditions (e.g., ADA compliance, bus shelters, benches, etc.). For rail stations, refer to the 2008 *WMATA Station Site and Access Planning Manual*, as well as various station capacity studies. *All existing bus stops must be accommodated during construction.* ☒ *Scoping/CTR Figure – Map of Adjacent Transit Routes and Stations*	The 2012 existing transit network map within the study area from 2012 TTR is included in **Attachment 12**. The map will be updated based on 2019 existing conditions. The previous study proposed operating shuttle services from metro station to the campus. A shuttle service between Gate 4 and the Anacostia Metrorail Station is currently being provided by the Washington Metropolitan Area Transit Authority (WMATA) by modifying an existing Metrobus route (A4). The map of proposed shuttle service in 2012 TTR is also included in in **Attachment 12.**	DDOT Comment 5.6.19: Where does the L'Enfant Station shuttle route fit in? Is that a route currently in operation that will continue in addition to the new routes discussed? **Jacobs response:** WMATA route A4/W5 is currently in operation with 10-minute headways during the peak periods.
Safety Analysis Propose methodology to identify crash patterns at study intersections and mitigate potential safety concerns. Identify intersections with a crash rate of 1.0 MEVs or higher over the most recent 3-year period, document the types of crashes, and evaluate crash trends at these intersections. A safety analysis is only required if a capacity analysis is required. *Perform a review of DDOT Vision Zero Map for the project study area and connect crash trends and recommendations to DDOT's Vision Zero strategy. Note whether any study intersections have been identified by DDOT as high crash locations and if any safety studies have been previously conducted.* *Crash data may be obtained by submitting a data request form to the Transportation Operations and Safety Division (TOSD). This form can be provided upon request.*	A qualitative evaluation of the most recent available three-year crash history on Martin Luther King Jr. Avenue, Malcolm X Avenue and Alabama Avenue will be performed to identify hot-spot locations and crash patterns.	

Internal Circulation and Transportation Facilities If site contains 500 or more vehicle parking spaces, evaluate on-site vehicle parking demand and provide analysis demonstrating parking entrance and ramps can properly process vehicles without queuing onto public streets. Provide proposed parking supply, queuing analysis, and physical controls to parking area, if applicable. ☐ *CTR Figure – Parking ramps and processing facilities along with processing speed*	Traffic operational analysis using VISSIM will include gate operations and parking garage entrance roadways to ensure no queue spillback onto public streets will occur or to develop appropriate mitigation measures.	
On-Street Parking Occupancy Study This analysis is required if BZA relief from 5 or more on-site vehicle parking spaces is being requested. It may also be required as part of a ZC or permitting case, if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods. *Vehicle parking occupancy counts should be collected hourly during periods of peak demand. These are typically the weekday evening period (6-9 PM) for residential uses, weekday morning period (7-9 AM) if within ¼ mile of Metrorail, and weekend peak periods if there is a commercial component. Parking availability should be assessed a maximum of 2 blocks in each direction from the site, unless otherwise agreed upon.* ☐ *Scoping/CTR Figure – Study Area/Block Faces* ☐ *CTR Figure(s) – Block Face Parking Inventory and Restrictions* ☐ *CTR Figure(s) – Vehicle Parking Space Utilization by Study Period*	On-street parking occupancy study is not applicable for this study.	

Section 4: MITIGATIONS

The completed CTR should detail all proposed mitigations. The purpose of including the Mitigations section in the Scoping Form is to note DDOT's Significant Impact policy, DDOT's approach to mitigation, and to allow the Applicant to gain initial feedback on potential mitigations the Applicant may ultimately propose. Any mitigation strategies discussed and included in the Scoping Form are not considered binding until formally committed to in the CTR.

DDOT Significant Impact Policy: Per DEM 38.3.5, all site-generated vehicular impacts to the transportation network during study peak hours must be mitigated. Vehicular impacts are defined as 1) the degradation of an intersection approach to LOS E or F or intersection v/c ratio to 1.0 or greater under Total Future Conditions; 2) if an approach exceeds LOS E or F or intersection exceeds 1.0 v/c ratio under Background Conditions then an increase in delay or v/c ratio by 5% or more under Total Future Conditions; 3) vehicle queuing length exceeds available capacity of approach or turn lane under Total Future Conditions; 4) if the 95th percentile queue length of an approach or turn lane increases by 150 feet or more from Background to Total Future Conditions.

DDOT's approach to mitigate impacts to the network is to first establish optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action's impact, reducing on-site vehicle parking, implementing TDM measures, and making upgrades to the pedestrian, bicycle, and transit networks to encourage use of non-automotive modes should be proposed. Only when these options are exhausted will DDOT consider capacity-increasing changes to the roadway network because such changes often have detrimental impacts on non-automotive travel and are often contrary to the District's multi-modal transportation goals.

☒ *The Applicant acknowledges DDOT's Significant Impact Policy and the Agency's approach to mitigation that prioritizes reducing vehicle parking, implementing TDM strategies, and making non-automotive network improvements.*

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Transportation Demand Management (TDM) A TDM Plan is typically required to offset site-generated impacts to the transportation network or in situations where a site provides more parking than DDOT determines is practical for the use and surrounding context. TDM strategies are also an integral part of the District's transportation options. As such, a baseline TDM plan, regardless of impacts to the transportation network, should be proposed for all PUDs and Campus Plans. *Document all existing TDM strategies being implemented on-site and those being proposed and committed to by the Applicant. Elements of the TDM Plan must be broken down by land use.*	The previous TDM strategies were documented in *The DHS Headquarters Consolidation at St. Elizabeths: Transportation Management Program Amendment* dated March 2012 and subsequently approved by DDOT and NCPC. The 2012 TMP included a detailed TDM Implementation Plan, in which DHS was committed to implement the following TDM strategies and attempt to identify external funding to address anticipated need: • Employee Transportation Coordinator (ETC) • Commuter coordination • Web-based transportation services information system • Federal transit–Metrorail subsidies management • Coordination of route planning with commuter transit agencies • Internal and external agency shuttles • Vanpooling/carpool incentives • Modified employee parking policy • Bicycle storage/racks • Bicycle-rider and walker media • Alternative work schedule (AWS) policy • Telework policy • Flex-time policy • Incentives and reward programs • Employee health and safety program • Community partners program As a part of the MPA #2 efforts, the TMP will be updated to reflect the new changes in the updated master plan and the current employee residential zip	

	code information. A draft TMP will be submitted together with MPA #2 and DSEIS in September 2019.	
Operational Changes Describe all proposed operational changes in CTR and provide supporting analysis and warrants in the study appendix. All proposed changes in traffic control must be conducted following the procedures outlined in the Manual of Uniform Traffic Control Devices (MUTCD). *Note any preliminary ideas being considered at this stage of scoping.*	The transportation improvements proposed in 2012 MPA #1 will be re-evaluated with updated 2035 traffic demand based on MPA #2 development. If the results indicate operational degradations as compared to No Action, mitigations will be proposed. A planning-level warrant analysis will be performed using daily and peak hour volumes if new signals are proposed.	
Geometric Changes Describe all proposed geometric changes in CTR and provide supporting analysis and warrants in the study appendix. *Note any preliminary ideas being considered at this stage of scoping.*	The 2012 MPA #1 proposed a number of transportation improvements. Several of them has been constructed or are currently under construction. The Martin Luther King Jr. Avenue Improvements will be re-evaluated with updated 2035 traffic demand based on MPA #2 development. If the results indicate operational degradations as compared to No Action, mitigations will be proposed. • Interchange modifications at I-295 interchange with Malcolm X Avenue – currently under construction. • West Campus Access Road Construction – partially open and the rest is currently under construction. • Firth Sterling Avenue / West Campus Access Road Intersection Improvements – completed. • Martin Luther King Jr. Avenue Improvements – will be re-evaluated based on MPA #2 development.	
Performance Monitoring DDOT may require a performance monitoring plan in situations where anticipated vehicle trips are large in magnitude, unpredictable, or necessitate a vehicle trip cap. The monitoring plan will establish thresholds for new trips a project can generate, define post-completion evaluation criteria and methodology, determine the frequency of reporting, and establish potential remediating measures (e.g., adjust trip caps or implement additional TDM strategies). *Document any existing performance monitoring Plans in effect and any proposed changes.*	In 2012 TMP, DHS was committed to a comprehensive monitoring plan as part of the TMP, including • Detailed Employee Surveys • Random Employee/Vehicle Counts • Shuttle Use/Capacity Surveys • Transit Use Surveys • Random Neighborhood Parking Surveys • Independent Employee Input • Annual Senior Management and Bi-Annual TMP Reviews Between 2013 and 2017, GSA and DHS have performed four yearly traffic monitoring studies to evaluate the traffic operational conditions in the roadway networks surrounding the West Campus as a result of the U.S. Coast Guard (USCG) move-in. The updated TMP will include an updated traffic monitoring plan to reflect master plan changes.	

Section 5: ADDITIONAL TOPICS FOR DISCUSSION DURING SCOPING		
CATEGORY & GUIDELINES	**CONSULTANT PROPOSAL**	**DDOT COMMENTS**
These items include status of Community Benefits Agreement, ANC concerns, traffic calming proposals, Traffic Operations and Parking Plan (TOPP), additional analyses such as merge/weave analysis, etc.	Advisory Neighborhood Commission (ANC) 8C has expressed interest in the linkages (especially community linkages) between the East Campus and the West Campus. The ANC has expressed curiosity about the economic benefit that the West Campus employees will bring to the community. As such, GSA is coordinating and will continue to work with the District of Columbia on any potential physical and community integrations that can occur between the East and West campuses. GSA and DHS, as of April 2019, are constructing facilities on the West Campus that will serve and be utilized by not only the West Campus affiliates, but the general public as well. Geometric improvements, operational changes, parking improvements and traffic calming measures will be considered as part of mitigation strategies if relevant problems identified through traffic and transportation analysis are identified.	


Martin Luther King Jr. Ave
West Access Road
St. Elizabeths West Campus Site
INTERSTATE
295

2008 MASTER PLAN - DEVELOPMENT SUMMARY

West Campus

Seat Target	10,900
Building GSF	3.8 M
- Above Grade	3.2 M
- Below Grade	0.6 M
Parking GSF	1.2 M
- Above Grade	0.5 M
- Below Grade	0.7 M
Total GSF	5.0 M
Parking Spaces	3,459

East Campus

Seat Target	3,100
Building GSF	0.7 M
- Above Grade	0.6 M
- Below Grade	0.1 M
Parking GSF	0.3 M
- Above Grade	0.3 M
- Below Grade	0.0 M
GSF	1.0 M
Parking Spaces	775

Total

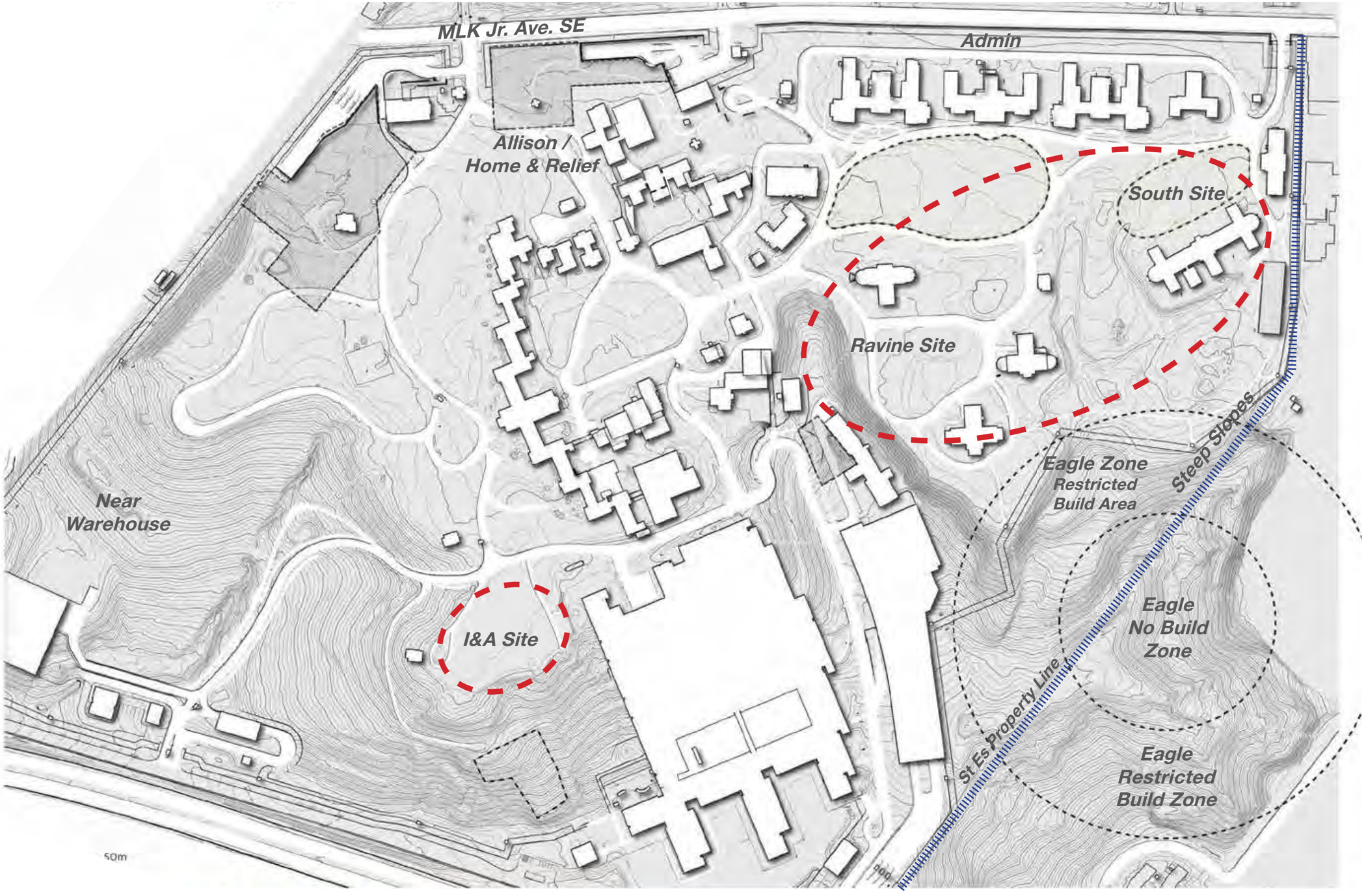
Seat Target	14,000
Building GSF	4.5 M
Parking GSF	1.5 M
Total GSF	6.0 M
Parking Spaces	4,234

N 0ft 200ft 400ft

Figure - Illustrative Master Plan dated 10 November 2008

DEVELOPMENT SITES

St. Elizabeths East Campus - New DC Hospital



MASTER PLAN AMENDMENT #2 RECOMMENDED PLAN

2008 Master Plan
2012 MPA #1
2018 MPA #2
Program Summary

Building GSF #60,66,67,68,69 — 2008 = 98,960 gsf — 2016 = 104,500 gsf (13,500 below grade)
2016 Enhanced Plan — Plateau 1,063,083 gsf — (637,850 above grade / 425,233 below grade) — GSA Efficiency 1.4, USF 759,345 gsf
2018 — Plateau 1,200,000 GSF (above grade) — I&A 175,000 GSF (25,000 above grade, 150,000 below grade)

	2008 Master Plan			2012 Master Plan Amendment #1			2016 Enhanced Plan 2018 Concept			Results
West Campus Seats			10,900			10,900			12,800	+17%
East Campus Seats			3,100			3,100			0	Eliminated
Total Campus Seat Target			**14,000**			**14,000**			**12,800**	**-9%**
Personnel Seats Assigned			**14,000**			**14,000**			**17,000**	
	Above Grade	Below Grade	Total GSF	Above Grade	Below Grade	Total GSF	Above Grade	Below Grade	Total GSF	
West Campus Building Development	3,228,474	601,912	3,830,386	3,228,474	601,912	3,830,386	2,983,784 3,480,784	950,189 661,956	3,933,973 4,142,740	+3% +8%
East Campus Building Development	619,939	95,133	715,072	650,000	100,000	750,000			0	Eliminated
Total Building Development GSF	3.8M	0.7M	**4.5M**	3.8M	0.7M	**4.5M**	2.9M	0.9M	**3.9M**	**-13%**
West Campus Parking Structures	478,900	737,600	1,216,500	478,900	737,600	1,216,500	804,783	707,700	1,512,483	+24%
East Campus Parking Structures	271,250		271,250	271,250		271,250			0	Eliminated
Total Parking Structures GSF	0.8M	0.7M	**1.5M**	0.8M	0.7M	**1.5M**	0.8M	0.7M	**1.5M**	**+2%**
West Campus Parking Spaces	2,090	1,369	3,459	2,090	1,369	3,459	2,035	2,023	4,058	+17%
East Campus Parking Spaces		775	775		775	775			0	Eliminated
Total Parking Spaces	2,090	2,144	**4,234**	2,090	2,144	**4,234**	2,035	2,023	**4,058**	**No change to NCPC approved 1:4 parking ratio**
Total Campus GSF	4.6M	1.4M	**6M**	4.6M	1.4M	**6M**	3.8M	1.6M	**5.4M**	**-10%**
							4.3M	1.4M	**5.7M**	**-5%**

Mater Plan Amendment #1 Transportation Improvements

Transportation

Transportation Planning and Improvements

The TTR includes Transportation Alternative 2 Modified, which has been identified in the EIS as the preferred alternative for transportation improvements needed to accommodate access to the consolidated DHS Headquarters at St. Elizabeths. It includes the following roadway improvements:

- Interchange modifications at I-295 interchange with Malcolm X Avenue – these improvements would provide direct ramps to the proposed West Campus Access Road and would help separate local traffic from traffic associated with the DHS Headquarters. The interchange modifications would also eliminate existing unsafe weaving conditions on I-295 and reduce the number of merge points onto I-295 northbound.
- West Campus Access Road – this three-lane road would run parallel to I-295 to its East between the Malcolm X Avenue interchange and Firth Sterling Avenue. This new road would connect to the proposed access modifications at Malcolm X Avenue and provide access to the West Campus portion of the DHS Headquarters consolidation.
- Firth Sterling Avenue / West Campus Access Road Intersection Improvements – these improvements will connect the West Campus Access Road with existing Firth Sterling Avenue and provide improvements and modifications to Firth Sterling Avenue and its side streets.
- Martin Luther King Jr. Avenue Improvements – these improvements include two travel lanes in each direction, an additional turn lane, median, and sidewalks along Martin Luther King Jr. Avenue to mitigate traffic associated with FEMA and Gates 1 and 2 on the West Campus.

These proposed transportation improvements are illustrated in Figure 6.19, along with the East Campus road network planned by DC. More detailed illustrations of the I-295/Malcolm X Avenue interchange and Access Road imporvements are shown in Figure 6.20, with more

Legend

- Improvements for DHS Development
- Improvements for DC Development
- WMATA Metrorail Green Line

Figure 6.19 – Overall Transportation Improvements Plan

detail of the MLK Avenue improvements in Figure 6.21. Table 6.1 provides mode split goals for the consolidated DHS Campus at St. Elizabeths.

In addition, the preferred alternative would include the implementation of a shuttle system to reduce vehicular demand within the vicinity of St. Elizabeths. Two routes are proposed to serve the Congress Heights Metro Station. One route is proposed between the Anacostia Metro Station and DHS Headquarters. The shuttle service is discussed in more detail in this section.

In March 2012, NCPC approved the preliminary and final design submission for the site development plans for Firth Sterling. Last November, NCPC approved the final design of the West Campus Access Road. In September 2009, GSA issued an Amended ROD for the West Campus Access Road and Firth Sterling Avenue intersection improvements. The West Campus Access Road will include two inbound lanes and one outbound lane between the West Campus and Firth Sterling Avenue. Campus access would be provided at Gate 4. The new intersection would modify the existing intersection of Firth Sterling Avenue at Barry Road/ Stevens Road/Eaton Road. Vehicles moving westbound on Firth Sterling Avenue would be able to make a left turn on to the proposed West Campus Access Road or continue straight on Firth Sterling Avenue. The recently constructed streetcar tracks along Firth Sterling would not

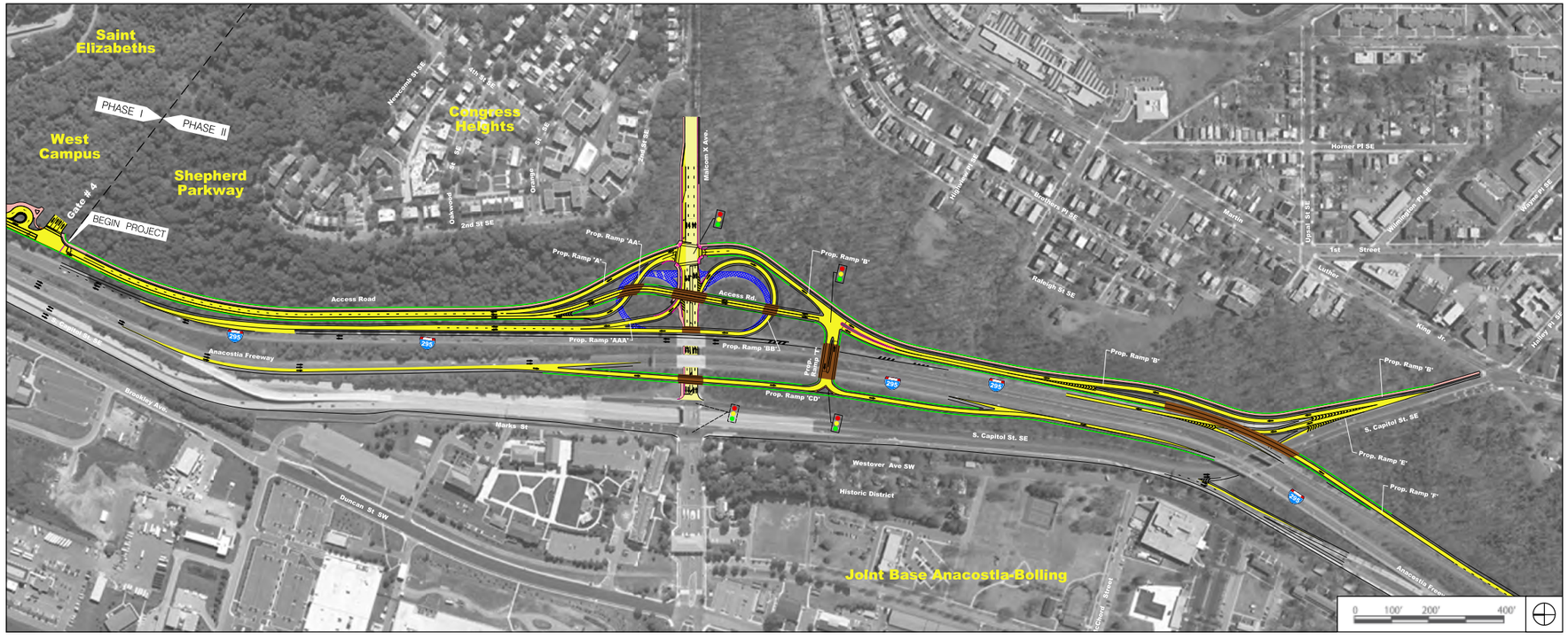


Figure 6.20 – I-295/Malcolm X Avenue Interchange and West Campus Access Road Improvements

DHS Employee Arrival Mode	Percentage
Automobile - SOV	15
Carpool with non-DHS (arrive SOV)	4
Carpool/vanpool (HOV)	18
Drop off/kiss-and-ride	1
Commuter/express bus	8
Shuttle from Metrorail station	30
Metrobus	6
Walk from home or Metrorail station	5
Bicycle	1
Motorcycle	1
Work from home/telework	9
Did not work (vacation/sick)	2
Total	**100**

Table 6.1 – St. Elizabeths Campus Mode Split Goals

SOV - single-occupant vehicle;
HOV - high-occupancy vehicle.

Figure 6.21 – Martin Luther King Jr. Avenue Improvements

require relocation. Eaton Road would be extended from its current terminus for Firth Sterling Avenue to intersect with Firth Sterling Avenue and Barry Road. The proposed new intersection would include new traffic signals, which would be reviewed and approved by DDOT prior to construction. Approximately 10 bus bays providing service to the West Campus would be constructed along the eastern side of the proposed West Campus Access Road between Gates 4 and 6 to support commuter bus, Metrobus and shuttle service from the Anacostia station.

Transportation Management Program

A Transportation Management Program (TMP) has been prepared for the planned DHS Headquarters Consolidation at St. Elizabeths, consistent with NCPC's requirements, and was published in January 2012. This TMP is an amendment that builds on the program in the December 2008 TMP, which was developed in conjunction with the 2008 DHS Consolidation Master Plan. The 2012 TMP incorporates results of additional analysis and departmental coordination that has occurred since the 2008 TMP was published.

The objective of the current TMP is to ensure that adequate measures are undertaken and maintained to minimize transportation impacts which result from the DHS Headquarters consolidation. The TMP includes specific strategies to encourage changes in employee travel modes as well as trip timing, frequency, length, and travel routes, with the objectives of reducing traffic congestion, improving air quality, and reducing demand for parking facilities.

The TMP includes two key components: a Transportation Demand Management (TDM) Implementation Plan and a TMP Performance Evaluation and Monitoring Plan. The TDM Implementation Plan provides guidance on implementing TDM strategies over the course of the phased relocation of DHS employees to St. Elizabeths as well as over the longer term, after the DHS Campus has been fully built and occupied. DHS will use the TMP Performance Evaluation and Monitoring Plan to ensure that the TDM Plan continues to address these issues over time. As a result of evaluation and monitoring, the

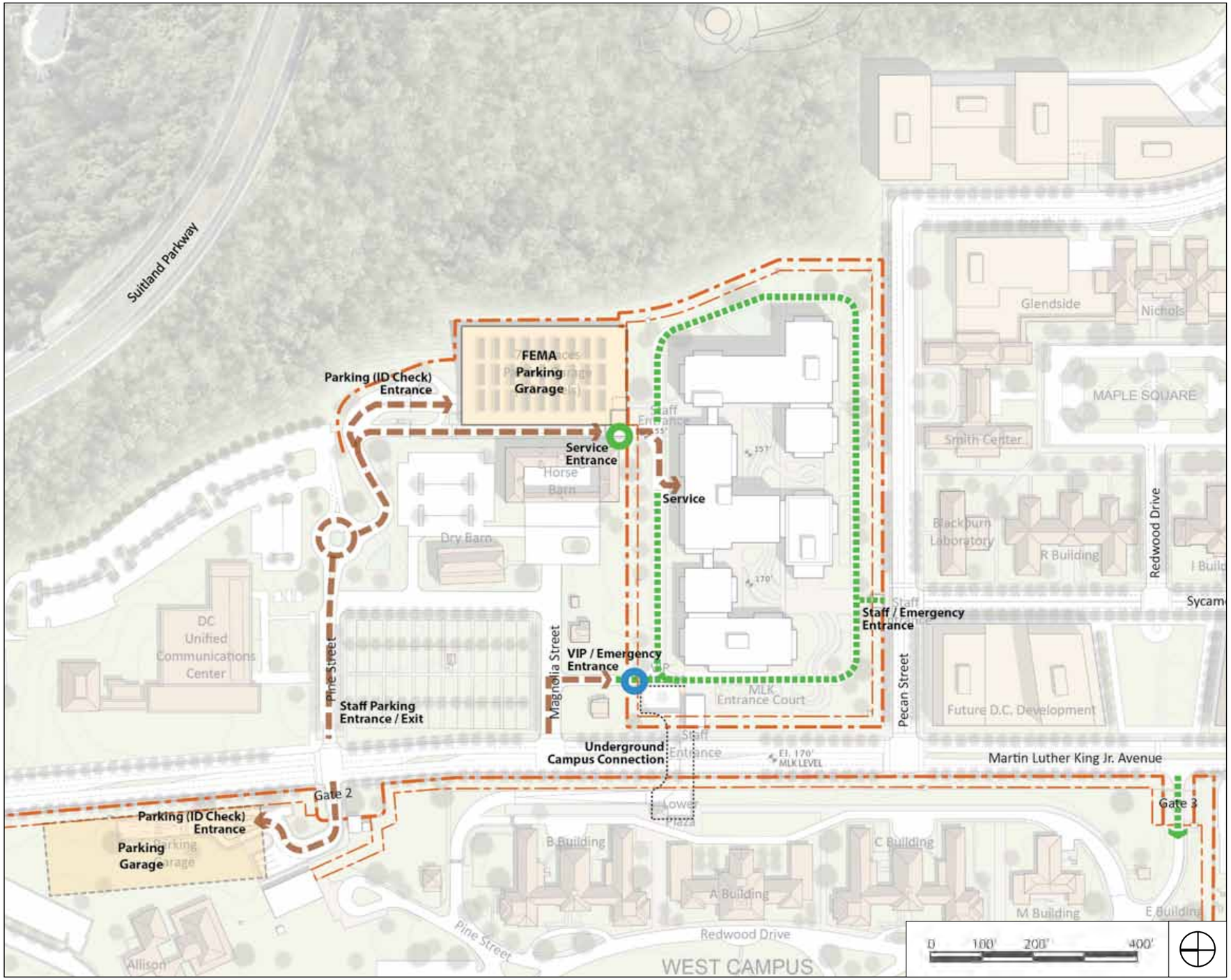
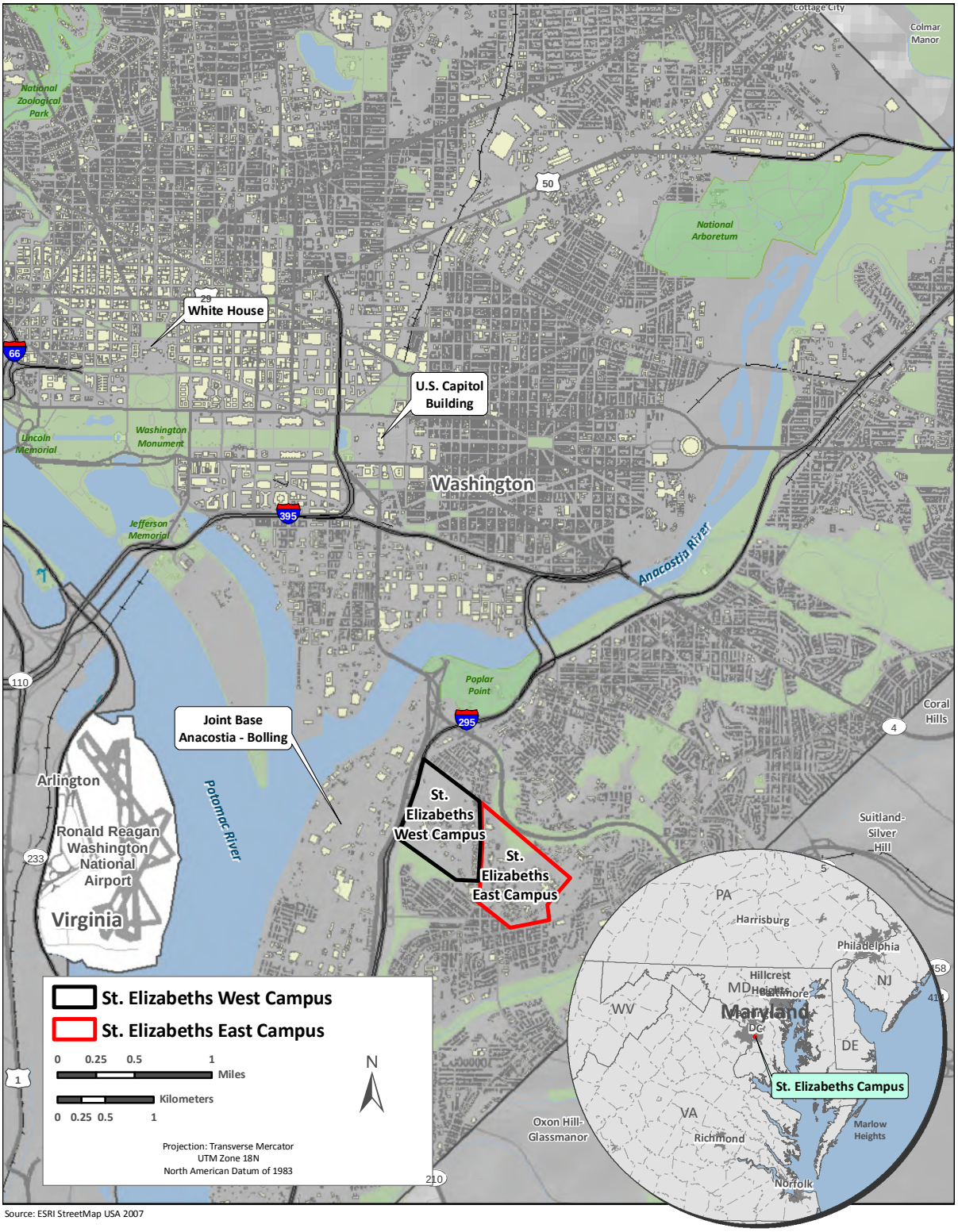


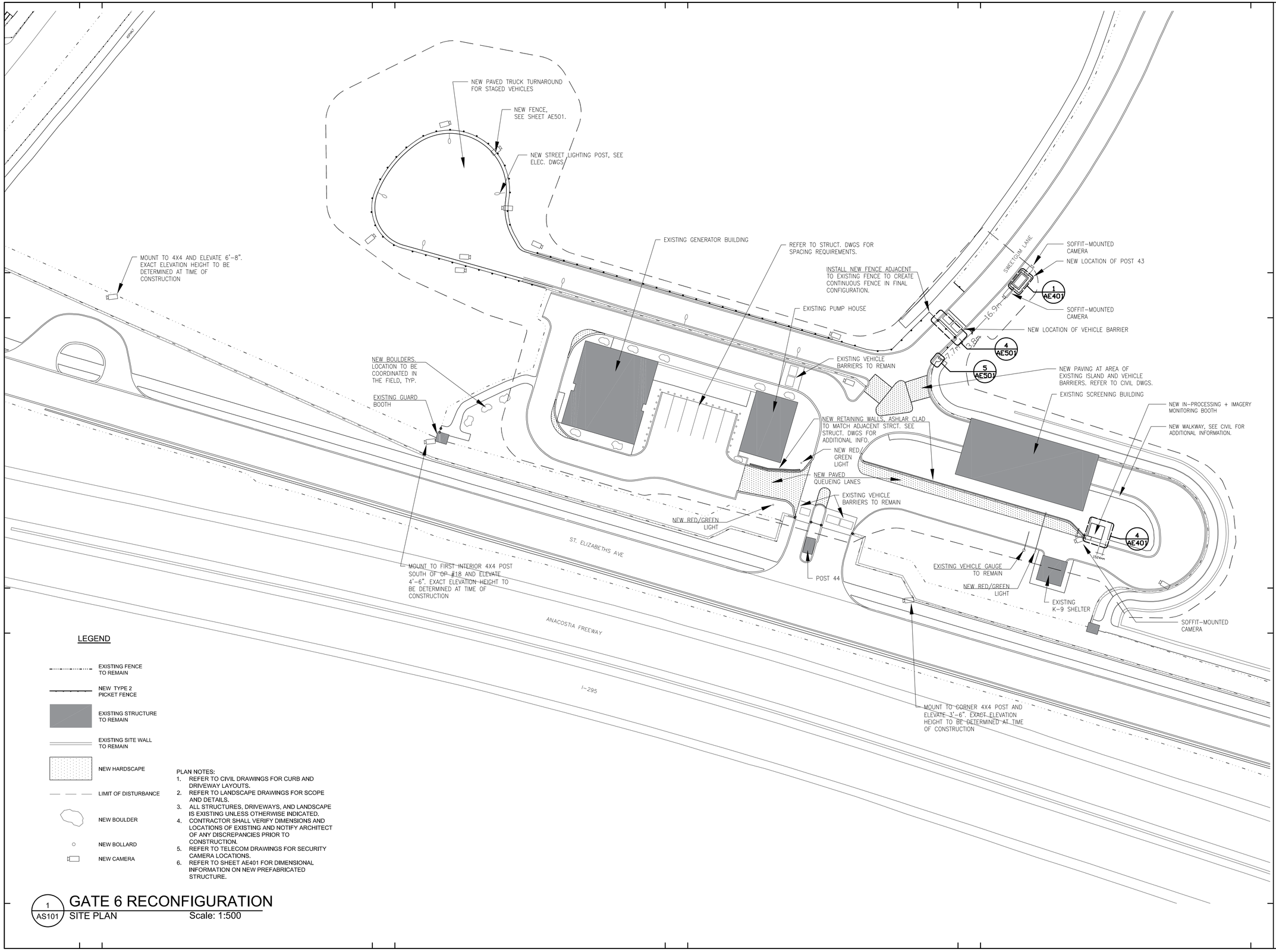
Figure 6.22 – Vehicular Access and Circulation Diagram

Project Location Map



Source: ESRI StreetMap USA 2007

West Campus Site Access



LEGEND

- EXISTING FENCE TO REMAIN
- NEW TYPE 2 PICKET FENCE
- EXISTING STRUCTURE TO REMAIN
- EXISTING SITE WALL TO REMAIN
- NEW HARDSCAPE
- LIMIT OF DISTURBANCE
- NEW BOULDER
- NEW BOLLARD
- NEW CAMERA

PLAN NOTES:

1. REFER TO CIVIL DRAWINGS FOR CURB AND DRIVEWAY LAYOUTS.
2. REFER TO LANDSCAPE DRAWINGS FOR SCOPE AND DETAILS.
3. ALL STRUCTURES, DRIVEWAYS, AND LANDSCAPE IS EXISTING UNLESS OTHERWISE INDICATED.
4. CONTRACTOR SHALL VERIFY DIMENSIONS AND LOCATIONS OF EXISTING AND NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
5. REFER TO TELECOM DRAWINGS FOR SECURITY CAMERA LOCATIONS.
6. REFER TO SHEET AE401 FOR DIMENSIONAL INFORMATION ON NEW PREFABRICATED STRUCTURE.

1 / AS101 GATE 6 RECONFIGURATION
SITE PLAN Scale: 1:500

General Services Administration
Public Buildings Service
National Capital Region

Office of Capitol Development
301 7th Street Southwest
Washington, DC 20407

OWNER IDENTIFICATION

GOODYCLANCY | HDR

420 Boylston Street
Boston, MA 02116
(617) 262-2760
www.goodyclancy.com

1101 King Street, Suite 400
Alexandria, VA 22314
(703) 518-8500
www.hdrinc.com

DESIGNER IDENTIFICATION

DESIGNER IDENTIFICATION

MARK	DATE	DESCRIPTION

REVISION BLOCK

A/E CONTRACT NO.	GS11P08MKC0079
DELIVER ORDER NO.	Deliver Order No
CONST. CONTRACT NO.	Const Contract No

CONTRACT

GRAPHIC SCALE

5000 0 10000 20000mm

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STAMP OR SEAL

PROJECT NAME	**GATE 6 RECONFIGURATION**
ADDRESS	2701 MLK Jr., Ave. SE
CITY, STATE, ZIP	Washington, DC 20032

BUILDING

PROJECT TITLE	**St. Elizabeths West Campus**
	US DHS Headquarters & NOC
GSA PROJECT NO.	NDC00256
SUBMISSION STAGE	**CONSTRUCTION DRAWINGS**
SUBMISSION DATE	02/15/19

PROJECT

DRAWN BY	NS
CHECKED BY	LF
DISCIPLINE	ARCHITECTURE
DRAWING TITLE	SITE PLAN
SHEET NUMBER AND FILENAME	AS101

SHEET

TECHNICAL MEMORANDUM

Gate 6 Reconfiguration Alternative Analysis

PREPARED FOR:	General Services Administration (GSA)
PREPARED BY:	CH2M
DATE:	November 2, 2017

In late 2016, CH2M conducted a truck screening sensitivity analysis (herein referenced as the "2016 analysis") which focused on traffic operations and a queuing analysis associated with the use of the St. Elizabeths Gate 6 area for security screening of trucks requiring Level 5 security access. The 2016 analysis, attached in ***Appendix A***, evaluated one alternative that reconfigured the roadways located adjacent to the Generator and Pump House buildings providing a continuous loop within the facility. Recently, the GSA has developed three new concepts for analysis requiring confirmation of their effectiveness to serve the functions as proposed and operate adequately during peak hour periods without impacting the operation of the Access Road and the other nearby entry gates and intersections. This technical memorandum summarizes a comparison of the three new alternatives of security screening activities that could occur at Gate 6 at St. Elizabeths. This analysis investigates the operation of screening activity during the peak hour periods without impacting the Access Road and other nearby gates and intersections.

A range of operating conditions were evaluated using the VISSIM traffic simulation software model developed by CH2M for the 2016 analysis including the three screening alternatives developed by GSA. Results from the simulation indicate the following key findings:

- All the three alternatives show acceptable traffic operations on the intersections along Firth Sterling Avenue under both 2017 and 2018 demand scenarios.
- All the three alternatives show that internal pre-screening queues can be accommodated within the Gate 6 site under both 2017 and 2018 demand scenarios.
- The external storage spaces at the entry checkpoint are not sufficient with the increased 2018 demand. This is a common issue for all the three alternatives. The queuing condition will be worse for Alternatives 1 and 2 in 2018. The entering vehicles will spill back to the Access Road and potentially impact the arterial through-traffic operations.
- For Alternatives 1 and 2, there are limited options to improve the queuing spaces at the entrance due to the physical location of Post 44. A more efficient checking process should be considered.
- For Alternative 3, minor modification of the entry checkpoint could create more queuing spaces to resolve the spill-back issue. However, while improving the queuing space, has signification impacts on the security on the campus needing to rework perimeter security and construction costs.

The remainder of this memorandum reviews the study background, methodology, assumptions, and analysis results.

Background

The Federal Protective Service (FPS) currently operates their National Capital Region (NCR) screening mission at the Cotton Annex located in Downtown Washington, DC[1]. Vehicles currently arrive at the

[1] As of early 2017, the truck screening operations were temporarily moved to Buzzards Point.

Cotton Annex for security screening using a mobile scanning machine. After completing the security screening, vehicles either exit the facility to their destination or they wait at the Cotton Annex for a vehicle to escort them to their destination. Approximately 100 to 125 vehicles are screened daily at the Cotton Annex. Screening activities occur for 12 hours, between 5:00 a.m. and 5:00 p.m. The busiest hours are between 10:00 a.m. and 1:00 p.m.

The Department of Homeland Security (DHS) is investigating relocating the NCR screening mission to Gate 6 at St. Elizabeths. The Department of Homeland Security (DHS) is in the process of relocating its headquarters to St. Elizabeths. Several agencies within DHS, most notably the United States Coast Guard (USCG), have already relocated to the campus. A stationary screening facility is located at Gate 6 designed to accommodate screening of vehicles with deliveries for the St. Elizabeths campus.

The NCR screening mission *could* be relocated to Gate 6 if the following issues at Gate 6 are addressed:

- The morning peak period truck restriction is lifted at St. Elizabeths provided it does not significantly impact traffic operations on Firth Sterling Avenue and the Access Road.
- Site circulation at Gate 6 is improved to provide sufficient space for vehicles to queue for screening and/or to wait for escort vehicles.
- An analysis of proposed screening activities at Gate 6 demonstrates that the site can accommodate queues within the facility.

This technical memorandum evaluates three new concepts to determine whether these issues can be addressed at Gate 6.

Methodology and Assumptions

A traffic simulation model of the roadway network, screening facility, and queuing areas (internal and along the Access Road) was developed using VISSIM microsimulation software version 9. CH2M used previous model networks developed for the GSA as part of the 2016 Coble Act traffic analysis and modified them accordingly to reflect the proposed layouts of the Gate 6 screening facility, entry and exit roadways, queuing areas, gate operation, and other nuances as needed, to simulate the truck traffic flow as they enter, maneuver, queue, are screened, and exit the facility for each of the three alternatives. All modeling scenarios used the same assumptions from the 2016 analysis, including the traffic data collected during the 2016 effort. Existing truck distributions, by vehicle classification/type and arrival time, was provided by FPS, based on available historical data.

Scenarios

The models included all existing background traffic, both on the Access Road and Firth Sterling Avenue. To account for a worst-case AM analysis, the methodology does account for the "blackout" period. For the three proposed alternatives, two demand scenarios were evaluated:

- Scenario A: By the end of 2017, with full occupation of the Gate 4 parking garage by US Coast Guard (USCG) employees.
- Scenario B: By July 1, 2018, with full occupation of parking garage by DHS and USCG employees, assuming a shift of 600 employee vehicles from USCG to DHS. DHS vehicles are expected to arrive later in the AM peak period. As a result, even though the total peak period demand will remain the same, the hourly demand during the AM peak hour (between 7:00 a.m. and 8:00 a.m.) will increase.

Table 1 lists the different assumptions of background traffic for the screening procedure under the two scenarios analyzed.

Table 1. Traffic Simulation Scenarios

Scenario	Background Traffic Assumption
Scenario A	I-295 / Malcolm X Ave Interchange not improved Full occupancy at Gate 4 garage USCG personnel primary users of Gate 4 garage (early arrival)
Scenario B	I-295 / Malcolm X Ave Interchange not improved Full occupancy at Gate 4 garage More DHS users at Gate 4 garage (later arrival)

Both scenarios assume the improvements to the interchange of I-295 and Malcolm X Avenue proposed as part of the consolidation of the DHS Headquarters at St. Elizabeths are not completed. This means that access and egress traffic from St. Elizabeths Gate 4 and Gate 6 traverses through local streets, primarily Firth Sterling Avenue. All scenarios also assume that the Gate 4 garage would be fully occupied.

The scenarios vary the type of personnel using the Gate 4 garage. The USCG is currently the primary user of the Gate 4 garage. Previous traffic counts indicate that USCG personnel arrive at Gate 4 earlier than the traditional AM peak hour. Traffic entering Gate 4 is highest before 7:00 a.m. Scenario A assumes USCG personnel make up the primary users of the garage. Scenario B assumes more personnel from DHS use the Gate 4 garage. As more phases of the DHS Headquarters consolidation are completed, the GSA expects to reallocate spaces in the Gate 4 garage from USCG to DHS personnel in the short term. Scenario B assumes DHS users would not arrive as early as USCG personnel. This would result in more background traffic (about 350 vehicles per hour) during the AM peak hour under Scenario B.

Study Area

Figure 1 illustrates the study area for the analysis. The study area includes the screening facility and circulating roadways at Gate 6 and the local street network near the access road to St. Elizabeths (Access Road). The local street network includes:

- Access Road from Gate 4 to Firth Sterling Avenue
- Suitland Parkway from I-295 interchange to Firth Sterling Avenue
- Firth Sterling Avenue from South Capitol Street to Howard Road

Assumptions related to the circulating roadways within Gate 6 are discussed later in the section of Reconfiguration Alternatives.

Aerial image © 2016 Google. Annotation © 2017 CH2M.

Figure 1. Study Area
Gate 6 and the Local Street Network in the Vicinity of St. Elizabeths

Measures of Effectiveness (MOEs)

The evaluation uses the following measures of effectiveness (MOEs) to assess traffic operations at Gate 6 and along the surrounding local street network:

- Gate 6 operations – queue lengths (measured in feet) for vehicles waiting for screening.
- Local street operations – average control delay (measured in seconds per vehicle) and level of service (LOS) (A through F scale).

Queues are a measurement of the lengths of roadway that are occupied by stopped vehicles. Simulated queue lengths are reported to identify whether there is enough queuing capacity within the circulating roadways at Gate 6 to accommodate vehicles waiting for screening and to identify whether queues extend into the Access Road.

Average control delay, measured in seconds per vehicle, is the delay a motorist experiences as a result of a stop sign or traffic signal. It includes the delay associated with slowing down while approaching an intersection, the time stopped at an intersection, and the delay associated with accelerating back to the desired speed. Control delays are reported from simulation results at all intersections along the local street network.

Level of service is a way to categorize a motorist's experience traveling through a traffic signal on an A through F scale. The LOS for signalized intersections is based on control delay. ***Table 2*** lists LOS thresholds for signalized intersections from the *Highway Capacity Manual 2010*. For urban environments, where motorists are accustomed to frequent stops and slow traffic, LOS A through LOS D provide acceptable traffic operations. To be more conservative, LOS C or better is considered acceptable traffic operations at the Gate 6 intersection. Level of service is reported at all intersections along the local street network.

Table 2. Level of Service (LOS) Thresholds and Descriptions for Signalized Intersections

Level of Service	Control Delay (seconds per vehicle)	Description
A	≤ 10	Most vehicles travel through intersection without stopping.
B	> 10 - 20	More vehicles stop at intersection than LOS A.
C	> 20 - 35	A significant number of vehicles stop at intersection. Cycle failure – when a queue during a red signal does not completely clear during the green signal – is infrequent.
D	> 35 - 55	Many vehicles stop at the intersection. Cycle failures become noticeable.
E	> 55 - 80	Cycle failures become frequent.
F	> 80	Cycle failure occurs most of the time. Intersection or intersection approach is over capacity.

Source: Highway Capacity Manual, 2010

Simulation Parameters

The traffic simulation uses VISSIM version 9.0. The following simulation parameters were used:

- Seeding time: 30 minutes
- Analysis period: 60 minutes
- Number of runs: 10

The traffic simulation is run for a total of 90 minutes. The first 30 minutes of the simulation is seeding time. This is time used to load traffic into the simulation network to a level representative of traffic conditions during the analysis period. The analysis period is 60 minutes. During this time, the simulation collects the MOEs discussed previously – queue lengths and control delay. The simulation is run 10 times, and the results provided in the evaluation are the average of the 10 simulation runs.

The traffic simulations required customization of the VISSIM application to replicate the expected behavior and travel paths within the facility. The VISSIM software allows for several means of customization including an internal programming language that can be used to interact with the modeling platform. Customizations were used to simulate the proposed screening protocol and defined how vehicles would operate within the facility including circulation, checkpoints, diversion, screening, and waiting areas.

Traffic Data

No new data collection efforts were performed for this study. Previous traffic counts collected as part of the Howard Coble Act 2016 Transportation Management Report supplemented the 2016 analysis data.

Analysis Period

The traffic simulation covers the AM peak hour – 7:00 a.m. to 8:00 a.m. Traffic counts and the observations of screening activity indicate that during this time, there is a high number of vehicles using the access road to St. Elizabeths (Access Road) and a high number of vehicles being screened at Gate 6 and the Cotton Annex[2]. ***Figure 2*** is a line diagram showing hourly counts of vehicles entering and exiting Gate 6 and the Cotton Annex; and hourly counts at the intersection of the Access Road and Firth Sterling Avenue.

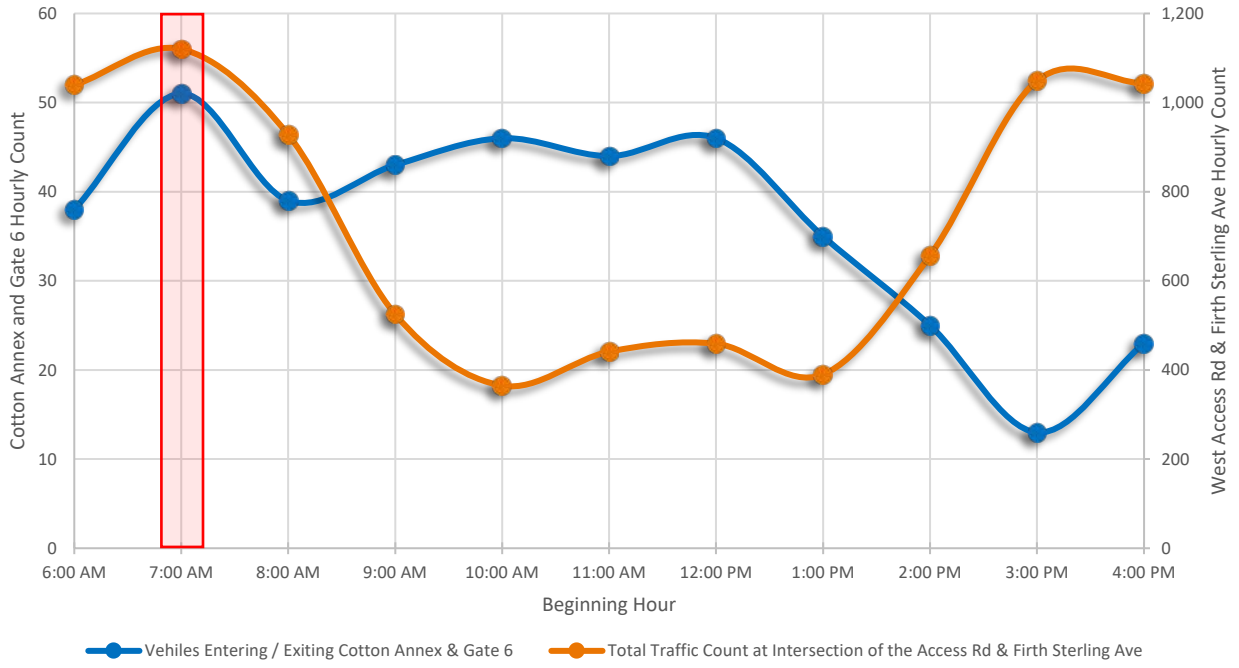


Figure 2. Traffic Counts at Gate 6, Cotton Annex, and the Intersection of the Access Road and Firth Sterling Avenue
6:00 a.m. to 5:00 p.m.

Between 7:00 a.m. and 8:00 a.m., approximately 50 vehicles were observed entering and exiting Gate 6 and the Cotton Annex. During this same time, approximately 1,150 vehicles traveled through the intersection of the Access Road and Firth Sterling Avenue. During the PM commuting period (after 3:00 p.m.), there is little activity at Gate 6 and the Cotton Annex. Less than 15 entering and exiting vehicles were observed.

Since there is an overlap between high activity at Gate 6 and the Cotton Annex and high traffic during the AM peak hour, traffic simulations were prepared only for the AM peak hour (7:00 to 8:00 a.m.). If this simulation demonstrates acceptable operations, then operations would conceivably work in the PM peak hour when there is less demand for vehicles to be screened.

Truck Volume

Table 3 summarizes vehicles by type that were observed entering Gate 6 and the Cotton Annex during the assumed analysis hour: 7:00 a.m. to 8:00 a.m. The table also lists the volume that were assumed for the traffic simulation.

[2] Traffic counts were collected at the Cotton Annex in late 2016 when FPS still operated the NCR screening there.

Table 3. Observed and Assumed Screening Volume for Traffic Simulation

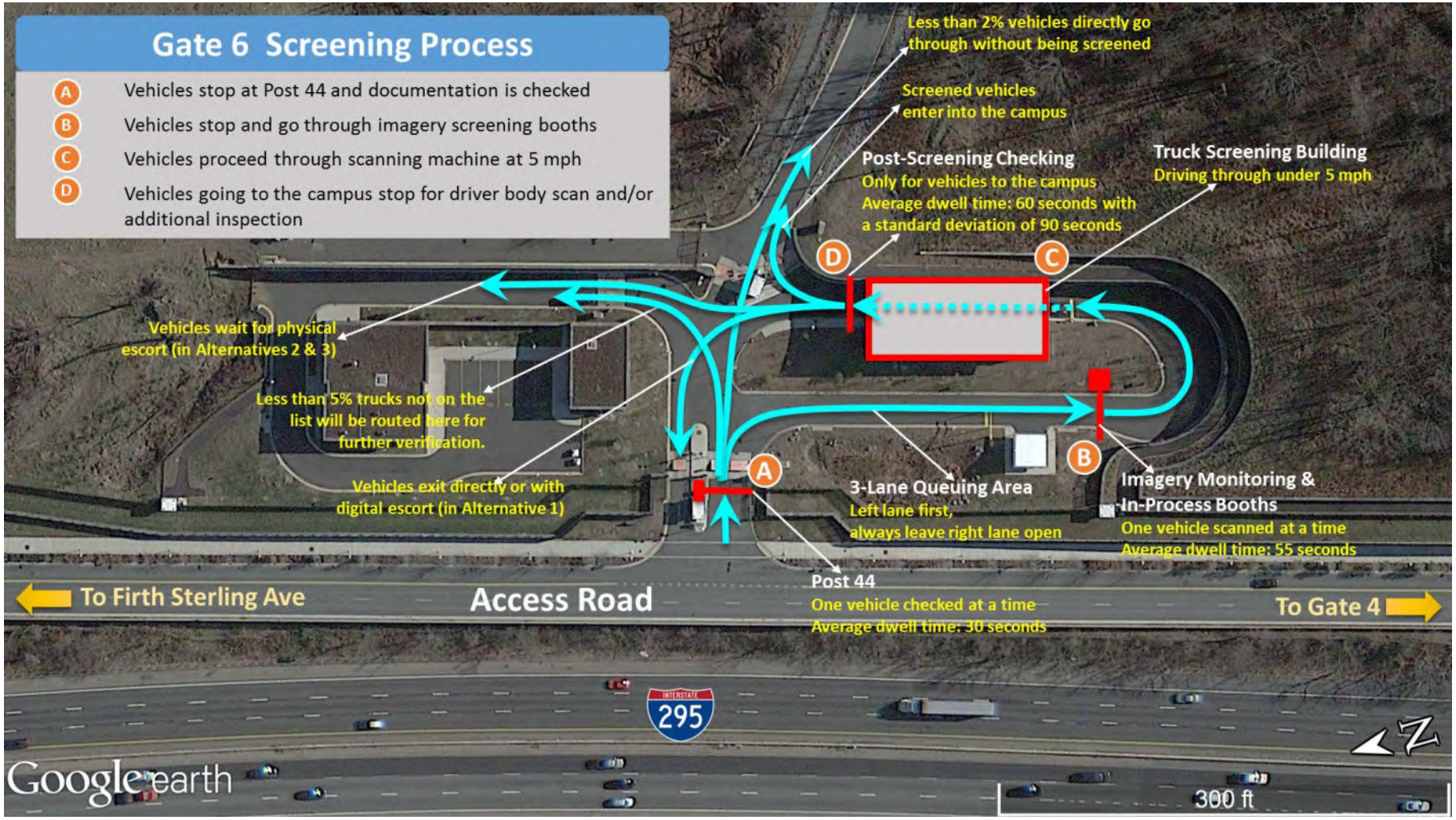
	Vehicles Observed	Percent of Total	Vehicles Assumed for Simulation	Percent of Total
Cars	10	31%	10	25%
Light Goods Vehicles	8	25%	10	25%
Single Unit Trucks	12	38%	15	38%
Articulated Trucks	2	6%	5	13%
Total	**32**	**100%**	**40**	**100%**

Single unit trucks comprise the highest share of vehicles observed at Gate 6 and the Cotton Annex. Articulated trucks comprise the lowest share of vehicles observed. On average, 32 vehicles entered Gate 6 and the Cotton Annex during the analysis hour. The simulation assumes 40 vehicles entering the proposed Gate 6 screening facility in order to be conservative. This is a 25 percent increase over the observed volumes. Similarly, the simulation assumes a higher share of articulated trucks to be conservative. Articulated trucks would have the greatest impact on queue lengths.

Screening Procedure

The traffic simulation assumes vehicles will be screened by traveling at a slow speed through the stationary scanning machine. ***Figure 3*** illustrates the screening procedure.

- Vehicles will stop at Post 44 (**Location A** in the figure) and documentation will be checked.
- Trucks entering the Gate 6 facility will proceed directly to the truck screening area if queues are not backing up along the right-side circulation area.
- Trucks will then stop at the imagery monitoring and in-process booth at **Location B**, one vehicle at a time.
- Trucks will slowly drive through the scanning machine building (**Location C**) at 5 miles per hour.
- After proceeding through the scanning machine, vehicles stop again at **Location D** for additional inspection and then exit Gate 6 directly, enter St. Elizabeths, or wait for an escort.
- For vehicles needing escort and upon completion of screening of those vehicles, if a truck is cleared to proceed, it may exit Gate 6 and proceed back up the Access Road (northbound) to Firth Sterling Avenue if an appropriate FPS escort vehicle is ready. If an escort is not ready, the truck(s) may go to a designated waiting area. FPS provided data on the percentage of trucks that must wait for an escort vehicle, along with the distribution of truck dwell times that typically occur until an escort vehicle arrives.



Aerial image © 2016 Google. Annotation © 2017 CH2M.

Figure 3. Gate 6 Screening Procedure

Performance of the Gate 6 facility is dependent on how long vehicles stop (dwell time) at Locations A through D shown in ***Figure 3***. With the inputs from the GSA, DHS, and FPS staff as well as empirical data of the dwell time in the field observations for the 2016 analysis, the assumptions of the average dwell times at these locations are listed in ***Table 4***. These dwell time distributions were coded into the traffic simulation.

Table 4. Assumptions of Average Dwell Times

	Location	Average Dwell Time
A	Post 44	30 seconds
B	Imagery Monitoring and In-Process Booths	55 seconds
C	Truck Screening Building	N/A
D	Post-Screening Checking	60 seconds with a standard deviation of 90 seconds

Table 5 lists observations and assumptions on the share of vehicles post screening that would exit Gate 6, enter St. Elizabeths, or wait for an escort.

Table 5. Observed and Assumed Vehicle Destinations Post Screening

	Vehicles Observed	Percent of Total	Vehicles Assumed for Simulation	Percent of Total
Vehicles to St. Elizabeths	17	53%	19	48%
Vehicles exiting Gate 6	13	41%	15	38%
Vehicles waiting for escort	2	6%	6	15%
Total	**32**	**100%**	**40**	**100%**

Vehicles listed as entering St. Elizabeths are vehicles counted at Gate 6. These vehicles would continue to use Gate 6 when the NCR screening mission is relocated to Gate 6. Vehicles listed as exiting Gate 6 and listed as waiting for escort are the vehicles counted at the Cotton Annex. These are the vehicles that represent the NCR screening mission that would be relocated to Gate 6. As discussed previously, the number of vehicles entering Gate 6 is increased by 25 percent in the traffic simulation to be conservative. The share of vehicles waiting for escort is also increased in the traffic simulation to represent a more conservative scenario.

Reconfiguration Alternatives

Figure 4 through ***Figure 6*** illustrates the three new alternatives for site circulation assumptions used in the current traffic simulation. In the figures, the dark orange line represents the path vehicles would take to undergo the screening procedure. After screening, vehicles would either enter St. Elizabeths (green path), directly exit Gate 6 to their destination (blue path), or wait for an escort prior to exiting (red path).

The screening process remain the same for all three alternatives as described in the previous section. The major differences among them are locations of queueing area prior to the imagery screening (Location B in ***Figure 3***) and waiting area for physical or digital escort (post screening).

Alternative 1

In this alternative, if the three-lane queueing area between Post 44 and imagery booth is full, the overflow vehicles will be directed to the alternative path around the Pump House (shown in dashed light-yellow

line in ***Figure 4***). Alternative 1 assumes that vehicles will be digitally escorted after the screening. No vehicle would be physically escorted therefore no waiting area is needed. All vehicles not entering St. Elizabeths would exit Gate 6 directly (red and blue lines in ***Figure 4***).

Alternative 2

The queuing, waiting and screening processes in Alternative 2 are identical as in Alternative 1. However, different from the digital escort procedure in Alternative 1, Alternative 2 will still require physical escort. After screening, vehicles needing escort will be directed to a new staging area to wait for an escort prior to exiting (shown in red line in ***Figure 5***).

Alternative 3

In this alternative, screening vehicles would enter Gate 6 from a new location that is about 700 feet north of the current entrance. A new segment of roadway, approximately 470 feet in length, would be constructed to connect the new entrance location to the existing internal circulating road. Therefore, the overflow vehicles would be queueing only on the north side of the Pump House. This alternative also assume that a physical escort will be required for some vehicles after the screening. Vehicles needing escort will be directed to wait around the Pump House and Generator Buildings, and then exit the campus with an escort vehicle using the same branch of new roadway. Note: Post 44 will remain in operation with this alternative.

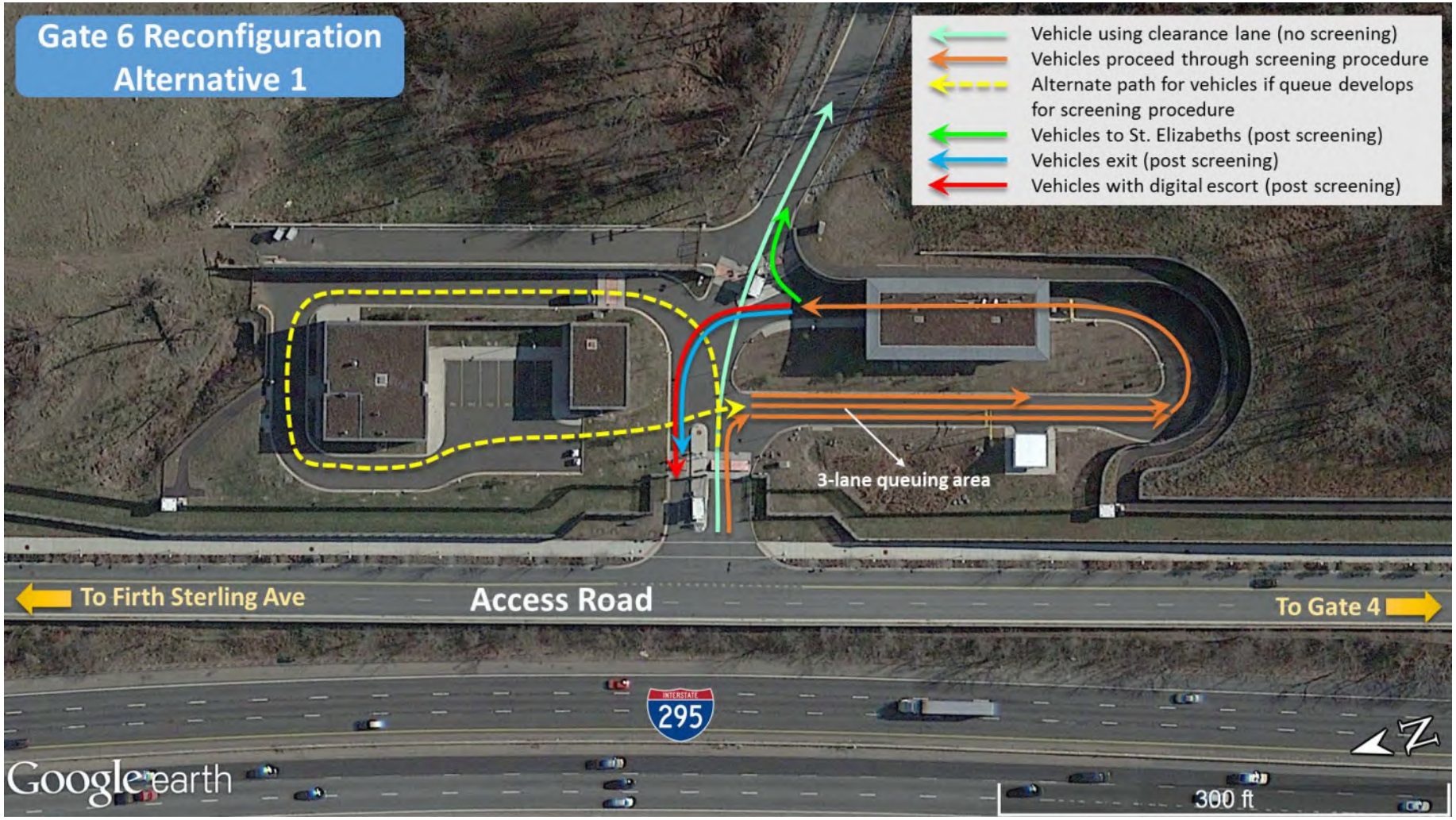


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Figure 4. Site Circulation at Gate 6 Reconfiguration Alternative 1

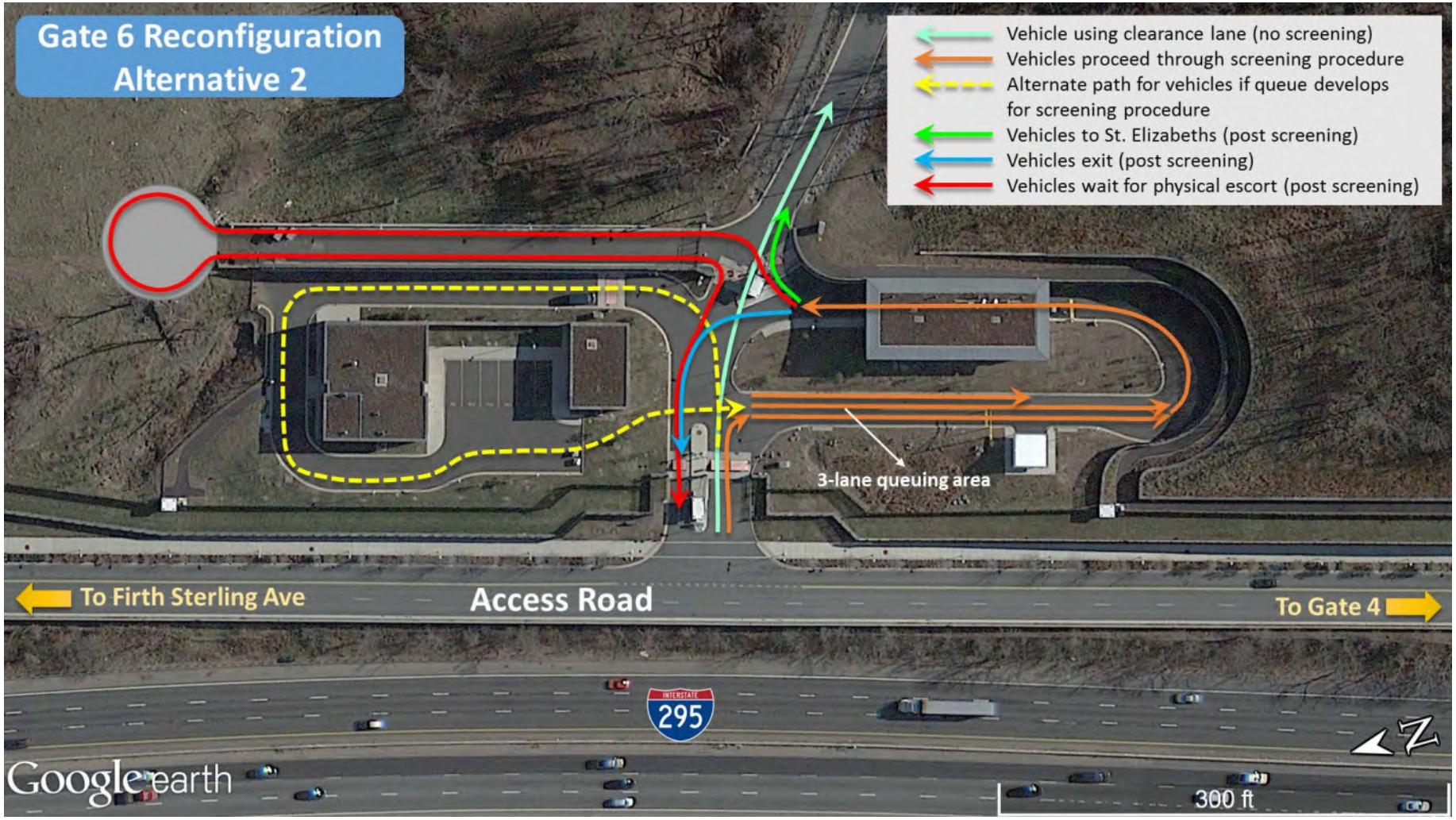

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Figure 5. Site Circulation at Gate 6 Reconfiguration Alternative 2

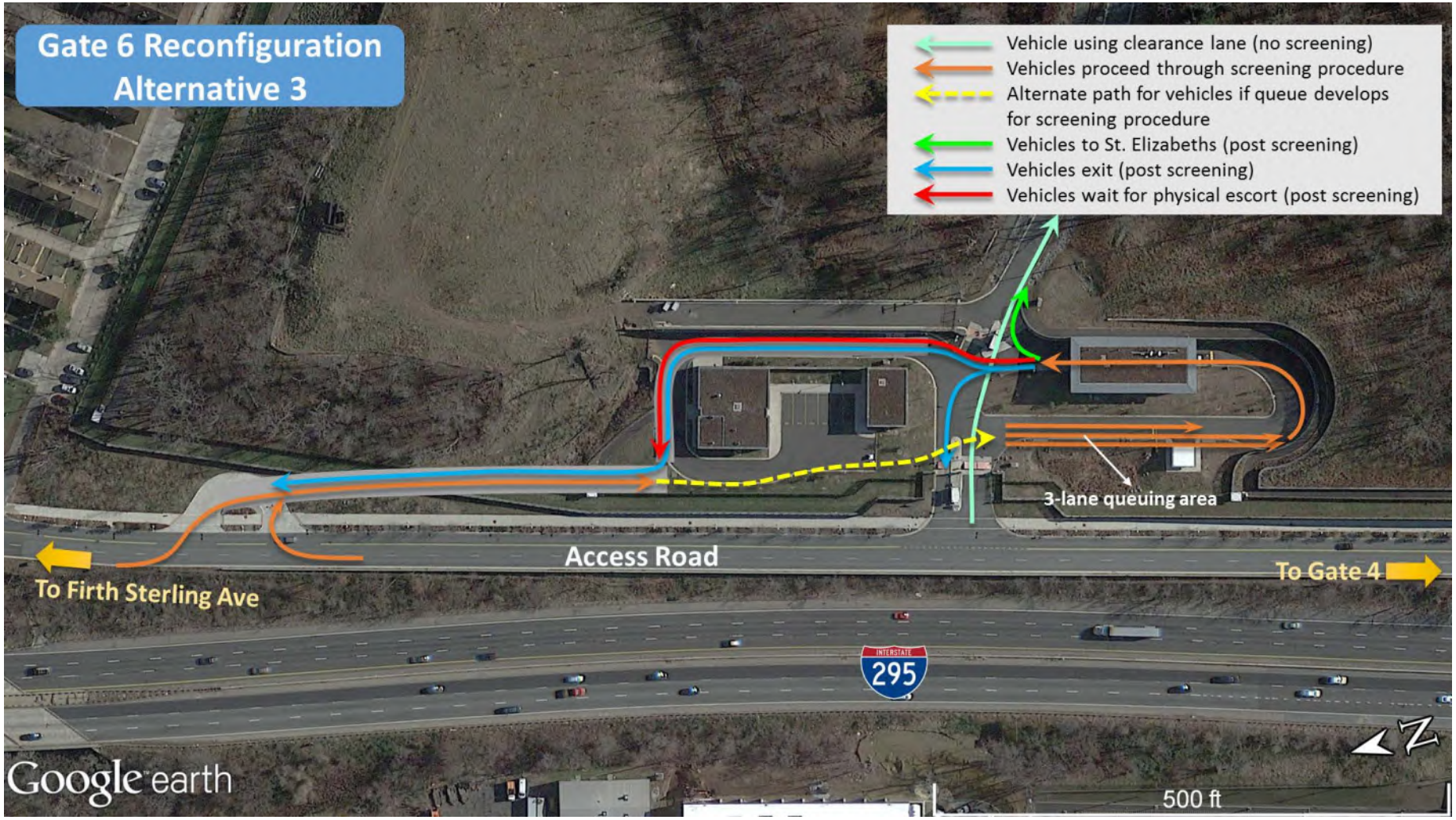

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Figure 6. Site Circulation at Gate 6 Reconfiguration Alternative 3

Analysis Results

Intersection Delay and LOS

Table 6 compares average intersection control delay and LOS of the three alternatives under each scenario from the traffic simulations. Results show acceptable traffic operations on all intersections along Firth Sterling Avenue and the Access Road at Gate 6 for all three alternatives under both demand scenarios. Results generally indicate that the screening operations at Gate 6 do not significantly impact intersection operations on the local streets leading to St. Elizabeths West Campus. All the adjacent local intersections operate at LOS C or better under both 2017 USCG demand and 2018 USCG and DHS demand scenarios. At the Access Road and Gate 6 intersection, entering traffic experiences LOS B or better in 2017. In 2018, entering traffic in all alternatives is anticipated to experience slightly increased delays due to increased demand, but LOS will still be C or better. There are no significant differences in intersections and gate operations among the three alternatives.

Table 6. Average Intersection Control Delay (Seconds per Vehicle) and Level of Service(LOS)
AM Peak Hour (7 a.m. – 8 a.m.)

Intersection	Scenario A						Scenario B					
	2017 USCG Demand						*2018 USCG & DHS Demand*					
	Alt-1		*Alt-2*		*Alt-3*		*Alt-1*		*Alt-2*		*Alt-3*	
Firth Sterling Ave, Defense Blvd, and South Capitol St	25	(C)	25	(C)	25	(C)	29	(C)	29	(C)	28	(C)
Firth Sterling Ave and West Access Rd	9	(A)	9	(A)	9	(A)	11	(B)	11	(B)	11	(B)
Firth Sterling Ave and Eaton Rd	2	(A)	2	(A)	2	(A)	2	(A)	2	(A)	2	(A)
Firth Sterling Ave, Barry Rd, and Sumner Rd	13	(B)	14	(B)	13	(B)	24	(C)	22	(C)	27	(C)
Firth Sterling Ave and Suitland Pkwy	20	(B)	20	(C)	20	(B)	25	(C)	23	(C)	24	(C)
Firth Sterling Ave and Howard Rd	27	(C)	33	(C)	35	(C)	27	(C)	34	(C)	34	(C)
Access Road and Gate 6 (Existing): Entering	18	(B)	12	(B)	--*	--*	26	(C)	20	(B)	--*	--*
Access Road and Gate 6 (Existing): Exiting	5	(A)	6	(A)	6	(A)	5	(A)	6	(A)	6	(A)
Access Road and Gate 6 (New): Entering	N/A		N/A		0	(A)	N/A		N/A		20	(B)
Access Road and Gate 6 (New): Exiting	N/A		N/A		5	(A)	N/A		N/A		5	(A)

Gate 6 entering approach controlled by check post, and exiting approach controlled by stop sign.
*No values because all trucks will be directed to the new entrance in Alternative 3.

Gate 6 Queuing Conditions

Queue lengths were recorded during the simulation at three locations at Gate 6:

(1) waiting queues approaching the imagery monitoring and in-process booth,

(2) the overflow queue around/along the Pump House and Generator Buildings, and

(3) queues at the entry checkpoint.

The first and second queues are internal queues within Gate 6 facility. The third queue is an external queue that could potentially spill back to the Access Road. ***Figure 7*** illustrates the locations of these three queues.

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Figure 7. Queue Length Measurements at Gate 6

Table 7 compares different percentile queue lengths for the three alternatives under two demand scenarios. The 50th percentile queue length represents the average queuing condition. The 95th percentile queue length represents the queue length where only 5 percent of the recorded queue lengths are longer.

Table 7. Queue Lengths at Gate 6

	Queue Location	Scenario	Alternative	Available Storage (feet)	Percentile Queue Lengths (feet)				
					25th	50th	75th	85th	95th
Internal Queues within Gate 6	Queue approaching Imagery Monitoring and In-Process Booths	Scenario A 2017 Demand	Alt-1	190	28	70	118	146	174
			Alt-2	190	13	23	79	100	129
			Alt-3	190	29	66	119	147	164
		Scenario B 2018 Demand	Alt-1	190	95	112	157	182	190
			Alt-2	190	61	82	107	123	169
			Alt-3	190	68	104	142	163	176
	Overflow Queue	Scenario A 2017 Demand	Alt-1	600	0	5	44	101	154
			Alt-2	600	0	0	68	211	267
			Alt-3	660	0	10	66	71	185
		Scenario B 2018 Demand	Alt-1	600	71	118	383	423	542
			Alt-2	600	128	170	324	501	589
			Alt-3	660	127	168	305	356	529
External Queue outside Gate 6	Queue at Entry Checkpoint	Scenario A 2017 Demand	Alt-1	75	0	1	2	4	5
			Alt-2	75	2	3	4	8	8
			Alt-3	85	0	0	0	0	0
		Scenario B 2018 Demand	Alt-1	75	13	18	44	44	**159**
			Alt-2	75	5	10	25	28	**155**
			Alt-3	85	9	14	70	**88**	**97**

*The values in **red** indicate that queue length exceeds available storage.

The internal queue approaching the imagery monitoring and in-process booth (three-lane area) will not exceed the available storage due to the queuing control at this location. Additional traffic beyond the screening capacity will be directed to overflow queue area. Both scenarios show a queue developing around the Pump House. In 2017, the 50th percentile queue lengths for the queue around the Pump House are 0 – 10 feet for the three alternatives. This means that about half of the time during the simulation, no vehicles used the overflow queue area within the facility.

Results indicate that the overflow queue area will be needed. In Alternatives 1 and 2, there are approximately 600 feet of waiting areas for vehicles in the overflow queue around the Pump House. In Alternative 3, there is a 660 feet roadway section for pre-screening vehicle waiting area after the entry checkpoint. The simulation results show that queue lengths would never exceed the storage spaces in all alternatives under both demand scenarios.

At the entry checkpoint, the queue lengths under Scenario A (2017 demand) will not exceed the available storage spaces for all three alternatives. However, with increased demand in 2018, the current available storage spaces for all three alternatives will not be sufficient to accommodate the external queues waiting to enter Gate 6 at all time. Simulation results indicates that the 95th percentile queue lengths will exceed the available storages during the AM peak hour.

In all, the two internal queues will not exceed the available storage for all three alternatives in both 2017 and 2018 demand scenarios, but the external queue at the entry checkpoint will spill back to the Access Road in 2018.

Access Road Traffic Operations

As previously discussed, due to increased demand in 2018, the entering vehicles will likely spill back to the Access Road, which will potentially impact the through traffic. ***Table 8*** shows the simulated spill-back queue lengths on the Access Road.

Table 8. Spill-Back Queue Lengths on the Access Road

Scenario	Alternative	Percentile Queue Lengths (feet)				
		25th	50th	75th	85th	95th
Scenario A 2017 Demand	Alt-1	0	0	0	0	0
	Alt-2	0	0	0	0	0
	Alt-3	0	0	0	0	0
Scenario B 2018 Demand	Alt-1	0	0	0	0	**84**
	Alt-2	0	0	0	0	**80**
	Alt-3	0	0	0	**3**	**12**

The spill-back queuing conditions on the Access Road will be worse in Alternatives 1 and 2. For Alternative 3, even though more than 15 percent of the time the entering vehicles will spill back to the Access Road, the queues will not be lengthy. For Alternative 3, minor modification of the entry checkpoint could easily create more queuing spaces to resolve the spill-back issue. As a comparison, there are limited options for Alternatives 1 and 2 to improve the queuing spaces at the entrance.

Table 9 presents the vehicle throughputs on the Access Road. For both scenarios, the unserved demand on most segments on the Access Road will be less than 2 percent. The only exception is the northbound segment after Gate 6, where the unserved demand will be between 9 to 12 percent. Most of unserved demands on this segment will be vehicles inside the Gate 6 facility waiting for screening and not being able to exit to the Access Road immediately. The northbound through traffic on the Access Road will be fully served.

Table 9. Demand vs. Throughputs on the Access Road

Access Road Segment		Demand (veh/h)	Alt-1		Alt-2		Alt-3	
			Throughput (veh/h)	Unserved Demand (%)	Throughput (veh/h)	Unserved Demand (%)	Throughput (veh/h)	Unserved Demand (%)
Scenario A: 2017 USCG Demand								
Northbound	Before Gate 6	65	65	1%	65	0%	64	1%
	After Gate 6	87	79	9%	79	9%	78	10%
Southbound	Before Gate 6	612	606	1%	605	1%	609	1%
	After Gate 6	576	571	1%	576	0%	575	0%
Scenario B: 2018 USCG & DHS Demand								
Northbound	Before Gate 6	65	64	2%	65	0%	65	0%
	After Gate 6	87	76	12%	77	12%	78	10%
Southbound	Before Gate 6	962	963	0%	948	2%	951	1%
	After Gate 6	922	916	1%	911	1%	907	2%

Figures 8 through ***10*** illustrate the simulated queuing conditions on the Access Road at Gate 6. It is observed from the simulations that the spill-back queuing conditions on the Access Road will only exist infrequently and last for a few minutes during the AM peak hour. It appears that traffic on the Access Road will not be significantly impeded.

Figure 8. Simulated Queue on the Access Road at Gate 6 during 2018 AM Peak Hour with Alternative 1

Figure 9. Simulated Queue on the Access Road at Gate 6 during 2018 AM Peak Hour with Alternative 2

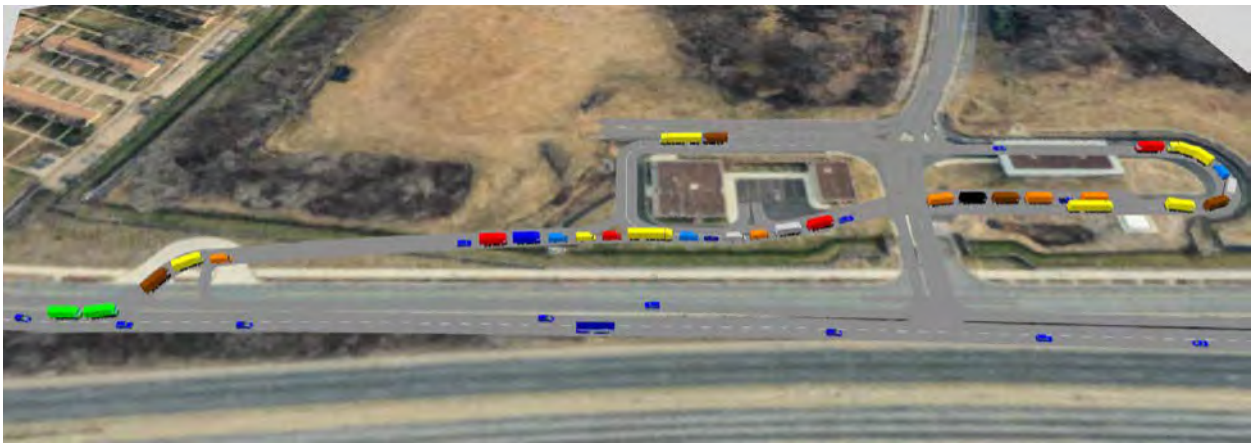

Figure 10. Simulated Queue on the Access Road at Gate 6 during 2018 AM Peak Hour with Alternative 3

Conclusions and Next Steps

The traffic operational analysis results of the three Gate 6 reconfiguration alternatives using simulation models indicate the following findings:

- All three alternatives show acceptable traffic operations in the intersections along Firth Sterling Avenue under both 2017 and 2018 demand scenarios.
- All three alternatives show that two internal pre-screening queues can be accommodated within the Gate 6 site under both 2017 and 2018 demand scenarios.
- The external storage spaces at the entry checkpoint are not sufficient with the increased 2018 demand. This is a common issue for all the three alternatives. The queuing condition will be worse for Alternative 1 and 2 in 2018. The spill-back queue lengths will be over 80 feet, about five passenger cars or two trucks, which will potentially impact the arterial through-traffic operations.
- For Alternative 3, minor modification of the entry checkpoint could create more queuing spaces to resolve the spill-back issue. However, for Alternatives 1 and 2, there are limited options to improve the queuing spaces at the entrance. A more efficient checking process should be considered to minimize queuing conditions.

Note that the findings and conclusion are entirely based on traffic operational analysis. A more comprehensive comparison among the three alternatives should be performed to make the final recommendation, which should include evaluations of roadway design, construction cost, security requirements, environmental and stormwater impacts, etc.

Once the preferred alternative is selected, the selected alternative will be further evaluated with revised background traffic conditions to reflect the I-295 / Malcolm X Avenue interchange being operational in the design year 2035. Right turns into Gate 6 from single-lane northbound on the Access Road will be documented and mitigation measures will be recommended where necessary.

APPENDIX A – Gate 6 Truck Screening Preliminary Analysis (2016)

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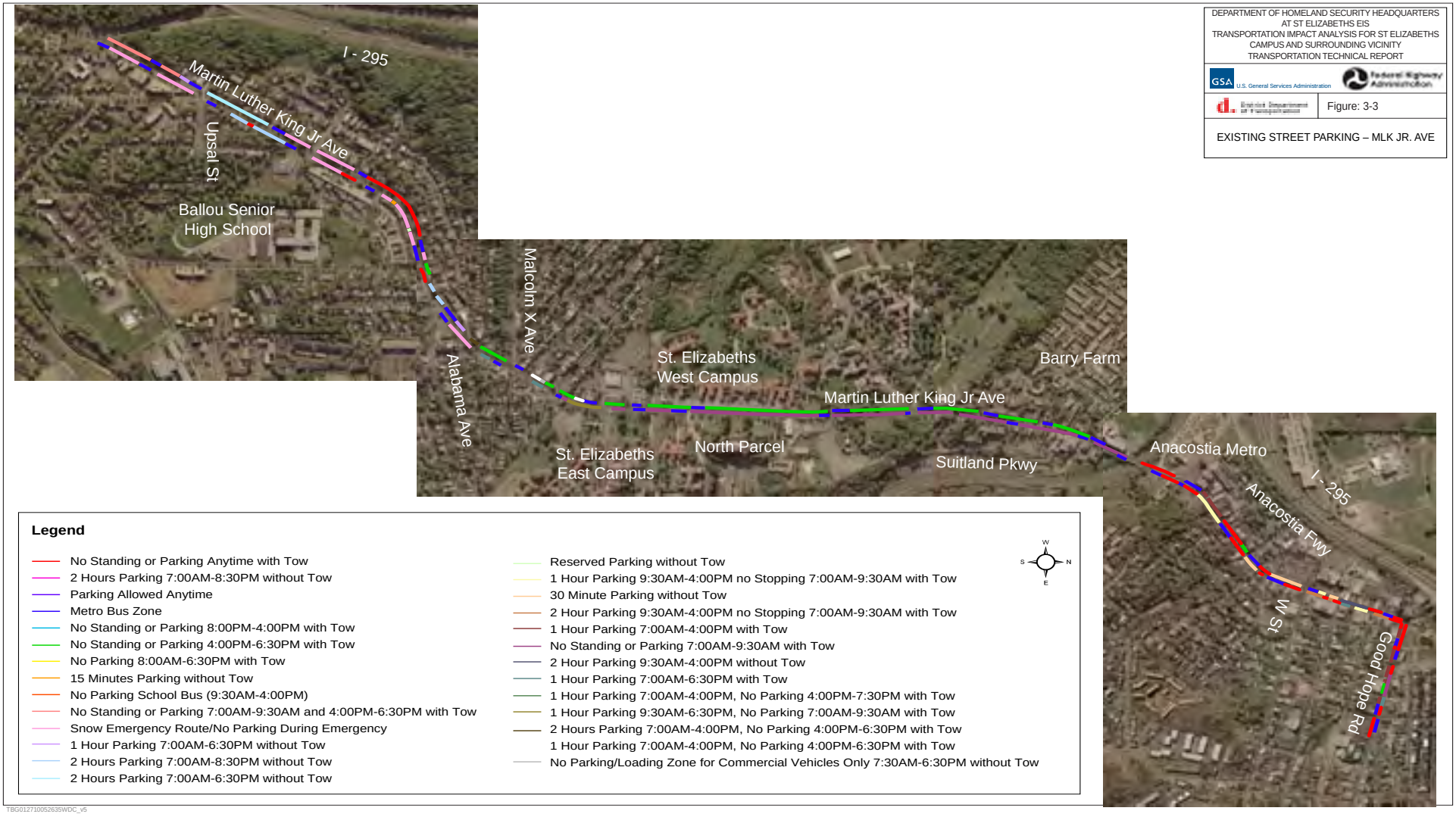
AT ST ELIZABETHS EIS
TRANSPORTATION IMPACT ANALYSIS FOR ST ELIZABETHS
CAMPUS AND SURROUNDING VICINITY
TRANSPORTATION TECHNICAL REPORT

GSA U.S. General Services Administration | Federal Highway Administration

District Department of Transportation | Figure: 3-3

EXISTING STREET PARKING – MLK JR. AVE



Legend

- No Standing or Parking Anytime with Tow
- 2 Hours Parking 7:00AM-8:30PM without Tow
- Parking Allowed Anytime
- Metro Bus Zone
- No Standing or Parking 8:00PM-4:00PM with Tow
- No Standing or Parking 4:00PM-6:30PM with Tow
- No Parking 8:00AM-6:30PM with Tow
- 15 Minutes Parking without Tow
- No Parking School Bus (9:30AM-4:00PM)
- No Standing or Parking 7:00AM-9:30AM and 4:00PM-6:30PM with Tow
- Snow Emergency Route/No Parking During Emergency
- 1 Hour Parking 7:00AM-6:30PM without Tow
- 2 Hours Parking 7:00AM-8:30PM without Tow
- 2 Hours Parking 7:00AM-6:30PM without Tow
- Reserved Parking without Tow
- 1 Hour Parking 9:30AM-4:00PM no Stopping 7:00AM-9:30AM with Tow
- 30 Minute Parking without Tow
- 2 Hour Parking 9:30AM-4:00PM no Stopping 7:00AM-9:30AM with Tow
- 1 Hour Parking 7:00AM-4:00PM with Tow
- No Standing or Parking 7:00AM-9:30AM with Tow
- 2 Hour Parking 9:30AM-4:00PM without Tow
- 1 Hour Parking 7:00AM-6:30PM with Tow
- 1 Hour Parking 7:00AM-4:00PM, No Parking 4:00PM-7:30PM with Tow
- 1 Hour Parking 9:30AM-6:30PM, No Parking 7:00AM-9:30AM with Tow
- 2 Hours Parking 7:00AM-4:00PM, No Parking 4:00PM-6:30PM with Tow
- 1 Hour Parking 7:00AM-4:00PM, No Parking 4:00PM-6:30PM with Tow
- No Parking/Loading Zone for Commercial Vehicles Only 7:30AM-6:30PM without Tow

W S N E

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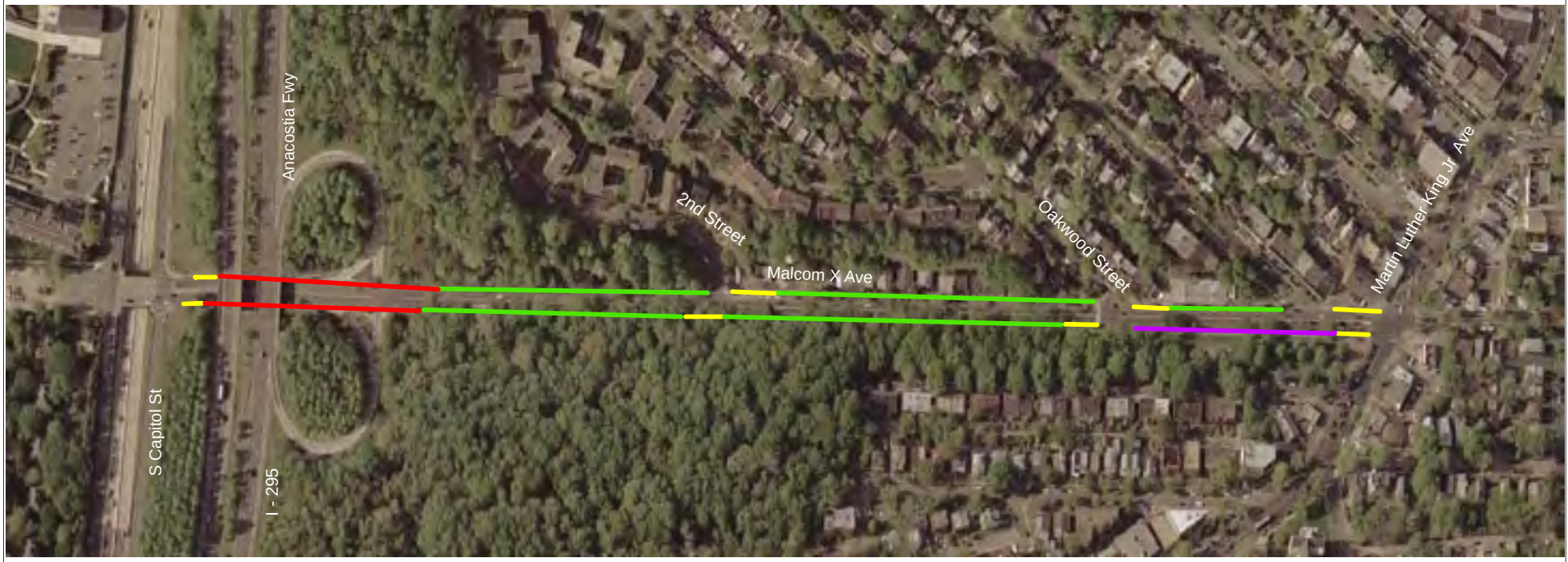

Legend

- No Standing or Parking Anytime with Tow
- Metro Bus Zone
- No Standing or Parking 8:00PM-4:00PM with Tow
- No Standing or Parking 7:00PM-9:30PM with Tow

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TRANSPORTATION IMPACT ANALYSIS FOR ST ELIZABETHS
CAMPUS AND SURROUNDING VICINITY
TRANSPORTATION TECHNICAL REPORT

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Figure: 3-4

EXISTING STREET PARKING – MALCOLM X AVE

Legend

- No Standing or Parking Anytime with Tow
- 2 Hours Parking 7:00AM-8:30PM without Tow
- Parking Allowed Anytime
- Metro Bus Zone
- No Standing or Parking 8:00PM-4:00PM with Tow
- No Standing or Parking 4:00PM-6:30PM with Tow
- No Parking 8:00AM-6:30PM with Tow
- 15 Minutes Parking without Tow
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Figure: 3-5

EXISTING STREET PARKING – ALABAMA AVE

NOTES: The Legend for this series of vegetation plans is shown on Plan VI.6, Existing Conditions Vegetation Plan-4.

Codes for individual trees are listed in Appendix A.

Sources

CAD file "STELIZABETH-1947-TOPO.dwg," based on "Topographic Survey St. Elizabeths Hospital Washington DC" by Corps of Engineers, Wash. Dist., War Dept., 1946-1947, scale 1/480.

Updated with 2002 High Resolution Urban Aerial Photograph, Topozone.com. Fieldwork 2004-2007 Heritage Landscapes.

0' 50' 100' 150' 300'

St. Elizabeths Hospital
West Campus
Cultural Landscape Report

Client:
Public Buildings Service
National Capital Region
U.S. General Services Administration
7th & D Sts., SW
Room 7600
Washington, DC 20407

Team Leader:
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Architects, LLC
200 Forrestal Road
Princeton, NJ 08540

Preservation Landscape Architect:
Heritage Landscapes
Preservation Landscape Architects & Planners
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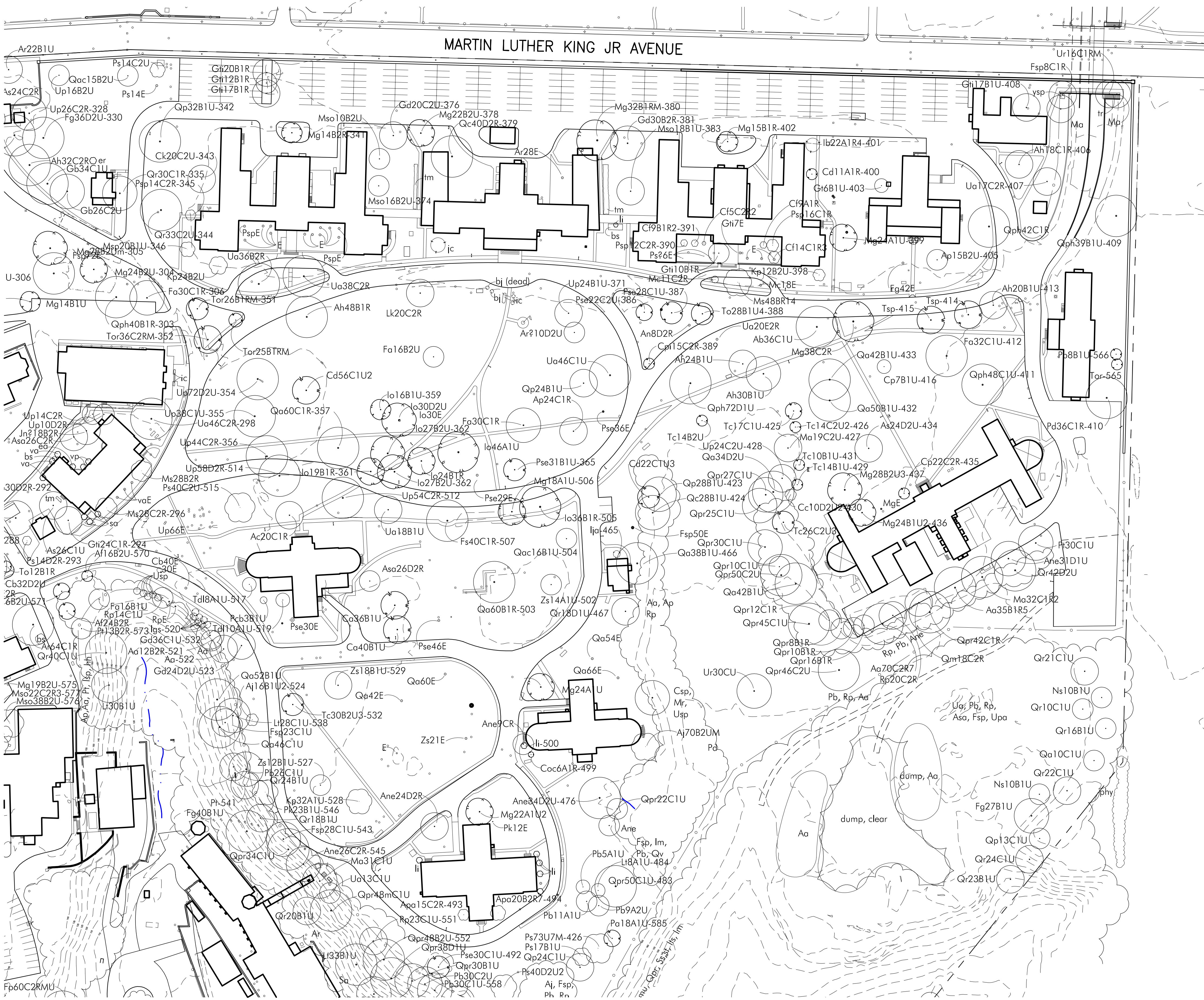
Charlotte, VT 05445
&
34 Wall Street
Norwalk, CT 06850

Historian:
Robinson & Associates
Inc.
1909 Q Street, N.W.
Washington, D.C. 20009

Drawing Title:
2007 Existing Conditions Vegetation Plan-1

Date:
April 2009

Drawing Number:
Plan VI.3



NOTES: The Legend for this series of vegetation plans is shown on Plan VI.6, Existing Conditions Vegetation Plan-4.

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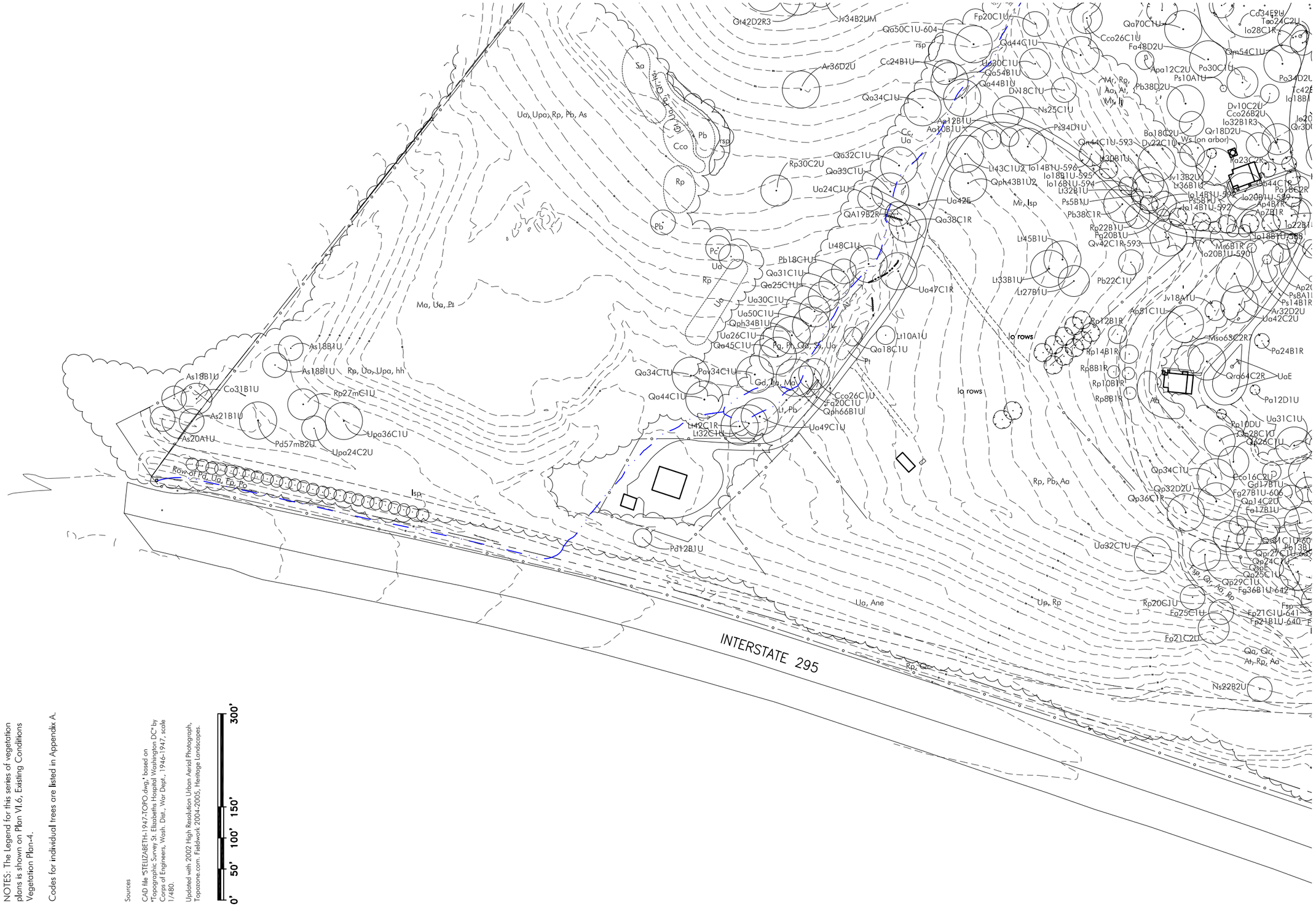
Historian:
Robinson & Associates Inc.
1909 Q Street, N.W.
Washington, D.C. 20009

Drawing Title:
2007 Existing Conditions Vegetation Plan-2

Date:
April 2009

Drawing Number:
Plan VI.4



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Architects, LLC
200 Forrestal Road
Princeton, NJ 08540

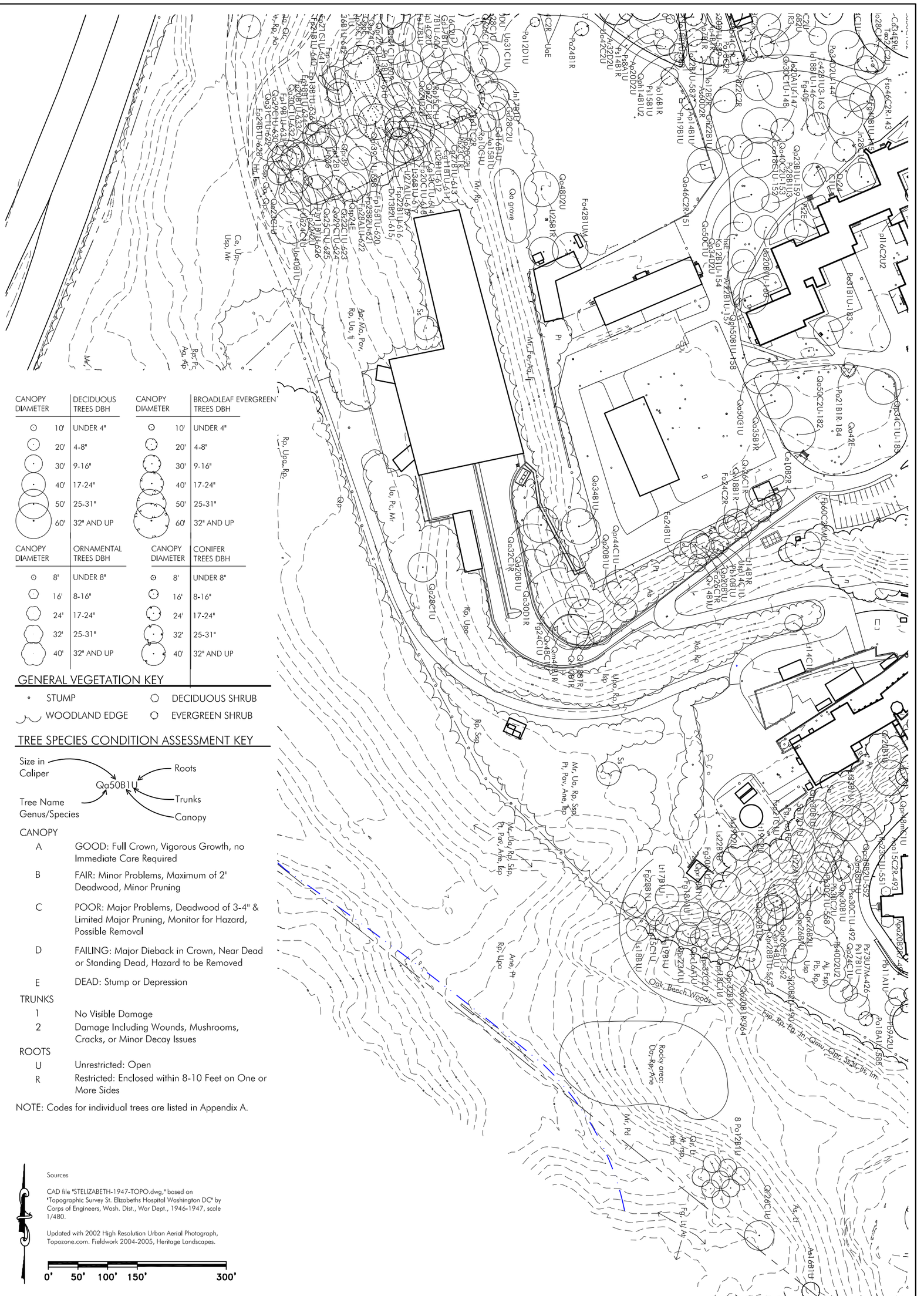
Preservation Landscape Architect:
Heritage Landscapes
Preservation Landscape Architects & Planners
501 Lake Road
Charlotte, VT 05445
&
34 Wall Street
Norwalk, CT 06850

Historian:
Robinson & Associates Inc.
1909 Q Street, N.W.
Washington, D.C. 20009

Drawing Title:
2007 Existing Conditions Vegetation Plan-3

Date:
April 2009

Drawing Number:
Plan VI.5



St. Elizabeths Hospital
West Campus
Cultural Landscape Report

Client:
Public Buildings Service
National Capital Region
U.S. General Services Administration
7th & D Sts., SW
Room 7600
Washington, DC 20407

Team Leader:
Farewell Mills & Gatsch Architects, LLC
200 Forrestal Road
Princeton, NJ 08540

Preservation Landscape Architect:
Heritage Landscapes
Historic Landscape Preservation Planning + Design Architects & Landscape Architects
501 Lake Road
Charlotte, VT 05445
&
34 Wall Street
Norwalk, CT 06850

Historian:
Robinson & Associates Inc.
1909 Q Street, N.W.
Washington, D.C. 20009

Drawing Title:
2007 Existing Conditions Vegetation Plan-4

Date:
April 2009

Drawing Number:
Plan VI.6

St. Elizabeths West Campus Parking Location

Martin Luther King Jr. Ave

1

2

3

Gate 1 Garage

Gate 2 Garage

Gate 4 Garage

Gate 6 Lot

6

West Access Road

5

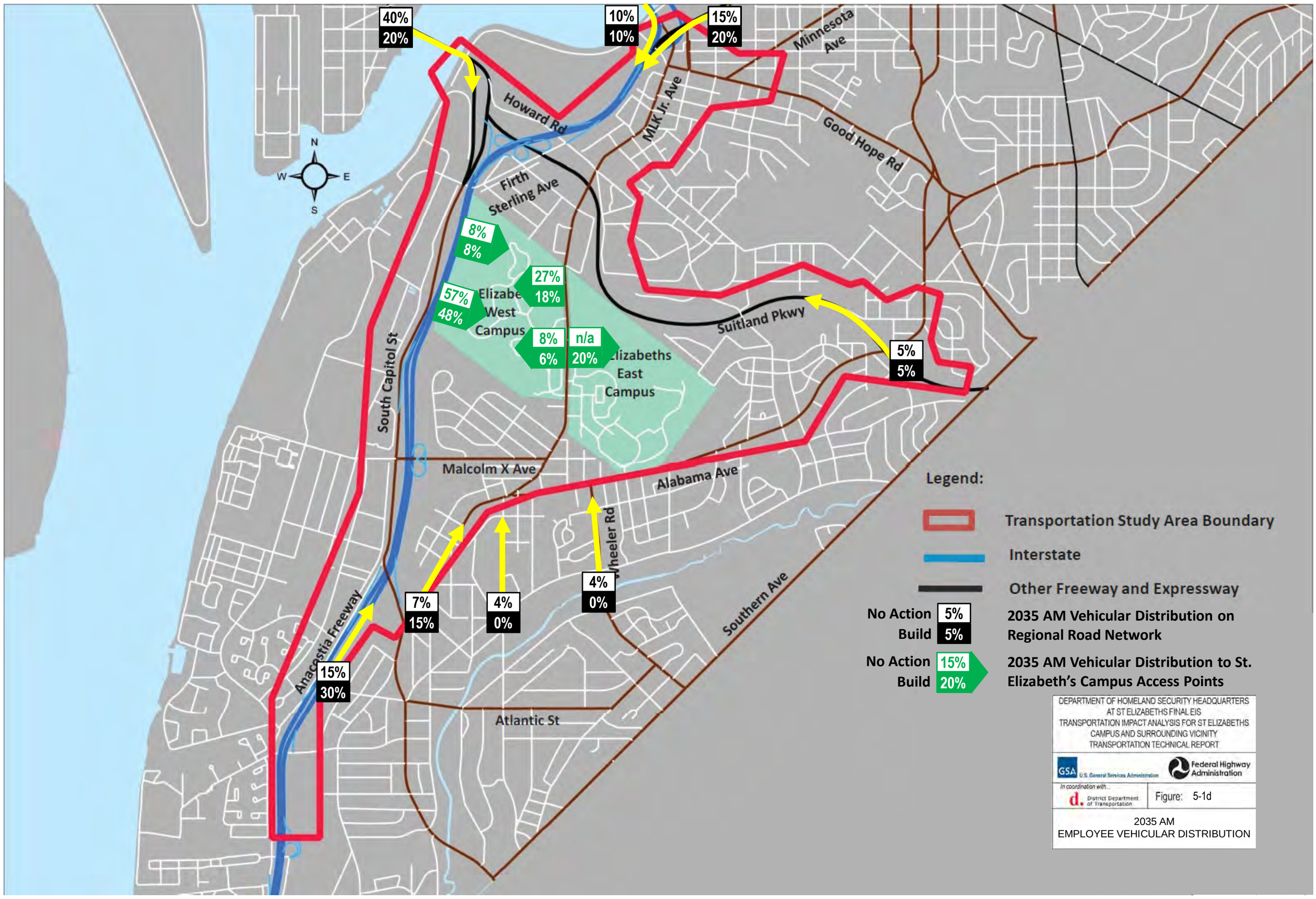
4

INTERSTATE 295

Legend

Garage open in future

Garage/lot open currently



DEPARTMENT OF HOMELAND SECURITY HEADQUARTERS
AT ST ELIZABETHS FINAL EIS
TRANSPORTATION IMPACT ANALYSIS FOR ST ELIZABETHS
CAMPUS AND SURROUNDING VICINITY
TRANSPORTATION TECHNICAL REPORT

GSA U.S. General Services Administration | Federal Highway Administration

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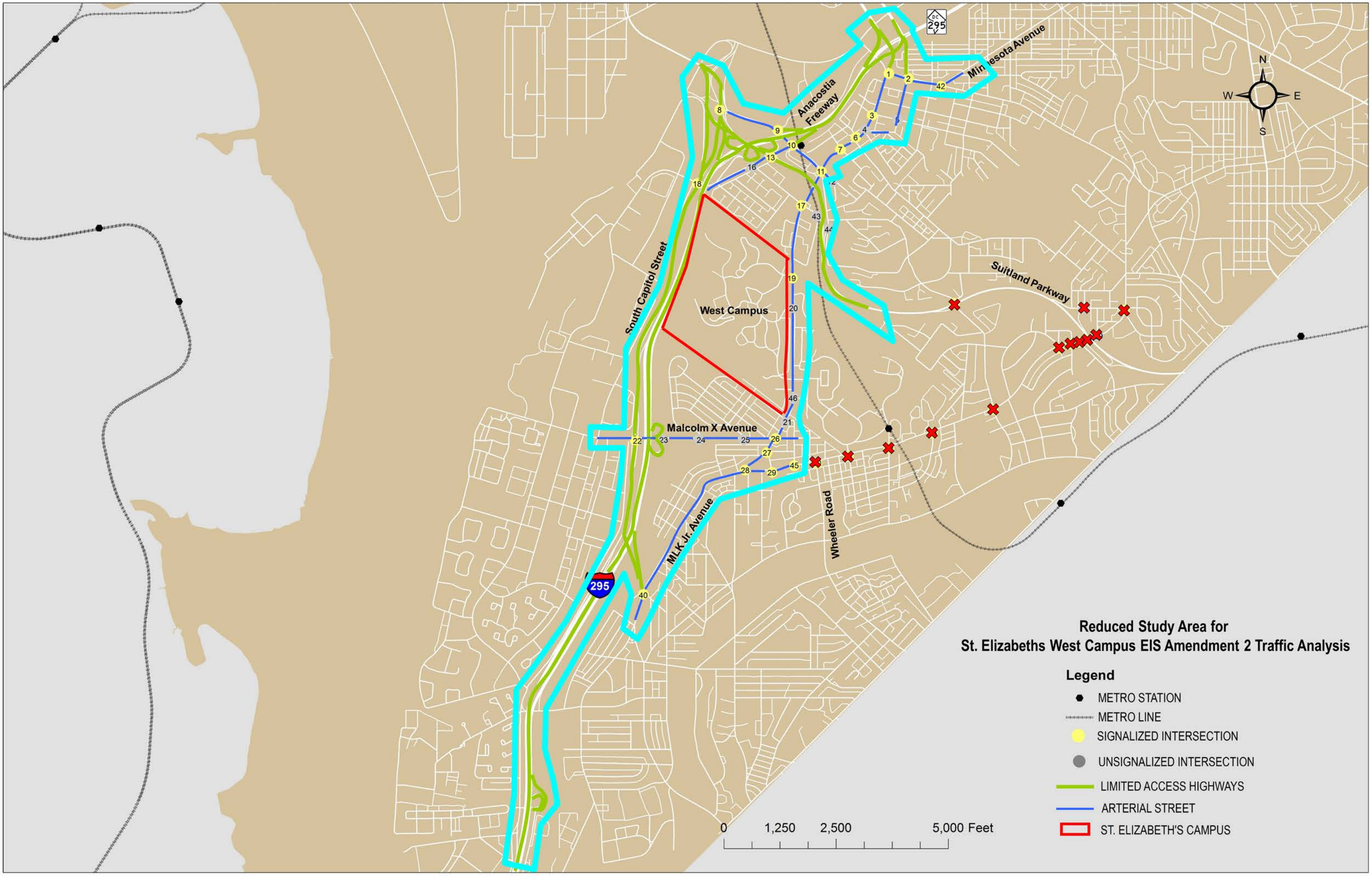
Figure: 5-1d

2035 AM
EMPLOYEE VEHICULAR DISTRIBUTION


Anacostia Freeway
Minnesota Avenue
South Capitol Street
West Campus
Suitland Parkway
Malcolm X Avenue
MLK Jr. Avenue
Wheeler Road
295
N
S
E
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1
2
42
3
4
6
7
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9
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11
12
13
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17
43
44
19
20
46
21
22
23
24
25
26
27
28
29
45
40
0
1,250
2,500
5,000 Feet
Reduced Study Area for
St. Elizabeths West Campus EIS Amendment 2 Traffic Analysis
Legend
METRO STATION
METRO LINE
SIGNALIZED INTERSECTION
UNSIGNALIZED INTERSECTION
LIMITED ACCESS HIGHWAYS
ARTERIAL STREET
ST. ELIZABETH'S CAMPUS

St. Elizabeths West Campus Transportation Study Data Collection Map

Legend

- 4-Anacostia Frwy/I-695 Interchange [10 Ramps]
- Category I - ATC
- Category I - TMC
- Category II - ATC
- Category II - TMC
- Category III - ATC
- Category III - TMC
- West Campus

Google Earth
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ST. ELIZABETHS WEST CAMPUS TRANSPORTATION STUDY (2018)
DATA COLLECTION PLAN
Intersection Listing by Categories

1	MLK Jr. Avenue and Good Hope Road
2	Good Hope Road and 13th Street
3	MLK Jr. Avenue and W Street
4	MLK Jr. Avenue and Pleasant Street/Maple View Pl
5	W Street and 13thStreet
6	MLK Jr. Avenue and Morris Road
7	MLK Jr. Avenue and Talbert Street
8	Suitland Pkwy and South Capitol Street
9	Howard Road and I-295 SB Off Ramp
10	Howard Road and Firth Sterling Avenue/I-295 NB On Ramp
11	MLK Jr. Avenue and Howard Road/Sheridian Rd
12	Howard Road and Sayles Pl
13	Suitland Pkwy and Firth Sterling Avenue
14	Suitland Pkwy East Off Ramp and Stanton Road
15	Suitland Pkwy West Off and On Ramp and Irving Street
16	Firth Sterling Avenue and Barry Road/ Sumner Road
17	MLK Jr. Avenue and Sumner Road/Stanton Road
18	South Capitol Street and Defense Blvd/Firth Sterling Avenue
19	MLK Jr. Avenue and Gate 2 Entrance to East Campus/Golden Raintree Dr
20	MLK Jr. Avenue and Redwood Drive
21	MLK Jr. Avenue and Lebaum Street
22	Malcolm X Ave and South Capitol St NB
23	Malcolm X Ave and South Capitol St SB
24	Malcolm X Avenue and Anacostia Freeway NB Off and On Ramp
25	Malcolm X Avenue and 2nd Street
26	Malcolm X Avenue and Oakwood Street
27	MLK Jr. Avenue and Malcolm X Avenue
28	MLK Jr. Avenue and Raleigh Pl
29	MLK Jr. Avenue and Alabama Avenue
30	Alabama Avenue and Randle Pl
31	Alabama Avenue and Wheeler Road
32	Alabama Avenue and 11th Pl
33	Alabama Avenue and 13th Street
34	Alabama Avenue and Congress Street
35	Alabama Avenue and Stanton Road
36	Alabama Avenue and Stanton Terrace / 21st Street
37	Alabama Avenue and 22nd Street
38	Alabama Avenue and 23rd Street
39	Alabama Avenue and Suitland Pkwy East Off Ramp
40	Alabama Ave and 24th Street
41	MLK Jr. Avenue and South Capitol Street/Halley Pl
42	Irving Street and Alabama Avenue
43	Good Hope Road and Minnesota Avenue
44	Stanton Road and Dunbar Road/Suitland Pkwy East On Ramp
45	Sheridan Road and Suitland Pkwy West Off Ramp
46	Alabama Avenue and 7th Street
47	MLK Jr. Avenue and Gate 4 Entrance to East Campus
48	Firth Sterling Ave and St. Elizabeths Ave
49	Firth Sterling Ave and Eaton Rd
50	Howard Rd and Anacostia Metro Garage Entrance

Category I – Priority Locations from 2012 Study (Must Repeat to Provide Current Data) [27 Intersections]

Category II – 2017 Locations (Possible Re-Use of Data) [11 Intersections]

Category III – Non-Priority Locations from 2012 Study (Possible Elimination by DDOT) [12 Intersections]

ST. ELIZABETHS WEST CAMPUS TRANSPORTATION STUDY (2018)
DATA COLLECTION PLAN
ATR/Tube Count Locations by Designated Categories

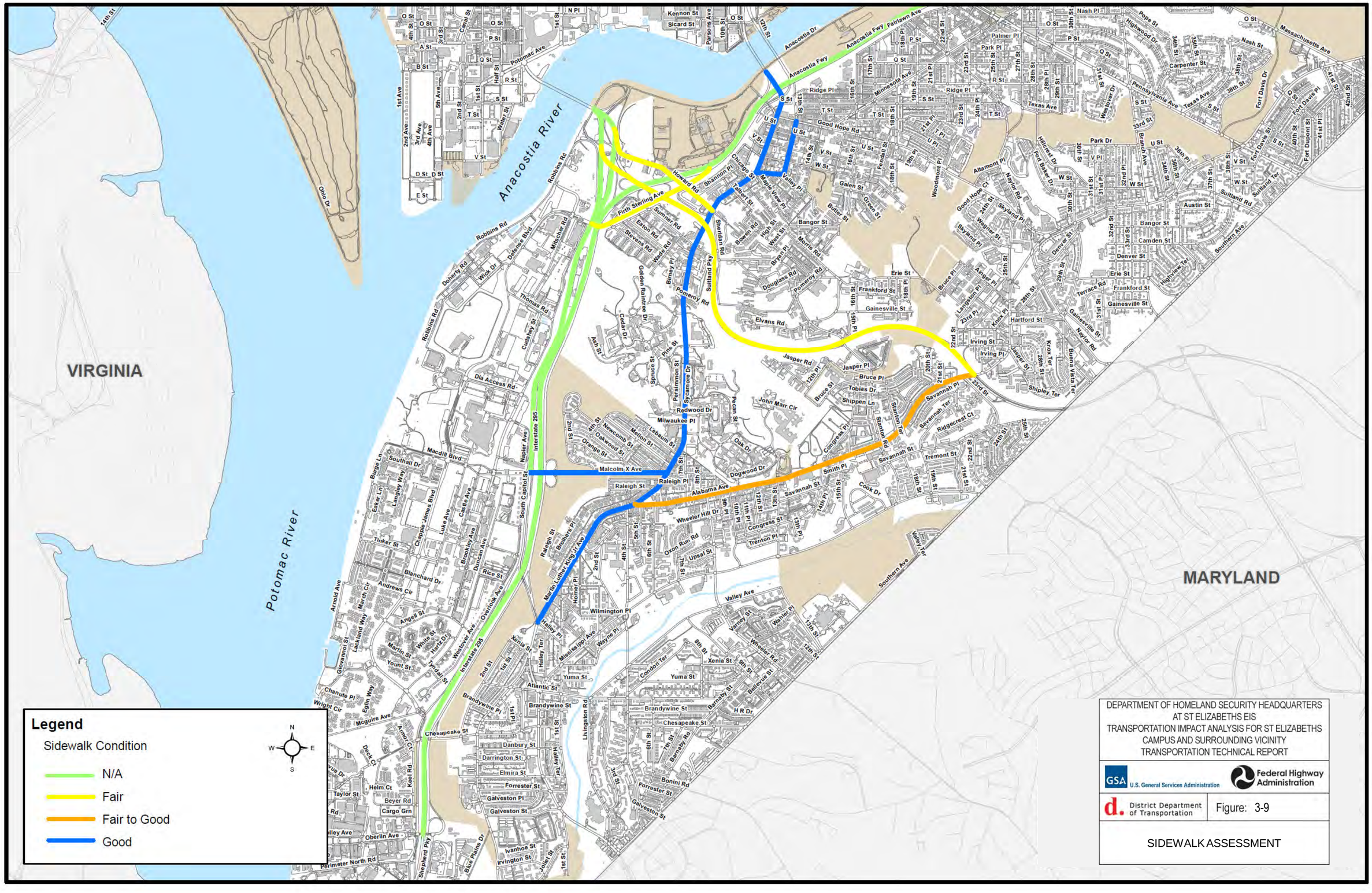
No.	Location	Type	No. of Lanes
1	Pennsylvania Ave EB Anacostia Frwy SB	Ramp	1
2	Anacostia Frwy NB to Pennsylvania Ave EB	Ramp	1
3	Anacostia Frwy Between I-695 and Pennsylvania Ave	Frwy	7
4	Anacostia Frwy/I-695 Interchange *	**10 Ramps**	18
5	Anacostia Frwy SB Off-Ramp to Howard Rd	Ramp	2
6	Anacostia Frwy NB On-Ramp from Firth Sterling Ave	Ramp	2
7	Martin Luther King Jr. Ave – north of Howard Rd	Arterial	4
8	Anacostia Frwy NB Off-Ramp to Suitland Pkwy WB	Ramp	1
9	South Capitol St NB – South of Douglas Bridge	Arterial	3
10	South Capitol St SB – South of Douglas Bridge	Arterial	3
11	Anacostia Frwy SB Off-Ramp to Suitland Pkwy EB	Ramp	1
12	Anacostia Frwy SB On-Ramp from Suitland Pkwy WB	Ramp	1
13	South Capitol St NB – North of Firth Sterling Ave	Arterial	3
14	South Capitol St SB – North of Firth Sterling Ave	Arterial	2
15	Anacostia Frwy NB On-Ramp from Suitland Pkwy EB	Ramp	1
16	Anacostia Frwy NB Off-Ramp to Firth Sterling Ave	Ramp	1
17	Firth Sterling Ave – East of St. Elizabeths Ave	Arterial	4
18	Martin Luther King Jr. Ave – South of Pomeroy Rd	Arterial	4
19	Suitland Pkwy – East of Sheridan Rd	Arterial	4
20	Suitland Pkwy – East of Alabama Ave/Southern Ave Int.	Arterial	4
21	Anacostia Frwy SB Off-Ramp to South Capitol St	Ramp	2
22	Martin Luther King Jr. Ave – North of Lebaum St, SE	Arterial	4
23	Alabama Ave – East of 11th St, SE	Arterial	4
24	Malcolm X Ave – West of South Capitol St/Entrance to JBAB	Arterial	6
25	South Capitol St SB Off-Ramp to Malcolm X Ave	Ramp	2
26	Malcolm X Ave WB to South Capitol St NB On-Ramp	Ramp	2
27	Malcolm X Ave WB to South Capitol St SB On-Ramp	Ramp	2
28	South Capitol St NB Off-Ramp to Malcolm X Ave	Ramp	2
29	Anacostia Frwy NB Off-Ramp to Malcolm X Ave *(EB & WB)*	Ramp	1
30	Anacostia Frwy NB Off-Ramp to Malcolm X Ave EB *(at Intersection)*	Ramp	1
31	Anacostia Frwy NB On-Ramp from Malcolm X Ave *(EB & WB)*	Ramp	1
32	Anacostia Frwy NB On-Ramp from Malcolm X Ave WB *(at Intersection)*	Ramp	1
33	Malcolm X Ave – East of Anacostia Frwy Interchange	Arterial	4
34	Anacostia Frwy SB On-Ramp from South Capitol St/Overlook Ave	Ramp	1
35	Anacostia Frwy NB On-Ramp from South Capitol St NB	Ramp	1
36	South Capitol St – South of Anacostia Frwy	Arterial	4
37	Martin Luther King Jr. Ave – North of South Capitol St	Arterial	4
38	Overlook Ave – North of Chappie James Blvd	Ramp/Conn.	2
39	Anacostia Frwy NB On-Ramp from Chesapeake St	Ramp	1
40	Anacostia Frwy NB On-Ramp from Oberlin Ave/Cooley Ave	Ramp	1
41	Anacostia Frwy NB Off-Ramp to Oberlin Ave/Cooley Ave	Ramp	1
42	Laboratory Rd/Overlook Ave On-Ramp to Anacostia Frwy SB	Ramp	1
43	Anacostia Frwy – South of Laboratory Rd/Overlook Ave On-Ramp	Frwy	6
44	Gate 4 to DHS Campus	Gate Access	4
	Total	**N/A**	**125 Lanes**

Category I – Priority Locations from 2012 Study (Must Repeat to Provide Current Data) [24 Locations, 68 Lanes]

Category II – 2017 Tube Count Locations (Possible Re-Use of Data) [27 Locations, 49 Lanes]

Category III – Non-Priority Locations from 2012 Study (Possible Elimination by DDOT) [2 Locations, 8 Lanes]

* ***Note:*** *Two (2) Ramp locations from the 2012 Study were eliminated by the new Anacostia Frwy/I-695 Interchange.*


VIRGINIA
MARYLAND
Anacostia River
Potomac River
Legend
Sidewalk Condition
N/A
Fair
Fair to Good
Good
N
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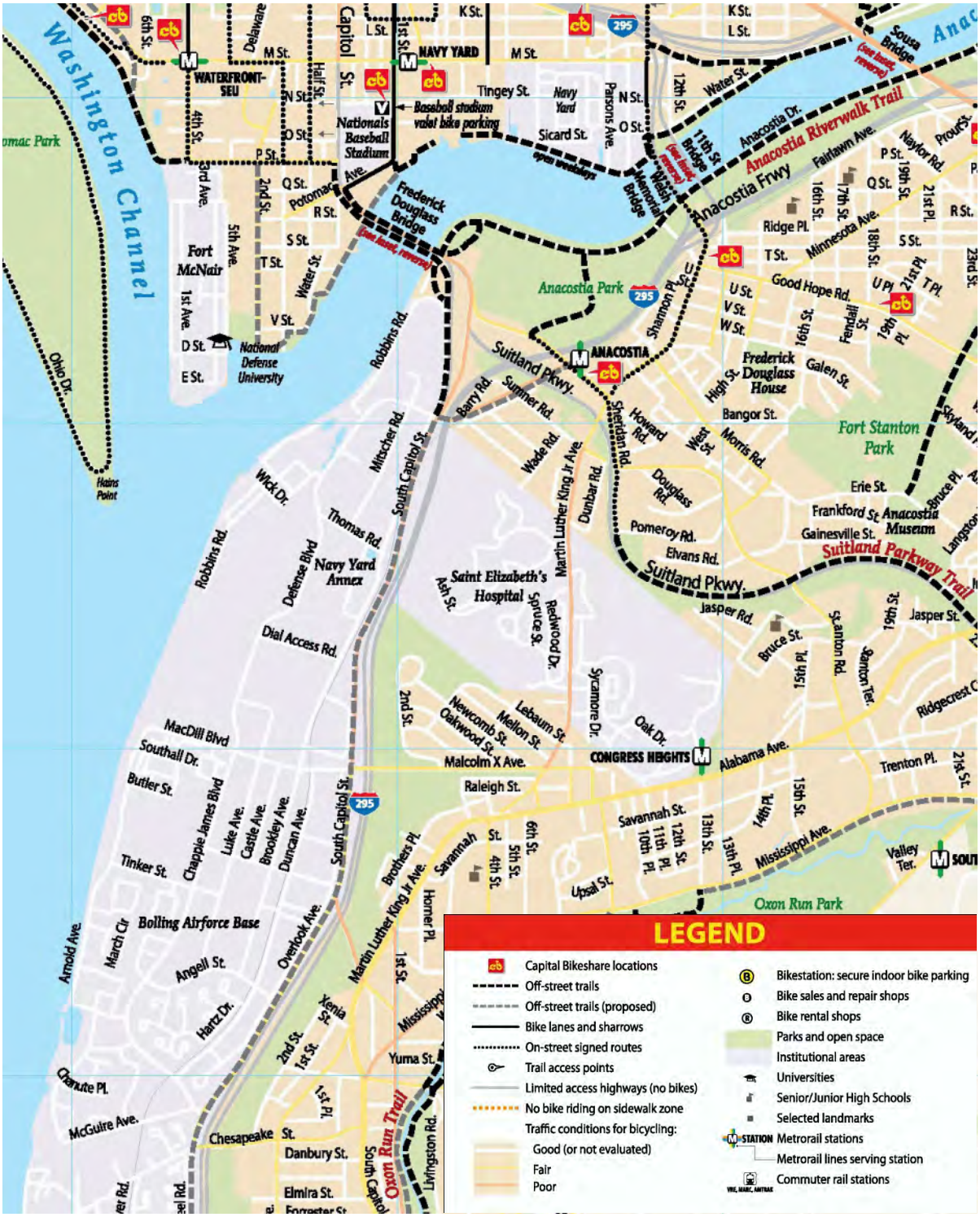
E
S
DEPARTMENT OF HOMELAND SECURITY HEADQUARTERS
AT ST ELIZABETHS EIS
TRANSPORTATION IMPACT ANALYSIS FOR ST ELIZABETHS
CAMPUS AND SURROUNDING VICINITY
TRANSPORTATION TECHNICAL REPORT
GSA U.S. General Services Administration
Federal Highway Administration
District Department of Transportation
Figure: 3-9
SIDEWALK ASSESSMENT

Bicycle Map


Washington Channel
Fort McNair
National Defense University
Hains Point
Ohio Dr.
Robbins Rd.
Wick Dr.
Thomas Rd.
Defense Blvd
Navy Yard Annex
Dial Access Rd.
Mitscher Rd.
South Capitol St.
Water St.
Half St.
Capitol St.
Delaware
WATERFRONT-SEU
NAVY YARD
Tingey St.
Navy Yard
Sicard St.
Parsons Ave.
Nationals Baseball Stadium
Baseball stadium valet bike parking
Frederick Douglass Bridge
Potomac Ave.
Memorial Bridge
Sousa Bridge
11th St. Bridge
Anacostia Riverwalk Trail
Anacostia Dr.
Anacostia Frwy
Fairlawn Ave.
Naylor Rd.
Minnesota Ave.
Ridge Pl.
Anacostia Park
Shannon Pl.
Good Hope Rd.
Suitland Pkwy.
ANACOSTIA
Frederick Douglass House
Galen St.
Bangor St.
Fort Stanton Park
Howard Rd.
Sheridan Rd.
Wade Rd.
Martin Luther King Jr Ave.
Dunbar Rd.
Douglass Rd.
Morris Rd.
Barry Rd.
Sumner Rd.
Erie St.
Frankford St.
Anacostia Museum
Gainesville St.
Pomeroy Rd.
Elvans Rd.
Suitland Parkway Trail
Saint Elizabeth's Hospital
Ash St.
Spruce St.
Redwood Dr.
Jasper Rd.
Jasper St.
Bruce St.
Stanton Rd.
Stanton Ter.
Ridgecrest
Sycamore Dr.
Oak Dr.
Lebaum St.
Mellon St.
Newcomb St.
Oakwood St.
2nd St.
Malcolm X Ave.
CONGRESS HEIGHTS
Alabama Ave.
Trenton Pl.
Raleigh St.
Savannah St.
Mississippi Ave.
Valley Ter.
Oxon Run Park
Upsal St.
Brothers Pl.
Horner Pl.
Martin Luther King Jr Ave.
Overlook Ave.
Bolling Airforce Base
Arnold Ave.
March Cir
Angell St.
Hartz Dr.
Xenia St.
Yuma St.
Chanute Pl.
McGuire Ave.
Chesapeake St.
Danbury St.
Elmira St.
Oxon Run Trail
South Capitol
Livingston Rd.
MacDill Blvd
Southall Dr.
Butler St.
Tinker St.
Chappie James Blvd
Luke Ave.
Castle Ave.
Brookley Ave.
Duncan Ave.
South Capitol St.
LEGEND
Capital Bikeshare locations
Off-street trails
Off-street trails (proposed)
Bike lanes and sharrows
On-street signed routes
Trail access points
Limited access highways (no bikes)
No bike riding on sidewalk zone
Traffic conditions for bicycling:
Good (or not evaluated)
Fair
Poor
Bikestation: secure indoor bike parking
Bike sales and repair shops
Bike rental shops
Parks and open space
Institutional areas
Universities
Senior/Junior High Schools
Selected landmarks
Metrorail stations
Metrorail lines serving station
Commuter rail stations

Legend

- Rt 36, Pennsylvania Avenue Line;
  Rt 39-Express, Pennsylvania Avenue Limited Line;
  Rt D51, Duke Ellington School of Arts Line
- Rt 32, Pennsylvania Avenue Line;
  Rt 34, Naylor Road Line
- Rt 90/92/93, U Street-Garfield Line;
  Rt 94, Stanton Road Line;
  Rt P1/P2/P6, Anacostia-Eckington Line;
  Rt A32/A33, Anacostia High School Line;
  Rt V5, Fairfax Village-L'Enfant Plaza Line
- Rt B2, Bladensburg Road-Anacostia Line;
  Rt U2, Minnesota Avenue-Anacostia Line;
- Rt D12/D13/D14, Oxon Hill-Suitland Line;
  Rt W15, Camp Springs - Indian Head Highway Line;
  Rt W19, Indian Head Express Line;
  Rt P12, Eastover-Addison Road Line;
  Rt TB33, Prince George County Transit
- Rt A2, Anacostia-Congress Heights Line;
  Rt A4/A5, Anacostia-Fort Drum Line;
  Rt A6/A7/A8, Anacostia-Congress Heights Line;
  Rt A42/A46/A48, Anacostia-Congress Heights Line
- Rt P17/P18/P19, Oxon Hill-Fort Washington Line;
  Rt W13/W14, Bock Road Line;
  Rt A9, South Capitol Street Line
- Rt W4, Deanwood-Alabama Ave. Line
- Rt M8/M9, Congress Heights Shuttle Line
- Rt W2/W3, United Medical Center-Anacostia Line
- Rt W6/W8, Garfield-Anacostia Loop Line
- Metro Station

0 1,250 2,500 5,000 Feet

Anacostia River
Potomac River
WASHINGTON D.C.
MARYLAND
VIRGINIA
Anacostia
Congress Heights
Southern Ave
WEST CAMPUS
EAST CAMPUS
FREDERICK DOUGLASS BRIDGE
ANACOSTIA FWY
MINNESOTA AVE
W ST
GOOD HOPE RD
MORRIS RD
HOWARD RD
FIRTH STERLING AVE
SUMMER RD
SOUTH CAPITOL
SUITLAND PKWY
IRVING ST
JASPER ST
23RD ST
STANTON RD
ALABAMA AVE
18TH ST
CONGRESS ST
MALCOLM X AVE
11TH PL
WHEELER RD
4TH ST
MLK JR. AVE
OVERLOOK AVE
ATLANTIC ST

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TRANSPORTATION IMPACT ANALYSIS FOR ST ELIZABETHS
CAMPUS AND SURROUNDING VICINITY
TRANSPORTATION TECHNICAL REPORT

GSA U.S. General Services Administration | Federal Highway Administration

District Department of Transportation | Figure: 3-7

EXISTING BUS AND RAIL FACILITIES

TBG012710052635WDC_v8

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Figure: 5-1a

DHS Shuttle Routes 1, 2, & 3
(considered for further analysis)

ATTACHMENT C
Travel Demand Model
Memo

Subject	**St. Elizabeths West Campus Amendment 2 - Travel Demand Model Memo**	**Project Name**	St. Elizabeths West Campus Amendment 2
Attention	General Service Administration		
From	Giri Kilim		
Date	August 29, 2019		
Copies to	<Name>		

1. Introduction

This memorandum summarizes transportation and land use assumptions that will be used in the travel demand modeling and traffic simulation analysis of the proposed St. Elizabeths West Campus Master Plan Amendment 2 (herein referred as “MPA 2”) in support of the Supplemental EIS. The memo also provides a description of the travel demand forecasting methodology that was customized to reflect DHS personnel related travel patterns. This memorandum will also serve as the deliverable for Task 3 as outlined in Jacobs scope of work.

2. Summary of Recommendations

Table 1 lists major transportation and land use assumptions made in the transportation analysis for the *Final Department of Homeland Security (DHS) Headquarters Consolidation at St. Elizabeths Master Plan Amendment – East Campus North Parcel Environmental Impact Statement* (herein referred as “2012 FEIS/TTR”). The table lists the current status of each assumption and proposes a recommendation on whether the assumption should be updated in the travel demand modeling and traffic simulations for the MPA 2 transportation analysis. Through several telephone calls and meetings, Jacobs has been coordinating with General Services Administration (GSA) on these assumptions and recommendations listed in this table prior to running travel demand models and traffic simulations.

Please note: For this study, the future transportation analysis for the proposed MPA 2 was evaluated only for the year 2035.

Table 1. Recommended Transportation and Land Use Assumptions for Amendment#2 Transportation Analysis (Model Year 2035)

Transportation or Land Use Improvement	2012 FEIS/TTR Assumption	Current Status	Assumption made for MPA2 2035 Analysis Year
Transportation Improvements to be completed by Other Agencies			
DC Streetcar – Anacostia Initial Segment (DDOT)	Complete by West Campus design year (2035)	Construction occurred in 2009 and 2010, but the project was abandoned before the line was complete due to financial concerns.	Exclude from 2035 Analysis Year as DDOT requested to remove this project from the Visualize 2045 and the latest FY2019-2024 TIP
DC Streetcar – Anacostia Extension (DDOT)	Complete by West Campus design year (2035)	Construction occurred in 2009 and 2010, but the project was abandoned before the line was complete due to financial concerns.	Exclude from 2035 Analysis Year as DDOT requested to remove this project from the Visualize 2045 and the latest FY2019-2024 TIP
Purple Line Transitway (MDOT/MTA)	Not included	Under construction	Include in 2035 Analysis Year
South Capitol Street Bridge Project (DDOT)	Complete by West Campus design year (2035)	A revised Preferred Alternative was developed as part of the South Capitol Street Supplemental FEIS	Include the Revised Preferred Alternative in 2035 Analysis Year
St Elizabeths East Campus Roadway Network (DDOT / DMPED)	Complete by West Campus design year (2035)	Only Stage 1 streets (Cypress St and south) are constructed.	Include full build out East Campus network in 2035 Analysis Year
Local and Regional Transportation Improvements – Highway			
Martin Luther King Jr. Avenue Improvements	Complete by West Campus design year (2035)	No change	No change in Baseline. Refinements possible based on 2035 analysis
Firth Sterling Avenue Improvements	Complete by West Campus design year (2035)	Currently complete	No change
St. Elizabeths Avenue	Complete by West Campus design year (2035)	Gate 4 to Firth Sterling Ave is complete; The section between Gate-4 and Malcolm X interchange will be complete by 2035	No change
I-295 / Malcolm X Avenue Interchange	Complete by West Campus design year (2035)	No change	No change
Construction/widening I-95/I-495 Toll Lanes (MDOT/State Highway Administration/Maryland Transportation Authority)	Not included	The project is under consideration. For air quality conformity modeling purposes, Visualize 2045 assumed 2025 completion date.	Include in 2035 Analysis Year
Construction/widening I-495 I-495 Express Lanes Northern Extension (VDOT)	Not included	Currently, NEPA study underway. For air quality conformity modeling purposes, Visualize 2045 assumed 2025 completion date.	Include in 2035 Analysis Year

Construction/widening I-270 Toll Lanes (MDOT/State Highway Administration/Maryland Transportation Authority)	Not included	The project is under consideration. For air quality conformity modeling purposes, Visualize 2045 assumed 2025 completion date.	Include in 2035 Analysis Year
I-66 Inside The Beltway Tolling (VDOT)	Not included	Tolling on I-66 lanes inside the Beltway initiated; Currently HOV-2+ ride for free; After 2021, it will be changed to HOV-3+.	Include in 2035 Analysis Year
I-66 Outside The Beltway Managed/Express Lanes (VDOT)	Not included	Currently under construction with operational by 2021/2022	Include in 2035 Analysis Year
Land Use			
St. Elizabeths East Campus Master Plan (DDOT / DMPED)	Complete by West Campus opening year (2020) Office: 1.8 million SF Residential: 1,300 units Retail: 206,000 SF Hospitality: 330,000 SF Civic & Educational 250,000 SF	Various redevelopment options under consideration.	Sources: St. Elizabeths East Campus Parking Master Plan, June 2017 and DMPED/East Campus Team Office: 1.68 million SF Residential: 1,621 units Retail: 168,000 SF Hospitality: 352,000 SF Concert/Entertainment: 5,000 seats Civic/Art/Institutional: 310,000 SF
St. Elizabeths East Campus North Parcel	FEMA Headquarters complete by 2020 750,000 SF of development 3,100 seats/employees 775 parking spaces	FEMA Headquarters no longer on the East Campus Transit component provided by Pecan St bus bays will be retained but specific location has not yet been identified by the East Campus redevelopment team	150-bed new Hospital with 230,000 SF Ambulatory Services Relocation of 801 Men's Shelter (380-bed low-barrier shelter) Retain transit component provided by Pecan St bus bays
St. Elizabeths West Campus	3,750,000 SF of development 10,900 seats/employees 3,459 parking spaces	Partially occupied ~5,000 employees (DHS, GSA, and USCG) currently reporting via Gate-4 ~2,000 parking spaces actively used	4,200,000 SF of development 12,800 seats Up to 17,000 personnel seats assigned 4,058 parking spaces Assume 12,800 seats (for worker arrival calculations) and 17,000 employees (to scale daily non-Hone Based and visitor trips) in 2035 Analysis Year

Background Land Use Forecasts and Travel Demand Model Version	Travel Demand Model: Version 2.2 Land Use Forecasts: MWCOG Round 7.2A for Draft EIS and later updated to with Round 8.0 for Final EIS for 2,191 TAZs	Travel Demand Model: Version 2.3 Land Use Forecasts: MWCOG Round 9.1 for 3,722 TAZs	Retain Version 2.2 model used for 2012 Final EIS transportation analysis Update network with background transportation projects Land Use Forecasts: Convert Round 9.1 data for 3,722 TAZs to Round 9.1 for 2,191 TAZs using conversion methodology provided by MWCOG

DDOT – District Department of Transportation
FEMA – Federal Emergency Management Agency
MPA 2 – Master Plan Amendment 2
MWCOG – Metropolitan Washington Council of Governments
VDOT – Virginia Department of Transportation
EIS – Environmental Impact Statement
DMPED – Office of the Deputy Mayor for Planning and Economic Development
MDOT – Maryland Department of Transportation
MTA – Maryland Transit Administration
SF – square feet
TAZ – Traffic Analysis Zone

The remainder of this memorandum discusses the assumptions and recommended changes summarized in Table 1 in additional detail.

3. Transportation Improvements Within Study Area

3.1 DC Streetcar

The 2012 FEIS/TTR transportation analysis assumed two planned streetcar lines would be in place by the year of opening (2020) for St. Elizabeths West Campus: Anacostia Initial Segment and Anacostia Extension. These lines would be constructed by the District Department of Transportation (DDOT) and provide streetcar service to the Joint Base Anacostia Bolling (JBAB), the Anacostia Metrorail Station, and Martin Luther King Jr. Avenue between Howard Road and Good Hope Road. The Anacostia Initial Segment would operate on exclusive track parallel to South Capitol Street in the vicinity of the JBAB. It would then operate in mixed traffic on Firth Sterling Avenue. The Anacostia Extension would connect to the Anacostia Initial Segment at Firth Sterling Avenue and would continue in mixed traffic on Howard Road and Martin Luther King Jr. Avenue.

The track for the Anacostia Initial Segment had been constructed and an Environmental Assessment (EA) was underway for the Anacostia Extension during the time the 2012 FEIS/TTR transportation analysis was conducted. In 2014, the EA identified a Preferred Alternative different than what was assumed in the 2012 FEIS/TTR transportation analysis. The Preferred Alternative would operate the streetcar on CSX right-of-way instead of operating in mixed traffic on Howard Road and Martin Luther King Jr. Avenue.

However, in 2018, DDOT requested that these segments of constructed and planned streetcar be removed from the Air Quality Conformity Analysis of the Constrained Element of Visualize 2045 and the FY 2019-2024 Transportation Improvement Program. Jacobs recommends not including these streetcar lines in the design year (2035) analysis of MPA 2.

3.2 South Capitol Street Bridge

The 2012 FEIS/TTR transportation analysis assumed the proposed South Capitol Street Bridge project would be in place by the time St. Elizabeths West Campus consolidation occurs. The project would replace the existing 5-lane Frederick Douglass Memorial Bridge with a 6-lane bridge. The project also

included a signalized traffic oval on the west side of the bridge that would replace the signalized intersection of Potomac Avenue and South Capitol Street. A signalized traffic circle would be constructed on the east side of the bridge replacing the current intersection of South Capitol Street, Suitland Parkway, and Howard Road. Interchange improvements would be made to the interchange of I-295 and Suitland Parkway. A new interchange would be constructed between Suitland Parkway and Martin Luther King Jr. Avenue. The project also included improvements to South Capitol Street between Potomac Avenue and I-395 outside of the 2012 FEIS/TTR study area.

After completion of the 2012 FEIS/TTR transportation analysis, the DDOT identified a Revised Preferred Alternative for the South Capitol Street project. Changes from the improvements assumed in the 2012 FEIS/TTR transportation analysis include: replacing the signalized traffic circle on the east side of the bridge with a signalized traffic oval, changing lane configurations at the I-295 / Suitland Parkway interchange, and replacing the center ramp interchange at Suitland Parkway and Martin Luther King Jr. Avenue with a compact urban diamond interchange.

The DDOT anticipates implementing the project under two phases. Phase 1 which includes: replacing the existing bridge; constructing the signalized traffic ovals to the east and west of the bridge; and the I-295 / Suitland Parkway interchange. Phase 1 is anticipated to be complete by end of 2020. The remainder of the improvements are grouped into Phase 2 and is anticipated to be complete sometime between 2020 and 2035 design year. The traffic simulation models for the 2035 design year were updated to reflect the Revised Preferred Alternative.

3.3 East Campus Roadway Network

The St. Elizabeths 2012 FEIS/TTR transportation analysis assumed the Preferred Alternative roadway network at St. Elizabeths East Campus would be constructed by the West Campus' opening year. Since the completion of the 2012 FEIS/TTR transportation analysis, DMPED revised the land use on the East Campus, but intended to keep the same road network proposed in the EA. In 2012, DDOT prepared an Environmental Assessment (EA) for the construction of a roadway network on St. Elizabeths East Campus to support redevelopment of the site. The most recent information on East Campus development is discussed in additional detail in the Land Use section of this memorandum.

Jacobs recommends assuming the St. Elizabeths East Campus EA's street network to be complete by the design year (2035).

4. 2012 FEIS/TTR Transportation Improvements

The 2012 FEIS/TTR identified the following transportation improvements to be implemented as part of the St. Elizabeths West Campus Master Plan.

- ***I-295 / Malcolm X Avenue Interchange*** – improvements to existing interchange that would provide direct freeway access to the proposed St. Elizabeths Avenue (previously referred as West Campus Access Road). These improvements are currently under construction and anticipated to be complete by Spring 2022 (https://295malcolmxproject.com/wp-content/uploads/MalX-Fact-Sheet-3.pdf).

- ***St. Elizabeths Avenue Construction*** – three-lane road that would run parallel to I-295 to its east between the Malcolm X Avenue interchange and Firth Sterling Avenue. This road would connect to the proposed access modifications at the I-295 / Malcolm X Avenue interchange and provide access to the West Campus. The St. Elizabeths Avenue between Firth Sterling Avenue and Gate 4 has been completed and open to traffic.

- ***Firth Sterling Avenue / St. Elizabeths Avenue Intersection Improvements*** – these improvements will connect the West Campus Access Road with existing Firth Sterling Avenue and provide improvements and modifications to Firth Sterling Avenue and its side streets. These improvements have been completed.

- ***Martin Luther King Jr. Avenue Improvements*** – these improvements include two travel lanes in each direction, an additional turn lane, median, and sidewalks along Martin Luther King Jr. Avenue to improve access to both the East and West Campus portions of the consolidation. Martin Luther King Jr. Avenue improvements continue south of St. Elizabeths Campus to Alabama Avenue. Improvements include wider sidewalks, on-street parking, and continuation of two travel lanes in each direction with turn pockets.

- ***East Campus North Parcel Transportation Improvements*** – these include improvements to Pine Street and Pecan Street to accommodate access to the portion of the DHS consolidation that will occur at the East Campus North Parcel (FEMA Headquarters). Bus bays would be built along Pecan Street to accommodate shuttles from the Congress Heights Metrorail Station. A pedestrian tunnel would be constructed underneath Martin Luther King Jr. Avenue.

5. Regionally Significant Transportation Improvements

Following are a sample of regionally significant major projects that are included in the approved FY 2019-2024 Transportation Improvement Program (TIP) for the National Capital Region. These projects, among others identified in the TIP), were originally not included in the 2012 FEIS/TTR transportation analysis as they were still in the infancy stage and were not part of the then constrained long range plan.

- Construction/widening I-95/I-495 Toll Lanes (MDOT/State Highway Administration/Maryland Transportation Authority): The I-495 component of MDOT's "Traffic Relief Plan" project will add two new managed toll lanes in each direction along the Capital Beltway between the Virginia end of the American Legion Bridge to the Maryland end of the Woodrow Wilson Bridge. Actual completion year will depend on awarded contract. For air quality conformity modeling purposes, the completion date is presumed to be 2025 (https://495-270-p3.com/program-overview/).

- Construction/widening I-495 Express Lanes Northern Extension (VDOT): VDOT is currently conducting an environmental study about plans to extend the I-495 Express Lanes by approximately three miles from the I-495 and Dulles Toll Road interchange to the vicinity of the American Legion Bridge. Actual completion year will depend on awarded contract. For air quality conformity modeling purposes, the completion date is presumed to be 2025 (https://www.495northernextension.org/).

- Construction/widening I-270 Toll Lanes (MDOT/State Highway Administration/Maryland Transportation Authority): The I-270 component of MDOT's "Traffic Relief Plan" project will add two new managed toll lanes in each direction along I-270 between the Capital Beltway (I-495) and I-70/US 40. Actual completion year will depend on awarded contract. For air quality conformity modeling purposes, the completion date is presumed to be 2025 (https://495-270-p3.com/program-overview/).

- I-66 Inside The Beltway Tolling (VDOT): In December 2017, VDOT converted the current HOV-2 lanes between I-495 and Route 29 in Rosslyn into Express Lanes that are open during rush hours on Interstate 66 inside the Beltway providing new travel options and more predictable trips for all travelers. Those who drive alone can use the lanes during rush hours by paying a toll. Those traveling with two or more people can continue to ride free. Starting 2025, only HOV-3+ can ride free, while HOV-2 and SOV pay a toll (http://inside.transform66.org/).

- I-66 Outside The Beltway Managed/Express Lanes (VDOT): This project transforms Interstate 66 into a multimodal corridor that moves more people, provides reliable trips and offers new travel options. Improvements include 22.5 miles of new two express lanes alongside three regular lanes on I-66 from I-495 to University Boulevard in Gainesville, in each direction. The project also adds new and improved bus service and transit routes, while adding 11 miles of new bike and pedestrian trails. Anticipated project completion date is late 2022 (http://inside.transform66.org/).

- Purple Line Transitway (MDOT/MTA): The Purple Line is a 16-mile light rail line that will extend from Bethesda in Montgomery County to New Carrollton in Prince George's County. It will provide a direct connection to the Metrorail Red, Green and Orange Lines; at Bethesda, Silver Spring, College Park, and New Carrollton. The Purple Line will also connect to MARC, Amtrak, and local bus services. Anticipated service begin date will be by 2022 (https://www.purplelinemd.com/).

6. Land Use Updates Within St. Elizabeths Campuses

6.1 St. Elizabeths East Campus Master Plan Development

The DC Office of Planning and the Office of the Deputy Mayor for Planning and Economic Development (DMPED) prepared a master plan for St. Elizabeths East Campus in 2012. The plan envisioned a certain level of development at the East Campus at that time. As years progressed, DMPED revised those plans. The latest information on the East Campus plan can be found on the web at https://stelizabethseast.com/wp-content/uploads/2017/08/StE_EC_Parking_MP_Study_Final.pdf.

Table 2 identifies those differences and illustrates the assumptions in the 2012 FEIS/TTR and the 2019 MPA 2 for the East Campus.

Table 2. St. Elizabeths East Campus Land Use Updates

Land Use Type	2012 FEIS/TTR	2019 MPA 2
Office	1.8 million gross square feet	1.68 million gross square feet
Residential units (rowhomes and multifamily units)	1,300	1,621
Retail	206,000 gross square feet	168,000 gross square feet
Hospitality	330,000 gross square feet	352,000 gross square feet
Civic/Art/Educational	250,000 gross square feet	310,000 gross square feet
Concert/Entertainment	-	5,000 seats

Jacobs assumed that revised full build out of the East Campus would occur by the MPA 2 design year (2035).

6.2 St. Elizabeths West Campus

The MPA 2 proposed by GSA would increase space utilization on the West Campus above what was proposed in the previous master plan 2012 FEIS/TTR. The increases in space utilization would allow the DHS personnel planned for the East Campus North Parcel to be incorporated into the West Campus. The additional occupancy on West Campus would require additional parking. **Table 3** summarizes the increases in parking and occupancy that would occur on the West Campus as a result of the proposed MPA 2.

Table 3. Occupancy and Parking Changes Proposed in St. Elizabeths West Campus MPA 2

Plan Element	2012 FEIS/TTR	2019 MPA 2	Plan Element
Occupancy	11,000 seats	12,800 seats	Occupancy
Parking	3,459 spaces	4,058 spaces	Parking

6.3 St. Elizabeths East Campus North Parcel

The 2012 FEIS/TTR assumed FEMA would relocate its headquarters to St. Elizabeths East Campus North Parcel. Under the MPA 2 consolidation plan to West Campus, the East Campus North Parcel would no longer be developed by the GSA.

Without the FEMA headquarters, development of the East Campus North Parcel would fall under the responsibility of the District of Columbia. In August 2018, the Government of District of Columbia have signed a letter of intent that will allow George Washington University Hospital to operate, maintain, and govern a new hospital that is to be developed on the North Parcel (https://dhcf.dc.gov/page/new-hospital-st-elizabeths-east) and will include the following main elements -

- Approximately 125 to 150-bed new Hospital with 230,000 SF Ambulatory Services
- Relocation of 801 Men's Shelter (380-bed low-barrier shelter)
- About 800-space parking garage

The new hospital is expected to open and operational by 2023. The District of Columbia Council Approved $325.8 million for the construction of this new hospital, along with funding for additional projects on the St. Elizabeths East Campus. Jacobs included this proposed development for the North Parcel in the MPA 2 design year (2035).

7. Background Land Use Forecasts, Socioeconomic, and Travel Demand Model Version

Several changes have occurred to land use forecasts and the travel demand model used for the Washington, DC, region. Travel demand forecasting for the 2012 FEIS was conducted using an application that was based on the Version 2.2 regional travel demand model developed by the Metropolitan Washington Council of Governments / National Capital Region Transportation Planning Board (MWCOG/TPB). Since completion of the original travel demand modeling for the 2012 FEIS, there have been two major changes in the MWCOG/TPB modeling process for the development of the current Version 2.3 model.

- The first major change was the modification from a 2,191 Traffic Analysis Zone (zone or TAZ) system to a 3,722 zone system.
- The second major change is that the Version 2.3 model has been calibrated with the newly-collected travel survey data from the 2007/2008 Household Travel Survey. The Version 2.2 model was based on the 1994 Household Travel Survey.

Additionally, the land use inputs (current Round 9.1) to the Version 2.3 model have been revised in the annual Regional Cooperative Land Use Forecasting Program to allocate land use across 3,722 zones. In contrast, for the 2012 FEIS/TTR, land use inputs Round 8.0 version was used for 2,191 zones.

The proposed approach for travel demand forecasting for this MPA 2 is to utilize the customized version of the MWCOG model developed and calibrated for the 2012 FEIS/TTR. To upgrade to the current MWCOG/TPB model (Version 2.3) and make the same modifications, would require considerable effort for a potentially limited benefit in the modeling results. In addition, using the same model version would allow a direct comparison between the 2012 FEIS results and MPA 2 results. While changes have

occurred in the MWCOG/TPB modeling process between Version 2.2 and Version 2.3, the modifications made for the 2012 FEIS/TTR model to represent the land use changes and transportation improvements specifically for the MPA 2 make it the best model to use.

7.1 TAZ Definition Adjustments

Version 2.3 of the MWCOG/TPB model increased the number of zones to 3,722 by adding 1,690 active traffic analysis zones (TAZs) across the region. The increase in zones was to better represent land use development patterns in newly developed areas and to better represent transit access in suburban areas. About 40 percent, or 649, of the 1,690 new zones are in the inner jurisdictions of the District of Columbia (DC), the City of Alexandria, and in Montgomery, Prince George's, Arlington, and Fairfax counties including 72 new zones in the District. The other 60 percent, or 1,041 zones, were added in the outer jurisdictions. **Table 4** shows the increase in active TAZs in the MWCOG/TPB model system for the 2,191 and 3,722 zone systems. **Figure 1** shows a map of the zones in southeast DC and the surrounding area.

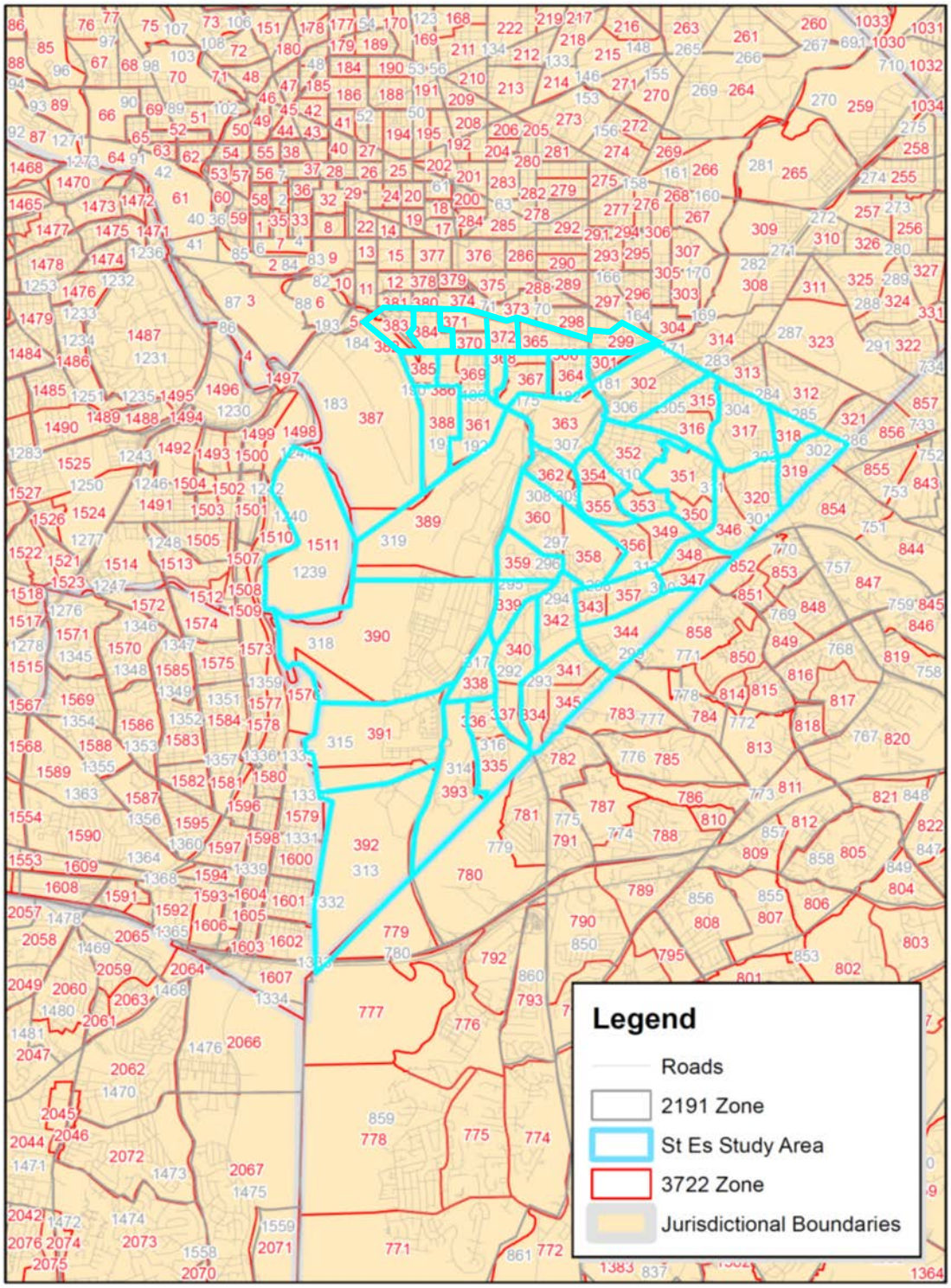
While the St. Elizabeths transportation study area is more limited, the selected zones show a more extensive adjacent study area comprised of TAZs in the District encompassed by M Street SE/SW, Southeast Boulevard, Pennsylvania Ave SE, and DC-Maryland border. This wider study area is defined by 45 TAZs in the original 2,191 zones system. These 45 zones were manually disaggregated for the St. Elizabeths study purposes to create 64 TAZs, with 10 of those 64 zones representing the St Elizabeths campus (which was formerly designated as one zone, TAZ 297, in the MWCOG/TPB Model network). In the newer 3,722 zone system, the zones within the wider study area are disaggregated to 58 zones, with Zone 297 as the only TAZ split into more than two zones (TAZs 359 and 360). As a result, the additional TAZ resolution (i.e. the number and smaller size of zones) added in the 3,722 zone system should have minimal enhancement to the travel demand forecasting ability of trips to the St. Elizabeths Campus over the manually disaggregated 2,191 TAZ system used in the 2012 FEIS/TTR model because there are fewer zones in the study area. Additionally the 2012 FEIS/TTR model has specific customized modeling components to represent the St. Elizabeths development.

Table 4: TAZ Allocation by Jurisdiction for the 2,191* and 3,722 Zone Systems

Jurisdiction	2,191* Zone System	3,722 Zone System	Increase in Zones
District of Columbia	319	391	72
Montgomery County	308	376	68
Prince George's County	381	633	252
Arlington County	82	141	59
City of Alexandria	60	65	5
Fairfax County / Falls Church	356	549	193
Loudoun County	126	282	156
Prince William County	142	376	234
Frederick County	24	130	106
Howard County	20	68	48
Anne Arundel County	33	98	65
Charles County	24	113	89
Carroll County	14	56	42
Calvert County	14	47	33
St. Mary's County	21	75	54
King George County	5	25	20
City of Fredericksburg	2	14	12
Stafford County	14	90	76
Spotsylvania County	6	61	55
Fauquier County	11	50	39
Clarke County	3	9	6
Jefferson County	7	13	6
External Zones	47	47	0
Total Used Zones	2,019	3,709	1,690
Unused Zones	172	13	
Total Zones	2,191	3,722	

** 2,191 zones prior to (exclusive of) the manual disaggregation within the study area for 2012 FEIS/TTR*

Figure 1: Southeast DC Zones in 2,191* and 3,722 Zone System



** 2,191 zones prior to (exclusive of) the manual disaggregation within the study area for 2012 FEIS/TTR*

7.2 Socio-Economic Forecasts

At a regional level, there is less than a 3 percent difference for the population forecasts for the year 2035 between the traffic forecast model used in the 2012 FEIS/TTR modeling and the current adopted regional forecasts in 2035 (Round 9.1).

Table 5. MWCOG Regional Level Socio-Economic Comparison

LU version >>	Round 8.0	Adj Round 9.1	Differences
Year >>	2035	2035	in 2035
Population	8,364,098	8,569,716	2.5%
Households	3,254,688	3,249,661	-0.2%
Employment	5,379,296	5,088,209	-5.4%

A closer examination for the 2035 forecasts by jurisdictions reveals that the Round 9.1 data projects 22 percent more population in the District, 4 percent more population in Prince George's County, and 10 percent more population in Arlington County than the prior forecasts. The "inner jurisdictions," DC, Montgomery, Prince George's, Arlington, Alexandria, and Fairfax, population forecasts for 2035 increase 6 percent while all other jurisdictions in the region (the "outer jurisdictions") forecasts are almost 2 percent lower. The Round 9.1 regional employment forecasts is nearly 6 percent lower in 2035. In 2035, the Round 9.1 employment forecasts are nearly 6 percent lower in the outer jurisdictions and a little over 5 percent lower in the inner jurisdictions. The Round 9.1 regional number of household forecasts is nearly 0.2 percent lower in 2035. In 2035, the Round 9.1 employment forecasts are a little over 5 percent lower in the outer jurisdictions and nearly 4 percent higher in the inner jurisdictions. The jurisdictional population, household, and employment forecasts are presented in ***Table 6.***

Table 6. Regional Land Use Forecasts by Jurisdiction

Jurisdiction	2035 Population				2035 Households				2035 Employment			
	Rnd 8.0	Adj Rnd 9.1	Abs Diff	% Change	Rnd 8.0	Adj Rnd 9.1	Abs Diff	% Change	Rnd 8.0	Adj Rnd 9.1	Abs Diff	% Change
TOTALS	**8,364,098**	**8,569,716**	**205,618**	**2.5%**	**3,254,688**	**3,249,661**	**-5,027**	**-0.2%**	**5,379,296**	**5,088,209**	**-291,088**	**-5.4%**
District of Columbia	730,521	895,112	164,591	22.5%	325,599	380,972	55,373	17.0%	957,484	985,934	28,450	3.0%
Montgomery County	1,187,175	1,161,089	-26,086	-2.2%	454,799	435,682	-19,117	-4.2%	703,634	625,340	-78,294	-11.1%
Prince George's County	934,731	974,457	39,726	4.2%	353,540	365,724	12,184	3.4%	443,511	387,553	-55,958	-12.6%
Arlington County	249,566	274,563	24,997	10.0%	122,712	129,768	7,056	5.8%	278,548	248,902	-29,646	-10.6%
City of Alexandria	180,862	180,463	-399	-0.2%	87,013	87,848	835	1.0%	153,606	135,254	-18,352	-11.9%
Fairfax Co./Fairfax City/Falls Church	1,307,260	1,375,587	68,327	5.2%	493,852	507,837	13,985	2.8%	888,718	861,633	-27,085	-3.0%
Loudoun County	431,179	494,293	63,114	14.6%	154,982	163,830	8,848	5.7%	271,462	262,210	-9,252	-3.4%
PrinceWilliamCo/Manassas/ManassasPark	621,209	615,742	-5,467	-0.9%	223,935	205,814	-18,121	-8.1%	256,059	257,042	983	0.4%
Frederick County	371,720	319,361	-52,359	-14.1%	134,778	121,133	-13,645	-10.1%	171,115	135,345	-35,770	-20.9%
Howard County	328,467	369,602	41,135	12.5%	135,065	138,960	3,895	2.9%	264,538	251,718	-12,820	-4.8%
Anne Arundel County	581,366	618,176	36,810	6.3%	234,335	234,647	312	0.1%	433,509	404,982	-28,527	-6.6%
Charles County	213,653	207,519	-6,134	-2.9%	80,877	78,606	-2,271	-2.8%	80,298	55,378	-24,920	-31.0%
Carroll County	213,530	186,180	-27,350	-12.8%	78,732	69,162	-9,570	-12.2%	91,314	82,991	-8,323	-9.1%
Calvert County	106,980	100,050	-6,930	-6.5%	39,323	37,556	-1,767	-4.5%	48,102	41,900	-6,202	-12.9%
St. Mary's County	162,572	148,149	-14,423	-8.9%	62,326	54,912	-7,414	-11.9%	78,637	79,100	463	0.6%
King George County	40,748	40,383	-365	-0.9%	15,318	14,258	-1,060	-6.9%	17,825	24,092	6,267	35.2%
City of Fredericksburg	29,853	32,588	2,735	9.2%	14,704	11,771	-2,933	-19.9%	43,694	50,868	7,174	16.4%
Stafford County	238,207	229,403	-8,804	-3.7%	79,406	86,384	6,978	8.8%	69,576	77,573	7,997	11.5%
Spotsylvania County	179,011	168,221	-10,790	-6.0%	63,671	58,240	-5,431	-8.5%	55,553	62,029	6,476	11.7%
Fauquier County	152,587	87,862	-64,725	-42.4%	54,773	31,922	-22,851	-41.7%	38,990	30,476	-8,514	-21.8%
Clarke County	19,792	15,616	-4,176	-21.1%	7,886	6,336	-1,550	-19.6%	6,713	5,455	-1,258	-18.7%
Jefferson County	83,109	75,300	-7,809	-9.4%	37,062	28,298	-8,764	-23.6%	26,410	22,434	-3,976	-15.1%

A further review of land use information with the updated zonal structure in the vicinity of St Elizabeths study area showed more noticeable changes. ***Figure 1*** shows the zone system for the area of southeast DC around St. Elizabeths campuses which were studied in a greater detail and ***Table 7*** provides a summary comparison of land use information within the TAZs of the expanded study area.

Table 7. Comparison of Land Use in TAZs within the vicinity of St. Elizabeths Campuses

LU version >>	Round 8.0	Adj Round 9.1	Absolute Differences	% Differences
Year >>	2035	2035		
Population	132,703	171,436	38,733	29.2%
Households	57,263	72,876	15,614	27.3%
Employment	131,192	136,266	5,074	3.9%

Within the expanded study area (as shown in ***Figure 1***) Year 2035 population and households show an increase of over 25 percent in the latest Round 9.1 while employment data showed an increase of nearly 4 percent. The largest difference in population forecasts are in 2035, where the Round 9.1 population forecasts are more than 29 percent higher than the Round 8.0 forecasts in the St. Elizabeths area. The 38,733 increase in population is spread across multiple (64) zones with large differences in Zones 173, 192, 293, 300, 311, 176, and 292.

The other largest difference in households forecast are in 2035, where the Round 9.1 households forecast are more than 27 percent higher than the Round 8.0 forecasts in the St. Elizabeths area. The 15,614 increase in households is spread across multiple (64) zones with large differences in Zones 173, 175, 176, 192, and 633.

These changes in the land use by TAZs are important to note to understand the expected differences in the travel demand model forecasts between the 2012 FEIS/TTR work and the current MPA2. Following sections provide additional details on the forecasting methodology, assumptions, adjustments made to the modeling process, and integration of TDM strategies.

7.3 Traffic Demand Forecasting Methodology

The MWCOG model is a regional traffic forecasting model that includes regionally significant roadways and other transportation facilities. The demand model is based on the conventional 4-step modeling approach applying trip generation, distribution, mode choice, and modal assignment. The MWCOG model also employs generation/distribution feedback to measure and simulate the effects of congestion and user travel-time experience on trip making, destination and modal choices. The model uses a feedback 'loop' that is executed seven times (including an initial pump-prime iteration) so that reasonable equilibrium between the input speeds driving trip distribution and the highway speeds resulting from the highway assignment process is attained.

The travel demand forecasting methodology adopted under the current MPA 2 is an extension to the previously applied process during the 2012 FEIS/TTR work, which was based on the MWCOG adopted and validated model approved by the Transportation Planning Board on October 21, 2009. However, to describe specific conditions and plans associated with the St. Elizabeths campus and understand the effect on demand, several aspects of the travel demand model were adjusted to better reflect local conditions and to support the subsequent operational analysis. The primary inputs and refinements made to the model are discussed below:

7.3.1 Land Use and Zone Structure

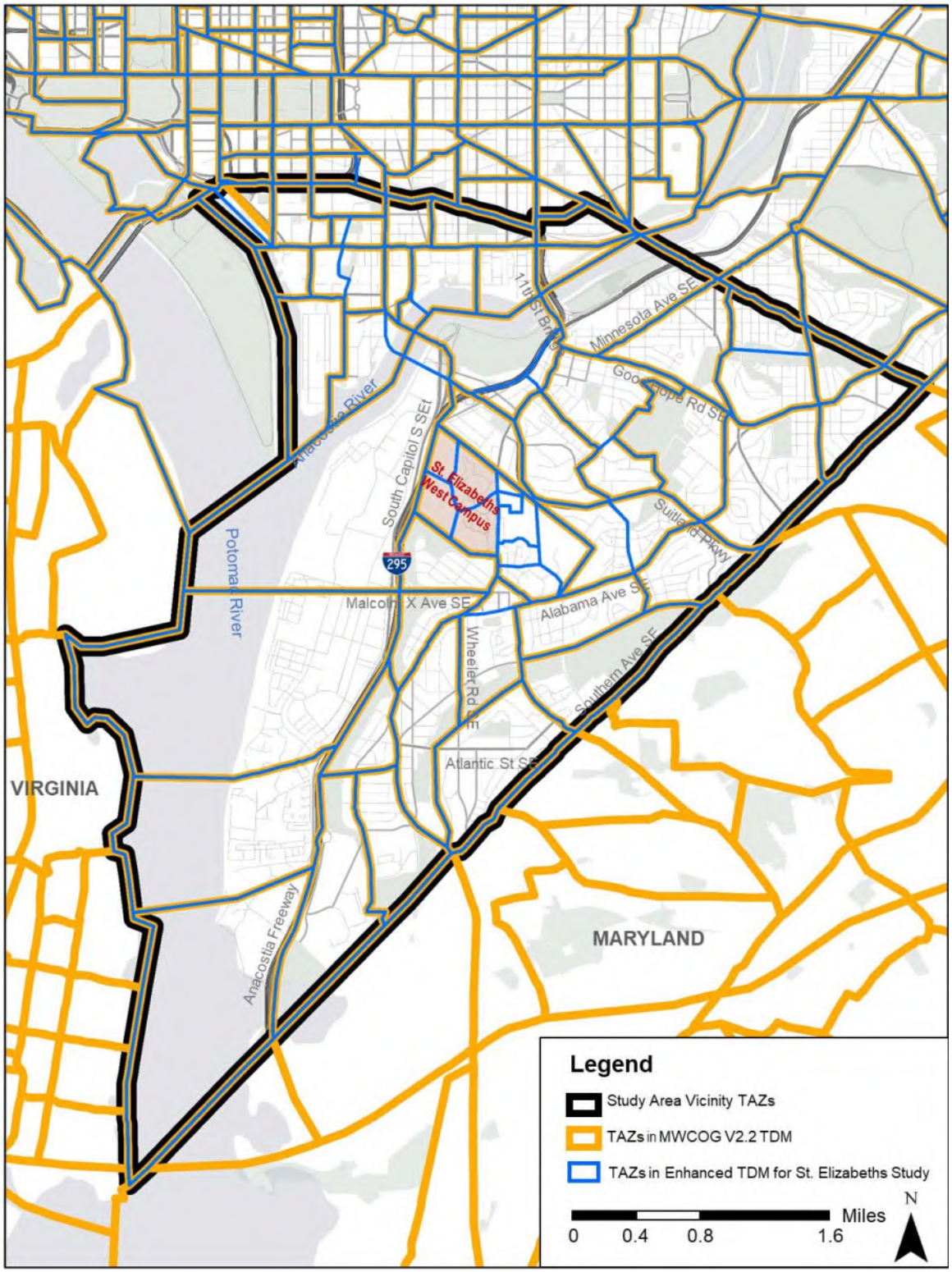
In addition to campus zone refinements as discussed above, zone descriptions and boundaries within the modeling study area (**Figure 1**) used in the 2012 FEIS/TTR were reviewed to assure correct representation of the land use. Socioeconomic (households, population, and employment) forecasts for the MWCOG region were initially developed from Round 9.1 land use dataset and then the study area zones were refined to account for more current land use information of the proposed developments in the vicinity of and within the modeling study area. All major vicinity proposed developments in reference to the campus location are listed in **Table 8**.

Table 8. Background Development Projects

Background Development	Location
DC OP/DMPED Master Plan for St Elizabeths East Campus	Martin Luther King Jr. Ave, Alabama Ave
Barry Farm PUD	Firth Sterling, MLK Jr. Ave, Suitland Pkwy, and St.Elizabeths West Campus
Poplar Point	Between Anacostia River and Howard Road SE
Anacostia Gateway	Martin Luther King Jr. Ave and Good Hope Road, SE (1800 Martin Luther King Jr. Ave., SE)
Anacostia Metro Station Area Redevelopment	1101 Howard Rd, SE
Anacostia Redevelopment - Great Streets Initiative	Martin Luther King Jr. Avenue/South Capitol Street SE/SW
Bethlehem Baptist Church PUD	2458 Martin Luther King Jr. Ave., SE
Anacostia Square	Good Hope Road and MLK Avenue
Curtis Properties	Between U Street and Chicago Street along MLK Jr. Avenue
Arthur Capper/Carrollsburg Redevelopment	M Street SE
Anacostia Park/Anacostia Riverwalk Trail/Twining Square Park	East and west banks of the Anacostia River
Archer Park	950 Mississippi Ave., SE
Aquatic Education Center & Pavillion; Twining Square Park	Anacostia Park in southeast Washington, DC
Buzzard's Point/S. Capitol Street Redevelopment	Southwest waterfront
BRAC (Bolling AFB)	Bolling AFB/Anacostia Annex
BRAC (Naval District Washington)	Washington Navy Yard
Danbury Station	5-165 and 132-152 Danbury Street, SE
Fort Stanton Recreation Center	1812 Erie Street SE
Carver Theater (Renovations)	Anacostia neighborhood of Washington, D.C
Matthew Memorial Terrace	East side of Martin Luther King Jr. Avenue, adjacent to Matthews Memorial Church
Sheridan Terrace	Bounded east of Suitland Parkway and south of martin Luther King, Jr. Avenue, SE
Southeast Federal Center	M Street and Anacostia River Waterfront
South Capital Street/Stadium Area Redevelopment	
(DC Ballpark District)	South Capital Street/M Street SE
Maritime Plaza/ACBA Building	1201 M St. SE, 1220 12th St SE, 1333 M St. SE
Waterside Mall	4th and M Street SW

Due to the nature of the analyses required and to better represent the access to different roadways and entrance gates, the zone representing St. Elizabeths campus (TAZ=297) was split to represent major entities (United States Coast Guard [USCG], United Communications Center (UCC), DHS, St. Elizabeths Hospital, etc.) that are expected to relocate. The review also warranted splitting some of the TAZs in the vicinity of the campus. The revised TAZ boundaries in and around the campus are shown in **Figure 2**. Correspondingly, the socioeconomic information was proportionally distributed for each of these revised TAZs.

Figure 2. St. Elizabeths Campus and Vicinity Area TAZs Refinement



7.3.2 Background Transportation Network

The future year networks used in the traffic model include the roadway improvements listed in the MWCOG's most recent 2016 Constrained Long Range Plan (CLRP) Air Quality Conformity Inputs, which is considered to be the official list of proposed projects. Some of the planned transportation improvements that are expected to have a potential impact on the modeling study area roads are described in Sections 3, 4, and 5.

A thorough review of the comprehensive transportation network updates was performed to make sure all of the future planned improvements are coded in the 2035 model network.

7.3.3 Enhanced Road Network and Modifications

The current MWCOG networks include all facilities that are regionally significant, including the above-mentioned Background Transportation Network improvements. For the 2012 FEIS/TTR, additional modifications to 2035 highway networks were deemed necessary to improve model performance and to accurately reflect the major roadways, interchanges, intersections, roadway alignments, and other local collector arrangements. Due to the nature of this study and the need for extensive data, the highway network was upgraded:

- to add links that represent several key roadways, minor collectors, local streets, St. Elizabeths campus gate access links (for employees & visitors), and intra-campuses walk access links
- to add nodes that represent several key intersections in and around the modeling study area that can provide model-forecasted turning movement volumes for operational analysis
- to reconfigure network coding and updating the number of lanes, facility type, speed class consistent with the field conditions
- to modify/reconnect zone access links (links to connect the street network to where people live and work) to reflect logical trip loading on the road network. For example, a zone access connecting directly to an intersection was moved to connect to the mid-section of the roadway.

These types of refinements are considered vital for forecasting turning movement volumes that would be used as input to VISSIM traffic operations simulation. For consistency with the 2012 FEIS/TTR, the MPA 2 included all the highway network enhancements described above.

In the MWCOG model, transit routes are represented using the same highway network, but speeds and other transit-specific network attributes are calculated separately. Transit networks are based on the actual bus running times and transit fares. Due to the extensive changes made to the highway network, transit routes (utilizing the same highway network) were updated as needed to correctly reflect their use of the enhanced highway network.

7.3.4 Integration of Transportation Demand Management (TDM) Strategies:

A key step in the process is the integration of Transportation Demand Management (TDM) strategies as documented in the Master Plan Amendment Transportation Management Program (TMP) report prepared for the DHS Headquarters Consolidation at St. Elizabeths (March 30, 2012). DHS employees were surveyed to describe their current travel patterns and "expected" travel mode to the new St. Elizabeths Campus with a key goal to recommend and implement TDM strategies. **Table 9** illustrates the summary

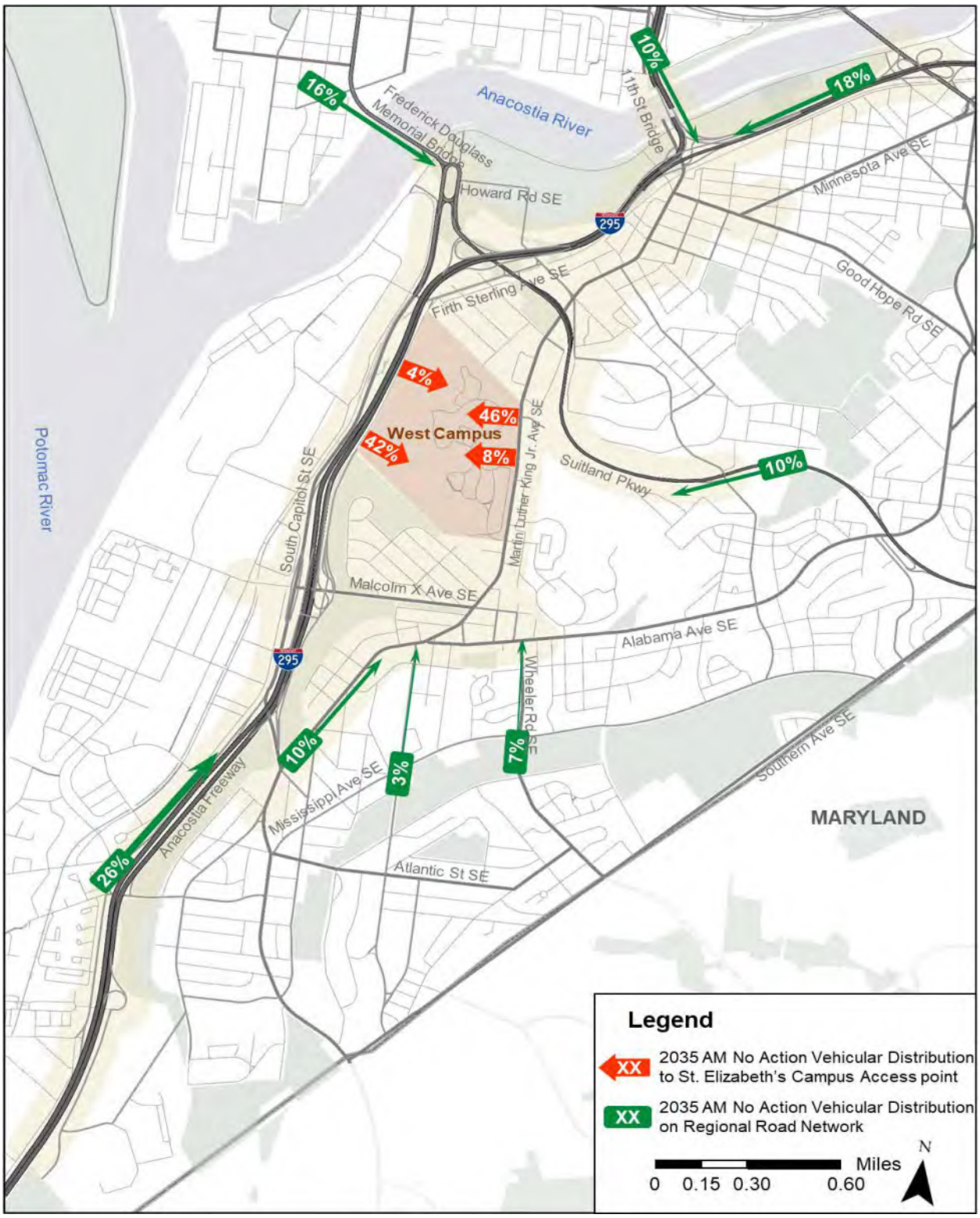
of distribution of employee arrival mode targets by 2035 full occupancy at the campus, as identified in the 2012 FEIS/TTR.

Table 9. Employee Arrival Mode Distribution in 2035

Travel Mode	Target Mode Share in 2035 (%)
SOV	15
Carpool with non-DHS (arrive SOV)	4
Carpool/vanpool (HOV)	18
Drop off	1
Commuter/express bus	8
Shuttle from Metrorail station	30
Scheduled-route Metrobus	6
Walk from home or Metrorail station	5
Bicycle	1
Motorcycle	1
Work from home/telework	9
Did not work (vacation/sick)	2
Total	**100**

Projected directional employee vehicular trip distribution for the year 2035 is shown in **Figure 3**. The survey data was used to develop commuter travel mode splits, parking ratios, and average vehicle occupancy information for existing and expected conditions.

Figure 3. Projected Directional Campus Trip Distribution in 2035 Action Alternative



7.3.5 Trip Table Adjustment

The trip tables for the MWCOG model represent travel between each pair of the defined travel zones, within the metropolitan area, and in surrounding areas (catering for trips drawn from more remote counties along the major roads into the area). However, the trips to and from St. Elizabeths zones are strictly driven by the TDM strategies as discussed in the 2012 TMP. This required the study team to develop customized “trip tables” (matrices), applicable to only St. Elizabeths zones. In other words, the St. Elizabeths zones trip information within the trip table generated by the standard MWCOG process was replaced with the customized DHS zones trips developed as per TDM strategies. All of the custom procedures and programs introduced in the modeling process of this travel demand evaluation effort have been an extension and modification of the approved MWCOG Version 2.2 model procedures. This process was repeated for the proposed MPA 2 to forecast the travel demand on the Study Area road network.

Two key elements that were examined as part of the Travel Forecasting process in the 2012 FEIS/TTR are constrained parking on St. Elizabeths campus and more compressed arrival and departure time of DHS employees.

- First, the 2035 future forecasts consistently entail a parking-to-employee ratio of 1:4, and this ratio is reflected in the model by overriding the MWCOG regional model to force the trip generation and mode split steps to reflect the appropriate number of vehicles associated with the MPA 2.

- Secondly, DDOT has expressed a desire to show a compressed time schedule for employee arrivals as a result of the TDM strategies, requesting that the analysis show that 50 percent of the peak period employee arrivals and departures arrive in the peak hour, as opposed to 40 percent of the AM peak period in the AM hour and 37 percent of the PM peak period in the PM peak hour. This is accomplished in the model process by developing a separate trip table for campus employee work trips to and from the St. Elizabeths campus and apply a 50 percent peak hour factor to the peak period volumes to reflect the higher concentration of campus trips in the peak hour as compared to other land uses which have lower peak hour adjustment factors. This higher concentration of St. Elizabeths campus peak hour employee trips are then added to the background peak hour trips (with lower peak hour adjustment factors) to capture the overall trips patterns.

For consistency purposes, the updated travel forecasting process under MPA 2 made no changes to these constraints. However, adjustments to the trip matrices for this study were deemed necessary for the following reasons:

- The last DHS employee survey was administered in October 2005 (USCG employees only) and again in April 2007. The customized travel forecasting process developed for the 2012 FEIS/TTR relied on those survey results. A decision was made to not administer a re-survey of the campus employee population in 2019. However, GSA supplied the campus employee’s most recent residence zip code database. This required adjusting the custom employee trip tables using latest employee residence zip code information (tied to traffic analysis zones) to capture likely bias due to mode accessibility resulting from the new zip code proximity to available transportation facilities (train stations, metro stops, etc). Since the two databases were developed independently and are over a decade apart, this resulted in a re-scaling and re-mapping of trip tables to account for locations where mode shares existed from the earlier survey, but no trips could be linked those

modes based on the new employee zip code data. This scaling was applied successfully at the census tract level.

- The second adjustment to the trip tables is because the planned seat count for the West Campus is 12,800 in the MPA 2 compared to 10,900 in the 2012 FEIS/TTR. The zip code level entries in the database were adjusted to reflect the likely number of employees entering and leaving campus during the AM and PM daily traffic peak periods;

- Lastly, during the project, the team was notified that FEMA was no longer planning on moving their headquarters to the West Campus. FEMA employment represented (after eliminating outside area staff) approximately 50% of the sample being used. Based on type of work, range of employee incomes, and, similarity of other demographic characteristics, and to keep from degrading the sample size, the FEMA related data from both the previous survey and the current employee zip code database would be retained as a surrogate for new staff that would be assigned to the campus by DHS. Similarity of distributions in both residential location and choice of travel mode reinforced this decision and provides a more robust database for interpolating staff work trip patterns.

7.3.6 Other Adjustments

Based on the detailed information provided in the 2012 TMP report and updated information on locations, types, and numbers of campus employees under MPA 2, MWCOG inputs for trip distribution and mode choice were modified to reflect the latest information. Specifically:

- The campus traffic analysis zone structure was modified to reflect numbers and types of trips associated with specific campus access locations;

- Trip generation outputs from these zones were adjusted to better match the characteristics and trip making behavior associated with specified uses;

- Mode shares as output by the MWCOG model were modified to match projected TMP targets (from Table 7 above) for the campus.

In addition, based on specification of a proposed campus shuttle bus system which would link nearby Metrorail stations (Anacostia and Congress Heights) to the campus, the following assumptions from the 2012 FEIS/TTR were carried forward to support forecasting of transit system usage under MPA 2.

- 50 percent of employees using transit arrive during the peak hour of the peak period (worst case)

- Shuttle buses carry 36-40 passengers seated plus 20 percent standee allowance for a maximum of 42 passengers

With all of the above-described enhancements to the model inputs and processes, forecast models were run to generate outputs that were post-processed to be used as inputs in traffic operations analysis tools (such as Synchro and VISSIM).

MARTIN LUTHER KING, JR. AVE. PROPOSED HYBRID ALTERNATIVE
NO PARKING ON BOTH SIDE

MARTIN LUTHER KING, JR. AVE. PROPOSED HYBRID ALTERNATIVE
WITH PARKING ON BOTH SIDE

LEGEND

HISTORIC BUILDING

CONCEPTUAL DESIGN
MARTIN LUTHER KING JR. AVE
HYBRID ALTERNATIVE

DRAFT
OCTOBER 2011

50' 0 50' 100'
SCALE 1" = 50'

CH2MHILL NTB

CONCEPTUAL DESIGN - ACCESS RD
WEST CAMPUS HYBRID - 2B

09–07–2011

SCALE: 1" = 200'

HNTB