DRAFT FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT
U.S. ARMY CYBER COMMAND AND CONTROL FACILITY
Fort George G. Meade, Anne Arundel County, Maryland
Fort Gordon, Richmond, Jefferson, Columbia, and McDuffie Counties, Georgia

1. Name of Action: U.S. Army Cyber Command and Control Facility at Fort George G. Meade, Maryland, or Fort Gordon, Georgia.

2. Description of Proposed Action: U.S. Army Cyber Command / 2nd Army (ARCYBER) proposes to establish and operate a Command and Control Facility at Fort Gordon, Georgia, or Fort George G. Meade, Maryland. The purpose of the Proposed Action is to construct a facility or renovate existing buildings to accommodate a workforce comprised of active duty military, government civilian, and contract personnel at either Fort Gordon or Fort Meade. ARCYBER currently has approximately 156 personnel stationed at Fort Meade and approximately 343 personnel stationed at Fort Belvoir, Virginia. However, ARCYBER needs facilities to provide the capability of growing its workforce up to 1,500 personnel with the reorganization of ARCYBER and its major supporting commands. To maximize operational efficiency, ARCYBER must consolidate its force structure currently at Fort Meade and Fort Belvoir into one location. Therefore, ARCYBER needs a Command and Control Facility that can accommodate a workforce of up to 1,500 active duty military, government civilians, and contract personnel.

3. Alternatives Evaluated: An Environmental Assessment (EA) was prepared to evaluate the potential environmental, cultural, transportation, and socioeconomic effects associated with the Proposed Action. The Proposed Action includes establishing and operating a Command and Control Facility at Fort Meade or Fort Gordon. Fort Meade and Fort Gordon were considered due to their proximity to existing commands with similar missions, including the U.S. Cyber Command at Fort Meade and the Signal Center of Excellence at Fort Gordon. At Fort Meade, there are two alternatives evaluated in the EA: Alternative A) construct a 179,056-SF facility at the northwest corner of Mapes Road and Taylor Avenue; and Alternative B) construct a 179,056-SF facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. At Fort Gordon, there are five alternatives evaluated in the EA: Alternative C) construct a 179,056-SF facility at Fort Gordon on a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; Alternative D) renovate several buildings and construct a 47,000-SF facility within Back Hall Campus located between 22nd Street to 25th Street and Chamberlain Avenue to Barnes Avenue; Alternative E) construct a wing on Whitelaw Hall as part of the planned Phase 2 development for the entire ARCYBER Command; Alternative F) construct a 179,056-SF facility along Kilbourne Street; and Alternative G) construct a 179,056-SF facility along 19th Street. All Fort Gordon alternative site locations are within the cantonment area of the installation. Interim stationing would be required if establishing the Command and Control facility at Fort Gordon, and would have the personnel currently located at Fort Belvoir and Fort Meade relocated to several buildings within Back Hall Campus at Fort Gordon.

A No Action alternative was also included in the EA which reflects the status quo and serves as a benchmark against which federal actions can be evaluated. In this EA, the No Action alternative assumes ARCYBER functions would continue to be conducted in existing locations at Fort Meade or Fort Belvoir. Under the No Action alternative, operational efficiency would continue to suffer as a result of coordinating operations occurring at two geographical separated units using substandard communication infrastructure. Moreover, ARCYBER would be limited in their ability to meet operational requirements by restricting workforce growth due to inadequate space accommodations. Additional alternatives to the Proposed Action included utilizing other Federal facilities located on Fort Meade or Fort Gordon, leasing commercial facilities located off of one of these two bases, and renovation of current facilities on Fort Meade or Fort Gordon. None of these alternatives were considered feasible and all were dismissed from further evaluation.

4. Anticipated Impacts: Based on the analysis contained in the EA, it was determined that implementation of the Proposed Action at either of the seven alternatives could result in short–term minor adverse impacts to land use, noise, rare, threatened or endangered species, potable water, sanitary sewer/wastewater, and power from the construction of any of the alternatives; short-term and long-term minor adverse impacts would also occur to aesthetics, air quality, soils, vegetation, wildlife resources, solid waste generation, and possibly stormwater; short term minor adverse impacts and long-term moderate to severe impacts to traffic; and short-term and long-term minor beneficial impacts to socioeconomics and possibly hazardous, toxic, and radioactive substances would also be expected. There would be no disproportional impacts to environmental justice/protection of children and no significant cumulative impacts would be expected for any of the proposed alternatives.

   While implementation of the Proposed Action has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in the EA would lessen the projected traffic impacts and is expected to result in no substantial effects.

5. Public Involvement: The Draft EA and Draft FNSI were made available for public review 26 September 2013 through 26 October 2013 at the local public libraries located in Anne Arundel County, Maryland and in Richmond County, Georgia. Notices of Availability of the Draft EA and Draft FNSI were published in the Augusta Chronicle, Baltimore Sun and The Capital. All comments received during this public review period, including agency responses were addressed.

6. Mitigation: Mitigation measures in association with the Proposed Action include a variety of applicable BMPs to be implemented both during and after construction to avoid and minimize adverse environmental effects. These include:

   - Compliance with a State-approved stormwater management plan and erosion and sediment control plan, using stormwater management and erosion control BMPs required by the State.

- Compliance with the State Forest Conservation Act to the maximum extent practical. Impacts will be mitigated on the installation in accordance with the current Fort Meade Forest Conservation Act and Tree Management Policy for Fort Meade and appropriate installation policy for Fort Gordon. Tree preservation measures will be incorporated into construction plans.
- Compliance with a Clean Water Act Section 404 permit and State Nontidal Wetland Protection Act. Any required mitigation measures in the permit will be complied with.
- All construction equipment will be treated according to BMPs, in a manner that would minimize the spread of invasive species.
- Compliance with all applicable federal, state, and local air regulations.
- Conducting construction activities during normal weekday work hours (generally 7 a.m. to 5 p.m.) and avoiding conducting construction activities on evenings and weekends to the extent practical.
- Using native vegetation to stabilize soil and preservation of natural areas where possible.

Traffic mitigation measures will be implemented, to include installation of traffic signals and revision of traffic signal operation, as appropriate.

7. Finding of No Significant Impact: After a review of the EA, I have determined that any of the alternatives evaluated may be selected for implementation. I have concluded that implementation of the Proposed Action will require implementation of select traffic mitigation measures to reduce impacts to less than significant; no other significant impacts to the natural environment, cultural resources, or human environment would result. Based upon the aforementioned, preparation of an Environmental Impact Statement is not required.

Date: ______________________ ________________________________

BRIAN P. FOLEY
Colonel, SC
Commanding
U.S. Army Garrison,
Fort George G. Meade, Maryland

Date: ______________________ ________________________________

SAMUEL G. ANDERSON
Colonel, SC
Commanding
U.S. Army Garrison,
Fort Gordon, Georgia

DRAFT FINAL ENVIRONMENTAL ASSESSMENT

U.S. ARMY CYBER
COMMAND AND CONTROL FACILITY

Fort George G. Meade, Maryland

Fort Gordon, Georgia

August 2013

DRAFT FINAL ENVIRONMENTAL ASSESSMENT

U.S. ARMY CYBER
COMMAND AND CONTROL FACILITY

Fort George G. Meade , Maryland

Fort Gordon, Georgia

August 2013

ENVIRONMENTAL ASSESSMENT
U.S. ARMY CYBER COMMAND AND CONTROL FACILITY
U.S. Army Garrison Fort George G. Meade, Maryland
U.S. Army Garrison Fort Gordon, Georgia

Reviewed and
Recommended for Approval by:

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AARON ROSS
Project Manager
Headquarters Army Cyber Command/2nd Army Engineers

Approved by:

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MICHAEL P. BUTLER
Chief, Environmental Division
Directorate of Public Works
Fort George G. Meade, Maryland

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ROBERT DRUMM
Chief, Natural Resources Branch
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Fort Gordon, Georgia

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JEFFREY WILLIAMS, REM, LEED-AP
Senior Environmental Engineer
Department of Defense/National Security Agency

Approved by:

____

BRIAN P. FOLEY
Colonel, SC
Commanding
U.S. Army Garrison, Fort George G. Meade, Maryland

____

SAMUEL G. ANDERSON
Colonel, SC
Commanding
U.S. Army Garrison, Fort Gordon, Georgia

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EXECUTIVE SUMMARY

INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze the potential environmental, cultural, transportation, and socioeconomic effects associated with the establishment and operation of a U.S. Army Cyber Command / 2nd Army (ARCYBER) Command and Control Facility at Fort George G. Meade, Maryland (hereinafter referred to as Fort Meade), or at Fort Gordon, Georgia. ARCYBER leads a corps of 21,000 soldiers and civilians who serve worldwide operating and defending all Army networks with supporting organizations such as the Army Network Enterprise Technology Command, 780th MI Brigade, and 1st Information Operations. ARCYBER plans, coordinates, integrates, synchronizes, directs, and conducts network operations and defense of all Army networks; when directed, ARCYBER conducts cyberspace operations in support of full spectrum operations to ensure U.S./Allied freedom of action in cyberspace, and to deny the same to our adversaries.

ARCYBER currently has approximately 156 active duty military, government civilians, and contract personnel employed at four different Fort Meade locations and approximately 343 active duty military, government civilians, and contract personnel employed at Fort Belvoir, Virginia. However, ARCYBER needs facilities to provide the capability of growing its workforce up to 1,500 personnel with the reorganization of ARCYBER and its major supporting commands. To maximize operational efficiency, ARCYBER must consolidate its force structure currently at Fort Meade and Fort Belvoir into one location. Therefore, ARCYBER needs a Command and Control Facility that can accommodate a workforce of up to 1,500 active duty military, government civilians, and contract personnel.

This EA was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code Section 4321 *et seq.*); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and 32 CFR 651.

BACKGROUND AND SETTING

Fort Meade became an active permanent U.S. Army installation in 1917 and is located approximately midway between Baltimore, Maryland, and Washington, DC, encompassing approximately 5,139 acres in Anne Arundel County, Maryland. Fort Meade supports over 90 tenant organizations from all military services and several federal agencies.

Fort Gordon was established in 1941. It encompasses approximately 55,600 acres in east central Georgia. The majority of the installation and the entire cantonment area lie within Richmond County, with a small portion of the training area in Jefferson, Columbia, and McDuffie counties. Fort Gordon is the largest communications training facility (offering 130 courses to 16,000 troops per year) in the Armed Forces, and is the focal point for the development of tactical communications and information systems.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to construct a new facility or renovate existing buildings to accommodate an anticipated workforce of up to 1,500 active duty military, government civilian, and contract personnel at either Fort Gordon or Fort Meade. With the anticipation of expanding the existing workforce of approximately 499 personnel to upwards of 1,500 personnel, a centralized Command and Control Facility is needed to maximize operational efficiency.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

ARCYBER proposes to establish and operate a Command and Control Facility at Fort Meade or Fort Gordon. The establishment would be accomplished by constructing a new facility or renovate existing buildings to accommodate an anticipated workforce of up to 1,500 active duty military, government civilian, and contract personnel. Once established, approximately 156 personnel at Fort Meade and approximately 343 personnel at Fort Belvoir would relocate to the new Command and Control Facility. The EA analyzes three courses of actions: Fort Meade Course of Action, Fort Gordon Course of Action, and the No Action alternative. Within the Fort Meade and Fort Gordon Courses of Action, a total of seven site locations were considered. A description of each course of action is provided below.

Fort Meade Course of Action: Interim stationing would not be necessary at the Fort Meade location. Final stationing options at Fort Meade include the following two site alternatives:

- Alternative A: Construct a 179,056-square foot (SF) facility at Fort Meade within an approximately 18-acre site at the northwest corner of Mapes Road and Taylor Avenue to include parking and building access.

- Alternative B: Construct a 179,056-SF facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Parking and access would also be provided at this location.

Fort Gordon Course of Action: Interim stationing would be required during construction. During this time, current personnel located at Fort Belvoir and Fort Meade would be temporarily relocated to several buildings within Back Hall Campus at Fort Gordon. Renovation to these buildings may be required to accommodate the temporary stationing. Final stationing options at Fort Gordon include the following five site alternatives, all located within the cantonment area:

- Alternative C: Construct a 179,056-SF facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street. Parking and access would also be provided at this location.

- Alternative D: Renovate several buildings within Back Hall Campus between 22nd Street to 25th Street and Chamberlain Avenue to Barnes Avenue; an additional 47,000-SF facility would be constructed.

- Alternative E: Construct a wing on Whitelaw Hall for the entire ARCYBER Command as part of the planned Whitelaw Hall Phase 2 development.

- Alternative F: Construct a 179,056-SF facility on Kilbourne Street to house the entire ARCYBER Command to include parking and building access.

- Alternative G: Construct a 179,056-SF facility on 19th Street to house the entire ARCYBER Command to include parking and building access.

No Action Alternative: Under the No Action alternative, ARCYBER functions would continue to be conducted in existing locations at Fort Meade or Fort Belvoir. Operational efficiency would continue to suffer as a result of coordinating operations occurring at two geographical separated units using substandard communication infrastructure. Moreover, ARCYBER would be limited in their ability to meet operational requirements by restricting workforce growth due to inadequate space accommodations.

SUMMARY OF ENVIRONMENTAL EFFECTS

As detailed in this EA, there would be expected short–term minor adverse impacts to land use, noise, potable water, sanitary sewer/wastewater, and power from the construction of any of the alternatives; short-term and long-term minor adverse impacts would also occur to aesthetics, air quality, soils, vegetation, wildlife resources, solid waste generation, and possibly stormwater; short term minor adverse impacts and long-term moderate to severe impacts to traffic; and short-term and long-term minor beneficial impacts to socioeconomics and possibly Hazardous, Toxic, and Radioactive Substances (HTRS) would also be expected. There would be no disproportional impacts to environmental justice/protection of children and no significant cumulative impacts would be expected for any of the proposed alternatives.

While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Tables 5-7 and 5-9, and detailed further in Appendix D would lessen the projected traffic impacts and is expected to result in no substantial effects.

Table ES-1 summarizes the potential consequences the Proposed Action and No Action alternative would have on resources evaluated in the EA.

PUBLIC INVOLVEMENT

The Draft EA and Draft Finding of No Significant Impact (FNSI) were made available for public review X through X, 2013, at the local public libraries in XX. ARCYBER command published Notices of Availability of the Draft EA and Draft FNSI in the *insert name of newspaper*.

CONCLUSION

Based on the evaluation of environmental consequences accomplished by this EA, implementation of the Proposed Action would not have a significant environmental impact within the meaning of NEPA Section 102(2) (c), and preparation of an Environmental Impact Statement is not required; therefore, a Finding of No Significant Impacts has been prepared.

Table ES-1: SUMMARY OF POTENTIAL INDIVIDUAL AND CUMULATIVE EFFECTS ON ENVIRONMENTAL RESOURCES								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Physical Environment								
Land Use	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Visual and Aesthetic Value	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Air Quality	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Noise	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Geology and Soils	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Prime and Unique Farmland	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Water Resources								
Surface Waters	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	No Impacts

Table ES-1: SUMMARY OF POTENTIAL INDIVIDUAL AND CUMULATIVE EFFECTS ON ENVIRONMENTAL RESOURCES								
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Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Water Resources cont'd								
Stormwater	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	No Impacts
Floodplains	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Groundwater	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Coastal Zone	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Biological Resources								
Wetlands	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Vegetation	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Very Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Wildlife Resources	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Very Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Rare, Threatened, or Endangered Species	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	Short-term Minor Adverse Impacts	No Impacts
Aquatic Habitat	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Wild and Scenic Rivers	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Cultural Resources	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts

Table ES-1: SUMMARY OF POTENTIAL INDIVIDUAL AND CUMULATIVE EFFECTS ON ENVIRONMENTAL RESOURCES								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Biological Resources cont'd								
Hazardous, Toxic, and Radioactive Substances	No Impacts	Possible short-term minor adverse impacts and long-term minor beneficial impacts	No Impacts	Possible short-term minor adverse impacts and long-term minor beneficial impacts	No Impacts	No Impacts	No Impacts	No Impacts
Infrastructure And Utilities								
Traffic, Roadways, and Transportation Systems*	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	No Impacts
Potable Water	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Sanitary Sewer/ Wastewater	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Power	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Solid Waste	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts

Table ES-1: SUMMARY OF POTENTIAL INDIVIDUAL AND CUMULATIVE EFFECTS ON ENVIRONMENTAL RESOURCES								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Infrastructure And Utilities cont'd								
Socio-economic	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	No Impacts
Environmental Justice/ Protection of Children	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Impacts
Cumulative Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Impacts

*While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Tables 5-7 and 5-9, and detailed further in Appendix D would lessen the projected traffic impacts and is expected to result in no substantial effects.

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1.0 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

On October 1st, 2010, the U.S. Army activated Army Cyber Command/ 2nd Army (ARCYBER). The Command is leading a corps of 21,000 soldiers and civilians who serve worldwide operating and defending all Army networks with supporting organizations such as the Army Network Enterprise Technology Command (NETCOM), 780th MI Brigade and 1st Information Operations. ARCYBER plans, coordinates, integrates, synchronizes, directs, and conducts network operations and defense of all Army networks; when directed, ARCYBER conducts cyberspace operations in support of full spectrum operations to ensure U.S./Allied freedom of action in cyberspace, and to deny the same to our adversaries.

Fort George G. Meade, Maryland (hereinafter referred to as Fort Meade) became an active permanent U.S. Army installation in 1917 and is located approximately midway between Baltimore, Maryland, and Washington, D.C., encompassing approximately 5,139 acres in Anne Arundel County, Maryland (Figure 1-1, Appendix A). Fort Meade supports over 90 tenant organizations from all military services and several federal agencies. The major tenants include the National Security Agency (NSA), the Defense Information School (DINFOS), the 704th Military Intelligence Brigade, 902nd Military Intelligence Group, the U.S. Environmental Protection Agency (USEPA) Science Center, Asymmetric Warfare Group (AWG), Defense Media Activity (DMA), Department of Defense Consolidated Adjudication Facility (DODCAF), Defense Information System Agency (DISA), and 1st Army Division East.

Fort Gordon, Georgia was established in 1941. Fort Gordon encompasses approximately 55,600 acres in east central Georgia. The majority of the installation and the entire cantonment area lie within Richmond County, with a small portion of the training area in Jefferson, Columbia, and McDuffie Counties (Figure 1-2, Appendix A). It is the current home of the U.S. Army Signal Corps. Fort Gordon is the largest communications training facility (offering 130 courses to 16,000 troops per year) in the Armed Forces, and is the focal point for the development of tactical communications and information systems (Fort Gordon, 2008). The Installation trains soldiers with the most sophisticated communications equipment and technology in existence. The Leader College of Information Technology is the U.S. Army's premiere site for all automation training and home to the Regimental Non-Commissioned Officer (NCO) Academy. Fort Gordon is also the home to the U.S. Army Garrison, the Gordon Regional Security Operations Center (GRSOC) (including the 706th Military Intelligence Group, the Naval Security Group Activity (NSGA), and United States Air Force 480th Intelligence, Surveillance, and Reconnaissance Group), 63rd Signal Battalion, the Southeast Region Medical Command, the Southeast Region Dental Command, Southeast Region Veterinary Command, the Dwight D. Eisenhower Army Medical Center (DDEAMC), U.S. Army's only Dental Laboratory, 67th Signal Battalion, Regional Training Site-Medical, National Science Center-Army, two deployable brigades (35th Signal Brigade and 513th Military Intelligence Brigade), and Georgia National Guard Youth Challenge Academy.

1.2 BACKGROUND

ARCYBER currently has approximately 156 active duty military, government civilians, and contract personnel employed at Fort Meade and approximately 343 active duty military, government civilians, and contract personnel employed at Fort Belvoir, Virginia. ARCYBER is expected to increase its current workforce to approximately 855 personnel by late 2012/early 2013. However, ARCYBER needs facilities to provide the capability of growing its workforce up to 1,500 personnel with the reorganization of ARCYBER and its major supporting commands. To maximize operational efficiency, ARCYBER must consolidate its force structure currently at Fort Meade and Fort Belvoir into one location. Therefore, ARCYBER needs a Command and Control Facility that can accommodate a workforce of up to 1,500 active duty military, government civilians, and contract personnel.

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to construct a new facility or renovate existing buildings to accommodate an anticipated workforce of up to 1,500 active duty military, government civilian, and contract personnel at either Fort Gordon or Fort Meade. With the anticipation of expanding the existing workforce of approximately 499 personnel to upwards of 1,500 personnel, a centralized Command and Control Facility is needed to maximize operational efficiency.

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code Section 4321 *et seq.*); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and AR 200-1, *Environmental Protection and Enhancement*, as promulgated in 32 CFR 651.

1.4 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA was prepared to analyze the potential environmental effects associated with the establishment and operation of a proposed ARCYBER Command and Control Facility at Fort Gordon or Fort Meade.

Environmental effects would include those related to construction and operation of the Proposed Action. The Proposed Action is described in Section 2.0, and alternatives, including the no action alternative, are described in Section 3.0. Baseline environmental conditions are described in Section 4.0 and potential effects to the baseline environment are described in Section 5.0. Section 5.0 also addresses the potential for cumulative effects. Findings and conclusions are presented in Section 6.0.

1.5 OTHER RELATED NEPA DOCUMENTATION

In accordance with CEQ regulations for implementing NEPA and with the intent of reducing the size of this document, the following materials relevant to the Proposed Action are incorporated by reference:

- Final Environmental Impact Statement (EIS) for Addressing Campus Development at Fort George G. Meade, Maryland dated September 2010. This East Campus EIS analyzed the potential effects associated with the development of a portion of the East Campus (formerly known as Site M) as an operational complex, and construct and operate consolidated facilities for intelligence community use. The permanent facilities would be proposed for construction in Fiscal Year 2014 (FY14) (NSA, 2010).

- Final EIS for Fort George G. Meade Base Realignment and Closure (BRAC) 2005 and Enhanced Use Lease (EUL) Actions, Implementation dated August 2007. This BRAC EIS analyzed the potential effects of implementing Army transformation activities and EUL actions at Fort Meade. The action involved increasing workforce personnel by 5,696 and construction of new facilities. The EUL action involved leasing two parcels of land totaling 173 acres for administrative buildings and a third parcel of land totaling 367 acres for development of two golf courses (USACE, 2007).
- Fort Meade Integrated Natural Resource Management Plan (INRMP) dated June 2007.
- Fort Meade Integrated Cultural Resources Management Plan (ICRMP) dated October 2011.
- Fort Gordon INRMP dated September 2008.
- Fort Gordon ICRMP dated January 2011.

1.6 PUBLIC INVOLVEMENT

A Public Notice was released in April 2012 to appropriate local, state, and federal agencies. In addition, coordination with the U.S. Fish and Wildlife Service (USFWS), the Maryland Department of Natural Resources (MDNR), Georgia Department of Natural Resources (GADNR), and the Maryland and Georgia State Historic Preservation Officers (SHPOs) were initiated in April, June, and August 2012. Copies of the Public Notice, coordination letters, mailing list, and response letters are included in Appendices B and C.

A Supplement to the Public Notice was released in August 2012 which included an additional alternative site location at Fort Gordon. The notice was sent to the same agencies who received a copy of the April 2012 Public Notice.

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR Part 651. The Draft EA was made available to the public for 30 days, from -- to --, along with a draft Finding of No Significant Impact (FNSI). At the end of the 30-day public review period, -- comments were received on the Proposed Action, the Draft EA, or Draft FNSI. As such, the Army will execute the FNSI and proceed with implementation of the Proposed Action; with implementation of traffic minimization measures, the Proposed Action will not result in significant impacts, and preparation of an EIS is not needed.

1.7 ENVIRONMENTAL LAWS AND REGULATIONS

Army decisions that affect environmental resources and conditions occur within the framework of numerous laws, regulations, and Executive Orders (EOs). Some of these authorities prescribe standards for compliance while others require specific planning and management actions to protect environmental values potentially affected by Army actions. These include, but are not limited to: the Clean Air Act; Clean Water Act (CWA); Noise Control Act; Farmland Protection Policy Act; Endangered Species Act; Migratory Bird Treaty Act; National Historic Preservation Act (NHPA); Archaeological Resources Protection Act; Native American Graves Protection and Repatriation Act; American Indian Religious Freedom Act; Resource Conservation and Recovery Act; EO 11988, *Floodplain Management*; EO 11990, *Protection of Wetlands*; EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. Key provisions of appropriate statutes and EOs are described in more detail throughout the text of this EA.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

ARCYBER proposed to establish and operate a Command and Control Facility at Fort Meade or Fort Gordon. The establishment would be accomplished by constructing a new facility or renovate existing buildings to accommodate an anticipated workforce of up to 1,500 active duty military, government civilian, and contract personnel. Once established, approximately 156 personnel at Fort Meade and approximately 343 personnel at Fort Belvoir would relocate to the new Command and Control Facility. Fort Meade and Fort Gordon were considered due to their proximity to existing commands with similar missions, including the U.S. Cyber Command at Fort Meade and the Signal Center of Excellence at Fort Gordon. The EA analyzes three courses of actions: Fort Meade Course of Action, Fort Gordon Course of Action, and the No Action alternative. Within the Fort Meade and Fort Gordon Courses of Action, a total of seven site locations were considered that meet the purpose and need of the Proposed Action. A description of each course of action is provided below.

Fort Meade Course of Action: Interim stationing would not be necessary at the Fort Meade location. Final stationing options at Fort Meade include the following two alternatives:

- Alternative A: Construct a new 179,056-square foot (SF) facility at Fort Meade within an approximately 18-acre site at the northwest corner of Mapes Road and Taylor Avenue. Parking and access would also be provided at this location.

- Alternative B: Construct a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Impacts associated with the East Campus component of the alternative have been assessed in the East Campus EIS. Parking and access would also be provided at this location.

Figure 2-1 (Appendix A) shows the possible layout of the Fort Meade alternatives.

Fort Gordon Course of Action: Interim stationing would be required during construction. During this time, current personnel located at Fort Belvoir and Fort Meade would be temporarily relocated to several buildings within Back Hall Campus at Fort Gordon. Renovation to these buildings may be required to accommodate the temporary stationing. Final stationing options at Fort Gordon include the following five alternatives all located within the cantonment area:

- Alternative C: Construct a new 179,056-SF facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street. Parking and access would also be provided at this location.

- Alternative D: Renovate several buildings within Back Hall Campus between 22nd Street to 25th Street and Chamberlain Avenue to Barnes Avenue and construct an additional 47,000-SF facility.

- Alternative E: Construct a new wing on Whitelaw Hall for the entire ARCYBER Command as part of the planned Whitelaw Hall Phase 2 development.

- Alternative F: Construct a new 179,056-SF facility on Kilbourne Street to house the entire ARCYBER Command. Parking and access would also be provided at this location.

- Alternative G: Construct a new 179,056-SF facility on 19th Street to house the entire ARCYBER Command. Parking and access would also be provided at this location.

Figure 2-2 (Appendix A) shows the possible locations for the Fort Gordon alternatives under consideration.

The proposed Command and Control Facility would include an administrative area divided into specified security zones and operations area that includes special use space for the NSA, accredited Sensitive Compartmented Information Facility (SCIF), Operations Center (OC), Network Operations Center (NOC) and a data storage center. Construction will include redundant mechanical and electrical systems with provisions to support user installed Uninterrupted Power Systems (UPS) and dual generator backup power to critical areas, secure organizational vehicle parking, antenna pad, loading/service areas, information systems, fire protection and alarm systems, Intrusion Detection System (IDS) installation, and Energy Monitoring Control Systems (EMCS) connection.

Supporting facilities include site development, utilities and connections, lighting, paving, parking, walks, curbs and gutters, storm drainage, information systems, landscaping and signage. Heating and air conditioning will be provided by self-contained system.

This project has been coordinated with installation physical security plans, and physical security and antiterrorism protection measures will be incorporated. This project has been considered for joint use potential and will be available for use by other components. Measures in accordance with the Department of Defense (DoD) Minimum Antiterrorism for Buildings standards will be provided.

All utility systems and services would be laid out and designed in accordance with applicable codes, requirements, and guidelines. Utility lines in the areas are expected to be adequate to serve the facility.

Approximately 28,000 square yards of parking and driveway access would be required to support the personnel requirements along with approximately 4,200 SF of sidewalks. Pervious pavers will be used to minimize stormwater impacts, and trees will be incorporated into the parking lot design in order to minimize heat trap effects of blacktop areas.

If ARCYBER constructs a new facility, sustainable principles, to include Life Cycle cost-effective practices, will be integrated into the design, development, and construction of the project in accordance with EO 13423, 10 USC 2802(c), and other applicable laws and EOs.

No designs have been started as no site has been selected for the Proposed Action. Any new construction would be expected to meet Leadership in Energy and Environmental Design (LEED) standards.

3.0 ADDITIONAL ALTERNATIVES CONSIDERED

3.1 INTRODUCTION

This chapter describes the alternatives and summarizes the environmental impacts. In accordance with CEQ guidance in 40 CFR 1502.14, the purpose of this chapter is to sharply define the differences between the alternatives.

3.2 NO ACTION ALTERNATIVE

NEPA regulations refer to the continuation of the present course of action without the implementation of or in the absence of the proposed action, as the “No Action Alternative.” Inclusion of the No Action alternative is the baseline against which Federal actions are evaluated, and is prescribed by the CEQ regulations and 32 CFR 651.

Under the No Action alternative, no new facilities would be constructed for ARCYBER Command and current facilities would continue to be utilized. The current facilities are unsuitable for accomplishing the current mission and do not have adequate space to support all of the incoming personnel. The unit suffers from inefficient space utilization caused by the existing building configuration. The existing facilities are in poor condition and do not meet current standards and safety requirements, including building construction, fire protection, and electrical codes. Renovations to address space, safety, and function of the current facilities could allow the existing workforce to continue operations may be accomplished under this alternative. However, this alternative would not provide space for the increase in ARCYBER personnel.

It should be noted, that Fort Meade anticipates development of the East Campus area of the installation regardless of the location of the ARCYBER project. Impacts associated with this development have been assessed in the September 2010 EIS entitled “*Addressing Campus Development at Fort George G. Meade, Maryland”*. The impacts associated with the East Campus development include impacts related to Alternative B discussed throughout this EA. However, as no timeframe has been established for this development, the No Action alternative is considered to be no construction. The development of the East Campus is addressed in Cumulative Impacts.

Implementing the No Action alternative would not satisfy the purpose and need to provide needed space for an increased workforce.

3.3 OTHER ALTERNATIVES CONSIDERED BUT ELIMINATED

Several other alternatives were considered for providing adequate facilities for ARCYBER, including using other Federal facilities located on Fort Meade or Fort Gordon, leasing commercial facilities off one of these two bases, and renovation of current facilities at either Fort Meade or Fort Gordon. All these were dismissed from further evaluation as discussed below.

Currently, no Federal facilities exist at Fort Meade or Fort Gordon to meet the objective of providing adequate contiguous working space for ARCYBER and supporting units. Similarly, no

Federal facilities exist near either of these installations that could meet their requirements. Due to the nature of their mission, the mission space must be contiguous and cannot be separated among other buildings or other installations.

Due to security requirements and the highly classified nature of the mission, commercial facilities are not an option nor are they available. No commercial facility can support the unique requirements, extensive secure communications infrastructure, and special operational requirements.

3.4 PREFERRED ALTERNATIVE

ARCYBER does not have a preferred alternative at this time. ARCYBER will select one or more of the alternatives described in Section 2.0 for design and construction to implement the Proposed Action. Due to the nature of the ARCYBER activities and the existing functions at Fort Meade and Fort Gordon, it is best to co-locate ARCYBER at one of these installations.

4.0 AFFECTED ENVIRONMENT

This section describes the environment that would be affected by establishing and operating an ARCYBER Command and Control Facility at Fort Meade or at Fort Gordon. The affected environment focuses on those features of the environment that could potentially be impacted from implementing the Proposed Action. Therefore, the region of influence (ROI) delimits the geographic extent of the affected environment and subsequent environmental effects analysis, which is included in Section 5.0. For this EA, the ROI encompasses the immediate vicinity of the Proposed Action Alternative site locations as well as the immediate surrounding vicinity.

Each environmental, cultural, and social resource category typically considered in an EA was reviewed for its applicability to the project to be funded under the Proposed Action. Through this analysis, which is summarized in Table 4-1, resource categories clearly not applicable to the alternatives were screened from further evaluation. Only those resources potentially affected by the Proposed Action are discussed further in this section and analyzed for potential impacts.

Table 4-1: COMPLIANCE WITH FEDERAL ENVIRONMENTAL STATUTES AND EXECUTIVE ORDERS

Acts	Compliance at Fort Meade	Compliance at Fort Gordon
Clean Air Act, as amended (Public Law 88-206)	FULL	FULL
Clean Water Act, as amended (Public Law 95-217)	FULL	FULL
Coastal Zone Management Act (Public Law 92-583)	FULL	N/A
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §9601 et seq.)	FULL	FULL
Endangered Species Act of 1973, as amended (Public Law 93-205)	FULL	FULL
Farmland Protection Policy Act (Public Law 97-98)	N/A	N/A
Fish and Wildlife Coordination Act, as amended (16 United States Code [U.S.C.] 661, et seq.)	FULL	FULL
Migratory Bird Treaty Act (16 U.S.C §§703-712, et seq.)	FULL	FULL
National Environmental Policy Act of 1969 (Public Law 91-190)	FULL	FULL
National Historic Preservation Act of 1966, as amended (Public Law 89-665)	FULL	FULL
Noise Control Act of 1972, as amended (Public Law 92-574)	FULL	FULL
Resource Conservation and Recovery Act (Public Law 94-580)	FULL	FULL
Safe Drinking Water Act, as amended (Public Law 93-523)	FULL	FULL

Table 4-1: COMPLIANCE WITH FEDERAL ENVIRONMENTAL STATUTES AND EXECUTIVE ORDERS		
Acts	**Compliance at Fort Meade**	**Compliance at Fort Gordon**
Solid Waste Disposal Act of 1965, as amended (Public Law 89-272, Title II)	FULL	FULL
Toxic Substances Control Act of 1976 (Public Law 94-469)	FULL	FULL
Watershed Protection and Flood Prevention Act of 1954 (16 U.S.C. §1101, et seq.)	FULL	FULL
Wetlands Conservation Act (Public Law 101-233)	FULL	FULL
Wild and Scenic Rivers Act (Public Law 90-542, as amended)	FULL	FULL
Sikes Act, as amended (Public Law 86-797)	FULL	FULL
Archaeological Resources Protection Act, as amended (Public Law 96-95)	FULL	FULL
Executive Orders (EO)		
Floodplain Management (EO 11988)	FULL	FULL
Protection of Wetlands (EO 11990)	FULL	FULL
Environmental Justice in Minority Populations and Low-Income Populations (EO 12898)	FULL	FULL
Federal Compliance with Pollution Control Standards (EO 12088)	FULL	FULL
Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)	FULL	FULL
Consultation and Coordination with Indian Tribal Governments (EO 13175)	FULL	FULL
Strengthening Federal Environmental, Energy, and Transportation Management (EO 13514)	FULL	FULL
Chesapeake Bay Protection and Restoration (EO 13508)	FULL	N/A

4.1 LAND USE

4.1.1 Fort Meade

Fort Meade encompasses approximately 5,139 acres and is located in the northwest corner of Anne Arundel County, Maryland. The installation is located approximately 17 miles southwest of downtown Baltimore, Maryland, and approximately 24 miles northeast of Washington, DC. The State Capitol city of Annapolis lies approximately 14 miles southeast.

4.1.1.1 Regional Land Use at Fort Meade

Fort Meade is surrounded to the north, west, and east by residential areas, commercial centers, a mix of light industrial uses, and open space and undeveloped areas. Directly to the south of Fort Meade are the Tipton Airport and 12,750-acre Patuxent Research Refuge, part of USFWS's National Wildlife Refuge System. To the southwest of Fort Meade is the 800-acre parcel that houses DC's New Beginnings Youth Development Center (Atkins, 2011). The community land use encompasses a mix of facilities including religious, family support, personnel services, professional services, medical, community, housing, commercial, and recreational services. The professional/institutional land use provides for non-tactical organizations including military schools, headquarters, major commands, and non-industrial research, development, test, and evaluation.

4.1.1.2 Installation Land Use at Fort Meade

Fort Meade is home to over 90 partner organizations from the Army, Navy, Air Force, Marines and Coast Guard, as well as several federal agencies such as the NSA, DINFOS, the USEPA, the Defense Courier Service, and the Office of Personnel Management. The Post has administrative buildings, industrial areas in the form of motor pools and warehouses, and a significant number of family housing units which are currently being upgraded under the Residential Communities Initiative (RCI). The Post also has unaccompanied personnel housing, recreational areas and a shopping complex with a main Post Exchange, Commissary, bank, gas station, Post Office, and a bowling alley.

4.1.1.3 Site Specific Land Use at Fort Meade Project Areas

The East Campus makes up approximately 227 acres of open space and Tenant Agency land use. As open space this area includes the now closed golf course.

Building 8605 is located in the Troop land use zone (Figure 4-1, Appendix A). This land use is designated for operational facilities for Table of Organization and Equipment (TOE) units, Basic Combat Training (BCT) and One Station Unit Training (OSUT) complexes and for selected Initial Entry Training (IET) complexes.

Aside from Building 8605, the proposed new building construction sites are located in an area that has most recently been used as a portion of the now closed golf course and in a land use zone identified as Professional/Institutional. This land use provides for non-tactical organizations including military schools, headquarters, major commands, and non-industrial Research, Development, Test, and Evaluation. In the past a portion of this area has been used as a mortar test firing range. The potential for unexploded ordnance (UXO) and munitions within this area has been investigated (NSA, 2010) and only practice rounds have been found within the area. As such, the potential of UXO being present is low.

The DoD recognizes its responsibility to protect the public from the potential hazards associated with military operations, both past and present. This is particularly true with regard to DoD's use of military munitions in training and testing. To address munitions-related issues and the potential hazards munitions pose on property that the DoD once used, DoD developed the Military Munitions Response Program (MMRP). The MMRP addresses non-operational range lands that are suspected or known to contain UXO, discarded military munitions (DMM) or munitions constituent (MC) contamination.

Both Alternative A and Alternative B, with the exception of Building 8605, are within East Campus and are located within a MMRP site: the former Mortar Range Munitions Response Area (MRA). The MRA is made up of the Training Area and the Mortar Area Munitions Response Sites (MRSs). Based on previous investigations, the entire MRA is considered a 'low risk' for munitions of explosive concern (MEC) and material potentially presenting an explosive hazard (MPPEH). A golf course existed on the MRA since approximately 1956 before recently being developed as East Campus.

According to the September 2012 Final Record of Decision, the selected remedial action for the MRA is Land Use Controls (LUCs) with Long Term Management (LTM). Existing LUCs at the MRA will be maintained and enhanced including requirements to obtain dig permits from DPW for any intrusive activity; Master Plan Regulations; and the Fort Meade GIS Database. UXO Construction Support is required for all intrusive construction projects, and UXO avoidance procedures are required for any other intrusive activity.

Additionally, an education program will be initiated for potential future site workers, users, and emergency responders at the MRA. Residential land use at the MRA is prohibited. Signage (warning signs), specific to both the Mortar Area MRS and the Training Area MRS, describing restrictions on site use at key locations of the site will be installed. Annual inspections of each MRS will be performed to establish that all on-site LUCs are in good condition; to confirm that the land use of the site had not changed; and, through an instrument-assisted surface sweep, that no MEC/MPPEH or munitions debris had been exposed through erosion or frost heave. The LUCs and LTM will be incorporated into CERCLA required procedures in the forthcoming Remedial Design.

4.1.2 Fort Gordon

Fort Gordon encompasses approximately 55,600 acres in east central Georgia. The majority of the installation and the entire cantonment area lie within Richmond County, with a small portion of the training area in Jefferson, Columbia, and McDuffie counties. Fort Gordon is located approximately 145 miles east of Atlanta, Georgia, and approximately 115 miles northwest of Savannah, Georgia. Augusta, Georgia, is the nearest urban center and is located approximately 9 miles northeast of the installation.

4.1.2.1 Regional Land Use at Fort Gordon

Land use within one mile of Fort Gordon varies from semi-urban to rural. The area east of Fort Gordon is developed and makes up the greater Augusta area. The major land use east of the installation along U.S. 1 and Gordon Highway is commercial. Further west of Augusta on the north and south sides of the installation, land use becomes a mixture of rural residential, commercial, and undeveloped land. Land use south of the installation along U.S. Highway 1 to the west of Gate 5 in western Richmond County is agricultural (USAGFG, 2008). In Columbia County, land use closest to Fort Gordon is mixed, with single-family residential and some mobile home development. Some multifamily development is also scattered throughout the area. Suburban areas are concentrated in the Evans-Martinez area and in the city of Grovetown (USAGFG, 2008). Land use adjacent to Fort Gordon in Jefferson and McDuffie counties is agricultural. More than 88 percent of Jefferson County’s land is devoted to agriculture and forestry (USAGFG, 2008).

4.1.2.2 Installation Land Use at Fort Gordon

Fort Gordon encompasses approximately 55,600 acres. Approximately 50,000 acres are used for training missions: 49 training areas (TAs) occupy approximately 37,000 acres and two restricted impact areas (small arms and artillery) occupy approximately 13,000 acres (Figure 4-2, Appendix A). The remaining 5,590 acres are occupied by cantonment areas which include military housing, administrative offices, community facilities, medical facilities, industrial facilities, maintenance facilities, supply/storage facilities, lakes and ponds, recreational areas, and forested areas.

Land use on Fort Gordon is classified as improved, semi-improved, and unimproved. The Inventory of Installation Land Use at Fort Gordon classifies 4.3 percent of the installation as improved, 1.7 percent as semi-improved, and 94.2 percent as unimproved. Improved grounds are those where intensive development and maintenance measures are performed (e.g., cantonment, housing areas, golf courses, and cemeteries). Semi-improved grounds are those that undergo periodic maintenance for operational and aesthetic reasons (e.g., antenna facilities, rifle ranges, and ammunition storage ranges). Unimproved grounds are those that are usually not mowed more than once a year (e.g., forest lands, grazing lands, and weapons ranges) (USAGFG, 2008).

The installation operates 14 live fire ranges, one dud impact area, one demolition pit, one indoor shoot house, one convoy live fire familiarization course, two military operations on urban terrain (MOUT) site/building clearings and one nuclear, biological, and chemical (NBC) chamber. Training primarily consists of advanced individual signal training and unit employment of tactical communications/electronics operations. Additionally, artillery demolition, aerial gunnery load master drop zone, and airborne troop training are conducted on Fort Gordon.

4.1.2.3 Site Specific Land Use at Fort Gordon Project Areas

The alternatives located at Fort Gordon are within the cantonment area. The cantonment area includes administrative areas, barracks, housing, classroom buildings, and fixed field training sites that augment the classroom instruction.

4.2 VISUAL RESOURCES AND AESTHETICS

Visual resources are the natural and human-made features on the installation landscape. They can include cultural and historic landmarks, landforms of particular beauty or significance, water surfaces, or vegetation. Together, these features, called the “viewshed,” form the overall impression that a viewer receives of the area or its landscape.

4.2.1 Fort Meade

The topography of Fort Meade is mostly level to gently rolling, and generally slopes from north to south. Elevations range between 97 feet above mean sea level (MSL) in the southwestern corner of the installation at the Little Patuxent River to 307 feet above MSL near the 1st Army Radio Station (Building 2844) behind the former golf course (NSA, 2010).

4.2.1.1 Site Specific Visual Resources and Aesthetics at Fort Meade Project Areas

Portions of areas where the facilities could be located have been identified for development in the past. Much of the area has been used as a golf course and as such has remained an open space. The golf course was closed permanently in 2012 for development of the East Campus as described in the 2010 East Campus EIS.

4.2.2 Fort Gordon

Fort Gordon's topography ranges from the gentle undulating sand hills of the south and middle sections, to areas of steep slopes and near-bluffs adjacent to some of the streams, which are characteristically small and bordered by heavy hardwood swamp areas. The elevation of Fort Gordon ranges from 221 to 561 feet above MSL, with the majority of the installation having an elevation between 380 and 490 feet above MSL (USAGFG, 2008). The cantonment area is built on relatively level ground with low-lying areas scattered throughout. Buildings vary in size and style, having been constructed from the 1940s to the present. Open grassy areas separate the buildings, along with some ornamental trees and landscaping around the structures (USAGFG, 2008).

4.2.2.1 Site Specific Visual Resources and Aesthetics at Fort Gordon Project Areas

The areas where the facilities could be located are mainly areas that have been developed in the past. Viewshed and aesthetics of the cantonment area are those consistent with office buildings and landscaping.

4.3 AIR QUALITY

Air quality is the ambient air concentration of specific criteria pollutants determined by the USEPA to be of concern to the health and welfare of the public. These criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter less than 10 microns in diameter (PM_{10}), and lead. The federal government has established ambient air quality standards (National Ambient Air Quality Standards [NAAQS]) for several criteria pollutants (USEPA, 2012a). These standards identify the maximum allowable concentrations of criteria pollutants that regulatory agencies consider safe, with an additional adequate margin of safety to protect human health and welfare.

4.3.1 Emissions Methodology

Air quality within a region is a function of the type and amount of pollutants emitted, size, and topography of the air basin, and prevailing meteorological conditions. Criteria pollutants affecting air quality in a given region can come from either stationary or mobile sources. A smokestack typifies a stationary emission source. Mobile sources of emissions include emissions from cars and aircraft. Emissions are "primary" or "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere such as CO, SO_2, $PM_{2.5}$, and PM_{10}. Secondary pollutants are those formed through chemical reactions in the atmosphere such as O_3 and NO_2. Volatile organic compounds (VOCs) (also referred to as hydrocarbons or reactive organic gases [ROGs]) are precursors to the production of O_3. SO_2 and NO_2 are reported as oxides of sulfur (SO_x) and oxides of nitrogen (NO_x), respectively. SO_2 and NO_2 constitute the majority of their respective oxides.

Regulatory agencies designate areas that violate ambient air quality standards as nonattainment areas. Nonattainment designations for O_3, CO, $PM_{2.5,}$ and PM_{10} include subcategories indicating the severity of the air quality problem (e.g., the classifications range from moderate to serious for CO and PM_{10}, and from marginal to severe for O_3). Areas that comply with federal air quality standards are attainment areas. Areas that are redesignated from nonattainment to attainment status become maintenance areas. Areas that lack monitoring data to demonstrate attainment or nonattainment status are unclassified and considered to be in attainment for regulatory purposes.

4.3.2 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The main source of GHGs from human activities is the combustion of fossil fuels, including crude oil and coal. Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydro fluorocarbons and per fluorocarbons) and sulfur hexafluoride.

Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis (Intergovernmental Panel on Climate Change, 2007). To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such higher quantities that it is the overwhelming contributor to CO_2e from both natural processes and human activities.

Federal agencies on a national scale address emissions of GHGs by reporting and meeting reductions mandated in federal laws, EOs, and agency policies. The most recent of these are EOs

13423 *Strengthening Federal Environmental, Energy, and Transportation Management* and 13514 *Federal Leadership in Environmental, Energy, and Economic Performance,* and the USEPA Final Mandatory Reporting of Greenhouse Gases Rule. Several states have promulgated laws as a means of reducing statewide levels of GHG emissions.

In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EOs and the Energy Policy Act of 2005, the DoD has implemented a number of renewable energy projects.

On 18 February 2010, the CEQ proposed for the first time draft guidance on how federal agencies should evaluate the effects of climate change and GHG emissions for NEPA documentation (CEQ, 2010). Specifically, if a proposed action emits 25,000 metric tons or more of CO_{2e} on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. The CEQ does not propose this reference point as an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but notes that it serves as a minimum standard for reporting emissions under the Clean Air Act (CAA). In the analysis of the direct effects of a proposed action, the CEQ proposes that it would be appropriate to: (1) quantify cumulative emissions over the life of the project; (2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and (3) qualitatively discuss the link between such GHG emissions and climate change. However, the CEQ states that it is not currently useful for NEPA analyses to attempt to link specific climatic changes or environmental impacts to proposed GHG emissions, as such direct linkage is difficult to isolate and to understand.

4.3.3 Federal Requirements

Section 176(c) of the 1990 CAA Amendments contains the General Conformity Rule (40 CFR §§ 51.850-860 and 40 CFR §§ 93.150-160). The General Conformity Rule (updated 24 March 2010) requires any federal agency responsible for an action in a nonattainment or maintenance area to determine that the action conforms to the applicable State Implementation Plan (SIP) (USEPA, 2010). Emissions of attainment pollutants are exempt from conformity analysis. Actions would conform to a SIP if their annual direct and indirect emissions would remain less than the applicable *de minimis* thresholds. Formal conformity determinations are required for any actions that would exceed these thresholds.

4.3.4 Fort Meade

The ROI for the Proposed Action at Fort Meade, Maryland, is the Metropolitan Baltimore Intrastate Air Quality Control Region (AQCR), which includes Fort Meade in Anne Arundel County (40 CFR Part 81.28). Anne Arundel County is classified as a nonattainment area for $PM_{2.5}$ and O_3 (VOCs and NO_X are precursors to the formation of O_3). This area attains the NAAQS standards for all other criteria pollutants. The general conformity requirements and thresholds only apply to criteria pollutants in the ROI which are in nonattainment or maintenance of the NAAQS. Therefore, *de minimis* levels for the project area are 100 tons per year for $PM_{2.5}$ and NO_X. The VOC *de minimis* level is 50 tons per year as established for nonattainment areas located in an O_3 transport area. New Source Review (NSR) thresholds are 250 tons per year of any pollutant. For planning purposes, these thresholds are used in the absence of applicable *de minimis* thresholds.

4.3.5 Fort Gordon

The ROI for the Proposed Action at Fort Gordon, Georgia, is the Augusta (Georgia) Aiken (South Carolina) Interstate AQCR, which includes Fort Gordon (40 CFR Part 81.114). This area attains the NAAQS standards for all criteria pollutants. The general conformity requirements and thresholds only apply to criteria pollutants in the ROI which are in nonattainment or maintenance of the NAAQS. Therefore, *de minimi*s levels for the project area not applicable. NSR thresholds are 250 tons per year of any pollutant. For planning purposes, these thresholds are used in the absence of applicable *de minimis* thresholds.

4.4 NOISE

Noise is traditionally defined as unwanted sound that interferes with normal activities in a way that reduces the quality of the environment. Magnitudes of sound, whether wanted or unwanted, are usually described by sound pressure. There are two primary types of sources of sound that generate noise: stationary and transient. Sounds produced by these sources can be intermittent or continuous. A stationary source is usually associated with a specific land use or site, such as construction activities or the operation of generators. Transient sound sources, such as vehicles and aircraft, move through the area. The human auditory system is sensitive to fluctuations in air pressure above and below the barometric static pressure. The loudness of sound as heard by the human ear is measured on the A-weighted decibel (dBA) scale. Examples can be found in Table 4-2.

The Noise Control Act (NCA) of 1972 establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The Act also serves to (1) establish a means for effective coordination of Federal research and activities in noise control; (2) authorize the establishment of Federal noise emission standards for products distributed in commerce; and (3) provide information to the public respecting the noise emission and noise reduction characteristics of such products. The Act provided the framework for states and local authorities to establish noise regulations.

According to the DoD, Federal Aviation Administration, and U.S. Department of Housing and Urban Development criteria, residential units and other noise-sensitive land uses are “clearly unacceptable” in areas where the noise exposure exceeds the day-night level (DNL) of 75 dB, “normally unacceptable” in regions exposed to noise between the DNL of 65 to 75 dB, and “normally acceptable” in areas exposed to noise where the DNL is 65 dB or less. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of DNL. For outdoor activities, USEPA recommends DNL of 55 dB as the sound level below which there is no reason to suspect that the general population will be at risk from any of the effects of noise.

Table 4-2: Common Noise Levels		
Source	**Decibel Level**	**Exposure Concern**
Soft Whisper	30	Normal safe levels.
Quiet Office	40	
Average Home	50	
Conversational Speech	65	
Highway Traffic	75	May affect hearing in some individuals depending. on sensitivity, exposure length, etc.
Noisy Restaurant	80	
Average Factory	80-90	
Pneumatic Drill	100	
Automobile Horn	120	
Jet Plane	140	Above 140 decibel may cause pain
Gunshot Blast	140	

Source: USEPA, 1986

4.4.1 Fort Meade

Noise elements in and around the proposed project areas have noise conditions that are consistent with business and administrative activities. Personal and commercial vehicles accessing the area, along with lawn maintenance and pedestrian activities would be part of the normal noise environment in the area.

4.4.2 Fort Gordon

The most common sources of noise at Fort Gordon are small arms firing and vehicles; however, the installation also conducts artillery firing, demolition, and aerial gunnery. Environmental noise contours greater than DNL of 65 dBA from activities at Fort Gordon do not extend beyond Fort Gordon's boundary (USAGFG, 2000).

Noise elements in and around the proposed project areas have noise conditions that are consistent with business and administrative activities. Personal and commercial vehicles accessing the area, along with lawn maintenance and pedestrian activities would be part of the noise environment in the area.

4.5 GEOLOGY AND SOILS

4.5.1 Fort Meade

Fort Meade lies in the Atlantic Coastal Plain Physiographic Province (Maryland Geological Survey, 2005). It is underlain by unconsolidated sediments that lie over a crystalline substrate consisting of gabbro, diorite, and other igneous and metamorphic rocks (Mach and Achmad 1986). The series of thick, unconsolidated sediments are subdivided, from youngest to oldest, into the Potomac Group, Magothy Formation, and Patuxent River terraces and associated alluvium. Within the Potomac group, the Arundel Clay, Patuxent Aquifer, and Lower Patapsco Aquifer geological units underlie Fort Meade. The Arundel Clay has low vertical hydraulic conductivity and is the confining layer between the two aquifers under Fort Meade. Above the

Lower Potomac Aquifer is an unnamed confining layer composed of tough variegated clay that also exhibits low vertical hydraulic conductivity, although some layers are permeable. Alluvium underlies all of Fort Meade's streams and wetlands, and consists of interbedded sand, silt, and clay with small gravel inclusions (Mach and Achmad, 1986).

The most prevalent soils on Fort Meade are part of the Evesboro and Galestown complexes, covering approximately 42 percent of the Post area (NRCS, 2012). Evesboro soil is a very deep, excessively drained sandy loam soil found on uplands. Other soil series occurring on Fort Meade include the Bibb-Iuka, Downer, Hambrook, Hammonton, Ingleside, Keyport, Muirkirk, Patapsco, Runclint, Sassafras, Udorthents, and Woodstown. Bibb and Evesboro soils are Entisols, which are recent mineral soils that have been only slightly modified from the geologic material in which they formed. All the other soil series are Ultisols, which are excessively weathered soils with well-developed horizons and argillic B horizons.

"Urban land" and "Cut and fill land" were also identified as map units in the soil survey (NRCS, 2012). Urban land includes areas in the vicinity of pavements and buildings. Cut and fill land includes miscellaneous soil types in severely disturbed areas to the extent that identification by soil series cannot be determined. Both Urban and Cut and fill lands are common in developed sites that have been severely modified by earth-moving equipment (NSA, 2010).

Of the 39 distinct soil mapping units on Fort Meade, the Muirkirk Loamy Sand, Keyport Sandy Loam, and Evesboro and Galestown Loamy Sand units are classified as highly erodible lands (HEL), as defined by The Anne Arundel County Code, § 2-101 (22E). Several soil mapping units have severe limitations to development due to slope and/or wetness, including the Bibb-Iuka Silt Loams, Downer Loamy Sand, Downer Sandy Loam, Evesboro and Galestown Loamy Sands, Evesboro-Urban Complex, Fallsington Sandy Loam, Ingleside Sandy Loam, Muirkirk Loamy Sand, Muirkirk-Urban Complex, Sassafras Sandy Loam, Sassafras-Urban Complex, and Udorthents (USACE, 2007).

4.5.1.1 Site Specific Conditions at Fort Meade

The five soils mapped within the proposed project sites belong primarily to the Patapsco-Fort Mott Complex and the Evesboro Complex (NRCS, 2012). Specifically, the soils underlying the sites are: Evesboro and Galestown soils, Patapsco-Evesboro-Fort Mott soils, Sassafras and Croom soils, Udorthents, and Patapsco-Fort Mott-Urban land complex. Within the possible project sites, soils have been previously disturbed through development in and around these areas.

4.5.2 Fort Gordon

Fort Gordon is located near Augusta, Georgia, in the Southeastern Coastal Plain physiographic province near the Fall Line transition with the underlying bedrock of the Piedmont physiographic province. In this zone of Fall Line transition, the topography ranges from the gentle undulating sand hills of the south and middle sections to areas of steep slopes and near-bluffs adjacent to some of the streams, which are characteristically small and bordered by heavy hardwood swamp areas. The elevation of Fort Gordon ranges from 221 feet to 561 feet above MSL, and the majority of the land area (35,852 acres) is between 378 feet and 489 feet above MSL.

Twenty-six soil classes have been identified on the installation; these soils are further classified by slope and content detail. These classifications include such common soil series as Ailey, Bibb, Dothan, Lakeland, Lucy, Orangeburg, Osier, Troup, and Vaucluse. These and other soil series can be grouped into associations based on similarities of soils, relief, and drainage (Frost, 1981; Paulk, 1981). Creek drainages are characterized by well-drained soils such as Troup-Vaucluse-Ailey associations. Low-lying, poorly drained soils within drainages typically consist of Bibb-Osier associations. These soils are generally dominated by bottomland hardwood communities. Dry, upland habitats are characterized by Troup and Ailey sand series, and are generally dominated by pine/scrub oak communities.

Twelve of the soil types found on Fort Gordon are considered Prime Farmland under the Farmland Protection Policy Act (FPPA) of 1980 and 1995 (Public Law 97-98, 7 USC 4201). According to 7 USC 4201(c)(1)(A), Prime Farmland is defined as "land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oil, seed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, labor, and without intolerable soil erosion." Additionally, six of the soil types found on Fort Gordon are considered Farmland of Statewide Importance. Farmland of Statewide Importance is defined as "land that is important for the production of food, feed, fiber, forage, and oilseed crops. It economically produces good yields if the soils are drained or are drained and protected against flooding, if erosion control practices are installed, or if additional water is applied to overcome droughty conditions". Soils considered either Prime Farmland or Farmland of Statewide Importance are protected under the FPPA. Approximately 5,091 and 2,652 acres of Fort Gordon are considered Prime Farmland or Farmland of Statewide Importance, respectively.

4.5.2.1 Site Specific Conditions at Fort Gordon

Within the proposed project areas, the soils are mapped mostly as Troup-Urban land complex with some Lakeland sand and Troup fine sand (NRCS, 2012). No Prime Farmland or Farmland of Statewide Importance soils are located within the proposed project sites at Fort Gordon.

4.6 WATER RESOURCES

4.6.1 Fort Meade

4.6.1.1 Groundwater

The Patuxent, Upper Patapsco, and Lower Patapsco aquifers lie under the installation (Michael Baker Jr. Inc., 2007). The Lower Patapsco and Patuxent aquifers are separated by the Arundel Clay formation. The Patuxent Aquifer consists of lenticular interfingering sands, silts, and clays capable of yielding large quantities of water. This aquifer is 200 to 400 feet thick and is the deepest of the three aquifers beneath Fort Meade. The Upper Patapsco Aquifer is unconfined and is considered the water table aquifer.

American Water owns and operates the potable water system that serves Fort Meade. American Water obtains potable water from six wells under a Water Appropriation and Use permit from the MDE: two wells located north of Route 32 and four wells located south of Route 32 (Atkins, 2011). The wells draw from the Patuxent Aquifer and range in depth from 500 to 800 feet below ground surface. Individual wells range in capacity from 720 gallons per minute (GPM) to 1,000 GPM (USACE, 2007). Total capacity of the wells is 5,000 GPM or 2.75 million gallons per day (MGD). The Water Appropriation and Use Permit (Permit No. AA1969G021[7]) allows an average withdrawal of approximately 3.3 MGD from these wells.

4.6.1.2 Surface Water

Fort Meade is located within the greater Chesapeake Bay watershed. The Chesapeake Bay is North America's largest and most biologically diverse estuary, home to more than 3,600 species of plants, fish, and animals (Chesapeake Bay Project, 2000). To protect and restore this valuable ecosystem, Maryland joined a consortium of State and Federal agencies to establish the Chesapeake Bay Program partnership. The Army's conservation mission supports the Chesapeake Bay Programs, and Fort Meade is implementing Best Management Practices (BMPs) that support the guidelines established by the partnership.

The installation lies almost entirely within the Little Patuxent River watershed (MD watershed code number 02131105), of the Patuxent River Basin. A very small area in the northeast corner of the Post drains to the Severn River. The Patuxent River drains an area of 932 square miles before emptying into the Chesapeake Bay on the western shore, and is designated a "scenic river" under the Maryland Scenic and Wild Rivers Act of 1968. The Act mandates the preservation and protection of natural values associated with each designated river, and State and local governments are required to take whatever actions necessary to protect and enhance the qualities of the designated rivers. The Little Patuxent River is currently listed on Maryland's list of impaired waters under Section 303(d) of the CWA. Impairments include sediments, metals (cadmium) and biological. As Total Maximum Daily Loads (TMDLs) for these impairments are developed, facilities could be impacted by requirements for reducing loads in the watershed.

Fort Meade contains approximately 7.2 miles of perennial streams as well as other intermittent and ephemeral channels. The most significant water resources on Fort Meade are Franklin Branch and Midway Branch as well as Burba Lake (Figure 4-3, Appendix A). The majority of the installation is drained by Midway Branch and its primary tributary, the Franklin Branch. Both are tributaries to the Little Patuxent River. Midway Branch flows for the entire length of Fort Meade from the northern end to the southern end, then confluences with the Little Patuxent River off-site. Franklin Branch also flows on Post from the northern end through Burba Lake, an 8.2 acre man-made lake, and confluences with Midway Branch.

Streams that are proximate to project areas would be identified and field delineated in accordance with the USACE 1987 Wetland Delineation Manual and the Atlantic and Coastal Plain Supplement (November 2010); and classified using the Cowardin classification system. Additionally, riparian buffers were incorporated into the Fort Meade Comprehensive Expansion Management Plan and subsequent Base Realignment and Closure projects to minimize impacts and degradation to waterbodies leading to the Chesapeake Bay. Fort Meade would maintain voluntary 100 foot riparian forest buffers along streams and abutting wetlands to the maximum extent practical.

Fort Meade contains wetland resources, the majority of which are concentrated near the Little Patuxent River. Wetland resources are described in Section 4.9 of this EA. There are also several stormwater management features, particularly ponds, spread across Fort Meade.

In May 9, 2012, correspondence (Appendix B), MDE indicated the proposed project areas are located in the Little Patuxent watershed, which is currently listed on Maryland's list of impaired waters under Section 303(d) of CWA. Impairments include sediments, metals (cadmium) and biological. As Total Maximum Daily Loads (TMDLs) for these impairments are developed, facilities could be impacted by requirements for reducing loads in the watershed.

Fort Meade has several acres of wetland resources across the base, the majority of which are concentrated around Midway Branch, Franklin Branch and the unnamed tributaries. There are also several stormwater management features, particularly ponds, spread across Fort Meade. Wetland resources on Fort Meade are described in Section 4.9.1.

4.6.1.3 Stormwater

Stormwater runoff is conveyed to the three primary drainages, with the majority carried by Midway and Franklin Branches. All the natural drainages discharge into the Little Patuxent River. Runoff from developed areas is conveyed through an extensive network of drainpipes and associated drainage structures, supplemented by swales, ditches, other drains, and retention ponds (NSA, 2010). In recent years, Fort Meade has constructed new retention ponds to reduce concentrated flows to the main branch channels and prevent bank overflows and flooding.

In addition, Fort Meade employs a number of stormwater management initiatives, including low impact development, throughout the Installation to manage stormwater. Some examples of these include low impact development, installation of rain gardens, stormwater ponds, and replacing concrete storm drains with grass swales.

Section 438 of the Energy Independence and Security Act of 2007 (EISA) instructs federal agencies to "use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible (METF), the predevelopment hydrology of the property with regard to the temperature, rate," for any project with a footprint that exceeds 5,000 square feet.

In December 2009, the Environmental Protection Agency (EPA) issued the "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (EISA)" focusing on a step-by-step framework that will help federal agencies maintain pre-development site hydrology by retaining rainfall on-site through infiltration, evaporation/transpiration, and re-use to the same extent as occurred prior to development. Implementation of Section 438 of the EISA can be achieved through the use of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices which are described in the guidance. The intention of the statute is to maintain or restore the pre-development site hydrology during the development or redevelopment process. More specifically, this requirement is intended to maintain or restore stream flows such that receiving waters are not negatively impacted by changes in runoff temperature, volumes, durations and rates. Site designers must design, construct, and maintain stormwater management practices to preserve or restore the hydrology of the site during the development or redevelopment process in compliance with Section 438. Site designers have two options to meet this standard: Option 1 provides site designers with a process to design, construct, and maintain stormwater management practices that manage rainfall on-site, and prevent the off-site discharge of stormwater from all rainfall events less than or equal to the 95th percentile rainfall event. Option 2 allows the site designers to design, construct, and maintain stormwater management practices using a site-specific hydrologic analysis to determine pre-development runoff conditions instead of using the estimated volume approach of Option 1. Under Option 2, pre-development hydrology would be determined based on site-specific conditions and local meteorology by using continuous simulation modeling techniques, published data, studies, or other established tools.

Federal agencies have many alternatives for meeting the requirements of Section 438 including green infrastructure or low impact development management approaches and technologies that enhance or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration, and use. Federal agencies can also use footprint-reduction practices (e.g., building up instead of out) to reduce their stormwater impact. Some of the practices that agencies can use to meet Section 438, include but are not limited to the following practices:

- **Rain gardens, bioretention, and infiltration planters** promote infiltration of stormwater, and allow for evapotranspiration to occur.

- **Porous pavements** allow stormwater to infiltrate where traditional impervious pavements would otherwise be used

- **Vegetated swales and bioswales** treat stormwater runoff as it flows through these channels.

- **Green roofs** absorb and store rainfall, thereby reducing runoff volume. Green roofs also help reduce energy costs.

- **Trees and tree boxes** help break up the landscape of impervious surfaces and absorb stormwater runoff.

- **Pocket wetlands** are small wetland systems designed to treat stormwater.

- **Reforestation/revegetation** practices help restore areas to more natural vegetative cover, which promote infiltration.

- **Protection and enhancement of riparian buffers and floodplains** ensures that streams are protected and shaded, improving water quality.

- **Rainwater harvesting** (e.g., irrigation, air conditioning cooling water, non-potable indoor uses such as watering plants) uses cisterns and rain barrels to capture and use stormwater.

Provisions of Code of Maryland Regulations (COMAR) 26.17.02.01 (Maryland Department of the Environment, Water Management, Purpose and Scope) require that all jurisdictions in Maryland implement a stormwater management program to control the quality and quantity of stormwater runoff resulting from new development. The regulations state:

A. The primary goals of the State and local stormwater management programs are to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding by implementing environmental site design to the maximum extent practicable and using appropriate structural best management practices only when necessary.

B. These regulations for stormwater management apply to the development or redevelopment of land for residential, commercial, industrial, or institutional use, but do not apply to agricultural land management practices. These provisions specify the minimum content of county and municipal ordinances, responsibilities of the Administration regarding the review of the county and municipal stormwater management programs, and approval of State-constructed projects for stormwater management by the Department of the Environment.

C. These provisions apply to all new development and redevelopment projects that do not have final approval for erosion and sediment control and stormwater management plans by May 4, 2010.

COMAR Title 26.17.02.05 (When Stormwater Management is required) exempts any developments that do not disturb over 5,000 SF of land area or 100 CY of earth. Conversely, developments disturbing over 5,000 SF of land or 100 CY of earth require stormwater management. The Stormwater Management Plan (SWP) requirements are outlined in COMAR 26.17.02.09.

Environmental Site Design requires a developer to demonstrate that all reasonable opportunities for meeting stormwater requirements using ESD have been exhausted by using natural areas and landscape features to manage runoff from impervious surfaces and that structural BMPs have been used only where absolutely necessary. The 2010 Stormwater Management Guidelines for State and Federal Projects will be followed for work at Fort Meade.

Furthermore, Fort Meade maintains a Stormwater Pollution Prevention Plan (SWPPP) that provides BMPs for controlling and preventing siltation and other contaminants associated with construction and industrial activity sites from reaching area surface waters.

4.6.1.4 Site Specific Conditions at Fort Meade

The potential project sites at Fort Meade are located to the west of Midway Branch and east of an unnamed perennial tributary to the Little Patuxent River. The nearest potential project sites are located approximately 500 feet from these waters.

For Alternative A, located at the northwest corner of Mapes Road and Taylor Avenue, stormwater flows through a network of open ditches and through storm sewer lines to an unnamed perennial tributary to the Little Patuxent River (to the southwest) and to Midway Branch (to the east).

For Alternative B, East Campus stormwater flows through a network of open ditches and through storm sewer lines to Midway Branch (to the east) and to unnamed perennial and intermittent tributaries to the Little Patuxent River (to the west. Stormwater from Building 8605 flows through storm sewer lines to an unnamed perennial tributary to the Little Patuxent River (to the west) and through a network of storm sewer lines and open ditches to wetlands that drain to the Little Patuxent River.

4.6.2 Fort Gordon

4.6.2.1 Groundwater

Fort Gordon is located in the Coastal Plain hydrogeologic province of Georgia, whose principal groundwater source is the Southeastern Coastal Plain aquifer system. This aquifer is composed of interbedded sand and clay of Cretaceous age and locally includes sand and clay of early Tertiary age. The Dublin–Midville aquifer system consists of two aquifers, separated by a confining unit. The sediments of the Upper Cretaceous age correlate to the Lower Dublin and Upper and Lower Midville aquifers, undifferentiated. The top of this aquifer occurs at approximately 340 feet above MSL. The overlying Huber Formation correlates to the Lower Dublin confining unit, with the top of the unit occurring at approximately 380 feet above MSL. Depth to groundwater varies from approximately 56 feet to 0 feet below ground surface at seeps discharging to surface water along floodplains and creeks. Natural discharge from the aquifer is into the Oconee, Savannah, and Ocmulgee Rivers. Fort Gordon lies within the recharge area and the aquifer is relatively thin; therefore, there is limited storage capacity and only moderate supplies of potable water are available within the installation. Typical yields in this area range from 29,000 to 72,000 gallons per day (GPD). Wells within the aquifer supply potable water to the range, training, and recreation areas. Because of the high content of dissolved carbon dioxide, pH values can range from 3.8 to 7.4, with a mean of 5.8. Potable water to the cantonment area is provided by the City of Augusta through the public water supply system.

4.6.2.2 Surface Water

Surface streams on Fort Gordon generally flow south and east, towards the Savannah River (Figure 4-4, Appendix A). Five major stream systems drain portions of Fort Gordon. From north to south, they are Butler Creek, Spirit Creek, Sandy Run Creek, Boggy Gut Creek, and Brier

Creek. There are 89 streams on Post associated with these five major drainages (USAGFG, 2008).

Streams that have no tributaries flowing into them are called first-order streams. Streams that receive only first-order streams are called second-order streams. When two second-order streams meet, the combined flow becomes a third-order stream, and so on. First through third order streams are also called headwater streams and constitute any waterways in the upper reaches of the watershed. Going up in size and strength, streams that are classified as fourth through sixth order are medium streams while anything larger (up to 12th order) is considered a river. Approximately two-thirds (63 streams) of the streams on Fort Gordon are very small first-order streams, with a total length of 46 miles. Smaller numbers of second-order streams (17 streams) and third-order streams (8 streams) are present, totaling 36 miles. Brier Creek is unique in that it enters Fort Gordon as a fifth-order stream (USAGFG, 2008). Spirit Creek's headwaters are in the northwest part of Fort Gordon. From its headwaters, Spirit Creek flows 24 miles to the southeast, entering the Savannah River two miles downstream of Augusta's Bush Field. Spirit Creek drains approximately 19,200 acres of Fort Gordon (USAGFG, 2008). The other major stream systems drain smaller areas of the installation, from 3,840 acres (Butler Creek) to 13,440 acres (Sandy Run).

Georgia has established 5.0 milligrams per liter (mg/L) (daily average) as the state water quality standard for dissolved oxygen in waters used for fishing and contact recreation. Hoover and Kilgore (1999) found that dissolved oxygen levels in Spirit Creek, Sandy Run Creek, Boggy Gut Creek, and Brier Creek were high enough to support a diverse assemblage of aquatic organisms. Spirit Creek dissolved oxygen levels were the highest measured, ranging from 6.8 to 10.1 mg/L (Hoover and Kilgore, 1999).

The U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) conducted an investigation in 2006 and 2007 to determine if there had been releases of munitions-related contaminants to surface water and/or groundwater that posed a threat to human health of the environment. Arsenic and copper concentrations in Spirit Creek water slightly exceeded Georgia Water Quality Standards, as did silver concentrations in Spirit Creek sediment. However, benthic macroinvertebrate communities showed no significant impairment, suggesting actual potential of risk to aquatic receptors was low (CHPPM, 2008).

GADNR's Environmental Protection Division (Georgia EPD) is responsible for establishing and enforcing the State's water quality standards. Every two years, in compliance with CWA sections 303(d) and 305(b), Georgia EPD publishes "Water Quality in Georgia," a comprehensive assessment of water quality in the state. Only one stream on Fort Gordon, a short stretch of Headstall Creek that flows into Brier Creek in the southwestern corner of the installation, is listed on Georgia EPD's 2008 303(d) list of impaired waters (GADNR, 2008).

In the course of preparing a Comprehensive Wildlife Conservation Strategy that was implemented in 2005, GADNR's Wildlife Resources Division identified "High Priority Waters," which are streams and river reaches deemed significant and worthy of preservation based primarily on the uniqueness and diversity of their aquatic communities (GADNR, Undated). As part of the same planning effort, GADNR delineated watersheds that contained high priority streams or tributaries of these streams and designated them "High Priority Watersheds." GADNR works with private, corporate, and government land owners to protect and preserve these valuable streams and watersheds. The sections of Sandy Run Creek, Boggy Gut, and Brier Creek that flow through the western half of the Fort Gordon reservation have all been designated High Priority Waters (GADNR, Undated). The watersheds associated with these stream reaches have been designated High Priority Watersheds. Spirit Creek, Butler Creek, and their watersheds have not been designated High Priority, however, reflecting their proximity to the developed portion of Fort Gordon and generally less pristine character.

In addition to the 89 streams on Fort Gordon, there are 30 ponds and reservoirs scattered across the Installation with a total surface area of 436 acres (USAGFG, 2008). Most are less than 20 acres in area. The largest impoundments are Lower Leitner Pond (25.3 acres), Leitner Pond (28.5 acres), Gordon Lake (37.3 acres), and Butler Reservoir (81.9 acres) (USAGFG, 2008). Of these 30 impoundments, 27 are managed for recreational fishing. Although water quality of these impoundments is not systematically monitored, the presence/absence of nuisance aquatic plants (both algae and macrophytes) is monitored, and chemical controls are applied where appropriate. Grass carp have also been stocked in several Fort Gordon reservoirs to control nuisance aquatic vegetation.

4.6.2.3 Stormwater

Fort Gordon maintains a SWPPP that provides drainage descriptions and BMPs for stormwater pollution prevention consistent with the National Pollutant Discharge Elimination System (NPDES) requirements found in 40 CFR 126.26.

The stormwater drainage system at Fort Gordon is a series of pipes and paved and channeled natural drainage ditches. New low-impact development regulations require Fort Gordon to design projects to minimize the effects on stormwater drainage systems. Fort Gordon's environmental staff maintains protective buffers around wetlands to improve water quality and minimize impacts to wetlands and stream channels from stormwater discharge from impervious surfaces such as runways and roads.

4.6.2.4 Site Specific Conditions at Fort Gordon

McCoys Creek, Marcum Branch, Riley Branch, Spirit Creek, and Belair Branch flow through and near the developed portion of Fort Gordon. However, the streams are located over 1,000 feet from the nearest proposed construction action. Alternative C, the 16-acre site southwest of the intersection of 110th Avenue and 15th Street, lies within 200 feet of a perennial tributary to Spirit Creek.

Within the cantonment area, the stormwater system consists mainly of catch basins and pipes:

- For Alternative C, the 16-acre site southwest of the intersection of 110th Avenue and 15th Street, stormwater flows through a network of open ditches and storm sewer lines that flow to two unnamed perennial tributaries to Spirit Creek (to the south).

- For Alternative D, the Back Hall Campus, stormwater flows through a network of open ditches and storm sewer lines that flow to either Belair Branch (to the north) or an unnamed perennial tributary to McCoys Creek (to the south).

- For Alternative E, the Whitelaw Hall addition, stormwater flows through a network of open ditches, catch basins, and storm sewer lines that flow to an unnamed perennial tributary to McCoys Creek (to the southeast).

- For Alternative F, the Kilbourne Street site, stormwater flows through a network of open ditches and storm sewer lines to unnamed perennial tributaries to Riley Branch (to the east).

- For Alternative G, the 19th Street site, stormwater flows through a network of open ditches and storm sewer lines that flow to an unnamed water quality pond.

4.7 FLOODPLAINS

EO 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action would occur within a floodplain. The determination of whether a proposed action occurs within a floodplain typically involves consultation of appropriate Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative to undertaking the action in a floodplain. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to comply with EO 11988. This "eight-step" process is detailed in FEMA's, *Further Advice on EO 11988 Floodplain Management*.

A flood zone area is an area that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's or county's FIRM or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Examples of flood zones include the 1-percent-annual-chance flood hazard area (this is also known as a 100-year flood event) and the 0.2-percent-annual-chance flood hazard area (this is also known as a 500-year flood event).

4.7.1 Fort Meade

The U.S. Army Corps of Engineers (USACE) conducted a floodplain study in 2008 to map areas along the streams on Fort Meade. For this investigation, areas with a drainage area of greater than 1-square mile within the Fort Meade boundaries were included in the hydrologic, hydraulic and digital floodplain mapping efforts. This included all of Midway Branch within the Fort Meade boundaries and the majority of Franklin Branch. Locations on Franklin Branch with drainage areas less than 1-square mile were included in this investigation because of the amount of development along this flooding source (USACE, 2008).

Based upon a comparison of the graphical location of the 100-year and 500-year floodplain limits to the existing aerial photography and building layer provided by the Fort Meade GIS

Center, the following eight primary buildings are graphically located in the 100-year and 500-year floodplain:

• Sewage Pump Station on Midway Branch
• Water Well and Pump on Midway Branch
• Exchange Auto Service Center
• Forensic Toxicology Drug Testing Laboratory on Burba Lake
• Storage Building on Burba Park
• Communserve Recreation Center on Burba Lake (500-year only)
• Leonard Wood Pumping Station on Franklin Branch
• Low Lift Pump Station on Little Patuxent River

In addition, the following buildings are shown in the 500-year floodplain for the Little Patuxent River: Multi-media Filter Plant; Effluent Pump Station; Sewer Treatment Plant and Chlorinator Building. The locations of projects with regard to floodplains are shown in Figure 4-3 in Appendix A.

4.7.1.1 Site Specific Conditions at Fort Meade

None of the proposed project sites are located within floodplains.

4.7.2 Fort Gordon

Fort Gordon is mapped on the August-Richmond County (FEMA, 2011), Jefferson County (FEMA, 2010a), and McDuffie County (FEMA, 2010b) FIRMs. Fort Gordon is not mapped on the Columbia County FIRM (FEMA, 2007). Some areas of Fort Gordon are adjacent to surface water bodies within a flood zone area.

4.7.2.1 Site Specific Conditions at Fort Gordon

None of the proposed project sites are located within floodplains.

4.8 COASTAL ZONE

The Coastal Zone Management Act (CZMA) of 1972 (16 United States Code [USC] §1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in the coastal zone. CZMA policy is implemented through state coastal zone management programs. Federal lands are excluded from the jurisdiction of these state programs. However, activities on federal lands are subject to CZMA federal consistency requirements if the federal activity would affect any land or water or natural resource of the coastal zone, including reasonably foreseeable effects. Specifically, in accordance with Section 307 of the CZMA and 15 CFR 930 subpart C, federal agency activities affecting a land or water use or natural resource of a State's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the State's coastal management program. According to 15 CFR 930.41, the reviewing state has 60 days from receipt of the Consistency Determination to "concur" or "object". States are not required to concur with a Negative Determination. However, if a response from the state is not received by the 60th day of submittal (unless a one-time extension was requested), the federal agency may presume state agency concurrence. Additionally, 15 CFR 930.43 provides that should a state object to a Consistency Determination, the state and federal agencies should attempt to resolve their differences. However, if no resolution can be met, the federal agency may proceed if federal law prohibits the agency from being fully consistent or if that federal agency has concluded that its proposed action is fully consistent with the enforceable policies of the management program, though the State agency objects. If a Federal agency decides to proceed with a Federal agency activity that is objected to by a State agency, or to follow an alternative suggested by the State agency, the Federal agency shall notify the State agency of its decision to proceed before the project commences.

4.8.1 Fort Meade

All of Fort Meade is located within the Maryland Coastal Zone Management (CZM) Program. This includes the Chesapeake Bay, into which water from streams and their tributaries on Fort Meade flow. MDE regulates activities that are proposed within the CZM Program through federal consistency requirements. Under these requirements, applicants for federal and state licenses or permits must certify their proposed activity will be conducted in a manner consistent with the State's CZM Program. If a state permit is not required for a project, MDE has the authority to "concur" or "object" to the federal consistency determination.

4.8.1.1 <u>Site Specific Conditions at Fort Meade</u>

Although the potential sites are within the CZM Program, none of the proposed areas are located in areas near wetlands or streams.

4.8.2 Fort Gordon

The Georgia Coastal Management Program and Federal Consistency provisions are applicable in the eleven coastal counties: Effingham, Chatham, Bryan, Liberty, Long, McIntosh, Wayne, Glynn, Brantley, Camden, and Charlton. Fort Gordon does not lie within the boundaries of any of these counties.

4.9 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats (i.e., wetlands, forests, and grasslands) in which they live. Protected biological resources include plant and animal species listed by the State of Georgia or the State of Maryland as rare, threatened, or endangered or by the USFWS as threatened or endangered. Special concern species are not afforded the same level of protection, but their presence is taken into consideration by resource agency biologists involved in reviewing projects and permit applications.

Under the Endangered Species Act (ESA), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The ESA also provides for recovery plans to be developed describing the steps needed to restore a species population. Critical habitat for federally listed species includes “geographic areas on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection.” Critical habitat can include areas not occupied by the species at the time of the listing but that are essential to the conservation of the species. The Sikes Act provides for cooperation by the Department of the Interior and Department of Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States.

The Migratory Bird Treaty Act was implemented in 1918 makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. The migratory bird species protected by the Act are listed in 50 CFR 10.13.

Wetlands are protected as a subset of the “waters of the United States” under the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). Jurisdictional wetlands are those wetlands subject to regulatory protection under Section 404 of the CWA and EO 11990. Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. USACE defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Part 328). Important wetland functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, storm water attenuation and storage, sediment detention, and erosion protection.

4.9.1 Fort Meade

4.9.1.1 Vegetation at Fort Meade

Vegetative cover at Fort Meade consists of forest land, open land/meadow, and developed areas with maintained turf, and street trees. These components constitute Fort Meade’s green infrastructure. Maryland's green infrastructure was mapped into hubs and corridors using satellite imagery, road and stream locations, biological data, and other information. Hubs are typically unfragmented forest areas hundreds or thousands of acres in size, and are vital to maintaining the state's ecological health. They provide habitat for native plants and animals, protect water quality and soils, regulate climate, and perform other critical functions. Corridors are linear remnants of natural land such as stream valleys and mountain ridges that allow animals, seeds, and pollen to move from one area to another. They also protect the health of streams and wetlands by maintaining adjacent vegetation. Preserving linkages (corridors) between the remaining blocks of habitat (hubs) will ensure the long- term survival and continued diversity of Maryland's plants, wildlife, and environment. Fort Meade maintains both green infrastructure hubs and corridors.

One third of the Installation, approximately 1,795 acres, is forested. Many native forests were cleared prior to the formation of Fort Meade for agriculture. Larger remaining forested tracts are located towards the perimeter of the Installation. Many of these larger tracts are connected by riparian forest corridors. Larger tracts are around 70 years old, but some stands predate the installation. Development at Fort Meade has resulted in forest fragments as well as recently planted reforestation areas.

Forest cover within Fort Meade consists primarily of mixed pine-hardwood in uplands and bottomland hardwoods in riparian areas. Dominant species in upland areas are a mixture of pitch pine (*Pinus rigida*) and Virginia pine (*Pinus virginiana*) and hardwoods consisting of white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and chestnut oak (*Quercus montana*). Bottomland hardwood species are predominantly red maple (*Acer rubrum*), American sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua)*, and American holly *(Ilex opaca).*
Due to extensive development at Fort Meade, urban forests are an important biological resource. The installation has actively planted street trees for over 50 years and promoted landscaping with native plant material for over 15 years. Many specimen trees predate the installation and have been preserved throughout multiple phases of Post development. Urban forests provide valuable ecosystem services such as improving water quality, reducing the urban heat island effect, reducing air pollution, providing wildlife habitat, as well as enhancing recreation opportunities and aesthetics.

It is the intent of Fort Meade to maintain a campus like environment and protect forested areas to the maximum extent practical in accordance with the Maryland Forest Conservation Act (FCA) while continuing to sustain and support current and future missions. Fort Meade manages its forest conservation program in accordance with the Maryland Department of Natural Resources (MDNR). The installation supports Army, federal, state, and local laws, regulations, policies, and initiatives to the fullest extent possible (USACE Mobile District, 2007).

Development and construction projects are required to follow the current Fort Meade Forest Conservation Act and Tree Management Policy. In keeping with the FCA standards, Fort Meade requires that the equivalent of 20% of the Project area be forested. All projects 40,000 SF or larger must comply with the Fort Meade policy. Other projects are evaluated on a case by case basis. As per MD FCA, site developments must preserve or establish 20% forest cover, regardless if the site was forested before the construction. Generally, linear utility and road projects are only required to preserve or establish 20% of the forest cover removed for the actual project. Street trees are to be replaced at a minimum of a 1:1 ratio, with preference given to the preservation of specimen trees. Specimen tree replacement ratios will be calculated on a case by case basis. Forestation that cannot feasibly be performed within the project area shall be performed on other designated land areas within Fort Meade.

The Installation participates in the Army's conservation reimbursable and fee collection program for forestry. This program exists to provide ecosystem-level management that supports and enhances the land's ability to support each installation's respective military missionscape, while simultaneously obtaining ecologically responsible results that satisfy all federally mandated requirements for natural resources. Program revenues are generated through the sale of forest products. The fair market value of all forest products removed due to the proposed action shall be deposited into the Army's Forestry Account which will be utilized for natural resource activities and ecosystem management at Army installations.

4.9.1.2 Terrestrial Wildlife Resources at Fort Meade

Fort Meade contains interior/core, edge, aquatic and urban wildlife habitats. The installation is home to 71 bird, 10 mammal, 22 insect, and no less than 6 reptile and amphibian species (USACE, 2009). Due to development and forest fragmentation, the majority of wildlife found on Post is characteristic of species found in suburban and urban areas. However, portions of Fort Meade have been identified as habitat for Forest Interior Dwelling Birds (FIDS) by Maryland DNR. FIDS require large forest areas to breed successfully and maintain viable populations. Forest interior refers to the area in the center of the forest greater than 300 feet from the forest edge. Edge habitat is the forest area within 300 feet of a forest edge.

Wildlife species found on Fort Meade include white-tail deer (*Odocoileus virginianus)*, groundhogs (*Marmota monax*), gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), eastern chipmunk (*Tamias striatus*), field mouse and vole (*Microtu*s spp.), mole (*Scalopus aquaticus*), and fox (*Vulpes vulpes*). Common birds are American robin (*Turdus migratorius*), catbird (*Dumetella carolinensis*), mockingbird (*Mimus polyglyottos*), Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), house wren (*Troglodytes aedon*), downy woodpecker (*Picoides pubescens*), common flicker (*Colaptes auratus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), and song sparrow (*Melospiza melodia*) (Michael Baker Jr. Inc., 2007).

Eight species of birds were listed on both the Global and Maryland State Heritage designation list including, purple finch (*Carpodacus purpureus*), hermit thrush (*Catharus guttatus*), blue-throated blue warbler (*Dendroica caerulescens*), dark-eyed junco (*Junco hyemalis*), golden-crowned kinglet (*Regulus satrapa*), red-breasted nuthatch (*Sitta canadensis*), yellow-bellied sapsucker (*Sphyrapicus varius*) and winter wren (*Troglodytes troglodytes*). The purple finch and hermit thrush are also listed as Maryland State Species of Concern. Most of the observed animal species are common to Anne Arundel County and the Central Maryland area.

As of November 2009, Partners in Flight Species of Concern present on Fort Meade include:

- Baltimore oriole (*Icterus galbula*)
- Wood thrush (*Hylocichla mustelina*)

The Migratory Bird Treaty Act (MBTA), implemented in 1918, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. The migratory bird species protected by the Act are listed in 50 CFR 10.13.

The Sikes Act provides for cooperation by the Department of the Interior and Department of Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States.

Amphibians found at Fort Meade include: Cricket frog (*Acris crepitans*), eastern American toad (*Bufo americanus*), and leopard frog (*Rana pipiens*). Reptiles include the Black rat snake (*Elaphe obsoleta*), eastern box turtle (*Terrapene carolina*), and common garter snake (*Thamnophis sirtalis*).

4.9.1.3 Aquatic Resources at Fort Meade

Waterbodies that flow though Fort Meade provide habitat for a number of aquatic organisms (USACE, 2007). Over two dozen species of fish are known to occur on Fort Meade, including, but not limited to, the creek chubsucker (*Erimyzon oblongu*), eastern mudminnow (*Umbra pygmaea*), tessellated darter (*Etheostoma olmstedi*), American brook lamprey (*Lampetra appendix*), American eel (*Anguilla rostrata*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), glassy darter (*Etheostoma vitreum),* redbreast sunfish (*Lepomis auritus),* bluegill (*Lepomis macrochirus*), and pumpkinseed (*Lepomis gibbosus).*

4.9.1.4 Rare, Threatened and Endangered Species at Fort Meade

No federally listed or proposed endangered or threatened species are known to occur on Fort Meade. Correspondence from USFWS dated July 12, 2012 indicated that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area (Appendix B). Rare, threatened, and endangered species survey conducted in 2001 (Eco-Science Professionals) as well as a 2009 Flora and Fauna Survey (USACE Baltimore District, 2009) did not identify federally listed endangered or threatened species on Fort Meade.

State-listed species are not protected under the Endangered Species Act; however, whenever feasible, the installation cooperates with State authorities in an effort to identify and conserve State-listed species (Army and Air Force Exchange Service, 2006). A 2002 survey identified the State rare mud salamander (*Pseudotriton montanus*) located along the western boundary of the installation (Versar, Inc.). The Little Patuxent River, adjacent to the waste water treatment plant, supports one of only two populations of the State threatened Glassy darter *(Etheostoma vitreum)* in Maryland. The Glassy darter is a member of the Perch family named for its translucent body.

Fort Meade also contains the following Maryland species of concern:

- Downy bushclover (*Lespedeza stuevei*) – Maryland Watchlist
- Pubescent sedge (*Carex hirtifolia*) Maryland Watchlist (Berman Tract)
- Purple chokeberry (*Aronia prunifloia*) – Maryland Watchlist
- Roughish panicgrass (*Panicum leucothrix*) – Maryland status uncertain

Fort Meade voluntarily maintains four Habitat Protection Areas (HPAs) on the installation. HPAs are self-designated sensitive areas. One of these areas is located proximate to the waste water treatment plant. HPAs are included in Fort Meade's Integrated Natural Resource Management Plan and are protected as a BMP. Fort Meade coordinates with MDNR and tries to avoid impacting these areas to the maximum extent practical.

4.9.1.5 Wetlands at Fort Meade

There are approximately 207 acres of wetlands on Fort Meade (USACE, 2011b). Wetland mapping conducted at Fort Meade in 2011 showed that no wetlands exist within 500 feet of the proposed project locations (USACE, 2011b) (Figure 4-5, Appendix A).

4.9.1.6 Site Specific Conditions at Fort Meade

Biological resources near the proposed project sites are those found within the open golf courses as well as developed areas of the installation, consisting of landscaped vegetation and various songbirds and other wildlife accustomed to human interaction. Ornamental trees, mature trees and early successional trees also grow at the sites. Common trees include red maple (*Acer rubrum*), sweetgum, white pine (*Pinus strobus*), eastern red cedar (*Juniperus virginiana*), white ash (*Fraxinus americana*), and white oak. The sites provide wildlife habitat. The sites also have invasive species such as Callery pear (*Pyrus calleryana*). Alternative B, the East Campus site, has been cleared for the start of construction of buildings for the initial occupying agencies; however, depending on final site design, additional tree removal may be needed.

A portion of Alternative B lies within a forest conservation area at Fort Meade. Any work would require adhering to FCA standards and possible mitigation.

In their letter dated July 12, 2012, the USFWS indicated that no Federally-listed rare, threatened, or endangered species are known to occur in the areas where the proposed alternatives are located (Appendix B).

In their May 4, 2012, letter, MDNR indicated that there are no State or Federal records for rare, threatened or endangered species in the areas where the proposed alternatives are located (Appendix B).

There are no wetlands located within 500 feet of the proposed sites.

4.9.2 Fort Gordon

4.9.2.1 Vegetation at Fort Gordon

Ninety-two percent (approximately 51,143 acres) of the installation is forested, and approximately 83 percent of the forests (approximately 42,448 acres) are managed for wildlife (including endangered species) and timber production. The major vegetative community on the installation is pine forest, which comprises approximately 50 percent of the land area.

Fort Gordon exhibits a large variety of native vegetation characteristic of both the Upper Coastal Plain and Lower Piedmont Plateau physiographic provinces. The type of vegetation is dictated partially by elevation. The small and large scale topographic diversity between upland areas and streams forms a gradient of moisture conditions along slopes and vegetation types. Natural communities range from xeric, fire-prone uplands to moist, bottomland swamp forest, subject to periodic flooding. Most of the existing tree and shrub communities common to Fort Gordon can be grouped into nine major forest types. These are the Natural Pine, Pine Plantation, Pine-Scrub Oak, Pine-Hardwood, Scrub Oak, Bottomland Hardwood, Hardwood Pine, Streamside Forest, and Grassland communities (GSRC, 2001).

Dominant overstory species of the Natural Pine community are loblolly pine (*Pinus taeda*), longleaf pine (*Pinus palustris*), shortleaf pine (*Pinus echinata*), and slash pine (*Pinus elliottii*), but include all natural forest types regardless of species (GSRC, 2001). Understory species consist of immature pines (*Pinus* sp.), honeysuckle (*Lonicera* sp.), scrub oak (*Quercus* spp.), sumac (*Rhus* sp.), and short grasses. This community composes approximately 50 percent of the Post.

The Pine Plantation community is a result of reforestation and the overstory is composed predominantly of planted loblolly pine and slash pine. Some planted and direct-seeded longleaf pine are also scattered throughout the Post. These areas will increase as they are restored to longleaf pine from nonnative slash pine and offsite loblolly pine. There are also several small plantations of sand pine (*Pinus clausa*) and Virginia pine, which are not native to the Post (GSRC, 2001). Dominant understory species of this community include sumac rhododendron (*Rhododendron* sp.), wax myrtle (*Morella cerifera*), and short grasses. This community composes approximately 19 percent of the Post.

The Pine-Scrub Oak community is made up of pine with a scrub oak understory that can revert to scrub oak without proper management. Longleaf pine is typically the overstory species associated with this community, but other pine species might include loblolly pine, shortleaf pine, scrub oak, blackjack oak (*Quercus marilandica*), and turkey oak (*Quercus cerris*). Understory species include wax myrtle, greenbrier (*Smilax* sp.), sumac, honeysuckle, and short grasses. This community is usually found on sand ridges and upper slopes where sandy soil is relatively deep (GSRC, 2001). This community inhabits approximately 8 percent of the Post.

The overstory of the Pine-Hardwoods community is commonly composed of longleaf, loblolly, or shortleaf pine mixed with sweetgum, yellow poplar, and black gum (GSRC, 2001). Other overstory species include white oak and northern red oak (*Quercus rubra*). Undergrowth varies from medium to dense and consists of honeysuckle, wax myrtle, sumac, and scrub oak. This community composes approximately 1 percent of the Post.

The Scrub-Oak community is dominated by scrub oak including turkey oak, laurel oak (*Quercus hemisphaerica)*, blackjack oak, sand Post oak (*Quercus stellata* var *margaretta*), and bluejack oak (*Quercus incana*). Scattered longleaf pine and small black gum, persimmon, sand hickory (*Carya pallida*), pignut hickory, and mockernut hickory (*Carya tomentosa*) are often mixed with the above species. Understory growth includes wax myrtle, honeysuckle, sumac, and short grasses. This community is found on sand ridges and upper slopes (GSRC, 2001). This community composes approximately 4 percent of the Post, with the largest stands in the small arms impact area.

The Upland Hardwood community is dominated by upland hardwoods including southern red oak, water oak (*Quercus nigra*), northern red oak, willow oak, white oak, sweetgum, and Post oak (*Quercus stellata*). Also, found in association with upland hardwoods are any pine species and persimmon, pignut hickory, and mockernut hickory of better quality than those found in association with scrub oaks. Upland hardwoods are usually found on lower slopes and around old home sites (GSRC, 2001).

The overstory of the Bottomland Hardwood community is dominated by bottomland hardwoods including black gum and red maple, with scattered sweetgum, water oak, white oak, American beech, hickory (*Carya* sp.), swamp chestnut oak (*Quercus michauxii*), willow oak, American sycamore, and yellow poplar. Any pine species can also be associated with this community. Undergrowth associated with this community is medium to dense and includes wax myrtle, sumac, scrub oak, and honeysuckle. Bottomland hardwood communities are found in branchheads, swamps, and poorly drained soils bordering streams. This community composes approximately 7 percent of the Post.

Dominant species of the Streamside Forest community include black willow, river birch (*Betula nigra*), swamp cottonwood (*Populus heterophylla*), willow oak, and water oak. Understory species include greenbrier, honeysuckle, and alder (*Alnus* sp.). This community is common on seasonal wetlands mainly along Brier Creek in the southwest portion of the Post and composes approximately 3 percent of the Post (GSRC, 2001).

Species of the Grassland Community at Fort Gordon include broomsedge (*Andropogon virginicus*), Southern wiregrass (*Aristida beyrichiana*), Johnson grass (*Sorghum halapense*), crab grass (*Digitarea* sp.); and many other species of grasses, sedges, and composites. Grasslands develop in areas of food plots, clearings in forest areas, and in the understory of open forest types. Grassland communities compose approximately 3 percent of the installation land area.

Some other species commonly found in mixture with the above communities are swamp bay (*Persea pubescens*), flowering dogwood, black cherry (*Prunus serotina*), American holly, river birch, black willow, hackberry (*Celtis laevigata*), American beech, swamp chestnut oak, eastern red cedar, and American hornbeam.

4.9.2.2 Terrestrial Wildlife Resources at Fort Gordon

Fort Gordon is inhabited by a wide variety of wildlife species. Approximately 136 species of birds have been identified on the installation. It is estimated that approximately 31 species of mammals and approximately 67 species of reptiles and amphibians inhabit Fort Gordon. These species are dispersed throughout the various habitats on the installation.

Common mammal species found on the installation include, but are not limited to: white-tailed deer, raccoon, eastern grey squirrel, Virginia opossum, red fox, gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), eastern cottontail rabbit (*Sylvilagus floridanus*), and coyote (*Canis latrans*). Common bird species found on Fort Gordon include, but are not limited to, northern bobwhite quail (*Colinus virginianus*), turkey vulture (*Cathartes* *aura*), pileated woodpecker (*Dryocopus pileatus*), northern mockingbird, red-eyed vireo (*Vireo olivaceus*), tufted titmouse (*Parus biocolor*), and Carolina chickadee.

Common reptile and amphibian species found on the installation include, but are not limited to: eastern box turtle, eastern mud turtle (*Kinosternon subrubrum subrubrum*), southern fence lizard (*Scelopont*s *undulatus undulatus*), brown water snake (*Nerodia taxispilota*), and eastern kingsnake (*Lampropeltis getula getula*).

White-tailed deer, red fox, eastern gray squirrel, raccoon, eastern cottontail rabbit, wood duck (*Aix sponsa*), eastern wild turkey (*Meleagris gallopavo silvestris*), northern bobwhite quail, and mourning dove are actively managed for sport hunting on Fort Gordon.

4.9.2.3 Aquatic Resources at Fort Gordon

Approximately 56 species of fish are known to occur on Fort Gordon, including the bluebarred pygmy sunfish (*Elassoma okatie*). This is the only recorded siting in the State of Georgia (Fort Gordon, 2001). Common fish species on the installation include, but are not limited to, yellow bullhead (*Ameiurus natalis*), flat bullhead (*Ameiurus platycephalus*), bowfin (*Amia calva*), carp (*Cyprinus carpio*), and gizzard shad (*Dorosoma cepedianum*).

In 1995 and 1996, Hoover and Kilgore collected two fish species (Savannah darter [*Etheostoma fricksium*], and sawcheek darter [*Etheostoma serrifer*]) in Spirit Creek that have been designated Species of Special Concern by Georgia DNR, but no state or federally listed species were observed (Hoover and Kilgore, 1999). Additional sampling in 1997-1998 using specialized sampling gear (light traps) revealed that the state-listed (Endangered) bluebarred pygmy sunfish was much more widely distributed across Fort Gordon than originally believed and was abundant in several locations, including McCoys Creek, a tributary of Spirit Creek. Sixty-four bluebarred pygmy sunfish were collected from an off-channel wetland associated with McCoy's Creek in 1997 and 1998 (Rohde, Hoover and Killgore, 2004).

Gordon Lake, a 37-acre impoundment that is fed by Spirit Creek, is managed primarily to provide water for the irrigation of Gordon Lakes Golf Course. It is managed secondarily for recreational fishing. In addition to largemouth bass, bluegill, redear sunfish (*Lepomis microlophus*), and channel catfish (*Ictalurus punctatus*), which are the species most often sought by anglers, Gordon Lake contains gizzard shad, golden shiners (*Notemigonus crysoleucas*), unidentified "suckers," chain pickerel (*Esox niger*), redfin pickerel (*Esox americanus*), pirate perch (*Aphredoderus sayanus*), mud sunfish (*Acantharchus pomotis*), white crappie (*Pomoxis annularis*), warmouth (*Lepomis gulcosus*), pumpkinseed, redbreast sunfish, yellow perch (*Perca flavescens*), and several (unidentified) darters.

4.9.2.4 Rare, Threatened and Endangered Species at Fort Gordon

The term "special concern species" refers to federally- and state-listed species. Table 4-3 list the 16 animal species (five birds, two mammals, three reptiles and amphibians, and six fish) and six plant species listed as either threatened, endangered, or of special concern by the USFWS or the State of Georgia that are known to occur on Fort Gordon.

Table 4-3: Rare, Threatened, and Endangered Species at Fort Gordon, Georgia			
Common Name	**Scientific Name**	**State Status**	**Federal Status**
Birds			
Bachman's sparrow	*Aimophila aestivali*	Rare	
Southeastern American kestrel	*Falco sparverius paulu*	Rare	
Migrant loggerhead shrike	*Lanius ludovicianus migrans*	Vulnerable	
Wood Stork	*Mycteria americana*	Endangered	Endangered
Red-cockaded woodpecker	*Picoides borealis*	Endangered	Endangered
Mammals			
Southeastern bat	*Myotis austrororiparius*	Vulnerable	
Rafinesque's big eared bat	*Corynorhinus rafinesquii*	Rare	
Reptiles and Amphibians			
Gopher tortoise	*Gopherus polyphemus*	Threatened	
Southern hognose snake	*Heterodon simus*	Threatened	
Florida pine snake	*Pituophis melanoleucus mugitus*	Vulnerable	
Fish			
Bluebarred pygmy sunfish	*Elassoma okatie*	Endangered	
Mud sunfish	*Acantharchus pomotis*	Vulnerable	
Savannah darter	*Etheostoma fricksium*	Imperiled	
Sawcheek darter	*Etheostoma serriferum*	Imperiled	
Sandbar shiner	*Notropis scepticus*	Rare	
Plants			
Sandhill rosemary	*Ceratiola ericoides*	Threatened	
Atlantic white cedar	*Chamaecyparis thyoides*	Rare	
Indian olive	*Nestronia umbellula*	Rare	
Sweet pitcher plant	*Sarracenia rubrarubra*	Threatened	
Pickering's morning glory	*Stylisma pickeringii*	Threatened	
Silky camellia	*Stewartia malacodendron*	Rare	

4.9.2.5 Wetlands at Fort Gordon

According to the National Wetland Inventory (NWI), there are approximately 4,395 acres of wetlands on Fort Gordon (Figure 4-6, Appendix A) (USFWS, 2012). These wetlands consist of both alluvial and nonalluvial wetlands. Alluvial wetlands are associated with stream channels and depend on the flooding regime of the stream system. With the exception of Brier Creek, the floodplain of most alluvial wetlands on Fort Gordon is inconspicuous due to rolling topography. These streams fit the description of "small stream swamps" where separate fluvial features and associated vegetation are too small or poorly developed to distinguish (USAGFG, 2008).

Nonalluvial wetlands are associated in areas where groundwater emerges or precipitation is held close to the soil surface. Nonalluvial wetlands on Fort Gordon included seepage areas and isolated wetlands. Seepage areas occur on saturated soils where the water table remains immediately below the soil surface. Plant species associated with these types of wetlands include, but are not limited to sweetbay magnolia (*Magnolia virginiana*) in the midstory and sweetgum and yellow poplar in the overstory. Isolated wetlands include small isolated ponds with grasses and herbs as dominant vegetation. If present, the overstory consists primarily of sweetgum and black gum (USAGFG, 2008).

4.9.2.6 Site Specific Conditions at Fort Gordon

Biological resources near the proposed project sites are those found within the developed areas of the installation, consisting of landscaped vegetation and various songbirds and other wildlife accustomed to human interaction. The sites consist mainly of mowed lawn, ornamental trees, loblolly pine, wax myrtle, sumac, turkey oak, and *Rubus* sp.

Fort Gordon's Natural Resource Branch indicated that the site of Alternative C has some trees that may be able to be harvested for fuel chips or pulpwood should this site be chosen.

Correspondence from the USFWS on May 12, 2012, indicated that no federally listed rare, threatened, or endangered species are known to occur in the potential project areas (Appendix C). One southeastern American kestrel nesting box is located within the site of Alternative G. This alternative was added to the EA after coordination letters were sent in May 2012. The American kestrel nest box program is managed under the approved Fort Gordon Integrated Natural Resources Management Plan and has previously been coordinated and approved by state and federal wildlife agencies. Fort Gordon biologist will relocate American kestrel nesting boxes as necessary to mitigate any potential impacts.

Based on NWI mapping and site field visits, it is unlikely that there are wetlands located within the potential project areas. If ARCYBER becomes aware of wetlands within the project disturbance area, the appropriate permit applications will be submitted to federal and state agencies.

4.10 CULTURAL RESOURCES

Cultural resources are "historic properties" as defined by the NHPA of 1966, "cultural items" as defined by the Native American Graves Protection and Repatriation Act of 1979 (NAGPRA), "archaeological resources" as defined by the Archaeological Resource Protection Act of 1979 (ARPA), "sacred sites" as defined by EO 13007 to which access is afforded under the American Indian Religious Freedom Act of 1987 (AIRFA), and collections and associated records as defined in 36 CFR 79.

Archaeological resources consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. Traditional cultural properties include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture.

Several federal laws and regulations—including the NHPA of 1966, the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resource Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990—have been established to manage cultural resources. In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the National Register of Historic Places (NRHP):

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are associated with the lives or persons significant in our past; or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history.

4.10.1 Fort Meade

The most recent ICRMP for Fort Meade was prepared in 2011 by the Baltimore District of the USACE (USACE, 2011a). All of the known resources at Fort Meade that are 50 years old, or older, are being evaluated for eligibility for listing on the NRHP.

The entirety of Fort Meade, including the locations of Alternatives A and B, has been investigated for the presence of archaeological resources. No archaeological resources were identified in either of the alternative areas. Five archaeological sites were identified to the north and west of Alternative A. Site 18AN234 was initially identified in 1972 by a groundskeeper for the golf course. At that time, several lithic artifacts, including a possible projectile point (arrow or spear head), were recovered from the ground surface. Since the initial identification, the area around 18AN234 has been dramatically altered. It appears that 18AN234 has been disturbed and no evidence of archaeological resources remains. The site is not National Register eligible. Sites 18AN930 and 931 were a camp sites occupied from the Late Archaic through the Woodland Periods (3,000 B.C. through A.D. 1600). Additional evaluation of the sites yielded only two eroded, quartz-tempered ceramic shards dating to the Woodland Period. No other diagnostic artifacts were recovered, and no features were identified during the Phase II excavations. The artifact density was low, and no horizontal or vertical patterning was observed. These two sites are also not eligible for the National Register.

The Downs Farmstead archaeological site (18AN973) is located approximately 1500 feet north of Alternative A. The site has an associated family cemetery. Both the site and the cemetery were evaluated for National Register eligibility in 2012. The archaeological site was determined ineligible for National Register listing, although the eligibility of the cemetery could not be determined.

The archaeological investigation of Sites 18AN930 and 18AN931 revealed the presence of Site 18AN1240, which had not been located during previous Phase I investigations. Site 18AN1240 Archeological site 18AN1240 is a Late Archaic Period base camp, situated on a ridge overlooking a tributary of the Little Patuxent River approximately 1400 feet to the west of Alternative A. Site 18AN1240 is approximately 2,700 square meters in size. Field testing determined that the site had intact, and possibly stratified, artifact deposits. This site was recommended as being eligible for inclusion in the NRHP. The Maryland Historic Trust concurred with this recommendation in a letter dated April 28, 2003.

The possible locations of two undocumented historic period cemeteries were identified during environmental studies for other development projects at Fort Meade. Neither of these two possible cemeteries are in Alternatives A or B. The two possible cemeteries are located near the 3rd hole of the Parks Golf Course and the 5th hole of the Applewood Golf Course. The reported general locations of these cemeteries are directly south of the U.S. Army Antenna Site. Attempts to locate these cemeteries have been unsuccessful, including a ground penetrating radar survey in 2010.

4.10.2 Fort Gordon

The most recent ICRMP for Fort Gordon was prepared in 2011 (USAGFG, 2011). Cultural resources at Fort Gordon include archeological sites and potentially historic structures/buildings. Most of Fort Gordon's property has been surveyed for the presence of archaeological sites and the NRHP eligibility of buildings and structures built between 1942 and 1989. There are 41 archaeological sites that are eligible for the NRHP, and 114 sites that are potentially eligible for the NRHP. The historic building surveys determined that no buildings on Fort Gordon were determined eligible for the NRHP. However, the Georgia SHPO recommends Building 33500, Woodworth Library, as eligible for its local and regional architectural significance as few buildings of this style remain intact in Georgia. According to the survey, 42 buildings will need to be reevaluated when they reach 50 years old.

4.11 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES (HTRS)

A hazardous material is defined as any substance that is 1) listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); 2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring; 3) listed by the U.S. Department of Transportation as hazardous materials under 49 CFR 172.101 and appendices; or 4) defined as a hazardous waste per 40 CFR 261.3 or 49 CFR 171. Hazardous materials are federally regulated by the USEPA in accordance with the Federal Water Pollution Control Act; CWA; Toxic Substance Control Act (TSCA); Resource Conservation and Recovery Act (RCRA); CERCLA; and CAA.

The promulgation of TSCA (40 CFR Parts 700 to 766) represented an effort by the Federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA Chemical Substances Inventory lists information on more than 62,000 chemicals and substances. Toxic chemical substances regulated by USEPA under TSCA include asbestos and lead, which for the purposes of this EA, are evaluated in the most common forms found in buildings, namely asbestos-containing materials (ACM) and lead-based paint (LBP). ACM includes materials that contain more than 1 percent asbestos and is categorized as either friable or non-friable. LBP includes paint having lead levels equal to or exceeding 0.5 percent by weight. In addition to asbestos and lead, renovation/demolition activities have the potential to disturb mercury and poly-chlorinated biphenyl (PCBs). These materials are also regulated under TSCA as RCRA Universal Waste. Buildings may contain liquid mercury in thermostats and thermometers, and fluorescent lighting fixtures typically contain elemental mercury in the fluorescent light bulb; compact fluorescent lamps also contain mercury. In addition, fluorescent lighting fixtures have potential to contain ballasts containing PCBs.

RCRA defines hazardous waste as wastes or combination of wastes that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serous irreversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. All hazardous wastes are classified as solid wastes. A solid waste is any material that is disposed, incinerated, treated, or recycled except those exempted under 40 CFR 261.4.

4.11.1 Fort Meade

Fort Meade's Directorate of Public Works Environmental Division is responsible for managing hazardous materials and waste. Both the installation and NSA operate under a Spill Prevention Control and Countermeasures Plan (SPCCP)/Installation Spill Contingency Plan (ISCP) (Science Applications International Corporation, 2006) for all facilities where hazardous materials are stored. The SPCCP/ISCP Plan delineates measures and practices that require implementation to prevent and/or minimize spill/release from storage and handling of hazardous materials to protect ground and water surfaces. In accordance with State and Federal law and Army regulations, the SPCCP/ISCP is updated at least every 3 years, or when significant changes in operations occur that could impact the likelihood of a spill. The ISCP provides emergency response instructions for spills and uncontrolled releases of hazardous materials. Instructions include notification, probable spill routes, control measures, exposure limits, and evacuation guidelines. Material Safety Data Sheets (MSDS) that provide information about health hazards and first-aid procedures are included in the ISCP.

Fort Meade also has an Installation Hazardous Waste Management Plan (DoD, 2011). Those who handle or manage hazardous materials or hazardous waste are trained in accordance with Federal, State, local, and Army requirements. Each facility has appointed an emergency management coordinator, who is responsible for emergency response actions until relieved by hazardous materials spill response personnel.

The Integrated Pest Management Plan (IPMP) provides a framework through which pest problems can be effectively addressed at Fort Meade (DoD, 2007). The plan was prepared in 2007 and was validated annually since then because no significant changes were required. The plan will be validated again for FY 2013. Elements of the program, including health and

environmental safety, pest identification, pest management, pesticide storage, transportation, use and disposal are defined within the plan. Used as a tool, this plan reduces reliance on pesticides, enhances environmental protection, and maximizes the use of integrated pest management techniques. Pesticides are stored at the entomology building, and used on Fort Meade in accordance with all applicable Federal, State, and Installation guidelines.
The possibility of PCBs in electrical light ballast, capacitors, systems and lights, LBP, and ACM exists at the installation. The installation has a continuing program to remove PCB-containing material from electrical equipment. Most lighting ballasts are expected to contain PCBs and are treated as containing PCBs unless they are labeled PCB-free.

LBP may be found in structures older than 1978. The installation's 2006 Lead Hazard Management Plan (DoD, 2006) procedures and protocols are used in the identification, control and removal of LBP from real property at Fort Meade.

ACM may be found within older buildings at Fort Meade and on buried steam lines at the installation. Some of these lines may be present within the project area. The Fort Meade 2008 Asbestos Management Program Standard Operating Procedure (SOP) (DoD, 2008) provides the procedures for identifying, controlling, and disposing of asbestos containing materials.

The DoD established the Installation Restoration Program (IRP) in 1975 to provide guidance and funding for the investigation and remediation of hazardous waste sites caused by historical disposal activities at military installations. The fundamental goal of the Fort Meade IRP is to protect human health, safety and the environment. The IRP is carried out in accordance with all federal, state and local laws. The primary federal laws are CERCLA and Superfund Amendments and Reauthorization Act (SARA). In 2009, Fort Meade signed a Federal Facility Agreement (FFA) with the USEPA, U.S. Department of the Interior (DoI) and U.S. Architect of the Capitol (AoC). This document establishes the role that Fort Meade and the USEPA each play in the restoration of the installation and the formal mechanisms of this process. The IRP's staff works closely with the USEPA, MDE and local government agencies to ensure that cleanup processes are conducted properly and efficiently. The staff also receives input from community groups and nearby residential areas.

4.11.1.1 Site Specific Conditions at Fort Meade

Building 8605 was constructed in 1954. The building was inspected and analyzed in 1995 and 1996 for asbestos. Asbestos was detected in 23 of the 138 samples analyzed. During the latest testing on 7 November 2011 Building 8605 tested positive for LBPs. EPA shows no records of PCBs (EPA, 2013).

The proposed locations for the new facility located at the northwest corner of Mapes Road and Taylor Avenue (Alternative A) and the East Campus (Alternative B) are categorized as Site Condition II by the Fort Meade staff in accordance with AR 200-1 and AR 4201: "There is no known contamination at the site. There remains some potential that contamination may be encountered during construction". As a former mortar range, an unexploded ordnance (UXO) survey has been conducted which encountered and removed metal dummy mortar shell and small arm rounds in boxes. Any action may require standby Unexploded Ordnance Construction support. The potential for UXO being present is low.

Under the IRP program, a risk analysis was performed at several parcels within the East Campus and determined that there were no soil risks and minimal hazards to groundwater within the location proposed for Alternative B (USACE, 2004) at Parcels 1, 2, and 3 as shown in Figure 4-7, Appendix A. Pending approval from the USEPA, Parcel 8 would also be classified as no further action required. It was also determined that there were no soil risks and minimal hazards to groundwater within the location proposed for Alternative A (USACE, 2004) at Parcel 7. These parcels were identified based on Community Environmental Response Facilitation Act (CERFA) categorization scheme and review of installation documents (USACE, 2004).

4.11.2 Fort Gordon

Fort Gordon has a Hazardous Materials Control Center (HMCC) that provides materials on an as-needed basis to reduce the quantities of materials that are stored throughout the Post. The mission of the HMCC is to track all hazardous materials and hazardous wastes, monitor hazardous materials use, assist in hazardous materials reutilization, look for efficiencies, and promote pollution prevention and hazardous materials and hazardous wastes minimization. The materials are tracked via a Hazardous Substance Management System (HSMS). Fort Gordon maintains a SPCCP and an ISCP. The SPCCP identifies areas that are at risk for spills that could cause harm to human health and the environment. It also lists measures that have been taken to reduce or eliminate the risk of potential contamination in the event of a spill. The SPCCP was last updated in 2010 (USAGFG, 2010b). The ISCP provides information for personnel to respond to potential spills. The Fort Gordon Environmental Branch maintains the Hazardous Waste Management Plan and an Installation-wide inventory of all hazardous materials and hazardous wastes. The Hazardous Waste Management Plan provides guidance on the management of hazardous materials and hazardous wastes (USAGFG, 2003).

No evidence exists that hazardous substances were stored, released, or disposed of on the subject sites. In addition, no evidence of mold exists, and no instances of radon exceeding four picocuries per liter have been recorded at the sites (USAGFG, 2006).

The installation has a continuing program to remove PCB-containing material from electrical equipment. However, most lighting ballasts are expected to contain PCBs and are treated as containing PCBs unless they are labeled PCB-free.

Under the Environmental Restoration Program, Fort Gordon conducted an Installation Assessment in 1982 that identified 36 Solid Waste Management Units (SWMUs) within the installation. Since that time, additional sites have been added bringing the total to 41 SWMUs at Fort Gordon (USAGFG, 2006).

4.11.2.1 Site Specific Conditions at Fort Gordon

Based on partial survey reports, buildings in the Back Hall area may contain ACM and/or LBP. Although abatement and remediation actions have occurred in the past on an as-needed basis, surveys and abatement records are not complete. Therefore, it is assumed ACM and LBP still exist in these buildings (USAGFG, 2010a). In addition, mercury and PCB-containing light ballasts may also exist in these buildings.

Two SWMUs are located near the Whitelaw Hall site (Alternative E) (USAGFG, 2006). SWMU-024A is within the Alternative E site between 16th and 18th Streets and 103rd and 109th Avenues. It is west-southwest of SWMU-024 (17th Street Landfill). Contamination at SWMU-024A was discovered during the investigation of SWMU-024. The origin of the contamination at SWMU-024A is unknown; however, the area east of 17th Street was a vehicle maintenance area that contained wash racks, motor repair shops, grease racks, oil storage houses, and fuel points. Seventeen surface soil samples were collected at SWMU-024A between 1998 and 2000. Thirty-four subsurface soil samples were collected from 14 soil borings in 1998 and 2000. Eleven groundwater samples were collected between 1994 and 2000. Ten monitoring wells were installed during the investigations of SWMU-024A. The following constituents of potential concern have been identified at SWMU-024A: metals in the soil and groundwater, VOCs in the groundwater, and semi-volatile organic compounds in the soil. In 2005, Fort Gordon conducted a RCRA Facility Investigation (RFI) at SWMU-024A and submitted the RFI Report to Georgia EPD for approval and issuance of No Further Action under RCRA Subtitle C (hazardous waste). Georgia EPD approved the RFI Report and tentatively approved No Further Action under RCRA Subtitle C for SWMU-024A in 2005 with the provision that access must be allowed for sampling the former SWMU-024A groundwater monitoring wells in case they need to be used to monitor SWMU-024 (USAGFG, 2006).

Immediately to the east of the Alternative E site is SWMU-024, 17th Street Landfill, which has the following constituents of potential concern: metals and VOCs in the groundwater, water, and sediments. Fort Gordon conducted an RFI of SWMU-024, submitted the RFI Report to Georgia EPD in November 2005, and requested No Further Action under RCRA Subtitle C. Fort Gordon is waiting for a response from Georgia EPD. The landfill is still required to comply with RCRA Subtitle D (solid waste) postclosure requirements for monitoring of the cap, methane, groundwater, and surface water for up to 30 years (USAGFG, 2006).

4.12 TRAFFIC AND ROADWAYS

For the purposes of this analysis, traffic and roadways include the highways that provide local and regional access to the action alternatives. The operations of intersections (signalized, unsignalized, and roundabouts) are measured by Level of Service (LOS), and the amounts of delay experienced per vehicle during peak commuting hours. The Traffic Study, which is the basis for the transportation resource analysis contained in this EA, can be found in Appendix D.

The ROI for traffic and transportation encompasses the major intersections within the vicinity of the action alternatives located at Fort Meade and Fort Gordon. The ROI for Fort Meade (Figure 4-8, Appendix A) includes 16 intersections, while the ROI for Fort Gordon (Figure 4-9, Appendix A) includes 20 intersections.

Existing morning (6:00 AM to 9:30 AM) and afternoon (3:30 PM to 5:30 PM) turning movement counts were collected at Fort Meade over the course of several weekdays in late July and early

August 2012. The morning peak hour at most locations began between 6:45 AM and 7:30 AM. The afternoon peak hour generally started between 3:30 and 4:30 PM. Counts at Fort Gordon took place in the middle of July 2012 between the hours of 6:00 AM and 9:00 AM, and from 3:00 PM to 6:00 PM. The morning peak hour at Fort Gordon generally began between 6:45 AM and 7:15 AM, while the afternoon peak hour typically started between 3:45 PM and 4:45 PM. Existing traffic count summaries are included in the Traffic Study (Appendix D).

4.12.1 Fort Meade

Fort Meade is located in Anne Arundel County and is served by the surrounding roadway network:

- Baltimore-Washington Parkway (Maryland [MD] Route 295).
- MD Route 175 (Annapolis Road).
- MD Route 32.
- MD Route 198.

The Fort Meade installation is accessible from the following five access gates:

- Gate 1: Mapes Road and MD Route 32,
- Gate 2: Mapes Road and MD Route 175,
- Gate 3: Rockenbach Road and MD Route 175,
- Gate 6: Llewellyn Avenue and MD Route 175, and
- Gate 7: Reece Road and MD Route 175 (Demps Visitor Control Center).

Table 4-4 displays the results of the LOS analysis for the study intersections under existing conditions. LOS rates road performance on a scale of A to F, with LOS A reflecting free flowing conditions and LOS F representing heavily congested conditions (see Appendix D for descriptions of all LOS ratings). Figure 4-8 (Appendix A) depicts the existing intersections within the ROI.

Table 4-4: Intersection Level of Service Summary, Existing Conditions at Fort Meade, Maryland

ID	Intersection	Traffic Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
1	MD 32 Eastbound/Laurel Ft. Meade Rd.	Roundabout	AM	20.9	C
			PM	30.7	D
2	MD 32 Westbound/Mapes Rd.	Roundabout	AM	44.2	**E**
			PM	87.6	**F**
3	Mapes Rd./O'Brien Rd.	Signal	AM	15.6	B
			PM	39.5	D
4	Mapes Rd./6th Armored Cavalry Rd.	Two-Way Stop	AM	28.5	D
			PM	172.1	**F**
5	Mapes Rd./Zimborski Ave.	Two-Way Stop	AM	ECL	**F**
			PM	22.3	C
6	Mapes Rd./Taylor Ave.	Signal	AM	22.0	C
			PM	15.0	B

Table 4-4: Intersection Level of Service Summary, Existing Conditions at Fort Meade, Maryland					
ID	**Intersection**	**Traffic Control**	**Peak Hour**	**Existing**	
				Delay (a)	**LOS (b)**
7	Mapes Rd./Cooper Rd.	Signal	AM	64.1	**E**
			PM	30.5	C
8	Mapes Rd./Ernie Pyle St.	Signal	AM	29.4	C
			PM	26.0	C
9	Llewellyn Ave./Annapolis Rd.	Signal	AM	123.4	**F**
			PM	85.6	**F**
10	Mapes Rd./Annapolis Rd.	Signal	AM	57.6	**E**
			PM	55.2	**E**
11	Reece Rd./Annapolis Rd.	Signal	AM	31.6	C
			PM	26.1	C
12	Rockenbach Rd./Annapolis Rd.	Signal	AM	64.5	**E**
			PM	57.7	**E**
13	Reece Rd./Cooper Rd.	Signal	AM	18.8	B
			PM	14.7	B
14	Rockenbach Rd./Cooper Rd.	Signal	AM	18.4	B
			PM	18.2	B
15	Rockenbach Rd./29th Division Blvd.	Two-Way Stop	AM	10.2	B
			PM	12.9	B
16	Rockenbach Rd./O’Brien Rd.	Two-Way Stop	AM	12.3	B
			PM	12.1	B

Notes:

Bold values indicate intersections operating at LOS E or F.

Ave. = Avenue; Blvd. = Boulevard; ECL = Exceeds Calculable Limit; LOS = Level of Service; Rd. = Road; St. = Street.

(a) Delay is measured in seconds per vehicle.

(b) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.

4.12.2 Fort Gordon

Transportation in and around Fort Gordon is achieved mainly via road and street networks, a rail system, pedestrian walks, trails and bike paths. The transportation system serves installation traffic consisting of everyday work, living, and recreations trips. Two U.S. Highways, 1 and 78, traverse the installation. I-520 serves as a connection road between U.S. Highway 1 and I-20 at the north portion of the installation traveling east west from Augusta to Atlanta. Four public entrances serve the installation.

Table 4-5 displays the results of the LOS analysis for the study intersections under existing conditions. LOS rates road performance on a scale of A to F, with LOS A reflecting free flowing conditions and LOS F representing heavily congested conditions (see Appendix D for descriptions of all LOS ratings). Figure 4-9 (Appendix A) depicts the existing intersections within the ROI.

Table 4-5: Intersection Level of Service Summary, Existing Conditions at Fort Gordon, Georgia					
ID	Intersection	Traffic Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
1	Gordon Highway/13th St.	Two-Way Stop	AM	56.4	**F**
			PM	23.0	C
2	Gordon Highway/19th St.	Signal	AM	44.9	D
			PM	96.3	**F**
3	Gordon Highway/7th Ave.	Signal	AM	29.7	C
			PM	72.1	**E**
4	13th St./19th St.	Two-Way Stop	AM	33.0	D
			PM	ECL	**F**
5	Chamberlain Ave./15th St.	Two-Way Stop	AM	ECL	**F**
			PM	81.8	**F**
6	Chamberlain Ave./19th St.	Signal	AM	36.5	D
			PM	103.0	**F**
7	Chamberlain Ave./25th St.	Two-Way Stop	AM	16.5	C
			PM	17.0	C
8	Chamberlain Ave./Rice Rd.	Signal	AM	14.0	B
			PM	42.0	D
9	Chamberlain Ave./Kilbourne St.	One-Way Stop	AM	ECL	**F**
			PM	ECL	**F**
10	Barnes Ave./19th St.	Two-Way Stop	AM	51.1	**F**
			PM	17.8	C
11	Barnes Ave./25th St.	All-Way Stop	AM	17.4	C
			PM	15.5	C
12	Brainard Ave./Kilbourne St.	One-Way Stop	AM	ECL	**F**
			PM	ECL	**F**
13	Lane Ave./15th St.	All-Way Stop	AM	38.2	**E**
			PM	38.3	**E**
14	Lane Ave./19th St.	Two-Way Stop	AM	18.2	C
			PM	25.7	D
15	Lane Ave./25th St	Two-Way Stop	AM	23.0	C
			PM	186.9	**F**
16	Lane Ave./Rice Rd.	One-Way Stop	AM	57.0	**F**
			PM	58.1	**F**
17	North Range Rd./111th St.	Two-Way Stop	AM	7.2	A
			PM	10.7	B
18	North Range Rd./Ave. of the States	Two-Way Stop	AM	ECL	**F**
			PM	110.3	**F**
19	US Highway 1 Southbound/Ave. of the States	One-Way Stop	AM	26.3	D
			PM	48.8	**E**

Table 4-5: Intersection Level of Service Summary, Existing Conditions at Fort Gordon, Georgia					
ID	Intersection	Traffic Control	Peak Hour	Existing	
20	US Highway 1 Northbound/Tobacco Rd.	One-Way Stop	AM	29.5	D
			PM	31.5	D

Notes:

Bold values indicate intersections operating at LOS E or F.

Ave. = Avenue; Blvd. = Boulevard; ECL = Exceeds Calculable Limit; LOS = Level of Service; Rd. = Road; St. = Street.

(a) Delay is measured in seconds per vehicle.

(b) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.

4.13 INFRASTRUCTURE AND UTILITIES

4.13.1 Fort Meade

4.13.1.1 Potable Water at Fort Meade

American Water owns and operates the potable water system that serves Fort Meade. Water is drawn from six groundwater wells located throughout the Installation to American Water's water treatment plant, which is located in the southwest quadrant of the cantonment area near the intersection of Mapes and O'Brien Roads. The maximum allowed draw capacity permitted by MDE is 3.3 MGD, or approximately 1,200 million gallons per year (Permit No. AA1969G021 (07), effective 1 June 2012, expires 1 June 2024).

4.13.1.2 Domestic and Industrial Wastewater and Fort Meade

Sanitary sewer collection and pumping system at Fort Meade is comprised of 58 miles of piping on and around the installation, 55 miles of gravity sewers, three miles of force mains, and nine pumping stations. The pipe diameter of the gravity sewers, installed between 1941 and 1987, range from four to 30 inches. The force mains have pipe diameters that range from three inches to 24 inches. Wastewater from the gravity sewers and force mains flow to two major pump stations: the Leonard Wood and the East Side pump stations. Each station has three pumps, each rated at approximately 1500 GPM, at average operating head, thereby providing total station capacity of 4500 GPM (9000 GPM between the two stations). The wastewater treatment plant (WWTP) has a design flow of 12.3 MGD. The average flow the WWTP is currently approximately 2.5 MGD. American Water is responsible for the operation and maintenance of the wastewater system at Fort Meade.

4.13.1.3 Electric and Gas at Fort Meade

Electrical power is supplied to the installation by Baltimore Gas and Electric (BG&E) through four distribution substations. The primary source for Fort Meade (non-NSA) is a 110 kilovolt (kV) redundant feeder pair from the BG&E Waugh Chapel Power Station along the south and east sides of the installation along MD Route 32 that terminates at Substation #3. A second pair of 110 kV feeders originates in the BG&E High Ridge Power Station west of the installation and back feeds the substation utilizing the Waugh Chapel distribution line. The installation also has 18 engine-driven emergency standby generators at 15 locations should there be a BGE power outage.

Natural gas is supplied by BG&E to the Defense Energy Support Center, a DoD agency, which in turn provides it to Fort Meade. Natural gas is supplied via high pressure (100 pound force per square inch gauge) mains owned by BG&E, which form a loop on the installation. The extensive natural gas distribution system includes BG&E and government owned systems. Most buildings are within a few hundred feet of an active supply line (USACE, 2007).

4.13.1.4 Telecommunications at Fort Meade

The Network Enterprise Center has oversight for the communication system at Fort Meade. Fiber-optic cable is used exclusively on the installation (NSA, 2010).

4.13.1.5 Solid Waste Management at Fort Meade

No active landfills are located on Fort Meade; all solid waste is transported to a permitted facility located off the Installation. Solid wastes are currently collected and disposed of under the base operations contract with Melwood.

4.13.2 Fort Gordon

4.13.2.1 Potable Water at Fort Gordon

Fort Gordon's potable water system was privatized to the City of Augusta Utilities Department (AUD) in 2006. AUD is responsible for the operation and maintenance of the city's water systems. AUD's water is supplied from two sources – the Savannah River provides water for the Surface Water Treatment Plant and the Crutaceous Aquifer provides water for the Ground Water Treatment Plant (AUD, 2012). In an April 23, 2012, letter, the Augusta Planning and Development Department indicated that the existing potable water system to the installation can accommodate substantial growth.

4.13.2.2 Domestic and Industrial Wastewater at Fort Gordon

Fort Gordon's wastewater system was also privatized to AUD in 2006. AUD is responsible for the operation and maintenance of the city's wastewater systems. AUD's main WWTP, the James B. Messerly WWTP, located near the Augusta Airport, has a permitted average design flow of 46.1 MGD and currently treats approximately 34 MGD (AUD, 2009; USEPA, 2006; and USEPA, 2009a). AUD also operates a smaller treatment plant, the Spirit Creek WWTP, located south of Tobacco Road, which is permitted to treat approximately 2.24 MGD (AUD, 2009).

The Fort Gordon WWTP has been taken offline and the base connected to the Augusta-Richmond County system. Demolition of the WWTP was completed in 2011. Fort Gordon's WWTP had a design capacity of 5 MGD, although daily flow is approximately 2 MGD (USAGFG, 2010a). Treated wastewater was discharged into Spirit Creek under NPDES permit No. GA0003484 which expired in November 2011. The gravity sewer collection system is in good condition and provides adequate service for all portions of the cantonment area. Septic tanks are used to treat sanitary wastewater at remote locations of the installation not served by the sanitary sewer system (USAGFG, 2006). The septic systems remain Army-owned and maintained.

4.13.2.3 Electric and Gas at Fort Gordon

Fort Gordon's electrical service was privatized in February 2007, and is owned and operated by Georgia Power Company. The system receives 115 kV primary input at two jointly owned and operated substations (main and hospital), which provide electrical power to the entire installation (USACE, 2010).

Natural gas is provided by Atlanta Gas and Light Company, which owns the main natural gas distribution piping on Fort Gordon and all system piping and components downstream of the regulators up to the facilities. An 8-inch main runs through Fort Gordon along a dedicated 10-foot easement for the 8.5 miles of pipe (USAGFG, 2006). Natural gas is supplied to heating and cooling plants, housing, barracks, medical facilities, academic facilities, and other facilities (USACE, 2010).

4.13.2.4 Telecommunications at Fort Gordon

The Army owns and operates the on-Post business telecommunication system. The switchboard has a capacity of 14,200 lines, of which 5,300 lines are in use. BellSouth provides commercial telephone service for the family housing, guest house, and bachelor officer's quarters (USACE, 2010). All telecommunications are distributed throughout the installation by buried cable and overhead lines (USAGFG, 2006).

4.13.2.5 Solid Waste Management at Fort Gordon

Fort Gordon operates one active landfill, the Fort Gordon Landfill on Gibson Road, which is permitted by Georgia under Permit 121-014D (SL). The landfill accepts nonhazardous demolition debris from the installation that cannot be recycled; however, use of the landfill is restricted and must be coordinated through the Directorate of Public Works (USACE, 2010). The Fort Gordon Landfill receives approximately 2,736 cubic yards of waste per year and has 121,873 cubic yards of capacity remaining, or 45 years (Georgia Department of Community Affairs, 2012).

Other solid waste is disposed of at the Augusta-Richmond County Landfill on Deans Bridge Road under contract (USACE, 2010). The landfill operates under Permit 121-018D (MSWL). The landfill receives approximately 406,536 cubic yards of waste per year and has approximately 65,857,376 cubic yards of remaining capacity, or 162 years (Georgia Department of Community Affairs, 2012).

Fort Gordon actively participates in recycling/waste minimization efforts. Metals and paper/cardboard are collected for off-Post recycling. Yard wastes and woody debris from grounds maintenance are processed at the on-Post compost facility/mulch pit located in Training Area #17 (USAGFG, 2006).

4.14 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

The ROI for socioeconomic impacts is defined for the Fort Meade alternatives, as Anne Arundel County, Maryland, and for the Fort Gordon alternatives as Richmond County, Georgia. Socioeconomic data are provided in this section to establish baseline conditions. Data consist primarily of publicly-available information about Anne Arundel and Richmond Counties and to provide perspective the States of Maryland and Georgia.

EO 12898 declared that each federal agency will make environmental justice part of its mission. Environmental justice focuses on the protection for racial and ethnic minorities and/or low-income populations to be disproportionately affected by project-related impacts. Analysis of environmental justice is initiated by determining the presence and proximity of these segments of the population relative to the specific locations that would experience adverse impacts to the environment. As defined for the purposes of identifying relevant populations, minority areas are census block groups with a 50 percent or greater proportion of the population consisting of racial minorities, including those of Hispanic origin. Poverty areas are defined as census block groups where 20 percent or more of the population lives in households with incomes below the poverty line.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from federal actions.

4.14.1 Fort Meade

4.14.1.1 <u>Population Trends</u>

In 2010 Anne Arundel County had a population of 427,239, making it the fourth most populous county in Maryland (fifth if Baltimore City is included). Similar to the national and statewide trend, population growth in Anne Arundel County has slowed since 1990, as population growth from 1990 to 2000 exceeded population growth from 2000 to 2010. Over the 20 year period from 1990 to 2010, Anne Arundel County grew at a quicker rate than Maryland and the nation overall. Table 4-6 shows population in Anne Arundel County, the State of Maryland, and the United States from 1990 to 2010.

Table 4-6: Population, 1990-2010

Area	1990	2000	2010	Change 1990 to 2000 (%)	Change 2000 to 2010 (%)	Change 1990 to 2010 (%)
Anne Arundel County	427,239	489,656	537,656	14.61	9.80	25.84
Maryland	4,781,468	5,296,486	5,773,552	10.77	9.01	20.75
United States	248,709,873	281,421,906	308,745,538	13.2	9.7	24.1

Sources: Census 1990; Census 2000; Census 2010a

4.14.1.2 Demographics

As shown in Table 4-7, in 2010, the population of Anne Arundel County was 77.9 percent White, 16.9 percent Black or African American, 4.4 percent Asian, 2.5 percent Hispanic or Latino, 1 percent American Indian or Native Alaskan, and 0.2 percent Native Hawaiian or Other Pacific Islander.

Table 4-7: Race, Alone or in Combination[1], 2010

Area	White (%)	Black or African American (%)	Asian (%)	Hispanic or Latino (%)	American Indian or Alaska Native (%)	Native Hawaiian or Other Pacific Islander (%)
Anne Arundel County	77.9	16.9	4.4	2.5	1	0.2
Maryland	60.4	30.9	6.4	3.8	1	0.2
United States	74.8	6.7	5.6	13.6	1.7	0.4

Source: Census 2010a
Note[1]: Respondents were able to identify themselves as one or more races so percentage totals may exceed 100 percent.

Table 4-8 presents data on educational attainment for Anne Arundel County, the State of Maryland, and the Nation overall, as of 2010. Of the population aged 25 or older, 10 percent of Anne Arundel residents had not completed high school, 26 percent had completed high school but not attended college, 28 percent had attended some college or received an Associate degree, and 36 percent had earned a Bachelor's degree or advanced degree. In general, Anne Arundel County had a higher level of educational attainment in comparison to Maryland and the Nation overall. As of 2010, a higher percentage of the population of Anne Arundel County had completed some college or received an Associate degree than the populations of Maryland and the Nation overall; also, an equal or greater proportion of Anne Arundel County residents had earned a Bachelors or advanced degree. Anne Arundel County had an equal or lower proportion of its population that had either not completed high school or had completed high school but not attended college than Maryland and the Nation overall.

Table 4-8: Educational Attainment[1], 2010

Level of Education	Anne Arundel County (%)	Maryland (%)	United States (%)
Did not complete high school	10	12	15
High school or equivalent, no college	26	26	29
Some college or Associate degree	28	26	28
Bachelor's degree or advanced degree	36	36	28

Source: Census 2010b
Note[1]: Educational attainment for individuals aged 25 or older.

Table 4-9 provides household characteristics data for Anne Arundel County, the State of Maryland, and the Nation overall. As of 2010, Anne Arundel County had a household population of 508,132 and 195,999 total households. The average household size was 2.6 persons per household, the same as Maryland and the Nation overall. Anne Arundel County had a higher median household income and a higher income per household member than Maryland and the

Nation overall. The number of Anne Arundel County households with incomes below the poverty line numbered 9,678, or 4.9 percent of county households, a rate lower than Maryland and the Nation overall.

Table 4-9: Household Characteristics, 2010								
Area	**Population in HH's[1]**	**Total Households**	**Avg. HH Size**	**% Family HH's**	**Median HH Income**	**Income Per HH Member**	**HH's Below Poverty Level**	**% HH's Below Poverty Level**
Anne Arundel County	508,132	195,999	2.6	69.7	$83,456	$32,098	9,678	4.9
Maryland	5,558,493	2,121,047	2.6	67.1	$70,647	$27,172	173,696	8.2
United States	295,968,252	114,235,996	2.6	66.8	$51,914	$20,044	14,865,322	13.0

Source: Census 2010b

Note[1]: By definition, population in households consists of the resident population excluding people living in group quarters (i.e.9 or more people living together who are unrelated to the householder).

4.14.1.3 Employment and Income

Table 4-10 provides labor force statistics for Anne Arundel County, the State of Maryland, and the Nation overall. In 2010, the labor force of Anne Arundel County was 294,513; 273,710 individuals were employed and 20,803 were unemployed implying an unemployment rate of 7.1 percent. The unemployment rate in Anne Arundel County in 2010 was lower than Maryland's (7.8 percent) and lower than the Nation overall (9.6 percent). From 1990 to 2010, the labor force, the number of employed, and the number of unemployed in Anne Arundel expanded at a greater rate than Maryland and the Nation overall; the number of individuals who were employed in Anne Arundel County increased by 23 percent while the number of unemployed increased by 164.5 percent.

Table 4-10: Labor Force, Employment, and Unemployment, 1990, 2000, and 2010					
Area and Timeframe		**Labor Force**	**Employed**	**Unemployed**	**Unemployment Rate[1] (%)**
Anne Arundel County	1990	230,440	222,575	7,865	3.4
	2000	268,268	260,150	8,118	3
	2010	294,513	273,710	20,803	7.1
	% Change 1990 to 2010	27.8%	23.0%	164.5%	3.7
Maryland	1990	2,582,827	2,465,249	117,578	4.6
	2000	2,811,657	2,711,382	100,275	3.6
	2010	3,057,271	2,817,830	239,441	7.8
	% Change 1990 to 2010	18.4%	14.3%	103.6%	3.2
USA	1990	125,840,000	118,793,000	7,047,000	5.6
	2000	142,583,000	136,891,000	5,692,000	4.0
	2010	153,889,000	139,064,000	14,825,000	9.6
	% Change 1990 to 2010	22%	17%	110%	4.0

Source: BLS 2012a

Note[1]: Changes in the unemployment rate, from 1990 to 2010, are expressed in terms of percentage points.

Table 4-11 shows data on employment by industry in Anne Arundel County for the years 2000 and 2010. In terms of employment, the largest industry in Anne Arundel County in 2010 was the Educational, Health, and Social Services industry, which employed 50,777 people (18.7 percent of industry employment). Other large industries, in terms of employment, in 2010, included the Professional, Scientific, Management, Administrative, and Waste Management Services industry (14.3 percent of employment) and Public Administration (13 percent of industry employment). The fastest growing industries in Anne Arundel County, in terms of employment, from 2000 to 2010, include the Professional, Scientific, Management, Administrative, and Waste Management Services industry (27.9 percent increase in employment from 2000 to 2010), the Agriculture, Forestry, Fishing, Hunting, and Mining industry (25.2 percent increase), and the Educational, Health, and Social Services industry (35 percent increase). From 2000 to 2010, overall industry employment in Anne Arundel County increased by 7.8 percent.

Table 4-11: Employment by Industry, 2000 and 2010

Industry	2000 Employment	2000 Employment (%)	2010 Employment	2010 Employment (%)	Growth Rate 2000 to 2010 (%)
Agriculture, forestry, fishing, hunting, and mining	575	0.2	720	0.3	25.2
Construction	20,383	8.1	22,157	8.2	8.7
Manufacturing	18,283	7.3	14,884	5.5	-18.6
Wholesale trade	9,403	3.8	8,698	3.2	-7.5
Retail trade	29,295	11.7	28,369	10.5	-3.2
Transportation, warehousing, and utilities	14,251	5.7	12,900	4.8	-9.5
Information	8,906	3.6	6,488	2.4	-27.2
Finance, insurance, real estate, rental, and leasing	16,138	6.4	17,664	6.5	9.5
Professional, scientific, management, administrative, and waste management services	30,234	12.1	38,684	14.3	27.9
Educational, health, and social services	42,716	17.1	50,777	18.8	18.9
Arts, entertainment, recreation, accommodation, and food services	16,468	6.6	18,336	6.8	11.3
Other services (except public administration)	13,929	5.6	14,879	5.5	6.8
Public administration	29,673	11.9	35,161	13.0	18.5
Total Industry Employment	**250,254**		**269,717**		**7.8**

Sources: Census 2000, 2010b.

Table 4-12 provides data on average annual salary for Anne Arundel County, the State of Maryland, and the Nation overall for 2001 and 2010. Average annual pay in Anne Arundel County, in 2011, was $51,215; average annual pay in Anne Arundel County was lower than the

Maryland average ($53,004), but greater than the National average ($45,230). From 2001 to 2010, average annual pay in Anne Arundel County increased 38 percent, a slower rate of increase than Maryland (39 percent increase) but more quickly than the Nation overall (25 percent increase).

Table 4-12: Average Annual Pay[1], 2001-2011			
Area	**2001**	**2011**	**Change (%)**
Anne Arundel County	$37,190	$51,215	37.7
Maryland	$38,253	$53,004	38.6
United States	$36,219	$45,230	24.9

Source: BLS 2012b, BLS 2012c (for USA)
Note[1]: Average annual pay for all employees covered by unemployment insurance.

4.14.1.4 Environmental Justice

Figure 4-10, Appendix A, shows low-income population areas in Anne Arundel County, near the proposed project site. The figure identifies one low-income population area (identified as area 240037508032) where 20 percent or more of the population live below the poverty line. Area 240037508032 had 258 residents, 73 of which lived below the poverty line in 2010 (Census 2010b).

Figure 4-11, Appendix A, shows minority population areas (Census Block Groups with populations that are 50 or more percent minority) in Anne Arundel County, near the proposed project site. Table 4-13 lists the areas. There are 20 minority population areas in Anne Arundel County near the project site. The minority population area that exists within the boundaries of Fort Meade (area number 240037406031), as of 2010, was populated by a total of 16 people, nine of whom are considered minorities.

Table 4-13: Minority Population Areas in Anne Arundel County Near the Proposed Project Site				
Geographic ID	**Block Group Description**	**Total Population**	**Minority Population**	**Percentage Minority (%)**
240037305051	Block Group 1, Census Tract 7305.05	2,922	1,535	52.5
240037401023	Block Group 3, Census Tract 7401.02	3,701	2,423	65.5
240037401034	Block Group 4, Census Tract 7401.03	1,779	1,184	66.6
240037401041	Block Group 1, Census Tract 7401.04	2,837	1,553	54.7
240037401042	Block Group 2, Census Tract 7401.04	2,025	1,080	53.3
240037401043	Block Group 3, Census Tract 7401.04	2,455	2,125	86.6
240037401051	Block Group 1, Census Tract 7401.05	2,725	2,279	83.6
240037401052	Block Group 2, Census Tract 7401.05	463	396	85.5
240037402012	Block Group 2, Census Tract 7402.01	2,239	1,361	60.8
240037402013	Block Group 3, Census Tract 7402.01	1,704	863	50.6
240037403052	Block Group 2, Census Tract 7403.05	4,454	3,135	70.4
240037403053	Block Group 3, Census Tract 7403.05	2,052	1,688	82.3

Table 4-13: Minority Population Areas in Anne Arundel County Near the Proposed Project Site				
Geographic ID	**Block Group Description**	**Total Population**	**Minority Population**	**Percentage Minority (%)**
240037403054	Block Group 4, Census Tract 7403.05	2,022	1,441	71.3
240037404001	Block Group 1, Census Tract 7404	5,081	3,946	77.7
240037405001	Block Group 1, Census Tract 7405	4,189	2,747	65.6
240037405002	Block Group 2, Census Tract 7405	1,768	1,378	77.9
240037405003	Block Group 3, Census Tract 7405	2,989	1,826	61.1
240037406031	Block Group 1, Census Tract 7406.03	16	9	56.3
240037502012	Block Group 2, Census Tract 7502.01	1,786	1,061	59.4
240037515001	Block Group 1, Census Tract 7515	1,686	1,090	64.7

Source: Census 2010a

4.14.2 Fort Gordon

4.14.2.1 Population Trends

Table 4-14 shows population in Richmond County, Jefferson County, McDuffie County, Columbia County, the State of Georgia, and the United States from 1990 to 2010. Richmond County and McDuffie County have had slow, moderate growth over the last few decades, while Jefferson County has continued to decline in population. Columbia County has experienced significant growth over the last few decades, far exceeding the growth in the State and Nation overall.

Table 4-14: Population, 1990-2010						
Area	**1990**	**2000**	**2010**	**Change 1990 to 2000 (%)**	**% Change 2000 to 2010 (%)**	**Change 1990 to 2010 (%)**
Richmond County	189,719	199,775	200,549	5.30	0.39	5.71
Jefferson County	17,408	17,266	16,930	-0.81	-1.94	-2.74
McDuffie County	20,119	21,231	21,875	5.52	3.03	8.72
Columbia County	66,031	89,288	124,053	35.22	38.93	87.87
Georgia	6,478,216	8,186,453	9,687,653	26.37	18.34	49.54
United States	248,709,873	281,421,906	308,745,538	13.2	9.7	24.1

Sources: Census 1990; Census 2000; Census 2010a

4.14.2.2 Demographics

Table 4-15 shows the demographic profile of Richmond County, Jefferson County, McDuffie County, and Columbia County as well as Georgia and the United States in 2010. The majority of the population of Richmond County and Jefferson County was Black or African American, while McDuffie County and Columbia County were primarily White.

Table 4-15: Race, Alone or in Combination[1], 2010						
Area	**White (%)**	**Black or African American (%)**	**Asian (%)**	**Hispanic or Latino (%)**	**American Indian or Alaska Native (%)**	**Native Hawaiian or Other Pacific Islander (%)**
Richmond County	41.7	55.8	2.3	1.5	1.0	0.3
Jefferson County	42.6	54.4	0.4	3.1	0.1	0.0
McDuffie County	57.2	39.8	0.3	2.2	0.3	0.1
Columbia County	76.5	14.9	3.8	5.0	0.3	0.2
Georgia	60.4	30.9	6.4	3.8	1.0	0.2
United States	74.8	6.7	5.6	13.6	1.7	0.4

Source: Census 2010a
Note[1]: Respondents were able to identify themselves as one or more races so percentage totals may exceed 100 percent.

Table 4-16 presents data on educational attainment for Richmond County, Jefferson County, McDuffie County, Columbia County, the State of Georgia, and the Nation overall, as of 2010. In Columbia County, the highest percentage of the population had obtained a Bachelor's degree or advanced degree, above that of Georgia or the Nation overall.

Table 4-16: Educational Attainment[1], 2010						
Level of Education	**Richmond County (%)**	**Jefferson County (%)**	**McDuffie County (%)**	**Columbia County (%)**	**Georgia (%)**	**United States (%)**
Did not complete high school	18	17	26	9	17	15
High school or equivalent, no college	31	43	34	26	30	29
Some college or Associate degree	31	20	24	30	27	28
Bachelor's degree or advanced degree	20	9	15	34	27	28

Source: Census 2010b
Note[1]: Educational attainment for individuals aged 25 or older.

Table 4-17 provides Household characteristics data for Richmond County, Jefferson County, McDuffie County, Columbia County, the State of Georgia, and the Nation overall. The average household size in each county ranged from 2.5 to 2.8 persons, similar to Georgia and the Nation overall. Richmond County, Jefferson County and McDuffie County all had a lower median household income and a lower income per household member than Georgia and the Nation overall, while Columbia County had a higher median household income and income per household member than Georgia and the Nation overall. McDuffie County has a higher percentage of households below poverty level (23.9 percent), while Columbia County has a relatively low percentage of households below poverty level (6.5 percent).

Table 4-17: Household Characteristics								
Area	**Population in HH's[1]**	**Total Households**	**Avg. HH Size**	**% Family HH's**	**Median HH Income**	**Income Per HH Member**	**HH's Below Poverty Level**	**% HH's Below Poverty Level**
Richmond County	185,894	74,199	2.5	63.0	$37,882	$15,153	15,053	20.3
Jefferson County	16,213	6,227	2.6	69.3	$29,178	$11,222	n/a	n/a
McDuffie County	21,380	8,292	2.6	71.8	$36,841	$14,279	1,990	23.9
Columbia County	120,658	43,070	2.8	78.9	$66,556	$23,770	2,808	6.5
Georgia	9,214,377	3,468,704	2.7	68.4	$49,347	$18,277	566,653	16.3
United States	295,968,252	114,235,996	2.6	66.8	$51,914	$20,044	14,865,322	13.0

Source: Census 2010b

Note[1]: By definition, population in households consists of the resident population excluding people living in group quarters (i.e.9 or more people living together who are unrelated to the householder).

4.14.2.3 Employment and Income

Table 4-18 provides labor force statistics for Richmond County, Jefferson County, McDuffie County, Columbia County, the State of Georgia, and the Nation overall. In 2010, the unemployment rates in Richmond County and Jefferson County were higher than that in Georgia or the Nation overall. McDuffie County and Columbia County had much lower unemployment rates than Georgia and the Nation overall.

Table 4-18: Labor Force, Employment and Unemployment, 2010				
Area	**Labor Force**	**Employed**	**Unemployed**	**Unemployment rate (%)**
Richmond County	87,505	78,036	9,469	10.8
Jefferson County	6,906	5,914	973	14.1
McDuffie County	9,697	8,812	860	8.9
Columbia County	61,939	56,114	3,813	6.4
Georgia	4,694,930	4,213,875	481,055	10.2
United States	153,889,000	139,064,000	14,825,000	9.6

Source: BLS 2012a

Table 4-19 shows data on employment by industry in Richmond County, Jefferson County, McDuffie County, and Columbia County for 2010. In terms of employment, the largest industry in all counties in 2010 was the Educational, Health, and Social Services industry, which employed 20 to 25 percent of the people in each county. Other large industries, in terms of employment, in 2010, included the Retail Trade industry and the Manufacturing industry.

Table 4-19: Employment by Industry, 2010				
Industry	**Richmond County (%)**	**Jefferson County (%)**	**McDuffie County (%)**	**Columbia County (%)**
Agriculture, forestry, fishing, hunting, and mining	0.2	5.9	2.8	0.8
Construction	5.8	6.0	9.5	6.8
Manufacturing	11.2	17.9	16.0	10.8
Wholesale trade	2.2	2.9	4.1	2.1
Retail trade	12.5	10.9	12.0	10.7
Transportation, warehousing, and utilities	5.1	3.6	4.4	5.0
Information	2.1	1.4	0.9	2.3
Finance, insurance, real estate, rental, and leasing	4.0	3.2	4.2	5.6
Professional, scientific, management, administrative, and waste management services	9.4	4.5	9.8	10.5
Educational, health, and social services	25.5	25.1	20.3	24.1
Arts, entertainment, recreation, accommodation, and food services	10.5	6.6	8.9	8.3
Other services (except public administration)	4.9	3.0	2.2	5.9
Public administration	6.5	9.1	4.9	7.1

Sources: Census 2000, 2010b.

Table 4-20 provides data on average annual salary for Richmond County, Jefferson County, McDuffie County, Columbia, the State of Georgia, and the Nation overall for 2001 and 2011. Average annual pay in Richmond County increased at a faster pace than the other counties, Georgia and the Nation overall, increasing 37 percent. Jefferson County, McDuffie County, and Columbia County all increased at a slower pace than Georgia, but in relatively in line with the Nation overall.

Table 4-20: Average Annual Pay[1], 2001-2011			
Area	**2001**	**2011**	**Change (%)**
Richmond County	$29,431	$40,438	37.4
Jefferson County	$25,326	$31,677	25.1
McDuffie County	$24,108	$29,897	24.0
Columbia County	$26,020	$32,770	25.9
Georgia	$35,136	$45,093	28.3
USA	$36,219	$45,230	24.9

Source: BLS 2012b, BLS 2012c (USA)
Note[1]: Average annual pay for all employees covered by unemployment insurance.

4.14.2.4 Environmental Justice

Figure 4-12, Appendix A, shows low-income population areas in Richmond County near the project site. Direct, environmental impacts related to construction activity would occur in Richmond County, therefore, only those low-income populations near the proposed site are included. Table 4-21 lists the low-income population areas presented in that Figure. There are nine low-income population areas in Richmond County near the proposed project site. The geographic area with the highest percentage of low-income individuals (area number 132450105042) had a total population of 747, as of 2010, 420 of whom were living below the poverty line.

Table 4-21: Low-income Population Areas in Richmond County Near the proposed Project Site

Geographic ID	Block Group Description	Total Population	Population with Income Below Poverty Line	Percentage Below Poverty Line
132450105042	Block Group 2, Census Tract 105.04	747	420	56.2
132450105123	Block Group 3, Census Tract 105.12	439	137	31.2
132450107081	Block Group 1, Census Tract 107.08	455	126	27.7
132450107082	Block Group 2, Census Tract 107.08	538	114	21.2
132450107083	Block Group 3, Census Tract 107.08	601	141	23.5
132450107101	Block Group 1, Census Tract 107.10	397	98	24.7
132450107112	Block Group 2, Census Tract 107.11	423	157	37.1
132450108004	Block Group 4, Census Tract 108	191	45	23.6
132450109042	Block Group 2, Census Tract 109.04	653	198	30.3

Source: Census 2010b

Figure 4-13, Appendix A, shows minority population areas in Richmond County, near the proposed project site. Table 4-22 lists the low-income population areas presented in that Figure. There are 19 minority population areas in Richmond County near the project site. The minority population areas listed in Table 4-22 sit to the north and east of the proposed project site.

Table 4-22: Minority population Areas in Richmond County Near the Proposed Project Site

Geographic ID	Block Group Description	Total Population	Minority Population	Percentage Minority
132450102041	Block Group 1, Census Tract 102.04	5,023	3,644	72.5
132450102044	Block Group 4, Census Tract 102.04	2,639	1,331	50.4
132450105042	Block Group 2, Census Tract 105.04	2,875	2,796	97.3
132450105043	Block Group 3, Census Tract 105.04	1,190	1,121	94.2
132450105044	Block Group 4, Census Tract 105.04	1,409	942	66.9
132450105121	Block Group 1, Census Tract 105.12	1,752	1,525	87.0
132450105122	Block Group 2, Census Tract 105.12	2,495	2,365	94.8
132450105123	Block Group 3, Census Tract 105.12	1,743	1,609	92.3
132450107071	Block Group 1, Census Tract 107.07	1,963	1,724	87.8
132450107072	Block Group 2, Census Tract 107.07	746	599	80.3
132450107081	Block Group 1, Census Tract 107.08	1,894	1,643	86.7
132450107082	Block Group 2, Census Tract 107.08	1,748	1,621	92.7
132450107083	Block Group 3, Census Tract 107.08	2,187	1,904	87.1

Table 4-22: Minority population Areas in Richmond County Near the Proposed Project Site				
Geographic ID	**Block Group Description**	**Total Population**	**Minority Population**	**Percentage Minority**
132450107101	Block Group 1, Census Tract 107.10	1,874	1,377	73.5
132450107111	Block Group 1, Census Tract 107.11	1,878	1,167	62.1
132450107112	Block Group 2, Census Tract 107.11	1,858	1,510	81.3
132450107121	Block Group 1, Census Tract 107.12	2,386	1,966	82.4
132450107122	Block Group 2, Census Tract 107.12	2,773	2,336	84.2
132450107123	Block Group 3, Census Tract 107.12	2,025	1,989	98.2

Source: Census 2010a

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5.0 ENVIRONMENTAL CONSEQUENCES

This section identifies and evaluates the anticipated environmental impacts associated with implementing the seven proposed action alternatives, as well as the No Action alternative. To reiterate, the seven action alternatives are summarized as follows:

- Alternative A: Construct a new 179,056-SF facility at Fort Meade within an approximately 18-acre site at the northwest corner of Mapes Road and Taylor Avenue.

- Alternative B: Construct a new facility within approximately 18 acres of the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff.

- Alternative C: Construct a new 179,056-SF facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street.

- Alternative D: Renovate several buildings within Back Hall Campus between 22nd Street to 25th Street and Chamberlain Avenue to Barnes Avenue and construct an additional 47,000-SF facility. Approximately 37 acres are contained within this area.

- Alternative E: Construct a wing on Whitelaw Hall for the entire ARCYBER Command as part of the planned Whitelaw Hall Phase 2 development. This alternative would impact approximately 6 acres.

- Alternative F: Construct a new 179,056-SF facility on Kilbourne Street to house the entire ARCYBER Command. Parking and access would also be provided at this approximately 36-acre location.

- Alternative G: Construct a new 179,056-SF facility on 19th Street to house the entire ARCYBER Command. Parking and access would also be provided at this approximately 34-acre location.

Under the No Action alternative, ARCYBER would not establish or operate a centralized Command and Control Facility.

The method used for evaluating the overall importance of impacts is based on the following four fundamental criteria:

1. Nature (beneficial or adverse, and direct or indirect);
2. Duration (temporary or permanent);
3. Areal extent (regional, local, or isolated); and
4. Intensity (low, moderate, or high).

Nature of Impact. The nature of the impact can be described as positive (beneficial) or negative (adverse). Positive impacts enhance the quality or access to a resource, while negative impacts degrade the quality or limit access the resource. Impacts are also described as direct or indirect. A direct impact is as an immediate result of an activity. An indirect impact arises from a project activity at the secondary level.

Duration of Impact. The duration of an impact can be temporary or permanent.

Areal Extent of Impact. The areal extent of an impact refers to its area of influence and can be regional, local, or isolated to a particularly small and well defined area. An impact of regional extent exerts an influence far beyond the surroundings of the project area. The local area of influence refers to the communities located near Fort Meade or Fort Gordon that could be affected by the project. An isolated impact is limited in extent to a small, readily defined area.

Intensity of Impact. The intensity of an impact concerns the scale or size of the impact on a resource. Intensity is evaluated as negligible, minor, moderate, or significant. A description of each measure of intensity is as follows:

- *Negligible.* This term indicates that the environmental impact is barely perceptible or measurable, remains confined to a single location, and will not result in a sustained recovery time for the resource impacted (days to months).
- *Minor.* This term indicates that the environmental impact is readily perceptible and measurable; however, the impact will be temporary and the resource should recover in a relatively short period of time.
- *Moderate.* This term indicates that the environmental impact is perceptible and measurable, and may not remain localized, impacting areas adjacent to the proposed action. Under the impact, recovery of the resource may require several years or decades.
- *Significant.* This term indicates significant impacts would occur. Under a significant impact, a resource may not recover and mitigation measures are considered to minimize the impact.

This section is organized by resource area following the same sequence as in the preceding Section 4.0. However, this section also includes a discussion of other environmental effects, including cumulative impacts and irretrievable commitment of resources.

5.1 LAND USE

Factors considered in evaluating land use impacts include the potential for the Proposed Action to be incompatible with surrounding land uses; result in a change of land use that would degrade mission-essential activities; or be inconsistent or in conflict with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the affected area.

5.1.1 Alternative A

Implementation of Alternative A is not expected to significantly impact land use surrounding Fort Meade. Some minor long-term growth or change in existing land use in the Fort Meade vicinity would be expected. While the action would bring approximately 1,300 more workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative A would not result in any changes to land use, as the project would occur within areas already designated as Professional/Institutional. In addition, all construction would occur within the Installation boundaries. Such changes are not expected to degrade the mission-essential activities supporting Fort Meade. In addition, Alternative A would not introduce incompatibilities with adjacent land use areas. Therefore, implementation of Alternative A would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. No significant long-term impacts to land use would occur from implementation of Alternative A.

5.1.2 Alternative B

Implementation of Alternative B is not expected to significantly impact land use surrounding Fort Meade. Some minor long-term growth or change in existing land use in the Fort Meade vicinity would be expected. While the action would bring approximately 1,300 more workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative B would not result in any changes to existing land use, as the proposed new construction project would occur within areas already designated as Professional/Institutional. The use of Building 8605, although in a designated Troop area, would not change from its existing use. In addition, all construction would occur within the Installation boundaries. Such changes are not expected to degrade the mission-essential activities supporting Fort Meade. Alternative B would not introduce incompatibilities with adjacent land use areas. Therefore, implementation of Alternative B would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. No significant long-term impacts to land use would occur from implementation of Alternative B.

5.1.3 Alternative C

Implementation of Alternative C is not expected to significantly impact land use surrounding Fort Gordon. Some minor long-term growth or change in existing land use in the Fort Gordon vicinity would be expected. While the action would bring approximately 1,500 workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. This alternative would occur within the cantonment area within Fort Gordon. The area proposed by this alternative has been identified by Fort Gordon as buildable space in the Real Property Master Plan. Therefore, implementation of Alternative C would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. No significant long-term impacts to land use would occur as a result of this alternative.

5.1.4 Alternative D

Implementation of Alternative D is not expected to significantly impact land use surrounding Fort Gordon. Some minor long-term growth or change in existing land use in the Fort Gordon vicinity would be expected. While the action would bring approximately 1,500 workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative D would not result in any changes to land use at Fort Gordon, as the project would occur within a previously developed area and would remain consistent with existing land use. In addition, all construction would occur within the Installation boundaries and the alternative would not introduce incompatibilities with adjacent land use areas. Therefore, implementation of Alternative D would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. No significant long-term impacts to land use would occur from implementation of Alternative D.

5.1.5 Alternative E

Implementation of Alternative E is not expected to significantly impact land use surrounding Fort Gordon. Some minor long-term growth or change in existing land use in the Fort Gordon vicinity would be expected. While the action would bring approximately 1,500 workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

This alternative would occur within the cantonment area within Fort Gordon. The area proposed by this alternative has been identified by Fort Gordon as buildable space in the Real Property Master Plan. Therefore, implementation of Alternative E would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. No long-term impacts would be expected.

5.1.6 Alternative F

Implementation of Alternative F is not expected to significantly impact land use surrounding Fort Gordon. Some minor long-term growth or change in existing land use in the Fort Gordon vicinity would be expected. While the action would bring approximately 1,500 workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

This alternative would occur within the cantonment area within Fort Gordon. The area proposed by this alternative has been identified by Fort Gordon as buildable space in the Real Property Master Plan. Therefore, implementation of Alternative F would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. No long-term impacts would be expected.

5.1.7 Alternative G

Implementation of Alternative G is not expected to significantly impact land use surrounding Fort Gordon. Some minor long-term growth or change in existing land use in the Fort Gordon vicinity would be expected. While the action would bring approximately 1,500 workers to the installation, the nearby communities are capable of providing the housing and support for the increase in personnel.

This alternative would occur within the cantonment area within Fort Gordon. The area proposed by this alternative has been identified by Fort Gordon as buildable space in the Real Property Master Plan. Therefore, implementation of Alternative G would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. Short-term minor adverse impacts on land use would be expected due to the presence of construction vehicles and disturbances related to construction activities. No long-term impacts would be expected.

5.1.8 No Action

Implementation of the No Action alternative would not alter the existing land use on either installation.

5.2 VISUAL RESOURCES AND AESTHETICS

Visual resources include the natural and manmade physical features that give a particular landscape its aesthetic character and value. An impact would be considered significant if changes to the physical features diminish the aesthetic character and value of the landscape or public viewing opportunities are eliminated.

5.2.1 Alternative A

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative A would change the visual characteristics of the Installation primarily as a result of construction of the new facility and parking area. However, the new construction would be designed to incorporate existing trees and vegetated areas where possible. Views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Meade. Moreover, Fort Meade is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative A would be minor.

5.2.2 Alternative B

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative B would change the visual characteristics of the Installation primarily as a result of construction of a new building and associated parking areas; no change is visual characteristic would occur with interior renovations of Building 8605. However, the new construction would be designed to incorporate existing trees and vegetated areas where possible. Views of the

Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Meade. Moreover, Fort Meade is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative B would be minor.

5.2.3 Alternative C

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative C would change the visual characteristics of the Installation primarily as a result of construction. However, the new construction would be designed to incorporate existing trees and vegetated areas where possible. Views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Gordon. Moreover, Fort Gordon is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative C would be minor.

5.2.4 Alternative D

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Only minor long-term impacts to the aesthetics and visual resources would result from implementation of Alternative D as implementation of this alternative would require renovation of buildings as well as additional construction within a previously developed area.

5.2.5 Alternative E

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative E focuses on constructing a wing to an existing building. Construction would require the contractor to match the exterior visual appearance of Whitelaw Hall. In addition, views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Gordon. Moreover, Fort Gordon is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative E would be minor.

5.2.6 Alternative F

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative F would change the visual characteristics of the Installation primarily as a result of construction. However, the new construction would be designed to incorporate existing trees and vegetated areas where possible. Views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Gordon. Moreover, Fort Gordon is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative F would be minor.

5.2.7 Alternative G

Short-term minor adverse impacts on visual aesthetics would be expected due to the presence of construction vehicles and disturbances related to construction activities. Implementation of Alternative G would change the visual characteristics of the Installation primarily as a result of construction. However, the new construction would be designed to incorporate existing trees and vegetated areas where possible. Views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation. These viewers are cognizant of the missions that occur at and near Fort Gordon. Moreover, Fort Gordon is not located within any sensitive viewsheds. Therefore, long-term impacts to visual resources from implementation of Alternative G would be minor.

5.2.8 No Action

Implementation of the No Action alternative would not alter the existing visual or aesthetics values at the installations.

5.3 AIR QUALITY

Emission thresholds associated with federal CAA conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of a Proposed Action under NEPA. A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. Significant air quality impacts would occur if implementation of an action alternative would directly or indirectly:

- Expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- Cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as CAA conformity *de minimis* levels or the numerical values of major source thresholds for nonattainment pollutants); or,
- Conflict with adopted air quality management plan policies or programs.

Federal, state, and local air pollution standards and regulations set the criteria for determining the significance of air quality impacts. Impacts would also be potentially significant if estimated emissions would exceed the thresholds that trigger a conformity determination under Section 176(c) of the CAA of 1990.

5.3.1 Alternative A

Under Alternative A, potential air quality impacts from proposed construction activities would occur from: 1) clearance combustion emissions due to the use of fossil fuel-powered equipment and vehicles, and 2) PM_{10} emissions during earth-moving activities. Construction vehicles used would consist of a mixture of graders/dozers, loaders, trucks, backhoes, water trucks, and other vehicles and equipment typically associated with road and building construction activities.

Appendix E contains a list of estimated equipment required for construction, estimates of workforce requirements, along with the emission calculations for all construction activities under Alternative A.

Annual emissions resulting from project activities have been estimated using data presented in Chapter 3, general air quality assumptions, and emission factors published in USEPA AP-42 for heavy construction equipment and gasoline and diesel powered engines (USEPA, 2009b).

With the projected growth of the Command, the Command and Control Facility would be capable of supporting a workforce of approximately 1,500 personnel. Approximately 200 personnel are already located at the installation in other facilities; therefore, this air quality analysis estimates vehicle emissions of 1,300 additional personnel to the installation. Table 5-1 presents the estimated construction emissions due to implementation of Alternative A. Estimated annual emissions would be below the *de minimis* levels for CAA conformity; therefore, a formal conformity determination under Section 176(c) of the CAA would not be required. The U.S. Army has prepared a Record of Non-Applicability (RONA) for CAA conformity (refer to Appendix E of this EA). The proposed emissions are from construction and vehicle emissions associated with the additional personnel, these are mobile source emissions and are not regulated the same as the installation's permitted emissions (boilers, gas tanks, etc.). Even so, the proposed emissions are so small there would be no appreciable increase in emissions at the installation. The total annual air emissions at the installation would not exceed the existing regulatory threshold (synthetic minor permit or GHG permit thresholds).

The operations within the proposed facilities would require multiple megawatts of backup generator power in order to maintain the operations in the event of a significant power loss in addition to standard life safety generators. The type of generators and the total number of generators needed would be dependent on a number of factors that are not finalized at this time to include the design of the facilities, number of personnel in each facility, and the operations that would require backup power. Operating the emergency generators would contribute air emissions (CO, VOCs, and NO_x), however, these emissions would be temporary, localized, and would not contribute substantial emissions. AR Cyber would coordinate and obtain the appropriate permit with regulators and the host command once this level of detail is known.

Table 5-1: Estimated Construction and Operational Emissions at Fort Meade, Maryland

Estimated Emissions	Emissions (tons)					
	CO^2	$VOCs^1$	$NO_x{}^1$	$SO_x{}^2$	$PM_{10}{}^2$	$PM_{2.5}{}^1$
Alternative A Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18
Annual Operational Emissions: 1,300 additional personnel (tons/year)	36.89	2.01	3.38	0.05	0.39	0.21
de minimis/New Source Review threshold	250	50	100	250	250	100
Exceeds *de minimis* threshold?	No	No	No	No	No	No

Note: [1] The ROI is a nonattainment area for the 8-hour O_3 NAAQS (VOCs and NO_x are precursors to the formation of O_3), and is in nonattainment of the $PM_{2.5}$ NAAQS. *de minimis* thresholds are defined in 40 CFR 93 Section 153. VOC *de minimis* established for nonattainment areas located in an O_3 transport area.

[2] *de minimis* thresholds are not applicable to NAAQS attainment areas. New Source Review thresholds are 250 tons per year of any pollutant.

Sources: USEPA, 2012b.

Fugitive dust generated from construction activities and vehicle travel on unpaved areas would temporarily affect local air quality. However, no long-term increases in fugitive dust would occur. Particulate matter emissions would be moderated through dust reduction measures (e.g., watering of exposed soils), thereby minimizing the total quantity of fugitive dust emitted during construction activities. In addition, project construction equipment would emit minor amounts of hazardous air pollutants (HAPs) that could potentially impact public health. The main sources of HAPs would occur from the combustion of diesel fuel. Construction would be temporary and minor and HAPs emissions could be further moderated through implementation of BMPs such as restricting excessive idling, adherence to equipment maintenance programs, use of particulate filters, and use of ultra-low sulfur diesel fuel if applicable.

Greenhouse Gas Emissions

Table 5-2 summarizes the annual GHG emissions associated with the Alternative A. Appendix E presents an estimate of GHG emissions generated by Alternative A. Emissions would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area. In addition, potential effects of GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change.

Table 5-2: Estimated GHG Emissions at Fort Meade, Maryland

Scenario/Activity	Metric Tons per Year[1]			
	CO_2	CH_4	N_2O	CO_2e
Alternative A Construction Emissions	303.37	0.03	0.27	387
Annual Operational Emissions: 1,300 additional personnel (metric tons/year)	4,120.28	0.29	0.29	4,217
Draft NEPA Threshold [2]				25,000

Notes: [1]$CO_2e = (CO_2 * 1) + (CH4 * 21) + (N2O * 310)$
Source: [2]CEQ, 2010.

5.3.2 Alternative B

Construction and operation (work force) emissions for this campus were previously evaluated in the East Campus EIS at Fort Meade, Maryland. Under Alternative B, two buildings within this campus would be used for the Command. No significant impacts were determined (NSA, 2010).

5.3.3 Alternative C

Potential air quality impacts from proposed construction activities would occur from: 1) clearance combustion emissions due to the use of fossil fuel-powered equipment and vehicles, and 2) PM_{10} emissions during earth-moving activities. Construction vehicles used would consist of a mixture of graders/dozers, loaders, trucks, backhoes, water trucks, and other vehicles and equipment typically associated with road and building construction activities. Appendix E contains a list of estimated equipment required for construction, estimates of workforce requirements, along with the emission calculations for all construction activities under each alternative.

Emissions resulting from project activities have been estimated using data presented in Chapter 3, general air quality assumptions, and emission factors published in USEPA AP-42 for heavy construction equipment and gasoline and diesel powered engines (USEPA, 2009b).

The operations within the proposed facilities would require multiple megawatts of backup generator power in order to maintain the operations in the event of a significant power loss in addition to standard life safety generators. The type of generators and the total number of generators needed would be dependent on a number of factors that are not finalized at this time to include the design of the facilities, number of personnel in each facility, and the operations that would require backup power. Operating the emergency generators would contribute air emissions (CO, VOCs, and NO_x), however, these emissions would be temporary, localized, and would not contribute substantial emissions. AR Cyber would coordinate and obtain the appropriate permit with regulators and the host command once this level of detail is known.

Emissions of pollutants for which an area is in attainment are exempt from conformity analyses and *de minimis* levels for CAA conformity do not apply. Since the ROI is in attainment for all criteria pollutants, a formal conformity determination under Section 176(c) of the CAA, or a RONA for CAA conformity would not be required. However, emissions have been estimated for Alternative C at Fort Gordon and are compared with NSR thresholds for planning purposes (Table 5-3). As shown in Table 5-3, estimated annual emissions from the implementation of Alternative C would be below the NSR thresholds. Therefore, while implementation of Alternative C would result in air emissions, the emissions would be minor and would not result in significant impacts to air quality.

Table 5-3: Estimated Construction and Operational Emissions at Fort Gordon, Georgia

Estimated Emissions	Emissions (tons)					
	CO	VOCs	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Alternative C Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18
Alternative D Construction Emissions	1.34	0.32	2.61	0.00	0.23	0.15
Alternative E Construction Emissions	0.90	0.21	1.74	0.00	0.15	0.10
Alternative F Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18
Alternative G Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18
Annual Operational Emissions: 1,500 additional personnel (tons/year)	42.56	2.32	3.90	0.05	0.45	0.24
de minimis/New Source Review threshold[1]	250	250	250	250	250	250
Exceeds New Source Review threshold?	No	No	No	No	No	No

Note: [1]The ROI is in attainment of all criteria pollutants. *de minimis* thresholds are not applicable to NAAQS attainment areas. New Source Review thresholds are 250 tons per year of any pollutant.
Sources: USEPA, 2012b.

Fugitive dust generated from construction activities and vehicle travel on unpaved areas would temporarily affect local air quality. However, no long-term increases in fugitive dust would occur. Particulate matter emissions would be moderated through dust reduction measures (e.g., watering of exposed soils), thereby minimizing the total quantity of fugitive dust emitted during construction activities. In addition, project construction equipment would emit minor amounts of HAPs that could potentially impact public health. The main sources of HAPs would occur from the combustion of diesel fuel. Construction would be temporary and minor and HAPs emissions could be further moderated through implementation of BMPs such as restricting excessive idling, adherence to equipment maintenance programs, use of particulate filters, and use of ultra-low sulfur diesel fuel if applicable.

Greenhouse Gas Emissions

Table 5-4 summarizes the annual GHG emissions associated with Alternative C. Appendix E presents an estimate of GHG emissions generated by the project alternatives. Emissions under Alternative C would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area. In addition, potential effects of GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change.

Table 5-4: Estimated GHG Emissions at Fort Gordon, Georgia

Scenario/Activity	Metric Tons per Year [1]			
	CO_2	CH_4	N_2O	CO_2e
Alternative C Construction Emissions	303.37	0.03	0.27	387
Alternative D Construction Emissions	254.83	0.03	0.22	325
Alternative E Construction Emissions	169.89	0.02	0.15	217
Alternative F Construction Emissions	303.37	0.03	0.27	387
Alternative G Construction Emissions	303.37	0.03	0.27	387
Annual Operational Emissions: 1,500 additional personnel (metric tons/year)	4,754.17	0.33	0.34	4,865
Draft NEPA Threshold [2]				25,000

Notes: [1] $CO_2e = (CO_2 * 1) + (CH4* 21) + (N2O * 310)$
Source: [2] CEQ, 2010.

5.3.4 Alternative D

As shown in Table 5-3, estimated annual emissions from the implementation of Alternative D would be below the NSR thresholds. Therefore, while implementation of Alternative D would result in air emissions, the emissions would be minor and would not result in significant impacts to air quality. Table 5-4 summarizes the annual GHG emissions associated with Alternative D. Appendix E presents an estimate of GHG emissions generated by the project alternatives. Emissions under Alternative D would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area.

5.3.5 Alternative E

As shown in Table 5-3, estimated annual emissions from the implementation of Alternative E would be below the NSR thresholds. Therefore, while implementation of Alternative E would result in air emissions, the emissions would be minor and would not result in significant impacts to air quality. Table 5-4 summarizes the annual GHG emissions associated with Alternative E. Appendix E presents an estimate of GHG emissions generated by the project alternatives. Emissions under Alternative E would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area.

5.3.6 Alternative F

As shown in Table 5-3, estimated annual emissions from the implementation of Alternative F would be below the NSR thresholds. Therefore, while implementation of Alternative F would result in air emissions, the emissions would be minor and would not result in significant impacts to air quality. Table 5-4 summarizes the annual GHG emissions associated with Alternative F. Appendix E presents an estimate of GHG emissions generated by the project alternatives. Emissions under Alternative F would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area.

5.3.7 Alternative G

As shown in Table 5-3, estimated annual emissions from the implementation of Alternative G would be below the NSR thresholds. Therefore, while implementation of Alternative G would result in air emissions, the emissions would be minor and would not result in significant impacts to air quality. Table 5-4 summarizes the annual GHG emissions associated with Alternative G. Appendix E presents an estimate of GHG emissions generated by the project alternatives. Emissions under Alternative G would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area.

5.3.8 No Action

Under the No-Action Alternative, the proposed ARCYBER Command and Control Facility would not be constructed and existing conditions at Fort Meade and Fort Gordon would remain unchanged. Therefore, no significant impacts to air quality would occur.

5.4 NOISE

Impacts to noise would be considered significant if it is determined the noise would rise to such a level to be incompatible with adjacent noise receptors or increase the number of people annoyed by the heightened noise levels both on- and off-Post. The USEPA categorizes construction noise as an intermittent noise source (USEPA, 1973).

Noise from construction activities varies with the types of equipment used and the duration of use. Stationary sources of construction equipment include pumps, generators, and compressors; these sources are considered nonimpact-type noises. Stationary sources of construction equipment considered impact-type noises include pile drivers, jackhammers, pavement breakers, and blasting operations. Mobile sources include dozers, scrapers, graders, etc. Table 5-5 provides a representation of construction noise levels associated new construction. Commonly, use of heavy equipment occurs sporadically throughout the daytime hours. Under any of the action alternatives, noise levels that would be generated during the earth moving phase (site clearing activities involving pieces of equipment) could range from 73 to 101 dBA when measured 50 feet from the respective piece of equipment.

Table 5-5: Typical Noise levels of Construction Equipment (noise Level in dBA at 50 Feet)	
Construction Vehicle Type	**dBA**
Bulldozers	80
Backhoe	72-93
Bobcat	72-93
Jack Hammer	81-98
Crane	75-77
Pick-Up Truck	83-94
Dump Truck	83-94

Source: USEPA, 1986

5.4.1 Alternative A

Noise impacts from construction-related activities are expected to be minor because construction would occur during normal business hours and the equipment would be used for a short period of time. Therefore, while there may be a minor increase in the number of people annoyed by construction noise, the impact would not be significant with the implementation of Alternative A.

With the exception of possible occasional emergency generator usage, there would not be any operational noise associated with the new facilities. Long-term impacts would be expected from the increase in vehicular traffic. Given the large volume of traffic accessing Fort Meade, these impacts would be considered negligible.

5.4.2 Alternative B

Noise Impacts would be similar to those described for Alternative A. There would be short-term minor noise impacts associated with the construction of the facility. There would be negligible long-term noise impacts associated with the operation of the new facilities.

5.4.3 Alternative C

Temporary noise from construction equipment could impact military and civilian personnel working, using recreation areas on-Post, and residents in military housing. However, this increase would be short-term and would occur during normal working hours. Because Fort Gordon is a military training facility, noise from small arms, artillery, and vehicles is heard regularly. It is not anticipated that the short-term increase in ambient noise levels from implementation of Alternative C would cause significant adverse impacts on the surrounding population for reasons described above for Alternative A. Long-term noise impacts associated with an increase in traffic to the installation would be expected. However these impacts would be considered negligible as the installation already receives a large volume of traffic. Therefore, there would be no significant impacts with the implementation of Alternative C.

5.4.4 Alternative D

Noise Impacts would be similar to those described for Alternative C; there would be short-term minor impacts and no significant long-term impacts with the implementation of Alternative D.

5.4.5 Alternative E

Noise Impacts would be similar to those described for Alternative C; there would be short-term minor impacts and no significant long-term impacts with the implementation of Alternative E.

5.4.6 Alternative F

Noise Impacts would be similar to those described for Alternative C; there would be short-term minor impacts and no significant long-term impacts with the implementation of Alternative F.

5.4.7 Alternative G

Noise Impacts would be similar to those described for Alternative C; there would be short-term minor impacts and no significant long-term impacts with the implementation of Alternative G.

5.4.8 No Action

The No Action alternative would not be expected to change the noise levels that are generated at Fort Meade or at Fort Gordon.

5.5 GEOLOGY AND SOILS

With exception of Alternative D, the Proposed Action would result in localized changes to topography at construction sites as a result of earthmoving activities (clearing and grading) associated with site preparation (all construction would occur in previously disturbed areas under Alternative D). These changes would not significantly impact geology and this section will only analyze impacts to soils.

Impacts to soils would be considered significant if impacts result in substantial soil erosion or loss of topsoil which would result in damage to waterways, ground instability, or impact to animal or human habitats. Under all alternatives, there would be no impacts to Prime and Unique Farmland soils.

5.5.1 Alternative A

The implementation of the Proposed Action is expected to have short-term and long-term minor adverse impacts on approximately 18 acres of previously disturbed soils at Fort Meade. Soil disturbance in the form of excavation, grading, earthmoving, and compaction would result from new construction activities. As a result, soils would be compacted, soil layer structure would be disturbed and modified, and soils would be exposed, increasing the overall potential for erosion at the site. Soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), would decline in disturbed areas and be completely eliminated for those areas within the footprint of building structures, and parking facilities. Adverse impacts to soils from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMPs for controlling runoff, erosion, and sedimentation during construction activities. Standard erosion and sedimentation control techniques include using vegetative and structural protective covers (e.g., permanent seeding, groundcover), sediment barriers (e.g., straw bales, silt fence, brush), constructing water conveyances (e.g., slope drains, check dam inlet, and outlet protection), and repairing bare and slightly eroded areas quickly.

Projects that disturb one or more acres of earth must apply to MDE for either a General or Individual Permit for Stormwater Associated with Construction Activity. In addition, an Environmental Site Design (ESD) is required for any project that exceeds 5,000 SF in size. These plans must be reviewed and approved by MDE, Water Management Administration. Areas disturbed within the equipment staging area would be reseeded, replanted, and/or re-sodded following construction activities, which would decrease the overall erosion potential of the site and improve soil productivity.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* (Guiding Principles). This includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 require that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies in order to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow. Compliance with this requirement can be met through the implementation of Low Impact Development (LID) technologies. LID techniques would strive to maintain or restore natural hydrologic functions of a site and achieve natural resource protection. Examples include, but are not limited to, minimizing total site impervious areas, direct building drainage to vegetative buffers, use permeable pavements where practical, and break up flow directions from large paved surfaces. Where possible, pervious pavers will be used within the proposed parking lot to minimize stormwater runoff.

With the implementation of previously described protective measures, implementation of Alternative A would have only temporary, minor impacts on soils.

5.5.2 Alternative B

For the reasons described above for Alternative A, implementation of Alternative B would have short-term and long-term minor adverse impacts on soils.

5.5.3 Alternative C

The implementation of this alternative is expected to have short-term and long-term minor adverse impacts on approximately 16 acres of previously disturbed soils at Fort Gordon. Soil disturbance in the form of excavation, grading, earthmoving, and compaction would result from new construction activities. As a result, soils would be compacted, soil layer structure would be disturbed and modified, and soils would be exposed, increasing the overall potential for erosion at the site. Soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), would decline in disturbed areas and be completely eliminated for those areas within the footprint of building structures, and parking facilities. Adverse impacts to soils from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMPs for controlling runoff, erosion, and sedimentation during construction activities. Areas disturbed within the equipment staging area would be reseeded, replanted, and/or re-sodded following construction activities, which would decrease the overall erosion potential of the site and improve soil productivity.

The CWA, Georgia Water Quality Act (Official Code of Georgia [OCGA] § 12-5-20), and Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1) require erosion and sediment controls during projects that disturb 1.0 acre or more of land. These Erosion and Sediment Control Plans (ESCP) must be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 requires that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow. Compliance with this requirement can be met through the implementation of LID technologies. LID techniques would maintain or restore natural hydrologic functions of a site and achieve natural resource protection. Examples include, but are not limited to, minimizing total site impervious areas, directing building drainage to vegetative buffers, using permeable pavements where practical, and breaking up flow directions from large paved surfaces. Where possible, pervious pavers will be used within the proposed parking lot to minimize stormwater runoff.

Adherence to the ESCP and NPDES permit, along with implementation of project-specific BMPs and LID practices would minimize impacts to water quality. Both LID practices and BMPs for erosion and sedimentation control would be implemented in accordance with the guidelines in the *Georgia Stormwater Management Manual/Coastal Stormwater Supplement* and the USEPA *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* and the *Manual for Erosion and Sediment Control in Georgia*. BMPs specified in the ESPCP could include erosion control matting, silt fencing, brush barriers, construction exits, temporary and permanent seeding, the application of mulch, buffer zones, and dust control. The application of any or all of these BMPs would depend upon precise, specific ground conditions in the areas disturbed by construction. The selected contractor(s) would be responsible for continually maintaining all erosion and sediment control measures during the project.

With the implementation of previously described protective measures, implementation of Alternative C would have only temporary, minor impacts on soils.

5.5.4 Alternative D

For the reasons described above for Alternative C, the implementation of Alternative D would have short-term and long-term minor adverse impacts on soils.

5.5.5 Alternative E

For the reasons described above for Alternative C, the implementation of Alternative E would have short-term and long-term minor adverse impacts on soils.

5.5.6 Alternative F

For the reasons described above for Alternative C, the implementation of Alternative F would have short-term and long-term minor adverse impacts on soils.

The current design of the Alternative F avoids mapped on NWI maps, and therefore it is unlikely that direct impacts to wetlands would occur from implementation of Alternative F. However, since Alternative F is nearby mapped NWI wetlands, should wetlands be discovered at the site, a Georgia Stream Buffer Variance (SBV) is required in cases where new construction, including infrastructure improvements, requires crossing or encroaching upon "state water" by removing trees and/or vegetation within a 25-foot buffer of "state waters."

5.5.7 Alternative G

For the reasons described above for Alternative C, the implementation of Alternative G would have short-term and long-term minor adverse impacts on soils.

5.5.8 No Action

Under the no-action alternative, the proposed construction and demolition activities would not occur and baseline conditions would remain unchanged. Therefore, no significant impacts to soil resources would occur as a result of implementation of the no-action alternative.

5.6 WATER RESOURCES

Impacts to water resources would be considered significant if impacts (1) substantially deplete groundwater supplies or interfere with groundwater recharge, (2) result in a violation of federal and/or state water quality standards, (3) degrade the area's ecosystem due to the direct discharge of fill material into a wetland, or (4) alter existing drainage patterns.

Implementation of any of the seven alternatives is not expected to impact groundwater resources, and therefore groundwater resource impacts are not discussed below.

5.6.1 Alternative A

<u>Surface Water</u>

No impacts to surface water resources are expected. Given that the nearest water body is over 500 feet away, it is unlikely that any sediment would be transported that distance. To minimize any potential short-term impacts that could occur, projects that disturb one or more acres of earth must apply to MDE for either a General or Individual Permit for Stormwater Associated with Construction Activity. In addition, an ESD is required for any project that exceeds 5,000 SF in size, which would include measures to protect surface water resources. Fort Meade will coordinate with local, state and federal agencies to obtain any necessary permits which would include, but not be limited to, the two permits listed above.

Possible adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

<u>Stormwater</u>

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on surface or storm water if any of the action alternatives were chosen for implementation.

As the work would include earth disturbances greater than 5,000-SF, an ESD would be required. Construction activities and BMPs would be implemented according to Maryland standards and specifications for erosion and sediment control to minimize any short-term impacts.

Possible long-term impacts to water resources would be minimized by meeting SWPPP requirements. The application of any or all of the stormwater engineering controls such as culverts, channels directing stormwater to retention basins would depend upon precise, specific ground conditions in the areas disturbed by construction. The SWPPP also would be required to include a site evaluation of how and where pollutants may be mobilized by stormwater; a site plan for managing stormwater runoff, maintenance and inspection schedule, a recordkeeping process, and identification of stormwater exit areas. These impacts would also be minimized through close adherence to the Maryland Stormwater Design Manual and updates, include extended stormwater detention to reduce stormwater runoff.

5.6.2 Alternative B

Surface Water

Implementation of this alternative is similar to Alternative A. No impacts to surface water resources are expected. Given that the nearest water body is over 500 feet away, it is unlikely that any sediment would be transported that distance. To minimize any potential short-term impacts that could occur, projects that disturb one or more acres of earth must apply to MDE for either a General or Individual Permit for Stormwater Associated with Construction Activity. In addition, an ESD is required for any project that exceeds 5,000 SF in size, which would include measures to protect surface water resources. Fort Meade will coordinate with local, state and federal agencies to obtain any necessary permits which would include, but not be limited to, the two permits listed above.

Adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities to minimize any short-term impacts.

Stormwater

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on surface or storm water if any of the action alternatives were chosen for implementation.

As the work would include earth disturbances greater than 5,000-SF, an ESD would be required. Construction activities and BMPs would be implemented according to Maryland standards and specifications for erosion and sediment control to minimize any short-term impacts.

Possible long-term impacts to water resources would be minimized by meeting SWPPP requirements. The application of any or all of the stormwater engineering controls such as culverts, channels directing stormwater to retention basins would depend upon precise, specific ground conditions in the areas disturbed by construction. The SWPPP also would be required to include a site evaluation of how and where pollutants may be mobilized by stormwater; a site plan for managing stormwater runoff, maintenance and inspection schedule, a recordkeeping process, and identification of stormwater exit areas. These impacts would also be minimized through close adherence to the Maryland Stormwater Design Manual and updates, include extended stormwater detention to reduce stormwater runoff.

5.6.3 Alternative C

Surface Water

Implementation of Alternative C would be expected to have no impacts on surface water resources. This alternative lies within 200 feet of a perennial tributary to Spirit Creek. The Georgia EPD provided information in their May 1, 2012, letter (Appendix B) regarding the requirements for permitting if any work is within the 25 foot buffer of a State Water or within 200 feet of a State Water. In addition, the Agency provided information that any construction that would disturb one acre or more would require a permit from the Agency.

To minimize any potential short-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

Adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

Stormwater

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on surface or stormwater if any of the action alternatives were chosen for implementation.

To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

5.6.4 Alternative D

Surface Water

Implementation of this alternative would be expected to have no impacts on surface water resources. No water bodies are located within 500 feet of the proposed location. To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

Adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

Stormwater

While Alternative D may increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, there will be low impact development best management practices employed to treat the stormwater on site and maintain the pre-project hydrologic regime. The use of pervious pavement and similar materials for the parking lot area is planned will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. The use of these best management practices will result in minimal to no impacts to downstream surface waters. As the Back Hall Campus area is already developed and most of the proposed site consists of hardened material, any increases in impervious area would be minor.

To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

5.6.5 Alternative E

Surface Water

Implementation of this alternative would be expected to have no impacts on surface water resources. No water bodies are located within 800 feet of the proposed location. To minimize any potential short-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

Possible adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

Stormwater

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on stormwater by implementing Alternative E.

To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

5.6.6 Alternative F

<u>Surface Water</u>

Implementation of this alternative would be expected to have no impacts on surface water resources. No water bodies are located within 200 feet of the proposed location. To minimize any potential short-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

The current design of the Alternative F avoids streams and wetlands mapped on NWI maps, and therefore it is unlikely that direct impacts to streams or wetlands would occur from implementation of Alternative F. However, should streams or wetlands be discovered at the site, a Georgia SBV is required in cases where new construction, including infrastructure improvements, requires crossing or encroaching upon "state water" by removing trees and/or vegetation within a 25-foot buffer of "state waters."

<u>Stormwater</u>

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on surface or stormwater by implementing this alternative.

To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

5.6.7 Alternative G

<u>Surface Water</u>

Implementation of this alternative would be expected to have no impacts on surface water resources. No water bodies are located within 400 feet of the proposed location. To minimize any potential short-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

Possible adverse impacts to waterways from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

Stormwater

While the alternative would increase the amount of impervious surface located on this site, resulting in increased stormwater runoff, implementation of project-specific BMPs and LID practices would minimize impacts to water quality. In addition, the use of pervious pavement and similar materials for the parking lot area is planned which will allow for stormwater infiltration on site. The use of structural soils is also a possibility, which will allow for increased infiltration of stormwater and reduce the impacts to surface water from increased impervious surface. By applying these measures, it is not anticipated that there would be any significant impacts (short or long term) on surface or stormwater by implementing this alternative.

To minimize any potential short-term and long-term impacts, an ESCP and a SWPPP would be designed and approved prior to construction. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits.

5.6.8 No Action

Implementation of the No Action alternative would have no impacts on water resources.

5.7 FLOODPLAINS

None of the action alternatives are located within a 100- or 500-year floodplain. Therefore, no impacts to floodplains would occur from implementation of the Proposed Action at either installation.

5.8 COASTAL ZONE

Factors considered in evaluating coastal zone management impacts include the potential for the Proposed Action to be inconsistent with the federal and state enforceable policies.

5.8.1 Alternative A

Implementation of Alternative A is expected to be consistent with Maryland's enforceable policies. An ESCP and a SWPPP would be designed and approved by MDE prior to construction which would include measures to protect the "Coastal Zone".

5.8.2 Alternative B

Implementation of Alternative B is expected to be consistent with Maryland's enforceable policies. An ESCP and a SWPPP would be designed and approved by MDE prior to construction which would include measures to protect the "Coastal Zone".

5.8.3 Alternative C

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program.

5.8.4 Alternative D

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program.

5.8.5 Alternative E

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program.

5.8.6 Alternative F

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program.

5.8.7 Alternative G

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program.

5.8.8 No Action

Under the no-action alternative, the proposed construction and demolition activities would not occur and baseline conditions would remain unchanged. There would be no impacts on coastal zone management.

5.9 BIOLOGICAL RESOURCES

Factors considered in the analysis of potential impacts to biological resources include disruption to normal wildlife behavioral patterns or disturbance to habitat at a level that would substantially impede the respective Installation's ability to meet obligations outlined in their INRMP.

As there are no wetlands within any of the proposed alternative areas, this resource has not been analyzed below. No impacts to this resource is expected. No impacts to aquatic habitats are expected from any of the alternatives as no water bodies are within close proximity of any of the proposed sites.

5.9.1 Alternative A

<u>Vegetation</u>

Minor short-term and long-term adverse impacts to vegetation in the area would be anticipated as a result of Alternative A. Removal of grasses, landscaping, brush, and trees would be expected. Construction would disturb the plant ecology, particularly grasses and herbaceous areas, in the immediate vicinity of project site. Temporary impacts to vegetation would not be significant. Permanent removal of approximately 18 acres of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site due to the fact that the vegetated areas are not unique or habitat for rare, threatened or endangered species, and that there is an abundance of similar habitat in adjacent or nearby areas.

Impacts on Fort Meade land would be mitigated on the installation in accordance with the current Fort Meade Forest Conservation Act (FCA) and Tree Policy, through forest preservation or reforestation. Project proponents would preserve or establish 20% forest cover, regardless if the site was forested before the construction. Street trees would be replaced at a minimum of a 1:1 ratio, with preference given to the preservation of specimen trees. Specimen tree replacement ratios would be calculated on a case by case basis.

Existing, healthy landscape and street trees will be preserved where ever possible. Construction will also be planned to provide for the preservation of specimen trees. All designs would incorporate tree protection practices including, but not limited to, protective fencing around the critical root zone of trees, trunk protection, and root pruning. Tree preservation measures and required pruning should be performed by a certified arborist and shall be in accordance with American National Standards Institute (ANSI) standards.

Native species will be used in the landscaping plans and invasive species currently on the site will be removed or controlled as appropriate. Reforestation/afforestation would be planned to establish a wildlife corridor on the northern boundary of this site. Forestation that cannot feasibly be performed within the project area shall be performed on other designated land areas within Fort Meade. Reforestation, planting plans and specifications would be part of all designs. The fair market value of all forest products removed due to the proposed action shall be deposited into the Army's Forestry Account.

<u>Terrestrial Wildlife</u>

Implementation of the Proposed Action would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat; however, an abundance of suitable habitat exists nearby.

<u>Rare, Threatened or Endangered Species</u>

As there are no rare, threatened or endangered species within Alternative A no impacts to this resource is expected.

5.9.2 Alternative B

<u>Vegetation</u>

The Alternative B construction location has been mostly cleared in anticipation of the beginning of the East Campus construction; however, an ecologically important forested corridor remains along O’Brien Road. Minor short-term and long term adverse impacts would occur to vegetation communities and wildlife habitat from the permanent removal of approximately 18 acres of a mature hardwood forested corridor that extends throughout the installation. Removal of forest, shrubs, landscaping and grasses would be expected. Project proponents would minimize long term impacts by preserving the mature hardwood forested corridor along O’Brien Road and minimizing forest fragmentation to the maximum extent possible.

Impacts on Fort Meade land would be mitigated on the installation in accordance with the current Fort Meade Forest Conservation Act (FCA) and Tree Policy, through forest preservation or reforestation. Project proponents would preserve or establish 20% forest cover, regardless if the site was forested before the construction. Street trees would be replaced at a minimum of a 1:1 ratio, with preference given to the preservation of specimen trees. Specimen tree replacement ratios would be calculated on a case by case basis.

Project proponents would preserve the 300-foot forested corridor along O’Brien Road as it currently exists to the maximum extent practicable. In addition to the 300-foot forested corridor, buffers of a minimum of fifty feet will be maintained as practicable to minimize additional forest fragmentational. In areas where the project proponent cannot retain the 300-foot forested corridor, the maximum amount of forest will be retained.

Construction will also be planned to provide for the preservation of specimen trees where possible. All designs would incorporate tree protection practices including, but not limited to, protective fencing around the critical root zone of trees, trunk protection, and root pruning. Tree preservation measures and required pruning should be performed by a certified arborist and shall be in accordance with American National Standards Institute (ANSI) standards.

Native species will be used in the landscaping plans and invasive species currently on the site will be removed or controlled as appropriate. Any reforestation/afforestation necessary would be used to augment the corridor on the western portion of the site. Forestation that cannot feasibly be performed within the project area shall be performed on other designated land areas within the installation. Reforestation, planting plans and specifications would be part of all designs. The fair market value of all forest products removed due to the proposed action shall be deposited into the Army’s Forestry Account.

<u>Terrestrial Wildlife</u>

Implementation of the Proposed Action would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat.

Rare, Threatened or Endangered Species

As there are no rare, threatened or endangered species within Alternative B no impacts to this resource is expected.

5.9.3 Alternative C

Vegetation

Minor short-term and long-term adverse impacts would be anticipated as a result of Alternative C. Removal of grasses, landscaping, brush, and trees would be expected. Construction would disturb the plant ecology, particularly grasses and herbaceous areas, in the immediate vicinity of project site. Temporary impacts to vegetation would not be significant. Permanent removal of 16 acres of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site due to the fact that the vegetated areas are not unique or habitat for rare, threatened or endangered species, and that there is an abundance of similar habitat in adjacent or nearby areas. Landscape plantings will be made contiguous to groups of existing trees, to include street trees, where possible. Native species will be used in the landscaping plans; invasive species currently on the site will be removed or controlled as appropriate.

Terrestrial Wildlife

Implementation of Alternative C would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat.

Rare, Threatened or Endangered Species

As there are no rare, threatened or endangered species within Alternative C no impacts to this resource is expected.

5.9.4 Alternative D

Vegetation

Minimal short-term and long-term adverse impacts to vegetation would be anticipated as a result of the Alternative D. This area has been highly developed and any vegetative cover is negligible. Removal of grasses and landscaping would be expected. Permanent removal of marginal vegetative habitat would have a long-term very minor adverse impact to vegetation at the site. Landscape plantings will be made contiguous to groups of existing trees, to include street trees, where possible. Native species will be used in the landscaping plans; invasive species currently on the site will be removed or controlled as appropriate.

Terrestrial Wildlife

Minimal short-term and long-term adverse impacts to wildlife would be anticipated as a result of the Alternative D. This area has been highly developed and any wildlife habitat is negligible. Permanent removal of marginal vegetative habitat would have a long-term very minor adverse impact to wildlife at the site.

Rare, Threatened or Endangered Species

As there are no rare, threatened or endangered species within Alternative D no impacts to this resource is expected.

5.9.5 Alternative E

Vegetation

The location for Alternative E was almost completely cleared as a result of the construction of Whitelaw Hall. Several large trees still remain near the project area. Minor short-term and long-term adverse impacts would be anticipated as a result of Alternative E. Removal of grasses, landscaping, brush, and trees would be expected. Temporary impacts to approximately seven acres of vegetation would not be significant. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site due to the fact that the vegetated areas are not unique or habitat for rare, threatened or endangered species, and that there is an abundance of similar habitat in adjacent or nearby areas. Landscape plantings will be made contiguous to groups of existing trees, to include street trees, where possible. Native species will be used in the landscaping plans; invasive species currently on the site will be removed or controlled as appropriate.

Terrestrial Wildlife

Implementation of Alternative E would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat.

Rare, Threatened or Endangered Species

As there are no rare, threatened or endangered species within Alternative E no impacts to this resource is expected.

5.9.6 Alternative F

Vegetation

Minor short-term and long-term adverse impacts would be anticipated as a result of Alternative F. Removal of grasses, landscaping, brush, and trees would be expected. Construction would disturb the plant ecology, particularly grasses and herbaceous areas, in the immediate vicinity of project site. Temporary impacts to approximately seven acres of vegetation would not be significant. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site due to the fact that the vegetated areas are not unique or habitat for rare, threatened or endangered species, and that there is an abundance of similar habitat in adjacent or nearby areas. Landscape plantings will be made contiguous to groups of existing trees, to include street trees, where possible. Native species will be used in the landscaping plans; invasive species currently on the site will be removed or controlled as appropriate.

Terrestrial Wildlife

Implementation of Alternative F would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat.

Rare, Threatened or Endangered Species

As there are no rare, threatened or endangered species within Alternative F no impacts to this resource is expected.

5.9.7 Alternative G

Vegetation

Minor short-term and long-term adverse impacts would be anticipated as a result of Alternative G. Removal of grasses, landscaping, brush, and trees would be expected. Construction would disturb the plant ecology, particularly grasses and herbaceous areas, in the immediate vicinity of project site. Temporary impacts to vegetation would not be significant. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site due to the fact that the vegetated areas are not unique or habitat for rare, threatened or endangered species, and that there is an abundance of similar habitat in adjacent or nearby areas. Landscape plantings will be made contiguous to groups of existing trees, to include street trees, where possible. Native species will be used in the landscaping plans; invasive species currently on the site will be removed or controlled as appropriate.

Terrestrial Wildlife

Implementation of Alternative G would have a short-term and long-term minor adverse impact by displacing wildlife. In the short-term, construction would disturb wildlife on, and in the immediate area of the project location. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife would scatter to adjacent wooded areas and open fields and some wildlife may gradually return to the area of the proposed project once construction is complete. Permanent removal of vegetative habitat would have a long-term minor adverse impact to vegetation and wildlife at the site, resulting in loss of wildlife habitat.

Rare, Threatened or Endangered Species

One southeastern American kestrel nesting box is located within the site of Alternative G. This alternative was added to the EA after coordination letters were sent in May 2012. The American kestrel nest box program is managed under the approved Fort Gordon Integrated Natural Resources Management Plan and has previously been coordinated and approved by state and federal wildlife agencies. Fort Gordon biologist will relocate American kestrel nesting boxes as necessary to mitigate any potential impacts.

5.9.8 No Action

Implementation of the No Action alternative would not be expected to have any impact on vegetation as no construction or demolition would occur.

The No Action alternative would not be expected to have an impact on local wildlife species inhabiting the project areas. Trees and other vegetation would be undisturbed and would continue to provide cover and food for wildlife.

5.10 CULTURAL RESOURCES

No cultural resources have been identified within the proposed site locations at Fort Meade or Fort Gordon; therefore, no impacts are anticipated. If cultural resources are inadvertently discovered by construction contractors, activities would cease and the discovery would be immediately reported to the respective Installation’s cultural resource manager in accordance with the respective Installation’s ICRMP guidance and procedures.

Implementation of the No Action alternative would not be expected to have any impact on cultural resources as no construction or demolition would occur.

5.11 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES

The significance of potential impacts associated with hazardous materials and wastes is based on the toxicity, transportation, storage, and disposal of these substances. Hazardous materials and waste impacts would be considered significant if the storage, use, transportation, or disposal of these substances substantially increases the human health risk or environmental exposure.

All contractors would be responsible for adhering either to Fort Meade's or Fort Gordon's policies and procedures as well as state and Federal regulations for storage, handling, and disposal of hazardous wastes.

5.11.1 Alternative A

No impacts to HTRS are expected from implementation of this alternative. Construction activities may require use of hazardous materials such as paints; cleaners; petroleum, oils, and lubricants (POLs). Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as POLs and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

Portions of the site are located in areas that are classified as Category 7 under the Environmental Condition of Property (ECOP) as defined by CERFA guidance, the DoD *BRAC Cleanup Plan (BCP) Guidebook* (DOD 1995/1996), and the FY 97 Defense Authorization Act and will require further investigation and coordination with state and Federal agencies should this alternative be selected (USACE, 2004).

A portion of this site located at the northwest corner of Mapes Road and Taylor Avenue was once a former mortar range. An investigation of the area has determined that the potential for UXO is low. However, should any ordnance be encountered during construction, the contractor would be required to immediately stop work and report the discovery to the installation, and implement appropriate safety measures.

5.11.2 Alternative B

Possible short-term impacts and long-term minor benefits to HTRS are expected from implementation of this alternative. Prior to interior renovation activities, surveys will be performed to identify any present ACM, LBP, PCBs, as well any other potentially harmful contaminants. Identified contaminants will be removed or managed in place by licensed contractors. If the materials are removed, they will disposed of in accordance with applicable Federal and State laws and regulations. Army policy calls for controlling LBP by using in-place management rather than mandated removal procedures. In-place management is used to prevent deterioration over time of those surfaces likely to contain LBP, followed by replacement as necessary. In cases where activities require demolition, removal, and/or replacement of material containing LBP, the LBP should be encapsulated and removed in accordance with Army, Housing and Urban Development, and Occupational Safety and Health Administration guidelines, which cover contractor training, notification requirements, use of personal protective equipment, and approved disposal methods.

Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

Portions of the site are located in areas that are classified as Category 7 under the ECOP as defined by CERFA guidance, the DoD *BRAC Cleanup Plan (BCP) Guidebook* (DOD 1995/1996), and the FY 97 Defense Authorization Act and will require further investigation and coordination with state and Federal agencies should this alternative be selected (USACE, 2004).

A portion of this site located on the East Campus was once a former mortar range. An investigation of the area has determined that the potential for UXO is low. However, should any ordnance be encountered during construction, the contractor would be required to immediately stop work and report the discovery to the installation, and implement appropriate safety measures.

5.11.3 Alternative C

No impacts to HTRS are expected from implementation of this alternative. Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

5.11.4 Alternative D

Possible short-term impacts and long-term minor benefits to HTRS are expected from implementation of this alternative. Prior to interior renovation activities, surveys will be performed to identify any present ACM, LBP, PCBs, as well any other potentially harmful contaminants. Identified contaminants will be removed or managed in place by licensed contractors. If the materials are removed, they will disposed of in accordance with applicable Federal and State laws and regulations. Army policy calls for controlling LBP by using in-place management rather than mandated removal procedures. In-place management is used to prevent deterioration over time of those surfaces likely to contain LBP, followed by replacement as necessary. In cases where activities require demolition, removal, and/or replacement of material containing LBP, the LBP should be encapsulated and removed in accordance with Army, Housing and Urban Development, and Occupational Safety and Health Administration guidelines, which cover contractor training, notification requirements, use of personal protective equipment, and approved disposal methods.

Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

5.11.5 Alternative E

No impacts to HTRS are expected from implementation of this alternative. Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

The only Environmental Restoration Program (ERP) area within the footprint of the proposed facility is SWMU-024A, which has received a No Further Action determination from Georgia EPD. Therefore, no demolition or construction activities would take place in ERP areas that have not been formally closed. If methane gas is detected at the proposed building site, the exterior sides of the subsurface walls of the building would be treated with an impermeable coating to prevent gas migration into the building and plug-in type continuous methane gas detectors would be installed in the subsurface rooms of the building. The methane monitoring wells along 17th Street cannot be disturbed. Access must be allowed for sampling of these methane monitoring wells and, if necessary, installation of new methane monitoring wells. Additionally, access must be allowed for sampling the former SWMU-024A groundwater monitoring wells in case they need to be used to monitor SWMU-024.

5.11.6 Alternative F

No impacts to HTRS are expected from implementation of this alternative. Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

5.11.7 Alternative G

No impacts to HTRS are expected from implementation of this alternative. Construction activities may require use of hazardous materials such as POLs. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the limited amount of construction required, negligible amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Over the long term, operation of the proposed facilities would not have a significant impact on the use or generation of hazardous material and wastes at the Installation.

5.11.8 No Action

The No Action alternative would not be expected to have any impacts on the handling and disposal of hazardous materials/wastes.

5.12 TRAFFIC AND ROADWAYS

Consistent with the East Campus EIS (NSA, 2010) and other NEPA documentation, a project is considered to have a significant effect on the operations of an intersection if the addition of traffic causes LOS to degrade from LOS D or better to LOS E or F.

In addition, a project may contribute toward a substantial cumulative effect if its traffic, when taken together with traffic from past, present and reasonably foreseeable future projects, causes intersection LOS to decline from LOS D or better to LOS E or F.

Daily and peak hour traffic generations were estimated based on trip generation rates published in *Trip Generation, 8th Edition: An Institute of Transit Engineers (ITE) Informational Report* (ITE, 2008). This traffic was then added to existing intersections in accordance with a distribution pattern that was developed for each action alternative, based on the location of each alternative site, installation gate locations, existing traffic volumes, and likely travel routes between the gates and each alternative site. Refer to Appendix D for a copy of the traffic study.

5.12.1 Alternative A

In analyzing potential impacts from implementing Alternative A, baseline conditions for 2016 were established. The revised baseline conditions assume an increase in traffic and transportation improvements over what was described in Section 4 using Figure 4.2-9 of the East Campus EIS. As indicated in Table 5-6, implementation of Alternative A would result in a substantial traffic effect at the following locations:

- Mapes Rd./6th Armored Cavalry Rd.
- Reece Rd./Cooper Ave.

Table 5-6: Intersection Level of Service and Effects Summary, Alternative A (Fort Meade)

ID	Intersection	Peak Hour	Baseline	With Alt. A	Substantial Effect?	Alt. A with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	MD 32 Eastbound/Laurel Ft. Meade Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
2	MD 32 Westbound/Mapes Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Mapes Rd./O'Brien Rd.	AM	C	C	NO	-	-
		PM	C	C	NO	-	-
4	Mapes Rd./6th Armored Cavalry Rd.	AM	**F**	**F**	NO	-	-
		PM	D	**F**	**YES**	B	NO

Table 5-6: Intersection Level of Service and Effects Summary, Alternative A (Fort Meade)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**With Alt. A**	**Substantial Effect?**	**Alt. A with Mitigation**	**Substantial Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
5	Mapes Rd./Zimborski Ave.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Mapes Rd./Taylor Ave.	AM	C	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Mapes Rd./Cooper Ave.	AM	D	D	NO	-	-
		PM	C	C	NO	-	-
8	Mapes Rd./Ernie Pyle St.	AM	B	C	NO	-	-
		PM	**F**	**F**	NO	-	-
9	Llewellyn Ave./Annapolis Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Mapes Rd./Annapolis Rd.	AM	**E**	**E**	NO	-	-
		PM	D	D	NO	-	-
11	Reece Rd./Annapolis Rd.	AM	D	D	NO	-	-
		PM	D	D	NO	-	-
12	Rockenbach Rd./Annapolis Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Reece Rd./Cooper Ave.	AM	C	D	NO	-	-
		PM	D	**E**	**YES**	C	NO
14	Rockenbach Rd./Cooper Ave.	AM	D	D	NO	-	-
		PM	C	C	NO	-	-
15	Rockenbach Rd./29th Division Blvd.	AM	C	B	NO	-	-
		PM	D	D	NO	-	-
16	Rockenbach Rd./O'Brien Rd.	AM	**E**	**F**	NO	-	-
		PM	D	D	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.

None of the other 14 intersections within the ROI would experience any substantial traffic effect. While implementation of Alternative A has the potential to result in significant adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Table 5-7 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS C or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative A, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

Table 5-7: Summary of Mitigation Measures for Fort Meade, by Location and Alternative		
ID	**Intersection**	**Alternative A**
4	Mapes Rd./ 6th Armored Cavalry Rd.	Install traffic signal and provide protected plus permitted phasing for the westbound approach. (Signal timing and phasing should be coordinated with other signals along Mapes Rd.)
13	Reece Rd./ Cooper Ave.	Revise signal operation from split phasing to protected plus permitted phasing for eastbound and westbound left turns.

5.12.2 Alternative B

As stated in the East Campus EIS (NSA, 2010) the NSA expansions, BRAC action, EUL action, and other developments at and around Fort Meade would result in additional transportation constraints and deficiencies. A series of transportation improvements were recommended to mitigate adverse impacts to transportation. Refer to the East Campus EIS for previously identified mitigation measures.

5.12.3 Alternative C

In analyzing potential impacts from implementing the proposed action, baseline conditions for 2016 were established. The revised baseline conditions assume an increase in traffic and transportation improvements over what was described in Section 4 using a conservative growth factor of 3 percent per year for 2012 through 2016. As indicated in Table 5-8, implementation of Alternative C would result in a substantial traffic effect at the following locations:

- Chamberlain Ave./19th St.
- Lane Ave./19th St.
- Lane Ave./25th St.
- North Range Rd./111th St.
- US Highway 1 Southbound/Ave. of the States

Table 5-8: Intersection Level of Service and Effects Summary, Alternative C (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**With Alt. C**	**Substantial Effect?**	**Alt. C with Mitigation**	**Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-

Table 5-8: Intersection Level of Service and Effects Summary, Alternative C (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**With Alt. C**	**Substantial Effect?**	**Alt. C with Mitigation**	**Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	**E**	**YES**	C	NO
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	C	NO	-	-
11	Barnes Ave./25th St.	AM	D	D	NO	-	-
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	**F**	**YES**	B	NO
		PM	**E**	**F**	NO	-	-
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-
17	North Range Rd./111th St.	AM	A	**F**	**YES**	A	NO
		PM	B	**F**	**YES**	A	NO
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.

Alternative C would not have a substantial effect on the remaining 15 intersections. While implementation of Alternative C has the potential to result in significant adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Table 5-9 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS C or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative C, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

Table 5-9: Summary of Mitigation Measures for Fort Gordon, by Location and Alternative

ID	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
6	Chamberlain Ave./19th St.	Revise signal operation to provide permitted phasing for eastbound, westbound, and northbound left turns, and provide permitted plus protected phasing for southbound left turns. Also restripe the westbound approach to provide one shared through/left turn lane and one dedicated right turn lane.	Same as Alternative C.	No mitigation required.	No mitigation required.	No mitigation required.
7	Chamberlain Ave./25th St.	No mitigation required.	No mitigation required.	No mitigation required.	No mitigation required.	Install traffic signal.
8	Chamberlain Ave./Rice Rd.	No mitigation required.	No mitigation required.	Revise signal operation to provide for northbound right turns to overlap with westbound left turns.	No mitigation required.	Same as Alternative E.
10	Barnes Ave./19th St.	No mitigation required.	Install all-way stop control.	No mitigation required.	Install all-way stop control, and restripe the northbound approach to provide one shared left/through turn lane and one dedicated right turn lane.	Install traffic signal.
11	Barnes Ave./25th St.	No mitigation required.	Install traffic signal.	No mitigation required.	Install traffic signal.	Install traffic signal.
14	Lane Ave./ 19th St.	Install traffic signal, and provide protected plus permitted phasing for southbound left turns in the afternoon peak.	No mitigation required.	Same as Alternative C.	No mitigation required.	No mitigation required.
15	Lane Ave./ 25th St.	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	No mitigation required.	No mitigation required.

Table 5-9: Summary of Mitigation Measures for Fort Gordon, by Location and Alternative						
ID	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
17	North Range Rd./ 111th St.	Install traffic signal and remove westbound leg to form "T" intersection. Channelize southbound right turns.	No mitigation required.	Install all-way stop control.	No mitigation required.	Same as Alternative C.
19	US Highway 1 Southbound/Ave. of the States[1]	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	Same as Alternative C.	No mitigation required.

5.12.4 Alternative D

As indicated in Table 5-10, implementation of Alternative D would result in substantial traffic effects at the following locations:

- Chamberlain Ave./19th St.
- Barnes Ave./25th St.
- Brainard Ave./Kilbourne St.
- US Highway 1 Southbound/Ave. of the States

Table 5-10: Intersection Level of Service and Effects Summary, Alternative D (Fort Gordon)							
ID	Intersection	Peak Hour	Baseline	With Alt. D	Substantial Effect?	Alt. D with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	**E**	**YES**	D	NO
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-

[1] Interchange improvements should be coordinated with the Georgia Department of Transportation.

Table 5-11: Intersection Level of Service and Effects Summary, Alternative D (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**With Alt. D**	**Substantial Effect?**	**Alt. D with Mitigation**	**Substantial Effect with Mitigation?**
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	D	NO	-	-
11	Barnes Ave./25th St.	AM	D	**E**	**YES**	B	NO
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	C	NO	-	-
		PM	**E**	**E**	NO	-	-
15	Lane Ave./25th St	AM	D	**E**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

Alternative D would not result in any substantial effect at any of the 16 remaining intersections in the ROI. While implementation of Alternative D has the potential to result in significant adverse traffic impacts to select intersections, the application of the proposed mitigation measures described in Table 5-9 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS D or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative D, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

5.12.5 Alternative E

As indicated in Table 5-11, implementation of Alternative E would result in substantial traffic effects at the following locations:

- Chamberlain Ave./25th St.
- Lane Ave./19th St.
- Lane Ave./25th St.
- North Range Rd./111th St.
- US Highway 1 Southbound/Ave. of the States

Table 5-12: Intersection Level of Service and Effects Summary, Alternative E (Fort Gordon)

ID	Intersection	Peak Hour	Baseline LOS (a)	With Alt. E LOS (a)	Substantial Effect?	Alt. E with Mitigation LOS (a)	Substantial Effect with Mitigation?
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	**E**	**YES**	D	NO
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	C	NO	-	-
11	Barnes Ave./25th St.	AM	D	D	NO	-	-
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	**F**	**YES**	A	NO
		PM	**E**	**F**	NO	-	-

Table 5-12: Intersection Level of Service and Effects Summary, Alternative E (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**With Alt. E**	**Substantial Effect?**	**Alt. E with Mitigation**	**Substantial Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-
17	North Range Rd./111th St.	AM	A	**F**	**YES**	B	NO
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

Alternative E would not result in any substantial effect at any of the 15 remaining intersections in the ROI. While implementation of Alternative E has the potential to result in significant adverse traffic impacts to select intersections, the application of the proposed mitigation measures described in Table 5-9 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS D or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative E, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

5.12.6 Alternative F

As shown in Table 5-12, Alternative F would result in substantial effects at the following intersections:

- Barnes Ave./19^{th} St.
- Barnes Ave./25^{th} St.
- US Highway 1 Southbound/Ave. of the States

Table 5-12: Intersection Level of Service and Effects Summary, Alternative F (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**Alt. F**	**Substantial Effect?**	**Alt. F with Mitigation**	**Substantial Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	**E**	**YES**	D	NO
11	Barnes Ave./25th St.	AM	D	**F**	**YES**	B	NO
		PM	C	**E**	**YES**	A	NO
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	C	NO	-	-
		PM	**E**	**E**	NO	-	-
15	Lane Ave./25th St	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-

Table 5-12: Intersection Level of Service and Effects Summary, Alternative F (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**Alt. F**	**Substantial Effect?**	**Alt. F with Mitigation**	**Substantial Effect with Mitigation?**
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

Alternative F would not result in any substantial effect at any of the 17 remaining intersections in the ROI. While implementation of Alternative F has the potential to result in significant adverse traffic impacts to select intersections, the application of the proposed mitigation measures described in Table 5-9 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS D or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative F, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

5.12.7 Alternative G

As shown in Table 5-13, Alternative G would result in substantial effects at the following intersections:

- Chamberlain Ave./25th St.
- Chamberlain Ave./Rice Rd.
- Barnes Ave./19th St.
- Barnes Ave./25th St.
- Lane Ave./25th St.
- US Highway 1 Southbound/Ave. of the States

Table 5-13: Intersection Level of Service and Effects Summary, Alternative G (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**Alt. G**	**Substantial Effect?**	**Alt. G with Mitigation**	**Substantial Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-

Table 5-13: Intersection Level of Service and Effects Summary, Alternative G (Fort Gordon)							
ID	**Intersection**	**Peak Hour**	**Baseline**	**Alt. G**	**Substantial Effect?**	**Alt. G with Mitigation**	**Substantial Effect with Mitigation?**
			LOS (a)	**LOS (a)**		**LOS (a)**	
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	**F**	**YES**	D	NO
		PM	**E**	**F**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	**E**	**YES**	D	NO
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	**E**	**YES**	B	NO
11	Barnes Ave./25th St.	AM	D	**F**	**YES**	B	NO
		PM	C	**F**	**YES**	D	NO
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	D	NO	-	-
		PM	**E**	**F**	NO	-	-
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the Highway Capacity Manual and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

Alternative G would not result in any substantial effect at any of the 14 remaining intersections in the ROI. While implementation of Alternative G has the potential to result in significant adverse traffic impacts to select intersections, the application of the proposed mitigation measures described in Table 5-9 and detailed further in Appendix D would lessen the projected traffic impacts to a LOS D or better. It is also recommended that additional traffic surveys be conducted following implementation of Alternative G, if selected as the course of action, to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

5.12.8 No Action

Under the No-Action Alternative, ARCYBER would not construct a new facility, and existing conditions would remain unchanged.

5.13 INFRASTRUCTURE AND UTILITIES

5.13.1 Alternative A

Short-term minor impacts to potable water, wastewater, electrical, and communication utilities would be expected during construction as existing lines are accessed for connecting new service lines.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. This estimate is approximately 1.5 percent of the water treatment plant's (WTP) design capacity. The WTP has a design capacity of 7.2 MGD and is currently operating at approximately 2.4 MGD (Atkins, 2011). The system is capable of handling the additional requirement. No long-term impacts to the water supply system are anticipated by adding this demand to the existing system. Possible localized short-term disruptions to water service could result from construction activities as existing buried water lines are accessed for connecting new water service lines to the Proposed Action.

The alternative would have no long-term impact on the sanitary sewer/wastewater facilities at Fort Meade. Additional restroom facilities would be constructed as needed at the project area. This would result in a negligible increase in sewage loads to the sewage treatment system at Fort Meade. With an average load of approximately 13 GPD per person (USEPA, 2010), it is estimated that the addition of approximately 1,500 workers to Fort Meade would create an increase of approximately 19,500 GPD. This amounts to approximately 0.15 percent of the capacity of the system. The design flow of the existing system at Fort Meade is 12.3 MGD and is currently averaging 2.5 MGD (USACE, 2007). Possible localized short-term disruptions to service could result from construction activities due to accessing the existing underground sanitary sewer lines for connecting new lines.

An analysis of water requirements will be conducted for cooling systems, fire suppression and other needs will be conducted to determine if there is a need for a cooling tower.

The new facility would require electric service for high density use for the complex needs of communication and security. The alternative is not anticipated to have long-term impacts on the electrical system at Fort Meade. The distribution system is currently operating below capacity and the new demand would not exceed this capacity. Possible short-term impacts associated with construction and the relocation of electrical lines could occur. These would cease with the completion of construction activities.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.2 Alternative B

Short-term minor impacts to potable water, wastewater, electrical, and communication utilities would be expected during construction as existing lines are accessed for connecting new service lines.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. This estimate is approximately 1.5 percent of the water treatment plant's (WTP) design capacity. The WTP has a design capacity of 7.2 MGD and is currently operating at approximately 2.4 MGD (Atkins, 2011). The system is capable of handling the additional requirement. No long-term impacts to the water supply system are anticipated by adding this demand to the existing system. Possible localized short-term disruptions to water service could result from construction activities as existing buried water lines are accessed for connecting new water service lines to the Proposed Action.

The alternative would have no long-term impact on the sanitary sewer/wastewater facilities at Fort Meade. Additional restroom facilities would be constructed as needed at the project area. This would result in a negligible increase in sewage loads to the sewage treatment system at Fort Meade. With an average load of approximately 13 GPD per person (USEPA, 2010), it is estimated that the addition of approximately 1,500 workers to Fort Meade would create an increase of approximately 19,500 GPD. This amounts to approximately 0.15 percent of the capacity of the system. The design flow of the existing system at Fort Meade is 12.3 MGD and is currently averaging 2.5 MGD (USACE, 2007). Possible localized short-term disruptions to service could result from construction activities due to accessing the existing underground sanitary sewer lines for connecting new lines.

An analysis of water requirements will be conducted for cooling systems, fire suppression and other needs will be conducted to determine if there is a need for a cooling tower.

The new facility would require electric service for high density use for the complex needs of communication and security. The alternative is not anticipated to have long-term impacts on the electrical system at Fort Meade. The distribution system is currently operating below capacity and the new demand would not exceed this capacity. Possible short-term impacts associated with construction and the relocation of electrical lines could occur. These would cease with the completion of construction activities.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction and demolition debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.3 Alternative C

Short-term disruptions to water, sewer, and electrical services could be experienced within the project locale at Fort Gordon as these serviced are augmented to allow the construction of the facilities proposed under this alternative.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. Similarly, with the increased demand for an average wastewater load of approximately 13 GPD per person, it is estimated that the addition of approximately 1,500 workers to Fort Gordon would create an increase of approximately 19,500 GPD. The existing utility systems have adequate capacity for this increased demand. The electrical supply to Fort Gordon is adequate for the needs associated by this action.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.4 Alternative D

Short-term disruptions to water, sewer, and electrical services could be experienced within the project locale at Fort Gordon as these serviced are augmented to allow the construction of the facilities proposed under this alternative.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. Similarly, with the increased demand for an average wastewater load of approximately 13 GPD per person, it is estimated that the addition of approximately 1,500 workers to Fort Gordon would create an increase of approximately 19,500 GPD. The existing utility systems have adequate capacity for this increased demand. The electrical supply to Fort Gordon is adequate for the needs associated by this action.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.5 Alternative E

Short-term disruptions to water, sewer, and electrical services could be experienced within the project locale at Fort Gordon as these serviced are augmented to allow the construction of the facilities proposed under this alternative.
Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. Similarly, with the increased demand for an average wastewater load of approximately 13 GPD per person, it is estimated that the addition of approximately 1,500 workers to Fort Gordon would create an increase of approximately 19,500 GPD. The existing utility systems have adequate capacity for this increased demand. The electrical supply to Fort Gordon is adequate for the needs associated by this action.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction and demolition debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.6 Alternative F

Short-term disruptions to water, sewer, and electrical services could be experienced within the project locale at Fort Gordon as these serviced are augmented to allow the construction of the facilities proposed under this alternative.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. Similarly, with the increased demand for an average wastewater load of approximately 13 GPD per person, it is estimated that the addition of approximately 1,500 workers to Fort Gordon would create an increase of approximately 19,500 GPD. The existing utility systems have adequate capacity for this increased demand. The electrical supply to Fort Gordon is adequate for the needs associated by this action.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.7 Alternative G

Short-term disruptions to water, sewer, and electrical services could be experienced within the project locale at Fort Gordon as these serviced are augmented to allow the construction of the facilities proposed under this alternative.

Using a conservative consumption rate of 70 GPD per person (WSSC, 2012), it is estimated that the addition of approximately 1,500 workers would create a long-term demand for approximately 105,000 GPD or 0.105 MGD. Similarly, with the increased demand for an average wastewater load of approximately 13 GPD per person, it is estimated that the addition of approximately 1,500 workers to Fort Gordon would create an increase of approximately 19,500 GPD. The existing utility systems have adequate capacity for this increased demand. The electrical supply to Fort Gordon is adequate for the needs associated by this action.

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed of in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-Post by the contractor to an approved landfill. Long-term minor impacts to solid waste generation would be expected from the increase in workforce.

5.13.8 No Action

No impacts are expected as a result of implementing the No Action alternative. Existing conditions would remain the same with the No Action alternative.

5.14 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

This socioeconomic impact analysis focuses on construction costs and the local economic benefit consequent to increases in personnel. Economic impacts are defined to include direct effects, such as changes to employment and expenditures that affect the flow of dollars into the local economy and indirect effects, which result from the "ripple effect" of spending and re-spending in response to the direct effects. Induced impacts are the result of spending of the wages and salaries of the direct and indirect employees on items such as food, housing, transportation, and medical services. This spending creates induced employment in nearly all sectors of the economy, especially service sectors, and can flow outside of the region of influence. Results of economic impact analysis presented in this EA are all positive in nature. There are no expected detrimental economic impacts associated with any alternative, whether at Fort Meade or Fort Gordon. Therefore, for all economic impact results presented, impacts are expected to be beneficial.

This analysis also addresses potential disproportionately high and adverse impacts to minority and/or low income populations consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and environmental health and safety risks to children consistent with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

5.14.1 Alternative A

5.14.1.1 Jobs

Table 5-14 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 656 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 1,149 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,373 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; 2,286 jobs would be generated annually in 2019 and every year for the foreseeable future.

Table 5-14: Jobs Impact from Combined Construction and Operations, 2015-2019

Impact	2015	2016	2017	2018	2019*
Direct	193	402	723	909	1,514
Indirect/Induced	120	254	426	464	772
Total	**313**	**656**	**1,149**	**1,373**	**2,286**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.1.2 Labor Income

Table 5-15 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $37,900,788 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $76,809,019 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $104,321,175 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $173,696,002 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-15: Labor Income Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$11,775,173	$25,181,578	$58,237,126	$84,957,730	$141,471,869
Indirect/Induced	$6,042,950	$12,719,210	$18,571,893	$19,363,446	$32,224,133
Total	**$17,818,123**	**$37,900,788**	**$76,809,019**	**$104,321,175**	**$173,696,002**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.1.3 Economic Output

Table 5-16 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $97,237,418 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $159,589,892 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $197,227,085 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $328,349,665 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-16: Economic Output Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$30,676,531	$64,386,627	$108,333,334	$141,231,811	$235,155,106
Indirect/Induced	$15,566,887	$32,850,940	$51,256,558	$55,995,274	$93,194,559
Total	**$46,243,418**	**$97,237,567**	**$159,589,892**	**$197,227,085**	**$328,349,665**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.1.4 Environmental Justice

Economic impacts from the project are expected to be positive and would, generally, stimulate the economy of the region through the creation of jobs, income, and economic output. While many of the jobs created would be taken by people in-migrating to the area for the purposes of working at ARCYBER, many jobs would be available to current residents of the area who are either currently unemployed or underemployed. The additional employment opportunities would be open for application to all racial groups at all levels of income.

This EA has identified no adverse environmental or health effects that would disproportionately affect minority or low-income populations. No environmental justice impacts would occur as a result of implementation of the proposed project.

5.14.1.5 Protection of Children

This EA has identified no adverse environmental health and safety risks that would disproportionately affect children.

5.14.2 Alternative B

Impacts under the proposed Alternative B would be the same as under the proposed Alternative A.

5.14.3 Alternative C

5.14.3.1 Jobs

Table 5-17 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 599 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 1,026 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,232 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum 2,029 jobs would be generated annually in 2019 and every year for the foreseeable future if upwards of 1,500 people are employed at ARCYBER.

Table 5-17: Jobs Impact from Combined Construction and Operations, 2015-2019					
Impact	**2015**	**2016**	**2017**	**2018**	**2019***
Direct	202	423	735	909	1,514
Indirect/Induced	83	175	291	323	515
Total	**285**	**599**	**1,026**	**1,232**	**2,029**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.3.2 Labor Income

Table 5-18 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $27,526,175 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $62,212,780 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $96,721,246 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $154,331,368 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-18: Labor Income Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars					
Impact	**2015**	**2016**	**2017**	**2018**	**2019***
Direct	$9,480,441	$20,176,026	$51,286,681	$84,869,423	$135,430,015
Indirect/Induced	$3,483,783	$7,350,149	$10,926,099	$11,851,824	$18,901,353
Total	**$12,964,224**	**$27,526,175**	**$62,212,780**	**$96,721,246**	**$154,331,368**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.3.3 Economic Output

Table 5-19 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $81,387,177 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $135,850,166 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $180,396,813 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $287,803,673 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-19: Economic Output Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars					
Impact	**2015**	**2016**	**2017**	**2018**	**2019***
Direct	$28,222,409	$59,235,697	$102,686,292	$143,745,964	$229,349,845
Indirect/Induced	$10,509,283	$22,151,480	$33,163,874	$36,650,848	$58,453,828
Total	**$38,731,692**	**$81,387,177**	**$135,850,166**	**$180,396,813**	**$287,803,673**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.3.4 Environmental Justice

Economic impacts from the project are expected to be positive and would, generally, stimulate the economy of the region through the creation of jobs, income, and economic output. While many of the jobs created would be taken by people in-migrating to the area for the purposes of working at ARCYBER, many jobs would be available to current residents of the area who are either currently unemployed or underemployed. The additional employment opportunities would be open for application to all racial groups at all levels of income.

This EA has identified no adverse environmental or health effects that would disproportionately affect minority or low-income populations. No environmental justice impacts would occur as a result of implementation of the proposed project.

5.14.3.5 Protection of Children

This EA has identified no adverse environmental health and safety risks that would disproportionately affect children.

5.14.4 Alternative D

5.14.4.1 Jobs

Table 5-20 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 176 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 864 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,235 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum 2,033 jobs would be generated annually in 2019 and every year for the foreseeable future if upwards of 1,500 people are employed at ARCYBER.

Table 5-20: Jobs Impact from Combined Construction and Operations, 2015-2019					
Impact	**2015**	**2016**	**2017**	**2018**	**2019***
Direct	50	123	617	911	1,517
Indirect/Induced	54	119	271	323	516
Total	**71**	**176**	**864**	**1,235**	**2,033**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.4.2 Labor Income

Table 5-21 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $8,398,104 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $55,689,374 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $96,841,653 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $154,532,046 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-21: Labor Income Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars

Impact	2015	2016	2017	2018	2019*
Direct	$2,356,872	$6,198,479	$46,599,688	$84,962,215	$135,584,669
Indirect/Induced	$866,081	$2,199,625	$9,089,686	$11,879,439	$18,947,377
Total	**$3,222,953**	**$8,398,104**	**$55,689,374**	**$96,841,653**	**$154,532,046**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.4.3 Economic Output

Table 5-22 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $24,052,003 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $116,080,900 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $180,706,677 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $288,320,113 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER.

Table 5-22: Economic Output Impact from Combined Construction and Operations, 2015-2019, Constant 2014 Dollars

Impact	2015	2016	2017	2018	2019*
Direct	$7,016,192	$17,442,449	$88,509,691	$143,973,166	$229,728,514
Indirect/Induced	$2,612,645	$6,609,554	$27,571,209	$36,733,511	$58,591,599
Total	**$9,628,837**	**$24,052,003**	**$116,080,900**	**$180,706,677**	**$288,320,113**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

5.14.4.4 Environmental Justice

Economic impacts from the project are expected to be positive and would, generally, stimulate the economy of the region through the creation of jobs, income, and economic output. While many of the jobs created would be taken by people in-migrating to the area for the purposes of working at ARCYBER, many jobs would be available to current residents of the area who are either currently unemployed or underemployed. The additional employment opportunities would be open for application to all racial groups at all levels of income.

This EA has identified no adverse environmental or health effects that would disproportionately affect minority or low-income populations. No environmental justice impacts would occur as a result of implementation of the proposed project.

5.14.4.5 Protection of Children

This EA has identified no adverse environmental health and safety risks that would disproportionately affect children.

5.14.5 Alternative E

Impacts under the proposed Alternative E would be the same as under the proposed Alternative C.

5.14.6 Alternative F

Impacts under the proposed Alternative F would be the same as under the proposed Alternative C.

5.14.7 Alternative G

Impacts under the proposed Alternative G would be the same as under the proposed Alternative C.

5.14.8 No Action

Under the No-Action Alternative, the proposed ARCYBER Command and Control Facility would not be constructed and operated. Existing conditions in Anne Arundel County and Richmond County would be unchanged.

5.15 CUMULATIVE IMPACTS

5.15.1 Definition of Cumulative Impacts

CEQ regulations stipulate that the cumulative impacts analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). CEQ guidance in Considering Cumulative Impacts affirms this requirement, stating that the first steps in assessing cumulative impacts involve defining the scope of the other actions and their interrelationship with the proposed action. The scope must consider geographic and temporal overlaps among the proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative impacts.

To identify cumulative impacts the analysis needs to address three fundamental questions:

1. Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
3. If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

5.15.2 Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the impacts and the time frame in which the impacts could be expected to occur. For this EA, the ROI delimits the geographic extent of the cumulative impacts analysis. Due to the geographic scope and relatively locally isolated environmental interactions that are anticipated, the ROI for this cumulative impacts analysis is the same for each resource as previously described in Chapter 4. The time frame for cumulative impacts centers on the timing of the proposed action; specifically, construction (interior or exterior) would begin in FY15 and personnel would begin working at Fort Gordon in FY19.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of “reasonably foreseeable” to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions included notices of intent to prepare NEPA documents (i.e., EISs and EAs), management plans, land use plans, and other related planning studies. Those actions occurring or planned to occur near the area of potential effect that could impact traffic conditions (i.e., increase personnel) at Fort Meade and near the proposed ARCYBER facility site in particular are considered potential cumulative actions for this project; those projects are listed in Table 5-23. Similar work for Fort Gordon is shown in Table 5-24.

Table 5-23: Cumulative Actions at Fort Meade, Maryland		
Project	**Description**	**NEPA Documentation**
Army and Air Force Exchange Services (AAFES)	Demolition of AAFES shopping center and parking lot at Reece Road and MacArthur Road and construction of a new 169,000 SF building at the same site.	REC

Table 5-23: Cumulative Actions at Fort Meade, Maryland		
Project	**Description**	**NEPA Documentation**
Asymmetric Warfare Group (AWG) Compound and Motor Pool Site	Construction and operation of an AWG Compound providing administrative, operational, and storage areas, and construction of a Motor Pool Site (a vehicle maintenance facility). The AWG Compound is proposed for an approximately 46-acre parcel of land on Fort Meade, in Anne Arundel County, Maryland with an associated structure on an additional, adjacent 4-acre parcel.	EA
BGE Substation	Construction of a new electrical substation and supporting infrastructure to support future expansion. Approximately 22 acres of undeveloped land and forest would be disturbed.	EA
Construction and Operation of Single and Unaccompanied Personnel Apartments (Reece Crossings Apartments)	The Army would grant Picerne a 50-year lease of approximately 45 acres of land on which Picerne would construct and operate new garden-style apartments and associated facilities for single and unaccompanied personnel. Picerne would operate and maintain the new facilities during the lease period. Picerne would demolish the existing lodging facilities on the parcel.	EA
Defense Information School (DINFOS) Renovation and Expansion	Construction of a 60,273 SF multi-story addition to existing DINFOS building (Bldg 6500). Less than 5 acres of previously disturbed land would be impacted.	REC
East Campus	A portion of Fort Meade, known as Site M, would be developed as an operational complex for Intelligence Community use. The EIS addressed Phase I of this proposal which included 1.8 million square feet of facilities for a data center and associated administrative space for up to 6,500 personnel.	EIS
Howard County Water Reclamation Project	NSA, in coordination with Howard County's Department of Public Works, proposed to create a reclaimed water delivery system on Fort Meade property for the purpose of providing reclaimed water to cooling towers located on NSA's east and main campuses. Project would disturb approximately 14.5 acres of land.	EA
Mini Child Development Center	A 4,460 SF child development center has been proposed for construction at Fort Meade near the proposed SCIF. This facility would provide 24-hour care for up to 20 children at a time. The facility would support extended hours care for shift workers, respite, crisis, and overnight care for children of wounded soldiers.	REC
Privatization of Army Lodging	The Army would grant a short-term (7-year) lease for two existing lodging facilities and the land underlying them for building renovation and operation. One facility (Kuhn Hall) would be returned to the Army at the end of the lease. The other facility (Abrams Hall) would be demolished following coordination and approval from the Maryland Historic Trust, and the land would be returned to the Army at the end of the lease. The Army would grant a 46-year lease of an undeveloped 15.5-acre parcel of land for construction and operation of a new lodging facility. The Army also would convey select buildings under a separate support lease for short-term use by Rest Easy to maintain available lodging units while new lodging was being built.	EA
Water and Wastewater Systems Improvements	Upgrades to the water and wastewater treatment plants, including the conversion of the Wastewater Treatment Plant (WWTP) to a Biological Nitrogen Removal (BNR) system. Proposed pipe work includes replacing a minimum of 62,000 linear feet (LF) of	EA

Table 5-23: Cumulative Actions at Fort Meade, Maryland		
Project	**Description**	**NEPA Documentation**
	waterline, installing a minimum of 1,600 LF of new water line to expand service, and replacing a minimum of 2,024 LF of existing sewer piping. Other work includes installing fencing at wells and pump stations, installing emergency generators at wells, and replacing booster pumps, Also included is the construction of an approximately 6,000 square-foot slab on grade Operations Center near the existing water treatment plant.	
Widening of MD 175	Maryland Department of Transportation has allocated funding for several BRAC actions in MD to include widening MD175 from MD 295 to MD170. Bicycles and pedestrian accommodations will be provided where appropriate. The project would address current and future congestion along MD 175 and improve access to Fort Meade.	EA

Notes: EA = Environmental Assessment; EIS = Environmental Impact Statement; REC = Record of Environmental Consideration

Table 5-24: Cumulative Actions at Fort Gordon, Georgia		
Action	**Project Description**	**NEPA Documentation**
National Security Agency (NSA) – Georgia Cryptologic Center (CSS)	A NSA/CSS Georgia facility was constructed in FY10 at Fort Gordon between 15th Street and the western border of the 17th Street Landfill, and Lane and 111th Avenues. The facility is 525,000 ft^2, and staffing increased up to 3,500 military and civilian personnel.	EA
General Instruction Facility	Construct a 95,770 SF General Instruction Facility to include classrooms, instructors' offices, computer resource rooms and administrative offices.	REC
New Hotel	Construct a 320 room Candlewood Suites Hotel with 324 space parking lot.	EA
Youth Activities Center	Construct a 19,873 SF Youth Activities Center with capacity for 150 children to include Gymnasium, basketball courts, multi-purpose room, class rooms, patio area, and associated sidewalks.	REC
Post Exchange Expansion	The existing 92,000 SF Post Exchange (PX) building will be expanded on the existing site to a total of 177,000 SF under roof. Not only will the existing activities in the building be expanded, but activities currently located at the PXtra Complex (buildings 35200 thru 35206) will also be housed in the new consolidated facility.	REC
80th Training Command TASS Training Center	Construct a 38,000 SF High-Tech Regional Training Site Maintenance (HT RTS-Maint) Military Occupational Specialty (MOS) training building for a year round/full-time HT RTS-Maint schoolhouse unit of the 80th Training Command, at FT Gordon, GA to replace the units' current training facility in Tobyhanna, PA and augment USAR training space on Ft Gordon.	Pending
480th ISR Group HQ	Construct 18,000 sq ft facility to consolidate 6 AF ISR orgs into 1 command/admin/support facility with unclassified and SECRET collateral level security.	Pending
Student Barracks Replacement Phase II	Construct Phase 2 of a 3 - phased standard design Complex. Phase 2 includes two Barracks/Company Operations Facilities for 600 soldiers (300 each), a 1,300 personnel Dining Facility, a Lawn Equipment Building, and Physical Fitness Areas to include Physical Training pits and a quarter-mile running track.	REC

Table 5-24: Cumulative Actions at Fort Gordon, Georgia		
Action	**Project Description**	**NEPA Documentation**
AIT Barracks Replacement Phase III	Construct Phase 3 of a 3 - phased standard design AIT Complex. Phase 3 provides two Barracks with Company Operations Facilities for 600 soldiers (total), and a Battalion Headquarters.	REC
Training Barracks Upgrade Program	Renovation of 18 barracks, one brigade headquarters, four battalion headquarters, four dining facilities, and eight company administration buildings. Each barracks would accommodate 190 soldiers and consist of two-person suites. Project began in January 2008 and will be completed Spring 2016.	REC
Cyber Center of Excellence (CoE)	Establish a CoE at Fort Gordon, leveraging existing institutional and staff structure of the Signal Center of Excellence. This transition would create an estimated 50 to 100 new personnel requirements (depending on approved COA) at Fort Gordon and require modification to existing facilities in order to support specialized training in a SCIF'd classroom environment.	EA

Notes: EA = Environmental Assessment; REC = Record of Environmental Consideration

5.15.3 Potential Cumulative Impacts by Environmental Resource Area

5.15.3.1 <u>Fort Meade</u>

Land Use

The East Campus, BRAC actions, EUL actions, AWG compound, Reece Crossing Apartments, BGE Substation, and the Howard County Water Reclamation Project could cumulatively result in the loss of open space on Fort Meade. Implementation of Alternatives A or B would be consistent with existing designated land uses and policies. Moreover, the land identified for use under Alternative B is the same land designated for the East Campus project, is currently cleared, and no new cumulative impacts would occur. Implementation of Alternatives A or B would not contribute to any long-term significant adverse cumulative impacts.

Visual Resources and Aesthetics

Implementation of Alternatives A or B would have less than significant short-term and long-term impacts on the aesthetics and visual resources within the immediate area of the work. The vacant area is currently open space; however, the proposed construction is consistent with the proposed future development of the area. Moreover, views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation, and these viewers are cognizant of the missions that occur at and near Fort Meade. Similarly, the projects described in Table 5-23 would not substantially change the existing visual condition and would be consistent with proposed development for the area. Therefore, implementation of Alternatives A or B would have no significant cumulative impact to visual resources and aesthetics.

Air Quality

In terms of short-term cumulative impacts, new construction associated with Alternatives A or B, as well as other construction projects could produce a short-term additive amount of emissions if they occur concurrently; however, these projects are expected to produce only a nominal amount which would be below the *de minimis* levels and not regionally significant. Any potential overlaps in emissions would be dispersed over a large geographical area and would occur over multiple years. Furthermore, implementation of recommended fugitive dust control measures would minimize particulate matter emissions. In terms of long-term cumulative impacts, Section 5.3 includes a discussion of emissions due to vehicular use for the Proposed Action which were below the *de minimis* levels. Long-term adverse cumulative impacts would occur as a result of the East Campus, BRAC, and EUL actions which could add more than 23,000 personnel to Fort Meade. It would be necessary for the Metropolitan Planning Organization to include the changes in vehicle patterns for all regional actions when developing the Transportation Improvement Program.

In terms of GHG emissions, emissions from implementation of Alternatives A and B would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions from the Proposed Action and other past, present, and future actions would not be large enough to have an appreciable effect on climate change. Therefore, cumulative impacts to global climate change from implementation of Alternatives A or B would not be significant.

Noise

Other construction projects have the potential to contribute cumulatively to the potential impacts associated with the construction or renovations proposed under the proposed action. However, it is assumed that any construction-related noise generated from other projects at Fort Meade would be temporary, lasting only the duration of the respective project(s) and would be confined to the installation boundaries. For example, construction noise would attenuate to background levels (conservatively, approximately 55 dB) in approximately 245 m (800 ft). In addition, noise from construction-related activities would be confined to general working hours (8:00 AM to 5:00 PM). There would be no significant long-term cumulative increases in noise from any project listed in Table 5-23. Therefore, no significant cumulative impacts associated with the implementation of Alternatives A or B are anticipated at this time.

Geology and Soils

Impacts to soil are localized and typically site-specific. The proposed construction-related projects, as well as other construction projects at Fort Meade are required to adhere to a site specific ESCP to ensure that soil erosion during construction is minimal. In addition, the ESCP and SWPPP would require the implementation of BMPs including using silt fencing, soil stabilization blankets, and matting around areas of land disturbance during construction. Bare soils would be vegetated after construction to reduce erosion and stormwater runoff velocities. Therefore, implementation of Alternatives A or B would not have any significant cumulative impacts on soils.

Water Resources

Short-term cumulative impacts to surface water quality from soil erosion during construction activities could occur if the projects are located in close proximity and time. Conservatively, however, these impacts would be temporary and confined to the respective project areas as all projects are required to follow state and federal guidelines to ensure water quality is protected from possible erosion and sedimentation. This includes implementing project specific BMPs as part of the proposed construction projects to minimize impacts to water quality and using stormwater engineering controls (e.g., culvert/channels directing stormwater to retention basins) to decrease future impacts to water quality following construction. The use of ESCPs and SWPPPs during construction would also minimize impacts to water quality.

Long-term cumulative impacts to water resources are possible due to the increase in impervious surfaces for the new construction. EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* requires a 2-percent annual reduction in potable, industrial, landscaping, and agricultural water intensity by FY20. In addition, the EO requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 require that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow.

Overall, implementation of Alternatives A or B would not result in significant cumulative impacts on water resources.

Floodplains

None of the action alternatives are located within a 100- or 500-year floodplain. Therefore, there is no potential for cumulative impacts for implementation of Alternatives A or B.

Coastal Zone

Implementation of the Alternatives A or B would be consistent to the maximum extent possible with the enforceable policies of the Maryland Coastal Management Program and no significant impacts are expected.

Biological Resources

The Alternative A site location would be located within the open golf course in a developed area of the installation and the Alternative B site location would be located in an area previously cleared. Although there are ornamental, mature, and early successional trees at the sites, implementation of the proposed action would likely disturb grasses and herbaceous areas in the immediate vicinity of project site as the area is mostly cleared and there are plans to incorporate existing trees into the project design to the maximum extent possible. Therefore, it is unlikely for cumulative impacts to result from the removal of grasses and herbaceous areas when combined with other projects listed in Table 5-23 that would remove forested vegetated areas.

No impacts to federal- or state-listed threatened or endangered species would occur and there would be no potential for cumulative impacts. The impact of the proposed action on resident wildlife would be additive to other stressors for these species, which include increasing urbanization and development in the area. Certain species, particularly bird species, could flee to nearby habitat during the construction phase of projects when habitat is disrupted and/or altered. However, given the temporary nature of construction-related impacts to wildlife and migratory birds and the likely separations in implementation timeframes, there is little potential for cumulative impact to resident wildlife from construction activities associated with the proposed action. Therefore, there would be no significant impacts to wildlife from implementation of Alternatives A or B.

Cultural Resources

No impacts to cultural resources would be anticipated from implementation of proposed alternatives; therefore, there is no potential for cumulative impacts for implementation of Alternatives A or B.

Hazardous, Toxic, and Radioactive Substances

Cumulative impacts associated with the amounts of hazardous materials used, toxic substances generated, or hazardous waste disposed would be short-term and managed in accordance with existing installation procedures, as well as federal and state standard operating procedures and regulatory requirements. Therefore, there would be no significant cumulative impacts to hazardous materials, toxic substances, or hazardous waste with the implementation of Alternatives A or B.

Traffic and Roadways

In terms of short-term cumulative impacts, construction traffic associated with the proposed action and other projects on Fort Meade could create additional, but temporary, impacts to traffic. The timing of these projects is not well-known, but if the projects are staggered, impacts would be negligible to minor for implementation of Alternatives A or B. However, even if the projects are not separated in time, the temporary increases in construction-related traffic would not likely result in a long-term disruption to current transportation patterns, nor would it change existing traffic safety.

Implementation of either proposed alternative would have long-term adverse cumulative impacts on traffic and roadways when combined with other actions at Fort Meade that would also increase personnel, including the East Campus, BRAC, and EUL actions. Combined, these projects could add more than 23,000 personnel to Fort Meade. This would result in long-term moderate to severe impacts to already degraded intersections at Fort Meade. It is recommended that identified roadway improvements be implemented and additional traffic surveys be conducted to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

Infrastructure and Utilities

Implementation of Alternatives A or B would have less than significant impacts on infrastructure and utilities. Possible localized short-term disruptions to water service could result from construction activities as existing buried water lines are accessed for connecting new water service lines to the Proposed Action. With the proposed improvements to the water and wastewater systems and infrastructure at the Fort, there would be no long-term impacts to sanitary sewer/wastewater facilities or electrical system. Cumulatively, the projects described in Table 5-23 would have less than significant impacts to infrastructure and utilities. Cumulative projects along with the proposed action would not create excess burden on systems. Consequently, cumulative impacts to infrastructure and utilities would not be significant.

Socioeconomics, Environmental Justice, and Protection of Children

Implementation of Alternatives A or B would have long-term moderate beneficial cumulative impacts on socioeconomics when combined with other actions at Fort Meade, including the East Campus, BRAC, and EUL actions. Combined, these projects could add more than 23,000 personnel to Fort Meade. This would result in short-term beneficial impacts from construction and long-term beneficial impacts from job creation, labor income, and economic output.

Implementation of proposed alternatives would not significantly impact human health or the environment or result in significant impacts to environmental justice and protection of children. The proposed action would comply with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations*, which requires that “each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health impacts of its programs, policies, and activities on minority populations and low income populations” (59 Federal Register, 1994). The proposed alternatives would have no impact on minority populations or low-income populations as defined in EO 12898. The proposed alternatives and all other cumulative projects listed in Table 5-23 would be required to comply with EO 12898; therefore, the proposed alternatives in conjunction with other past, present, and reasonably foreseeable projects would not impose disproportionately high and adverse human health impacts or displacement of or disproportionate cumulative impact to minority and low-income populations.

5.15.3.2 Fort Gordon

Land Use

Implementation of Alternatives C through G would have no significant impact on land use. Cumulatively, the projects described in Table 5-24 would all be consistent with designated land uses and policies and there would be no adverse impacts to land uses.

Visual Resources and Aesthetics

Implementation of Alternatives C through G would have no significant short-term and long-term cumulative impacts on the aesthetics and visual resources within the immediate area of the work. All the proposed site locations would be developed consistent with the proposed future development of the area. Moreover, views of the Installation are limited to personnel, contractors, and civilians working on or visiting the Installation, and these viewers are cognizant of the missions that occur at and near Fort Gordon. Similarly, the projects described in Table 5-24 would not substantially change the existing visual condition and would be consistent with proposed development for the respective area. Therefore, implementation of Alternatives C through G would have no significant cumulative impact to visual resources and aesthetics.

Air Quality

In terms of short-term cumulative impacts, Alternatives C through G and other construction projects listed in Table 5-24 could produce a short-term additive amount of emissions if they are concurrent. However, as discussed in Section 5.3, the proposed construction is expected to produce a less than significant impact on regional emissions; therefore, it is not anticipated that air emissions from other past, present, and future construction projects, when considered incrementally with Alternatives C through G, would exceed any regulatory standards. This is especially true in a region already in attainment for all criteria pollutants.

In terms of long-term cumulative impacts, the proposed increase in personnel associated with the Alternatives C through G would correlate to an increase in the number of vehicles driven. However, with exception of the operations of the NSA/CSS Georgia facility and CoE, none of the other past, present, or reasonably foreseeable actions would affect the number of persons employed at Fort Gordon. While an incremental cumulative impact would result, the emissions would not exceed any regulatory standards.

Overall, there is the possibility of minor short- and long-term adverse cumulative impacts resulting from the implementation of Alternatives C through G at Fort Gordon. However, since regulatory standards would not be exceeded and the AQCR would continue to be attainment of all NAAQS standards, no significant cumulative impacts to air quality are anticipated from implementation Alternatives C through G.

In terms of GHG emissions, emissions from implementation of Alternatives C through G would be below the 25,000 metric tons of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area. In addition, these cumulative sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, cumulative impacts to global climate change from implementation of Alternatives C through G would not be significant.

Noise

Other construction projects have the potential to contribute to short-term cumulative impacts when added to the construction noise associated with the implementation of Alternatives C through G. However, it is assumed that any construction-related noise generated from other projects at Fort Gordon would be temporary, lasting only the duration of the respective project(s) and would be confined to the installation boundaries. For example, construction noise would attenuate to background levels (conservatively, approximately 55 dB) in approximately 245 m (800 ft). In addition, noise from construction-related activities would be confined to general working hours (8:00 AM to 5:00 PM). Therefore, no significant cumulative impacts associated with the implementation of Alternatives C through G are anticipated at this time.

Geology and Soils

Impacts to soil are localized and typically site-specific. The proposed construction-related projects, as well as other construction projects at Fort Gordon are required to adhere to a site specific ESCP to ensure that soil erosion during construction is minimal. In addition, the ESCP and SWPPP would require the implementation of BMPs including using silt fencing, soil stabilization blankets, and matting around areas of land disturbance during construction. Bare soils would be vegetated after construction to reduce erosion and stormwater runoff velocities. Therefore, implementation of Alternatives C through G would not have any significant cumulative impacts on soils.

Water Resources

Short-term cumulative impacts to surface water quality from soil erosion during construction activities could occur if the projects are located in close proximity and time. Conservatively, however, these impacts would be temporary and confined to the respective project areas as all projects are required to follow state and federal guidelines to ensure water quality is protected from possible erosion and sedimentation. This includes implementing project specific BMPs as part of the proposed construction projects to minimize impacts to water quality and using stormwater engineering controls (e.g., culvert/channels directing stormwater to retention basins) to decrease future impacts to water quality following construction. The use of ESCPs and SWPPPs during construction would also minimize impacts to water quality.

Long-term cumulative impacts to water resources are possible due to the increase in impervious surfaces for the new construction (i.e., Alternatives C, E, and F). EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* requires a 2-percent annual reduction in potable, industrial, landscaping, and agricultural water intensity by FY20. In addition, the EO requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 require that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow.

Overall, implementation of Alternatives C through G at Fort Gordon would not result in significant cumulative impacts on water resources.

Floodplains

None of the proposed alternatives are located within a 100- or 500-year floodplain. Therefore, there is no potential for cumulative impacts for implementation of Alternatives C through G.

Coastal Zone

Fort Gordon does not lie within the boundaries of the Georgia Coastal Management Program. Therefore, there is no potential for cumulative impacts for implementation of Alternatives C through G.

Biological Resources

Implementation of Alternatives C or G would require the removal of vegetation. Implementation of Alternatives D or E would occur in previously disturbed areas and negligible impacts to vegetation would occur. Other construction projects listed in Table 5-24 would also require the removal of vegetation at Fort Gordon's cantonment area. Removing natural vegetation would have corresponding impacts to resident wildlife since developing open land permanently removes habitat and displaces resident wildlife. Impacts to vegetation would result in a cumulative impact, but land use planning in accordance with the Installation's INRMP would ensure the preservation of natural land and control growth. As such, when incrementally considering impacts of past, present, and future actions, it was determined there would be no significant cumulative impacts to vegetation from the implementation of Alternatives C or G.

Short-term impacts to federal- or state-listed threatened or endangered species would occur, however, these impacts would be temporary and confined to the respective project areas and there would be no potential for cumulative impacts. The impact of the proposed action on resident wildlife would be additive to other stressors for these species, which include increasing urbanization and development in the area. Certain species, particularly bird species, could flee to nearby habitat during the construction phase of projects when habitat is disrupted and/or altered. However, given the temporary nature of construction-related impacts to wildlife and migratory birds and the likely separations in implementation timeframes, there is little potential for cumulative impact to resident wildlife from construction activities associated with the proposed alternatives. Therefore, there would be no significant impacts to wildlife from implementation of Alternatives C through G.

Cultural Resources

No impacts to cultural resources would be anticipated from implementation of the proposed alternatives. Therefore, there is no potential for cumulative impacts from implementation of Alternatives C through G.

Hazardous, Toxic, and Radioactive Substances

Cumulative impacts associated with the amounts of hazardous materials used, toxic substances generated, or hazardous waste disposed would be short-term and managed in accordance with existing installation procedures, as well as federal and state standard operating procedures and regulatory requirements. Therefore, there would be no significant cumulative impacts to hazardous materials, toxic substances, or hazardous waste with the implementation of Alternatives C through G.

Traffic and Roadways

In terms of short-term cumulative impacts, construction traffic associated with the implementation of Alternatives C through G and other projects on Fort Gordon could create additional, but temporary, impacts to traffic. The timing of these projects is not well-known, but if the projects are staggered, impacts would be negligible to minor. However, even if the projects are not separated in time, the temporary increases in construction-related traffic would not likely result in a long-term disruption to current transportation patterns, nor would it change existing traffic safety as construction trucks would be required to enter and exit Fort Gordon through Gate 3.

In terms of long-term cumulative impacts, none of the projects listed Table 5-24 would significantly increase the number of vehicles driving onto or off of Fort Gordon during peak hours. Therefore, long-term cumulative impacts are not likely. However, it is recommended that roadway improvements be implemented and additional traffic surveys be conducted to confirm projected traffic conditions and identify further measures to minimize traffic impacts.

Infrastructure and Utilities

Implementation of Alternatives C through G would have less than significant impacts infrastructure and utilities. Possible localized short-term disruptions to water service could result from construction activities as existing buried water lines are accessed for connecting new water service lines to the proposed alternatives. There would be no long-term impacts to sanitary sewer/wastewater facilities or electrical system. Cumulatively, the projects described in Table 5-24 would have less than significant impacts to infrastructure and utilities. Cumulative projects along with the proposed action would not create excess burden on systems. Consequently, cumulative impacts to infrastructure and utilities would not be significant.

Socioeconomics, Environmental Justice, and Protection of Children

Implementation of Alternatives C through G would result in short-term beneficial cumulative impacts as a result of additional construction expenditures. The projects listed in Table 5-24 would add up to 100 additional personnel to Fort Gordon; however, no long-term cumulative impacts are expected.

Implementation of Alternatives C through G would result in short- and long-term beneficial impacts; no adverse cumulative impacts are anticipated. There would be no disproportionate adverse environmental health or safety risks to minority or low-income populations or children. Therefore, there is not potential for cumulative impacts.

5.15.4 No Action

Implementation of the No Action alternative would not result in any cumulative environmental impacts.

5.16 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and the impacts that loss would have on future generations.

Construction and operation of the ARCYBER facility would involve the irreversible and irretrievable commitment of materials, energy, biological resources, and human resources. These impacts would be permanent.

Materials. Material resources irretrievably used would include steel, aluminum, concrete, and other building materials. These materials are not in short supply and would not be expected to limit other unrelated construction activities. The preferential use of recycled building materials would reduce the overall amount of materials required.

Energy. The use of fossil fuels (gasoline, natural gas, and diesel fuel) and electricity would be irretrievably lost during construction and operation of the facilities. Overall, consumption of energy resources would not place a significant demand on their availability in either region.

Biological Resources. Some irretrievable loss of vegetation and wildlife habitat would occur for most of the alternatives. With the exception of Alternative D (highly developed Back Hall Campus), the loss of vegetation and conversion of open space would be a permanent impact to biological resources.

Human Resources. The use of human resources for construction is considered an irretrievable loss only in that it would prevent such personnel from engaging in other work activities. However, the use of human resources for the construction actions represents employment opportunities and is considered beneficial.

<u>No Action Alternative</u>

The No Action alternative would not result in any commitment of resources other than those currently used in day to day activities at Fort Meade or at Fort Gordon.

5.17 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 5-25 provides a summary of the potential environmental and cumulative impacts associated with the implementation of the Proposed Action. As detailed in this EA, there would be expected short–term minor adverse impacts to land use, air quality, noise, potable water and wastewater systems, electrical supply, telecommunications, and possibly HTRS from the construction of any of the alternatives; short-term and long-term minor adverse impacts would also occur to aesthetics, air quality, soils, vegetation, wildlife resources, solid waste generation, and potentially stormwater; short term minor adverse impacts and long-term moderate to severe impacts to traffic and short-term and long-term minor beneficial impacts to socioeconomics would also be expected.

While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Tables 5-7 and 5-9, and detailed further in Appendix D would lessen the projected traffic impacts and is expected to result in no substantial effects.

Table 5-26 includes a list of Federal environmental statutes and executive orders that are applicable to the proposed project, as well as the status of compliance to each.

Table 5-25: Summary of Potential Individual and Cumulative Effects on Environmental Resources								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Physical Environment								
Land Use	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Visual and Aesthetic Value	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Air Quality	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Noise	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Geology and Soils	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Prime and Unique Farmland	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Water Resources								
Surface Waters	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	Possible Short-term Minor Adverse Impacts	No Impacts
Stormwater	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	Possible Short-term and Long-term Minor Adverse Impacts	No Impacts
Floodplains	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts

Table 5-25: Summary of Potential Individual and Cumulative Effects on Environmental Resources								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Water Resources cont'd								
Groundwater	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Coastal Zone	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Biological Resources								
Wetlands	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Vegetation	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Very Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Wildlife Resources	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Very Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Rare, Threatened, or Endangered Species	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	Short-term Minor Adverse Impacts	No Impacts
Aquatic Habitat	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Wild and Scenic Rivers	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Cultural Resources	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Hazardous, Toxic, and Radioactive Substances	No Impacts	Possible short-term minor adverse impacts and long-term minor beneficial impacts	No Impacts	Possible short-term minor adverse impacts and long-term minor beneficial impacts	No Impacts	No Impacts	No Impacts	No Impacts

Table 5-25: Summary of Potential Individual and Cumulative Effects on Environmental Resources								
Environmental Consequences								
Resource Area	**Proposed Actions at Ft. Meade**		**Proposed Actions at Ft. Gordon**					**No Action**
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Alternative G**	
Infrastructure And Utilities								
Traffic, Roadways, and Transportation Systems*	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	Short-term Minor Adverse Impacts and Long-term Moderate to Severe Adverse Impacts	No Impacts
Potable Water	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Sanitary Sewer/ Wastewater	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Power	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	Short-term Minor Adverse Impacts	No Impacts
Solid Waste	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	Short-term and Long-term Minor Adverse Impacts	No Impacts
Socio-economic	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	Short-term and Long-term Minor Beneficial Impacts	No Impacts
Environmental Justice/ Protection of Children	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Impacts
Cumulative Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Impacts

* While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Tables 5-7 and 5-9, and detailed further in Appendix D would lessen the projected traffic impacts and is expected to result in no substantial effects.

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Table 5-26: Compliance with Federal Environmental Statutes and Executive Orders	
Acts	**Compliance**
Clean Air Act, as amended (Public Law 88-206)	FULL
Clean Water Act, as amended (Public Law 95-217)	FULL
Coastal Zone Management Act (Public Law 92-583)	FULL
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §9601 et seq.)	FULL
Endangered Species Act of 1973, as amended (Public Law 93-205)	FULL
Farmland Protection Policy Act (Public Law 97-98)	FULL
Fish and Wildlife Coordination Act, as amended (16 United States Code [U.S.C.] 661, et seq.)	FULL
Migratory Bird Treaty Act (16 U.S.C §§703-712, et seq.)	FULL
National Environmental Policy Act of 1969 (Public Law 91-190)	FULL
National Historic Preservation Act of 1966, as amended (Public Law 89-665)	FULL
Noise Control Act of 1972, as amended (Public Law 92-574)	FULL
Resource Conservation and Recovery Act (Public Law 94-580)	FULL
Safe Drinking Water Act, as amended (Public Law 93-523)	FULL
Solid Waste Disposal Act of 1965, as amended (Public Law 89-272, Title II)	FULL
Toxic Substances Control Act of 1976 (Public Law 94-469)	FULL
Watershed Protection and Flood Prevention Act of 1954 (16 U.S.C. §1101, et seq.)	FULL
Wetlands Conservation Act (Public Law 101-233)	FULL
Wild and Scenic Rivers Act (Public Law 90-542, as amended)	FULL
Sikes Act, as amended (Public Law 86-797)	FULL
Archaeological Resources Protection Act, as amended (Public Law 96-95)	FULL
Executive Orders (EO)	
Floodplain Management (EO 11988)	FULL
Protection of Wetlands (EO 11990)	FULL
Environmental Justice in Minority Populations and Low-Income Populations (EO 12898)	FULL
Federal Compliance with Pollution Control Standards (EO 12088)	FULL
Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)	FULL
Consultation and Coordination with Indian Tribal Governments (EO 13175)	FULL
Strengthening Federal Environmental, Energy, and Transportation Management (EO 13514)	FULL
Chesapeake Bay Protection and Restoration (EO 13508)	FULL

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6.0 CONCLUSION

Pursuant to NEPA of 1969, as amended, an EA has been prepared to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the establishment and operation of a Command and Control Facility for ARCYBER to be located at Fort Meade, Maryland, or Fort Gordon, Georgia. With the potential growth of ARCYBER, the resulting facility may need to be capable of supporting a workforce of at least 1,500 personnel.

ARCYBER currently has approximately 156 personnel stationed at Fort Meade and approximately 343 personnel stationed at Fort Belvoir. As ARCYBER grows, personnel from Fort Belvoir would be transferred to one of the two proposed locations. The Proposed Action includes the potential for one or more scenarios encompassing the Command and Control Facility and addition of personnel to either Fort Meade in Maryland or to Fort Gordon in Georgia. The alternatives evaluated in this EA include utilizing existing buildings, renovating existing buildings, and constructing new facilities. The alternatives are presented below:

Fort Meade Course of Action: Interim station would not be necessary at the Fort Meade location. Final stationing options at Fort Meade include the following two alternatives:

- Alternative A: Construct new 179,056 SF facility at Fort Meade at the northwest corner of Mapes Road and Taylor Avenue. Parking and access would also be provided at this location.

- Alternative B: Construct new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Parking and access would also be provided at this location.

Fort Gordon Course of Action: Interim stationing would have the personnel currently located at Fort Belvoir and Fort Meade relocated to several buildings within Back Hall Campus at Fort Gordon. Renovation to these buildings may be required to accommodate the temporary stationing. Final stationing options at Fort Gordon include the following five alternatives all located within the cantonment area:

- Alternative C: Construct a new 179,056 SF facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street. Parking and access would also be provided at this location.

- Alternative D: Renovate several buildings within Back Hall Campus between 22nd Street to 25th Street and Chamberlain Avenue to Barnes Avenue and construct an additional 47,000 SF facility.

- Alternative E: Construct a wing on Whitelaw Hall for the entire ARCYBER Command as part of the planned Whitelaw Hall Phase 2 development.

- Alternative F: Construct a new 179,056 SF facility on Kilbourne Street to house the entire ARCYBER Command. Parking and access would also be provided at this location.

- Alternative G: Construct a new 179,056 SF facility on 19th Street to house the entire ARCYBER Command. Parking and access would also be provided at this location.

As detailed in this EA, there would be expected short–term minor adverse impacts to land use, noise, potable water, sanitary sewer/wastewater, and power from the construction of any of the alternatives; short-term and long-term minor adverse impacts would also occur to aesthetics, air quality, soils, vegetation, wildlife resources, solid waste generation, and possibly stormwater; short term minor adverse impacts and long-term moderate to severe impacts to traffic; and short-term and long-term minor beneficial impacts to socioeconomics and possibly HTRS would also be expected. There would be no disproportional impacts to environmental justice/protection of children and no significant cumulative impacts would be expected for any of the proposed alternatives.

While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, the application of the proposed mitigation measures described in Tables 5-7 and 5-9, and detailed further in Appendix D would lessen the projected traffic impacts and is expected to result in no substantial effects.

Table 5-24 summarizes the potential consequences that the project alternatives and the No Action alternative would have on environmental resources. Table 5-25 presents a list of Federal environmental statutes and executive orders that are applicable to the proposed project, as well as the status of compliance to each.

Based on the evaluation of the environmental consequences accomplished by this EA, the preparation of an EIS is not needed. Any moderate to severe traffic impacts can be minimized through the implementation of previously identified measures. The preparation of a FNSI shall be appropriate.

7.0 REFERENCES

(ARCYBER) U.S. Army Cyber Command. 2012. Data provided upon request in support of socioeconomic report.

Atkins. 2011. Fort Meade Real Property Master Plan Update, Long Range Component, Fort Meade, Maryland. October 2011.

(AUD) City of Augusta Utilities Department. 2012. Augusta Water. Available online at http://www.augustaga.gov/index.aspx?nid=1104. Accessed on September 12, 2012.

AUD. 2009. Available online at http://www.augustaga.gov/index.aspx?NID=1156. Accessed on September 4, 2009.

(BLS) Bureau of Labor Statistics. 2012a. Local Area Unemployment Statistics. Accessed on August 16, 2012.

BLS. 2012b. Quarterly Census of Employment and Wages. Accessed on August 16, 2012.

BLS. 2012c. Occupational Employment and Wages. All occupational average as of May 2011. Accessed on August 9, 2012.

(Census) United States Census Bureau. 2010a. Decennial Census 2000. Summary File 1. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed on August 10, 2012.

Census. 2010b. American Community Survey 5-Year estimate 2006-2010. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed on August 10, 2010.

Census. 2000. Decennial Census 2000. Summary Files 1 and 3. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed on August 10, 2012.

Census. 1990. Decennial Census 1990. Census of Population and Housing. Available online at http://www.census.gov/prod/www/abs/decennial/1990.html. Accessed on August 10, 2012.

(CEQ) Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500 – 1508.

CEQ. 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. Memorandum for Heads of Federal Departments and Agencies. Available online at http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf. February 2010.

(CHPPM) U.S. Army Center for Health Promotion and Preventative Medicine. 2008. Operational Range Assessment Program Phase II Assessment Report, Fort Gordon, Georgia. Prepared by U.S. Army Center for Health Promotion and Preventative Medicine, Aberdeen Proving Ground, MD. July 2008.

CHPPM. 2006. Environmental Assessment for the Proposed Privatization of Wastewater Utilities, Fort Gordon, Georgia. April 2006.

(DoD) Department of Defense. 2011. Installation Hazardous Waste Management Plan, Fort George G. Meade.

DoD. 2008. Fort George G. Meade Asbestos Management Program. Standard Operating Procedures (SOP). October 2008.

DoD. 2006. Fort George G. Meade Lead Hazard Management Plan. January 2006.

DoD. 2005. Final Integrated Pest Management Plan for Fort George G. Meade, Maryland. October 2005.

(EPA) Environmental Protection Agency. 2013. Fort George G. Meade Current Site Information. Available online at http://www.epa.gov/reg3hwmd/npl/MD9210020567.htm. Accessed on February 27, 2013.

(FEMA) Federal Emergency Management Agency. 2011. Flood Insurance Rate Map. August-Richmond County, Georgia (All Jurisdictions).

FEMA. 2010a. Flood Insurance Rate Map. Jefferson County, Georgia and Incorporated Areas.

FEMA. 2010b. Flood Insurance Rate Map. McDuffie County, Georgia and Incorporated Areas.

FEMA. 2007. Flood Insurance Rate Map. Columbia County, Georgia and Incorporated Areas.

Frost, Louis W., Jr. 1981. Soil Survey of Columbia, McDuffie and Warren Counties, Georgia. U.S. Department of Agriculture, Soil Conservation Service.

Georgia Department of Community Affairs. Landfill Infrastructure for FY2011. Available online at www.dca.ga.gov/development/research/programs/downloads/Landfill%20Infrastructure_FY2011.xls. Accessed on September 12, 2012.

(GADNR) Georgia Department of Natural Resources. 2008. Water Quality in Georgia 2007-2008. Prepared by Environmental Protection Division, Atlanta, Georgia. Available online at http://www.gaepd.org/Documents/305b.html. Accessed on September 9, 2009.

GADNR. Undated. “High Priority Waters.” Available on line at http://www.georgiawildlife.org/documentdetail.aspx?docid=89&pageid=13&category=other. Accessed on September 9, 2009.

(GSRC) Gulf South Research Corporation. 2008. *Integrated Natural Resources Management Plan for U.S. Army Signal Center and Fort Gordon*. September 2008.

GSRC. 2001. *Integrated Natural Resources Management Plan for U.S. Army Signal Center and Fort Gordon*. September 2001.

Hoover, J.J. and K. J. Kilgore. 1999. Fish-Habitat Relationships in the Streams of Fort Gordon, Georgia (Technical Report EL-99-6). Prepared by U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS, for U.S. Army, Fort Gordon, GA. July 1999.

Institute of Transportation Engineers. 2008. Trip Generation Manual. Eighth Edition. Washington, DC.

Intergovernmental Panel on Climate Change. 2007. Climate Change 2007-Synthesis Report. IPCC Fourth Assessment Report.

Mach, F.K., and G. Achmad. 1986. Evaluation of the Water-Supply Potential of Aquifers in the Potomac Group of Anne Arundel County, Maryland. Report of Investigation No. 46. Prepared in cooperation with the U.S. Department of the Interior Geological Survey and Anne Arundel County Office of Planning and Zoning. Cited in CH2MHill, 1999.

Maryland Geological Survey. 2005. Generalized Geology of Maryland Pamphlet Series. Available online at http://www.mgs.md.gov/esic/brochures/mdgeology.html. Accessed on February 15, 2006.

Michael Baker Jr., Inc. 2007. Integrated Natural Resources Management Plan for U.S. Army Garrison Fort George G. Meade, 2008-2012. June 2007.

Minnesota IMPLAN Group. 2012. Table to bridge NAICS industries to IMPLAN sectors. Available online at http://implan.com/V4/index.php?option=com_docman&task=cat_view&gid=145&Itemid=60. Accessed on August 10, 2012.

(NCHRP) National Cooperative Highway Research Program. 2010. Report 672, Roundabouts: An Informational Guide. Second Edition. Washington, DC.

(NRCS) U.S. Department of Agriculture, Natural Resources Conservation Service. 2012. Soil Surveys on line. Available online at http://websoilsurvey.nrcs.usda.gov/app/.

(NSA) National Security Agency. 2010. Environmental Impact Statement *Addressing Campus Development at Fort George G. Meade, Maryland.*

Paulk, Herschel L. 1981. Soil Survey of Richmond County, Georgia. U.S. Department of Agriculture, Soil Conservation Service.

Rohde, Fred C., Hoover, Jan J., and K. Jack Killgore. 2004. Management Plan for the Savannah darter, Bluebarred pygmy sunfish, and Mud sunfish at Fort Gordon, Georgia. North Carolina Division of Marine Fisheries, Wilmington, NC, and U.S. Army Engineer Research and Development Center, Vicksburg, MS. June 2004.

Science Applications International Corporation. 2006. *Oil and Hazardous Substance Spill Prevention and Response Plan, U.S. Army Fort George G. Meade, Maryland*. Prepared for U.S. Army Corps of Engineers, Mobile District, Mobile, Alabama. December 2006.

(TRB) Transportation Research Board. 2010. Highway Capacity Manual. Fifth Edition. Washington, DC.

(USACE) U.S. Army Corps of Engineers, Baltimore District. 2011a. Integrated Cultural Resources Management Plan, Fort George G. Meade, Anne Arundel County, Maryland. October 2011.

USACE, Baltimore District. 2011b. Wetland Delineation Report Fort George G. Meade, Basewide, Anne Arundel County, Maryland. December 2011.

USACE, Baltimore District, 2008. Floodplain Analysis and Mapping, U.S. Army Garrison Fort George G. Meade, Anne Arundel County, Maryland. March 2008.

USACE, Baltimore District. 2004. Environmental Baseline Survey, Site M, Fort Meade, Maryland. May 2004.

USACE, Mobile District. 2010. Environmental Assessment *Implementation of the Privatization of Army Lodging Program at Fort Gordon*, Georgia. September 2010.

USACE, Mobile District. 2007. Environmental Impact Statement *Implementation of Base Realignment and Closure 2005 and Enhanced Use Lease Actions at Fort George G. Meade, Maryland.*

(USAGFG) U.S. Army Garrison, Fort Gordon. 2011. Integrated Cultural Resource Management Plan for Fort Gordon, Georgia. January 2011.

USAGFG, Directorate of Public Works. 2010a. Privatization of Army Lodging (PAL) Environmental Questionnaire – Fort Gordon, GA – Parcels A, B, C, D, E and F. May 2010.

USAGFG. 2010b. Spill Prevention, Control, and Countermeasures Plan (SPCCP), Fort Gordon, Georgia. November 2010.

USAGFG. 2008. Integrated Natural Resources Management Plan. U.S. Army Garrison, Fort Gordon, Georgia. September 2008.

USAGFG. 2006. Environmental Assessment of the Proposed NSA/CSS Georgia Cryptologic Center, Fort Gordon, Georgia. Director of Public Works and Logistics (DPWL). July 2006.

USAGFG. 2003. Hazardous Waste Management Plan. U.S. Army Garrison, Fort Gordon, Georgia. March 2003.

USAGFG. 2000. Installation Environmental Noise Management Plan, Fort Gordon, Georgia.

(USEPA) U.S. Environmental Protection Agency. 2012a. National Ambient Air Quality Standards. Available online at http://www.epa.gov/air/criteria.html. Accessed on August 7, 2012.

USEPA. 2012b. Currently Designated Nonattainment Areas for All Criteria Pollutants. Available online at http://www.epa.gov/air/oaqps/greenbk/index.html.

USEPA. 2010. General Conformity Regulatory Actions. Revisions to the General Conformity Rule. Available online at http://www.epa.gov/air/genconform/documents/20100324rule.pdf. March.

USEPA. 2009a. Enforcement and Compliance History Online. Permit #GA0037621. Available online at http://www.epa-echo.gov/echo/compliance_report_water_icp.html

USEPA. 2009b. Emissions Factors & AP-42, Compilation of Air Pollutant Emission Factors. AP-42, Fifth Addition, Vol I. Last updated March 2009. Available online at http://www.epa.gov/ttn/chief/ap42/ch03/index.html.

USEPA. 2006. Envirofacts. Water Discharge Permits. 2006. Permit #GA0037621. Available online at http://www.epa.gov/enviro/html/pcs/pcs_query_java.html

USEPA. 1986. Pamphlet, “Noise and Your Hearing.”

USEPA. 1973. Public Health and Welfare Criteria for Noise, 550/9-73-002. July 1973.

(USFWS) U.S. Fish and Wildlife Service. 2012. National Wetlands Inventory. Available online at http://www.fws.gov/wetlands/index.html. Accessed on July 24, 2012.

U.S. Army Center for Health Promotion and Preventive Medicine – North. 2004. *Installation Hazardous Waste Management Plan, Fort George G. Meade*. Prepared for Fort G. Meade, Directorate of Public Works, Environmental Management Office, Fort Meade, Maryland. December 2004.

(WSSC) Washington Suburban Sanitary Commission. 2012. Water Usage. Available online at: http://www.wsscwater.com/home/jsp/content/water-usagechart.faces

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8.0 ACRONYMS AND ABBREVIATIONS

ACM	Asbestos Containing Material
AIRFA	American Indian Religious Freedom Act
AOC	Architect of the Capitol
AQCR	Air Quality Control Region
AR	Army Regulation
ARCYBER	Army Cyber Command, 2nd Army
ARPA	Archaeological Resource Protection Act
AUD	City of Augusta Utilities Department
AWG	Asymmetric Warfare Group
BCT	Basic Combat Training
BG&E	Baltimore Gas and Electric
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CAA(A)	Clean Air Act (Amendments)
CEQ	Council of Environmental Quality
CEMP	Comprehensive Expansion Master Plan
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CH_4	Methane
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
CZM(A)	Coastal Zone Management (Act)
dBA	A-Weighted Decibel
DC	District of Columbia
DDEAMC	Dwight D. Eisenhower Army Medical Center
DINFOS	Defense Information School
DISA	Defense Information System Agency
DMA	Defense Media Activity
DMM	Discarded Military Munitions
DNL	Day-Night Level
DoD	Department of Defense
DoI	Department of the Interior
EA	Environmental Assessment
ECOP	Environmental Condition of Property
EIS	Environmental Impact Statement
EMCS	Energy Monitoring Control Systems

EO	Executive Order
EPA	Environmental Protection Agency
EPD	Environmental Protection Division
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESD	Environmental Site Design
EUL	Enhanced Use Lease
FEMA	Federal Emergency Management Agency
FFA	Federal Facility Agreement
FIRM	Flood Insurance Rate Map
FNSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FY	Fiscal Year
GA	Georgia
GADNR	Georgia Department of Natural Resources
GHG	Greenhouse Gas
GPD	Gallons Per Day
GPM	Gallons Per Minute
GRSOC	Gordon Regional Security Operations Center
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HEL	Highly Erodible Lands
HMCC	Hazardous Materials Control Center
HSMS	Hazardous Substance Management System
HTRS	Hazardous, Toxic, and Radioactive Substances
ICRMP	Integrated Cultural Resources Management Plan
IDS	Intrusion Detection System
IET	Initial Entry Training
INRMP	Integrated Natural Resource Management Plan
IPMP	Integrated Pest Management Plan
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ITE	Institute of Transportation Engineers
kV	Kilovolt
LBP	Lead Based Paint
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LTM	Long Term Management
LOS	Level of Service
LUC	Land Use Control

MC	Munitions Constituent
MD	Maryland
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MEC	Munitions of Explosive Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
MGD	Million gallons per day
mg/L	Milligrams per Liter
MMRP	Military Munitions Response Program
MOUT	Military Operations on Urban Terrain
MRA	Munitions Response Area
MRS	Munitions Response Site
MSDS	Material Safety Data Sheets
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NBC	Nuclear, Biological, and Chemical
NCA	Noise Control Act
NCHRP	National Cooperative Highway Research Program
NCO	Non-Commissioned Officer
NEPA	National Environmental Protection Act
NETCOM	Army Network Enterprise Technology Command
NHPA	National Historic Preservation Act
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOC	Network Operations Center
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSA	National Security Agency
NSGA	Naval Security Group Activity
NSR	New Source Review
NWI	National Wetland Inventory
O_3	Ozone
OC	Operations Center
OSUT	One Station Unit Training
PCB	Polychlorinated Biphenyl
PM	Particulate Matter
PM_{10}	PM less than 10 microns in diameter
$PM_{2.5}$	PM less than 2.5 microns in diameter
POLs	Petroleum, Oils, and Lubricants

RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RFI	RCRA Facility Investigation
ROG	Reactive Organic Gas
ROI	Region of Influence
RONA	Record of Non-Applicability
SARA	Superfund Amendments and Reauthorization Act
SBV	Stream Buffer Variance
SCIF	Sensitive Compartmented Information Facility
SF	Square Foot (Feet)
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SOP	Standard Operating Procedure
SPCCP	Spill Prevention Control and Countermeasures Plan
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TA	Training Area
TMDL	Total Maximum Daily Load
TOE	Table of Organization and Equipment
TSCA	Toxic Substance Control Act
UPS	Uninterrupted Power Systems
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

APPENDIX A

FIGURES

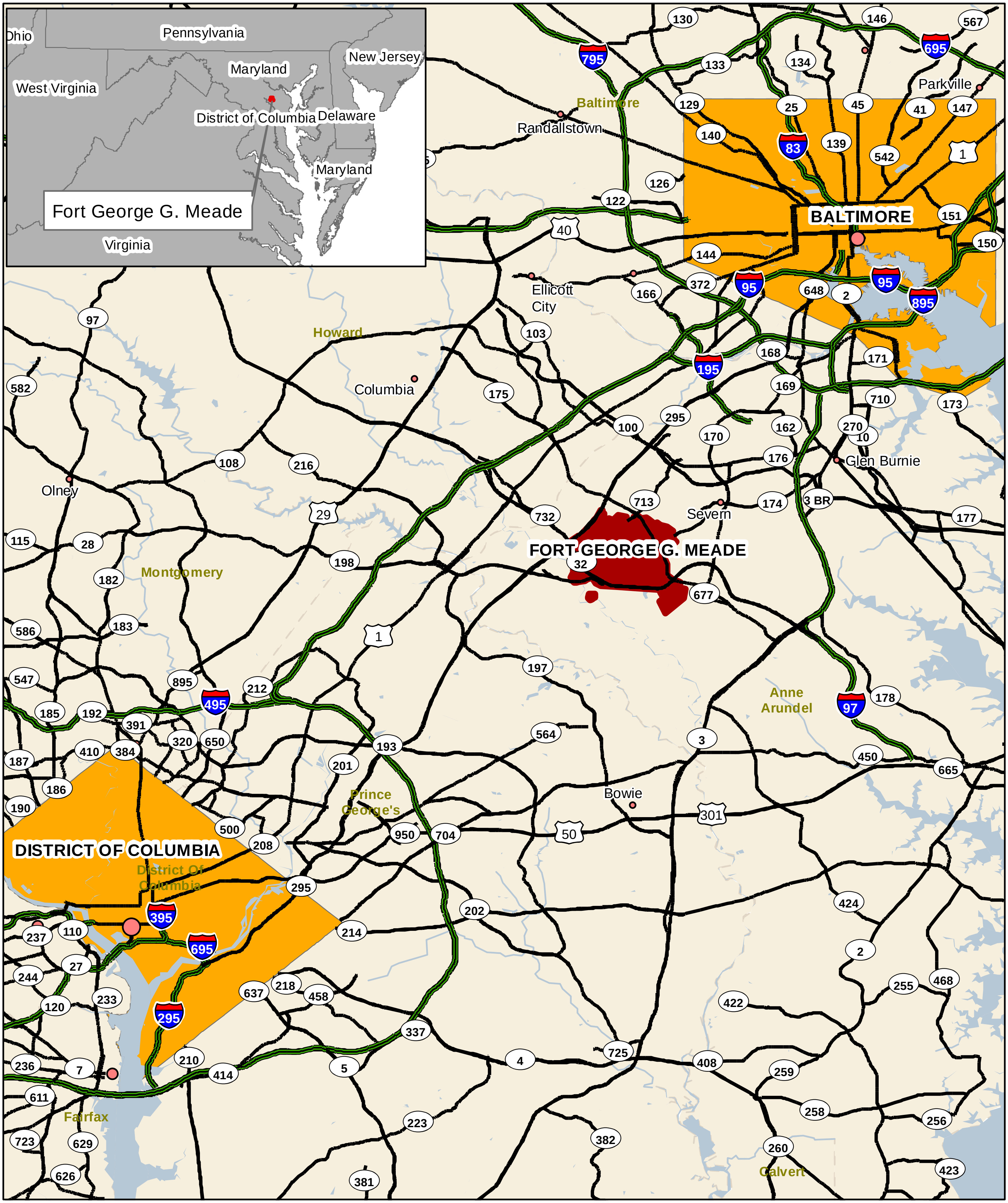


Figure 1-1: Location
Fort George G. Meade
Anne Arundel County, Maryland

1 inch = 5 miles

0 2.5 5 10 Miles

N

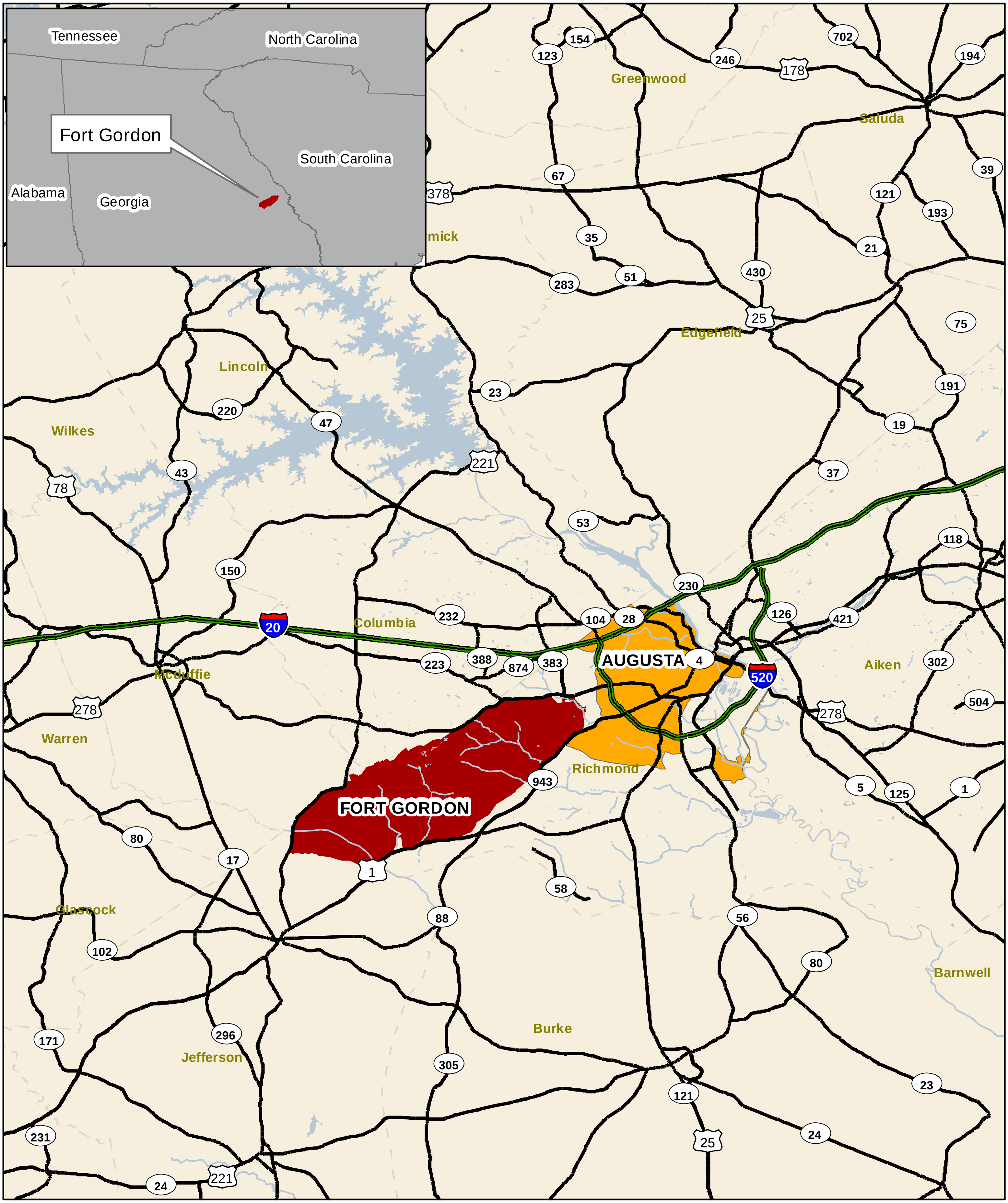


Figure 1-2: Location
Fort Gordon
Richmond, Jefferson, Columbia, and McDuffie Counties
Georgia

1 inch = 8 miles

0 4 8 16 Miles

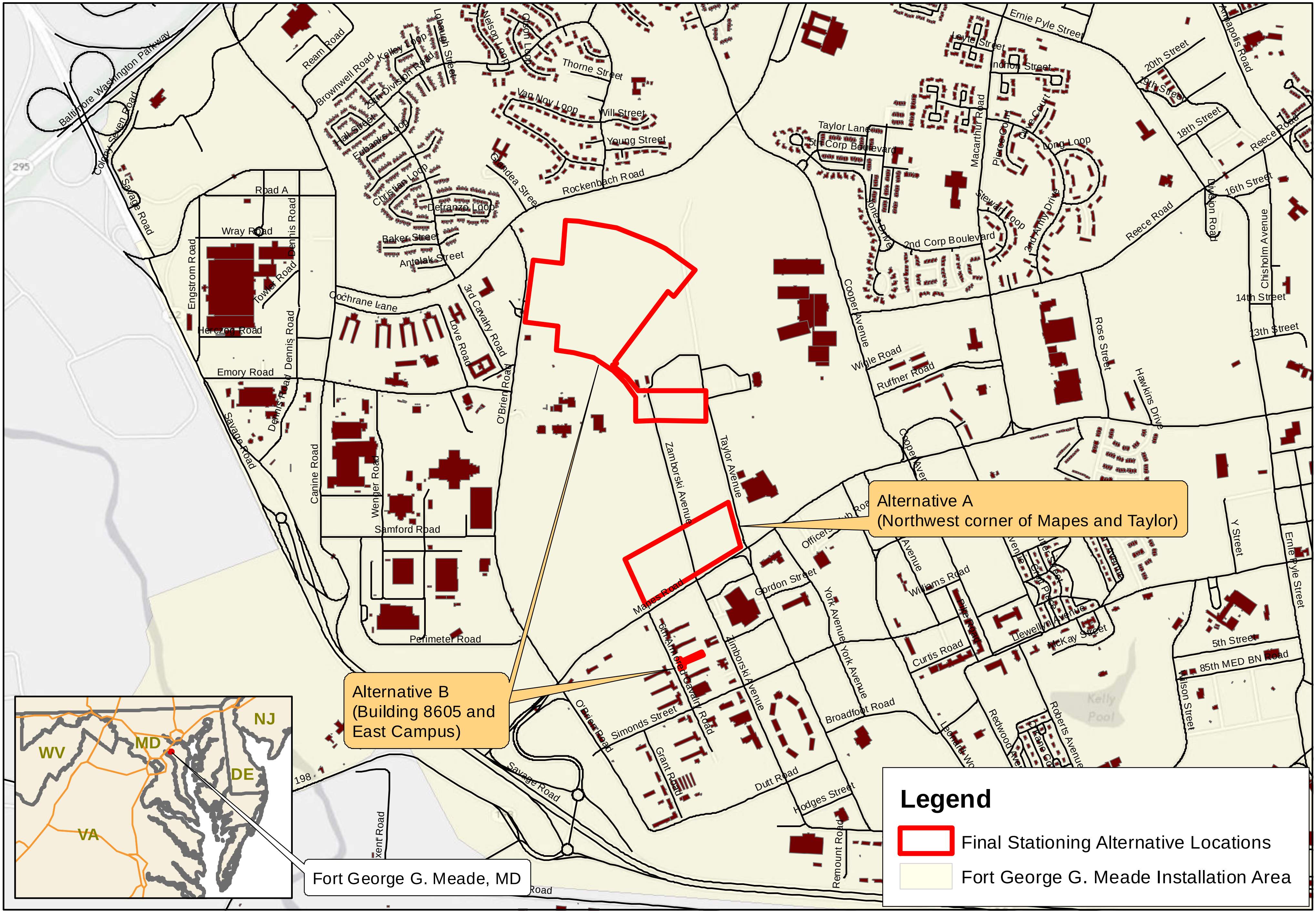


FIGURE 2-1
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort George G. Meade, MD

0 750 1,500 3,000 4,500 6,000 Feet

Prepared May 23, 2012

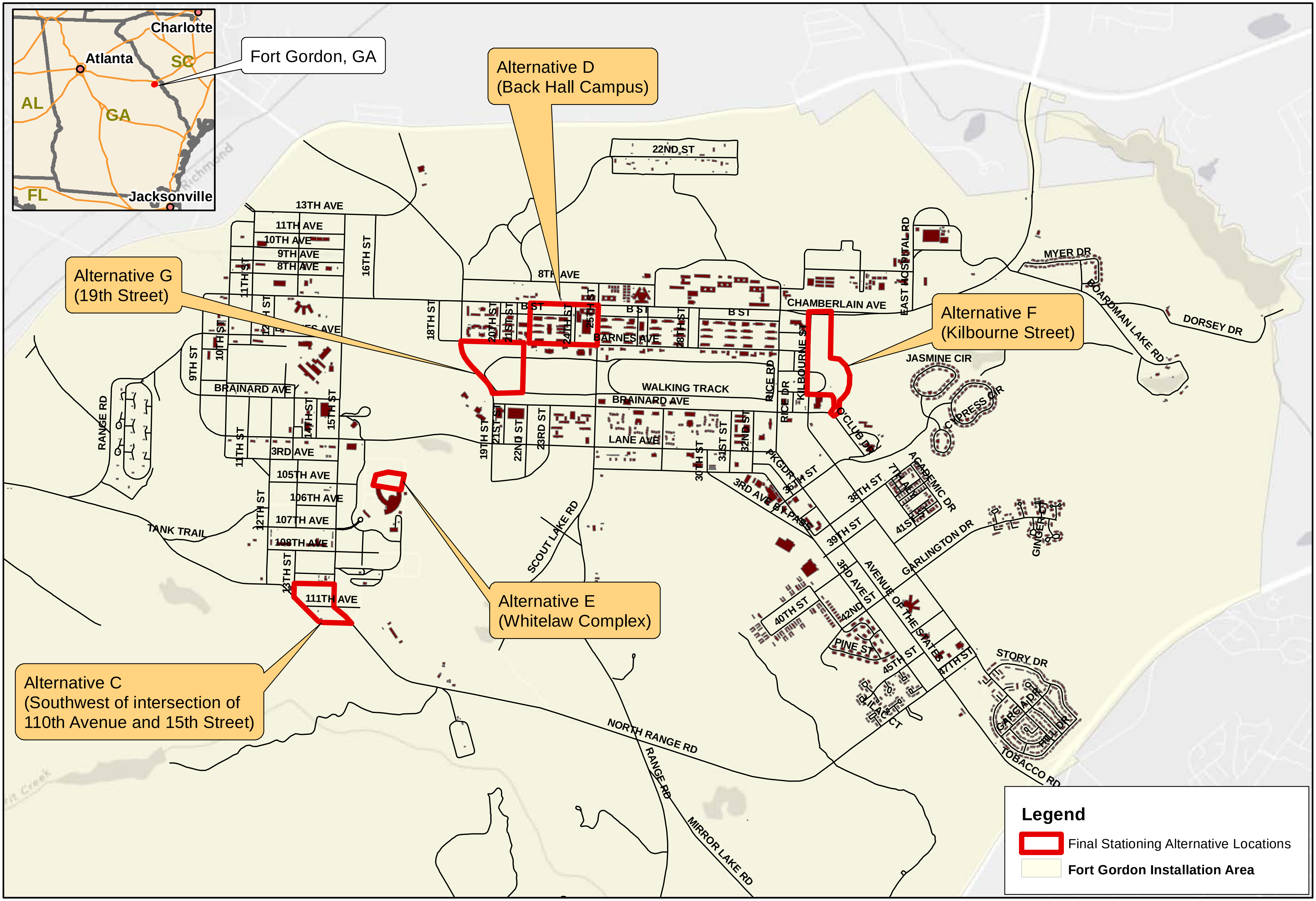


FIGURE 2-2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

0 1,500 3,000 6,000 9,000 12,000 Feet

Prepared July 23, 2013

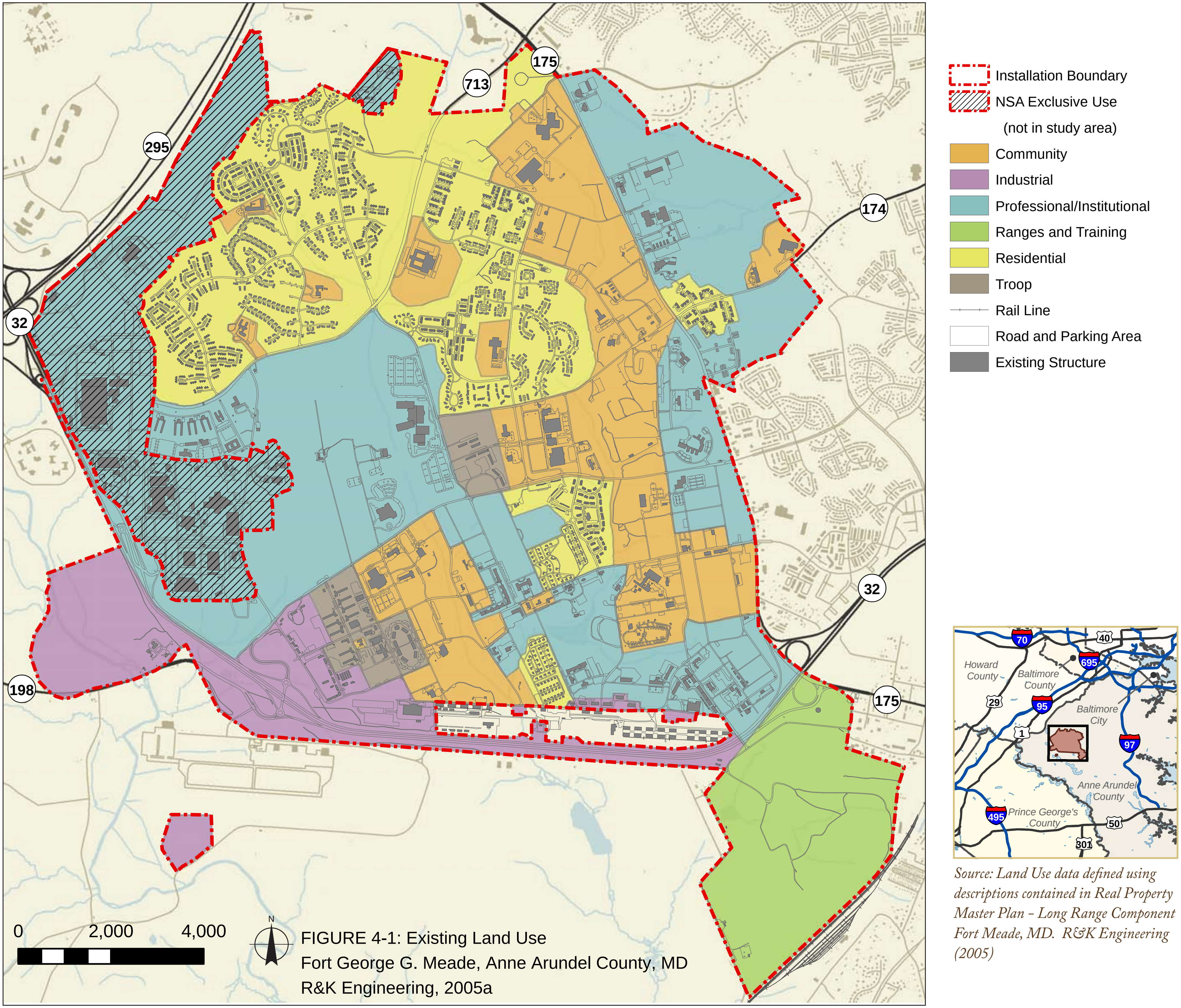


FIGURE 4-1: Existing Land Use
Fort George G. Meade, Anne Arundel County, MD
R&K Engineering, 2005a

Source: Land Use data defined using descriptions contained in Real Property Master Plan – Long Range Component Fort Meade, MD. R&K Engineering (2005)

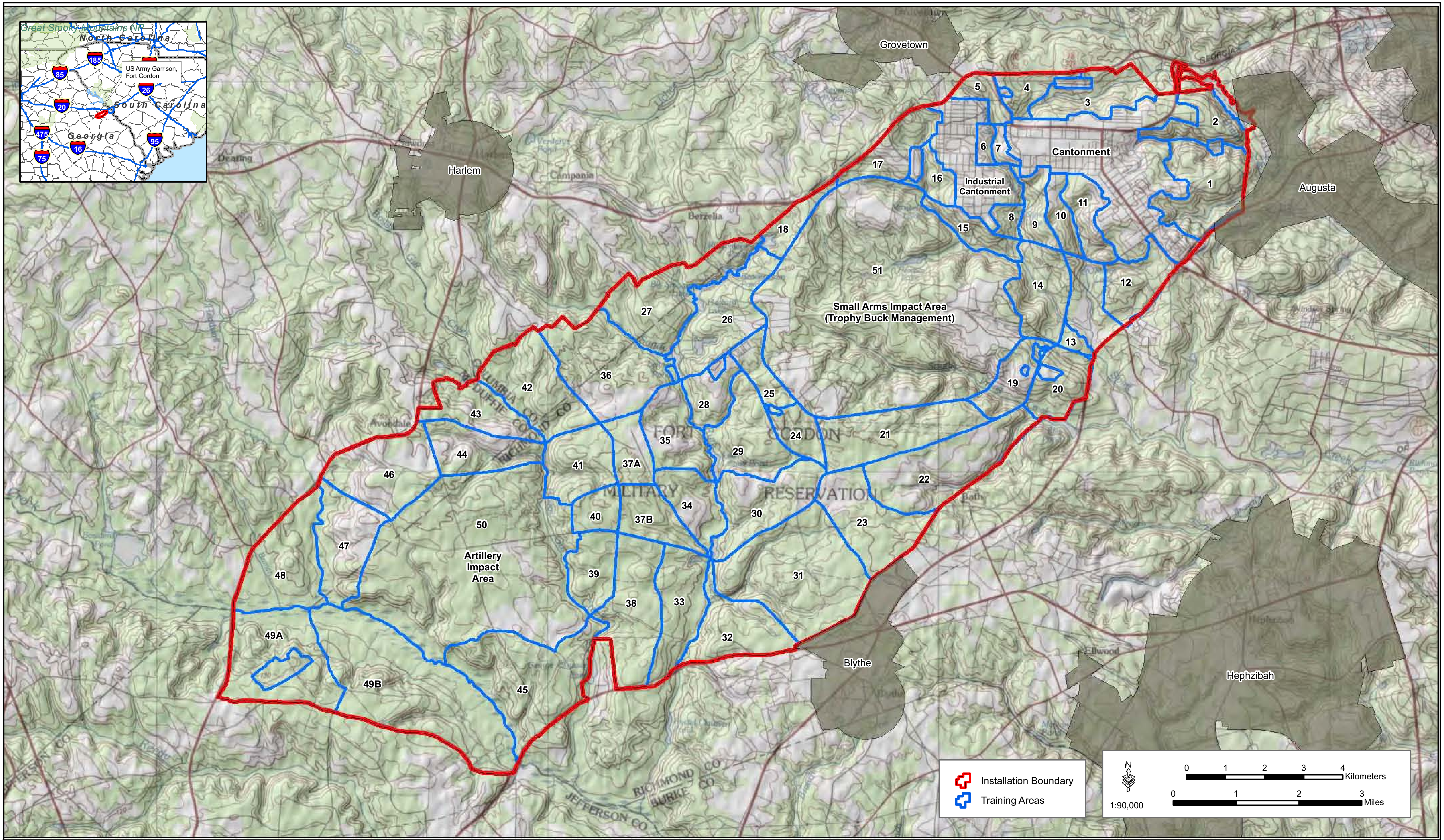


FIGURE 4-2: Existing Land Use
Fort Gordon, Richmond, Jefferson, Columbia, and McDuffie Counties, GA
(GSRC, 2008)

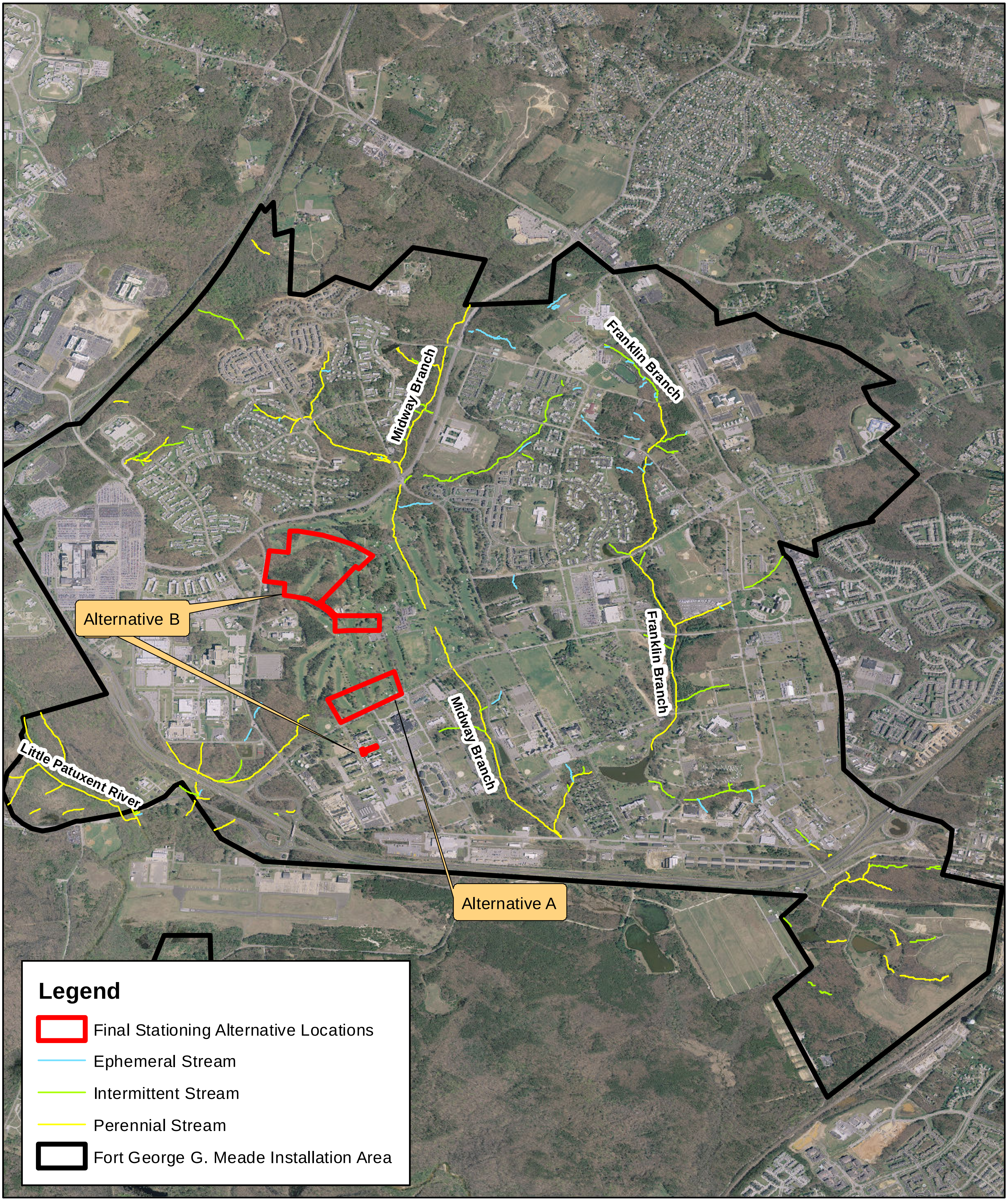


Figure 4-3: Surface Water Features
Fort George G. Meade, Anne Arundel County, MD
Source: Aerial, Anne Arundel County, 2007

1 inch = 3,000 feet

0 1,500 3,000 6,000 Feet

Prepared August 14, 2012

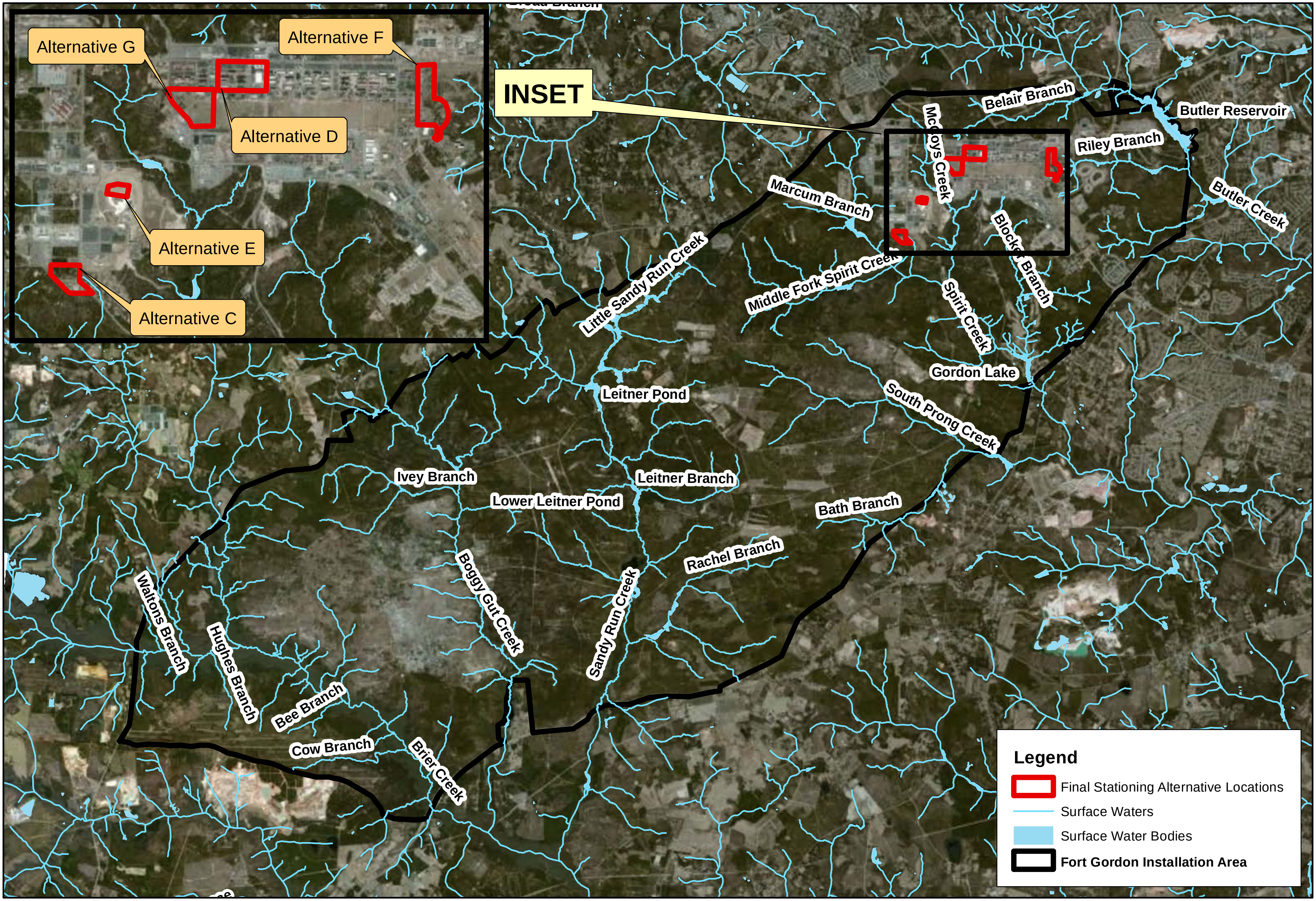


FIGURE 4-4: Surface Water Features
Fort Gordon, Richmond, Jefferson, Columbia, and McDuffie Counties, GA
Source: Aerial, Bing Maps

Prepared July 23, 2013

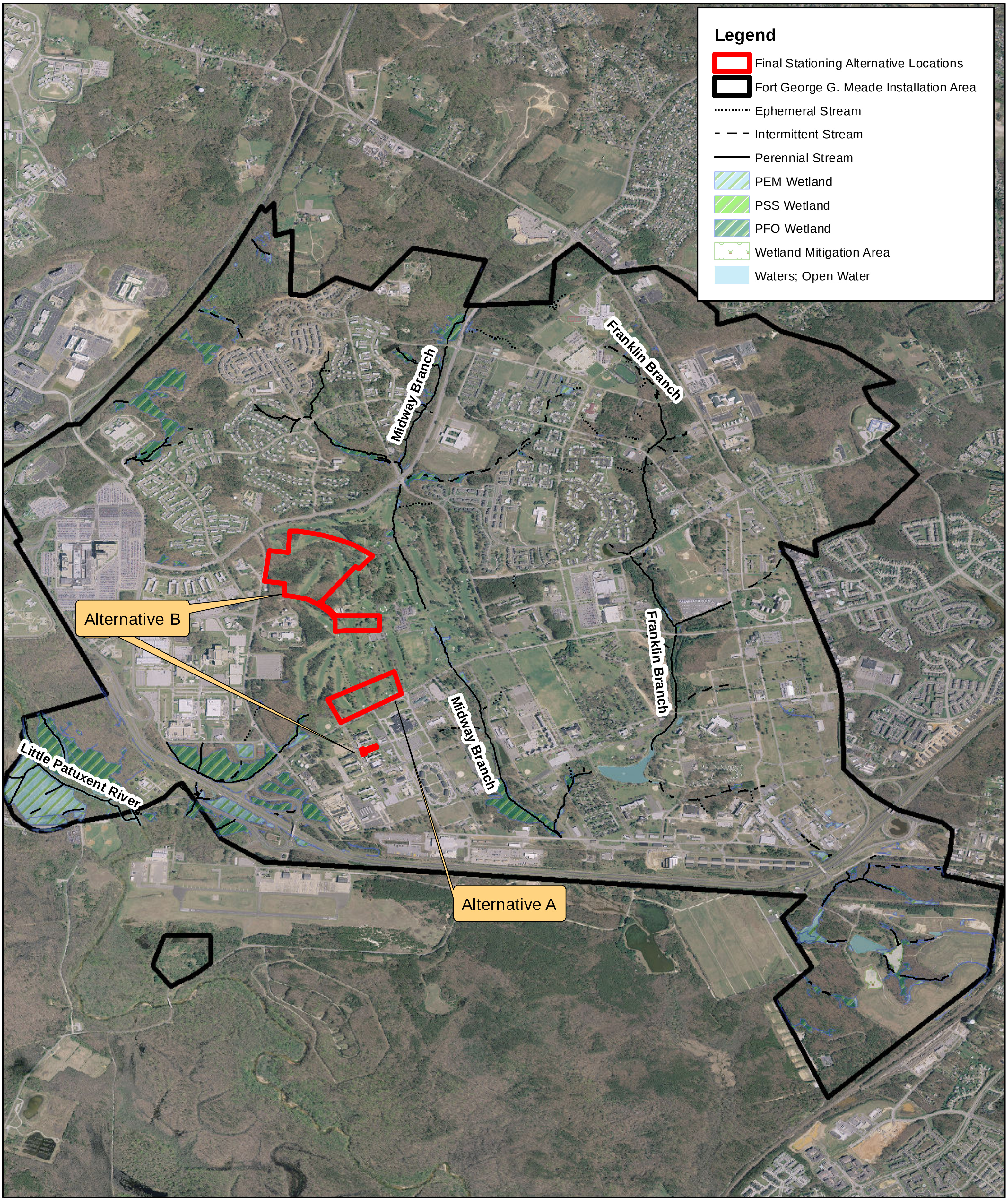


Figure 4-5: Wetlands

Fort George G. Meade, Anne Arundel County, MD
Source: Aerial, Anne Arundel County, 2007
Wetlands, USACE, 2011

1 inch = 3,000 feet

0 1,500 3,000 6,000 Feet

Prepared August 14, 2012

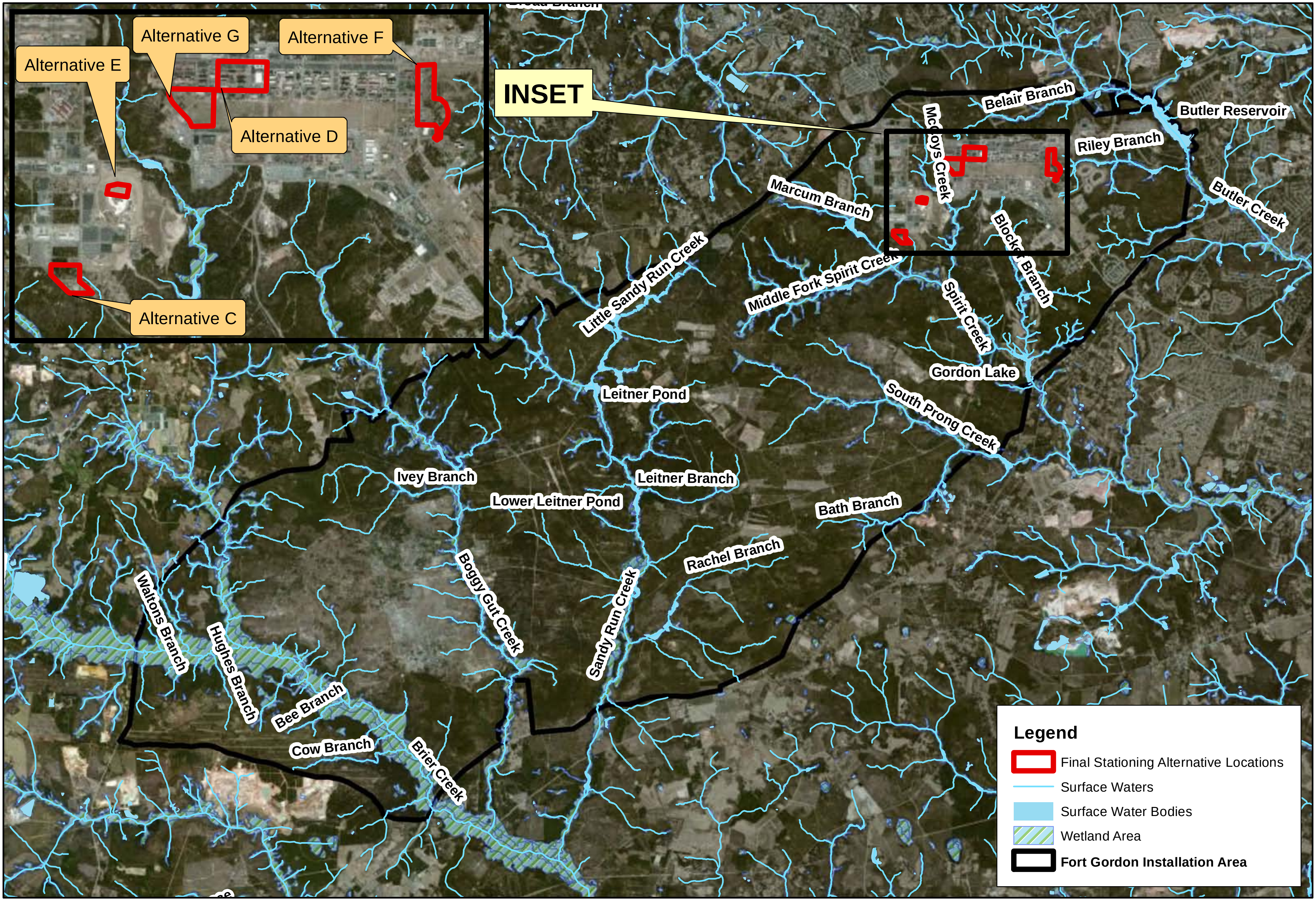


FIGURE 4-6: Wetlands
Fort Gordon, Richmond, Jefferson, Columbia, and McDuffie Counties, GA
Source: Aerial, Bing Maps
Wetlands, National Wetland Inventory, 2012

Prepared July 23, 2013

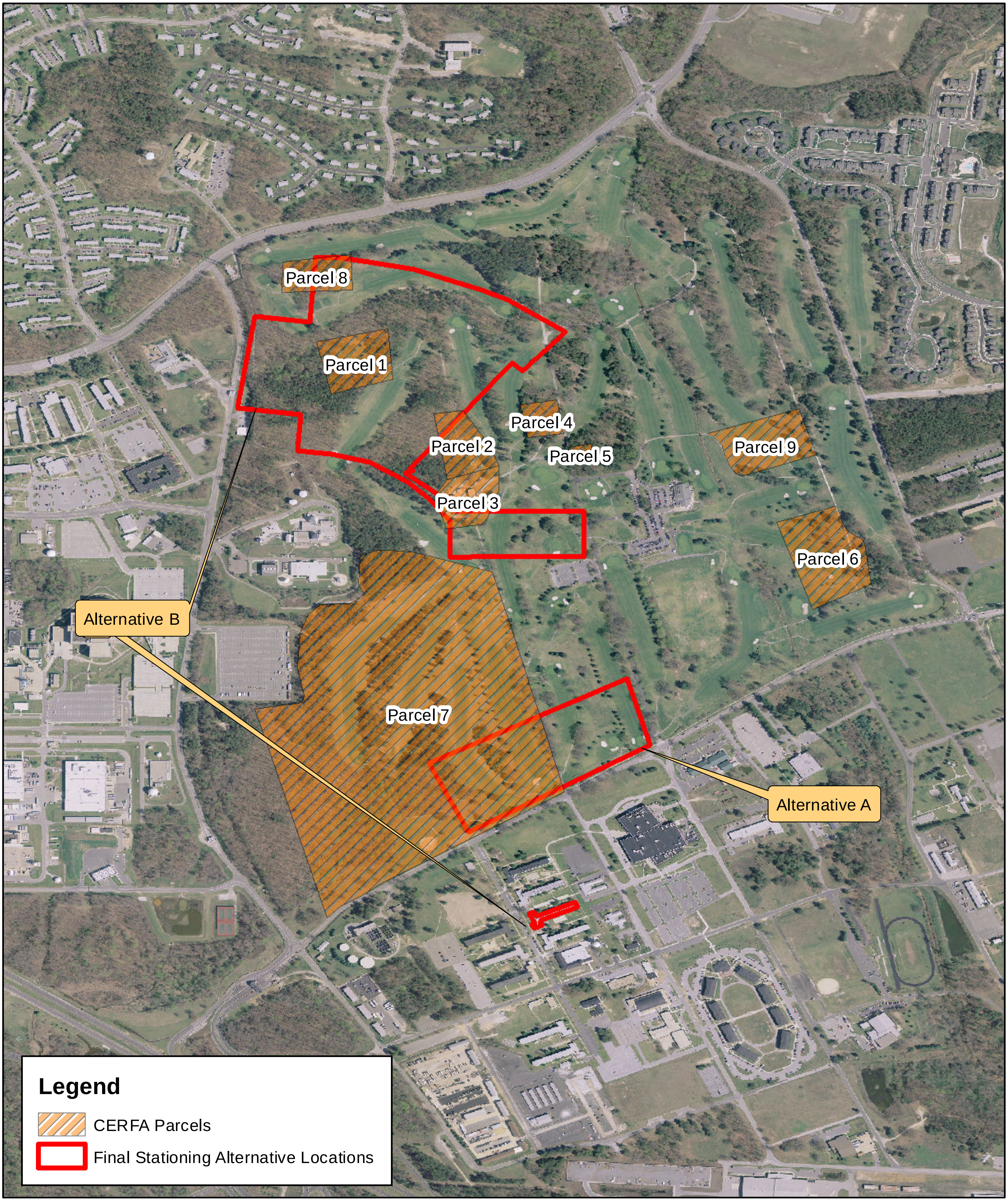


Figure 4-7: Potential Soil and Groundwater Hazard Areas

Fort George G. Meade, Anne Arundel County, MD
Source: Aerial, Anne Arundel County, 2007
CERFA Parcels, NSA, 2010

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

Prepared September 24, 2012

N

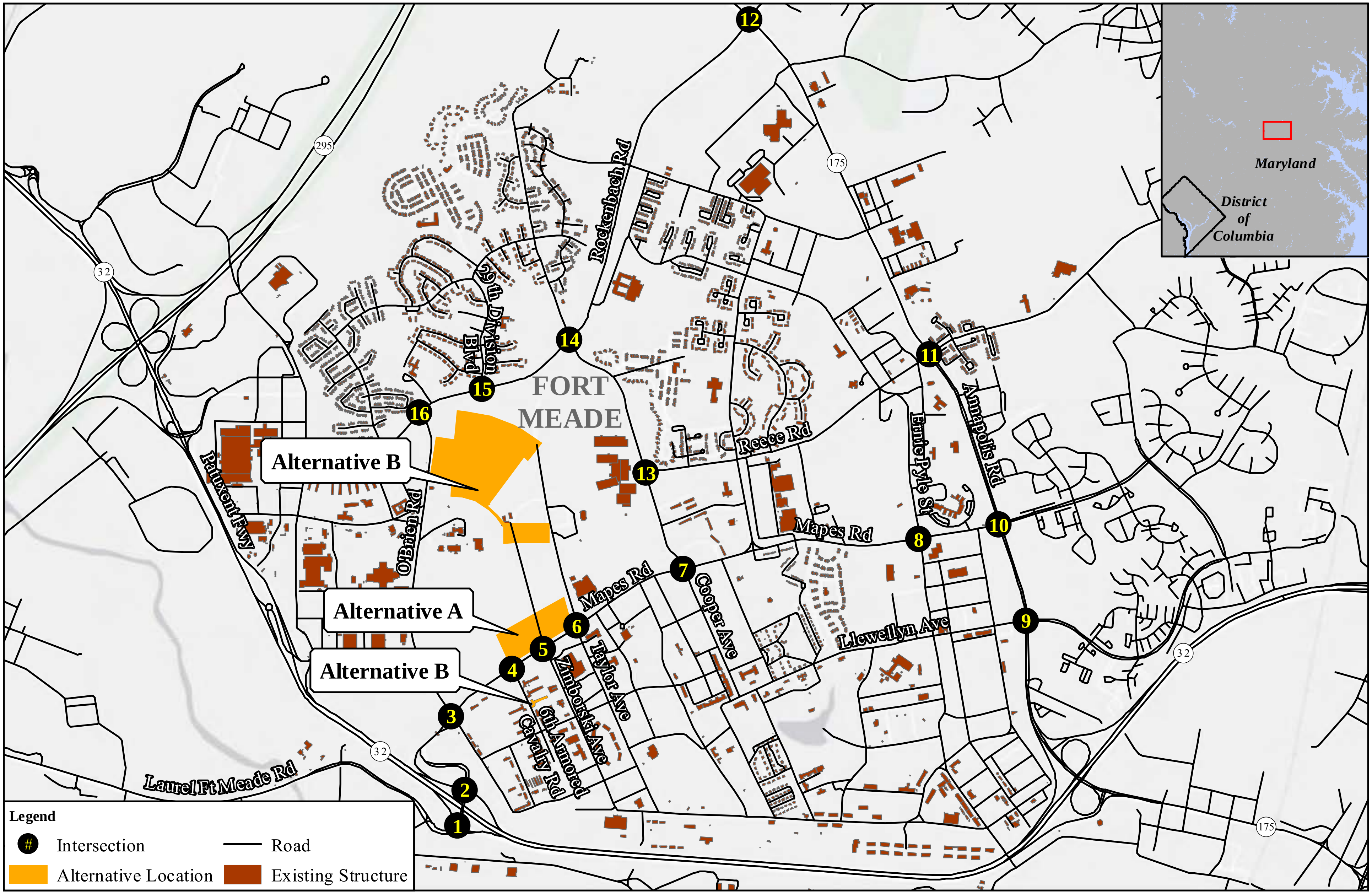


Figure 4-8: Traffic Region of Influence, Fort Meade Course of Action

1 in = 0.5 miles

0 0.25 0.5 1 Miles

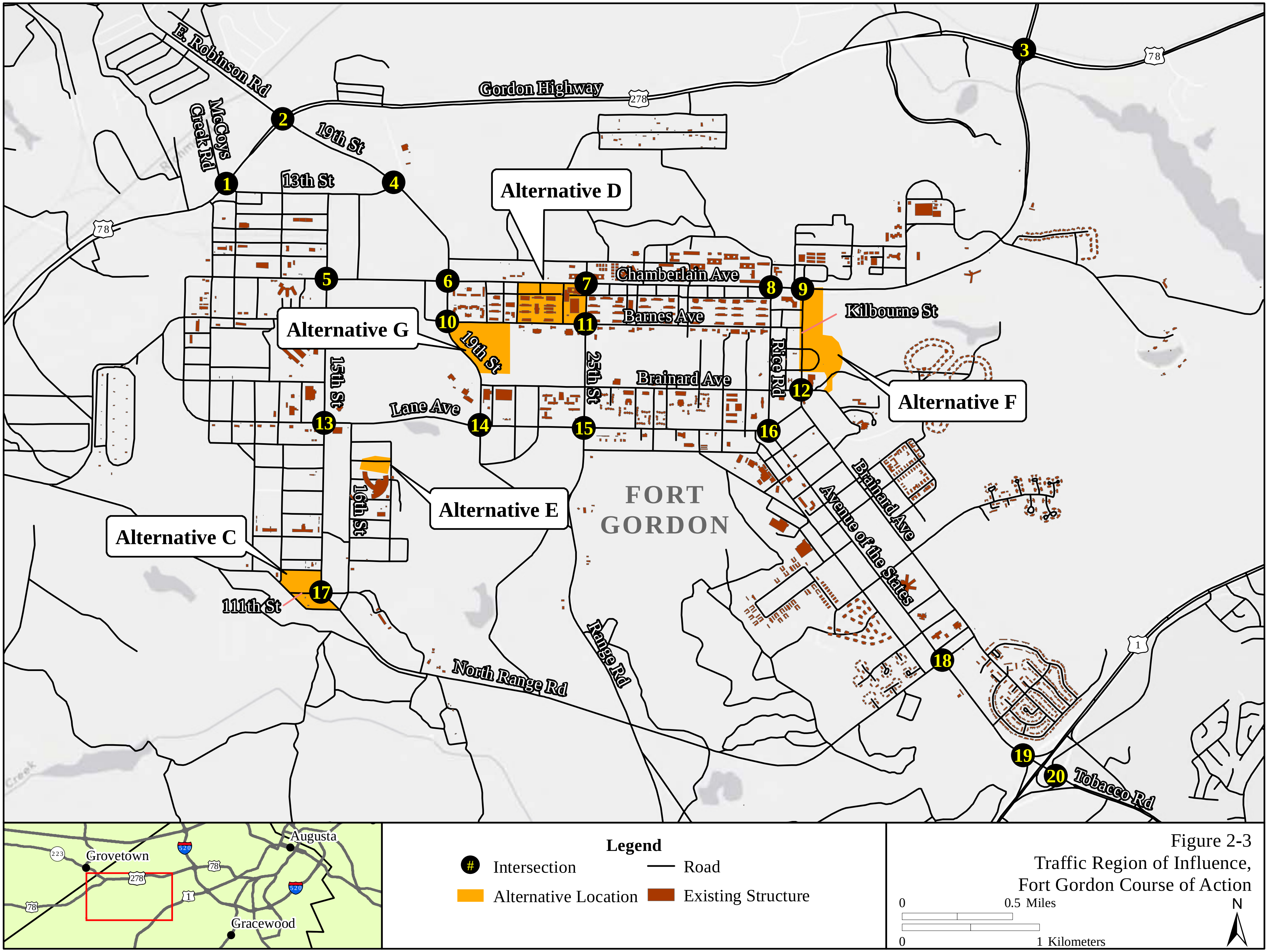


Figure 2-3
Traffic Region of Influence,
Fort Gordon Course of Action

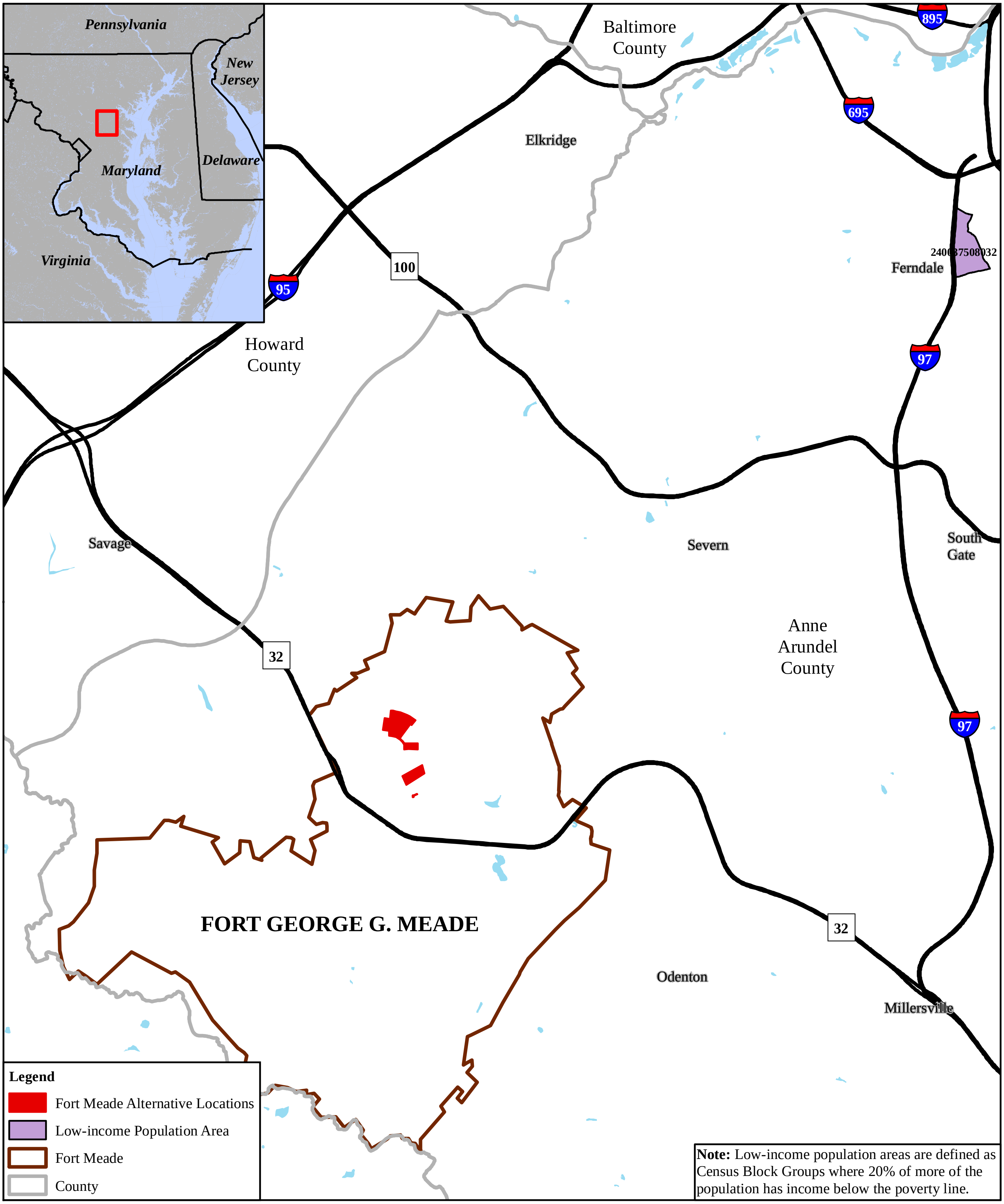


Figure 4-10: Environmental Justice for Low-income Population Areas

1 in = 2 miles

0 0.5 1 2 Miles

Source: Census 2010

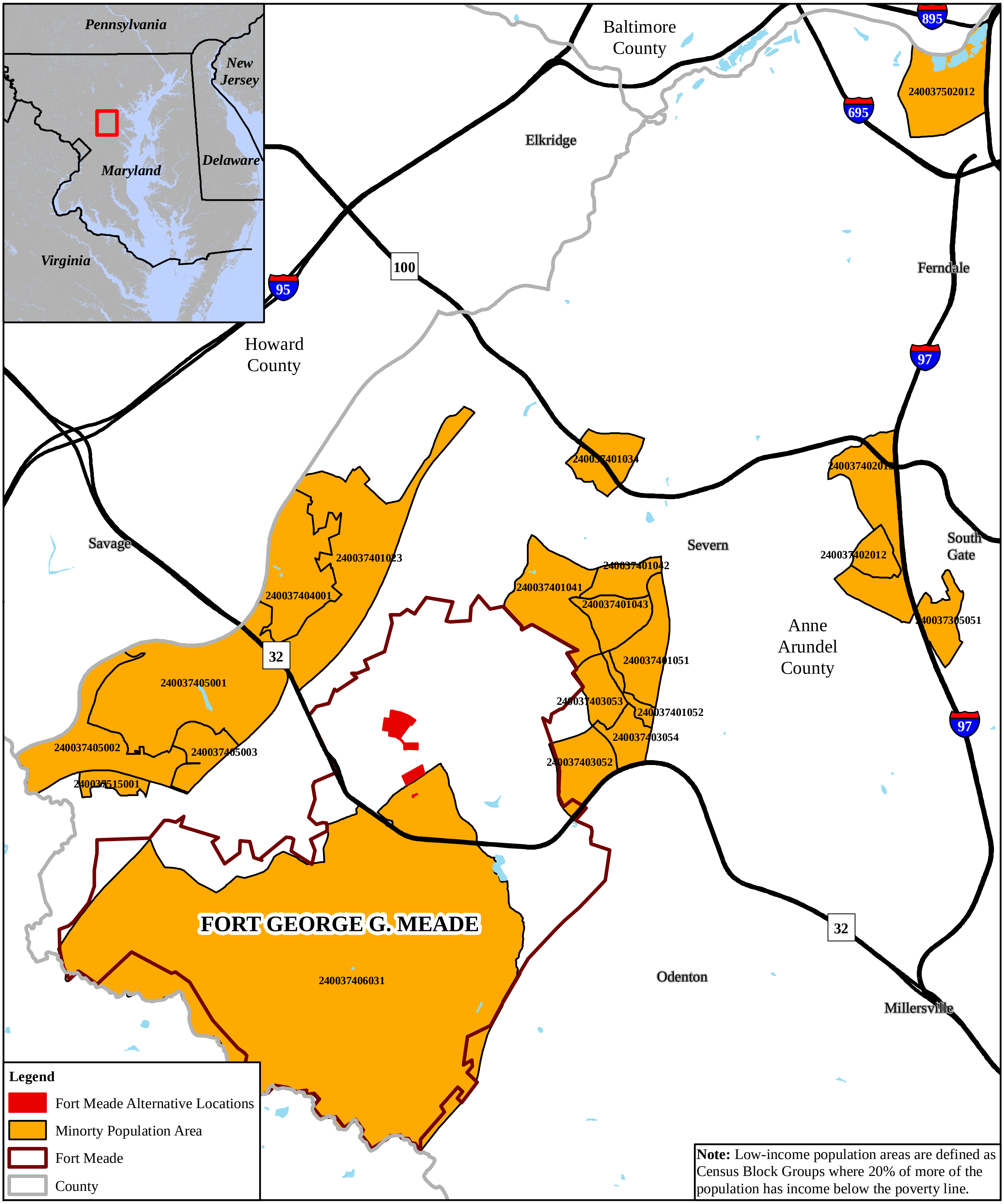


Figure 4-11: Environmental Justice for Minority Population Areas

1 in = 2 miles

0 0.5 1 2 Miles

Source: Census 2010

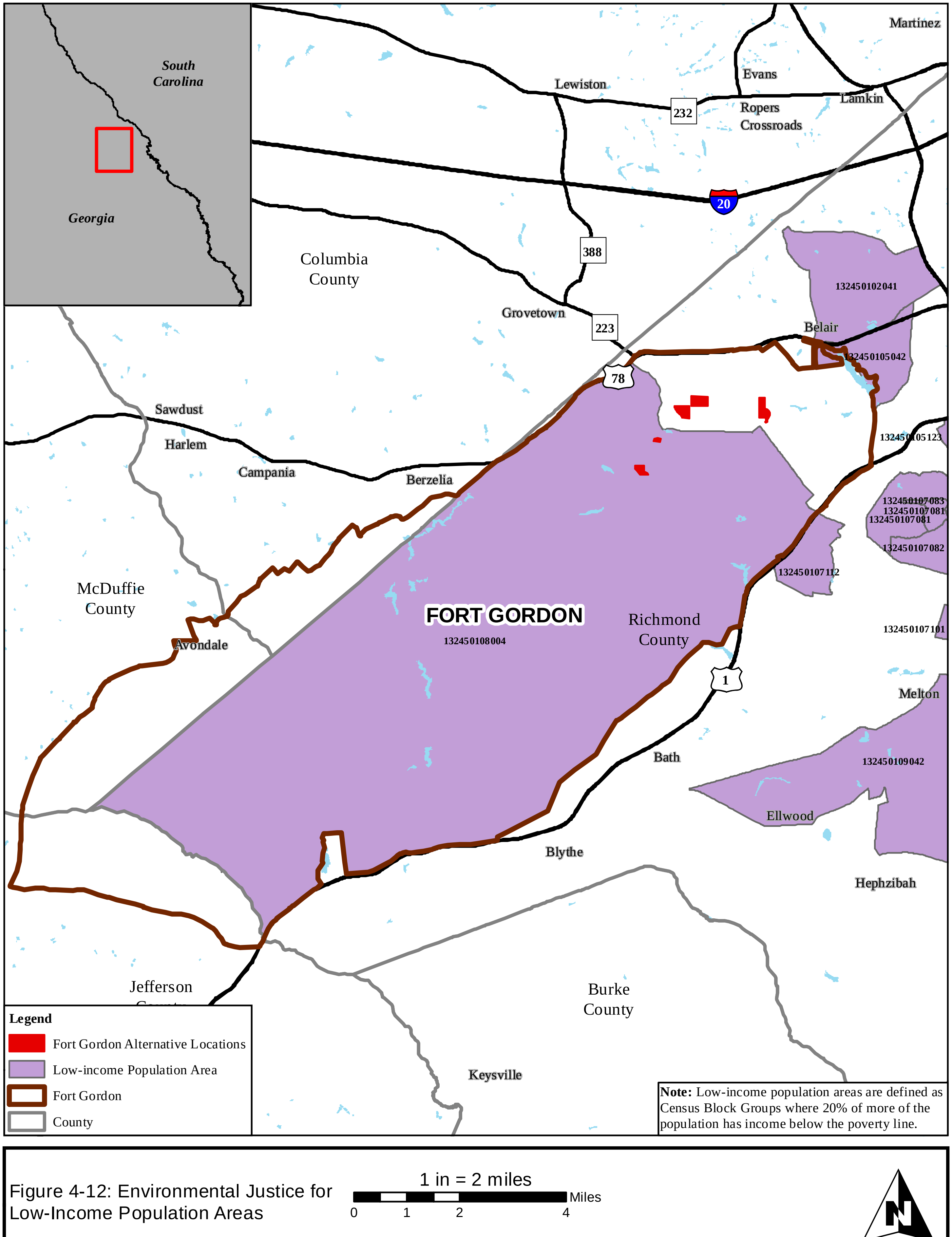


Figure 4-12: Environmental Justice for Low-Income Population Areas

Source: Census 2010b

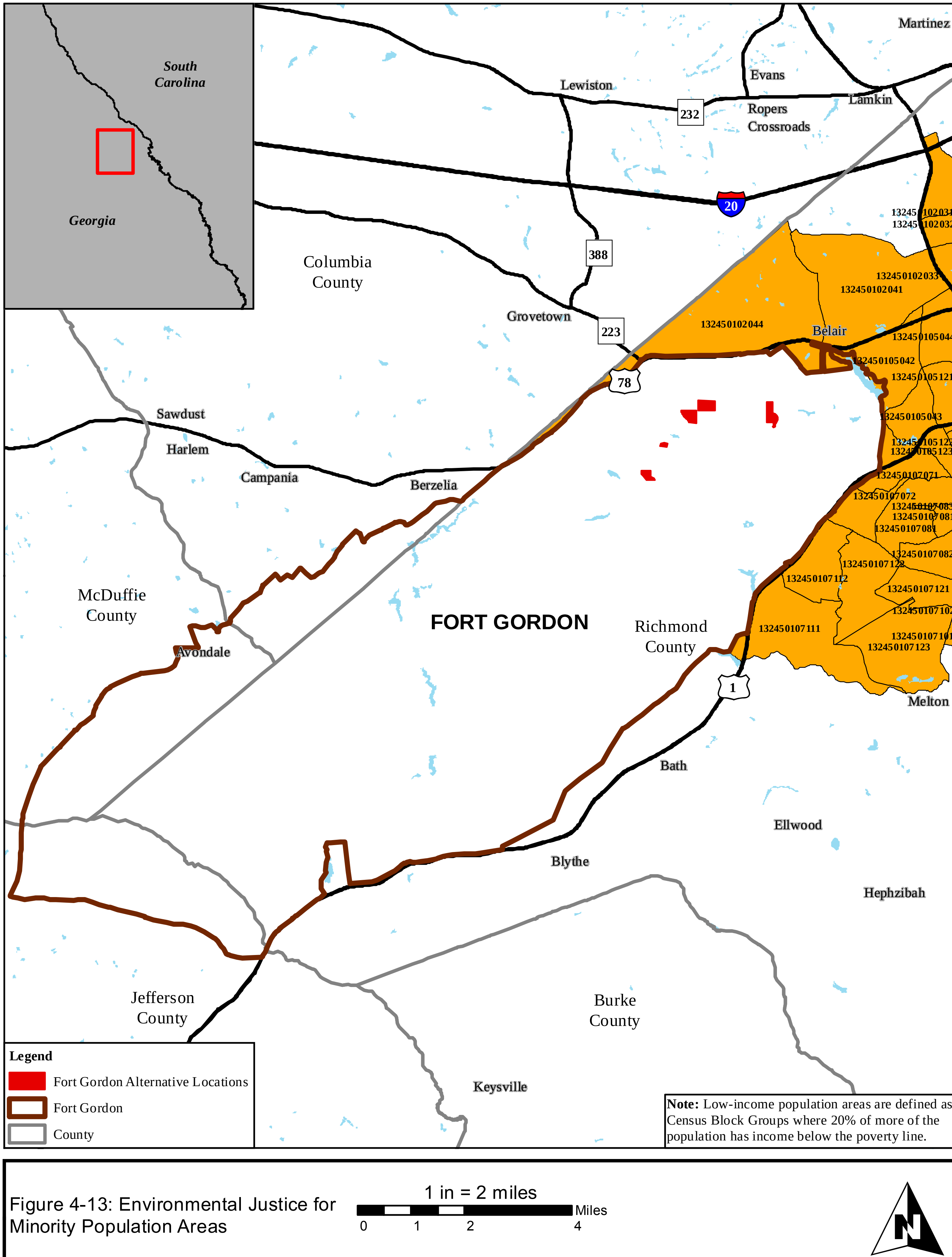


Figure 4-13: Environmental Justice for Minority Population Areas

Source: Census 2010b

APPENDIX B

COORDINATION
REGARDING
FORT GEORGE G. MEADE

US Army Corps
of Engineers
Baltimore District

Public Notice

Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia
Fort George G. Meade, Maryland

All Interested Parties: On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel.

The three alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon include: 1) construct a new facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovate several buildings and construct additional space if needed within Back Hall Campus between 22nd to 25th and Chamberlain to Barnes; and 3) construct a wing on Whitelaw Hall as part of the planned Phase 2 development for the entire ARCYBER Command. All components are proposed within the cantonment area of the installation (Enclosure 1). Interim stationing would have the personnel currently located at Fort Belvoir and Fort Meade relocated to several buildings within Back Hall Campus at Fort Gordon.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff (Enclosure 2).

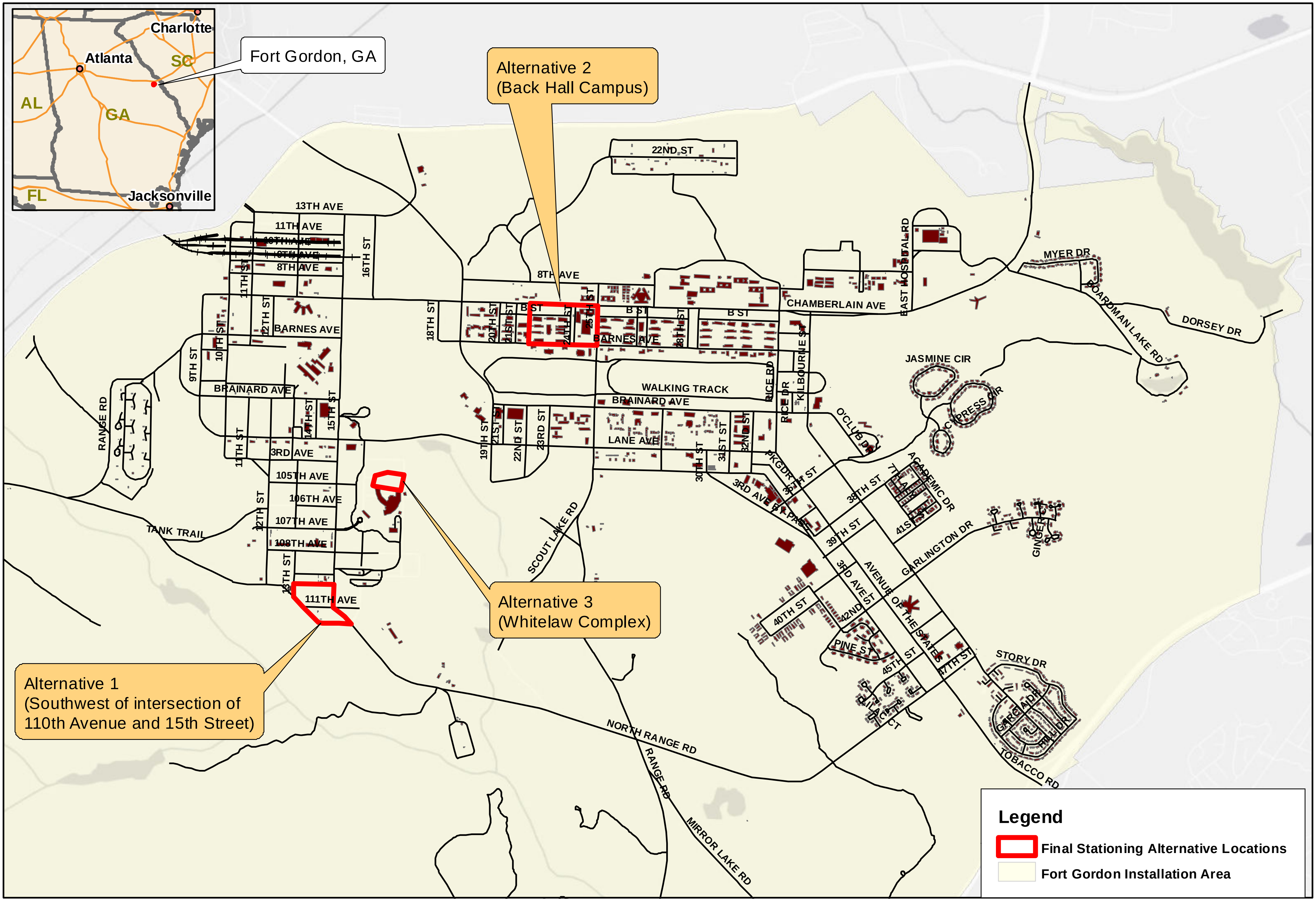
This EA will evaluate the potential environmental effects that may occur as a result of the Proposed Action and will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended.

Interested parties are invited to submit written comments for consideration within 30 days of this notice. Any comments received will be considered in the preparation of the EA. This Public Notice is being distributed to organizations and individuals that are known to have an interest in this project (Enclosures 3 and 4). Please bring this matter to the attention of any other organizations or individuals with an interest in this matter. Comments must be submitted within 30 days of the date of this notice to: ARCYBER_NEPA@usace.army.mil.

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Date: 12 April 2012

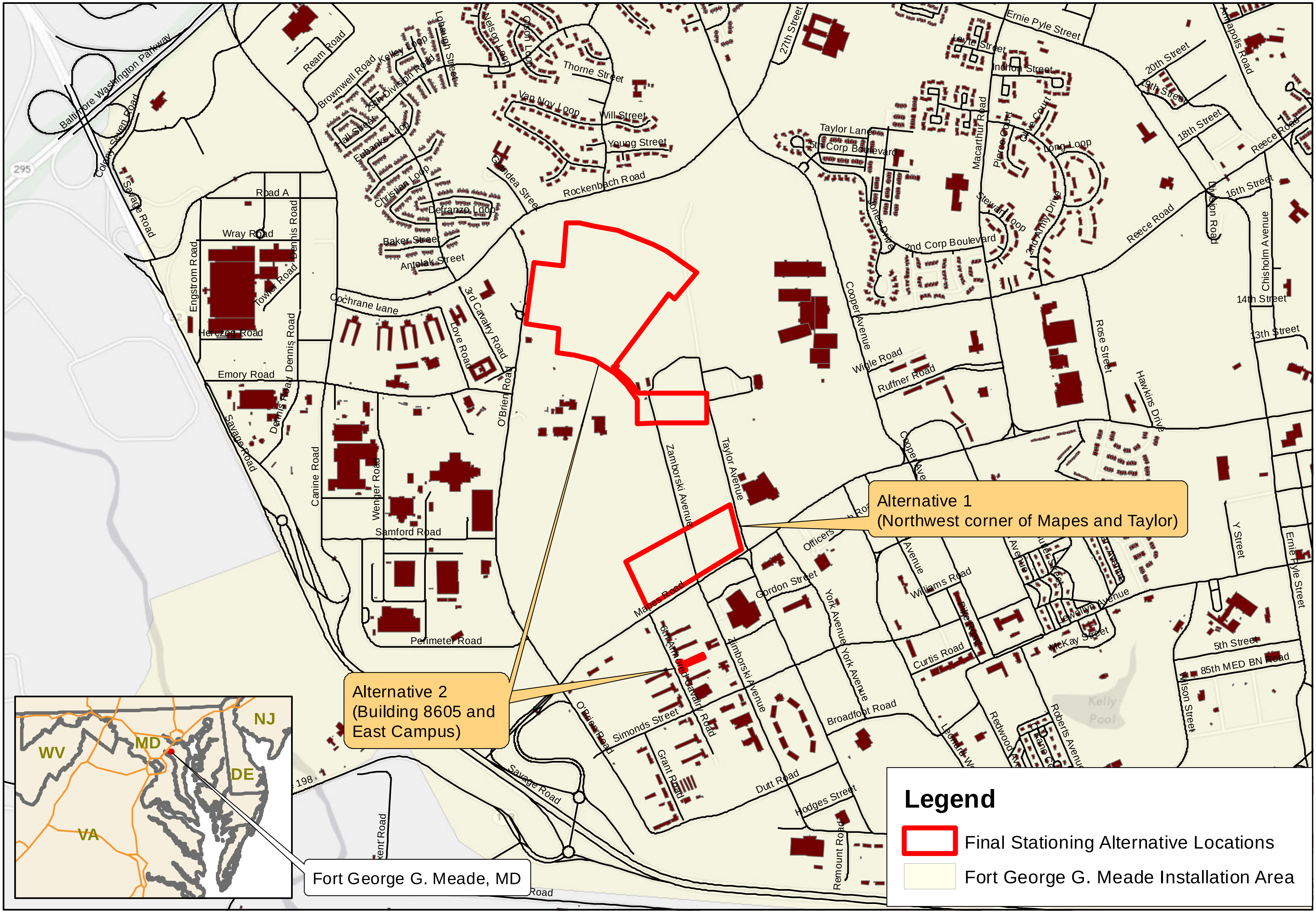
Enclosures



ENCLOSURE 1
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

0 1,500 3,000 6,000 9,000 12,000 Feet

Prepared March 13, 2012



ENCLOSURE 2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort George G. Meade, MD

0 750 1,500 3,000 4,500 6,000 Feet

Prepared March 13, 2012

ENCLOSURE 3
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia

Federal and State Agencies

EPA Region 4
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Georgia Historic Preservation Division
Attn: Dr. David Crass
254 Washington Street, SW
Ground Level
Atlanta, GA 30334-9007

US Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

David M. Jennings
Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
Fort Eustis, VA 23604-5515

Georgia Environmental Protection Division
Northeast District
Attn: Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Georgia Dept. of Natural Resources
Historic Preservation Division
Attn: Ms. Elizabeth Shirk
254 Washington Street, SW; Ground Level;
Atlanta, GA 30334

Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329

Georgia Dept of Transportation
One Georgia Center
600 West Peachtree NW
Atlanta, GA 30308

Regional and Local Offices

Brier Creek Soil and Water Conservation District
2531 Perkins Green Fork Road
Perkins, GA 30822-5337

Columbia County Soil and Water Conservation District
501 Greene Street, Suite 309
Augusta, GA 30901-4427

McDuffie County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

George Patty, Director
Augusta-Richmond
Planning and Development Department
525 Telfair Street
Augusta, GA 30901

Lillian Easterlin, Executive Director
Jefferson County Chamber of Commerce
P.O. Box 630
302 East Broad Street
Louisville, GA 30434

Department of Planning
Columbia County Government Center
630 Ronald Reagan Drive
Building A, West Wing
P.O. Box 498
Evans, GA 30809

McDuffie County Planning Commission
City/County Government Complex
210 Railroad Street
Thomson, GA 30824

ENCLOSURE 4
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort George G. Meade

State and Federal Agencies

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Suite 1101
301 West Preston Street
Baltimore, MD 21201-2365

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Mr. Leopoldo Miranda
U.S. Dept. of the Interior Fish & Wildlife Services
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Maryland Dept. of Housing & Community
Development Maryland Historical Trust
Division of Historical and Cultural Programs
ATTN: Elizabeth J. Cole
100 Community Place
Crownsville, MD 21032-2023

State of Maryland Dept. of Agriculture
ATTN: Ms. Joe Oberg
Public Information Officer
50 Harry S. Truman Parkway
Annapolis, Maryland 21401

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Maryland Dept of Transportation
State Highway Administration
ATTN: Lee Johnston
707 North Calvert Street
Mail Stop C303
Baltimore, Maryland 21202

Regional and Local Offices

Ms. Ginger Ellis
Anne Arundel County Maryland
Office of Environmental & Cultural Resources
2664 Riva Rd
Annapolis, MD 21401

Mr. Joseph A. Haamid
Resource Conservationist
Anne Arundel Soil Conservation District
Heritage Office Center
2662 Riva Road, Suite 150, MS #7001
Annapolis, MD 21401-7377

Mr. George G. Cardwell
Anne Arundel County
Office of Planning and Zoning
Heritage Office Complex
2664 Riva Rd, MS 6403
Annapolis, MD 21401

Mr. Jean Friedberg
Fort Meade RGMC
6751 Columbia Gateway Drive
Suite 500
Columbia, MD 21046

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Dear Ms. Byrne:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Enclosures

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Room 1104
301 West Preston Street
Baltimore, MD 21201-2365

Dear Ms. Janey:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Kenney:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Mr. Leopoldo Miranda
Chesapeake Bay Field Office
U.S. Department of the Interior Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Dear Mr. Miranda:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

The purpose of this letter is to request a review of the project area and to solicit comments from your agency regarding impacts, if any, to threatened and endangered species in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq).

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Dear Mr. Arguto:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Enclosures

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Dear Mr. Rosenbush:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort Gordon. Fort Gordon's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Ms. Genevieve LaRouche
Chesapeake Bay Field Office
U.S. Department of the Interior Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Dear Ms. LaRouche:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

The purpose of this letter is to request a review of the additional project area and to solicit comments from your agency regarding impacts, if any, to threatened and endangered species in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq).

Attached are the comments that we received from your office regarding the April 12, 2012, Public Notice. To assist us in identifying issues that may affect the implementation of this project, please provide only additional written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

From: Janet_Norman@fws.gov
Sent: Thursday, July 12, 2012 12:39 PM
To: CENAB-PL ARCYBER_NEPA
Cc: Gomez, Michele NAB
Subject: USFWS End. Species request on potential ARCYBER command facility at Ft. Meade
Attachments: ARCYBER Ft Meade.pdf

Dear ARCYBER staff,

At the request of the U.S. Army Corps of Engineers, Baltimore District, I am enclosing the U.S. Fish and Wildlife Service's letter on the absence of Federally listed species on Ft. George G. Meade.

The USFWS still has significant concerns for the responsible development of any buildings for this command, as your proposed location is directly upstream of the USFWS Patuxent Research Refuge lands, totalling 12, 841 acres where researchers conduct important studies and habitats are protected and managed for wildlife.

As we have indicated on our comments for the Ft. Meade Integrated Natural Resource Management Plan, and due to our National Wildlife Refuge downstream of your building site, we recommend that no coal-tar sealants be used for parking lots or roads in the new or renovated building construction. Asphalt-based sealants with far less contaminant leachate are readily available. We recommend that stormwater runoff be contained on-site and the highest level of environmental site design be employed.

As your site selection and building design progresses, please keep the USFWS apprised of your specific development plans. Thank you for considering our comments.

(See attached file: ARCYBER Ft Meade.pdf)

Janet Norman

Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
Phone (410) 573-4533
Fax (410) 269-0832
email: janet_norman@fws.gov
http://www.fws.gov/chesapeakebay

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

July 12, 2012

Mr. Lawrence D. Eastman
Chief, Planning and Environmental Services
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

RE: Potential U.S. Army Cyber Command (ARCYBER) at Fort George G. Meade, Maryland.

Dear Mr. Eastman:

This responds to your letter, received April 16, 2012, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.). Additional comments under the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq*.) may be forthcoming.

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

G. La Rouche

Genevieve LaRouche
Supervisor

US Army Corps of Engineers
Baltimore District

Supplement to Public Notice

Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia
Fort George G. Meade, Maryland

All Interested Parties: On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of this Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

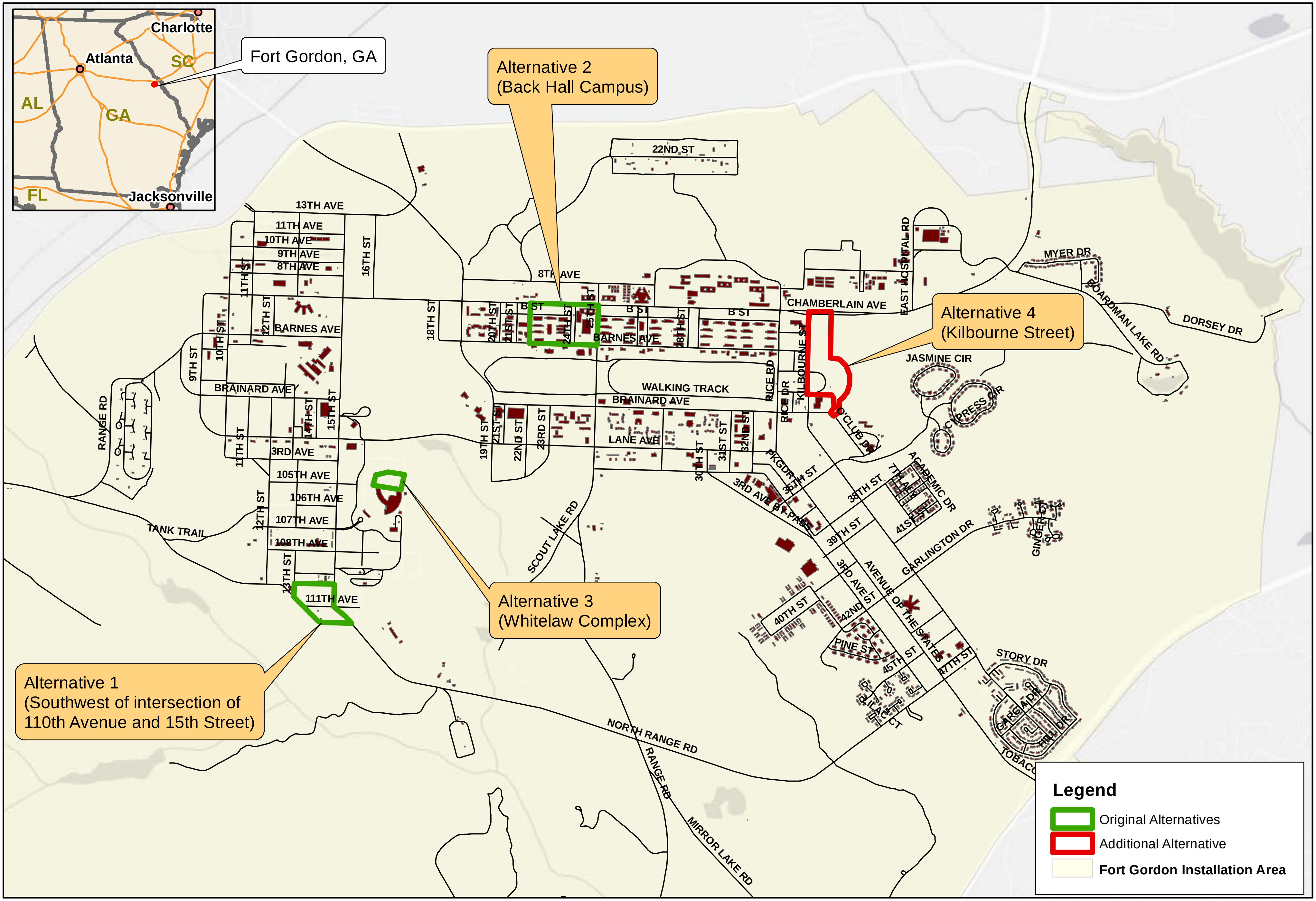
The EA will evaluate the potential environmental effects that may occur as a result of the Proposed Action and will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended.

Interested parties are invited to submit written comments for consideration within 15 days of this notice. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA. This Public Notice is being distributed to organizations and individuals that are known to have an interest in this project (Enclosures 3 and 4). Please bring this matter to the attention of any other organizations or individuals with an interest in this matter. Comments must be submitted within 15 days of the date of this notice to: ARCYBER_NEPA@usace.army.mil.

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Date: Aug 7, 2012

Enclosures



ENCLOSURE 2

ARCYBER COMMAND AND CONTROL FACILITY

Final Stationing Alternative Locations

Fort Gordon, GA

Prepared July 30, 2012

ENCLOSURE 3
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia

Federal and State Agencies

EPA Region 4
Mr. Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Georgia Historic Preservation Division
Attn: Dr. David Crass
254 Washington Street, SW
Ground Level
Atlanta, GA 30334-9007

US Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

Mr. David M. Jennings
Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
Fort Eustis, VA 23604-5515

Georgia Environmental Protection Division
Northeast District
Attn: Mr. Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Ms. Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Georgia Dept. of Natural Resources
Historic Preservation Division
Attn: Ms. Elizabeth Shirk
254 Washington Street, SW; Ground Level;
Atlanta, GA 30334

Mr. Jon A. West
Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329

Ms. Amber Phillips
Georgia Dept of Transportation
One Georgia Center
600 West Peachtree NW
Atlanta, GA 30308

Regional and Local Offices

Mr. Ron Milligan
Brier Creek Soil and Water Conservation District
2531 Perkins Green Fork Road
Perkins, GA 30822-5337

Mr. Robert Amos
Columbia County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

Mr. Robert Amos
McDuffie County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

Mr. George Patty, Director
Augusta-Richmond
Planning and Development Department
525 Telfair Street
Augusta, GA 30901

Ms. Lillian Easterlin, Executive Director
Jefferson County Chamber of Commerce
P.O. Box 630
302 East Broad Street
Louisville, GA 30434

Ms. Nayna Mistry
Department of Planning
Columbia County Government Center
630 Ronald Reagan Drive
Building A, West Wing
P.O. Box 498
Evans, GA 30809

Ms. Gail Newsome
McDuffie County Planning Commission
City/County Government Complex
210 Railroad Street
Thomson, GA 30824

ENCLOSURE 4
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort George G. Meade

State and Federal Agencies

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Suite 1101
301 West Preston Street
Baltimore, MD 21201-2365

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Ms. Genevieve LaRouche
U.S. Dept. of the Interior Fish & Wildlife Services
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Maryland Dept. of Housing & Community
Development Maryland Historical Trust
Division of Historical and Cultural Programs
ATTN: Ms. Elizabeth J. Cole
100 Community Place
Crownsville, MD 21032-2023

State of Maryland Dept. of Agriculture
ATTN: Ms. Joe Oberg
Public Information Officer
50 Harry S. Truman Parkway
Annapolis, Maryland 21401

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Maryland Dept of Transportation
State Highway Administration
ATTN: Ms. Kathryn Robbins
707 North Calvert Street
Mail Stop C303
Baltimore, Maryland 21202

Regional and Local Offices

Ms. Ginger Ellis
Anne Arundel County Maryland
Office of Environmental & Cultural Resources
2664 Riva Rd
Annapolis, MD 21401

Mr. Joseph A. Haamid
Resource Conservationist
Anne Arundel Soil Conservation District
Heritage Office Center
2662 Riva Road, Suite 150, MS #7001
Annapolis, MD 21401-7377

Mr. George G. Cardwell
Anne Arundel County
Office of Planning and Zoning
Heritage Office Complex
2664 Riva Rd, MS 6403
Annapolis, MD 21401

Mr. Jean Friedberg
Fort Meade RGMC
6751 Columbia Gateway Drive
Suite 500
Columbia, MD 21046

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Dear Mr. Rosenbush:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Dear Mr. Arguto:

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As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

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Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Room 1104
301 West Preston Street
Baltimore, MD 21201-2365

Dear Ms. Janey:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

Attached is the response that we received from your office regarding the April 12, 2012, Public Notice. To assist us in identifying issues that may affect the implementation of this project, please provide only additional written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

Maryland Department of Planning

Martin O'Malley
Governor
Anthony G. Brown
Lt. Governor

Richard Eberhart Hall
Secretary
Matthew J. Power
Deputy Secretary

April 17, 2012

Mr. Lawrence Eastman
Chief, Planning and Environmental Services Branch
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

STATE CLEARINGHOUSE REVIEW PROCESS
State Application Identifier: MD20120416-0243
Reviewer Comments Due By: May 9, 2012
Project Description: Scoping prior to E.A.: Army Cyber Command and Control Facility to be Located at Fort Gordon, GA or Fort George G. Meade, MD
Project Location: State of Georgia, and Anne Arundel County
Clearinghouse Contact: Bob Rosenbush

Dear Mr. Eastman:

Thank you for submitting your project for intergovernmental review. Participation in the Maryland Intergovernmental Review and Coordination (MIRC) process helps ensure project consistency with plans, programs, and objectives of State agencies and local governments. MIRC enhances opportunities for approval and/or funding and minimizes delays by resolving issues before project implementation.

The following agencies and/or jurisdictions have been forwarded a copy of your project for their review: the Maryland Department(s) of Transportation, the Environment, Natural Resources; the Maryland Military Department; the County of Anne Arundel; and the Maryland Department of Planning; including the Maryland Historical Trust. They have been requested to contact your agency directly by **May 9, 2012** with any comments or concerns and to provide a copy of those comments to the State Clearinghouse for Intergovernmental Assistance. Please be assured that after **May 9, 2012** all MIRC requirements will have been met in accordance with Code of Maryland Regulations (COMAR 34.02.01.04- 06). The project has been assigned a unique State Application Identifier that should be used on all documents and correspondence.

If you need assistance or have questions, contact the State Clearinghouse staff noted above at 410-767-4490 or through e-mail at brosenbush@mdp.state.md.us. Thank you for your cooperation with the MIRC process.

Sincerely,

Linda C. Janey

Linda C. Janey, J.D., Assistant Secretary

LCJ:BR

cc: Beth Cole - MHT
Melinda Gretsinger - MDOT
Joane Mueller - MDE
Greg Golden - DNR
Lawrence Leone - MILT
John Dodds - ANARP
Mike Paone – MDPL
Bihui Xu - MDPI-T

12-0243_NDC.NEW.doc

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Dear Ms. Byrne:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

Attached are the comments that we received from your office regarding the April 12, 2012, Public Notice. To assist us in identifying issues that may affect the implementation of this project, please provide only additional written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

May 4, 2012

Lawrence Eastman
USACOE- Baltimore District
PO Box 1715
Baltimore, MD 21203

RE: Environmental Review for US Army Cyber Command, EA prep for ARCYBER command/control facility at Fort George G. Meade or out of state alternate site: new facility at either NW corner of Mapes Road and Taylor Ave or within East Campus in NSA fenceline and use building, Anne Arundel County, MD.

Dear Mr. Eastman:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2012.0587.aa

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Kenney:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

Attached are the comments that we received from your office regarding the April 12, 2012, Public Notice. To assist us in identifying issues that may affect the implementation of this project, please provide only additional written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore, Maryland 21230
410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Robert M. Summers, Ph.D
Secretary

May 9, 2012

Mr. Lawrence Eastman
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203

RE: State Application Identifier: MD20120416-0243
Project: Scoping...Army Cyber Command and Control Facility

Dear Mr. Eastman:

Thank you for the opportunity to review the above referenced project. The document was circulated throughout the Maryland Department of the Environment (MDE) for review, and the following comments are offered for your consideration.

1. Any above ground or underground petroleum storage tanks, which may be utilized, must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered and the installation must be conducted and performed by a contractor certified to install underground storage tanks by the Land Management Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.

2. If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442 for additional information.

3. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Waste Diversion and Utilization Program at (410) 537-3314 for additional information regarding recycling activities.

4. The Waste Diversion and Utilization Program should be contacted directly at (410) 537-3314 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.

5. Any contract specifying "lead paint abatement" must comply with Code of Maryland Regulations (COMAR) 26.16.01 - Accreditation and Training for Lead Paint Abatement Services. If a property was built before 1950 and will be used as rental housing, then compliance with COMAR 26.16.02 - Reduction of Lead Risk in Housing; and Environment Article Title 6, Subtitle 8, is required. Additional guidance regarding projects where lead paint may be encountered can be obtained by contacting the Environmental Lead Division at (410) 537-3825.

6. The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please contact the Land Restoration Program at (410) 537-3437.

In addition, information from MDE's Science Services Administration is enclosed.

Again, thank you for giving MDE the opportunity to review this project. If you have any questions or need additional information, please feel free to call me at (410) 537-4120.

Sincerely,

Joane D. Mueller

Joane D. Mueller
MDE Clearinghouse Coordinator
Office of Communications

Enclosure
cc: Bob Rosenbush, State Clearinghouse

EA: Command and Control Facility Construction

Maryland Department of the Environment - Science Services Administration

REVIEW FINDING: R1 Consistent with Qualifying Comments (MD2012 0416-0243)

The following additional comments are intended to alert interested parties to issues regarding water quality standards. The comments address:

A. Water Quality Impairments: Section 303(d) of the federal Clean Water Act requires the State to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the substances causing the impairments. A TMDL is the maximum amount of a substance that can be assimilated by a waterbody such that it still meets water quality standards.

Planners should be aware of existing water quality impairments identified on Maryland's 303(d) list. The Project is situated in the Little Patuxent River watershed, identified by the 8-digit code 02131105 which is currently impaired by several substances and subject to regulations regarding the Clean Water Act.

Planners may find a list of nearby impaired waters by entering the 8-digit basin code into an on-line database linked to the following URL: http://www.mde.state.md.us/programs/Water/TMDL/Integrated303dReports/Pages/303d.aspx.

This list is updated every even calendar year. Planners should review this list periodically to help ensure that local decisions consider water quality protection and restoration needs. **Briefly, the current impairments that are relevant to the Project include the following:**

Little Patuxent River (02131105)

Sediments:	**Non-tidal. A TMDL has been written and submitted to EPA.**
Metals:	**Non-tidal. A TMDL for Cadmium is pending development.**
Biological:	**Non-tidal. A TMDL is pending development.**

B. TMDLs: Development and implementation of any Plan should take into account consistency with TMDLs developed for the impaired waterbodies referenced above. Government decisions made prior to the development of a TMDL should strive to ensure no net increase of impairing substances. TMDLs are made available on an updated basis at the following web site: http://www.mde.state.md.us/programs/Water/TMDL/CurrentStatus/Pages/Programs/WaterPrograms/TMDL/Sumittals/index.aspx

Special protections for high-quality waters in the local vicinity, which are identified pursuant to Maryland's anti-degradation policy;

C. Anti-degradation of Water Quality: Maryland requires special protections for waters of very high quality (Tier II waters). The policies and procedures that govern these special waters are commonly called "anti-degradation policies." This policy states that "proposed amendments to county plans or discharge permits for discharge to Tier II waters that will result in a new, or an increased, permitted annual discharge of pollutants and a potential impact to water quality, shall evaluate alternatives to eliminate or reduce discharges or impacts." These permitted annual discharges are not just traditional Point Sources, it can include all discharges such as Stormwater.

Currently, Tier II waters are not present in the area surrounding the project.

Planners should be aware of legal obligations related to Tier II waters described in the Code of Maryland Regulations (COMAR) 26.08.02.04 with respect to current and future land use plans. Information on Tier II waters can be obtained online at: http://www.dsd.state.md.us/comar/getfile.aspx?file=26.08.02.04.htm and policy implementation procedures are located at http://www.dsd.state.md.us/comar/getfile.aspx?file=26.08.02.04-1.htm

Planners should also note that since the Code of Maryland Regulations is subject to periodic updates. A list of Tier II waters pending Departmental listing in COMAR can be found, with a discussion and maps for each county, at the following website:
http://www.mde.state.md.us/programs/researchcenter/EnvironmentalData/Pages/researchcenter/data/waterqualitystandards/antidegradation/index.aspx

ADDITIONAL COMMENTS

Chesapeake Bay TMDL

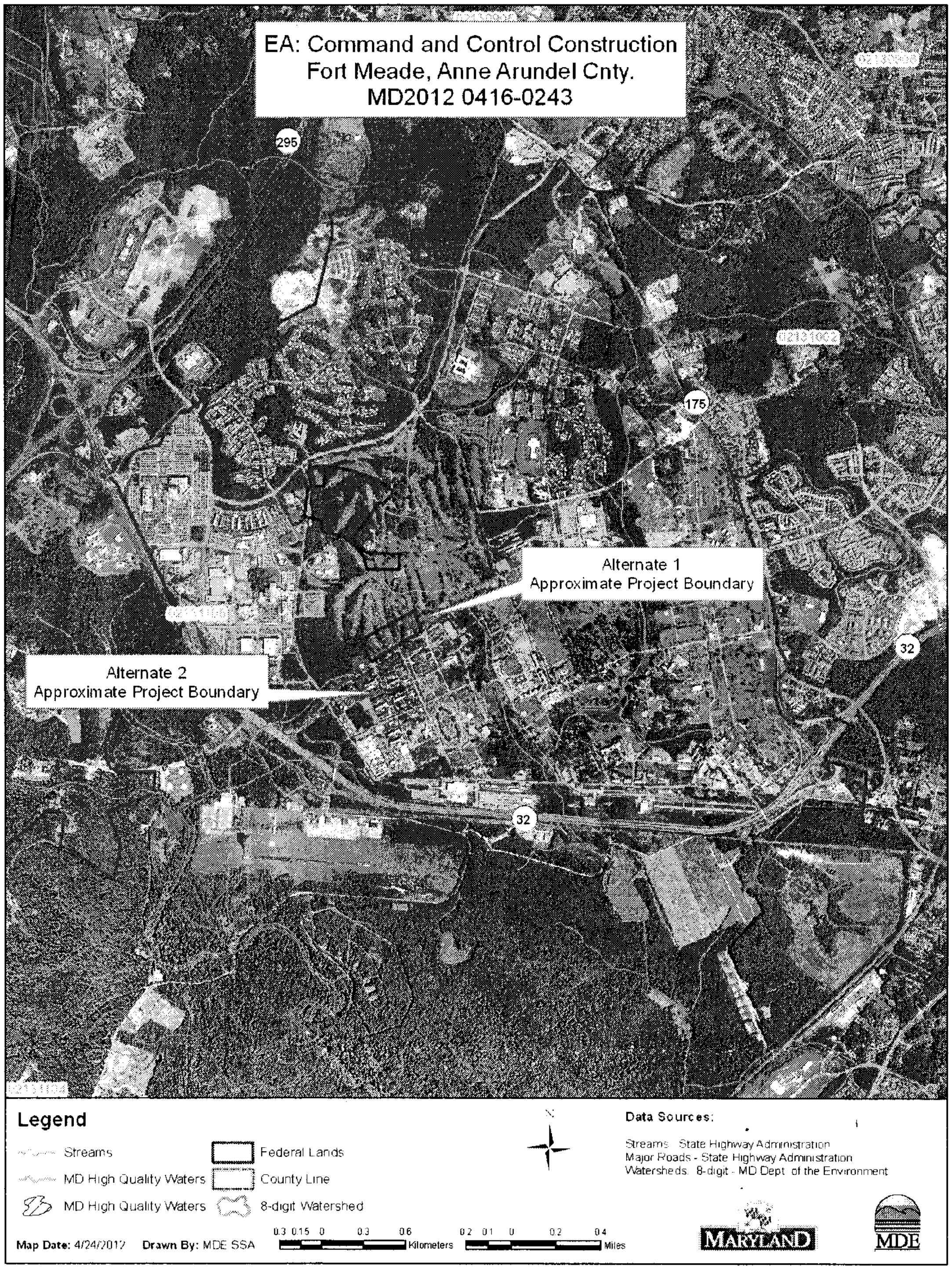
With the completion of the Chesapeake Bay TMDL, the Chesapeake Bay Program Office (CBPO) will be able to provide loading data at a more refined scale than in the past. MDE will be able to use the CBPO data to estimate pollution allocations at the jurisdictional level (which will include Federal Facilities) to provide allocations to the Facilities. These allocations, both Wasteload (WLA) and Load Allocation (LA) could call for a reduction in both Point Sources and Nonpoint Sources. **Facilities should be aware of reductions and associated implementation required by WIPs or FIPs.**

Stormwater
The project should consider all Maryland Stormwater Management Controls. Site Designs should consider all Environmental Site Design to the Maximum Extent Practicable and "Green Building" Alternatives. Designs that reduce impervious surface and BMPs that increase runoff infiltration are highly encouraged.

Further Information:
http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Pages/Programs/WaterPrograms/SedimentandStormwater/swm2007.aspx

Environmental Site Design (Chapter 5):
http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Documents/www.mde.state.md.us/assets/document/chapter5.pdf

Redevelopment Regulations:
http://www.dsd.state.md.us/comar/comarhtml/26/26.17.02.05.htm



EA: Command and Control Construction
Fort Meade, Anne Arundel Cnty.
MD2012 0416-0243
295
02131002
175
Alternate 1
Approximate Project Boundary
Alternate 2
Approximate Project Boundary
32
32
Legend
Streams
Federal Lands
MD High Quality Waters
County Line
MD High Quality Waters
8-digit Watershed
N
Data Sources:
Streams State Highway Administration
Major Roads - State Highway Administration
Watersheds 8-digit - MD Dept of the Environment
Map Date: 4/24/2012
Drawn By: MDE SSA
0.3 0.15 0 0.3 0.6 Kilometers
0.2 0.1 0 0.2 0.4 Miles
MARYLAND
MDE

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON
4551 LLEWELLYN AVENUE, SUITE 5000
FORT GEORGE G. MEADE, MARYLAND 20755-5000

REPLY TO
ATTENTION OF:

JUL 1 1 2012

Directorate of Public Works

Ms. Elizabeth Cole, Administrator
Project Review / Compliance
Maryland Historical Trust
100 Community Place
Crownsville, Maryland 21032

Dear Ms. Cole:

The purpose of this letter is to consult with your office as required by Section 106 of the National Historic Preservation Act regarding the proposed command and control facility for the U.S. Army Cyber (ARCYBER) Command at Fort George G. Meade, Anne Arundel County, Maryland, or Fort Gordon, Georgia. In order to accommodate the relocation and projected growth of the ARCYBER Command, a new or existing facility at Fort Meade or Fort Gordon must be obtained that is capable of supporting a workforce of approximately 1,500 personnel.

Two alternatives are being considered for relocating the ARCYBER Command to Fort Meade, as shown in Enclosure 1. The first alternative involves construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue. The second alternative involves construction of a new facility in the East Campus Area of Fort Meade, and using existing Fort Meade Building 8605 to house a portion of the administrative and logistics staff.

The proposed location of the first alternative at the corner of Mapes Road and Taylor Avenue is currently part of Fort Meade's golf course. This location was investigated for its potential to contain archaeological resources in the 1995 *Archeological Study of Fort Meade* (Hornum et al. 1995:91). The study determined that the area was disturbed and had a low potential for containing intact archaeological resources. There are no existing buildings at this location.

Under the second alternative, new construction would be part of the development of Fort Meade's East Campus (formerly known as "Site M"), an undertaking currently under separate Section 106 review by your office in consultation with Fort Meade, the Baltimore District, and the National Security Agency (MD20090717-1052). By letter to your office dated May 4, 2012, the Baltimore District determined that no historic properties are located on the East Campus property.

Building 8605, a barracks building constructed in 1954, was previously evaluated for National Register eligibility under Maryland Historical Trust Determination of Eligibility Inventory Number AN-0071. Your office concurred with Fort Meade's ineligibility determination for this building on February 10, 2005.

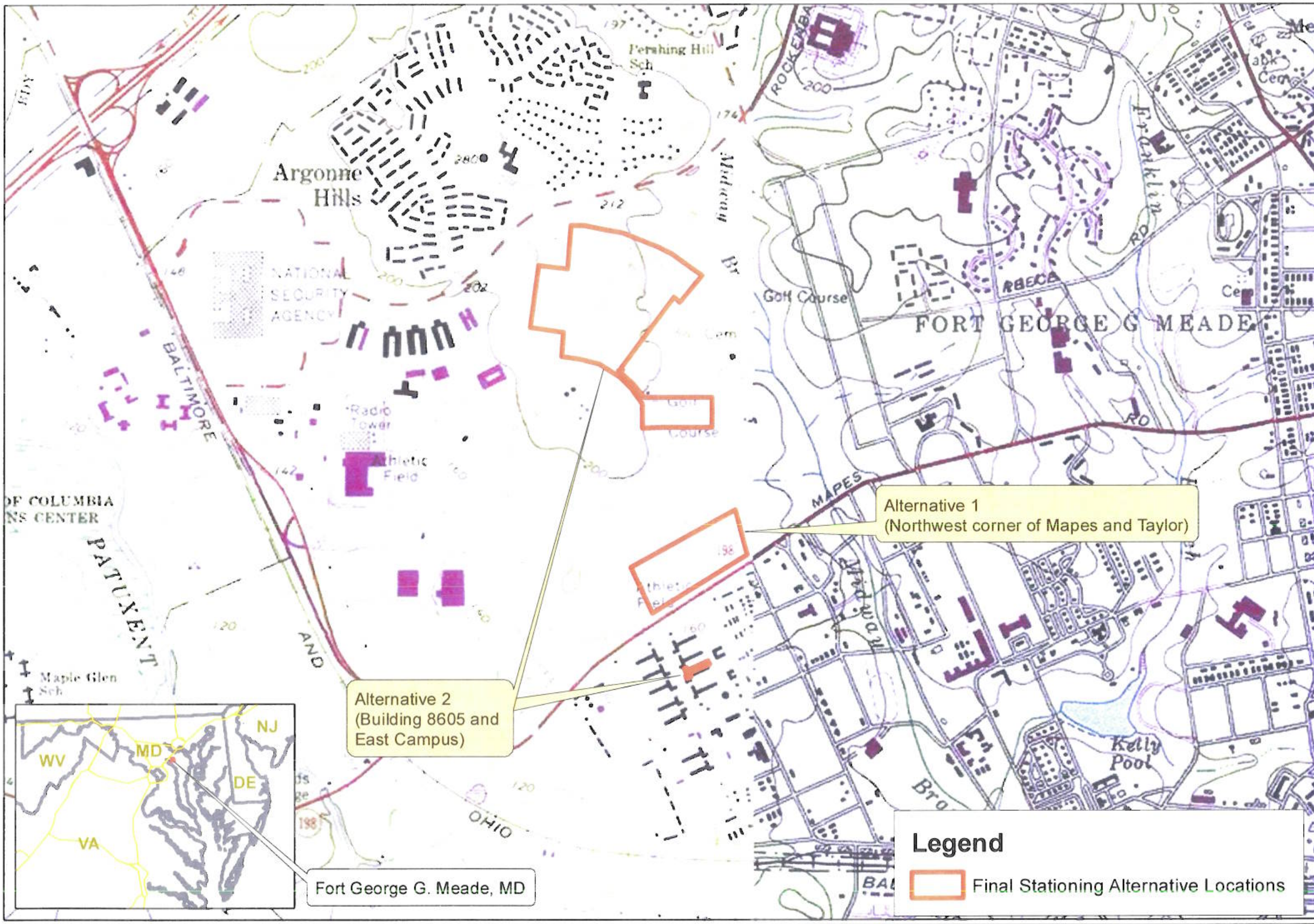
No historic properties are located at any of the alternative locations being considered for the proposed command and control facility for the ARCYBER Command. None of the proposed alternative locations are within the view shed of Fort Meade's historic properties, including the National Register Historic District, and the National Register eligible water treatment plant. Fort Meade has therefore determined that implementation of either of the proposed alternatives here at Fort Meade, Maryland, will have no effect on historic properties, and no further work is recommended. Should we become aware, from any source, that historic properties are located at or near the property, we will notify your office immediately. Questions regarding this matter should be directed to Fort Meade's Cultural Resource Program Manager, Jerry Glodek. Mr. Glodek can be reached at 301-677-9179 or by email at jerald.w.glodek.civ@mail.mil.

Sincerely,

Michael P. Butler

Enclosures

Michael P. Butler
Chief, Environmental Division



USGS Quadrangle
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort George G. Meade, MD

Prepared May 23, 2012

From: George Cardwell [PZCARD44@aacounty.org]
Sent: Monday, August 13, 2012 11:49 AM
To: CENAB-PL ARCYBER_NEPA
Cc: Robert (Bob) Leib; Ginger Ellis; Carole Sanner
Subject: Supplement to Public Notice ARCYBERCOM EIS
Attachments: 03-30-12 AAC Comments Re Cyber EA at FGGM.pdf

Mr. Eastman:

Anne Arundel County is in receipt of the Supplement to Public Notice for the EIS to evaluate impacts associated with the proposed ARCYBER command and control facility to be located at either Fort Meade, Maryland or Fort Gordon, Georgia. Thank you for providing us with the Supplement.

Under previous cover, the County provided scoping comments specific to the proposed action at Fort Meade, Maryland which is located within Anne Arundel County. I have attached a copy of our prior scoping comments specific to the Fort Meade proposal, for your information.

We have no further comments to provide at this time and offer no comments specific to sites being considered at Fort Gordon, Georgia.

Sincerely,

George G. Cardwell, AICP
Planning Administrator
Transportation Division
Anne Arundel County Office of Planning and Zoning
2664 Riva Road MS-6402
Annapolis, MD 21401

Phone: (410) 222-7440
Fax: (410) 222-7255
PZCARD44@aacounty.org

ANNE ARUNDEL COUNTY

M A R Y L A N D

County Executive John R. Leopold
P.O. Box 2700, Annapolis , MD 21404

March 30, 2012

Jeffrey Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road, Suite 6404
Fort George G. Meade, Maryland 20755-6404

Dear Mr. Williams:

Thank you for providing Anne Arundel County, Maryland with the opportunity to offer comments regarding the Environmental Assessment Addressing the Construction and Operation of the Joint Operations Center (JOC) Facility at Fort George G. Meade, Maryland, as identified in your letter of 8 March 2012. As we noted in our comments regarding the *Environmental Impact Statement (EIS) Addressing Campus Development at Fort George G. Meade, Maryland* prepared in July 2010 and the Final EIS issued in September 2010, the County understands the significance of this effort to relocate existing assets of the National Security Agency (NSA), and now USCYBERCOM to a more modern and secure facility as well as the need to increase the number of personnel to meet and overcome the cyber and signal intelligence threats to the United States.

It is our understanding, based on your March 6, 2012 letter, that the action is to locate 1600 USCYBERCOM personnel in a proposed JOC and that this contingent will be a portion of the 6,500 person staff level for which impacts were assessed in the Final EIS noted above. While we understand and support the purpose and need for this Federal Action, Anne Arundel County is concerned about the extent of impacts that will likely be generated by that action on the area's water and other natural resources, emergency response responsibilities, surface transportation network, and other socio-economic impacts. In scoping the EA, we recommend that you address these comments through detailed analysis of the impact of the proposed Federal Action.

As this action is a tiered approach off of the FEIS noted above, our previous comments regarding impacts to the natural and built environment remain relevant and should be of assistance in framing the proposed Environmental Assessment (EA). Those comments are noted below.

I. Regarding water resources and utilities, we offer the following comments:

1. Growth at Fort Meade in terms of Base Realignment and Closure, Enhanced Use Lease, Grow the Army as well as the proposed Federal Action requested by the National Security Agency/USCYBERCOM will place substantially increased demands on the installation's waste water treatment plant (WWTP). While not reaching the design capacity of the plant, it is evident that the increased demands will likely result in greater discharge of total nitrogen and other materials into the Patuxent River. This river receives discharges from both Howard and Anne Arundel

Counties' waste water treatment plants that serve the planned growth areas in these jurisdictions. Therefore, we respectfully recommend that the Decision document for this environmental assessment clearly establish that it is the responsibility of the Department of Defense to identify how the Fort Meade WWTP will maintain the present capacity load through technological innovations and best practices.

2. Regarding stormwater, we offer the following comments: The proposed action footprint lies in the Rogue Harbor subwatershed of the Little Patuxent Watershed. Development within this watershed is subject to the Chesapeake Bay Total Maximum Daily Loadings(TMDL) allocation for Federal properties within Anne Arundel County which requires approximately 35 percent reduction in nutrient and sediment load from current (2010 base year) undeveloped levels. Further, this subwatershed is ranked by Anne Arundel County in the highest tier for needing restoration. Growth at Fort Meade as shown in the proposed action footprint will place substantial stormwater runoff increases to the receiving non-tidal stream. To address the onsite stormwater management design, Anne Arundel County recommends the implementation of the latest Maryland Department of the Environment (MDE) stormwater management regulations. These regulations dictate, at a minimum, the use of Environmental Site Design (ESD) to the Maximum Extent Possible (MEP). Quantity management and downstream mitigation requirements are typically left to the discretion of the local jurisdiction. It is important to note that even with the implementation of ESD to the MEP, the proposed development will double the Nitrogen load to the receiving streams. This is due to limitation of technology associated with stormwater practices, with ESD to the MEP achieving a 50% pollutant removal efficiency for Total Nitrogen, 60% pollutant removal efficiency for Total Phosphorous, and 90% pollutant removal efficiency for Total Suspended Solids. Further, ESD to the MEP typically stores a volume that is equivalent to 1-2 inches of rainfall over a 24-hour period. This is equivalent to the one-year storm. Higher storms are typically unmanaged and will exacerbate downstream erosion resulting in additional sediment and phosphorous transport to the Bay. Anne Arundel County recommends that Fort Meade follow the County's code for analyzing the downstream adequacy and follow the County's stormwater practice and procedure manual to assess the capacity and stability of all non tidal receiving streams to the point where the discharge is more than ten times the discharge from the site. The Anne Arundel County Stream Assessment Protocols as referenced in the County code and Stormwater Practice and Procedure Manual should be utilized to perform this assessment and can be found online *http://www.aacounty.org/DPW/Watershed/DownstreamAdequacyProtocols.cfm*.

3. Downstream restoration/mitigation is highly encouraged to negate the additional runoff and pollutant load from this proposed development and to enhance the ecosystem functions of the receiving wetlands and waterways.

4. Anne Arundel County recommends the implementation of a minimum 100-foot forested riparian buffer adjacent to Midway Branch on the east border of the proposed site (Site M), encourages the use of the most recent MDE regulations regarding sediment and erosion control, in addition to incorporation of the Final Rule for the Clean Water Act (effective February 1, 2010) into site construction requirements. The County further recommends that planning and design for the campus address the issues noted in the *Stream Corridor Assessment Report for Fort Meade*, developed by Maryland DNR in October 2005, which identified more than 107 potential environmental issues associated with the stream reaches on the installation, and finally recommends that further planning and design of the campus provide for an investigation of the off-site downstream conditions to document receiving waterway stability, including evaluation of the adequacy of infrastructure to accommodate the increased run-off associated with the proposed Federal Action's increase in impervious surface. The County requests that each of these recommendations be included in the Environmental Assessment.

II. Regarding Public Safety impacts: The Anne Arundel County Fire Department has conducted a study of impacts to response times created by growth in population and employment. The Department's findings based on their analysis clearly indicate a deterioration in needed response times, an increase in requirements to provide emergency medical services and requirements for additional mutual aid. Anne Arundel County recommends that the Decision Document identify how the Department of Defense (DoD) will address the impacts and impediments to public safety both in terms of response to incidents at NSA and on Fort Meade as well as incidents occurring outside the Federal reservation.

III. Regarding Socio-Economic Impacts: The information provided identifies possible locations for the USCYBERCOM outside the boundaries of the Federal Reservation. Location of such a large employment concentration offers positive economic benefits to the County. Location of the 1600 person contingent inside the Fort's boundaries reduces that positive impact. The County requests that the EA provide a detailed assessment of the fiscal impacts both positive and negative to the County regarding the Proposed Federal Action and that this fiscal and economic impact be considered as part of the selection criteria. Selection of locations outside the Federal Reservation was not considered in the prior Final EIS/ROD. Therefore, the County requests a detailed assessment of impact to public utilities, transportation facilities and emergency services.

IV. Regarding Transportation Impacts: At present, only the Annapolis Road (MD 175)/Ridge-Rockenbach Road (MD 713) intersection improvements are fully funded, and a segment of MD 175 (Baltimore-Washington Parkway to MD 713) has been constructed as a five-lane section by a private-sector land developer. Therefore highway capacity in the vicinity of Fort Meade is largely unchanged from the existing condition evaluated in the Final EIS/ROD. The Baltimore-Washington Parkway is owned and operated by the National Park Service which, on several occasions, has indicated their unwillingness to provide additional capacity. For these reasons, the County is very concerned about the likely impacts of this action, even though it was evaluated in the Final EIS/ROD. The improvements identified for the various phases of the campus development are not funded beyond what has been noted above. Present traffic generated by current activities at Fort Meade impact local roadway capacity, and as noted above, seriously impairs emergency response. Traffic which will be generated by the EUL action at Fort Meade will further reduce available capacity. To date there has been little formal response or funding by the Department of Defense or the Department of the Army to mitigate or off set either the current or the anticipated impacts. Additional traffic generated by the proposed Federal Action by NSA/USCYBERCOM, even though evaluated in the Final EIS/ROD will only increase the demand leading to a longer recurring duration of network failures as the necessary improvements identified in that environmental assessment remain unfunded. The County believes that there is a significant need for additional access control point (ACP) capacity and the impact of that ACP capacity should be evaluated in the EA document. Further significant impacts to the highway network can result in public safety impacts, motorist and pedestrian safety impacts, increased congestion, and more deterioration of air quality. In the scoping letter of August 15, 2009, Anne Arundel County requested that the Campus Development EIS address the transportation issue and demonstrate how it will be mitigated. County staff reviewed the DEIS of July 2012 and offered the following comments at that time. We believe that these comments remain relevant and should be addressed in the upcoming EA.

1. Since the Transportation Network impacts assessment does not provide remedies for the conditions that are forecast to occur as a result of the Federal Action (as noted in the FEIS), Anne Arundel County requests that greater detail be provided in the EA to assist State and local planning and operating agencies in determining the extent of the impact to the network.

2. On page 4-10, the DEIS assumes a five percent mode share using transit. Anne Arundel County cautions the EA preparers that virtually no additional transit is funded and the current mode share (trips on transit) is lower than this estimate. We recommend that the Decision Document include requirements for NSA and Fort Meade, plus their contractors, to participate in a transportation demand management program to substantially reduce anticipated vehicle trip generation, especially during peak hours on the adjacent roadways.

3. On page 4-39, Figure 4.2-21 (and other locations of the DEIS document), Anne Arundel County is very concerned that the DEIS recommends improvements on locally-maintained roadways are identified without first consulting the County. It is further concerned about improvements identified in the DEIS that will likely require additional environmental (National Environmental Policy Act—NEPA) clearance such as lane increases on the Baltimore-Washington Parkway and the Patuxent Freeway (MD 32). In neither instance are NEPA studies funded, nor improvements identified in financially-constrained, air quality conforming regional transportation plans. If improvements can not be constructed due to lack of funding, or lack of concurrence from the various resource agencies, the DEIS must identify other strategies or improvements to offset the transportation-related impacts associated with the Federal Action. We recommend that language be provided in the ROD to address this concern.

4. The DEIS identified a need for travel demand reduction strategies, but did not offer recommendations, or more importantly, identify sources of funding to implement these needed strategies. Previous studies prepared by Fort Meade such as the *Fort Meade Installation-Wide Traffic and Safety Engineering Study* (Gannett/Fleming, 2008), by the Regional Growth Management Committee (2009) and by Anne Arundel County and the Maryland State Highway Administration (2006, 2009) have shown that the combined Federal Actions for BRAC/EUL will result in extremely long periods of delay on roadways around Fort Meade. Adding more traffic generated by this Federal Action for Campus Development (even in this tier) will only exacerbate this situation. Again, the County recommends that NSA and Fort Meade work collaboratively and aggressively to develop a transportation management plan and to implement that plan in advance of this increased trip generation created by these Federal Actions.

Anne Arundel County looks to NSA/USCYBERCOM to implement the requirements noted in DoD Instruction No. 4715.9 Section 6.2.4 which identifies the need to develop and maintain an intergovernmental and public consultation procedure for this proposed Federal Action. This Federal Action will clearly be an activity that will have "…significant impacts on the human environment…" as it will impact both the natural and built environment. The County understands the importance of the Federal Action proposed for NSA/USCYBERCOM JOC at Fort Meade. We also see that this action, in addition to the BRAC/EUL and other increases in personnel and households at Fort Meade have a cumulative impact on the natural and built environment that must be taken into account comprehensively. We continue to look forward to working with NSA in making the consultation process successful.

Should you have any questions, regarding our comments, please contact me or George Cardwell, Planning Administrator via e-mail at pzcard44@aacounty.org or via phone at (410) 222-7440.

Sincerely,

Robert C. Leib

Robert C. Leib
Special Assistant for BRAC/Education

cc: Larry R. Tom, Planning & Zoning Officer
Robert Ray, Chief, Anne Arundel County Fire Department
Ronald Bowen, Director, Department of Public Works
Carole Sanner, Assistant Planning & Zoning Officer, OPZ
George Cardwell, Planning Administrator, OPZ

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore, Maryland 21230
410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us

Martin O'Malley
Governor

Robert M. Summers, Ph.D
Secretary

Anthony G. Brown
Lieutenant Governor

September 6, 2012

Mr. Lawrence Eastman
Chief, Planning and Environmental Services Branch
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203-1715

RE: State Application Identifier: MD20120809-0595
Project: Army Cyber Command and Control Facility to be Located at Fort Gordon, Georgia or Fort George G. Meade, MD

Dear Mr. Eastman:

Thank you for the opportunity to review the above referenced project. The document was circulated throughout the Maryland Department of the Environment (MDE) for review, and the following comments are offered for your consideration.

1. Any above ground or underground petroleum storage tanks, which may be utilized, must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered and the installation must be conducted and performed by a contractor certified to install underground storage tanks by the Land Management Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.

2. If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442 for additional information.

3. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Waste Diversion and Utilization Program at (410) 537-3314 for additional information regarding recycling activities.

4. The Waste Diversion and Utilization Program should be contacted directly at (410) 537-3314 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.

5. Any contract specifying "lead paint abatement" must comply with Code of Maryland Regulations (COMAR) 26.16.01 - Accreditation and Training for Lead Paint Abatement Services. If a property was built before 1950 and will be used as rental housing, then compliance with COMAR 26.16.02 - Reduction of Lead Risk in Housing; and Environment Article Title 6, Subtitle 8, is required. Additional guidance regarding projects where lead paint may be encountered can be obtained by contacting the Environmental Lead Division at (410) 537-3825.

6. The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial,

industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please contact the Land Restoration Program at (410) 537-3437.

7. If boilers or other equipment capable of producing emissions are installed as a result of this project, the applicant is requested to obtain a permit to construct from MDE's Air and Radiation Management Administration for this equipment, unless the applicant determines that a permit for this equipment is not required under State regulations pertaining to "Permits, Approvals, and Registration" (COMAR 26.11.02.). A review for toxic air pollutants should be performed. Please contact the New Source Permits Division, Air and Radiation Management Administration at (410) 537-3230 to learn about the State's requirements and the permitting processes for such devices.

8. If a project receives federal funding, approvals and/or permits, and will be located in a nonattainment area or maintenance area for ozone or carbon monoxide, the applicant should determine whether emissions from the project will exceed the thresholds identified in the federal rule on general conformity. If the project emissions will be greater than 25 tons per year, contact James Wilkinson, Air and Radiation Management Administration, at (410) 537-3245 for further information regarding threshold limits.

9. Water Quality Impairments: Section 303(d) of the federal Clean Water Act requires the State to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the substances causing the impairments. A TMDL is the maximum amount of a substance that can be assimilated by a water body such that it still meets water quality standards.

   Planners should be aware of existing water quality impairments identified on Maryland's 303(d)list. The Project is situated in the Little Patuxent River watershed, identified by the 8-digit code 02131105 which is currently impaired by several substances and subject to regulations regarding the Clean Water Act.

   Planners may find a list of nearby impaired waters by entering the 8-digit basin code into an on-line database linked to the following URL:

   http://www.mde.state.md.us/programs/Water/TMDL/Integrated303dReports/Pages/303d.aspx.

   This list is updated every even calendar year. Planners should review this list periodically to help ensure that local decisions consider water quality protection and restoration needs. Briefly, the current impairments that are relevant to the Project include the following:

   Little Patuxent River (02131105)

Sediments:	Non-tidal. A TMDL has been written and submitted to EPA.
Metals:	Non-tidal. A TMDL for Cadmium is pending development.
Biological:	Non-tidal. A TMDL is pending

10. TMDLs: Development and implementation of any Plan should take into account consistency with TMDLs developed for the impaired waterbodies referenced above. Government decisions made prior to the development of a TMDL should strive to ensure no net increase of impairing substances. TMDLs are made available on an updated basis at the following web site:
    http://www.mde.state.md.us/programs/Water/TMDL/CurrentStatus/Pages/Programs/WaterPrograms/TMDL/Sumittals/index.aspx

    Special protections for high-quality waters in the local vicinity, which are identified pursuant to Maryland's anti degradation policy;

11. Anti-degradation of Water Quality: Maryland requires special protections for waters of very high quality (Tier II waters). The policies and procedures that govern these special waters are commonly called "anti-degradation policies." This policy states that "proposed amendments to county plans or discharge permits for discharge to Tier II waters that will result in a new, or an increased, permitted annual discharge of pollutants and a potential impact to water quality, shall evaluate alternatives to eliminate or reduce discharges or impacts." These permitted annual discharges are not just traditional Point Sources, it can include all discharges such as Stormwater.

    Currently, Tier II waters are not present in the area surrounding the project.

    Planners should be aware of legal obligations related to Tier II waters described in the Code of Maryland Regulations (COMAR) 26.08.02.04 with respect to current and future land use plans. Information on Tier II waters can be obtained online at: http://www.dsd.state.md.us/comar/getfile.aspx?file=26.08.02.04.htm and policy implementation procedures are located at http://www.dsd.state.md.us/comar/getfile.aspx?file=26.08.02.04-1.htm.

Planners should also note that since the Code of Maryland Regulations is subject to periodic updates. A list of Tier II waters pending Departmental listing in COMAR can be found, with a discussion and maps for each county, at the following website:
http://www.mde.state.md.us/programs/researchcenter/EnvironmentalData/Pages/researchcenter/data/waterqualitystandards/antidegradation/index.aspx

12. With the completion of the Chesapeake Bay TMDL, the Chesapeake Bay Program Office (CBPO) will be able to provide loading data at a more refined scale than in the past. MDE will be able to use the CBPO data to estimate pollution allocations at the jurisdictional level (which will include Federal Facilities) to provide allocations to the Facilities. These allocations, both Wasteload (WLA) and Load Allocation (LA) could call for a reduction in both Point Sources and Nonpoint Sources. Facilities should be aware of reductions and associated implementation required by WIPs or FIPs.

13. The project should consider all Maryland Stormwater ManagementControls. Site Designs should consider all Environmental Site Design to the Maximum Extent Practicable and "Green Building" Alternatives. Designs that reduce impervious surface and BMPs that increase runoff infiltration are highly encouraged.

Again, thank you for giving MDE the opportunity to review this project. If you have any questions or need additional information, please feel free to call me at (410) 537-4120.

Sincerely,

Amanda R. Degen

Amanda R. Degen
MDE Acting Clearinghouse Coordinator
Office of Communications

cc: Linda C. Janey, State Clearinghouse

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APPENDIX C

COORDINATION REGARDING FORT GORDON

US Army Corps
of Engineers
Baltimore District

Public Notice

Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia
Fort George G. Meade, Maryland

All Interested Parties: On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel.

The three alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon include: 1) construct a new facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovate several buildings and construct additional space if needed within Back Hall Campus between 22nd to 25th and Chamberlain to Barnes; and 3) construct a wing on Whitelaw Hall as part of the planned Phase 2 development for the entire ARCYBER Command. All components are proposed within the cantonment area of the installation (Enclosure 1). Interim stationing would have the personnel currently located at Fort Belvoir and Fort Meade relocated to several buildings within Back Hall Campus at Fort Gordon.

The two alternatives to be evaluated in the EA for locating the command and control facility at Fort Meade include: 1) construction of a new facility at the northwest corner of Mapes Road and Taylor Avenue; and 2) construction of a new facility within the East Campus area located within the National Security Agency's fenceline and use Building 8605 for a portion of the administrative and logistics staff (Enclosure 2).

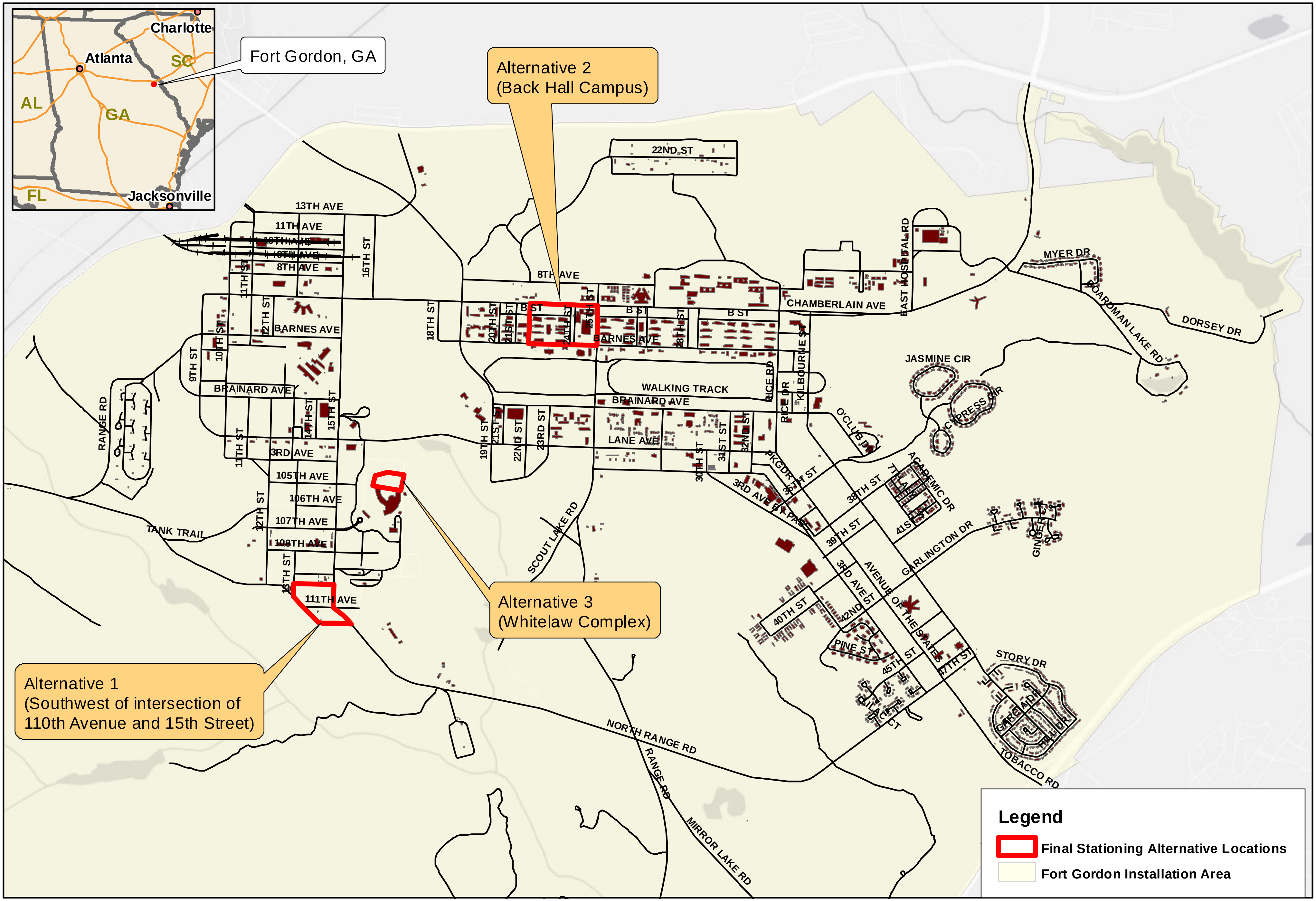
This EA will evaluate the potential environmental effects that may occur as a result of the Proposed Action and will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended.

Interested parties are invited to submit written comments for consideration within 30 days of this notice. Any comments received will be considered in the preparation of the EA. This Public Notice is being distributed to organizations and individuals that are known to have an interest in this project (Enclosures 3 and 4). Please bring this matter to the attention of any other organizations or individuals with an interest in this matter. Comments must be submitted within 30 days of the date of this notice to: ARCYBER_NEPA@usace.army.mil.

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Date: 12 April 2012

Enclosures

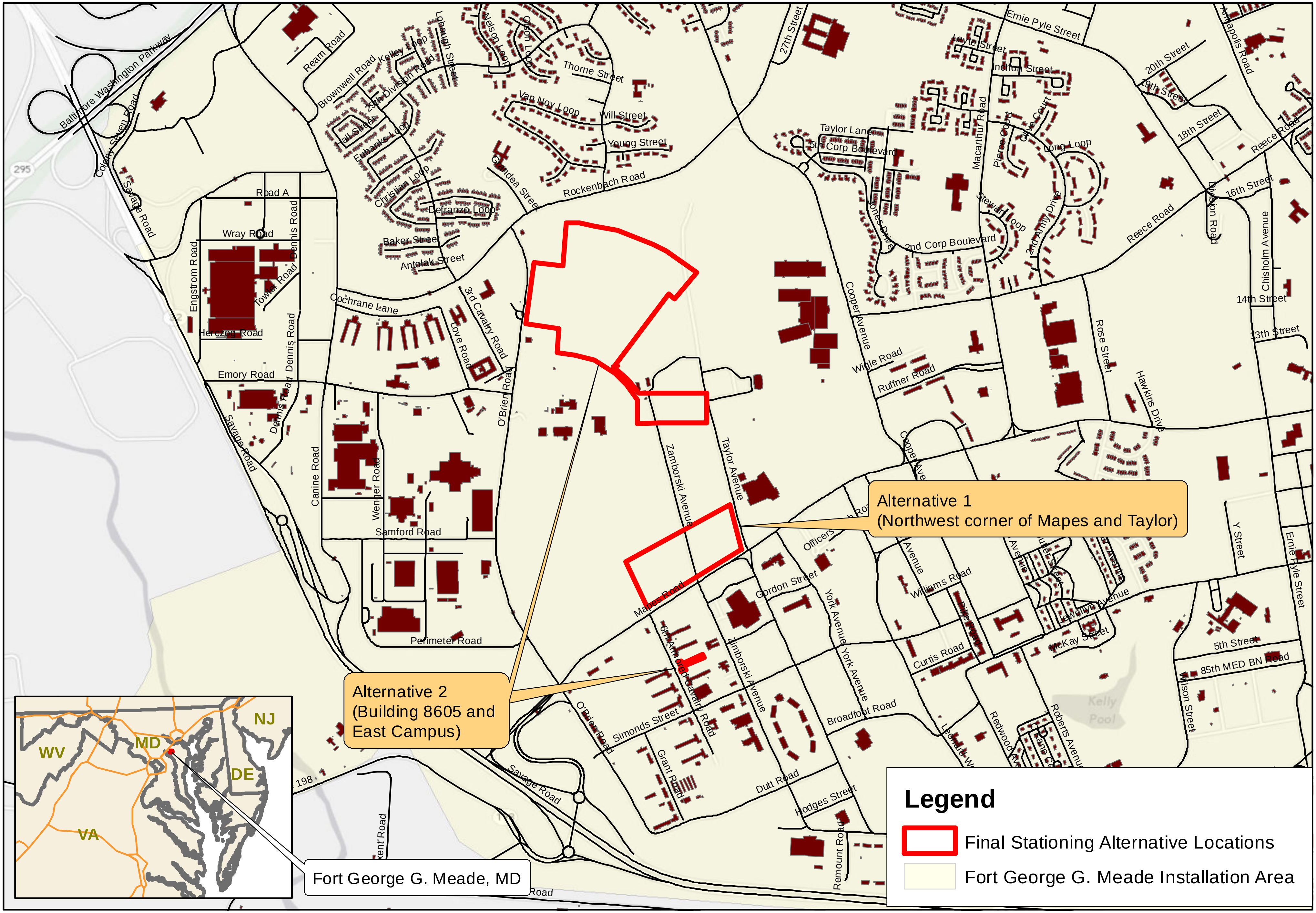


ENCLOSURE 1
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

0 1,500 3,000 6,000 9,000 12,000 Feet

Prepared March 13, 2012

N



ENCLOSURE 2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort George G. Meade, MD

0 750 1,500 3,000 4,500 6,000 Feet

Prepared March 13, 2012

ENCLOSURE 3
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia

Federal and State Agencies

EPA Region 4
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Georgia Historic Preservation Division
Attn: Dr. David Crass
254 Washington Street, SW
Ground Level
Atlanta, GA 30334-9007

US Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

David M. Jennings
Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
Fort Eustis, VA 23604-5515

Georgia Environmental Protection Division
Northeast District
Attn: Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Georgia Dept. of Natural Resources
Historic Preservation Division
Attn: Ms. Elizabeth Shirk
254 Washington Street, SW; Ground Level;
Atlanta, GA 30334

Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329

Georgia Dept of Transportation
One Georgia Center
600 West Peachtree NW
Atlanta, GA 30308

Regional and Local Offices

Brier Creek Soil and Water Conservation District
2531 Perkins Green Fork Road
Perkins, GA 30822-5337

Columbia County Soil and Water Conservation District
501 Greene Street, Suite 309
Augusta, GA 30901-4427

McDuffie County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

George Patty, Director
Augusta-Richmond
Planning and Development Department
525 Telfair Street
Augusta, GA 30901

Lillian Easterlin, Executive Director
Jefferson County Chamber of Commerce
P.O. Box 630
302 East Broad Street
Louisville, GA 30434

Department of Planning
Columbia County Government Center
630 Ronald Reagan Drive
Building A, West Wing
P.O. Box 498
Evans, GA 30809

McDuffie County Planning Commission
City/County Government Complex
210 Railroad Street
Thomson, GA 30824

ENCLOSURE 4
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort George G. Meade

State and Federal Agencies

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Suite 1101
301 West Preston Street
Baltimore, MD 21201-2365

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Mr. Leopoldo Miranda
U.S. Dept. of the Interior Fish & Wildlife Services
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Maryland Dept. of Housing & Community
Development Maryland Historical Trust
Division of Historical and Cultural Programs
ATTN: Elizabeth J. Cole
100 Community Place
Crownsville, MD 21032-2023

State of Maryland Dept. of Agriculture
ATTN: Ms. Joe Oberg
Public Information Officer
50 Harry S. Truman Parkway
Annapolis, Maryland 21401

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Maryland Dept of Transportation
State Highway Administration
ATTN: Lee Johnston
707 North Calvert Street
Mail Stop C303
Baltimore, Maryland 21202

Regional and Local Offices

Ms. Ginger Ellis
Anne Arundel County Maryland
Office of Environmental & Cultural Resources
2664 Riva Rd
Annapolis, MD 21401

Mr. Joseph A. Haamid
Resource Conservationist
Anne Arundel Soil Conservation District
Heritage Office Center
2662 Riva Road, Suite 150, MS #7001
Annapolis, MD 21401-7377

Mr. George G. Cardwell
Anne Arundel County
Office of Planning and Zoning
Heritage Office Complex
2664 Riva Rd, MS 6403
Annapolis, MD 21401

Mr. Jean Friedberg
Fort Meade RGMC
6751 Columbia Gateway Drive
Suite 500
Columbia, MD 21046

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE 12 April 2012

EPA Region 4
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Dear Mr. Mueller:

Subject: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. Enclosed please find a letter and a public notice from the Baltimore District, U.S. Army Corps of Engineers, which is part of their coordination effort for the EA. The Corps' letter requests that all comments or questions on the proposed action be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

Robert L Drumm

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

EPA Region 4
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Dear Mr. Mueller:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The three alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon include: 1) construct a new facility in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovate several buildings and construct additional space if needed within Back Hall Campus between 22nd to 25th and Chamberlain to Barnes; and 3) construct a wing on Whitelaw Hall as part of the planned Whitelaw Hall Phase 2 development for the entire ARCYBER Command. All components are proposed within the cantonment area of the installation. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort George G. Meade. Fort George G. Meade's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

12 April 2012

Georgia Environmental Protection Division
Northeast District
Attn: Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Dear Mr. Darley:

Subject: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. Enclosed please find a letter and a public notice from the Baltimore District, U.S. Army Corps of Engineers, which is part of their coordination effort for the EA. The Corps' letter requests that all comments or questions on the proposed action be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Georgia Environmental Protection Division
Northeast District
Attn: Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

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To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

12 April 2012

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Dear Ms.Morris:

Subject: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. Enclosed please find a letter and a public notice from the Baltimore District, U.S. Army Corp of Engineers, which is part of their coordination effort for the EA. The Corps' requests that all comments or questions on the proposed action be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

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Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Dear Ms. Morris:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

The three alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon include: 1) construct a new facility in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovate several buildings and construct additional space if needed within Back Hall Campus between 22nd to 25th and Chamberlain to Barnes; and 3) construct a wing on Whitelaw Hall as part of the planned Whitelaw Hall Phase 2 development for the entire ARCYBER Command. All components are proposed within the cantonment area of the installation. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort George G. Meade. Fort George G. Meade's alternatives will be reviewed by its local, state and federal agencies.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

12 April 2012

Installation Management Command,
Atlantic Region
Attn: David Jennings
IMAT-PWD-E
705 Washington Blvd
Fort Eustis, VA 23604-5515

Dear Mr. Jennings:

Subject: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. Enclosed please find a letter and a public notice from the Baltimore District, U.S. Army Corps of Engineers, which is part of their coordination effort for the EA. The Corps' letter requests that all comments or questions on the proposed action be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

Robert L. Drumm

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

12 April 2012

Planning Division

David M. Jennings
Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
Fort Eustis, VA 23604-5515

Dear Mr. Jennings:

On behalf of the U.S. Army Cyber (ARCYBER) Command, the U.S. Army Corps of Engineers, Baltimore District, is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland. With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

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Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

12 April 2012

U.S. Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

Dear Ms. Harris:

Subject: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. Enclosed please find a letter and a public notice from the Baltimore District, U.S. Army Corps of Engineers, which is part of their coordination effort for the EA. The Corps' letter requests that all comments or questions on the proposed action be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

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BALTIMORE DISTRICT, CORPS OF ENGINEERS
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ATTENTION OF

12 April 2012

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The three alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon include: 1) construct a new facility in a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovate several buildings and construct additional space if needed within Back Hall Campus between 22nd to 25th and Chamberlain to Barnes; and 3) construct a wing on Whitelaw Hall as part of the planned Whitelaw Hall Phase 2 development for the entire ARCYBER Command. All components are proposed within the cantonment area of the installation. Please see the attached Public Notice for a map and description of these alternatives as well as the alternatives proposed for Fort George G. Meade. Fort George G. Meade's alternatives will be reviewed by its local, state and federal agencies.

The purpose of this letter is to request a review of the project area and to solicit comments from your agency regarding impacts, if any, to threatened and endangered species in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq).

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 30 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

US Army Corps of Engineers
Baltimore District

Supplement to Public Notice

Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia
Fort George G. Meade, Maryland

All Interested Parties: On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of this Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

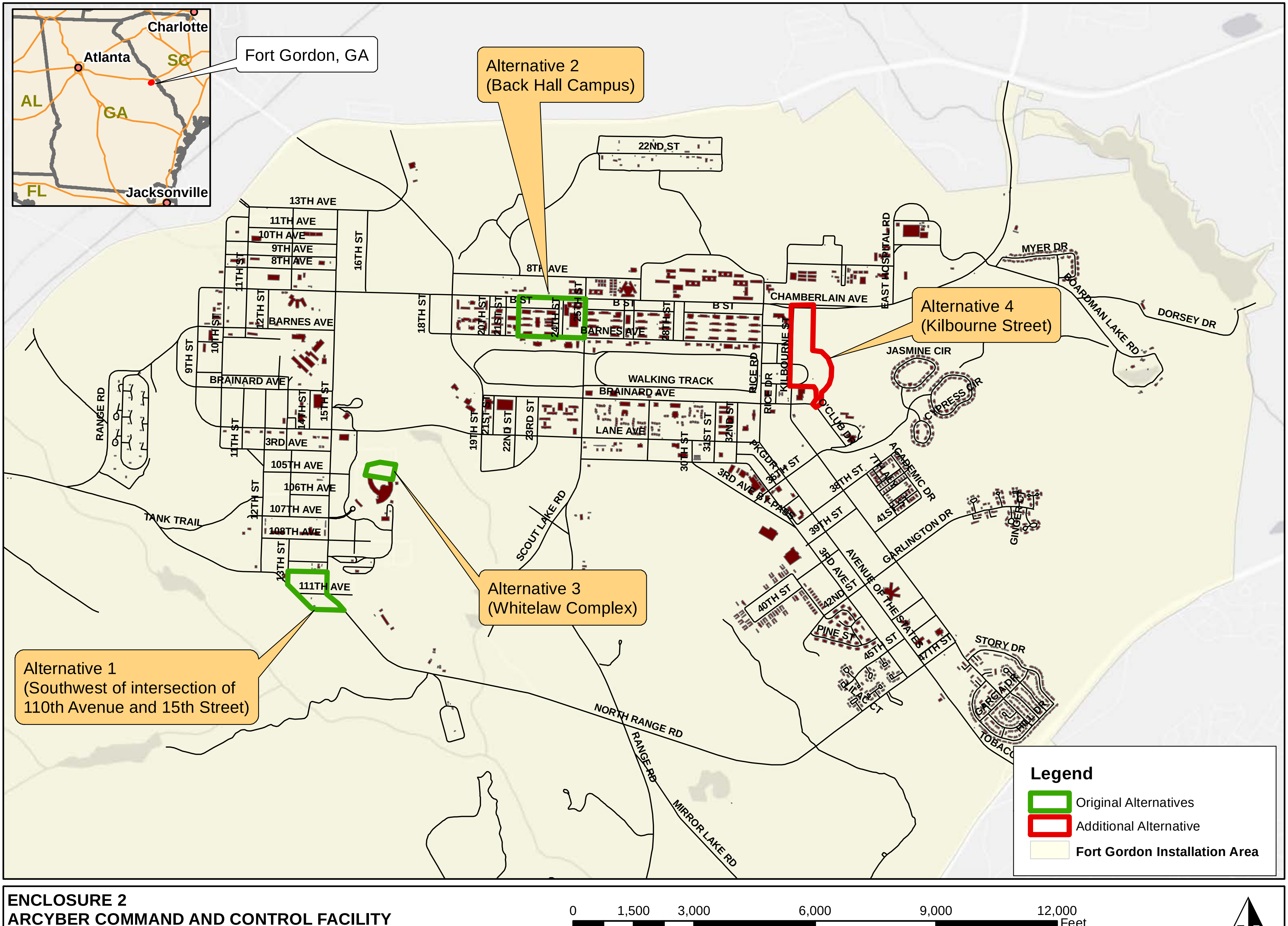
The EA will evaluate the potential environmental effects that may occur as a result of the Proposed Action and will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended.

Interested parties are invited to submit written comments for consideration within 15 days of this notice. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA. This Public Notice is being distributed to organizations and individuals that are known to have an interest in this project (Enclosures 3 and 4). Please bring this matter to the attention of any other organizations or individuals with an interest in this matter. Comments must be submitted within 15 days of the date of this notice to: ARCYBER_NEPA@usace.army.mil.

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Date: Aug 7, 2012

Enclosures



ENCLOSURE 2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

Prepared July 30, 2012

ENCLOSURE 3
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort Gordon, Georgia

Federal and State Agencies

EPA Region 4
Mr. Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Georgia Historic Preservation Division
Attn: Dr. David Crass
254 Washington Street, SW
Ground Level
Atlanta, GA 30334-9007

US Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

Mr. David M. Jennings
Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
Fort Eustis, VA 23604-5515

Georgia Environmental Protection Division
Northeast District
Attn: Mr. Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Ms. Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Georgia Dept. of Natural Resources
Historic Preservation Division
Attn: Ms. Elizabeth Shirk
254 Washington Street, SW; Ground Level;
Atlanta, GA 30334

Mr. Jon A. West
Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329

Ms. Amber Phillips
Georgia Dept of Transportation
One Georgia Center
600 West Peachtree NW
Atlanta, GA 30308

Regional and Local Offices

Mr. Ron Milligan
Brier Creek Soil and Water Conservation District
2531 Perkins Green Fork Road
Perkins, GA 30822-5337

Mr. Robert Amos
Columbia County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

Mr. Robert Amos
McDuffie County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

Mr. George Patty, Director
Augusta-Richmond
Planning and Development Department
525 Telfair Street
Augusta, GA 30901

Ms. Lillian Easterlin, Executive Director
Jefferson County Chamber of Commerce
P.O. Box 630
302 East Broad Street
Louisville, GA 30434

Ms. Nayna Mistry
Department of Planning
Columbia County Government Center
630 Ronald Reagan Drive
Building A, West Wing
P.O. Box 498
Evans, GA 30809

Ms. Gail Newsome
McDuffie County Planning Commission
City/County Government Complex
210 Railroad Street
Thomson, GA 30824

ENCLOSURE 4
Public Notice Mail List
Environmental Assessment
Army Cyber Command and Control Facility
Fort George G. Meade

State and Federal Agencies

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Ms. Linda C. Janey
Maryland State Clearinghouse
Maryland Office of Planning, Suite 1101
301 West Preston Street
Baltimore, MD 21201-2365

Ms. Brigid E. Kenney
Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Ms. Genevieve LaRouche
U.S. Dept. of the Interior Fish & Wildlife Services
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. William Arguto
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103
Mail Code EA30

Maryland Dept. of Housing & Community
Development Maryland Historical Trust
Division of Historical and Cultural Programs
ATTN: Ms. Elizabeth J. Cole
100 Community Place
Crownsville, MD 21032-2023

State of Maryland Dept. of Agriculture
ATTN: Ms. Joe Oberg
Public Information Officer
50 Harry S. Truman Parkway
Annapolis, Maryland 21401

Maryland Department of Planning
ATTN: Mr. Bob Rosenbush, Planner
301 West Preston Street, Suite 1101
Baltimore, MD 21201

Maryland Dept of Transportation
State Highway Administration
ATTN: Ms. Kathryn Robbins
707 North Calvert Street
Mail Stop C303
Baltimore, Maryland 21202

Regional and Local Offices

Ms. Ginger Ellis
Anne Arundel County Maryland
Office of Environmental & Cultural Resources
2664 Riva Rd
Annapolis, MD 21401

Mr. Joseph A. Haamid
Resource Conservationist
Anne Arundel Soil Conservation District
Heritage Office Center
2662 Riva Road, Suite 150, MS #7001
Annapolis, MD 21401-7377

Mr. George G. Cardwell
Anne Arundel County
Office of Planning and Zoning
Heritage Office Complex
2664 Riva Rd, MS 6403
Annapolis, MD 21401

Mr. Jean Friedberg
Fort Meade RGMC
6751 Columbia Gateway Drive
Suite 500
Columbia, MD 21046

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

7 August 2012

Georgia Environmental Protection Division
Northeast District
Attn: Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

Dear Mr. Darley:

Reference: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. Enclosed please find a letter and information regarding a sixth alternative site on Fort Gordon as part of the continued scoping effort for the EA.

The letter requests that all comments or questions be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact Mr. Robert Drumm of Fort Gordon's Natural Resources Management Branch at (706) 791-6374.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Georgia Environmental Protection Division
Northeast District
Attn: Mr. Jeff Darley
885 Tobacco Road, Suite A
Augusta, GA 30906

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Attached are the comments that we received from your office regarding the April 12, 2012, Public Notice. To assist us in identifying issues that may affect the implementation of this project, please provide only additional written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. Please note that it is not necessary to resubmit comments previously sent regarding this project. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE 7 August 2012

U.S. Fish and Wildlife Service
Ecological Services Office
Attn: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

Dear Ms. Harris:

Reference: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

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If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact Mr. Robert Drumm of Fort Gordon's Natural Resources Management Branch at (706) 791-6374.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

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BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

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ATTENTION OF

7 August 2012

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Chief, Planning and Environmental
Services Branch

Enclosures

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US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

7 August 2012

EPA Region 4
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Dear Mr. Mueller:

Reference: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

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DPW, ED
Fort Gordon, GA 30909

Enclosures

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7 August 2012

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Chief, Planning and Environmental
Services Branch

Enclosures

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US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

7 August 2012

Installation Management Command,
Atlantic Region
Attn: David Jennings
IMAT-PWD-E
705 Washington Blvd
Fort Eustis, VA 23604-5515

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Robert Drumm

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Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

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Environmental Protection Specialist
Installation Management Command, Atlantic Region
IMAT-PWD-E
705 Washington Boulevard
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On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Enclosures

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

7 August 2012

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Dear Ms. Morris:

Reference: U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA)

ARCYBER proposes to construct a command and control facility to be located on Fort Gordon, Georgia or Fort George G. Meade, Maryland. On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. Enclosed please find a letter and information regarding a sixth alternative site on Fort Gordon as part of the continued scoping effort for the EA.

The letter requests that all comments or questions be submitted to the reference email address within the letter. In addition, Fort Gordon respectfully requests that we also be notified, as part of our internal process. Please copy robert.l.drumm6.civ@mail.mil when submitting your comments to the preparers of the EA.

If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact Mr. Robert Drumm of Fort Gordon's Natural Resources Management Branch at (706) 791-6374.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

7 August 2012

Planning Division

Georgia Dept. of Natural Resources
Wildlife Resources Division
Georgia Natural Heritage Program
Attn: Katrina Morris
2065 U.S. H 278, SE
Social Circle, GA 30025

Dear Ms. Morris:

On April 12, 2012, the U.S. Army Corps of Engineers, Baltimore District, distributed a Public Notice to Federal, State, and Local agencies, on behalf of the U.S. Army Cyber (ARCYBER) Command. The Public Notice advised that ARCYBER is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (Enclosure 1). With the projected growth of the Command, the resulting facility would be capable of supporting a workforce of approximately 1,500 personnel. The EA will be prepared in accordance with the National Environmental Policy Act of 1969, as amended.

As noted in the April 12, 2012, Public Notice, ARCYBER originally considered five alternatives for locating the new command and control facility. During the planning process, an additional site has been added to the alternatives to be evaluated in the EA for locating the command and control facility at Fort Gordon. This sixth alternative includes construction of a new facility along Kilbourne Street, which is located within the cantonment area of Fort Gordon (Enclosure 2). The addition of this site has prompted the submission of the attached Supplement to the Public Notice. Should additional sites be added during the planning process, you will have the opportunity to review when the draft EA is made available for public review.

To assist us in identifying issues that may affect the implementation of this project, please provide written comments within 15 days of receipt of this letter to: ARCYBER_NEPA@usace.army.mil. All comments received as a result of the April 12, 2012, Public Notice and this Supplement to the Public Notice will be considered in the preparation of the EA.

Sincerely,

Lawrence D. Eastman
Chief, Planning and Environmental
Services Branch

Enclosures

Georgia Department of Natural Resources

Environmental Protection Division

Northeast District - Augusta Office

1885 Tobacco Rd., Suite A, Augusta, Georgia 30906-8825

Mark Williams, Commissioner
Judson H. Turner, Director
706-792-7744

May 1, 2012

Mr. Lawrence D. Eastman, Chief
Planning and Environmental Services Branch
Department Of The Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203-1715

RE: **Environmental Assessment for the proposed U.S. Army Cyber (ARCYBER) facility**
Fort Gordon

Dear Mr. Eastman:

On April 13, 2012 the Environmental Protection Division (EPD) Northeast District – Augusta Office received a letter requesting information and input regarding the proposed ARCYBER command and control facility at Fort Gordon, Georgia. The following is a brief summation of our comments for these activities with relevance to the Georgia Water Quality Control Act, Water Quality Control Regulations and the National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated With Construction Activity (NPDES General Permit) and the Georgia Erosion and Sedimentation Act of 1975:

- Land disturbance activities located within 200 feet of a State Water will require the proper Land Disturbance Activity permit from the respective Local Issuing Authority (LIA);
- Land disturbance activities conducted within the 25 foot buffer of a State Water will require a Buffer Variance application to and approval from EPD;
- Construction activities discharging storm water associated with construction projects that will result in disturbance equal to or greater than one (1) acre will require the owner and/or operator to secure a permit from the LIA, submit a Notice of Intent (NOI) to EPD, submit applicable fees, and submit for review and approval an Erosion, Sedimentation and Pollution Control Plan (ES&PCP) that was designed by a Georgia Soil and Water Conservation Commission (GSWCC) certified design professional.

It is the intention of the Environmental Protection Division to restore and maintain purity in waters of the State. If you have any questions regarding this matter, please do not hesitate to call.

Sincerely,

Delaine Scott

Delaine Scott
Environmental Specialist
Northeast District - Augusta Office
(706) 792-7744

DS
CC: Augusta Office Files/Richmond County/Construction Storm Water/Fort Gordon
Robert L. Drumm, Chief, Natural Resources Branch, DPW, ED, Fort Gordon, GA 30909 – via email

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE 7 August 2012

Dr. David Crass
Georgia Department of Natural Resources
Historic Preservation Division
254 Washington Street, SW
Ground Level
Atlanta, Georgia 30334-9007

Dear Dr. Crass:

The purpose of this letter is to consult with your office as required by Section 106 of the National Historic Preservation Act regarding the proposed command and control facility for U.S. Army Cyber (ARCYBER) Command at Fort Gordon; Richmond, Jefferson, McDuffie, and Columbia Counties; Georgia or Fort Meade, Maryland. In order to accommodate the relocation and projected growth of the ARCYBER Command, a new or existing facility at Fort Gordon or Fort Meade must be obtained that is capable of supporting a workforce of approximately 1,500 personnel.

Four alternatives are being considered for the proposed ARCYBER command and control facility at Fort Gordon, as shown on Enclosures 1 and 2 to this letter. The four alternatives include: 1) constructing a new facility on a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovating several buildings and constructing additional space, if needed, within the Back Hall Campus between 22nd and 25th Streets and Chamberlain and Barnes Streets; 3) constructing a new wing on Whitelaw Hall (HP-050706-002); and 4) constructing a new facility along Kilbourne Street.

Fort Gordon has considered the potential effects of the four alternatives on historic properties. All four alternatives are located within the Fort Gordon cantonment, which has been previously determined to be disturbed and does not contain any National Register eligible archeological sites (*Integrated Cultural Resource Management Plan,* Fort Gordon, 2011:26). Alternative 2 will require the renovation of up to 16 buildings, ten of which (Buildings 21714 - 21718, 21720 – 21722 and 24701) were surveyed as part of the "Rolling Pins Barracks" complex and found to be ineligible for listing in the National Register of Historic Places (*Fort Gordon Cold War Architectural Survey, Volume 3: Barracks Areas Survey Forms*, Smith and Stone 2005). The remaining six buildings (24702, 24704, 24705, R1720, R1721, and R4701) were constructed in 2006 and 2007 and have not reached 50 years of age. These six buildings do not possess any exceptional importance that would make them eligible for the National Register under Criteria Consideration G.

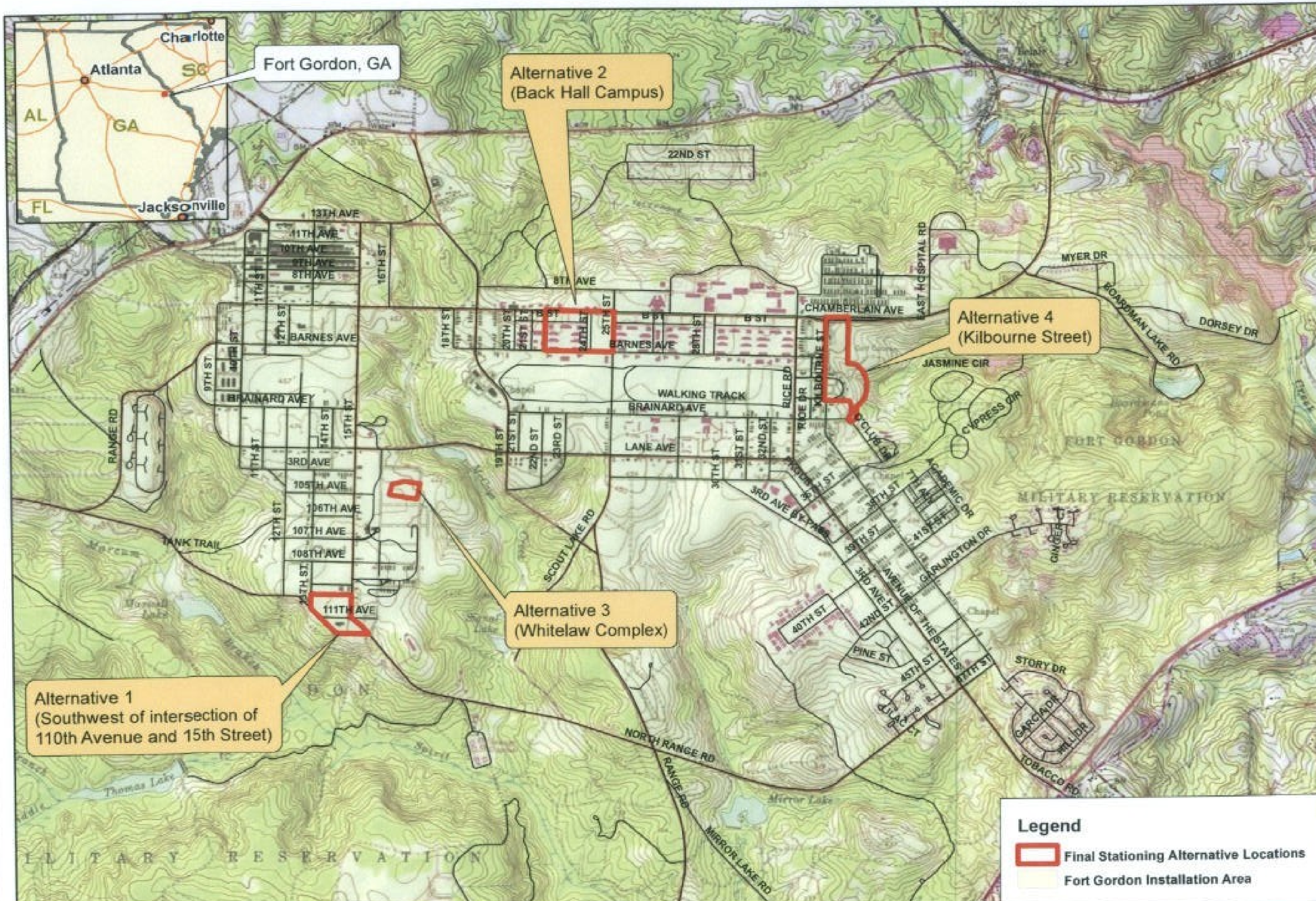
Fort Gordon has determined that implementation of any of the four alternatives will have no effect on historic properties and no further work is recommended. Should we become aware, from any source, that historic properties are located at or near the property, we will notify your office immediately.

Thank you for your assistance with the ARCYBER command and control facility project. If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures

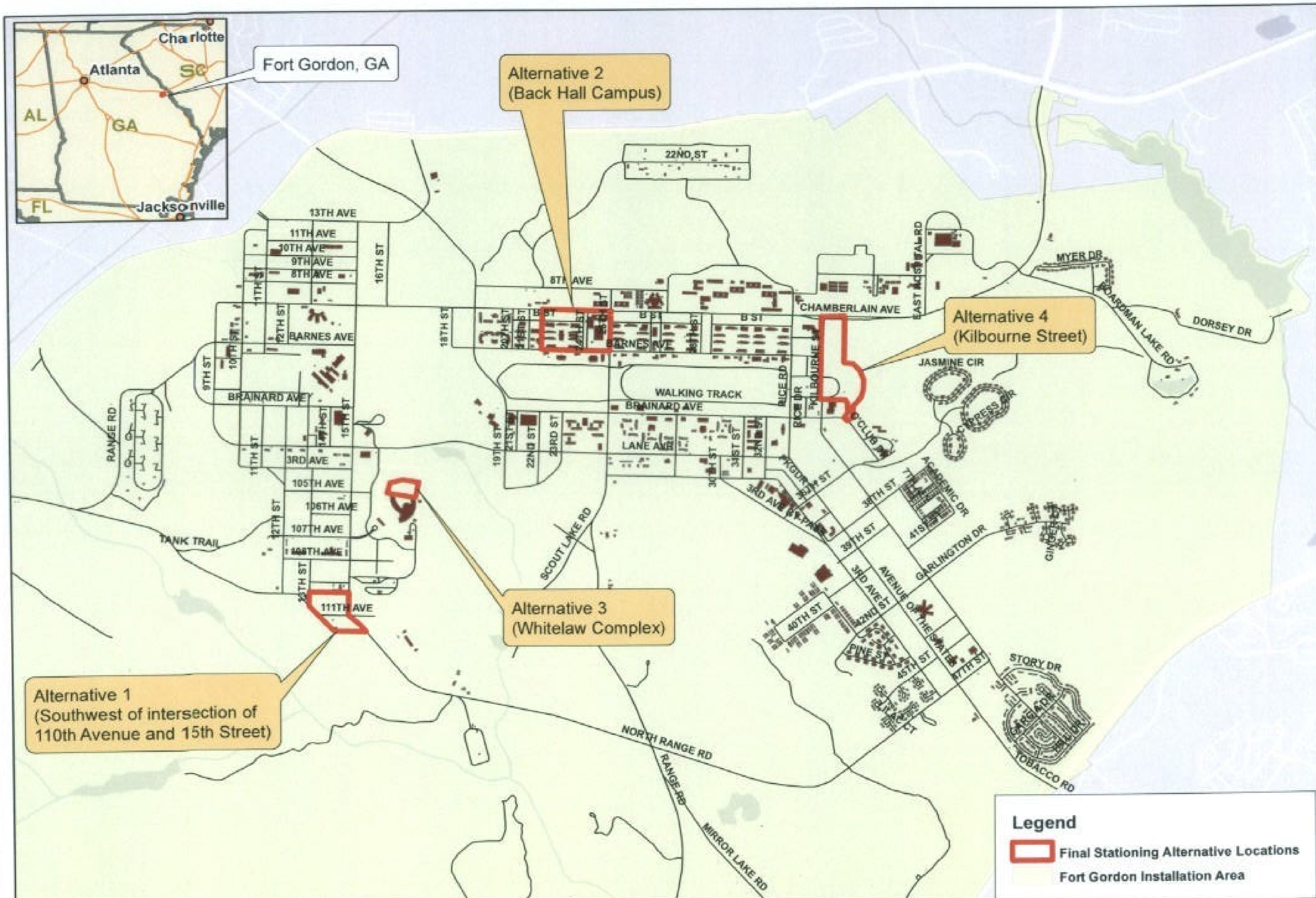


USGS QUADRANGLE
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

0 1,500 3,000 6,000 9,000 12,000 Feet

Prepared July 24, 2012

ENCLOSURE 1



ENCLOSURE 2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

0 1,500 3,000 6,000 9,000 12,000 Feet

Prepared July 19, 2012

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

7 August 2012

Georgia Dept. of Natural Resources
Historic Preservation Division
Attn: Ms. Elizabeth Shirk
254 Washington Street, SW; Ground Level; Atlanta, GA 30334

Dear Ms. Shirk:

The purpose of this letter is to consult with your office as required by Section 106 of the National Historic Preservation Act regarding the proposed command and control facility for U.S. Army Cyber (ARCYBER) Command at Fort Gordon; Richmond, Jefferson, McDuffie, and Columbia Counties; Georgia or Fort Meade, Maryland. In order to accommodate the relocation and projected growth of the ARCYBER Command, a new or existing facility at Fort Gordon or Fort Meade must be obtained that is capable of supporting a workforce of approximately 1,500 personnel.

Four alternatives are being considered for the proposed ARCYBER command and control facility at Fort Gordon, as shown on Enclosures 1 and 2 to this letter. The four alternatives include: 1) constructing a new facility on a 16-acre site southwest of the intersection of 110th Avenue and 15th Street; 2) renovating several buildings and constructing additional space, if needed, within the Back Hall Campus between 22nd and 25th Streets and Chamberlain and Barnes Streets; 3) constructing a new wing on Whitelaw Hall (HP-050706-002); and 4) constructing a new facility along Kilbourne Street.

Fort Gordon has considered the potential effects of the four alternatives on historic properties. All four alternatives are located within the Fort Gordon cantonment, which has been previously determined to be disturbed and does not contain any National Register eligible archeological sites (*Integrated Cultural Resource Management Plan,* Fort Gordon, 2011:26). Alternative 2 will require the renovation of up to 16 buildings, ten of which (Buildings 21714 - 21718, 21720 – 21722 and 24701) were surveyed as part of the "Rolling Pins Barracks" complex and found to be ineligible for listing in the National Register of Historic Places (*Fort Gordon Cold War Architectural Survey, Volume 3: Barracks Areas Survey Forms*, Smith and Stone 2005). The remaining six buildings (24702, 24704, 24705, R1720, R1721, and R4701) were constructed in 2006 and 2007 and have not reached 50 years of age. These six buildings do not possess any exceptional importance that would make them eligible for the National Register under Criteria Consideration G.

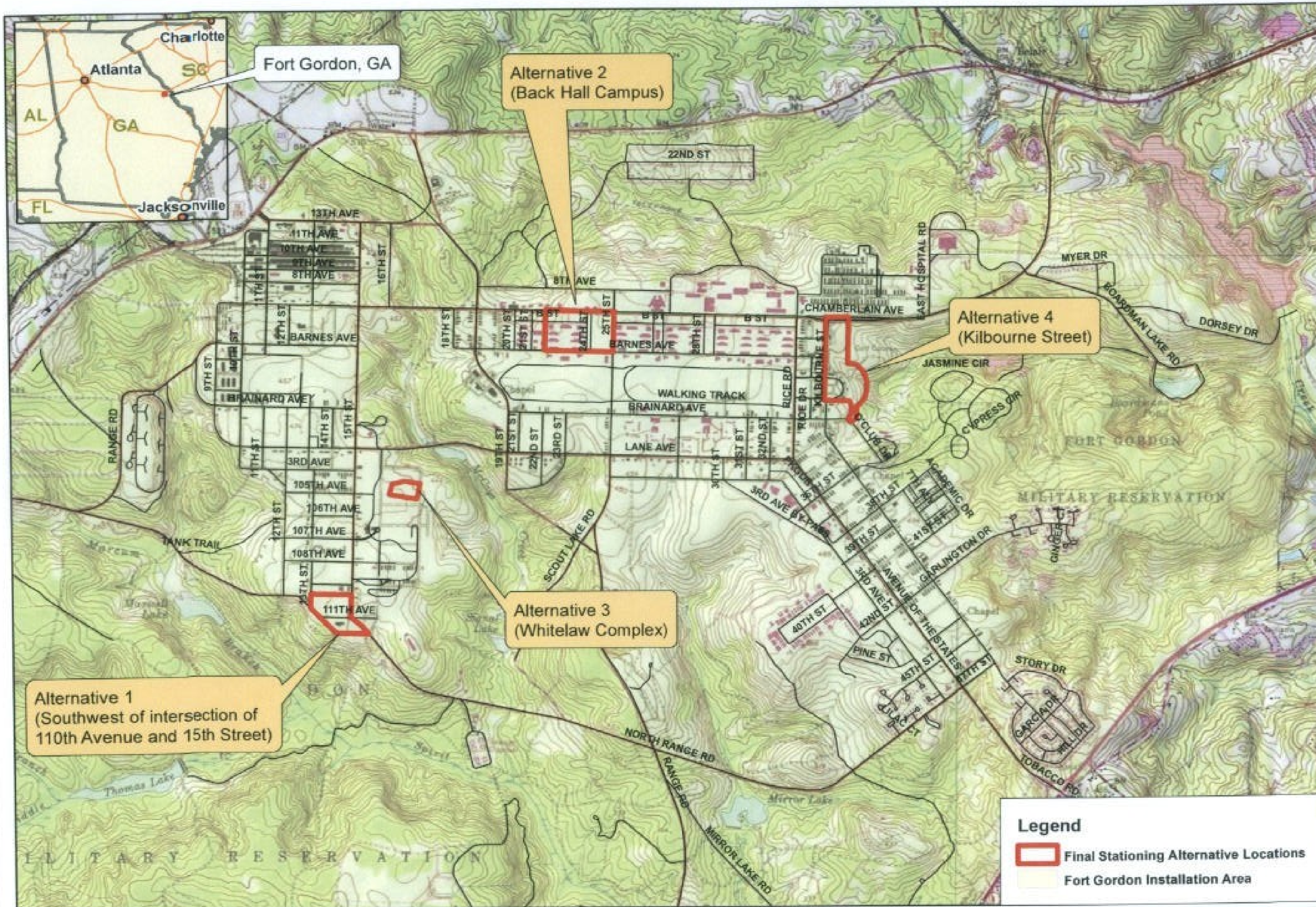
Fort Gordon has determined that implementation of any of the four alternatives will have no effect on historic properties and no further work is recommended. Should we become aware, from any source, that historic properties are located at or near the property, we will notify your office immediately.

Thank you for your assistance with the ARCYBER command and control facility project. If you have any questions or require additional information regarding Fort Gordon, please do not hesitate to contact me at Fort Gordon's Natural Resources Management Branch at (706) 791-9209.

Sincerely,

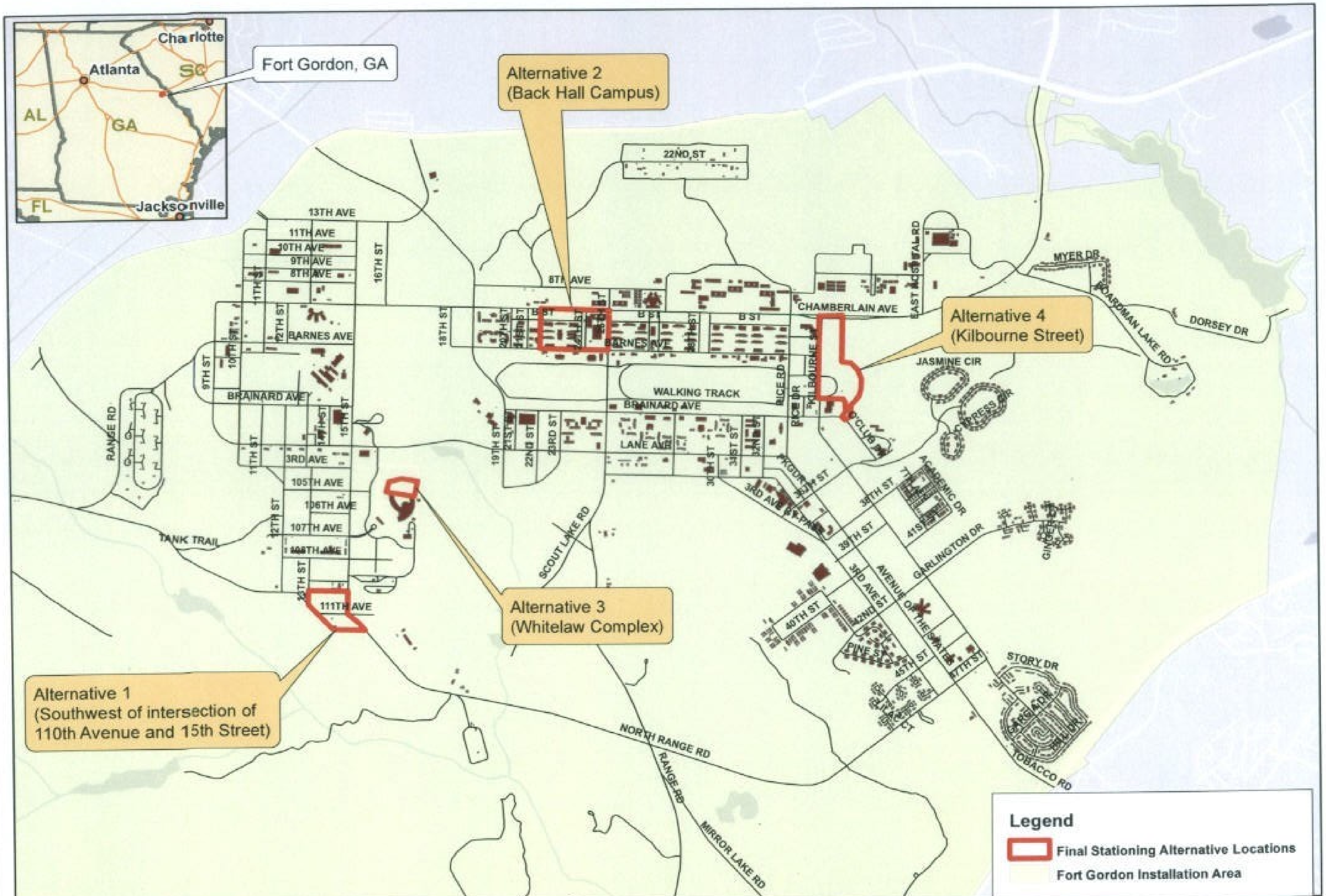
Mr. Robert L. Drumm
Chief, Natural Resources Branch
DPW, ED
Fort Gordon, GA 30909

Enclosures



USGS QUADRANGLE
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

Prepared July 24, 2012



ENCLOSURE 2
ARCYBER COMMAND AND CONTROL FACILITY
Final Stationing Alternative Locations
Fort Gordon, GA

Prepared July 19, 2012

Augusta
GEORGIA

AUGUSTA PLANNING AND DEVELOPMENT DEPARTMENT
GEORGE A. PATTY
DIRECTOR
525 TELFAIR STREET
AUGUSTA, GEORGIA 30901
PHONE: (706) 821-1796
FAX: (706) 821-1806
www.AugustaGA.gov

April 23, 2012

Lawrence D. Eastman
Chief, Planning and Environmental
Service Branch
US Army Corps of Engineers
Baltimore District
P O Box 1715
Baltimore, MD 21203

RE: Environmental Assessment Army Cyber Command and Control Facility

Dear Mr. Eastman:

I am the director of the Planning and Development Department for Augusta, Georgia, a consolidated City and County government within which most of Fort Gordon is located. We believe that Fort Gordon is well suited to accept additional functions and development. We have worked cooperatively with Fort Gordon on many issues and the City's Comprehensive Land Use Plan supports the addition of new uses at the installation.

We completed a Joint Land Use Study in 2005 with Fort Gordon and the other surrounding local governments which resulted in policies and ordinance changes designed to protect the perimeter of the installation from various forms of encroachment. The City is now providing potable water to the installation and our system can accommodate substantial growth. We have established cooperation with the installation in dealing with soil erosion and NPDES requirements, and we recently installed a state of the art interactive traffic signal system at the two main gates to eliminate traffic congestions and provide easy access to the interstate system.

We do not see any environmental issues that would be affected by locating the Cyber Command and Controls facility at Fort Gordon.

Sincerely,

George A. Patty
Director

GEORGIA DEPARTMENT OF
COMMUNITY AFFAIRS

Mike Beatty
COMMISSIONER

Nathan Deal
GOVERNOR

May 1, 2012

Lawrence D. Eastman
Chief, Planning and Environmental Services Branch
U.S. Army Corps of Engineers: Baltimore District
Post Office Box 1715
Baltimore, MD 21203-1715

RE: Comments on Environmental Assessment—Army Cyber Command and Control Facility, Fort Gordon, Georgia

Mr. Eastman,

The Georgia Department of Community Affairs welcomes the opportunity to comment on your Environmental Assessment for the U.S. Army Cyber (ARCYBER) Command's potential site at Fort Gordon, Georgia. It is DCA's belief that continued, effective, successful development of Fort Gordon is fundamental to the economic vitality of the communities surrounding the installation and the continued vigor of the Augusta-Richmond County Metropolitan Area, as a whole. The Corps of Engineers is properly taking the critical step of developing a substantive, holistic assessment that meaningfully assess all the various potential effects that this project.

It is the belief of the Department of Community Affairs that, regardless of which of the three alternatives being evaluated for locating the command and control facility at Fort Gordon is chosen, the potential positive impacts of the influx of up to 1,500 personnel into the local economy would be significant and far-reaching. The historic cores of the communities surrounding the installation, particularly that of the City of Augusta, support a variety of retail and service-oriented enterprises which would benefit greatly from the additional customer base provided by new personnel. Both in their commercial centers and closer to Fort Gordon, the communities have additional space for expansion, as necessary, to accommodate new base-oriented development.

Practically, none of the three site alternatives being evaluated presents meaningful impediments to development of which we are aware. We are confident that whichever site is chosen, based upon whatever specific criteria are required by the project, any potential adverse impacts will not be immitigable. Significantly, the Fort Gordon installation is buffered from its surrounding communities by a fairly wide swath of undeveloped land which provides a wealth of opportunity for continued expansion, if that should be required in the future.

Georgia and the Augusta area in particular have a long history of "Southern hospitality". We go out of our way to welcome both visitors and those who seek to make their homes here. The workers associated with command and control facility and any of their families based at Fort Gordon would find a community pleased to have them here, good schools to educate their children, excellent food, and plentiful opportunities for passive and active recreation.

Fort Gordon and the people that live and work there are important to Georgia. It and they are a part of us. We welcome and support the possibility of "growing" the installation and strengthening our relationship with the U.S. Army, the men and women who serve, and their families. The Georgia Department of Community Affairs stands ready to assist you, the U.S. Army Corps of Engineers and ARCYBER as you move forward with your evaluation and decision-making processes. If there is any specific information you need that we can provide, please do not hesitate to contact us.

Warm Regards,

Jon A. West
Office of Planning & Environmental Management

From:
Sent: Monday, May 14, 2012 8:21 AM
To: CENAB-PL ARCYBER_NEPA
Subject: FW: Public Notice ARCYBER Command and Control Facility

Deborah - My staff told me that we have no comments about this project. Please let me know if you need anything else.

Thank you.

Nayna Mistry
Planning and Engineering Division Manager Development Services Division Columbia County
630 Ronald Reagan Drive
Evans, Georgia 30809
Office: (706) 868 3400
Direct: (706) 312 7178
Fax: (706) 868 3405
nmistry@columbiacountyga.gov

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United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

MAY 12 2012

Mr. Lawrence D. Eastman
Chief, Planning and Environmental Services Branch
Baltimore District, Corps of Engineers
Baltimore, Maryland 21203-1715

Re: NG-12-147-Rich

Dear Mr. Eastman:

Thank you for your April 12, 2012, letter requesting our review of the U.S. Army Cyber (ARCYBER) Command and control facility and Environmental Assessment (EA). The EA will evaluate the potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed ARCYBER command and control facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland.

We have reviewed the three alternatives at Fort Gordon, which are all located within the cantonment area, which is mostly developed with very little natural resources.
Federally-endangered or threatened species are not likely to occur at any of the three alternatives sites.

Please contact Deborah Harris in our Athens office (Deborah_C_Harris@fws.gov; 706-613-9493 ext. 224) if you have any questions about our evaluation of this project.

Sincerely,

Sandra S. Tucker

Sandra S. Tucker
Field Supervisor

cc: Robert Drumm, Fort Gordon, GA

From:	Larry Gissentanna [Gissentanna.Larry@epamail.epa.gov]
Sent:	Tuesday, September 11, 2012 9:48 AM
To:	CENAB-PL ARCYBER_NEPA
Cc:	robert.1.drumm6.civ@mail.mil
Subject:	Fw: Scoping Comments U.S. Army Cyber (ARCYBER) Cmd Environmental Assessment (EA) dated 7 August 2012

Department Of The Army
Baltimore District, Corps Of Engineers
P.O. Box 1715
Baltimore, Maryland 21203-1715
Attn: Lawrence D. Eastman Chief Planning and Environmental Services Branch

Dear Mr Eastman,

Consistent with Section 102(2)(c) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) appreciates the opportunity to provide scoping comments on the U.S. Army Cyber (ARCYBER) Command Environmental Assessment (EA).

EPA's preliminary concerns at this time can be summarized to include the following:

* Purpose & Need - The EA should discuss the purpose of constructing the Army Cyber (ARCYBER) Command and Control facility. Clearly list the alternatives and the criteria for selecting the Preferred Alternative.

* Air Quality - The project must also be consistent with General Conformity requirements to the extent that predicted air emissions are above de minimis levels for this proposal. Additional air quality concerns include the secondary impacts often associated with additional administrative buildings relative to additional generators and vehicular emissions from increased traffic and any requirements relating to Transportation Conformity.

* Noise - The selected site should avoid if possible, the use of non-compatible land in order to minimize noise impacts to any nearby residents.

* Waters of the United States - Consistent with Section 404 of the Clean Water Act, the selected site should avoid and minimize, to the maximum extent practicable, placement of fill into jurisdictional waters of the United States, which include wetlands and streams. Any potential site should be assessed (delineated) for the presence of federally jurisdictional waters. It should be noted that jurisdictional waters of the United States can differ from waters of the State subject to State of Georgia laws and regulations, and which are the basis for any County issued permits. Any fill material in waters of the United States will require a permit or authorization from the Atlanta Office of the Savannah District U.S. Army Corps of Engineers (COE). We encourage you to initiate coordination with the COE as soon as your preferred site is identified and if there will be wetland or stream impacts associated with the project.

* Environmental Justice (EJ) – The environmental, socioeconomic and health related impacts to potential EJ populations should be evaluated in the proposed EA. The demographics of the area should be documented in terms of the existence of minority and low-income populations. This description should include US Census data for the geographic unit(s) such as the Census Block Group(s) (BGs) encompassing the airport. At a minimum, the percentages of minority and low-income populations within these BGs should be documented and compared against other

demographics of the area, as well as against the percentages of neighboring BGs, counties and the State of MS. In addition, other demographic factors like population age, density, literacy, etc. may also be important to the overall assessment. Meaningful collaboration with the community can also help to identify whether any "pockets" (concentrations) of EJ communities exist within a BG that otherwise (as a whole) may have a relatively low percentage of minorities and low-income populations. We suggest coordination with local community leaders and groups in an effort to engage these communities in the scoping, assessment and project design process. The EA should include maps of the surrounding communities and indicate the proximity of communities with potential EJ concerns to the proposed project area.

Depending on the outcome of the EJ assessment, it may be necessary to enhance public participation with susceptible EJ communities to better understand their concerns and to identify whether there is an increased potential for exposure to environmental hazards associated with the expansion of the proposed project. The EA should identify whether multiple or cumulative impacts are likely to occur. Any benefits to the affected communities that may be derived from the project should be also included in the EA including any construction or operation jobs related to the proposed airport expansion, or local training for those jobs. If the environmental impacts of the proposed project appear to fall disproportionately minority and/or low income populations, then mitigation options should also be considered.

For additional information, EPA Region 4’s interim EJ policy can be emailed upon request. EPA Guidance for Consideration of EJ in Clean Air Action Section 309 Reviews and EPA Guidance for Incorporating EJ Concerns in EPA's NEPA Compliance Analyses can be found at our website at http://www.epa.gov/compliance/resources/policies/nepa/index.html. Demographic information can be found at the U.S. Census Bureau -2010, U.S. Bureau of Labor Statistics, LAUS, and U.S. Bureau of Economic Analysis, REIS, 2005. Publically available EPA Web-based tools can also be used to conduct preliminary screening level EJ reviews. EJView: http://epamap14.epa.gov/ejmap/entry.html <http://epamap14.epa.gov/ejmap/entry.html> and NEPAssist: https://oasext.epa.gov/NEPA/ <https://oasext.epa.gov/NEPA/> . The information from these sources should be used in conjunction with information acquired the public involvement, community interviews, surveys and ground verification processes. Additional EJ clarification is available through Ntale Kajumba at 404/562-9620 or kajumba.ntale@epa.gov).

* NPDES - National Pollutant Discharge Elimination System (NPDES) permit coverage for both project construction and operation are needed for point-source discharges.

* Ground-Water Quality - In addition to waters of the United States and NPDES issues, there may be additional water quality concerns for the proposal that relate to groundwater. The EA should consider identifying existing ongoing restoration efforts within the project site. Protect monitoring wells to ensure they are not damaged or properly closed prior to demolition or construction. Damaged or improperly closed monitoring wells can serve as a conduit/source to contaminate the ground water. Discuss this in your EA.

* Cultural Resources - Impacts to historic and archaeological resources must also be reviewed, with listed sites avoided or appropriately relocated to the satisfaction of the Georgia State Historic Preservation Officer (SHPO). http://georgiashpo.org.

* Cumulative Impacts - The EA should also consider the cumulative impacts of the proposed project, particularly for those impacts generated by the project (e.g., noise and air quality). That is, the EA should discuss all (federal and non-federal) past, present, proposed and future (foreseeable within some 10-15 yrs) projects that are within the designated project area or affect that area (e.g., air/water currents). Such project areas are often designated by logical geographic boundaries such as watersheds or airsheds, or by other methods. The cumulative impact analysis can be important for even small projects if

their proposed location is in an area that is already extensively developed. The EA document should also discuss the future increase in personnel as a result of the new command.

* Installation Restoration- If the Preferred Alternative require the demolition of existing buildings, the EA should mention any contaminated sites on the facility / installation that are near or will be use as part of the new construction site.

* Recycling - Consider an aggressive recycling program for the buildings planned for demolitions. Divert as much material from the landfill as possible.

* Energy - Consider energy sustainable buildings utilizing variable forms of proven alternative energy applicable for this area. Please see attached for additional info. http://www.wbdg.org/references/federal_mandates.php
<http://www.wbdg.org/references/federal_mandates.php>

Again, Thank you for the opportunity to provide comments to your project scoping letter, if you have any question, feel free to contact me via the information provided below..

Larry O. Gissentanna
DoD and Federal Agency, Project Manager
NEPA Program Office
U.S. Environmental Protection Agency/ Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8960
Office: 404-562-8248
gissentanna.larry@epa.gov

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

SEP 13 2012

Mr. Lawrence D. Eastman
Chief, Planning and Environmental Services Branch
Baltimore District, Corps of Engineers
Baltimore, Maryland 21203-1715

Re: NG-12-147-Rich

Dear Mr. Eastman:

Thank you for your August 7, 2012, letter requesting our review of a sixth alternative for the U.S. Army Cyber (ARCYBER) Command facility at Fort Gordon, Georgia. The Environmental Assessment for this project will evaluate the potential environmental, cultural, transportation, and socioeconomic effects associated with all alternatives for the facility which will be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland.

We have reviewed the Enclosure 2 map showing the location of alternative six (Kilbourne Street) within the cantonment area. The cantonment area is mostly developed with very little natural resources. Federally-endangered or threatened species are not likely to occur at alternative six.

Please contact Deborah Harris in our Athens office (Deborah_C_Harris@fws.gov; 706-613-9493 ext. 224) if you have any questions about our evaluation of this project.

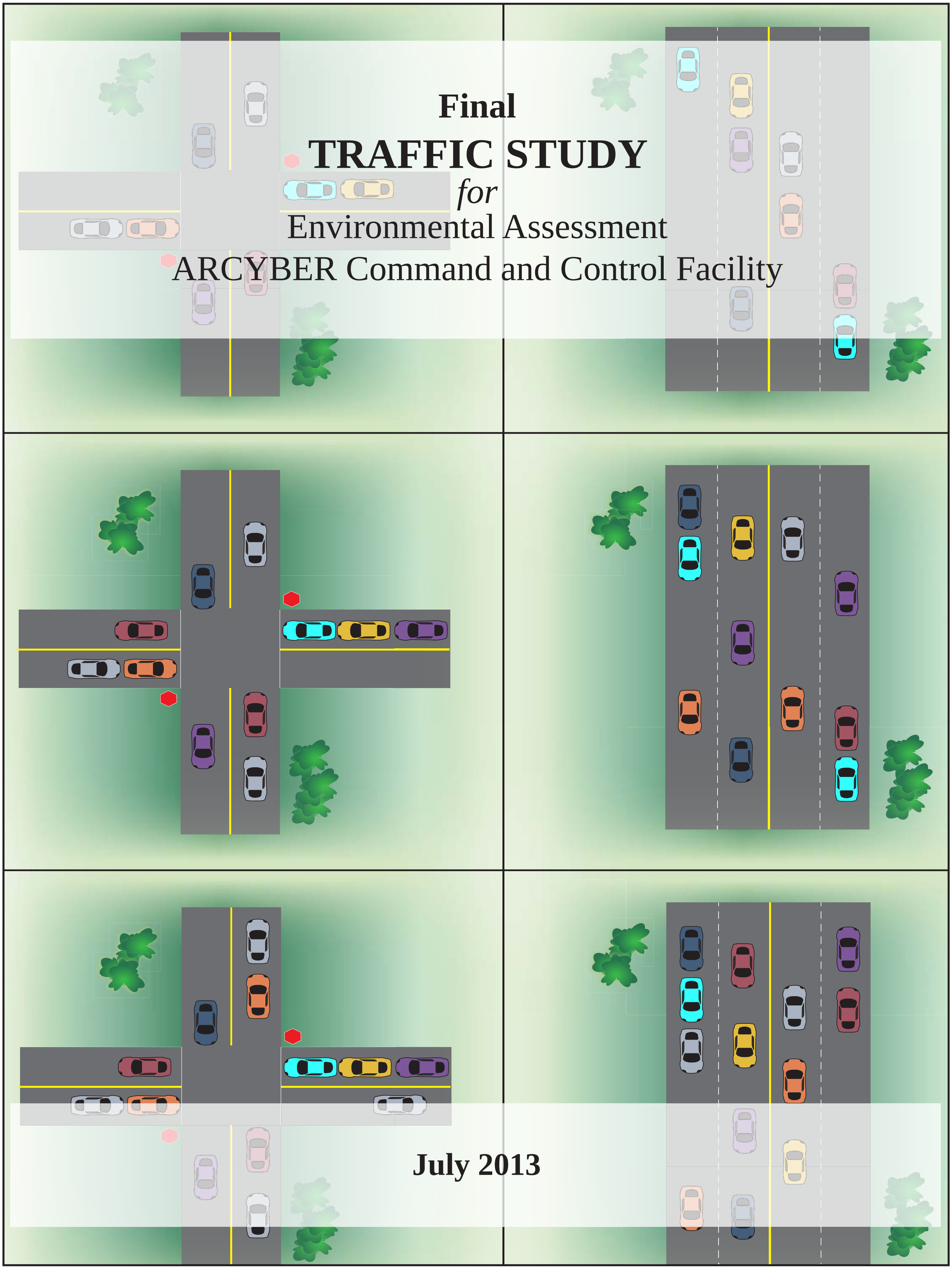
Sincerely,

FOR Sandra S. Tucker
Field Supervisor

cc: Robert Drumm, Fort Gordon, GA

APPENDIX D

TRAFFIC STUDY



Final

TRAFFIC STUDY

for

Environmental Assessment

ARCYBER Command and Control Facility

July 2013

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EXECUTIVE SUMMARY

This Traffic Study has been prepared to evaluate the potential traffic-related effects associated with the establishment and operation of a proposed U.S. Army Cyber (ARCYBER) Command / 2nd Army Command and Control Facility to be located at Fort George G. Meade, Maryland (hereinafter referred to as Fort Meade), or at Fort Gordon, Georgia. ARCYBER currently has approximately 151 active duty military, government civilians, and contract personnel employed at four different Fort Meade locations and approximately 316 active duty military, government civilians, and contract personnel employed at Fort Belvoir, Virginia. ARCYBER is expected to increase its current workforce to approximately 855 personnel by late 2012/early 2013. However, ARCYBER needs facilities to provide the capability of growing its workforce up to 1,500 personnel with the reorganization of ARCYBER and its major subordinate commands. To maximize operational efficiency, ARCYBER must consolidate its force structure currently at Fort Meade and Fort Belvoir into one location. Therefore, ARCYBER needs a command and control facility that can accommodate a workforce of up to 1,500 active duty military, government civilians, and contract personnel.

The Traffic Study was developed and prepared in consultation with staff members from various departments at both installations, and was conducted using procedures and calculations published in the *Highway Capacity Manual* (Transportation Research Board [TRB] 2010), *Trip Generation, 8th Edition: An ITE Informational Report* (Institute of Transportation Engineers [ITE] 2008), National Cooperative Highway Research Program (NCHRP) Report 672 (NCHRP 2010) and other sources and materials. Existing traffic counts were conducted at both installations during July and August of 2012. The Traffic Study considered six action alternatives, including one at Fort Meade[1] and five at Fort Gordon.

The analysis found substantial traffic congestion at numerous locations at both installations under baseline conditions. The addition of traffic from action alternatives would result in substantial effects during one or both peak hours at the following number of intersections:

- Alternative A (Fort Meade): two intersections out of the 16 analyzed
- Alternative C (Fort Gordon): five intersections out of the 20 analyzed
- Alternative D (Fort Gordon): four intersections out of the 20 analyzed
- Alternative E (Fort Gordon): five intersections out of the 20 analyzed
- Alternative F (Fort Gordon): three intersections out of the 20 analyzed
- Alternative G (Fort Gordon): six intersections out of the 20 analyzed

Measures to mitigate, minimize and/or avoid the traffic effects are summarized below:

Fort Meade

1. The action proponent will coordinate with Fort Meade representatives to develop and implement physical improvements and other measures necessary to mitigate the Proposed Action's traffic effects. Specific physical improvements are described in Table ES-1. The

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[1] Alternative B at Fort Meade would be located within the area previously evaluated in the Campus Development Environmental Impact Statement (National Security Agency 2010). Because the impacts associated with this alternative have been previously disclosed in a National Environmental Policy Act document, no additional analysis of this alternative was performed in this Traffic Study.

measures in Table ES-1 may be modified as appropriate based on input from installation public works staff.

Table ES-1. Summary of Mitigation Measures for Fort Meade, by Location and Alternative

	Intersection	Alternative A	Alternative B
4	Mapes Rd./ 6th Armored Cavalry Rd.	Install traffic signal and provide protected plus permitted phasing for the westbound approach. (Signal timing and phasing should be coordinated with other signals along Mapes Rd.)	**Mitigation Measures for Alternative B were Previously Identified in the Campus Development Environmental Impact Statement (NSA 2010).**
13	Reece Rd./ Cooper Ave.	Revise signal operation from split phasing to permitted plus protected phasing for eastbound and westbound left turns.	

2. To the extent feasible, incorporate various measures into the design and operation of the ARCYBER facility to minimize the concentration of project traffic during peak commuting hours, and/or encourage travel using public transit or non-motorized modes. Such measures may include flexible working hours, telecommuting, incentives to encourage transit use or carpooling, bicycle storage facilities, showers and locker rooms, etc.
3. To minimize less-than-significant project-level and cumulative impacts at various intersections, traffic conditions should be monitored before and after the occupancy of the Proposed Action to confirm projected traffic conditions at selected locations and to identify other feasible measures as appropriate that may be implemented to minimize traffic effects (such as physical improvements, on-site trip reduction measures, and/or other approaches).
4. To minimize and avoid potential temporary impacts associated with construction traffic, the construction contractor should coordinate with installation representatives to develop and implement a traffic management plan, which may specify construction timeframes, internal routing, carpooling and/or other measures to minimize the effects of construction related traffic on internal streets and intersections.
5. To minimize and avoid potential impacts at site access driveways, the action proponent should coordinate with installation representatives during the preparation of project design plans to determine the appropriate design and traffic control at site access driveways.

Fort Gordon

1. The action proponent will coordinate with Fort Gordon representatives and appropriate state and local officials to develop and implement physical improvements and other measures necessary to mitigate the Proposed Action’s traffic effects. Specific physical improvements are described in Table ES-2. The measures in Table ES-2 may be modified as appropriate based on input from installation public works staff.

Table ES-2. Summary of Mitigation Measures for Fort Gordon, by Location and Alternative

	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
6	Chamberlain Ave./19th St.	Revise signal operation to provide permitted phasing for eastbound, westbound, and northbound left turns, and provide permitted plus protected phasing for southbound left turns. Also restripe the westbound approach to provide one shared through/left turn lane and one dedicated right turn lane.	Same as Alternative C.	(No mitigation required)	(No mitigation required)	(No mitigation required)
7	Chamberlain Ave./25th Street	(No mitigation required)	(No mitigation required)	(No mitigation required)	(No mitigation required)	Install traffic signal.
8	Chamberlain Ave./Rice Rd.	(No mitigation required)	(No mitigation required)	Revise signal operation to provide for northbound right turns to overlap with westbound left turns.	(No mitigation required)	(Same as Alternative E)
10	Barnes Ave./19th St.	(No mitigation required)	(No mitigation required)	(No mitigation required)	Install all-way stop control, and restripe the northbound approach to provide one shared left/through turn lane and one dedicated right turn lane.	Install traffic signal.
11	Barnes Ave./25th St.	(No mitigation required)	Install traffic signal.	(No mitigation required)	Install traffic signal.	Install traffic signal.
14	Lane Ave./ 19th St.	Install traffic signal, and provide protected plus permitted phasing for southbound left turns in the afternoon peak.	(No mitigation required)	Same as Alternative C.	(No mitigation required)	(No mitigation required)

	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
15	Lane Ave./ 25th St.	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	(No mitigation required)	Same as Alternative C.
17	North Range Rd./ 111th St.	Install traffic signal and remove westbound leg to form "T" intersection. Channelize southbound right turns.	(No mitigation required)	Install all-way stop control.	(No mitigation required)	(No mitigation required)
19	US Highway 1 Southbound/Ave. of the States[2]	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	Same as Alternative C.	Same as Alternative C.

2. To the extent feasible, incorporate various measures into the design and operation of the ARCYBER facility to minimize the concentration of project traffic during peak commuting hours, and/or encourage travel using public transit or non-motorized modes. Such measures may include flexible working hours, telecommuting, incentives to encourage transit use or carpooling, bicycle storage facilities, showers and locker rooms, etc.
3. To minimize less-than-significant project-level and cumulative impacts at various intersections, traffic conditions should be monitored before and after the occupancy of the Proposed Action to confirm projected traffic conditions at selected locations and to identify other feasible measures as appropriate that may be implemented to minimize traffic effects (such as physical improvements, on-site trip reduction measures, and/or other approaches).
4. To minimize and avoid potential temporary impacts associated with construction traffic, the construction contractor should coordinate with installation representatives to develop and implement a traffic management plan, which may specify construction timeframes, internal routing, carpooling and/or other measures to minimize the effects of construction related traffic on internal streets and intersections.
5. To minimize and avoid potential impacts at site access driveways, the action proponent should coordinate with installation representatives during the preparation of project design plans to determine the appropriate design and traffic control at site access driveways.

[2] Interchange improvements should be coordinated with the Georgia Department of Transportation.

FINAL
TRAFFIC STUDY
for
ENVIRONMENTAL ASSESSMENT
ARCYBER COMMAND AND CONTROL FACILITY

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Acronyms and Abbreviations

ARCYBER	Army Cyber
EA	Environmental Assessment
EIS	Environmental Impact Statement
GDOT	Georgia Department of Transportation
ITE	Institute of Transportation Engineers
LOS	Level of Service
MD	Maryland Route
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NSA	National Security Agency
ROI	Region of Influence
SF	square foot
TRB	Transportation Research Board
U.S.	United States

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CHAPTER 1
INTRODUCTION

1.1 PROJECT LOCATION

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, an Environmental Assessment (EA) has been prepared to evaluate potential environmental, cultural, transportation, and socioeconomic effects associated with the proposed United States (U.S.) Army Cyber (ARCYBER) Command / 2nd Army Command and Control Facility to be located at either Fort Gordon, Georgia, or Fort George G. Meade, Maryland (hereinafter "Fort Meade"). This Traffic Study has been prepared to document the analysis of the action alternatives relative to traffic and roadways, as summarized in the EA.

1.2 PROJECT DESCRIPTION

ARCYBER currently has programmed a 179,056 square foot (SF) facility containing 855 personnel. The current personnel strength has the potential of increasing with the reorganization of ARCYBER and its major subordinate commands. As such, the projected growth of ARCYBER could result in the necessity of a facility capable of supporting a workforce of approximately 1,500 personnel.

ARCYBER currently has approximately 151 personnel stationed at Fort Meade and approximately 316 personnel stationed at Fort Belvoir. As ARCYBER grows, personnel from Fort Belvoir would be transferred to one of the two proposed locations. The Proposed Action includes the potential for one or more scenarios encompassing the command and control facility and addition of personnel to either Fort Meade in Maryland or to Fort Gordon in Georgia. The alternatives evaluated in this EA include utilizing existing buildings, renovating existing buildings, and constructing new facilities. The alternatives are presented below:

Fort Meade Course of Action: Interim stationing would not be necessary at the Fort Meade location. Final stationing options at Fort Meade include the following two alternatives:

- Alternative A: Construct new 179,056 SF facility at Fort Meade at the northwest corner of Mapes Rd. and Taylor Ave.
- Alternative B: Construct a 179,056 SF facility within the East Campus area located within the National Security Agency's fence line and use Building 8605 for a portion of the administrative and logistics staff.

Fort Gordon Course of Action: Interim stationing would have the personnel currently located at Fort Belvoir and Fort Meade relocated to several buildings within Back Hall Campus at Fort Gordon. Renovation may be required. Final stationing options at Fort Gordon include the following five alternatives all located within the cantonment area:

- Alternative C: Construct a new 179,056 SF facility at Fort Gordon in a 16-acre site southwest of the intersection of 110th Ave. and 15th St.
- Alternative D: Renovate several buildings within Back Hall Campus between 22nd St. to 25th St. and Chamberlain Ave. to Barnes Ave. and construct an additional 47,000 SF facility.
- Alternative E: Construct a 179,056 SF wing on Whitelaw Hall for the entire ARCYBER Command as part of the planned Whitelaw Hall Phase 2 development.

- Alternative F: Construct a new 179,056 SF facility on Kilbourne St. to house the entire ARCYBER Command. Parking and access would also be provided at this location.
- Alternative G: Construct a new 179,056 SF on 19th St. to house the entire ARCYBER Command. Parking and access would also be provided at this location.

1.3 ANALYSIS SCENARIOS

To determine the traffic-related implications of the Proposed Action, this Traffic Study considers the following existing and near-term future traffic scenarios:

1. **Existing Conditions:** reflects traffic conditions as of July and August 2012, when traffic counts were performed at the installations.
2. **Baseline Conditions:** represents projected future traffic conditions at the time that the proposed construction is completed and operations have begun (i.e., 2016). The baseline conditions are described by location as follows:
   - Fort Meade: the baseline condition assumes traffic growth consistent with the year 2015 evaluated in the Campus Development Environmental Impact Statement (EIS) (National Security Association [NSA] 2010).
   - Fort Gordon: a conservative growth factor of 3 percent per year for 4 years was assumed to reflect this growth. This growth factor was uniformly applied to the existing 2012 traffic counts.
3. **Baseline plus Alternative A:** this scenario adds the traffic distribution resulting with Fort Meade Alternative A to baseline traffic volumes. Effects associated with both construction and operations of the Proposed Action are considered in this scenario.
4. **Baseline plus Alternative B:** the Proposed Action would be constructed within the action area previously evaluated in the Campus Development EIS. Because the impacts associated with this alternative have already been disclosed in a NEPA document, no new traffic analysis will be prepared for this alternative.
5. **Baseline plus Alternative C:** this scenario adds the traffic distribution resulting with Fort Gordon Alternative C to baseline traffic volumes. Effects associated with both construction and operations of the Proposed Action are considered in this scenario.
6. **Baseline plus Alternative D:** this scenario addresses the impacts associated with Fort Gordon Alternative D.
7. **Baseline plus Alternative E:** this scenario evaluates the traffic related effects of Fort Gordon Alternative E.
8. **Baseline plus Alternative F:** Fort Gordon Alternative F is analyzed in this scenario.
9. **Baseline plus Alternative G:** Fort Gordon Alternative G's traffic impacts are addressed in this scenario.

CHAPTER 2
TRAFFIC ANALYSIS METHODS

2.1 CAPACITY ANALYSIS PROCEDURES

Roadway and intersection operating conditions, and the adequacy of existing roadway systems to accommodate projected future traffic, are described in terms of Level of Service (LOS) ratings. LOS is a method used to rate the performance of streets, intersections, and other highway facilities. Developed by the Transportation Research Board, and documented in various editions of the *Highway Capacity Manual* (Transportation Resource Board [TRB] 2010) since 1950, LOS rates performance on a scale of A to F, with LOS A reflecting free flowing conditions and LOS F representing heavily congested conditions. Table 2-1 summarizes the general traffic conditions associated with each LOS rating, while the Figure 2-1 is an illustration of representative levels of congestion for each LOS grade.

Table 2-1. Traffic Conditions Associated with LOS Ratings

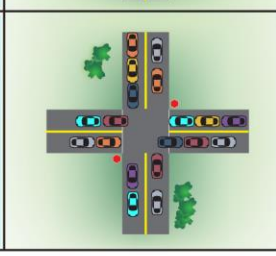
LOS Rating	Description of Traffic Conditions
A	Traffic flows freely, with little or no restrictions to vehicle maneuvers within the traffic stream.
B	Reasonably free-flowing conditions, with slight restrictions to vehicle maneuvers within the traffic stream.
C	Traffic speed approaches free-flowing conditions, but freedom to maneuver within the traffic stream noticeably restricted.
D	Traffic speed begins to be reduced, and freedom to maneuver is seriously limited due to a high concentration of traffic.
E	Unpredictable traffic flow, with virtually no usable gaps in the traffic stream to accommodate vehicle maneuvers.
F	Unstable flow resulting in delays and the formation of queues in locations where traffic demand exceeds roadway capacity.

Note: LOS = Level of Service
Source: TRB 2010

2.1.1 Intersection LOS

Intersection capacity analysis was conducted in accordance with procedures contained in Chapter 18 (Signalized Intersections), Chapter 19 (Two-Way Stop-Controlled Intersections[3]) and Chapter 20 (All-Way Stop-Controlled Intersections) of the *Highway Capacity Manual*. Data used in intersection analysis include peak hour turning movement traffic volumes, the number of lanes, and the type of traffic control used. Analysis was performed using the Synchro 8 software (published by Trafficware, Ltd.), which incorporates *Highway Capacity Manual* analysis procedures. LOS for signalized and unsignalized intersections is measured in terms of delay, in seconds per vehicle.

3 Two-way stop-controlled intersection analysis procedures are also used for one-way stop-controlled intersections.

LEVEL OF SERVICE (LOS)				
LOS	Signalized Intersection		Unsignalized Intersection (a)	
A		• Very low delay of 10.0 seconds or less per vehicle. • Most vehicles arrive during the green phase. • Most vehicles do not need to stop.		• Delays of 10.0 seconds per vehicle. • Little or no delay to minor street traffic.
B		• Delay in range of 10.1 to 20.0 seconds per vehicle. • More vehicles stop than LOS A.		• Delay in range of 10.1 to 15.0 seconds per vehicle. • Short traffic delays to minor street traffic.
C		• Delay in range of 20.1 to 35.0 seconds per vehicle. • More vehicles stop than LOS B, minimal backup may occur.		• Delay in range of 15.1 to 25.0 seconds per vehicle. • Average traffic delays to minor street traffic.
D		• Delay in range of 35.1 to 55.0 seconds per vehicle. • Many vehicles stop. • Longer delays occur.		• Delay in range of 25.1 to 35.0 seconds per vehicle. • Long traffic delays to. minor street traffic.
E		• Delay in range of 55.1 to 80.0 seconds per vehicle. • Extensive queuing. • Poor traffic progression.		• Delay in range of 35.1 to 50.0 seconds per vehicle. • Very long delays to minor street traffic.
F		• Delay in excess of 80.0 seconds per vehicle. • Severe queuing and extensive delay.		• Delay in excess of 50.0 seconds per vehicle. • Extreme delays with queuing.

(a) Although a two-way stop controlled intersection is shown, LOS delay thresholds and congestion levels are the same for all-way stop controlled intersections.
Source: TRB 2010.

Figure 2-1 Representative Traffic Levels for Each LOS Rating

Peak hour factors and heavy vehicle factors collected in the field were manually entered into Synchro, and were maintained through all existing and baseline analyses. Worksheets documenting all analyses are attached to this report. In rare instances, the Synchro output did not present the LOS for the most congested approach at selected two-way stop controlled intersections. In these cases, LOS results were input directly from the software into the analysis summary tables.

A roundabout is a specific type of intersection that is not controlled by a traffic signal or a stop sign. Because a raised circular median is located in the center of the intersection, it is not possible for a motorist to drive directly to other legs of the intersection. Instead, a motorist enters a roundabout by turning right, circulates around the median, and then turns right again at the desired intersection leg. Analysis of roundabouts was conducted using analysis procedures described in the *Highway Capacity Manual* and the National Cooperative Highway Research Program (NCHRP) Report 672 (NCHRP 2010). Analysis of roundabouts was completed using Georgia Department of Transportation (GDOT) Roundabout Analysis Tool version 2.1, which incorporates procedures contained in the *Highway Capacity Manual* and NCHRP Report 672. Because roundabouts are present in the Fort Meade Region of Influence (ROI), and because one roundabout is under construction at Fort Gordon, the analysis assumed that drivers will be familiar with roundabouts by the time of the baseline scenario. For this reason, all baseline analyses of roundabouts reported delay based on the calibrated model, which assumes driver familiarity with roundabouts.

2.2 SUBSTANTIAL EFFECTS CRITERIA

Consistent with the Campus Development EIS (NSA 2010) and other NEPA documentation, a project is considered to have a substantial effect on the operations of an intersection if the addition of traffic causes LOS to degrade from LOS D or better to LOS E or F.

In addition, a project may contribute toward a substantial cumulative effect if its traffic, when taken together with traffic from past, present and reasonably foreseeable future projects, causes intersection LOS to decline from LOS D or better to LOS E or F.

2.3 REGION OF INFLUENCE

The ROI for traffic encompasses the major intersections that provide access to and from the action alternatives at Fort Gordon and Fort Meade. A preliminary ROI was proposed to representatives at both installations in June 2012. Adjustments were made based on feedback from the installations, and the final ROIs were approved by both Fort Meade and Fort Gordon on June 29, 2012. The ROI for Fort Meade includes 16 intersections and the ROI for Fort Gordon includes 20 intersections. Refer to Figures 2-2 and 2-3 for the ROI of Fort Meade and Fort Gordon, respectively.

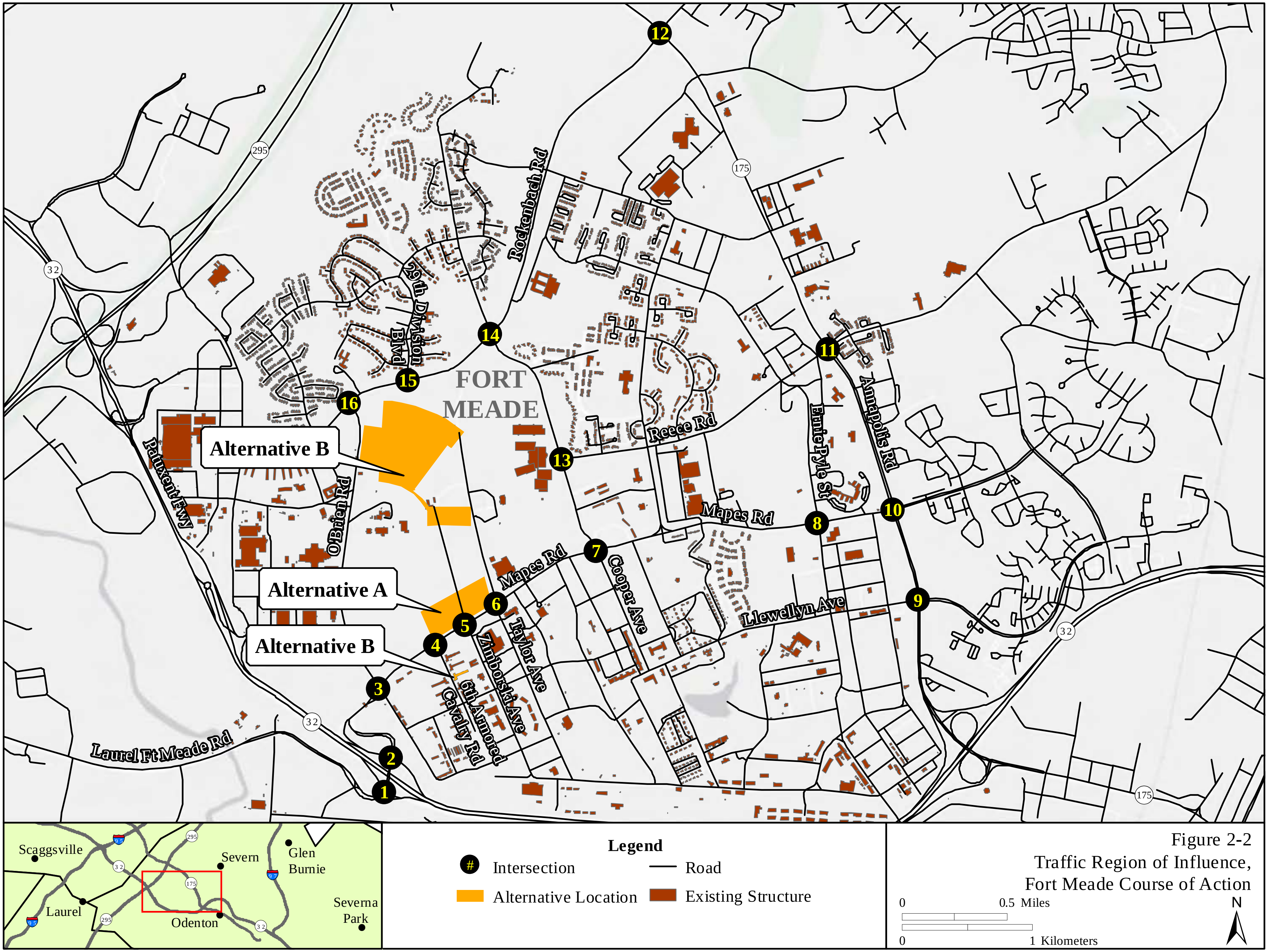


Figure 2-2
Traffic Region of Influence,
Fort Meade Course of Action

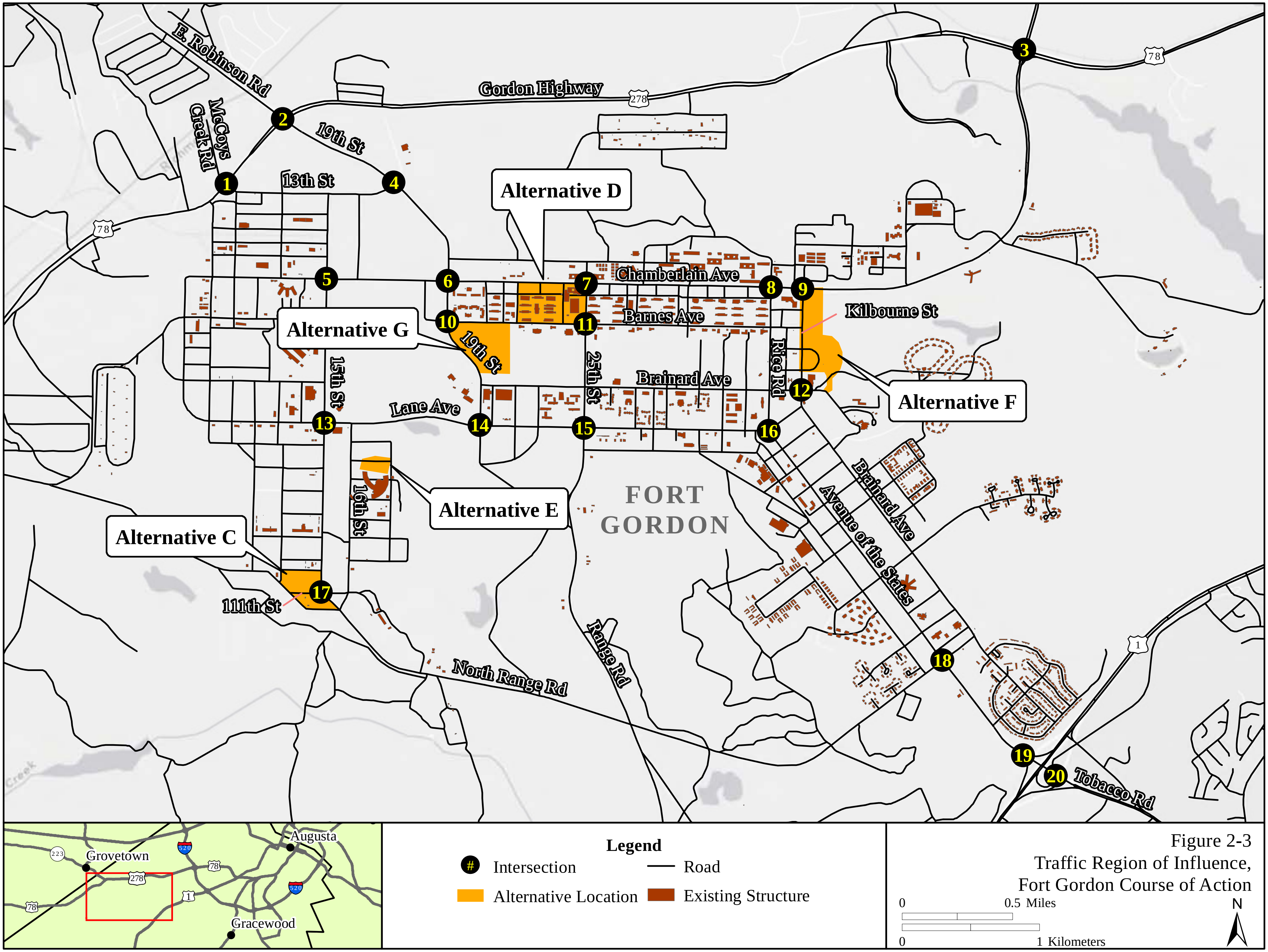


Figure 2-3
Traffic Region of Influence,
Fort Gordon Course of Action

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CHAPTER 3
EXISTING CONDITIONS

3.1 ROADWAY NETWORK

Field reviews were conducted in August 2012 at both installations by the Timmons Group. These surveys reviewed and recorded various aspects of the existing transportation infrastructure within and adjacent to the ROI, including roadway lane configuration, intersection lane geometry and traffic control, traffic signal timing and phasing, and other characteristics that are pertinent to traffic analysis. Attachment 1 contains a memo and illustrations documenting the field review at Fort Meade, while Attachment 2 includes the same information for Fort Gordon.

3.2 TRAFFIC VOLUMES

Existing morning (6:00 AM to 9:30 AM) and afternoon (3:30 PM to 5:30 PM) turning movement counts were collected at Fort Meade over the course of several weekdays in late July and early August 2012. The morning peak hour at most locations began between 6:45 AM and 7:30 AM, and the afternoon peak hour generally started between 3:30 and 4:30 PM. Counts at Fort Gordon took place in the middle of July 2012 between the hours of 6:00 AM and 9:00 AM, and from 3:00 PM to 6:00 PM. The morning peak hour at Fort Gordon generally began between 6:45 AM and 7:15 AM, while the afternoon peak hour typically started between 3:45 PM and 4:45 PM. In order to provide a conservative analysis, existing volumes at all locations were assumed to coincide with the Proposed Action's peak hour traffic generation. This is a conservative approach as it is anticipated that ARCYBER would be manned 24 hours a day, 7 days per week. At any given time, there would be approximately 50 workers at the facility.

Because traffic counts were conducted while school was not in session, monthly factors published by the Maryland State Highway Administration (Maryland State Highway Administration 2012) and the Georgia Department of Transportation (GDOT 2012) were consulted to determine whether or not the existing counts should be adjusted to provide a representative traffic condition. The review found that monthly variations did not suggest that any adjustments to existing counts were justified.

Figures 3-1 and 3-2 illustrate the existing traffic volumes that were collected at the study intersections, and the peak hour volume on ROI intersections for Fort Meade and Fort Gordon, respectively. Attachment 3 contains the count summaries for Fort Meade, while Attachment 4 provides the count information for Fort Gordon.

3.3 INTERSECTION ANALYSIS

Tables 3-1 and 3-2 presents the LOS analysis results for the ROI intersections under existing conditions for Fort Meade and Fort Gordon, respectively. Attachment 5 contains the analysis worksheets for Fort Meade, while Attachment 6 provides the worksheets for Fort Gordon.

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Figure 3-1
Existing Traffic Volumes, Fort Meade

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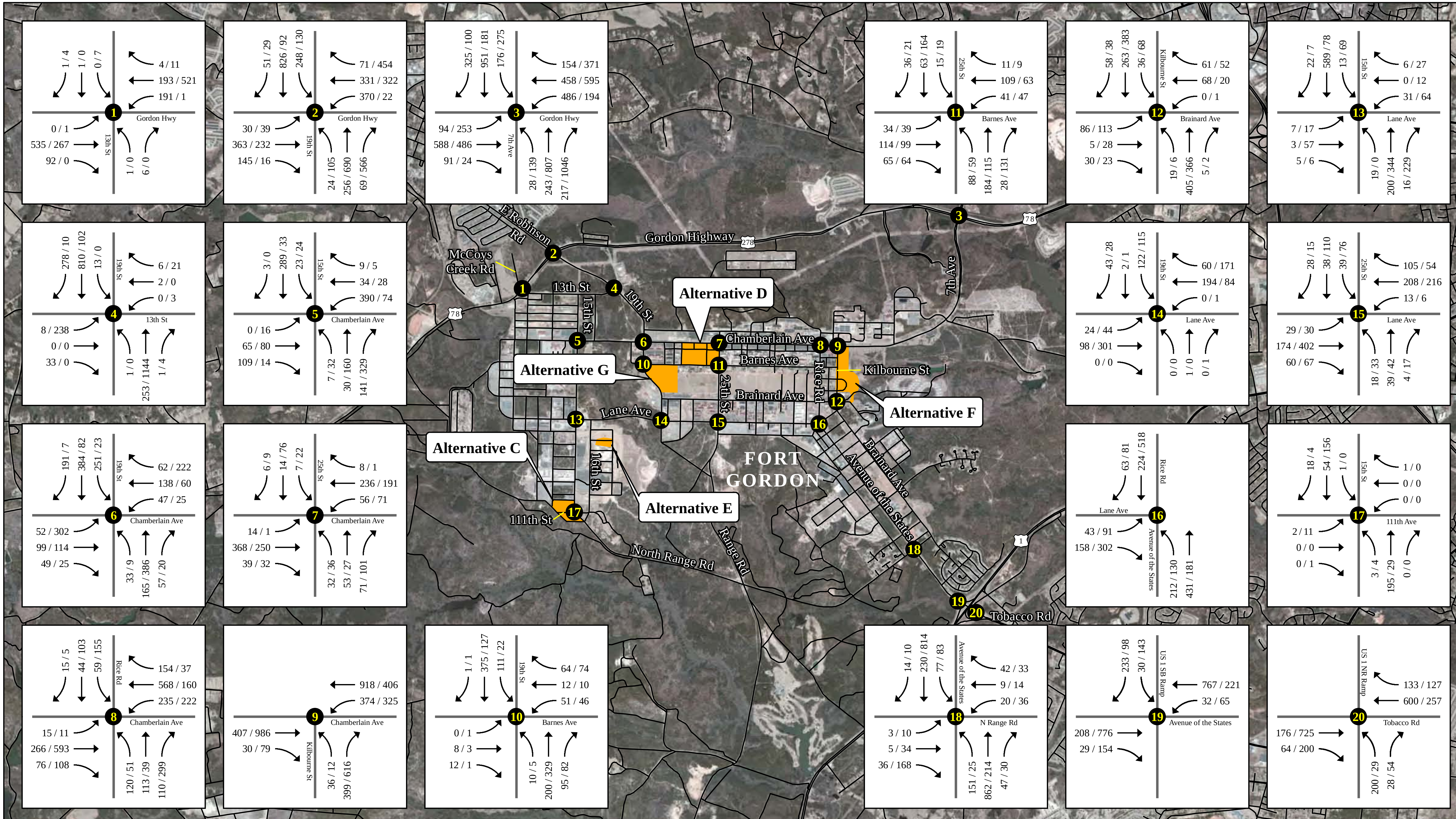

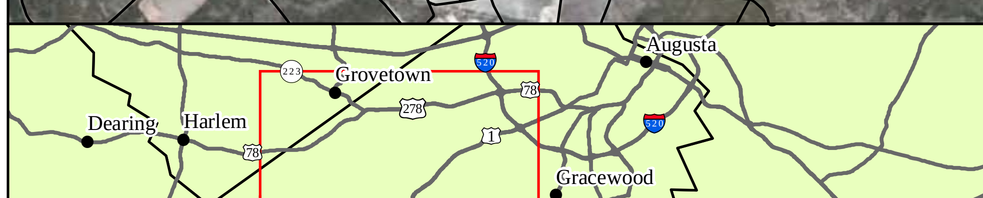

Legend

- # Intersection
- Road
- Alternative Location
- Intersection Turning Movement
- XXX / YYY Peak Hour Volume (am/pm)

0 0.5 Miles
0 1 Kilometers
N

Figure 3-2
Existing Traffic Volumes, Fort Gordon

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Table 3-1. Intersection Level of Service Summary, Existing Conditions (Fort Meade)

	Intersection	Traffic Control	Peak Hour	LOS (b)
1	MD 32 Eastbound/Laurel Ft. Meade Rd.	Roundabout	AM	C
			PM	D
2	MD 32 Westbound/Mapes Rd.	Roundabout	AM	**E**
			PM	**F**
3	Mapes Rd./O'Brien Rd.	Signal	AM	B
			PM	D
4	Mapes Rd./6th Armored Cavalry Rd.	Two-Way Stop	AM	D
			PM	**F**
5	Mapes Rd./Zimborski Ave.	Two-Way Stop	AM	**F**
			PM	C
6	Mapes Rd./Taylor Ave.	Signal	AM	C
			PM	B
7	Mapes Rd./Cooper Ave.	Signal	AM	**E**
			PM	C
8	Mapes Rd./Ernie Pyle St.	Signal	AM	C
			PM	C
9	Llewellyn Ave./Annapolis Rd.	Signal	AM	**F**
			PM	**F**
10	Mapes Rd./Annapolis Rd.	Signal	AM	**E**
			PM	**E**
11	Reece Rd./Annapolis Rd.	Signal	AM	C
			PM	C
12	Rockenbach Rd./Annapolis Rd.	Signal	AM	**E**
			PM	**E**
13	Reece Rd./Cooper Ave.	Signal	AM	B
			PM	B
14	Rockenbach Rd./Cooper Ave.	Signal	AM	B
			PM	B
15	Rockenbach Rd./29th Division Blvd.	Two-Way Stop	AM	B
			PM	B
16	Rockenbach Rd./O'Brien Rd.	Two-Way Stop	AM	B
			PM	B

Notes: **Bold values indicate intersections operating at LOS E or F.**
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service.

Table 3-2. Intersection Level of Service Summary, Existing Conditions (Fort Gordon)

	Intersection	Traffic Control	Peak Hour	LOS (a)
1	Gordon Highway/13th St.	Two-Way Stop	AM	**F**
			PM	C
2	Gordon Highway/19th St.	Signal	AM	D
			PM	**F**
3	Gordon Highway/7th Ave.	Signal	AM	C
			PM	**E**
4	13th St./19th St.	Two-Way Stop	AM	D
			PM	**F**
5	Chamberlain Ave./15th St.	Two-Way Stop	AM	**F**
			PM	**F**
6	Chamberlain Ave./19th St.	Signal	AM	D
			PM	**F**
7	Chamberlain Ave./25th St.	Two-Way Stop	AM	C
			PM	C
8	Chamberlain Ave./Rice Rd.	Signal	AM	B
			PM	D
9	Chamberlain Ave./Kilbourne St.	One-Way Stop	AM	**F**
			PM	**F**
10	Barnes Ave./19th St.	Two-Way Stop	AM	**F**
			PM	C
11	Barnes Ave./25th St.	All-Way Stop	AM	C
			PM	C
12	Brainard Ave./Kilbourne St.	One-Way Stop	AM	**F**
			PM	**F**
13	Lane Ave./15th St.	All-Way Stop	AM	**E**
			PM	**E**
14	Lane Ave./19th St.	Two-Way Stop	AM	C
			PM	D
15	Lane Ave./25th St	Two-Way Stop	AM	C
			PM	**F**
16	Lane Ave./Rice Rd.	One-Way Stop	AM	**F**
			PM	**F**
17	North Range Rd./111th St.	Two-Way Stop	AM	A
			PM	B
18	North Range Rd./Ave. of the States	Two-Way Stop	AM	**F**
			PM	**F**
19	US Highway 1 Southbound/Ave. of the States	One-Way Stop	AM	D
			PM	**E**

	Intersection	Traffic Control	Peak Hour	LOS (a)
20	US Highway 1 Northbound/Tobacco Rd.	One-Way Stop	AM	D
			PM	D

Notes: **Bold values indicate intersections operating at LOS E or F.**
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As shown in Table 3-1, the following intersections at Fort Meade are characterized by congested LOS E or F conditions during one or both peak hours:

- The Maryland Route 32 (MD 32) Westbound/Mapes Rd. roundabout currently operates at LOS E during the morning peak and LOS F during the afternoon peak.
- The Mapes Rd./6th Armored Cavalry Rd. intersection currently operates at LOS F during the afternoon peak.
- The Mapes Rd./Zimborski Ave. intersection currently operates at LOS F during the morning peak.
- The Mapes Rd./Cooper Ave. intersection currently operates at LOS E during the morning peak.
- The Llewellyn Ave./Annapolis Rd. intersection currently operates at LOS F during both the morning peak and the afternoon peak.
- The Mapes Rd./Annapolis Rd. intersection currently operates at LOS E during both the morning peak and the afternoon peak.
- The Rockenbach Rd./Annapolis Rd. intersection currently operates at LOS E during both the morning peak and the afternoon peak.

As presented in Table 3-2, the following intersections at Fort Gordon currently experience congested LOS E or F conditions during one or both peak hours:

- The Gordon Highway/13th St. intersection currently operates at LOS F during the morning peak.
- The Gordon Highway/19th St. intersection currently operates at LOS F during the afternoon peak.
- The Gordon Highway/7th Ave. intersection currently operates at LOS E during the afternoon peak.
- The 13th St./19th St. intersection currently operates at LOS F during the afternoon peak.
- The Chamberlain Ave./15th St. intersection currently operates at LOS F during both the morning peak and the afternoon peak.
- The Chamberlain Ave./19th St. intersection currently operates at LOS F during the afternoon peak.
- The Chamberlain Ave./Kilbourne St. intersection currently operates at LOS F during both the morning peak and the afternoon peak.
- The Barnes Ave./19th St. intersection currently operates at LOS F during the morning peak.
- The Brainard Ave./Kilbourne St. intersection currently operates currently operates at LOS F during both the morning peak and during the afternoon peak.
- The Lane Ave./15th St. intersection currently operates at LOS E during both the morning peak and the afternoon peak.
- The Lane Ave./25th St. intersection currently operates at LOS F during the afternoon peak.

- The Lane Ave./Rice Rd. intersection currently operates at LOS F during both the morning peak and the afternoon peak.
- The North Range Rd./Ave. of the States intersection currently operates at LOS F during both the morning peak and the afternoon peak.
- The US Highway 1 Southbound/Ave. of the States intersection currently operates at LOS E during the afternoon peak.

CHAPTER 4
BASELINE CONDITIONS

4.1 DEVELOPMENT OF THE BASELINE CONDITION

As discussed above, existing traffic data was collected in July and August 2012. However, the Proposed Action is expected to be constructed and operational by the year 2016. In order to evaluate the traffic effects of the Proposed Action under year 2016 conditions, a future year baseline traffic scenario was developed. This scenario includes traffic growth associated with present and reasonably foreseeable future projects. Traffic growth resulting from present and reasonably foreseeable future projects was determined for Fort Meade and Fort Gordon as follows:

- *Fort Meade:* the baseline condition assumes traffic growth consistent with the year 2015 evaluated in the Campus Development EIS (NSA 2010). This condition includes substantial traffic growth from both the Campus Development and reasonably foreseeable future projects within and adjacent to Fort Meade that were also evaluated in this EIS.
- *Fort Gordon:* a conservative growth factor of 3 percent per year for four years was assumed to reflect this growth. This growth factor was uniformly applied to the existing 2012 traffic counts.

The baseline condition also incorporates specific transportation improvements, consistent with recent NEPA documentation or projects under construction. Improvements that are anticipated to be in place under baseline conditions at Fort Meade were identified based on the year 2015 recommended improvements contained in Figure 4.2-9 of the Campus Development EIS. Specifically, the following improvements were assumed:

- Mapes Rd./O'Brien Rd.: add one eastbound and one westbound through lane.
- Mapes Rd./Taylor Ave.: add one eastbound and one westbound through lane.
- Mapes Rd./Cooper Ave.: add one northbound left turn lane, one eastbound through lane, and one westbound through lane.
- Mapes Rd./Ernie Pyle St.: add one eastbound through lane, one eastbound right turn lane, one westbound left turn lane, one westbound through lane, one northbound left turn lane, and one northbound right turn lane.
- Llewellyn Ave./Annapolis Rd.: add one northbound right turn lane.
- Mapes Rd./Annapolis Rd.: add one eastbound left turn lane, one eastbound right turn lane, one westbound right turn lane, one northbound left turn lane, one northbound right turn lane, one southbound through lane and one southbound right turn lane.
- Reece Rd./Annapolis Rd.: add one eastbound left turn lane, one westbound left turn lane, two westbound right turn lanes, one northbound through lane, one northbound right turn lane, one southbound left turn lane, one southbound through lane, and one southbound right turn lane.
- Rockenbach Rd./Annapolis Rd.: add one eastbound left turn lane, one eastbound right turn lane, one westbound left turn lane, one westbound through lane, one northbound left turn lane, one northbound through lane, one northbound right turn lane, one southbound left turn lane, one southbound through lane, and one southbound right turn lane.

Information from the Fort Gordon Department of Public Works staff indicated that construction is underway on the following improvement:

- Lane Ave./Ave. of the States: reconstruct the intersection to provide a multi-lane, three-leg roundabout with a eastbound to southbound bypass lane.

Each of the above improvements was assumed to be in place as part of the baseline condition.

4.2 TRAFFIC VOLUMES

Figures 4-1 and 4-2 displays the baseline peak hour traffic volumes at intersections within the defined ROI for Fort Meade and Fort Gordon, respectively.

4.3 INTERSECTION ANALYSIS

Tables 4-1 and 4-2 displays the LOS analysis results for ROI intersections under baseline conditions for Fort Meade and Fort Gordon respectively. Refer to Attachment 5 for Fort Meade intersection worksheets and to Attachment 6 for Fort Gordon intersection worksheets.

As shown in Table 4-1, intersections that experienced deterioration in LOS due to cumulative traffic growth at Fort Meade are listed below.

- The MD 32 Eastbound/Laurel Ft. Meade Rd. roundabout degraded from LOS C to LOS F during the morning peak and from LOS D to LOS F during the afternoon peak.
- The Mapes Rd./6th Armored Cavalry Rd. intersection degraded from LOS D to LOS F during the morning peak.
- The Mapes Rd./Zimborski Ave. intersection degraded from LOS C to LOS E during the afternoon peak.
- The Mapes Rd./Taylor Ave. intersection degraded from LOS B to LOS F during the afternoon peak.
- The Mapes Rd./Ernie Pyle St. intersection degraded from LOS C to LOS F during the afternoon peak.
- The Rockenbach Rd./O'Brien Rd. intersection degraded from LOS B to LOS E during the morning peak.

As indicated in Table 4-2, the addition of estimated traffic growth from existing conditions to 2016 would cause LOS of several intersections at Fort Gordon to degrade to LOS E or F as follows:

- The Gordon Highway/19th St. intersection degraded from LOS D to LOS E during the morning peak.
- The 13th St./19th St. intersection degraded from LOS D to LOS F during the morning peak.
- The Chamberlain Ave./25th St. intersection degraded from LOS C to LOS E during the afternoon peak.
- The Lane Ave./19th St. intersection degraded from LOS D to LOS E during the afternoon peak.
- The US Highway 1 Northbound/Tobacco Rd. intersection degraded from LOS D to LOS E for both the morning peak and the afternoon peak.

In general, LOS results under baseline conditions are consistent with projected year 2015 conditions analyzed in the 2011 Transportation Plan (Fort Gordon 2011).

Figure 4-1
Baseline Traffic Volumes, Fort Meade

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Figure 4-2
Baseline Traffic Volumes, Fort Gordon

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Table 4-1. Intersection Level of Service Summary, Baseline Conditions (Fort Meade)

	Intersection	Traffic Control	Peak Hour	LOS (a)
1	MD 32 Eastbound/Laurel Ft. Meade Rd.	Roundabout	AM	**F**
			PM	**F**
2	MD 32 Westbound/Mapes Rd.	Roundabout	AM	**F**
			PM	**F**
3	Mapes Rd./O'Brien Rd.	Signal	AM	C
			PM	C
4	Mapes Rd./6th Armored Cavalry Rd.	Two-Way Stop	AM	**F**
			PM	D
5	Mapes Rd./Zimborski Ave.	Two-Way Stop	AM	**F**
			PM	**E**
6	Mapes Rd./Taylor Ave.	Signal	AM	C
			PM	**F**
7	Mapes Rd./Cooper Ave.	Signal	AM	D
			PM	C
8	Mapes Rd./Ernie Pyle St.	Signal	AM	B
			PM	**F**
9	Llewellyn Ave./Annapolis Rd.	Signal	AM	**F**
			PM	**F**
10	Mapes Rd./Annapolis Rd.	Signal	AM	**E**
			PM	D
11	Reece Rd./Annapolis Rd.	Signal	AM	D
			PM	D
12	Rockenbach Rd./Annapolis Rd.	Signal	AM	**F**
			PM	**F**
13	Reece Rd./Cooper Ave.	Signal	AM	C
			PM	D
14	Rockenbach Rd./Cooper Ave.	Signal	AM	D
			PM	C
15	Rockenbach Rd./29th Division Blvd.	Two-Way Stop	AM	C
			PM	D
16	Rockenbach Rd./O'Brien Rd.	Two-Way Stop	AM	**E**
			PM	D

Notes: **Bold values indicate intersections operating at LOS E or F.**
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service.

Table 4-2. Intersection Level of Service Summary, Baseline Conditions (Fort Gordon)

	Intersection	Traffic Control	Peak Hour	LOS (a)
1	Gordon Highway/13th St.	Two-Way Stop	AM	**F**
			PM	D
2	Gordon Highway/19th St.	Signal	AM	**E**
			PM	**F**
3	Gordon Highway/7th Ave.	Signal	AM	D
			PM	**F**
4	13th St./19th St.	Two-Way Stop	AM	**F**
			PM	**F**
5	Chamberlain Ave./15th St.	Two-Way Stop	AM	**F**
			PM	**F**
6	Chamberlain Ave./19th St.	Signal	AM	D
			PM	**F**
7	Chamberlain Ave./25th St.	Two-Way Stop	AM	C
			PM	**E**
8	Chamberlain Ave./Rice Rd.	Signal	AM	B
			PM	D
9	Chamberlain Ave./Kilbourne St.	One-Way Stop	AM	**F**
			PM	**F**
10	Barnes Ave./19th St.	Two-Way Stop	AM	**F**
			PM	C
11	Barnes Ave./25th St.	All-Way Stop	AM	D
			PM	C
12	Brainard Ave./Kilbourne St.	One-Way Stop	AM	**F**
			PM	**F**
13	Lane Ave./15th St.	All-Way Stop	AM	**E**
			PM	**E**
14	Lane Ave./19th St.	Two-Way Stop	AM	C
			PM	**E**
15	Lane Ave./25th St	Two-Way Stop	AM	D
			PM	**F**
16	Lane Ave./Rice Rd.	Roundabout	AM	A
			PM	A
17	North Range Rd./111th St.	Two-Way Stop	AM	A
			PM	B
18	North Range Rd./Ave. of the States	Two-Way Stop	AM	**F**
			PM	**F**
19	US Highway 1 Southbound/Ave. of the States	One-Way Stop	AM	D
			PM	**F**

	Intersection	Traffic Control	Peak Hour	LOS (a)
20	US Highway 1 Northbound/Tobacco Rd.	One-Way Stop	AM	**E**
			PM	**E**

Notes: **Bold values indicate intersections operating at LOS E or F.**
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

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CHAPTER 5
BASELINE PLUS ALTERNATIVE A CONDITIONS

5.1 TRAFFIC VOLUMES

5.1.1 Traffic Generation

Daily and peak hour traffic generation was estimated using trip generation rates published in *Trip Generation, 8th Edition: An ITE Informational Report* (Institute of Transportation Engineers [ITE] 2008). Consistent with the Campus Development EIS (NSA 2010), trip generation is estimated based on the maximum employee count (i.e., 1,500 employees) using the ITE trip rates for land use code 715, single-tenant office. Refer to Table 5-1 for the Proposed Action's traffic generation. As shown in this table, Alternative A's total traffic generation was reduced by 5 percent to reflect a shift from passenger cars to public transit anticipated as the result of planned transit improvements (NSA 2010).

5.1.2 Traffic Distribution

Fort Meade's Alternative A traffic was then added to existing intersections in accordance with a distribution pattern that was developed based on the location of Fort Meade's access gates, existing traffic volumes, and likely travel routes between the gates and Alternative A. This distribution pattern is consistent with the distribution provided in the Campus Development EIS. Figure 5-1 presents the distribution patterns by movement at each ROI intersection.

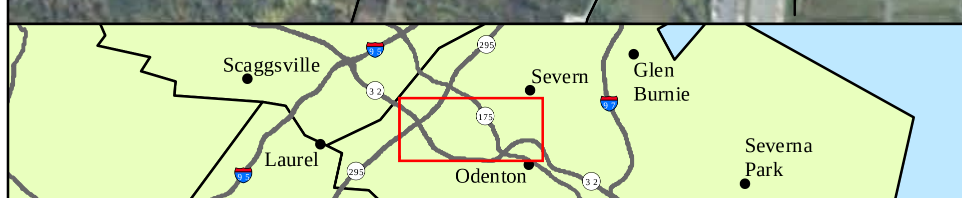
5.1.3 Traffic Assignment

Figure 5-2 depicts the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 5-1 to the net trip generation shown in Table 5-1. Combined peak hour volumes for the baseline plus Alternative A traffic scenario are presented in Figure 5-3. These volumes were calculated by adding the assignment of project traffic (Figure 5-1) to baseline traffic volumes (refer to Figure 4-1).

Table 5-1. ARCYBER Traffic Generation

Land Use	Number of Employees	Trip Rate [a]	Daily Trips	AM Peak Hour					PM Peak Hour				
				% of Daily [a]	In : Out Ratio [a]	In	Out	Total	% of Daily [a]	In : Out Ratio [a]	In	Out	Total
Proposed Land Use													
ARCYBER Facility	1,500	3.62 / employee	5,430	14.6%	0.89 : 0.11	708	87	795	13.8%	0.15 : 0.85	113	638	750
Alternative Mode Reduction (5%) [b]			272			35	4	40			6	32	38
Fort Meade (Alternative A) Trip Generation [c]			**5,159**			**672**	**83**	**755**			**107**	**606**	**713**
Fort Gordon (Alternatives C - G) Trip Generation			**5,430**			**708**	**87**	**795**			**113**	**638**	**750**

Notes: [a] Daily and peak hour trip generation rates and inbound/outbound directional splits were taken from ITE *Trip Generation Manual, Eighth Edition: An ITE Informational Report* for Land Use Code 715, Single-Tenant Office.
[b] Vehicular trip reduction ***(at Fort Meade only)*** anticipated due to planned transit improvements (NSA 2010).
[c] Proposed Land Uses Minus Alternative Mode Reduction.



Legend

- Intersection
- Road
- Intersection Turning Movement
- Alternative A Location
- Intersection Turning Movement with Trip Distribution
- XX% /(YY%) Inbound (Outbound) Trip Distribution Percentage

Note: percentages do not add precisely due to rounding

0 0.5 Miles
0 1 Kilometers
N

Figure 5-1
Alternative A Trip Distribution, Fort Meade

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Figure 5-2
Alternative A Traffic Assignment, Fort Meade

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Figure 5-3
Baseline Plus Alternative A Traffic Volumes, Fort Meade

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5.2 Capacity Analysis

5.2.1 Intersection Analysis

Table 5-2 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative A conditions. Attachment 5 contains the intersection LOS calculation worksheets.

Table 5-2. Intersection Level of Service and Effects Summary, Alternative A (Fort Meade)

	Intersection	Peak Hour	Baseline	With Alt. A	Substantial Effect?	Alt. A with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	MD 32 Eastbound/Laurel Ft. Meade Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
2	MD 32 Westbound/Mapes Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Mapes Rd./O'Brien Rd.	AM	C	C	NO	-	-
		PM	C	C	NO	-	-
4	Mapes Rd./6th Armored Cavalry Rd.	AM	**F**	**F**	NO	-	-
		PM	D	**F**	**YES**	B	NO
5	Mapes Rd./Zimborski Ave.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Mapes Rd./Taylor Ave.	AM	C	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Mapes Rd./Cooper Ave.	AM	D	D	NO	-	-
		PM	C	C	NO	-	-
8	Mapes Rd./Ernie Pyle St.	AM	B	C	NO	-	-
		PM	**F**	**F**	NO	-	-
9	Llewellyn Ave./Annapolis Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Mapes Rd./Annapolis Rd.	AM	**E**	**E**	NO	-	-
		PM	D	D	NO	-	-
11	Reece Rd./Annapolis Rd.	AM	D	D	NO	-	-
		PM	D	D	NO	-	-
12	Rockenbach Rd./Annapolis Rd.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Reece Rd./Cooper Ave.	AM	C	D	NO	-	-
		PM	D	**E**	**YES**	C	NO
14	Rockenbach Rd./Cooper Ave.	AM	D	D	NO	-	-
		PM	C	C	NO	-	-
15	Rockenbach Rd./29th Division Blvd.	AM	C	B	NO	-	-
		PM	D	D	NO	-	-

	Intersection	Peak Hour	Baseline	With Alt. A	Substantial Effect?	Alt. A with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
16	Rockenbach Rd./O'Brien Rd.	AM	**E**	**F**	NO	-	-
		PM	D	D	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As indicated in this table, implementation of Alternative A would result in a substantial traffic effect at the following locations:

- Mapes Rd./6th Armored Cavalry Rd.
- Reece Rd./Cooper Ave.

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative A's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 6
BASELINE PLUS ALTERNATIVE C CONDITIONS

6.1 TRAFFIC VOLUMES

6.1.1 Traffic Generation

Fort Gordon's Alternative C traffic generation is generally consistent with that described for Alternative A in Chapter 5 of this Traffic Study. The sole difference is that no adjustment was made to reflect planned transit improvements, as those improvements would be implemented only at Fort Meade. Accordingly, this action alternative's trip generation would be 5 percent higher than Alternative A because no credit for diversion of trips to public transit has been taken. Refer to Table 5-1 for the traffic generation characteristics of Alternative C.

6.1.2 Traffic Distribution

Fort Gordon's Alternative C traffic was added to existing intersections in accordance with a distribution pattern that was developed based on the location of Alternative C, Fort Gordon gate locations, existing traffic volumes, and likely travel routes between the gates and Alternative C. Figure 6-1 presents the distribution patterns by movement at each ROI intersection.

6.1.3 Traffic Assignment

Figure 6-2 depicts the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 6-1 to the total traffic generation (i.e., with no transit adjustment) shown on Table 5-1. Combined peak hour volumes for the baseline plus Alternative C traffic scenario are presented in Figure 6-3. These volumes were calculated by adding the assignment of project traffic (Figure 6-1) to baseline traffic volumes (refer to Figure 4-2).

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Figure 6-1
Alternative C Trip Distribution, Fort Gordon

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Figure 6-2
Alternative C Traffic Assignment, Fort Gordon

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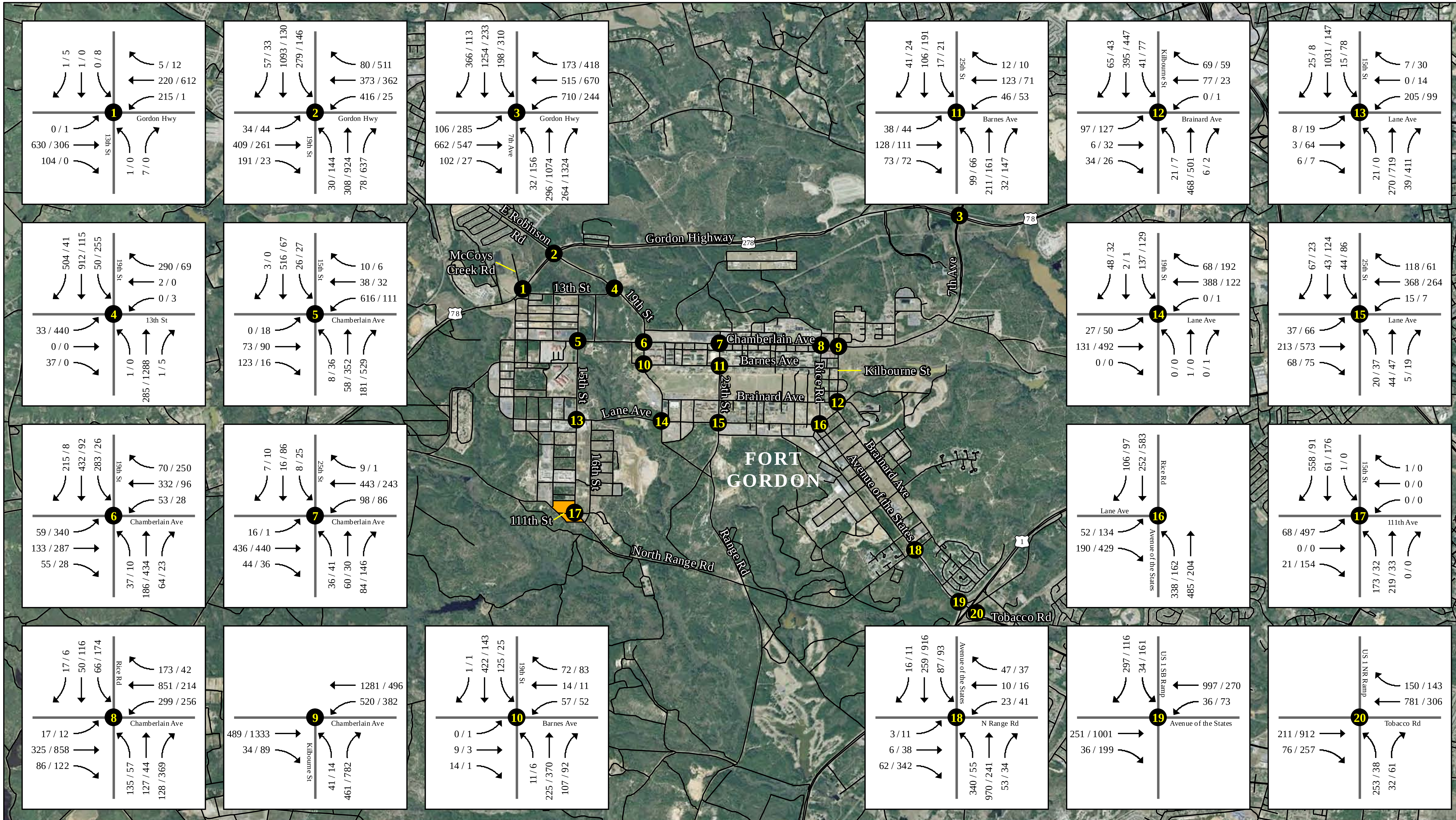

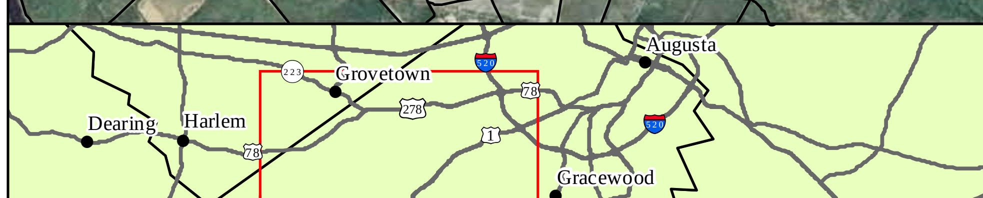

Legend

- Intersection
- Road
- Alternative C Location
- Intersection Turning Movement
- XXX/YYY Peak Hour Volume (am/pm)

Figure 6-3
Baseline Plus Alternative C Traffic Volumes, Fort Gordon

0 0.5 Miles
0 1 Kilometers
N

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6.2 Capacity Analysis

6.2.1 Intersection Analysis

Table 6-1 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative C conditions. Attachment 6 contains the intersection LOS calculation worksheets.

Table 6-1. Intersection Level of Service and Effects Summary, Alternative C (Fort Gordon)

	Intersection	Peak Hour	Baseline	With Alt. C	Substantial Effect?	Alt. C with Mitigation	Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	**E**	**YES**	C	NO
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	C	NO	-	-
11	Barnes Ave./25th St.	AM	D	D	NO	-	-
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	**F**	**YES**	B	NO
		PM	**E**	**F**	NO	-	-
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-

	Intersection	Peak Hour	Baseline	With Alt. C	Substantial Effect?	Alt. C with Mitigation	Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
17	North Range Rd./111th St.	AM	A	**F**	**YES**	A	NO
		PM	B	**F**	**YES**	A	NO
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As indicated in this table, implementation of Alternative C would result in substantial traffic effects at the following locations:

- Chamberlain Ave./19th St.
- Lane Ave./19th St.
- Lane Ave./25th St.
- North Range Rd./111th St.
- US Highway 1 Southbound/Ave. of the States

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative C's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 7
BASELINE PLUS ALTERNATIVE D CONDITIONS

7.1 TRAFFIC VOLUMES

7.1.1 Traffic Generation

As is the case for Alternative C, Fort Gordon's Alternative D traffic generation is generally consistent with that described for Alternative A in Chapter 5 of this Traffic Study. The only difference in terms of traffic generation is that no transit credit is applied to the traffic generation for Alternative C. Refer to Table 5-1 for the traffic generation characteristics of Alternative D.

7.1.2 Traffic Distribution

Fort Gordon's Alternative D traffic was then added to existing intersections in accordance with a distribution pattern that was developed based on the location of Alternative D, Fort Gordon gate locations, existing traffic volumes, and likely travel routes between the gates and Alternative D. Figure 7-1 presents the distribution patterns by movement at each ROI intersection.

7.1.3 Traffic Assignment

Figure 7-2 depicts the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 7-1 to the total traffic generation (i.e., with no transit adjustment) shown on Table 5-1. Combined peak hour volumes for the baseline plus Alternative D traffic scenario are presented in Figure 7-3. These volumes were calculated by adding the assignment of project traffic (Figure 7-1) to baseline traffic volumes (refer to Figure 4-2).

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Figure 7-1
Alternative D Trip Distribution, Fort Gordon

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Figure 7-2
Alternative D Traffic Assignment, Fort Gordon

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Figure 7-3
Baseline Plus Alternative D Traffic Volumes, Fort Gordon

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7.2 Capacity Analysis

7.2.1 Intersection Analysis

Table 7-1 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative D conditions. Attachment 6 contains the intersection LOS calculation worksheets.

Table 7-1. Intersection Level of Service and Effects Summary, Alternative D (Fort Gordon)

	Intersection	Peak Hour	Baseline LOS (a)	With Alt. D LOS (a)	Substantial Effect?	Alt. D with Mitigation LOS (a)	Substantial Effect with Mitigation?
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	**E**	**YES**	D	NO
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	D	NO	-	-
11	Barnes Ave./25th St.	AM	D	**E**	**YES**	B	NO
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	C	NO	-	-
		PM	**E**	**E**	NO	-	-
15	Lane Ave./25th St	AM	D	**E**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-

	Intersection	Peak Hour	Baseline	With Alt. D	Substantial Effect?	Alt. D with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As indicated in this table, implementation of Alternative D would result in substantial traffic effects at the following locations:

- Chamberlain Ave./19th St.
- Barnes Ave./25th St.
- Lane Ave./25th St.
- US Highway 1 Southbound/Ave. of the States

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative D's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 8
BASELINE PLUS ALTERNATIVE E CONDITIONS

8.1 TRAFFIC VOLUMES

8.1.1 Traffic Generation

As is the case for all Fort Gordon Alternatives, Fort Gordon's Alternative E's traffic generation is similar to Alternative A, the only difference being that no trip generation reduction for transit use is assumed. Refer to Table 5-1 for the traffic generation characteristics of Alternative E.

8.1.2 Traffic Distribution

Alternative E's traffic was then added to existing intersections in accordance with a distribution pattern that was developed considering the location of Alternative E, Fort Gordon gate locations, existing traffic volumes, and likely travel routes between the gates and Alternative E. Figure 8-1 presents the distribution patterns by movement at each ROI intersection.

8.1.3 Traffic Assignment

Figure 8-2 depicts the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 8-1 to the total traffic generation (i.e., with no transit adjustment) shown on Table 5-1. Combined peak hour volumes for the baseline plus Alternative E traffic scenario are presented in Figure 8-3. These volumes were calculated by adding the assignment of project traffic (Figure 8-1) to baseline traffic volumes (refer to Figure 4-2).

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Figure 8-1
Alternative E Trip Distribution, Fort Gordon

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Figure 8-2
Alternative E Traffic Assignment, Fort Gordon

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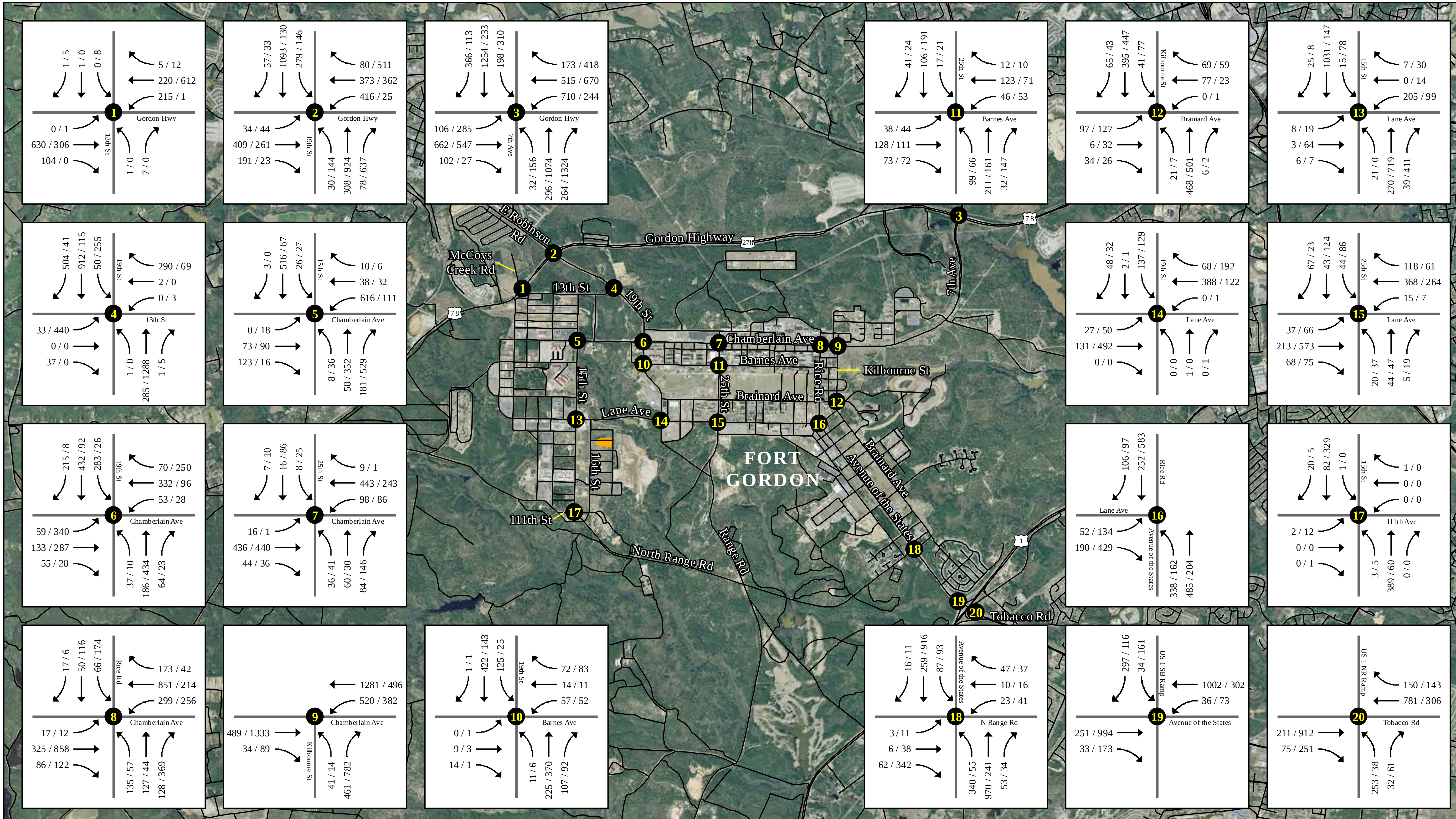

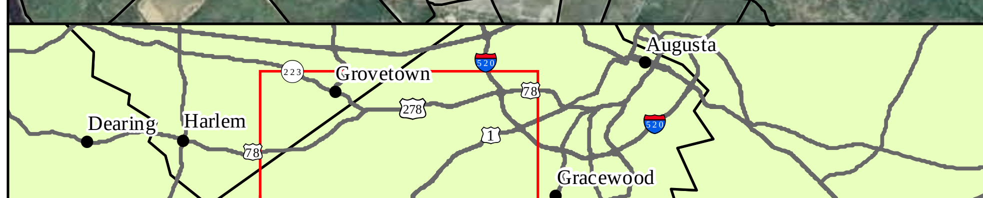

Legend

- Intersection
- Road
- Alternative E Location
- Intersection Turning Movement
- XXX/YYY Peak Hour Volume (am/pm)

Figure 8-3
Baseline Plus Alternative E Traffic Volumes, Fort Gordon

0 0.5 Miles
0 1 Kilometers
N

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8.2 CAPACITY ANALYSIS

8.2.1 Intersection Analysis

Table 8-1 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative E conditions. Attachment 6 contains the intersection LOS calculation worksheets.

Table 8-1. Intersection Level of Service and Effects Summary, Alternative E (Fort Gordon)

	Intersection	Peak Hour	Baseline	With Alt. E	Substantial Effect?	Alt. E with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	**E**	**YES**	D	NO
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	C	NO	-	-
11	Barnes Ave./25th St.	AM	D	D	NO	-	-
		PM	C	D	NO	-	-
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**F**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	**F**	**YES**	A	NO
		PM	**E**	**F**	NO	-	-
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-

	Intersection	Peak Hour	Baseline	With Alt. E	Substantial Effect?	Alt. E with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
17	North Range Rd./111th St.	AM	A	**F**	**YES**	B	NO
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As indicated in this table, implementation of Alternative E would result in substantial traffic effects at the following locations:

- Chamberlain Ave./Rice Rd.
- Lane Ave./19th St.
- Lane Ave./25th St.
- North Range Rd./111th St.
- US Highway 1 Southbound/Ave. of the States

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative E's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 9
BASELINE PLUS ALTERNATIVE F CONDITIONS

9.1 TRAFFIC VOLUMES

9.1.1 Traffic Generation

As with the other Fort Gordon Alternatives, Fort Gordon's Alternative F traffic generation is similar to that of Alternative A, but no adjustment was made to the traffic generation to reflect a shift from passenger cars to public transit. Refer to Table 5-1 for the traffic generation characteristics of Alternative F.

9.1.2 Traffic Distribution

Fort Gordon's Alternative F peak hour traffic was added to existing intersections in accordance with a distribution pattern that was developed taking into account the location of Alternative F, Fort Gordon gate locations, existing traffic volumes, and likely travel routes between the gates and Alternative F. Figure 9-1 presents the distribution patterns by movement at each ROI intersection.

9.1.3 Traffic Assignment

Figure 9-2 depicts the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 9-1 to the total traffic generation (i.e., with no transit adjustment) shown on Table 5-1. Combined peak hour volumes for the baseline plus Alternative F traffic scenario are presented in Figure 9-3. These volumes were calculated by adding the assignment of project traffic (Figure 9-1) to baseline traffic volumes (refer to Figure 4-2).

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Figure 9-1
Alternative F Trip Distribution, Fort Gordon

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Figure 9-2
Alternative F Traffic Assignment, Fort Gordon

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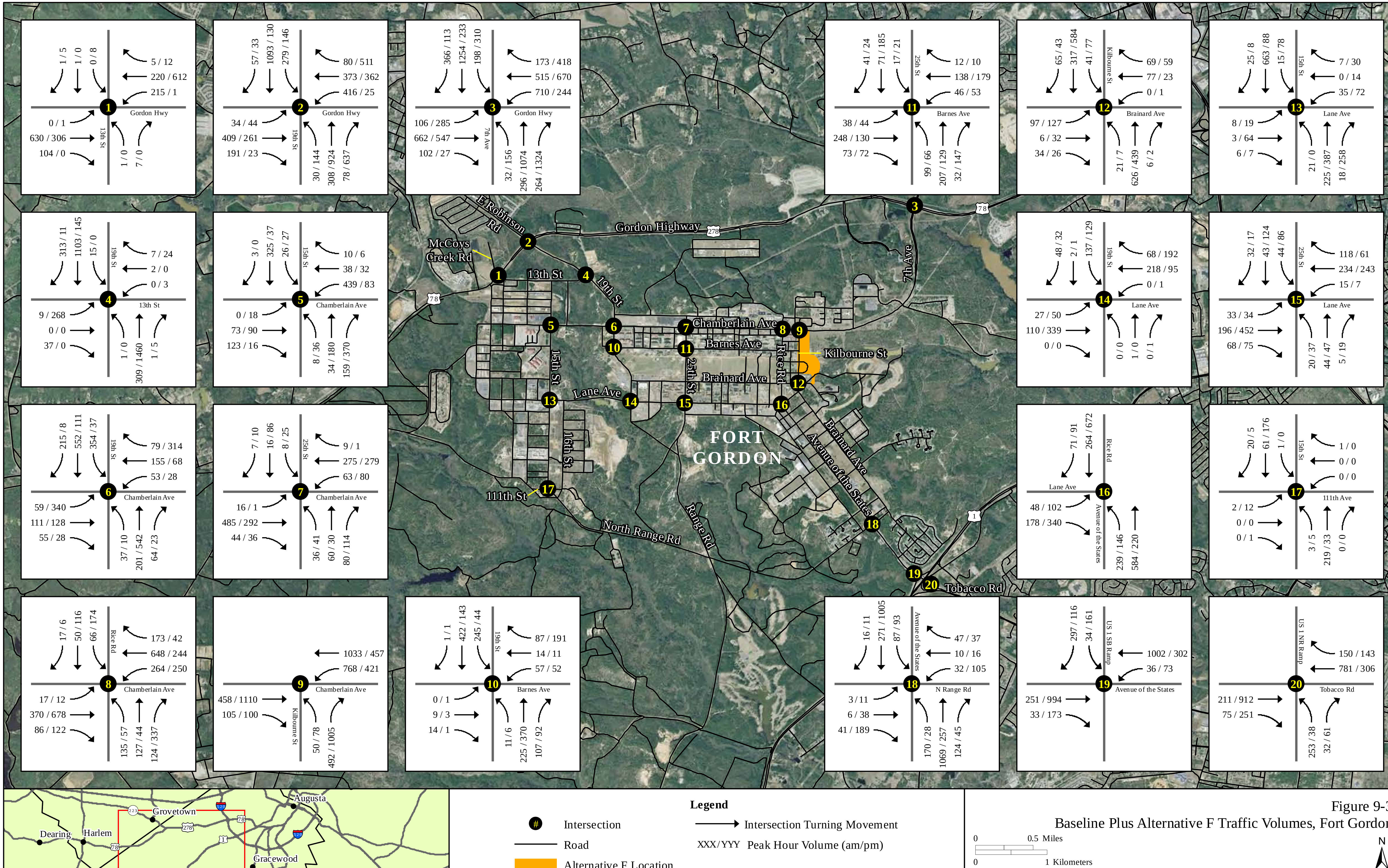

Figure 9-3
Baseline Plus Alternative F Traffic Volumes, Fort Gordon

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9.2 CAPACITY ANALYSIS

9.2.1 Intersection Analysis

Table 9-1 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative F conditions. Attachment 6 contains the intersection LOS calculation worksheets.

Table 9-1. Intersection Level of Service and Effects Summary, Alternative F (Fort Gordon)

	Intersection	Peak Hour	Baseline	Alt. F	Substantial Effect?	Alt. F with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	D	NO	-	-
		PM	**E**	**E**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	D	NO	-	-
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	**E**	**YES**	D	NO
11	Barnes Ave./25th St.	AM	D	**F**	**YES**	B	NO
		PM	C	**E**	**YES**	A	NO
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	C	NO	-	-
		PM	**E**	**E**	NO	-	-
15	Lane Ave./25th St	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-

	Intersection	Peak Hour	Baseline	Alt. F	Substantial Effect?	Alt. F with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As shown in this table, Alternative F would result in substantial effects at the following intersections:

- Barnes Ave./19th St.
- Barnes Ave./25th St.
- US Highway 1 Southbound/Ave. of the States

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative F's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 10
BASELINE PLUS ALTERNATIVE G CONDITIONS

10.1 TRAFFIC VOLUMES

10.1.1 Traffic Generation

As discussed in preceding chapters, Fort Gordon's Alternative G traffic generation is consistent with that of Alternative A (refer to Chapter 5). However, unlike Alternative A, no adjustment was made to the traffic generation to reflect a shift from passenger cars to public transit. Refer to Table 5-1 for the traffic generation characteristics of Alternative G.

10.1.2 Traffic Distribution

Peak hour traffic associated with Alternative G was added to existing intersections in accordance with a distribution pattern that considered the location of this Alternative, installation gate locations, existing traffic volumes, and likely travel routes between the gates and the Alternative G site. Figure 10-1 presents the distribution patterns by movement at each ROI intersection.

10.1.3 Traffic Assignment

Figure 10-2 illustrates the assignment of trips from the Proposed Action to the intersections that comprise the ROI. This volume was calculated by applying the percentages shown in Figure 10-1 to the total traffic generation (i.e., with no transit adjustment) shown on Table 5-1. Combined peak hour volumes for the baseline plus Alternative G traffic scenario are presented in Figure 10-3. These volumes were calculated by adding the assignment of project traffic (Figure 10-1) to baseline traffic volumes (refer to Figure 4-2).

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Figure 10-1
Alternative G Trip Distribution, Fort Gordon

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Figure 10-2
Alternative G Traffic Assignment, Fort Gordon

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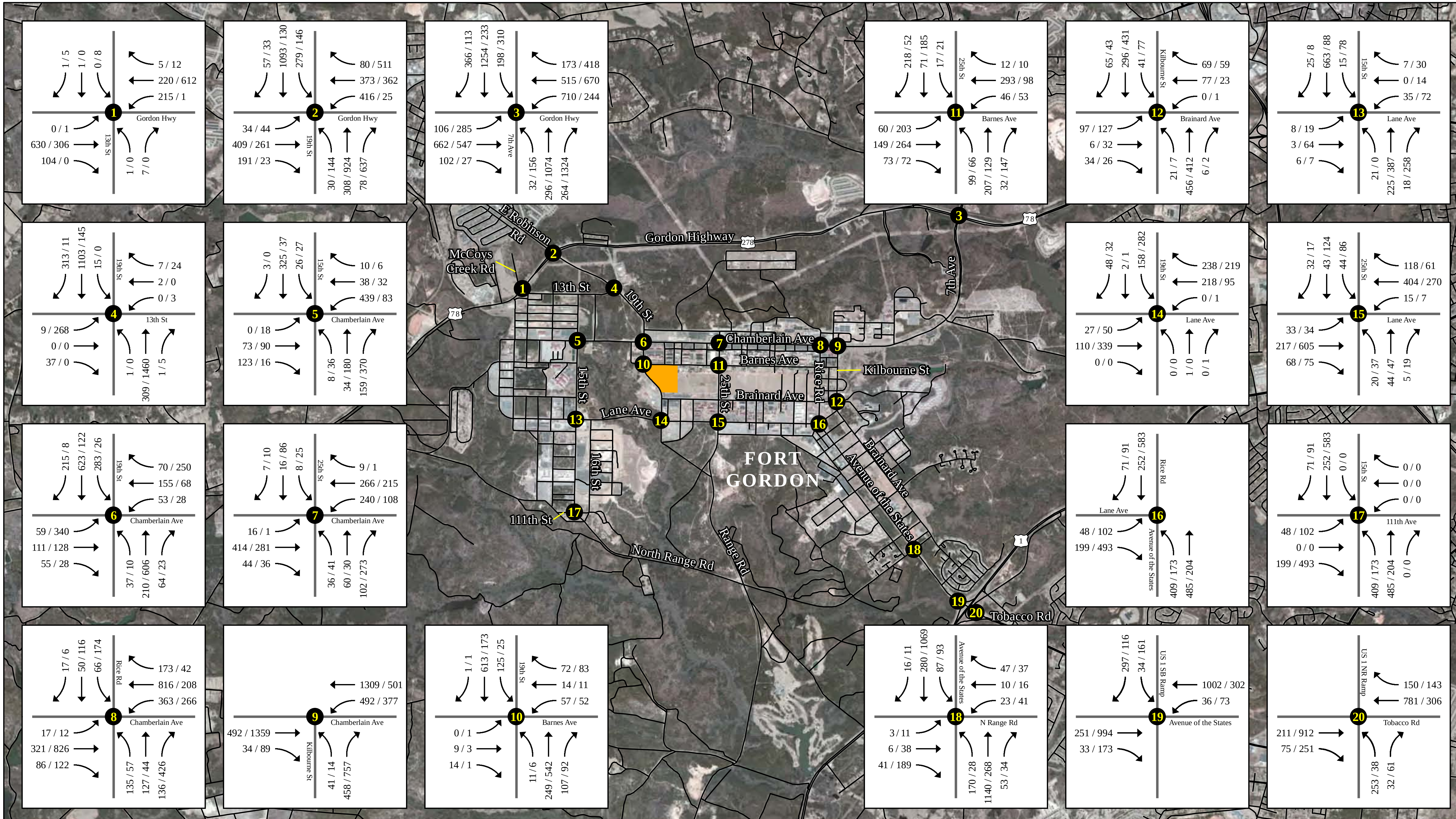

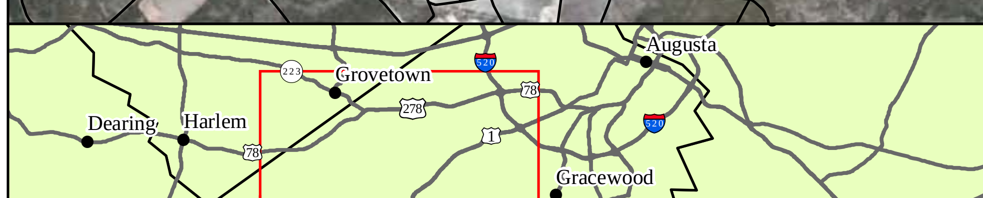

Legend

Intersection

Road

Alternative G Location

Intersection Turning Movement

XXX / YYY Peak Hour Volume (am/pm)

0 0.5 Miles

0 1 Kilometers

N

Figure 10-3
Baseline Plus Alternative G Traffic Volumes, Fort Gordon

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10.2 Capacity Analysis

10.2.1 Intersection Analysis

Table 10-1 summarizes the LOS analysis results for ROI intersections under baseline plus Alternative G conditions. Attachment 6 contains the intersection LOS calculation worksheets.

Table 10-1. Intersection Level of Service and Effects Summary, Alternative G (Fort Gordon)

	Intersection	Peak Hour	Baseline	Alt. G	Substantial Effect?	Alt. G with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
1	Gordon Highway/13th St.	AM	**F**	**F**	NO	-	-
		PM	D	D	NO	-	-
2	Gordon Highway/19th St.	AM	**E**	**E**	NO	-	-
		PM	**F**	**F**	NO	-	-
3	Gordon Highway/7th Ave.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
4	13th St./19th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
5	Chamberlain Ave./15th St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
6	Chamberlain Ave./19th St.	AM	D	D	NO	-	-
		PM	**F**	**F**	NO	-	-
7	Chamberlain Ave./25th St.	AM	C	**F**	**YES**	D	NO
		PM	**E**	**F**	NO	-	-
8	Chamberlain Ave./Rice Rd.	AM	B	B	NO	-	-
		PM	D	**E**	**YES**	D	NO
9	Chamberlain Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
10	Barnes Ave./19th St.	AM	**F**	**F**	NO	-	-
		PM	C	**E**	**YES**	B	NO
11	Barnes Ave./25th St.	AM	D	**F**	**YES**	B	NO
		PM	C	**F**	**YES**	D	NO
12	Brainard Ave./Kilbourne St.	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
13	Lane Ave./15th St.	AM	**E**	**E**	NO	-	-
		PM	**E**	**E**	NO	-	-
14	Lane Ave./19th St.	AM	C	D	NO	-	-
		PM	**E**	**F**	NO	-	-
15	Lane Ave./25th St	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
16	Lane Ave./Rice Rd.	AM	A	A	NO	-	-
		PM	A	A	NO	-	-

	Intersection	Peak Hour	Baseline	Alt. G	Substantial Effect?	Alt. G with Mitigation	Substantial Effect with Mitigation?
			LOS (a)	LOS (a)		LOS (a)	
17	North Range Rd./111th St.	AM	A	A	NO	-	-
		PM	B	B	NO	-	-
18	North Range Rd./Ave. of the States	AM	**F**	**F**	NO	-	-
		PM	**F**	**F**	NO	-	-
19	US Highway 1 Southbound/Ave. of the States	AM	D	**F**	**YES**	A	NO
		PM	**F**	**F**	NO	-	-
20	US Highway 1 Northbound/Tobacco Rd.	AM	**E**	**F**	NO	-	-
		PM	**E**	**F**	NO	-	-

Notes: **Bold** values indicate intersections operating at LOS E or F.
Bold and shaded values indicate substantial project effect.
(a) LOS calculations are based on the methodology outlined in the *Highway Capacity Manual* and National Cooperative Highway Research Program Report 672, and performed using Synchro 8 and the Georgia Department of Transportation Roundabout Analysis Tool version 2.1.
LOS = Level of Service

As shown in this table, Alternative G would result in substantial effects at the following intersections:

- Chamberlain Ave./25th St.
- Chamberlain Ave./Rice Rd.
- Barnes Ave./19th St.
- Barnes Ave./25th St.
- Lane Ave./25th St.
- US Highway 1 Southbound/Ave. of the States

As indicated in the rightmost column of this table, specific physical improvements will reduce Alternative G's effect to a less than substantial level. Refer to Chapter 12 for a description of these and other mitigation, avoidance, and/or minimization measures.

CHAPTER 11
OTHER TRAFFIC EFFECTS

11.1 CUMULATIVE EFFECTS

As discussed in Chapter 4, projected traffic growth from present and reasonably foreseeable future projects is expected to result in deterioration in LOS at six intersections in the Fort Meade ROI and five locations at the Fort Gordon ROI (see Section 4.3). Depending on the alternative, the Proposed Action will contribute traffic to many of these locations. In instances where the Proposed Action would cause LOS to decline from LOS D or better to LOS E or F, mitigation measures are proposed to restore operations to LOS D or better (refer to Chapter 12 for a summary of these measures).

As discussed in Chapter 1, the Proposed Action is ultimately assumed to accommodate a maximum of 1,500 personnel, although current projections have identified a workforce of 855. In addition, although some staff would work in shifts, the trip generation estimate evaluated in the Traffic Study is based on typical civilian working hours. Therefore, the traffic generation of the Proposed Action is conservative, and actual traffic effects may be less. To minimize and avoid potential cumulative impacts at various intersections, traffic conditions should be monitored before and after the occupancy of the Proposed Action to confirm estimated traffic effects at locations listed in Section 4.3 and to identify other feasible measures as appropriate that may be implemented to minimize the traffic effects of the Proposed Action (such as physical improvements, on-site trip reduction measures, and/or other approaches).

11.2 CONSTRUCTION EFFECTS

Construction of the Proposed Action would involve short-term traffic increases within the ROI. These trips would include construction workers, delivery of construction materials and equipment and, if necessary, the removal of excess soil and/or construction debris. In general, construction trips would likely involve inbound trips only during the morning peak hour, and outbound trips only during the afternoon peak hour. Some materials and equipment may be staged on or near the construction site, alleviating the need for certain delivery trips to enter the installation on a recurring basis. To minimize and avoid potential temporary impacts associated with construction traffic, the construction contractor should coordinate with installation representatives to develop and implement a traffic management plan, which may specify construction timeframes, internal routing, carpooling and/or other measures to minimize the effects of construction related traffic on internal streets and intersections.

11.3 SITE ACCESS EFFECTS

During project development, design plans will be prepared for the selected alternative. In order to provide safe and efficient access to and from the ARCYBER facility, it is recommended that the action proponent coordinate with installation public works representatives to develop an appropriate design of access driveways, including traffic control, dedicated turn lanes, and other related improvements.

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CHAPTER 12
FINDINGS AND RECOMMENDATIONS

The analysis found substantial traffic congestion at numerous locations at both installations under baseline conditions. The addition of traffic from action alternatives would result in substantial effects during one or both peak hours at the following number of intersections:

- Alternative A (Fort Meade): two intersections out of the 16 analyzed
- Alternative C (Fort Gordon): five intersections out of the 20 analyzed
- Alternative D (Fort Gordon): four intersections out of the 20 analyzed
- Alternative E (Fort Gordon): five intersections out of the 20 analyzed
- Alternative F (Fort Gordon): three intersections out of the 20 analyzed
- Alternative G (Fort Gordon): six intersections out of the 20 analyzed

Measures to mitigate, minimize and/or avoid the traffic effects are summarized below:

Fort Meade

1. The action proponent will coordinate with Fort Meade representatives to develop and implement physical improvements and other measures necessary to mitigate the Proposed Action's traffic effects. Specific physical improvements are described in Table 12-1. The measures in Table 12-1 may be modified as appropriate based on input from installation public works staff. (Refer to Attachment 7 for intersection worksheets with mitigation measures incorporated.)

Table 12-1. Summary of Mitigation Measures for Fort Meade, by Location and Alternative

	Intersection	Alternative A	Alternative B
4	Mapes Rd./ 6th Armored Cavalry Rd.	Install traffic signal and provide protected plus permitted phasing for the westbound approach. (Signal timing and phasing should be coordinated with other signals along Mapes Rd.)	**Mitigation Measures for Alternative B were Previously Identified in the Campus Development Environmental Impact Statement (NSA 2010).**
13	Reece Rd./ Cooper Ave.	Revise signal operation from split phasing to permitted plus protected phasing for eastbound and westbound left turns.	

2. To the extent feasible, incorporate various measures into the design and operation of the ARCYBER facility to minimize the concentration of project traffic during peak commuting hours, and/or encourage travel using public transit or non-motorized modes. Such measures may include flexible working hours, telecommuting, incentives to encourage transit use or carpooling, bicycle storage facilities, showers and locker rooms, etc.
3. To minimize less-than-significant project-level and potential cumulative impacts at various intersections, traffic conditions should be monitored before and after the occupancy of the

Proposed Action to confirm projected traffic conditions at selected locations and to identify other feasible measures as appropriate that may be implemented to minimize traffic effects (such as physical improvements, on-site trip reduction measures, and/or other approaches).

4. To minimize and avoid potential temporary impacts associated with construction traffic, the construction contractor should coordinate with installation representatives to develop and implement a traffic management plan, which may specify construction timeframes, internal routing, carpooling and/or other measures to minimize the effects of construction related traffic on internal streets and intersections.
5. To minimize and avoid potential impacts at site access driveways, the action proponent should coordinate with installation representatives during the preparation of project design plans to determine the appropriate design and traffic control at site access driveways.

Fort Gordon

1. The action proponent will coordinate with Fort Gordon representatives and appropriate state and local officials to develop and implement physical improvements and other measures necessary to mitigate the Proposed Action's traffic effects. Specific physical improvements are described in Table 12-2. The measures in Table 12-2 may be modified as appropriate based on input from installation public works staff. (Refer to Attachment 8 for intersection worksheets with mitigation measures incorporated.)
2. To the extent feasible, incorporate various measures into the design and operation of the ARCYBER facility to minimize the concentration of project traffic during peak commuting hours, and/or encourage travel using public transit or non-motorized modes. Such measures may include flexible working hours, telecommuting, incentives to encourage transit use or carpooling, bicycle storage facilities, showers and locker rooms, etc.
3. To minimize less-than-significant project-level and potential cumulative impacts at various intersections, traffic conditions should be monitored before and after the occupancy of the Proposed Action to confirm projected traffic conditions at selected locations and to identify other feasible measures as appropriate that may be implemented to minimize traffic effects (such as physical improvements, on-site trip reduction measures, and/or other approaches).
4. To minimize and avoid potential temporary impacts associated with construction traffic, the construction contractor should coordinate with installation representatives to develop and implement a traffic management plan, which may specify construction timeframes, internal routing, carpooling and/or other measures to minimize the effects of construction related traffic on internal streets and intersections.
5. To minimize and avoid potential impacts at site access driveways, the action proponent should coordinate with installation representatives during the preparation of project design plans to determine the appropriate design and traffic control at site access driveways.

Table 12-2. Summary of Mitigation Measures for Fort Gordon, by Location and Alternative

	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
6	Chamberlain Ave./19th St.	Revise signal operation to provide permitted phasing for eastbound, westbound, and northbound left turns, and provide permitted plus protected phasing for southbound left turns. Also restripe the westbound approach to provide one shared through/left turn lane and one dedicated right turn lane.	Same as Alternative C.	(No mitigation required)	(No mitigation required)	(No mitigation required)
7	Chamberlain Ave./25th Street	(No mitigation required)	(No mitigation required)	(No mitigation required)	(No mitigation required)	Install traffic signal.
8	Chamberlain Ave./Rice Rd.	(No mitigation required)	(No mitigation required)	Revise signal operation to provide for northbound right turns to overlap with westbound left turns.	(No mitigation required)	(Same as Alternative E)
10	Barnes Ave./19th St.	(No mitigation required)	(No mitigation required)	(No mitigation required)	Install all-way stop control, and restripe the northbound approach to provide one shared left/through turn lane and one dedicated right turn lane.	Install traffic signal.
11	Barnes Ave./25th St.	(No mitigation required)	Install traffic signal.	(No mitigation required)	Install traffic signal.	Install traffic signal.
14	Lane Ave./ 19th St.	Install traffic signal, and provide protected plus permitted phasing for southbound left turns in the afternoon peak.	(No mitigation required)	Same as Alternative C.	(No mitigation required)	(No mitigation required)

	Intersection	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
15	Lane Ave./ 25th St.	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	(No mitigation required)	Same as Alternative C.
17	North Range Rd./ 111th St.	Install traffic signal and remove westbound leg to form "T" intersection. Channelize southbound right turns.	(No mitigation required)	Install all-way stop control.	(No mitigation required)	(No mitigation required)
19	US Highway 1 Southbound/Ave. of the States[4]	Install traffic signal.	Same as Alternative C.	Same as Alternative C.	Same as Alternative C.	Same as Alternative C.

[4] Interchange improvements should be coordinated with the Georgia Department of Transportation.

CHAPTER 13
REFERENCES

Fort Gordon. 2011. Transportation Plan, Fort Gordon, Georgia. March.

GDOT. 2012. 2010 Monthly Factors. On-line at: http://www.dot.state.ga.us/statistics/documents/monthlyfactors_2010.pdf. Accessed on July 18.

ITE. 2008. *Trip Generation, 8th Edition: An ITE Informational Report*. Washington, DC.

Maryland State Highway Administration. 2012. Monthly Variation at Automatic Traffic Recording Stations. On-line at: http://roads.maryland.gov/Index.aspx?/PageId=251&d=36. Accessed on July 18.

NCHRP. 2010. Report 672, Roundabouts: An Informational Guide. Second Edition. Washington, DC.

NSA. 2010. Final EIS Addressing Campus Development at Fort George G. Meade, Maryland. September.

TRB. 2010. *Highway Capacity Manual*. Fifth Edition. Washington, DC.

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Attachment 1

Existing Lane Configuration and Traffic Control – Fort Meade

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

To: Scott Barker, AICP (CardnoTEC)
From: W. Scott Dunn, AICP, PTP
Re: Fort Meade – Field Notes
Date: September 13, 2012
Cc: Jennifer DeVaughn, P.E. (Timmons Group)

The following notes summarize the observations collected during the field work completed by Timmons Group on August 5 – August 8, 2012. The intersection numbers listed below correspond with those shown on Figures 1 through 5.

Figure 1 shows a map of the study intersections. The existing intersection geometry is shown on Figure 2 with the intersection controls and posted speed limits shown on Figure 3. The facility types are shown on Figure 4. Lastly, Figure 5 illustrates the ordinal directions that were assigned to the individual roadway facilities/intersections within the study area.

Intersection photos are provided electronically (on CD).

The counts and field work were conducted when Anne Arundel County Public Schools (AACPS) were not in session. As indicated on Figure 1, there are seven AACPS facilities located at Fort Meade:

1. Manor View Elementary School (2900 MacArthur Road, Ft Meade);
2. Meade Heights Elementary School (1925 Reece Road, Ft. Meade);
3. Pershing Hill Elementary School (7600 29th Division Road, Ft. Meade);
4. West Meade Early Education Center (7722 Ray Street, Ft. Meade);
5. Mac Arthur Middle School (3033 Rockenbach Road, Ft. Meade);
6. Meade Middle School (1103 26th Street, Ft. Meade); and
7. Meade High School (1100 Clark Road, Ft. Meade).

1. *Laurel Fort Meade Road at MD 32 EB Ramps – Roundabout*

   The multi-lane roundabout serves as the junction for the MD 32 EB ramps at Laurel Fort Meade Road. All entering approaches are controlled with a yield sign and are signed indicating the recommended entering/operating speed within the roundabout is 15 mph.

2. *Mapes Road at MD 32 WB Ramps – Roundabout*

   The multi- lane roundabout serves as the junction for the MD 32 WB ramps at Mapes Road which provides access to Gate 1 for Fort Meade. Both the Mapes Road and the MD 32 WB ramp approaches are signed indicating the recommended entering/operating speed within the roundabout is 15 mph and all approaches are controlled with a yield sign.

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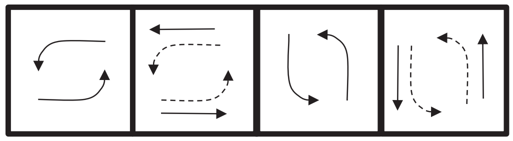
3. *Mapes Road at O'Brien Road – Signalized*

This signalized intersection is located just inside of Gate 1. At this intersection, Mapes Road is posted at 15 mph and O'Brien is posted at 30 mph. Both Mapes Road and O'Brien Road are two-lane facilities and auxiliary turn lanes are provided on each approach.

The diagram below summarizes the phasing at the intersection. (*Note: dashed lines in all of the phasing diagrams represent permissive left turn movements.)*



The observed cycle length ranged from 90 to 120 seconds.

The north approach of O'Brien Road is a gate-controlled facility that provides access to the National Security Agency (NSA) facility located to the north.

No pedestrian amenities are provided at this intersection.

Gate 1 is located west of the Mapes Road/O'Brien Road intersection. Gate 1 is open from 5 AM to 9 PM seven days a week and serves both inbound and outbound traffic.

4. *Mapes Road at 6th Armored Cavalry Road – Unsignalized*

This 3-legged intersection has posted speed limits of 25 mph on the east and west approaches; the south approach is posted at 10 mph. The south approach of 6th Armored Cavalry Road is controlled by a stop sign. A pedestrian crosswalk is provided across the west approach.

6th Armored Cavalry Road is a narrow facility with perpendicular parking spaces along both the east and west sides, immediately adjacent to the subject intersection. This situation is not ideal with respect to traffic flow and safety as the parking is located within the functional area of the intersection.

5. *Mapes Road at Zimborski Avenue - Unsignalized*

This 4-legged intersection has posted speed limits of 30 mph on the east and west approaches and 25 mph on the south approach. The north approach, which does not have a posted speed limit, is a gravel road currently being used as a construction entrance (into the golf course) and was posted for construction vehicles only. The north and south approaches of Zimborski Avenue are controlled by stop signs. No pedestrian amenities are provided.

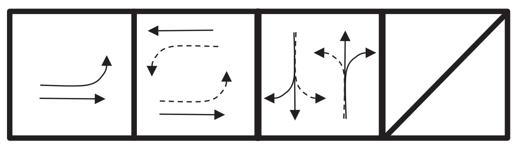
It should be noted that the flared geometry in the southwest corner provides a 50 foot deceleration taper for eastbound traffic turning right onto Zimborski Avenue.

6. *Mapes Road at Taylor Avenue – Signalized*

This signalized intersection serves as a transition point for Mapes Road, which widens from a 2-lane facility (serving primarily residential uses) to a 3-lane facility that accommodates a center two-way left turn lane to MacArthur Road. The posted speed limit along Mapes Road remains at 30 mph; Taylor Avenue has a posted speed limit of 10 mph on the south approach and 15 mph on the north approach.

Each of the four approaches has a channelized right turn lane; an acceleration lane is provided for traffic from the north approach entering westbound Mapes Road while the remaining three (east, west, and south) are yield conditions.

The diagram below summarizes the phasing at the intersection.



Please note that only the eastbound approach has a protected left turn phase. The observed cycle length ranged from 90 to 120 seconds.

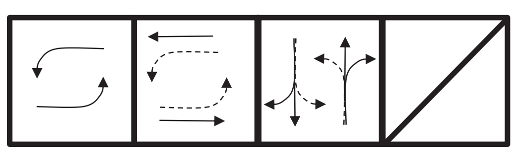
A crosswalk is provided on the north approach. Pedestrian ramps and sidewalk are being constructed adjacent to the intersection; additional crosswalks are anticipated.

7. *Mapes Road at Cooper Avenue – Signalized*

At this signalized intersection, Mapes Road is a 3-lane facility with a posted speed limit of 30 mph. Cooper Avenue, to the north, is a 3-lane facility with a posted speed limit of 30 mph; to the south Cooper Avenue is a 2-lane undivided road with a posted speed limit of 25 mph.

Both the north and south approaches (Cooper Avenue) have channelized right turn lanes with yield signs. The east and west approaches (Mapes Road) have dedicated/auxiliary left and right turn lanes.

The diagram below summarizes the phasing at the intersection.



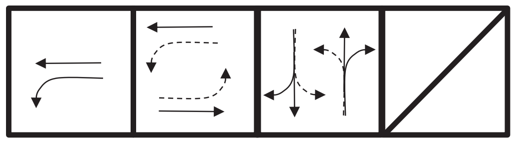
The observed cycle length ranged from 90 to 120 seconds.

Crosswalks are provided on the north, south, and west approaches; however, pedestrian push buttons and signals are not provided.

8. *Mapes Road at Ernie Pyle Street – Signalized*

This signalized intersection is located just inside of Gate 2. At this intersection, Mapes Road is posted at 30 mph on the west approach and 15 mph on the east approach (approaching from the security gate). Ernie Pyle Street is a 2-lane facility with a posted speed limit of 25 mph on both the north and south approaches. At the intersection each approach has the benefit of an auxiliary lane.

The diagram below summarizes the phasing at the intersection.



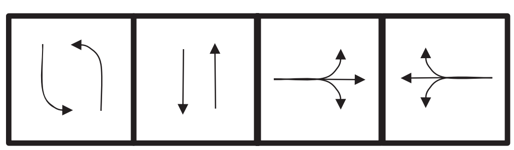
Please note that only the westbound approach (arriving from the gate) has a protected left turn phase. The observed cycle length ranged from 90 to 120 seconds.

No pedestrian amenities are provided at this intersection.

9. *Llewellyn Avenue/Blue Water Boulevard at Annapolis Road (MD 175) – Signalized*

This signalized intersection is located at Gate 6. Annapolis Road (north-south) is a 5-lane facility with auxiliary/dedicated left turn lanes and a posted speed limit of 40 mph. During the AM peak, the queue for northbound left turns exceeded the provided storage and spilled back into the through lane multiple times. To the east is Blue Water Boulevard, a 4-lane divided facility with a posted speed limit of 35 mph. To the west is Llewellyn Avenue/Gate 6. Gate 6 was open to inbound and outbound traffic between 6 AM and 8 AM and open to outbound traffic only between 3 PM and 6 PM. Gate 6 was closed to all traffic the rest of the day during the August 5 – August 8 field reviews.

The diagram below summarizes the phasing at the intersection.



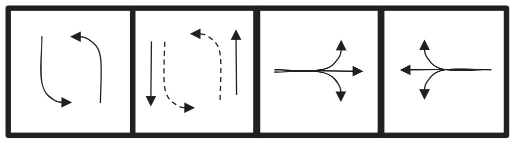
The mainline lefts are protected-only movements and the side streets are split phased (i.e. do not run concurrently). The observed cycle length ranged from 160 to 180 seconds.

Pedestrian pushbuttons are provided in the northeast, southeast and southwest quadrants. A single crosswalk is provided across the east approach; one should be provided across the south approach but is not.

10. *Mapes Road/Charter Oaks Boulevard at Annapolis Road (MD 175) – Signalized*

This signalized intersection is located at Gate 2. Annapolis Road (north-south) is a 5-lane facility with auxiliary/dedicated left turn lanes and a posted speed limit of 40 mph. To the east is Charter Oaks Boulevard, a 4-lane divided facility with a posted speed limit of 35 mph. To the west is Mapes Road/Gate 2. Gate 2 is open from 5 AM to 7 PM Monday through Friday and serves both inbound and outbound traffic.

The diagram below summarizes the phasing at the intersection.



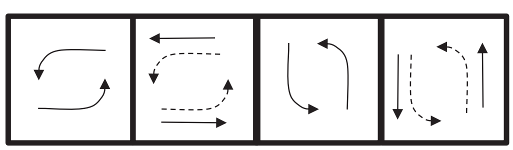
The mainline lefts are protected-permissive movements and the side streets are split phased (i.e. do not run concurrently). The observed cycle length ranged from 130 to 150 seconds.

Pedestrian pushbuttons are provided in the southeast and southwest quadrants and a single crosswalk is provided across the south approach.

11. *Reece Road at Annapolis Road (MD 175) – Signalized*

This signalized intersection is located at Gate 7 Annapolis Road (north-south) transitions from a 2-lane facility to a 5-lane facility at this intersection; the posted speed limit is 40 mph. Auxiliary/dedicated left turn lanes are provided on both Annapolis Road and Reece Road at this intersection. The southbound left turn lane is extremely long and accommodated the traffic observed in the field between August 5 and August 8. The northbound left turn queue, however, exceeded the provided storage and spilled back into the through lane multiple times during the AM peak hour. To the east is Reece Road, a 3-lane facility with a posted speed limit of 25 mph. To the west is Reece Road/Gate 7. Gate 7 is open from 5 AM to 9 PM Monday through Friday and serves both inbound and outbound traffic. Gate 7 is one of the main entrances to Fort Meade and is also provides visitor access to Fort Meade. Exiting traffic during the PM peak was heavy but did not flow back and impact operations at the guard gate.

The diagram below summarizes the phasing at the intersection.



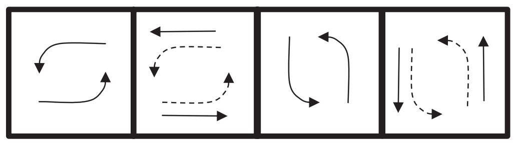
The mainline and side street lefts are protected-permissive movements. The observed cycle length ranged from 90 to 120 seconds.

Pedestrian pushbuttons are not provided at this intersection, however, crosswalks are provided on the north, east, and west approaches.

12. *Rockenbach Road at Annapolis Road (MD 175) – Signalized*

The signalized intersection is located east of Gate 3 and was under construction at the time of the August 5 – August 8 field review. Annapolis Road is a 5-lane facility with auxiliary/dedicated left turn lanes. Annapolis Road was posted at 45 mph to the north and 40 mph to the south. Rockenbach Road to the east is a 2-lane facility that widens in the vicinity of the intersection and has a posted speed limit of 45 mph. Rockenbach Road to the west is a 4-lane facility with a posted speed limit of 40 mph.

The diagram below summarizes the phasing at the intersection.



The left turn movements on both Annapolis Road and Rockenbach Road are protected-permissive movements.

The observed cycle length ranged from 110 to 150 seconds.

It was noted that eastbound traffic did typically slow down to cross Annapolis Road; this appears to be due to the skew of the receiving lanes and the lane merge immediately to the east. Operations on the east leg were also impacted by traffic entering/exiting the gas station and dry cleaners via driveways located in the functional area of the intersection.

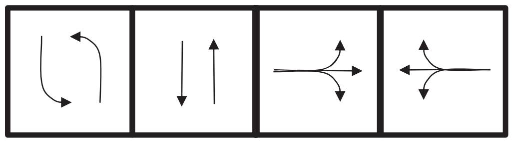
No pedestrian amenities were in place during the August 5 – August 8 field reviews.

Gate 3 is located west of the Rockenbach Road/Annapolis Road intersection. Gate 3 is open from 5 AM to 9 PM seven days a week and serves both inbound and outbound traffic.

13. *Reece Road at Cooper Avenue – Signalized*

This signalized intersection is located in at main entrance to the DISA facility. Cooper Avenue has a posted speed limit of 35 mph and Reece Road is posted at 25 mph. Traffic entering/exiting the DISA facility during the AM/PM peaks appeared light during the August 5 – August 8 field reviews. The provided auxiliary lanes at the intersection accommodated the peak hour flows without issue.

The diagram below summarizes the phasing at the intersection.



The northbound and southbound lefts are protected-only movements and the Reece Road/DISA Driveway operate split phased (i.e. do not run concurrently). It should be noted that the south bound right was signed "no right turn on red".

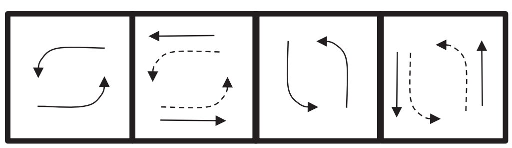
The observed cycle length ranged from 100 to 120 seconds.

Pedestrian pushbuttons are provided in the northeast, southeast and southwest quadrants and crosswalks are provided across the east and south approaches.

14. *Rockenbach Road at Cooper Avenue – Signalized*

The signalized intersection was under construction at the time of the August 5 – August 8 field review. The intersection geometrics at the time of review are summarized on Figure 2 and the respective speed limits are shown on Figure 3.

The diagram below summarizes the phasing at the intersection.



The left turn movements on both Cooper Avenue and Rockenbach Road are protected-permissive movements

The observed cycle length ranged from 120 to 150 seconds.

Pedestrian pushbuttons are not provided at this intersection, however, a crosswalk was provided on the east approach.

15. *Rockenbach Road at 29th Division Boulevard – Unsignalized*

This 3-legged intersection has posted speed limits of 30 mph on the east and west approaches; the north approach is posted at 15 mph. The north approach of 29th Division Boulevard is controlled by a stop sign.

Rockenbach Road (east-west) is a four-lane undivided road with wide shoulders. Pedestrians (i.e. joggers) were noted in the area. No crosswalks are provided at this intersection.

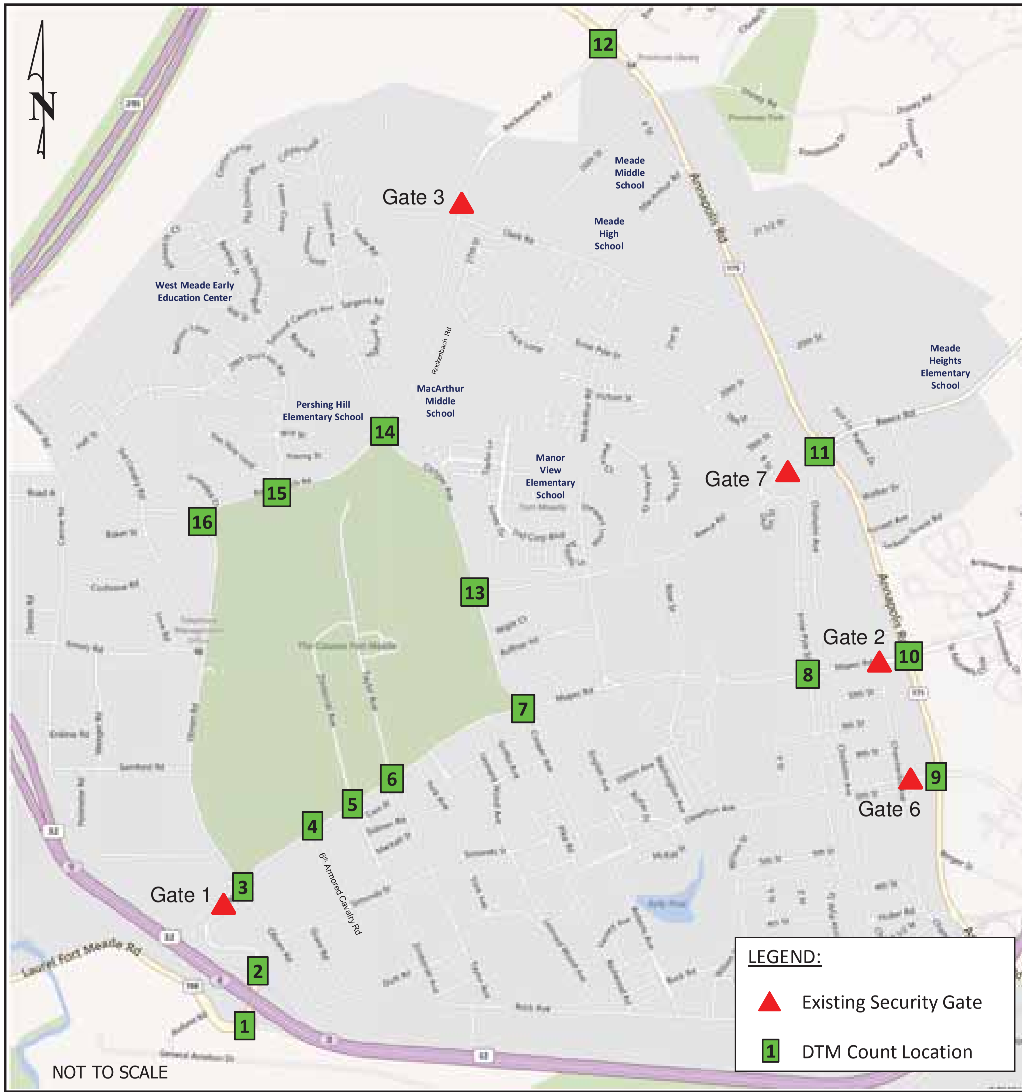
29th Division Road serves as an access to Midway Commons, an on-base residential development. Sidewalks are present on both the east and west sides of the facility. Also, Pershing Hill Elementary School is fed by this facility; school was not in session when the counts or field surveys were conducted.

16. *Rockenbach Road at O'Brien Road - Unsignalized*

This 3-legged intersection has posted speed limits of 25 mph on the east and west approaches; the south approach does not have a posted speed limit. The south approach of O'Brien Road is controlled by a stop sign.

Rockenbach Road (east-west) is a four-lane undivided road with wide shoulders. Pedestrians (i.e. joggers) were noted in the area. No crosswalks are provided at this intersection.

O'Brien Road is a gate-controlled facility that provides access to the NSA facility located to the south.



Fort Mead Intersections:

1. Laurel Fort Meade Road at MD 32 EB Ramps - Roundabout
2. Mapes Road at MD 32 WB Ramps - Roundabout
3. Mapes Road at O'Brien Road - Signalized
4. Mapes Road at 6th Armored Cavalry Road
5. Mapes Road at Zimborski Avenue
6. Mapes Road at Taylor Avenue - Signalized
7. Mapes Road at Cooper Avenue - Signalized
8. Mapes Road at Ernie Pyle Street - Signalized
9. Llewellyn Avenue at Annapolis Road (MD 175) - Signalized
10. Mapes Road at Annapolis Road (MD 175) - Signalized
11. Reece Road at Annapolis Road (MD 175) - Signalized
12. Rockenbach Road at Annapolis Road (MD 175) - Signalized
13. Reece Road at Cooper Avenue - Signalized
14. Rockenbach Road at Cooper Avenue - Signalized
15. Rockenbach Road at 29th Division Boulevard
16. Rockenbach Road at O'Brien Road

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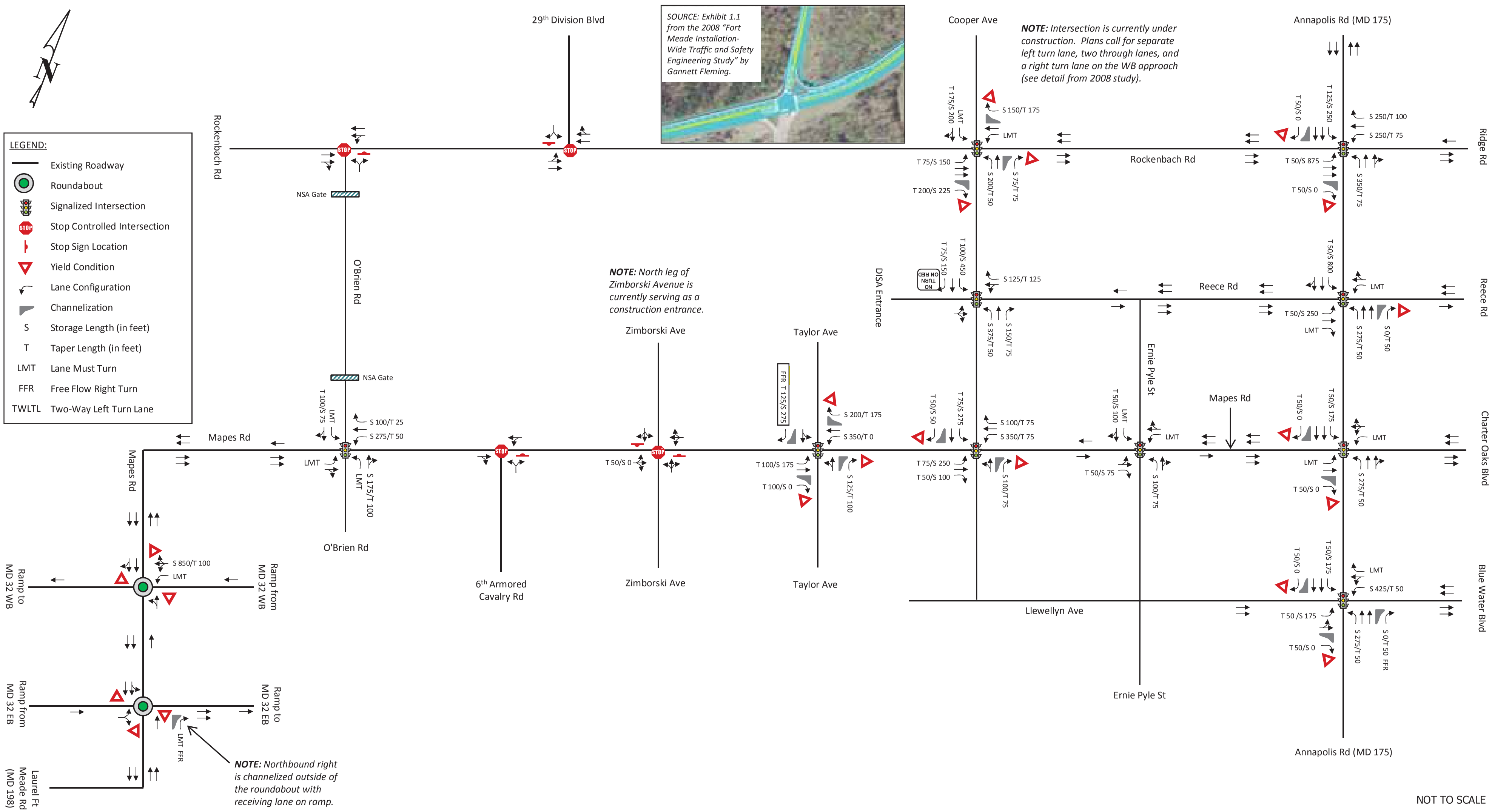
ARCYBER Fort Meade, Maryland
Study Intersections

Figure
1



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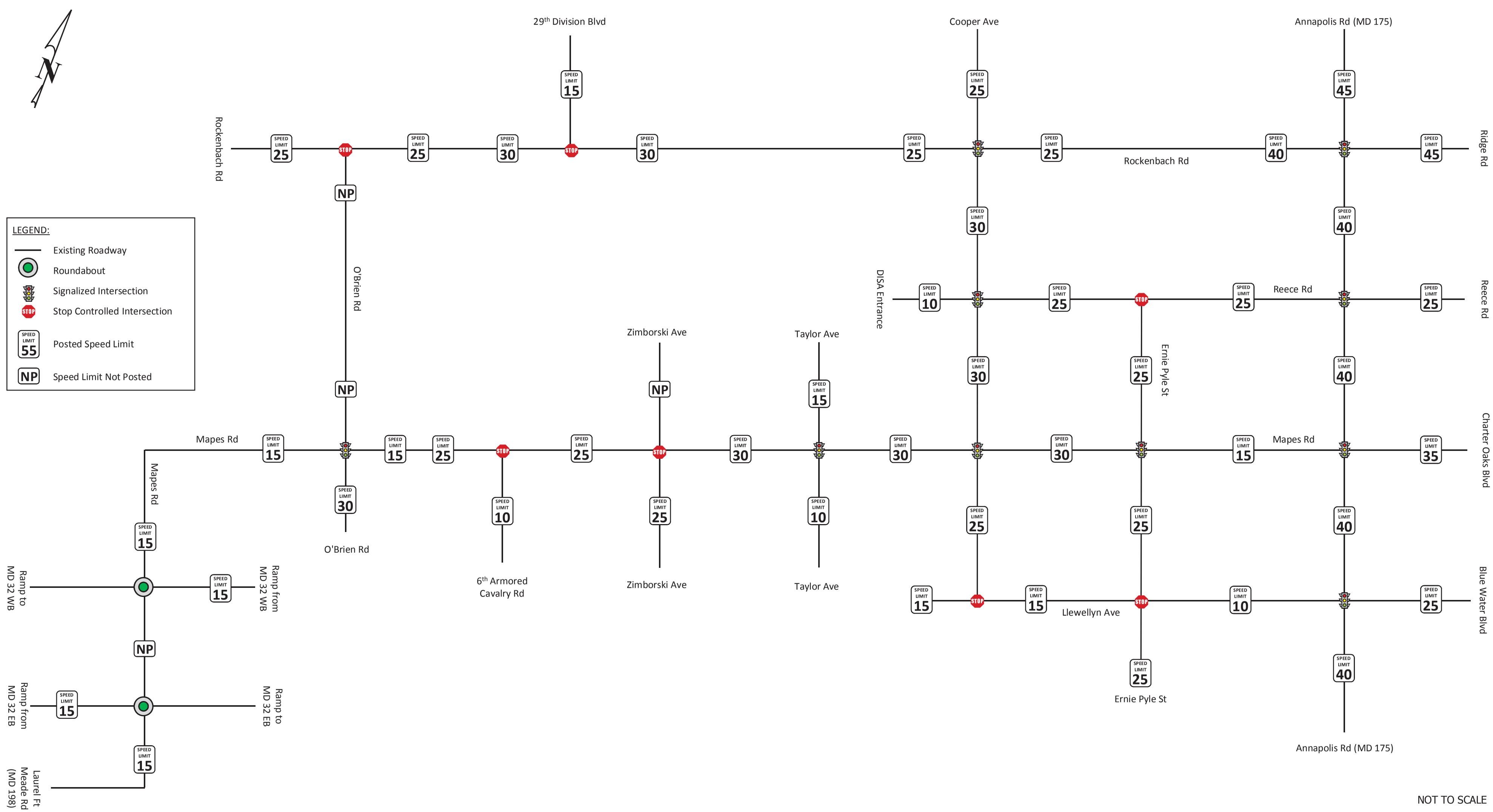
ARCYBER Fort Meade, Maryland
Intersection Geometry

Figure 2



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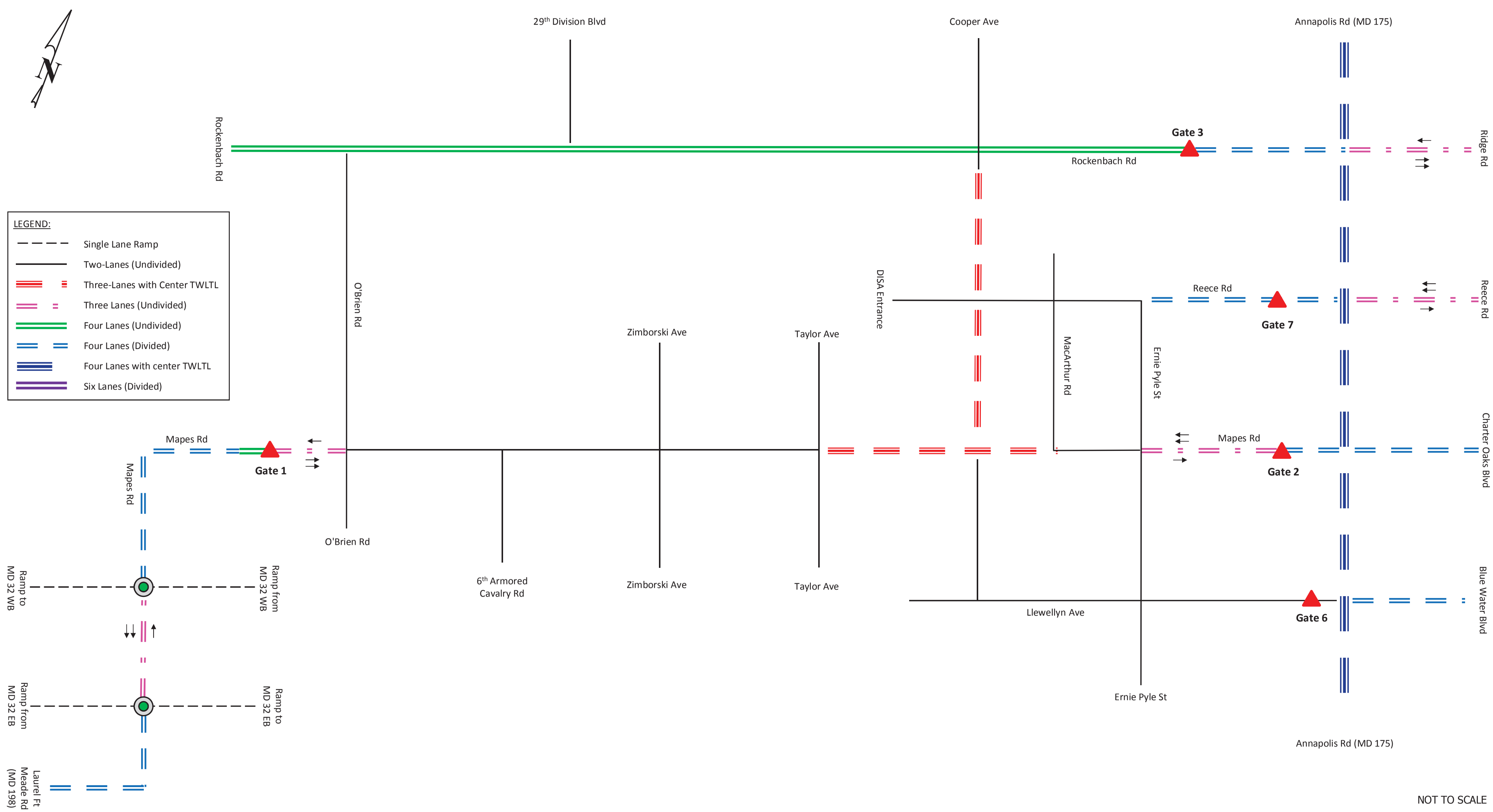
ARCYBER Fort Meade, Maryland
Intersection Control and Posted Speed Limits

Figure
3



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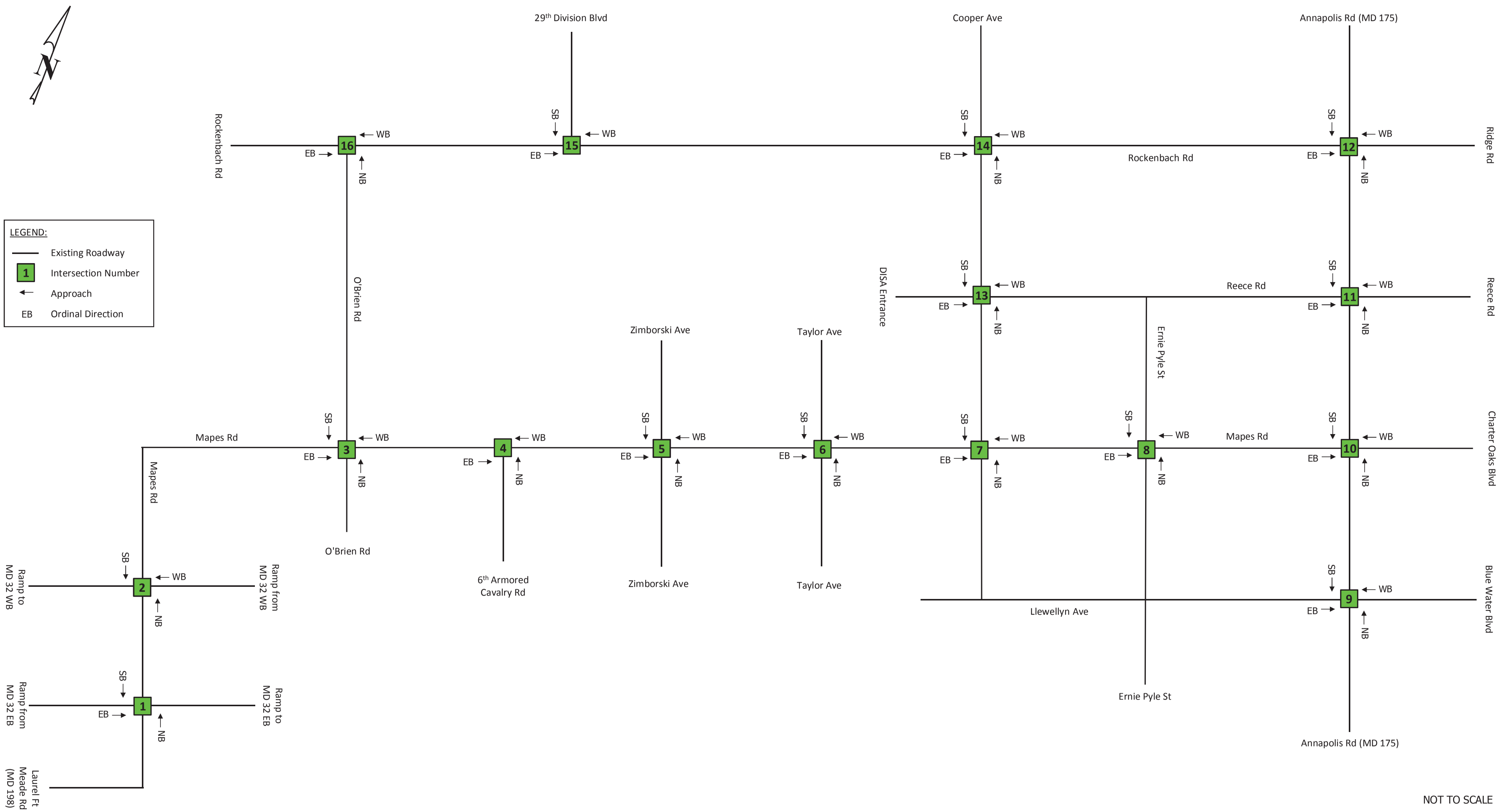
ARCYBER Fort Meade, Maryland
Facility Types

Figure 4



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ARCYBER Fort Meade, Maryland
Ordinal Directions

Figure
5

Attachment 2

Existing Lane Configuration and Traffic Control – Fort Gordon

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

To: Scott Barker, AICP (Cardno TEC)
From: W. Scott Dunn, AICP, PTP
Re: Fort Gordon – Field Notes
Date: September 13, 2012
Cc: Jennifer DeVaughn, PE (Timmons Group)

The following notes summarize the observations collected during the field work completed by Timmons Group on July 29 – August 2, 2012. The intersection numbers listed below correspond with those shown on Figures 1 through 5.

Figure 1 shows a map of the study intersections. The existing intersection geometry is shown on Figure 2 with the intersection controls and posted speed limits shown on Figure 3. The facility types are shown on Figure 4. Lastly, Figure 5 illustrates the ordinal directions that were assigned to the individual roadway facilities/intersections within the study area.

Intersection photos are provided electronically (on CD).

Gordon Highway Corridor

Gordon Highway (US 78/US 278/SR 10) transitions from a 2-lane undivided facility to a 4-lane divided facility between McCoys Creek Road/13th Street and E Robinson Avenue/19th Street. At the intersection of Jimmie Dyess Parkway/7th Avenue, Gordon Highway becomes a 6-lane divided facility heading east towards Augusta. Within the study area, Gordon Highway has a posted speed limit of 55 mph and is intersected in several locations by driveways/streets that serve both commercial and residential development; Gordon Highway is not a limited access facility.

This major east-west arterial is the northern boundary for the ARCYBER study area and is located adjacent to Gates 1, 2, and 3. Descriptions of each of the study intersections located along the Gordon Highway are provided below:

1. *Gordon Highway (US 78/US 278/SR 10) at McCoys Creek Road/13th Street (Gate 3) - Unsignalized*

    Gate 3 is located approximately 4 miles west of the Main Gate (Gate 1) via Gordon Highway. Gate 3 serves as the primary access points for large trucks, deliveries, and contractors (per signage along Gordon Highway and at Gate 3) and is open from 6am to 2pm Monday through Friday. Gate 3 cannot be seen from Gordon Highway; the old guardhouse remains but is not used. Overall traffic at this intersection is light, but constant throughout the day. Sight distance to the east is limited due to the grades on Gordon Highway.

    Gordon Highway a 2-lane undivided east-west arterial with a 55 mph speed limit at the intersection. McCoys Creek Road is a 2-lane undivided facility without a posted speed limit that serves the McCoys Creek residential subdivision. 13th Street, which serves Fort Gordon, is a 4-lane divided facility without a posted speed limit. Pavement markings on the egress lanes direct exiting traffic to the left or right only, northbound throughs into McCoys Creek subdivision are not allowed. The north and south approaches are controlled by stop signs.

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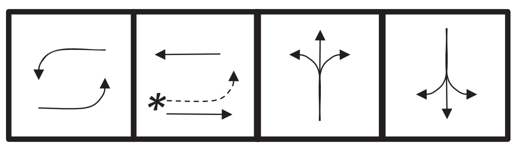
2. *Gordon Highway (US 78/US 278/SR 10) at E Robinson Avenue/19th Street (Gate 2) - Signalized*

Gate 2 is one of the three (3) primary access points to Fort Gordon. In the morning, traffic entering the installation is heavy from the north (E Robinson Avenue) and east (Gordon Highway). Traffic entering Fort Gordon routinely backed up from the gate to Gordon Highway; traffic queues were observed interfering with eastbound through traffic on Gordon Highway a limited number of times. In the afternoon, the reverse is seen as traffic attempting to exit routinely backs up through the guard gate.

Gordon Highway a 4-lane divided facility with a 55 mph speed limit at the intersection. East Robinson Road is a 2-lane undivided facility with a posted speed limit of 45 mph. Entering Fort Gordon 19th Street is a 4-lane divided facility with a posted speed limit of 35 mph that transitions to a 3-lane facility (with a reversible lane) south of Gate 2.

As noted, the intersection is signalized. During the peak hours, cycle lengths ranged from 150 second to 180 seconds. Mainline lefts are protected only movements during both the AM and PM peak periods; during the off peak hours, however, the EB left is also a permissive movement. East Robinson Avenue and 19th Street operate split phased (i.e. they do not run concurrently). Pedestrian signals, pushbuttons, and crosswalks are provided to accommodate pedestrians across all four intersection approaches.

The diagram below summarizes the phasing at the intersection and timing sheets from the City of Augusta are attached for your convenience. (*Note: dashed lines in all of the phasing diagrams represent permissive left turn movements.)*

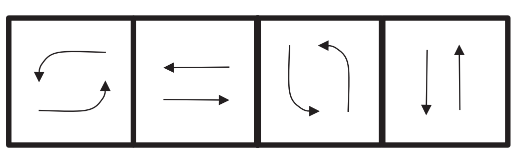


**Permissive during off peak only*

3. *Gordon Highway (US 78/US 278/SR 10) at Jimmie Dyess Parkway/7th Avenue (Gate 1) – Signalized*

This intersection serves the main gate to Fort Gordon. As noted previously, Gordon Highway, an east-west arterial with a 55 mph speed limit, is a 4-lane divided facility west of the intersection and a 6-lane divided facility east of the intersection. Jimmie Dyess Parkway is a 4-lane divided north-south arterial with a posted speed limit of 55 mph; the speed limit decreases from 55 mph to 25 mph as southbound motorists cross Gordon Highway and approach Kilbourne Street. Traffic congestion at this location is heavy during both the AM and PM peaks with traffic patterns similar to those noted at Gate 2 to the west. Despite the heavy volumes, cycle failures and accumulated queues were not noted during the July 29 – August 2 field reviews.

With regard to the traffic signal operations, cycle lengths were recorded ranging from 150 seconds to 190 seconds. Given the signal system is actuated/adaptive, consistent split times could not be collected in the field. The diagram below summarizes the phasing at the intersection and timing sheets from the City of Augusta are attached for your convenience.



No pedestrian amenities are provided at this location.

4. *13th Street at 19th Street - Unsignalized*

This is the first intersection inside Fort Gordon entering through Gate 3 via 19th Street. 19th Street is a 3-lane facility with a 35 mph posted speed limit that runs north-south on the western side of Fort Gordon. 19th Street is set up to accommodate a reversible center traffic lane; however, during the July 29 – August 2 field observations, 19th Street operated as a 2-lane facility with a two-way left turn lane (TWLTL) during typical AM and PM peaks. Overhead signage to support the reversible lanes is in place but was not used.

Chamberlain Avenue Corridor

Chamberlain Avenue is the northernmost east-west route on Fort Gordon within the study area. It runs from Gate 1, past the hospital, across the installation, and through 15th Street (which is the western boundary of the study area). Chamberlain Avenue from Kilbourne Street (east) to 19th Street (west) is a 4-lane undivided facility with a posted speed limit of 25 mph; both signalized and unsignalized intersections are present along this corridor. West of 19th Street, Chamberlain Avenue transitions to a 2-lane undivided facility with a posted speed limit of 35 mph.

Within the developed/urbanized area of Fort Gordon (between Kilbourne Street and 22nd Street), a significant number of pedestrian crosswalks were noted; each crossing was clearly identified with signage, flashing lights, and pavement markings. There is limited consistency with respect to signage and lighting at the pedestrian crossing locations along Chamberlain Avenue.

Additional details pertaining to each of the study intersections located along Chamberlain Avenue are provided below:

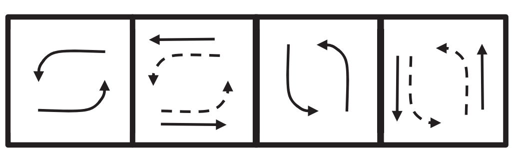
5. *Chamberlain Avenue at 15th Street - Unsignalized*

Chamberlain Avenue and 15th Street are both 2-lane undivided facilities with posted speed limits of 35 mph. The north and south approaches of 15th Street are controlled by stop signs. Auxiliary left turn lanes are provided on each approach of the intersection. It should be noted that the driveway to the parking area located in the southwest quadrant is fenced off and does not serve vehicular traffic.

6. *Chamberlain Avenue at 19th Street - Signalized*

This signalized intersection serves as a transition point for both the posted speed limit along Chamberlain Avenue (25 mph to the east, 35 mph to the west) and the cross section (4-lane undivided to the east, 2-lane undivided to the west).

Auxiliary left turn lanes are provided on each approach of the intersection. The diagram below summarizes the phasing at the intersection; left turns were observed as protected/permissive during both the AM and PM peak periods.



The timing data (below) for the intersection was provided by representatives from Fort Gordon; Chamberlain Avenue (east-west) is considered the major street:

Chamberlain & 19th								
	phase 1	phase 2	phase 3	phase 4	phase 5	phase 6	phase 7	phase 8
min grn.	10	10	5	10	5	10	5	10
passage	3	5	3	3	3	5	3	3
max 1	35	45	20	35	20	45	20	35
max 2	35	45	20	35	20	45	20	35
yel chg	4	4	4	4	4	4	4	4
red clr.	2	2	2	2	2	2	2	2

7. *Chamberlain Avenue at 25th Street - Unsignalized*

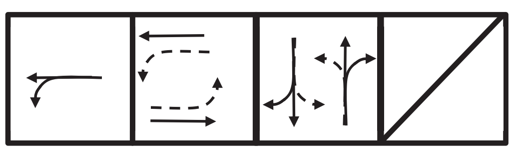
This 4-legged intersection has posted speed limits of 25 mph on the south, east, and west approaches; the north approach is posted at 10 mph. The north and south approaches of 25th Street are controlled by stop signs. A pedestrian crosswalk is provided across the east approach.

A one-way (entering) driveway to the parking lot in the southeast corner of the intersection is located 50 feet from Chamberlain Avenue on the south approach of 25th Street. If this parking lot were to become heavily used in the future, the close proximity of the driveway could result in operational problems at this intersection.

8. *Chamberlain Avenue at Rice Road - Signalized*

Chamberlain Avenue is a 4-lane undivided facility with a posted speed limit of 25 mph on both approaches. The south leg of Rice Road is a 3-lane facility with a center TWLTL and the north leg is a 2-lane undivided facility. Rice Road has a posted speed limit of 25 mph on both approaches.

Auxiliary left turn lanes are provided on the westbound, northbound, and southbound approaches of the intersection. The diagram below summarizes the phasing at the intersection.



The timing data (below) for the intersection was provided by representatives from Fort Gordon; Chamberlain Avenue (east-west) is considered the major street:

Chamberlain & Rice								
	phase 1	phase 2	phase 3	phase 4	phase 5	phase 6	phase 7	phase 8
min grn.	8	15	8	8	8	15	8	8
passage	6	5	4	3	3	5	3	5
max 1	25	50	25	35	25	50	25	35
max 2	30	50	30	50	30	50	30	50
yel chg	3	3	3	3	3	3	3	3
red clr.	3	2	3	1.5	1	2	1	1.5

9. *Chamberlain Avenue at Kilbourne Street - Unsignalized*

This 3-legged intersection is at the eastern edge of the study area boundary within Fort Gordon. All approaches are posted at 25 mph. The north approach of Kilbourne Street is controlled by a stop sign. The northbound right turn movement is accommodated via sweeping channelized right turn lane; a short acceleration lane (300-feet with a 100-foot taper) is provided on Chamberlain Avenue.

Heavy westbound left turns (and long queues) were noted at the intersection during both the AM and Midday peaks. The eastbound left is signed to instruct drivers not to block the intersection and impede northbound lefts; this sign is typically ignored.

Pedestrian accommodations are provided to connect the parking lot on the north side of Chamberlain Avenue; no pedestrian traffic was noted. Also, the pedestrian accommodations in the area are worn; the pavement markings are worn, and the flexible delineator posts are faded.

Barnes Avenue Corridor

Barnes Avenue is a 2-lane east/west facility that extends from 19th Street (west) to Kilbourne Street (east) with a posted speed limit of 25 mph.

10. *Barnes Avenue at 19th Street - Unsignalized*

This intersection is a 4-legged intersection with auxiliary left turn lanes accommodated in the center lane of 19th Street on both approaches (north-south). The east and west approaches of Barnes Avenue are controlled by stop signs. The posted speed limit on the west leg is 20 mph. Also, a driveway to a utility station in the southwest quadrant was noted during the field review. This driveway is located close to the intersection and has a steep grade; given the gravel surface and small size of the facility, it is likely that this driveway sees infrequent, light traffic volumes.

Sidewalk exists in the northeast quadrant of the intersection; however, no pedestrian traffic was observed. It should be noted that a retaining wall is located along the north side of Barnes Avenue.

11. *Barnes Avenue at 25th Street - Unsignalized*

This is a 4-legged all-way stop intersection. Each approach consists of a single lane (no auxiliary turn lanes) with a posted speed limit of 25 mph. Crosswalks are provided on each of the approaches.

It should be noted that a bus shelter is provided on the southeast corner and that an ATM machine is provided in the parking area in the southwest quadrant. Sidewalks are provided on both sides of 25th Street, but no crosswalk is available to accommodate pedestrians.

12. *Brainard Avenue/O'Club Drive at Kilbourne Street/Brainard Avenue - Unsignalized*

This is a 4-legged intersection. The north-south road (Kilbourne Street to the north, Brainard Avenue to the south) has a posted speed limit of 25 mph; no auxiliary turn lanes are provided. The east approach (O'Club Drive) consists of a single lane and has a 30 mph posted speed limit. The west approach (Brainard Avenue) consists of dual approach lanes (a shared left-through and right turn lane) and has a posted speed of 25 mph. The east and west approaches are controlled by stop signs. Sidewalks are present along each of the approaches, but no pedestrian traffic was noted during the July 29 – August 2 field reviews.

<u>Lane Avenue Corridor</u>

Lane Avenue is an east-west corridor located in the southern portion of the study area. The posted speed limit along the corridor is 35 mph, with the exception of the Lane Avenue/Rice Road intersection, which is posted at 25 mph. With respect to cross-sections, the western portion section from 15th Street to 19th Street is a 2-lane roadway, from this intersection west, Lane Avenue is a 3-lane roadway (1 through lane in each direction and a center TWLTL).

13. *<u>Lane Avenue at 15th Street - Unsignalized</u>*

The Lane Avenue and 15th Street intersection is an all-way stop intersection. Lane Avenue and 15th Street are both 2-lane undivided facilities with posted speed limits of 35 mph. Auxiliary left turn lanes are provided on each approach of the intersection.

Significant drainage features were noted in both the southeast and southwest corners of the intersection.

14. *<u>Lane Avenue at 19th Street - Unsignalized</u>*

The Lane Avenue and 19th Street intersection is a 4-legged intersection with three approaches having a posted speed limit of 35 mph (south approach is not posted). Auxiliary left turn lanes are provided on the north, east, and west approaches. The south approach, which consists of a single lane, is closed and is being used as a construction staging area. The north and south approaches of 19th Street are controlled by stop signs.

To the east of this intersection, Lane Avenue becomes a 3-lane facility consisting of an east-and westbound through lanes, in addition to a center TWLTL.

15. *<u>Lane Avenue at 25th Street – Unsignalized</u>*

The Lane Avenue and 25th Street intersection is a 4-legged intersection. The north and south approaches consist of a single lane with a posted speed limit of 25 mph. The east and west approaches have auxiliary left turn lanes and a posted speed limit of 35 mph. The north and south approaches of 25th Street are controlled by stop signs.

A sidewalk is provided along the northeast corner and gravel/asphalt trail was noted along the west side of the north approach.

The driveway located on the southeast quadrant of the intersection does not serve the adjacent building/parking area.

16. *<u>Lane Avenue at Rice Road/Avenue of the States - Unsignalized</u>*

Each of the three approaches has a posted speed limit of 25 mph. The southbound and eastbound right turns are accommodated with channelized right turn lanes; raised concrete medians are provided to direct traffic accordingly. In addition, each of these approaches contains “Proceed with Caution” signs on the approaches. The Lane Avenue approach is controlled by a stop sign.

Sidewalks are provided on both the east and west sides of the southbound approach, as well as (1) along the east side of the northbound approach and (2) in the southwest quadrant. Heavy pedestrian traffic was noted in the area.

As of August 9th, the intersection was scheduled to be closed until January 25, 2013 for construction of a traffic circle (per Fort Gordon's website: http://www.gordon.army.mil/NEWS/traffic/).

North Range Road Corridor

North Range Road is a 2-lane east/west facility that extends from 19th Street (west) to Avenue of the States. The posted speed limit in the eastern section adjacent to the residential units is 30 mph; the western section (from Lilac Court to 15th Street) has a posted speed limit of 40 mph. Multiple signs were posted to alert drivers to the potential presence of pedestrians/bicyclists. Overall, vehicular traffic on the facility was light.

17. *North Range Road at 111th Avenue - Unsignalized*

    This is a 4-legged intersection with the southern leg angled toward the east. The north approach (15th Street) has a posted speed limit of 35 mph and the south approach (North Range Road) has a posted speed limit of 40 mph; this represents the through movement of the intersection. The east-west approaches (111th Avenue) are stop controlled and a speed limit is not posted.

    There is an existing "parking area" on the southern side of the intersection that significantly expands the footprint of the intersection. A limited amount of vehicular traffic was noted at this intersection.

18. *North Range Road at Avenue of the States - Unsignalized*

    This is a 4-legged intersection. Avenue of the States (through movement) is 5-lane facility consisting of two through lanes in each direction plus a center TWLTL; the posted speed limit is 35 mph. The North Range Road approaches are single lanes; the west leg of North Range Road is posted at 30 mph and the east leg does not have a posted speed limit.

US 1/SR 4 (Dean's Bridge Road) Interchange with Avenue of the States/Tobacco Road

19. *US 1/SR 4 (Dean's Bridge Road) Southbound Ramps at Avenue of the States - Unsignalized*

    Standard stop controlled intersection for a diamond interchange. Posted speed limit along Avenue of the States is 45 mph; entering Fort Gordon traffic is posted at 15 mph. Avenue of the States is a 6-lane divided facility exiting Fort Gordon that transitions to a 4-lane divided facility heading east through the interchange.

    The southbound off ramp is posted at 25 mph. The left turns from the ramp are controlled by a stop sign; the free-flowing right turn is channelized with a receiving lane on Avenue of the States.

    Grass in the area is somewhat tall and the sidewalks appear to be receiving limited use.

20. *US 1/SR 4 (Dean's Bridge Road) Northbound Ramps at Tobacco Road - Unsignalized*

    Standard interchange configuration. The eastbound right turn lane on Tobacco Road drops at northbound on-ramp (loop). Both ramps on the eastern side of the interchange are posted at 25 mph. The left turns from the ramp are controlled by a stop sign; the free-flowing right turn is channelized and controlled with a yield sign. West of the interchange, Tobacco Road is a 4-lane divided facility with a posted speed limit of 45 mph.

SIGNAL TIMING INFORMATION FROM THE CITY OF AUGUSTA

AUGUSTA TRAFFIC ENGINEERING
TRAFFIC SIGNAL CABINET
INVENTORY

LOCATION: GORDON HWY @ GATE 1 / JIMMIE DYESS PKWY.

CABINET #: 1498 (336) **CONTROLLER MANUFACTURER:** EAGLE

CONTROLLER MODEL #: 2070 L **CONTROLLER SERIAL #:** 9778

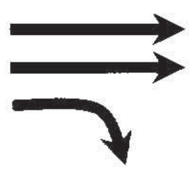
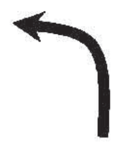
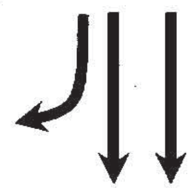
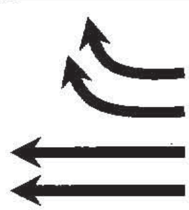
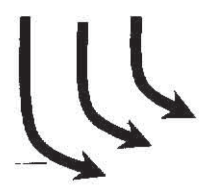
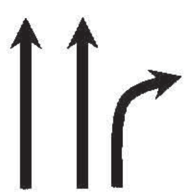
MONITOR MODEL #: 2010 ECL **MONITOR SERIAL #:** 215315

CONTROLLER ON LINE: O CONTROLLER OFF LINE: O

TIME BASE COORDINATION: O ISOLATED CONTROLLER (FREE): O

COMMENTS:

PHASING (VIEW FROM CABINET)

Gate 1 - NB – L.T.	Jimmie Dyess – SB	Gordon Hwy – EB – L.T.	Gordon Hwy – WB
Ø1 	Ø2 	Ø3 	Ø4 
Jimmie Dyess – SB – L.T.	Gate 1 - NB	Gordon Hwy – WB – L.T.	Gordon Hwy - EB
Ø5 	Ø6 	Ø7 	Ø8 

PHASES ON RECALL: 1 2 3 4 5 6 7 8

REASON ON:

DATES PREVENTATIVE MAINTENANCE PERFORMED:

Programmed EPAC Data

8/6/2012
9:59:35AM

Intersection Name: Gordon Hwy @ Gate 1 **Intersection Alias: Gate1**

Access Code: 9999 Channel: 9 Address: 9 Revision: 3.32g

Access Data

Port 2 Comm :19200 Baud
Port 3 Comm :19200 Baud

Phase Data

Vehical Basic Timings							Vehical Density Timings					
Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red	Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
1	8	3.0	25	25	4.0	3.0	0.0	0	0	0	0	0.0
2	15	5.0	40	60	5.0	2.0	2.0	45	15	0	30	2.5
3	8	3.0	35	35	4.0	3.0	0.0	0	0	0	0	0.0
4	15	6.0	40	40	5.0	2.0	2.0	45	15	0	30	2.5
5	8	4.0	45	45	4.0	3.0	0.0	0	0	0	0	0.0
6	15	5.0	40	60	5.0	2.0	2.0	45	15	0	30	2.5
7	8	3.0	20	40	4.0	3.0	0.0	0	0	0	0	0.0
8	15	6.0	40	40	5.0	2.0	2.0	45	15	0	30	2.5

Pedestrian Timing				Extended Actuated		General Control					Miscellaneous				
Phase	Walk	Ped Clear	Flashing Walk	Ped Clear	Rest in Walk	Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
1	0	0	No	0	No	Inactive	None	None	None	0	No	No	No	No	No
2	0	0	No	0	No	Inactive	None	None	None	0	No	Yes	No	No	No
3	0	0	No	0	No	Inactive	None	None	None	0	No	No	No	No	No
4	0	0	No	0	No	Green	None	Min	None	0	No	Yes	No	No	No
5	0	0	No	0	No	Inactive	None	None	None	0	No	No	No	No	No
6	0	0	No	0	No	Inactive	None	None	None	0	No	Yes	No	No	No
7	0	0	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
8	0	0	No	0	No	Green	None	Min	None	0	No	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :3	5	Veh	0	0.0	0
Vehical Detector Channel :5	2	Veh	0	0.0	0
Vehical Detector Channel :6	2	Veh	0	0.0	0
Vehical Detector Channel :9	7	Veh	0	0.0	0
Vehical Detector Channel :11	7	Veh	0	0.0	0
Vehical Detector Channel :13	4	Veh	0	0.0	0
Vehical Detector Channel :14	4	Veh	0	0.0	0
Vehical Detector Channel :21	1	Veh	0	0.0	0
Vehical Detector Channel :23	6	Veh	0	0.0	0
Vehical Detector Channel :24	6	Veh	0	0.0	0
Vehical Detector Channel :29	3	Veh	0	0.0	0
Vehical Detector Channel :33	8	Veh	0	0.0	0
Vehical Detector Channel :34	8	Veh	0	0.0	0

Pedestrian Detector

Default Data

Special Detector Phase Assignment

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 0sec Startup State: All Red Red Revert: 4sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

	Overlaps															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
3	1	4
4	1	1
5	2	6
6	2	7
7	2	8
8	2	5

Phase(s)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concurrent Phases	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase Pair(s)

No Alternate Sequences Programmed

Port 1 Data

BIU Addr	Port Status	Message 40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1
Ph.4 Veh	4	4 - Ph.4 RYG	4
Ph.7 Veh	7	7 - Ph.7 RYG	7
Ph.4 Ped	10	12 - Ph.4 DPW	12
Ph.1 OLP	13	17 - Ph.1 RYG	17
Ph.4 OLP	16	20 - Ph.4 RYG	20
Ph.5 Ped	19	13 - Ph.5 DPW	13

Control	Channel	Hardware Pin Set	
Ph.2 Veh	2	2 - Ph.2 RYG	2
Ph.5 Veh	5	5 - Ph.5 RYG	5
Ph.8 Veh	8	8 - Ph.8 RYG	8
Ph.6 Ped	11	14 - Ph.6 DPW	14
Ph.2 OLP	14	18 - Ph.2 RYG	18
Ph.1 Ped	17	9 - Ph.1 DPW	9
Ph.7 Ped	20	15 - Ph.7 DPW	15

Control	Channel	Hardware Pin Set	
Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.3 Ped	18	11 - Ph.3 DPW	11

Coordination Data

Dial/Split Cycle
/

General Coordination Data

Operation Mode: 0=Free
Coordination Mode: 0=Permissive
Maximun Mode: 1=Max 1
Correction Mode: 3=Short Way Plus

Offset Mode: 0=Beg Grn
Force Mode: 0=Plan
Max Dwell Time: 0
Yield Period: 0

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Split Times and Phase Mode

Dial / Split

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode

Traffic Plan Data

Plan: // Offset Time: Alt. Sequence: Mode: Rg 2 Lag Time: Rg 3 Lag Time: Rg 4 Lag Time:

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero ReferenceHours: 24 Min: 0
End of Daylight Saving Month: 11 Week: 1

Equate Days

Source Day	1	2	3	4	5	6	7

Traffic Data

PHASE FUNCTION

Event	Day	Time	D/S/O	flash	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		:	//		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Special Function Outputs

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	X							
Special Function 2		X						
Special Function 3			X					
Special Function 4				X				
Special Function 5					X			
Special Function 6						X		
Special Function 7							X	
Special Function 8								X

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	X															
Phase 2 Max2		X														
Phase 3 Max2			X													
Phase 4 Max2				X												
Phase 5 Max2					X											
Phase 6 Max2						X										
Phase 7 Max2							X									
Phase 8 Max2								X								
Phase 1 Phase Omit									X							
Phase 2 Phase Omit										X						
Phase 3 Phase Omit											X					
Phase 4 Phase Omit												X				
Phase 5 Phase Omit													X			
Phase 6 Phase Omit														X		
Phase 7 Phase Omit															X	
Phase 8 Phase Omit																X

Dimming Data

Channel	Red	Yellow	Green	Alternate

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	10
2	10
3	10
4	10

Flash > Preepmt 1 Preepmt 2 = Preempt 3 Preepmt 4 = Preempt 5
Preepmt 1 > Preempt 2 Preepmt 3 = Preempt 4 Preepmt 5 = Preempt 6

Preempt	Preempt Timers Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Select Ped Clear	Select Yel	Select Red	Track Grn	Track Ped	Track Yel	Track Red	Dwell Green	Return Ped Clear	Return Yel	Return Red
1	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Priority Timers

Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph Track Dwell Cycle

Default Data

Overlaps
Ovlp Track Dwell Cycle

Default Data

Preempt 2

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp.Track Dwell Cycle

Default Data

Preempt 3

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 4

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 5

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 6

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: No Remote Flash: No

Local Fash: No Cycle Fault: No Coord Fault: No Premption: No Voltage Monitor: No

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %

Default Data

Queue 1 Detectors	System Detectors	Weight Factor

Default Data

Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Sample Interval:

Queue: 1 Input Selection: 0=Average
Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average
Detector Failed Level : 0

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Vehical Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Valı

Pedestrian Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1	Detector_2	Distance :

Default Data

Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
//		

Default Data

Volume Detector Data

Volume Detector Number	Report Interval Controller Detector Channel

Default Data

AUGUSTA TRAFFIC ENGINEERING
TRAFFIC SIGNAL CABINET
INVENTORY

LOCATION: GORDON HWY @ GATE 2 / ROBINSON AVE.

CABINET #: 1533 (336) **CONTROLLER MANUFACTURER:** EAGLE

CONTROLLER MODEL #: 2070 L **CONTROLLER SERIAL #:** 009695

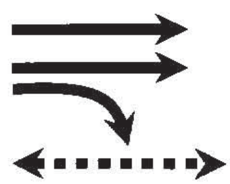
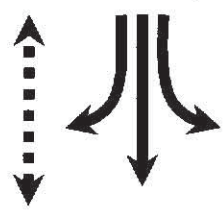
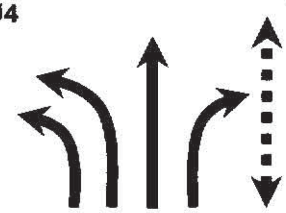
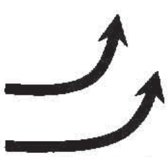
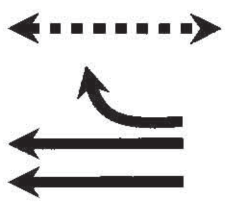
MONITOR MODEL #: 2010 ECL **MONITOR SERIAL #:** 214299

CONTROLLER ON LINE: O CONTROLLER OFF LINE: O

TIME BASE COORDINATION: O ISOLATED CONTROLLER (FREE): O

COMMENTS:

PHASING (VIEW FROM CABINET)

Gordon Hwy – EB - L.T.	Gordon Hwy - WB	Gate 2 - NB	Robinson Ave. - SB
Ø1 	Ø2  P2	Ø3  P3	Ø4  P4
Gordon Hwy – WB - L.T.	Gordon Hwy - EB		
Ø5 	Ø6  P6	Ø7	Ø8

PHASES ON RECALL: 1 2 3 4 5 6 7 8

REASON ON:

DATES PREVENTATIVE MAINTENANCE PERFORMED:

Programmed EPAC Data

Intersection Name: Gordon Hwy @ Gate 2 **Intersection Alias: Gate 2**

Access Code: 9999 Channel: 1 Address: 0 Revision: 3.30"

Access Data

Port 2 Comm :19200 Baud
Port 3 Comm :19200 Baud

Phase Data

Vehical Basic Timings							Vehical Density Timings		Time B4	Cars	Time To	
Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red	Added Initial	Max_Initial	Reduction	Before	Reduce	Min_Gap
1	4	3.0	15	25	4.2	2.5	0.0	0	0	0	0	0.0
2	15	6.0	40	60	5.0	1.8	2.0	40	18	0	8	3.0
3	6	3.0	65	65	3.0	3.6	0.0	0	0	0	0	0.0
4	6	3.0	65	65	4.1	3.9	0.0	0	0	0	0	0.0
5	4	3.0	20	45	4.3	2.7	0.0	0	0	0	0	0.0
6	15	6.0	40	60	5.0	1.8	2.0	40	18	0	8	3.0

Pedestrian Timing				Extended Actuated		General Control					Miscellaneous				
Phase	Walk	Ped Clear	Flashing Walk	Ped Clear	Rest in Walk	Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
1	0	0	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
2	12	25	No	0	No	Green	None	Min	None	0	No	Yes	No	No	No
3	7	28	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
4	12	35	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
5	0	0	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
6	7	19	No	0	No	Green	None	Min	None	0	No	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :1	1	Veh	6	0.0	0
Vehical Detector Channel :3	2	Veh	0	0.0	0
Vehical Detector Channel :4	2	Veh	0	0.0	0
Vehical Detector Channel :9	3	Veh	0	0.0	0
Vehical Detector Channel :11	4	Veh	0	0.0	0
Vehical Detector Channel :12	4	Veh	0	0.0	0
Vehical Detector Channel :13	4	Veh	0	0.0	0
Vehical Detector Channel :19	5	Veh	0	0.0	0
Vehical Detector Channel :21	6	Veh	0	0.0	0
Vehical Detector Channel :22	6	Veh	0	0.0	0

Pedestrian Detector

Pedestrian Detector Channel :8	3	Ped	0	0.0	0

Special Detector Phase Assignment

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 0sec Startup State: Flash Red Revert: 5sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

Phase(s)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
3	1	4
4	1	1
5	2	6
6	2	7

Concurrent Phases / Phase(s)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase
Pair(s)

No Alternate
Sequences
Programmed

Port 1 Data

BIU Addr	Port Status	Message
		40

Default Data

Channel Assignment

Control	Channel	Hardware Pin	Set
Ph.1 Veh	1	1 - Ph.1 RYG	1
Ph.4 Veh	4	4 - Ph.4 RYG	4
Ph.7 Veh	7	7 - Ph.7 RYG	7
Ph.4 Ped	10	12 - Ph.4 DPW	12
Ph.2 OLP	14	18 - Ph.2 RYG	18
Ph.1 Ped	17	9 - Ph.1 DPW	9
Ph.7 Ped	20	15 - Ph.7 DPW	15
Ph.2 Veh	2	2 - Ph.2 RYG	2
Ph.5 Veh	5	5 - Ph.5 RYG	5
Ph.8 Veh	8	8 - Ph.8 RYG	8
Ph.6 Ped	11	14 - Ph.6 DPW	14
Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.3 Ped	18	16 - Ph.3 DPW	16
Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.1 OLP	13	17 - Ph.1 RYG	17
Ph.4 OLP	16	20 - Ph.4 RYG	20
Ph.5 Ped	19	13 - Ph.5 DPW	13

Coordination Data

Dial/Split **Cycle**
/

General Coordination Data

Operation Mode: 0=Free
Coordination Mode: 0=Permissive
Maximun Mode: 2=Max 2
Correction Mode: 0=Dwell

Offset Mode: 0=Beg Grn
Force Mode: 0=Plan
Max Dwell Time: 0
Yield Period: 0

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Split Times and Phase Mode

Dial / Split

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode

Traffic Plan Data

Plan: // Offset Time: Alt. Sequence: Mode: Rg 2 Lag Time: Rg 3 Lag Time: Rg 4 Lag Time:

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero ReferenceHours: 0 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		:	//																	

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	X							
Special Function 2		X						
Special Function 3			X					
Special Function 4				X				
Special Function 5					X			
Special Function 6						X		
Special Function 7							X	
Special Function 8								X

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	X															
Phase 2 Max2		X														
Phase 3 Max2			X													
Phase 4 Max2				X												
Phase 5 Max2					X											
Phase 6 Max2						X										
Phase 7 Max2							X									
Phase 8 Max2								X								
Phase 1 Phase Omit									X							
Phase 2 Phase Omit										X						
Phase 3 Phase Omit											X					
Phase 4 Phase Omit												X				
Phase 5 Phase Omit													X			
Phase 6 Phase Omit														X		
Phase 7 Phase Omit															X	
Phase 8 Phase Omit																X

Dimming Data

Channel Red Yellow Green Alternate

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	10
2	10
3	10
4	10

Flash > Preempt 1 Preempt 2 = Preempt 3 Preempt 4 = Preempt 5
Preempt 1 > Preempt 2 Preempt 3 = Preempt 4 Preempt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Select Ped Clear	Select Yel	Select Red	Track Grn	Track Ped	Track Yel	Track Red	Dwell Green	Return Ped Clear	Return Yel	Return Red
1	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Priority Timers

Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph	Track	Dwell	Cycle	Ovlp	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

Preempt 2

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp.Track Dwell Cycle

Default Data

Preempt 3

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 4

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 5

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

Preempt 6

Vehical Phases
Ph. Track Dwell Cycle

Default Data

Pedestrian Phases
Ph. Track Dwell Cycle

Default Data

Overlaps
Ovlp. Track Dwell Cycle

Default Data

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15 1st Phone:

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: No Remote Flash: No 2nd Phone:

Local Fash: No Cycle Fault: No Coord Fault: No Premption: No Voltage Monitor: No

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Default Data

Default Data

Sample Interval:

Queue: 1 Input Selection: 0=Average
Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average
Detector Failed Level : 0

Queue:
Level Enter Leave

Default Data

Dial / Split / Offset
/ /

Vehical Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Vehical Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Valı

Pedestrian Detector
Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector
Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1	Detector_2	Distance :	Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
			//		

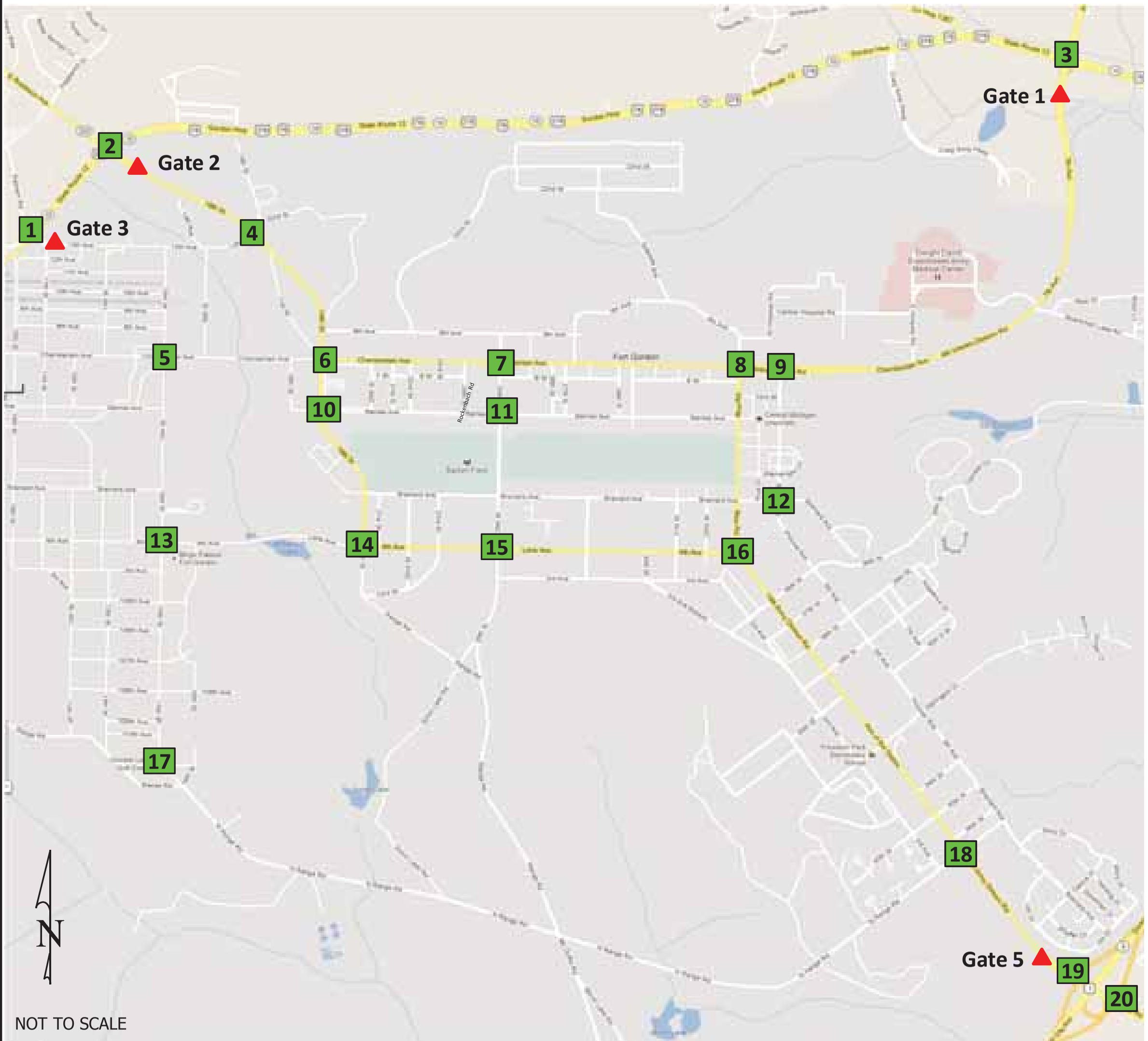
Default Data

Default Data

Volume Detector Data

Volume Detector Number	Report Interval Controller Detector Channel

Default Data



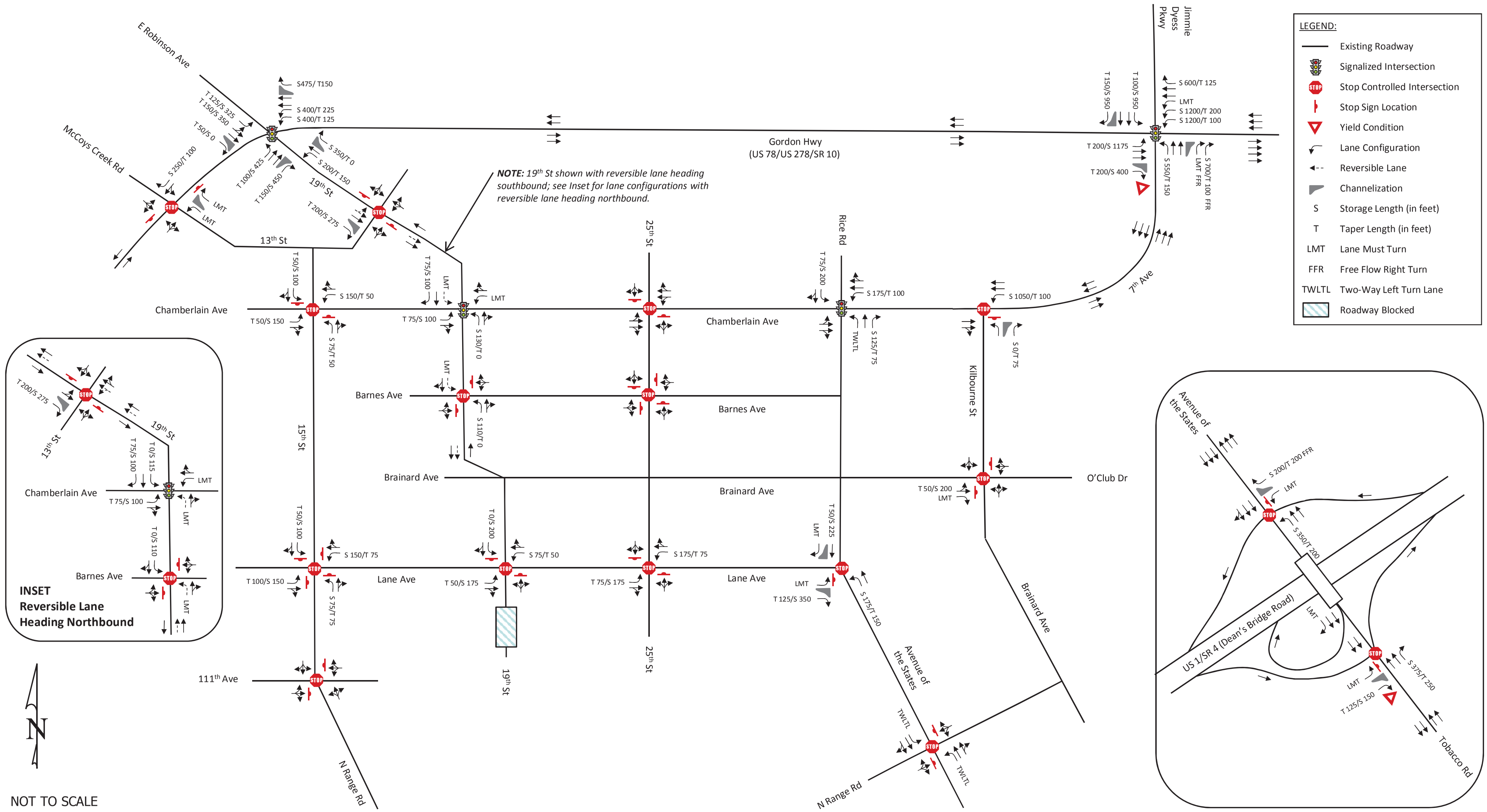
Fort Gordon Intersections:

1. Gordon Highway (US 78/US 278/SR 10) at McCoys Creek Road/ 13th Street (Gate 3)
2. Gordon Highway (US 78/US 278/SR 10) at E Robinson Avenue/ 19th Street (Gate 2) - Signalized
3. Gordon Highway (US 78/US 278/SR 10) at Jimmie Dyess Parkway/ 7th Avenue (Gate 1) – Signalized
4. 13th Street at 19th Street
5. Chamberlain Avenue at 15th Street
6. Chamberlain Avenue at 19th Street– Signalized
7. Chamberlain Avenue at 25th Street
8. Chamberlain Avenue at Rice Road - Signalized
9. Chamberlain Avenue at Kilbourne Street
10. Barnes Avenue at 19th Street
11. Barnes Avenue at 25th Street
12. Brainard Avenue/O'Club Drive at Kilbourne Street/ Brainard Avenue
13. Lane Avenue at 15th Street
14. Lane Avenue at 19th Street
15. Lane Avenue at 25th Street
16. Lane Avenue at Rice Road/Avenue of the States
17. North Range Road at 111th Avenue
18. North Range Road at Avenue of the States
19. US 1/SR 4 (Dean's Bridge Road) Southbound Ramps at Avenue of the States
20. US 1/SR 4 (Dean's Bridge Road) Northbound Ramps at Tobacco Road

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

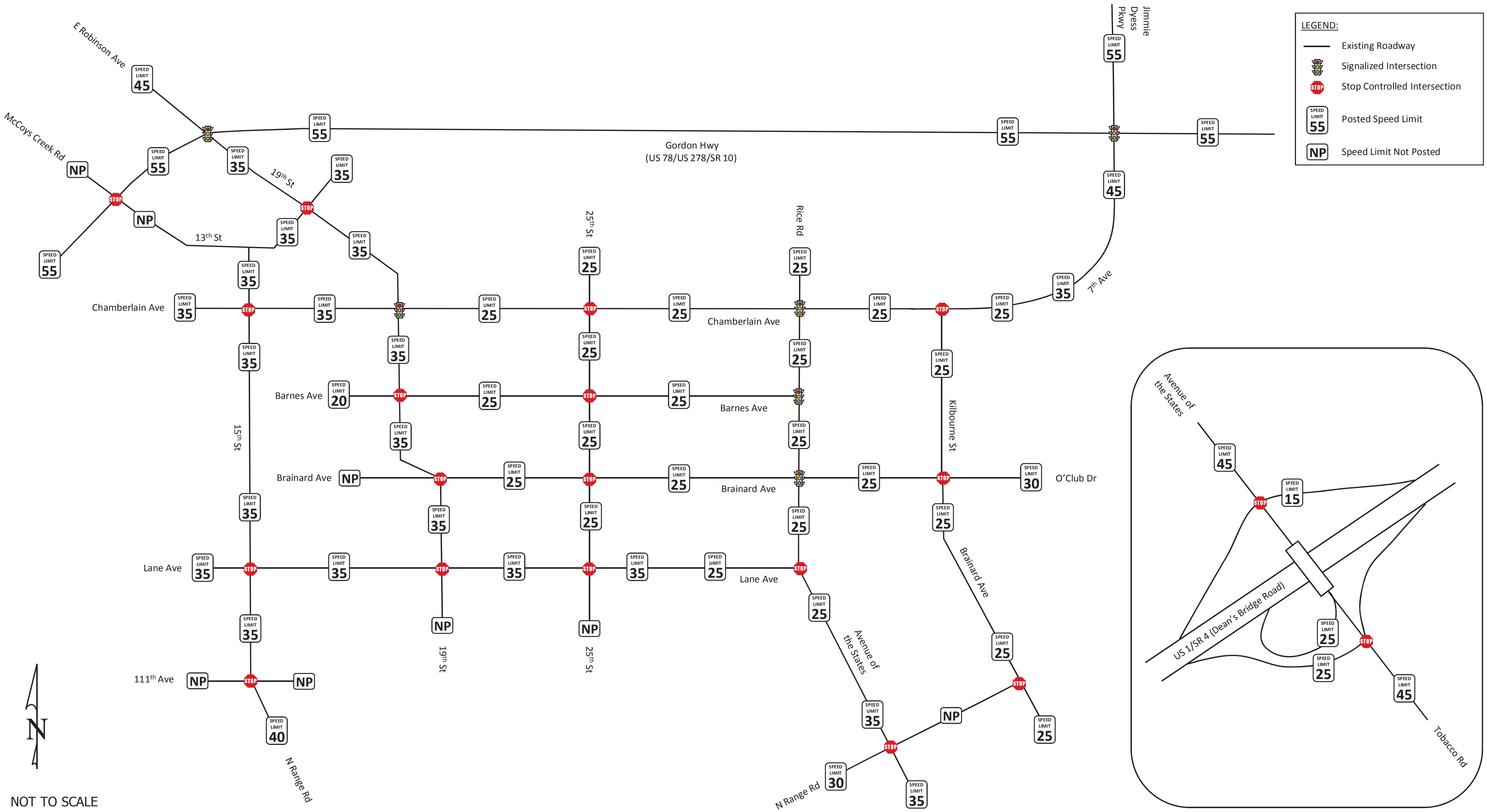
ARCYBER Fort Gordon, Georgia
Study Intersections

Figure 1



ARCYBER Fort Gordon, Georgia
Intersection Geometry

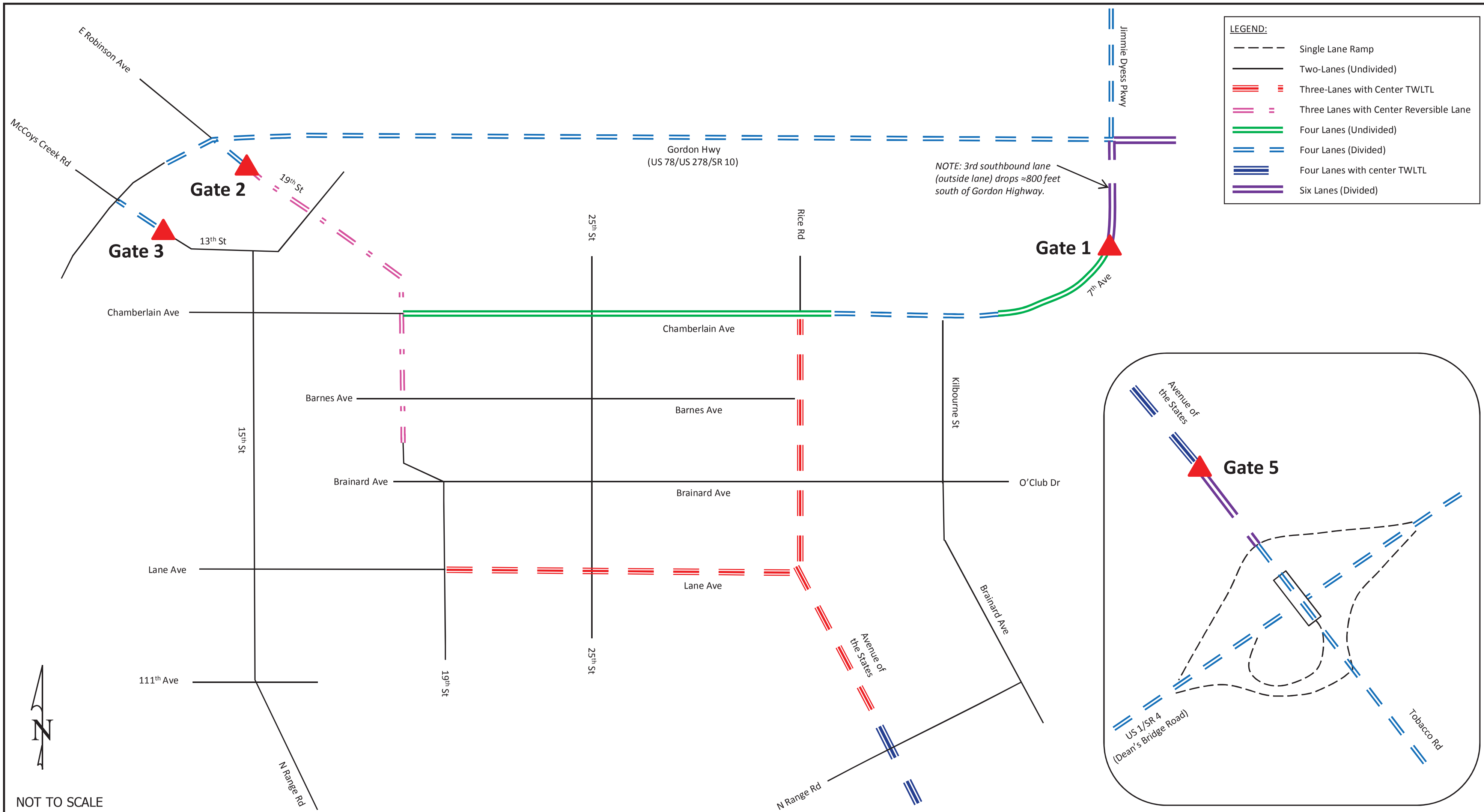
Figure 2



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

ARCYBER Fort Gordon, Georgia
Intersection Control and Posted Speed Limits

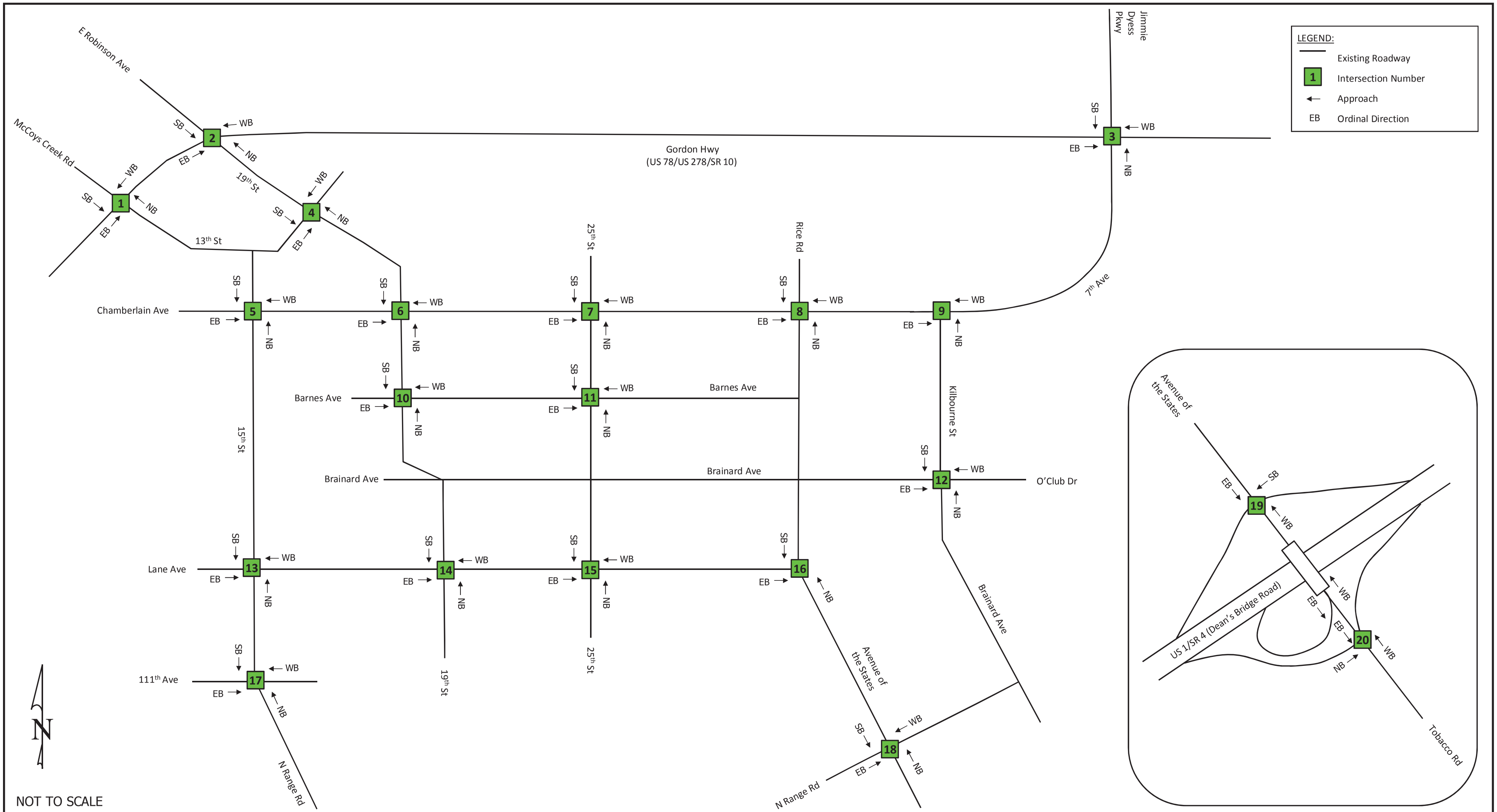
Figure
3



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

ARCYBER Fort Gordon, Georgia
Facility Types

Figure
4



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

ARCYBER Fort Gordon, Georgia
Ordinal Directions

Figure 5

Attachment 3

Existing Traffic Data – Fort Meade

Table A-1A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	103	69	172	4	100	0	104	88	0	11	99	0	0	0	0	375
06:15	0	135	54	189	2	148	0	150	87	0	12	99	0	0	0	0	438
06:30	0	109	99	208	3	148	0	151	67	0	22	89	0	0	0	0	448
06:45	0	167	104	271	3	208	0	211	92	0	10	102	0	0	0	0	584
07:00	0	137	118	255	7	199	0	206	68	0	13	81	0	0	0	0	542
07:15	0	152	112	264	6	202	0	208	96	0	12	108	0	0	0	0	580
07:30	0	135	96	231	11	215	0	226	68	0	12	80	0	0	0	0	537
07:45	0	147	95	242	5	233	0	238	68	0	13	81	0	0	0	0	561
08:00	0	134	98	232	2	175	0	177	73	0	16	89	0	0	0	0	498
08:15	0	97	83	180	5	190	0	195	65	0	6	71	0	0	0	0	446
08:30	0	134	81	215	3	154	0	157	75	0	16	91	0	0	0	0	463
08:45	0	98	78	176	7	149	0	156	63	0	6	69	0	0	0	0	401
09:00	0	80	73	153	8	109	0	117	34	0	10	44	0	0	0	0	314
09:15	0	50	82	132	7	121	0	128	44	0	14	58	0	0	0	0	318

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	591	430	1021	27	824	0	851	324	0	47	371	0	0	0	0	2243
PHF	0	0.88	0.91	0.94	0.61	0.96	0	0.94	0.84	0	0.90	0.86	0	0	0	0	0.96

Start Date 7/31/2012
Start Time 15:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	41	170	211	42	196	0	238	32	0	32	64	0	0	0	0	513
15:45	0	49	242	291	39	202	0	241	33	0	31	64	0	0	0	0	596
16:00	0	39	239	278	54	258	0	312	27	0	27	54	0	0	0	0	644
16:15	0	53	258	311	79	241	0	320	40	0	37	77	0	0	0	0	708
16:30	0	39	255	294	81	254	0	335	29	0	33	62	0	0	0	0	691
16:45	0	52	254	306	60	264	0	324	29	0	35	64	0	0	0	0	694
17:00	0	50	253	303	60	241	0	301	29	0	32	61	0	0	0	0	665
17:15	0	44	269	313	47	283	0	330	31	0	32	63	0	0	0	0	706

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	194	1020	1214	280	1000	0	1280	127	0	137	264	0	0	0	0	2758
PHF	0	0.92	0.99	0.98	0.86	0.95	0	0.96	0.79	0	0.93	0.86	0	0	0	0	0.97

Table A-1B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	2	1	3	1	4	0	5	4	0	0	4	0	0	0	0	12
06:15	0	2	0	2	0	3	0	3	1	0	1	2	0	0	0	0	7
06:30	0	5	0	5	0	4	0	4	12	0	1	13	0	0	0	0	22
06:45	0	4	1	5	0	6	0	6	7	0	1	8	0	0	0	0	19
07:00	0	3	3	6	2	3	0	5	7	0	3	10	0	0	0	0	21
07:15	0	4	0	4	1	3	0	4	4	0	2	6	0	0	0	0	14
07:30	0	0	1	1	4	6	0	10	7	0	3	10	0	0	0	0	21
07:45	0	4	5	9	0	6	0	6	4	0	1	5	0	0	0	0	20
08:00	0	3	7	10	1	5	0	6	7	0	0	7	0	0	0	0	23
08:15	0	3	5	8	1	9	0	10	3	0	1	4	0	0	0	0	22
08:30	0	3	5	8	0	7	0	7	3	0	2	5	0	0	0	0	20
08:45	0	1	3	4	1	5	0	6	10	0	0	10	0	0	0	0	20
09:00	0	0	2	2	0	9	0	9	1	0	0	1	0	0	0	0	12
09:15	0	0	2	2	0	4	0	4	8	0	4	12	0	0	0	0	18

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	11	5	16	7	18	0	25	25	0	9	34	0	0	0	0	75
PHF	0	0.69	0.42	0.67	0.44	0.75	0	0.63	0.89	0	0.75	0.85	0	0	0	0	0.89

Start Date 7/31/2012
Start Time 15:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	4	4	0	1	0	1	4	0	1	5	0	0	0	0	10
15:45	0	0	6	6	1	5	0	6	2	0	0	2	0	0	0	0	14
16:00	0	0	3	3	0	3	0	3	0	0	1	1	0	0	0	0	7
16:15	0	1	2	3	0	6	0	6	0	0	1	1	0	0	0	0	10
16:30	0	2	4	6	1	3	0	4	0	0	1	1	0	0	0	0	11
16:45	0	1	3	4	0	5	0	5	0	0	1	1	0	0	0	0	10
17:00	0	1	8	9	0	1	0	1	0	0	1	1	0	0	0	0	11
17:15	0	0	3	3	0	3	0	3	0	0	0	0	0	0	0	0	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	5	17	22	1	15	0	16	0	0	4	4	0	0	0	0	42
PHF	0	0.63	0.53	0.61	0.25	0.63	0	0.67	0	0	1.00	1.00	0	0	0	0	0.95

Table A-1C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	105	70	175	5	104	0	109	92	0	11	103	0	0	0	0	387
06:15	0	137	54	191	2	151	0	153	88	0	13	101	0	0	0	0	445
06:30	0	114	99	213	3	152	0	155	79	0	23	102	0	0	0	0	470
06:45	0	171	105	276	3	214	0	217	99	0	11	110	0	0	0	0	603
07:00	0	140	121	261	9	202	0	211	75	0	16	91	0	0	0	0	563
07:15	0	156	112	268	7	205	0	212	100	0	14	114	0	0	0	0	594
07:30	0	135	97	232	15	221	0	236	75	0	15	90	0	0	0	0	558
07:45	0	151	100	251	5	239	0	244	72	0	14	86	0	0	0	0	581
08:00	0	137	105	242	3	180	0	183	80	0	16	96	0	0	0	0	521
08:15	0	100	88	188	6	199	0	205	68	0	7	75	0	0	0	0	468
08:30	0	137	86	223	3	161	0	164	78	0	18	96	0	0	0	0	483
08:45	0	99	81	180	8	154	0	162	73	0	6	79	0	0	0	0	421
09:00	0	80	75	155	8	118	0	126	35	0	10	45	0	0	0	0	326
09:15	0	50	84	134	7	125	0	132	52	0	18	70	0	0	0	0	336

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	602	435	1037	34	842	0	876	349	0	56	405	0	0	0	0	2318
PHF	0	0.88	0.90	0.94	0.57	0.95	0	0.93	0.87	0	0.88	0.89	0	0	0	0	0.96
% HV	0%	1.8%	1.1%	1.5%	20.6%	2.1%	0%	2.9%	7.2%	0%	16.1%	8.4%	0%	0%	0%	0%	3.2%

Start Date 7/31/2012
Start Time 15:00

Street Name	Laurel Fort Meade Rd				Mapes Rd				Ramp from MD 32 EB				Ramp to MD 32 EB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	41	174	215	42	197	0	239	36	0	33	69	0	0	0	0	523
15:45	0	49	248	297	40	207	0	247	35	0	31	66	0	0	0	0	610
16:00	0	39	242	281	54	261	0	315	27	0	28	55	0	0	0	0	651
16:15	0	54	260	314	79	247	0	326	40	0	38	78	0	0	0	0	718
16:30	0	41	259	300	82	257	0	339	29	0	34	63	0	0	0	0	702
16:45	0	53	257	310	60	269	0	329	29	0	36	65	0	0	0	0	704
17:00	0	51	261	312	60	242	0	302	29	0	33	62	0	0	0	0	676
17:15	0	44	272	316	47	286	0	333	31	0	32	63	0	0	0	0	712

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	199	1037	1236	281	1015	0	1296	127	0	141	268	0	0	0	0	2800
PHF	0	0.92	0.99	0.98	0.86	0.94	0	0.96	0.79	0	0.93	0.86	0	0	0	0	0.97
% HV	0%	2.5%	1.6%	1.8%	0.4%	1.5%	0%	1.2%	0.0%	0%	2.8%	1.5%	0%	0%	0%	0%	1.5%

Table A-2A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	21	182	0	203	0	14	15	29	0	0	0	0	99	4	16	119	351
06:15	16	206	0	222	0	13	13	26	0	0	0	0	142	5	9	156	404
06:30	13	157	0	170	0	27	28	55	0	0	0	0	135	2	16	153	378
06:45	0	223	0	223	0	18	17	35	0	0	0	0	209	21	20	250	508
07:00	25	188	0	213	0	24	22	46	0	0	0	0	177	0	21	198	457
07:15	19	231	0	250	0	31	36	67	0	0	0	0	175	7	16	198	515
07:30	16	189	0	205	0	28	43	71	0	0	0	0	202	2	12	216	492
07:45	20	205	0	225	0	26	22	48	0	0	0	0	207	2	5	214	487
08:00	28	181	0	209	0	22	22	44	0	0	0	0	156	6	16	178	431
08:15	11	158	0	169	0	26	20	46	0	0	0	0	170	2	9	181	396
08:30	24	189	0	213	0	25	27	52	0	0	0	0	134	0	8	142	407
08:45	21	143	0	164	0	24	15	39	0	0	0	0	135	0	17	152	355
09:00	9	107	0	116	0	22	14	36	0	0	0	0	91	6	4	101	253
09:15	18	74	0	92	0	21	13	34	0	0	0	0	108	0	6	114	240

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	60	831	0	891	0	101	118	219	0	0	0	0	763	30	69	862	1972
PHF	0.60	0.90	0	0.89	0	0.81	0.69	0.77	0	0	0	0	0.91	0.36	0.82	0.86	0.96

Start Date 7/31/2012
Start Time 15:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	17	44	0	61	0	149	91	240	0	0	0	0	86	0	6	92	393
15:45	28	60	0	88	0	157	79	236	0	0	0	0	84	0	2	86	410
16:00	16	49	0	65	0	206	108	314	0	0	0	0	104	1	4	109	488
16:15	32	59	0	91	0	204	91	295	0	0	0	0	116	0	2	118	504
16:30	14	55	0	69	0	212	91	303	0	0	0	0	120	0	6	126	498
16:45	32	47	0	79	0	207	90	297	0	0	0	0	117	0	3	120	496
17:00	22	54	0	76	0	189	89	278	0	0	0	0	118	0	0	118	472
17:15	29	49	0	78	0	172	90	262	0	0	0	0	137	0	9	146	486

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	94	210	0	304	0	829	380	1209	0	0	0	0	457	1	15	473	1986
PHF	0.73	0.89	0	0.84	0	0.98	0.88	0.96	0	0	0	0	0.95	0.25	0.63	0.94	0.99

Table A-2B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	0	0	5	0	2	1	3	0	0	0	0	6	5	0	11	19
06:15	2	0	0	2	0	0	1	1	0	0	0	0	1	2	0	3	6
06:30	15	0	0	15	0	4	0	4	0	0	0	0	0	0	0	0	19
06:45	13	0	0	13	0	4	0	4	0	0	0	0	0	0	0	0	17
07:00	9	2	0	11	0	2	0	2	0	0	0	0	2	1	0	3	16
07:15	8	0	0	8	0	0	3	3	0	0	0	0	4	2	0	6	17
07:30	9	0	0	9	0	4	3	7	0	0	0	0	4	1	0	5	21
07:45	5	2	0	7	0	0	2	2	0	0	0	0	6	0	0	6	15
08:00	7	3	0	10	0	1	2	3	0	0	0	0	5	2	0	7	20
08:15	5	1	0	6	0	0	4	4	0	0	0	0	12	2	0	14	24
08:30	5	0	0	5	0	1	0	1	0	0	0	0	7	5	0	12	18
08:45	9	0	0	9	0	2	3	5	0	0	0	0	4	2	1	7	21
09:00	3	0	0	3	0	4	2	6	0	0	0	0	6	6	1	13	22
09:15	7	1	0	8	0	0	1	1	0	0	0	0	2	6	0	8	17

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	39	2	0	41	0	10	6	16	0	0	0	0	10	4	0	14	71
PHF	0.75	0.25	0	0.79	0	0.63	0.50	0.57	0	0	0	0	0.63	0.50	0	0.58	0.85

Start Date 7/31/2012
Start Time 15:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	2	2	0	4	0	0	1	1	0	0	0	0	1	3	1	5	10
15:45	1	0	0	1	0	2	2	4	0	0	0	0	3	0	0	3	8
16:00	0	1	0	1	0	1	1	2	0	0	0	0	2	0	0	2	5
16:15	0	1	0	1	0	2	0	2	0	0	0	0	3	1	0	4	7
16:30	1	1	0	2	0	2	0	2	0	0	0	0	2	2	0	4	8
16:45	2	1	0	3	0	1	1	2	0	0	0	0	3	0	0	3	8
17:00	0	0	0	0	0	1	2	3	0	0	0	0	0	1	0	1	4
17:15	1	0	0	1	0	1	1	2	0	0	0	0	2	0	0	2	5

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	3	4	0	7	0	6	2	8	0	0	0	0	10	3	0	13	28
PHF	0.38	1.00	0	0.58	0	0.75	0.50	1.00	0	0	0	0	0.83	0.38	0	0.81	0.88

Table A-2C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	26	182	0	208	0	16	16	32	0	0	0	0	105	9	16	130	370
06:15	18	206	0	224	0	13	14	27	0	0	0	0	143	7	9	159	410
06:30	28	157	0	185	0	31	28	59	0	0	0	0	135	2	16	153	397
06:45	13	223	0	236	0	22	17	39	0	0	0	0	209	21	20	250	525
07:00	34	190	0	224	0	26	22	48	0	0	0	0	179	1	21	201	473
07:15	27	231	0	258	0	31	39	70	0	0	0	0	179	9	16	204	532
07:30	25	189	0	214	0	32	46	78	0	0	0	0	206	3	12	221	513
07:45	25	207	0	232	0	26	24	50	0	0	0	0	213	2	5	220	502
08:00	35	184	0	219	0	23	24	47	0	0	0	0	161	8	16	185	451
08:15	16	159	0	175	0	26	24	50	0	0	0	0	182	4	9	195	420
08:30	29	189	0	218	0	26	27	53	0	0	0	0	141	5	8	154	425
08:45	30	143	0	173	0	26	18	44	0	0	0	0	139	2	18	159	376
09:00	12	107	0	119	0	26	16	42	0	0	0	0	97	12	5	114	275
09:15	25	75	0	100	0	21	14	35	0	0	0	0	110	6	6	122	257

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	99	833	0	932	0	111	124	235	0	0	0	0	773	34	69	876	2043
PHF	0.73	0.90	0	0.90	0	0.87	0.67	0.75	0	0	0	0	0.92	0.40	0.82	0.88	0.96
% HV	39.4%	0.2%	0%	4.4%	0%	9.0%	4.8%	6.8%	0%	0%	0%	0%	1.3%	11.8%	0.0%	1.6%	3.5%

Start Date 7/31/2012
Start Time 15:00

Street Name	Mapes Rd				Mapes Rd				Ramp to MD 32 WB				Ramp from MD 32 WB				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	19	46	0	65	0	149	92	241	0	0	0	0	87	3	7	97	403
15:45	29	60	0	89	0	159	81	240	0	0	0	0	87	0	2	89	418
16:00	16	50	0	66	0	207	109	316	0	0	0	0	106	1	4	111	493
16:15	32	60	0	92	0	206	91	297	0	0	0	0	119	1	2	122	511
16:30	15	56	0	71	0	214	91	305	0	0	0	0	122	2	6	130	506
16:45	34	48	0	82	0	208	91	299	0	0	0	0	120	0	3	123	504
17:00	22	54	0	76	0	190	91	281	0	0	0	0	118	1	0	119	476
17:15	30	49	0	79	0	173	91	264	0	0	0	0	139	0	9	148	491

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	97	214	0	311	0	835	382	1217	0	0	0	0	467	4	15	486	2014
PHF	0.71	0.89	0	0.85	0	0.98	0.88	0.96	0	0	0	0	0.96	0.50	0.63	0.93	0.99
% HV	3.1%	1.9%	0%	2.3%	0%	0.7%	0.5%	0.7%	0%	0%	0%	0%	2.1%	75.0%	0.0%	2.7%	1.4%

Table A-3A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd				O'Brien Rd				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	7	0	9	46	6	7	59	7	133	1	141	2	23	29	54	263
06:15	5	5	0	10	22	6	6	34	11	180	1	192	1	29	24	54	290
06:30	9	15	0	24	13	6	9	28	2	160	0	162	0	42	51	93	307
06:45	12	7	0	19	23	2	9	34	9	173	2	184	0	27	43	70	307
07:00	8	13	0	21	32	10	1	43	12	167	0	179	0	38	54	92	335
07:15	6	18	1	25	13	4	1	18	18	176	3	197	1	43	72	116	356
07:30	21	26	0	47	26	12	7	45	14	148	1	163	1	39	78	118	373
07:45	12	20	0	32	34	11	10	55	7	149	1	157	1	42	68	111	355
08:00	11	33	0	44	23	7	10	40	10	122	1	133	1	35	93	129	346
08:15	3	26	2	31	18	6	11	35	9	141	0	150	2	33	61	96	312
08:30	7	18	21	46	31	6	6	43	9	163	1	173	5	31	86	122	384
08:45	5	22	0	27	27	12	6	45	9	159	1	169	5	48	76	129	370
09:00	5	6	0	11	21	5	8	34	12	108	2	122	3	23	47	73	240
09:15	8	6	2	16	50	11	6	67	5	81	2	88	0	25	48	73	244

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	50	97	1	148	96	34	28	158	49	595	6	650	4	159	311	474	1430
PHF	0.60	0.73	0.25	0.79	0.71	0.71	0.70	0.72	0.68	0.85	0.50	0.82	1.00	0.92	0.84	0.92	0.96

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd				O'Brien Rd				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	42	4	1	47	144	13	31	188	5	50	1	56	2	185	25	212	503
15:45	35	14	0	49	121	10	54	185	1	41	3	45	0	175	21	196	475
16:00	65	3	1	69	78	12	51	141	1	42	0	43	2	213	16	231	484
16:15	63	8	4	75	67	5	59	131	8	46	1	55	0	178	22	200	461
16:30	52	5	1	58	80	4	59	143	2	51	0	53	0	209	18	227	481
16:45	39	13	1	53	97	7	59	163	1	58	1	60	1	178	22	201	477
17:00	44	7	3	54	73	7	51	131	6	64	0	70	1	186	10	197	452
17:15	23	4	0	27	59	5	70	134	1	66	0	67	0	145	16	161	389

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:30	205	29	6	240	410	40	195	645	15	179	5	199	4	751	84	839	1923
PHF	0.79	0.52	0.38	0.80	0.71	0.77	0.83	0.86	0.47	0.90	0.42	0.89	0.50	0.88	0.84	0.91	0.96

Table A-3B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd Northbound				O'Brien Rd Southbound				Mapes Rd Eastbound				Mapes Rd Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	2	0	2	0	1	0	1	3	1	0	4	0	2	0	2	9
06:15	0	0	0	0	3	0	0	3	0	0	0	0	0	2	0	2	5
06:30	0	0	0	0	4	0	0	4	0	0	0	0	0	1	0	1	5
06:45	3	0	0	3	1	0	2	3	3	0	0	3	0	2	0	2	11
07:00	0	0	0	0	4	0	1	5	2	2	0	4	0	2	0	2	11
07:15	0	2	0	2	2	0	0	2	2	1	0	3	0	2	0	2	9
07:30	0	0	0	0	3	0	0	3	1	0	0	1	0	3	0	3	7
07:45	0	0	0	0	0	2	2	4	5	2	0	7	0	2	0	2	13
08:00	1	0	0	1	6	1	2	9	1	0	0	1	0	2	0	2	13
08:15	0	0	0	0	6	0	0	6	2	2	0	4	0	2	0	2	12
08:30	0	0	0	0	1	0	0	1	10	1	0	11	0	2	0	2	14
08:45	1	1	0	2	3	0	2	5	7	4	0	11	0	1	0	1	19
09:00	1	0	0	1	2	1	0	3	1	0	0	1	0	3	0	3	8
09:15	0	0	1	1	2	0	1	3	1	0	0	1	0	1	1	2	7

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	1	2	0	3	11	3	4	18	9	3	0	12	0	9	0	9	42
PHF	0.25	0.25	0	0.38	0.46	0.38	0.50	0.50	0.45	0.38	0	0.43	0	0.75	0	0.75	0.81

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd Northbound				O'Brien Rd Southbound				Mapes Rd Eastbound				Mapes Rd Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
15:45	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
16:00	2	0	0	2	1	0	0	1	0	0	0	0	0	1	0	1	4
16:15	0	0	0	0	1	1	0	2	0	0	0	0	0	2	0	2	4
16:30	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
17:15	2	0	0	2	0	0	0	0	0	0	0	0	0	2	0	2	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:30	2	0	0	2	3	3	0	6	0	1	0	1	0	4	0	4	13
PHF	0.25	0	0	0.25	0.75	0.38	0	0.75	0	0.25	0	0.25	0	0.50	0	0.50	0.81

Table A-3C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd				O'Brien Rd				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	9	0	11	46	7	7	60	10	134	1	145	2	25	29	56	272
06:15	5	5	0	10	25	6	6	37	11	180	1	192	1	31	24	56	295
06:30	9	15	0	24	17	6	9	32	2	160	0	162	0	43	51	94	312
06:45	15	7	0	22	24	2	11	37	12	173	2	187	0	29	43	72	318
07:00	8	13	0	21	36	10	2	48	14	169	0	183	0	40	54	94	346
07:15	6	20	1	27	15	4	1	20	20	177	3	200	1	45	72	118	365
07:30	21	26	0	47	29	12	7	48	15	148	1	164	1	42	78	121	380
07:45	12	20	0	32	34	13	12	59	12	151	1	164	1	44	68	113	368
08:00	12	33	0	45	29	8	12	49	11	122	1	134	1	37	93	131	359
08:15	3	26	2	31	24	6	11	41	11	143	0	154	2	35	61	98	324
08:30	7	18	21	46	32	6	6	44	19	164	1	184	5	33	86	124	398
08:45	6	23	0	29	30	12	8	50	16	163	1	180	5	49	76	130	389
09:00	6	6	0	12	23	6	8	37	13	108	2	123	3	26	47	76	248
09:15	8	6	3	17	52	11	7	70	6	81	2	89	0	26	49	75	251

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	51	99	1	151	107	37	32	176	58	598	6	662	4	168	311	483	1472
PHF	0.61	0.75	0.25	0.80	0.79	0.71	0.67	0.75	0.73	0.84	0.50	0.83	1.00	0.93	0.84	0.92	0.97
% HV	2.0%	2.0%	0.0%	2.0%	10.3%	8.1%	12.5%	10.2%	15.5%	0.5%	0.0%	1.8%	0.0%	5.4%	0.0%	1.9%	2.9%

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd				O'Brien Rd				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	42	4	1	47	144	15	31	190	5	50	1	56	2	186	25	213	506
15:45	35	14	0	49	122	10	54	186	1	42	3	46	0	175	21	196	477
16:00	67	3	1	71	79	12	51	142	1	42	0	43	2	214	16	232	488
16:15	63	8	4	75	68	6	59	133	8	46	1	55	0	180	22	202	465
16:30	52	5	1	58	81	4	59	144	2	52	0	54	0	210	18	228	484
16:45	39	13	1	53	97	7	59	163	1	58	1	60	1	178	22	201	477
17:00	44	7	3	54	74	7	51	132	6	64	0	70	1	187	10	198	454
17:15	25	4	0	29	59	5	70	134	1	66	0	67	0	147	16	163	393

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:30	207	29	6	242	413	43	195	651	15	180	5	200	4	755	84	843	1936
PHF	0.77	0.52	0.38	0.81	0.72	0.72	0.83	0.86	0.47	0.90	0.42	0.89	0.50	0.88	0.84	0.91	0.96
% HV	1.0%	0.0%	0.0%	0.8%	0.7%	7.0%	0.0%	0.9%	0.0%	0.6%	0.0%	0.5%	0.0%	0.5%	0.0%	0.5%	0.7%

Table A-4A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	0	0	2	0	0	0	0	0	177	3	180	7	40	0	47	229
06:15	2	0	2	4	0	0	0	0	0	212	4	216	8	52	0	60	280
06:30	0	0	1	1	0	0	0	0	0	167	1	168	7	93	0	100	269
06:45	1	0	3	4	0	0	0	0	0	215	2	217	8	70	0	78	299
07:00	1	0	4	5	0	0	0	0	0	194	4	198	18	94	0	112	315
07:15	0	0	4	4	0	0	0	0	0	182	2	184	7	133	0	140	328
07:30	1	0	6	7	0	0	0	0	0	205	4	209	8	125	0	133	349
07:45	2	0	2	4	0	0	0	0	0	181	7	188	10	112	0	122	314
08:00	1	0	3	4	0	0	0	0	0	172	3	175	7	112	0	119	298
08:15	2	0	4	6	0	0	0	0	0	172	4	176	9	96	0	105	287
08:30	2	0	2	4	0	0	0	0	0	167	6	173	15	102	0	117	294
08:45	0	0	10	10	0	0	0	0	0	135	6	141	14	93	0	107	258
09:00	2	0	2	4	0	0	0	0	0	120	3	123	9	88	0	97	224
09:15	2	0	3	5	0	0	0	0	0	96	2	98	6	66	0	72	175

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	4	0	16	20	0	0	0	0	0	762	17	779	43	464	0	507	1306
PHF	0.50	0	0.67	0.71	0	0	0	0	0	0.93	0.61	0.93	0.60	0.87	0	0.91	0.94

Start Date 7/31/2012
Start Time 15:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	0	3	6	0	0	0	0	0	162	4	166	5	196	0	201	373
15:45	2	0	9	11	0	0	0	0	0	180	0	180	6	178	0	184	375
16:00	2	0	8	10	0	0	0	0	0	129	0	129	2	217	0	219	358
16:15	5	0	9	14	0	0	0	0	0	120	4	124	8	203	0	211	349
16:30	6	0	19	25	0	0	0	0	0	158	1	159	2	210	0	212	396
16:45	4	0	14	18	0	0	0	0	0	129	0	129	4	197	0	201	348
17:00	6	0	17	23	0	0	0	0	0	140	1	141	4	211	0	215	379
17:15	2	0	9	11	0	0	0	0	0	155	1	156	4	190	0	194	361

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	18	0	59	77	0	0	0	0	0	582	3	585	14	808	0	822	1484
PHF	0.75	0	0.78	0.77	0	0	0	0	0	0.92	0.75	0.92	0.88	0.96	0	0.96	0.94

Table A-4B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6
06:15	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
06:30	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
06:45	0	0	1	1	0	0	0	0	0	7	0	7	0	1	0	1	9
07:00	0	0	1	1	0	0	0	0	0	10	1	11	0	2	0	2	14
07:15	1	0	0	1	0	0	0	0	0	10	2	12	0	4	0	4	17
07:30	0	0	1	1	0	0	0	0	0	3	0	3	0	2	0	2	6
07:45	0	0	1	1	0	0	0	0	0	5	1	6	0	1	0	1	8
08:00	0	0	1	1	0	0	0	0	0	3	1	4	0	4	0	4	9
08:15	0	0	2	2	0	0	0	0	0	4	1	5	0	6	0	6	13
08:30	0	0	0	0	0	0	0	0	0	6	0	6	0	2	0	2	8
08:45	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
09:00	0	0	2	2	0	0	0	0	0	4	0	4	0	1	0	1	7
09:15	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	1	0	3	4	0	0	0	0	0	28	4	32	0	9	0	9	45
PHF	0.25	0	0.75	1.00	0	0	0	0	0	0.70	0.50	0.67	0	0.56	0	0.56	0.66

Start Date 7/31/2012
Start Time 15:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5
15:45	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	2	6
16:00	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
16:30	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	2	3
16:45	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:15	0	0	1	1	0	0	0	0	0	0	0	0	1	2	0	3	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	0	1	1	0	0	0	0	0	4	0	4	2	6	0	8	13
PHF	0	0	0.25	0.25	0	0	0	0	0	0.33	0	0.33	0.50	0.75	0	0.67	0.65

Table A-4C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	0	0	2	0	0	0	0	0	180	3	183	7	43	0	50	235
06:15	2	0	2	4	0	0	0	0	0	214	4	218	8	54	0	62	284
06:30	0	0	1	1	0	0	0	0	0	170	1	171	7	93	0	100	272
06:45	1	0	4	5	0	0	0	0	0	222	2	224	8	71	0	79	308
07:00	1	0	5	6	0	0	0	0	0	204	5	209	18	96	0	114	329
07:15	1	0	4	5	0	0	0	0	0	192	4	196	7	137	0	144	345
07:30	1	0	7	8	0	0	0	0	0	208	4	212	8	127	0	135	355
07:45	2	0	3	5	0	0	0	0	0	186	8	194	10	113	0	123	322
08:00	1	0	4	5	0	0	0	0	0	175	4	179	7	116	0	123	307
08:15	2	0	6	8	0	0	0	0	0	176	5	181	9	102	0	111	300
08:30	2	0	2	4	0	0	0	0	0	173	6	179	15	104	0	119	302
08:45	0	0	10	10	0	0	0	0	0	138	6	144	14	95	0	109	263
09:00	2	0	4	6	0	0	0	0	0	124	3	127	9	89	0	98	231
09:15	2	0	3	5	0	0	0	0	0	100	2	102	6	69	0	75	182

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	5	0	19	24	0	0	0	0	0	790	21	811	43	473	0	516	1351
PHF	0.63	0	0.68	0.75	0	0	0	0	0	0.95	0.66	0.96	0.60	0.86	0	0.90	0.95
% HV	20.0%	0%	15.8%	16.7%	0%	0%	0%	0%	0%	3.5%	19.0%	3.9%	0.0%	1.9%	0%	1.7%	3.3%

Start Date 7/31/2012
Start Time 15:00

Street Name	6th Armored Calvary Rd				---				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	0	3	6	0	0	0	0	0	166	4	170	5	197	0	202	378
15:45	2	0	9	11	0	0	0	0	0	184	0	184	6	180	0	186	381
16:00	2	0	9	11	0	0	0	0	0	129	0	129	2	218	0	220	360
16:15	5	0	9	14	0	0	0	0	0	120	4	124	8	205	0	213	351
16:30	6	0	19	25	0	0	0	0	0	159	1	160	3	211	0	214	399
16:45	4	0	14	18	0	0	0	0	0	132	0	132	4	199	0	203	353
17:00	6	0	17	23	0	0	0	0	0	140	1	141	4	212	0	216	380
17:15	2	0	10	12	0	0	0	0	0	155	1	156	5	192	0	197	365

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	18	0	60	78	0	0	0	0	0	586	3	589	16	814	0	830	1497
PHF	0.75	0	0.79	0.78	0	0	0	0	0	0.92	0.75	0.92	0.80	0.96	0	0.96	0.94
% HV	0.0%	0%	1.7%	1.3%	0%	0%	0%	0%	0%	0.7%	0.0%	0.7%	12.5%	0.7%	0%	1.0%	0.9%

Table A-5A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	7	7	0	0	0	0	0	160	10	170	17	49	3	69	246
06:15	2	0	3	5	0	0	0	0	2	203	14	219	18	58	0	76	300
06:30	3	0	3	6	0	0	0	0	3	154	13	170	11	97	1	109	285
06:45	2	0	16	18	0	0	0	0	1	200	15	216	19	76	1	96	330
07:00	7	0	8	15	0	0	0	0	0	183	16	199	24	105	0	129	343
07:15	6	0	19	25	0	0	0	0	1	164	22	187	29	134	1	164	376
07:30	1	0	10	11	0	0	0	0	0	182	18	200	39	133	0	172	383
07:45	3	0	13	16	0	0	0	0	0	184	11	195	43	119	0	162	373
08:00	7	0	9	16	0	0	1	1	0	155	15	170	32	110	1	143	330
08:15	5	0	13	18	0	0	0	0	0	172	5	177	12	100	0	112	307
08:30	12	0	10	22	0	0	0	0	0	158	7	165	18	112	0	130	317
08:45	6	0	10	16	0	0	0	0	0	142	4	146	12	98	1	111	273
09:00	3	1	11	15	1	0	0	1	0	119	5	124	13	94	0	107	247
09:15	0	0	10	10	1	0	0	1	0	93	3	96	12	73	0	85	192

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	17	0	50	67	0	0	0	0	1	713	67	781	135	491	1	627	1475
PHF	0.61	0	0.66	0.67	0	0	0	0	0.25	0.97	0.76	0.98	0.78	0.92	0.25	0.91	0.96

Start Date 7/31/2012
Start Time 15:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	0	20	23	2	0	1	3	0	161	8	169	7	193	0	200	395
15:45	19	0	59	78	1	0	1	2	0	173	17	190	11	170	1	182	452
16:00	16	0	53	69	0	0	1	1	0	127	9	136	9	214	0	223	429
16:15	14	0	39	53	0	0	0	0	0	118	6	124	11	184	0	195	372
16:30	17	0	43	60	0	0	2	2	0	169	10	179	13	190	0	203	444
16:45	16	0	42	58	0	0	0	0	1	140	5	146	10	188	0	198	402
17:00	15	0	24	39	1	0	1	2	0	146	4	150	9	196	0	205	396
17:15	8	0	11	19	0	0	1	1	0	156	8	164	15	186	0	201	385

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	66	0	194	260	1	0	4	5	0	587	42	629	44	758	1	803	1697
PHF	0.87	0	0.82	0.83	0.25	0	0.50	0.63	0	0.85	0.62	0.83	0.85	0.89	0.25	0.90	0.94

Table A-5B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6
06:15	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
06:30	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
06:45	0	0	0	0	0	0	0	0	0	8	0	8	0	1	0	1	9
07:00	0	0	1	1	0	0	0	0	1	9	1	11	0	2	0	2	14
07:15	0	0	0	0	0	0	0	0	0	11	0	11	0	4	0	4	15
07:30	0	0	0	0	0	0	1	1	0	5	0	5	0	1	0	1	7
07:45	0	0	0	0	0	0	0	0	0	6	0	6	0	1	0	1	7
08:00	1	0	0	1	0	0	0	0	0	4	0	4	0	3	0	3	8
08:15	1	0	0	1	0	0	0	0	0	6	0	6	0	5	0	5	12
08:30	0	0	0	0	0	0	0	0	0	6	0	6	0	2	0	2	8
08:45	0	0	1	1	0	0	0	0	0	3	0	3	1	2	0	3	7
09:00	0	0	0	0	0	0	0	0	0	6	1	7	1	2	0	3	10
09:15	0	0	0	0	0	0	0	0	0	3	1	4	1	3	0	4	8

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	0	0	1	1	0	0	1	1	1	31	1	33	0	8	0	8	43
PHF	0	0	0.25	0.25	0	0	0.25	0.25	0.25	0.70	0.25	0.75	0	0.50	0	0.50	0.72

Start Date 7/31/2012
Start Time 15:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	0	1	1	0	4	0	4	0	0	0	0	5
15:45	0	0	0	0	0	0	0	0	1	3	0	4	0	2	0	2	6
16:00	0	0	1	1	0	0	1	1	0	1	0	1	0	0	0	0	3
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
16:30	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
16:45	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:15	0	0	0	0	0	0	0	0	0	1	0	1	1	3	0	4	5

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	0	1	1	0	0	1	1	1	5	0	6	0	6	0	6	14
PHF	0	0	0.25	0.25	0	0	0.25	0.25	0.25	0.42	0	0.38	0	0.75	0	0.75	0.58

Table A-5C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	7	7	0	0	0	0	0	163	10	173	17	52	3	72	252
06:15	2	0	3	5	0	0	0	0	2	205	14	221	18	60	0	78	304
06:30	3	0	3	6	0	0	0	0	3	156	14	173	11	97	1	109	288
06:45	2	0	16	18	0	0	0	0	1	208	15	224	19	77	1	97	339
07:00	7	0	9	16	0	0	0	0	1	192	17	210	24	107	0	131	357
07:15	6	0	19	25	0	0	0	0	1	175	22	198	29	138	1	168	391
07:30	1	0	10	11	0	0	1	1	0	187	18	205	39	134	0	173	390
07:45	3	0	13	16	0	0	0	0	0	190	11	201	43	120	0	163	380
08:00	8	0	9	17	0	0	1	1	0	159	15	174	32	113	1	146	338
08:15	6	0	13	19	0	0	0	0	0	178	5	183	12	105	0	117	319
08:30	12	0	10	22	0	0	0	0	0	164	7	171	18	114	0	132	325
08:45	6	0	11	17	0	0	0	0	0	145	4	149	13	100	1	114	280
09:00	3	1	11	15	1	0	0	1	0	125	6	131	14	96	0	110	257
09:15	0	0	10	10	1	0	0	1	0	96	4	100	13	76	0	89	200

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	17	0	51	68	0	0	1	1	2	744	68	814	135	499	1	635	1518
PHF	0.61	0	0.67	0.68	0	0	0.25	0.25	0.50	0.97	0.77	0.97	0.78	0.90	0.25	0.92	0.97
% HV	0.0%	0%	2.0%	1.5%	0%	0%	100.0%	100.0%	50.0%	4.2%	1.5%	4.1%	0.0%	1.6%	0.0%	1.3%	2.8%

Start Date 7/31/2012
Start Time 15:00

Street Name	Zimborski Ave				Zimborski Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	0	20	23	2	0	2	4	0	165	8	173	7	193	0	200	400
15:45	19	0	59	78	1	0	1	2	1	176	17	194	11	172	1	184	458
16:00	16	0	54	70	0	0	2	2	0	128	9	137	9	214	0	223	432
16:15	14	0	39	53	0	0	0	0	0	118	6	124	11	186	0	197	374
16:30	17	0	43	60	0	0	2	2	0	170	10	180	13	192	0	205	447
16:45	16	0	42	58	0	0	0	0	1	142	5	148	10	190	0	200	406
17:00	15	0	24	39	1	0	1	2	0	146	4	150	9	197	0	206	397
17:15	8	0	11	19	0	0	1	1	0	157	8	165	16	189	0	205	390

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	66	0	195	261	1	0	5	6	1	592	42	635	44	764	1	809	1711
PHF	0.87	0	0.83	0.84	0.25	0	0.63	0.75	0.25	0.84	0.62	0.82	0.85	0.89	0.25	0.91	0.93
% HV	0.0%	0%	0.5%	0.4%	0.0%	0%	20.0%	16.7%	100.0%	0.8%	0.0%	0.9%	0.0%	0.8%	0.0%	0.7%	0.8%

Table A-6A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	3	0	14	17	1	0	0	1	12	142	13	167	13	63	7	83	268
06:15	5	0	3	8	1	0	0	1	12	179	15	206	22	71	15	108	323
06:30	13	0	6	19	2	1	1	4	10	141	5	156	12	94	16	122	301
06:45	6	1	16	23	1	0	1	2	12	193	5	210	21	90	13	124	359
07:00	12	0	6	18	3	0	3	6	24	172	5	201	27	118	30	175	400
07:15	21	0	18	39	0	0	0	0	14	169	4	187	40	145	17	202	428
07:30	18	3	22	43	2	1	1	4	21	165	7	193	36	157	27	220	460
07:45	14	4	14	32	1	0	1	2	20	179	0	199	19	138	27	184	417
08:00	7	1	15	23	4	0	1	5	12	152	0	164	15	135	16	166	358
08:15	9	1	6	16	0	0	2	2	16	171	0	187	11	101	12	124	329
08:30	9	0	16	25	1	0	2	3	10	157	0	167	9	117	12	138	333
08:45	11	1	9	21	0	0	1	1	13	139	1	153	10	106	10	126	301
09:00	3	0	8	11	0	2	0	2	6	124	1	131	12	102	9	123	267
09:15	4	1	8	13	2	0	2	4	6	96	1	103	5	79	5	89	209

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	65	7	60	132	6	1	5	12	79	685	16	780	122	558	101	781	1705
PHF	0.77	0.44	0.68	0.77	0.50	0.25	0.42	0.50	0.82	0.96	0.57	0.97	0.76	0.89	0.84	0.89	0.93

Start Date 7/31/2012
Start Time 15:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	1	14	18	18	0	18	36	4	172	5	181	6	183	6	195	430
15:45	11	1	28	40	10	1	10	21	2	221	2	225	7	159	2	168	454
16:00	11	0	57	68	23	0	19	42	1	191	1	193	14	191	4	209	512
16:15	12	0	47	59	16	1	18	35	1	154	1	156	9	173	2	184	434
16:30	8	0	43	51	27	3	33	63	0	202	3	205	9	154	1	164	483
16:45	11	0	29	40	16	0	17	33	2	183	1	186	9	176	2	187	446
17:00	6	1	29	36	22	1	21	44	2	159	2	163	19	180	2	201	444
17:15	5	0	21	26	5	1	15	21	1	172	1	174	13	175	2	190	411

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	42	1	175	218	76	5	80	161	4	768	7	779	39	677	9	725	1883
PHF	0.88	0.25	0.77	0.80	0.70	0.42	0.61	0.64	0.50	0.87	0.58	0.87	0.70	0.89	0.56	0.87	0.92

Table A-6B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	3	0	3	0	5	0	5	8
06:15	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
06:30	0	0	1	1	0	0	0	0	0	2	0	2	0	0	0	0	3
06:45	0	0	0	0	1	0	0	1	0	8	0	8	1	1	1	3	12
07:00	0	0	0	0	0	0	0	0	0	9	0	9	2	2	0	4	13
07:15	0	0	0	0	0	0	0	0	1	10	0	11	0	4	2	6	17
07:30	0	0	0	0	0	0	0	0	0	6	0	6	2	1	1	4	10
07:45	0	0	0	0	2	0	0	2	0	5	1	6	1	1	0	2	10
08:00	1	0	0	1	2	0	0	2	0	4	0	4	0	3	1	4	11
08:15	1	0	0	1	0	0	0	0	0	6	0	6	0	3	0	3	10
08:30	0	0	0	0	1	1	0	2	0	6	0	6	0	2	2	4	12
08:45	0	0	0	0	0	0	1	1	0	4	0	4	0	2	1	3	8
09:00	0	0	1	1	0	0	1	1	1	4	0	5	0	2	1	3	10
09:15	0	0	0	0	1	0	1	2	0	3	0	3	1	3	1	5	10

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	0	0	0	0	2	0	0	2	1	30	1	32	5	8	3	16	50
PHF	0	0	0	0	0.25	0	0	0.25	0.25	0.75	0.25	0.73	0.63	0.50	0.38	0.67	0.74

Start Date 7/31/2012
Start Time 15:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	1	0	1	1	0	0	1	0	4	0	4	1	0	0	1	7
15:45	0	0	0	0	0	0	1	1	0	3	0	3	1	1	1	3	7
16:00	0	1	0	1	2	1	0	3	0	2	0	2	0	0	1	1	7
16:15	0	0	1	1	0	0	1	1	0	0	0	0	0	1	1	2	4
16:30	0	0	0	0	1	0	0	1	0	1	0	1	0	2	0	2	4
16:45	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	2	4
17:00	0	1	0	1	2	0	0	2	0	0	0	0	0	1	0	1	4
17:15	0	0	0	0	0	0	0	0	0	1	0	1	0	5	0	5	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	1	1	2	3	1	2	6	0	6	0	6	1	4	3	8	22
PHF	0	0.25	0.25	0.50	0.38	0.25	0.50	0.50	0	0.50	0	0.50	0.25	0.50	0.75	0.67	0.79

Table A-6C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	3	0	14	17	1	0	0	1	12	145	13	170	13	68	7	88	276
06:15	5	0	3	8	1	0	0	1	12	181	15	208	22	72	15	109	326
06:30	13	0	7	20	2	1	1	4	10	143	5	158	12	94	16	122	304
06:45	6	1	16	23	2	0	1	3	12	201	5	218	22	91	14	127	371
07:00	12	0	6	18	3	0	3	6	24	181	5	210	29	120	30	179	413
07:15	21	0	18	39	0	0	0	0	15	179	4	198	40	149	19	208	445
07:30	18	3	22	43	2	1	1	4	21	171	7	199	38	158	28	224	470
07:45	14	4	14	32	3	0	1	4	20	184	1	205	20	139	27	186	427
08:00	8	1	15	24	6	0	1	7	12	156	0	168	15	138	17	170	369
08:15	10	1	6	17	0	0	2	2	16	177	0	193	11	104	12	127	339
08:30	9	0	16	25	2	1	2	5	10	163	0	173	9	119	14	142	345
08:45	11	1	9	21	0	0	2	2	13	143	1	157	10	108	11	129	309
09:00	3	0	9	12	0	2	1	3	7	128	1	136	12	104	10	126	277
09:15	4	1	8	13	3	0	3	6	6	99	1	106	6	82	6	94	219

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	65	7	60	132	8	1	5	14	80	715	17	812	127	566	104	797	1755
PHF	0.77	0.44	0.68	0.77	0.67	0.25	0.42	0.58	0.83	0.97	0.61	0.97	0.79	0.90	0.87	0.89	0.93
% HV	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	14.3%	1.3%	4.2%	5.9%	3.9%	3.9%	1.4%	2.9%	2.0%	2.8%

Start Date 7/31/2012
Start Time 15:00

Street Name	Taylor Ave				Taylor Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	3	2	14	19	19	0	18	37	4	176	5	185	7	183	6	196	437
15:45	11	1	28	40	10	1	11	22	2	224	2	228	8	160	3	171	461
16:00	11	1	57	69	25	1	19	45	1	193	1	195	14	191	5	210	519
16:15	12	0	48	60	16	1	19	36	1	154	1	156	9	174	3	186	438
16:30	8	0	43	51	28	3	33	64	0	203	3	206	9	156	1	166	487
16:45	11	0	29	40	16	0	17	33	3	184	1	188	9	178	2	189	450
17:00	6	2	29	37	24	1	21	46	2	159	2	163	19	181	2	202	448
17:15	5	0	21	26	5	1	15	21	1	173	1	175	13	180	2	195	417

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	42	2	176	220	79	6	82	167	4	774	7	785	40	681	12	733	1905
PHF	0.88	0.50	0.77	0.80	0.71	0.50	0.62	0.65	0.50	0.86	0.58	0.86	0.71	0.89	0.60	0.87	0.92
% HV	0.0%	50.0%	0.6%	0.9%	3.8%	16.7%	2.4%	3.6%	0.0%	0.8%	0.0%	0.8%	2.5%	0.6%	25.0%	1.1%	1.2%

Table A-7A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	2	4	8	7	53	48	108	79	39	14	132	57	65	9	131	379
06:15	2	6	10	18	4	33	67	104	101	45	16	162	38	93	23	154	438
06:30	5	22	27	54	6	17	40	63	112	66	8	186	14	85	20	119	422
06:45	3	7	8	18	5	36	59	100	113	70	14	197	22	102	35	159	474
07:00	5	8	5	18	7	20	68	95	122	80	6	208	15	135	32	182	503
07:15	15	14	16	45	5	19	87	111	103	90	10	203	18	141	31	190	549
07:30	9	35	33	77	9	28	72	109	116	81	8	205	10	149	35	194	585
07:45	9	12	9	30	8	20	58	86	105	64	14	183	18	118	37	173	472
08:00	13	19	12	44	8	25	44	77	107	73	14	194	13	115	35	163	478
08:15	3	11	8	22	7	19	40	66	109	75	8	192	24	93	32	149	429
08:30	4	7	6	17	8	21	52	81	97	64	12	173	15	99	23	137	408
08:45	2	3	9	14	13	31	54	98	79	62	16	157	25	102	16	143	412
09:00	10	5	5	20	2	25	50	77	72	57	8	137	9	76	13	98	332
09:15	5	8	11	24	6	17	38	61	55	48	9	112	12	70	7	89	286

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	32	64	62	158	26	103	286	415	454	321	38	813	65	527	133	725	2111
PHF	0.53	0.46	0.47	0.51	0.72	0.72	0.82	0.93	0.93	0.89	0.68	0.98	0.74	0.88	0.95	0.93	0.90

Start Date 7/31/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	14	18	11	43	28	7	122	157	69	142	5	216	3	71	8	82	498
15:45	6	17	18	41	33	6	108	147	88	163	6	257	4	62	10	76	521
16:00	15	29	22	66	36	10	138	184	75	216	1	292	3	84	9	96	638
16:15	4	25	22	51	40	10	100	150	88	153	3	244	10	79	10	99	544
16:30	5	39	24	68	40	10	96	146	105	198	9	312	5	82	7	94	620
16:45	7	27	14	48	35	15	102	152	78	157	4	239	7	94	14	115	554
17:00	16	23	17	56	37	9	123	169	62	156	4	222	6	95	16	117	564
17:15	6	24	25	55	32	15	102	149	56	165	6	227	9	77	6	92	523

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	31	120	82	233	151	45	436	632	346	724	17	1087	25	339	40	404	2356
PHF	0.52	0.77	0.85	0.86	0.94	0.75	0.79	0.86	0.82	0.84	0.47	0.87	0.63	0.90	0.71	0.88	0.92

Table A-7B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	2	2	1	2	0	3	0	2	0	2	7
06:15	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
06:30	0	1	1	2	0	0	1	1	2	1	0	3	0	0	0	0	6
06:45	0	1	0	1	0	0	0	0	2	7	1	10	0	2	0	2	13
07:00	0	4	0	4	1	0	2	3	1	5	0	6	0	2	0	2	15
07:15	0	2	0	2	1	1	1	3	2	4	3	9	0	5	0	5	19
07:30	0	1	0	1	0	0	2	2	4	1	1	6	0	1	0	1	10
07:45	0	0	0	0	0	1	1	2	3	3	2	8	0	1	1	2	12
08:00	0	0	1	1	0	0	1	1	3	1	1	5	0	2	0	2	9
08:15	0	0	0	0	1	0	3	4	2	2	0	4	0	1	0	1	9
08:30	0	2	0	2	0	0	2	2	3	5	0	8	0	1	0	1	13
08:45	0	0	0	0	1	0	1	2	0	3	0	3	0	2	0	2	7
09:00	0	1	0	1	0	1	1	2	1	4	0	5	0	3	3	6	14
09:15	0	0	0	0	0	1	1	2	2	1	0	3	2	5	0	7	12

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	8	0	8	2	1	5	8	9	17	5	31	0	10	0	10	57
PHF	0	0.50	0	0.50	0.50	0.25	0.63	0.67	0.56	0.61	0.42	0.78	0	0.50	0	0.50	0.75

Start Date 7/31/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	1	1	2	1	3	0	4	1	0	0	1	7
15:45	0	1	0	1	0	0	2	2	2	2	0	4	0	1	0	1	8
16:00	0	0	0	0	1	1	0	2	3	0	0	3	0	0	1	1	6
16:15	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	4
16:30	0	0	0	0	0	0	2	2	1	1	0	2	0	0	0	0	4
16:45	0	0	0	0	0	1	2	3	1	1	0	2	0	1	0	1	6
17:00	0	0	0	0	0	1	0	1	3	0	0	3	0	0	0	0	4
17:15	0	0	0	0	0	0	4	4	1	0	0	1	0	1	0	1	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	1	1	1	2	5	8	5	3	0	8	0	2	1	3	20
PHF	0	0	0.25	0.25	0.25	0.50	0.63	0.67	0.42	0.75	0	0.67	0	0.50	0.25	0.75	0.83

Table A-7C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	2	4	8	7	53	50	110	80	41	14	135	57	67	9	133	386
06:15	2	6	10	18	4	33	67	104	101	47	16	164	38	94	23	155	441
06:30	5	23	28	56	6	17	41	64	114	67	8	189	14	85	20	119	428
06:45	3	8	8	19	5	36	59	100	115	77	15	207	22	104	35	161	487
07:00	5	12	5	22	8	20	70	98	123	85	6	214	15	137	32	184	518
07:15	15	16	16	47	6	20	88	114	105	94	13	212	18	146	31	195	568
07:30	9	36	33	78	9	28	74	111	120	82	9	211	10	150	35	195	595
07:45	9	12	9	30	8	21	59	88	108	67	16	191	18	119	38	175	484
08:00	13	19	13	45	8	25	45	78	110	74	15	199	13	117	35	165	487
08:15	3	11	8	22	8	19	43	70	111	77	8	196	24	94	32	150	438
08:30	4	9	6	19	8	21	54	83	100	69	12	181	15	100	23	138	421
08:45	2	3	9	14	14	31	55	100	79	65	16	160	25	104	16	145	419
09:00	10	6	5	21	2	26	51	79	73	61	8	142	9	79	16	104	346
09:15	5	8	11	24	6	18	39	63	57	49	9	115	14	75	7	96	298

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	32	72	62	166	28	104	291	423	463	338	43	844	65	537	133	735	2168
PHF	0.53	0.50	0.47	0.53	0.78	0.72	0.83	0.93	0.94	0.90	0.72	0.99	0.74	0.90	0.95	0.94	0.91
% HV	0.0%	11.1%	0.0%	4.8%	7.1%	1.0%	1.7%	1.9%	1.9%	5.0%	11.6%	3.7%	0.0%	1.9%	0.0%	1.4%	2.6%

Start Date 7/31/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	14	18	11	43	28	8	123	159	70	145	5	220	4	71	8	83	505
15:45	6	18	18	42	33	6	110	149	90	165	6	261	4	63	10	77	529
16:00	15	29	22	66	37	11	138	186	78	216	1	295	3	84	10	97	644
16:15	4	25	23	52	40	10	101	151	88	154	3	245	10	80	10	100	548
16:30	5	39	24	68	40	10	98	148	106	199	9	314	5	82	7	94	624
16:45	7	27	14	48	35	16	104	155	79	158	4	241	7	95	14	116	560
17:00	16	23	17	56	37	10	123	170	65	156	4	225	6	95	16	117	568
17:15	6	24	25	55	32	15	106	153	57	165	6	228	9	78	6	93	529

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	31	120	83	234	152	47	441	640	351	727	17	1095	25	341	41	407	2376
PHF	0.52	0.77	0.86	0.86	0.95	0.73	0.80	0.86	0.83	0.84	0.47	0.87	0.63	0.90	0.73	0.88	0.92
% HV	0.0%	0.0%	1.2%	0.4%	0.7%	4.3%	1.1%	1.3%	1.4%	0.4%	0.0%	0.7%	0.0%	0.6%	2.4%	0.7%	0.8%

Table A-8A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	2	3	7	0	13	2	15	1	19	19	39	74	58	4	136	197
06:15	4	2	3	9	0	19	1	20	0	12	29	41	85	75	8	168	238
06:30	3	1	3	7	0	14	1	15	1	28	34	63	63	68	4	135	220
06:45	6	2	3	11	0	24	3	27	1	19	26	46	91	97	3	191	275
07:00	7	5	5	17	0	29	1	30	4	23	38	65	77	110	3	190	302
07:15	10	3	7	20	1	30	1	32	13	25	29	67	75	108	9	192	311
07:30	31	10	9	50	0	31	2	33	12	36	42	90	70	91	9	170	343
07:45	24	2	15	41	0	29	1	30	9	23	30	62	60	103	9	172	305
08:00	22	9	24	55	1	19	4	24	2	28	38	68	100	87	12	199	346
08:15	18	12	15	45	1	36	5	42	7	21	37	65	100	79	5	184	336
08:30	15	9	25	49	1	31	10	42	8	16	39	63	115	74	8	197	351
08:45	22	8	25	55	3	19	5	27	15	21	37	73	90	71	6	167	322
09:00	28	7	18	53	0	20	6	26	4	23	36	63	51	44	6	101	243
09:15	24	23	23	70	1	33	3	37	4	23	29	56	57	50	2	109	272

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	77	38	89	204	6	105	24	135	32	86	151	269	405	311	31	747	1355
PHF	0.88	0.79	0.89	0.93	0.50	0.73	0.60	0.80	0.53	0.77	0.97	0.92	0.88	0.89	0.65	0.94	0.97

Start Date 7/31/2012
Start Time 15:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	33	8	67	108	8	11	6	25	11	97	16	124	20	28	0	48	305
15:45	30	18	58	106	11	8	12	31	7	125	21	153	14	19	0	33	323
16:00	19	17	97	133	5	7	2	14	8	139	23	170	14	35	4	53	370
16:15	47	10	68	125	7	9	8	24	1	142	17	160	12	23	2	37	346
16:30	25	18	71	114	6	8	19	33	3	158	11	172	10	29	0	39	358
16:45	20	7	45	72	6	8	16	30	1	148	17	166	8	37	2	47	315
17:00	28	4	33	65	9	9	11	29	1	148	12	161	13	35	3	51	306
17:15	22	13	38	73	3	5	3	11	2	140	12	154	12	33	0	45	283

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	121	63	294	478	29	32	41	102	19	564	72	655	50	106	6	162	1397
PHF	0.64	0.88	0.76	0.90	0.66	0.89	0.54	0.77	0.59	0.89	0.78	0.95	0.89	0.76	0.38	0.76	0.94

Table A-8B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2
06:15	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	3
06:30	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
06:45	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	2
07:00	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	3
07:15	1	1	0	2	0	0	0	0	0	2	1	3	0	0	0	0	5
07:30	3	1	3	7	0	0	0	0	0	2	0	2	0	0	0	0	9
07:45	1	1	0	2	0	1	0	1	0	2	0	2	1	0	0	1	6
08:00	0	2	1	3	0	0	0	0	0	0	1	1	0	0	0	0	4
08:15	1	0	0	1	1	1	1	3	0	0	1	1	1	0	0	1	6
08:30	0	0	1	1	0	0	0	0	0	3	0	3	0	0	0	0	4
08:45	2	0	0	2	0	1	0	1	0	0	0	0	1	0	0	1	4
09:00	3	1	1	5	0	1	0	1	0	1	2	3	2	0	0	2	11
09:15	2	1	2	5	0	0	0	0	0	1	0	1	0	0	0	0	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	3	2	2	7	1	2	1	4	0	3	2	5	2	0	0	2	18
PHF	0.38	0.25	0.50	0.58	0.25	0.50	0.25	0.33	0	0.25	0.50	0.42	0.50	0	0	0.50	0.75

Start Date 7/31/2012
Start Time 15:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	1	1	2	0	0	0	0	0	1	2	3	0	0	0	0	5
15:45	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
16:00	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
16:15	0	2	0	2	0	0	0	0	0	0	1	1	0	0	0	0	3
16:30	1	0	1	2	0	1	0	1	0	0	0	0	1	0	0	1	4
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	2	2	2	6	0	3	0	3	0	0	1	1	1	1	0	2	12
PHF	0.50	0.25	0.50	0.75	0	0.38	0	0.38	0	0	0.25	0.25	0.25	0.25	0	0.50	0.75

Table A-8C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	2	3	7	0	13	2	15	1	20	19	40	75	58	4	137	199
06:15	4	2	3	9	0	20	1	21	0	13	29	42	85	76	8	169	241
06:30	4	1	3	8	0	14	1	15	1	29	34	64	63	68	4	135	222
06:45	6	2	3	11	0	24	3	27	1	20	27	48	91	97	3	191	277
07:00	7	5	5	17	0	29	1	30	4	24	40	68	77	110	3	190	305
07:15	11	4	7	22	1	30	1	32	13	27	30	70	75	108	9	192	316
07:30	34	11	12	57	0	31	2	33	12	38	42	92	70	91	9	170	352
07:45	25	3	15	43	0	30	1	31	9	25	30	64	61	103	9	173	311
08:00	22	11	25	58	1	19	4	24	2	28	39	69	100	87	12	199	350
08:15	19	12	15	46	2	37	6	45	7	21	38	66	101	79	5	185	342
08:30	15	9	26	50	1	31	10	42	8	19	39	66	115	74	8	197	355
08:45	24	8	25	57	3	20	5	28	15	21	37	73	91	71	6	168	326
09:00	31	8	19	58	0	21	6	27	4	24	38	66	53	44	6	103	254
09:15	26	24	25	75	1	33	3	37	4	24	29	57	57	50	2	109	278

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	80	40	91	211	7	107	25	139	32	89	153	274	407	311	31	749	1373
PHF	0.83	0.83	0.88	0.91	0.58	0.72	0.63	0.77	0.53	0.79	0.98	0.94	0.88	0.89	0.65	0.94	0.97
% HV	3.8%	5.0%	2.2%	3.3%	14.3%	1.9%	4.0%	2.9%	0.0%	3.4%	1.3%	1.8%	0.5%	0.0%	0.0%	0.3%	1.3%

Start Date 7/31/2012
Start Time 15:00

Street Name	Ernie Pyle St				Ernie Pyle St				Mapes Rd				Mapes Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	33	9	68	110	8	11	6	25	11	98	18	127	20	28	0	48	310
15:45	30	18	59	107	11	8	12	31	7	125	21	153	14	20	0	34	325
16:00	20	17	97	134	5	9	2	16	8	139	23	170	14	35	4	53	373
16:15	47	12	68	127	7	9	8	24	1	142	18	161	12	23	2	37	349
16:30	26	18	72	116	6	9	19	34	3	158	11	172	11	29	0	40	362
16:45	20	7	45	72	6	8	16	30	1	148	17	166	8	37	2	47	315
17:00	28	4	33	65	9	10	11	30	1	148	12	161	13	36	3	52	308
17:15	22	13	38	73	3	5	3	11	2	140	12	154	12	33	0	45	283

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	123	65	296	484	29	35	41	105	19	564	73	656	51	107	6	164	1409
PHF	0.65	0.90	0.76	0.90	0.66	0.97	0.54	0.77	0.59	0.89	0.79	0.95	0.91	0.76	0.38	0.77	0.94
% HV	1.6%	3.1%	0.7%	1.2%	0.0%	8.6%	0.0%	2.9%	0.0%	0.0%	1.4%	0.2%	2.0%	0.9%	0.0%	1.2%	0.9%

Table A-9A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	58	104	8	170	4	116	6	126	0	0	1	1	85	24	26	135	432
06:15	54	125	18	197	9	122	10	141	2	2	2	6	81	9	28	118	462
06:30	54	131	16	201	11	172	15	198	1	9	12	22	117	10	41	168	589
06:45	76	167	26	269	9	146	16	171	1	4	2	7	111	26	35	172	619
07:00	74	204	23	301	9	172	16	197	5	4	11	20	125	17	46	188	706
07:15	99	230	28	357	9	173	20	202	1	5	13	19	146	25	49	220	798
07:30	84	259	45	388	13	204	19	236	4	10	10	24	144	3	41	188	836
07:45	86	226	36	348	14	173	9	196	0	6	11	17	129	13	43	185	746
08:00	4	286	26	316	17	193	0	210	3	0	0	3	118	1	53	172	701
08:15	0	231	29	260	18	167	0	185	0	0	0	0	89	0	51	140	585
08:30	0	211	34	245	26	136	0	162	0	0	0	0	110	0	47	157	564
08:45	1	190	34	225	9	113	0	122	0	0	0	0	111	0	34	145	492
09:00	0	184	35	219	21	124	0	145	0	0	0	0	65	0	30	95	459
09:15	1	154	31	186	21	113	0	134	0	0	0	0	65	0	32	97	417

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	343	919	132	1394	45	722	64	831	10	25	45	80	544	58	179	781	3086
PHF	0.87	0.89	0.73	0.90	0.80	0.88	0.80	0.88	0.50	0.63	0.87	0.83	0.93	0.58	0.91	0.89	0.92

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	1	175	95	271	33	227	0	260	33	8	66	107	63	0	37	100	738
15:45	0	147	73	220	52	227	0	279	13	7	28	48	80	0	32	112	659
16:00	0	187	101	288	50	231	0	281	39	13	111	163	54	1	29	84	816
16:15	2	160	123	285	67	324	1	392	31	13	97	141	56	0	32	88	906
16:30	1	175	96	272	46	277	0	323	22	17	102	141	62	0	50	112	848
16:45	0	208	115	323	49	288	0	337	25	20	91	136	93	0	47	140	936
17:00	0	219	143	362	61	274	0	335	23	11	57	91	80	0	41	121	909
17:15	0	207	132	339	94	314	0	408	29	14	64	107	74	0	38	112	966

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	1	809	486	1296	250	1153	0	1403	99	62	314	475	309	0	176	485	3659
PHF	0.25	0.92	0.85	0.90	0.66	0.92	0	0.86	0.85	0.78	0.77	0.84	0.83	0	0.88	0.87	0.95

Table A-9B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	3	0	3	1	1	0	2	0	0	1	1	0	0	1	1	7
06:15	1	2	0	3	0	8	0	8	0	0	0	0	0	0	1	1	12
06:30	0	5	0	5	0	4	0	4	0	0	0	0	0	0	0	0	9
06:45	1	7	1	9	0	3	0	3	0	0	1	1	0	0	0	0	13
07:00	2	7	0	9	0	2	0	2	0	0	0	0	0	0	0	0	11
07:15	0	3	1	4	0	4	0	4	0	0	0	0	0	0	0	0	8
07:30	0	12	1	13	1	9	0	10	1	0	0	1	1	0	1	2	26
07:45	1	5	0	6	0	2	0	2	0	0	0	0	2	0	0	2	10
08:00	0	7	0	7	0	4	0	4	0	0	0	0	0	0	0	0	11
08:15	0	8	2	10	0	5	0	5	0	0	0	0	2	0	1	3	18
08:30	0	5	1	6	0	4	0	4	0	0	0	0	0	0	0	0	10
08:45	0	5	3	8	0	10	0	10	0	0	0	0	1	0	0	1	19
09:00	0	2	5	7	2	1	0	3	0	0	0	0	2	0	0	2	12
09:15	0	7	2	9	0	9	0	9	0	0	0	0	1	0	0	1	19

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	3	27	2	32	1	17	0	18	1	0	0	1	3	0	1	4	55
PHF	0.38	0.56	0.50	0.62	0.25	0.47	0	0.45	0.25	0	0	0.25	0.38	0	0.25	0.50	0.53

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	5	1	6	0	5	0	5	0	0	1	1	0	0	1	1	13
15:45	0	3	1	4	0	8	0	8	0	0	0	0	3	0	0	3	15
16:00	0	4	0	4	1	5	0	6	0	0	0	0	1	0	0	1	11
16:15	0	2	1	3	0	6	0	6	0	0	1	1	3	0	0	3	13
16:30	0	3	0	3	1	3	0	4	0	0	0	0	0	0	0	0	7
16:45	0	6	1	7	1	4	0	5	0	0	1	1	2	0	0	2	15
17:00	0	3	0	3	1	2	0	3	0	0	0	0	0	0	1	1	7
17:15	0	1	0	1	0	2	0	2	0	0	1	1	0	0	0	0	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	13	1	14	3	11	0	14	0	0	2	2	2	0	1	3	33
PHF	0	0.54	0.25	0.50	0.75	0.69	0	0.70	0	0	0.50	0.50	0.25	0	0.25	0.38	0.55

Table A-9C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	58	107	8	173	5	117	6	128	0	0	2	2	85	24	27	136	439
06:15	55	127	18	200	9	130	10	149	2	2	2	6	81	9	29	119	474
06:30	54	136	16	206	11	176	15	202	1	9	12	22	117	10	41	168	598
06:45	77	174	27	278	9	149	16	174	1	4	3	8	111	26	35	172	632
07:00	76	211	23	310	9	174	16	199	5	4	11	20	125	17	46	188	717
07:15	99	233	29	361	9	177	20	206	1	5	13	19	146	25	49	220	806
07:30	84	271	46	401	14	213	19	246	5	10	10	25	145	3	42	190	862
07:45	87	231	36	354	14	175	9	198	0	6	11	17	131	13	43	187	756
08:00	4	293	26	323	17	197	0	214	3	0	0	3	118	1	53	172	712
08:15	0	239	31	270	18	172	0	190	0	0	0	0	91	0	52	143	603
08:30	0	216	35	251	26	140	0	166	0	0	0	0	110	0	47	157	574
08:45	1	195	37	233	9	123	0	132	0	0	0	0	112	0	34	146	511
09:00	0	186	40	226	23	125	0	148	0	0	0	0	67	0	30	97	471
09:15	1	161	33	195	21	122	0	143	0	0	0	0	66	0	32	98	436

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	346	946	134	1426	46	739	64	849	11	25	45	81	547	58	180	785	3141
PHF	0.87	0.87	0.73	0.89	0.82	0.87	0.80	0.86	0.55	0.63	0.87	0.81	0.94	0.58	0.92	0.89	0.91
% HV	0.9%	2.9%	1.5%	2.2%	2.2%	2.3%	0.0%	2.1%	9.1%	0.0%	0.0%	1.2%	0.5%	0.0%	0.6%	0.5%	1.8%

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Llewellyn Ave				Blue Water Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	1	180	96	277	33	232	0	265	33	8	67	108	63	0	38	101	751
15:45	0	150	74	224	52	235	0	287	13	7	28	48	83	0	32	115	674
16:00	0	191	101	292	51	236	0	287	39	13	111	163	55	1	29	85	827
16:15	2	162	124	288	67	330	1	398	31	13	98	142	59	0	32	91	919
16:30	1	178	96	275	47	280	0	327	22	17	102	141	62	0	50	112	855
16:45	0	214	116	330	50	292	0	342	25	20	92	137	95	0	47	142	951
17:00	0	222	143	365	62	276	0	338	23	11	57	91	80	0	42	122	916
17:15	0	208	132	340	94	316	0	410	29	14	65	108	74	0	38	112	970

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	1	822	487	1310	253	1164	0	1417	99	62	316	477	311	0	177	488	3692
PHF	0.25	0.93	0.85	0.90	0.67	0.92	0	0.86	0.85	0.78	0.77	0.85	0.82	0	0.89	0.86	0.95
% HV	0.0%	1.6%	0.2%	1.1%	1.2%	0.9%	0%	1.0%	0.0%	0.0%	0.6%	0.4%	0.6%	0%	0.6%	0.6%	0.9%

Table A-10A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	67	58	8	133	6	51	52	109	5	2	15	22	59	22	11	92	356
06:15	67	80	16	163	15	83	71	169	4	2	4	10	51	25	11	87	429
06:30	45	87	13	145	9	81	47	137	7	7	25	39	94	15	23	132	453
06:45	87	118	8	213	9	82	84	175	4	3	10	17	77	28	35	140	545
07:00	119	124	10	253	20	110	64	194	12	6	17	35	86	35	30	151	633
07:15	90	166	13	269	12	108	85	205	16	4	12	32	100	28	20	148	654
07:30	82	164	19	265	11	100	61	172	21	9	28	58	95	17	41	153	648
07:45	99	173	16	288	15	92	39	146	13	7	20	40	102	31	29	162	636
08:00	134	158	15	307	12	80	56	148	12	9	25	46	90	35	40	165	666
08:15	112	157	18	287	14	97	53	164	11	10	22	43	83	23	33	139	633
08:30	114	138	14	266	11	73	60	144	16	4	28	48	66	18	19	103	561
08:45	85	124	22	231	10	66	45	121	17	5	25	47	39	29	33	101	500
09:00	77	122	11	210	12	51	36	99	16	9	25	50	52	11	24	87	446
09:15	60	108	22	190	14	90	21	125	18	4	25	47	35	10	20	65	427

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	405	661	63	1129	50	380	241	671	62	29	85	176	387	111	130	628	2604
PHF	0.76	0.96	0.83	0.92	0.83	0.88	0.71	0.82	0.74	0.81	0.76	0.76	0.95	0.79	0.79	0.95	0.98

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	43	146	40	229	31	138	9	178	80	12	100	192	27	2	24	53	652
15:45	23	141	49	213	15	144	12	171	50	13	87	150	40	8	22	70	604
16:00	31	159	78	268	24	173	8	205	82	20	118	220	29	5	18	52	745
16:15	40	139	43	222	44	224	7	275	72	20	107	199	31	4	11	46	742
16:30	15	163	70	248	33	181	7	221	74	26	103	203	45	5	16	66	738
16:45	43	196	71	310	42	196	6	244	49	19	127	195	42	4	23	69	818
17:00	38	185	63	286	39	204	7	250	50	22	114	186	35	4	28	67	789
17:15	25	188	70	283	30	250	8	288	42	20	105	167	42	9	17	68	806

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	121	732	274	1127	144	831	28	1003	215	87	449	751	164	22	84	270	3151
PHF	0.70	0.93	0.96	0.91	0.86	0.83	0.88	0.87	0.73	0.84	0.88	0.92	0.91	0.61	0.75	0.98	0.96

Table A-10B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	2	0	2	0	1	1	2	0	0	2	2	1	0	0	1	7
06:15	0	2	1	3	0	2	0	2	0	0	1	1	1	0	0	1	7
06:30	0	6	0	6	1	4	0	5	0	0	0	0	0	0	0	0	11
06:45	0	5	0	5	0	3	0	3	2	0	0	2	0	0	1	1	11
07:00	0	8	0	8	1	2	1	4	0	0	0	0	0	0	2	2	14
07:15	0	3	0	3	0	6	0	6	0	0	0	0	0	0	0	0	9
07:30	0	10	1	11	2	8	1	11	0	0	0	0	1	0	0	1	23
07:45	0	8	0	8	0	3	3	6	0	0	1	1	0	0	1	1	16
08:00	1	4	2	7	0	3	0	3	2	0	1	3	0	0	1	1	14
08:15	2	7	1	10	0	4	1	5	2	0	1	3	0	0	0	0	18
08:30	0	3	1	4	1	7	3	11	1	0	0	1	0	0	0	0	16
08:45	0	5	0	5	1	4	1	6	3	0	4	7	0	0	1	1	19
09:00	0	2	1	3	0	4	1	5	3	0	0	3	0	0	0	0	11
09:15	0	7	1	8	0	7	4	11	0	0	2	2	1	0	0	1	22

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	1	25	3	29	2	20	4	26	2	0	2	4	1	0	2	3	62
PHF	0.25	0.63	0.38	0.66	0.25	0.63	0.33	0.59	0.25	0	0.50	0.33	0.25	0	0.50	0.75	0.67

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	3	1	4	1	4	0	5	1	0	0	1	1	0	0	1	11
15:45	1	3	0	4	0	6	0	6	0	0	0	0	1	0	1	2	12
16:00	0	4	1	5	0	6	0	6	0	0	0	0	0	0	0	0	11
16:15	0	2	0	2	0	4	0	4	0	0	1	1	1	0	0	1	8
16:30	1	2	0	3	0	5	0	5	0	0	0	0	0	0	0	0	8
16:45	1	6	0	7	1	5	0	6	0	0	1	1	0	0	0	0	14
17:00	0	3	0	3	0	3	0	3	0	0	0	0	0	0	1	1	7
17:15	0	1	0	1	0	3	0	3	0	0	1	1	0	0	0	0	5

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	2	12	0	14	1	16	0	17	0	0	2	2	0	0	1	1	34
PHF	0.50	0.50	0	0.50	0.25	0.80	0	0.71	0	0	0.50	0.50	0	0	0.25	0.25	0.61

Table A-10C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	67	60	8	135	6	52	53	111	5	2	17	24	60	22	11	93	363
06:15	67	82	17	166	15	85	71	171	4	2	5	11	52	25	11	88	436
06:30	45	93	13	151	10	85	47	142	7	7	25	39	94	15	23	132	464
06:45	87	123	8	218	9	85	84	178	6	3	10	19	77	28	36	141	556
07:00	119	132	10	261	21	112	65	198	12	6	17	35	86	35	32	153	647
07:15	90	169	13	272	12	114	85	211	16	4	12	32	100	28	20	148	663
07:30	82	174	20	276	13	108	62	183	21	9	28	58	96	17	41	154	671
07:45	99	181	16	296	15	95	42	152	13	7	21	41	102	31	30	163	652
08:00	135	162	17	314	12	83	56	151	14	9	26	49	90	35	41	166	680
08:15	114	164	19	297	14	101	54	169	13	10	23	46	83	23	33	139	651
08:30	114	141	15	270	12	80	63	155	17	4	28	49	66	18	19	103	577
08:45	85	129	22	236	11	70	46	127	20	5	29	54	39	29	34	102	519
09:00	77	124	12	213	12	55	37	104	19	9	25	53	52	11	24	87	457
09:15	60	115	23	198	14	97	25	136	18	4	27	49	36	10	20	66	449

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	406	686	66	1158	52	400	245	697	64	29	87	180	388	111	132	631	2666
PHF	0.75	0.95	0.83	0.92	0.87	0.88	0.72	0.83	0.76	0.81	0.78	0.78	0.95	0.79	0.80	0.95	0.98
% HV	0.2%	3.6%	4.5%	2.5%	3.8%	5.0%	1.6%	3.7%	3.1%	0.0%	2.3%	2.2%	0.3%	0.0%	1.5%	0.5%	2.3%

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Mapes Rd				Charter Oaks Blvd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	43	149	41	233	32	142	9	183	81	12	100	193	28	2	24	54	663
15:45	24	144	49	217	15	150	12	177	50	13	87	150	41	8	23	72	616
16:00	31	163	79	273	24	179	8	211	82	20	118	220	29	5	18	52	756
16:15	40	141	43	224	44	228	7	279	72	20	108	200	32	4	11	47	750
16:30	16	165	70	251	33	186	7	226	74	26	103	203	45	5	16	66	746
16:45	44	202	71	317	43	201	6	250	49	19	128	196	42	4	23	69	832
17:00	38	188	63	289	39	207	7	253	50	22	114	186	35	4	29	68	796
17:15	25	189	70	284	30	253	8	291	42	20	106	168	42	9	17	68	811

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	123	744	274	1141	145	847	28	1020	215	87	451	753	164	22	85	271	3185
PHF	0.70	0.92	0.96	0.90	0.84	0.84	0.88	0.88	0.73	0.84	0.88	0.93	0.91	0.61	0.73	0.98	0.96
% HV	1.6%	1.6%	0.0%	1.2%	0.7%	1.9%	0.0%	1.7%	0.0%	0.0%	0.4%	0.3%	0.0%	0.0%	1.2%	0.4%	1.1%

Table A-11A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	23	42	9	74	11	75	53	139	13	11	5	29	40	65	17	122	364
06:15	26	48	11	85	7	103	41	151	9	7	9	25	54	47	30	131	392
06:30	36	79	13	128	11	81	37	129	20	14	12	46	49	53	31	133	436
06:45	30	113	11	154	7	90	64	161	16	14	7	37	71	85	39	195	547
07:00	27	119	12	158	14	128	61	203	17	22	15	54	72	75	40	187	602
07:15	43	144	14	201	17	120	75	212	22	26	9	57	68	75	38	181	651
07:30	32	167	27	226	10	101	76	187	25	28	8	61	46	81	39	166	640
07:45	37	145	19	201	13	99	51	163	24	23	16	63	38	92	40	170	597
08:00	53	147	23	223	15	90	63	168	23	11	14	48	47	74	29	150	589
08:15	44	150	13	207	6	99	59	164	20	18	15	53	45	71	30	146	570
08:30	27	123	14	164	5	93	48	146	14	17	10	41	44	57	24	125	476
08:45	35	112	15	162	12	86	44	142	17	17	6	40	26	60	24	110	454
09:00	44	123	18	185	14	69	46	129	21	8	8	37	23	36	14	73	424
09:15	19	104	18	141	10	86	56	152	20	12	9	41	24	33	17	74	408

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	139	575	72	786	54	448	263	765	88	99	48	235	224	323	157	704	2490
PHF	0.81	0.86	0.67	0.87	0.79	0.88	0.87	0.90	0.88	0.88	0.75	0.93	0.78	0.88	0.98	0.94	0.96

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	19	154	54	227	34	89	40	163	66	67	40	173	21	26	20	67	630
15:45	18	141	48	207	30	129	45	204	65	67	35	167	17	30	21	68	646
16:00	24	161	69	254	29	152	33	214	76	67	47	190	24	31	29	84	742
16:15	21	160	45	226	35	179	37	251	75	65	59	199	24	36	19	79	755
16:30	20	165	73	258	41	155	36	232	72	95	60	227	24	33	18	75	792
16:45	29	161	66	256	34	154	38	226	90	91	59	240	21	52	26	99	821
17:00	20	173	69	262	46	177	36	259	75	79	47	201	32	34	27	93	815
17:15	26	162	60	248	45	197	35	277	69	60	47	176	31	42	20	93	794

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	95	661	268	1024	166	683	145	994	306	325	213	844	108	161	91	360	3222
PHF	0.82	0.96	0.92	0.98	0.90	0.87	0.95	0.90	0.85	0.86	0.89	0.88	0.84	0.77	0.84	0.91	0.98

Table A-11B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	2	1	3	0	2	0	2	1	0	0	1	0	0	0	0	6
06:15	0	2	0	2	0	2	0	2	0	0	0	0	0	0	1	1	5
06:30	1	5	0	6	0	6	0	6	0	0	0	0	2	0	1	3	15
06:45	0	6	0	6	1	0	0	1	0	0	0	0	0	0	0	0	7
07:00	4	4	2	10	0	3	0	3	0	0	1	1	0	0	0	0	14
07:15	0	4	0	4	0	3	0	3	0	1	3	4	0	0	0	0	11
07:30	0	6	3	9	0	8	0	8	0	0	0	0	1	0	0	1	18
07:45	0	9	0	9	1	7	0	8	0	0	0	0	0	0	2	2	19
08:00	0	6	0	6	1	3	0	4	1	0	0	1	0	0	2	2	13
08:15	3	9	1	13	0	5	3	8	1	0	1	2	0	0	2	2	25
08:30	1	2	1	4	0	13	1	14	3	0	0	3	1	0	1	2	23
08:45	2	5	0	7	0	4	1	5	0	1	1	2	0	1	1	2	16
09:00	1	4	1	6	0	5	1	6	1	0	1	2	1	1	0	2	16
09:15	0	5	1	6	1	12	2	15	1	0	0	1	0	0	1	1	23

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	4	23	5	32	1	21	0	22	0	1	4	5	1	0	2	3	62
PHF	0.25	0.64	0.42	0.80	0.25	0.66	0	0.69	0	0.25	0.33	0.31	0.25	0	0.25	0.38	0.82

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	2	2	1	5	0	5	0	5	0	0	0	0	0	0	0	0	10
15:45	0	2	0	2	0	4	0	4	1	0	2	3	1	1	1	3	12
16:00	0	4	0	4	1	6	1	8	0	0	0	0	0	0	0	0	12
16:15	0	2	0	2	0	6	1	7	0	1	0	1	0	0	0	0	10
16:30	1	1	1	3	0	4	0	4	2	0	0	2	0	0	0	0	9
16:45	0	4	0	4	0	3	0	3	0	0	1	1	0	0	0	0	8
17:00	0	1	2	3	0	2	0	2	0	0	0	0	0	0	1	1	6
17:15	0	1	0	1	0	1	0	1	1	0	0	1	3	0	0	3	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	1	7	3	11	0	10	0	10	3	0	1	4	3	0	1	4	29
PHF	0.25	0.44	0.38	0.69	0	0.63	0	0.63	0.38	0	0.25	0.50	0.25	0	0.25	0.33	0.81

Table A-11C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	23	44	10	77	11	77	53	141	14	11	5	30	40	65	17	122	370
06:15	26	50	11	87	7	105	41	153	9	7	9	25	54	47	31	132	397
06:30	37	84	13	134	11	87	37	135	20	14	12	46	51	53	32	136	451
06:45	30	119	11	160	8	90	64	162	16	14	7	37	71	85	39	195	554
07:00	31	123	14	168	14	131	61	206	17	22	16	55	72	75	40	187	616
07:15	43	148	14	205	17	123	75	215	22	27	12	61	68	75	38	181	662
07:30	32	173	30	235	10	109	76	195	25	28	8	61	47	81	39	167	658
07:45	37	154	19	210	14	106	51	171	24	23	16	63	38	92	42	172	616
08:00	53	153	23	229	16	93	63	172	24	11	14	49	47	74	31	152	602
08:15	47	159	14	220	6	104	62	172	21	18	16	55	45	71	32	148	595
08:30	28	125	15	168	5	106	49	160	17	17	10	44	45	57	25	127	499
08:45	37	117	15	169	12	90	45	147	17	18	7	42	26	61	25	112	470
09:00	45	127	19	191	14	74	47	135	22	8	9	39	24	37	14	75	440
09:15	19	109	19	147	11	98	58	167	21	12	9	42	24	33	18	75	431

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	143	598	77	818	55	469	263	787	88	100	52	240	225	323	159	707	2552
PHF	0.83	0.86	0.64	0.87	0.81	0.90	0.87	0.92	0.88	0.89	0.81	0.95	0.78	0.88	0.95	0.95	0.96
% HV	2.8%	3.8%	6.5%	3.9%	1.8%	4.5%	0.0%	2.8%	0.0%	1.0%	7.7%	2.1%	0.4%	0.0%	1.3%	0.4%	2.4%

Start Date 8/1/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Reece Rd				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	21	156	55	232	34	94	40	168	66	67	40	173	21	26	20	67	640
15:45	18	143	48	209	30	133	45	208	66	67	37	170	18	31	22	71	658
16:00	24	165	69	258	30	158	34	222	76	67	47	190	24	31	29	84	754
16:15	21	162	45	228	35	185	38	258	75	66	59	200	24	36	19	79	765
16:30	21	166	74	261	41	159	36	236	74	95	60	229	24	33	18	75	801
16:45	29	165	66	260	34	157	38	229	90	91	60	241	21	52	26	99	829
17:00	20	174	71	265	46	179	36	261	75	79	47	201	32	34	28	94	821
17:15	26	163	60	249	45	198	35	278	70	60	47	177	34	42	20	96	800

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	96	668	271	1035	166	693	145	1004	309	325	214	848	111	161	92	364	3251
PHF	0.83	0.96	0.92	0.98	0.90	0.88	0.95	0.90	0.86	0.86	0.89	0.88	0.82	0.77	0.82	0.92	0.98
% HV	1.0%	1.0%	1.1%	1.1%	0.0%	1.4%	0.0%	1.0%	1.0%	0.0%	0.5%	0.5%	2.7%	0.0%	1.1%	1.1%	0.9%

Table A-12A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	20	5	8	33	26	38	80	144	16	110	40	166	11	77	10	98	441
06:15	13	6	3	22	40	49	74	163	5	107	47	159	13	120	16	149	493
06:30	31	11	4	46	38	59	88	185	16	107	60	183	17	141	14	172	586
06:45	26	11	7	44	43	72	106	221	17	141	58	216	21	152	11	184	665
07:00	49	12	9	70	51	73	92	216	14	117	73	204	18	198	18	234	724
07:15	43	14	6	63	49	81	91	221	14	123	52	189	29	205	17	251	724
07:30	52	15	12	79	67	88	98	253	26	115	54	195	22	203	24	249	776
07:45	28	15	8	51	56	59	107	222	18	154	68	240	19	221	32	272	785
08:00	23	10	10	43	38	52	88	178	25	129	58	212	14	208	30	252	685
08:15	27	13	8	48	49	31	91	171	13	110	36	159	14	181	28	223	601
08:30	23	14	7	44	49	37	88	174	14	99	26	139	14	146	21	181	538
08:45	27	9	11	47	41	30	66	137	30	120	34	184	11	135	22	168	536
09:00	20	6	8	34	21	18	57	96	23	88	28	139	8	116	29	153	422
09:15	19	11	4	34	30	22	62	114	24	88	26	138	6	105	30	141	427

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	172	56	35	263	223	301	388	912	72	509	247	828	88	827	91	1006	3009
PHF	0.83	0.93	0.73	0.83	0.83	0.86	0.91	0.90	0.69	0.83	0.85	0.86	0.76	0.94	0.71	0.92	0.96

Start Date 7/31/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	47	38	8	93	50	19	44	113	79	138	26	243	20	179	68	267	716
15:45	61	50	12	123	57	15	35	107	78	153	26	257	11	161	65	237	724
16:00	88	75	25	188	43	24	34	101	95	163	31	289	17	175	68	260	838
16:15	92	101	31	224	54	24	34	112	95	168	41	304	16	197	70	283	923
16:30	89	78	24	191	53	26	37	116	103	205	20	328	29	169	78	276	911
16:45	86	106	20	212	56	33	34	123	107	195	35	337	25	188	82	295	967
17:00	92	99	33	224	52	32	49	133	101	222	34	357	28	189	83	300	1014
17:15	66	95	27	188	65	36	46	147	103	233	30	366	26	197	80	303	1004

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	333	378	104	815	226	127	166	519	414	855	119	1388	108	743	323	1174	3896
PHF	0.90	0.89	0.79	0.91	0.87	0.88	0.85	0.88	0.97	0.92	0.85	0.95	0.93	0.94	0.97	0.97	0.96

Table A-12B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6
06:15	0	0	0	0	1	0	0	1	0	2	0	2	0	4	0	4	7
06:30	0	0	0	0	3	0	1	4	1	2	0	3	0	0	0	0	7
06:45	0	0	0	0	1	0	0	1	1	4	0	5	0	4	0	4	10
07:00	0	3	0	3	1	0	2	3	2	3	0	5	2	2	3	7	18
07:15	2	0	0	2	1	0	0	1	3	4	1	8	0	6	1	7	18
07:30	2	0	0	2	1	1	2	4	3	7	0	10	0	9	1	10	26
07:45	0	1	1	2	3	0	2	5	2	8	0	10	1	12	2	15	32
08:00	0	0	0	0	1	0	2	3	1	11	0	12	1	11	4	16	31
08:15	1	0	0	1	1	0	1	2	1	10	0	11	1	13	3	17	31
08:30	1	0	0	1	2	1	0	3	0	9	3	12	0	11	5	16	32
08:45	0	0	1	1	1	0	2	3	1	12	0	13	0	10	1	11	28
09:00	0	0	1	1	3	0	1	4	0	7	0	7	2	11	2	15	27
09:15	1	0	0	1	1	0	0	1	2	11	0	13	0	7	4	11	26

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	4	4	1	9	6	1	6	13	10	22	1	33	3	29	7	39	94
PHF	0.50	0.33	0.25	0.75	0.50	0.25	0.75	0.65	0.83	0.69	0.25	0.83	0.38	0.60	0.58	0.65	0.73

Start Date 7/31/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	1	1	0	2	1	0	0	1	0	10	0	10	1	10	0	11	24
15:45	1	0	0	1	0	1	0	1	0	10	0	10	0	10	2	12	24
16:00	0	0	0	0	0	0	0	0	1	2	0	3	0	7	0	7	10
16:15	1	0	0	1	0	0	0	0	0	2	1	3	0	1	1	2	6
16:30	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
16:45	1	0	0	1	0	0	1	1	0	2	0	2	0	3	0	3	7
17:00	0	1	0	1	0	0	0	0	0	3	0	3	0	1	0	1	5
17:15	0	0	0	0	1	0	1	2	0	2	0	2	0	4	1	5	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	1	1	0	2	2	0	2	4	0	8	0	8	0	9	1	10	24
PHF	0.25	0.25	0	0.50	0.50	0	0.50	0.50	0	0.67	0	0.67	0	0.56	0.25	0.50	0.67

Table A-12C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 7/31/2012
Start Time 06:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	20	5	8	33	26	38	80	144	16	113	40	169	11	80	10	101	447
06:15	13	6	3	22	41	49	74	164	5	109	47	161	13	124	16	153	500
06:30	31	11	4	46	41	59	89	189	17	109	60	186	17	141	14	172	593
06:45	26	11	7	44	44	72	106	222	18	145	58	221	21	156	11	188	675
07:00	49	15	9	73	52	73	94	219	16	120	73	209	20	200	21	241	742
07:15	45	14	6	65	50	81	91	222	17	127	53	197	29	211	18	258	742
07:30	54	15	12	81	68	89	100	257	29	122	54	205	22	212	25	259	802
07:45	28	16	9	53	59	59	109	227	20	162	68	250	20	233	34	287	817
08:00	23	10	10	43	39	52	90	181	26	140	58	224	15	219	34	268	716
08:15	28	13	8	49	50	31	92	173	14	120	36	170	15	194	31	240	632
08:30	24	14	7	45	51	38	88	177	14	108	29	151	14	157	26	197	570
08:45	27	9	12	48	42	30	68	140	31	132	34	197	11	145	23	179	564
09:00	20	6	9	35	24	18	58	100	23	95	28	146	10	127	31	168	449
09:15	20	11	4	35	31	22	62	115	26	99	26	151	6	112	34	152	453

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	176	60	36	272	229	302	394	925	82	531	248	861	91	856	98	1045	3103
PHF	0.81	0.94	0.75	0.84	0.84	0.85	0.90	0.90	0.71	0.82	0.85	0.86	0.78	0.92	0.72	0.91	0.95
% HV	2.3%	6.7%	2.8%	3.3%	2.6%	0.3%	1.5%	1.4%	12.2%	4.1%	0.4%	3.8%	3.3%	3.4%	7.1%	3.7%	3.0%

Start Date 7/31/2012
Start Time 15:00

Street Name	Annapolis Rd (MD 175)				Annapolis Rd (MD 175)				Rockenbach Rd				Ridge Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	48	39	8	95	51	19	44	114	79	148	26	253	21	189	68	278	740
15:45	62	50	12	124	57	16	35	108	78	163	26	267	11	171	67	249	748
16:00	88	75	25	188	43	24	34	101	96	165	31	292	17	182	68	267	848
16:15	93	101	31	225	54	24	34	112	95	170	42	307	16	198	71	285	929
16:30	89	78	24	191	54	26	37	117	103	206	20	329	29	170	78	277	914
16:45	87	106	20	213	56	33	35	124	107	197	35	339	25	191	82	298	974
17:00	92	100	33	225	52	32	49	133	101	225	34	360	28	190	83	301	1019
17:15	66	95	27	188	66	36	47	149	103	235	30	368	26	201	81	308	1013

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	334	379	104	817	228	127	168	523	414	863	119	1396	108	752	324	1184	3920
PHF	0.91	0.89	0.79	0.91	0.86	0.88	0.86	0.88	0.97	0.92	0.85	0.95	0.93	0.94	0.98	0.96	0.96
% HV	0.3%	0.3%	0.0%	0.2%	0.9%	0.0%	1.2%	0.8%	0.0%	0.9%	0.0%	0.6%	0.0%	1.2%	0.3%	0.8%	0.6%

Table A-13A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				DISA Entrance				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	55	4	59	6	136	0	142	0	0	0	0	13	3	25	41	242
06:15	4	93	4	101	7	96	3	106	0	1	1	2	12	6	38	56	265
06:30	3	129	4	136	7	47	0	54	0	0	0	0	9	6	32	47	237
06:45	3	112	5	120	7	95	6	108	0	0	0	0	11	7	34	52	280
07:00	3	116	4	123	11	93	2	106	1	0	0	1	9	4	38	51	281
07:15	2	111	3	116	22	109	0	131	0	1	0	1	22	5	39	66	314
07:30	2	136	4	142	14	81	0	95	0	1	2	3	25	4	40	69	309
07:45	2	113	2	117	8	83	2	93	0	0	0	0	20	4	47	71	281
08:00	1	106	8	115	6	73	0	79	0	0	2	2	19	4	54	77	273
08:15	0	79	4	83	7	93	1	101	0	3	0	3	23	4	55	82	269
08:30	0	86	3	89	7	86	1	94	0	0	0	0	14	2	24	40	223
08:45	2	72	2	76	7	91	0	98	0	0	0	0	12	1	37	50	224
09:00	0	55	2	57	15	67	0	82	0	1	0	1	5	3	25	33	173
09:15	0	55	4	59	9	55	0	64	0	1	0	1	11	7	15	33	157

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	10	475	16	501	54	378	8	440	1	2	2	5	67	20	151	238	1184
PHF	0.83	0.87	0.80	0.88	0.61	0.87	0.33	0.84	0.25	0.50	0.25	0.42	0.67	0.71	0.94	0.86	0.94

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				DISA Entrance				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	71	19	90	37	100	0	137	0	3	7	10	4	0	26	30	267
15:45	1	92	21	114	28	73	0	101	1	4	2	7	8	0	10	18	240
16:00	2	117	27	146	53	120	1	174	2	5	4	11	3	1	28	32	363
16:15	1	115	16	132	54	122	1	177	2	6	2	10	12	3	24	39	358
16:30	0	105	23	128	68	147	0	215	2	2	4	8	7	0	16	23	374
16:45	1	110	17	128	48	107	3	158	0	6	1	7	5	0	24	29	322
17:00	0	112	12	124	37	117	1	155	3	7	1	11	7	1	25	33	323
17:15	0	105	24	129	42	120	1	163	0	3	3	6	2	1	21	24	322

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	4	447	83	534	223	496	5	724	6	19	11	36	27	4	92	123	1417
PHF	0.50	0.96	0.77	0.91	0.82	0.84	0.42	0.84	0.75	0.79	0.69	0.82	0.56	0.33	0.82	0.79	0.95

Table A-13B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Cooper Ave Northbound				Cooper Ave Southbound				DISA Entrance Eastbound				Reece Rd Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
06:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:00	1	1	1	3	0	0	0	0	0	0	0	0	0	0	2	2	5
07:15	0	3	0	3	1	0	0	1	0	0	0	0	0	0	0	0	4
07:30	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	1	1	0	2	1	1	0	2	0	0	0	0	0	0	0	0	4
08:15	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	2	4
08:30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:45	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
09:00	0	2	1	3	0	3	0	3	0	0	0	0	0	1	2	3	9
09:15	0	3	0	3	1	1	0	2	0	0	0	0	1	0	0	1	6

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	1	5	1	7	1	2	0	3	0	0	0	0	0	0	2	2	12
PHF	0.25	0.42	0.25	0.58	0.25	0.50	0	0.75	0	0	0	0	0	0	0.25	0.25	0.60

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave Northbound				Cooper Ave Southbound				DISA Entrance Eastbound				Reece Rd Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
15:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:00	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
16:15	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
16:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
17:00	1	3	0	4	1	0	0	1	0	0	0	0	0	0	0	0	5
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	6	0	6	0	2	0	2	0	0	0	0	0	0	1	1	9
PHF	0	0.50	0	0.50	0	0.50	0	0.50	0	0	0	0	0	0	0.25	0.25	0.56

Table A-13C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				DISA Entrance				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	55	4	59	6	136	0	142	0	0	0	0	13	3	25	41	242
06:15	4	94	4	102	7	96	3	106	0	1	1	2	12	6	38	56	266
06:30	3	131	4	138	7	47	0	54	0	0	0	0	9	6	32	47	239
06:45	3	112	5	120	7	96	6	109	0	0	0	0	11	7	34	52	281
07:00	4	117	5	126	11	93	2	106	1	0	0	1	9	4	40	53	286
07:15	2	114	3	119	23	109	0	132	0	1	0	1	22	5	39	66	318
07:30	2	137	4	143	14	82	0	96	0	1	2	3	25	4	40	69	311
07:45	2	113	2	117	8	83	2	93	0	0	0	0	20	4	47	71	281
08:00	2	107	8	117	7	74	0	81	0	0	2	2	19	4	54	77	277
08:15	0	81	4	85	7	93	1	101	0	3	0	3	23	4	57	84	273
08:30	0	88	3	91	7	86	1	94	0	0	0	0	14	2	24	40	225
08:45	2	73	3	78	7	91	0	98	0	0	0	0	12	1	37	50	226
09:00	0	57	3	60	15	70	0	85	0	1	0	1	5	4	27	36	182
09:15	0	58	4	62	10	56	0	66	0	1	0	1	12	7	15	34	163

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	11	480	17	508	55	380	8	443	1	2	2	5	67	20	153	240	1196
PHF	0.69	0.88	0.85	0.89	0.60	0.87	0.33	0.84	0.25	0.50	0.25	0.42	0.67	0.71	0.96	0.87	0.94
% HV	9.1%	1.0%	5.9%	1.4%	1.8%	0.5%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.8%	1.0%

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				DISA Entrance				Reece Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	71	19	90	37	100	0	137	0	3	7	10	4	0	27	31	268
15:45	2	92	21	115	28	73	0	101	1	4	2	7	8	0	10	18	241
16:00	2	120	27	149	53	121	1	175	2	5	4	11	3	1	28	32	367
16:15	1	116	16	133	54	123	1	178	2	6	2	10	12	3	24	39	360
16:30	0	106	23	129	68	147	0	215	2	2	4	8	7	0	16	23	375
16:45	1	111	17	129	48	107	3	158	0	6	1	7	5	0	25	30	324
17:00	1	115	12	128	38	117	1	156	3	7	1	11	7	1	25	33	328
17:15	0	105	24	129	42	120	1	163	0	3	3	6	2	1	21	24	322

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	4	453	83	540	223	498	5	726	6	19	11	36	27	4	93	124	1426
PHF	0.50	0.94	0.77	0.91	0.82	0.85	0.42	0.84	0.75	0.79	0.69	0.82	0.56	0.33	0.83	0.79	0.95
% HV	0.0%	1.3%	0.0%	1.1%	0.0%	0.4%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.8%	0.6%

Table A-14A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	10	4	8	22	21	56	4	81	1	9	49	59	53	24	5	82	244
06:15	15	7	5	27	16	28	7	51	2	6	21	29	77	40	6	123	230
06:30	28	23	30	81	15	19	7	41	1	10	16	27	60	43	4	107	256
06:45	40	21	11	72	24	29	11	64	0	13	24	37	82	59	7	148	321
07:00	28	13	20	61	24	33	13	70	2	20	28	50	76	58	2	136	317
07:15	46	11	12	69	22	39	18	79	3	15	27	45	100	68	4	172	365
07:30	45	41	21	107	20	36	15	71	2	13	14	29	74	88	6	168	375
07:45	35	19	12	66	18	34	6	58	3	15	19	37	79	57	11	147	308
08:00	28	19	10	57	10	18	4	32	1	5	22	28	66	36	6	108	225
08:15	27	19	18	64	19	33	4	56	0	6	19	25	62	32	11	105	250
08:30	22	16	8	46	18	33	9	60	0	8	21	29	50	30	2	82	217
08:45	20	14	3	37	14	44	4	62	1	11	27	39	54	21	5	80	218
09:00	10	14	7	31	13	29	1	43	1	10	15	26	35	8	2	45	145
09:15	11	17	17	45	14	24	1	39	0	9	12	21	33	5	3	41	146

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	159	86	64	309	90	137	57	284	7	61	93	161	332	273	19	624	1378
PHF	0.86	0.52	0.76	0.72	0.94	0.88	0.79	0.90	0.58	0.76	0.83	0.81	0.83	0.78	0.68	0.91	0.92

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	19	35	60	114	13	15	1	29	0	10	20	30	24	9	19	52	225
15:45	29	40	67	136	17	18	0	35	3	25	18	46	13	10	14	37	254
16:00	22	43	105	170	12	22	2	36	8	79	43	130	16	12	25	53	389
16:15	26	52	99	177	18	11	4	33	5	96	65	166	24	11	15	50	426
16:30	30	38	83	151	26	33	0	59	9	99	55	163	15	16	19	50	423
16:45	30	58	80	168	19	23	2	44	7	103	58	168	19	16	29	64	444
17:00	31	53	81	165	24	29	2	55	10	79	39	128	26	13	33	72	420
17:15	31	43	76	150	33	25	1	59	7	66	47	120	22	18	28	68	397

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	117	201	343	661	87	96	8	191	31	377	217	625	84	56	96	236	1713
PHF	0.94	0.87	0.87	0.93	0.84	0.73	0.50	0.81	0.78	0.92	0.83	0.93	0.81	0.88	0.73	0.82	0.96

Table A-14B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	1	1	0	1	0	1	0	1	0	1	0	0	0	0	3
07:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
07:45	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	2	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30	0	4	0	4	1	0	0	1	0	1	0	1	0	0	0	0	6
08:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:00	1	0	0	1	0	1	0	1	0	0	0	0	2	0	0	2	4
09:15	1	0	0	1	0	0	0	0	0	0	1	1	1	0	1	2	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	1	2	3	0	1	0	1	0	1	1	2	0	0	0	0	6
PHF	0	0.25	0.50	0.38	0	0.25	0	0.25	0	0.25	0.25	0.50	0	0	0	0	0.50

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	1	0	1	2	0	0	2	0	0	0	0	0	0	0	0	3
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
16:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	1	0	1	2	0	0	0	0	0	0	2	2	0	0	1	1	5
PHF	0.25	0	0.25	0.50	0	0	0	0	0	0	0.50	0.50	0	0	0.25	0.25	0.63

Table A-14C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	10	4	8	22	21	56	4	81	1	9	49	59	53	24	5	82	244
06:15	15	7	5	27	16	28	7	51	2	6	21	29	77	40	6	123	230
06:30	28	23	30	81	15	19	7	41	1	10	16	27	60	43	4	107	256
06:45	40	21	11	72	24	29	11	64	0	13	24	37	82	59	7	148	321
07:00	28	14	21	63	24	33	13	70	2	20	28	50	76	58	2	136	319
07:15	46	11	13	70	22	40	18	80	3	16	27	46	100	68	4	172	368
07:30	45	41	21	107	20	36	15	71	2	13	15	30	74	88	6	168	376
07:45	35	19	12	66	19	34	6	59	3	15	19	37	80	57	12	149	311
08:00	28	19	10	57	10	18	4	32	1	5	22	28	66	36	6	108	225
08:15	27	19	18	64	19	33	4	56	0	6	19	25	62	33	11	106	251
08:30	22	20	8	50	19	33	9	61	0	9	21	30	50	30	2	82	223
08:45	20	15	3	38	14	44	4	62	1	11	27	39	54	21	5	80	219
09:00	11	14	7	32	13	30	1	44	1	10	15	26	37	8	2	47	149
09:15	12	17	17	46	14	24	1	39	0	9	13	22	34	5	4	43	150

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	159	87	66	312	90	138	57	285	7	62	94	163	332	273	19	624	1384
PHF	0.86	0.53	0.79	0.73	0.94	0.86	0.79	0.89	0.58	0.78	0.84	0.82	0.83	0.78	0.68	0.91	0.92
% HV	0.0%	1.1%	3.0%	1.0%	0.0%	0.7%	0.0%	0.4%	0.0%	1.6%	1.1%	1.2%	0.0%	0.0%	0.0%	0.0%	0.4%

Start Date 8/1/2012
Start Time 15:00

Street Name	Cooper Ave				Cooper Ave				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	19	36	60	115	15	15	1	31	0	10	20	30	24	9	19	52	228
15:45	29	40	67	136	17	18	0	35	3	25	18	46	13	10	14	37	254
16:00	22	43	105	170	12	23	2	37	8	79	43	130	16	12	25	53	390
16:15	26	52	99	177	18	11	4	33	5	96	66	167	24	11	15	50	427
16:30	30	38	83	151	26	33	0	59	9	99	55	163	15	16	20	51	424
16:45	31	58	80	169	19	23	2	44	7	103	58	168	19	16	29	64	445
17:00	31	53	82	166	24	29	2	55	10	79	40	129	26	13	33	72	422
17:15	31	43	76	150	33	25	1	59	7	66	47	120	22	18	28	68	397

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	118	201	344	663	87	96	8	191	31	377	219	627	84	56	97	237	1718
PHF	0.95	0.87	0.87	0.94	0.84	0.73	0.50	0.81	0.78	0.92	0.83	0.93	0.81	0.88	0.73	0.82	0.97
% HV	0.8%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.3%	0.0%	0.0%	1.0%	0.4%	0.3%

Table A-15A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	8	0	2	10	0	55	0	55	0	38	2	40	105
06:15	0	0	0	0	11	0	5	16	1	12	0	13	0	56	5	61	90
06:30	0	0	0	0	6	0	1	7	1	23	0	24	0	71	3	74	105
06:45	0	0	0	0	10	0	7	17	4	32	0	36	0	108	8	116	169
07:00	0	0	0	0	17	0	8	25	1	30	0	31	0	89	5	94	150
07:15	0	0	0	0	12	0	10	22	1	32	0	33	0	127	10	137	192
07:30	0	0	0	0	8	0	14	22	1	22	0	23	0	139	6	145	190
07:45	0	0	0	0	15	0	9	24	1	20	0	21	0	94	8	102	147
08:00	0	0	0	0	9	0	6	15	0	18	0	18	0	61	7	68	101
08:15	0	0	0	0	9	0	5	14	1	17	0	18	0	52	11	63	95
08:30	0	0	0	0	15	0	3	18	2	16	0	18	0	53	4	57	93
08:45	0	0	0	0	11	0	6	17	1	24	0	25	0	43	6	49	91
09:00	0	0	0	0	7	0	2	9	1	21	0	22	0	10	7	17	48
09:15	0	0	0	0	8	0	2	10	1	15	0	16	0	16	4	20	46

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	47	0	39	86	7	116	0	123	0	463	29	492	701
PHF	0	0	0	0	0.69	0	0.70	0.86	0.44	0.91	0	0.85	0	0.83	0.73	0.85	0.91

Start Date 8/1/2012
Start Time 15:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	8	0	1	9	1	17	0	18	0	19	10	29	56
15:45	0	0	0	0	5	0	0	5	2	47	0	49	0	27	13	40	94
16:00	0	0	0	0	9	0	3	12	3	131	0	134	0	26	5	31	177
16:15	0	0	0	0	12	0	2	14	9	146	0	155	0	30	15	45	214
16:30	0	0	0	0	13	0	2	15	4	156	0	160	0	28	16	44	219
16:45	0	0	0	0	17	0	2	19	8	142	0	150	0	31	16	47	216
17:00	0	0	0	0	9	0	1	10	11	124	0	135	0	29	20	49	194
17:15	0	0	0	0	10	0	2	12	8	114	0	122	0	40	9	49	183

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	0	0	0	51	0	7	58	32	568	0	600	0	118	67	185	843
PHF	0	0	0	0	0.75	0	0.88	0.76	0.73	0.91	0	0.94	0	0.95	0.84	0.94	0.96

Table A-15B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
09:15	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
PHF	0	0	0	0	0	0	0	0	0	0.50	0	0.50	0	0	0	0	0.50

Start Date 8/1/2012
Start Time 15:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
16:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	2
17:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	0	0	0	1	0	1	2	0	1	0	1	0	1	1	2	5
PHF	0	0	0	0	0.25	0	0.25	0.50	0	0.25	0	0.25	0	0.25	0.25	0.50	0.63

Table A-15C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	8	0	2	10	0	55	0	55	0	38	2	40	105
06:15	0	0	0	0	11	0	5	16	1	12	0	13	0	56	5	61	90
06:30	0	0	0	0	6	0	1	7	1	23	0	24	0	71	3	74	105
06:45	0	0	0	0	10	0	7	17	4	32	0	36	0	108	8	116	169
07:00	0	0	0	0	17	0	8	25	1	30	0	31	0	89	5	94	150
07:15	0	0	0	0	12	0	10	22	1	33	0	34	0	127	10	137	193
07:30	0	0	0	0	8	0	14	22	1	23	0	24	0	139	6	145	191
07:45	0	0	0	0	15	0	9	24	1	20	0	21	0	94	8	102	147
08:00	0	0	0	0	9	0	6	15	0	18	0	18	0	61	7	68	101
08:15	0	0	0	0	9	0	5	14	1	17	0	18	0	52	11	63	95
08:30	0	0	0	0	15	0	3	18	2	16	0	18	0	53	4	57	93
08:45	0	0	0	0	11	0	6	17	1	24	0	25	0	43	6	49	91
09:00	0	0	0	0	7	0	2	9	1	21	0	22	0	10	8	18	49
09:15	0	0	0	0	8	0	2	10	1	16	0	17	0	17	4	21	48

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	47	0	39	86	7	118	0	125	0	463	29	492	703
PHF	0	0	0	0	0.69	0	0.70	0.86	0.44	0.89	0	0.87	0	0.83	0.73	0.85	0.91
% HV	0%	0%	0%	0%	0.0%	0%	0.0%	0.0%	0.0%	1.7%	0%	1.6%	0%	0.0%	0.0%	0.0%	0.3%

Start Date 8/1/2012
Start Time 15:00

Street Name	--				29th Division Blvd				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	8	0	1	9	1	17	0	18	0	19	10	29	56
15:45	0	0	0	0	5	0	0	5	2	47	0	49	0	27	13	40	94
16:00	0	0	0	0	9	0	3	12	3	131	0	134	0	26	5	31	177
16:15	0	0	0	0	13	0	2	15	9	146	0	155	0	30	15	45	215
16:30	0	0	0	0	13	0	2	15	4	156	0	160	0	29	16	45	220
16:45	0	0	0	0	17	0	3	20	8	142	0	150	0	31	17	48	218
17:00	0	0	0	0	9	0	1	10	11	125	0	136	0	29	20	49	195
17:15	0	0	0	0	10	0	2	12	8	114	0	122	0	40	9	49	183

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:15	0	0	0	0	52	0	8	60	32	569	0	601	0	119	68	187	848
PHF	0	0	0	0	0.76	0	0.67	0.75	0.73	0.91	0	0.94	0	0.96	0.85	0.95	0.96
% HV	0%	0%	0%	0%	1.9%	0%	12.5%	3.3%	0.0%	0.2%	0%	0.2%	0%	0.8%	1.5%	1.1%	0.6%

Table A-16A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	1	0	2	3	0	0	0	0	0	50	4	54	21	19	0	40	97
06:15	1	0	2	3	0	0	0	0	0	12	2	14	18	43	0	61	78
06:30	2	0	8	10	0	0	0	0	0	23	4	27	21	54	0	75	112
06:45	5	0	7	12	0	0	0	0	0	29	3	32	31	78	0	109	153
07:00	0	0	4	4	0	0	0	0	0	30	4	34	40	61	0	101	139
07:15	4	0	3	7	0	0	0	0	0	27	7	34	39	97	0	136	177
07:30	7	0	7	14	0	0	0	0	0	17	10	27	49	106	0	155	196
07:45	6	0	3	9	0	0	0	0	0	17	6	23	37	63	0	100	132
08:00	8	0	1	9	0	0	0	0	0	17	0	17	7	60	0	67	93
08:15	3	0	3	6	0	0	0	0	0	17	1	18	2	55	0	57	81
08:30	4	0	1	5	0	0	0	0	0	16	0	16	4	51	0	55	76
08:45	3	0	1	4	0	0	0	0	0	25	3	28	4	40	0	44	76
09:00	0	0	2	2	0	0	0	0	0	15	0	15	1	6	0	7	24
09:15	0	0	0	0	0	0	0	0	0	14	0	14	1	9	0	10	24

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	16	0	21	37	0	0	0	0	0	103	24	127	159	342	0	501	665
PHF	0.57	0	0.75	0.66	0	0	0	0	0	0.86	0.60	0.93	0.81	0.81	0	0.81	0.85

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	2	2	0	0	0	0	0	14	0	14	0	22	0	22	38
15:45	2	0	13	15	0	0	0	0	0	40	2	42	1	23	0	24	81
16:00	1	0	33	34	0	0	0	0	0	106	2	108	6	23	0	29	171
16:15	0	0	49	49	0	0	0	0	0	101	2	103	7	25	0	32	184
16:30	2	0	59	61	0	0	0	0	0	91	3	94	4	26	0	30	185
16:45	2	0	43	45	0	0	0	0	0	114	4	118	5	31	0	36	199
17:00	1	0	48	49	0	0	0	0	0	78	4	82	2	27	0	29	160
17:15	5	0	41	46	0	0	0	0	0	80	5	85	5	36	0	41	172

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	5	0	184	189	0	0	0	0	0	412	11	423	22	105	0	127	739
PHF	0.63	0	0.78	0.77	0	0	0	0	0	0.90	0.69	0.90	0.79	0.85	0	0.88	0.93

Table A-16B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
PHF	0	0	0	0	0	0	0	0	0	0.50	0	0.50	0	0	0	0	0.50

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
PHF	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0.25	0.25

Table A-16C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Meade, Maryland

Start Date 8/1/2012
Start Time 06:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	1	0	2	3	0	0	0	0	0	50	4	54	21	19	0	40	97
06:15	1	0	2	3	0	0	0	0	0	12	2	14	18	43	0	61	78
06:30	2	0	8	10	0	0	0	0	0	23	4	27	21	54	0	75	112
06:45	5	0	7	12	0	0	0	0	0	29	3	32	31	78	0	109	153
07:00	0	0	4	4	0	0	0	0	0	30	4	34	40	61	0	101	139
07:15	4	0	3	7	0	0	0	0	0	28	7	35	39	97	0	136	178
07:30	7	0	7	14	0	0	0	0	0	18	10	28	49	106	0	155	197
07:45	6	0	3	9	0	0	0	0	0	17	6	23	37	63	0	100	132
08:00	8	0	1	9	0	0	0	0	0	17	0	17	7	60	0	67	93
08:15	3	0	3	6	0	0	0	0	0	17	1	18	2	55	0	57	81
08:30	4	0	1	5	0	0	0	0	0	16	0	16	4	51	0	55	76
08:45	3	0	1	4	0	0	0	0	0	25	3	28	4	40	0	44	76
09:00	0	0	2	2	0	0	0	0	0	15	0	15	1	6	0	7	24
09:15	0	0	0	0	0	0	0	0	0	14	0	14	1	9	0	10	24

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	16	0	21	37	0	0	0	0	0	105	24	129	159	342	0	501	667
PHF	0.57	0	0.75	0.66	0	0	0	0	0	0.88	0.60	0.92	0.81	0.81	0	0.81	0.85
% HV	0.0%	0%	0.0%	0.0%	0%	0%	0%	0%	0%	1.9%	0.0%	1.6%	0.0%	0.0%	0%	0.0%	0.3%

Start Date 8/1/2012
Start Time 15:00

Street Name	O'Brien Rd				--				Rockenbach Rd				Rockenbach Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:30	0	0	2	2	0	0	0	0	0	14	0	14	0	22	0	22	38
15:45	2	0	13	15	0	0	0	0	0	40	2	42	1	23	0	24	81
16:00	1	0	33	34	0	0	0	0	0	106	2	108	6	23	0	29	171
16:15	0	0	49	49	0	0	0	0	0	101	2	103	7	25	0	32	184
16:30	2	0	59	61	0	0	0	0	0	91	3	94	4	26	0	30	185
16:45	2	0	43	45	0	0	0	0	0	114	4	118	5	32	0	37	200
17:00	1	0	48	49	0	0	0	0	0	79	4	83	2	27	0	29	161
17:15	5	0	41	46	0	0	0	0	0	80	5	85	5	36	0	41	172

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	5	0	184	189	0	0	0	0	0	412	11	423	22	106	0	128	740
PHF	0.63	0	0.78	0.77	0	0	0	0	0	0.90	0.69	0.90	0.79	0.83	0	0.86	0.93
% HV	0.0%	0%	0.0%	0.0%	0%	0%	0%	0%	0%	0.0%	0.0%	0.0%	0.0%	0.9%	0%	0.8%	0.1%

Attachment 4

Existing Traffic Data – Fort Gordon

Table A-1A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	1	0	1	0	75	9	84	13	22	0	35	120
06:15	0	0	0	0	1	0	0	1	0	118	13	131	17	33	0	50	182
06:30	2	0	0	2	2	0	1	3	0	118	13	131	33	27	1	61	197
06:45	0	0	0	0	0	0	0	0	0	116	24	140	62	65	0	127	267
07:00	0	0	2	2	0	0	0	0	0	126	29	155	31	41	1	73	230
07:15	1	0	2	3	0	1	0	1	0	129	28	157	57	35	0	92	253
07:30	0	0	2	2	0	0	1	1	0	151	11	162	26	49	3	78	243
07:45	0	0	1	1	2	0	0	2	0	100	13	113	28	56	2	86	202
08:00	1	0	0	1	1	1	0	2	0	97	20	117	13	31	2	46	166
08:15	0	0	0	0	1	0	0	1	0	72	7	79	10	24	1	35	115
08:30	0	0	1	1	0	1	0	1	0	83	1	84	15	29	2	46	132
08:45	1	1	1	3	3	1	2	6	0	57	8	65	11	20	3	34	108

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	1	0	6	7	0	1	1	2	0	522	92	614	176	190	4	370	993
PHF	0.25	0	0.75	0.58	0	0.25	0.25	0.50	0	0.86	0.79	0.95	0.71	0.73	0.33	0.73	0.93

Start Date 7/18/2012
Start Time 15:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	4	0	0	4	0	41	0	41	0	50	2	52	97
15:15	0	0	0	0	3	0	0	3	0	45	0	45	0	80	4	84	132
15:30	0	0	1	1	4	0	0	4	0	58	0	58	1	75	1	77	140
15:45	0	0	0	0	1	0	0	1	0	71	0	71	0	96	0	96	168
16:00	0	0	0	0	2	0	0	2	0	60	0	60	0	109	3	112	174
16:15	0	0	0	0	2	0	0	2	0	61	0	61	0	111	2	113	176
16:30	0	0	0	0	2	0	1	3	0	59	0	59	0	103	3	106	168
16:45	0	0	0	0	0	0	0	0	0	72	0	72	0	109	0	109	181
17:00	0	0	0	0	2	0	1	3	1	58	0	59	0	101	2	103	165
17:15	0	0	0	0	1	0	2	3	0	57	0	57	0	168	6	174	234
17:30	0	0	0	0	4	0	1	5	0	67	0	67	1	136	3	140	212
17:45	0	0	0	0	1	0	1	2	0	45	0	45	0	109	2	111	158

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	0	0	0	0	7	0	4	11	1	254	0	255	1	514	11	526	792
PHF	0	0	0	0	0.44	0	0.50	0.55	0.25	0.88	0	0.89	0.25	0.76	0.46	0.76	0.85

Table A-1B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	6
06:15	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
06:30	0	0	0	0	0	0	0	0	0	2	0	2	2	2	0	4	6
06:45	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	3	4
07:00	0	0	0	0	0	0	0	0	0	8	0	8	2	2	0	4	12
07:15	0	0	0	0	0	0	0	0	0	3	0	3	4	1	0	5	8
07:30	0	0	0	0	0	0	0	0	0	1	0	1	6	0	0	6	7
07:45	0	0	0	0	0	0	0	0	0	4	0	4	8	3	0	11	15
08:00	1	0	0	1	0	0	0	0	0	4	1	5	3	2	1	6	12
08:15	1	0	0	1	0	0	0	0	0	8	0	8	2	3	0	5	14
08:30	0	0	0	0	0	0	0	0	0	2	0	2	4	3	0	7	9
08:45	0	0	1	1	0	0	0	0	0	1	0	1	2	5	1	8	10

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	0	0	0	0	0	13	0	13	15	3	0	18	31
PHF	0	0	0	0	0	0	0	0	0	0.41	0	0.41	0.63	0.38	0	0.75	0.65

Start Date 7/18/2012
Start Time 15:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9
15:15	0	0	0	0	0	0	0	0	0	3	0	3	0	5	0	5	8
15:30	0	0	0	0	0	0	1	1	0	4	0	4	1	2	1	4	9
15:45	0	0	0	0	0	0	0	0	0	4	0	4	0	4	0	4	8
16:00	0	0	0	0	0	0	0	0	0	6	0	6	0	2	0	2	8
16:15	0	0	0	0	0	0	0	0	0	6	0	6	0	5	0	5	11
16:30	0	0	0	0	0	0	0	0	0	6	0	6	0	3	0	3	9
16:45	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5
17:00	0	0	0	0	0	0	0	0	0	6	0	6	0	3	0	3	9
17:15	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
17:30	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
17:45	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	0	0	0	0	0	0	0	0	0	13	0	13	0	7	0	7	20
PHF	0	0	0	0	0	0	0	0	0	0.54	0	0.54	0	0.58	0	0.58	0.56

Table A-1C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	1	0	1	0	75	9	84	17	24	0	41	126
06:15	0	0	0	0	1	0	0	1	0	120	13	133	17	34	0	51	185
06:30	2	0	0	2	2	0	1	3	0	120	13	133	35	29	1	65	203
06:45	0	0	0	0	0	0	0	0	0	117	24	141	65	65	0	130	271
07:00	0	0	2	2	0	0	0	0	0	134	29	163	33	43	1	77	242
07:15	1	0	2	3	0	1	0	1	0	132	28	160	61	36	0	97	261
07:30	0	0	2	2	0	0	1	1	0	152	11	163	32	49	3	84	250
07:45	0	0	1	1	2	0	0	2	0	104	13	117	36	59	2	97	217
08:00	2	0	0	2	1	1	0	2	0	101	21	122	16	33	3	52	178
08:15	1	0	0	1	1	0	0	1	0	80	7	87	12	27	1	40	129
08:30	0	0	1	1	0	1	0	1	0	85	1	86	19	32	2	53	141
08:45	1	1	2	4	3	1	2	6	0	58	8	66	13	25	4	42	118

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	1	0	6	7	0	1	1	2	0	535	92	627	191	193	4	388	1024
PHF	0.25	0	0.75	0.58	0	0.25	0.25	0.50	0	0.88	0.79	0.96	0.73	0.74	0.33	0.75	0.94
% HV	0.0%	0%	0.0%	0.0%	0%	0.0%	0.0%	0.0%	0%	2.4%	0.0%	2.1%	7.9%	1.6%	0.0%	4.6%	3.0%

Start Date 7/18/2012
Start Time 15:00

Street Name	13th St				McCoys Creek				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	4	0	0	4	0	46	0	46	0	54	2	56	106
15:15	0	0	0	0	3	0	0	3	0	48	0	48	0	85	4	89	140
15:30	0	0	1	1	4	0	1	5	0	62	0	62	2	77	2	81	149
15:45	0	0	0	0	1	0	0	1	0	75	0	75	0	100	0	100	176
16:00	0	0	0	0	2	0	0	2	0	66	0	66	0	111	3	114	182
16:15	0	0	0	0	2	0	0	2	0	67	0	67	0	116	2	118	187
16:30	0	0	0	0	2	0	1	3	0	65	0	65	0	106	3	109	177
16:45	0	0	0	0	0	0	0	0	0	76	0	76	0	110	0	110	186
17:00	0	0	0	0	2	0	1	3	1	64	0	65	0	104	2	106	174
17:15	0	0	0	0	1	0	2	3	0	59	0	59	0	170	6	176	238
17:30	0	0	0	0	4	0	1	5	0	68	0	68	1	137	3	141	214
17:45	0	0	0	0	1	0	1	2	0	50	0	50	0	113	2	115	167

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	0	0	0	0	7	0	4	11	1	267	0	268	1	521	11	533	812
PHF	0	0	0	0	0.44	0	0.50	0.55	0.25	0.88	0	0.88	0.25	0.77	0.46	0.76	0.85
% HV	0%	0%	0%	0%	0.0%	0%	0.0%	0.0%	0.0%	4.9%	0%	4.9%	0.0%	1.3%	0.0%	1.3%	2.5%

Table A-2A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	20	7	32	43	198	3	244	2	52	19	73	64	28	4	96	445
06:15	1	40	13	54	42	131	1	174	2	104	24	130	89	50	21	160	518
06:30	1	81	17	99	59	138	6	203	4	93	20	117	90	51	7	148	567
06:45	10	71	19	100	47	212	22	281	10	70	27	107	80	88	11	179	667
07:00	2	59	8	69	61	187	8	256	4	84	39	127	108	66	11	185	637
07:15	0	35	10	45	67	231	11	309	8	86	43	137	107	101	20	228	719
07:30	12	91	32	135	67	196	8	271	5	113	36	154	75	58	14	147	707
07:45	8	55	14	77	56	190	10	256	6	101	17	124	75	69	23	167	624
08:00	5	23	7	35	55	171	4	230	4	69	21	94	65	38	16	119	478
08:15	0	25	5	30	42	152	7	201	1	60	8	69	53	27	12	92	392
08:30	2	25	8	35	33	124	7	164	5	67	10	82	55	35	14	104	385
08:45	2	40	8	50	37	128	1	166	3	48	11	62	55	30	23	108	386

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	24	256	69	349	242	826	49	1117	27	353	145	525	370	313	56	739	2730
PHF	0.50	0.70	0.54	0.65	0.90	0.89	0.56	0.90	0.68	0.78	0.84	0.85	0.86	0.77	0.70	0.81	0.95

Start Date 7/18/2012
Start Time 15:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	95	63	168	30	29	4	63	6	40	1	47	7	37	47	91	369
15:15	15	98	59	172	19	23	6	48	10	38	3	51	3	63	40	106	377
15:30	16	105	51	172	39	20	11	70	13	43	3	59	11	48	55	114	415
15:45	22	131	81	234	40	18	7	65	18	44	8	70	9	68	59	136	505
16:00	28	167	150	345	26	27	9	62	6	55	4	65	9	75	69	153	625
16:15	26	183	135	344	26	29	3	58	8	52	6	66	6	82	105	193	661
16:30	35	174	156	365	39	12	3	54	13	42	2	57	4	71	118	193	669
16:45	16	166	124	306	32	24	13	69	11	59	4	74	3	84	149	236	685
17:00	27	200	69	296	34	25	4	63	9	48	6	63	5	71	87	163	585
17:15	27	184	68	279	29	21	15	65	5	53	3	61	8	133	98	239	644
17:30	14	142	48	204	49	29	13	91	12	49	5	66	9	111	104	224	585
17:45	7	110	37	154	48	23	11	82	7	40	3	50	7	93	97	197	483

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	105	690	565	1360	123	92	28	243	38	208	16	262	22	312	441	775	2640
PHF	0.75	0.94	0.91	0.93	0.79	0.79	0.54	0.88	0.73	0.88	0.67	0.89	0.61	0.93	0.74	0.82	0.96

Table A-2B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	2	2	0	0	0	0	0	4	0	4	6
06:15	0	0	0	0	1	0	0	1	1	2	0	3	0	2	0	2	6
06:30	0	0	0	0	1	0	1	2	0	1	0	1	0	7	2	9	12
06:45	0	0	0	0	2	0	0	2	0	1	0	1	0	4	1	5	8
07:00	0	0	0	0	1	0	0	1	3	5	0	8	0	4	6	10	19
07:15	0	0	0	0	1	0	0	1	0	3	0	3	0	7	4	11	15
07:30	0	0	0	0	2	0	2	4	0	1	0	1	0	3	4	7	12
07:45	0	0	0	0	4	0	2	6	0	4	0	4	0	8	3	11	21
08:00	0	0	0	0	2	0	0	2	1	2	0	3	0	5	0	5	10
08:15	0	0	1	1	5	0	1	6	0	6	0	6	0	4	2	6	19
08:30	0	0	0	0	8	0	1	9	0	4	0	4	0	5	3	8	21
08:45	0	0	0	0	4	0	0	4	1	1	0	2	0	9	4	13	19

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	6	0	2	8	3	10	0	13	0	18	15	33	54
PHF	0	0	0	0	0.75	0	0.25	0.50	0.25	0.50	0	0.41	0	0.64	0.63	0.75	0.71

Start Date 7/18/2012
Start Time 15:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	3	0	0	3	2	3	0	5	0	4	2	6	14
15:15	0	0	1	1	1	0	0	1	1	2	0	3	0	5	1	6	11
15:30	0	1	0	1	2	0	0	2	0	3	0	3	0	4	3	7	13
15:45	0	0	1	1	1	0	0	1	0	6	0	6	0	4	1	5	13
16:00	0	0	0	0	3	0	0	3	1	5	0	6	0	4	6	10	19
16:15	0	0	1	1	0	0	0	0	0	7	0	7	0	3	2	5	13
16:30	0	0	0	0	2	0	1	3	0	6	0	6	0	2	3	5	14
16:45	0	0	0	0	2	0	0	2	0	6	0	6	0	1	2	3	11
17:00	0	0	1	1	1	0	0	1	0	6	0	6	0	3	2	5	13
17:15	0	0	0	0	1	0	0	1	0	2	0	2	0	2	1	3	6
17:30	0	0	1	1	1	0	0	1	0	1	0	1	0	1	0	1	4
17:45	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	1	1	7	0	1	8	1	24	0	25	0	10	13	23	57
PHF	0	0	0.25	0.25	0.58	0	0.25	0.67	0.25	0.86	0	0.89	0	0.63	0.54	0.58	0.75

Table A-2C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	20	7	32	43	198	5	246	2	52	19	73	64	32	4	100	451
06:15	1	40	13	54	43	131	1	175	3	106	24	133	89	52	21	162	524
06:30	1	81	17	99	60	138	7	205	4	94	20	118	90	58	9	157	579
06:45	10	71	19	100	49	212	22	283	10	71	27	108	80	92	12	184	675
07:00	2	59	8	69	62	187	8	257	7	89	39	135	108	70	17	195	656
07:15	0	35	10	45	68	231	11	310	8	89	43	140	107	108	24	239	734
07:30	12	91	32	135	69	196	10	275	5	114	36	155	75	61	18	154	719
07:45	8	55	14	77	60	190	12	262	6	105	17	128	75	77	26	178	645
08:00	5	23	7	35	57	171	4	232	5	71	21	97	65	43	16	124	488
08:15	0	25	6	31	47	152	8	207	1	66	8	75	53	31	14	98	411
08:30	2	25	8	35	41	124	8	173	5	71	10	86	55	40	17	112	406
08:45	2	40	8	50	41	128	1	170	4	49	11	64	55	39	27	121	405

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	24	256	69	349	248	826	51	1125	30	363	145	538	370	331	71	772	2784
PHF	0.50	0.70	0.54	0.65	0.90	0.89	0.58	0.91	0.75	0.80	0.84	0.87	0.86	0.77	0.74	0.81	0.95
% HV	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	3.9%	0.7%	10.0%	2.8%	0.0%	2.4%	0.0%	5.4%	21.1%	4.3%	1.9%

Start Date 7/18/2012
Start Time 15:00

Street Name	19th St				E Robinson Ave				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	95	63	168	33	29	4	66	8	43	1	52	7	41	49	97	383
15:15	15	98	60	173	20	23	6	49	11	40	3	54	3	68	41	112	388
15:30	16	106	51	173	41	20	11	72	13	46	3	62	11	52	58	121	428
15:45	22	131	82	235	41	18	7	66	18	50	8	76	9	72	60	141	518
16:00	28	167	150	345	29	27	9	65	7	60	4	71	9	79	75	163	644
16:15	26	183	136	345	26	29	3	58	8	59	6	73	6	85	107	198	674
16:30	35	174	156	365	41	12	4	57	13	48	2	63	4	73	121	198	683
16:45	16	166	124	306	34	24	13	71	11	65	4	80	3	85	151	239	696
17:00	27	200	70	297	35	25	4	64	9	54	6	69	5	74	89	168	598
17:15	27	184	68	279	30	21	15	66	5	55	3	63	8	135	99	242	650
17:30	14	142	49	205	50	29	13	92	12	50	5	67	9	112	104	225	589
17:45	7	110	37	154	48	23	11	82	7	45	3	55	7	97	97	201	492

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	105	690	566	1361	130	92	29	251	39	232	16	287	22	322	454	798	2697
PHF	0.75	0.94	0.91	0.93	0.79	0.79	0.56	0.88	0.75	0.89	0.67	0.90	0.61	0.95	0.75	0.83	0.97
% HV	0.0%	0.0%	0.2%	0.1%	5.4%	0.0%	3.4%	3.2%	2.6%	10.3%	0.0%	8.7%	0.0%	3.1%	2.9%	2.9%	2.1%

Table A-3A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	22	27	54	27	134	51	212	11	76	15	102	100	64	33	197	565
06:15	4	18	25	47	24	164	51	239	15	126	20	161	86	89	46	221	668
06:30	9	42	40	91	38	198	64	300	14	143	22	179	129	106	51	286	856
06:45	5	68	52	125	42	268	83	393	27	116	21	164	130	115	33	278	960
07:00	9	48	45	102	38	251	82	371	17	129	25	171	106	116	35	257	901
07:15	4	40	42	86	42	230	89	361	14	145	22	181	143	101	36	280	908
07:30	10	86	75	171	41	202	69	312	35	183	23	241	106	90	40	236	960
07:45	4	53	51	108	61	208	55	324	24	174	27	225	136	83	65	284	941
08:00	9	29	29	67	64	178	40	282	24	136	9	169	113	68	41	222	740
08:15	3	33	30	66	33	150	45	228	19	87	15	121	92	56	47	195	610
08:30	5	40	34	79	51	125	33	209	14	94	9	117	89	73	48	210	615
08:45	4	43	43	90	36	117	28	181	20	81	18	119	94	58	44	196	586

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	28	242	214	484	163	951	323	1437	93	573	91	757	485	422	144	1051	3729
PHF	0.70	0.70	0.71	0.71	0.97	0.89	0.91	0.91	0.66	0.78	0.91	0.79	0.85	0.91	0.90	0.94	0.97

Start Date 7/18/2012
Start Time 15:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	114	113	237	61	51	20	132	36	97	4	137	44	72	38	154	660
15:15	6	159	98	263	56	52	21	129	33	75	1	109	48	93	58	199	700
15:30	16	156	141	313	66	32	21	119	42	100	7	149	66	84	55	205	786
15:45	19	171	169	359	67	53	14	134	53	103	9	165	56	122	62	240	898
16:00	30	205	261	496	61	47	18	126	76	113	3	192	53	99	83	235	1049
16:15	34	192	270	496	65	50	30	145	71	120	12	203	30	140	77	247	1091
16:30	41	209	286	536	61	42	16	119	66	122	5	193	62	129	77	268	1116
16:45	33	193	261	487	67	47	22	136	60	119	3	182	53	147	104	304	1109
17:00	31	212	222	465	73	42	31	146	50	102	4	156	47	160	102	309	1076
17:15	28	205	196	429	73	51	32	156	44	112	5	161	43	196	106	345	1091
17:30	18	151	153	322	70	50	20	140	46	94	8	148	50	212	89	351	961
17:45	19	139	106	264	80	41	26	147	46	110	6	162	55	155	79	289	862

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	139	806	1039	1984	266	181	99	546	247	463	24	734	192	576	360	1128	4392
PHF	0.85	0.95	0.91	0.93	0.91	0.91	0.80	0.93	0.87	0.95	0.50	0.90	0.77	0.90	0.87	0.91	0.98

Table A-3B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	1	1	0	2	0	2	0	2	1	3	6
06:15	0	0	0	0	1	0	2	3	1	1	0	2	0	3	2	5	10
06:30	0	0	1	1	2	0	2	4	0	3	0	3	0	2	3	5	13
06:45	0	0	0	0	3	0	0	3	0	3	0	3	0	4	2	6	12
07:00	0	1	2	3	1	0	1	2	0	5	0	5	0	11	2	13	23
07:15	0	0	0	0	7	0	1	8	0	5	0	5	0	10	3	13	26
07:30	0	0	1	1	2	0	0	2	1	2	0	3	1	11	3	15	21
07:45	0	0	1	1	5	0	3	8	1	5	0	6	1	8	6	15	30
08:00	0	1	1	2	1	0	2	3	0	6	0	6	0	7	5	12	23
08:15	0	1	0	1	2	0	1	3	1	13	0	14	0	7	2	9	27
08:30	1	1	1	3	5	0	0	5	1	10	0	11	0	8	1	9	28
08:45	0	0	0	0	2	0	4	6	1	4	0	5	0	15	2	17	28

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	1	3	4	13	0	2	15	1	15	0	16	1	36	10	47	82
PHF	0	0.25	0.38	0.33	0.46	0	0.50	0.47	0.25	0.75	0	0.80	0.25	0.82	0.83	0.78	0.79

Start Date 7/18/2012
Start Time 15:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	2	2	13	0	2	15	2	10	0	12	4	4	2	10	39
15:15	0	2	5	7	8	1	1	10	0	7	0	7	0	4	3	7	31
15:30	0	0	1	1	6	0	3	9	1	4	0	5	2	3	3	8	23
15:45	0	0	2	2	2	0	0	2	0	8	1	9	3	7	3	13	26
16:00	0	0	1	1	5	0	3	8	2	5	0	7	1	8	1	10	26
16:15	0	0	1	1	3	0	0	3	3	4	0	7	1	6	0	7	18
16:30	0	0	4	4	4	0	0	4	1	9	0	10	0	5	7	12	30
16:45	0	0	1	1	0	0	0	0	0	6	0	6	1	3	2	6	13
17:00	0	1	1	2	2	0	1	3	2	4	0	6	0	5	2	7	18
17:15	0	0	0	0	3	0	1	4	0	8	0	8	0	3	3	6	18
17:30	0	1	0	1	3	0	2	5	0	2	0	2	1	1	3	5	13
17:45	0	1	2	3	1	0	0	1	3	2	0	5	0	6	0	6	15

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	0	1	7	8	9	0	1	10	6	23	0	29	2	19	11	32	79
PHF	0	0.25	0.44	0.50	0.56	0	0.25	0.63	0.50	0.64	0	0.73	0.50	0.79	0.39	0.67	0.66

Table A-3C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	22	27	54	27	134	52	213	11	78	15	104	100	66	34	200	571
06:15	4	18	25	47	25	164	53	242	16	127	20	163	86	92	48	226	678
06:30	9	42	41	92	40	198	66	304	14	146	22	182	129	108	54	291	869
06:45	5	68	52	125	45	268	83	396	27	119	21	167	130	119	35	284	972
07:00	9	49	47	105	39	251	83	373	17	134	25	176	106	127	37	270	924
07:15	4	40	42	86	49	230	90	369	14	150	22	186	143	111	39	293	934
07:30	10	86	76	172	43	202	69	314	36	185	23	244	107	101	43	251	981
07:45	4	53	52	109	66	208	58	332	25	179	27	231	137	91	71	299	971
08:00	9	30	30	69	65	178	42	285	24	142	9	175	113	75	46	234	763
08:15	3	34	30	67	35	150	46	231	20	100	15	135	92	63	49	204	637
08:30	6	41	35	82	56	125	33	214	15	104	9	128	89	81	49	219	643
08:45	4	43	43	90	38	117	32	187	21	85	18	124	94	73	46	213	614

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	28	243	217	488	176	951	325	1452	94	588	91	773	486	458	154	1098	3811
PHF	0.70	0.71	0.71	0.71	0.90	0.89	0.90	0.92	0.65	0.79	0.91	0.79	0.85	0.90	0.90	0.94	0.97
% HV	0.0%	0.4%	1.4%	0.8%	7.4%	0.0%	0.6%	1.0%	1.1%	2.6%	0.0%	2.1%	0.2%	7.9%	6.5%	4.3%	2.2%

Start Date 7/18/2012
Start Time 15:00

Street Name	7th Ave				Jimmie Dyess Pkwy				Gordon Hwy				Gordon Hwy				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	114	115	239	74	51	22	147	38	107	4	149	48	76	40	164	699
15:15	6	161	103	270	64	53	22	139	33	82	1	116	48	97	61	206	731
15:30	16	156	142	314	72	32	24	128	43	104	7	154	68	87	58	213	809
15:45	19	171	171	361	69	53	14	136	53	111	10	174	59	129	65	253	924
16:00	30	205	262	497	66	47	21	134	78	118	3	199	54	107	84	245	1075
16:15	34	192	271	497	68	50	30	148	74	124	12	210	31	146	77	254	1109
16:30	41	209	290	540	65	42	16	123	67	131	5	203	62	134	84	280	1146
16:45	33	193	262	488	67	47	22	136	60	125	3	188	54	150	106	310	1122
17:00	31	213	223	467	75	42	32	149	52	106	4	162	47	165	104	316	1094
17:15	28	205	196	429	76	51	33	160	44	120	5	169	43	199	109	351	1109
17:30	18	152	153	323	73	50	22	145	46	96	8	150	51	213	92	356	974
17:45	19	140	108	267	81	41	26	148	49	112	6	167	55	161	79	295	877

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:45	139	807	1046	1992	275	181	100	556	253	486	24	763	194	595	371	1160	4471
PHF	0.85	0.95	0.90	0.92	0.92	0.91	0.78	0.93	0.85	0.93	0.50	0.91	0.78	0.90	0.88	0.92	0.98
% HV	0.0%	0.1%	0.7%	0.4%	3.3%	0.0%	1.0%	1.8%	2.4%	4.7%	0.0%	3.8%	1.0%	3.2%	3.0%	2.8%	1.8%

Table A-4A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				13th St				13th St				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	31	1	32	1	219	46	266	6	0	4	10	1	2	0	3	311
06:15	0	40	0	40	3	186	70	259	2	0	1	3	0	1	0	1	303
06:30	0	85	0	85	3	147	63	213	4	0	8	12	0	0	6	6	316
06:45	0	63	1	64	4	228	77	309	1	0	8	9	0	0	0	0	382
07:00	1	64	0	65	3	249	68	320	1	0	12	13	0	1	0	1	399
07:15	0	80	1	81	2	283	60	345	4	0	3	7	0	0	0	0	433
07:30	0	89	1	90	6	286	49	341	6	0	7	13	0	0	0	0	444
07:45	0	54	2	56	4	285	45	334	1	0	11	12	0	0	0	0	402
08:00	1	40	5	46	8	297	43	348	4	1	6	11	1	1	0	2	407
08:15	0	21	3	24	3	200	38	241	2	0	10	12	1	1	0	2	279
08:30	0	21	1	22	2	144	43	189	4	1	7	12	1	0	0	1	224
08:45	1	30	1	32	0	140	59	199	4	0	7	11	1	0	0	1	243

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	1	252	1	254	13	810	278	1101	8	0	29	37	0	2	6	8	1400
PHF	0.25	0.74	0.25	0.75	0.81	0.81	0.90	0.86	0.50	0	0.60	0.71	0	0.50	0.25	0.33	0.88

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				13th St				13th St				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	90	4	94	0	24	3	27	35	0	0	35	6	0	1	7	163
15:15	3	123	0	126	0	32	7	39	53	3	3	59	1	0	4	5	229
15:30	0	129	1	130	0	30	1	31	36	0	0	36	0	0	1	1	198
15:45	0	158	0	158	0	34	11	45	41	0	0	41	0	0	2	2	246
16:00	0	301	4	305	0	36	4	40	68	0	0	68	0	0	5	5	418
16:15	0	250	0	250	0	30	3	33	61	0	0	61	0	0	5	5	349
16:30	0	327	0	327	0	18	2	20	47	0	0	47	2	0	8	10	404
16:45	0	265	0	265	0	17	1	18	62	0	0	62	1	0	3	4	349
17:00	1	222	0	223	0	19	3	22	47	0	0	47	2	0	2	4	296
17:15	0	190	0	190	0	32	3	35	52	0	0	52	1	0	1	2	279
17:30	0	160	1	161	0	30	7	37	37	0	0	37	0	0	6	6	241
17:45	0	130	1	131	0	29	4	33	22	0	0	22	0	0	1	1	187

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	1143	4	1147	0	101	10	111	238	0	0	238	3	0	21	24	1520
PHF	0	0.87	0.25	0.88	0	0.70	0.63	0.69	0.88	0	0	0.88	0.38	0	0.66	0.60	0.91

Table A-4B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				13th St				13th St				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
06:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
07:00	0	1	0	1	0	0	0	0	0	0	2	2	0	0	0	0	3
07:15	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
07:30	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
07:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
08:00	0	1	1	2	0	0	0	0	0	0	2	2	0	0	0	0	4
08:15	0	0	0	0	0	0	0	0	0	0	3	3	0	1	0	1	4
08:30	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
08:45	0	1	0	1	0	0	0	0	0	0	2	2	0	0	0	0	3

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	0	1	0	1	0	0	0	0	0	0	4	4	0	0	0	0	5
PHF	0	0.25	0	0.25	0	0	0	0	0	0	0.50	0.50	0	0	0	0	0.42

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				13th St				13th St				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:15	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	2	0	2	0	0	0	0	1	0	0	1	0	0	0	0	3
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
PHF	0	0.25	0	0.25	0	0.25	0	0.25	0	0	0	0	0	0	0	0	0.50

Table A-4C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St Northbound				19th St Southbound				13th St Eastbound				13th St Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	31	1	32	1	219	46	266	6	0	5	11	1	2	0	3	312
06:15	0	40	0	40	3	186	70	259	2	0	1	3	0	1	0	1	303
06:30	0	85	0	85	3	147	63	213	4	0	9	13	0	0	6	6	317
06:45	0	63	1	64	4	228	77	309	1	0	9	10	0	0	0	0	383
07:00	1	65	0	66	3	249	68	320	1	0	14	15	0	1	0	1	402
07:15	0	80	1	81	2	283	60	345	4	0	6	10	0	0	0	0	436
07:30	0	89	1	90	6	286	49	341	6	0	10	16	0	0	0	0	447
07:45	0	54	2	56	4	285	45	334	1	0	12	13	0	0	0	0	403
08:00	1	41	6	48	8	297	43	348	4	1	8	13	1	1	0	2	411
08:15	0	21	3	24	3	200	38	241	2	0	13	15	1	2	0	3	283
08:30	0	21	1	22	2	144	43	189	4	1	9	14	1	0	0	1	226
08:45	1	31	1	33	0	140	59	199	4	0	9	13	1	0	0	1	246

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	1	253	1	255	13	810	278	1101	8	0	33	41	0	2	6	8	1405
PHF	0.25	0.74	0.25	0.75	0.81	0.81	0.90	0.86	0.50	0	0.59	0.68	0	0.50	0.25	0.33	0.87
% HV	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	12.1%	9.8%	0%	0.0%	0.0%	0.0%	0.4%

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St Northbound				19th St Southbound				13th St Eastbound				13th St Westbound				Total
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	90	4	95	0	24	3	27	35	0	0	35	6	0	1	7	164
15:15	3	124	0	127	0	32	7	39	54	3	3	60	1	0	4	5	231
15:30	0	129	1	130	0	30	1	31	36	0	0	36	0	0	1	1	198
15:45	0	160	0	160	0	34	11	45	42	0	0	42	0	0	2	2	249
16:00	0	301	4	305	0	36	4	40	68	0	0	68	0	0	5	5	418
16:15	0	251	0	251	0	30	3	33	61	0	0	61	0	0	5	5	350
16:30	0	327	0	327	0	18	2	20	47	0	0	47	2	0	8	10	404
16:45	0	265	0	265	0	18	1	19	62	0	0	62	1	0	3	4	350
17:00	1	222	0	223	0	19	3	22	47	0	0	47	2	0	2	4	296
17:15	0	190	0	190	0	32	3	35	52	0	0	52	1	0	1	2	279
17:30	0	160	1	161	0	30	7	37	37	0	0	37	0	0	6	6	241
17:45	0	130	1	131	0	29	4	33	22	0	0	22	0	0	1	1	187

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	1144	4	1148	0	102	10	112	238	0	0	238	3	0	21	24	1522
PHF	0	0.87	0.25	0.88	0	0.71	0.63	0.70	0.88	0	0	0.88	0.38	0	0.66	0.60	0.91
% HV	0%	0.1%	0.0%	0.1%	0%	1.0%	0.0%	0.9%	0.0%	0%	0%	0.0%	0.0%	0%	0.0%	0.0%	0.1%

Table A-5A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	1	8	11	20	10	41	2	53	0	6	3	9	51	5	0	56	138
06:15	0	2	8	10	8	74	3	85	0	4	3	7	68	4	0	72	174
06:30	1	4	16	21	5	72	0	77	0	7	6	13	91	8	1	100	211
06:45	1	7	37	45	2	74	1	77	0	22	23	45	94	10	1	105	272
07:00	3	9	45	57	2	71	2	75	0	12	29	41	110	3	2	115	288
07:15	0	7	42	49	2	74	0	76	0	9	38	47	106	7	3	116	288
07:30	3	7	14	24	11	65	0	76	0	13	16	29	74	12	3	89	218
07:45	6	8	24	38	9	69	1	79	0	8	6	14	52	8	3	63	194
08:00	4	8	34	46	6	59	0	65	0	7	6	13	38	13	0	51	175
08:15	3	6	21	30	10	44	5	59	1	6	4	11	31	11	0	42	142
08:30	16	3	10	29	3	27	14	44	0	6	7	13	21	39	2	62	148
08:45	22	8	17	47	1	50	15	66	0	11	8	19	29	66	1	96	228

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	7	30	138	175	17	284	3	304	0	56	106	162	384	32	9	425	1066
PHF	0.58	0.83	0.77	0.77	0.39	0.96	0.38	0.99	0	0.64	0.70	0.86	0.87	0.67	0.75	0.92	0.93

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	4	38	38	80	4	2	1	7	1	12	2	15	13	14	3	30	132
15:15	6	47	55	108	3	8	0	11	8	15	7	30	21	5	2	28	177
15:30	1	32	41	74	4	3	1	8	2	18	2	22	19	14	3	36	140
15:45	23	32	51	106	3	7	0	10	2	16	5	23	33	5	2	40	179
16:00	4	34	109	147	13	13	0	26	8	31	4	43	20	6	0	26	242
16:15	2	47	74	123	4	4	0	8	2	17	1	20	9	7	1	17	168
16:30	1	47	91	139	2	4	0	6	4	13	3	20	12	7	1	20	185
16:45	1	45	52	98	4	2	0	6	6	16	7	29	7	6	0	13	146
17:00	0	38	38	76	2	4	1	7	1	5	3	9	8	11	0	19	111
17:15	3	37	30	70	2	5	0	7	2	2	2	6	8	2	0	10	93
17:30	0	33	41	74	0	8	0	8	0	1	0	1	11	0	0	11	94
17:45	0	21	18	39	1	5	0	6	1	1	0	2	8	2	0	10	57

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	30	160	325	515	22	28	0	50	16	77	13	106	74	25	4	103	774
PHF	0.33	0.85	0.75	0.88	0.42	0.54	0	0.48	0.50	0.62	0.65	0.62	0.56	0.89	0.50	0.64	0.80

Table A-5B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	1	1	2	0	0	2	0	2	0	2	0	0	0	0	5
06:15	0	0	2	2	5	1	0	6	0	1	0	1	2	0	0	2	11
06:30	0	0	1	1	3	0	0	3	0	1	0	1	0	0	0	0	5
06:45	0	0	1	1	1	2	0	3	0	3	0	3	2	2	0	4	11
07:00	0	0	2	2	1	0	0	1	0	1	0	1	1	0	0	1	5
07:15	0	0	0	0	2	1	0	3	0	3	0	3	2	0	0	2	8
07:30	0	0	0	0	2	2	0	4	0	2	3	5	1	0	0	1	10
07:45	0	0	1	1	3	3	0	6	0	4	0	4	1	1	0	2	13
08:00	0	0	0	0	1	1	0	2	0	0	0	0	1	1	0	2	4
08:15	4	0	2	6	2	2	0	4	0	0	0	0	1	6	0	7	17
08:30	2	0	0	2	2	1	0	3	0	0	0	0	0	3	2	5	10
08:45	0	0	1	1	4	3	0	7	0	0	0	0	0	2	0	2	10

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	3	3	6	5	0	11	0	9	3	12	6	2	0	8	34
PHF	0	0	0.38	0.38	0.75	0.63	0	0.69	0	0.75	0.25	0.60	0.75	0.25	0	0.50	0.77

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	3	1	0	4	0	1	0	1	0	2	0	2	2	1	0	3	10
15:15	2	0	0	2	0	0	0	0	0	0	2	2	1	0	0	1	5
15:30	0	0	0	0	1	0	0	1	0	0	1	1	0	1	0	1	3
15:45	2	0	0	2	0	0	0	0	0	1	0	1	0	3	1	4	7
16:00	0	0	0	0	2	5	0	7	0	0	0	0	0	0	0	0	7
16:15	0	0	4	4	0	0	0	0	0	2	1	3	0	0	0	0	7
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:15	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:45	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	2	0	4	6	2	5	0	7	0	3	1	4	0	3	1	4	21
PHF	0.25	0	0.25	0.38	0.25	0.25	0	0.25	0	0.38	0.25	0.33	0	0.25	0.25	0.25	0.75

Table A-5C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	1	8	12	21	12	41	2	55	0	8	3	11	51	5	0	56	143
06:15	0	2	10	12	13	75	3	91	0	5	3	8	70	4	0	74	185
06:30	1	4	17	22	8	72	0	80	0	8	6	14	91	8	1	100	216
06:45	1	7	38	46	3	76	1	80	0	25	23	48	96	12	1	109	283
07:00	3	9	47	59	3	71	2	76	0	13	29	42	111	3	2	116	293
07:15	0	7	42	49	4	75	0	79	0	12	38	50	108	7	3	118	296
07:30	3	7	14	24	13	67	0	80	0	15	19	34	75	12	3	90	228
07:45	6	8	25	39	12	72	1	85	0	12	6	18	53	9	3	65	207
08:00	4	8	34	46	7	60	0	67	0	7	6	13	39	14	0	53	179
08:15	7	6	23	36	12	46	5	63	1	6	4	11	32	17	0	49	159
08:30	18	3	10	31	5	28	14	47	0	6	7	13	21	42	4	67	158
08:45	22	8	18	48	5	53	15	73	0	11	8	19	29	68	1	98	238

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	7	30	141	178	23	289	3	315	0	65	109	174	390	34	9	433	1100
PHF	0.58	0.83	0.75	0.75	0.44	0.95	0.38	0.98	0	0.65	0.72	0.87	0.88	0.71	0.75	0.92	0.93
% HV	0.0%	0.0%	2.1%	1.7%	26.1%	1.7%	0.0%	3.5%	0%	13.8%	2.8%	6.9%	1.5%	5.9%	0.0%	1.8%	3.1%

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	7	39	38	84	4	3	1	8	1	14	2	17	15	15	3	33	142
15:15	8	47	55	110	3	8	0	11	8	15	9	32	22	5	2	29	182
15:30	1	32	41	74	5	3	1	9	2	18	3	23	19	15	3	37	143
15:45	25	32	51	108	3	7	0	10	2	17	5	24	33	8	3	44	186
16:00	4	34	109	147	15	18	0	33	8	31	4	43	20	6	0	26	249
16:15	2	47	78	127	4	4	0	8	2	19	2	23	9	7	1	17	175
16:30	1	47	91	139	2	4	0	6	4	13	3	20	12	7	1	20	185
16:45	1	45	52	98	4	2	0	6	6	16	7	29	7	12	0	19	152
17:00	0	38	38	76	2	4	1	7	1	5	3	9	8	12	0	20	112
17:15	4	37	30	71	2	6	0	8	2	2	2	6	8	3	0	11	96
17:30	0	33	41	74	0	8	0	8	0	1	0	1	11	1	0	12	95
17:45	0	21	18	39	1	5	0	6	1	3	0	4	8	2	0	10	59

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	32	160	329	521	24	33	0	57	16	80	14	110	74	28	5	107	795
PHF	0.32	0.85	0.75	0.89	0.40	0.46	0	0.43	0.50	0.65	0.70	0.64	0.56	0.88	0.42	0.61	0.80
% HV	6.3%	0.0%	1.2%	1.2%	8.3%	15.2%	0%	12.3%	0.0%	3.8%	7.1%	3.6%	0.0%	10.7%	20.0%	3.7%	2.6%

Table A-6A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	15	25	6	46	52	127	16	195	5	8	12	25	0	25	4	29	295
06:15	19	19	10	48	45	94	27	166	6	5	8	19	2	19	5	26	259
06:30	20	33	8	61	32	46	44	122	5	12	9	26	10	27	26	63	272
06:45	17	32	7	56	54	67	50	171	7	27	15	49	4	33	7	44	320
07:00	7	31	11	49	62	67	62	191	20	34	9	63	10	40	13	63	366
07:15	14	44	18	76	71	92	60	223	11	18	17	46	20	25	23	68	413
07:30	9	58	10	77	60	110	43	213	7	19	6	32	10	36	15	61	383
07:45	3	32	17	52	51	112	26	189	12	20	8	40	7	32	10	49	330
08:00	1	25	7	33	64	109	23	196	7	29	9	45	3	17	11	31	305
08:15	3	13	7	23	60	79	19	158	7	23	6	36	0	20	14	34	251
08:30	5	11	5	21	40	66	21	127	2	14	1	17	4	31	8	43	208
08:45	12	23	23	58	31	60	23	114	4	19	7	30	3	56	11	70	272

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	33	165	56	254	244	381	191	816	50	91	40	181	47	133	61	241	1492
PHF	0.59	0.71	0.78	0.82	0.86	0.85	0.77	0.91	0.63	0.67	0.59	0.72	0.59	0.83	0.66	0.89	0.90

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	7	39	3	49	7	16	5	28	22	26	4	52	7	17	16	40	169
15:15	1	49	2	52	5	21	8	34	39	24	7	70	5	15	32	52	208
15:30	5	59	6	70	9	19	4	32	30	33	5	68	10	25	30	65	235
15:45	2	65	6	73	8	20	8	36	44	16	5	65	3	22	22	47	221
16:00	0	76	3	79	4	23	4	31	120	31	5	156	12	19	64	95	361
16:15	1	92	4	97	12	24	1	37	55	32	6	93	2	14	43	59	286
16:30	2	113	6	121	4	22	0	26	75	24	5	104	6	16	72	94	345
16:45	3	104	7	114	3	12	0	15	52	23	5	80	5	10	43	58	267
17:00	3	102	7	112	2	18	1	21	27	15	1	43	8	13	41	62	238
17:15	1	86	5	92	4	26	1	31	21	11	2	34	10	6	39	55	212
17:30	1	82	2	85	10	22	1	33	27	14	0	41	2	10	29	41	200
17:45	0	57	1	58	6	22	0	28	13	7	1	21	22	10	39	71	178

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	6	385	20	411	23	81	5	109	302	110	21	433	25	59	222	306	1259
PHF	0.50	0.85	0.71	0.85	0.48	0.84	0.31	0.74	0.63	0.86	0.88	0.69	0.52	0.78	0.77	0.81	0.87

Table A-6B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	1	0	1	1	2	1	4	0	0	0	0	5
06:15	1	0	0	1	0	0	0	0	0	0	7	7	0	0	0	0	8
06:30	0	1	4	5	0	0	0	0	0	5	0	5	1	0	0	1	11
06:45	1	0	0	1	0	0	0	0	0	3	1	4	0	3	0	3	8
07:00	0	0	1	1	1	1	0	2	2	2	0	4	0	2	1	3	10
07:15	0	0	0	0	2	1	0	3	0	4	1	5	0	1	0	1	9
07:30	0	0	0	0	4	0	0	4	0	2	1	3	0	1	0	1	8
07:45	0	0	0	0	0	1	0	1	0	0	7	7	0	1	0	1	9
08:00	0	1	0	1	1	1	0	2	0	1	1	2	1	2	1	4	9
08:15	3	0	0	3	1	2	1	4	0	1	0	1	0	3	0	3	11
08:30	1	0	0	1	1	1	0	2	0	2	1	3	0	1	0	1	7
08:45	1	0	0	1	0	2	0	2	0	2	2	4	0	1	1	2	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	0	0	1	1	7	3	0	10	2	8	9	19	0	5	1	6	36
PHF	0	0	0.25	0.25	0.44	0.75	0	0.63	0.25	0.50	0.32	0.68	0	0.63	0.25	0.50	0.90

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	0	0	1	0	0	1	1	1	0	0	1	0	1	1	2	5
15:15	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
15:30	1	2	0	3	0	0	0	0	1	1	0	2	1	0	0	1	6
15:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
16:00	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
16:15	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	5
16:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:45	3	0	0	3	0	1	2	3	0	0	0	0	0	1	0	1	7
17:00	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:15	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	3	1	0	4	0	1	2	3	0	4	4	8	0	1	0	1	16
PHF	0.25	0.25	0	0.33	0	0.25	0.25	0.25	0	0.25	0.33	0.40	0	0.25	0	0.25	0.57

Table A-6C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	15	25	6	46	52	128	16	196	6	10	13	29	0	25	4	29	300
06:15	20	19	10	49	45	94	27	166	6	5	15	26	2	19	5	26	267
06:30	20	34	12	66	32	46	44	122	5	17	9	31	11	27	26	64	283
06:45	18	32	7	57	54	67	50	171	7	30	16	53	4	36	7	47	328
07:00	7	31	12	50	63	68	62	193	22	36	9	67	10	42	14	66	376
07:15	14	44	18	76	73	93	60	226	11	22	18	51	20	26	23	69	422
07:30	9	58	10	77	64	110	43	217	7	21	7	35	10	37	15	62	391
07:45	3	32	17	52	51	113	26	190	12	20	15	47	7	33	10	50	339
08:00	1	26	7	34	65	110	23	198	7	30	10	47	4	19	12	35	314
08:15	6	13	7	26	61	81	20	162	7	24	6	37	0	23	14	37	262
08:30	6	11	5	22	41	67	21	129	2	16	2	20	4	32	8	44	215
08:45	13	23	23	59	31	62	23	116	4	21	9	34	3	57	12	72	281

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	33	165	57	255	251	384	191	826	52	99	49	200	47	138	62	247	1528
PHF	0.59	0.71	0.79	0.83	0.86	0.85	0.77	0.91	0.59	0.69	0.68	0.75	0.59	0.82	0.67	0.89	0.91
% HV	0.0%	0.0%	1.8%	0.4%	2.8%	0.8%	0.0%	1.2%	3.8%	8.1%	18.4%	9.5%	0.0%	3.6%	1.6%	2.4%	2.4%

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	8	39	3	50	7	16	6	29	23	26	4	53	7	18	17	42	174
15:15	1	49	2	52	5	21	8	34	39	25	7	71	5	16	32	53	210
15:30	6	61	6	73	9	19	4	32	31	34	5	70	11	25	30	66	241
15:45	2	65	6	73	8	20	8	36	44	17	5	66	3	23	22	48	223
16:00	0	76	3	79	4	23	4	31	120	31	8	159	12	19	64	95	364
16:15	1	92	4	97	12	24	1	37	55	36	7	98	2	14	43	59	291
16:30	2	114	6	122	4	22	0	26	75	24	5	104	6	16	72	94	346
16:45	6	104	7	117	3	13	2	18	52	23	5	80	5	11	43	59	274
17:00	5	102	7	114	2	18	1	21	27	15	1	43	8	13	41	62	240
17:15	2	86	5	93	4	26	1	31	21	11	2	34	10	7	39	56	214
17:30	1	82	2	85	10	22	1	33	27	14	0	41	2	10	29	41	200
17:45	0	57	1	58	6	22	0	28	13	9	1	23	22	10	39	71	180

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	9	386	20	415	23	82	7	112	302	114	25	441	25	60	222	307	1275
PHF	0.38	0.85	0.71	0.85	0.48	0.85	0.44	0.76	0.63	0.79	0.78	0.69	0.52	0.79	0.77	0.81	0.88
% HV	33.3%	0.3%	0.0%	1.0%	0.0%	1.2%	28.6%	2.7%	0.0%	3.5%	16.0%	1.8%	0.0%	1.7%	0.0%	0.3%	1.3%

Table A-7A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	1	2	3	0	0	0	0	0	25	1	26	8	66	0	74	103
06:15	2	2	7	11	1	0	1	2	0	23	2	25	12	61	2	75	113
06:30	0	8	20	28	0	2	0	2	0	82	3	85	10	67	3	80	195
06:45	3	3	14	20	1	0	2	3	0	88	9	97	14	54	2	70	190
07:00	3	1	4	8	1	3	1	5	0	73	11	84	11	69	1	81	178
07:15	5	8	9	22	2	2	0	4	2	84	9	95	11	68	2	81	202
07:30	9	8	14	31	2	3	0	5	3	81	12	96	15	79	2	96	228
07:45	8	17	16	41	1	2	1	4	5	86	11	102	16	52	3	71	218
08:00	6	19	32	57	2	4	2	8	4	101	7	112	14	31	1	46	223
08:15	5	15	15	35	2	7	0	9	2	80	12	94	24	24	6	54	192
08:30	4	7	6	17	1	4	0	5	1	55	11	67	18	29	2	49	138
08:45	9	7	5	21	1	5	0	6	1	72	6	79	18	42	3	63	169

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	28	52	71	151	7	11	3	21	14	352	39	405	56	230	8	294	871
PHF	0.78	0.68	0.55	0.66	0.88	0.69	0.38	0.66	0.70	0.87	0.81	0.90	0.88	0.73	0.67	0.77	0.96

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	4	4	19	27	4	14	0	18	0	45	6	51	16	34	1	51	147
15:15	5	5	7	17	3	7	0	10	0	49	2	51	14	40	1	55	133
15:30	10	6	8	24	5	20	0	25	0	49	6	55	15	50	1	66	170
15:45	6	6	18	30	1	7	0	8	0	39	2	41	12	43	1	56	135
16:00	7	9	25	41	4	11	4	19	0	52	6	58	20	73	0	93	211
16:15	10	9	18	37	4	29	1	34	0	62	7	69	17	39	0	56	196
16:30	8	8	29	45	9	22	4	35	0	78	8	86	20	48	0	68	234
16:45	11	1	29	41	5	10	0	15	1	54	11	66	13	28	1	42	164
17:00	10	12	25	47	1	2	2	5	1	53	6	60	7	49	1	57	169
17:15	6	7	14	27	3	6	2	11	0	50	10	60	16	39	2	57	155
17:30	7	4	14	25	2	1	1	4	0	45	12	57	11	35	0	46	132
17:45	1	2	9	12	0	1	0	1	0	33	7	40	9	39	1	49	102

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	36	27	101	164	22	72	9	103	1	246	32	279	70	188	1	259	805
PHF	0.82	0.75	0.87	0.91	0.61	0.62	0.56	0.74	0.25	0.79	0.73	0.81	0.88	0.64	0.25	0.70	0.86

Table A-7B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	1	0	1	1	5	0	6	0	1	0	1	8
06:45	0	0	0	0	0	0	0	0	0	6	0	6	0	2	0	2	8
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
07:15	0	0	0	0	0	1	0	1	0	8	0	8	0	1	0	1	10
07:30	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	6
07:45	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
08:00	4	0	0	4	0	2	3	5	0	2	0	2	0	4	0	4	15
08:15	0	0	0	0	0	1	0	1	0	4	0	4	0	1	0	1	6
08:30	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
08:45	0	0	0	0	0	1	0	1	0	2	0	2	0	2	0	2	5

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	4	1	0	5	0	3	3	6	0	16	0	16	0	6	0	6	33
PHF	0.25	0.25	0	0.31	0	0.38	0.25	0.30	0	0.50	0	0.50	0	0.38	0	0.38	0.55

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
15:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
15:30	0	0	0	0	0	0	0	0	0	1	1	2	0	2	0	2	4
15:45	1	0	0	1	0	0	0	0	0	0	1	1	0	1	0	1	3
16:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
16:15	0	0	0	0	0	2	0	2	0	3	0	3	1	2	0	3	8
16:30	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	2	3
17:15	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:45	0	0	0	0	1	0	0	1	0	2	0	2	0	1	0	1	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	0	0	0	4	0	4	0	4	0	4	1	3	0	4	12
PHF	0	0	0	0	0	0.50	0	0.50	0	0.33	0	0.33	0.25	0.38	0	0.33	0.38

Table A-7C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	1	2	3	0	0	0	0	0	26	1	27	8	66	0	74	104
06:15	2	2	7	11	1	0	1	2	0	23	2	25	12	61	2	75	113
06:30	0	8	20	28	0	3	0	3	1	87	3	91	10	68	3	81	203
06:45	3	3	14	20	1	0	2	3	0	94	9	103	14	56	2	72	198
07:00	3	1	4	8	1	3	1	5	0	73	11	84	11	73	1	85	182
07:15	5	8	9	22	2	3	0	5	2	92	9	103	11	69	2	82	212
07:30	9	8	14	31	2	3	0	5	3	87	12	102	15	79	2	96	234
07:45	8	18	16	42	1	2	1	4	5	86	11	102	16	53	3	72	220
08:00	10	19	32	61	2	6	5	13	4	103	7	114	14	35	1	50	238
08:15	5	15	15	35	2	8	0	10	2	84	12	98	24	25	6	55	198
08:30	4	8	6	18	1	4	0	5	1	57	11	69	18	29	2	49	141
08:45	9	7	5	21	1	6	0	7	1	74	6	81	18	44	3	65	174

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	32	53	71	156	7	14	6	27	14	368	39	421	56	236	8	300	904
PHF	0.80	0.70	0.55	0.64	0.88	0.58	0.30	0.52	0.70	0.89	0.81	0.92	0.88	0.75	0.67	0.78	0.95
% HV	12.5%	1.9%	0.0%	3.2%	0.0%	21.4%	50.0%	22.2%	0.0%	4.3%	0.0%	3.8%	0.0%	2.5%	0.0%	2.0%	3.7%

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	4	4	19	27	4	14	0	18	0	45	6	51	16	36	1	53	149
15:15	5	5	7	17	3	7	0	10	0	50	2	52	14	40	1	55	134
15:30	10	6	8	24	5	20	0	25	0	50	7	57	15	52	1	68	174
15:45	7	6	18	31	1	7	0	8	0	39	3	42	12	44	1	57	138
16:00	7	9	25	41	4	11	4	19	0	53	6	59	20	73	0	93	212
16:15	10	9	18	37	4	31	1	36	0	65	7	72	18	41	0	59	204
16:30	8	8	29	45	9	24	4	37	0	78	8	86	20	49	0	69	237
16:45	11	1	29	41	5	10	0	15	1	54	11	66	13	28	1	42	164
17:00	10	12	25	47	1	2	2	5	1	54	6	61	9	49	1	59	172
17:15	6	7	14	27	3	6	2	11	0	51	10	61	16	40	2	58	157
17:30	7	4	14	25	2	1	1	4	0	45	12	57	11	36	0	47	133
17:45	1	2	9	12	1	1	0	2	0	35	7	42	9	40	1	50	106

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	36	27	101	164	22	76	9	107	1	250	32	283	71	191	1	263	817
PHF	0.82	0.75	0.87	0.91	0.61	0.61	0.56	0.72	0.25	0.80	0.73	0.82	0.89	0.65	0.25	0.71	0.86
% HV	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%	3.7%	0.0%	1.6%	0.0%	1.4%	1.4%	1.6%	0.0%	1.5%	1.5%

Table A-8A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	20	8	11	39	3	3	3	9	0	15	9	24	48	76	8	132	204
06:15	29	7	16	52	6	6	0	12	1	18	7	26	39	84	4	127	217
06:30	30	16	51	97	5	5	0	10	1	59	15	75	37	77	17	131	313
06:45	23	23	24	70	11	7	1	19	4	86	19	109	27	113	15	155	353
07:00	27	26	31	84	24	6	0	30	1	67	18	86	45	100	30	175	375
07:15	25	24	27	76	24	15	0	39	1	57	16	74	45	100	18	163	352
07:30	31	29	37	97	20	8	3	31	1	73	24	98	69	155	29	253	479
07:45	27	28	20	75	9	9	0	18	8	59	18	85	48	101	38	187	365
08:00	33	28	25	86	16	11	7	34	3	67	13	83	52	148	46	246	449
08:15	27	22	20	69	13	11	1	25	3	62	20	85	64	162	41	267	446
08:30	13	11	19	43	2	2	0	4	2	48	15	65	54	66	16	136	248
08:45	10	11	26	47	10	8	0	18	1	50	19	70	41	86	14	141	276

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	118	107	102	327	58	39	11	108	15	261	75	351	233	566	154	953	1739
PHF	0.89	0.92	0.69	0.84	0.73	0.89	0.39	0.79	0.47	0.89	0.78	0.90	0.84	0.87	0.84	0.89	0.91

Start Date 7/17/2012
Start Time 15:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	16	48	74	18	8	5	31	2	71	22	95	38	38	12	88	288
15:15	12	6	55	73	15	18	1	34	1	67	14	82	45	38	6	89	278
15:30	20	7	54	81	13	6	5	24	1	101	24	126	30	41	8	79	310
15:45	10	5	51	66	16	19	5	40	3	85	19	107	36	51	9	96	309
16:00	15	13	77	105	37	16	2	55	3	155	28	186	68	56	18	142	488
16:15	9	9	68	86	27	19	2	48	0	146	24	170	57	38	6	101	405
16:30	15	10	80	105	47	36	0	83	2	165	33	200	62	34	7	103	491
16:45	12	3	72	87	44	27	0	71	3	124	23	150	34	31	6	71	379
17:00	6	4	97	107	27	21	1	49	1	140	17	158	46	43	4	93	407
17:15	9	5	88	102	16	18	1	35	0	103	16	119	38	38	4	80	336
17:30	9	7	47	63	16	11	1	28	0	89	18	107	47	35	2	84	282
17:45	2	3	60	65	7	2	0	9	0	46	13	59	30	33	6	69	202

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	51	35	297	383	155	98	4	257	8	590	108	706	221	159	37	417	1763
PHF	0.85	0.67	0.93	0.91	0.82	0.68	0.50	0.77	0.67	0.89	0.82	0.88	0.81	0.71	0.51	0.73	0.90

Table A-8B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
06:30	0	1	0	1	0	0	0	0	0	1	1	2	0	0	0	0	3
06:45	1	1	0	2	1	0	0	1	0	0	1	1	0	1	0	1	5
07:00	1	0	0	1	0	0	0	0	0	2	0	2	0	3	0	3	6
07:15	0	0	1	1	0	3	0	3	3	4	3	10	1	1	0	2	16
07:30	1	0	2	3	1	4	0	5	0	3	1	4	0	0	0	0	12
07:45	0	1	2	3	0	1	0	1	0	0	0	0	0	0	0	0	4
08:00	1	4	4	9	0	0	4	4	0	1	0	1	1	1	0	2	16
08:15	0	1	0	1	0	0	0	0	0	1	0	1	1	1	0	2	4
08:30	0	0	0	0	0	0	0	0	1	2	0	3	2	0	0	2	5
08:45	0	0	2	2	0	0	0	0	0	2	0	2	0	0	0	0	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	2	6	8	16	1	5	4	10	0	5	1	6	2	2	0	4	36
PHF	0.50	0.38	0.50	0.44	0.25	0.31	0.25	0.50	0	0.42	0.25	0.38	0.50	0.50	0	0.50	0.56

Start Date 7/17/2012
Start Time 15:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	2	2	0	0	0	0	0	2	0	2	1	2	0	3	7
15:15	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	2
15:30	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
15:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
16:00	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
16:15	0	0	1	1	0	0	1	1	0	3	0	3	0	0	0	0	5
16:30	0	2	0	2	0	3	0	3	3	0	0	3	0	0	0	0	8
16:45	0	2	1	3	0	2	0	2	0	0	0	0	0	0	0	0	5
17:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
17:15	0	3	0	3	0	0	1	1	1	1	0	2	1	0	0	1	7
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
17:45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	4	2	6	0	5	1	6	3	3	0	6	1	1	0	2	20
PHF	0	0.50	0.50	0.50	0	0.42	0.25	0.50	0.25	0.25	0	0.50	0.25	0.25	0	0.25	0.63

Table A-8C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	20	8	11	39	3	3	3	9	0	16	9	25	48	76	8	132	205
06:15	29	7	16	52	6	6	0	12	1	18	7	26	40	84	4	128	218
06:30	30	17	51	98	5	5	0	10	1	60	16	77	37	77	17	131	316
06:45	24	24	24	72	12	7	1	20	4	86	20	110	27	114	15	156	358
07:00	28	26	31	85	24	6	0	30	1	69	18	88	45	103	30	178	381
07:15	25	24	28	77	24	18	0	42	4	61	19	84	46	101	18	165	368
07:30	32	29	39	100	21	12	3	36	1	76	25	102	69	155	29	253	491
07:45	27	29	22	78	9	10	0	19	8	59	18	85	48	101	38	187	369
08:00	34	32	29	95	16	11	11	38	3	68	13	84	53	149	46	248	465
08:15	27	23	20	70	13	11	1	25	3	63	20	86	65	163	41	269	450
08:30	13	11	19	43	2	2	0	4	3	50	15	68	56	66	16	138	253
08:45	10	11	28	49	10	8	0	18	1	52	19	72	41	86	14	141	280

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	120	113	110	343	59	44	15	118	15	266	76	357	235	568	154	957	1775
PHF	0.88	0.88	0.71	0.86	0.70	0.92	0.34	0.78	0.47	0.88	0.76	0.88	0.85	0.87	0.84	0.89	0.90
% HV	1.7%	5.3%	7.3%	4.7%	1.7%	11.4%	26.7%	8.5%	0.0%	1.9%	1.3%	1.7%	0.9%	0.4%	0.0%	0.4%	2.0%

Start Date 7/17/2012
Start Time 15:00

Street Name	Rice Rd				Rice Rd				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	16	50	76	18	8	5	31	2	73	22	97	39	40	12	91	295
15:15	12	6	56	74	15	18	1	34	1	68	14	83	45	38	6	89	280
15:30	20	7	54	81	13	7	5	25	1	101	24	126	30	44	8	82	314
15:45	10	5	51	66	16	19	5	40	3	86	19	108	36	52	9	97	311
16:00	15	13	77	105	37	16	2	55	3	155	28	186	69	57	18	144	490
16:15	9	9	69	87	27	19	3	49	0	149	24	173	57	38	6	101	410
16:30	15	12	80	107	47	39	0	86	5	165	33	203	62	34	7	103	499
16:45	12	5	73	90	44	29	0	73	3	124	23	150	34	31	6	71	384
17:00	6	4	97	107	27	21	1	49	1	140	17	158	47	43	4	94	408
17:15	9	8	88	105	16	18	2	36	1	104	16	121	39	38	4	81	343
17:30	9	7	47	63	16	11	1	28	0	89	18	107	47	36	3	86	284
17:45	2	3	61	66	7	2	0	9	0	46	13	59	30	33	6	69	203

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	51	39	299	389	155	103	5	263	11	593	108	712	222	160	37	419	1783
PHF	0.85	0.75	0.93	0.91	0.82	0.66	0.42	0.76	0.55	0.90	0.82	0.88	0.80	0.70	0.51	0.73	0.89
% HV	0.0%	10.3%	0.7%	1.5%	0.0%	4.9%	20.0%	2.3%	27.3%	0.5%	0.0%	0.8%	0.5%	0.6%	0.0%	0.5%	1.1%

Table A-9A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	0	42	47	0	0	0	0	0	27	5	32	60	121	0	181	260
06:15	1	0	58	59	0	0	0	0	0	43	11	54	61	123	0	184	297
06:30	3	0	93	96	0	0	0	0	0	116	13	129	52	120	0	172	397
06:45	6	0	67	73	0	0	0	0	0	115	11	126	62	145	0	207	406
07:00	4	0	91	95	0	0	0	0	0	109	10	119	97	177	0	274	488
07:15	3	0	136	139	0	0	0	0	0	96	14	110	88	171	0	259	508
07:30	6	0	135	141	0	0	0	0	0	118	9	127	90	242	0	332	600
07:45	6	0	106	112	0	0	0	0	0	86	7	93	107	187	0	294	499
08:00	15	0	84	99	0	0	0	0	0	101	7	108	86	235	0	321	528
08:15	9	0	70	79	0	0	0	0	0	90	6	96	90	248	0	338	513
08:30	0	0	60	60	0	0	0	0	0	64	5	69	85	149	0	234	363
08:45	2	0	87	89	0	0	0	0	0	78	6	84	104	128	0	232	405

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	36	0	395	431	0	0	0	0	0	395	29	424	373	912	0	1285	2140
PHF	0.60	0	0.73	0.76	0	0	0	0	0	0.84	0.81	0.83	0.87	0.92	0	0.95	0.89

Start Date 7/17/2012
Start Time 15:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	2	0	97	99	0	0	0	0	0	127	8	135	78	85	0	163	397
15:15	5	0	97	102	0	0	0	0	0	135	5	140	88	85	0	173	415
15:30	2	0	108	110	0	0	0	0	0	151	18	169	90	78	0	168	447
15:45	4	0	121	125	0	0	0	0	0	147	10	157	78	94	0	172	454
16:00	5	0	170	175	0	0	0	0	0	251	22	273	85	141	0	226	674
16:15	3	0	113	116	0	0	0	0	0	219	29	248	91	98	0	189	553
16:30	3	0	179	182	0	0	0	0	0	276	20	296	71	96	0	167	645
16:45	1	0	147	148	0	0	0	0	0	236	8	244	77	69	0	146	538
17:00	4	0	148	152	0	0	0	0	0	247	15	262	72	86	0	158	572
17:15	5	0	157	162	0	0	0	0	0	202	15	217	73	78	0	151	530
17:30	2	0	133	135	0	0	0	0	0	142	9	151	84	80	0	164	450
17:45	3	0	119	122	0	0	0	0	0	120	4	124	55	68	0	123	369

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	12	0	609	621	0	0	0	0	0	982	79	1061	324	404	0	728	2410
PHF	0.60	0	0.85	0.85	0	0	0	0	0	0.89	0.68	0.90	0.89	0.72	0	0.81	0.89

Table A-9B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	3
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
06:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
07:00	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
07:15	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
07:30	0	0	1	1	0	0	0	0	0	6	0	6	0	0	0	0	7
07:45	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:00	0	0	1	1	0	0	0	0	0	5	0	5	1	3	0	4	10
08:15	0	0	2	2	0	0	0	0	0	0	1	1	0	3	0	3	6
08:30	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
08:45	0	0	2	2	0	0	0	0	0	4	1	5	0	0	0	0	7

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	0	0	4	4	0	0	0	0	0	12	1	13	1	6	0	7	24
PHF	0	0	0.50	0.50	0	0	0	0	0	0.50	0.25	0.54	0.25	0.50	0	0.44	0.60

Start Date 7/17/2012
Start Time 15:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	1	1	0	0	0	0	0	4	0	4	1	2	0	3	8
15:15	0	0	1	1	0	0	0	0	0	3	0	3	0	0	0	0	4
15:30	0	0	1	1	0	0	0	0	0	0	0	0	2	3	0	5	6
15:45	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
16:00	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	3
16:15	0	0	2	2	0	0	0	0	0	4	0	4	0	0	0	0	6
16:30	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
16:45	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	2	3
17:15	0	0	1	1	0	0	0	0	0	1	0	1	1	1	0	2	4
17:30	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	1	3
17:45	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	7	7	0	0	0	0	0	4	0	4	1	2	0	3	14
PHF	0	0	0.58	0.58	0	0	0	0	0	0.25	0	0.25	0.25	0.25	0	0.25	0.58

Table A-9C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	5	0	43	48	0	0	0	0	0	28	5	33	61	121	0	182	263
06:15	1	0	58	59	0	0	0	0	0	43	11	54	61	124	0	185	298
06:30	3	0	93	96	0	0	0	0	0	117	13	130	52	120	0	172	398
06:45	6	0	67	73	0	0	0	0	0	116	11	127	62	146	0	208	408
07:00	4	0	91	95	0	0	0	0	0	111	10	121	97	180	0	277	493
07:15	3	0	136	139	0	0	0	0	0	101	14	115	88	173	0	261	515
07:30	6	0	136	142	0	0	0	0	0	124	9	133	90	242	0	332	607
07:45	6	0	106	112	0	0	0	0	0	87	7	94	107	187	0	294	500
08:00	15	0	85	100	0	0	0	0	0	106	7	113	87	238	0	325	538
08:15	9	0	72	81	0	0	0	0	0	90	7	97	90	251	0	341	519
08:30	0	0	60	60	0	0	0	0	0	66	5	71	85	150	0	235	366
08:45	2	0	89	91	0	0	0	0	0	82	7	89	104	128	0	232	412

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	36	0	399	435	0	0	0	0	0	407	30	437	374	918	0	1292	2164
PHF	0.60	0	0.73	0.77	0	0	0	0	0	0.82	0.83	0.82	0.87	0.91	0	0.95	0.89
% HV	0.0%	0%	1.0%	0.9%	0%	0%	0%	0%	0%	2.9%	3.3%	3.0%	0.3%	0.7%	0%	0.5%	1.1%

Start Date 7/17/2012
Start Time 15:00

Street Name	Kilbourne St				--				Chamberlain Ave				Chamberlain Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	2	0	98	100	0	0	0	0	0	131	8	139	79	87	0	166	405
15:15	5	0	98	103	0	0	0	0	0	138	5	143	88	85	0	173	419
15:30	2	0	109	111	0	0	0	0	0	151	18	169	92	81	0	173	453
15:45	4	0	121	125	0	0	0	0	0	148	10	158	78	96	0	174	457
16:00	5	0	170	175	0	0	0	0	0	251	22	273	86	143	0	229	677
16:15	3	0	115	118	0	0	0	0	0	223	29	252	91	98	0	189	559
16:30	3	0	182	185	0	0	0	0	0	276	20	296	71	96	0	167	648
16:45	1	0	149	150	0	0	0	0	0	236	8	244	77	69	0	146	540
17:00	4	0	148	152	0	0	0	0	0	248	15	263	73	87	0	160	575
17:15	5	0	158	163	0	0	0	0	0	203	15	218	74	79	0	153	534
17:30	2	0	135	137	0	0	0	0	0	142	9	151	84	81	0	165	453
17:45	3	0	120	123	0	0	0	0	0	121	4	125	55	68	0	123	371

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	12	0	616	628	0	0	0	0	0	986	79	1065	325	406	0	731	2424
PHF	0.60	0	0.85	0.85	0	0	0	0	0	0.89	0.68	0.90	0.89	0.71	0	0.80	0.90
% HV	0.0%	0%	1.1%	1.1%	0%	0%	0%	0%	0%	0.4%	0.0%	0.4%	0.3%	0.5%	0%	0.4%	0.6%

Table A-10A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	32	10	44	53	83	0	136	0	1	0	1	11	3	13	27	208
06:15	4	40	10	54	40	66	0	106	0	0	0	0	15	1	9	25	185
06:30	7	37	14	58	21	46	0	67	0	2	1	3	9	4	24	37	165
06:45	5	40	9	54	23	58	0	81	0	0	6	6	9	7	13	29	170
07:00	4	33	28	65	16	70	0	86	0	0	4	4	10	3	15	28	183
07:15	1	50	28	79	29	100	1	130	0	1	0	1	11	6	27	44	254
07:30	3	72	14	89	25	95	0	120	0	4	2	6	11	3	19	33	248
07:45	1	45	24	70	38	100	0	138	0	3	3	6	17	0	3	20	234
08:00	0	19	12	31	38	84	0	122	0	0	0	0	13	1	6	20	173
08:15	1	16	8	25	29	63	0	92	0	2	0	2	5	2	3	10	129
08:30	1	13	11	25	19	55	0	74	0	0	0	0	10	5	10	25	124
08:45	2	50	15	67	20	55	0	75	0	0	0	0	18	4	8	30	172

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	9	200	94	303	108	365	1	474	0	8	9	17	49	12	64	125	919
PHF	0.56	0.69	0.84	0.85	0.71	0.91	0.25	0.86	0	0.50	0.56	0.71	0.72	0.50	0.59	0.71	0.90

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	44	10	55	6	28	0	34	0	1	1	2	9	3	11	23	114
15:15	0	47	10	57	8	23	1	32	0	2	0	2	10	2	9	21	112
15:30	3	72	14	89	5	30	0	35	1	0	0	1	11	5	11	27	152
15:45	0	68	20	88	2	25	0	27	0	0	0	0	20	5	12	37	152
16:00	0	88	17	105	3	35	0	38	0	3	0	3	13	1	14	28	174
16:15	0	68	29	97	10	21	0	31	1	0	0	1	9	0	22	31	160
16:30	4	103	14	121	6	43	1	50	0	0	0	0	4	3	26	33	204
16:45	0	90	12	102	0	20	0	20	0	1	0	1	7	0	19	26	149
17:00	4	86	13	103	4	24	0	28	0	0	0	0	12	1	25	38	169
17:15	0	91	13	104	6	33	0	39	0	2	0	2	8	1	12	21	166
17:30	0	69	8	77	3	24	0	27	0	0	0	0	13	0	12	25	129
17:45	0	53	4	57	3	45	0	48	0	0	0	0	7	0	14	21	126

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	4	327	80	411	21	124	1	146	1	3	0	4	46	9	74	129	690
PHF	0.25	0.79	0.69	0.85	0.53	0.72	0.25	0.73	0.25	0.25	0	0.33	0.58	0.45	0.71	0.87	0.85

Table A-10B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	1	3
06:15	1	1	0	2	1	6	0	7	0	0	0	0	0	0	0	0	9
06:30	0	5	0	5	0	1	0	1	0	1	0	1	0	0	0	0	7
06:45	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
07:00	0	0	0	0	1	1	0	2	0	0	1	1	0	0	0	0	3
07:15	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	1	3
07:30	0	0	1	1	0	1	0	1	0	0	1	1	1	0	0	1	4
07:45	1	0	0	1	2	6	0	8	0	0	1	1	0	0	0	0	10
08:00	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
08:15	0	3	0	3	1	0	0	1	0	2	0	2	0	0	2	2	8
08:30	1	0	1	2	1	1	0	2	0	0	0	0	1	0	1	2	6
08:45	0	0	0	0	2	2	0	4	0	0	1	1	0	1	1	2	7

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	1	0	1	2	3	10	0	13	0	0	3	3	2	0	0	2	20
PHF	0.25	0	0.25	0.50	0.38	0.42	0	0.41	0	0	0.75	0.75	0.50	0	0	0.50	0.50

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:15	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3
15:30	0	3	0	3	0	1	0	1	0	0	0	0	0	1	0	1	5
15:45	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
16:00	0	1	1	2	1	1	0	2	0	0	0	0	0	0	0	0	4
16:15	0	0	0	0	0	2	0	2	0	0	1	1	0	0	0	0	3
16:30	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
16:45	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
17:00	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	1	2	2	5	1	3	0	4	0	0	1	1	0	1	0	1	11
PHF	0.25	0.50	0.50	0.63	0.25	0.38	0	0.50	0	0	0.25	0.25	0	0.25	0	0.25	0.69

Table A-10C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	2	32	10	44	53	85	0	138	0	1	0	1	12	3	13	28	211
06:15	5	41	10	56	41	72	0	113	0	0	0	0	15	1	9	25	194
06:30	7	42	14	63	21	47	0	68	0	3	1	4	9	4	24	37	172
06:45	5	42	9	56	23	59	0	82	0	0	6	6	9	7	13	29	173
07:00	4	33	28	65	17	71	0	88	0	0	5	5	10	3	15	28	186
07:15	1	50	28	79	29	102	1	132	0	1	0	1	12	6	27	45	257
07:30	3	72	15	90	25	96	0	121	0	4	3	7	12	3	19	34	252
07:45	2	45	24	71	40	106	0	146	0	3	4	7	17	0	3	20	244
08:00	0	20	12	32	38	87	0	125	0	0	0	0	13	1	6	20	177
08:15	1	19	8	28	30	63	0	93	0	4	0	4	5	2	5	12	137
08:30	2	13	12	27	20	56	0	76	0	0	0	0	11	5	11	27	130
08:45	2	50	15	67	22	57	0	79	0	0	1	1	18	5	9	32	179

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	10	200	95	305	111	375	1	487	0	8	12	20	51	12	64	127	939
PHF	0.63	0.69	0.85	0.85	0.69	0.88	0.25	0.83	0	0.50	0.60	0.71	0.75	0.50	0.59	0.71	0.91
% HV	10.0%	0.0%	1.1%	0.7%	2.7%	2.7%	0.0%	2.7%	0%	0.0%	25.0%	15.0%	3.9%	0.0%	0.0%	1.6%	2.1%

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	45	10	56	6	28	0	34	0	1	1	2	9	3	11	23	115
15:15	1	48	11	60	8	23	1	32	0	2	0	2	10	2	9	21	115
15:30	3	75	14	92	5	31	0	36	1	0	0	1	11	6	11	28	157
15:45	1	68	20	89	2	25	0	27	0	0	0	0	20	6	12	38	154
16:00	0	89	18	107	4	36	0	40	0	3	0	3	13	1	14	28	178
16:15	0	68	29	97	10	23	0	33	1	0	1	2	9	0	22	31	163
16:30	4	104	15	123	6	43	1	50	0	0	0	0	4	3	26	33	206
16:45	0	93	12	105	0	21	0	21	0	1	0	1	7	0	19	26	153
17:00	4	88	13	105	4	24	0	28	0	0	0	0	12	1	25	38	171
17:15	0	92	13	105	6	33	0	39	0	2	0	2	8	1	12	21	167
17:30	0	69	8	77	3	24	0	27	0	0	0	0	13	0	12	25	129
17:45	0	53	4	57	3	45	0	48	0	0	0	0	7	0	14	21	126

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	5	329	82	416	22	127	1	150	1	3	1	5	46	10	74	130	701
PHF	0.31	0.79	0.71	0.85	0.55	0.74	0.25	0.75	0.25	0.25	0.25	0.42	0.58	0.42	0.71	0.86	0.85
% HV	20.0%	0.6%	2.4%	1.2%	4.5%	2.4%	0.0%	2.7%	0.0%	0.0%	100.0%	20.0%	0.0%	10.0%	0.0%	0.8%	1.6%

Table A-11A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	1	1	1	0	5	6	2	21	1	24	0	60	2	62	93
06:15	7	0	2	9	1	0	13	14	2	16	1	19	2	47	0	49	91
06:30	0	1	0	1	1	0	11	12	4	44	0	48	0	25	6	31	92
06:45	0	0	0	0	4	0	20	24	17	39	1	57	1	31	9	41	122
07:00	0	0	0	0	5	1	15	21	4	27	0	31	3	34	2	39	91
07:15	1	1	1	3	3	1	9	13	7	46	5	58	4	42	9	55	129
07:30	26	27	8	61	1	13	8	22	11	39	16	66	7	38	0	45	194
07:45	23	42	12	77	5	16	7	28	5	24	16	45	8	20	1	29	179
08:00	20	61	5	86	2	11	7	20	9	27	19	55	15	23	7	45	206
08:15	19	49	3	71	4	22	14	40	8	21	13	42	5	23	2	30	183
08:30	9	12	8	29	3	13	12	28	3	15	14	32	10	26	1	37	126
08:45	12	14	9	35	0	21	3	24	5	23	16	44	4	22	0	26	129

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	88	179	28	295	12	62	36	110	33	111	64	208	35	104	10	149	762
PHF	0.85	0.73	0.58	0.86	0.60	0.70	0.64	0.69	0.75	0.71	0.84	0.79	0.58	0.68	0.36	0.83	0.92

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	25	10	45	2	22	13	37	5	25	17	47	5	16	1	22	151
15:15	9	15	5	29	0	18	5	23	5	26	12	43	12	17	3	32	127
15:30	12	12	6	30	3	43	7	53	7	29	15	51	17	18	1	36	170
15:45	7	24	5	36	2	20	5	27	6	15	15	36	7	14	0	21	120
16:00	20	26	14	60	4	42	6	52	5	26	15	46	14	13	3	30	188
16:15	9	34	42	85	4	43	4	51	5	27	11	43	11	16	2	29	208
16:30	12	31	50	93	5	50	5	60	9	18	23	50	11	18	1	30	233
16:45	18	20	20	58	4	26	6	36	20	25	15	60	11	14	3	28	182
17:00	10	21	3	34	0	21	7	28	7	20	21	48	18	25	4	47	157
17:15	13	15	2	30	1	28	8	37	7	24	19	50	5	16	2	23	140
17:30	8	17	7	32	1	16	7	24	9	15	27	51	5	10	3	18	125
17:45	11	7	11	29	2	13	1	16	5	10	13	28	7	7	3	17	90

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	59	111	126	296	17	161	21	199	39	96	64	199	47	61	9	117	811
PHF	0.74	0.82	0.63	0.80	0.85	0.81	0.88	0.83	0.49	0.89	0.70	0.83	0.84	0.85	0.75	0.98	0.87

Table A-11B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	1	3
07:30	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	2	3
07:45	0	0	0	0	1	0	0	1	0	2	1	3	0	0	1	1	5
08:00	0	5	0	5	1	0	0	1	0	0	0	0	2	1	0	3	9
08:15	0	0	0	0	1	1	0	2	0	1	0	1	3	3	0	6	9
08:30	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	2	3
08:45	0	1	0	1	0	0	0	0	0	2	1	3	0	0	0	0	4

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	0	5	0	5	3	1	0	4	1	3	1	5	6	5	1	12	26
PHF	0	0.25	0	0.25	0.75	0.25	0	0.50	0.25	0.38	0.25	0.42	0.50	0.42	0.25	0.50	0.72

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	1	1	0	0	0	0	0	0	1	1	1	0	0	1	3
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
15:45	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2
16:00	0	0	1	1	0	0	0	0	0	2	0	2	0	0	0	0	3
16:15	0	1	2	3	2	1	0	3	0	1	0	1	0	1	0	1	8
16:30	0	3	2	5	0	2	0	2	0	0	0	0	0	0	0	0	7
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:00	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	4	5	9	2	3	0	5	0	3	0	3	0	2	0	2	19
PHF	0	0.33	0.63	0.45	0.25	0.38	0	0.42	0	0.38	0	0.38	0	0.50	0	0.50	0.59

Table A-11C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	1	1	1	0	5	6	2	21	1	24	0	61	2	63	94
06:15	7	0	2	9	1	0	13	14	2	16	1	19	2	47	0	49	91
06:30	0	1	0	1	1	0	11	12	4	46	0	50	0	25	6	31	94
06:45	0	0	0	0	4	0	20	24	17	39	1	57	1	31	9	41	122
07:00	0	0	0	0	5	1	15	21	4	27	0	31	3	34	2	39	91
07:15	1	1	1	3	5	1	9	15	7	46	5	58	4	43	9	56	132
07:30	26	27	8	61	1	13	8	22	12	39	16	67	8	39	0	47	197
07:45	23	42	12	77	6	16	7	29	5	26	17	48	8	20	2	30	184
08:00	20	66	5	91	3	11	7	21	9	27	19	55	17	24	7	48	215
08:15	19	49	3	71	5	23	14	42	8	22	13	43	8	26	2	36	192
08:30	9	12	8	29	3	13	12	28	3	15	15	33	10	27	2	39	129
08:45	12	15	9	36	0	21	3	24	5	25	17	47	4	22	0	26	133

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	88	184	28	300	15	63	36	114	34	114	65	213	41	109	11	161	788
PHF	0.85	0.70	0.58	0.82	0.63	0.68	0.64	0.68	0.71	0.73	0.86	0.79	0.60	0.70	0.39	0.84	0.92
% HV	0.0%	2.7%	0.0%	1.7%	20.0%	1.6%	0.0%	3.5%	2.9%	2.6%	1.5%	2.3%	14.6%	4.6%	9.1%	7.5%	3.3%

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Barnes Ave				Barnes Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	25	11	46	2	22	13	37	5	25	18	48	6	16	1	23	154
15:15	9	15	5	29	0	18	5	23	5	26	12	43	12	17	3	32	127
15:30	13	12	6	31	3	43	8	54	7	29	15	51	17	18	1	36	172
15:45	7	24	5	36	2	20	6	28	7	15	15	37	7	14	0	21	122
16:00	20	26	15	61	4	42	6	52	5	28	15	48	14	13	3	30	191
16:15	9	35	44	88	6	44	4	54	5	28	11	44	11	17	2	30	216
16:30	12	34	52	98	5	52	5	62	9	18	23	50	11	18	1	30	240
16:45	18	20	20	58	4	26	6	36	20	25	15	60	11	15	3	29	183
17:00	10	21	3	34	1	21	7	29	7	20	21	48	18	26	4	48	159
17:15	13	15	2	30	1	28	8	37	7	24	19	50	5	16	2	23	140
17:30	8	17	7	32	1	16	7	24	9	15	27	51	5	10	3	18	125
17:45	11	8	11	30	2	13	1	16	5	10	13	28	7	7	3	17	91

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	59	115	131	305	19	164	21	204	39	99	64	202	47	63	9	119	830
PHF	0.74	0.82	0.63	0.78	0.79	0.79	0.88	0.82	0.49	0.88	0.70	0.84	0.84	0.88	0.75	0.99	0.86
% HV	0.0%	3.5%	3.8%	3.0%	10.5%	1.8%	0.0%	2.5%	0.0%	3.0%	0.0%	1.5%	0.0%	3.2%	0.0%	1.7%	2.3%

Table A-12A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	18	38	1	57	5	12	43	60	10	2	3	15	2	3	3	8	140
06:15	12	40	1	53	9	27	40	76	16	3	7	26	0	3	3	6	161
06:30	1	51	2	54	8	44	12	64	22	5	16	43	0	2	2	4	165
06:45	2	63	3	68	15	57	11	83	7	20	5	32	0	7	12	19	202
07:00	2	80	1	83	14	66	17	97	12	1	7	20	0	3	4	7	207
07:15	5	108	4	117	5	65	13	83	26	0	11	37	0	10	6	16	253
07:30	6	110	0	116	11	60	17	88	36	1	13	50	0	18	19	37	291
07:45	5	96	1	102	13	74	17	104	15	1	4	20	0	11	13	24	250
08:00	3	86	0	89	7	63	11	81	9	3	1	13	0	29	23	52	235
08:15	1	71	0	72	4	60	13	77	9	1	1	11	0	12	16	28	188
08:30	2	47	1	50	6	50	20	76	14	0	6	20	0	1	3	4	150
08:45	4	71	0	75	5	55	33	93	16	1	3	20	0	2	7	9	197

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	19	400	5	424	36	262	58	356	86	5	29	120	0	68	61	129	1029
PHF	0.79	0.91	0.31	0.91	0.69	0.89	0.85	0.86	0.60	0.42	0.56	0.60	0	0.59	0.66	0.62	0.88

Start Date 7/17/2012
Start Time 15:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	3	68	0	71	4	79	11	94	19	0	1	20	0	5	4	9	194
15:15	2	74	2	78	7	78	17	102	10	6	2	18	0	3	3	6	204
15:30	2	72	0	74	21	75	9	105	25	7	0	32	1	1	3	5	216
15:45	1	85	1	87	8	70	8	86	20	4	2	26	0	2	4	6	205
16:00	1	108	1	110	18	102	11	131	23	6	6	35	1	5	14	20	296
16:15	2	83	0	85	26	106	9	141	11	8	3	22	0	4	9	13	261
16:30	2	107	0	109	14	95	11	120	38	9	3	50	0	8	16	24	303
16:45	1	68	1	70	10	78	7	95	41	5	11	57	0	3	13	16	238
17:00	2	91	2	95	9	75	10	94	37	8	4	49	1	4	16	21	259
17:15	6	86	0	92	13	79	11	103	46	6	4	56	0	4	12	16	267
17:30	2	73	0	75	4	86	11	101	28	4	2	34	1	3	12	16	226
17:45	2	66	1	69	4	49	14	67	35	3	3	41	1	2	7	10	187

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	6	366	2	374	68	381	38	487	113	28	23	164	1	20	52	73	1098
PHF	0.75	0.85	0.50	0.85	0.65	0.90	0.86	0.86	0.69	0.78	0.52	0.72	0.25	0.63	0.81	0.76	0.91

Table A-12B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	2	0	2	0	0	0	0	0	0	1	1	0	0	0	0	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
08:15	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
08:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
08:45	0	2	0	2	0	0	1	1	0	0	0	0	0	0	0	0	3

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	0	5	0	5	0	1	0	1	0	0	1	1	0	0	0	0	7
PHF	0	0.42	0	0.42	0	0.25	0	0.25	0	0	0.25	0.25	0	0	0	0	0.44

Start Date 7/17/2012
Start Time 15:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:30	0	1	0	1	1	1	0	2	0	0	0	0	0	0	0	0	3
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
17:30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
PHF	0	0	0	0	0	0.50	0	0.50	0	0	0	0	0	0	0	0	0.50

Table A-12C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	18	39	1	58	5	13	43	61	10	2	3	15	2	3	3	8	142
06:15	12	40	1	53	9	27	40	76	16	3	7	26	0	3	3	6	161
06:30	1	51	2	54	8	44	12	64	22	5	16	43	0	2	2	4	165
06:45	2	63	3	68	15	57	11	83	7	20	5	32	0	7	12	19	202
07:00	2	80	1	83	14	66	17	97	12	1	7	20	0	3	4	7	207
07:15	5	108	4	117	5	65	13	83	26	0	11	37	0	10	6	16	253
07:30	6	112	0	118	11	60	17	88	36	1	14	51	0	18	19	37	294
07:45	5	96	1	102	13	74	17	104	15	1	4	20	0	11	13	24	250
08:00	3	89	0	92	7	64	11	82	9	3	1	13	0	29	23	52	239
08:15	1	72	0	73	4	61	13	78	9	1	1	11	0	12	16	28	190
08:30	2	48	1	51	6	50	20	76	14	0	6	20	0	1	4	5	152
08:45	4	73	0	77	5	55	34	94	16	1	3	20	0	2	7	9	200

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	19	405	5	429	36	263	58	357	86	5	30	121	0	68	61	129	1036
PHF	0.79	0.90	0.31	0.91	0.69	0.89	0.85	0.86	0.60	0.42	0.54	0.59	0	0.59	0.66	0.62	0.88
% HV	0.0%	1.2%	0.0%	1.2%	0.0%	0.4%	0.0%	0.3%	0.0%	0.0%	3.3%	0.8%	0%	0.0%	0.0%	0.0%	0.7%

Start Date 7/17/2012
Start Time 15:00

Street Name	Brainard Ave				Kilbourne St				Brainard Ave				Officer Club Dr				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	3	69	0	72	4	79	11	94	19	0	1	20	0	5	4	9	195
15:15	2	75	2	79	7	78	17	102	10	6	2	18	0	3	3	6	205
15:30	2	73	0	75	22	76	9	107	25	7	0	32	1	1	3	5	219
15:45	1	85	1	87	8	70	8	86	20	4	2	26	0	2	4	6	205
16:00	1	108	1	110	18	103	11	132	23	6	6	35	1	5	14	20	297
16:15	2	83	0	85	26	106	9	141	11	8	3	22	0	4	9	13	261
16:30	2	107	0	109	14	96	11	121	38	9	3	50	0	8	16	24	304
16:45	1	68	1	70	10	78	7	95	41	5	11	57	0	3	13	16	238
17:00	2	91	2	95	9	77	10	96	37	8	4	49	1	4	16	21	261
17:15	6	86	0	92	13	80	11	104	47	6	4	57	0	4	12	16	269
17:30	2	75	0	77	4	86	11	101	28	4	2	34	1	3	12	16	228
17:45	2	67	1	70	4	49	14	67	35	3	3	41	1	2	7	10	188

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	6	366	2	374	68	383	38	489	113	28	23	164	1	20	52	73	1100
PHF	0.75	0.85	0.50	0.85	0.65	0.90	0.86	0.87	0.69	0.78	0.52	0.72	0.25	0.63	0.81	0.76	0.90
% HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%

Table A-13A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	20	0	20	0	83	1	84	0	0	0	0	0	0	0	0	104
06:15	1	8	0	9	0	120	0	120	0	0	0	0	0	0	0	0	129
06:30	0	28	0	28	0	146	0	146	0	0	0	0	0	0	0	0	174
06:45	3	42	0	45	0	163	4	167	2	0	1	3	0	0	0	0	215
07:00	4	65	0	69	0	161	4	165	0	0	3	3	0	0	0	0	237
07:15	8	68	0	76	0	133	10	143	1	0	0	1	0	0	0	0	220
07:30	4	24	15	43	8	127	4	139	0	3	0	3	30	0	6	36	221
07:45	0	17	19	36	7	101	5	113	0	2	1	3	22	9	9	40	192
08:00	2	20	15	37	5	77	2	84	1	8	0	9	32	4	6	42	172
08:15	1	15	13	29	6	56	0	62	2	3	0	5	23	5	12	40	136
08:30	0	10	12	22	8	35	2	45	0	7	2	9	30	7	11	48	124
08:45	0	19	23	42	11	61	2	74	1	8	0	9	66	7	17	90	215

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	19	199	15	233	8	584	22	614	3	3	4	10	30	0	6	36	893
PHF	0.59	0.73	0.25	0.77	0.25	0.90	0.55	0.92	0.38	0.25	0.33	0.83	0.25	0	0.25	0.25	0.94

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	69	51	120	3	8	3	14	1	1	0	2	20	4	9	33	169
15:15	1	81	43	125	9	14	3	26	11	8	3	22	28	11	13	52	225
15:30	1	64	38	103	2	6	1	9	3	12	1	16	29	3	13	45	173
15:45	0	64	45	109	15	22	3	40	2	14	0	16	22	8	15	45	210
16:00	0	90	51	141	36	28	3	67	2	14	2	18	15	1	6	22	248
16:15	0	97	47	144	5	13	0	18	4	11	0	15	19	2	5	26	203
16:30	0	90	78	168	10	13	1	24	6	16	4	26	7	1	1	9	227
16:45	0	70	49	119	10	7	0	17	3	5	0	8	6	0	0	6	150
17:00	0	54	73	127	9	10	0	19	1	3	0	4	9	5	4	18	168
17:15	0	45	20	65	10	5	2	17	1	8	2	11	0	1	4	5	98
17:30	0	50	13	63	9	7	0	16	1	5	1	7	8	3	3	14	100
17:45	2	24	6	32	3	6	1	10	0	1	0	1	1	0	2	3	46

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	341	221	562	66	76	7	149	14	55	6	75	63	12	27	102	888
PHF	0	0.88	0.71	0.84	0.46	0.68	0.58	0.56	0.58	0.86	0.38	0.72	0.72	0.38	0.45	0.57	0.90

Table A-13B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	1	3	0	4	0	2	0	2	0	0	1	1	0	0	0	0	7
06:30	1	1	0	2	0	1	0	1	0	0	1	1	0	0	0	0	4
06:45	0	1	0	1	0	3	0	3	1	0	1	2	0	0	0	0	6
07:00	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	3
07:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30	0	0	1	1	5	1	0	6	0	0	0	0	1	0	0	1	8
07:45	0	0	0	0	2	3	0	5	0	0	0	0	0	0	0	0	5
08:00	0	1	0	1	0	0	0	0	0	0	0	0	5	0	0	5	6
08:15	0	3	1	4	1	3	0	4	0	1	0	1	1	0	4	5	14
08:30	0	3	0	3	1	0	0	1	0	0	0	0	0	1	0	1	5
08:45	0	2	0	2	0	4	1	5	0	0	0	0	2	0	0	2	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	1	1	2	5	5	0	10	4	0	1	5	1	0	0	1	18
PHF	0	0.25	0.25	0.50	0.25	0.42	0	0.42	0.33	0	0.25	0.42	0.25	0	0	0.25	0.56

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	3	0	3	0	1	0	1	0	1	0	1	0	0	2	2	7
15:15	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
15:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
15:45	0	2	2	4	0	0	0	0	0	0	0	0	1	0	0	1	5
16:00	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	3
16:15	0	0	1	1	3	2	0	5	3	2	0	5	0	0	0	0	11
16:30	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
16:45	0	0	3	3	0	0	0	0	0	0	0	0	2	0	0	2	5
17:00	0	0	1	1	0	0	0	0	0	0	0	0	3	1	0	4	5
17:15	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	3	8	11	3	2	0	5	3	2	0	5	1	0	0	1	22
PHF	0	0.38	0.67	0.69	0.25	0.25	0	0.25	0.25	0.25	0	0.25	0.25	0	0	0.25	0.50

Table A-13C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	20	0	20	0	83	1	84	0	0	0	0	0	0	0	0	104
06:15	2	11	0	13	0	122	0	122	0	0	1	1	0	0	0	0	136
06:30	1	29	0	30	0	147	0	147	0	0	1	1	0	0	0	0	178
06:45	3	43	0	46	0	166	4	170	3	0	2	5	0	0	0	0	221
07:00	4	65	0	69	0	161	4	165	3	0	3	6	0	0	0	0	240
07:15	8	68	0	76	0	134	10	144	1	0	0	1	0	0	0	0	221
07:30	4	24	16	44	13	128	4	145	0	3	0	3	31	0	6	37	229
07:45	0	17	19	36	9	104	5	118	0	2	1	3	22	9	9	40	197
08:00	2	21	15	38	5	77	2	84	1	8	0	9	37	4	6	47	178
08:15	1	18	14	33	7	59	0	66	2	4	0	6	24	5	16	45	150
08:30	0	13	12	25	9	35	2	46	0	7	2	9	30	8	11	49	129
08:45	0	21	23	44	11	65	3	79	1	8	0	9	68	7	17	92	224

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	19	200	16	235	13	589	22	624	7	3	5	15	31	0	6	37	911
PHF	0.59	0.74	0.25	0.77	0.25	0.89	0.55	0.92	0.58	0.25	0.42	0.63	0.25	0	0.25	0.25	0.95
% HV	0.0%	0.5%	6.3%	0.9%	38.5%	0.8%	0.0%	1.6%	57.1%	0.0%	20.0%	33.3%	3.2%	0%	0.0%	2.7%	2.0%

Start Date 7/17/2012
Start Time 15:00

Street Name	15th St				15th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	72	51	123	3	9	3	15	1	2	0	3	20	4	11	35	176
15:15	1	81	43	125	9	17	3	29	11	8	3	22	28	11	13	52	228
15:30	1	64	38	103	2	7	1	10	3	12	1	16	29	3	13	45	174
15:45	0	66	47	113	15	22	3	40	2	14	0	16	23	8	15	46	215
16:00	0	91	53	144	36	28	3	67	2	14	2	18	15	1	6	22	251
16:15	0	97	48	145	8	15	0	23	7	13	0	20	19	2	5	26	214
16:30	0	90	81	171	10	13	1	24	6	16	4	26	7	1	1	9	230
16:45	0	70	52	122	10	7	0	17	3	5	0	8	8	0	0	8	155
17:00	0	54	74	128	9	10	0	19	1	3	0	4	12	6	4	22	173
17:15	0	45	20	65	11	5	2	18	1	8	2	11	0	1	5	6	100
17:30	0	50	13	63	9	7	0	16	1	5	1	7	8	3	3	14	100
17:45	2	24	6	32	3	6	1	10	0	1	0	1	1	0	2	3	46

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	344	229	573	69	78	7	154	17	57	6	80	64	12	27	103	910
PHF	0	0.89	0.71	0.84	0.48	0.70	0.58	0.57	0.61	0.89	0.38	0.77	0.70	0.38	0.45	0.56	0.91
% HV	0%	0.9%	3.5%	1.9%	4.3%	2.6%	0.0%	3.2%	17.6%	3.5%	0.0%	6.3%	1.6%	0.0%	0.0%	1.0%	2.4%

Table A-14A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	1	30	1	10	41	10	13	0	23	0	29	14	43	108
07:45	0	0	0	0	52	1	9	62	13	15	0	28	0	32	39	71	161
08:00	0	0	0	0	36	0	12	48	5	22	0	27	0	32	17	49	124
08:15	0	0	0	0	34	0	8	42	5	15	0	20	0	32	8	40	102
08:30	0	1	0	1	24	1	9	34	6	24	0	30	0	41	16	57	122
08:45	0	0	0	0	26	1	10	37	8	34	0	42	0	81	16	97	176

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	0	1	0	1	120	2	39	161	24	95	0	119	0	186	57	243	524
PHF	0	0.25	0	0.25	0.83	0.50	0.81	0.84	0.75	0.70	0	0.71	0	0.57	0.84	0.63	0.74

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	18	0	8	26	12	47	0	59	1	26	27	54	139
15:15	0	0	0	0	18	0	13	31	11	44	0	55	0	40	24	64	150
15:30	0	1	3	4	20	0	4	24	8	49	0	57	3	42	38	83	168
15:45	0	0	0	0	18	0	15	33	9	53	0	62	0	33	41	74	169
16:00	0	0	0	0	32	1	6	39	13	90	0	103	0	18	41	59	201
16:15	0	0	0	0	26	0	6	32	13	60	0	73	1	21	36	58	163
16:30	0	0	1	1	39	0	1	40	8	86	0	94	0	10	50	60	195
16:45	0	1	1	2	23	0	3	26	4	61	0	65	3	5	42	50	143
17:00	0	0	0	0	24	0	9	33	10	78	0	88	2	17	51	70	191
17:15	0	0	0	0	19	0	2	21	6	34	0	40	1	12	45	58	119
17:30	0	0	2	2	29	0	2	31	2	25	0	27	3	16	58	77	137
17:45	0	1	2	3	18	0	3	21	3	9	0	12	0	8	37	45	81

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	0	1	1	115	1	28	144	43	289	0	332	1	82	168	251	728
PHF	0	0	0.25	0.25	0.74	0.25	0.47	0.90	0.83	0.80	0	0.81	0.25	0.62	0.84	0.85	0.91

Table A-14B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date
Start Time 06:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	1	0	0	1	0	4	0	4	0	1	0	1	6
07:45	0	0	0	0	4	0	0	4	0	4	0	4	0	0	0	0	8
08:00	0	0	0	0	1	0	3	4	0	2	0	2	0	1	0	1	7
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	6	6
08:30	0	0	0	0	1	0	1	2	0	1	0	1	0	0	2	2	5
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	0	0	0	0	2	0	4	6	0	3	0	3	0	8	3	11	20
PHF	0	0	0	0	0.50	0	0.33	0.38	0	0.38	0	0.38	0	0.40	0.38	0.46	0.71

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
15:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	3	3	4
15:30	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	2	3
15:45	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
16:00	0	0	0	0	0	0	0	0	1	1	0	2	0	0	1	1	3
16:15	0	0	0	0	0	0	0	0	0	7	0	7	0	0	0	0	7
16:30	0	0	0	0	0	0	0	0	0	2	0	2	0	0	2	2	4
16:45	0	0	0	0	1	0	0	1	0	4	0	4	0	2	2	4	9
17:00	0	0	0	0	0	0	1	1	0	1	0	1	0	0	1	1	3
17:15	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	0	0	0	0	0	0	0	1	12	0	13	0	2	3	5	18
PHF	0	0	0	0	0	0	0	0	0.25	0.43	0	0.46	0	0.25	0.38	0.63	0.64

Table A-14C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	1	31	1	10	42	10	17	0	27	0	30	14	44	114
07:45	0	0	0	0	56	1	9	66	13	19	0	32	0	32	39	71	169
08:00	0	0	0	0	37	0	15	52	5	24	0	29	0	33	17	50	131
08:15	0	0	0	0	34	0	8	42	5	15	0	20	0	37	9	46	108
08:30	0	1	0	1	25	1	10	36	6	25	0	31	0	41	18	59	127
08:45	0	0	0	0	26	1	10	37	8	34	0	42	0	83	16	99	178

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
08:00	0	1	0	1	122	2	43	167	24	98	0	122	0	194	60	254	544
PHF	0	0.25	0	0.25	0.82	0.50	0.72	0.80	0.75	0.72	0	0.73	0	0.58	0.83	0.64	0.76
% HV	0%	0.0%	0%	0.0%	1.6%	0.0%	9.3%	3.6%	0.0%	3.1%	0%	2.5%	0%	4.1%	5.0%	4.3%	3.7%

Start Date 7/17/2012
Start Time 15:00

Street Name	19th St				19th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	18	0	8	26	12	49	0	61	1	28	27	56	143
15:15	0	0	0	0	18	0	13	31	11	45	0	56	0	40	27	67	154
15:30	0	1	3	4	21	0	4	25	8	49	0	57	3	42	40	85	171
15:45	0	0	0	0	18	0	15	33	9	55	0	64	0	35	41	76	173
16:00	0	0	0	0	32	1	6	39	14	91	0	105	0	18	42	60	204
16:15	0	0	0	0	26	0	6	32	13	67	0	80	1	21	36	58	170
16:30	0	0	1	1	39	0	1	40	8	88	0	96	0	10	52	62	199
16:45	0	1	1	2	24	0	3	27	4	65	0	69	3	7	44	54	152
17:00	0	0	0	0	24	0	10	34	10	79	0	89	2	17	52	71	194
17:15	0	0	0	0	19	0	2	21	7	34	0	41	1	13	45	59	121
17:30	0	0	2	2	29	0	2	31	2	25	0	27	3	16	58	77	137
17:45	0	1	2	3	18	0	3	21	3	9	0	12	0	8	38	46	82

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	0	1	1	115	1	28	144	44	301	0	345	1	84	171	256	746
PHF	0	0	0.25	0.25	0.74	0.25	0.47	0.90	0.79	0.83	0	0.82	0.25	0.60	0.82	0.84	0.91
% HV	0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	4.0%	0%	3.8%	0.0%	2.4%	1.8%	2.0%	2.4%

Table A-15A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	11	0	11	0	21	0	21	0	0	0	0	0	0	1	1	33
06:15	0	11	0	11	0	8	0	8	0	0	0	0	0	0	0	0	19
06:30	0	2	0	2	0	14	0	14	0	0	0	0	0	0	0	0	16
06:45	0	13	0	13	0	15	0	15	0	0	0	0	0	0	0	0	28
07:00	0	14	0	14	0	13	0	13	0	0	0	0	1	0	0	1	28
07:15	0	21	0	21	2	18	2	22	0	0	0	0	2	4	5	11	54
07:30	1	5	0	6	9	15	5	29	9	32	19	60	4	51	21	76	171
07:45	5	8	2	15	8	7	9	24	7	52	20	79	4	62	36	102	220
08:00	5	11	0	16	10	5	6	21	9	38	12	59	0	53	22	75	171
08:15	5	15	2	22	12	6	7	25	4	38	9	51	5	38	21	64	162
08:30	8	7	2	17	7	6	8	21	6	31	14	51	3	53	13	69	158
08:45	9	2	1	12	10	6	10	26	6	46	11	63	2	82	15	99	200

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	16	39	4	59	39	33	27	99	29	160	60	249	13	204	100	317	724
PHF	0.80	0.65	0.50	0.67	0.81	0.55	0.75	0.85	0.81	0.77	0.75	0.79	0.65	0.82	0.69	0.78	0.82

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	6	5	5	16	15	15	8	38	9	56	11	76	0	40	9	49	179
15:15	11	2	1	14	7	9	6	22	9	51	10	70	1	64	11	76	182
15:30	15	7	2	24	14	7	6	27	7	58	9	74	1	78	7	86	211
15:45	14	6	2	22	13	22	2	37	6	70	7	83	1	52	12	65	207
16:00	8	13	12	33	12	24	3	39	6	104	22	132	2	60	13	75	279
16:15	11	8	1	20	22	23	6	51	8	76	11	95	2	45	10	57	223
16:30	8	10	3	21	23	37	2	62	3	129	15	147	0	56	16	72	302
16:45	4	8	1	13	19	26	4	49	8	84	15	107	1	48	14	63	232
17:00	23	11	1	35	15	26	3	44	11	87	16	114	0	57	16	73	266
17:15	11	10	3	24	20	14	2	36	1	54	10	65	0	56	20	76	201
17:30	7	8	0	15	18	15	2	35	6	50	11	67	0	66	20	86	203
17:45	11	6	1	18	15	10	2	27	2	24	7	33	0	34	15	49	127

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	31	39	17	87	76	110	15	201	25	393	63	481	5	209	53	267	1036
PHF	0.70	0.75	0.35	0.66	0.83	0.74	0.63	0.81	0.78	0.76	0.72	0.82	0.63	0.87	0.83	0.89	0.86

Table A-15B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
06:15	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
07:30	0	0	0	0	0	1	0	1	0	4	0	4	0	1	0	1	6
07:45	0	0	0	0	0	0	0	0	0	8	0	8	0	1	1	2	10
08:00	0	0	0	0	0	4	0	4	0	2	0	2	0	0	4	4	10
08:15	2	0	0	2	0	0	1	1	0	0	0	0	0	2	0	2	5
08:30	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
08:45	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	2	0	0	2	0	5	1	6	0	14	0	14	0	4	5	9	31
PHF	0.25	0	0	0.25	0	0.31	0.25	0.38	0	0.44	0	0.44	0	0.50	0.31	0.56	0.78

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	0	0	1	1	1	0	2	0	2	0	2	0	0	0	0	5
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
15:30	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
15:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
16:00	0	0	0	0	0	0	0	0	0	1	0	1	1	2	1	4	5
16:15	1	1	0	2	0	0	0	0	3	1	4	8	0	0	0	0	10
16:30	1	2	0	3	0	0	0	0	2	3	0	5	0	1	0	1	9
16:45	0	0	0	0	0	0	0	0	0	4	0	4	0	4	0	4	8
17:00	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:45	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	2	3	0	5	0	0	0	0	5	9	4	18	1	7	1	9	32
PHF	0.50	0.38	0	0.42	0	0	0	0	0.42	0.56	0.25	0.56	0.25	0.44	0.25	0.56	0.80

Table A-15C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	11	0	11	0	23	0	23	0	0	0	0	0	0	1	1	35
06:15	0	11	0	11	0	10	0	10	0	0	0	0	0	0	0	0	21
06:30	0	2	0	2	0	14	0	14	0	0	0	0	0	0	0	0	16
06:45	0	14	0	14	0	15	0	15	0	0	0	0	0	0	0	0	29
07:00	0	15	0	15	0	13	0	13	0	0	0	0	1	0	0	1	29
07:15	0	21	0	21	2	19	2	23	0	0	0	0	2	4	6	12	56
07:30	1	5	0	6	9	16	5	30	9	36	19	64	4	52	21	77	177
07:45	5	8	2	15	8	7	9	24	7	60	20	87	4	63	37	104	230
08:00	5	11	0	16	10	9	6	25	9	40	12	61	0	53	26	79	181
08:15	7	15	2	24	12	6	8	26	4	38	9	51	5	40	21	66	167
08:30	8	7	2	17	8	6	8	22	6	32	14	52	3	54	13	70	161
08:45	9	2	1	12	10	6	10	26	6	47	11	64	2	84	15	101	203

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:30	18	39	4	61	39	38	28	105	29	174	60	263	13	208	105	326	755
PHF	0.64	0.65	0.50	0.64	0.81	0.59	0.78	0.88	0.81	0.73	0.75	0.76	0.65	0.83	0.71	0.78	0.82
% HV	11.1%	0.0%	0.0%	3.3%	0.0%	13.2%	3.6%	5.7%	0.0%	8.0%	0.0%	5.3%	0.0%	1.9%	4.8%	2.8%	4.1%

Start Date 7/17/2012
Start Time 15:00

Street Name	25th St				25th St				Lane Ave				Lane Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	7	5	5	17	16	16	8	40	9	58	11	78	0	40	9	49	184
15:15	11	2	1	14	7	9	6	22	9	51	10	70	1	66	11	78	184
15:30	15	7	2	24	14	7	6	27	7	59	9	75	1	81	7	89	215
15:45	14	6	2	22	13	22	2	37	6	71	7	84	1	53	12	66	209
16:00	8	13	12	33	12	24	3	39	6	105	22	133	3	62	14	79	284
16:15	12	9	1	22	22	23	6	51	11	77	15	103	2	45	10	57	233
16:30	9	12	3	24	23	37	2	62	5	132	15	152	0	57	16	73	311
16:45	4	8	1	13	19	26	4	49	8	88	15	111	1	52	14	67	240
17:00	23	11	1	35	15	26	3	44	11	88	16	115	0	59	16	75	269
17:15	11	10	3	24	20	14	2	36	1	54	10	65	0	58	20	78	203
17:30	7	8	0	15	18	15	2	35	6	50	11	67	0	67	20	87	204
17:45	14	6	1	21	15	10	2	27	2	24	7	33	0	34	15	49	130

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	33	42	17	92	76	110	15	201	30	402	67	499	6	216	54	276	1068
PHF	0.69	0.81	0.35	0.70	0.83	0.74	0.63	0.81	0.68	0.76	0.76	0.82	0.50	0.87	0.84	0.87	0.86
% HV	6.1%	7.1%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	16.7%	2.2%	6.0%	3.6%	16.7%	3.2%	1.9%	3.3%	3.0%

Table A-16A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	27	120	0	147	0	33	9	42	4	0	7	11	0	0	0	0	200
06:15	19	89	0	108	0	34	11	45	5	0	13	18	0	0	0	0	171
06:30	10	70	0	80	0	82	4	86	6	0	10	16	0	0	0	0	182
06:45	16	103	0	119	0	61	9	70	19	0	11	30	0	0	0	0	219
07:00	20	101	0	121	0	48	7	55	5	0	5	10	0	0	0	0	186
07:15	28	114	0	142	0	74	7	81	11	0	17	28	0	0	0	0	251
07:30	59	110	0	169	0	79	17	96	7	0	56	63	0	0	0	0	328
07:45	67	114	0	181	0	37	17	54	14	0	47	61	0	0	0	0	296
08:00	58	89	0	147	0	30	18	48	9	0	35	44	0	0	0	0	239
08:15	51	87	0	138	0	31	17	48	8	0	39	47	0	0	0	0	233
08:30	57	61	0	118	0	58	11	69	7	0	29	36	0	0	0	0	223
08:45	56	60	0	116	0	40	16	56	16	0	32	48	0	0	0	0	220

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	212	427	0	639	0	220	59	279	41	0	155	196	0	0	0	0	1114
PHF	0.79	0.94	0	0.88	0	0.70	0.82	0.73	0.73	0	0.69	0.78	0	0	0	0	0.85

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	28	44	0	72	0	71	8	79	25	0	31	56	0	0	0	0	207
15:15	38	44	0	82	0	83	16	99	12	0	30	42	0	0	0	0	223
15:30	31	47	0	78	0	81	13	94	27	0	37	64	0	0	0	0	236
15:45	26	45	0	71	0	71	17	88	19	0	43	62	0	0	0	0	221
16:00	30	36	0	66	0	120	29	149	27	0	76	103	0	0	0	0	318
16:15	29	49	0	78	0	114	17	131	15	0	52	67	0	0	0	0	276
16:30	34	47	0	81	0	166	15	181	27	0	88	115	0	0	0	0	377
16:45	36	48	0	84	0	118	11	129	22	0	86	108	0	0	0	0	321
17:00	31	44	0	75	0	117	14	131	20	0	55	75	0	0	0	0	281
17:15	35	45	0	80	0	94	11	105	20	0	60	80	0	0	0	0	265
17:30	44	43	0	87	0	90	19	109	19	0	58	77	0	0	0	0	273
17:45	31	30	0	61	0	64	12	76	23	0	52	75	0	0	0	0	212

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	129	180	0	309	0	518	72	590	91	0	302	393	0	0	0	0	1292
PHF	0.90	0.92	0	0.92	0	0.78	0.62	0.81	0.84	0	0.86	0.85	0	0	0	0	0.86

Table A-16B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:30	0	2	0	2	0	0	0	0	0	0	1	1	0	0	0	0	3
06:45	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
07:00	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
07:15	0	2	0	2	0	4	0	4	0	0	0	0	0	0	0	0	6
07:30	0	1	0	1	0	0	2	2	0	0	0	0	0	0	0	0	3
07:45	0	0	0	0	0	0	1	1	1	0	2	3	0	0	0	0	4
08:00	0	1	0	1	0	0	1	1	1	0	1	2	0	0	0	0	4
08:15	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
08:30	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	0	4	0	4	0	4	4	8	2	0	3	5	0	0	0	0	17
PHF	0	0.50	0	0.50	0	0.25	0.50	0.50	0.50	0	0.38	0.42	0	0	0	0	0.71

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	1	0	1	0	2	0	2	1	0	1	2	0	0	0	0	5
15:15	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
15:30	2	0	0	2	0	0	1	1	0	0	1	1	0	0	0	0	4
15:45	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
16:00	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	5
16:45	0	1	0	1	0	0	3	3	0	0	0	0	0	0	0	0	4
17:00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
17:15	1	1	0	2	0	0	0	0	3	0	0	3	0	0	0	0	5
17:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
17:45	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	1	1	0	2	0	0	9	9	0	0	0	0	0	0	0	0	11
PHF	0.25	0.25	0	0.50	0	0	0.45	0.45	0	0	0	0	0	0	0	0	0.55

Table A-16C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	27	120	0	147	0	33	9	42	4	0	7	11	0	0	0	0	200
06:15	19	89	0	108	0	35	11	46	5	0	13	18	0	0	0	0	172
06:30	10	72	0	82	0	82	4	86	6	0	11	17	0	0	0	0	185
06:45	16	103	0	119	0	62	10	72	19	0	11	30	0	0	0	0	221
07:00	20	102	0	122	0	49	7	56	5	0	5	10	0	0	0	0	188
07:15	28	116	0	144	0	78	7	85	11	0	17	28	0	0	0	0	257
07:30	59	111	0	170	0	79	19	98	7	0	56	63	0	0	0	0	331
07:45	67	114	0	181	0	37	18	55	15	0	49	64	0	0	0	0	300
08:00	58	90	0	148	0	30	19	49	10	0	36	46	0	0	0	0	243
08:15	51	87	0	138	0	34	17	51	8	0	39	47	0	0	0	0	236
08:30	57	61	0	118	0	58	11	69	7	0	31	38	0	0	0	0	225
08:45	56	60	0	116	0	40	16	56	16	0	33	49	0	0	0	0	221

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:15	212	431	0	643	0	224	63	287	43	0	158	201	0	0	0	0	1131
PHF	0.79	0.93	0	0.89	0	0.71	0.83	0.73	0.72	0	0.71	0.79	0	0	0	0	0.85
% HV	0.0%	0.9%	0%	0.6%	0%	1.8%	6.3%	2.8%	4.7%	0%	1.9%	2.5%	0%	0%	0%	0%	1.5%

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				Lane Ave				--				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	28	45	0	73	0	73	8	81	26	0	32	58	0	0	0	0	212
15:15	38	44	0	82	0	83	16	99	13	0	30	43	0	0	0	0	224
15:30	33	47	0	80	0	81	14	95	27	0	38	65	0	0	0	0	240
15:45	27	45	0	72	0	71	18	89	19	0	43	62	0	0	0	0	223
16:00	31	36	0	67	0	120	30	150	27	0	76	103	0	0	0	0	320
16:15	29	49	0	78	0	114	17	131	15	0	52	67	0	0	0	0	276
16:30	34	47	0	81	0	166	20	186	27	0	88	115	0	0	0	0	382
16:45	36	49	0	85	0	118	14	132	22	0	86	108	0	0	0	0	325
17:00	31	44	0	75	0	118	14	132	20	0	55	75	0	0	0	0	282
17:15	36	46	0	82	0	94	11	105	23	0	60	83	0	0	0	0	270
17:30	44	43	0	87	0	91	19	110	19	0	58	77	0	0	0	0	274
17:45	32	31	0	63	0	64	12	76	23	0	52	75	0	0	0	0	214

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	130	181	0	311	0	518	81	599	91	0	302	393	0	0	0	0	1303
PHF	0.90	0.92	0	0.91	0	0.78	0.68	0.81	0.84	0	0.86	0.85	0	0	0	0	0.85
% HV	0.8%	0.6%	0%	0.6%	0%	0.0%	11.1%	1.5%	0.0%	0%	0.0%	0.0%	0%	0%	0%	0%	0.8%

Table A-17A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	22	0	22	0	6	1	7	1	0	0	1	0	0	0	0	30
06:15	0	28	0	28	0	3	0	3	0	0	0	0	0	0	0	0	31
06:30	0	34	0	34	0	11	2	13	1	0	0	1	0	0	0	0	48
06:45	0	50	0	50	1	15	1	17	0	0	0	0	0	0	1	1	68
07:00	0	49	0	49	0	11	2	13	1	0	0	1	0	0	0	0	63
07:15	3	60	0	63	0	11	11	22	0	0	0	0	0	0	0	0	85
07:30	1	30	0	31	0	8	1	9	2	0	0	2	0	0	0	0	42
07:45	2	16	0	18	0	7	7	14	0	0	0	0	0	0	0	0	32
08:00	3	19	0	22	0	9	3	12	1	0	0	1	0	0	0	0	35
08:15	1	21	0	22	0	6	4	10	4	0	0	4	0	0	0	0	36
08:30	2	23	0	25	0	2	2	4	4	0	0	4	0	0	0	0	33
08:45	4	58	0	62	1	10	1	12	0	0	0	0	0	0	0	0	74

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:30	3	193	0	196	1	48	16	65	2	0	0	2	0	0	1	1	264
PHF	0.25	0.80	0	0.78	0.25	0.80	0.36	0.74	0.50	0	0	0.50	0	0	0.25	0.25	0.78

Start Date 7/17/2012
Start Time 15:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	5	0	6	1	16	1	18	1	0	0	1	0	0	0	0	25
15:15	1	4	0	5	0	15	1	16	2	0	0	2	0	0	0	0	23
15:30	0	6	0	6	0	10	1	11	1	0	0	1	0	0	0	0	18
15:45	2	8	0	10	0	21	0	21	4	0	0	4	0	0	0	0	35
16:00	0	8	0	8	0	59	0	59	3	0	1	4	0	0	0	0	71
16:15	2	6	0	8	0	24	2	26	1	0	0	1	0	0	0	0	35
16:30	0	6	0	6	0	52	2	54	1	0	0	1	0	0	0	0	61
16:45	0	4	0	4	0	15	0	15	2	0	0	2	0	0	0	0	21
17:00	1	0	0	1	0	24	3	27	0	0	0	0	0	0	0	0	28
17:15	0	5	0	5	0	12	1	13	1	0	0	1	0	0	0	0	19
17:30	0	5	0	5	1	5	1	7	1	0	0	1	0	0	0	0	13
17:45	0	4	0	4	0	4	0	4	1	0	0	1	0	0	0	0	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	4	28	0	32	0	156	4	160	9	0	1	10	0	0	0	0	202
PHF	0.50	0.88	0	0.80	0	0.66	0.50	0.68	0.56	0	0.25	0.63	0	0	0	0	0.71

Table A-17B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:30	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
06:45	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	4
07:00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
07:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	1	0	1	0	0	2	2	0	0	0	0	0	0	0	0	3
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	1	1	2	1	0	0	1	0	0	0	0	3

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:30	0	2	0	2	0	6	2	8	0	0	0	0	0	0	0	0	10
PHF	0	0.25	0	0.25	0	0.50	0.50	0.50	0	0	0	0	0	0	0	0	0.63

Start Date 7/17/2012
Start Time 15:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	0	1	0	1	3	0	0	3	0	0	0	0	4
15:15	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	3
15:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
16:00	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	3
PHF	0	0.25	0	0.25	0	0	0	0	0.50	0	0	0.50	0	0	0	0	0.38

Table A-17C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	22	0	22	0	6	1	7	1	0	0	1	0	0	0	0	30
06:15	0	29	0	29	0	3	0	3	0	0	0	0	0	0	0	0	32
06:30	0	36	0	36	0	13	2	15	1	0	0	1	0	0	0	0	52
06:45	0	50	0	50	1	18	2	21	0	0	0	0	0	0	1	1	72
07:00	0	49	0	49	0	12	2	14	1	0	0	1	0	0	0	0	64
07:15	3	60	0	63	0	11	12	23	0	0	0	0	0	0	0	0	86
07:30	1	30	0	31	0	9	1	10	3	0	0	3	0	0	0	0	44
07:45	2	16	0	18	0	7	8	15	0	0	0	0	0	0	0	0	33
08:00	3	19	0	22	0	9	3	12	1	0	0	1	0	0	0	0	35
08:15	1	22	0	23	0	6	6	12	4	0	0	4	0	0	0	0	39
08:30	2	23	0	25	0	2	2	4	4	0	0	4	0	0	0	0	33
08:45	4	58	0	62	1	11	2	14	1	0	0	1	0	0	0	0	77

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:30	3	195	0	198	1	54	18	73	2	0	0	2	0	0	1	1	274
PHF	0.25	0.81	0	0.79	0.25	0.75	0.38	0.79	0.50	0	0	0.50	0	0	0.25	0.25	0.80
% HV	0.0%	1.0%	0%	1.0%	0.0%	11.1%	11.1%	11.0%	0.0%	0%	0%	0.0%	0%	0%	0.0%	0.0%	3.6%

Start Date 7/17/2012
Start Time 15:00

Street Name	N Range Rd				15th St				111th Ave				111th Ave				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	1	5	0	6	1	17	1	19	4	0	0	4	0	0	0	0	29
15:15	1	4	0	5	0	15	4	19	2	0	0	2	0	0	0	0	26
15:30	0	7	0	7	0	10	1	11	1	0	0	1	0	0	0	0	19
15:45	2	8	0	10	0	21	0	21	5	0	0	5	0	0	0	0	36
16:00	0	9	0	9	0	59	0	59	4	0	1	5	0	0	0	0	73
16:15	2	6	0	8	0	24	2	26	1	0	0	1	0	0	0	0	35
16:30	0	6	0	6	0	52	2	54	1	0	0	1	0	0	0	0	61
16:45	0	4	0	4	0	15	0	15	4	0	0	4	0	0	0	0	23
17:00	1	0	0	1	0	24	3	27	0	0	0	0	0	0	0	0	28
17:15	0	5	0	5	0	12	1	13	1	0	0	1	0	0	0	0	19
17:30	0	5	0	5	1	5	1	7	1	0	0	1	0	0	0	0	13
17:45	0	4	0	4	0	4	0	4	1	0	0	1	0	0	0	0	9

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
15:45	4	29	0	33	0	156	4	160	11	0	1	12	0	0	0	0	205
PHF	0.50	0.81	0	0.83	0	0.66	0.50	0.68	0.55	0	0.25	0.60	0	0	0	0	0.70
% HV	0.0%	3.4%	0%	3.0%	0%	0.0%	0.0%	0.0%	18.2%	0%	0.0%	16.7%	0%	0%	0%	0%	1.5%

Table A-18A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	15	111	6	132	6	21	4	31	3	2	6	11	3	5	25	33	207
06:15	27	98	4	129	6	24	7	37	0	0	4	4	2	2	9	13	183
06:30	39	129	7	175	20	48	10	78	2	0	4	6	4	6	1	11	270
06:45	44	174	13	231	9	54	5	68	1	3	7	11	0	2	9	11	321
07:00	44	174	9	227	7	39	3	49	0	1	4	5	3	2	7	12	293
07:15	54	267	17	338	24	54	3	81	0	0	9	9	6	3	8	17	445
07:30	21	213	13	247	29	81	5	115	1	2	14	17	7	2	14	23	402
07:45	32	207	8	247	16	53	3	72	2	2	9	13	4	2	13	19	351
08:00	18	133	15	166	9	38	3	50	1	3	8	12	9	3	12	24	252
08:15	29	119	12	160	7	43	2	52	2	2	9	13	9	5	8	22	247
08:30	27	122	4	153	3	50	5	58	1	0	8	9	5	18	16	39	259
08:45	30	104	10	144	4	36	2	42	0	5	13	18	5	18	15	38	242

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	151	861	47	1059	76	227	14	317	3	5	36	44	20	9	42	71	1491
PHF	0.70	0.81	0.69	0.78	0.66	0.70	0.70	0.69	0.38	0.63	0.64	0.65	0.71	0.75	0.75	0.77	0.84

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	7	70	7	84	4	106	2	112	0	6	15	21	12	3	9	24	241
15:15	7	83	6	96	6	98	1	105	2	3	18	23	3	3	9	15	239
15:30	6	62	7	75	14	135	1	150	0	2	21	23	4	2	8	14	262
15:45	8	59	10	77	9	110	2	121	0	3	17	20	7	6	4	17	235
16:00	8	47	7	62	12	205	3	220	3	7	46	56	14	4	4	22	360
16:15	5	62	8	75	20	192	1	213	5	8	31	44	7	6	5	18	350
16:30	6	44	7	57	24	216	4	244	2	8	50	60	10	0	7	17	378
16:45	6	59	8	73	26	199	2	227	0	11	41	52	5	4	17	26	378
17:00	9	71	15	95	24	177	4	205	1	5	32	38	5	1	9	15	353
17:15	7	64	8	79	27	170	2	199	3	7	31	41	17	0	15	32	351
17:30	11	75	22	108	18	136	2	156	2	0	26	28	7	1	7	15	307
17:45	11	61	16	88	19	112	3	134	0	1	16	17	15	2	6	23	262

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	25	212	30	267	82	812	10	904	10	34	168	212	36	14	33	83	1466
PHF	0.78	0.85	0.94	0.89	0.79	0.94	0.63	0.93	0.50	0.77	0.84	0.88	0.64	0.58	0.49	0.80	0.97

Table A-18B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:45	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	1	1	2	0	3	0	0	0	0	0	0	0	0	4
07:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:00	0	0	2	2	0	2	0	2	0	0	1	1	0	0	0	0	5
08:15	0	0	1	1	0	1	0	1	0	0	1	1	0	0	0	0	3
08:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	0	1	0	1	1	3	0	4	0	0	0	0	0	0	0	0	5
PHF	0	0.25	0	0.25	0.25	0.38	0	0.33	0	0	0	0	0	0	0	0	0.31

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
15:45	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	2
16:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
16:45	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
17:00	0	0	1	1	0	1	0	1	0	0	0	0	0	0	1	1	3
17:15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
17:30	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
17:45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	0	2	0	2	1	2	0	3	0	0	0	0	0	0	0	0	5
PHF	0	0.50	0	0.50	0.25	0.50	0	0.75	0	0	0	0	0	0	0	0	0.63

Table A-18C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/17/2012
Start Time 06:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	15	111	6	132	6	22	4	32	3	2	6	11	3	5	25	33	208
06:15	28	98	4	130	6	24	7	37	0	0	4	4	2	2	9	13	184
06:30	39	129	7	175	20	49	10	79	2	0	4	6	4	6	1	11	271
06:45	44	174	13	231	10	54	5	69	1	3	7	11	0	2	9	11	322
07:00	44	174	9	227	7	39	3	49	0	1	4	5	3	2	7	12	293
07:15	54	267	17	338	24	54	3	81	0	0	9	9	6	3	8	17	445
07:30	21	214	13	248	30	83	5	118	1	2	14	17	7	2	14	23	406
07:45	32	207	8	247	16	54	3	73	2	2	9	13	4	2	13	19	352
08:00	18	133	17	168	9	40	3	52	1	3	9	13	9	3	12	24	257
08:15	29	119	13	161	7	44	2	53	2	2	10	14	9	5	8	22	250
08:30	27	123	4	154	3	50	5	58	1	0	8	9	5	18	16	39	260
08:45	30	104	10	144	4	36	2	42	0	5	13	18	6	18	15	39	243

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
07:00	151	862	47	1060	77	230	14	321	3	5	36	44	20	9	42	71	1496
PHF	0.70	0.81	0.69	0.78	0.64	0.69	0.70	0.68	0.38	0.63	0.64	0.65	0.71	0.75	0.75	0.77	0.84
% HV	0.0%	0.1%	0.0%	0.1%	1.3%	1.3%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%

Start Date 7/17/2012
Start Time 15:00

Street Name	Avenue of the States				Avenue of the States				N Range Rd				N Range Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	7	70	7	84	4	106	2	112	0	6	15	21	12	3	9	24	241
15:15	8	83	6	97	6	98	1	105	2	3	18	23	3	3	9	15	240
15:30	6	62	7	75	14	136	1	151	0	2	21	23	4	2	8	14	263
15:45	8	59	10	77	9	111	2	122	0	3	18	21	7	6	4	17	237
16:00	8	48	7	63	12	205	3	220	3	7	46	56	14	4	4	22	361
16:15	5	62	8	75	20	193	1	214	5	8	31	44	7	6	5	18	351
16:30	6	44	7	57	25	216	4	245	2	8	50	60	10	0	7	17	379
16:45	6	60	8	74	26	200	2	228	0	11	41	52	5	4	17	26	380
17:00	9	71	16	96	24	178	4	206	1	5	32	38	5	1	10	16	356
17:15	7	64	8	79	27	170	2	199	3	7	32	42	17	0	15	32	352
17:30	12	76	22	110	18	136	2	156	2	0	26	28	7	1	7	15	309
17:45	11	61	16	88	19	112	3	134	1	1	16	18	15	2	6	23	263

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:00	25	214	30	269	83	814	10	907	10	34	168	212	36	14	33	83	1471
PHF	0.78	0.86	0.94	0.90	0.80	0.94	0.63	0.93	0.50	0.77	0.84	0.88	0.64	0.58	0.49	0.80	0.97
% HV	0.0%	0.9%	0.0%	0.7%	1.2%	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%

Table A-19A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	3	0	29	32	0	30	5	35	3	94	0	97	164
06:15	0	0	0	0	5	0	25	30	0	28	5	33	4	105	0	109	172
06:30	0	0	0	0	1	0	26	27	0	35	9	44	2	143	0	145	216
06:45	0	0	0	0	8	0	52	60	0	37	4	41	3	171	0	174	275
07:00	0	0	0	0	13	0	54	67	0	54	7	61	8	221	0	229	357
07:15	0	0	0	0	6	0	74	80	0	42	5	47	8	218	0	226	353
07:30	0	0	0	0	3	0	52	55	0	75	13	88	10	157	0	167	310
07:45	0	0	0	0	10	0	68	78	0	47	4	51	1	137	0	138	267
08:00	0	0	0	0	14	0	41	55	0	40	6	46	9	114	0	123	224
08:15	0	0	0	0	5	0	35	40	0	28	7	35	6	89	0	95	170
08:30	0	0	0	0	17	0	36	53	0	37	4	41	10	102	0	112	206
08:45	0	0	0	0	10	0	22	32	1	30	6	37	3	90	0	93	162

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	30	0	232	262	0	208	29	237	29	767	0	796	1295
PHF	0	0	0	0	0.58	0	0.78	0.82	0	0.69	0.56	0.67	0.73	0.87	0	0.87	0.91

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	29	0	11	40	0	93	12	105	14	48	0	62	207
15:15	0	0	0	0	32	0	28	60	0	115	16	131	10	52	0	62	253
15:30	0	0	0	0	21	0	20	41	0	113	22	135	16	49	0	65	241
15:45	0	0	0	0	30	0	21	51	0	111	21	132	14	41	0	55	238
16:00	0	0	0	0	27	0	22	49	0	219	36	255	13	45	0	58	362
16:15	0	0	0	0	31	0	28	59	0	208	45	253	15	24	0	39	351
16:30	0	0	0	0	24	0	17	41	0	224	48	272	12	48	0	60	373
16:45	0	0	0	0	32	0	13	45	0	196	29	225	9	51	0	60	330
17:00	0	0	0	0	39	1	27	67	0	189	42	231	20	46	0	66	364
17:15	0	0	0	0	43	1	39	83	0	164	35	199	23	76	0	99	381
17:30	0	0	0	0	56	1	29	86	0	140	23	163	11	52	0	63	312
17:45	0	0	0	0	38	0	19	57	0	122	22	144	17	56	0	73	274

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	0	0	0	138	2	96	236	0	773	154	927	64	221	0	285	1448
PHF	0	0	0	0	0.80	0.50	0.62	0.71	0	0.86	0.80	0.85	0.70	0.73	0	0.72	0.95

Table A-19B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:30	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	2
07:45	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	2	3
08:00	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	1	3
08:15	0	0	0	0	0	0	0	0	0	2	1	3	0	1	0	1	4
08:30	0	0	0	0	1	0	0	1	0	1	0	1	1	4	0	5	7
08:45	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	0	0	1	1	0	0	0	0	3	0	0	3	4
PHF	0	0	0	0	0	0	0.25	0.25	0	0	0	0	0.75	0	0	0.75	0.50

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	2	0	0	2	0	2	0	2	1	0	0	1	5
15:15	0	0	0	0	2	0	0	2	0	1	0	1	0	0	0	0	3
15:30	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
15:45	0	0	0	0	1	0	1	2	0	1	0	1	0	0	0	0	3
16:00	0	0	0	0	1	0	1	2	0	4	0	4	0	1	0	1	7
16:15	0	0	0	0	3	0	0	3	0	1	0	1	0	0	0	0	4
16:30	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	3
16:45	0	0	0	0	2	0	0	2	0	1	0	1	0	0	0	0	3
17:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	1	1	0	2	0	2	1	0	0	1	4
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	0	0	0	5	0	2	7	0	3	0	3	1	0	0	1	11
PHF	0	0	0	0	0.63	0	0.50	0.58	0	0.38	0	0.38	0.25	0	0	0.25	0.69

Table A-19C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	0	0	0	0	3	0	29	32	0	30	5	35	3	95	0	98	165
06:15	0	0	0	0	5	0	25	30	0	28	5	33	4	105	0	109	172
06:30	0	0	0	0	1	0	26	27	0	35	9	44	4	143	0	147	218
06:45	0	0	0	0	8	0	52	60	0	37	4	41	3	171	0	174	275
07:00	0	0	0	0	13	0	54	67	0	54	7	61	9	221	0	230	358
07:15	0	0	0	0	6	0	74	80	0	42	5	47	9	218	0	227	354
07:30	0	0	0	0	3	0	53	56	0	75	13	88	11	157	0	168	312
07:45	0	0	0	0	10	0	68	78	0	48	4	52	3	137	0	140	270
08:00	0	0	0	0	14	0	41	55	0	42	6	48	10	114	0	124	227
08:15	0	0	0	0	5	0	35	40	0	30	8	38	6	90	0	96	174
08:30	0	0	0	0	18	0	36	54	0	38	4	42	11	106	0	117	213
08:45	0	0	0	0	10	0	22	32	1	31	6	38	4	90	0	94	164

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	0	0	30	0	233	263	0	208	29	237	32	767	0	799	1299
PHF	0	0	0	0	0.58	0	0.79	0.82	0	0.69	0.56	0.67	0.73	0.87	0	0.87	0.91
% HV	0%	0%	0%	0%	0.0%	0%	0.4%	0.4%	0%	0.0%	0.0%	0.0%	9.4%	0.0%	0%	0.4%	0.3%

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 SB On Ramp				US 1/SR 4 SB Off Ramp				Avenue of the States				Avenue of the States				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	0	0	31	0	11	42	0	95	12	107	15	48	0	63	212
15:15	0	0	0	0	34	0	28	62	0	116	16	132	10	52	0	62	256
15:30	0	0	0	0	23	0	20	43	0	113	22	135	16	49	0	65	243
15:45	0	0	0	0	31	0	22	53	0	112	21	133	14	41	0	55	241
16:00	0	0	0	0	28	0	23	51	0	223	36	259	13	46	0	59	369
16:15	0	0	0	0	34	0	28	62	0	209	45	254	15	24	0	39	355
16:30	0	0	0	0	26	0	18	44	0	224	48	272	12	48	0	60	376
16:45	0	0	0	0	34	0	13	47	0	197	29	226	9	51	0	60	333
17:00	0	0	0	0	40	1	27	68	0	189	42	231	20	46	0	66	365
17:15	0	0	0	0	43	1	40	84	0	166	35	201	24	76	0	100	385
17:30	0	0	0	0	56	1	29	86	0	140	23	163	11	52	0	63	312
17:45	0	0	0	0	38	0	19	57	0	122	22	144	17	56	0	73	274

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	0	0	0	143	2	98	243	0	776	154	930	65	221	0	286	1459
PHF	0	0	0	0	0.83	0.50	0.61	0.72	0	0.87	0.80	0.85	0.68	0.73	0	0.72	0.95
% HV	0%	0%	0%	0%	3.5%	0.0%	2.0%	2.9%	0%	0.4%	0.0%	0.3%	1.5%	0.0%	0%	0.3%	0.8%

Table A-20A

Directional Turning Movement Counts - Passenger Cars
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	16	0	3	19	0	0	0	0	0	22	11	33	0	81	10	91	143
06:15	27	0	5	32	0	0	0	0	0	24	10	34	0	81	14	95	161
06:30	35	0	4	39	0	0	0	0	0	25	11	36	0	114	32	146	221
06:45	40	0	4	44	0	0	0	0	0	38	8	46	0	133	24	157	247
07:00	54	0	4	58	0	0	0	0	0	47	18	65	0	173	26	199	322
07:15	59	0	10	69	0	0	0	0	0	33	17	50	0	172	37	209	328
07:30	47	0	8	55	0	0	0	0	0	58	21	79	0	119	44	163	297
07:45	35	0	11	46	0	0	0	0	0	37	21	58	0	102	34	136	240
08:00	30	0	8	38	0	0	0	0	0	37	17	54	0	96	27	123	215
08:15	19	0	8	27	0	0	0	0	0	32	7	39	0	75	39	114	180
08:30	18	0	6	24	0	0	0	0	0	41	13	54	0	96	34	130	208
08:45	20	0	9	29	0	0	0	0	0	31	8	39	0	73	28	101	169

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	200	0	26	226	0	0	0	0	0	176	64	240	0	597	131	728	1194
PHF	0.85	0	0.65	0.82	0	0	0	0	0	0.76	0.76	0.76	0	0.86	0.74	0.87	0.91

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	0	9	19	0	0	0	0	0	97	27	124	0	52	25	77	220
15:15	13	0	7	20	0	0	0	0	0	114	32	146	0	51	22	73	239
15:30	8	0	10	18	0	0	0	0	0	112	21	133	0	59	20	79	230
15:45	5	0	16	21	0	0	0	0	0	113	26	139	0	50	14	64	224
16:00	8	0	15	23	0	0	0	0	0	200	42	242	0	53	17	70	335
16:15	2	0	12	14	0	0	0	0	0	189	50	239	0	35	28	63	316
16:30	9	0	14	23	0	0	0	0	0	198	53	251	0	49	25	74	348
16:45	8	0	11	19	0	0	0	0	0	178	49	227	0	52	31	83	329
17:00	7	0	12	19	0	0	0	0	0	181	51	232	0	62	37	99	350
17:15	5	0	15	20	0	0	0	0	0	162	45	207	0	93	30	123	350
17:30	11	0	13	24	0	0	0	0	0	149	46	195	0	53	25	78	297
17:45	3	0	13	16	0	0	0	0	0	120	41	161	0	70	38	108	285

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	29	0	52	81	0	0	0	0	0	719	198	917	0	256	123	379	1377
PHF	0.81	0	0.87	0.88	0	0	0	0	0	0.91	0.93	0.91	0	0.69	0.83	0.77	0.98

Table A-20B

Directional Turning Movement Counts - Heavy Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
07:30	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	2	3
07:45	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2	4	5
08:00	0	0	0	0	0	0	0	0	0	1	1	2	0	1	0	1	3
08:15	0	0	2	2	0	0	0	0	0	1	1	2	0	1	1	2	6
08:30	1	0	1	2	0	0	0	0	0	2	0	2	0	3	1	4	8
08:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	0	0	2	2	0	0	0	0	0	0	0	0	0	3	2	5	7
PHF	0	0	0.50	0.50	0	0	0	0	0	0	0	0	0	0.75	0.50	0.63	0.58

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	0	0	1	1	0	0	0	0	0	2	2	4	0	1	2	3	8
15:15	0	0	0	0	0	0	0	0	0	2	1	3	0	0	2	2	5
15:30	0	0	1	1	0	0	0	0	0	2	0	2	0	0	1	1	4
15:45	0	0	0	0	0	0	0	0	0	2	1	3	0	0	2	2	5
16:00	1	0	1	2	0	0	0	0	0	4	1	5	0	0	1	1	8
16:15	0	0	0	0	0	0	0	0	0	3	1	4	0	0	2	2	6
16:30	0	0	1	1	0	0	0	0	0	2	0	2	0	0	1	1	4
16:45	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
17:00	0	0	1	1	0	0	0	0	0	0	1	1	0	0	3	3	5
17:15	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	0	0	2	2	0	0	0	0	0	6	2	8	0	1	4	5	15
PHF	0	0	0.50	0.50	0	0	0	0	0	0.75	0.50	0.67	0	0.25	0.33	0.42	0.75

Table A-20C

Directional Turning Movement Counts - All Vehicles
ARCYBER at Fort Gordon, Georgia

Start Date 7/18/2012
Start Time 06:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
06:00	17	0	3	20	0	0	0	0	0	22	11	33	0	81	10	91	144
06:15	27	0	5	32	0	0	0	0	0	24	10	34	0	81	15	96	162
06:30	35	0	4	39	0	0	0	0	0	25	11	36	0	116	32	148	223
06:45	40	0	4	44	0	0	0	0	0	38	8	46	0	133	24	157	247
07:00	54	0	5	59	0	0	0	0	0	47	18	65	0	174	26	200	324
07:15	59	0	10	69	0	0	0	0	0	33	17	50	0	173	38	211	330
07:30	47	0	9	56	0	0	0	0	0	58	21	79	0	120	45	165	300
07:45	35	0	11	46	0	0	0	0	0	37	22	59	0	104	36	140	245
08:00	30	0	8	38	0	0	0	0	0	38	18	56	0	97	27	124	218
08:15	19	0	10	29	0	0	0	0	0	33	8	41	0	76	40	116	186
08:30	19	0	7	26	0	0	0	0	0	43	13	56	0	99	35	134	216
08:45	20	0	9	29	0	0	0	0	0	32	8	40	0	74	28	102	171

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
06:45	200	0	28	228	0	0	0	0	0	176	64	240	0	600	133	733	1201
PHF	0.85	0	0.70	0.83	0	0	0	0	0	0.76	0.76	0.76	0	0.86	0.74	0.87	0.91
% HV	0.0%	0%	7.1%	0.9%	0%	0%	0%	0%	0%	0.0%	0.0%	0.0%	0%	0.5%	1.5%	0.7%	0.6%

Start Date 7/18/2012
Start Time 15:00

Street Name	US 1/SR 4 NB Off Ramp				US 1/SR 4 NB On Ramp				Tobacco Rd				Tobacco Rd				Total
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
15:00	10	0	10	20	0	0	0	0	0	99	29	128	0	53	27	80	228
15:15	13	0	7	20	0	0	0	0	0	116	33	149	0	51	24	75	244
15:30	8	0	11	19	0	0	0	0	0	114	21	135	0	59	21	80	234
15:45	5	0	16	21	0	0	0	0	0	115	27	142	0	50	16	66	229
16:00	9	0	16	25	0	0	0	0	0	204	43	247	0	53	18	71	343
16:15	2	0	12	14	0	0	0	0	0	192	51	243	0	35	30	65	322
16:30	9	0	15	24	0	0	0	0	0	200	53	253	0	49	26	75	352
16:45	8	0	11	19	0	0	0	0	0	180	50	230	0	52	31	83	332
17:00	7	0	13	20	0	0	0	0	0	181	52	233	0	62	40	102	355
17:15	5	0	15	20	0	0	0	0	0	164	45	209	0	94	30	124	353
17:30	11	0	13	24	0	0	0	0	0	149	46	195	0	53	25	78	297
17:45	3	0	13	16	0	0	0	0	0	120	41	161	0	70	38	108	285

Peak Hour	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
16:30	29	0	54	83	0	0	0	0	0	725	200	925	0	257	127	384	1392
PHF	0.81	0	0.90	0.86	0	0	0	0	0	0.91	0.94	0.91	0	0.68	0.79	0.77	0.98
% HV	0.0%	0%	3.7%	2.4%	0%	0%	0%	0%	0%	0.8%	1.0%	0.9%	0%	0.4%	3.1%	1.3%	1.1%

Attachment 5

Intersection Worksheets – Fort Meade

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	598	6	4	168	311	51	99	1	107	37	32
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1638	1881	1881	1900	1810	1900	1863	1864	1864	1727	1729	1729
Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Capacity, veh/h	778	1276	22	436	1193	1065	190	178	5	172	85	78
Arriving On Green	0.04	0.69	0.69	0.01	1.00	1.00	0.04	0.10	0.10	0.04	0.10	0.10
Sat Flow, veh/h	1559.9	1844.9	31.1	1809.5	1615.0	1615.0	1774.0	1799.7	54.5	1645.0	831.7	762.3
Grp Volume(v), veh/h	79.5	0.0	723.9	4.0	180.6	370.2	83.6	0.0	136.0	135.4	0.0	99.9
Grp Sat Flow(s),veh/h/ln	1559.9	0.0	1876.0	1809.5	1809.5	1615.0	1774.0	0.0	1854.2	1645.0	0.0	1594.0
Q Serve(g_s), s	1.7	0.0	18.8	0.0	0.0	0.0	0.0	0.0	6.9	1.5	0.0	5.8
Cycle Q Clear(g_c), s	1.7	0.0	18.8	0.0	0.0	0.0	0.0	0.0	6.9	1.5	0.0	5.8
Proportion In Lane	1.000		0.017	1.000		1.000	1.000		0.029	1.000		0.478
Lane Grp Cap(c), veh/h	778.1	0.0	1297.6	435.7	1193.4	1065.1	190.0	0.0	183.7	172.4	0.0	163.1
V/C Ratio(X)	0.102	0.000	0.558	0.009	0.151	0.348	0.440	0.000	0.740	0.786	0.000	0.612
Avail Cap(c_a), veh/h	785.7	0.0	1297.6	502.6	1193.4	1065.1	234.3	0.0	305.7	275.9	0.0	328.5
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	5.6	0.0	7.5	13.1	0.0	0.0	43.9	0.0	42.5	44.5	0.0	41.7
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.1	0.2	1.6	0.0	5.8	7.7	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	5.6	0.0	8.0	13.1	0.1	0.2	45.5	0.0	48.3	52.2	0.0	45.4
Lane Group LOS	A		A	B	A	A	D		D	D		D
Approach Volume, veh/h		803			555			220			235	
Approach Delay, s/veh		7.8			0.2			47.2			49.3	
Approach LOS		A			A			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	7.53	71.12		4.41	68.00		7.58	13.61		7.90	13.93	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	64.00		4.00	64.00		6.00	16.00		10.00	20.00	
Max Q Clear Time (g_c+I1), s	3.71	20.80		2.00	2.00		2.00	8.92		3.52	7.82	
Green Extension Time (p_c)	0.00	9.78		0.00	10.12		0.05	0.69		0.17	0.99	
Intersection Summary												
HCM 2010 Control Delay			15.6									
HCM 2010 Level of Service			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	715	17	127	566	104	65	7	60	8	1	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1827	1792	1827	1881	1863	1897	1897	1900	1863	1863	1863
Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Capacity, veh/h	576	1159	967	188	1330	1120	63	3	237	62	4	233
Arriving On Green	0.07	1.00	0.00	0.22	1.00	0.00	0.15	0.15	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1774.0	1523.6	1523.6	1739.9	1583.3	1583.3	19.6	1.8	1615.0	25.9	3.2	1583.3
Grp Volume(v), veh/h	87.0	737.1	0.0	160.8	628.9	0.0	92.0	0.0	0.0	9.8	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1826.9	1523.6	1739.9	1881.2	1583.3	21.4	0.0	1615.0	29.1	0.0	1583.3
Q Serve(g_s), s	2.2	0.0	0.0	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	0.0	9.7	0.0	0.0	16.0	0.0	0.0	16.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.917		1.000	0.889		1.000
Lane Grp Cap(c), veh/h	575.8	1159.4	966.9	188.3	1330.2	1119.6	66.5	0.0	237.3	66.7	0.0	232.6
V/C Ratio(X)	0.151	0.636	0.000	0.854	0.473	0.000	1.383	0.000	0.000	0.147	0.000	0.000
Avail Cap(c_a), veh/h	593.8	1159.4	966.9	287.6	1330.2	1119.6	66.5	0.0	237.3	66.7	0.0	232.6
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.685	0.685	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	8.1	0.0	0.0	41.8	0.0	0.0	53.7	0.0	0.0	47.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.2	0.0	10.2	0.2	0.0	242.1	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.3	1.2	0.0	52.0	0.2	0.0	295.8	0.0	0.0	48.5	0.0	0.0
Lane Group LOS	A	A		D	A		F			D		
Approach Volume, veh/h		824			790			92			10	
Approach Delay, s/veh		1.9			10.7			295.8			48.5	
Approach LOS		A			B			F			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	7.90	73.11		15.79	81.00			20.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	5.00	64.00		18.00	77.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s	4.19	2.00		11.67	2.00			18.00			18.00	
Green Extension Time (p_c)	0.01	14.39		0.21	14.66			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			22.0									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
7: Cooper Av & Mapes Rd

Existing AM Peak
9/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	463	338	43	65	537	133	32	72	62	28	104	291
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1810	1696	1900	1863	1900	1763	1763	1900	1859	1859	1863
Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Capacity, veh/h	524	1144	912	651	1080	936	43	76	355	40	128	348
Arriving On Green	0.15	1.00	1.00	0.04	0.58	0.58	0.22	0.22	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1774.0	1442.0	1442.0	1809.5	1615.0	1615.0	102.0	243.2	1615.0	115.4	464.5	1583.3
Grp Volume(v), veh/h	492.6	375.6	59.7	87.8	596.7	140.0	204.4	0.0	0.0	180.3	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1809.5	1442.0	1809.5	1862.7	1615.0	345.2	0.0	1615.0	579.9	0.0	1583.3
Q Serve(g_s), s	6.3	0.0	0.0	2.4	21.6	4.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	2.4	21.6	4.4	24.0	0.0	0.0	24.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.295		1.000	0.199		1.000
Lane Grp Cap(c), veh/h	523.5	1144.0	911.6	651.4	1080.0	936.3	118.6	0.0	355.1	167.1	0.0	348.2
V/C Ratio(X)	0.941	0.328	0.066	0.135	0.552	0.150	1.723	0.000	0.000	1.079	0.000	0.000
Avail Cap(c_a), veh/h	818.4	1144.0	911.6	665.7	1080.0	936.3	118.6	0.0	355.1	167.1	0.0	348.2
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.746	0.746	0.746	0.952	0.952	0.952	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	30.5	0.0	0.0	11.1	14.2	10.6	40.7	0.0	0.0	39.1	0.0	0.0
Incr Delay (d2), s/veh	10.9	0.1	0.0	0.1	0.6	0.1	358.1	0.0	0.0	92.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	41.4	0.1	0.0	11.1	14.8	10.6	398.8	0.0	0.0	131.5	0.0	0.0
Lane Group LOS	D	A	A	B	B	B	F			F		
Approach Volume, veh/h		928			825			204			180	
Approach Delay, s/veh		22.0			13.7			398.8			131.5	
Approach LOS		C			B			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	13.86	73.00		8.14	67.28			28.00			28.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	28.00	69.00		5.00	46.00			24.00			24.00	
Max Q Clear Time (g_c+I1), s	8.31	2.00		4.44	23.61			26.00			26.00	
Green Extension Time (p_c)	1.55	9.21		0.01	7.57			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			64.1									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
8: Ernie Pyle St & Mapes Rd

Existing AM Peak
9/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	89	153	407	311	31	80	40	91	7	107	25
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1881	1900	1900	1900	1827	1845	1845	1667	1855	1855
Lanes	0	1	1	1	1	0	1	1	0	1	1	0
Capacity, veh/h	144	250	480	871	1086	148	272	138	296	274	372	99
Arriving On Green	0.10	0.10	0.10	0.11	0.22	0.22	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	408.0	761.2	1599.0	1809.5	1637.1	223.4	1167.3	523.6	1123.6	1101.1	1411.6	376.9
Grp Volume(v), veh/h	173.0	0.0	156.1	462.5	0.0	397.1	96.4	0.0	151.6	12.1	0.0	188.3
Grp Sat Flow(s),veh/h/ln	1169.2	0.0	1599.0	1809.5	0.0	1860.6	1167.3	0.0	1647.2	1101.1	0.0	1788.5
Q Serve(g_s), s	10.2	0.0	10.0	14.4	0.0	19.7	8.1	0.0	8.2	1.0	0.0	9.5
Cycle Q Clear(g_c), s	13.9	0.0	10.0	14.4	0.0	19.7	17.7	0.0	8.2	9.2	0.0	9.5
Proportion In Lane	0.349		1.000	1.000		0.120	1.000		0.682	1.000		0.211
Lane Grp Cap(c), veh/h	394.9	0.0	479.7	871.4	0.0	1234.7	272.1	0.0	434.3	273.6	0.0	471.5
V/C Ratio(X)	0.438	0.000	0.325	0.531	0.000	0.322	0.354	0.000	0.349	0.044	0.000	0.399
Avail Cap(c_a), veh/h	394.9	0.0	479.7	871.4	0.0	1234.7	272.1	0.0	434.3	273.6	0.0	471.5
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	40.2	0.0	39.2	15.6	0.0	22.2	40.6	0.0	32.8	36.6	0.0	33.3
Incr Delay (d2), s/veh	3.5	0.0	1.8	2.3	0.0	0.7	3.6	0.0	2.2	0.3	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	43.7	0.0	41.0	17.9	0.0	22.8	44.2	0.0	35.1	36.9	0.0	35.8
Lane Group LOS	D		D	B		C	D		D	D		D
Approach Volume, veh/h		329			860			248			200	
Approach Delay, s/veh		42.4			20.2			38.6			35.9	
Approach LOS		D			C			D			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		37.00		40.00	77.00			33.00			33.00	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		33.00		36.00	73.00			29.00			29.00	
Max Q Clear Time (g_c+I1), s		15.90		16.43	21.73			19.68			11.53	
Green Extension Time (p_c)		3.97		1.43	4.85			1.69			2.29	
Intersection Summary												
HCM 2010 Control Delay			29.4									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	25	45	547	58	180	346	946	134	46	739	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1743	1892	1900	1900	1900	1881	1881	1845	1863	1863	1863	1900
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	176	275	235	290	397	334	423	1466	662	145	933	426
Arriving On Green	0.15	0.15	0.00	0.21	0.21	0.21	0.24	0.42	0.42	0.03	0.09	0.00
Sat Flow, veh/h	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1583.3	1583.3	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	20.0	39.7	0.0	581.9	100.0	195.7	397.7	1087.4	183.6	56.1	849.4	0.0
Grp Sat Flow(s),veh/h/ln	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1752.4	1583.3	1774.0	1769.6	1615.0
Q Serve(g_s), s	1.6	2.0	0.0	23.0	4.8	12.1	24.0	28.8	8.4	3.4	26.2	0.0
Cycle Q Clear(g_c), s	1.6	2.0	0.0	23.0	4.8	12.1	24.0	28.8	8.4	3.4	26.2	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	175.5	275.2	234.9	290.5	397.3	334.3	423.5	1465.7	662.1	145.1	933.1	425.8
V/C Ratio(X)	0.114	0.144	0.000	2.003	0.252	0.585	0.939	0.742	0.277	0.386	0.910	0.000
Avail Cap(c_a), veh/h	175.5	275.2	234.9	290.5	397.3	334.3	423.5	1465.7	662.1	145.1	933.1	425.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.8	41.0	0.0	43.5	36.3	39.2	41.2	27.0	21.1	50.8	48.9	0.0
Incr Delay (d2), s/veh	1.3	1.1	0.0	463.5	1.5	7.3	30.8	3.4	1.0	7.6	14.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	42.2	42.1	0.0	507.0	37.8	46.5	72.1	30.4	22.1	58.4	63.4	0.0
Lane Group LOS	D	D		F	D	D	E	C	C	E	E	
Approach Volume, veh/h		60			878			1669			906	
Approach Delay, s/veh		42.1			350.9			39.4			63.0	
Approach LOS		D			F			D			E	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		20.00			27.00		30.00	50.00		13.00	33.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			23.00		26.00	46.00		9.00	29.00	
Max Q Clear Time (g_c+I1), s		4.01			25.00		25.97	30.79		5.42	28.18	
Green Extension Time (p_c)		0.12			0.00		0.01	11.55		0.03	0.76	
Intersection Summary												
HCM 2010 Control Delay			123.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	29	87	388	111	132	406	686	66	52	400	245
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1845	1900	1863	1900	1882	1882	1900	1827	1827	1827	1810	1863
Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Capacity, veh/h	102	182	152	345	195	230	580	1470	162	77	612	282
Arriving On Green	0.10	0.10	0.00	0.25	0.25	0.25	0.21	0.30	0.30	0.04	0.18	0.00
Sat Flow, veh/h	1059.1	1900.0	1583.3	1394.2	790.4	928.1	1809.5	3235.0	356.0	1739.9	1583.3	1583.3
Grp Volume(v), veh/h	84.2	35.8	0.0	408.4	0.0	305.5	541.3	407.6	394.0	59.8	454.5	0.0
Grp Sat Flow(s),veh/h/ln	1059.1	1900.0	1583.3	1394.2	0.0	1718.5	1809.5	1826.9	1764.1	1739.9	1719.0	1583.3
Q Serve(g_s), s	7.9	1.8	0.0	25.0	0.0	16.5	29.7	18.4	18.5	3.4	12.7	0.0
Cycle Q Clear(g_c), s	7.9	1.8	0.0	25.0	0.0	16.5	29.7	18.4	18.5	3.4	12.7	0.0
Proportion In Lane	1.000		1.000	1.000		0.540	1.000		0.202	1.000		1.000
Lane Grp Cap(c), veh/h	101.7	182.5	152.0	344.8	0.0	425.0	579.6	830.1	801.6	76.5	612.2	281.9
V/C Ratio(X)	0.828	0.196	0.000	1.185	0.000	0.719	0.934	0.491	0.492	0.781	0.742	0.000
Avail Cap(c_a), veh/h	167.6	300.7	250.6	344.8	0.0	425.0	626.5	830.1	801.6	154.9	612.2	281.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	0.933	0.933	0.000	1.000	0.000	1.000	0.674	0.674	0.674	1.000	1.000	0.000
Uniform Delay (d), s/veh	44.9	42.1	0.0	38.0	0.0	34.8	38.6	25.6	25.6	47.8	39.3	0.0
Incr Delay (d2), s/veh	14.7	0.5	0.0	108.6	0.0	5.8	15.4	1.4	1.5	15.7	7.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	59.6	42.6	0.0	146.7	0.0	40.6	54.0	27.0	27.1	63.5	47.3	0.0
Lane Group LOS	E	D		F		D	D	C	C	E	D	
Approach Volume, veh/h		120			714			1343			514	
Approach Delay, s/veh		54.5			101.3			37.9			49.2	
Approach LOS		D			F			D			D	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		13.71			29.00		36.38	49.93		8.45	22.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			25.00		35.00	44.00		9.00	18.00	
Max Q Clear Time (g_c+I1), s		9.89			27.00		31.70	20.47		5.44	14.66	
Green Extension Time (p_c)		0.16			0.00		0.67	9.05		0.03	2.26	
Intersection Summary												
HCM 2010 Control Delay			57.6									
HCM 2010 Level of Service			E									

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	790	21	43	473	5	19
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.95	0.66	0.60	0.86	0.63	0.68
Heavy Vehicles(%)	4	19	0	2	20	16
Movement Flow Rate	832	32	72	550	8	28
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	864	0	1542	848
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	694	-
Follow-up Headway	-	-	2.2	-	3.68	3.444
Pot Capacity-1 Maneuver	-	-	*583	-	*68	*583
Stage 1	-	-	-	-	*583	-
Stage 2	-	-	-	-	*483	-
Time blocked-Platoon(%)	-	-	61	-	38	61
Mov Capacity-1 Maneuver	-	-	*583	-	*56	*583
Mov Capacity-2 Maneuver	-	-	-	-	*56	-
Stage 1	-	-	-	-	*583	-
Stage 2	-	-	-	-	*397	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	1.4	28.5
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*189				
HCM Control Delay (s)	28.5	-	-	12.039	-
HCM Lane VC Ratio	0.19	-	-	0.123	-
HCM Lane LOS	D	-	-	B	-
HCM 95th Percentile Queue (veh)	0.679	-	-	0.418	-

Intersection	
Intersection Delay (sec/veh):	159.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	744	68	135	499	1	17	0	51	0	0	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.97	0.77	0.78	0.90	0.92	0.61	0.92	0.67	0.92	0.92	0.92
Heavy Vehicles(%)	2	4	2	0	2	2	0	2	2	2	2	2
Movement Flow Rate	2	767	88	173	554	1	28	0	76	0	0	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

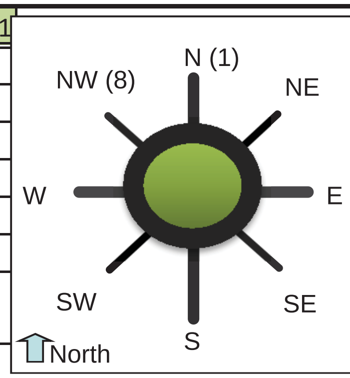
Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	555	0	0	855	0	0	1716	1716	811	1754	1760	555
Stage 1	-	-	-	-	-	-	815	815	-	901	901	-
Stage 2	-	-	-	-	-	-	901	901	-	853	859	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	*938	-	-	*623	-	-	*# 7	*9	*623	*5	*7	*938
Stage 1	-	-	-	-	-	-	*623	*623	-	*328	*326	-
Stage 2	-	-	-	-	-	-	*330	*325	-	*623	*623	-
Time blocked-Platoon(%)	37	-	-	58	-	-	74	74	58	74	74	37
Mov Capacity-1 Maneuver	*938	-	-	*623	-	-	*# 5	*6	*623	*3	*4	*938
Mov Capacity-2 Maneuver	-	-	-	-	-	-	*# 5	*6	-	*3	*4	-
Stage 1	-	-	-	-	-	-	*620	*620	-	*327	*195	-
Stage 2	-	-	-	-	-	-	*197	*194	-	*544	*620	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	3.1	$ 2574.2	8.8
HCM LOS	A	A	F	A

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*18							*938
HCM Control Delay (s)	$ 2574.2	8.847	0	-	12.986	0	-	8.8
HCM Lane VC Ratio	5.777	0.002	-	-	0.278	-	-	0.001
HCM Lane LOS	F	A	A	-	B	A	-	A
HCM 95th Percentile Queue (veh)	13.613	0.007	-	-	1.131	-	-	0.003

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	Existing, AM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Existing AM Peak



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph								
NE (2), vph								
E (3), vph								
SE (4), vph	34							
S (5), vph								
SW (6), vph	378	464						
W (7), vph								
NW (8), vph								
Entry Volume, vph	412	464	0	0	0	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph			602					
NE (2), vph								
E (3), vph								
SE (4), vph							349	
S (5), vph								
SW (6), vph							56	
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	602	0	0	0	405	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	1	2	2	2	1	1	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	0	687	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	39	0	0	0	0	0	0	398
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	961	0	0	0	0	0	0	64
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	1000	0	0	0	0	687	0	462
	Entry flow Lane 1, pcu/h	470	0	0	0	0	687	0	462
	Entry flow Lane 2, pcu/h	530	0	0	0	0	0	0	0
	Conflicting flow, pcu/h	0	0	0	0	0	437	0	1000

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	448	504	NA	NA	NA	NA	NA	NA
V/C ratio	**0.42**	**0.47**			#VALUE!	#VALUE!		
Control Delay, s/veh	**7.8**	**8.6**			#VALUE!	#VALUE!		
LOS	A	A			#VALUE!	#VALUE!		
95th % Queue (ft)	**55**	**67**			#VALUE!	#VALUE!		
Approach Delay, LOS	8.2 sec, LOS A				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	793	NA	535	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	654	NA	440	NA
V/C ratio			#VALUE!	#VALUE!	**0.83**		**0.82**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**26.2**		**35.0**	#VALUE!
LOS			#VALUE!	#VALUE!	D		D	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**243**		**216**	#VALUE!
Approach Delay, LOS			#VALUE!		26.2 sec, LOS D		35 sec, LOS D	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	448	504	NA	NA	NA	NA	NA	NA
V/C ratio	**0.33**	**0.37**			#VALUE!	#VALUE!		
Control Delay, s/veh	**5.5**	**6.0**			#VALUE!	#VALUE!		
LOS	A	A			#VALUE!	#VALUE!		
95th % Queue (ft)	**38**	**45**			#VALUE!	#VALUE!		
Approach Delay, LOS	5.8 sec, LOS A				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	1054	NA	635	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	654	NA	440	NA
V/C ratio			#VALUE!	#VALUE!	**0.62**		**0.69**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**11.9**		**20.9**	#VALUE!
LOS			#VALUE!	#VALUE!	B		C	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**118**		**145**	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

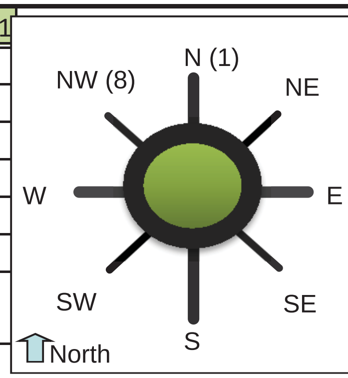
v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	Existing, AM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Existing AM Peak



Volumes

Entry Legs (FROM)	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph								69
NE (2), vph								
E (3), vph								
SE (4), vph								
S (5), vph	111						443	289
SW (6), vph								
W (7), vph		124						34
NW (8), vph								
Entry Volume, vph	111	124	0	0	0	0	443	392

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	833							
NE (2), vph								
E (3), vph								
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph	99							
NW (8), vph								
Entry Volume, vph	932	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	79	951	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	127	0	0	835	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	142	0	0	39	113	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	268	0	0	953	1064	0	0	0
	Entry flow Lane 1, pcu/h	127	0	0	506	1064	0	0	0
	Entry flow Lane 2, pcu/h	142	0	0	447	0	0	0	0
	Conflicting flow, pcu/h	987	0	0	1064	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	513	539	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	121	135	NA	NA	1013	NA	NA	NA
V/C ratio	**0.24**	**0.25**			**0.94**	#VALUE!		
Control Delay, s/veh	**10.3**	**10.1**			**34.7**	#VALUE!		
LOS	B	B			D	#VALUE!		
95th % Queue (ft)	**24**	**26**			**418**	#VALUE!		
Approach Delay, LOS	10.2 sec, LOS B				34.7 sec, LOS D			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	485	511	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	482	426	NA	NA	NA	NA
V/C ratio			**0.99**	**0.83**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**68.6**	**37.4**			#VALUE!	#VALUE!
LOS			F	E			#VALUE!	#VALUE!
95th % Queue (ft)			**348**	**220**			#VALUE!	#VALUE!
Approach Delay, LOS			53.9 sec, LOS F				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	582	642	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	121	135	NA	NA	1013	NA	NA	NA
V/C ratio	**0.21**	**0.21**			**0.65**	#VALUE!		
Control Delay, s/veh	**8.8**	**8.1**			**9.7**	#VALUE!		
LOS	A	A			A	#VALUE!		
95th % Queue (ft)	**20**	**21**			**135**	#VALUE!		
Approach Delay, LOS	8.5 sec, LOS A				9.7 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	539	600	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	482	426	NA	NA	NA	NA
V/C ratio			**0.89**	**0.71**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**44.2**	**22.9**			#VALUE!	#VALUE!
LOS			E	C			#VALUE!	#VALUE!
95th % Queue (ft)			**271**	**152**			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

11: Annapolis Rd & Reece Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	100	52	225	323	159	143	598	77	55	469	263
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1759	1900	1894	1894	1845	1827	1792	1863	1853	1853
Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Capacity, veh/h	269	486	386	632	405	185	242	1037	455	287	504	428
Arriving On Green	0.06	0.26	0.26	0.13	0.33	0.33	0.07	0.30	0.00	0.04	0.27	0.27
Sat Flow, veh/h	1809.5	1495.4	1495.4	1809.5	1232.8	562.1	1756.8	1523.6	1523.6	1774.0	1853.1	1575.1
Grp Volume(v), veh/h	100.0	112.4	64.2	288.5	0.0	534.4	172.3	695.3	0.0	67.9	521.1	302.3
Grp Sat Flow(s),veh/h/ln	1809.5	1881.2	1495.4	1809.5	0.0	1794.9	1756.8	1735.6	1523.6	1774.0	1853.1	1575.1
Q Serve(g_s), s	2.3	2.8	2.0	5.7	0.0	16.7	4.0	10.3	0.0	1.6	16.0	10.2
Cycle Q Clear(g_c), s	2.3	2.8	2.0	5.7	0.0	16.7	4.0	10.3	0.0	1.6	16.0	10.2
Proportion In Lane	1.000		1.000	1.000		0.313	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	268.8	486.0	386.3	631.8	0.0	589.7	241.8	1037.3	455.3	287.3	504.0	428.4
V/C Ratio(X)	0.372	0.231	0.166	0.457	0.000	0.906	0.712	0.670	0.000	0.236	1.034	0.706
Avail Cap(c_a), veh/h	284.2	511.7	406.7	643.2	0.0	610.2	241.8	1037.3	455.3	334.9	504.0	428.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	16.0	17.2	16.9	9.9	0.0	18.9	15.8	18.1	0.0	15.1	21.4	19.3
Incr Delay (d2), s/veh	0.9	0.2	0.2	0.5	0.0	16.9	9.4	1.7	0.0	0.4	49.1	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	16.9	17.4	17.1	10.4	0.0	35.8	25.3	19.8	0.0	15.6	70.5	24.5
Lane Group LOS	B	B	B	B		D	C	B		B	F	C
Approach Volume, veh/h		277			823			868			891	
Approach Delay, s/veh		17.2			26.9			20.9			50.7	
Approach LOS		B			C			C			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	7.50	19.20		11.63	23.33		8.00	21.58		6.42	20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	16.00		8.00	20.00		4.00	16.00		4.00	16.00	
Max Q Clear Time (g_c+I1), s	4.35	4.77		7.66	18.75		6.00	12.33		3.61	18.00	
Green Extension Time (p_c)	0.00	3.43		0.03	0.58		0.00	2.80		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			31.6									
HCM 2010 Level of Service			C									

12: Annapolis Rd & Rockenbach Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	531	248	91	856	98	176	60	36	229	302	394
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1696	1827	1900	1845	1845	1776	1863	1805	1805	1845	1900	1863
Lanes	1	2	1	1	1	1	1	2	0	1	2	1
Capacity, veh/h	181	1825	849	490	979	801	291	323	274	386	646	283
Arriving On Green	0.04	0.53	0.00	0.05	0.53	0.53	0.07	0.18	0.18	0.07	0.18	0.18
Sat Flow, veh/h	1615.6	1615.0	1615.0	1756.8	1509.3	1509.3	1774.0	1804.6	1533.9	1756.8	1583.3	1583.3
Grp Volume(v), veh/h	115.5	647.6	0.0	116.7	930.4	136.1	217.3	63.8	48.0	272.6	355.3	437.8
Grp Sat Flow(s),veh/h/ln	1615.6	1735.6	1615.0	1756.8	1844.7	1509.3	1774.0	1804.6	1533.9	1756.8	1805.0	1583.3
Q Serve(g_s), s	3.0	9.7	0.0	2.7	42.7	4.2	6.0	2.7	2.4	6.0	8.0	16.0
Cycle Q Clear(g_c), s	3.0	9.7	0.0	2.7	42.7	4.2	6.0	2.7	2.4	6.0	8.0	16.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	181.5	1825.0	849.1	489.6	978.6	800.7	290.6	322.8	274.4	386.3	645.7	283.2
V/C Ratio(X)	0.636	0.355	0.000	0.238	0.951	0.170	0.748	0.198	0.175	0.706	0.550	1.546
Avail Cap(c_a), veh/h	181.5	1825.0	849.1	500.9	989.8	809.9	290.6	322.8	274.4	386.3	645.7	283.2
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	20.7	12.4	0.0	9.1	19.9	10.8	32.6	31.3	31.1	32.1	33.5	36.7
Incr Delay (d2), s/veh	7.2	0.1	0.0	0.2	17.8	0.1	10.2	0.3	0.3	5.8	1.0	262.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.8	12.5	0.0	9.4	37.7	10.9	42.8	31.6	31.4	37.9	34.5	299.2
Lane Group LOS	C	B		A	D	B	D	C	C	D	C	F
Approach Volume, veh/h		763			1183			329			1066	
Approach Delay, s/veh		14.8			31.9			39.0			144.1	
Approach LOS		B			C			D			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	51.03		8.42	51.46		10.00	20.00		10.00	20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	47.00		5.00	48.00		6.00	16.00		6.00	16.00	
Max Q Clear Time (g_c+I1), s	4.96	11.73		4.67	44.74		8.00	4.69		8.00	18.00	
Green Extension Time (p_c)	0.00	17.15		0.01	2.71		0.00	3.65		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			64.5									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	2	2	67	20	153	11	480	17	55	380	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1743	1881	1792	1863	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	7	7	13	196	55	220	26	998	808	119	1106	940
Arriving On Green	0.02	0.02	0.02	0.14	0.14	0.14	0.02	0.53	0.53	0.02	0.19	0.19
Sat Flow, veh/h	431.5	431.5	863.1	1426.8	401.9	1599.0	1660.1	1523.6	1523.6	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	16.0	0.0	0.0	128.2	0.0	159.4	15.9	545.5	20.0	91.7	436.8	24.2
Grp Sat Flow(s),veh/h/ln	1726.1	0.0	0.0	1828.7	0.0	1599.0	1660.1	1881.2	1523.6	1774.0	1900.0	1615.0
Q Serve(g_s), s	0.6	0.0	0.0	4.2	0.0	6.1	0.6	12.3	0.4	3.3	12.9	0.8
Cycle Q Clear(g_c), s	0.6	0.0	0.0	4.2	0.0	6.1	0.6	12.3	0.4	3.3	12.9	0.8
Proportion In Lane	0.250		0.500	0.780		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	26.7	0.0	0.0	251.4	0.0	219.8	25.6	997.9	808.2	118.9	1105.8	940.0
V/C Ratio(X)	0.599	0.000	0.000	0.510	0.000	0.725	0.623	0.547	0.025	0.771	0.395	0.026
Avail Cap(c_a), veh/h	430.9	0.0	0.0	456.5	0.0	399.1	103.6	997.9	808.2	221.4	1126.4	957.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.844	0.844	0.844
Uniform Delay (d), s/veh	31.4	0.0	0.0	25.6	0.0	26.5	31.4	10.0	7.2	30.9	16.0	11.1
Incr Delay (d2), s/veh	19.6	0.0	0.0	1.6	0.0	4.5	22.2	0.6	0.0	8.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	51.0	0.0	0.0	27.2	0.0	31.0	53.5	10.6	7.2	39.4	16.2	11.1
Lane Group LOS	D			C		C	D	B	A	D	B	B
Approach Volume, veh/h		16			288			581			553	
Approach Delay, s/veh		51.0			29.3			11.6			19.8	
Approach LOS		D			C			B			B	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		4.99			12.81		4.99	38.00		8.29	41.31	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	34.00		8.00	38.00	
Max Q Clear Time (g_c+I1), s		2.59			8.12		2.61	14.29		5.29	14.88	
Green Extension Time (p_c)		0.02			0.74		0.00	6.61		0.04	7.03	
Intersection Summary												
HCM 2010 Control Delay			18.8									
HCM 2010 Level of Service			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	62	94	332	273	19	159	87	66	90	138	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1863	1881	1900	1900	1900	1900	1881	1845	1900	1887	1887
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	514	1343	607	830	956	813	335	401	334	365	210	95
Arriving On Green	0.01	0.38	0.00	0.14	0.50	0.00	0.03	0.07	0.00	0.06	0.17	0.17
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1615.0	1615.0	1809.5	1568.0	1568.0	1809.5	1234.1	554.9
Grp Volume(v), veh/h	12.1	79.5	0.0	400.0	350.0	0.0	184.9	164.2	0.0	95.7	0.0	232.6
Grp Sat Flow(s),veh/h/ln	1809.5	1769.6	1599.0	1809.5	1900.0	1615.0	1809.5	1881.2	1568.0	1809.5	0.0	1789.1
Q Serve(g_s), s	0.3	1.1	0.0	7.2	8.5	0.0	5.7	6.3	0.0	3.2	0.0	9.4
Cycle Q Clear(g_c), s	0.3	1.1	0.0	7.2	8.5	0.0	5.7	6.3	0.0	3.2	0.0	9.4
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.310
Lane Grp Cap(c), veh/h	514.3	1343.3	606.9	829.9	955.9	812.5	335.5	400.8	334.1	364.9	0.0	304.9
V/C Ratio(X)	0.023	0.059	0.000	0.482	0.366	0.000	0.551	0.410	0.000	0.262	0.000	0.763
Avail Cap(c_a), veh/h	588.7	1343.3	606.9	1111.9	955.9	812.5	436.9	672.5	560.5	375.9	0.0	473.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.874	0.874	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	14.1	14.9	0.0	6.9	11.4	0.0	21.8	30.6	0.0	23.7	0.0	29.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.4	0.2	0.0	1.2	0.6	0.0	0.4	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.1	14.9	0.0	7.3	11.7	0.0	23.1	31.1	0.0	24.1	0.0	33.8
Lane Group LOS	B	B		A	B		C	C		C		C
Approach Volume, veh/h		92			750			349			328	
Approach Delay, s/veh		14.8			9.4			26.9			31.0	
Approach LOS		B			A			C			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	4.89	32.67		14.23	42.00		11.77	20.09		8.54	16.87	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	20.00		22.00	38.00		12.00	27.00		5.00	20.00	
Max Q Clear Time (g_c+I1), s	2.31	3.08		9.18	10.47		7.74	8.31		5.25	11.36	
Green Extension Time (p_c)	0.00	2.40		1.05	2.77		0.19	2.22		0.00	1.51	
Intersection Summary												
HCM 2010 Control Delay			18.4									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	7	118	463	29	47	39
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.44	0.89	0.83	0.73	0.69	0.70
Heavy Vehicles(%)	0	2	0	0	0	0
Movement Flow Rate	16	133	558	40	68	56
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	598	0	0	0	677	299
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	99	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1242	-	-	-	642	*1246
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	920	-
Time blocked-Platoon(%)	17	-	-	-	17	17
Mov Capacity-1 Maneuver	1242	-	-	-	633	*1246
Mov Capacity-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.9	0	10.2
HCM LOS	A	A	B

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					813
HCM Control Delay (s)	7.936	-	-	-	10.2
HCM Lane VC Ratio	0.013	-	-	-	0.152
HCM Lane LOS	A	-	-	-	B
HCM 95th Percentile Queue (veh)	0.039	-	-	-	0.536

Intersection	
Intersection Delay (sec/veh):	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	105	24	159	342	16	21
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.88	0.60	0.81	0.81	0.57	0.75
Heavy Vehicles(%)	2	0	0	0	0	0
Movement Flow Rate	119	40	196	422	28	28
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	159	0	742	80
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	603	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1433	-	468	971
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	639	-
Time blocked-Platoon(%)	-	-	0	-	11	0
Mov Capacity-1 Maneuver	-	-	1433	-	384	971
Mov Capacity-2 Maneuver	-	-	-	-	384	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	2.5	12.3
HCM LOS	A	A	B

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	550				
HCM Control Delay (s)	12.3	-	-	7.911	-
HCM Lane VC Ratio	0.102	-	-	0.137	-
HCM Lane LOS	B	-	-	A	-
HCM 95th Percentile Queue (veh)	0.339	-	-	0.475	-

HCM 2010 Signalized Intersection Summary
3: Obrien Rd & Mapes Rd

Existing PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	180	5	4	755	84	207	29	6	413	43	195
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1882	1882	1900	1900	1900	1881	1900	1900	1881	1873	1873
Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Capacity, veh/h	248	856	51	588	895	761	355	224	63	568	66	259
Arriving On Green	0.02	0.49	0.49	0.02	0.94	0.94	0.14	0.16	0.16	0.18	0.20	0.20
Sat Flow, veh/h	1809.5	1759.1	104.7	1809.5	1615.0	1615.0	1791.6	1425.3	403.5	1791.6	332.9	1309.4
Grp Volume(v), veh/h	31.9	0.0	211.9	8.0	858.0	100.0	268.8	0.0	71.6	573.6	0.0	294.7
Grp Sat Flow(s),veh/h/ln	1809.5	0.0	1863.8	1809.5	1900.0	1615.0	1791.6	0.0	1828.8	1791.6	0.0	1642.3
Q Serve(g_s), s	0.9	0.0	6.4	0.2	26.3	0.4	12.1	0.0	3.4	18.0	0.0	17.1
Cycle Q Clear(g_c), s	0.9	0.0	6.4	0.2	26.3	0.4	12.1	0.0	3.4	18.0	0.0	17.1
Proportion In Lane	1.000		0.056	1.000		1.000	1.000		0.221	1.000		0.797
Lane Grp Cap(c), veh/h	248.4	0.0	907.3	588.4	895.0	760.8	355.3	0.0	287.2	568.0	0.0	325.1
V/C Ratio(X)	0.128	0.000	0.234	0.014	0.959	0.131	0.757	0.000	0.249	1.010	0.000	0.906
Avail Cap(c_a), veh/h	279.6	0.0	907.3	648.1	895.0	760.8	355.3	0.0	299.6	568.0	0.0	336.4
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	16.1	0.0	14.5	13.3	2.3	1.5	29.2	0.0	36.1	29.5	0.0	38.3
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.0	20.6	0.1	9.0	0.0	0.4	40.3	0.0	26.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	16.3	0.0	14.6	13.3	22.9	1.6	38.2	0.0	36.6	69.7	0.0	64.8
Lane Group LOS	B		B	B	C	A	D		D	F		E
Approach Volume, veh/h		244			966			340			868	
Approach Delay, s/veh		14.9			20.6			37.9			68.0	
Approach LOS		B			C			D			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	6.32	51.54		4.78	50.00		18.00	19.33		22.00	23.33	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	46.00		4.00	46.00		14.00	16.00		18.00	20.00	
Max Q Clear Time (g_c+I1), s	2.86	8.43		2.23	28.33		14.06	5.35		20.00	19.12	
Green Extension Time (p_c)	0.00	10.43		0.00	7.79		0.00	1.68		0.00	0.21	
Intersection Summary												
HCM 2010 Control Delay			39.5									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
6: Taylor Ave & Mapes Rd

Existing PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	774	7	40	681	12	42	2	176	79	6	82
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1881	1900	1863	1881	1863	1898	1898	1881	1863	1863	1863
Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Capacity, veh/h	566	1392	1195	501	1308	1101	70	2	288	69	3	285
Arriving On Green	0.01	0.98	0.00	1.00	1.00	0.00	0.18	0.18	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1774.0	1615.0	1615.0	616.4	1881.2	1583.3	9.2	0.4	1599.0	14.6	1.1	1583.3
Grp Volume(v), veh/h	4.3	900.0	0.0	56.3	765.2	0.0	49.9	0.0	0.0	92.4	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1881.2	1615.0	616.4	1881.2	1583.3	9.6	0.0	1599.0	15.7	0.0	1583.3
Q Serve(g_s), s	0.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	2.1	0.0	0.0	0.0	0.0	18.0	0.0	0.0	18.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.956		1.000	0.929		1.000
Lane Grp Cap(c), veh/h	566.4	1392.1	1195.1	500.7	1308.3	1101.1	72.2	0.0	287.8	72.3	0.0	285.0
V/C Ratio(X)	0.008	0.647	0.000	0.113	0.585	0.000	0.692	0.000	0.000	1.278	0.000	0.000
Avail Cap(c_a), veh/h	629.3	1392.1	1195.1	500.7	1308.3	1101.1	72.2	0.0	287.8	72.3	0.0	285.0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.585	0.585	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	3.9	0.2	0.0	0.0	0.0	0.0	49.4	0.0	0.0	49.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.0	0.1	0.4	0.0	24.5	0.0	0.0	197.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	3.9	1.3	0.0	0.1	0.4	0.0	73.9	0.0	0.0	246.9	0.0	0.0
Lane Group LOS	A	A		A	A		E			F		
Approach Volume, veh/h		904			822			50			92	
Approach Delay, s/veh		1.3			0.4			73.9			246.9	
Approach LOS		A			A			E			F	
Timer												
Assigned Phase	5	2			6			8			4	
Phase Duration (G+Y+Rc), s	4.46	78.00			73.54			22.00			22.00	
Change Period (Y+Rc), s	4.00	4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	74.00			66.00			18.00			18.00	
Max Q Clear Time (g_c+I1), s	2.07	4.08			2.00			20.00			20.00	
Green Extension Time (p_c)	0.00	23.88			23.34			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			15.0									
HCM 2010 Level of Service			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	351	727	17	25	341	41	31	120	83	152	47	441
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1900	1881	1863	1900	1900	1881	1881	1827	1881
Lanes	1	1	1	1	1	1	0	1	1	1	1	1
Capacity, veh/h	447	969	823	50	542	456	71	186	219	182	284	249
Arriving On Green	0.50	1.00	1.00	0.03	0.29	0.29	0.14	0.14	0.00	0.16	0.16	0.00
Sat Flow, veh/h	1791.6	1615.0	1615.0	1809.5	1583.3	1583.3	518.5	1355.5	1599.0	1172.6	1826.9	1599.0
Grp Volume(v), veh/h	422.9	865.5	36.2	39.7	378.9	56.2	215.5	0.0	0.0	160.0	64.4	0.0
Grp Sat Flow(s),veh/h/ln	1791.6	1900.0	1615.0	1809.5	1881.2	1583.3	1874.1	0.0	1599.0	1172.6	1826.9	1599.0
Q Serve(g_s), s	21.1	0.0	0.0	2.1	16.9	2.5	10.6	0.0	0.0	12.6	2.9	0.0
Cycle Q Clear(g_c), s	21.1	0.0	0.0	2.1	16.9	2.5	10.6	0.0	0.0	12.6	2.9	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.277		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	447.4	968.6	823.3	50.3	541.6	455.8	256.8	0.0	219.1	182.3	284.0	248.5
V/C Ratio(X)	0.945	0.894	0.044	0.789	0.700	0.123	0.839	0.000	0.000	0.878	0.227	0.000
Avail Cap(c_a), veh/h	494.7	968.6	823.3	76.9	541.6	455.8	318.5	0.0	271.7	199.3	310.5	271.7
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.771	0.771	0.771	0.875	0.875	0.875	1.000	0.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	23.0	0.0	0.0	45.5	29.9	24.8	39.6	0.0	0.0	38.9	34.8	0.0
Incr Delay (d2), s/veh	21.9	8.5	0.0	22.8	3.5	0.1	14.9	0.0	0.0	31.3	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.9	8.5	0.0	68.3	33.4	24.9	54.5	0.0	0.0	70.1	35.2	0.0
Lane Group LOS	D	A	A	E	C	C	D			E	D	
Approach Volume, veh/h		1325			475			215			224	
Approach Delay, s/veh		19.9			35.3			54.5			60.1	
Approach LOS		B			D			D			E	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	27.51	52.00		6.62	31.10			16.90			18.63	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	26.00	48.00		4.00	26.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s	23.07	2.00		4.05	18.91			12.55			14.56	
Green Extension Time (p_c)	0.44	12.99		0.00	4.64			0.35			0.11	
Intersection Summary												
HCM 2010 Control Delay			30.5									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	564	73	51	107	6	123	65	296	29	35	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1863	1883	1883	1863	1875	1875	1900	1847	1847
Lanes	0	1	1	1	1	0	1	1	0	1	1	0
Capacity, veh/h	69	948	854	572	1040	117	378	73	391	84	151	318
Arriving On Green	1.00	1.00	1.00	0.05	0.62	0.62	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	88.1	1733.7	1599.0	1774.0	1663.6	186.6	1275.7	255.4	1377.0	945.1	531.3	1118.0
Grp Volume(v), veh/h	665.9	0.0	92.4	56.0	0.0	156.6	189.2	0.0	461.7	43.9	0.0	112.0
Grp Sat Flow(s),veh/h/ln	1821.8	0.0	1599.0	1774.0	0.0	1850.2	1275.7	0.0	1632.4	945.1	0.0	1649.3
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	3.1	11.8	0.0	24.8	0.2	0.0	4.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.1	0.0	3.1	16.4	0.0	24.8	25.0	0.0	4.6
Proportion In Lane	0.048		1.000	1.000		0.101	1.000		0.844	1.000		0.678
Lane Grp Cap(c), veh/h	1016.2	0.0	854.2	571.8	0.0	1156.2	377.8	0.0	463.9	83.6	0.0	468.7
V/C Ratio(X)	0.655	0.000	0.108	0.098	0.000	0.135	0.501	0.000	0.995	0.526	0.000	0.239
Avail Cap(c_a), veh/h	1016.2	0.0	854.2	814.2	0.0	1409.0	377.8	0.0	463.9	83.6	0.0	468.7
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.563	0.000	0.563	0.752	0.000	0.752	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	0.0	0.0	0.0	7.2	0.0	6.8	30.5	0.0	31.4	44.0	0.0	24.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.1	0.0	0.0	1.0	0.0	40.5	6.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	0.9	0.0	0.0	7.3	0.0	6.8	31.5	0.0	71.9	49.9	0.0	24.4
Lane Group LOS	A		A	A		A	C		E	D		C
Approach Volume, veh/h		758			213			651			156	
Approach Delay, s/veh		0.8			6.9			60.2			31.6	
Approach LOS		A			A			E			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		51.00		7.98	58.98			29.00			29.00	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		47.00		16.00	67.00			25.00			25.00	
Max Q Clear Time (g_c+I1), s		2.00		3.14	5.05			26.84			27.00	
Green Extension Time (p_c)		7.17		0.07	7.30			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			26.0									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
Existing PM Peak
9: Annapolis Rd & Llewellyn Ave
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	62	316	311	0	177	1	822	487	253	1164	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1881	0	1881	1900	1863	1900	1881	1881	0
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	308	323	272	212	0	256	8	1026	468	394	1808	0
Arriving On Green	0.17	0.17	0.00	0.16	0.00	0.16	0.00	0.29	0.00	0.07	0.17	0.00
Sat Flow, veh/h	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1615.0	1615.0	1791.6	0.0	0.0
Grp Volume(v), veh/h	116.5	79.5	0.0	379.3	0.0	198.9	4.0	883.9	0.0	377.6	1265.2	0.0
Grp Sat Flow(s),veh/h/ln	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1769.6	1615.0	1791.6	1787.1	0.0
Q Serve(g_s), s	5.7	3.6	0.0	16.0	16.0	11.9	0.2	23.6	0.0	21.0	33.4	50.6
Cycle Q Clear(g_c), s	5.7	3.6	0.0	16.0	16.0	11.9	0.2	23.6	0.0	21.0	33.4	50.6
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	307.6	323.0	271.8	212.3	0.0	255.8	7.6	1026.4	468.3	394.2	1807.8	0.0
V/C Ratio(X)	0.379	0.246	0.000	1.787	0.000	0.777	0.526	0.861	0.000	0.958	0.700	0.000
Avail Cap(c_a), veh/h	307.6	323.0	271.8	212.3	0.0	255.8	72.4	1026.4	468.3	394.2	1807.8	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.000	1.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	0.419	0.419	0.000
Uniform Delay (d), s/veh	36.8	35.9	0.0	42.0	0.0	40.3	49.7	33.6	0.0	45.9	34.5	0.0
Incr Delay (d2), s/veh	3.5	1.8	0.0	372.2	0.0	20.4	46.5	7.6	0.0	19.9	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	40.3	37.8	0.0	414.2	0.0	60.7	96.2	41.2	0.0	65.8	35.0	0.0
Lane Group LOS	D	D		F		E	F	D		E	D	
Approach Volume, veh/h		196			578			888			1643	
Approach Delay, s/veh		39.3			292.6			41.4			42.1	
Approach LOS		D			F			D			D	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		21.00			20.00		4.42	33.00		26.00	54.58	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		17.00			16.00		4.00	29.00		22.00	47.00	
Max Q Clear Time (g_c+I1), s		7.71			18.00		2.22	25.63		23.01	35.39	
Green Extension Time (p_c)		0.46			0.00		0.00	3.05		0.00	9.56	
Intersection Summary												
HCM 2010 Control Delay			85.6									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
Existing PM Peak
10: Annapolis Rd & Mapes Rd
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	87	451	164	22	85	123	744	274	145	847	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1887	1887	1863	1872	1872	1881	1863	1900
Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Capacity, veh/h	351	532	452	210	63	203	241	873	308	211	1133	517
Arriving On Green	0.09	0.09	0.00	0.16	0.16	0.16	0.03	0.11	0.11	0.07	0.32	0.00
Sat Flow, veh/h	1254.2	1900.0	1615.0	1311.2	393.3	1269.8	1774.0	2646.7	933.2	1791.6	1615.0	1615.0
Grp Volume(v), veh/h	294.5	103.6	0.0	180.2	0.0	152.5	175.7	571.9	522.3	172.6	1008.3	0.0
Grp Sat Flow(s),veh/h/ln	1254.2	1900.0	1615.0	1311.2	0.0	1663.0	1774.0	1872.3	1707.6	1791.6	1769.6	1615.0
Q Serve(g_s), s	23.1	5.0	0.0	13.4	0.0	8.5	6.4	30.3	30.3	6.5	27.1	0.0
Cycle Q Clear(g_c), s	23.1	5.0	0.0	13.4	0.0	8.5	6.4	30.3	30.3	6.5	27.1	0.0
Proportion In Lane	1.000		1.000	1.000		0.764	1.000		0.547	1.000		1.000
Lane Grp Cap(c), veh/h	351.2	532.0	452.2	209.8	0.0	266.1	241.2	617.9	563.5	211.3	1132.5	516.8
V/C Ratio(X)	0.839	0.195	0.000	0.859	0.000	0.573	0.728	0.926	0.927	0.817	0.890	0.000
Avail Cap(c_a), veh/h	351.2	532.0	452.2	209.8	0.0	266.1	241.2	617.9	563.5	211.3	1132.5	516.8
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	43.2	35.0	0.0	40.9	0.0	38.8	25.8	43.3	43.4	25.6	32.3	0.0
Incr Delay (d2), s/veh	20.7	0.8	0.0	34.0	0.0	8.7	17.5	21.9	23.6	28.3	10.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	63.9	35.8	0.0	74.9	0.0	47.5	43.3	65.2	66.9	53.9	42.9	0.0
Lane Group LOS	E	D		E		D	D	E	E	D	D	
Approach Volume, veh/h		398			333			1270			1181	
Approach Delay, s/veh		56.6			62.4			62.9			44.5	
Approach LOS		E			E			E			D	
Timer												
Assigned Phase		2			6		3	8		7	4	
Phase Duration (G+Y+Rc), s		32.00			20.00		12.00	37.00		11.00	36.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		28.00			16.00		8.00	33.00		7.00	32.00	
Max Q Clear Time (g_c+I1), s		25.10			15.39		8.39	32.31		8.50	29.09	
Green Extension Time (p_c)		0.45			0.10		0.00	0.64		0.00	2.61	
Intersection Summary												
HCM 2010 Control Delay			55.2									
HCM 2010 Level of Service			E									

Intersection	
Intersection Delay (sec/veh):	10.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	586	3	16	814	18	60
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.75	0.80	0.96	0.75	0.79
Heavy Vehicles(%)	1	0	12	1	0	2
Movement Flow Rate	637	4	20	848	24	76
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	641	0	1527	639
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	888	-
Follow-up Headway	-	-	2.308	-	3.5	3.318
Pot Capacity-1 Maneuver	-	-	*838	-	*28	*838
Stage 1	-	-	-	-	*838	-
Stage 2	-	-	-	-	*535	-
Time blocked-Platoon(%)	-	-	44	-	76	44
Mov Capacity-1 Maneuver	-	-	*838	-	*26	*838
Mov Capacity-2 Maneuver	-	-	-	-	*26	-
Stage 1	-	-	-	-	*838	-
Stage 2	-	-	-	-	*511	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.2	172.1
HCM LOS	A	A	F

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*99				
HCM Control Delay (s)	172.1	-	-	9.401	-
HCM Lane VC Ratio	1.01	-	-	0.024	-
HCM Lane LOS	F	-	-	A	-
HCM 95th Percentile Queue (veh)	6.182	-	-	0.073	-

Intersection	
Intersection Delay (sec/veh):	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	592	42	44	764	1	66	0	195	1	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.84	0.62	0.85	0.89	0.92	0.87	0.92	0.83	0.92	0.92	0.92
Heavy Vehicles(%)	2	1	0	0	1	2	0	2	0	2	2	2
Movement Flow Rate	1	705	68	52	858	1	76	0	235	1	0	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

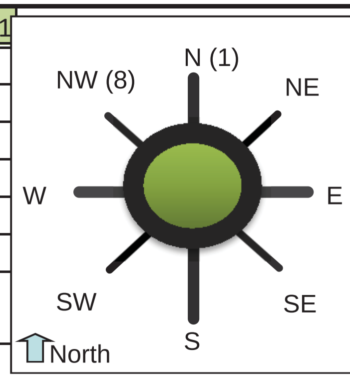
Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	859	0	0	773	0	0	1706	1704	739	1822	1738	859
Stage 1	-	-	-	-	-	-	741	741	-	963	963	-
Stage 2	-	-	-	-	-	-	965	963	-	859	775	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Capacity-1 Maneuver	*621	-	-	774	-	-	# 0	0	512	# 0	0	*621
Stage 1	-	-	-	-	-	-	484	436	-	331	304	-
Stage 2	-	-	-	-	-	-	331	304	-	371	410	-
Time blocked-Platoon(%)	59	-	-	44	-	-	98	98	44	98	98	59
Mov Capacity-1 Maneuver	*621	-	-	774	-	-	# 0	0	512	# 0	0	*621
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 0	0	-	# 0	0	-
Stage 1	-	-	-	-	-	-	482	434	-	330	265	-
Stage 2	-	-	-	-	-	-	285	265	-	200	409	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	0.6	22.3	10.9
HCM LOS	A	A	C	B

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	512							621
HCM Control Delay (s)	22.3	10.807	0	-	9.984	0	-	10.9
HCM Lane VC Ratio	0.607	0.002	-	-	0.067	-	-	0.011
HCM Lane LOS	C	B	A	-	A	A	-	B
HCM 95th Percentile Queue (veh)	3.999	0.005	-	-	0.215	-	-	0.032

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	Existing, PM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Existing PM Peak



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph	281							
	S (5), vph								
	SW (6), vph	328	687						
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	609	687	0	0	0	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph			199					
NE (2), vph								
E (3), vph								
SE (4), vph							127	
S (5), vph								
SW (6), vph							141	
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	199	0	0	0	268	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	1	2	2	2	1	1	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	227	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	321	0	0	0	0	0	0	145
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	1158	0	0	0	0	0	0	161
W (7), pcu/h	0	0	0	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	1479	0	0	0	0	227	0	306
Entry flow Lane 1, pcu/h	695	0	0	0	0	227	0	306
Entry flow Lane 2, pcu/h	784	0	0	0	0	0	0	0
Conflicting flow, pcu/h	0	0	0	0	0	466	0	1479

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	662	747	NA	NA	NA	NA	NA	NA
V/C ratio	**0.62**	**0.69**			#VALUE!	#VALUE!		
Control Delay, s/veh	**11.6**	**14.0**			#VALUE!	#VALUE!		
LOS	B	B			#VALUE!	#VALUE!		
95th % Queue (ft)	**116**	**156**			#VALUE!	#VALUE!		
Approach Delay, LOS	12.9 sec, LOS B				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	777	NA	382	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	216	NA	291	NA
V/C ratio			#VALUE!	#VALUE!	**0.28**		**0.76**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**7.8**		**37.8**	#VALUE!
LOS			#VALUE!	#VALUE!	A		E	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**30**		**163**	#VALUE!
Approach Delay, LOS			#VALUE!		7.8 sec, LOS A		37.8 sec, LOS E	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	662	747	NA	NA	NA	NA	NA	NA
V/C ratio	**0.48**	**0.54**			#VALUE!	#VALUE!		
Control Delay, s/veh	**7.5**	**8.4**			#VALUE!	#VALUE!		
LOS	A	A			#VALUE!	#VALUE!		
95th % Queue (ft)	**71**	**90**			#VALUE!	#VALUE!		
Approach Delay, LOS	8 sec, LOS A				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	1027	NA	413	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	216	NA	291	NA
V/C ratio			#VALUE!	#VALUE!	**0.21**		**0.71**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**5.5**		**30.7**	#VALUE!
LOS			#VALUE!	#VALUE!	A		D	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**21**		**140**	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

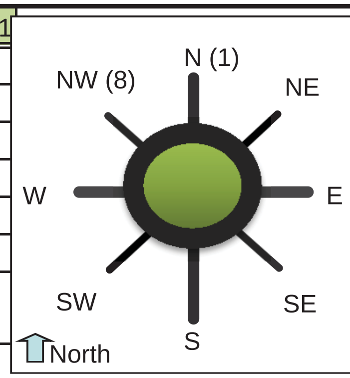
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	Existing, PM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Existing PM Peak



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								15
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph								
	S (5), vph	835						258	209
	SW (6), vph								
	W (7), vph		382						4
	NW (8), vph								
	Entry Volume, vph	835	382	0	0	0	0	258	228

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph	214							
	NE (2), vph								
	E (3), vph								
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	97							
	NW (8), vph								
	Entry Volume, vph	311	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	17	244	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	953	0	0	533	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	436	0	0	5	111	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	1389	0	0	555	355	0	0	0
	Entry flow Lane 1, pcu/h	953	0	0	294	355	0	0	0
	Entry flow Lane 2, pcu/h	436	0	0	260	0	0	0	0
	Conflicting flow, pcu/h	648	0	0	355	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	662	684	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	908	415	NA	NA	338	NA	NA	NA
V/C ratio	**1.37**	**0.61**			**0.31**	#VALUE!		
Control Delay, s/veh	**195.7**	**16.1**			**6.4**	#VALUE!		
LOS	F	C			A	#VALUE!		
95th % Queue (ft)	**1033**	**108**			**36**	#VALUE!		
Approach Delay, LOS	139.3 sec, LOS F				6.4 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	825	839	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	280	248	NA	NA	NA	NA
V/C ratio			**0.34**	**0.30**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**8.3**	**7.6**			#VALUE!	#VALUE!
LOS			A	A			#VALUE!	#VALUE!
95th % Queue (ft)			**40**	**32**			#VALUE!	#VALUE!
Approach Delay, LOS			7.9 sec, LOS A				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	817	872	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	908	415	NA	NA	338	NA	NA	NA
V/C ratio	**1.11**	**0.48**			**0.22**	#VALUE!		
Control Delay, s/veh	**87.6**	**10.2**			**4.0**	#VALUE!		
LOS	F	B			A	#VALUE!		
95th % Queue (ft)	**656**	**69**			**22**	#VALUE!		
Approach Delay, LOS	63.3 sec, LOS F				4 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	1095	1135	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	280	248	NA	NA	NA	NA
V/C ratio			**0.26**	**0.22**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**5.7**	**5.1**			#VALUE!	#VALUE!
LOS			A	A			#VALUE!	#VALUE!
95th % Queue (ft)			**27**	**22**			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	309	325	214	111	161	92	96	668	271	166	693	145
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1845	1893	1893	1881	1881	1881	1900	1884	1884
Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Capacity, veh/h	433	567	482	374	285	153	269	996	446	334	865	168
Arriving On Green	0.12	0.30	0.30	0.07	0.25	0.25	0.07	0.28	0.00	0.07	0.28	0.28
Sat Flow, veh/h	1791.6	1615.0	1615.0	1756.8	1160.7	622.8	1791.6	1599.0	1599.0	1809.5	3068.7	594.8
Grp Volume(v), veh/h	359.3	377.9	240.4	135.4	0.0	321.3	115.7	695.8	0.0	184.4	483.5	456.6
Grp Sat Flow(s),veh/h/ln	1791.6	1900.0	1615.0	1756.8	0.0	1783.5	1791.6	1787.1	1599.0	1809.5	1884.2	1779.3
Q Serve(g_s), s	7.0	9.9	7.0	3.2	0.0	9.4	2.6	9.9	0.0	4.0	14.1	14.1
Cycle Q Clear(g_c), s	7.0	9.9	7.0	3.2	0.0	9.4	2.6	9.9	0.0	4.0	14.1	14.1
Proportion In Lane	1.000		1.000	1.000		0.349	1.000		1.000	1.000		0.334
Lane Grp Cap(c), veh/h	432.8	567.1	482.0	373.8	0.0	438.1	268.7	996.4	445.8	333.8	531.1	501.5
V/C Ratio(X)	0.830	0.666	0.499	0.362	0.000	0.733	0.430	0.698	0.000	0.553	0.910	0.911
Avail Cap(c_a), veh/h	432.8	669.4	569.0	373.8	0.0	534.1	274.2	1007.4	450.7	333.8	531.1	501.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	14.7	17.4	16.4	14.9	0.0	19.7	15.0	18.3	0.0	14.8	19.7	19.7
Incr Delay (d2), s/veh	12.8	2.0	0.8	0.6	0.0	4.1	1.1	2.1	0.0	2.0	19.9	20.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.5	19.4	17.2	15.5	0.0	23.8	16.1	20.5	0.0	16.8	39.5	40.4
Lane Group LOS	C	B	B	B		C	B	C		B	D	D
Approach Volume, veh/h		978			457			811			1125	
Approach Delay, s/veh		21.8			21.3			19.8			36.2	
Approach LOS		C			C			B			D	

Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	11.00	20.94		8.00	17.94		7.83	19.83		8.00	20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	7.00	20.00		4.00	17.00		4.00	16.00		4.00	16.00	
Max Q Clear Time (g_c+I1), s	9.00	11.89		5.24	11.41		4.56	11.90		6.00	16.07	
Green Extension Time (p_c)	0.00	3.31		0.00	2.53		0.00	3.21		0.00	0.00	

Intersection Summary			
HCM 2010 Control Delay			26.1
HCM 2010 Level of Service			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	414	863	119	108	752	324	334	379	104	228	127	168
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1900	1900	1881	1900	1900	1900	1900	1881	1889	1889
Lanes	1	2	1	1	1	1	1	2	0	1	1	0
Capacity, veh/h	366	1793	810	370	743	638	411	501	153	280	281	0
Arriving On Green	0.16	0.50	0.00	0.06	0.40	0.40	0.13	0.18	0.18	0.10	0.15	0.00
Sat Flow, veh/h	1809.5	1615.0	1615.0	1809.5	1615.0	1615.0	1809.5	2793.9	855.2	1791.6	1889.1	0.0
Grp Volume(v), veh/h	426.8	938.0	0.0	116.1	800.0	330.6	367.0	288.2	269.2	265.1	144.3	0.0
Grp Sat Flow(s),veh/h/ln	1809.5	1787.1	1615.0	1809.5	1881.2	1615.0	1809.5	1900.0	1749.1	1791.6	1889.1	0.0
Q Serve(g_s), s	16.0	17.5	0.0	3.7	39.0	15.4	13.0	14.5	14.7	10.0	6.9	0.0
Cycle Q Clear(g_c), s	16.0	17.5	0.0	3.7	39.0	15.4	13.0	14.5	14.7	10.0	6.9	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.489	1.000		0.000
Lane Grp Cap(c), veh/h	366.3	1792.9	810.1	370.3	743.3	638.1	410.6	340.8	313.8	280.2	281.5	0.0
V/C Ratio(X)	1.165	0.523	0.000	0.314	1.076	0.518	0.894	0.846	0.858	0.946	0.513	0.000
Avail Cap(c_a), veh/h	366.3	1792.9	810.1	379.6	743.3	638.1	410.6	365.7	336.7	280.2	306.2	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	33.5	16.6	0.0	16.2	29.9	22.7	31.9	39.2	39.3	35.7	38.7	0.0
Incr Delay (d2), s/veh	100.1	0.3	0.0	0.5	55.5	0.7	21.3	15.8	18.5	39.4	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	133.7	16.9	0.0	16.7	85.3	23.4	53.2	54.9	57.7	75.1	40.1	0.0
Lane Group LOS	F	B		B	F	C	D	D	E	E	D	
Approach Volume, veh/h		1365			1247			925			409	
Approach Delay, s/veh		53.4			62.5			55.1			62.8	
Approach LOS		D			E			E			E	

Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	20.00	53.51		9.49	43.00		17.00	21.71		14.00	18.71	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	16.00	49.00		6.00	39.00		13.00	19.00		10.00	16.00	
Max Q Clear Time (g_c+I1), s	18.00	19.51		5.72	41.00		15.00	16.74		12.00	8.95	
Green Extension Time (p_c)	0.00	17.82		0.01	0.00		0.00	0.97		0.00	2.45	

Intersection Summary			
HCM 2010 Control Delay			57.7
HCM 2010 Level of Service			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	19	11	27	4	93	4	453	83	223	498	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1900	1881	1900	1900	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	73	99	56	175	34	165	15	1023	878	328	1362	1158
Arriving On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.01	0.54	0.54	0.18	0.72	0.72
Sat Flow, veh/h	270.5	730.7	539.0	898.1	225.8	1599.0	1809.5	1615.0	1615.0	1809.5	1615.0	1615.0
Grp Volume(v), veh/h	48.0	0.0	0.0	60.3	0.0	112.0	8.0	481.9	107.8	272.0	585.9	11.9
Grp Sat Flow(s),veh/h/ln	1622.8	0.0	0.0	1123.8	0.0	1599.0	1809.5	1881.2	1615.0	1809.5	1900.0	1615.0
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	4.7	0.3	11.0	2.3	10.1	8.8	0.1
Cycle Q Clear(g_c), s	1.7	0.0	0.0	2.5	0.0	4.7	0.3	11.0	2.3	10.1	8.8	0.1
Proportion In Lane	0.167		0.332	0.799		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	227.8	0.0	0.0	208.8	0.0	165.2	14.9	1022.7	877.9	328.2	1361.8	1157.6
V/C Ratio(X)	0.211	0.000	0.000	0.289	0.000	0.678	0.537	0.471	0.123	0.829	0.430	0.010
Avail Cap(c_a), veh/h	410.8	0.0	0.0	319.4	0.0	366.0	103.5	1022.7	877.9	621.3	1576.5	1340.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.962	0.962	0.962
Uniform Delay (d), s/veh	28.9	0.0	0.0	29.1	0.0	30.2	34.5	9.8	7.8	27.6	4.1	2.8
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.8	0.0	4.8	26.8	0.3	0.1	5.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	29.3	0.0	0.0	29.8	0.0	35.0	61.4	10.1	7.9	32.7	4.3	2.8
Lane Group LOS	C			C		D	E	B	A	C	A	A
Approach Volume, veh/h		48			172			598			870	
Approach Delay, s/veh		29.3			33.2			10.4			13.1	
Approach LOS		C			C			B			B	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		11.22			11.22		4.58	42.00		16.68	54.10	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	38.00		24.00	58.00	
Max Q Clear Time (g_c+I1), s		3.72			6.72		2.31	12.99		12.12	10.83	
Green Extension Time (p_c)		0.71			0.60		0.00	8.37		0.62	9.69	
Intersection Summary												
HCM 2010 Control Delay			14.7									
HCM 2010 Level of Service			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	377	219	84	56	97	118	201	344	87	96	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1900	1900	1881	1881	1900	1900	1900	1900	1900
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	792	1664	737	590	914	769	370	345	293	300	281	34
Arriving On Green	0.03	0.46	0.00	0.05	0.48	0.00	0.03	0.06	0.00	0.07	0.17	0.17
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1599.0	1599.0	1791.6	1615.0	1615.0	1809.5	1662.1	202.2
Grp Volume(v), veh/h	39.7	409.8	0.0	103.7	63.6	0.0	124.2	231.0	0.0	103.6	0.0	147.5
Grp Sat Flow(s),veh/h/ln	1809.5	1805.0	1599.0	1809.5	1900.0	1599.0	1791.6	1900.0	1615.0	1809.5	0.0	1864.3
Q Serve(g_s), s	0.8	4.6	0.0	1.9	1.2	0.0	3.7	7.9	0.0	3.1	0.0	4.7
Cycle Q Clear(g_c), s	0.8	4.6	0.0	1.9	1.2	0.0	3.7	7.9	0.0	3.1	0.0	4.7
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.108
Lane Grp Cap(c), veh/h	791.6	1664.4	737.2	589.7	914.0	769.2	369.8	344.7	293.0	299.9	0.0	315.7
V/C Ratio(X)	0.050	0.246	0.000	0.176	0.070	0.000	0.336	0.670	0.000	0.345	0.000	0.467
Avail Cap(c_a), veh/h	843.8	1664.4	737.2	714.5	914.0	769.2	445.9	885.5	752.6	371.4	0.0	840.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.899	0.899	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	8.8	10.9	0.0	8.0	9.3	0.0	21.0	29.3	0.0	21.1	0.0	24.9
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.1	0.0	0.0	0.5	2.0	0.0	0.7	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.8	11.0	0.0	8.2	9.3	0.0	21.5	31.4	0.0	21.7	0.0	26.0
Lane Group LOS	A	B		A	A		C	C		C		C
Approach Volume, veh/h		450			167			355			251	
Approach Delay, s/veh		10.8			8.6			27.9			24.2	
Approach LOS		B			A			C			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	6.08	34.67		7.41	36.00		9.17	16.07		8.37	15.27	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	28.00		8.00	32.00		8.00	31.00		7.00	30.00	
Max Q Clear Time (g_c+I1), s	2.76	6.59		3.89	3.20		5.69	9.92		5.09	6.75	
Green Extension Time (p_c)	0.01	3.04		0.08	3.27		0.06	2.15		0.04	2.21	
Intersection Summary												
HCM 2010 Control Delay			18.2									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	32	569	119	68	52	8
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.73	0.91	0.96	0.85	0.76	0.67
Heavy Vehicles(%)	0	0	1	2	2	12
Movement Flow Rate	44	625	124	80	68	12
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	204	0	0	0	565	102
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	401	-
Follow-up Headway	2.2	-	-	-	3.52	3.42
Pot Capacity-1 Maneuver	1463	-	-	-	508	*1438
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	645	-
Time blocked-Platoon(%)	4	-	-	-	4	4
Mov Capacity-1 Maneuver	1463	-	-	-	485	*1438
Mov Capacity-2 Maneuver	-	-	-	-	485	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	615	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.5	0	12.9
HCM LOS	A	A	B

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					538
HCM Control Delay (s)	7.537	-	-	-	12.9
HCM Lane VC Ratio	0.03	-	-	-	0.149
HCM Lane LOS	A	-	-	-	B
HCM 95th Percentile Queue (veh)	0.093	-	-	-	0.522

Intersection	
Intersection Delay (sec/veh):	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	412	11	22	106	5	184
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.69	0.79	0.83	0.63	0.78
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	458	16	28	128	8	236
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	474	0	586	237
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	120	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1099	-	457	771
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	917	-
Time blocked-Platoon(%)	-	-	0	-	1	0
Mov Capacity-1 Maneuver	-	-	1099	-	444	771
Mov Capacity-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	1.5	12.1
HCM LOS	A	A	B

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	753				
HCM Control Delay (s)	12.1	-	-	8.361	-
HCM Lane VC Ratio	0.324	-	-	0.025	-
HCM Lane LOS	B	-	-	A	-
HCM 95th Percentile Queue (veh)	1.406	-	-	0.078	-

HCM 2010 Signalized Intersection Summary
3: Obrien Rd & Mapes Rd

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	805	90	15	260	460	51	99	6	126	37	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1638	1884	1884	1900	1853	1900	1863	1868	1868	1727	1726	1726
Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Capacity, veh/h	663	1907	358	319	2060	897	288	175	32	267	117	130
Arriving On Green	0.08	0.62	0.62	0.00	0.18	0.18	0.06	0.11	0.11	0.10	0.16	0.16
Sat Flow, veh/h	1559.9	3086.8	579.2	1809.5	1615.0	1615.0	1774.0	1539.2	279.8	1645.0	745.7	832.9
Grp Volume(v), veh/h	231.5	584.6	553.7	15.0	279.6	547.6	83.6	0.0	156.0	159.5	0.0	110.3
Grp Sat Flow(s),veh/h/ln	1559.9	1884.1	1781.9	1809.5	1853.2	1615.0	1774.0	0.0	1819.0	1645.0	0.0	1578.6
Q Serve(g_s), s	5.1	17.5	17.6	0.4	6.4	31.8	4.2	0.0	8.5	7.9	0.0	6.5
Cycle Q Clear(g_c), s	5.1	17.5	17.6	0.4	6.4	31.8	4.2	0.0	8.5	7.9	0.0	6.5
Proportion In Lane	1.000		0.325	1.000		1.000	1.000		0.154	1.000		0.528
Lane Grp Cap(c), veh/h	662.7	1163.7	1100.6	318.7	2059.6	897.5	287.8	0.0	207.0	266.9	0.0	247.3
V/C Ratio(X)	0.349	0.502	0.503	0.047	0.136	0.610	0.290	0.000	0.754	0.598	0.000	0.446
Avail Cap(c_a), veh/h	911.9	1163.7	1100.6	365.1	2059.6	897.5	328.9	0.0	392.3	347.3	0.0	448.8
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	6.3	10.8	10.8	10.3	21.1	31.5	37.0	0.0	43.8	31.0	0.0	39.0
Incr Delay (d2), s/veh	0.3	0.3	0.4	0.1	0.0	1.2	0.6	0.0	5.5	2.1	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	6.7	11.2	11.2	10.3	21.2	32.7	37.5	0.0	49.3	33.1	0.0	40.3
Lane Group LOS	A	B	B	B	C	C	D		D	C		D
Approach Volume, veh/h		1370			842			240			270	
Approach Delay, s/veh		10.4			28.5			45.2			36.0	
Approach LOS		B			C			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	11.70	67.00		5.38	60.68		9.64	15.61		14.01	19.98	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	24.00	63.00		4.00	43.00		8.00	22.00		15.00	29.00	
Max Q Clear Time (g_c+I1), s	7.11	19.58		2.37	33.80		6.19	10.48		9.95	8.46	
Green Extension Time (p_c)	0.61	17.98		0.00	6.82		0.03	1.13		0.17	1.47	
Intersection Summary												
HCM 2010 Control Delay			21.6									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
6: Taylor Ave & Mapes Rd

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	827	25	169	794	284	65	7	60	40	1	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1827	1792	1827	1881	1863	1897	1897	1900	1863	1863	1863
Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Capacity, veh/h	439	2719	1193	467	2564	1136	58	3	242	59	1	238
Arriving On Green	0.02	0.52	0.00	0.24	0.24	0.00	0.15	0.15	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1774.0	1523.6	1523.6	632.0	3574.3	1583.3	17.4	1.6	1615.0	5.0	0.1	1583.3
Grp Volume(v), veh/h	117.4	852.6	0.0	213.9	882.2	0.0	92.0	0.0	0.0	44.6	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1735.6	1523.6	632.0	1787.1	1583.3	19.0	0.0	1615.0	5.2	0.0	1583.3
Q Serve(g_s), s	2.0	16.8	0.0	36.0	24.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	16.8	0.0	44.9	24.6	0.0	18.0	0.0	0.0	18.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.917		1.000	0.976		1.000
Lane Grp Cap(c), veh/h	439.0	2719.1	1193.5	466.8	2563.9	1135.8	60.4	0.0	242.2	60.0	0.0	237.5
V/C Ratio(X)	0.267	0.314	0.000	0.458	0.344	0.000	1.524	0.000	0.000	0.742	0.000	0.000
Avail Cap(c_a), veh/h	440.2	2719.1	1193.5	466.8	2563.9	1135.8	60.4	0.0	242.2	60.0	0.0	237.5
HCM Platoon Ratio	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.587	0.587	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	7.2	10.2	0.0	34.0	22.3	0.0	59.2	0.0	0.0	59.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.4	0.0	0.0	303.4	0.0	0.0	38.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	7.5	10.2	0.0	34.4	22.4	0.0	362.5	0.0	0.0	98.3	0.0	0.0
Lane Group LOS	A	B		C	C		F			F		
Approach Volume, veh/h		970			1096			92			45	
Approach Delay, s/veh		9.9			24.7			362.5			98.3	
Approach LOS		A			C			F			F	
Timer												
Assigned Phase	5	2			6			8			4	
Phase Duration (G+Y+Rc), s	7.92	98.00			90.08			22.00			22.00	
Change Period (Y+Rc), s	4.00	4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	94.00			86.00			18.00			18.00	
Max Q Clear Time (g_c+I1), s	3.96	18.76			46.86			20.00			20.00	
Green Extension Time (p_c)	0.00	28.27			21.62			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			33.8									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
7: Cooper Av & Mapes Rd

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	463	447	104	91	894	480	40	72	62	123	104	472
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1810	1696	1900	1863	1900	1900	1721	1900	1824	1824	1863
Lanes	1	2	1	1	2	1	1	1	1	0	1	1
Capacity, veh/h	521	1891	793	504	1369	625	60	516	484	168	129	475
Arriving On Green	0.21	0.55	0.55	0.05	0.39	0.39	0.30	0.30	0.00	0.30	0.30	0.00
Sat Flow, veh/h	1774.0	1442.0	1442.0	1809.5	1615.0	1615.0	1094.2	1720.7	1615.0	438.0	401.2	1583.3
Grp Volume(v), veh/h	492.6	496.7	144.4	123.0	993.3	505.3	75.5	144.0	0.0	302.1	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1719.0	1442.0	1809.5	1769.6	1615.0	1094.2	1720.7	1615.0	839.2	0.0	1583.3
Q Serve(g_s), s	22.9	9.1	6.0	4.9	28.7	33.5	0.0	7.7	0.0	28.3	0.0	0.0
Cycle Q Clear(g_c), s	22.9	9.1	6.0	4.9	28.7	33.5	36.0	7.7	0.0	36.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	0.522		1.000
Lane Grp Cap(c), veh/h	521.5	1891.0	793.1	504.5	1369.1	624.7	60.0	516.2	484.5	297.4	0.0	475.0
V/C Ratio(X)	0.945	0.263	0.182	0.244	0.726	0.809	1.258	0.279	0.000	1.016	0.000	0.000
Avail Cap(c_a), veh/h	572.1	1891.0	793.1	504.5	1369.1	624.7	60.0	516.2	484.5	297.4	0.0	475.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.963	0.963	0.963	0.819	0.819	0.819	1.000	1.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	33.6	14.2	13.5	20.4	31.4	32.8	60.0	32.1	0.0	46.8	0.0	0.0
Incr Delay (d2), s/veh	23.0	0.1	0.1	0.2	1.6	6.5	200.7	0.3	0.0	56.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	56.7	14.3	13.6	20.6	33.0	39.3	260.7	32.4	0.0	103.1	0.0	0.0
Lane Group LOS	E	B	B	C	C	D	F	C		F		
Approach Volume, veh/h		1134			1622			219			302	
Approach Delay, s/veh		32.6			34.0			110.9			103.1	
Approach LOS		C			C			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	29.58	70.00		10.00	50.42			40.00			40.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	29.00	66.00		6.00	43.00			36.00			36.00	
Max Q Clear Time (g_c+I1), s	24.87	11.12		6.93	35.50			38.00			38.00	
Green Extension Time (p_c)	0.71	22.42		0.00	6.04			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			45.0									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
8: Ernie Pyle St & Mapes Rd

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	209	299	666	1117	31	80	40	113	8	198	25
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1855	1855	1881	1900	1900	1900	1827	1835	1863	1667	1858	1858
Lanes	0	2	1	1	2	0	1	1	1	1	1	0
Capacity, veh/h	147	463	439	789	2401	91	185	498	430	366	431	62
Arriving On Green	0.09	0.09	0.09	0.70	1.00	1.00	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	310.5	1687.7	1599.0	1809.5	3637.5	138.1	1040.1	1834.6	1583.3	1209.3	1588.5	229.2
Grp Volume(v), veh/h	60.4	264.6	305.1	756.8	655.1	647.6	96.4	48.2	128.4	13.8	0.0	314.7
Grp Sat Flow(s),veh/h/ln	310.5	1687.7	1599.0	1809.5	1900.0	1875.6	1040.1	1834.6	1583.3	1209.3	0.0	1817.7
Q Serve(g_s), s	22.1	11.6	21.6	41.0	0.0	0.0	10.5	2.3	7.5	1.0	0.0	17.8
Cycle Q Clear(g_c), s	22.1	11.6	21.6	41.0	0.0	0.0	28.3	2.3	7.5	3.3	0.0	17.8
Proportion In Lane	1.000		1.000	1.000		0.074	1.000		1.000	1.000		0.126
Lane Grp Cap(c), veh/h	146.9	0.0	438.6	789.0	1253.9	1237.9	185.4	498.0	429.8	366.2	0.0	493.4
V/C Ratio(X)	0.411	0.000	0.696	0.959	0.522	0.523	0.520	0.097	0.299	0.038	0.000	0.638
Avail Cap(c_a), veh/h	146.9	0.0	438.6	789.0	1253.9	1237.9	215.1	550.4	475.0	400.7	0.0	545.3
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.977	0.977	0.977	0.090	0.090	0.090	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	48.5	0.0	48.3	9.9	0.0	0.0	49.9	31.8	33.7	33.0	0.0	37.4
Incr Delay (d2), s/veh	8.1	0.0	8.6	3.8	0.0	0.0	2.2	0.1	0.4	0.0	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	56.6	0.0	57.0	13.6	0.0	0.0	52.2	31.9	34.1	33.1	0.0	39.6
Lane Group LOS	E		E	B	A	A	D	C	C	C		D
Approach Volume, veh/h		630			2060			273			328	
Approach Delay, s/veh		33.0			5.0			40.1			39.3	
Approach LOS		C			A			D			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		36.00		45.00	81.00			35.67			35.67	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		32.00		41.00	77.00			35.00			35.00	
Max Q Clear Time (g_c+I1), s		24.05		43.00	2.00			30.30			19.80	
Green Extension Time (p_c)		6.29		0.00	23.99			1.38			2.79	
Intersection Summary												
HCM 2010 Control Delay			16.7									
HCM 2010 Level of Service			B									

HCM 2010 Signalized Intersection Summary
9: Annapolis Rd & Llewellyn Ave

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	25	45	568	58	213	346	2434	205	65	1140	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1743	1892	1900	1900	1900	1881	1881	1845	1863	1863	1863	1900
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	161	252	215	232	317	267	373	1869	844	59	1268	579
Arriving On Green	0.13	0.13	0.00	0.17	0.17	0.17	0.21	0.53	0.00	0.07	0.72	0.00
Sat Flow, veh/h	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1583.3	1583.3	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	20.0	39.7	0.0	604.3	100.0	231.5	397.7	2797.7	0.0	79.3	1310.3	0.0
Grp Sat Flow(s),veh/h/ln	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1752.4	1583.3	1774.0	1769.6	1615.0
Q Serve(g_s), s	1.8	2.2	0.0	20.0	5.6	16.9	25.0	64.0	0.0	4.0	43.0	0.0
Cycle Q Clear(g_c), s	1.8	2.2	0.0	20.0	5.6	16.9	25.0	64.0	0.0	4.0	43.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	160.9	252.3	215.3	231.5	316.7	266.5	373.3	1869.3	844.4	59.1	1268.2	578.7
V/C Ratio(X)	0.124	0.157	0.000	2.610	0.316	0.869	1.066	1.497	0.000	1.340	1.033	0.000
Avail Cap(c_a), veh/h	160.9	252.3	215.3	231.5	316.7	266.5	373.3	1869.3	844.4	59.1	1268.2	578.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	45.8	46.0	0.0	50.0	44.0	48.7	47.5	28.0	0.0	56.0	17.0	0.0
Incr Delay (d2), s/veh	1.6	1.3	0.0	736.7	2.6	29.7	65.0	226.4	0.0	232.3	34.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	47.4	47.4	0.0	786.7	46.6	78.5	112.5	254.4	0.0	288.3	51.2	0.0
Lane Group LOS	D	D		F	D	E	F	F		F	F	
Approach Volume, veh/h		60			936			3195			1390	
Approach Delay, s/veh		47.4			532.4			236.7			64.7	
Approach LOS		D			F			F			E	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		20.00			24.00		29.00	68.00		8.00	47.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			20.00		25.00	64.00		4.00	43.00	
Max Q Clear Time (g_c+I1), s		4.23			22.00		27.00	66.00		6.00	45.00	
Green Extension Time (p_c)		0.12			0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			241.5									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
10: Annapolis Rd & Mapes Rd

9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	29	171	488	111	191	1030	1381	90	72	650	886
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1845	1900	1863	1900	1897	1863	1900	1827	1827	1827	1810	1863
Lanes	2	1	1	1	1	1	2	2	1	1	3	1
Capacity, veh/h	515	285	238	367	348	290	1262	2131	906	349	2388	765
Arriving On Green	0.03	0.15	0.00	0.07	0.18	0.18	0.28	0.97	0.97	0.07	0.48	0.00
Sat Flow, veh/h	3408.2	1583.3	1583.3	1809.5	1583.3	1583.3	3510.5	1552.9	1552.9	1739.9	1583.3	1583.3
Grp Volume(v), veh/h	167.1	35.8	0.0	513.7	140.5	238.8	1373.3	1453.7	108.4	82.8	738.6	0.0
Grp Sat Flow(s),veh/h/ln	1704.1	1900.0	1583.3	1809.5	1897.4	1583.3	1755.2	1826.9	1552.9	1739.9	1646.7	1583.3
Q Serve(g_s), s	4.0	2.0	0.0	8.0	7.8	17.4	20.0	3.7	0.2	2.7	10.9	0.0
Cycle Q Clear(g_c), s	4.0	2.0	0.0	8.0	7.8	17.4	20.0	3.7	0.2	2.7	10.9	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	515.5	285.0	237.5	367.0	347.8	290.3	1261.8	2131.4	905.8	348.7	2387.7	765.3
V/C Ratio(X)	0.324	0.126	0.000	1.400	0.404	0.822	1.088	0.682	0.120	0.237	0.309	0.000
Avail Cap(c_a), veh/h	515.5	285.0	237.5	367.0	347.8	290.3	1261.8	2131.4	905.8	348.7	2387.7	765.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	42.9	44.2	0.0	46.7	43.2	47.1	14.5	0.7	0.6	12.8	18.8	0.0
Incr Delay (d2), s/veh	1.7	0.9	0.0	195.6	3.5	22.4	53.0	1.8	0.3	1.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.6	45.1	0.0	242.4	46.7	69.6	67.5	2.5	0.9	14.4	19.2	0.0
Lane Group LOS	D	D		F	D	E	F	A	A	B	B	
Approach Volume, veh/h		203			893			2935			821	
Approach Delay, s/veh		44.6			165.4			32.8			18.7	
Approach LOS		D			F			C			B	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	22.00		12.00	26.00		24.00	74.00		12.00	62.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	18.00		8.00	22.00		20.00	70.00		8.00	58.00	
Max Q Clear Time (g_c+I1), s	6.00	3.96		10.00	19.40		22.00	5.68		4.70	12.90	
Green Extension Time (p_c)	0.00	1.54		0.00	0.49		0.00	34.16		0.04	28.11	
Intersection Summary												
HCM 2010 Control Delay			55.3									
HCM 2010 Level of Service			E									

Intersection	
Intersection Delay (sec/veh):	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1345	36	73	805	9	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.95	0.66	0.60	0.86	0.63	0.68
Heavy Vehicles(%)	4	19	0	2	20	16
Movement Flow Rate	1416	55	122	936	14	47
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1471	0	2624	1444
Stage 1	-	-	-	-	1444	-
Stage 2	-	-	-	-	1180	-
Follow-up Headway	-	-	2.2	-	3.68	3.444
Pot Capacity-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	183	-
Time blocked-Platoon(%)	-	-	100	-	100	100
Mov Capacity-1 Maneuver	-	-	-	-	-	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	183	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	-
HCM LOS	A	A	-

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	-				
HCM Control Delay (s)	-	-	-	-	-
HCM Lane VC Ratio	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th Percentile Queue (veh)	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	$ 1387

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	1267	116	230	849	2	29	0	87	0	0	2
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.97	0.77	0.78	0.90	0.92	0.61	0.92	0.67	0.92	0.92	0.92
Heavy Vehicles(%)	2	4	2	0	2	2	0	2	2	2	2	2
Movement Flow Rate	3	1306	151	295	943	2	48	0	130	0	0	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

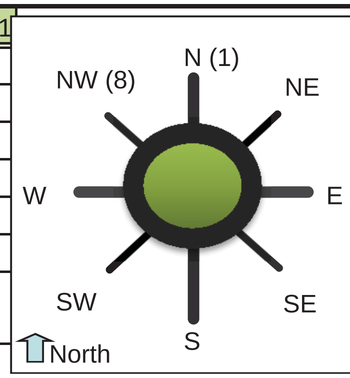
Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	945	0	0	1457	0	0	2923	2923	1382	2987	2997	944
Stage 1	-	-	-	-	-	-	1388	1388	-	1534	1534	-
Stage 2	-	-	-	-	-	-	1535	1535	-	1453	1463	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	*515	-	-	*# 10	-	-	-	-	*# 10	-	-	*515
Stage 1	-	-	-	-	-	-	*# 10	*10	-	*46	*57	-
Stage 2	-	-	-	-	-	-	*# 46	*57	-	*10	*10	-
Time blocked-Platoon(%)	66	-	-	99	-	-	100	100	99	100	100	66
Mov Capacity-1 Maneuver	*515	-	-	*# 10	-	-	-	-	*# 10	-	-	*515
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	*# 10	*10	-	*44	*57	-
Stage 2	-	-	-	-	-	-	*# 46	*57	-	-	*10	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	$ 3220.4	-	-
HCM LOS	A	F	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	12.035	0	-	$ 13546.623	$ 13546.623	-	-
HCM Lane VC Ratio	-	0.006	-	-	29.487	-	-	-
HCM Lane LOS	-	B	A	-	F	A	-	-
HCM 95th Percentile Queue (veh)	-	0.019	-	-	38.482	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Baseline AM Peak



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph	85							
	S (5), vph								
	SW (6), vph	672	853						
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	757	853	0	0	0	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph			602					
	NE (2), vph								
	E (3), vph								
	SE (4), vph							491	
	S (5), vph								
	SW (6), vph							56	
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	0	0	602	0	0	0	547	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	1	2	2	2	1	1	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	687	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	97	0	0	0	0	0	0	560
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	1740	0	0	0	0	0	0	64
W (7), pcu/h	0	0	0	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	1838	0	0	0	0	687	0	624
Entry flow Lane 1, pcu/h	864	0	0	0	0	687	0	624
Entry flow Lane 2, pcu/h	974	0	0	0	0	0	0	0
Conflicting flow, pcu/h	0	0	0	0	0	657	0	1838

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	823	927	NA	NA	NA	NA	NA	NA
V/C ratio	**0.76**	**0.86**			#VALUE!	#VALUE!		
Control Delay, s/veh	**17.1**	**24.1**			#VALUE!	#VALUE!		
LOS	C	C			#VALUE!	#VALUE!		
95th % Queue (ft)	**205**	**303**			#VALUE!	#VALUE!		
Approach Delay, LOS	20.8 sec, LOS C				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	679	NA	297	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	654	NA	595	NA
V/C ratio			#VALUE!	#VALUE!	**0.96**		**2.00**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**50.5**		**489.9**	#VALUE!
LOS			#VALUE!	#VALUE!	F		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**372**		**1113**	#VALUE!
Approach Delay, LOS			#VALUE!		50.5 sec, LOS F		489.9 sec, LOS F	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	823	927	NA	NA	NA	NA	NA	NA
V/C ratio	**0.60**	**0.68**			#VALUE!	#VALUE!		
Control Delay, s/veh	**9.5**	**11.3**			#VALUE!	#VALUE!		
LOS	A	B			#VALUE!	#VALUE!		
95th % Queue (ft)	**111**	**149**			#VALUE!	#VALUE!		
Approach Delay, LOS	10.4 sec, LOS B				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	864	NA	299	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	654	NA	595	NA
V/C ratio			#VALUE!	#VALUE!	**0.76**		**1.99**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**19.7**		**485.4**	#VALUE!
LOS			#VALUE!	#VALUE!	C		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**192**		**1109**	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

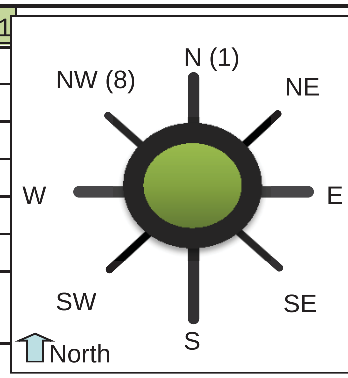
v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Baseline AM Peak



Volumes

Entry Legs (FROM)

Lane Designation	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph								204
Exit NE (2), vph								
Legs E (3), vph								
(TO) SE (4), vph								
S (5), vph	275						896	549
SW (6), vph								
W (7), vph		140						41
NW (8), vph								
Entry Volume, vph	275	140	0	0	0	0	896	794

Lane Designation	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	833							
NE (2), vph								
E (3), vph								
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph	177							
NW (8), vph								
Entry Volume, vph	1010	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	233	951	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	314	0	0	1649	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	160	0	0	47	202	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	474	0	0	1929	1153	0	0	0
	Entry flow Lane 1, pcu/h	314	0	0	1023	1153	0	0	0
	Entry flow Lane 2, pcu/h	160	0	0	906	0	0	0	0
	Conflicting flow, pcu/h	1898	0	0	1153	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	259	285	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	299	152	NA	NA	1098	NA	NA	NA
V/C ratio	**1.15**	**0.53**			**1.02**	**#VALUE!**		
Control Delay, s/veh	**145.0**	**28.9**			**52.3**	**#VALUE!**		
LOS	F	D			F	#VALUE!		
95th % Queue (ft)	**351**	**77**			**569**	**#VALUE!**		
Approach Delay, LOS	105.8 sec, LOS F				52.3 sec, LOS F			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	453	480	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	974	863	NA	NA	NA	NA
V/C ratio			**2.15**	**1.80**			**#VALUE!**	**#VALUE!**
Control Delay, sec/pcu			**544.1**	**387.4**			**#VALUE!**	**#VALUE!**
LOS			F	F			#VALUE!	#VALUE!
95th % Queue (ft)			**1845**	**1414**			**#VALUE!**	**#VALUE!**
Approach Delay, LOS			470.5 sec, LOS F				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	234	283	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	299	152	NA	NA	1098	NA	NA	NA
V/C ratio	**1.28**	**0.54**			**0.70**	**#VALUE!**		
Control Delay, s/veh	**195.5**	**29.3**			**11.1**	**#VALUE!**		
LOS	F	D			B	#VALUE!		
95th % Queue (ft)	**404**	**78**			**168**	**#VALUE!**		
Approach Delay, LOS	139.4 sec, LOS F				11.1 sec, LOS B			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	493	553	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	974	863	NA	NA	NA	NA
V/C ratio			**1.97**	**1.56**			**#VALUE!**	**#VALUE!**
Control Delay, sec/pcu			**465.2**	**280.2**			**#VALUE!**	**#VALUE!**
LOS			F	F			#VALUE!	#VALUE!
95th % Queue (ft)			**1723**	**1201**			**#VALUE!**	**#VALUE!**
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	102	82	434	410	431	311	1041	298	833	1207	438
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1759	1900	1898	1881	1845	1827	1792	1863	1831	1900
Lanes	2	1	1	2	1	2	1	3	1	2	3	1
Capacity, veh/h	399	395	314	959	527	808	390	1238	378	1024	1600	547
Arriving On Green	0.05	0.21	0.21	0.11	0.28	0.28	0.16	0.25	0.00	0.25	0.34	0.34
Sat Flow, veh/h	3510.5	1495.4	1495.4	3510.5	2910.2	2910.2	1756.8	1523.6	1523.6	3441.6	1615.0	1615.0
Grp Volume(v), veh/h	129.5	114.6	101.2	556.4	465.9	453.7	374.7	1210.5	0.0	1028.4	1341.1	503.4
Grp Sat Flow(s),veh/h/ln	1755.2	1881.2	1495.4	1755.2	1898.3	1455.1	1756.8	1662.5	1523.6	1720.8	1575.0	1615.0
Q Serve(g_s), s	2.5	4.5	5.1	9.8	20.8	11.8	14.0	21.3	0.0	22.0	23.2	26.5
Cycle Q Clear(g_c), s	2.5	4.5	5.1	9.8	20.8	11.8	14.0	21.3	0.0	22.0	23.2	26.5
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	399.2	395.1	314.1	958.6	527.3	808.3	389.5	1238.2	378.3	1023.5	1599.6	546.8
V/C Ratio(X)	0.324	0.290	0.322	0.580	0.884	0.561	0.962	0.978	0.000	1.005	0.838	0.921
Avail Cap(c_a), veh/h	399.2	424.6	337.5	958.6	557.0	853.9	389.5	1238.2	378.3	1023.5	1599.6	546.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	26.9	29.4	29.7	19.3	30.6	27.4	22.5	33.1	0.0	25.8	27.1	28.2
Incr Delay (d2), s/veh	0.5	0.4	0.6	0.9	15.0	0.8	35.6	20.3	0.0	29.3	4.1	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.3	29.8	30.2	20.2	45.6	28.1	58.2	53.4	0.0	55.1	31.2	49.2
Lane Group LOS	C	C	C	C	D	C	E	D		F	C	D
Approach Volume, veh/h		345			1476			1585			2873	
Approach Delay, s/veh		29.0			30.6			54.5			42.9	
Approach LOS		C			C			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	22.61		14.00	28.61		18.00	26.00		26.00	34.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	20.00		10.00	26.00		14.00	22.00		22.00	30.00	
Max Q Clear Time (g_c+I1), s	4.53	7.08		11.79	22.82		16.00	23.35		24.00	28.55	
Green Extension Time (p_c)	0.00	4.96		0.00	1.80		0.00	0.00		0.00	1.41	
Intersection Summary												
HCM 2010 Control Delay			42.2									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	257	531	248	705	856	572	305	1470	258	229	2128	398
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1696	1827	1900	1845	1845	1776	1863	1788	1788	1845	1900	1863
Lanes	2	2	1	2	2	1	2	3	0	2	3	1
Capacity, veh/h	406	752	350	886	1373	591	296	1571	343	298	2032	620
Arriving On Green	0.03	0.22	0.00	0.21	0.39	0.39	0.05	0.39	0.39	0.05	0.39	0.00
Sat Flow, veh/h	3134.4	1615.0	1615.0	3408.2	1509.3	1509.3	3441.6	4010.5	876.3	3408.2	1583.3	1583.3
Grp Volume(v), veh/h	362.0	647.6	0.0	903.8	930.4	794.4	376.5	1266.8	641.1	272.6	2503.5	0.0
Grp Sat Flow(s),veh/h/ln	1567.2	1735.6	1615.0	1704.1	1752.4	1509.3	1720.8	1626.9	1633.1	1704.1	1729.0	1583.3
Q Serve(g_s), s	4.0	21.6	0.0	25.0	26.4	47.0	6.0	46.5	47.0	5.8	47.0	0.0
Cycle Q Clear(g_c), s	4.0	21.6	0.0	25.0	26.4	47.0	6.0	46.5	47.0	5.8	47.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.537	1.000		1.000
Lane Grp Cap(c), veh/h	406.3	752.1	349.9	885.5	1372.7	591.2	296.3	1274.4	639.6	297.9	2031.6	620.1
V/C Ratio(X)	0.891	0.861	0.000	1.021	0.678	1.344	1.271	0.994	1.002	0.915	1.232	0.000
Avail Cap(c_a), veh/h	406.3	752.1	349.9	885.5	1372.7	591.2	296.3	1274.4	639.6	297.9	2031.6	620.1
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	46.7	45.3	0.0	35.8	30.2	36.5	30.9	36.4	36.5	29.5	36.5	0.0
Incr Delay (d2), s/veh	21.0	10.0	0.0	35.6	1.4	165.8	145.7	23.7	36.1	31.1	109.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	67.7	55.3	0.0	71.3	31.6	202.3	176.7	60.1	72.6	60.6	145.5	0.0
Lane Group LOS	E	E		F	C	F	F	E	F	E	F	
Approach Volume, veh/h		1010			2629			2284			2776	
Approach Delay, s/veh		59.7			96.9			82.8			137.2	
Approach LOS		E			F			F			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	30.00		29.00	51.00		10.00	51.00		10.00	51.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	26.00		25.00	47.00		6.00	47.00		6.00	47.00	
Max Q Clear Time (g_c+I1), s	6.00	23.56		27.00	49.00		8.00	49.00		7.83	49.00	
Green Extension Time (p_c)	0.00	2.22		0.00	0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			101.7									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	3	3	114	34	260	19	817	29	94	647	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1743	1881	1792	1863	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	11	8	17	238	67	267	36	1019	825	185	1186	1008
Arriving On Green	0.02	0.02	0.02	0.17	0.17	0.17	0.02	0.54	0.54	0.14	0.83	0.83
Sat Flow, veh/h	533.0	399.8	799.5	1427.0	401.6	1599.0	1660.1	1523.6	1523.6	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	26.0	0.0	0.0	218.0	0.0	270.8	27.5	928.4	34.1	156.7	743.7	42.4
Grp Sat Flow(s),veh/h/ln	1732.3	0.0	0.0	1828.6	0.0	1599.0	1660.1	1881.2	1523.6	1774.0	1900.0	1615.0
Q Serve(g_s), s	1.4	0.0	0.0	10.8	0.0	16.0	1.6	42.9	1.0	8.3	13.3	0.4
Cycle Q Clear(g_c), s	1.4	0.0	0.0	10.8	0.0	16.0	1.6	42.9	1.0	8.3	13.3	0.4
Proportion In Lane	0.308		0.462	0.780		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	36.1	0.0	0.0	304.8	0.0	266.5	36.0	1019.0	825.3	184.8	1185.9	1008.0
V/C Ratio(X)	0.720	0.000	0.000	0.715	0.000	1.016	0.765	0.911	0.041	0.848	0.627	0.042
Avail Cap(c_a), veh/h	288.7	0.0	0.0	304.8	0.0	266.5	69.2	1019.0	825.3	184.8	1185.9	1008.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.800	0.800	0.800
Uniform Delay (d), s/veh	46.7	0.0	0.0	37.8	0.0	40.0	46.7	19.9	10.3	40.6	4.2	3.1
Incr Delay (d2), s/veh	23.4	0.0	0.0	7.8	0.0	59.4	27.9	12.0	0.0	24.4	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	70.1	0.0	0.0	45.6	0.0	99.4	74.6	31.9	10.3	65.0	5.0	3.1
Lane Group LOS	E			D		F	E	C	B	E	A	A
Approach Volume, veh/h		26			489			990			943	
Approach Delay, s/veh		70.1			75.4			32.3			14.9	
Approach LOS		E			E			C			B	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		6.00			20.00		6.08	56.00		14.00	63.92	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	52.00		10.00	58.00	
Max Q Clear Time (g_c+I1), s		3.43			18.00		3.58	44.87		10.28	15.31	
Green Extension Time (p_c)		0.04			0.00		0.00	5.66		0.00	19.87	
Intersection Summary												
HCM 2010 Control Delay			34.6									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	120	114	332	696	27	313	87	76	90	138	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1863	1881	1900	1900	1900	1900	1881	1845	1900	1887	1887
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	154	1482	670	772	998	849	393	486	405	350	181	81
Arriving On Green	0.01	0.42	0.00	0.12	0.53	0.00	0.06	0.09	0.00	0.06	0.15	0.15
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1615.0	1615.0	1809.5	1568.0	1568.0	1809.5	1234.1	554.9
Grp Volume(v), veh/h	12.1	153.8	0.0	400.0	892.3	0.0	364.0	164.2	0.0	95.7	0.0	232.6
Grp Sat Flow(s),veh/h/ln	1809.5	1769.6	1599.0	1809.5	1900.0	1615.0	1809.5	1881.2	1568.0	1809.5	0.0	1789.1
Q Serve(g_s), s	0.4	2.8	0.0	10.3	45.1	0.0	16.2	8.8	0.0	4.8	0.0	13.7
Cycle Q Clear(g_c), s	0.4	2.8	0.0	10.3	45.1	0.0	16.2	8.8	0.0	4.8	0.0	13.7
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.310
Lane Grp Cap(c), veh/h	154.1	1482.1	669.6	772.0	998.5	848.7	392.6	486.3	405.3	350.2	0.0	262.7
V/C Ratio(X)	0.078	0.104	0.000	0.518	0.894	0.000	0.927	0.338	0.000	0.273	0.000	0.886
Avail Cap(c_a), veh/h	201.1	1482.1	669.6	811.1	998.5	848.7	392.6	490.2	408.5	350.2	0.0	266.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.424	0.424	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	23.0	19.0	0.0	9.7	22.8	0.0	33.2	40.5	0.0	36.1	0.0	45.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	10.4	0.0	15.0	0.2	0.0	0.4	0.0	27.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.2	19.0	0.0	10.2	33.2	0.0	48.2	40.7	0.0	36.5	0.0	72.6
Lane Group LOS	C	B		B	C		D	D		D		E
Approach Volume, veh/h		166			1292			528			328	
Approach Delay, s/veh		19.3			26.1			45.8			62.1	
Approach LOS		B			C			D			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	5.21	49.00		16.68	60.47		22.00	31.78		10.00	19.78	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	45.00		15.00	56.00		18.00	28.00		6.00	16.00	
Max Q Clear Time (g_c+I1), s	2.41	4.84		12.30	47.15		18.18	10.83		6.79	15.70	
Green Extension Time (p_c)	0.00	10.29		0.38	4.83		0.00	2.15		0.00	0.08	
Intersection Summary												
HCM 2010 Control Delay			35.2									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh):	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	12	201	788	49	80	66
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.44	0.89	0.83	0.73	0.69	0.70
Heavy Vehicles(%)	0	2	0	0	0	0
Movement Flow Rate	27	226	949	67	116	94
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	1016	0	0	0	1150	509
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	167	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	990	-	-	-	428	*1056
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	851	-
Time blocked-Platoon(%)	30	-	-	-	30	30
Mov Capacity-1 Maneuver	990	-	-	-	415	*1056
Mov Capacity-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.9	0	15
HCM LOS	A	A	C

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					570
HCM Control Delay (s)	8.739	-	-	-	15
HCM Lane VC Ratio	0.028	-	-	-	0.369
HCM Lane LOS	A	-	-	-	C
HCM 95th Percentile Queue (veh)	0.085	-	-	-	1.69

Intersection	
Intersection Delay (sec/veh):	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	357	92	261	435	24	29
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.88	0.60	0.81	0.81	0.57	0.75
Heavy Vehicles(%)	2	0	0	0	0	0
Movement Flow Rate	406	153	322	537	42	39
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	0	0	559	0	1396	280
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	913	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1022	-	180	723
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	484	-
Time blocked-Platoon(%)	-	-	0	-	17	0
Mov Capacity-1 Maneuver	-	-	1022	-	99	723
Mov Capacity-2 Maneuver	-	-	-	-	99	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	267	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3.8	44.4
HCM LOS	A	A	E

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	169				
HCM Control Delay (s)	44.4	-	-	10.136	-
HCM Lane VC Ratio	0.478	-	-	0.315	-
HCM Lane LOS	E	-	-	B	-
HCM 95th Percentile Queue (veh)	2.277	-	-	1.36	-

HCM 2010 Signalized Intersection Summary
3: Obrien Rd & Mapes Rd

Baseline PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	404	13	4	892	84	207	29	6	413	43	274
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1882	1882	1900	1900	1900	1881	1900	1900	1881	1880	1880
Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Capacity, veh/h	288	1504	103	404	1474	659	364	227	64	686	67	370
Arriving On Green	0.03	0.43	0.43	0.02	0.82	0.82	0.14	0.16	0.16	0.25	0.27	0.27
Sat Flow, veh/h	1809.5	3483.1	239.4	1809.5	1615.0	1615.0	1791.6	1425.3	403.5	1791.6	250.5	1384.8
Grp Volume(v), veh/h	61.7	242.0	237.9	8.0	1013.6	100.0	268.8	0.0	71.6	573.6	0.0	389.8
Grp Sat Flow(s),veh/h/ln	1809.5	1882.4	1840.1	1809.5	1805.0	1615.0	1791.6	0.0	1828.8	1791.6	0.0	1635.4
Q Serve(g_s), s	2.0	9.0	9.1	0.3	12.7	1.4	13.2	0.0	3.7	23.4	0.0	24.7
Cycle Q Clear(g_c), s	2.0	9.0	9.1	0.3	12.7	1.4	13.2	0.0	3.7	23.4	0.0	24.7
Proportion In Lane	1.000		0.130	1.000		1.000	1.000		0.221	1.000		0.847
Lane Grp Cap(c), veh/h	288.1	813.0	794.7	404.1	1474.1	659.5	363.6	0.0	291.5	686.2	0.0	436.9
V/C Ratio(X)	0.214	0.298	0.299	0.020	0.688	0.152	0.739	0.000	0.245	0.836	0.000	0.892
Avail Cap(c_a), veh/h	298.4	813.0	794.7	457.0	1474.1	659.5	437.1	0.0	291.5	899.2	0.0	546.4
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	17.1	20.0	20.0	18.5	7.0	6.0	31.8	0.0	39.6	19.3	0.0	38.0
Incr Delay (d2), s/veh	0.4	0.2	0.2	0.0	1.4	0.1	5.3	0.0	0.4	5.4	0.0	14.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	17.4	20.2	20.2	18.5	8.4	6.1	37.1	0.0	40.1	24.7	0.0	52.5
Lane Group LOS	B	C	C	B	A	A	D		D	C		D
Approach Volume, veh/h		542			1122			340			963	
Approach Delay, s/veh		19.9			8.2			37.7			36.0	
Approach LOS		B			A			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	7.39	50.54		4.85	48.00		19.58	21.18		31.19	32.79	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	44.00		4.00	44.00		20.00	16.00		40.00	36.00	
Max Q Clear Time (g_c+I1), s	4.02	11.09		2.28	14.65		15.24	5.69		25.44	26.72	
Green Extension Time (p_c)	0.00	13.84		0.00	13.19		0.35	2.21		1.74	2.07	
Intersection Summary												
HCM 2010 Control Delay			22.7									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
6: Taylor Ave & Mapes Rd

Baseline PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	808	42	72	821	54	46	2	210	267	6	97
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1881	1900	1863	1881	1863	1899	1899	1881	1863	1863	1863
Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Capacity, veh/h	371	1906	861	347	1726	764	59	1	640	59	0	633
Arriving On Green	0.03	1.00	0.00	0.97	0.97	0.00	0.40	0.40	0.00	0.40	0.40	0.00
Sat Flow, veh/h	1774.0	1615.0	1615.0	593.9	3574.3	1583.3	3.2	0.1	1599.0	0.0	0.0	1583.3
Grp Volume(v), veh/h	21.7	939.5	0.0	101.4	922.5	0.0	54.4	0.0	0.0	296.7	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1787.1	1615.0	593.9	1787.1	1583.3	3.3	0.0	1599.0	0.0	0.0	1583.3
Q Serve(g_s), s	0.7	0.0	0.0	1.1	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.1	2.2	0.0	48.0	0.0	0.0	48.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.960		1.000	0.978		1.000
Lane Grp Cap(c), veh/h	370.8	1906.3	861.3	346.8	1725.7	764.5	60.1	0.0	639.6	59.3	0.0	633.3
V/C Ratio(X)	0.059	0.493	0.000	0.292	0.535	0.000	0.906	0.000	0.000	5.001	0.000	0.000
Avail Cap(c_a), veh/h	399.5	1906.3	861.3	346.8	1725.7	764.5	60.1	0.0	639.6	59.3	0.0	633.3
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.774	0.774	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	14.0	0.0	0.0	1.1	1.1	0.0	58.8	0.0	0.0	60.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.4	0.3	0.0	82.9	0.0	0.0	1837.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.1	0.2	0.0	1.4	1.4	0.0	141.8	0.0	0.0	1897.4	0.0	0.0
Lane Group LOS	B	A		A	A		F			F		
Approach Volume, veh/h		961			1024			54			297	
Approach Delay, s/veh		0.5			1.4			141.8			1897.4	
Approach LOS		A			A			F			F	
Timer												
Assigned Phase	5	2			6			8			4	
Phase Duration (G+Y+Rc), s	6.06	68.00			61.94			52.00			52.00	
Change Period (Y+Rc), s	4.00	4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	64.00			56.00			48.00			48.00	
Max Q Clear Time (g_c+I1), s	2.72	2.00			4.20			50.00			50.00	
Green Extension Time (p_c)	0.00	26.51			24.70			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			245.1									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
7: Cooper Av & Mapes Rd

Baseline PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	438	956	19	25	471	139	100	120	104	442	47	441
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1900	1881	1863	1900	1900	1881	1881	1827	1881
Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Capacity, veh/h	548	1562	699	226	856	379	632	837	705	545	805	705
Arriving On Green	0.44	0.87	0.87	0.02	0.24	0.24	0.44	0.44	0.00	0.44	0.44	0.00
Sat Flow, veh/h	1791.6	1615.0	1615.0	1809.5	1583.3	1583.3	1358.6	1900.0	1599.0	1238.0	1826.9	1599.0
Grp Volume(v), veh/h	527.7	1138.1	40.4	39.7	523.3	190.4	192.3	155.8	0.0	465.3	64.4	0.0
Grp Sat Flow(s),veh/h/ln	1791.6	1805.0	1615.0	1809.5	1787.1	1583.3	1358.6	1900.0	1599.0	1238.0	1826.9	1599.0
Q Serve(g_s), s	22.4	13.5	0.4	1.9	15.4	12.2	11.3	5.9	0.0	43.2	2.4	0.0
Cycle Q Clear(g_c), s	22.4	13.5	0.4	1.9	15.4	12.2	13.7	5.9	0.0	49.1	2.4	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	548.0	1562.4	699.0	226.1	856.4	379.4	632.0	837.3	704.6	544.8	805.1	704.6
V/C Ratio(X)	0.963	0.728	0.058	0.176	0.611	0.502	0.304	0.186	0.000	0.854	0.080	0.000
Avail Cap(c_a), veh/h	659.4	1562.4	699.0	242.9	856.4	379.4	644.4	854.6	719.2	556.1	821.7	719.2
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.905	0.905	0.905	0.868	0.868	0.868	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	16.1	5.4	4.5	32.6	39.9	38.7	23.1	20.1	0.0	35.0	19.1	0.0
Incr Delay (d2), s/veh	22.6	1.6	0.0	0.3	1.1	0.9	0.3	0.1	0.0	12.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	38.7	7.0	4.5	32.9	41.0	39.6	23.3	20.2	0.0	47.2	19.1	0.0
Lane Group LOS	D	A	A	C	D	D	C	C		D	B	
Approach Volume, veh/h		1706			753			348			530	
Approach Delay, s/veh		16.7			40.2			21.9			43.8	
Approach LOS		B			D			C			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	29.68	55.00		6.91	32.23			55.93			55.93	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	33.00	51.00		4.00	22.00			53.00			53.00	
Max Q Clear Time (g_c+I1), s	24.43	15.51		3.94	17.37			15.67			51.12	
Green Extension Time (p_c)	1.25	17.90		0.00	3.84			4.01			0.81	
Intersection Summary												
HCM 2010 Control Delay			26.9									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
8: Ernie Pyle St & Mapes Rd

Baseline PM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	1122	73	124	276	6	217	140	694	29	35	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1863	1882	1882	1863	1871	1881	1900	1847	1847
Lanes	0	2	1	1	2	0	1	1	1	1	1	0
Capacity, veh/h	59	1633	753	224	2025	88	468	677	579	446	192	405
Arriving On Green	0.63	0.63	0.63	0.12	1.00	1.00	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	87.3	3435.1	1599.0	1774.0	3581.3	155.3	1275.7	1870.7	1599.0	1250.7	531.3	1118.0
Grp Volume(v), veh/h	661.4	631.4	92.4	136.3	190.3	188.6	333.8	155.6	913.2	43.9	0.0	112.0
Grp Sat Flow(s),veh/h/ln	1793.4	1729.0	1599.0	1774.0	1882.0	1854.6	1275.7	1870.7	1599.0	1250.7	0.0	1649.3
Q Serve(g_s), s	8.5	37.6	2.6	4.3	0.0	0.0	26.8	6.4	40.0	2.8	0.0	5.1
Cycle Q Clear(g_c), s	28.2	37.6	2.6	4.3	0.0	0.0	31.9	6.4	40.0	9.2	0.0	5.1
Proportion In Lane	0.049		1.000	1.000		0.084	1.000		1.000	1.000		0.678
Lane Grp Cap(c), veh/h	878.3	0.0	752.6	224.5	1064.3	1048.8	467.8	677.3	579.0	445.7	0.0	597.2
V/C Ratio(X)	0.753	0.000	0.123	0.607	0.179	0.180	0.714	0.230	1.577	0.099	0.000	0.188
Avail Cap(c_a), veh/h	878.3	0.0	752.6	377.4	1226.5	1208.7	467.8	677.3	579.0	445.7	0.0	597.2
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.593	0.593	0.593	0.485	0.485	0.485	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	16.0	0.0	11.4	21.0	0.0	0.0	35.0	24.5	35.2	27.7	0.0	24.1
Incr Delay (d2), s/veh	2.2	0.0	0.0	1.3	0.0	0.0	5.1	0.2	268.0	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	18.2	0.0	11.5	22.3	0.0	0.0	40.1	24.7	303.2	27.8	0.0	24.3
Lane Group LOS	B		B	C	A	A	D	C	F	C		C
Approach Volume, veh/h		1385			515			1403			156	
Approach Delay, s/veh		9.5			5.9			209.7			25.3	
Approach LOS		A			A			F			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		56.00		10.48	66.48			44.00			44.00	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		52.00		16.00	72.00			40.00			40.00	
Max Q Clear Time (g_c+I1), s		39.63		6.25	2.00			42.00			11.19	
Green Extension Time (p_c)		8.45		0.22	19.65			0.00			8.66	
Intersection Summary												
HCM 2010 Control Delay			90.9									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	62	316	311	0	185	1	1636	741	342	2461	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1881	0	1881	1900	1863	1900	1881	1881	0
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	241	253	213	177	0	213	60	1386	633	373	2025	0
Arriving On Green	0.13	0.13	0.00	0.13	0.00	0.13	0.03	0.39	0.00	0.21	0.57	0.00
Sat Flow, veh/h	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1615.0	1615.0	1791.6	0.0	0.0
Grp Volume(v), veh/h	116.5	79.5	0.0	379.3	0.0	207.9	4.0	1759.1	0.0	510.4	2675.0	0.0
Grp Sat Flow(s),veh/h/ln	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1769.6	1615.0	1791.6	1787.1	0.0
Q Serve(g_s), s	7.2	4.5	0.0	16.0	16.0	15.5	0.3	47.0	0.0	25.0	68.0	68.0
Cycle Q Clear(g_c), s	7.2	4.5	0.0	16.0	16.0	15.5	0.3	47.0	0.0	25.0	68.0	68.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	241.3	253.3	213.2	176.9	0.0	213.2	60.3	1386.2	632.5	373.3	2025.4	0.0
V/C Ratio(X)	0.483	0.314	0.000	2.144	0.000	0.975	0.066	1.269	0.000	1.368	1.321	0.000
Avail Cap(c_a), veh/h	241.3	253.3	213.2	176.9	0.0	213.2	241.3	1386.2	632.5	373.3	2025.4	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	0.090	0.090	0.000
Uniform Delay (d), s/veh	48.2	47.0	0.0	52.0	0.0	51.8	56.2	36.5	0.0	47.5	26.0	0.0
Incr Delay (d2), s/veh	6.8	3.2	0.0	533.1	0.0	55.5	0.5	126.9	0.0	167.0	144.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	54.9	50.2	0.0	585.1	0.0	107.3	56.6	163.4	0.0	214.5	170.7	0.0
Lane Group LOS	D	D		F		F	E	F		F	F	
Approach Volume, veh/h		196			587			1763			3185	
Approach Delay, s/veh		53.0			416.0			163.2			177.7	
Approach LOS		D			F			F			F	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		20.00			20.00		8.00	51.00		29.00	72.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		16.00	47.00		25.00	56.00	
Max Q Clear Time (g_c+I1), s		9.15			18.00		2.26	49.00		27.00	70.00	
Green Extension Time (p_c)		0.37			0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			193.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	762	87	943	252	30	163	262	1156	337	249	1577	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1895	1881	1863	1864	1900	1881	1863	1900
Lanes	2	1	1	1	1	1	2	2	1	1	3	1
Capacity, veh/h	1356	489	416	557	321	271	358	1299	563	238	1924	611
Arriving On Green	0.08	0.09	0.00	0.15	0.17	0.17	0.02	0.11	0.11	0.09	0.38	0.00
Sat Flow, veh/h	3510.5	1615.0	1615.0	1809.5	1599.0	1599.0	3441.6	1615.0	1615.0	1791.6	1615.0	1615.0
Grp Volume(v), veh/h	1043.8	103.6	0.0	276.9	49.2	223.3	374.3	1256.5	351.0	296.4	1877.4	0.0
Grp Sat Flow(s),veh/h/ln	1755.2	1900.0	1615.0	1809.5	1895.3	1599.0	1720.8	1863.7	1615.0	1791.6	1695.1	1615.0
Q Serve(g_s), s	19.5	5.1	0.0	12.4	2.2	13.5	6.0	33.7	20.8	9.0	36.6	0.0
Cycle Q Clear(g_c), s	19.5	5.1	0.0	12.4	2.2	13.5	6.0	33.7	20.8	9.0	36.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	1355.9	489.4	416.0	556.6	321.3	271.1	358.2	1298.7	562.7	237.8	1923.6	610.9
V/C Ratio(X)	0.770	0.212	0.000	0.498	0.153	0.824	1.045	0.968	0.624	1.246	0.976	0.000
Avail Cap(c_a), veh/h	1445.9	832.2	707.4	582.2	641.5	541.2	358.2	1298.7	562.7	237.8	1923.6	610.9
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.537	0.537	0.000	1.000	1.000	1.000	0.090	0.090	0.090	1.000	1.000	0.000
Uniform Delay (d), s/veh	22.2	36.5	0.0	27.9	35.6	40.3	28.9	43.9	38.2	27.2	30.8	0.0
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.7	0.2	6.2	27.8	3.1	0.5	141.0	15.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.5	36.6	0.0	28.5	35.8	46.5	56.7	47.0	38.7	168.2	46.0	0.0
Lane Group LOS	C	D		C	D	D	F	D	D	F	D	
Approach Volume, veh/h		1147			549			1982			2174	
Approach Delay, s/veh		24.7			36.5			47.3			62.6	
Approach LOS		C			D			D			E	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	27.42	29.88		18.58	21.03		10.00	39.00		13.00	42.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	26.00	44.00		16.00	34.00		6.00	35.00		9.00	38.00	
Max Q Clear Time (g_c+I1), s	21.51	7.10		14.44	15.54		8.00	35.72		11.00	38.55	
Green Extension Time (p_c)	1.92	1.68		0.14	1.49		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			47.6									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	998	5	27	1386	31	102
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.75	0.80	0.96	0.75	0.79
Heavy Vehicles(%)	1	0	12	1	0	2
Movement Flow Rate	1085	7	34	1444	41	129
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1092	0	2601	1089
Stage 1	-	-	-	-	1089	-
Stage 2	-	-	-	-	1512	-
Follow-up Headway	-	-	2.308	-	3.5	3.318
Pot Capacity-1 Maneuver	-	-	*335	-	*# 0	*335
Stage 1	-	-	-	-	*335	-
Stage 2	-	-	-	-	-	-
Time blocked-Platoon(%)	-	-	78	-	98	78
Mov Capacity-1 Maneuver	-	-	*335	-	*# 0	*335
Mov Capacity-2 Maneuver	-	-	-	-	*# 0	-
Stage 1	-	-	-	-	*335	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.4	26.4
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*335				
HCM Control Delay (s)	26.4	-	-	16.947	-
HCM Lane VC Ratio	0.509	-	-	0.101	-
HCM Lane LOS	D	-	-	C	-
HCM 95th Percentile Queue (veh)	2.742	-	-	0.333	-

Intersection	
Intersection Delay (sec/veh):	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	1008	71	75	1301	2	112	0	332	2	0	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.84	0.62	0.85	0.89	0.92	0.87	0.92	0.83	0.92	0.92	0.92
Heavy Vehicles(%)	2	1	0	0	1	2	0	2	0	2	2	2
Movement Flow Rate	2	1200	115	88	1462	2	129	0	400	2	0	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

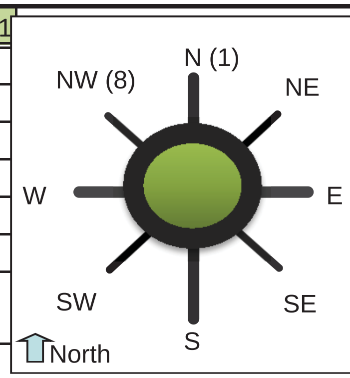
Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	1464	0	0	1315	0	0	2906	2902	1258	3101	2958	1463
Stage 1	-	-	-	-	-	-	1262	1262	-	1639	1639	-
Stage 2	-	-	-	-	-	-	1644	1640	-	1462	1319	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Capacity-1 Maneuver	-	-	-	201	-	-	-	-	# 151	-	-	-
Stage 1	-	-	-	-	-	-	141	132	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	39	98	-
Time blocked-Platoon(%)	100	-	-	80	-	-	100	100	80	100	100	100
Mov Capacity-1 Maneuver	-	-	-	201	-	-	-	-	# 151	-	-	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	132	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	98	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2.1	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	-	-	-	36.223	0	-	-
HCM Lane VC Ratio	-	-	-	-	0.439	-	-	-
HCM Lane LOS	-	-	-	-	E	A	-	-
HCM 95th Percentile Queue (veh)	-	-	-	-	2.049	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Baseline PM Peak



Volumes — Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO)	N (1), vph								
	NE (2), vph								
	E (3), vph								
	SE (4), vph	**471**							
	S (5), vph								
	SW (6), vph	**227**	**786**						
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	698	786	0	0	0	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph			**367**					
	NE (2), vph								
	E (3), vph								
	SE (4), vph							**127**	
	S (5), vph								
	SW (6), vph							**335**	
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	0	0	367	0	0	0	462	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	**1**	**2**	**2**	**2**	**1**	**1**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	0	419	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	538	0	0	0	0	0	0	145
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	1156	0	0	0	0	0	0	382
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	1694	0	0	0	0	419	0	527
	Entry flow Lane 1, pcu/h	797	0	0	0	0	419	0	527
	Entry flow Lane 2, pcu/h	897	0	0	0	0	0	0	0
	Conflicting flow, pcu/h	0	0	0	0	0	683	0	1694

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	759	854	NA	NA	NA	NA	NA	NA
V/C ratio	**0.70**	**0.79**			#VALUE!	#VALUE!		
Control Delay, s/veh	**14.4**	**18.8**			#VALUE!	#VALUE!		
LOS	B	C			#VALUE!	#VALUE!		
95th % Queue (ft)	**163**	**230**			#VALUE!	#VALUE!		
Approach Delay, LOS	16.7 sec, LOS C				#VALUE!			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	667	NA	329	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	399	NA	502	NA
V/C ratio			#VALUE!	#VALUE!	**0.60**		**1.53**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**16.1**		**281.5**	#VALUE!
LOS			#VALUE!	#VALUE!	C		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**105**		**743**	#VALUE!
Approach Delay, LOS			#VALUE!		16.1 sec, LOS C		281.5 sec, LOS F	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	759	854	NA	NA	NA	NA	NA	NA
V/C ratio	**0.55**	**0.62**			#VALUE!	#VALUE!		
Control Delay, s/veh	**8.6**	**10.0**			#VALUE!	#VALUE!		
LOS	A	A			#VALUE!	#VALUE!		
95th % Queue (ft)	**93**	**121**			#VALUE!	#VALUE!		
Approach Delay, LOS	9.3 sec, LOS A				#VALUE!			

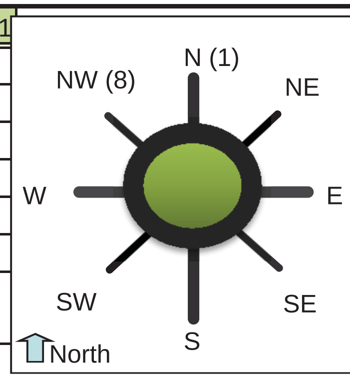
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	845	NA	340	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	399	NA	502	NA
V/C ratio			#VALUE!	#VALUE!	**0.47**		**1.48**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**10.4**		**258.9**	#VALUE!
LOS			#VALUE!	#VALUE!	B		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**67**		**714**	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Baseline PM Peak



Volumes

Entry Legs (FROM)		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								**69**
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph								
	S (5), vph	**835**						**356**	**220**
	SW (6), vph								
	W (7), vph		**423**						**27**
	NW (8), vph								
	Entry Volume, vph	835	423	0	0	0	0	356	316

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	**268**							
NE (2), vph								
E (3), vph								
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph	**200**							
NW (8), vph								
Entry Volume, vph	468	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	79	306	0	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	953	0	0	657	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	483	0	0	31	228	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	1436	0	0	767	534	0	0	0
Entry flow Lane 1, pcu/h	953	0	0	406	534	0	0	0
Entry flow Lane 2, pcu/h	483	0	0	361	0	0	0	0
Conflicting flow, pcu/h	916	0	0	534	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	541	567	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	908	460	NA	NA	509	NA	NA	NA
V/C ratio	**1.68**	**0.81**			**0.47**	#VALUE!		
Control Delay, s/veh	**332.0**	**32.2**			**8.7**	#VALUE!		
LOS	F	D			A	#VALUE!		
95th % Queue (ft)	**1373**	**211**			**68**	#VALUE!		
Approach Delay, LOS	231.2 sec, LOS F				8.7 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	721	740	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	387	343	NA	NA	NA	NA
V/C ratio			**0.54**	**0.46**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**13.3**	**11.3**			#VALUE!	#VALUE!
LOS			B	B			#VALUE!	#VALUE!
95th % Queue (ft)			**85**	**65**			#VALUE!	#VALUE!
Approach Delay, LOS			12.4 sec, LOS B				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	625	685	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	908	460	NA	NA	509	NA	NA	NA
V/C ratio	**1.45**	**0.67**			**0.33**	#VALUE!		
Control Delay, s/veh	**231.7**	**18.7**			**5.0**	#VALUE!		
LOS	F	C			A	#VALUE!		
95th % Queue (ft)	**1135**	**136**			**38**	#VALUE!		
Approach Delay, LOS	160.1 sec, LOS F				5 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	916	966	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	387	343	NA	NA	NA	NA
V/C ratio			**0.42**	**0.36**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**8.9**	**7.5**			#VALUE!	#VALUE!
LOS			A	A			#VALUE!	#VALUE!
95th % Queue (ft)			**56**	**43**			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	446	390	306	405	200	774	153	1531	271	362	1260	207
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1845	1893	1881	1881	1881	1881	1900	1881	1900
Lanes	2	1	1	2	1	2	1	3	1	2	3	1
Capacity, veh/h	842	507	431	590	536	825	252	1626	506	495	1537	511
Arriving On Green	0.07	0.27	0.27	0.08	0.28	0.28	0.07	0.32	0.00	0.07	0.32	0.32
Sat Flow, veh/h	3475.7	1615.0	1615.0	3408.2	2910.2	2910.2	1791.6	1599.0	1599.0	3510.5	1615.0	1615.0
Grp Volume(v), veh/h	518.6	453.5	343.8	493.9	259.7	943.9	184.3	1594.8	0.0	402.2	1431.8	217.9
Grp Sat Flow(s),veh/h/ln	1737.9	1900.0	1615.0	1704.1	1892.5	1455.1	1791.6	1711.9	1599.0	1755.2	1618.1	1615.0
Q Serve(g_s), s	4.0	13.8	11.9	5.0	6.8	17.0	4.0	18.5	0.0	4.0	17.2	6.4
Cycle Q Clear(g_c), s	4.0	13.8	11.9	5.0	6.8	17.0	4.0	18.5	0.0	4.0	17.2	6.4
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	841.7	506.7	430.7	590.0	536.2	824.6	252.0	1626.3	506.4	495.0	1537.2	511.4
V/C Ratio(X)	0.616	0.895	0.798	0.837	0.484	1.145	0.732	0.981	0.000	0.813	0.931	0.426
Avail Cap(c_a), veh/h	841.7	506.7	430.7	590.0	536.2	824.6	252.0	1626.3	506.4	495.0	1537.2	511.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	18.6	21.2	20.5	18.6	17.9	21.5	16.3	20.3	0.0	17.7	19.9	16.2
Incr Delay (d2), s/veh	1.4	18.3	10.2	10.2	0.7	79.3	10.4	17.8	0.0	10.0	10.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	19.9	39.4	30.7	28.9	18.5	100.8	26.7	38.2	0.0	27.7	30.4	16.8
Lane Group LOS	B	D	C	C	B	F	C	D		C	C	B
Approach Volume, veh/h		1316			1698			1779			2052	
Approach Delay, s/veh		29.5			67.3			37.0			28.5	
Approach LOS		C			E			D			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	20.00		9.00	21.00		8.00	23.00		8.00	23.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	16.00		5.00	17.00		4.00	19.00		4.00	19.00	
Max Q Clear Time (g_c+I1), s	6.00	15.79		7.00	19.00		6.00	20.47		6.00	19.15	
Green Extension Time (p_c)	0.00	0.18		0.00	0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			40.5									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	434	863	218	396	752	324	334	1998	703	589	1439	168
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1900	1900	1881	1900	1900	1900	1900	1881	1900	1881
Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Capacity, veh/h	423	894	404	385	849	384	572	1961	646	528	2141	660
Arriving On Green	0.06	0.25	0.00	0.05	0.24	0.24	0.09	0.40	0.40	0.10	0.41	0.00
Sat Flow, veh/h	3510.5	1615.0	1615.0	3510.5	1615.0	1615.0	3510.5	1615.0	1615.0	3475.7	1599.0	1599.0
Grp Volume(v), veh/h	447.4	938.0	0.0	425.8	800.0	330.6	367.0	2244.9	889.9	684.9	1635.2	0.0
Grp Sat Flow(s),veh/h/ln	1755.2	1787.1	1615.0	1755.2	1787.1	1615.0	1755.2	1634.0	1615.0	1737.9	1729.0	1599.0
Q Serve(g_s), s	5.0	20.0	0.0	4.0	17.6	15.7	4.8	32.0	32.0	8.0	21.6	0.0
Cycle Q Clear(g_c), s	5.0	20.0	0.0	4.0	17.6	15.7	4.8	32.0	32.0	8.0	21.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	423.0	893.6	403.7	384.9	848.9	383.6	572.2	1960.8	646.0	527.6	2141.4	660.1
V/C Ratio(X)	1.058	1.050	0.000	1.106	0.942	0.862	0.641	1.145	1.378	1.298	0.764	0.000
Avail Cap(c_a), veh/h	423.0	893.6	403.7	384.9	848.9	383.6	617.3	1960.8	646.0	527.6	2141.4	660.1
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	28.3	30.0	0.0	30.3	30.0	29.2	16.8	24.0	24.0	21.3	20.1	0.0
Incr Delay (d2), s/veh	59.8	44.0	0.0	77.7	18.4	17.8	2.0	71.8	179.5	147.7	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	88.1	74.0	0.0	108.1	48.4	47.1	18.8	95.8	203.5	169.0	21.8	0.0
Lane Group LOS	F	F		F	D	D	B	F	F	F	C	
Approach Volume, veh/h		1385			1556			3502			2320	
Approach Delay, s/veh		78.6			64.4			115.1			65.3	
Approach LOS		E			E			F			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	9.00	24.00		8.00	23.00		10.97	36.00		12.00	37.03	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	5.00	20.00		4.00	19.00		8.00	32.00		8.00	32.00	
Max Q Clear Time (g_c+I1), s	7.00	22.00		6.00	19.59		6.79	34.00		10.00	23.63	
Green Extension Time (p_c)	0.00	0.00		0.00	0.00		0.18	0.00		0.00	8.33	
Intersection Summary												
HCM 2010 Control Delay			87.1									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
13: Cooper Av & Reece Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	32	19	46	7	158	7	771	141	380	848	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1900	1881	1900	1900	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	17	53	36	198	51	218	23	791	679	430	1226	1042
Arriving On Green	0.06	0.06	0.06	0.14	0.14	0.14	0.01	0.42	0.42	0.32	0.86	0.86
Sat Flow, veh/h	291.5	885.6	602.0	1452.3	375.0	1599.0	1809.5	1615.0	1615.0	1809.5	1615.0	1615.0
Grp Volume(v), veh/h	81.4	0.0	0.0	103.4	0.0	190.4	14.0	820.2	183.1	463.4	997.6	21.4
Grp Sat Flow(s),veh/h/ln	1779.2	0.0	0.0	1827.4	0.0	1599.0	1809.5	1881.2	1615.0	1809.5	1900.0	1615.0
Q Serve(g_s), s	4.9	0.0	0.0	5.7	0.0	12.8	0.8	46.0	8.1	26.0	27.1	0.2
Cycle Q Clear(g_c), s	4.9	0.0	0.0	5.7	0.0	12.8	0.8	46.0	8.1	26.0	27.1	0.2
Proportion In Lane	0.164		0.338	0.795		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	106.1	0.0	0.0	249.2	0.0	218.1	22.9	790.6	678.7	429.8	1225.7	1041.9
V/C Ratio(X)	0.767	0.000	0.000	0.415	0.000	0.873	0.611	1.037	0.270	1.078	0.814	0.021
Avail Cap(c_a), veh/h	260.1	0.0	0.0	267.1	0.0	233.7	66.1	790.6	678.7	429.8	1225.7	1041.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.928	0.928	0.928
Uniform Delay (d), s/veh	50.7	0.0	0.0	43.3	0.0	46.3	53.8	31.7	20.7	37.4	4.7	2.8
Incr Delay (d2), s/veh	10.9	0.0	0.0	1.1	0.0	27.2	23.5	42.1	0.2	64.4	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	61.6	0.0	0.0	44.4	0.0	73.6	77.2	73.8	21.0	101.9	8.7	2.8
Lane Group LOS	E			D		E	E	F	C	F	A	A
Approach Volume, veh/h		81			294			1017			1482	
Approach Delay, s/veh		61.6			63.3			64.4			37.7	
Approach LOS		E			E			E			D	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		10.53			18.93		5.39	50.00		30.00	74.61	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	46.00		26.00	68.00	
Max Q Clear Time (g_c+I1), s		6.93			14.77		2.84	48.00		28.00	29.05	
Green Extension Time (p_c)		0.20			0.16		0.00	0.00		0.00	22.75	
Intersection Summary												
HCM 2010 Control Delay			50.4									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
14: Cooper Av & Rockenbach Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	688	313	84	136	97	131	201	344	87	96	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1900	1900	1881	1881	1900	1900	1900	1900	1900
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	781	1957	867	466	1060	892	302	324	275	257	205	72
Arriving On Green	0.03	0.54	0.00	0.04	0.56	0.00	0.03	0.06	0.00	0.06	0.15	0.15
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1599.0	1599.0	1791.6	1615.0	1615.0	1809.5	1346.1	470.8
Grp Volume(v), veh/h	39.7	747.8	0.0	103.7	154.5	0.0	137.9	231.0	0.0	103.6	0.0	177.5
Grp Sat Flow(s),veh/h/ln	1809.5	1805.0	1599.0	1809.5	1900.0	1599.0	1791.6	1900.0	1615.0	1809.5	0.0	1816.9
Q Serve(g_s), s	0.9	10.7	0.0	2.2	3.5	0.0	5.6	10.7	0.0	4.3	0.0	8.2
Cycle Q Clear(g_c), s	0.9	10.7	0.0	2.2	3.5	0.0	5.6	10.7	0.0	4.3	0.0	8.2
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.259
Lane Grp Cap(c), veh/h	780.9	1957.1	866.9	466.3	1060.5	892.5	302.3	323.6	275.1	257.1	0.0	277.3
V/C Ratio(X)	0.051	0.382	0.000	0.222	0.146	0.000	0.456	0.714	0.000	0.403	0.000	0.640
Avail Cap(c_a), veh/h	810.9	1957.1	866.9	588.7	1060.5	892.5	334.2	890.8	757.2	301.3	0.0	831.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.090	0.090	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	8.5	11.8	0.0	8.5	9.5	0.0	29.4	40.1	0.0	29.6	0.0	35.6
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.1	0.0	0.1	0.3	0.0	1.0	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.5	12.0	0.0	8.7	9.6	0.0	29.5	40.4	0.0	30.6	0.0	38.1
Lane Group LOS	A	B		A	A		C	D		C		D
Approach Volume, veh/h		788			258			369			281	
Approach Delay, s/veh		11.8			9.2			36.3			35.3	
Approach LOS		B			A			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	6.51	52.57		7.94	54.00		11.40	19.26		9.81	17.67	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	44.00		10.00	50.00		9.00	42.00		8.00	41.00	
Max Q Clear Time (g_c+I1), s	2.86	12.72		4.17	5.50		7.60	12.71		6.26	10.22	
Green Extension Time (p_c)	0.00	7.07		0.10	7.49		0.04	2.55		0.03	2.57	
Intersection Summary												
HCM 2010 Control Delay			20.6									
HCM 2010 Level of Service			C									

Intersection	
Intersection Delay (sec/veh):	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	54	969	203	116	89	14
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.73	0.91	0.96	0.85	0.76	0.67
Heavy Vehicles(%)	0	0	1	2	2	12
Movement Flow Rate	74	1065	211	136	117	21
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	347	0	0	0	960	174
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	681	-
Follow-up Headway	2.2	-	-	-	3.52	3.42
Pot Capacity-1 Maneuver	1316	-	-	-	286	981
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	464	-
Time blocked-Platoon(%)	6	-	-	-	6	6
Mov Capacity-1 Maneuver	1316	-	-	-	247	981
Mov Capacity-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	400	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.5	0	29.9
HCM LOS	A	A	D

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					279
HCM Control Delay (s)	7.898	-	-	-	29.9
HCM Lane VC Ratio	0.056	-	-	-	0.495
HCM Lane LOS	A	-	-	-	D
HCM 95th Percentile Queue (veh)	0.178	-	-	-	2.563

Intersection	
Intersection Delay (sec/veh):	9.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	412	28	34	373	84	275
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.69	0.79	0.83	0.63	0.78
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	458	41	43	449	133	353
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	499	0	790	250
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	311	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1075	-	*462	756
Stage 1	-	-	-	-	*595	-
Stage 2	-	-	-	-	*1309	-
Time blocked-Platoon(%)	-	-	0	-	13	0
Mov Capacity-1 Maneuver	-	-	1075	-	*437	756
Mov Capacity-2 Maneuver	-	-	-	-	*437	-
Stage 1	-	-	-	-	*595	-
Stage 2	-	-	-	-	*1240	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.7	27.3
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*630				
HCM Control Delay (s)	27.3	-	-	8.488	-
HCM Lane VC Ratio	0.771	-	-	0.04	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	7.221	-	-	0.125	-

HCM 2010 Signalized Intersection Summary
3: Obrien Rd & Mapes Rd

Base + Alt A AM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	1225	90	15	312	463	51	99	6	147	37	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1638	1883	1883	1900	1849	1900	1863	1868	1868	1727	1726	1726
Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Capacity, veh/h	623	2041	249	188	2070	904	293	167	30	276	122	136
Arriving On Green	0.07	0.62	0.62	0.00	0.18	0.18	0.05	0.11	0.11	0.11	0.16	0.16
Sat Flow, veh/h	1559.9	3293.1	402.4	1809.5	1615.0	1615.0	1774.0	1539.2	279.8	1645.0	745.7	832.9
Grp Volume(v), veh/h	231.5	827.6	810.7	15.0	335.5	551.2	83.6	0.0	156.0	186.1	0.0	110.3
Grp Sat Flow(s),veh/h/ln	1559.9	1883.2	1812.2	1809.5	1848.8	1615.0	1774.0	0.0	1819.0	1645.0	0.0	1578.6
Q Serve(g_s), s	5.4	32.2	33.3	0.4	8.2	33.9	4.5	0.0	9.0	9.8	0.0	6.8
Cycle Q Clear(g_c), s	5.4	32.2	33.3	0.4	8.2	33.9	4.5	0.0	9.0	9.8	0.0	6.8
Proportion In Lane	1.000		0.222	1.000		1.000	1.000		0.154	1.000		0.528
Lane Grp Cap(c), veh/h	623.5	1167.1	1123.1	187.9	2069.5	903.9	293.3	0.0	197.9	276.3	0.0	258.7
V/C Ratio(X)	0.371	0.709	0.722	0.080	0.162	0.610	0.285	0.000	0.788	0.673	0.000	0.426
Avail Cap(c_a), veh/h	783.1	1167.1	1123.1	230.6	2069.5	903.9	294.1	0.0	286.0	338.7	0.0	394.2
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	7.0	13.9	14.1	13.5	22.8	33.2	39.7	0.0	47.0	32.1	0.0	40.6
Incr Delay (d2), s/veh	0.4	2.0	2.3	0.2	0.0	1.2	0.5	0.0	8.9	3.8	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	7.4	16.0	16.4	13.7	22.8	34.4	40.2	0.0	55.9	35.9	0.0	41.7
Lane Group LOS	A	B	B	B	C	C	D		E	D		D
Approach Volume, veh/h		1870			902			240			296	
Approach Delay, s/veh		15.1			29.8			50.4			38.1	
Approach LOS		B			C			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	11.94	71.00		5.45	64.51		9.95	15.76		15.90	21.72	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	19.00	67.00		4.00	52.00		6.00	17.00		16.00	27.00	
Max Q Clear Time (g_c+I1), s	7.43	35.28		2.39	35.90		6.47	11.04		11.76	8.79	
Green Extension Time (p_c)	0.52	22.63		0.00	13.23		0.00	0.72		0.19	1.41	
Intersection Summary												
HCM 2010 Control Delay			23.7									
HCM 2010 Level of Service			C									

HCM 2010 Signalized Intersection Summary
6: Taylor Ave & Mapes Rd

Base + Alt A AM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	860	25	169	1061	284	65	7	60	40	1	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1827	1792	1827	1881	1863	1897	1897	1900	1863	1863	1863
Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Capacity, veh/h	206	1736	762	261	1549	686	58	3	700	59	1	686
Arriving On Green	0.03	0.50	0.00	0.58	0.58	0.00	0.43	0.43	0.00	0.43	0.43	0.00
Sat Flow, veh/h	1774.0	1523.6	1523.6	612.2	3574.3	1583.3	6.0	0.5	1615.0	1.7	0.0	1583.3
Grp Volume(v), veh/h	117.4	886.6	0.0	213.9	1178.9	0.0	92.0	0.0	0.0	44.6	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1735.6	1523.6	612.2	1787.1	1583.3	6.6	0.0	1615.0	1.8	0.0	1583.3
Q Serve(g_s), s	4.0	20.6	0.0	39.4	29.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	20.6	0.0	52.0	29.9	0.0	52.0	0.0	0.0	52.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.917		1.000	0.976		1.000
Lane Grp Cap(c), veh/h	206.5	1735.6	761.8	261.1	1548.8	686.1	60.4	0.0	699.8	60.0	0.0	686.1
V/C Ratio(X)	0.569	0.511	0.000	0.819	0.761	0.000	1.524	0.000	0.000	0.742	0.000	0.000
Avail Cap(c_a), veh/h	206.5	1735.6	761.8	261.1	1548.8	686.1	60.4	0.0	699.8	60.0	0.0	686.1
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.329	0.329	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	24.8	20.1	0.0	32.9	20.7	0.0	57.6	0.0	0.0	59.1	0.0	0.0
Incr Delay (d2), s/veh	3.6	0.3	0.0	6.8	0.8	0.0	303.4	0.0	0.0	38.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	28.4	20.4	0.0	39.7	21.5	0.0	360.9	0.0	0.0	97.7	0.0	0.0
Lane Group LOS	C	C		D	C		F			F		
Approach Volume, veh/h		1004			1393			92			45	
Approach Delay, s/veh		21.3			24.3			360.9			97.7	
Approach LOS		C			C			F			F	
Timer												
Assigned Phase	5	2			6			8			4	
Phase Duration (G+Y+Rc), s	8.00	64.00			56.00			56.00			56.00	
Change Period (Y+Rc), s	4.00	4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	60.00			52.00			52.00			52.00	
Max Q Clear Time (g_c+I1), s	6.00	22.58			54.00			54.00			54.00	
Green Extension Time (p_c)	0.00	25.46			0.00			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			36.6									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	471	472	104	91	1098	480	40	72	62	123	104	535
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1810	1696	1900	1863	1900	1900	1721	1900	1824	1824	1863
Lanes	1	2	1	1	2	1	1	1	1	0	1	1
Capacity, veh/h	518	1977	829	490	1348	615	60	473	444	154	112	435
Arriving On Green	0.41	0.96	0.96	0.05	0.38	0.38	0.28	0.28	0.00	0.28	0.28	0.00
Sat Flow, veh/h	1774.0	1442.0	1442.0	1809.5	1615.0	1615.0	1094.2	1720.7	1615.0	418.8	383.6	1583.3
Grp Volume(v), veh/h	501.1	524.4	144.4	123.0	1220.0	505.3	75.5	144.0	0.0	302.1	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1719.0	1442.0	1809.5	1769.6	1615.0	1094.2	1720.7	1615.0	802.4	0.0	1583.3
Q Serve(g_s), s	27.1	1.0	0.6	5.0	39.1	33.8	0.0	7.9	0.0	25.1	0.0	0.0
Cycle Q Clear(g_c), s	27.1	1.0	0.6	5.0	39.1	33.8	33.0	7.9	0.0	33.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	0.522		1.000
Lane Grp Cap(c), veh/h	518.2	1976.9	829.1	490.2	1348.1	615.2	60.0	473.2	444.1	266.3	0.0	435.4
V/C Ratio(X)	0.967	0.265	0.174	0.251	0.905	0.821	1.258	0.304	0.000	1.134	0.000	0.000
Avail Cap(c_a), veh/h	528.7	1976.9	829.1	490.2	1348.1	615.2	60.0	473.2	444.1	266.3	0.0	435.4
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.959	0.959	0.959	0.733	0.733	0.733	1.000	1.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	29.1	1.0	1.0	20.8	35.1	33.5	60.0	34.4	0.0	48.6	0.0	0.0
Incr Delay (d2), s/veh	29.8	0.1	0.1	0.2	6.8	6.6	200.7	0.4	0.0	96.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	58.9	1.1	1.1	21.0	41.9	40.0	260.7	34.8	0.0	144.9	0.0	0.0
Lane Group LOS	E	A	A	C	D	D	F	C		F		
Approach Volume, veh/h		1170			1848			219			302	
Approach Delay, s/veh		25.8			40.0			112.5			144.9	
Approach LOS		C			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	33.29	73.00		10.00	49.71			37.00			37.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	30.00	69.00		6.00	45.00			33.00			33.00	
Max Q Clear Time (g_c+I1), s	29.10	2.98		6.98	41.08			35.00			35.00	
Green Extension Time (p_c)	0.19	30.25		0.00	3.52			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			48.8									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	234	299	666	1321	31	80	40	113	8	198	25
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1854	1854	1881	1900	1900	1900	1827	1835	1863	1667	1858	1858
Lanes	0	2	1	1	2	0	1	1	1	1	1	0
Capacity, veh/h	206	956	906	677	2685	86	94	367	317	276	318	46
Arriving On Green	0.19	0.19	0.19	0.27	1.00	1.00	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	258.3	1686.9	1599.0	1809.5	3661.8	117.4	1040.1	1834.6	1583.3	1209.3	1588.5	229.2
Grp Volume(v), veh/h	60.4	296.2	305.1	756.8	768.8	763.2	96.4	48.2	128.4	13.8	0.0	314.7
Grp Sat Flow(s),veh/h/ln	258.3	1686.9	1599.0	1809.5	1900.0	1879.3	1040.1	1834.6	1583.3	1209.3	0.0	1817.7
Q Serve(g_s), s	24.7	7.9	19.9	16.0	0.0	0.0	3.9	2.6	8.5	1.1	0.0	20.1
Cycle Q Clear(g_c), s	24.7	7.9	19.9	16.0	0.0	0.0	24.0	2.6	8.5	3.7	0.0	20.1
Proportion In Lane	1.000		1.000	1.000		0.062	1.000		1.000	1.000		0.126
Lane Grp Cap(c), veh/h	206.4	0.0	906.1	676.8	1393.3	1378.1	93.8	366.9	316.7	275.8	0.0	363.5
V/C Ratio(X)	0.293	0.000	0.337	1.118	0.552	0.554	1.027	0.131	0.406	0.050	0.000	0.866
Avail Cap(c_a), veh/h	206.4	0.0	906.1	676.8	1393.3	1378.1	93.8	366.9	316.7	275.8	0.0	363.5
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.975	0.975	0.975	0.090	0.090	0.090	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	31.2	0.0	29.2	23.0	0.0	0.0	59.3	39.4	41.8	41.0	0.0	46.4
Incr Delay (d2), s/veh	3.5	0.0	1.0	55.4	0.0	0.0	100.6	0.2	0.8	0.1	0.0	19.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	34.7	0.0	30.2	78.3	0.0	0.0	159.9	39.6	42.6	41.0	0.0	65.6
Lane Group LOS	C		C	F	A	A	F	D	D	D		E
Approach Volume, veh/h		662			2289			273			328	
Approach Delay, s/veh		17.1			25.9			83.5			64.5	
Approach LOS		B			C			F			E	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		72.00		20.00	92.00			28.00			28.00	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		68.00		16.00	88.00			24.00			24.00	
Max Q Clear Time (g_c+I1), s		26.71		18.00	2.00			26.00			22.10	
Green Extension Time (p_c)		24.68		0.00	34.26			0.00			0.64	
Intersection Summary												
HCM 2010 Control Delay			32.3									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	25	45	568	58	213	346	2624	205	65	1164	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1743	1892	1900	1900	1900	1881	1881	1845	1863	1863	1863	1900
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	161	252	215	220	301	253	373	1898	858	59	1298	592
Arriving On Green	0.13	0.13	0.00	0.16	0.16	0.16	0.21	0.54	0.00	0.07	0.73	0.00
Sat Flow, veh/h	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1583.3	1583.3	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	20.0	39.7	0.0	604.3	100.0	231.5	397.7	3016.1	0.0	79.3	1337.9	0.0
Grp Sat Flow(s),veh/h/ln	1206.8	1891.9	1615.0	1389.3	1900.0	1599.0	1791.6	1752.4	1583.3	1774.0	1769.6	1615.0
Q Serve(g_s), s	1.8	2.2	0.0	19.0	5.6	17.1	25.0	65.0	0.0	4.0	44.0	0.0
Cycle Q Clear(g_c), s	1.8	2.2	0.0	19.0	5.6	17.1	25.0	65.0	0.0	4.0	44.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	160.9	252.3	215.3	220.0	300.8	253.2	373.3	1898.5	857.6	59.1	1297.7	592.2
V/C Ratio(X)	0.124	0.157	0.000	2.747	0.332	0.914	1.066	1.589	0.000	1.340	1.031	0.000
Avail Cap(c_a), veh/h	160.9	252.3	215.3	220.0	300.8	253.2	373.3	1898.5	857.6	59.1	1297.7	592.2
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	45.8	46.0	0.0	50.5	44.9	49.7	47.5	27.5	0.0	56.0	16.0	0.0
Incr Delay (d2), s/veh	1.6	1.3	0.0	798.8	3.0	38.2	65.0	267.5	0.0	232.3	33.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	47.4	47.4	0.0	849.3	47.8	87.9	112.5	295.0	0.0	288.3	49.3	0.0
Lane Group LOS	D	D		F	D	F	F	F		F	F	
Approach Volume, veh/h		60			936			3414			1417	
Approach Delay, s/veh		47.4			575.3			273.7			62.6	
Approach LOS		D			F			F			E	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		20.00			23.00		29.00	69.00		8.00	48.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			19.00		25.00	65.00		4.00	44.00	
Max Q Clear Time (g_c+I1), s		4.23			21.00		27.00	67.00		6.00	46.00	
Green Extension Time (p_c)		0.12			0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			268.5									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	129	29	195	488	111	191	1220	1381	90	72	650	899
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1845	1900	1863	1900	1897	1863	1900	1827	1827	1827	1810	1863
Lanes	2	1	1	1	1	1	2	2	1	1	3	1
Capacity, veh/h	515	285	238	367	348	290	1308	2162	919	325	2264	726
Arriving On Green	0.03	0.15	0.00	0.07	0.18	0.18	0.32	0.99	0.99	0.06	0.46	0.00
Sat Flow, veh/h	3408.2	1583.3	1583.3	1809.5	1583.3	1583.3	3510.5	1552.9	1552.9	1739.9	1583.3	1583.3
Grp Volume(v), veh/h	169.7	35.8	0.0	513.7	140.5	238.8	1626.7	1453.7	108.4	82.8	738.6	0.0
Grp Sat Flow(s),veh/h/ln	1704.1	1900.0	1583.3	1809.5	1897.4	1583.3	1755.2	1826.9	1552.9	1739.9	1646.7	1583.3
Q Serve(g_s), s	4.0	2.0	0.0	8.0	7.8	17.4	23.0	1.7	0.1	2.9	11.4	0.0
Cycle Q Clear(g_c), s	4.0	2.0	0.0	8.0	7.8	17.4	23.0	1.7	0.1	2.9	11.4	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	515.5	285.0	237.5	367.0	347.8	290.3	1307.9	2161.9	918.8	325.3	2264.2	725.7
V/C Ratio(X)	0.329	0.126	0.000	1.400	0.404	0.822	1.244	0.672	0.118	0.254	0.326	0.000
Avail Cap(c_a), veh/h	515.5	285.0	237.5	367.0	347.8	290.3	1307.9	2161.9	918.8	325.3	2264.2	725.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	43.0	44.2	0.0	46.7	43.2	47.1	15.0	0.3	0.3	14.7	20.7	0.0
Incr Delay (d2), s/veh	1.7	0.9	0.0	195.6	3.5	22.4	116.3	1.7	0.3	1.9	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.7	45.1	0.0	242.4	46.7	69.6	131.3	2.0	0.6	16.6	21.1	0.0
Lane Group LOS	D	D		F	D	E	F	A	A	B	C	
Approach Volume, veh/h		206			893			3189			821	
Approach Delay, s/veh		44.7			165.4			67.9			20.6	
Approach LOS		D			F			E			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	22.00		12.00	26.00		27.00	75.00		11.00	59.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	18.00		8.00	22.00		23.00	71.00		7.00	55.00	
Max Q Clear Time (g_c+I1), s	6.00	3.96		10.00	19.40		25.00	3.70		4.90	13.43	
Green Extension Time (p_c)	0.00	1.54		0.00	0.49		0.00	34.90		0.03	26.72	
Intersection Summary												
HCM 2010 Control Delay			76.4									
HCM 2010 Level of Service			E									

Intersection	
Intersection Delay (sec/veh):	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1786	36	73	859	9	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.95	0.66	0.60	0.86	0.63	0.68
Heavy Vehicles(%)	4	19	0	2	20	16
Movement Flow Rate	1880	55	122	999	14	47
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1935	0	3151	1908
Stage 1	-	-	-	-	1908	-
Stage 2	-	-	-	-	1243	-
Follow-up Headway	-	-	2.2	-	3.68	3.444
Pot Capacity-1 Maneuver	-	-	-	-	# 0	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	148	-
Time blocked-Platoon(%)	-	-	100	-	100	100
Mov Capacity-1 Maneuver	-	-	-	-	# 0	-
Mov Capacity-2 Maneuver	-	-	-	-	# 0	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	148	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	-
HCM LOS	A	A	-

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	-				
HCM Control Delay (s)	-	-	-	-	-
HCM Lane VC Ratio	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th Percentile Queue (veh)	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh)	$ 1499.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	444	1267	116	230	849	269	29	0	87	33	0	56
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.97	0.77	0.78	0.90	0.92	0.61	0.92	0.67	0.92	0.92	0.92
Heavy Vehicles(%)	2	4	2	0	2	2	0	2	2	2	2	2
Movement Flow Rate	483	1306	151	295	943	292	48	0	130	36	0	61
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

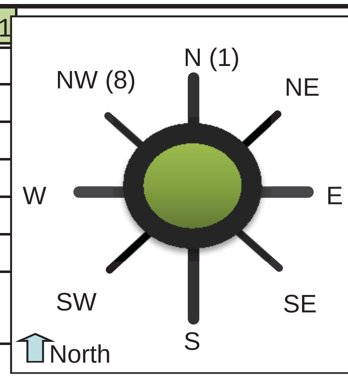
Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	1235	0	0	1457	0	0	4058	4173	1382	4092	4102	1089
Stage 1	-	-	-	-	-	-	2348	2348	-	1679	1679	-
Stage 2	-	-	-	-	-	-	1710	1825	-	2413	2423	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	# 301	-	-	*# 10	-	-	# 0	0	*# 10	# 0	0	253
Stage 1	-	-	-	-	-	-	# 0	0	-	# 26	35	-
Stage 2	-	-	-	-	-	-	# 23	21	-	# 0	0	-
Time blocked-Platoon(%)	66	-	-	99	-	-	100	100	99	100	100	66
Mov Capacity-1 Maneuver	# 301	-	-	*# 10	-	-	# 0	0	*# 10	-	0	253
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 0	0	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-	-	35	-
Stage 2	-	-	-	-	-	-	# 18	21	-	-	0	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	78.9	$ 2609.8	$ 8261.6	-
HCM LOS	F	F	F	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*10							-
HCM Control Delay (s)	$ 8261.6	$ 317.209	0	-	$ 13546.623	$ 13546.623	-	-
HCM Lane VC Ratio	17.739	# 1.603	-	-	29.487	-	-	-
HCM Lane LOS	F	F	A	-	F	A	-	-
HCM 95th Percentile Queue (veh)	23.728	28.952	-	-	38.482	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Base + Alt A AM Peak



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph								
Exit NE (2), vph								
Legs E (3), vph								
(TO) SE (4), vph	85							
S (5), vph								
SW (6), vph	673	854						
W (7), vph								
NW (8), vph								
Entry Volume, vph	758	854	0	0	0	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph			615					
NE (2), vph								
E (3), vph								
SE (4), vph							898	
S (5), vph								
SW (6), vph							179	
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	615	0	0	0	1077	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	1	2	2	2	1	1	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	0	702	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	97	0	0	0	0	0	0	1025
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	1743	0	0	0	0	0	0	204
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	1840	0	0	0	0	702	0	1229
	Entry flow Lane 1, pcu/h	865	0	0	0	0	702	0	1229
	Entry flow Lane 2, pcu/h	975	0	0	0	0	0	0	0
	Conflicting flow, pcu/h	0	0	0	0	0	1122	0	1840

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	824	928	NA	NA	NA	NA	NA	NA
V/C ratio	**0.77**	**0.86**			#VALUE!	#VALUE!		
Control Delay, s/veh	**17.2**	**24.2**			#VALUE!	#VALUE!		
LOS	C	C			#VALUE!	#VALUE!		
95th % Queue (ft)	**206**	**304**			#VALUE!	#VALUE!		
Approach Delay, LOS	20.9 sec, LOS C				#VALUE!			

	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	491	NA	297	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	668	NA	1171	NA
V/C ratio			#VALUE!	#VALUE!	**1.36**		**3.94**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**199.4**		**1357.6**	#VALUE!
LOS			#VALUE!	#VALUE!	F		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**799**		**2969**	#VALUE!
Approach Delay, LOS			#VALUE!		199.4 sec, LOS F		1357.6 sec, LOS F	

Calibrated Model *(future yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	824	928	NA	NA	NA	NA	NA	NA
V/C ratio	**0.60**	**0.68**			#VALUE!	#VALUE!		
Control Delay, s/veh	**9.5**	**11.3**			#VALUE!	#VALUE!		
LOS	A	B			#VALUE!	#VALUE!		
95th % Queue (ft)	**112**	**150**			#VALUE!	#VALUE!		
Approach Delay, LOS	10.5 sec, LOS B				#VALUE!			

	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	569	NA	298	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	668	NA	1171	NA
V/C ratio			#VALUE!	#VALUE!	**1.17**		**3.93**	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	**120.6**		**1349.5**	#VALUE!
LOS			#VALUE!	#VALUE!	F		F	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	**610**		**2965**	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

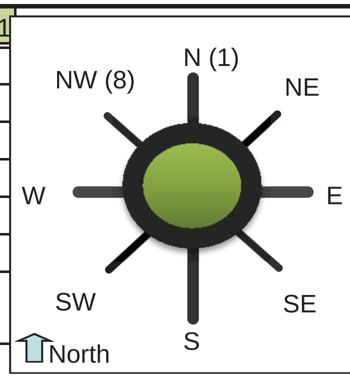
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information
v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Base + Alt A AM Peak



Volumes

		Entry Legs (FROM)							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								204
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph								
	S (5), vph	277						896	549
	SW (6), vph								
	W (7), vph		190						41
	NW (8), vph								
	Entry Volume, vph	277	190	0	0	0	0	896	794

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	1253							
NE (2), vph								
E (3), vph								
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph	177							
NW (8), vph								
Entry Volume, vph	1430	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	233	1430	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	316	0	0	1649	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	217	0	0	47	202	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	533	0	0	1929	1632	0	0	0
	Entry flow Lane 1, pcu/h	316	0	0	1023	1632	0	0	0
	Entry flow Lane 2, pcu/h	217	0	0	906	0	0	0	0
	Conflicting flow, pcu/h	1898	0	0	1632	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	259	285	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	301	207	NA	NA	1554	NA	NA	NA
V/C ratio	**1.16**	**0.72**			**1.44**	#VALUE!		
Control Delay, s/veh	**147.8**	**43.5**			**218.6**	#VALUE!		
LOS	F	E			F	#VALUE!		
95th % Queue (ft)	**356**	**136**			**1793**	#VALUE!		
Approach Delay, LOS	105.4 sec, LOS F				218.6 sec, LOS F			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	316	343	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	974	863	NA	NA	NA	NA
V/C ratio			**3.08**	**2.51**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**967.9**	**713.6**			#VALUE!	#VALUE!
LOS			F	F			#VALUE!	#VALUE!
95th % Queue (ft)			**2268**	**1827**			#VALUE!	#VALUE!
Approach Delay, LOS			848.4 sec, LOS F				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	234	283	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	301	207	NA	NA	1554	NA	NA	NA
V/C ratio	**1.29**	**0.73**			**1.00**	#VALUE!		
Control Delay, s/veh	**199.0**	**44.3**			**38.3**	#VALUE!		
LOS	F	E			E	#VALUE!		
95th % Queue (ft)	**410**	**137**			**621**	#VALUE!		
Approach Delay, LOS	136.1 sec, LOS F				38.3 sec, LOS E			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	305	360	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	974	863	NA	NA	NA	NA
V/C ratio			**3.19**	**2.40**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**1018.7**	**661.9**			#VALUE!	#VALUE!
LOS			F	F			#VALUE!	#VALUE!
95th % Queue (ft)			**2303**	**1778**			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	102	82	447	410	431	311	1041	300	833	1207	438
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1759	1900	1898	1881	1845	1827	1792	1863	1831	1900
Lanes	2	1	1	2	1	2	1	3	1	2	3	1
Capacity, veh/h	399	374	297	968	527	808	414	1238	378	1024	1503	514
Arriving On Green	0.05	0.20	0.20	0.12	0.28	0.28	0.18	0.25	0.00	0.25	0.32	0.32
Sat Flow, veh/h	3510.5	1495.4	1495.4	3510.5	2910.2	2910.2	1756.8	1523.6	1523.6	3441.6	1615.0	1615.0
Grp Volume(v), veh/h	129.5	114.6	101.2	573.1	465.9	453.7	374.7	1210.5	0.0	1028.4	1341.1	503.4
Grp Sat Flow(s),veh/h/ln	1755.2	1881.2	1495.4	1755.2	1898.3	1455.1	1756.8	1662.5	1523.6	1720.8	1575.0	1615.0
Q Serve(g_s), s	2.6	4.6	5.2	9.9	20.8	11.8	13.8	21.3	0.0	22.0	23.9	27.4
Cycle Q Clear(g_c), s	2.6	4.6	5.2	9.9	20.8	11.8	13.8	21.3	0.0	22.0	23.9	27.4
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	399.2	373.9	297.2	967.9	527.3	808.3	413.9	1238.2	378.3	1023.5	1503.3	513.8
V/C Ratio(X)	0.324	0.307	0.341	0.592	0.884	0.561	0.905	0.978	0.000	1.005	0.892	0.980
Avail Cap(c_a), veh/h	399.2	403.4	320.6	967.9	557.0	853.9	417.7	1238.2	378.3	1023.5	1503.3	513.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	27.5	30.3	30.5	18.9	30.6	27.4	21.1	33.1	0.0	25.5	28.8	29.9
Incr Delay (d2), s/veh	0.5	0.5	0.7	1.0	15.0	0.8	22.7	20.3	0.0	29.3	7.2	34.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.9	30.7	31.2	19.9	45.6	28.1	43.9	53.4	0.0	54.8	35.9	64.3
Lane Group LOS	C	C	C	B	D	C	D	D		F	D	E
Approach Volume, veh/h		345			1493			1585			2873	
Approach Delay, s/veh		29.8			30.4			51.1			47.6	
Approach LOS		C			C			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.00	21.61		15.00	28.61		19.81	26.00		26.00	32.19	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	19.00		11.00	26.00		16.00	22.00		22.00	28.00	
Max Q Clear Time (g_c+I1), s	4.57	7.16		11.95	22.82		15.77	23.35		24.00	29.37	
Green Extension Time (p_c)	0.00	4.73		0.00	1.80		0.03	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			43.5									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	533	248	705	869	572	305	1470	258	229	2128	469
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1696	1827	1900	1845	1845	1776	1863	1788	1788	1845	1900	1863
Lanes	2	2	1	2	2	1	2	3	0	2	3	1
Capacity, veh/h	407	748	348	897	1375	592	300	1573	344	301	2035	621
Arriving On Green	0.04	0.22	0.00	0.22	0.39	0.39	0.05	0.39	0.39	0.05	0.39	0.00
Sat Flow, veh/h	3134.4	1615.0	1615.0	3408.2	1509.3	1509.3	3441.6	4010.5	876.3	3408.2	1583.3	1583.3
Grp Volume(v), veh/h	374.6	650.0	0.0	903.8	944.6	794.4	376.5	1266.8	641.1	272.6	2503.5	0.0
Grp Sat Flow(s),veh/h/ln	1567.2	1735.6	1615.0	1704.1	1752.4	1509.3	1720.8	1626.9	1633.1	1704.1	1729.0	1583.3
Q Serve(g_s), s	5.0	23.5	0.0	28.0	29.1	51.0	7.0	50.4	51.0	6.3	51.0	0.0
Cycle Q Clear(g_c), s	5.0	23.5	0.0	28.0	29.1	51.0	7.0	50.4	51.0	6.3	51.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.537	1.000		1.000
Lane Grp Cap(c), veh/h	406.9	747.6	347.8	896.6	1375.0	592.1	300.0	1276.5	640.7	301.2	2034.9	621.2
V/C Ratio(X)	0.921	0.869	0.000	1.008	0.687	1.342	1.255	0.992	1.001	0.905	1.230	0.000
Avail Cap(c_a), veh/h	406.9	747.6	347.8	896.6	1375.0	592.1	300.0	1276.5	640.7	301.2	2034.9	621.2
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	50.1	49.2	0.0	39.5	32.9	39.5	32.6	39.3	39.5	31.7	39.5	0.0
Incr Delay (d2), s/veh	26.0	10.8	0.0	32.0	1.4	164.9	139.2	23.3	35.7	28.9	108.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	76.1	60.0	0.0	71.5	34.3	204.4	171.8	62.6	75.2	60.6	147.7	0.0
Lane Group LOS	E	E		F	C	F	F	E	F	E	F	
Approach Volume, veh/h		1025			2643			2284			2776	
Approach Delay, s/veh		65.9			98.2			84.1			139.1	
Approach LOS		E			F			F			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	9.00	32.00		32.00	55.00		11.00	55.00		11.00	55.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	5.00	28.00		28.00	51.00		7.00	51.00		7.00	51.00	
Max Q Clear Time (g_c+I1), s	7.00	25.50		30.00	53.00		9.00	53.00		8.26	53.00	
Green Extension Time (p_c)	0.00	2.28		0.00	0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			103.7									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
13: Cooper Av & Reece Rd

Base + Alt A AM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	3	3	114	34	260	19	825	29	94	710	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1743	1881	1792	1863	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	11	8	16	215	61	241	35	1081	876	184	1249	1062
Arriving On Green	0.02	0.02	0.02	0.15	0.15	0.15	0.02	0.57	0.57	0.14	0.87	0.87
Sat Flow, veh/h	533.0	399.8	799.5	1427.0	401.6	1599.0	1660.1	1523.6	1523.6	1774.0	1615.0	1615.0
Grp Volume(v), veh/h	26.0	0.0	0.0	218.0	0.0	270.8	27.5	937.5	34.1	156.7	816.1	42.4
Grp Sat Flow(s),veh/h/ln	1732.3	0.0	0.0	1828.6	0.0	1599.0	1660.1	1881.2	1523.6	1774.0	1900.0	1615.0
Q Serve(g_s), s	1.6	0.0	0.0	12.2	0.0	16.0	1.8	44.8	1.0	9.2	13.4	0.4
Cycle Q Clear(g_c), s	1.6	0.0	0.0	12.2	0.0	16.0	1.8	44.8	1.0	9.2	13.4	0.4
Proportion In Lane	0.308		0.462	0.780		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	35.0	0.0	0.0	275.7	0.0	241.0	34.8	1081.1	875.6	183.9	1249.0	1061.7
V/C Ratio(X)	0.744	0.000	0.000	0.791	0.000	1.124	0.792	0.867	0.039	0.852	0.653	0.040
Avail Cap(c_a), veh/h	261.1	0.0	0.0	275.7	0.0	241.0	62.6	1081.1	875.6	183.9	1249.0	1061.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.788	0.788	0.788
Uniform Delay (d), s/veh	51.7	0.0	0.0	43.5	0.0	45.1	51.7	19.1	9.8	45.0	3.1	2.3
Incr Delay (d2), s/veh	26.3	0.0	0.0	14.4	0.0	95.3	31.7	7.6	0.0	24.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	78.0	0.0	0.0	57.9	0.0	140.3	83.5	26.8	9.8	69.8	4.1	2.3
Lane Group LOS	E			E		F	F	C	A	E	A	A
Approach Volume, veh/h		26			489			999			1015	
Approach Delay, s/veh		78.0			103.6			27.8			14.2	
Approach LOS		E			F			C			B	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		6.14			20.00		6.22	65.00		15.00	73.78	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	61.00		11.00	68.00	
Max Q Clear Time (g_c+I1), s		3.58			18.00		3.75	46.85		11.16	15.36	
Green Extension Time (p_c)		0.04			0.00		0.00	10.43		0.00	23.56	
Intersection Summary												
HCM 2010 Control Delay			37.5									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
14: Cooper Av & Rockenbach Rd

Base + Alt A AM Peak
9/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	123	114	332	717	27	313	87	76	90	138	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1863	1881	1900	1900	1900	1900	1881	1845	1900	1887	1887
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	146	1534	693	778	1021	868	393	496	414	323	168	76
Arriving On Green	0.01	0.43	0.00	0.12	0.54	0.00	0.06	0.09	0.00	0.05	0.14	0.14
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1615.0	1615.0	1809.5	1568.0	1568.0	1809.5	1234.1	554.9
Grp Volume(v), veh/h	12.1	157.7	0.0	400.0	919.2	0.0	364.0	164.2	0.0	95.7	0.0	232.6
Grp Sat Flow(s),veh/h/ln	1809.5	1769.6	1599.0	1809.5	1900.0	1615.0	1809.5	1881.2	1568.0	1809.5	0.0	1789.1
Q Serve(g_s), s	0.4	3.1	0.0	11.0	50.8	0.0	18.9	9.6	0.0	5.3	0.0	15.1
Cycle Q Clear(g_c), s	0.4	3.1	0.0	11.0	50.8	0.0	18.9	9.6	0.0	5.3	0.0	15.1
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.310
Lane Grp Cap(c), veh/h	145.7	1533.6	692.9	777.9	1021.2	868.0	393.0	496.2	413.5	323.4	0.0	244.2
V/C Ratio(X)	0.083	0.103	0.000	0.514	0.900	0.000	0.926	0.331	0.000	0.296	0.000	0.953
Avail Cap(c_a), veh/h	187.4	1533.6	692.9	831.8	1021.2	868.0	394.3	497.5	414.7	323.4	0.0	244.2
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.468	0.468	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	24.7	19.7	0.0	10.1	24.3	0.0	40.2	43.8	0.0	40.8	0.0	50.2
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	10.8	0.0	16.0	0.2	0.0	0.5	0.0	44.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	24.9	19.7	0.0	10.6	35.1	0.0	56.1	44.0	0.0	41.3	0.0	94.7
Lane Group LOS	C	B		B	D		E	D		D		F
Approach Volume, veh/h		170			1319			528			328	
Approach Delay, s/veh		20.1			27.7			52.3			79.1	
Approach LOS		C			C			D			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	5.30	54.79		17.51	67.00		24.91	34.91		10.00	20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	50.00		17.00	63.00		21.00	31.00		6.00	16.00	
Max Q Clear Time (g_c+I1), s	2.44	5.10		12.98	52.81		20.90	11.61		7.32	17.13	
Green Extension Time (p_c)	0.00	11.11		0.52	5.53		0.01	2.25		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			39.9									
HCM 2010 Level of Service			D									

15: Rockenbach Rd & 29th Division Blvd

Intersection	
Intersection Delay (sec/veh):	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	12	204	809	49	80	66
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.44	0.89	0.83	0.73	0.69	0.70
Heavy Vehicles(%)	0	2	0	0	0	0
Movement Flow Rate	27	229	975	67	116	94
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	1042	0	0	0	1178	522
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	169	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1006	-	-	-	444	*1020
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	850	-
Time blocked-Platoon(%)	32	-	-	-	32	32
Mov Capacity-1 Maneuver	1006	-	-	-	430	*1020
Mov Capacity-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	824	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.9	0	14.7
HCM LOS	A	A	B

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					581
HCM Control Delay (s)	8.678	-	-	-	14.7
HCM Lane VC Ratio	0.027	-	-	-	0.362
HCM Lane LOS	A	-	-	-	B
HCM 95th Percentile Queue (veh)	0.084	-	-	-	1.643

16: Obrien Rd & Rockenbach Rd

Intersection	
Intersection Delay (sec/veh):	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	357	92	282	439	24	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.88	0.60	0.81	0.81	0.57	0.75
Heavy Vehicles(%)	2	0	0	0	0	0
Movement Flow Rate	406	153	348	542	42	43
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	559	0	1450	280
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	967	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1022	-	160	723
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	436	-
Time blocked-Platoon(%)	-	-	0	-	15	0
Mov Capacity-1 Maneuver	-	-	1022	-	82	723
Mov Capacity-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	224	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	4	57.7
HCM LOS	A	A	F

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	148				
HCM Control Delay (s)	57.7	-	-	10.331	-
HCM Lane VC Ratio	0.573	-	-	0.341	-
HCM Lane LOS	F	-	-	B	-
HCM 95th Percentile Queue (veh)	2.933	-	-	1.522	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	471	13	4	1270	103	207	29	6	416	43	274
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1882	1882	1900	1900	1900	1881	1900	1900	1881	1880	1880
Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Capacity, veh/h	196	1638	97	397	1600	716	332	204	58	653	63	347
Arriving On Green	0.03	0.47	0.47	0.02	0.89	0.89	0.14	0.14	0.14	0.25	0.25	0.25
Sat Flow, veh/h	1809.5	3520.0	207.8	1809.5	1615.0	1615.0	1791.6	1425.3	403.5	1791.6	250.5	1384.8
Grp Volume(v), veh/h	61.7	279.4	274.9	8.0	1443.2	122.6	268.8	0.0	71.6	577.8	0.0	389.8
Grp Sat Flow(s),veh/h/ln	1809.5	1882.2	1845.6	1809.5	1805.0	1615.0	1791.6	0.0	1828.8	1791.6	0.0	1635.4
Q Serve(g_s), s	2.1	11.1	11.2	0.3	27.1	1.2	15.1	0.0	4.2	27.5	0.0	28.0
Cycle Q Clear(g_c), s	2.1	11.1	11.2	0.3	27.1	1.2	15.1	0.0	4.2	27.5	0.0	28.0
Proportion In Lane	1.000		0.113	1.000		1.000	1.000		0.221	1.000		0.847
Lane Grp Cap(c), veh/h	195.7	875.9	858.8	396.9	1600.0	715.8	331.6	0.0	262.2	652.5	0.0	410.3
V/C Ratio(X)	0.315	0.319	0.320	0.020	0.902	0.171	0.811	0.000	0.273	0.885	0.000	0.950
Avail Cap(c_a), veh/h	202.1	875.9	858.8	443.3	1600.0	715.8	331.6	0.0	262.2	669.7	0.0	410.3
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	20.0	20.1	20.1	18.3	5.3	3.8	37.1	0.0	45.7	23.2	0.0	44.1
Incr Delay (d2), s/veh	0.9	0.2	0.2	0.0	7.5	0.1	14.0	0.0	0.6	13.3	0.0	31.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.0	20.3	20.3	18.3	12.8	4.0	51.1	0.0	46.2	36.5	0.0	75.9
Lane Group LOS	C	C	C	B	B	A	D		D	D		E
Approach Volume, veh/h		616			1574			340			968	
Approach Delay, s/veh		20.4			12.1			50.1			52.4	
Approach LOS		C			B			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	7.58	59.65		4.93	57.00		21.00	21.14		33.86	34.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	53.00		4.00	53.00		17.00	16.00		31.00	30.00	
Max Q Clear Time (g_c+I1), s	4.11	13.19		2.29	29.08		17.08	6.17		29.48	30.04	
Green Extension Time (p_c)	0.00	22.88		0.00	16.50		0.00	2.14		0.38	0.00	
Intersection Summary												
HCM 2010 Control Delay			28.4									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1048	42	72	863	54	46	2	210	267	6	97
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1881	1900	1863	1881	1863	1899	1899	1881	1863	1863	1863
Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Capacity, veh/h	137	1281	579	85	1100	487	59	1	919	59	0	910
Arriving On Green	0.03	0.72	0.00	0.62	0.62	0.00	0.57	0.57	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1774.0	1615.0	1615.0	456.1	3574.3	1583.3	2.2	0.1	1599.0	0.0	0.0	1583.3
Grp Volume(v), veh/h	21.7	1218.6	0.0	101.4	969.7	0.0	54.4	0.0	0.0	296.7	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1774.0	1787.1	1615.0	456.1	1787.1	1583.3	2.3	0.0	1599.0	0.0	0.0	1583.3
Q Serve(g_s), s	1.0	36.4	0.0	6.6	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	36.4	0.0	36.9	27.4	0.0	69.0	0.0	0.0	69.0	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	0.960		1.000	0.978		1.000
Lane Grp Cap(c), veh/h	136.6	1280.8	578.7	84.9	1100.2	487.4	60.1	0.0	919.4	59.3	0.0	910.4
V/C Ratio(X)	0.159	0.951	0.000	1.194	0.881	0.000	0.906	0.000	0.000	5.001	0.000	0.000
Avail Cap(c_a), veh/h	165.2	1280.8	578.7	84.9	1100.2	487.4	60.1	0.0	919.4	59.3	0.0	910.4
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.707	0.707	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	29.5	16.1	0.0	40.6	21.2	0.0	58.3	0.0	0.0	60.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	15.1	0.0	143.4	6.3	0.0	82.9	0.0	0.0	1837.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	30.1	31.1	0.0	183.9	27.5	0.0	141.3	0.0	0.0	1897.4	0.0	0.0
Lane Group LOS	C	C		F	C		F			F		
Approach Volume, veh/h		1240			1071			54			297	
Approach Delay, s/veh		31.1			42.3			141.3			1897.4	
Approach LOS		C			D			F			F	
Timer												
Assigned Phase	5	2			6			8			4	
Phase Duration (G+Y+Rc), s	6.06	47.00			40.94			73.00			73.00	
Change Period (Y+Rc), s	4.00	4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	43.00			35.00			69.00			69.00	
Max Q Clear Time (g_c+I1), s	2.98	38.44			38.94			71.00			71.00	
Green Extension Time (p_c)	0.00	4.19			0.00			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			245.9									
HCM 2010 Level of Service			F									

7: Cooper Av & Mapes Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	495	1140	19	25	503	139	100	120	104	442	47	451
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1900	1881	1863	1900	1900	1881	1881	1827	1881
Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Capacity, veh/h	607	1618	724	181	657	291	611	810	681	524	779	681
Arriving On Green	0.58	0.90	0.90	0.03	0.18	0.18	0.43	0.43	0.00	0.43	0.43	0.00
Sat Flow, veh/h	1791.6	1615.0	1615.0	1809.5	1583.3	1583.3	1358.6	1900.0	1599.0	1238.0	1826.9	1599.0
Grp Volume(v), veh/h	596.4	1357.1	40.4	39.7	558.9	190.4	192.3	155.8	0.0	465.3	64.4	0.0
Grp Sat Flow(s),veh/h/ln	1791.6	1805.0	1615.0	1809.5	1787.1	1583.3	1358.6	1900.0	1599.0	1238.0	1826.9	1599.0
Q Serve(g_s), s	32.5	18.7	0.3	2.1	18.1	13.4	11.7	6.1	0.0	44.9	2.5	0.0
Cycle Q Clear(g_c), s	32.5	18.7	0.3	2.1	18.1	13.4	14.2	6.1	0.0	51.0	2.5	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	607.0	1618.4	724.0	180.8	657.1	291.1	610.7	809.8	681.5	524.3	778.6	681.5
V/C Ratio(X)	0.982	0.839	0.056	0.220	0.851	0.654	0.315	0.192	0.000	0.887	0.083	0.000
Avail Cap(c_a), veh/h	612.0	1618.4	724.0	195.6	657.1	291.1	610.7	809.8	681.5	524.3	778.6	681.5
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.827	0.827	0.827	0.842	0.842	0.842	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	17.9	4.4	3.4	38.3	47.2	45.3	24.7	21.5	0.0	37.5	20.4	0.0
Incr Delay (d2), s/veh	28.5	3.4	0.0	0.5	8.9	4.4	0.3	0.1	0.0	16.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	46.4	7.8	3.5	38.8	56.1	49.7	24.9	21.6	0.0	54.2	20.5	0.0
Lane Group LOS	D	A	A	D	E	D	C	C		D	C	
Approach Volume, veh/h		1994			789			348			530	
Approach Delay, s/veh		19.3			53.7			23.4			50.1	
Approach LOS		B			D			C			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	38.67	57.65		7.02	26.00			55.00			55.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	35.00	53.00		4.00	22.00			51.00			51.00	
Max Q Clear Time (g_c+l1), s	34.54	20.75		4.12	20.10			16.24			53.00	
Green Extension Time (p_c)	0.13	20.20		0.00	1.73			3.99			0.00	
Intersection Summary												
HCM 2010 Control Delay			31.5									
HCM 2010 Level of Service			C									

8: Ernie Pyle St & Mapes Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	1306	73	124	308	6	217	140	694	29	35	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1863	1882	1882	1863	1871	1881	1900	1847	1847
Lanes	0	2	1	1	2	0	1	1	1	1	1	0
Capacity, veh/h	57	1807	828	204	2193	85	408	595	508	386	169	355
Arriving On Green	0.69	0.69	0.69	0.11	1.00	1.00	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	75.1	3458.5	1599.0	1774.0	3599.2	139.9	1275.7	1870.7	1599.0	1250.7	531.3	1118.0
Grp Volume(v), veh/h	773.4	726.2	92.4	136.3	211.5	209.6	333.8	155.6	913.2	43.9	0.0	112.0
Grp Sat Flow(s),veh/h/ln	1804.7	1729.0	1599.0	1774.0	1881.9	1857.2	1275.7	1870.7	1599.0	1250.7	0.0	1649.3
Q Serve(g_s), s	10.4	44.0	2.1	3.8	0.0	0.0	28.5	6.8	35.0	3.0	0.0	5.5
Cycle Q Clear(g_c), s	32.3	44.0	2.1	3.8	0.0	0.0	34.0	6.8	35.0	9.8	0.0	5.5
Proportion In Lane	0.042		1.000	1.000		0.075	1.000		1.000	1.000		0.678
Lane Grp Cap(c), veh/h	968.6	0.0	828.0	204.3	1146.7	1131.7	407.6	594.8	508.4	385.7	0.0	524.4
V/C Ratio(X)	0.798	0.000	0.112	0.667	0.184	0.185	0.819	0.262	1.796	0.114	0.000	0.214
Avail Cap(c_a), veh/h	968.6	0.0	828.0	364.3	1316.5	1299.2	407.6	594.8	508.4	385.7	0.0	524.4
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.454	0.454	0.454	0.287	0.287	0.287	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	13.1	0.0	8.6	22.3	0.0	0.0	39.9	27.9	37.5	31.6	0.0	27.5
Incr Delay (d2), s/veh	2.2	0.0	0.0	1.1	0.0	0.0	12.4	0.2	366.0	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	15.3	0.0	8.6	23.4	0.0	0.0	52.3	28.2	403.6	31.7	0.0	27.7
Lane Group LOS	B		A	C	A	A	D	C	F	C		C
Approach Volume, veh/h		1592			557			1403			156	
Approach Delay, s/veh		7.9			5.7			278.3			28.8	
Approach LOS		A			A			F			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		61.00		10.07	71.07			39.00			39.00	
Change Period (Y+Rc), s		4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s		57.00		16.00	77.00			35.00			35.00	
Max Q Clear Time (g_c+l1), s		46.05		5.85	2.00			37.00			11.79	
Green Extension Time (p_c)		8.54		0.23	26.70			0.00			8.11	
Intersection Summary												
HCM 2010 Control Delay			110.8									
HCM 2010 Level of Service			F									

9: Annapolis Rd & Llewellyn Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	62	316	311	0	185	1	1666	741	342	2632	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1881	0	1881	1900	1863	1900	1881	1881	0
Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Capacity, veh/h	241	253	213	177	0	213	60	1416	646	358	2025	0
Arriving On Green	0.13	0.13	0.00	0.13	0.00	0.13	0.03	0.40	0.00	0.20	0.57	0.00
Sat Flow, veh/h	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1615.0	1615.0	1791.6	0.0	0.0
Grp Volume(v), veh/h	116.5	79.5	0.0	379.3	0.0	207.9	4.0	1791.4	0.0	510.4	2860.9	0.0
Grp Sat Flow(s),veh/h/ln	1809.5	1900.0	1599.0	1326.8	0.0	1599.0	1809.5	1769.6	1615.0	1791.6	1787.1	0.0
Q Serve(g_s), s	7.2	4.5	0.0	16.0	16.0	15.5	0.3	48.0	0.0	24.0	68.0	68.0
Cycle Q Clear(g_c), s	7.2	4.5	0.0	16.0	16.0	15.5	0.3	48.0	0.0	24.0	68.0	68.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	241.3	253.3	213.2	176.9	0.0	213.2	60.3	1415.7	646.0	358.3	2025.4	0.0
V/C Ratio(X)	0.483	0.314	0.000	2.144	0.000	0.975	0.066	1.265	0.000	1.425	1.412	0.000
Avail Cap(c_a), veh/h	241.3	253.3	213.2	176.9	0.0	213.2	241.3	1415.7	646.0	358.3	2025.4	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	0.090	0.090	0.000
Uniform Delay (d), s/veh	48.2	47.0	0.0	52.0	0.0	51.8	56.2	36.0	0.0	48.0	26.0	0.0
Incr Delay (d2), s/veh	6.8	3.2	0.0	533.1	0.0	55.5	0.5	125.2	0.0	192.6	185.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	54.9	50.2	0.0	585.1	0.0	107.3	56.6	161.2	0.0	240.6	211.9	0.0
Lane Group LOS	D	D		F		F	E	F		F	F	
Approach Volume, veh/h		196			587			1795			3371	
Approach Delay, s/veh		53.0			416.0			161.0			216.2	
Approach LOS		D			F			F			F	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		20.00			20.00		8.00	52.00		28.00	72.00	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		16.00	48.00		24.00	56.00	
Max Q Clear Time (g_c+I1), s		9.15			18.00		2.26	50.00		26.00	70.00	
Green Extension Time (p_c)		0.37			0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			213.9									
HCM 2010 Level of Service			F									

10: Annapolis Rd & Mapes Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	774	87	1114	252	30	163	292	1156	337	249	1577	152
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1895	1881	1863	1864	1900	1881	1863	1900
Lanes	2	1	1	1	1	1	2	2	1	1	3	1
Capacity, veh/h	1375	497	423	561	324	273	368	1257	544	238	1870	594
Arriving On Green	0.08	0.09	0.00	0.15	0.17	0.17	0.02	0.11	0.11	0.09	0.37	0.00
Sat Flow, veh/h	3510.5	1615.0	1615.0	1809.5	1599.0	1599.0	3441.6	1615.0	1615.0	1791.6	1615.0	1615.0
Grp Volume(v), veh/h	1060.3	103.6	0.0	276.9	49.2	223.3	417.1	1256.5	351.0	296.4	1877.4	0.0
Grp Sat Flow(s),veh/h/ln	1755.2	1900.0	1615.0	1809.5	1895.3	1599.0	1720.8	1863.7	1615.0	1791.6	1695.1	1615.0
Q Serve(g_s), s	19.1	5.0	0.0	12.1	2.2	13.2	6.0	33.0	20.4	9.0	36.0	0.0
Cycle Q Clear(g_c), s	19.1	5.0	0.0	12.1	2.2	13.2	6.0	33.0	20.4	9.0	36.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	1375.3	497.4	422.8	561.1	323.7	273.1	367.7	1256.7	544.5	238.3	1870.3	594.0
V/C Ratio(X)	0.771	0.208	0.000	0.494	0.152	0.818	1.135	1.000	0.645	1.244	1.004	0.000
Avail Cap(c_a), veh/h	1476.9	892.9	759.0	593.3	697.1	588.1	367.7	1256.7	544.5	238.3	1870.3	594.0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.423	0.423	0.000	1.000	1.000	1.000	0.090	0.090	0.090	1.000	1.000	0.000
Uniform Delay (d), s/veh	21.2	35.3	0.0	27.0	34.5	39.1	28.8	43.5	37.9	27.0	30.9	0.0
Incr Delay (d2), s/veh	1.0	0.1	0.0	0.7	0.2	6.0	64.1	7.6	0.5	139.9	21.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	22.3	35.4	0.0	27.7	34.8	45.1	92.9	51.1	38.4	167.0	52.7	0.0
Lane Group LOS	C	D		C	C	D	F	D	D	F	F	
Approach Volume, veh/h		1164			549			2025			2174	
Approach Delay, s/veh		23.4			35.4			57.5			68.2	
Approach LOS		C			D			E			E	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	27.17	29.62		18.26	20.72		10.00	37.00		13.00	40.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	26.00	46.00		16.00	36.00		6.00	33.00		9.00	36.00	
Max Q Clear Time (g_c+I1), s	21.08	6.96		14.09	15.17		8.00	35.00		11.00	38.00	
Green Extension Time (p_c)	2.09	1.69		0.17	1.54		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			52.7									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh):	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1068	5	27	1783	31	102
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.75	0.80	0.96	0.75	0.79
Heavy Vehicles(%)	1	0	12	1	0	2
Movement Flow Rate	1161	7	34	1857	41	129
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1168	0	3090	1165
Stage 1	-	-	-	-	1165	-
Stage 2	-	-	-	-	1925	-
Follow-up Headway	-	-	2.308	-	3.5	3.318
Pot Capacity-1 Maneuver	-	-	*227	-	*# 0	*227
Stage 1	-	-	-	-	*227	-
Stage 2	-	-	-	-	-	-
Time blocked-Platoon(%)	-	-	85	-	80	85
Mov Capacity-1 Maneuver	-	-	*227	-	*# 0	*227
Mov Capacity-2 Maneuver	-	-	-	-	*# 0	-
Stage 1	-	-	-	-	*227	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.4	57
HCM LOS	A	A	F

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*227				
HCM Control Delay (s)	57	-	-	23.609	-
HCM Lane VC Ratio	0.751	-	-	0.149	-
HCM Lane LOS	F	-	-	C	-
HCM 95th Percentile Queue (veh)	5.207	-	-	0.513	-

Intersection	
Intersection Delay (sec/veh):	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	72	1008	71	75	1301	44	112	0	332	242	0	406
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.84	0.62	0.85	0.89	0.92	0.87	0.92	0.83	0.92	0.92	0.92
Heavy Vehicles(%)	2	1	0	0	1	2	0	2	0	2	2	2
Movement Flow Rate	78	1200	115	88	1462	48	129	0	400	263	0	441
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

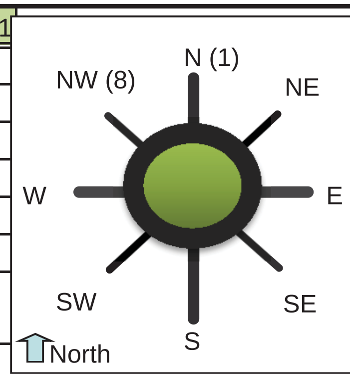
Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	1510	0	0	1315	0	0	3297	3100	1258	3276	3133	1486
Stage 1	-	-	-	-	-	-	1414	1414	-	1662	1662	-
Stage 2	-	-	-	-	-	-	1883	1686	-	1614	1471	-
Follow-up Headway	2.218	-	-	2.2	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Capacity-1 Maneuver	-	-	-	201	-	-	-	-	# 151	-	-	-
Stage 1	-	-	-	-	-	-	# 54	60	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	# 14	43	-
Time blocked-Platoon(%)	100	-	-	80	-	-	100	100	80	100	100	100
Mov Capacity-1 Maneuver	-	-	-	201	-	-	-	-	# 151	-	-	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	60	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	43	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	-	-	-	36.223	0	-	-
HCM Lane VC Ratio	-	-	-	-	0.439	-	-	-
HCM Lane LOS	-	-	-	-	E	A	-	-
HCM 95th Percentile Queue (veh)	-	-	-	-	2.049	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Anne Arundel, MD
Intersection:	Laurel Fort Meade Rd. and MD 32 East Baseline PM Peak



Volumes

Entry Legs (FROM)	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph								
NE (2), vph								
E (3), vph								
SE (4), vph	471							
S (5), vph								
SW (6), vph	233	793						
W (7), vph								
NW (8), vph								
Entry Volume, vph	704	793	0	0	0	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph			369					
NE (2), vph								
E (3), vph								
SE (4), vph							192	
S (5), vph								
SW (6), vph							335	
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	369	0	0	0	527	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	0	0	1	0	1
# of Conflict Flow Lanes	1	2	2	2	1	1	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	1.000	1.000	0.952	1.000	0.952
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	421	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	538	0	0	0	0	0	0	219
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	1171	0	0	0	0	0	0	382
W (7), pcu/h	0	0	0	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	1709	0	0	0	0	421	0	601
Entry flow Lane 1, pcu/h	803	0	0	0	0	421	0	601
Entry flow Lane 2, pcu/h	905	0	0	0	0	0	0	0
Conflicting flow, pcu/h	0	0	0	0	0	757	0	1709

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1076	1076	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	765	862	NA	NA	NA	NA	NA	NA
V/C ratio	**0.71**	**0.80**			**#VALUE!**	**#VALUE!**		
Control Delay, s/veh	**14.7**	**19.2**			**#VALUE!**	**#VALUE!**		
LOS	B	C			#VALUE!	#VALUE!		
95th % Queue (ft)	**167**	**237**			**#VALUE!**	**#VALUE!**		
Approach Delay, LOS	17.1 sec, LOS C				#VALUE!			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	634	NA	325	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	401	NA	573	NA
V/C ratio			**#VALUE!**	**#VALUE!**	**0.63**		**1.76**	**#VALUE!**
Control Delay, sec/pcu			**#VALUE!**	**#VALUE!**	**18.1**		**382.0**	**#VALUE!**
LOS			#VALUE!	#VALUE!	C		F	#VALUE!
95th % Queue (ft)			**#VALUE!**	**#VALUE!**	**118**		**965**	**#VALUE!**
Approach Delay, LOS			#VALUE!		18.1 sec, LOS C		382 sec, LOS F	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1371	1371	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	765	862	NA	NA	NA	NA	NA	NA
V/C ratio	**0.56**	**0.63**			**#VALUE!**	**#VALUE!**		
Control Delay, s/veh	**8.7**	**10.1**			**#VALUE!**	**#VALUE!**		
LOS	A	B			#VALUE!	#VALUE!		
95th % Queue (ft)	**95**	**124**			**#VALUE!**	**#VALUE!**		
Approach Delay, LOS	9.4 sec, LOS A				#VALUE!			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	790	NA	336	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	401	NA	573	NA
V/C ratio			**#VALUE!**	**#VALUE!**	**0.51**		**1.71**	**#VALUE!**
Control Delay, sec/pcu			**#VALUE!**	**#VALUE!**	**11.7**		**357.9**	**#VALUE!**
LOS			#VALUE!	#VALUE!	B		F	#VALUE!
95th % Queue (ft)			**#VALUE!**	**#VALUE!**	**77**		**936**	**#VALUE!**
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

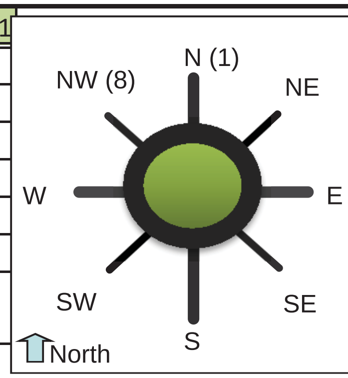
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						

Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Anne Arundel, MD
Intersection:	Mapes Rd. and MD 32 West Base + Alt A PM Peak



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph								69
Exit	NE (2), vph								
Legs	E (3), vph								
(TO)	SE (4), vph								
	S (5), vph	846						356	220
	SW (6), vph								
	W (7), vph		795						27
	NW (8), vph								
	Entry Volume, vph	846	795	0	0	0	0	356	316

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph	335							
	NE (2), vph								
	E (3), vph								
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	200							
	NW (8), vph								
	Entry Volume, vph	535	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	0	2	1	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	95%	95%	95%	95%	95%	95%	95%	95%
% Heavy Vehicles	5%	5%	5%	5%	5%	5%	5%	5%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.952	1.000	1.000	0.952	0.952	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	79	382	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	966	0	0	657	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	907	0	0	31	228	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	1873	0	0	767	611	0	0	0
	Entry flow Lane 1, pcu/h	966	0	0	406	611	0	0	0
	Entry flow Lane 2, pcu/h	907	0	0	361	0	0	0	0
	Conflicting flow, pcu/h	916	0	0	611	0	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	541	567	NA	NA	1076	NA	NA	NA
Entry Flow Rates, veh/h	920	864	NA	NA	582	NA	NA	NA
V/C ratio	**1.70**	**1.53**			**0.54**	#VALUE!		
Control Delay, s/veh	**341.6**	**264.9**			**9.9**	#VALUE!		
LOS	F	F			A	#VALUE!		
95th % Queue (ft)	**1410**	**1168**			**88**	#VALUE!		
Approach Delay, LOS	304.4 sec, LOS F				9.9 sec, LOS A			
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	681	702	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	387	343	NA	NA	NA	NA
V/C ratio			**0.57**	**0.49**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**14.9**	**12.4**			#VALUE!	#VALUE!
LOS			B	B			#VALUE!	#VALUE!
95th % Queue (ft)			**94**	**71**			#VALUE!	#VALUE!
Approach Delay, LOS			13.7 sec, LOS B				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	625	685	NA	NA	1562	NA	NA	NA
Entry Flow Rates, veh/h	920	864	NA	NA	582	NA	NA	NA
V/C ratio	**1.47**	**1.26**			**0.37**	#VALUE!		
Control Delay, s/veh	**239.9**	**149.7**			**5.5**	#VALUE!		
LOS	F	F			A	#VALUE!		
95th % Queue (ft)	**1171**	**851**			**46**	#VALUE!		
Approach Delay, LOS	196.2 sec, LOS F				5.5 sec, LOS A			
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	848	902	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	387	343	NA	NA	NA	NA
V/C ratio			**0.46**	**0.38**			#VALUE!	#VALUE!
Control Delay, sec/pcu			**10.0**	**8.3**			#VALUE!	#VALUE!
LOS			B	A			#VALUE!	#VALUE!
95th % Queue (ft)			**63**	**47**			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	446	390	306	407	200	774	153	1531	283	362	1260	207
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1900	1900	1845	1893	1881	1881	1881	1881	1900	1881	1900
Lanes	2	1	1	2	1	2	1	3	1	2	3	1
Capacity, veh/h	857	507	431	590	505	776	252	1626	506	495	1537	511
Arriving On Green	0.08	0.27	0.27	0.08	0.27	0.27	0.07	0.32	0.00	0.07	0.32	0.32
Sat Flow, veh/h	3475.7	1615.0	1615.0	3408.2	2910.2	2910.2	1791.6	1599.0	1599.0	3510.5	1615.0	1615.0
Grp Volume(v), veh/h	518.6	453.5	343.8	496.3	259.7	943.9	184.3	1594.8	0.0	402.2	1431.8	217.9
Grp Sat Flow(s),veh/h/ln	1737.9	1900.0	1615.0	1704.1	1892.5	1455.1	1791.6	1711.9	1599.0	1755.2	1618.1	1615.0
Q Serve(g_s), s	5.0	13.8	11.9	5.0	7.0	16.0	4.0	18.5	0.0	4.0	17.2	6.4
Cycle Q Clear(g_c), s	5.0	13.8	11.9	5.0	7.0	16.0	4.0	18.5	0.0	4.0	17.2	6.4
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	857.4	506.7	430.7	590.0	504.7	776.1	252.0	1626.3	506.4	495.0	1537.2	511.4
V/C Ratio(X)	0.605	0.895	0.798	0.841	0.515	1.216	0.732	0.981	0.000	0.813	0.931	0.426
Avail Cap(c_a), veh/h	857.4	506.7	430.7	590.0	504.7	776.1	252.0	1626.3	506.4	495.0	1537.2	511.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	17.2	21.2	20.5	19.3	18.7	22.0	16.3	20.3	0.0	17.7	19.9	16.2
Incr Delay (d2), s/veh	1.2	18.3	10.2	10.6	0.9	109.0	10.4	17.8	0.0	10.0	10.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	18.4	39.4	30.7	29.9	19.6	131.0	26.7	38.2	0.0	27.7	30.4	16.8
Lane Group LOS	B	D	C	C	B	F	C	D		C	C	B
Approach Volume, veh/h		1316			1700			1779			2052	
Approach Delay, s/veh		28.8			84.4			37.0			28.5	
Approach LOS		C			F			D			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	9.00	20.00		9.00	20.00		8.00	23.00		8.00	23.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	5.00	16.00		5.00	16.00		4.00	19.00		4.00	19.00	
Max Q Clear Time (g_c+I1), s	7.00	15.79		7.00	18.00		6.00	20.47		6.00	19.15	
Green Extension Time (p_c)	0.00	0.18		0.00	0.00		0.00	0.00		0.00	0.00	
Intersection Summary												
HCM 2010 Control Delay			44.6									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	498	875	218	396	754	324	334	1998	703	589	1439	179
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1881	1900	1900	1881	1900	1900	1900	1900	1881	1900	1881
Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Capacity, veh/h	442	953	431	344	864	390	531	2042	673	554	2392	737
Arriving On Green	0.08	0.27	0.00	0.06	0.24	0.24	0.08	0.42	0.42	0.13	0.46	0.00
Sat Flow, veh/h	3510.5	1615.0	1615.0	3510.5	1615.0	1615.0	3510.5	1615.0	1615.0	3475.7	1599.0	1599.0
Grp Volume(v), veh/h	513.4	951.1	0.0	425.8	802.1	330.6	367.0	2244.9	889.9	684.9	1635.2	0.0
Grp Sat Flow(s),veh/h/ln	1755.2	1787.1	1615.0	1755.2	1787.1	1615.0	1755.2	1634.0	1615.0	1737.9	1729.0	1599.0
Q Serve(g_s), s	10.0	31.9	0.0	7.0	26.3	23.4	7.0	50.0	50.0	15.0	29.8	0.0
Cycle Q Clear(g_c), s	10.0	31.9	0.0	7.0	26.3	23.4	7.0	50.0	50.0	15.0	29.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	442.3	953.1	430.7	344.2	863.8	390.3	531.5	2042.5	672.9	554.5	2392.2	737.5
V/C Ratio(X)	1.161	0.998	0.000	1.237	0.929	0.847	0.691	1.099	1.322	1.235	0.684	0.000
Avail Cap(c_a), veh/h	442.3	953.1	430.7	344.2	863.8	390.3	658.6	2042.5	672.9	554.5	2392.2	737.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	34.8	44.0	0.0	40.6	44.5	43.4	22.9	35.0	35.0	40.6	25.4	0.0
Incr Delay (d2), s/veh	94.8	28.6	0.0	129.3	16.1	15.8	2.3	52.8	155.3	120.8	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	129.6	72.6	0.0	169.9	60.5	59.2	25.1	87.8	190.3	161.3	26.3	0.0
Lane Group LOS	F	E		F	E	E	C	F	F	F	C	
Approach Volume, veh/h		1464			1559			3502			2320	
Approach Delay, s/veh		92.5			90.1			107.3			66.1	
Approach LOS		F			F			F			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	14.00	36.00		11.00	33.00		13.66	54.00		19.00	59.34	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	10.00	32.00		7.00	29.00		14.00	50.00		15.00	51.00	
Max Q Clear Time (g_c+I1), s	12.00	33.91		9.00	28.33		9.05	52.00		17.00	31.77	
Green Extension Time (p_c)	0.00	0.00		0.00	0.61		0.61	0.00		0.00	19.01	
Intersection Summary												
HCM 2010 Control Delay			91.0									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	32	19	46	7	158	7	828	141	380	858	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1900	1881	1900	1900	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	17	53	36	198	51	218	23	825	708	397	1226	1042
Arriving On Green	0.06	0.06	0.06	0.14	0.14	0.14	0.01	0.44	0.44	0.29	0.86	0.86
Sat Flow, veh/h	291.5	885.6	602.0	1452.3	375.0	1599.0	1809.5	1615.0	1615.0	1809.5	1615.0	1615.0
Grp Volume(v), veh/h	81.4	0.0	0.0	103.4	0.0	190.4	14.0	880.9	183.1	463.4	1009.4	21.4
Grp Sat Flow(s),veh/h/ln	1779.2	0.0	0.0	1827.4	0.0	1599.0	1809.5	1881.2	1615.0	1809.5	1900.0	1615.0
Q Serve(g_s), s	4.9	0.0	0.0	5.7	0.0	12.8	0.8	48.0	7.9	24.0	28.1	0.2
Cycle Q Clear(g_c), s	4.9	0.0	0.0	5.7	0.0	12.8	0.8	48.0	7.9	24.0	28.1	0.2
Proportion In Lane	0.164		0.338	0.795		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	106.1	0.0	0.0	249.2	0.0	218.1	22.9	825.0	708.2	396.8	1225.7	1041.9
V/C Ratio(X)	0.767	0.000	0.000	0.415	0.000	0.873	0.611	1.068	0.259	1.168	0.824	0.021
Avail Cap(c_a), veh/h	260.1	0.0	0.0	267.1	0.0	233.7	66.1	825.0	708.2	396.8	1225.7	1041.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	0.927	0.927	0.927
Uniform Delay (d), s/veh	50.7	0.0	0.0	43.3	0.0	46.3	53.8	30.7	19.5	38.8	4.8	2.8
Incr Delay (d2), s/veh	10.9	0.0	0.0	1.1	0.0	27.2	23.5	51.0	0.2	98.1	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	61.6	0.0	0.0	44.4	0.0	73.6	77.2	81.8	19.7	136.9	9.1	2.8
Lane Group LOS	E			D		E	E	F	B	F	A	A
Approach Volume, veh/h		81			294			1078			1494	
Approach Delay, s/veh		61.6			63.3			71.2			48.6	
Approach LOS		E			E			E			D	
Timer												
Assigned Phase		4			8		5	2		1	6	
Phase Duration (G+Y+Rc), s		10.53			18.93		5.39	52.00		28.00	74.61	
Change Period (Y+Rc), s		4.00			4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s		16.00			16.00		4.00	48.00		24.00	68.00	
Max Q Clear Time (g_c+I1), s		6.93			14.77		2.84	50.00		26.00	30.14	
Green Extension Time (p_c)		0.20			0.16		0.00	0.00		0.00	23.66	
Intersection Summary												
HCM 2010 Control Delay			58.7									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	707	313	84	139	97	131	201	344	87	96	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1881	1900	1900	1881	1881	1900	1900	1900	1900	1900
Lanes	1	2	1	1	1	1	1	1	1	1	1	0
Capacity, veh/h	781	1970	873	459	1067	898	300	322	274	255	204	71
Arriving On Green	0.03	0.55	0.00	0.04	0.56	0.00	0.03	0.06	0.00	0.06	0.15	0.15
Sat Flow, veh/h	1809.5	1599.0	1599.0	1809.5	1599.0	1599.0	1791.6	1615.0	1615.0	1809.5	1346.1	470.8
Grp Volume(v), veh/h	39.7	768.5	0.0	103.7	158.0	0.0	137.9	231.0	0.0	103.6	0.0	177.5
Grp Sat Flow(s),veh/h/ln	1809.5	1805.0	1599.0	1809.5	1900.0	1599.0	1791.6	1900.0	1615.0	1809.5	0.0	1816.9
Q Serve(g_s), s	0.9	11.2	0.0	2.2	3.6	0.0	5.7	10.9	0.0	4.3	0.0	8.3
Cycle Q Clear(g_c), s	0.9	11.2	0.0	2.2	3.6	0.0	5.7	10.9	0.0	4.3	0.0	8.3
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		0.259
Lane Grp Cap(c), veh/h	781.0	1969.9	872.5	459.2	1067.1	898.0	299.9	322.0	273.7	254.8	0.0	275.8
V/C Ratio(X)	0.051	0.390	0.000	0.226	0.148	0.000	0.460	0.717	0.000	0.406	0.000	0.644
Avail Cap(c_a), veh/h	810.3	1969.9	872.5	599.1	1067.1	898.0	329.7	857.8	729.2	297.0	0.0	800.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	0.090	0.090	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	8.5	11.9	0.0	8.5	9.5	0.0	29.8	40.7	0.0	30.1	0.0	36.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.1	0.0	0.1	0.3	0.0	1.0	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.5	12.0	0.0	8.8	9.6	0.0	29.9	41.0	0.0	31.1	0.0	38.7
Lane Group LOS	A	B		A	A		C	D		C		D
Approach Volume, veh/h		808			262			369			281	
Approach Delay, s/veh		11.9			9.3			36.9			35.9	
Approach LOS		B			A			D			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	6.53	53.55		7.98	55.00		11.49	19.39		9.89	17.79	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	4.00	44.00		11.00	51.00		9.00	41.00		8.00	40.00	
Max Q Clear Time (g_c+I1), s	2.87	13.16		4.18	5.61		7.69	12.86		6.32	10.34	
Green Extension Time (p_c)	0.00	7.29		0.11	7.77		0.04	2.53		0.03	2.55	
Intersection Summary												
HCM 2010 Control Delay			20.8									
HCM 2010 Level of Service			C									

Intersection						
Intersection Delay (sec/veh):	3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	54	988	206	116	89	14
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.73	0.91	0.96	0.85	0.76	0.67
Heavy Vehicles(%)	0	0	1	2	2	12
Movement Flow Rate	74	1086	215	136	117	21
Number of Lanes	0	2	2	0	1	0

Major/Minor		Major 1	Major 2			
Conflicting Flow Rate - All	351	0	0	0	974	176
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	691	-
Follow-up Headway	2.2	-	-	-	3.52	3.42
Pot Capacity-1 Maneuver	1312	-	-	-	281	978
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	459	-
Time blocked-Platoon(%)	6	-	-	-	6	6
Mov Capacity-1 Maneuver	1312	-	-	-	241	978
Mov Capacity-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	394	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.5	0	31.1
HCM LOS	A	A	D

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					272
HCM Control Delay (s)	7.908	-	-	-	31.1
HCM Lane VC Ratio	0.056	-	-	-	0.507
HCM Lane LOS	A	-	-	-	D
HCM 95th Percentile Queue (veh)	0.179	-	-	-	2.665

Intersection						
Intersection Delay (sec/veh):	9.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	412	28	37	405	84	294
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.69	0.79	0.83	0.63	0.78
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	458	41	47	488	133	377
Number of Lanes	2	0	0	2	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	499	0	817	250
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	338	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1075	-	*475	756
Stage 1	-	-	-	-	*595	-
Stage 2	-	-	-	-	*1273	-
Time blocked-Platoon(%)	-	-	0	-	15	0
Mov Capacity-1 Maneuver	-	-	1075	-	*447	756
Mov Capacity-2 Maneuver	-	-	-	-	*447	-
Stage 1	-	-	-	-	*595	-
Stage 2	-	-	-	-	*1197	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.7	29
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	*640				
HCM Control Delay (s)	29	-	-	8.501	-
HCM Lane VC Ratio	0.797	-	-	0.044	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	7.925	-	-	0.137	-

Attachment 6

Intersection Worksheets – Fort Gordon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	363	145	370	331	71	24	256	69	248	826	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	48	663	305	468	1008	391	129	400	340	292	1097	449
Arriving On Green	0.03	0.19	0.00	0.13	0.29	0.00	0.21	0.21	0.00	0.29	0.29	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	612.3	1900.0	1615.0	1012.1	3797.8	1552.9
Grp Volume(v), veh/h	40.0	453.8	0.0	430.2	429.9	0.0	48.0	365.7	0.0	275.6	928.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	612.3	1900.0	1615.0	1012.1	1898.9	1552.9
Q Serve(g_s), s	2.2	10.8	0.0	10.9	9.1	0.0	6.0	16.9	0.0	23.9	20.7	0.0
Cycle Q Clear(g_c), s	2.2	10.8	0.0	10.9	9.1	0.0	6.0	16.9	0.0	23.9	20.7	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	48.3	662.6	305.3	468.5	1007.8	391.2	129.0	400.2	340.2	292.4	1097.2	448.6
V/C Ratio(X)	0.827	0.685	0.000	0.918	0.427	0.000	0.372	0.914	0.000	0.942	0.846	0.000
Avail Cap(c_a), veh/h	109.8	662.6	305.3	468.5	1007.8	391.2	129.4	401.5	341.3	292.6	1098.1	449.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	43.4	34.0	0.0	38.5	25.7	0.0	30.4	34.7	0.0	31.2	30.1	0.0
Incr Delay (d2), s/veh	28.3	2.9	0.0	23.1	0.3	0.0	1.8	25.0	0.0	37.4	6.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	71.7	36.9	0.0	61.6	26.0	0.0	32.2	59.7	0.0	68.7	36.3	0.0
Lane Group LOS	E	D		E	C		C	E		E	D	
Approach Volume, veh/h		494			860			414			1204	
Approach Delay, s/veh		39.7			43.8			56.5			43.7	
Approach LOS		D			D			E			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	6.64	21.00		16.00	30.36			22.94			29.98	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	6.00	17.00		12.00	23.00			19.00			26.00	
Max Q Clear Time (g_c+l1), s	4.18	12.84		12.88	11.08			18.92			25.92	
Green Extension Time (p_c)	0.01	2.14		0.00	4.62			0.02			0.06	
Intersection Summary												
HCM 2010 Control Delay			44.9									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	94	588	91	486	458	154	28	243	217	176	951	325
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	235	923	425	659	1086	495	49	793	619	219	1162	515
Arriving On Green	0.07	0.26	0.00	0.13	0.32	0.32	0.03	0.22	0.00	0.13	0.32	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	144.6	744.3	0.0	571.8	508.9	171.1	40.0	342.3	0.0	195.6	1068.5	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	2.5	12.3	0.0	6.8	7.5	5.3	1.4	5.1	0.0	7.0	17.6	0.0
Cycle Q Clear(g_c), s	2.5	12.3	0.0	6.8	7.5	5.3	1.4	5.1	0.0	7.0	17.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	235.0	923.0	425.3	659.4	1086.2	495.1	48.9	793.4	618.5	218.5	1162.3	514.8
V/C Ratio(X)	0.615	0.806	0.000	0.867	0.469	0.346	0.818	0.431	0.000	0.895	0.919	0.000
Avail Cap(c_a), veh/h	336.8	962.4	443.5	659.4	1086.2	495.1	116.9	932.9	727.3	218.5	1166.2	516.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	28.1	21.3	0.0	26.4	16.6	15.9	30.0	20.8	0.0	26.5	20.2	0.0
Incr Delay (d2), s/veh	2.6	5.0	0.0	11.8	0.3	0.4	26.9	0.4	0.0	34.1	11.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	30.7	26.3	0.0	38.2	17.0	16.3	56.9	21.2	0.0	60.6	31.8	0.0
Lane Group LOS	C	C		D	B	B	E	C		E	C	
Approach Volume, veh/h		889			1252			382			1264	
Approach Delay, s/veh		27.0			26.6			24.9			36.3	
Approach LOS		C			C			C			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	8.19	20.30		12.00	24.12		5.67	17.61		12.00	23.93	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	6.00	17.00		8.00	19.00		4.00	16.00		8.00	20.00	
Max Q Clear Time (g_c+l1), s	4.51	14.30		8.80	9.51		3.36	7.06		9.05	19.65	
Green Extension Time (p_c)	0.06	2.01		0.00	5.86		0.00	5.87		0.00	0.29	
Intersection Summary												
HCM 2010 Control Delay			29.7									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	99	49	47	138	62	33	165	57	251	384	191
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1840	1840	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	113	242	121	181	291	160	78	278	86	331	651	559
Arriving On Green	0.06	0.23	0.23	0.10	0.26	0.26	0.04	0.20	0.20	0.19	0.35	0.35
Sat Flow, veh/h	1739.9	1072.6	538.7	1809.5	1117.0	614.2	1809.5	1385.1	430.0	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	88.1	0.0	215.5	79.7	0.0	260.8	55.9	0.0	304.5	291.9	451.8	248.1
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1611.3	1809.5	0.0	1731.1	1809.5	0.0	1815.2	1756.8	1881.2	1615.0
Q Serve(g_s), s	4.2	0.0	10.1	3.5	0.0	11.0	2.6	0.0	13.6	13.6	17.4	10.0
Cycle Q Clear(g_c), s	4.2	0.0	10.1	3.5	0.0	11.0	2.6	0.0	13.6	13.6	17.4	10.0
Proportion In Lane	1.000		0.334	1.000		0.355	1.000		0.237	1.000		1.000
Lane Grp Cap(c), veh/h	112.8	0.0	363.3	181.5	0.0	451.7	78.4	0.0	364.4	331.5	651.2	559.0
V/C Ratio(X)	0.781	0.000	0.593	0.439	0.000	0.577	0.714	0.000	0.836	0.880	0.694	0.444
Avail Cap(c_a), veh/h	206.5	0.0	363.3	214.7	0.0	451.7	107.4	0.0	387.7	396.1	714.3	613.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	38.8	0.0	29.2	35.7	0.0	27.1	39.8	0.0	32.3	33.3	23.7	21.3
Incr Delay (d2), s/veh	11.1	0.0	7.0	1.7	0.0	5.3	12.9	0.0	14.0	17.7	2.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	49.9	0.0	36.1	37.3	0.0	32.4	52.7	0.0	46.4	50.9	26.3	21.8
Lane Group LOS	D		D	D		C	D		D	D	C	C
Approach Volume, veh/h		304			340			360			992	
Approach Delay, s/veh		40.1			33.6			47.4			32.4	
Approach LOS		D			C			D			C	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	11.46	25.00		14.45	27.99		9.65	22.92		21.90	35.17	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	19.00		10.00	19.00		5.00	18.00		19.00	32.00	
Max Q Clear Time (g_c+I1), s	6.20	12.08		5.49	13.05		4.57	15.58		15.62	19.41	
Green Extension Time (p_c)	0.06	2.59		0.05	2.30		0.00	1.34		0.30	4.65	
Intersection Summary												
HCM 2010 Control Delay			36.5									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	266	76	235	568	154	120	113	110	59	44	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1870	1870	1870	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	101	660	209	519	1506	422	441	523	436	421	222	205
Arriving On Green	0.29	0.29	0.29	0.13	0.53	0.53	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	226.8	2018.3	727.4	1791.6	2857.1	801.5	1299.1	1809.5	1509.3	1256.8	767.9	708.4
Grp Volume(v), veh/h	217.9	0.0	216.3	276.5	434.0	402.2	136.4	128.4	154.9	84.3	0.0	91.9
Grp Sat Flow(s),veh/h/ln	1548.4	0.0	1573.0	1791.6	1900.0	1758.6	1299.1	1809.5	1509.3	1256.8	0.0	1476.3
Q Serve(g_s), s	0.0	0.0	6.5	5.7	8.0	8.0	5.1	3.1	4.6	3.1	0.0	2.7
Cycle Q Clear(g_c), s	5.4	0.0	6.5	5.7	8.0	8.0	7.8	3.1	4.6	6.2	0.0	2.7
Proportion In Lane	0.146		0.462	1.000		0.456	1.000		1.000	1.000		0.480
Lane Grp Cap(c), veh/h	518.3	0.0	453.0	519.0	1001.2	926.7	440.6	523.1	436.3	421.5	0.0	426.8
V/C Ratio(X)	0.421	0.000	0.477	0.533	0.433	0.434	0.310	0.245	0.355	0.200	0.000	0.215
Avail Cap(c_a), veh/h	597.8	0.0	560.9	530.3	1098.5	1016.7	440.6	523.1	436.3	421.5	0.0	426.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	16.4	0.0	16.8	11.0	8.3	8.3	18.3	15.5	16.1	17.9	0.0	15.4
Incr Delay (d2), s/veh	1.2	0.0	1.7	3.1	0.6	0.7	1.8	1.1	2.3	1.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	17.5	0.0	18.4	14.1	8.9	9.0	20.1	16.6	18.3	19.0	0.0	16.5
Lane Group LOS	B		B	B	A	A	C	B	B	B		B
Approach Volume, veh/h		434			1113			420			176	
Approach Delay, s/veh		18.0			10.2			18.4			17.7	
Approach LOS		B			B			B			B	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		22.30		13.64	35.94			21.00			21.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		20.00		8.00	33.00			16.50			16.50	
Max Q Clear Time (g_c+I1), s		8.48		7.66	10.01			9.76			8.23	
Green Extension Time (p_c)		8.69		0.08	14.91			2.30			2.67	
Intersection Summary												
HCM 2010 Control Delay			14.0									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	535	92	191	193	4	1	0	6	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	608	116	262	261	12	4	0	8	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	273	0	0	724	0	0	1461	~	666	1461	1515	137
Stage 1	-	-	-	-	-	-	666	-	-	791	791	-
Stage 2	-	-	-	-	-	-	795	-	-	670	724	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1302	-	-	852	-	-	108	0	463	108	121	917
Stage 1	-	-	-	-	-	-	452	0	-	386	404	-
Stage 2	-	-	-	-	-	-	384	0	-	450	433	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1302	-	-	852	-	-	74	-	463	76	77	917
Mov Capacity-2 Maneuver	-	-	-	-	-	-	74	-	-	76	77	-
Stage 1	-	-	-	-	-	-	452	-	-	386	257	-
Stage 2	-	-	-	-	-	-	240	-	-	442	433	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	5.4	27.4	31.9
HCM LOS	A	A	D	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	74	463							142
HCM Control Delay (s)	56.4	12.9	0	-	-	11.087	-	-	31.9
HCM Lane VC Ratio	0.054	0.017	-	-	-	0.307	-	-	0.056
HCM Lane LOS	F	B	A	-	-	B	-	-	D
HCM 95th Percentile Queue (veh)	0.168	0.053	0	-	-	1.306	-	-	0.177

Intersection	
Intersection Delay (sec/veh):	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	0	33	0	2	6	1	253	1	13	810	278
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	16	0	56	0	2	7	4	342	1	14	1000	309
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1538	1534	655	879	1688	343	1309	0	0	343	0	0
Stage 1	1183	1183	-	351	351	-	-	-	-	-	-	-
Stage 2	355	351	-	528	1337	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	80	115	386	242	93	653	535	-	-	1213	-	-
Stage 1	204	261	-	639	631	-	-	-	-	-	-	-
Stage 2	641	631	-	502	220	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	74	108	386	198	88	653	535	-	-	1213	-	-
Mov Capacity-2 Maneuver	74	108	-	198	88	-	-	-	-	-	-	-
Stage 1	202	248	-	633	625	-	-	-	-	-	-	-
Stage 2	627	625	-	409	209	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	33	19.9	0.1	0.1
HCM LOS	D	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				199	251			
HCM Control Delay (s)	11.78	0	-	33	19.9	8.003	-	-
HCM Lane VC Ratio	0.007	-	-	0.361	0.035	0.012	-	-
HCM Lane LOS	B	A	-	D	C	A	-	-
HCM 95th Percentile Queue (veh)	0.023	-	-	1.548	0.107	0.035	-	-

Intersection	
Intersection Delay (sec/veh):	180.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	65	109	390	34	9	7	30	141	23	289	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	100	151	443	48	12	12	36	188	52	304	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	60	0	0	251	0	0	1272	1122	126	1228	1191	30
Stage 1	-	-	-	-	-	-	176	176	-	940	940	-
Stage 2	-	-	-	-	-	-	1096	946	-	288	251	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1559	-	-	1314	-	-	145	207	924	138	# 186	1059
Stage 1	-	-	-	-	-	-	831	758	-	286	341	-
Stage 2	-	-	-	-	-	-	260	342	-	671	699	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1559	-	-	1314	-	-	-	137	924	65	# 123	1059
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	137	-	65	# 123	-
Stage 1	-	-	-	-	-	-	831	758	-	286	# 226	-
Stage 2	-	-	-	-	-	-	-	227	-	509	699	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	8	-	$ 660.1
HCM LOS	A	A	-	F

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	480							65	126
HCM Control Delay (s)	-	18.9	0	-	-	9.128	0	-	164.6	$ 18.9
HCM Lane VC Ratio	-	0.467	-	-	-	0.337	-	-	0.804	2.477
HCM Lane LOS	-	C	A	-	-	A	A	-	F	F
HCM 95th Percentile Queue (veh)	-	2.442	0	-	-	1.506	-	-	3.703	27.517

Intersection	
Intersection Delay (sec/veh):	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	14	368	39	56	236	8	32	53	71	7	14	6
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	20	413	48	64	315	12	40	76	129	8	24	20
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	327	0	0	461	0	0	775	932	231	734	950	164
Stage 1	-	-	-	-	-	-	477	477	-	449	449	-
Stage 2	-	-	-	-	-	-	298	455	-	285	501	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1244	-	-	1347	-	-	426	355	*1294	*486	314	720
Stage 1	-	-	-	-	-	-	774	718	-	*564	525	-
Stage 2	-	-	-	-	-	-	659	567	-	*1294	661	-
Time blocked-Platoon(%)	0	-	-	14	-	-	14	14	14	14	14	0
Mov Capacity-1 Maneuver	1244	-	-	1347	-	-	365	327	*1294	*339	289	720
Mov Capacity-2 Maneuver	-	-	-	-	-	-	365	327	-	*339	289	-
Stage 1	-	-	-	-	-	-	757	702	-	*552	495	-
Stage 2	-	-	-	-	-	-	574	534	-	*1016	647	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1.4	16.5	15.4
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*555							*339	*393
HCM Control Delay (s)	16.5	7.941	0.1	-	7.805	0.2	-	15.8	15.4
HCM Lane VC Ratio	0.441	0.016	-	-	0.047	-	-	0.016	0.119
HCM Lane LOS	C	A	A	-	A	A	-	C	C
HCM 95th Percentile Queue (veh)	2.238	0.049	-	-	0.149	-	-	0.048	0.402

Intersection	
Intersection Delay (sec/veh):	18.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	407	30	374	918	36	399
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	496	36	430	1009	60	547
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	532	0	1879	266
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	1365	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1046	-	64	735
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	206	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1046	-	# 38	735
Mov Capacity-2 Maneuver	-	-	-	-	# 38	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	121	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3.2	71.9
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	38	735				
HCM Control Delay (s)	$ 520.3	22.7	-	-	10.822	-
HCM Lane VC Ratio	1.579	0.744	-	-	0.411	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th Percentile Queue (veh)	6.314	6.761	-	-	2.039	-

Intersection	
Intersection Delay (sec/veh):	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	8	12	51	12	64	10	200	95	111	375	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	16	20	68	24	108	16	290	112	161	426	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1194	1184	215	1146	1130	201	430	0	0	402	0	0
Stage 1	750	750	-	378	378	-	-	-	-	-	-	-
Stage 2	444	434	-	768	752	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	165	191	770	175	205	845	1088	-	-	1151	-	-
Stage 1	407	422	-	640	619	-	-	-	-	-	-	-
Stage 2	597	585	-	391	421	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	114	162	770	139	174	845	1088	-	-	1151	-	-
Mov Capacity-2 Maneuver	114	162	-	139	174	-	-	-	-	-	-	-
Stage 1	401	363	-	631	610	-	-	-	-	-	-	-
Stage 2	493	576	-	313	362	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	19.2	51.1	0.3	2.4
HCM LOS	C	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				289	265			
HCM Control Delay (s)	8.358	0	-	19.2	51.1	8.635	0	-
HCM Lane VC Ratio	0.015	-	-	0.125	0.757	0.14	-	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th Percentile Queue (veh)	0.044	-	-	0.421	5.53	0.486	-	-

Intersection	
Intersection Delay (sec/veh)	17.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	34	114	65	41	109	11	88	184	28	15	63	36
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	48	156	76	68	156	28	104	263	48	24	93	56
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.2	15.6	21.9	13.1
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	16%	25%	13%
Volume Thru (%)	61%	54%	68%	55%
Volume Right (%)	9%	31%	7%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	300	213	161	114
Left Turning Volume	184	114	109	63
Through Volume	28	65	11	36
Right Turning Volume	88	34	41	15
Lane Flow Rate	415	280	252	173
Geometry Group	1	1	1	1
Degree of Utilization, X	0.697	0.488	0.469	0.324
Departure Headway, Hd	6.048	6.286	6.688	6.758
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	597	570	537	530
Service Time	4.097	4.344	4.746	4.823
HCM Lane V/C Ratio	0.695	0.491	0.469	0.326
HCM Control Delay	21.9	15.2	15.6	13.1
HCM Lane LOS	C	C	C	B
HCM 95th Percentile Queue	6.9	2.9	2.6	1.4

Intersection	
Intersection Delay (sec/veh)	38.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	7	3	5	31	0	6	19	200	16	13	589	22
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	12	12	12	124	0	24	32	270	64	52	662	40
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.8	12.7	15.2	55.7
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	93%	0%	38%	0%	0%	0%	96%
Volume Right (%)	0%	7%	0%	62%	0%	100%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	19	216	7	8	31	6	13	611
Left Turning Volume	0	200	0	3	0	0	0	589
Through Volume	0	16	0	5	0	6	0	22
Right Turning Volume	19	0	7	0	31	0	13	0
Lane Flow Rate	32	334	12	24	124	24	52	702
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.058	0.549	0.03	0.047	0.268	0.043	0.099	1
Departure Headway, Hd	6.473	5.914	9.066	7.108	7.779	6.499	6.869	5.702
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	551	605	396	502	464	550	525	639
Service Time	4.238	3.687	6.783	4.883	5.491	4.245	4.569	3.402
HCM Lane V/C Ratio	0.058	0.552	0.03	0.048	0.267	0.044	0.099	1.099
HCM Control Delay	9.6	15.7	12.1	10.2	13.3	9.5	10.3	59.1
HCM Lane LOS	A	C	B	B	B	A	B	F
HCM 95th Percentile Queue	0.2	3.6	0.1	0.1	1.1	0.1	0.3	119.2

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	306	0	1	612	12	1	0	1	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	348	0	1	827	36	4	0	1	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	863	0	0	348	0	0	1213	~	348	1204	1203	432
Stage 1	-	-	-	-	-	-	356	-	-	847	847	-
Stage 2	-	-	-	-	-	-	857	-	-	357	356	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	788	-	-	1178	-	-	160	0	700	162	186	628
Stage 1	-	-	-	-	-	-	666	0	-	359	381	-
Stage 2	-	-	-	-	-	-	355	0	-	665	633	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	788	-	-	1178	-	-	154	-	700	161	185	628
Mov Capacity-2 Maneuver	-	-	-	-	-	-	154	-	-	161	185	-
Stage 1	-	-	-	-	-	-	662	-	-	357	380	-
Stage 2	-	-	-	-	-	-	343	-	-	660	629	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	24.3	25.7
HCM LOS	A	A	C	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	154	700							225
HCM Control Delay (s)	29	10.2	9.592	0	-	8.06	-	-	25.7
HCM Lane VC Ratio	0.026	0.002	0.005	-	-	0.001	-	-	0.231
HCM Lane LOS	D	B	A	A	-	A	-	-	D
HCM 95th Percentile Queue (veh)	0.08	0.006	0.015	-	-	0.003	-	-	0.867

Intersection	
Intersection Delay (sec/veh)$ 3659.7	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	268	0	0	3	0	24	0	1460	5	0	145	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	536	0	0	3	0	26	0	1973	5	0	179	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	2174	2163	96	2066	2167	1976	191	0	0	-	0	0
Stage 1	185	185	-	1976	1976	-	-	-	-	-	-	-
Stage 2	1989	1978	-	90	191	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	0	-	-
Pot Capacity-1 Maneuver	# 27	47	910	31	46	52	1395	-	-	0	-	-
Stage 1	805	746	-	64	106	-	-	-	-	0	-	-
Stage 2	# 64	106	-	907	741	-	-	-	-	0	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 13	47	910	31	46	52	1395	-	-	-	-	-
Mov Capacity-2 Maneuver	# 13	47	-	31	46	-	-	-	-	-	-	-
Stage 1	805	746	-	64	106	-	-	-	-	-	-	-
Stage 2	# 32	106	-	907	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 18665.3	160.7	0	0
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (vph)				13	48		
HCM Control Delay (s)	0	-	-	$ 160.7	160.7	-	-
HCM Lane VC Ratio	-	-	-	41.231	0.611	-	-
HCM Lane LOS	A	-	-	F	F	-	-
HCM 95th Percentile Queue (veh)	0	-	-	68.317	2.351	-	-

Intersection	
Intersection Delay (sec/veh):	41

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	83	32	6	36	180	370	27	37	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	94	45	8	62	217	493	61	39	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	53	0	0	160	0	0	550	534	80	885	541	-
Stage 1	-	-	-	-	-	-	293	293	-	237	237	-
Stage 2	-	-	-	-	-	-	257	241	-	648	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	450	456	980	241	449	0
Stage 1	-	-	-	-	-	-	719	674	-	719	710	0
Stage 2	-	-	-	-	-	-	755	711	-	421	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	382	406	980	64	400	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	382	406	-	64	400	-
Stage 1	-	-	-	-	-	-	686	643	-	686	663	-
Stage 2	-	-	-	-	-	-	663	664	-	132	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	4.9	64.9	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	382	684							64	-
HCM Control Delay (s)	16.2	69.2	7.406	0	-	7.718	0	-	208	-
HCM Lane VC Ratio	0.162	1.038	0.046	-	-	0.066	-	-	0.959	-
HCM Lane LOS	C	F	A	A	-	A	A	-	F	-
HCM 95th Percentile Queue (veh)	0.574	18.039	0.144	-	-	0.213	-	-	4.635	-

Intersection	
Intersection Delay (sec/veh):	12.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	530	36	80	259	1	41	30	114	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	596	44	91	345	1	51	43	207	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	346	0	0	640	0	0	1049	1148	320	850	1170	174
Stage 1	-	-	-	-	-	-	620	620	-	528	528	-
Stage 2	-	-	-	-	-	-	429	528	-	322	642	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1224	-	-	1255	-	-	311	295	*1201	*496	256	708
Stage 1	-	-	-	-	-	-	767	698	-	*507	481	-
Stage 2	-	-	-	-	-	-	548	526	-	*1201	646	-
Time blocked-Platoon(%)	0	-	-	20	-	-	20	20	20	20	20	0
Mov Capacity-1 Maneuver	1224	-	-	1255	-	-	136	268	*1201	*336	233	708
Mov Capacity-2 Maneuver	-	-	-	-	-	-	136	268	-	*336	233	-
Stage 1	-	-	-	-	-	-	766	697	-	*506	438	-
Stage 2	-	-	-	-	-	-	314	479	-	*932	645	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	1.8	31.6	42.9
HCM LOS	A	A	D	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*425							*336	*269
HCM Control Delay (s)	31.6	7.945	0	-	8.092	0.2	-	16.4	45.5
HCM Lane VC Ratio	0.709	0.001	-	-	0.072	-	-	0.056	0.71
HCM Lane LOS	D	A	A	-	A	A	-	C	E
HCM 95th Percentile Queue (veh)	5.416	0.004	-	-	0.234	-	-	0.178	4.896

Intersection						
Intersection Delay (sec/veh): $ 345.7						

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1359	89	377	501	14	757
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1657	107	433	551	23	1037
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1764	0	2853	883
Stage 1	-	-	-	-	1711	-
Stage 2	-	-	-	-	1142	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	# 359	-	# 14	# 291
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	271	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	# 359	-	# 14	# 291
Mov Capacity-2 Maneuver	-	-	-	-	# 14	-
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	271	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	65.6	$ 1181
HCM LOS	A	F	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	14	291				
HCM Control Delay (s)	$ 876.2	$ 1187.9	-	-	148.893	-
HCM Lane VC Ratio	1.667	3.564	-	-	1.207	-
HCM Lane LOS	F	F	-	-	F	-
HCM 95th Percentile Queue (veh)	3.598	97.247	-	-	18.214	-

Intersection	
Intersection Delay (sec/veh):	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	147	6	370	92	36	143	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	249	10	536	108	52	162	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1015	933	84	883	881	322	167	0	0	644	0	0
Stage 1	269	269	-	610	610	-	-	-	-	-	-	-
Stage 2	746	664	-	273	271	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	219	268	915	264	288	724	1364	-	-	936	-	-
Stage 1	741	690	-	478	488	-	-	-	-	-	-	-
Stage 2	409	461	-	729	689	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	128	251	915	246	270	724	1364	-	-	936	-	-
Mov Capacity-2 Maneuver	128	251	-	246	270	-	-	-	-	-	-	-
Stage 1	736	652	-	474	484	-	-	-	-	-	-	-
Stage 2	254	458	-	681	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	23.6	28.6	0.1	2.2
HCM LOS	C	D	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				205	481			
HCM Control Delay (s)	7.658	0	-	23.6	28.6	9.073	0	-
HCM Lane VC Ratio	0.007	-	-	0.057	0.708	0.056	-	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th Percentile Queue (veh)	0.021	-	-	0.18	5.529	0.177	-	-

Intersection	
Intersection Delay (sec/veh):	43.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	86	5	30	0	68	61	19	405	5	36	263	58
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	143	12	56	0	115	92	24	450	16	52	296	68
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1044	948	330	974	974	458	364	0	0	466	0	0
Stage 1	434	434	-	506	506	-	-	-	-	-	-	-
Stage 2	610	514	-	468	468	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	209	263	709	233	254	607	1206	-	-	1106	-	-
Stage 1	604	585	-	552	543	-	-	-	-	-	-	-
Stage 2	485	539	-	579	565	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 102	241	709	193	233	607	1206	-	-	1106	-	-
Mov Capacity-2 Maneuver	# 102	241	-	193	233	-	-	-	-	-	-	-
Stage 1	588	550	-	537	528	-	-	-	-	-	-	-
Stage 2	313	524	-	491	532	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	238.2	34.6	0.4	1.1
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				107	709	321			
HCM Control Delay (s)	8.046	0	-	$ 34.6	10.5	34.6	8.416	0	-
HCM Lane VC Ratio	0.02	-	-	1.451	0.078	0.647	0.047	-	-
HCM Lane LOS	A	A	-	F	B	D	A	A	-
HCM 95th Percentile Queue (veh)	0.061	-	-	11.219	0.254	4.233	0.148	-	-

Intersection	
Intersection Delay (sec/veh):	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	24	98	0	0	194	60	0	1	0	122	2	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	32	136	0	0	334	72	0	4	0	149	4	60
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	406	0	-	136	0	0	602	606	68	572	570	203
Stage 1	-	-	-	-	-	-	200	200	-	370	370	-
Stage 2	-	-	-	-	-	-	402	406	-	202	200	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	1164	-	0	1461	-	-	414	414	1001	431	434	820
Stage 1	-	-	0	-	-	-	806	739	-	650	624	-
Stage 2	-	-	0	-	-	-	629	601	-	800	739	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1164	-	-	1461	-	-	373	403	1001	419	422	820
Mov Capacity-2 Maneuver	-	-	-	-	-	-	373	403	-	419	422	-
Stage 1	-	-	-	-	-	-	784	719	-	632	624	-
Stage 2	-	-	-	-	-	-	579	601	-	774	719	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.6	0	14	15.8
HCM LOS	A	A	B	C

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	403						419	774
HCM Control Delay (s)	14	8.18	0	0	-	-	18.2	10.1
HCM Lane VC Ratio	0.01	0.027	-	-	-	-	0.355	0.082
HCM Lane LOS	B	A	A	A	-	-	C	B
HCM 95th Percentile Queue (veh)	0.03	0.085	-	0	-	-	1.578	0.268

Intersection	
Intersection Delay (sec/veh):	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	29	174	60	13	208	105	18	39	4	39	38	28
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	36	238	80	20	251	148	28	60	8	48	64	36
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	399	0	0	318	0	0	765	789	159	749	755	200
Stage 1	-	-	-	-	-	-	350	350	-	365	365	-
Stage 2	-	-	-	-	-	-	415	439	-	384	390	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	1171	-	-	1253	-	-	309	325	892	331	325	836
Stage 1	-	-	-	-	-	-	648	636	-	658	604	-
Stage 2	-	-	-	-	-	-	597	582	-	643	589	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1171	-	-	1253	-	-	240	310	892	270	310	836
Mov Capacity-2 Maneuver	-	-	-	-	-	-	240	310	-	270	310	-
Stage 1	-	-	-	-	-	-	628	616	-	638	594	-
Stage 2	-	-	-	-	-	-	501	573	-	557	571	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.8	0.4	22.5	23
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	301							346
HCM Control Delay (s)	22.5	8.171	0	-	7.92	0	-	23
HCM Lane VC Ratio	0.319	0.031	-	-	0.016	-	-	0.429
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th Percentile Queue (veh)	1.338	0.095	-	-	0.049	-	-	2.079

Intersection	
Intersection Delay (sec/veh):	5.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	43	158	212	431	224	63
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	Free	Free	None	None	Free	Free
Storage Length	0	0	0			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.72	0.71	0.79	0.93	0.71	0.83
Heavy Vehicles(%)	5	2	0	1	2	6
Movement Flow Rate	60	223	268	463	315	76
Number of Lanes	1	1	1	1	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow Rate - All	1352	196	391	0	0	0
Stage 1	353	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Follow-up Headway	3.545	3.318	2.2	-	-	-
Pot Capacity-1 Maneuver	163	845	1179	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	126	845	1179	-	-	-
Mov Capacity-2 Maneuver	126	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	272	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	20.6	3.3	0
HCM LOS	C	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			126	845		
HCM Control Delay (s)	8.951	-	57	10.8	-	-
HCM Lane VC Ratio	0.228	-	0.474	0.263	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th Percentile Queue (veh)	0.877	-	2.147	1.058	-	-

Intersection	
Intersection Delay (sec/veh):	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	0	0	0	0	1	3	195	0	1	54	18
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	4	0	0	0	0	4	12	241	0	4	72	47
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	4	0	0	0	0	0	70	12	0	131	10	2
Stage 1	-	-	-	-	-	-	8	8	-	2	2	-
Stage 2	-	-	-	-	-	-	62	4	-	129	8	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	-	-	-	927	885	-	846	867	1056
Stage 1	-	-	-	-	-	-	1019	891	-	1026	877	-
Stage 2	-	-	-	-	-	-	954	894	-	880	871	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	-	-	-	828	883	-	-	865	1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	828	883	-	-	865	-
Stage 1	-	-	-	-	-	-	1017	889	-	1024	877	-
Stage 2	-	-	-	-	-	-	836	894	-	640	869	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	7.2	0	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	7.213	0	-	0	-	-	-
HCM Lane VC Ratio	-	0.002	-	-	-	-	-	-
HCM Lane LOS	-	A	A	-	A	-	-	-
HCM 95th Percentile Queue (veh)	-	0.007	-	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	27.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	5	36	20	9	42	151	862	47	77	230	14
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	8	56	28	12	56	216	1064	68	120	333	20
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1553	2147	177	1941	2123	566	353	0	0	1132	0	0
Stage 1	583	583	-	1530	1530	-	-	-	-	-	-	-
Stage 2	970	1564	-	411	593	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	78	49	842	40	51	473	1217	-	-	619	-	-
Stage 1	470	502	-	125	181	-	-	-	-	-	-	-
Stage 2	276	174	-	594	497	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	38	32	842	# 23	34	473	1217	-	-	619	-	-
Mov Capacity-2 Maneuver	38	32	-	# 23	34	-	-	-	-	-	-	-
Stage 1	387	405	-	103	149	-	-	-	-	-	-	-
Stage 2	184	143	-	438	401	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	56.6	$ 490.8	1.6	3.4
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				138	57			
HCM Control Delay (s)	8.594	0.3	-	56.6	$ 490.8	12.214	0.4	-
HCM Lane VC Ratio	0.177	-	-	0.522	1.687	0.194	-	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th Percentile Queue (veh)	0.643	-	-	2.514	8.933	0.716	-	-

Intersection												
Intersection Delay (sec/veh):	5.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	208	29	32	767	0	0	0	0	30	0	233
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	0	301	52	44	882	0	0	0	0	52	0	295
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	882	0	0	353	0	-				1090	~	441
Stage 1	-	-	-	-	-	-				970	-	-
Stage 2	-	-	-	-	-	-				120	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	452	-	-	768	-	0				230	0	487
Stage 1	-	-	-	-	-	0				212	0	-
Stage 2	-	-	-	-	-	0				807	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	452	-	-	768	-	-				220	-	487
Mov Capacity-2 Maneuver	-	-	-	-	-	-				220	-	-
Stage 1	-	-	-	-	-	-				212	-	-
Stage 2	-	-	-	-	-	-				807	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.5	23.6
HCM LOS	A	A	C

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						220	487
HCM Control Delay (s)	0	-	-	9.971	-	26.3	23.1
HCM Lane VC Ratio	-	-	-	0.057	-	0.235	0.606
HCM Lane LOS	A	-	-	A	-	D	C
HCM 95th Percentile Queue (veh)	0	-	-	0.181	-	0.885	3.955

Intersection												
Intersection Delay (sec/veh):	5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	176	64	0	600	133	200	0	28	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	232	84	0	698	180	235	0	40	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor	Major 1			Major 2			Minor 1					
Conflicting Flow Rate - All	-	0	0	-	0	0	623	~	158			
Stage 1	-	-	-	-	-	-	274	-	-			
Stage 2	-	-	-	-	-	-	349	-	-			
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37			
Pot Capacity-1 Maneuver	0	-	-	0	-	-	375	0	844			
Stage 1	0	-	-	0	-	-	714	0	-			
Stage 2	0	-	-	0	-	-	646	0	-			
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0			
Mov Capacity-1 Maneuver	-	-	-	-	-	-	375	-	844			
Mov Capacity-2 Maneuver	-	-	-	-	-	-	375	-	-			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	646	-	-			

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	26.6
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	375	844				
HCM Control Delay (s)	29.5	9.5	-	-	-	-
HCM Lane VC Ratio	0.627	0.047	-	-	-	-
HCM Lane LOS	D	A	-	-	-	-
HCM 95th Percentile Queue (veh)	4.093	0.149	-	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	232	16	22	322	454	105	690	566	130	92	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1886	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	859	396	67	793	308	610	884	751	77	510	210
Arriving On Green	0.03	0.25	0.00	0.02	0.23	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1311.4	1900.0	1615.0	568.7	3771.4	1552.9
Grp Volume(v), veh/h	52.0	290.0	0.0	25.6	418.2	0.0	210.0	985.7	0.0	144.4	103.4	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1311.4	1900.0	1615.0	568.7	1885.7	1552.9
Q Serve(g_s), s	3.7	8.1	0.0	0.9	12.6	0.0	12.1	55.0	0.0	16.0	2.9	0.0
Cycle Q Clear(g_c), s	3.7	8.1	0.0	0.9	12.6	0.0	12.1	55.0	0.0	16.0	2.9	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.6	859.4	396.0	67.5	792.8	307.8	609.8	883.5	751.0	76.9	510.2	210.1
V/C Ratio(X)	0.935	0.337	0.000	0.379	0.527	0.000	0.344	1.116	0.000	1.878	0.203	0.000
Avail Cap(c_a), veh/h	55.6	859.4	396.0	118.7	843.0	327.3	609.8	883.5	751.0	76.9	510.2	210.1
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.0	36.7	0.0	57.3	39.9	0.0	20.2	31.6	0.0	51.1	45.5	0.0
Incr Delay (d2), s/veh	96.8	0.2	0.0	3.5	0.5	0.0	0.3	67.2	0.0	439.9	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	153.8	37.0	0.0	60.8	40.4	0.0	20.5	98.9	0.0	491.0	45.7	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		342			444			1196			248	
Approach Delay, s/veh		54.7			41.6			85.1			305.3	
Approach LOS		D			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	33.00		6.27	31.27			59.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	29.00		4.00	29.00			55.00			16.00	
Max Q Clear Time (g_c+I1), s	5.73	10.05		2.85	14.60			57.00			18.00	
Green Extension Time (p_c)	0.00	4.59		0.00	4.07			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			96.3									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	486	24	194	595	371	139	807	1046	275	181	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	391	911	420	309	695	317	231	1327	1034	293	1492	661
Arriving On Green	0.11	0.26	0.00	0.06	0.21	0.21	0.13	0.37	0.00	0.17	0.41	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	389.2	615.2	0.0	228.2	661.1	412.2	198.6	1136.6	0.0	305.6	203.4	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	12.9	18.2	0.0	5.1	22.5	24.0	12.4	33.5	0.0	20.0	4.0	0.0
Cycle Q Clear(g_c), s	12.9	18.2	0.0	5.1	22.5	24.0	12.4	33.5	0.0	20.0	4.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	391.5	911.0	419.8	309.5	695.1	316.8	230.5	1326.7	1034.3	293.0	1492.4	661.0
V/C Ratio(X)	0.994	0.675	0.000	0.737	0.951	1.301	0.861	0.857	0.000	1.043	0.136	0.000
Avail Cap(c_a), veh/h	391.5	911.0	419.8	309.5	695.1	316.8	344.9	1470.0	1146.0	293.0	1492.4	661.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	51.2	38.3	0.0	53.3	45.1	45.7	49.4	33.7	0.0	47.7	21.0	0.0
Incr Delay (d2), s/veh	43.9	2.0	0.0	8.9	22.8	156.7	13.4	4.9	0.0	64.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	95.0	40.3	0.0	62.2	68.0	202.5	62.7	38.6	0.0	111.9	21.1	0.0
Lane Group LOS	F	D		E	E	F	E	D		F	C	
Approach Volume, veh/h		1004			1302			1335			509	
Approach Delay, s/veh		61.5			109.6			42.1			75.6	
Approach LOS		E			F			D			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	17.00	34.00		11.00	28.00		18.70	46.42		24.00	51.71	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	13.00	30.00		7.00	24.00		22.00	47.00		20.00	45.00	
Max Q Clear Time (g_c+I1), s	14.92	20.18		7.08	26.00		14.41	35.55		22.00	6.04	
Green Extension Time (p_c)	0.00	6.58		0.00	0.00		0.32	6.87		0.00	13.09	
Intersection Summary												
HCM 2010 Control Delay			72.1									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	302	114	25	25	60	222	9	386	20	23	82	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1730	1730	1900	1856	1856	1900	1898	1898	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	502	575	128	115	57	259	30	519	24	43	558	479
Arriving On Green	0.29	0.42	0.42	0.02	0.06	0.06	0.02	0.29	0.29	0.02	0.30	0.30
Sat Flow, veh/h	1739.9	1371.0	305.1	1809.5	293.4	1328.4	1809.5	1799.7	83.8	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	511.9	0.0	202.0	42.4	0.0	404.5	15.3	0.0	569.0	26.7	96.5	9.1
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1676.1	1809.5	0.0	1621.7	1809.5	0.0	1883.5	1756.8	1881.2	1615.0
Q Serve(g_s), s	34.0	0.0	9.4	2.7	0.0	23.0	1.0	0.0	34.0	1.8	4.5	0.5
Cycle Q Clear(g_c), s	34.0	0.0	9.4	2.7	0.0	23.0	1.0	0.0	34.0	1.8	4.5	0.5
Proportion In Lane	1.000		0.182	1.000		0.819	1.000		0.044	1.000		1.000
Lane Grp Cap(c), veh/h	501.7	0.0	703.5	115.2	0.0	316.3	30.2	0.0	543.1	43.5	557.6	478.7
V/C Ratio(X)	1.020	0.000	0.287	0.368	0.000	1.279	0.506	0.000	1.048	0.615	0.173	0.019
Avail Cap(c_a), veh/h	501.7	0.0	703.5	153.5	0.0	316.3	76.7	0.0	543.1	74.5	557.6	478.7
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	42.0	0.0	22.6	55.4	0.0	55.2	57.5	0.0	42.0	56.9	30.8	29.4
Incr Delay (d2), s/veh	45.4	0.0	1.0	2.0	0.0	147.6	12.5	0.0	51.7	13.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	87.4	0.0	23.6	57.3	0.0	202.8	70.0	0.0	93.6	70.2	30.9	29.4
Lane Group LOS	F		C	E		F	E		F	E	C	C
Approach Volume, veh/h		714			447			584			132	
Approach Delay, s/veh		69.3			189.0			93.0			38.8	
Approach LOS		E			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	40.00	55.50		13.50	29.00		7.97	40.00		8.92	40.95	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	34.00	47.00		10.00	23.00		5.00	34.00		5.00	34.00	
Max Q Clear Time (g_c+I1), s	36.00	11.38		4.72	25.00		2.99	36.00		3.78	6.48	
Green Extension Time (p_c)	0.00	8.85		0.02	0.00		0.00	0.00		0.00	4.78	
Intersection Summary												
HCM 2010 Control Delay			103.0									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	593	108	222	160	37	51	39	299	155	103	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1867	1867	1867	1881	1900	1900	1863	1810	1776	1863	1683	1683
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	56	1355	281	343	1813	424	370	550	459	449	443	58
Arriving On Green	0.16	0.16	0.16	0.07	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	94.2	2771.3	571.6	1791.6	2980.5	696.6	1258.8	1809.5	1509.3	1356.3	1457.8	191.5
Grp Volume(v), veh/h	442.1	0.0	397.2	261.2	115.6	112.4	58.0	44.3	421.1	221.4	0.0	126.7
Grp Sat Flow(s),veh/h/ln	1779.0	0.0	1598.0	1791.6	1900.0	1777.1	1258.8	1809.5	1509.3	1356.3	0.0	1649.3
Q Serve(g_s), s	0.0	0.0	27.2	1.6	3.0	3.2	4.4	2.1	32.3	16.7	0.0	6.9
Cycle Q Clear(g_c), s	25.8	0.0	27.2	1.6	3.0	3.2	11.3	2.1	32.3	18.8	0.0	6.9
Proportion In Lane	0.053		0.358	1.000		0.392	1.000		1.000	1.000		0.116
Lane Grp Cap(c), veh/h	906.3	0.0	785.7	342.9	1155.8	1081.1	370.0	550.4	459.1	448.9	0.0	501.7
V/C Ratio(X)	0.488	0.000	0.506	0.762	0.100	0.104	0.157	0.081	0.917	0.493	0.000	0.252
Avail Cap(c_a), veh/h	906.3	0.0	785.7	552.0	1155.8	1081.1	370.0	550.4	459.1	448.9	0.0	501.7
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	36.4	0.0	37.0	43.0	9.8	9.8	35.7	29.8	40.3	36.5	0.0	31.5
Incr Delay (d2), s/veh	0.9	0.0	1.1	11.9	0.1	0.1	0.9	0.3	25.7	3.8	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	37.2	0.0	38.0	54.9	9.9	9.9	36.6	30.1	66.0	40.3	0.0	32.7
Lane Group LOS	D		D	D	A	A	D	C	E	D		C
Approach Volume, veh/h		839			489			523			348	
Approach Delay, s/veh		37.6			33.9			59.7			37.5	
Approach LOS		D			C			E			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		65.00		14.00	79.00			41.00			41.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		46.00		22.00	73.00			36.50			36.50	
Max Q Clear Time (g_c+I1), s		29.22		3.59	5.17			34.31			20.80	
Green Extension Time (p_c)		10.25		2.26	20.13			1.19			5.21	
Intersection Summary												
HCM 2010 Control Delay			42.0									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh):	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	267	0	1	521	11	1	0	1	7	0	4
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	303	0	1	704	33	4	0	1	28	0	16
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	737	0	0	303	0	0	1042	~	303	1035	1034	369
Stage 1	-	-	-	-	-	-	311	-	-	723	723	-
Stage 2	-	-	-	-	-	-	731	-	-	312	311	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	878	-	-	1225	-	-	210	0	741	212	234	681
Stage 1	-	-	-	-	-	-	704	0	-	421	434	-
Stage 2	-	-	-	-	-	-	416	0	-	703	662	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	878	-	-	1225	-	-	204	-	741	211	233	681
Mov Capacity-2 Maneuver	-	-	-	-	-	-	204	-	-	211	233	-
Stage 1	-	-	-	-	-	-	700	-	-	419	434	-
Stage 2	-	-	-	-	-	-	406	-	-	698	659	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	19.7	20.1
HCM LOS	A	A	C	C

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	204	741							282
HCM Control Delay (s)	23	9.9	9.119	0	-	7.942	-	-	20.1
HCM Lane VC Ratio	0.02	0.002	0.005	-	-	0.001	-	-	0.156
HCM Lane LOS	C	A	A	A	-	A	-	-	C
HCM 95th Percentile Queue (veh)	0.06	0.005	0.014	-	-	0.003	-	-	0.545

Intersection	
Intersection Delay (sec/veh):	$ 908.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	238	0	0	3	0	21	0	1144	4	0	102	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	476	0	0	3	0	23	0	1546	4	0	126	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1692	1682	69	1611	1685	1548	137	0	0	-	0	0
Stage 1	132	132	-	1548	1548	-	-	-	-	-	-	-
Stage 2	1560	1550	-	63	137	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	0	-	-
Pot Capacity-1 Maneuver	# 62	94	948	70	93	103	1459	-	-	0	-	-
Stage 1	864	786	-	119	174	-	-	-	-	0	-	-
Stage 2	# 120	173	-	941	782	-	-	-	-	0	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 48	94	948	70	93	103	1459	-	-	-	-	-
Mov Capacity-2 Maneuver	# 48	94	-	70	93	-	-	-	-	-	-	-
Stage 1	864	786	-	119	174	-	-	-	-	-	-	-
Stage 2	# 93	173	-	941	782	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 4174.2	55.2	0	0
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (vph)				48	97		
HCM Control Delay (s)	0	-	-	$ 55.2	55.2	-	-
HCM Lane VC Ratio	-	-	-	9.917	0.269	-	-
HCM Lane LOS	A	-	-	F	F	-	-
HCM 95th Percentile Queue (veh)	0	-	-	56.651	0.992	-	-

Intersection	
Intersection Delay (sec/veh):	21.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	80	14	74	28	5	32	160	329	24	33	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	64	123	19	84	39	7	55	193	439	55	35	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	46	0	0	142	0	0	489	475	72	788	481	-
Stage 1	-	-	-	-	-	-	261	261	-	211	211	-
Stage 2	-	-	-	-	-	-	228	214	-	577	270	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1577	-	-	1441	-	-	495	493	990	282	486	0
Stage 1	-	-	-	-	-	-	748	696	-	743	730	0
Stage 2	-	-	-	-	-	-	783	731	-	462	686	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1577	-	-	1441	-	-	431	445	990	97	439	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	431	445	-	97	439	-
Stage 1	-	-	-	-	-	-	718	668	-	713	687	-
Stage 2	-	-	-	-	-	-	700	688	-	176	658	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	4.9	32.9	-
HCM LOS	A	A	D	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	431	721							97	-
HCM Control Delay (s)	14.6	34.5	7.379	0	-	7.653	0	-	81.8	-
HCM Lane VC Ratio	0.128	0.876	0.041	-	-	0.058	-	-	0.562	-
HCM Lane LOS	B	D	A	A	-	A	A	-	F	-
HCM 95th Percentile Queue (veh)	0.436	10.777	0.127	-	-	0.186	-	-	2.59	-

Intersection	
Intersection Delay (sec/veh):	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	250	32	71	191	1	36	27	101	22	76	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	281	40	81	255	1	45	39	184	25	131	30
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	256	0	0	321	0	0	658	721	161	580	741	129
Stage 1	-	-	-	-	-	-	303	303	-	418	418	-
Stage 2	-	-	-	-	-	-	355	418	-	162	323	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1427	-	-	1397	-	-	527	485	*1381	*641	436	*1417
Stage 1	-	-	-	-	-	-	831	769	-	*681	607	-
Stage 2	-	-	-	-	-	-	712	648	-	*1381	713	-
Time blocked-Platoon(%)	6	-	-	8	-	-	13	13	8	13	13	6
Mov Capacity-1 Maneuver	1427	-	-	1397	-	-	368	451	*1381	*492	405	*1417
Mov Capacity-2 Maneuver	-	-	-	-	-	-	368	451	-	*492	405	-
Stage 1	-	-	-	-	-	-	830	768	-	*681	565	-
Stage 2	-	-	-	-	-	-	499	604	-	*1136	712	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2	11.9	16.6
HCM LOS	A	A	B	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*784							*492	*468
HCM Control Delay (s)	11.9	7.525	0	-	7.735	0.2	-	12.6	17
HCM Lane VC Ratio	0.341	0.001	-	-	0.058	-	-	0.034	0.362
HCM Lane LOS	B	A	A	-	A	A	-	B	C
HCM 95th Percentile Queue (veh)	1.516	0.003	-	-	0.184	-	-	0.105	1.63

Intersection	
Intersection Delay (sec/veh):	12.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	986	79	325	406	12	616
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1202	95	374	446	20	844
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1297	0	2221	649
Stage 1	-	-	-	-	1250	-
Stage 2	-	-	-	-	971	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	800	-	48	*948
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	333	-
Time blocked-Platoon(%)	-	-	37	-	37	37
Mov Capacity-1 Maneuver	-	-	800	-	26	*948
Mov Capacity-2 Maneuver	-	-	-	-	26	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	177	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	6.1	36.9
HCM LOS	A	A	E

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*26	*948				
HCM Control Delay (s)	$ 316.5	30.3	-	-	13.379	-
HCM Lane VC Ratio	0.769	0.89	-	-	0.467	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th Percentile Queue (veh)	2.389	12.432	-	-	2.51	-

Intersection	
Intersection Delay (sec/veh):	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	46	10	74	5	329	82	22	127	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	61	20	125	8	477	96	32	144	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	824	799	74	755	753	287	148	0	0	573	0	0
Stage 1	210	210	-	541	541	-	-	-	-	-	-	-
Stage 2	614	589	-	214	212	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	294	321	927	323	341	757	1386	-	-	995	-	-
Stage 1	797	732	-	522	524	-	-	-	-	-	-	-
Stage 2	483	499	-	784	731	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	227	309	927	309	328	757	1386	-	-	995	-	-
Mov Capacity-2 Maneuver	227	309	-	309	328	-	-	-	-	-	-	-
Stage 1	792	708	-	519	521	-	-	-	-	-	-	-
Stage 2	385	496	-	751	707	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	17.5	17.8	0.1	1.5
HCM LOS	C	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				300	486			
HCM Control Delay (s)	7.612	0	-	17.5	17.8	8.738	0	-
HCM Lane VC Ratio	0.006	-	-	0.039	0.425	0.032	-	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th Percentile Queue (veh)	0.017	-	-	0.121	2.095	0.099	-	-

11: 25th St & Barnes Ave

Intersection	
Intersection Delay (sec/veh)	15.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	39	99	64	47	63	9	59	115	131	19	164	21
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	80	112	91	56	72	12	80	140	208	24	208	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.5	11.9	18.3	14
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	19%	19%	39%	9%
Volume Thru (%)	38%	49%	53%	80%
Volume Right (%)	43%	32%	8%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	305	202	119	204
Left Turning Volume	115	99	63	164
Through Volume	131	64	9	21
Right Turning Volume	59	39	47	19
Lane Flow Rate	428	284	140	256
Geometry Group	1	1	1	1
Degree of Utilization, X	0.649	0.478	0.256	0.438
Departure Headway, Hd	5.588	6.064	6.595	6.177
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	650	595	546	583
Service Time	3.588	4.084	4.624	4.208
HCM Lane V/C Ratio	0.658	0.477	0.256	0.439
HCM Control Delay	18.3	14.5	11.9	14
HCM Lane LOS	C	B	B	B
HCM 95th Percentile Queue	5.5	2.7	1	2.3

13: 15th St & Lane Av

Intersection	
Intersection Delay (sec/veh)	38.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	17	57	6	64	12	27	0	344	229	69	78	7
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	28	64	16	91	32	60	0	387	323	144	111	12
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.6	11.6	59.2	11.7
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	60%	0%	90%	0%	31%	0%	92%
Volume Right (%)	0%	40%	0%	10%	0%	69%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	573	17	63	64	39	69	85
Left Turning Volume	0	344	0	57	0	12	0	78
Through Volume	0	229	0	6	0	27	0	7
Right Turning Volume	0	0	17	0	64	0	69	0
Lane Flow Rate	0	709	28	80	91	92	144	123
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.063	0.163	0.197	0.17	0.278	0.219
Departure Headway, Hd	5.988	5.721	8.199	7.371	7.746	6.701	6.961	6.387
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	638	436	484	464	532	519	566
Service Time	3.696	3.429	5.958	5.154	5.497	4.48	4.661	4.087
HCM Lane V/C Ratio	0	1.111	0.064	0.165	0.196	0.173	0.277	0.217
HCM Control Delay	8.7	59.2	11.5	11.6	12.4	10.9	12.3	10.9
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	118.9	0.2	0.6	0.7	0.6	1.2	0.8

Intersection	
Intersection Delay (sec/veh):	52

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	113	28	23	1	20	52	6	366	2	68	383	38
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	164	36	44	4	32	64	8	431	4	105	426	44
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1155	1109	448	1147	1129	433	470	0	0	435	0	0
Stage 1	658	658	-	449	449	-	-	-	-	-	-	-
Stage 2	497	451	-	698	680	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	175	211	615	178	206	627	1102	-	-	1135	-	-
Stage 1	457	464	-	593	576	-	-	-	-	-	-	-
Stage 2	559	574	-	434	454	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 122	183	615	126	178	627	1102	-	-	1135	-	-
Mov Capacity-2 Maneuver	# 122	183	-	126	178	-	-	-	-	-	-	-
Stage 1	452	406	-	587	570	-	-	-	-	-	-	-
Stage 2	469	568	-	321	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	277.8	21.3	0.1	1.5
HCM LOS	F	C	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				130	615	320			
HCM Control Delay (s)	8.291	0	-	$ 21.3	11.3	21.3	8.494	0	-
HCM Lane VC Ratio	0.007	-	-	1.536	0.072	0.312	0.092	-	-
HCM Lane LOS	A	A	-	F	B	C	A	A	-
HCM 95th Percentile Queue (veh)	0.022	-	-	14.041	0.232	1.301	0.304	-	-

Intersection	
Intersection Delay (sec/veh):	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	301	0	1	84	171	0	0	1	115	1	28
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	56	363	0	4	140	209	0	0	4	155	4	60
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	349	0	-	363	0	0	760	832	182	730	728	175
Stage 1	-	-	-	-	-	-	475	475	-	253	253	-
Stage 2	-	-	-	-	-	-	285	357	-	477	475	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1210	-	0	1207	-	-	325	307	866	340	353	874
Stage 1	-	-	0	-	-	-	574	561	-	756	702	-
Stage 2	-	-	0	-	-	-	727	632	-	573	561	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1210	-	-	1207	-	-	289	292	866	326	336	874
Mov Capacity-2 Maneuver	-	-	-	-	-	-	289	292	-	326	336	-
Stage 1	-	-	-	-	-	-	547	535	-	721	700	-
Stage 2	-	-	-	-	-	-	671	630	-	544	535	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.1	0.1	9.2	21.1
HCM LOS	A	A	A	C

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	866						326	794
HCM Control Delay (s)	9.2	8.119	0	7.993	0	-	25.7	9.9
HCM Lane VC Ratio	0.005	0.046	-	0.003	-	-	0.477	0.08
HCM Lane LOS	A	A	A	A	A	-	D	A
HCM 95th Percentile Queue (veh)	0.014	0.145	-	0.01	-	-	2.451	0.26

Intersection	
Intersection Delay (sec/veh):	44

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	30	402	67	6	216	54	33	42	17	76	110	15
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	44	529	88	12	248	64	48	52	49	92	149	24
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	617	0	0	1052	997	309	1016	1009	156
Stage 1	-	-	-	-	-	-	661	661	-	304	304	-
Stage 2	-	-	-	-	-	-	391	336	-	712	705	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1168	-	-	894	-	-	201	239	736	218	242	895
Stage 1	-	-	-	-	-	-	445	452	-	710	667	-
Stage 2	-	-	-	-	-	-	625	633	-	427	442	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1168	-	-	894	-	-	91	227	736	162	230	895
Mov Capacity-2 Maneuver	-	-	-	-	-	-	91	227	-	162	230	-
Stage 1	-	-	-	-	-	-	428	435	-	683	658	-
Stage 2	-	-	-	-	-	-	465	625	-	338	425	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.5	0.3	79	186.9
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	181							213
HCM Control Delay (s)	79	8.203	0	-	9.082	0	-	186.9
HCM Lane VC Ratio	0.819	0.038	-	-	0.013	-	-	1.24
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	5.685	0.118	-	-	0.041	-	-	13.638

Intersection	
Intersection Delay (sec/veh):	8.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	91	302	130	181	518	81
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	Free	Free	None	None	Free	Free
Storage Length	0	0	0			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.84	0.86	0.90	0.92	0.78	0.68
Heavy Vehicles(%)	0	0	1	1	0	11
Movement Flow Rate	108	351	144	197	664	119
Number of Lanes	1	1	1	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	1209	392	783	0	0	0
Stage 1	724	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.209	-	-	-
Pot Capacity-1 Maneuver	204	661	840	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	169	661	840	-	-	-
Mov Capacity-2 Maneuver	169	-	-	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	516	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	26.2	4.3	0
HCM LOS	D	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			169	661		
HCM Control Delay (s)	10.174	-	58.1	16.4	-	-
HCM Lane VC Ratio	0.172	-	0.641	0.531	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th Percentile Queue (veh)	0.619	-	3.625	3.145	-	-

Intersection												
Intersection Delay (sec/veh):	1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	0	1	0	0	0	4	29	0	0	156	4
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	20	0	4	0	0	0	8	36	0	0	236	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	292	292	240	294	296	36	244	0	0	36	0	0
Stage 1	240	240	-	52	52	-	-	-	-	-	-	-
Stage 2	52	52	-	242	244	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	630	622	804	662	619	1042	1334	-	-	1588	-	-
Stage 1	729	711	-	966	856	-	-	-	-	-	-	-
Stage 2	922	856	-	766	708	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	627	618	804	656	615	1042	1334	-	-	1588	-	-
Mov Capacity-2 Maneuver	627	618	-	656	615	-	-	-	-	-	-	-
Stage 1	725	711	-	960	851	-	-	-	-	-	-	-
Stage 2	916	851	-	762	708	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	10.7	0	1.4	0
HCM LOS	B	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				651	0			
HCM Control Delay (s)	7.715	0	-	10.7	0	0	-	-
HCM Lane VC Ratio	0.006	-	-	0.037	-	-	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th Percentile Queue (veh)	0.018	-	-	0.115	-	0	-	-

Intersection												
Intersection Delay (sec/veh):	22.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	10	34	168	36	14	33	25	214	30	83	814	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	20	44	200	56	24	67	32	249	32	104	866	16
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1283	1427	441	992	1419	141	882	0	0	281	0	0
Stage 1	1082	1082	-	329	329	-	-	-	-	-	-	-
Stage 2	201	345	-	663	1090	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	124	136	570	203	138	888	775	-	-	1286	-	-
Stage 1	236	296	-	664	650	-	-	-	-	-	-	-
Stage 2	788	640	-	422	294	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	89	120	570	86	122	888	775	-	-	1286	-	-
Mov Capacity-2 Maneuver	89	120	-	86	122	-	-	-	-	-	-	-
Stage 1	226	272	-	637	623	-	-	-	-	-	-	-
Stage 2	671	614	-	211	270	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	80.1	110.3	1.1	1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				280	159			
HCM Control Delay (s)	9.845	0.1	-	80.1	110.3	8.045	0.2	-
HCM Lane VC Ratio	0.041	-	-	0.943	0.929	0.081	-	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.129	-	-	9.012	6.772	0.263	-	-

Intersection	
Intersection Delay (sec/veh):	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	776	154	65	221	0	0	0	0	143	2	98
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	0	892	192	96	303	0	0	0	0	172	4	161
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	303	0	0	1085	0	-				852	1580	152
Stage 1	-	-	-	-	-	-				495	495	-
Stage 2	-	-	-	-	-	-				357	1085	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	845	-	-	356	-	0				308	110	737
Stage 1	-	-	-	-	-	0				437	549	-
Stage 2	-	-	-	-	-	0				575	295	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	845	-	-	356	-	-				244	80	737
Mov Capacity-2 Maneuver	-	-	-	-	-	-				244	80	-
Stage 1	-	-	-	-	-	-				437	401	-
Stage 2	-	-	-	-	-	-				575	295	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	4.5	30.7
HCM LOS	A	A	D

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						244	737
HCM Control Delay (s)	0	-	-	18.783	-	48.8	11.2
HCM Lane VC Ratio	-	-	-	0.269	-	0.706	0.218
HCM Lane LOS	A	-	-	C	-	E	B
HCM 95th Percentile Queue (veh)	0	-	-	1.066	-	4.721	0.827

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	725	200	0	257	127	29	0	54	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	797	213	0	378	161	36	0	60	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	1093	~	506
Stage 1	-	-	-	-	-	-	904	-	-
Stage 2	-	-	-	-	-	-	189	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	171	0	506
Stage 1	0	-	-	0	-	-	302	0	-
Stage 2	0	-	-	0	-	-	800	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	171	-	506
Mov Capacity-2 Maneuver	-	-	-	-	-	-	171	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	800	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	20
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	171	506				
HCM Control Delay (s)	31.5	13.1	-	-	-	-
HCM Lane VC Ratio	0.209	0.119	-	-	-	-
HCM Lane LOS	D	B	-	-	-	-
HCM 95th Percentile Queue (veh)	0.76	0.401	-	-	-	-

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	163	416	373	80	27	288	78	279	930	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	561	258	491	914	355	121	418	355	311	1215	497
Arriving On Green	0.03	0.16	0.00	0.14	0.27	0.00	0.22	0.22	0.00	0.32	0.32	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	548.5	1900.0	1615.0	970.5	3797.8	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	54.0	411.4	0.0	310.0	1044.9	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	548.5	1900.0	1615.0	970.5	1898.9	1552.9
Q Serve(g_s), s	2.7	14.3	0.0	13.7	12.0	0.0	8.5	21.6	0.0	31.9	25.8	0.0
Cycle Q Clear(g_c), s	2.7	14.3	0.0	13.7	12.0	0.0	8.5	21.6	0.0	31.9	25.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.9	560.8	258.4	491.5	914.5	355.0	120.7	418.0	355.3	310.5	1215.3	496.9
V/C Ratio(X)	0.810	0.912	0.000	0.984	0.530	0.000	0.447	0.984	0.000	0.998	0.860	0.000
Avail Cap(c_a), veh/h	115.2	560.8	258.4	491.5	914.5	355.0	120.7	418.0	355.3	310.5	1215.3	496.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	48.0	41.3	0.0	42.9	31.4	0.0	33.7	38.8	0.0	34.0	31.9	0.0
Incr Delay (d2), s/veh	23.3	19.2	0.0	36.4	0.6	0.0	2.6	39.7	0.0	50.6	6.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	71.3	60.5	0.0	79.3	31.9	0.0	36.3	78.6	0.0	84.5	38.3	0.0
Lane Group LOS	E	E		E	C		D	E		F	D	
Approach Volume, veh/h		557			968			465			1355	
Approach Delay, s/veh		61.4			55.6			73.7			48.9	
Approach LOS		E			E			E			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	7.40	20.00		18.00	30.60			26.00			36.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	7.00	16.00		14.00	23.00			22.00			32.00	
Max Q Clear Time (g_c+I1), s	4.74	16.35		15.74	14.04			23.56			33.92	
Green Extension Time (p_c)	0.01	0.00		0.00	4.31			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			56.4									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	547	515	173	32	273	244	198	1070	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	245	934	430	718	1125	513	58	851	663	258	1287	570
Arriving On Green	0.07	0.27	0.00	0.14	0.34	0.34	0.03	0.24	0.00	0.15	0.36	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	643.5	572.2	192.2	45.7	384.5	0.0	220.0	1202.2	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	3.6	18.0	0.0	9.7	10.7	7.5	2.0	7.1	0.0	9.9	25.1	0.0
Cycle Q Clear(g_c), s	3.6	18.0	0.0	9.7	10.7	7.5	2.0	7.1	0.0	9.9	25.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	245.5	933.7	430.2	717.9	1124.6	512.6	57.7	850.5	663.1	258.2	1286.6	569.9
V/C Ratio(X)	0.664	0.897	0.000	0.896	0.509	0.375	0.792	0.452	0.000	0.852	0.934	0.000
Avail Cap(c_a), veh/h	355.6	941.3	433.7	717.9	1124.6	512.6	92.6	850.5	663.1	302.8	1292.7	572.6
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	35.4	27.7	0.0	33.0	20.8	19.7	37.6	25.6	0.0	32.3	24.3	0.0
Incr Delay (d2), s/veh	3.1	11.2	0.0	14.0	0.4	0.5	21.0	0.4	0.0	18.0	12.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	38.5	38.9	0.0	47.0	21.1	20.2	58.6	25.9	0.0	50.3	36.8	0.0
Lane Group LOS	D	D		D	C	C	E	C		D	D	
Approach Volume, veh/h		1001			1408			430			1422	
Approach Delay, s/veh		38.8			32.8			29.4			38.9	
Approach LOS		D			C			C			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	9.52	24.83		15.00	30.31		6.49	22.42		15.94	31.87	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		11.00	24.00		4.00	18.00		14.00	28.00	
Max Q Clear Time (g_c+I1), s	5.58	20.02		11.70	12.72		3.96	9.13		11.91	27.13	
Green Extension Time (p_c)	0.11	0.81		0.00	7.33		0.00	6.37		0.13	0.74	
Intersection Summary												
HCM 2010 Control Delay			35.9									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	111	55	53	155	70	37	186	64	283	432	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1839	1839	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	126	248	124	172	283	156	81	297	92	365	709	609
Arriving On Green	0.07	0.23	0.23	0.10	0.25	0.25	0.04	0.21	0.21	0.21	0.38	0.38
Sat Flow, veh/h	1739.9	1072.2	539.1	1809.5	1114.7	616.1	1809.5	1386.6	428.8	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	241.8	89.8	0.0	293.5	62.7	0.0	343.0	329.1	508.2	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1611.2	1809.5	0.0	1730.8	1809.5	0.0	1815.4	1756.8	1881.2	1615.0
Q Serve(g_s), s	5.4	0.0	12.9	4.5	0.0	14.5	3.3	0.0	17.4	17.4	22.0	12.4
Cycle Q Clear(g_c), s	5.4	0.0	12.9	4.5	0.0	14.5	3.3	0.0	17.4	17.4	22.0	12.4
Proportion In Lane	1.000		0.335	1.000		0.356	1.000		0.236	1.000		1.000
Lane Grp Cap(c), veh/h	126.2	0.0	372.1	172.3	0.0	439.0	81.1	0.0	389.2	364.5	709.3	608.9
V/C Ratio(X)	0.793	0.000	0.650	0.521	0.000	0.669	0.773	0.000	0.881	0.903	0.717	0.459
Avail Cap(c_a), veh/h	182.7	0.0	372.1	190.0	0.0	439.0	114.0	0.0	400.2	424.2	750.4	644.2
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	43.5	0.0	33.1	41.0	0.0	31.9	45.0	0.0	36.2	36.8	25.3	22.3
Incr Delay (d2), s/veh	13.8	0.0	8.5	2.4	0.0	7.9	18.8	0.0	19.5	20.3	3.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	57.3	0.0	41.7	43.5	0.0	39.8	63.8	0.0	55.8	57.1	28.4	22.9
Lane Group LOS	E		D	D		D	E		E	E	C	C
Approach Volume, veh/h		342			383			406			1117	
Approach Delay, s/veh		46.2			40.7			57.0			35.5	
Approach LOS		D			D			E			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	12.91	28.00		15.07	30.16		10.27	26.42		25.77	41.92	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	22.00		10.00	22.00		6.00	21.00		23.00	38.00	
Max Q Clear Time (g_c+I1), s	7.39	14.93		6.50	16.52		5.27	19.43		19.40	23.97	
Green Extension Time (p_c)	0.05	2.97		0.05	2.41		0.01	0.99		0.37	5.61	
Intersection Summary												
HCM 2010 Control Delay			41.9									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	299	86	264	639	173	135	127	124	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1870	1870	1870	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	101	602	193	530	1520	426	421	513	428	401	218	200
Arriving On Green	0.27	0.27	0.27	0.16	0.53	0.53	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	224.3	1975.9	719.1	1791.6	2857.4	801.2	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	241.4	0.0	247.7	310.6	488.4	452.1	153.4	144.3	174.6	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1496.7	0.0	1574.5	1791.6	1900.0	1758.6	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	7.8	6.4	9.2	9.2	5.9	3.5	5.3	3.6	0.0	3.1
Cycle Q Clear(g_c), s	6.2	0.0	7.8	6.4	9.2	9.2	9.0	3.5	5.3	7.2	0.0	3.1
Proportion In Lane	0.150		0.457	1.000		0.456	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	473.7	0.0	421.7	530.1	1010.4	935.2	420.7	512.8	427.7	400.9	0.0	418.3
V/C Ratio(X)	0.510	0.000	0.588	0.586	0.483	0.483	0.365	0.281	0.408	0.235	0.000	0.249
Avail Cap(c_a), veh/h	520.7	0.0	488.2	593.2	1117.0	1033.9	420.7	512.8	427.7	400.9	0.0	418.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	17.5	0.0	18.1	11.2	8.4	8.4	19.2	15.9	16.5	18.6	0.0	15.7
Incr Delay (d2), s/veh	1.8	0.0	2.8	3.8	0.8	0.8	2.4	1.4	2.9	1.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	19.3	0.0	20.9	15.0	9.1	9.2	21.6	17.2	19.4	20.0	0.0	17.1
Lane Group LOS	B		C	B	A	A	C	B	B	C		B
Approach Volume, veh/h		489			1251			472			199	
Approach Delay, s/veh		20.1			10.6			19.4			18.5	
Approach LOS		C			B			B			B	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		21.22		15.00	36.21			20.60			20.60	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		17.40		11.00	33.40			16.10			16.10	
Max Q Clear Time (g_c+I1), s		9.77		8.42	11.20			11.04			9.17	
Green Extension Time (p_c)		6.45		0.65	16.08			2.09			2.66	
Intersection Summary												
HCM 2010 Control Delay			14.9									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	602	104	215	217	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	684	132	295	293	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	308	0	0	816	0	0	1645	~	750	1646	1707	155
Stage 1	-	-	-	-	-	-	750	-	-	891	891	-
Stage 2	-	-	-	-	-	-	895	-	-	755	816	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1264	-	-	786	-	-	80	0	415	80	92	896
Stage 1	-	-	-	-	-	-	407	0	-	340	364	-
Stage 2	-	-	-	-	-	-	338	0	-	404	393	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1264	-	-	786	-	-	48	-	415	50	50	896
Mov Capacity-2 Maneuver	-	-	-	-	-	-	48	-	-	50	50	-
Stage 1	-	-	-	-	-	-	407	-	-	340	199	-
Stage 2	-	-	-	-	-	-	180	-	-	395	393	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	6	35.7	46.4
HCM LOS	A	A	E	E

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	48	415							95
HCM Control Delay (s)	86.7	13.9	0	-	-	12.299	-	-	46.4
HCM Lane VC Ratio	0.083	0.022	-	-	-	0.375	-	-	0.084
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.26	0.069	0	-	-	1.748	-	-	0.269

Intersection	
Intersection Delay (sec/veh):	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	9	0	37	0	2	7	1	285	1	15	912	313
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	18	0	63	0	2	8	4	385	1	16	1126	348
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1731	1726	737	989	1900	386	1474	0	0	386	0	0
Stage 1	1332	1332	-	394	394	-	-	-	-	-	-	-
Stage 2	399	394	-	595	1506	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	58	88	339	201	68	612	463	-	-	1169	-	-
Stage 1	166	222	-	602	604	-	-	-	-	-	-	-
Stage 2	604	604	-	458	182	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	51	79	339	151	61	612	463	-	-	1169	-	-
Mov Capacity-2 Maneuver	51	79	-	151	61	-	-	-	-	-	-	-
Stage 1	164	201	-	595	597	-	-	-	-	-	-	-
Stage 2	588	597	-	337	165	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	54	23.5	0.1	0.1
HCM LOS	F	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				150	204			
HCM Control Delay (s)	12.843	0	-	54	23.5	8.123	-	-
HCM Lane VC Ratio	0.009	-	-	0.538	0.048	0.014	-	-
HCM Lane LOS	B	A	-	F	C	A	-	-
HCM 95th Percentile Queue (veh)	0.026	-	-	2.671	0.15	0.042	-	-

Intersection	
Intersection Delay (sec/veh): $ 323.4	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	439	38	10	8	34	159	26	325	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	499	54	13	14	41	212	59	342	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	67	0	0	283	0	0	1432	1263	142	1383	1342	34
Stage 1	-	-	-	-	-	-	198	198	-	1059	1059	-
Stage 2	-	-	-	-	-	-	1234	1065	-	324	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1550	-	-	1279	-	-	112	171	906	107	# 151	1052
Stage 1	-	-	-	-	-	-	808	741	-	244	# 300	-
Stage 2	-	-	-	-	-	-	217	300	-	640	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1550	-	-	1279	-	-	-	104	906	# 41	# 92	1052
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	104	-	# 41	# 92	-
Stage 1	-	-	-	-	-	-	808	741	-	244	# 183	-
Stage 2	-	-	-	-	-	-	-	183	-	463	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	8.5	-	$ 1193.6
HCM LOS	A	A	-	F

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	403							41	94
HCM Control Delay (s)	-	27.8	0	-	-	9.603	0	-	$ -1	$ 27.8
HCM Lane VC Ratio	-	0.628	-	-	-	0.39	-	-	1.441	3.723
HCM Lane LOS	-	D	A	-	-	A	A	-	F	F
HCM 95th Percentile Queue (veh)	-	4.143	0	-	-	1.882	-	-	5.972	35.679

Intersection	
Intersection Delay (sec/veh):	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	414	44	63	266	9	36	60	80	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	465	54	72	355	13	45	86	145	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	368	0	0	519	0	0	874	1050	260	828	1071	185
Stage 1	-	-	-	-	-	-	538	538	-	506	506	-
Stage 2	-	-	-	-	-	-	336	512	-	322	565	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1202	-	-	1306	-	-	372	307	*1271	*430	268	695
Stage 1	-	-	-	-	-	-	741	691	-	*522	493	-
Stage 2	-	-	-	-	-	-	625	535	-	*1271	633	-
Time blocked-Platoon(%)	0	-	-	15	-	-	15	15	15	15	15	0
Mov Capacity-1 Maneuver	1202	-	-	1306	-	-	305	278	*1271	*270	243	695
Mov Capacity-2 Maneuver	-	-	-	-	-	-	305	278	-	*270	243	-
Stage 1	-	-	-	-	-	-	721	673	-	*508	459	-
Stage 2	-	-	-	-	-	-	529	498	-	*956	616	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1.5	21.9	17.6
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*484							*270	*341
HCM Control Delay (s)	21.9	8.053	0.1	-	7.916	0.2	-	18.6	17.5
HCM Lane VC Ratio	0.571	0.019	-	-	0.055	-	-	0.022	0.158
HCM Lane LOS	C	A	A	-	A	A	-	C	C
HCM 95th Percentile Queue (veh)	3.512	0.058	-	-	0.174	-	-	0.069	0.555

Intersection	
Intersection Delay (sec/veh):	38.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	458	34	421	1033	41	449
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	559	41	484	1135	68	615
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	600	0	2116	301
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	1536	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	987	-	# 45	698
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	167	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	987	-	# 23	698
Mov Capacity-2 Maneuver	-	-	-	-	# 23	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	85	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3.6	156.6
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	23	698				
HCM Control Delay (s)	$ 1242.1	36	-	-	12.104	-
HCM Lane VC Ratio	2.971	0.881	-	-	0.49	-
HCM Lane LOS	F	E	-	-	B	-
HCM 95th Percentile Queue (veh)	8.634	10.864	-	-	2.764	-

Intersection	
Intersection Delay (sec/veh):	23.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	72	11	225	107	125	422	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	122	17	326	126	181	480	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1342	1330	242	1288	1269	226	484	0	0	452	0	0
Stage 1	844	844	-	423	423	-	-	-	-	-	-	-
Stage 2	498	486	-	865	846	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	131	156	743	139	170	818	1038	-	-	1103	-	-
Stage 1	361	382	-	605	591	-	-	-	-	-	-	-
Stage 2	558	554	-	346	381	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	82	128	743	104	140	818	1038	-	-	1103	-	-
Mov Capacity-2 Maneuver	82	128	-	104	140	-	-	-	-	-	-	-
Stage 1	355	319	-	595	581	-	-	-	-	-	-	-
Stage 2	444	545	-	264	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	23.1	133.9	0.3	2.4
HCM LOS	C	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				240	209			
HCM Control Delay (s)	8.528	0	-	23.1	133.9	8.904	0	-
HCM Lane VC Ratio	0.017	-	-	0.172	1.082	0.164	-	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th Percentile Queue (veh)	0.051	-	-	0.609	10.333	0.587	-	-

Intersection	
Intersection Delay (sec/veh)	25.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	38	128	73	46	123	12	99	207	32	17	71	41
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	54	175	85	77	176	31	116	296	55	27	104	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.4	20.3	36.6	15.8
HCM LOS	C	C	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	16%	25%	13%
Volume Thru (%)	61%	54%	68%	55%
Volume Right (%)	9%	31%	7%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	338	239	181	129
Left Turning Volume	207	128	123	71
Through Volume	32	73	12	41
Right Turning Volume	99	38	46	17
Lane Flow Rate	467	314	283	195
Geometry Group	1	1	1	1
Degree of Utilization, X	0.849	0.61	0.583	0.411
Departure Headway, Hd	6.691	6.994	7.414	7.564
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	547	518	487	475
Service Time	4.691	5.026	5.45	5.612
HCM Lane V/C Ratio	0.854	0.606	0.581	0.411
HCM Control Delay	36.6	20.4	20.3	15.8
HCM Lane LOS	E	C	C	C
HCM 95th Percentile Queue	16.4	4.7	4.2	2.1

Intersection	
Intersection Delay (sec/veh)	39.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	35	0	7	21	225	18	15	663	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	140	0	28	36	304	72	60	745	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.1	13.4	18.3	56.7
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	93%	0%	33%	0%	0%	0%	96%
Volume Right (%)	0%	7%	0%	67%	0%	100%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	243	8	9	35	7	15	688
Left Turning Volume	0	225	0	3	0	0	0	663
Through Volume	0	18	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	35	0	15	0
Lane Flow Rate	36	376	14	26	140	28	60	790
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.066	0.639	0.036	0.054	0.308	0.052	0.118	1
Departure Headway, Hd	6.671	6.12	9.267	7.338	7.91	6.663	7.055	5.886
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	538	590	387	489	456	539	509	617
Service Time	4.394	3.843	6.995	5.065	5.63	4.384	4.786	3.616
HCM Lane V/C Ratio	0.067	0.637	0.036	0.053	0.307	0.052	0.118	1.28
HCM Control Delay	9.9	19.1	12.3	10.5	14.1	9.8	10.7	60.2
HCM Lane LOS	A	C	B	B	B	A	B	F
HCM 95th Percentile Queue	0.2	5.3	0.1	0.2	1.3	0.2	0.4	117

Intersection	
Intersection Delay (sec/veh):	125.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	456	6	41	296	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	507	19	59	333	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1178	1069	371	1099	1098	517	409	0	0	526	0	0
Stage 1	489	489	-	571	571	-	-	-	-	-	-	-
Stage 2	689	580	-	528	527	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	169	223	673	192	215	562	1161	-	-	1051	-	-
Stage 1	564	553	-	509	508	-	-	-	-	-	-	-
Stage 2	439	503	-	538	532	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 58	200	673	152	193	562	1161	-	-	1051	-	-
Mov Capacity-2 Maneuver	# 58	200	-	152	193	-	-	-	-	-	-	-
Stage 1	545	513	-	492	491	-	-	-	-	-	-	-
Stage 2	254	486	-	439	493	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 718.5	64.9	0.4	1.1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				62	673	273			
HCM Control Delay (s)	8.173	0	-	$ 64.9	10.9	64.9	8.63	0	-
HCM Lane VC Ratio	0.023	-	-	2.838	0.094	0.861	0.057	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.07	-	-	17.925	0.308	7.312	0.18	-	-

Intersection	
Intersection Delay (sec/veh):	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	110	0	0	218	68	0	1	0	137	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	153	0	0	376	82	0	4	0	167	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	458	0	-	153	0	0	678	683	77	644	642	229
Stage 1	-	-	-	-	-	-	225	225	-	417	417	-
Stage 2	-	-	-	-	-	-	453	458	-	227	225	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	1114	-	0	1440	-	-	369	374	990	386	395	793
Stage 1	-	-	0	-	-	-	782	721	-	613	595	-
Stage 2	-	-	0	-	-	-	590	570	-	776	721	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1114	-	-	1440	-	-	327	362	990	373	382	793
Mov Capacity-2 Maneuver	-	-	-	-	-	-	327	362	-	373	382	-
Stage 1	-	-	-	-	-	-	757	698	-	593	595	-
Stage 2	-	-	-	-	-	-	537	570	-	747	698	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.6	0	15.1	18.7
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	362						373	747
HCM Control Delay (s)	15.1	8.339	0	0	-	-	22.3	10.3
HCM Lane VC Ratio	0.011	0.032	-	-	-	-	0.448	0.095
HCM Lane LOS	C	A	A	A	-	-	C	B
HCM 95th Percentile Queue (veh)	0.033	0.1	-	0	-	-	2.239	0.312

Intersection	
Intersection Delay (sec/veh):	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	196	68	15	234	118	20	44	5	44	43	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	41	268	91	23	282	166	31	68	10	54	73	41
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	448	0	0	359	0	0	864	890	180	846	852	224
Stage 1	-	-	-	-	-	-	396	396	-	411	411	-
Stage 2	-	-	-	-	-	-	468	494	-	435	441	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	1123	-	-	1211	-	-	265	284	868	284	285	810
Stage 1	-	-	-	-	-	-	612	608	-	622	576	-
Stage 2	-	-	-	-	-	-	559	550	-	604	559	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1123	-	-	1211	-	-	191	268	868	217	269	810
Mov Capacity-2 Maneuver	-	-	-	-	-	-	191	268	-	217	269	-
Stage 1	-	-	-	-	-	-	590	586	-	599	565	-
Stage 2	-	-	-	-	-	-	453	540	-	509	539	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.8	0.4	29.3	32.4
HCM LOS	A	A	D	D

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	255							294
HCM Control Delay (s)	29.3	8.326	0	-	8.03	0	-	32.4
HCM Lane VC Ratio	0.427	0.036	-	-	0.019	-	-	0.572
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th Percentile Queue (veh)	2.015	0.113	-	-	0.058	-	-	3.314

Intersection	
Intersection Delay (sec/veh):	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	0	0	0	0	1	3	219	0	1	61	20
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	4	0	0	0	0	4	12	270	0	4	81	53
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	4	0	0	0	0	0	77	12	0	145	10	2
Stage 1	-	-	-	-	-	-	8	8	-	2	2	-
Stage 2	-	-	-	-	-	-	69	4	-	143	8	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	-	-	-	917	885	-	828	867	1056
Stage 1	-	-	-	-	-	-	1019	891	-	1026	877	-
Stage 2	-	-	-	-	-	-	946	894	-	865	871	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	-	-	-	807	883	-	-	865	1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	807	883	-	-	865	-
Stage 1	-	-	-	-	-	-	1017	889	-	1024	877	-
Stage 2	-	-	-	-	-	-	815	894	-	601	869	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	7.2	0	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	7.213	0	-	0	-	-	-
HCM Lane VC Ratio	-	0.002	-	-	-	-	-	-
HCM Lane LOS	-	A	A	-	A	-	-	-
HCM 95th Percentile Queue (veh)	-	0.007	-	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	82.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	41	23	10	47	170	970	53	87	259	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	64	32	13	63	243	1198	77	136	375	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1751	2420	200	2188	2393	638	398	0	0	1275	0	0
Stage 1	659	659	-	1723	1723	-	-	-	-	-	-	-
Stage 2	1092	1761	-	465	670	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	56	33	814	# 26	34	424	1172	-	-	546	-	-
Stage 1	424	464	-	94	145	-	-	-	-	-	-	-
Stage 2	232	139	-	552	459	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	16	20	814	# 11	20	424	1172	-	-	546	-	-
Mov Capacity-2 Maneuver	16	20	-	# 11	20	-	-	-	-	-	-	-
Stage 1	336	348	-	75	115	-	-	-	-	-	-	-
Stage 2	139	110	-	371	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	208.8	$ 1512.1	1.7	3.9
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				78	29			
HCM Control Delay (s)	8.873	0.4	-	208.8	$ 1512.1	13.765	0.5	-
HCM Lane VC Ratio	0.207	-	-	1.045	3.738	0.249	-	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th Percentile Queue (veh)	0.779	-	-	5.75	13.041	0.976	-	-

Intersection	
Intersection Delay (sec/veh):	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	234	33	36	863	0	0	0	0	34	0	262
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	0	339	59	49	992	0	0	0	0	59	0	332
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	992	0	0	398	0	-				1226	~	496
Stage 1	-	-	-	-	-	-				1090	-	-
Stage 2	-	-	-	-	-	-				136	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	401	-	-	731	-	0				191	0	449
Stage 1	-	-	-	-	-	0				175	0	-
Stage 2	-	-	-	-	-	0				790	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	401	-	-	731	-	-				181	-	449
Mov Capacity-2 Maneuver	-	-	-	-	-	-				181	-	-
Stage 1	-	-	-	-	-	-				175	-	-
Stage 2	-	-	-	-	-	-				790	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.5	32.7
HCM LOS	A	A	D

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						181	449
HCM Control Delay (s)	0	-	-	10.281	-	34.1	32.5
HCM Lane VC Ratio	-	-	-	0.067	-	0.324	0.739
HCM Lane LOS	A	-	-	B	-	D	D
HCM 95th Percentile Queue (veh)	0	-	-	0.216	-	1.323	6.013

Intersection	
Intersection Delay (sec/veh):	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	198	72	0	675	150	225	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	261	95	0	785	203	265	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	702	~	179
Stage 1	-	-	-	-	-	-	309	-	-
Stage 2	-	-	-	-	-	-	393	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	329	0	818
Stage 1	0	-	-	0	-	-	682	0	-
Stage 2	0	-	-	0	-	-	609	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	329	-	818
Mov Capacity-2 Maneuver	-	-	-	-	-	-	329	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	609	-	-

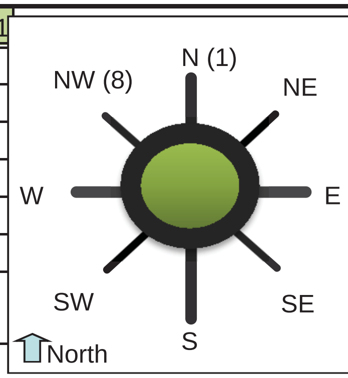
Approach	EB	WB	NB
HCM Control Delay (s)	0	0	43
HCM LOS	A	A	E

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	329	818				
HCM Control Delay (s)	48.8	9.7	-	-	-	-
HCM Lane VC Ratio	0.805	0.056	-	-	-	-
HCM Lane LOS	E	A	-	-	-	-
HCM 95th Percentile Queue (veh)	6.725	0.177	-	-	-	-

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Baseline AM



Volumes

Entry Legs (FROM)

Lane Designation	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
	Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
N (1), vph					48			
Exit NE (2), vph								
Legs E (3), vph		71						
(TO) SE (4), vph								
S (5), vph	252							
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	252	71	0	0	48	0	0	0

Lane Designation	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph		485						
NE (2), vph								
E (3), vph	239							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	239	485	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to Leg #	N (1), pcu/h	0	0	52	0	527	0	0	0
	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	77	0	0	0	260	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	274	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	351	0	52	0	787	0	0	0
	Entry flow Lane 1, pcu/h	274	0	52	0	260	0	0	0
	Entry flow Lane 2, pcu/h	77	0	0	0	527	0	0	0
	Conflicting flow, pcu/h	0	0	527	0	77	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	781	NA	1046	1046	NA	NA
Entry Flow Rates, veh/h	274	77	52	NA	260	527	NA	NA
V/C ratio	**0.24**	**0.07**	**0.07**		**0.25**	**0.50**		
Control Delay, s/veh	**5.4**	**3.8**	**5.3**		**5.8**	**9.4**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**24**	**5**	**5**		**25**	**73**		
Approach Delay, LOS	5.1 sec, LOS A		5.3 sec, LOS A		8.2 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1020	NA	1333	1333	NA	NA
Entry Flow Rates, veh/h	274	77	52	NA	260	527	NA	NA
V/C ratio	**0.17**	**0.05**	**0.05**		**0.19**	**0.40**		
Control Delay, s/veh	**3.5**	**2.5**	**4.0**		**4.3**	**6.4**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**15**	**4**	**4**		**18**	**48**		
Approach Delay, LOS	3.3 sec, LOS A		4 sec, LOS A		5.7 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	18	25	362	511	118	777	637	146	104	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1886	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	888	409	73	826	321	591	866	736	68	509	210
Arriving On Green	0.03	0.25	0.00	0.02	0.24	0.00	0.46	0.46	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1295.5	1900.0	1615.0	505.7	3771.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	236.0	1110.0	0.0	162.2	116.9	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1295.5	1900.0	1615.0	505.7	1885.8	1552.9
Q Serve(g_s), s	4.0	9.1	0.0	1.0	14.3	0.0	14.4	54.0	0.0	16.0	3.3	0.0
Cycle Q Clear(g_c), s	4.0	9.1	0.0	1.0	14.3	0.0	14.4	54.0	0.0	16.0	3.3	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	887.6	409.0	73.0	826.1	320.7	590.5	866.1	736.2	68.3	509.4	209.7
V/C Ratio(X)	1.056	0.368	0.000	0.398	0.569	0.000	0.400	1.282	0.000	2.375	0.229	0.000
Avail Cap(c_a), veh/h	55.5	887.6	409.0	118.5	870.7	338.0	590.5	866.1	736.2	68.3	509.4	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	36.4	0.0	57.3	39.6	0.0	21.4	32.2	0.0	51.2	45.7	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	0.8	0.0	0.4	135.6	0.0	661.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	36.7	0.0	60.7	40.4	0.0	21.9	167.8	0.0	712.7	46.0	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1346			279	
Approach Delay, s/veh		60.7			41.6			142.2			433.5	
Approach LOS		E			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	34.00		6.46	32.46			58.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	30.00		4.00	30.00			54.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.08		2.97	16.26			56.00			18.00	
Green Extension Time (p_c)	0.00	5.22		0.00	4.50			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			142.1									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	218	670	418	156	908	1177	310	204	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	351	888	409	339	731	333	254	1392	1085	270	1462	648
Arriving On Green	0.10	0.25	0.00	0.07	0.22	0.22	0.14	0.39	0.00	0.16	0.40	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	256.5	744.4	464.4	222.9	1278.9	0.0	344.4	229.2	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	12.0	21.8	0.0	5.9	26.0	26.0	14.3	40.0	0.0	19.0	4.8	0.0
Cycle Q Clear(g_c), s	12.0	21.8	0.0	5.9	26.0	26.0	14.3	40.0	0.0	19.0	4.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	351.0	888.4	409.4	338.5	731.4	333.4	254.4	1392.1	1085.3	270.4	1461.9	647.5
V/C Ratio(X)	1.249	0.779	0.000	0.758	1.018	1.393	0.876	0.919	0.000	1.274	0.157	0.000
Avail Cap(c_a), veh/h	351.0	888.4	409.4	343.6	731.4	333.4	365.5	1427.9	1113.2	270.4	1461.9	647.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	53.4	41.3	0.0	54.5	46.4	46.4	50.0	34.7	0.0	49.9	22.5	0.0
Incr Delay (d2), s/veh	133.7	4.5	0.0	9.2	37.8	194.3	15.2	9.7	0.0	148.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	187.1	45.7	0.0	63.8	84.2	240.7	65.3	44.4	0.0	198.7	22.5	0.0
Lane Group LOS	F	D		E	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1465			1502			574	
Approach Delay, s/veh		100.5			130.3			47.5			128.3	
Approach LOS		F			F			D			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	16.00	34.12		11.88	30.00		20.70	49.82		23.00	52.12	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	12.00	30.00		8.00	26.00		24.00	47.00		19.00	42.00	
Max Q Clear Time (g_c+I1), s	14.00	23.84		7.87	28.00		16.34	42.05		21.00	6.79	
Green Extension Time (p_c)	0.00	4.84		0.01	0.00		0.37	3.77		0.00	15.00	
Intersection Summary												
HCM 2010 Control Delay			96.2									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
6: 19th St. & Chamberlain Ave.

9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	128	28	28	68	250	10	434	23	26	92	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1730	1730	1900	1856	1856	1900	1898	1898	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	475	608	135	115	69	310	32	504	24	45	543	466
Arriving On Green	0.27	0.44	0.44	0.06	0.23	0.23	0.02	0.28	0.28	0.03	0.29	0.29
Sat Flow, veh/h	1739.9	1372.0	304.5	1809.5	294.9	1327.0	1809.5	1797.6	85.6	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	226.7	47.5	0.0	456.1	16.9	0.0	640.4	30.2	108.2	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1676.6	1809.5	0.0	1621.9	1809.5	0.0	1883.2	1756.8	1881.2	1615.0
Q Serve(g_s), s	35.0	0.0	11.2	3.2	0.0	30.0	1.2	0.0	36.0	2.2	5.6	0.6
Cycle Q Clear(g_c), s	35.0	0.0	11.2	3.2	0.0	30.0	1.2	0.0	36.0	2.2	5.6	0.6
Proportion In Lane	1.000		0.182	1.000		0.818	1.000		0.045	1.000		1.000
Lane Grp Cap(c), veh/h	474.7	0.0	742.8	115.1	0.0	379.3	32.0	0.0	528.4	45.2	543.0	466.1
V/C Ratio(X)	1.214	0.000	0.305	0.412	0.000	1.203	0.530	0.000	1.212	0.670	0.199	0.022
Avail Cap(c_a), veh/h	474.7	0.0	742.8	126.9	0.0	379.3	70.5	0.0	528.4	68.5	543.0	466.1
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	46.6	0.0	23.0	57.8	0.0	49.1	62.5	0.0	46.1	62.0	34.4	32.7
Incr Delay (d2), s/veh	114.4	0.0	1.1	2.4	0.0	113.7	12.9	0.0	111.9	15.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	161.1	0.0	24.1	60.1	0.0	162.9	75.4	0.0	158.1	77.7	34.6	32.7
Lane Group LOS	F		C	E		F	E		F	E	C	C
Approach Volume, veh/h		803			504			657			149	
Approach Delay, s/veh		122.4			153.2			156.0			43.2	
Approach LOS		F			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	41.00	62.84		14.16	36.00		8.27	42.00		9.30	43.03	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	35.00	56.00		9.00	30.00		5.00	36.00		5.00	36.00	
Max Q Clear Time (g_c+I1), s	37.00	13.17		5.24	32.00		3.19	38.00		4.19	7.57	
Green Extension Time (p_c)	0.00	10.83		0.02	0.00		0.00	0.00		0.00	5.65	
Intersection Summary												
HCM 2010 Control Delay			134.6									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
8: Rice Rd & Chamberlain Ave.

9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	667	122	250	180	42	57	44	337	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1867	1867	1867	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	55	1241	259	408	1834	433	343	535	447	432	427	60
Arriving On Green	0.45	0.45	0.45	0.11	0.62	0.62	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	91.2	2771.4	573.5	1791.6	2973.6	702.4	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	496.8	0.0	447.2	294.1	130.5	126.4	64.8	50.0	474.6	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1775.0	0.0	1597.6	1791.6	1900.0	1776.0	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	1.3	0.0	25.6	9.8	3.4	3.5	5.1	2.4	35.5	19.6	0.0	8.1
Cycle Q Clear(g_c), s	24.0	0.0	25.6	9.8	3.4	3.5	13.2	2.4	35.5	22.0	0.0	8.1
Proportion In Lane	0.051		0.359	1.000		0.395	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	833.4	0.0	721.8	408.4	1171.7	1095.2	343.2	535.3	446.5	432.2	0.0	486.9
V/C Ratio(X)	0.596	0.000	0.620	0.720	0.111	0.115	0.189	0.093	1.063	0.575	0.000	0.295
Avail Cap(c_a), veh/h	833.4	0.0	721.8	545.9	1171.7	1095.2	343.2	535.3	446.5	432.2	0.0	486.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	24.6	0.0	25.0	18.7	9.5	9.5	37.7	30.6	42.3	38.6	0.0	32.6
Incr Delay (d2), s/veh	1.8	0.0	2.4	8.5	0.1	0.1	1.2	0.3	60.3	5.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	26.4	0.0	27.4	27.2	9.6	9.6	38.9	30.9	102.6	44.1	0.0	34.1
Lane Group LOS	C		C	C	A	A	D	C	F	D		C
Approach Volume, veh/h		944			551			589			392	
Approach Delay, s/veh		26.9			19.0			89.5			40.4	
Approach LOS		C			B			F			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		60.21		19.79	80.00			40.00			40.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		46.00		23.00	74.00			35.50			35.50	
Max Q Clear Time (g_c+I1), s		27.57		11.82	5.53			37.50			24.02	
Green Extension Time (p_c)		12.16		1.97	24.48			0.00			4.99	
Intersection Summary												
HCM 2010 Control Delay		42.2										
HCM 2010 Level of Service		D										

Intersection	
Intersection Delay (sec/veh):	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	301	0	1	586	12	1	0	1	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	342	0	1	792	36	4	0	1	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	828	0	0	342	0	0	1172	~	342	1163	1162	414
Stage 1	-	-	-	-	-	-	350	-	-	812	812	-
Stage 2	-	-	-	-	-	-	822	-	-	351	350	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	812	-	-	1184	-	-	171	0	705	173	197	643
Stage 1	-	-	-	-	-	-	671	0	-	376	395	-
Stage 2	-	-	-	-	-	-	371	0	-	670	636	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	812	-	-	1184	-	-	165	-	705	172	195	643
Mov Capacity-2 Maneuver	-	-	-	-	-	-	165	-	-	172	195	-
Stage 1	-	-	-	-	-	-	667	-	-	374	394	-
Stage 2	-	-	-	-	-	-	359	-	-	665	632	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	23.1	24.2
HCM LOS	A	A	C	C

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	165	705							239
HCM Control Delay (s)	27.4	10.1	9.455	0	-	8.044	-	-	24.2
HCM Lane VC Ratio	0.024	0.002	0.005	-	-	0.001	-	-	0.218
HCM Lane LOS	D	B	A	A	-	A	-	-	C
HCM 95th Percentile Queue (veh)	0.074	0.006	0.015	-	-	0.003	-	-	0.806

Intersection	
Intersection Delay (sec/veh):	$ 1834

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	268	0	0	3	0	24	0	1288	5	0	115	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	536	0	0	3	0	26	0	1741	5	0	142	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1905	1894	77	1815	1898	1744	154	0	0	-	0	0
Stage 1	148	148	-	1744	1744	-	-	-	-	-	-	-
Stage 2	1757	1746	-	71	154	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	0	-	-
Pot Capacity-1 Maneuver	# 43	69	937	49	69	76	1439	-	-	0	-	-
Stage 1	845	774	-	90	139	-	-	-	-	0	-	-
Stage 2	# 90	139	-	931	769	-	-	-	-	0	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 28	69	937	49	69	76	1439	-	-	-	-	-
Mov Capacity-2 Maneuver	# 28	69	-	49	69	-	-	-	-	-	-	-
Stage 1	845	774	-	90	139	-	-	-	-	-	-	-
Stage 2	# 59	139	-	931	769	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 8431.3	85.8	0	0
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (vph)				28	72		
HCM Control Delay (s)	0	-	-	$ 85.8	85.8	-	-
HCM Lane VC Ratio	-	-	-	19.143	0.408	-	-
HCM Lane LOS	A	-	-	F	F	-	-
HCM 95th Percentile Queue (veh)	0	-	-	66.522	1.59	-	-

Intersection	
Intersection Delay (sec/veh):	41

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	83	32	6	36	180	370	27	37	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	94	45	8	62	217	493	61	39	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	53	0	0	160	0	0	550	534	80	885	541	-
Stage 1	-	-	-	-	-	-	293	293	-	237	237	-
Stage 2	-	-	-	-	-	-	257	241	-	648	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	450	456	980	241	449	0
Stage 1	-	-	-	-	-	-	719	674	-	718	710	0
Stage 2	-	-	-	-	-	-	754	711	-	421	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	382	406	980	64	400	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	382	406	-	64	400	-
Stage 1	-	-	-	-	-	-	686	643	-	685	663	-
Stage 2	-	-	-	-	-	-	663	664	-	132	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	4.9	64.9	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	382	684							64	-
HCM Control Delay (s)	16.2	69.2	7.406	0	-	7.718	0	-	208	-
HCM Lane VC Ratio	0.162	1.038	0.046	-	-	0.066	-	-	0.959	-
HCM Lane LOS	C	F	A	A	-	A	A	-	F	-
HCM 95th Percentile Queue (veh)	0.574	18.039	0.144	-	-	0.213	-	-	4.635	-

Intersection	
Intersection Delay (sec/veh):	13.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	281	36	80	215	1	41	30	114	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	316	44	91	287	1	51	43	207	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	288	0	0	360	0	0	740	810	180	652	832	145
Stage 1	-	-	-	-	-	-	340	340	-	470	470	-
Stage 2	-	-	-	-	-	-	400	470	-	182	362	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1439	-	-	1382	-	-	287	312	*1357	*357	270	*1381
Stage 1	-	-	-	-	-	-	829	764	-	*677	600	-
Stage 2	-	-	-	-	-	-	718	642	-	*1357	708	-
Time blocked-Platoon(%)	8	-	-	10	-	-	0	0	10	0	0	8
Mov Capacity-1 Maneuver	1439	-	-	1382	-	-	139	287	*1357	*252	249	*1381
Mov Capacity-2 Maneuver	-	-	-	-	-	-	139	287	-	*252	249	-
Stage 1	-	-	-	-	-	-	828	763	-	*676	554	-
Stage 2	-	-	-	-	-	-	473	592	-	*1084	707	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2	27.9	36.6
HCM LOS	A	A	D	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*449							*252	*291
HCM Control Delay (s)	27.9	7.504	0	-	7.788	0.2	-	20.4	38.2
HCM Lane VC Ratio	0.671	0.001	-	-	0.066	-	-	0.075	0.657
HCM Lane LOS	D	A	A	-	A	A	-	C	E
HCM 95th Percentile Queue (veh)	4.85	0.003	-	-	0.211	-	-	0.242	4.274

HCM 2010 TWSC
9: Kilbourne St & Chamberlain Ave.
9/8/2012

Intersection						
Intersection Delay (sec/veh): 36.8						

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1110	89	366	457	14	693
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1354	107	421	502	23	949
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1461	0	2501	731
Stage 1	-	-	-	-	1408	-
Stage 2	-	-	-	-	1093	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	742	-	25	*# 840
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	287	-
Time blocked-Platoon(%)	-	-	44	-	44	44
Mov Capacity-1 Maneuver	-	-	742	-	# 11	*# 840
Mov Capacity-2 Maneuver	-	-	-	-	# 11	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	124	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	7.3	120.2
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*11	*840				
HCM Control Delay (s)	$ 1197.8	93.7	-	-	16.01	-
HCM Lane VC Ratio	2.121	1.13	-	-	0.567	-
HCM Lane LOS	F	F	-	-	C	-
HCM 95th Percentile Queue (veh)	3.828	26.899	-	-	3.604	-

HCM 2010 TWSC
10: 19th St. & Barnes Ave.
9/8/2012

Intersection												
Intersection Delay (sec/veh): 5.3												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	83	6	370	92	25	143	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	141	10	536	108	36	162	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	929	901	84	851	849	322	167	0	0	644	0	0
Stage 1	237	237	-	610	610	-	-	-	-	-	-	-
Stage 2	692	664	-	241	239	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	250	280	915	278	300	724	1364	-	-	936	-	-
Stage 1	771	713	-	478	488	-	-	-	-	-	-	-
Stage 2	437	461	-	758	711	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	183	267	915	263	286	724	1364	-	-	936	-	-
Mov Capacity-2 Maneuver	183	267	-	263	286	-	-	-	-	-	-	-
Stage 1	765	686	-	474	484	-	-	-	-	-	-	-
Stage 2	334	458	-	721	684	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	19.9	22.4	0.1	1.6
HCM LOS	C	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				253	434			
HCM Control Delay (s)	7.658	0	-	19.9	22.4	9.001	0	-
HCM Lane VC Ratio	0.007	-	-	0.046	0.535	0.039	-	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th Percentile Queue (veh)	0.021	-	-	0.144	3.072	0.121	-	-

11: 25th St & Barnes Ave

9/8/2012

Intersection	
Intersection Delay (sec/veh)	21.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	111	72	53	71	10	66	129	147	21	185	24
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	90	126	103	63	81	13	89	157	233	27	234	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.4	13.7	28.7	17.3
HCM LOS	C	B	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	19%	19%	40%	9%
Volume Thru (%)	38%	49%	53%	80%
Volume Right (%)	43%	32%	7%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	342	227	134	230
Left Turning Volume	129	111	71	185
Through Volume	147	72	10	24
Right Turning Volume	66	44	53	21
Lane Flow Rate	480	319	157	288
Geometry Group	1	1	1	1
Degree of Utilization, X	0.797	0.58	0.319	0.535
Departure Headway, Hd	5.979	6.552	7.309	6.685
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	600	548	495	536
Service Time	4.06	4.642	5.309	4.781
HCM Lane V/C Ratio	0.8	0.582	0.317	0.537
HCM Control Delay	28.7	18.4	13.7	17.3
HCM Lane LOS	D	C	B	C
HCM 95th Percentile Queue	11.6	4.1	1.4	3.4

13: 15th St & Lane Av

9/8/2012

Intersection	
Intersection Delay (sec/veh)	39.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	72	14	30	0	387	258	78	88	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	103	37	67	0	435	363	163	126	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12	12.1	60.5	12.4
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	60%	0%	90%	0%	32%	0%	92%
Volume Right (%)	0%	40%	0%	10%	0%	68%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	645	19	71	72	44	78	96
Left Turning Volume	0	387	0	64	0	14	0	88
Through Volume	0	258	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	72	0	78	0
Lane Flow Rate	0	798	31	90	103	104	162	140
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.073	0.191	0.226	0.199	0.322	0.254
Departure Headway, Hd	6.205	5.938	8.4	7.594	7.914	6.904	7.135	6.56
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	615	428	474	455	522	505	548
Service Time	3.941	3.674	6.125	5.319	5.638	4.628	4.862	4.287
HCM Lane V/C Ratio	0	1.298	0.072	0.19	0.226	0.199	0.321	0.255
HCM Control Delay	8.9	60.5	11.8	12.1	12.9	11.3	13.2	11.5
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	116.4	0.2	0.7	0.9	0.7	1.4	1

HCM 2010 TWSC
12: Kilbourne St & Brainard Ave

Intersection	
Intersection Delay (sec/veh):	112.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	412	2	77	431	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	485	4	118	479	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1300	1247	504	1291	1270	487	529	0	0	489	0	0
Stage 1	740	740	-	505	505	-	-	-	-	-	-	-
Stage 2	560	507	-	786	765	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 140	175	572	142	170	585	1048	-	-	1085	-	-
Stage 1	412	426	-	553	544	-	-	-	-	-	-	-
Stage 2	516	543	-	388	415	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 86	146	572	89	142	585	1048	-	-	1085	-	-
Mov Capacity-2 Maneuver	# 86	146	-	89	142	-	-	-	-	-	-	-
Stage 1	407	360	-	546	537	-	-	-	-	-	-	-
Stage 2	416	536	-	265	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 610.2	28.2	0.2	1.6
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				93	572	266			
HCM Control Delay (s)	8.466	0	-	$ 28.2	11.9	28.2	8.724	0	-
HCM Lane VC Ratio	0.009	-	-	2.42	0.087	0.426	0.109	-	-
HCM Lane LOS	A	A	-	F	B	D	A	A	-
HCM 95th Percentile Queue (veh)	0.027	-	-	20.607	0.286	2.015	0.367	-	-

HCM 2010 TWSC
14: 19th St & Lane Av

Intersection	
Intersection Delay (sec/veh):	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	339	0	1	95	192	0	0	1	129	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	408	0	4	158	234	0	0	4	174	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	392	0	-	408	0	0	853	934	204	819	817	196
Stage 1	-	-	-	-	-	-	534	534	-	283	283	-
Stage 2	-	-	-	-	-	-	319	400	-	536	534	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1167	-	0	1162	-	-	281	268	842	297	313	850
Stage 1	-	-	0	-	-	-	534	528	-	728	681	-
Stage 2	-	-	0	-	-	-	697	605	-	532	528	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1167	-	-	1162	-	-	245	253	842	283	295	850
Mov Capacity-2 Maneuver	-	-	-	-	-	-	245	253	-	283	295	-
Stage 1	-	-	-	-	-	-	505	499	-	689	679	-
Stage 2	-	-	-	-	-	-	635	603	-	501	499	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.1	0.1	9.3	28.6
HCM LOS	A	A	A	D

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	842						283	770
HCM Control Delay (s)	9.3	8.262	0	8.109	0	-	36.2	10.2
HCM Lane VC Ratio	0.005	0.054	-	0.003	-	-	0.616	0.094
HCM Lane LOS	A	A	A	A	A	-	E	B
HCM 95th Percentile Queue (veh)	0.014	0.172	-	0.01	-	-	3.767	0.309

Intersection	
Intersection Delay (sec/veh):	130.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	34	452	75	7	243	61	37	47	19	86	124	17
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	50	595	99	14	279	73	54	58	54	104	168	27
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	352	0	0	694	0	0	1186	1125	348	1145	1138	177
Stage 1	-	-	-	-	-	-	745	745	-	344	344	-
Stage 2	-	-	-	-	-	-	441	380	-	801	794	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1128	-	-	836	-	-	163	201	700	178	203	871
Stage 1	-	-	-	-	-	-	400	414	-	676	641	-
Stage 2	-	-	-	-	-	-	587	605	-	381	403	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1128	-	-	836	-	-	# 38	189	700	120	191	871
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 38	189	-	120	191	-
Stage 1	-	-	-	-	-	-	382	396	-	646	630	-
Stage 2	-	-	-	-	-	-	411	595	-	287	385	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.6	0.4	$ 478.8	$ 418.7
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	92							168
HCM Control Delay (s)	$ 478.8	8.339	0	-	9.38	0	-	$ 478.8
HCM Lane VC Ratio	1.804	0.044	-	-	0.017	-	-	1.775
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	13.763	0.139	-	-	0.051	-	-	21.477

Intersection	
Intersection Delay (sec/veh):	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	12	0	1	0	0	0	5	33	0	0	176	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	22	0	4	0	0	0	10	41	0	0	267	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	333	333	272	335	338	41	277	0	0	41	0	0
Stage 1	272	272	-	61	61	-	-	-	-	-	-	-
Stage 2	61	61	-	274	277	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	591	590	772	622	586	1036	1298	-	-	1581	-	-
Stage 1	700	688	-	955	848	-	-	-	-	-	-	-
Stage 2	912	848	-	736	685	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	587	585	772	615	581	1036	1298	-	-	1581	-	-
Mov Capacity-2 Maneuver	587	585	-	615	581	-	-	-	-	-	-	-
Stage 1	694	688	-	947	841	-	-	-	-	-	-	-
Stage 2	905	841	-	732	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	11.2	0	1.5	0
HCM LOS	B	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				610	0			
HCM Control Delay (s)	7.795	0	-	11.2	0	0	-	-
HCM Lane VC Ratio	0.008	-	-	0.042	-	-	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th Percentile Queue (veh)	0.023	-	-	0.132	-	0	-	-

Intersection	
Intersection Delay (sec/veh):	71.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	189	41	16	37	28	241	34	93	916	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	225	64	28	76	36	280	36	116	974	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1441	1603	496	1114	1593	158	991	0	0	316	0	0
Stage 1	1215	1215	-	370	370	-	-	-	-	-	-	-
Stage 2	226	388	-	744	1223	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	95	107	525	165	108	866	706	-	-	1248	-	-
Stage 1	195	256	-	628	624	-	-	-	-	-	-	-
Stage 2	762	612	-	377	254	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	60	92	525	# 49	93	866	706	-	-	1248	-	-
Mov Capacity-2 Maneuver	60	92	-	# 49	93	-	-	-	-	-	-	-
Stage 1	185	232	-	596	592	-	-	-	-	-	-	-
Stage 2	629	581	-	154	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	218.2	$ 423.5	1.1	1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				223	99			
HCM Control Delay (s)	10.372	0.1	-	218.2	$ 423.5	8.181	0.2	-
HCM Lane VC Ratio	0.051	-	-	1.329	1.688	0.093	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.16	-	-	16.08	13.251	0.307	-	-

Intersection	
Intersection Delay (sec/veh):	13.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	873	173	73	249	0	0	0	0	161	2	110
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	0	1003	216	107	341	0	0	0	0	194	4	180
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	341	0	0	1219	0	-				956	1774	171
Stage 1	-	-	-	-	-	-				555	555	-
Stage 2	-	-	-	-	-	-				401	1219	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	811	-	-	306	-	0				268	84	717
Stage 1	-	-	-	-	-	0				398	516	-
Stage 2	-	-	-	-	-	0				541	255	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	811	-	-	306	-	-				195	55	717
Mov Capacity-2 Maneuver	-	-	-	-	-	-				195	55	-
Stage 1	-	-	-	-	-	-				398	336	-
Stage 2	-	-	-	-	-	-				541	255	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	5.5	64.3
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						195	717
HCM Control Delay (s)	0	-	-	22.99	-	113.2	11.7
HCM Lane VC Ratio	-	-	-	0.351	-	0.995	0.252
HCM Lane LOS	A	-	-	C	-	F	B
HCM 95th Percentile Queue (veh)	0	-	-	1.527	-	8.465	0.993

Intersection	
Intersection Delay (sec/veh):	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	816	225	0	289	143	33	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	Free	Free	Free	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	897	239	0	425	181	41	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

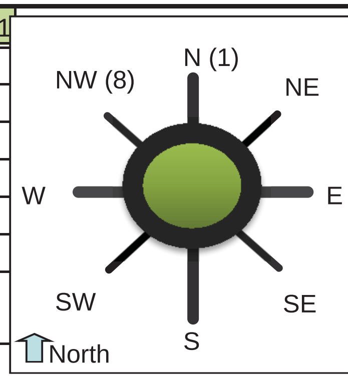
Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	1230	~	569
Stage 1	-	-	-	-	-	-	1017	-	-
Stage 2	-	-	-	-	-	-	213	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	136	0	460
Stage 1	0	-	-	0	-	-	258	0	-
Stage 2	0	-	-	0	-	-	775	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	136	-	460
Mov Capacity-2 Maneuver	-	-	-	-	-	-	136	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	775	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	24.8
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	136	460				
HCM Control Delay (s)	42.4	14.2	-	-	-	-
HCM Lane VC Ratio	0.3	0.147	-	-	-	-
HCM Lane LOS	E	B	-	-	-	-
HCM 95th Percentile Queue (veh)	1.168	0.513	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Baseline PM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					102			
Exit	NE (2), vph								
Legs	E (3), vph		91						
(TO)	SE (4), vph								
	S (5), vph	583							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	583	91	0	0	102	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		204						
	NE (2), vph								
	E (3), vph	146							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	146	204	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	111	0	222	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	99	0	0	0	159	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	634	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	733	0	111	0	380	0	0	0
	Entry flow Lane 1, pcu/h	634	0	111	0	159	0	0	0
	Entry flow Lane 2, pcu/h	99	0	0	0	222	0	0	0
	Conflicting flow, pcu/h	0	0	222	0	99	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	968	NA	1024	1024	NA	NA
Entry Flow Rates, veh/h	634	99	111	NA	159	222	NA	NA
V/C ratio	**0.56**	**0.09**	**0.11**		**0.16**	**0.22**		
Control Delay, s/veh	**10.0**	**3.9**	**4.8**		**4.9**	**5.6**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**90**	**7**	**10**		**14**	**21**		
Approach Delay, LOS	9.2 sec, LOS A		4.8 sec, LOS A		5.3 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1343	NA	1304	1304	NA	NA
Entry Flow Rates, veh/h	634	99	111	NA	159	222	NA	NA
V/C ratio	**0.39**	**0.06**	**0.08**		**0.12**	**0.17**		
Control Delay, s/veh	**5.5**	**2.6**	**3.3**		**3.8**	**4.2**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**47**	**5**	**7**		**10**	**15**		
Approach Delay, LOS	5.1 sec, LOS A		3.3 sec, LOS A		4 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	191	416	373	80	30	308	78	279	1093	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	57	529	244	471	862	335	104	430	366	335	1344	550
Arriving On Green	0.03	0.15	0.00	0.13	0.25	0.00	0.23	0.23	0.00	0.35	0.35	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	461.1	1900.0	1615.0	945.3	3798.1	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	60.0	440.0	0.0	310.0	1228.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	461.1	1900.0	1615.0	945.3	1899.1	1552.9
Q Serve(g_s), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Cycle Q Clear(g_c), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	56.6	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	334.6	1344.3	549.6
V/C Ratio(X)	0.801	0.966	0.000	1.026	0.562	0.000	0.574	1.022	0.000	0.927	0.914	0.000
Avail Cap(c_a), veh/h	124.2	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	341.0	1370.3	560.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.1	50.3	0.0	51.6	38.9	0.0	41.0	46.1	0.0	37.0	36.8	0.0
Incr Delay (d2), s/veh	22.1	30.5	0.0	48.4	0.8	0.0	7.4	49.1	0.0	30.3	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	79.2	80.8	0.0	100.0	39.8	0.0	48.4	95.2	0.0	67.3	46.3	0.0
Lane Group LOS	E	F		F	D		D	F		E	D	
Approach Volume, veh/h		557			968			500			1538	
Approach Delay, s/veh		80.7			69.8			89.6			50.5	
Approach LOS		F			E			F			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.10	22.00		20.00	33.90			31.00			46.18	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	9.00	18.00		16.00	25.00			27.00			43.00	
Max Q Clear Time (g_c+I1), s	5.26	19.28		18.00	16.64			29.00			39.57	
Green Extension Time (p_c)	0.02	0.00		0.00	4.10			0.00			2.61	
Intersection Summary												
HCM 2010 Control Delay			66.0									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	710	515	173	32	296	264	198	1254	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	237	828	382	861	1126	513	58	946	738	258	1381	612
Arriving On Green	0.07	0.24	0.00	0.17	0.34	0.34	0.03	0.26	0.00	0.15	0.38	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	835.3	572.2	192.2	45.7	416.9	0.0	220.0	1409.0	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Cycle Q Clear(g_c), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	236.9	828.3	381.7	861.4	1126.4	513.4	58.3	946.1	737.5	258.3	1381.3	611.8
V/C Ratio(X)	0.689	1.012	0.000	0.970	0.508	0.374	0.785	0.441	0.000	0.852	1.020	0.000
Avail Cap(c_a), veh/h	312.9	828.3	381.7	861.4	1126.4	513.4	81.5	946.1	737.5	399.7	1381.3	611.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.5	33.9	0.0	36.7	23.6	22.4	42.7	27.4	0.0	36.7	27.4	0.0
Incr Delay (d2), s/veh	4.1	34.2	0.0	23.4	0.4	0.5	27.4	0.3	0.0	10.2	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.5	68.1	0.0	60.1	23.9	22.8	70.1	27.7	0.0	46.9	56.8	0.0
Lane Group LOS	D	F		E	C	C	E	C		D	F	
Approach Volume, veh/h		1001			1600			463			1629	
Approach Delay, s/veh		64.3			42.7			31.9			55.5	
Approach LOS		E			D			C			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	10.06	25.00		19.00	33.94		6.86	27.29		17.57	38.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		15.00	28.00		4.00	17.00		21.00	34.00	
Max Q Clear Time (g_c+I1), s	6.08	23.00		16.46	14.17		4.23	10.56		13.26	36.00	
Green Extension Time (p_c)	0.09	0.00		0.00	8.50		0.00	5.28		0.37	0.00	
Intersection Summary												
HCM 2010 Control Delay			50.7									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
6: 19th St. & Chamberlain Ave.

Base + Alt C AM Peak
9/7/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	133	55	53	332	70	37	186	64	283	432	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1712	1712	1900	1834	1834	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	124	361	152	146	457	118	81	273	84	356	666	572
Arriving On Green	0.07	0.32	0.32	0.05	0.22	0.22	0.04	0.20	0.20	0.20	0.35	0.35
Sat Flow, veh/h	1739.9	1146.4	481.1	1809.5	1407.0	363.1	1809.5	1386.6	428.8	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	273.6	89.8	0.0	509.4	62.7	0.0	343.0	329.1	508.2	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1627.5	1809.5	0.0	1770.1	1809.5	0.0	1815.4	1756.8	1881.2	1615.0
Q Serve(g_s), s	6.6	0.0	16.2	5.7	0.0	32.6	4.0	0.0	21.9	21.5	28.0	15.8
Cycle Q Clear(g_c), s	6.6	0.0	16.2	5.7	0.0	32.6	4.0	0.0	21.9	21.5	28.0	15.8
Proportion In Lane	1.000		0.296	1.000		0.205	1.000		0.236	1.000		1.000
Lane Grp Cap(c), veh/h	123.7	0.0	512.7	146.3	0.0	574.9	81.0	0.0	356.9	355.6	666.4	572.1
V/C Ratio(X)	0.808	0.000	0.534	0.614	0.000	0.886	0.774	0.000	0.961	0.925	0.763	0.488
Avail Cap(c_a), veh/h	148.7	0.0	512.7	185.6	0.0	574.9	108.3	0.0	356.9	375.4	666.4	572.1
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	53.6	0.0	33.0	53.5	0.0	43.7	55.3	0.0	46.6	45.8	33.4	29.5
Incr Delay (d2), s/veh	23.5	0.0	3.9	4.1	0.0	18.0	21.4	0.0	37.3	27.7	5.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	77.0	0.0	36.9	57.7	0.0	61.7	76.7	0.0	83.9	73.5	38.6	30.1
Lane Group LOS	E		D	E		E	E		F	E	D	C
Approach Volume, veh/h		374			599			406			1117	
Approach Delay, s/veh		47.7			61.1			82.8			46.8	
Approach LOS		D			E			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	14.32	42.86		15.46	44.00		11.24	29.00		29.68	47.44	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	36.00		12.00	38.00		7.00	23.00		25.00	41.00	
Max Q Clear Time (g_c+I1), s	8.63	18.20		7.68	34.63		6.01	23.90		23.51	29.97	
Green Extension Time (p_c)	0.03	8.35		0.06	2.19		0.01	0.00		0.17	4.89	
Intersection Summary												
HCM 2010 Control Delay			56.2									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
8: Rice Rd & Chamberlain Ave.

Base + Alt C AM Peak
9/7/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	325	86	299	851	173	135	127	128	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1869	1869	1869	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	97	953	292	685	1955	411	337	490	409	317	208	192
Arriving On Green	0.92	0.92	0.92	0.13	0.64	0.64	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	193.3	1971.2	636.8	1791.6	3046.6	640.4	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	236.3	0.0	282.3	351.8	609.4	574.7	153.4	144.3	180.3	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1263.1	0.0	1588.7	1791.6	1900.0	1787.0	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	2.7	11.5	20.3	20.4	12.8	7.6	11.9	7.8	0.0	6.7
Cycle Q Clear(g_c), s	1.7	0.0	2.7	11.5	20.3	20.4	19.4	7.6	11.9	15.4	0.0	6.7
Proportion In Lane	0.153		0.401	1.000		0.358	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	613.8	0.0	728.5	685.3	1219.2	1146.7	336.6	490.1	408.8	317.2	0.0	399.7
V/C Ratio(X)	0.385	0.000	0.388	0.513	0.500	0.501	0.456	0.294	0.441	0.297	0.000	0.261
Avail Cap(c_a), veh/h	613.8	0.0	728.5	820.1	1219.2	1146.7	336.6	490.1	408.8	317.2	0.0	399.7
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	2.8	0.0	2.8	11.6	11.3	11.4	41.9	34.7	36.2	40.8	0.0	34.3
Incr Delay (d2), s/veh	0.8	0.0	0.7	2.2	0.7	0.7	4.4	1.5	3.4	2.4	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	3.6	0.0	3.5	13.8	12.0	12.1	46.3	36.2	39.7	43.2	0.0	35.9
Lane Group LOS	A		A	B	B	B	D	D	D	D		D
Approach Volume, veh/h		519			1536			478			199	
Approach Delay, s/veh		3.6			12.4			40.8			39.3	
Approach LOS		A			B			D			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		61.02		21.98	83.00			37.00			37.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		47.00		25.00	77.00			32.50			32.50	
Max Q Clear Time (g_c+I1), s		4.74		13.48	22.39			21.43			17.42	
Green Extension Time (p_c)		30.64		2.49	36.71			3.68			4.37	
Intersection Summary												
HCM 2010 Control Delay			17.7									
HCM 2010 Level of Service			B									

Intersection												
Intersection Delay (sec/veh):	3.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	630	104	215	220	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	716	132	295	297	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	848	0	0	1681	~	782	1682	1743	157
Stage 1	-	-	-	-	-	-	782	-	-	895	895	-
Stage 2	-	-	-	-	-	-	899	-	-	787	848	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1260	-	-	764	-	-	76	0	397	76	88	894
Stage 1	-	-	-	-	-	-	390	0	-	338	362	-
Stage 2	-	-	-	-	-	-	336	0	-	388	380	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1260	-	-	764	-	-	45	-	397	47	47	894
Mov Capacity-2 Maneuver	-	-	-	-	-	-	45	-	-	47	47	-
Stage 1	-	-	-	-	-	-	390	-	-	338	193	-
Stage 2	-	-	-	-	-	-	174	-	-	379	380	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	6.1	37.8	49.4
HCM LOS	A	A	E	E

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	45	397							89
HCM Control Delay (s)	92.7	14.3	0	-	-	12.637	-	-	49.4
HCM Lane VC Ratio	0.089	0.024	-	-	-	0.385	-	-	0.09
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.278	0.072	0	-	-	1.825	-	-	0.288

Intersection												
Intersection Delay (sec/veh):	97.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	0	37	0	2	290	1	285	1	50	912	504
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	66	0	63	0	2	315	4	385	1	54	1126	560
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2066	1908	843	1065	2188	386	1686	0	0	386	0	0
Stage 1	1514	1514	-	394	394	-	-	-	-	-	-	-
Stage 2	552	394	-	671	1794	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	# 32	68	287	177	45	612	384	-	-	1169	-	-
Stage 1	128	181	-	602	604	-	-	-	-	-	-	-
Stage 2	491	604	-	412	131	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 15	67	287	137	44	612	384	-	-	1169	-	-
Mov Capacity-2 Maneuver	# 15	67	-	137	44	-	-	-	-	-	-	-
Stage 1	126	181	-	594	596	-	-	-	-	-	-	-
Stage 2	234	596	-	322	131	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1902.5	19.4	0.1	0.3
HCM LOS	F	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				28	562			
HCM Control Delay (s)	14.474	0	-	$ 19.4	19.4	8.23	-	-
HCM Lane VC Ratio	0.01	-	-	4.597	0.565	0.046	-	-
HCM Lane LOS	B	A	-	F	C	A	-	-
HCM 95th Percentile Queue (veh)	0.032	-	-	15.669	3.493	0.146	-	-

Intersection	
Intersection Delay (sec/veh):	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	616	38	10	8	58	181	26	516	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	700	54	13	14	70	241	59	543	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	67	0	0	283	0	0	1934	1665	142	1814	1744	34
Stage 1	-	-	-	-	-	-	198	198	-	1461	1461	-
Stage 2	-	-	-	-	-	-	1736	1467	-	353	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1549	-	-	1279	-	-	50	97	906	# 52	# 85	1052
Stage 1	-	-	-	-	-	-	808	741	-	141	# 193	-
Stage 2	-	-	-	-	-	-	111	193	-	617	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1549	-	-	1279	-	-	-	# 44	906	-	# 39	1052
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	# 44	-	-	# 39	-
Stage 1	-	-	-	-	-	-	808	741	-	141	# 87	-
Stage 2	-	-	-	-	-	-	-	87	-	410	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	10.2	-	-
HCM LOS	A	B	-	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	168							-	40
HCM Control Delay (s)	-	$ 452	0	-	-	11.163	0	-	-	$ 452
HCM Lane VC Ratio	-	1.852	-	-	-	0.547	-	-	-	13.776
HCM Lane LOS	-	F	A	-	-	B	A	-	-	F
HCM 95th Percentile Queue (veh)	-	22.98	0	-	-	3.461	-	-	-	66.967

Intersection	
Intersection Delay (sec/veh):	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	436	44	98	443	9	36	60	84	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	490	54	111	591	13	45	86	153	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	604	0	0	544	0	0	1095	1389	272	1154	1410	303
Stage 1	-	-	-	-	-	-	563	563	-	820	820	-
Stage 2	-	-	-	-	-	-	532	826	-	334	590	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1198	-	-	1271	-	-	383	234	*1273	*354	202	*1273
Stage 1	-	-	-	-	-	-	707	670	-	*491	455	-
Stage 2	-	-	-	-	-	-	743	490	-	*1273	611	-
Time blocked-Platoon(%)	15	-	-	15	-	-	27	27	15	27	27	15
Mov Capacity-1 Maneuver	1198	-	-	1271	-	-	291	198	*1273	*183	170	*1273
Mov Capacity-2 Maneuver	-	-	-	-	-	-	291	198	-	*183	170	-
Stage 1	-	-	-	-	-	-	687	651	-	*477	395	-
Stage 2	-	-	-	-	-	-	589	425	-	*946	594	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1.6	32.9	21.7
HCM LOS	A	A	D	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*401							*183	*274
HCM Control Delay (s)	32.9	8.063	0.1	-	8.104	0.4	-	25.3	21.3
HCM Lane VC Ratio	0.707	0.019	-	-	0.088	-	-	0.033	0.197
HCM Lane LOS	D	A	A	-	A	A	-	D	C
HCM 95th Percentile Queue (veh)	5.313	0.058	-	-	0.288	-	-	0.102	0.717

Intersection	
Intersection Delay (sec/veh):	59.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	489	34	520	1281	41	461
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	596	41	598	1408	68	632
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	637	0	2517	319
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	1900	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1206	-	# 23	*1237
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	106	-
Time blocked-Platoon(%)	-	-	18	-	18	18
Mov Capacity-1 Maneuver	-	-	1206	-	# 12	*1237
Mov Capacity-2 Maneuver	-	-	-	-	# 12	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	# 53	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3.2	276.8
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*12	*1237				
HCM Control Delay (s)	$ 2734	10.9	-	-	10.881	-
HCM Lane VC Ratio	5.694	0.511	-	-	0.496	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th Percentile Queue (veh)	9.687	3.009	-	-	2.842	-

Intersection	
Intersection Delay (sec/veh):	23.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	72	11	225	107	125	422	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	122	17	326	126	181	480	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1342	1330	242	1288	1269	226	484	0	0	452	0	0
Stage 1	844	844	-	423	423	-	-	-	-	-	-	-
Stage 2	498	486	-	865	846	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	131	156	743	139	170	818	1038	-	-	1103	-	-
Stage 1	361	382	-	605	591	-	-	-	-	-	-	-
Stage 2	558	554	-	346	381	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	82	128	743	104	140	818	1038	-	-	1103	-	-
Mov Capacity-2 Maneuver	82	128	-	104	140	-	-	-	-	-	-	-
Stage 1	355	319	-	595	581	-	-	-	-	-	-	-
Stage 2	444	545	-	264	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	23.1	133.9	0.3	2.4
HCM LOS	C	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				240	209			
HCM Control Delay (s)	8.528	0	-	23.1	133.9	8.904	0	-
HCM Lane VC Ratio	0.017	-	-	0.172	1.082	0.164	-	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th Percentile Queue (veh)	0.051	-	-	0.609	10.333	0.587	-	-

11: 25th St & Barnes Ave

Intersection	
Intersection Delay (sec/veh)	31.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	38	128	73	46	123	12	99	211	32	17	106	41
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	54	175	85	77	176	31	116	301	55	27	156	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.1	22.8	48.3	19.8
HCM LOS	C	C	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	16%	25%	10%
Volume Thru (%)	62%	54%	68%	65%
Volume Right (%)	9%	31%	7%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	342	239	181	164
Left Turning Volume	211	128	123	106
Through Volume	32	73	12	41
Right Turning Volume	99	38	46	17
Lane Flow Rate	473	314	283	247
Geometry Group	1	1	1	1
Degree of Utilization, X	0.916	0.645	0.616	0.537
Departure Headway, Hd	6.969	7.406	7.838	7.83
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	520	486	459	457
Service Time	5.046	5.498	5.933	5.93
HCM Lane V/C Ratio	0.91	0.646	0.617	0.54
HCM Control Delay	48.3	23.1	22.8	19.8
HCM Lane LOS	E	C	C	C
HCM 95th Percentile Queue	29.9	5.4	4.8	3.5

13: 15th St & Lane Av

Intersection	
Intersection Delay (sec/veh)	67.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	205	0	7	21	270	39	15	1031	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	820	0	28	36	365	156	60	1158	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	13.2	70.5	65.9	67.2
HCM LOS	B	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	87%	0%	33%	0%	0%	0%	98%
Volume Right (%)	0%	13%	0%	67%	0%	100%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	309	8	9	205	7	15	1056
Left Turning Volume	0	270	0	3	0	0	0	1031
Through Volume	0	39	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	205	0	15	0
Lane Flow Rate	36	521	14	26	820	28	60	1204
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.082	1	0.043	0.067	1	0.055	0.149	1
Departure Headway, Hd	8.313	7.726	11.148	9.217	8.372	7.123	8.946	7.802
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	431	469	323	391	443	503	402	482
Service Time	6.053	5.466	8.85	6.919	6.113	4.864	6.682	5.539
HCM Lane V/C Ratio	0.084	1.111	0.043	0.066	1.851	0.056	0.149	2.498
HCM Control Delay	11.8	69.6	14.4	12.6	72.6	10.3	13.2	69.9
HCM Lane LOS	B	F	B	B	F	B	B	F
HCM 95th Percentile Queue	0.3	102.1	0.1	0.2	98.1	0.2	0.5	101.7

Intersection	
Intersection Delay (sec/veh):	237.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	468	6	41	395	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	520	19	59	444	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1302	1193	482	1223	1222	530	520	0	0	539	0	0
Stage 1	600	600	-	584	584	-	-	-	-	-	-	-
Stage 2	702	593	-	639	638	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 139	188	582	158	181	553	1056	-	-	1040	-	-
Stage 1	491	493	-	501	502	-	-	-	-	-	-	-
Stage 2	432	497	-	468	474	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 33	166	582	120	160	553	1056	-	-	1040	-	-
Mov Capacity-2 Maneuver	# 33	166	-	120	160	-	-	-	-	-	-	-
Stage 1	473	453	-	482	483	-	-	-	-	-	-	-
Stage 2	246	479	-	371	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1505.9	104.8	0.4	0.9
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				35	582	234			
HCM Control Delay (s)	8.497	0	-	$ 104.8	11.9	104.8	8.671	0	-
HCM Lane VC Ratio	0.025	-	-	5.027	0.108	1.005	0.057	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.077	-	-	20.792	0.362	9.455	0.182	-	-

Intersection	
Intersection Delay (sec/veh):	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	131	0	0	388	68	0	1	0	137	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	182	0	0	669	82	0	4	0	167	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	751	0	-	182	0	0	1000	1005	91	966	964	376
Stage 1	-	-	-	-	-	-	254	254	-	710	710	-
Stage 2	-	-	-	-	-	-	746	751	-	256	254	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	868	-	0	1405	-	-	224	243	972	234	257	655
Stage 1	-	-	0	-	-	-	755	701	-	424	440	-
Stage 2	-	-	0	-	-	-	409	421	-	749	701	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	868	-	-	1405	-	-	192	233	972	224	246	655
Mov Capacity-2 Maneuver	-	-	-	-	-	-	192	233	-	224	246	-
Stage 1	-	-	-	-	-	-	724	672	-	406	440	-
Stage 2	-	-	-	-	-	-	364	421	-	714	672	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.5	0	20.7	43.6
HCM LOS	A	A	C	E

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	233						224	599
HCM Control Delay (s)	20.7	9.327	0	0	-	-	57	11.8
HCM Lane VC Ratio	0.017	0.041	-	-	-	-	0.746	0.118
HCM Lane LOS	C	A	A	A	-	-	F	B
HCM 95th Percentile Queue (veh)	0.052	0.13	-	0	-	-	5.12	0.399

Intersection	
Intersection Delay (sec/veh):	14.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	37	213	68	15	368	118	20	44	5	44	43	67
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	46	292	91	23	443	166	31	68	10	54	73	86
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	609	0	0	383	0	0	1082	1085	192	1041	1047	305
Stage 1	-	-	-	-	-	-	430	430	-	572	572	-
Stage 2	-	-	-	-	-	-	652	655	-	469	475	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	979	-	-	1187	-	-	187	219	855	210	218	730
Stage 1	-	-	-	-	-	-	586	587	-	509	487	-
Stage 2	-	-	-	-	-	-	442	466	-	579	539	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	979	-	-	1187	-	-	114	205	855	147	204	730
Mov Capacity-2 Maneuver	-	-	-	-	-	-	114	205	-	147	204	-
Stage 1	-	-	-	-	-	-	558	559	-	485	478	-
Stage 2	-	-	-	-	-	-	324	457	-	479	514	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.3	53.4	66.1
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	177							252
HCM Control Delay (s)	53.4	8.857	0	-	8.093	0	-	66.1
HCM Lane VC Ratio	0.615	0.047	-	-	0.019	-	-	0.846
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	3.424	0.147	-	-	0.059	-	-	6.833

Intersection	
Intersection Delay (sec/veh):	154.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	68	0	21	0	0	1	173	219	0	1	61	558
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	136	0	84	0	0	4	692	270	0	4	81	1468
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	4	0	0	84	0	0	1091	318	42	451	358	2
Stage 1	-	-	-	-	-	-	314	314	-	2	2	-
Stage 2	-	-	-	-	-	-	777	4	-	449	356	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	1526	-	-	# 194	600	1034	522	554	# 1056
Stage 1	-	-	-	-	-	-	701	658	-	1026	877	-
Stage 2	-	-	-	-	-	-	# 393	894	-	593	613	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	1526	-	-	-	547	1034	300	505	# 1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	547	-	300	505	-
Stage 1	-	-	-	-	-	-	# 639	600	-	936	877	-
Stage 2	-	-	-	-	-	-	-	894	-	297	559	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	4.6	0	-	272.4
HCM LOS	A	A	-	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							993
HCM Control Delay (s)	-	7.408	0	-	0	-	-	272.4
HCM Lane VC Ratio	-	0.083	-	-	-	-	-	1.565
HCM Lane LOS	-	A	A	-	A	-	-	F
HCM 95th Percentile Queue (veh)	-	0.273	-	-	0	-	-	77.603

18: Avenue of the States & N. Range Rd

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	62	23	10	47	340	970	53	87	259	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	97	32	13	63	486	1198	77	136	375	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2237	2906	200	2674	2879	638	398	0	0	1275	0	0
Stage 1	659	659	-	2209	2209	-	-	-	-	-	-	-
Stage 2	1578	2247	-	465	670	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	24	16	814	# 11	17	424	1172	-	-	546	-	-
Stage 1	424	464	-	46	83	-	-	-	-	-	-	-
Stage 2	116	79	-	552	459	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	-	# 7	814	-	# 7	424	1172	-	-	546	-	-
Mov Capacity-2 Maneuver	-	# 7	-	-	# 7	-	-	-	-	-	-	-
Stage 1	248	348	-	# 27	49	-	-	-	-	-	-	-
Stage 2	42	46	-	355	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	-	3.2	3.9
HCM LOS	-	-	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				-	-			
HCM Control Delay (s)	10.228	0.6	-	-	-	13.765	0.5	-
HCM Lane VC Ratio	0.414	-	-	-	-	0.249	-	-
HCM Lane LOS	B	A	-	-	-	B	A	-
HCM 95th Percentile Queue (veh)	2.073	-	-	-	-	0.976	-	-

19: US 1 SB & Tobacco Rd

Intersection	
Intersection Delay (sec/veh):	13.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	251	36	36	997	0	0	0	0	34	0	297
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	0	364	64	49	1146	0	0	0	0	59	0	376
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	1146	0	0	428	0	-				1390	~	573
Stage 1	-	-	-	-	-	-				1244	-	-
Stage 2	-	-	-	-	-	-				146	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	338	-	-	707	-	0				153	0	400
Stage 1	-	-	-	-	-	0				137	0	-
Stage 2	-	-	-	-	-	0				779	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	338	-	-	707	-	-				145	-	400
Mov Capacity-2 Maneuver	-	-	-	-	-	-				145	-	-
Stage 1	-	-	-	-	-	-				137	-	-
Stage 2	-	-	-	-	-	-				779	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.4	61.2
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						145	400
HCM Control Delay (s)	0	-	-	10.473	-	45.7	63.6
HCM Lane VC Ratio	-	-	-	0.07	-	0.404	0.94
HCM Lane LOS	A	-	-	B	-	E	F
HCM 95th Percentile Queue (veh)	0	-	-	0.224	-	1.752	10.465

Intersection	
Intersection Delay (sec/veh):	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	211	76	0	781	150	253	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	278	100	0	908	203	298	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	782	~	189
Stage 1	-	-	-	-	-	-	328	-	-
Stage 2	-	-	-	-	-	-	454	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	# 288	0	805
Stage 1	0	-	-	0	-	-	664	0	-
Stage 2	0	-	-	0	-	-	560	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	# 288	-	805
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 288	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	560	-	-

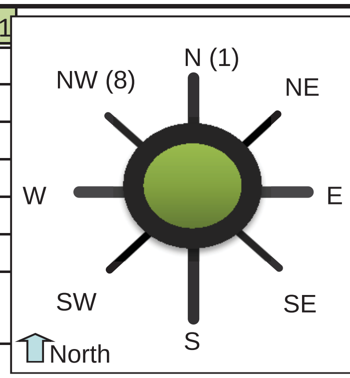
Approach	EB	WB	NB
HCM Control Delay (s)	0	0	89.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	288	805				
HCM Control Delay (s)	101.7	9.7	-	-	-	-
HCM Lane VC Ratio	1.033	0.057	-	-	-	-
HCM Lane LOS	F	A	-	-	-	-
HCM 95th Percentile Queue (veh)	11.185	0.18	-	-	-	-

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt C AM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					52			
Exit	NE (2), vph								
Legs	E (3), vph		106						
(TO)	SE (4), vph								
	S (5), vph	252							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	252	106	0	0	52	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph		485						
NE (2), vph								
E (3), vph	338							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	338	485	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	57	0	527	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	115	0	0	0	367	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	274	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	389	0	57	0	895	0	0	0
	Entry flow Lane 1, pcu/h	274	0	57	0	367	0	0	0
	Entry flow Lane 2, pcu/h	115	0	0	0	527	0	0	0
	Conflicting flow, pcu/h	0	0	527	0	115	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	781	NA	1007	1007	NA	NA
Entry Flow Rates, veh/h	274	115	57	NA	367	527	NA	NA
V/C ratio	**0.24**	**0.10**	**0.07**		**0.36**	**0.52**		
Control Delay, s/veh	**5.4**	**4.1**	**5.3**		**7.4**	**10.1**		
LOS	A	A	A		A	B		
95th % Queue (ft)	**24**	**8**	**6**		**42**	**78**		
Approach Delay, LOS	5 sec, LOS A		5.3 sec, LOS A		9 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1020	NA	1283	1283	NA	NA
Entry Flow Rates, veh/h	274	115	57	NA	367	527	NA	NA
V/C ratio	**0.17**	**0.07**	**0.06**		**0.29**	**0.41**		
Control Delay, s/veh	**3.5**	**2.7**	**4.0**		**5.4**	**6.8**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**15**	**6**	**4**		**30**	**51**		
Approach Delay, LOS	3.2 sec, LOS A		4 sec, LOS A		6.2 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

Base + Alt C PM Peak
9/7/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	23	25	362	511	144	924	637	146	130	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1889	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	828	382	73	768	298	596	898	763	56	510	210
Arriving On Green	0.03	0.24	0.00	0.02	0.22	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1261.6	1900.0	1615.0	414.1	3777.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	288.0	1320.0	0.0	162.2	146.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1261.6	1900.0	1615.0	414.1	1888.7	1552.9
Q Serve(g_s), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Cycle Q Clear(g_c), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	828.4	381.7	73.0	768.0	298.2	596.4	898.2	763.4	55.9	510.2	209.7
V/C Ratio(X)	1.056	0.394	0.000	0.398	0.612	0.000	0.483	1.470	0.000	2.900	0.286	0.000
Avail Cap(c_a), veh/h	55.5	828.4	381.7	118.5	812.6	315.5	596.4	898.2	763.4	55.9	510.2	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	38.1	0.0	57.3	41.4	0.0	21.3	31.2	0.0	51.2	46.1	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	1.2	0.0	0.6	217.4	0.0	901.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	38.4	0.0	60.7	42.6	0.0	21.9	248.7	0.0	953.0	46.4	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1608			308	
Approach Delay, s/veh		62.2			43.7			208.1			523.4	
Approach LOS		E			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	32.00		6.46	30.46			60.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	28.00		4.00	28.00			56.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.29		2.97	16.57			58.00			18.00	
Green Extension Time (p_c)	0.00	4.95		0.00	4.06			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			193.4									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Base + Alt C PM Peak
9/7/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	244	670	418	156	1074	1324	310	233	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	322	784	361	315	644	294	252	1578	1230	261	1632	723
Arriving On Green	0.09	0.22	0.00	0.06	0.19	0.19	0.14	0.44	0.00	0.15	0.45	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	287.1	744.4	464.4	222.9	1512.7	0.0	344.4	261.8	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Cycle Q Clear(g_c), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	252.1	1578.1	1230.2	260.8	1631.9	722.8
V/C Ratio(X)	1.363	0.884	0.000	0.912	1.155	1.581	0.884	0.959	0.000	1.321	0.160	0.000
Avail Cap(c_a), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	362.8	1586.6	1236.8	260.8	1631.9	722.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	58.8	48.7	0.0	60.5	52.3	52.3	54.8	35.4	0.0	54.8	21.0	0.0
Incr Delay (d2), s/veh	182.4	11.7	0.0	29.3	86.7	277.4	16.4	14.0	0.0	168.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	241.2	60.4	0.0	89.8	139.0	329.7	71.2	49.3	0.0	223.5	21.0	0.0
Lane Group LOS	F	E		F	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1496			1736			606	
Approach Delay, s/veh		130.5			188.8			52.1			136.1	
Approach LOS		F			F			D			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	16.00	33.00		12.00	29.00		22.07	60.70		24.00	62.63	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	12.00	29.00		8.00	25.00		26.00	57.00		20.00	51.00	
Max Q Clear Time (g_c+I1), s	14.00	26.79		9.25	27.00		17.68	54.65		22.00	7.56	
Green Extension Time (p_c)	0.00	1.88		0.00	0.00		0.39	2.05		0.00	20.92	
Intersection Summary												
HCM 2010 Control Delay			121.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	287	28	28	96	250	10	434	23	26	92	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1745	1745	1900	1854	1854	1900	1898	1898	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	471	676	67	121	89	284	33	487	23	47	526	451
Arriving On Green	0.27	0.43	0.43	0.07	0.23	0.23	0.02	0.27	0.27	0.03	0.28	0.28
Sat Flow, veh/h	1739.9	1562.8	154.7	1809.5	390.4	1244.1	1809.5	1797.6	85.6	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	457.1	47.5	0.0	490.2	16.9	0.0	640.4	30.2	108.2	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1717.5	1809.5	0.0	1634.5	1809.5	0.0	1883.2	1756.8	1881.2	1615.0
Q Serve(g_s), s	32.0	0.0	24.3	3.0	0.0	27.0	1.1	0.0	32.0	2.0	5.2	0.6
Cycle Q Clear(g_c), s	32.0	0.0	24.3	3.0	0.0	27.0	1.1	0.0	32.0	2.0	5.2	0.6
Proportion In Lane	1.000		0.090	1.000		0.761	1.000		0.045	1.000		1.000
Lane Grp Cap(c), veh/h	471.3	0.0	742.9	120.9	0.0	373.5	32.7	0.0	510.1	46.8	525.7	451.3
V/C Ratio(X)	1.223	0.000	0.615	0.393	0.000	1.312	0.519	0.000	1.256	0.646	0.206	0.023
Avail Cap(c_a), veh/h	471.3	0.0	742.9	153.2	0.0	373.5	76.6	0.0	510.1	74.3	525.7	451.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	43.1	0.0	25.9	52.8	0.0	45.6	57.5	0.0	43.1	56.9	32.5	30.9
Incr Delay (d2), s/veh	118.1	0.0	3.8	2.1	0.0	158.5	12.1	0.0	130.3	14.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	161.1	0.0	29.7	54.9	0.0	204.1	69.6	0.0	173.4	70.9	32.7	30.9
Lane Group LOS	F		C	D		F	E		F	E	C	C
Approach Volume, veh/h		1033			538			657			149	
Approach Delay, s/veh		103.0			190.9			170.7			40.4	
Approach LOS		F			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	38.00	57.11		13.89	33.00		8.13	38.00		9.15	39.01	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	32.00	49.00		10.00	27.00		5.00	32.00		5.00	32.00	
Max Q Clear Time (g_c+I1), s	34.00	26.31		4.97	29.00		3.10	34.00		4.01	7.20	
Green Extension Time (p_c)	0.00	11.84		0.03	0.00		0.00	0.00		0.00	5.45	
Intersection Summary												
HCM 2010 Control Delay			137.7									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	858	122	256	214	42	57	44	369	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	59	1155	188	352	1828	365	350	513	428	439	409	57
Arriving On Green	0.40	0.40	0.40	0.13	0.59	0.59	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	75.0	2935.5	471.4	1791.6	3076.8	614.7	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	611.2	0.0	549.9	301.2	150.3	145.7	64.8	50.0	519.7	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1795.8	0.0	1615.0	1791.6	1900.0	1791.5	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	9.8	0.0	26.6	7.9	3.0	3.1	3.7	1.7	24.3	14.3	0.0	5.9
Cycle Q Clear(g_c), s	26.2	0.0	26.6	7.9	3.0	3.1	9.6	1.7	24.3	16.0	0.0	5.9
Proportion In Lane	0.042		0.292	1.000		0.343	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	758.4	0.0	642.7	352.2	1128.6	1064.2	350.4	513.0	427.9	439.1	0.0	466.5
V/C Ratio(X)	0.806	0.000	0.856	0.855	0.133	0.137	0.185	0.097	1.215	0.566	0.000	0.308
Avail Cap(c_a), veh/h	800.5	0.0	685.9	419.0	1223.5	1153.7	350.4	513.0	427.9	439.1	0.0	466.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	23.2	0.0	23.6	17.7	7.7	7.7	27.9	22.6	30.7	28.5	0.0	24.1
Incr Delay (d2), s/veh	6.8	0.0	11.1	20.2	0.1	0.1	1.2	0.4	116.4	5.2	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	30.0	0.0	34.7	38.0	7.8	7.8	29.0	23.0	147.1	33.7	0.0	25.8
Lane Group LOS	C		C	D	A	A	C	C	F	C		C
Approach Volume, veh/h		1161			597			634			392	
Approach Delay, s/veh		32.2			23.0			125.2			30.8	
Approach LOS		C			C			F			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		40.11		16.80	56.92			28.80			28.80	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		36.20		14.00	55.20			24.30			24.30	
Max Q Clear Time (g_c+I1), s		28.64		9.87	5.08			26.30			18.01	
Green Extension Time (p_c)		6.47		0.94	28.77			0.00			3.43	
Intersection Summary												
HCM 2010 Control Delay			51.2									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	306	0	1	612	12	1	0	1	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	348	0	1	827	36	4	0	1	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	863	0	0	348	0	0	1213	~	348	1204	1203	432
Stage 1	-	-	-	-	-	-	356	-	-	847	847	-
Stage 2	-	-	-	-	-	-	857	-	-	357	356	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	788	-	-	1178	-	-	160	0	700	162	186	628
Stage 1	-	-	-	-	-	-	666	0	-	359	381	-
Stage 2	-	-	-	-	-	-	355	0	-	665	633	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	788	-	-	1178	-	-	154	-	700	161	185	628
Mov Capacity-2 Maneuver	-	-	-	-	-	-	154	-	-	161	185	-
Stage 1	-	-	-	-	-	-	662	-	-	357	380	-
Stage 2	-	-	-	-	-	-	343	-	-	660	629	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	24.3	25.7
HCM LOS	A	A	C	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	154	700							225
HCM Control Delay (s)	29	10.2	9.592	0	-	8.06	-	-	25.7
HCM Lane VC Ratio	0.026	0.002	0.005	-	-	0.001	-	-	0.231
HCM Lane LOS	D	B	A	A	-	A	-	-	D
HCM 95th Percentile Queue (veh)	0.08	0.006	0.015	-	-	0.003	-	-	0.867

Intersection	
Intersection Delay (sec/veh):	16

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	440	0	0	3	0	69	0	1288	5	255	115	41
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	880	0	0	3	0	75	0	1741	5	277	142	46
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2500	2465	94	2369	2486	1744	188	0	0	1746	0	0
Stage 1	719	719	-	1744	1744	-	-	-	-	-	-	-
Stage 2	1781	1746	-	625	742	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	# 15	30	913	18	29	76	1398	-	-	356	-	-
Stage 1	# 390	431	-	90	139	-	-	-	-	-	-	-
Stage 2	# 87	139	-	439	420	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 0	4	913	5	4	76	1398	-	-	356	-	-
Mov Capacity-2 Maneuver	# 0	4	-	5	4	-	-	-	-	-	-	-
Stage 1	# 390	54	-	90	139	-	-	-	-	-	-	-
Stage 2	# 1	139	-	55	53	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	$ 496	0	25.6
HCM LOS	-	F	A	D

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				0	48			
HCM Control Delay (s)	0	-	-	-	$ 496	42.913	-	-
HCM Lane VC Ratio	-	-	-	-	1.63	0.779	-	-
HCM Lane LOS	A	-	-	-	F	E	-	-
HCM 95th Percentile Queue (veh)	0	-	-	-	7.629	6.396	-	-

Intersection	
Intersection Delay (sec/veh):	276.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	111	32	6	36	352	529	27	67	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	126	45	8	62	424	705	61	71	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	53	0	0	160	0	0	630	598	80	1159	605	-
Stage 1	-	-	-	-	-	-	293	293	-	301	301	-
Stage 2	-	-	-	-	-	-	337	305	-	858	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	398	# 419	980	155	412	0
Stage 1	-	-	-	-	-	-	719	674	-	662	666	0
Stage 2	-	-	-	-	-	-	683	666	-	320	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	305	# 364	980	-	358	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	305	# 364	-	-	358	-
Stage 1	-	-	-	-	-	-	686	643	-	632	607	-
Stage 2	-	-	-	-	-	-	550	607	-	# 29	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	5.5	$ 401	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	305	599							-	-
HCM Control Delay (s)	19.8	$ 421.9	7.406	0	-	7.784	0	-	-	-
HCM Lane VC Ratio	0.204	1.886	0.046	-	-	0.089	-	-	-	-
HCM Lane LOS	C	F	A	A	-	A	A	-	-	-
HCM 95th Percentile Queue (veh)	0.748	72.172	0.144	-	-	0.292	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	440	36	86	243	1	41	30	146	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	494	44	98	324	1	51	43	265	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	325	0	0	538	0	0	950	1039	269	792	1061	163
Stage 1	-	-	-	-	-	-	518	518	-	521	521	-
Stage 2	-	-	-	-	-	-	432	521	-	271	540	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1246	-	-	1278	-	-	317	311	*1273	*459	271	721
Stage 1	-	-	-	-	-	-	760	705	-	*512	485	-
Stage 2	-	-	-	-	-	-	546	530	-	*1273	651	-
Time blocked-Platoon(%)	0	-	-	15	-	-	15	15	15	15	15	0
Mov Capacity-1 Maneuver	1246	-	-	1278	-	-	147	282	*1273	*298	245	721
Mov Capacity-2 Maneuver	-	-	-	-	-	-	147	282	-	*298	245	-
Stage 1	-	-	-	-	-	-	760	705	-	*511	439	-
Stage 2	-	-	-	-	-	-	312	480	-	*945	650	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2	27.6	39.5
HCM LOS	A	A	D	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*507							*298	*280
HCM Control Delay (s)	27.6	7.893	0	-	8.05	0.2	-	17.9	41.6
HCM Lane VC Ratio	0.709	0.001	-	-	0.076	-	-	0.064	0.682
HCM Lane LOS	D	A	A	-	A	A	-	C	E
HCM 95th Percentile Queue (veh)	5.609	0.003	-	-	0.248	-	-	0.202	4.569

Intersection	
Intersection Delay (sec/veh): $ 359.3	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1333	89	382	496	14	782
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1626	107	439	545	23	1071
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1733	0	2831	867
Stage 1	-	-	-	-	1680	-
Stage 2	-	-	-	-	1151	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	# 369	-	# 14	# 298
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	268	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	# 369	-	# 14	# 298
Mov Capacity-2 Maneuver	-	-	-	-	# 14	-
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	268	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	63.1	$ 1194.3
HCM LOS	A	F	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	14	298				
HCM Control Delay (s)	$ 876.2	$ 1201.2	-	-	141.453	-
HCM Lane VC Ratio	1.667	3.595	-	-	1.19	-
HCM Lane LOS	F	F	-	-	F	-
HCM 95th Percentile Queue (veh)	3.598	100.645	-	-	17.939	-

Intersection	
Intersection Delay (sec/veh):	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	83	6	370	92	25	143	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	141	10	536	108	36	162	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	929	901	84	851	849	322	167	0	0	644	0	0
Stage 1	237	237	-	610	610	-	-	-	-	-	-	-
Stage 2	692	664	-	241	239	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	250	280	915	278	300	724	1364	-	-	936	-	-
Stage 1	771	713	-	478	488	-	-	-	-	-	-	-
Stage 2	437	461	-	758	711	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	183	267	915	263	286	724	1364	-	-	936	-	-
Mov Capacity-2 Maneuver	183	267	-	263	286	-	-	-	-	-	-	-
Stage 1	765	686	-	474	484	-	-	-	-	-	-	-
Stage 2	334	458	-	721	684	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	19.9	22.4	0.1	1.6
HCM LOS	C	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				253	434			
HCM Control Delay (s)	7.658	0	-	19.9	22.4	9.001	0	-
HCM Lane VC Ratio	0.007	-	-	0.046	0.535	0.039	-	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th Percentile Queue (veh)	0.021	-	-	0.144	3.072	0.121	-	-

Intersection	
Intersection Delay (sec/veh)	26.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	111	72	53	71	10	66	161	147	21	191	24
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	90	126	103	63	81	13	89	196	233	27	242	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19.9	14.3	38.3	18.9
HCM LOS	C	B	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	18%	19%	40%	9%
Volume Thru (%)	43%	49%	53%	81%
Volume Right (%)	39%	32%	7%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	374	227	134	236
Left Turning Volume	161	111	71	191
Through Volume	147	72	10	24
Right Turning Volume	66	44	53	21
Lane Flow Rate	519	319	157	296
Geometry Group	1	1	1	1
Degree of Utilization, X	0.877	0.607	0.33	0.571
Departure Headway, Hd	6.212	6.854	7.573	6.952
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	586	529	476	520
Service Time	4.212	4.878	5.608	4.986
HCM Lane V/C Ratio	0.886	0.603	0.33	0.569
HCM Control Delay	38.3	19.9	14.3	18.9
HCM Lane LOS	E	C	B	C
HCM 95th Percentile Queue	20.6	4.6	1.5	4

Intersection	
Intersection Delay (sec/veh)	45.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	99	14	30	0	719	411	78	147	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	141	37	67	0	808	579	163	210	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12.5	13.3	62.5	14.1
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	64%	0%	90%	0%	32%	0%	95%
Volume Right (%)	0%	36%	0%	10%	0%	68%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	1130	19	71	99	44	78	155
Left Turning Volume	0	719	0	64	0	14	0	147
Through Volume	0	411	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	99	0	78	0
Lane Flow Rate	0	1387	31	90	141	104	162	224
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.076	0.199	0.319	0.204	0.332	0.423
Departure Headway, Hd	6.561	6.319	8.729	7.923	8.112	7.103	7.353	6.8
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	582	412	454	444	507	491	530
Service Time	4.298	4.056	6.454	5.648	5.835	4.825	5.081	4.528
HCM Lane V/C Ratio	0	2.383	0.075	0.198	0.318	0.205	0.33	0.423
HCM Control Delay	9.3	62.5	12.2	12.6	14.6	11.6	13.7	14.4
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	112.9	0.2	0.7	1.4	0.8	1.5	2.2

Intersection	
Intersection Delay (sec/veh):	153.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	501	2	77	447	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	589	4	118	497	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1422	1369	522	1413	1392	591	547	0	0	593	0	0
Stage 1	758	758	-	609	609	-	-	-	-	-	-	-
Stage 2	664	611	-	804	783	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 115	148	559	117	143	511	1033	-	-	993	-	-
Stage 1	402	418	-	486	488	-	-	-	-	-	-	-
Stage 2	453	487	-	380	407	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 65	121	559	68	117	511	1033	-	-	993	-	-
Mov Capacity-2 Maneuver	# 65	121	-	68	117	-	-	-	-	-	-	-
Stage 1	397	346	-	480	482	-	-	-	-	-	-	-
Stage 2	354	481	-	253	337	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 903.5	37.3	0.1	1.6
HCM LOS	F	E	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				71	559	221			
HCM Control Delay (s)	8.517	0	-	$ 37.3	12.1	37.3	9.116	0	-
HCM Lane VC Ratio	0.009	-	-	3.17	0.089	0.513	0.119	-	-
HCM Lane LOS	A	A	-	F	B	E	A	A	-
HCM 95th Percentile Queue (veh)	0.027	-	-	22.94	0.293	2.641	0.405	-	-

Intersection	
Intersection Delay (sec/veh):	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	492	0	1	122	192	0	0	1	129	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	593	0	4	203	234	0	0	4	174	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	437	0	-	593	0	0	1083	1164	297	1049	1047	219
Stage 1	-	-	-	-	-	-	719	719	-	328	328	-
Stage 2	-	-	-	-	-	-	364	445	-	721	719	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1123	-	0	993	-	-	197	196	747	207	230	826
Stage 1	-	-	0	-	-	-	423	436	-	689	651	-
Stage 2	-	-	0	-	-	-	659	578	-	422	436	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1123	-	-	993	-	-	170	184	747	196	216	826
Mov Capacity-2 Maneuver	-	-	-	-	-	-	170	184	-	196	216	-
Stage 1	-	-	-	-	-	-	399	412	-	650	648	-
Stage 2	-	-	-	-	-	-	599	576	-	396	412	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.8	0.1	9.8	65.2
HCM LOS	A	A	A	F

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	747						196	714
HCM Control Delay (s)	9.8	8.397	0	8.64	0	-	87.8	10.6
HCM Lane VC Ratio	0.005	0.056	-	0.004	-	-	0.889	0.101
HCM Lane LOS	A	A	A	A	A	-	F	B
HCM 95th Percentile Queue (veh)	0.016	0.179	-	0.012	-	-	6.843	0.335

Intersection	
Intersection Delay (sec/veh):	177.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	66	573	75	7	264	61	37	47	19	86	124	23
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	97	754	99	14	303	73	54	58	54	104	168	37
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	376	0	0	853	0	0	1468	1402	427	1422	1415	189
Stage 1	-	-	-	-	-	-	998	998	-	368	368	-
Stage 2	-	-	-	-	-	-	470	404	-	1054	1047	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1105	-	-	726	-	-	103	137	632	115	# 139	858
Stage 1	-	-	-	-	-	-	289	315	-	656	625	-
Stage 2	-	-	-	-	-	-	566	591	-	276	308	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1105	-	-	726	-	-	-	123	632	# 61	# 124	858
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	123	-	# 61	# 124	-
Stage 1	-	-	-	-	-	-	264	287	-	598	613	-
Stage 2	-	-	-	-	-	-	386	580	-	184	281	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.4	-	$ 1040.8
HCM LOS	A	A	-	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							99
HCM Control Delay (s)	-	8.571	0	-	10.056	0	-	$ -1
HCM Lane VC Ratio	-	0.088	-	-	0.019	-	-	3.108
HCM Lane LOS	-	A	A	-	B	A	-	F
HCM 95th Percentile Queue (veh)	-	0.288	-	-	0.059	-	-	29.94

Intersection	
Intersection Delay (sec/veh):	$ 693.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	497	0	154	0	0	0	32	33	0	0	176	91
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	904	0	616	0	0	0	64	41	0	0	267	182
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	527	527	358	835	618	41	449	0	0	41	0	0
Stage 1	358	358	-	169	169	-	-	-	-	-	-	-
Stage 2	169	169	-	666	449	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 437	459	691	289	408	1036	1122	-	-	1581	-	-
Stage 1	# 628	631	-	838	763	-	-	-	-	-	-	-
Stage 2	# 797	763	-	452	576	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 418	432	691	30	384	1036	1122	-	-	1581	-	-
Mov Capacity-2 Maneuver	# 418	432	-	30	384	-	-	-	-	-	-	-
Stage 1	# 592	631	-	789	719	-	-	-	-	-	-	-
Stage 2	# 751	719	-	49	576	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 946	0	5.1	0
HCM LOS	F	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				498	0			
HCM Control Delay (s)	8.403	0	-	$ 0	0	0	-	-
HCM Lane VC Ratio	0.057	-	-	3.051	-	-	-	-
HCM Lane LOS	A	A	-	F	A	A	-	-
HCM 95th Percentile Queue (veh)	0.181	-	-	132.021	-	0	-	-

Intersection	
Intersection Delay (sec/veh):	258.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	342	41	16	37	55	241	34	93	916	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	407	64	28	76	71	280	36	116	974	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1511	1673	496	1184	1663	158	991	0	0	316	0	0
Stage 1	1215	1215	-	440	440	-	-	-	-	-	-	-
Stage 2	296	458	-	744	1223	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	84	97	525	147	98	866	706	-	-	1248	-	-
Stage 1	195	256	-	571	581	-	-	-	-	-	-	-
Stage 2	694	570	-	377	254	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	49	79	525	# 14	80	866	706	-	-	1248	-	-
Mov Capacity-2 Maneuver	49	79	-	# 14	80	-	-	-	-	-	-	-
Stage 1	175	232	-	514	523	-	-	-	-	-	-	-
Stage 2	540	513	-	# 60	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 428.5	$ 2070.6	2.1	1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				259	33			
HCM Control Delay (s)	10.664	0.2	-	$ 2070.6	$ 2070.6	8.181	0.2	-
HCM Lane VC Ratio	0.1	-	-	1.847	5.065	0.093	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.331	-	-	32.892	19.917	0.307	-	-

Intersection	
Intersection Delay (sec/veh):	19.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	1001	199	73	270	0	0	0	0	161	2	116
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	0	1151	249	107	370	0	0	0	0	194	4	190
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	370	0	0	1400	0	-				1044	1984	185
Stage 1	-	-	-	-	-	-				584	584	-
Stage 2	-	-	-	-	-	-				460	1400	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	787	-	-	250	-	0				237	62	703
Stage 1	-	-	-	-	-	0				380	501	-
Stage 2	-	-	-	-	-	0				499	209	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	787	-	-	250	-	-				# 158	35	703
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 158	35	-
Stage 1	-	-	-	-	-	-				380	287	-
Stage 2	-	-	-	-	-	-				499	209	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	6.7	108.1
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						158	703
HCM Control Delay (s)	0	-	-	29.815	-	202.4	12
HCM Lane VC Ratio	-	-	-	0.429	-	1.228	0.271
HCM Lane LOS	A	-	-	D	-	F	B
HCM 95th Percentile Queue (veh)	0	-	-	2.027	-	11.069	1.094

Intersection	
Intersection Delay (sec/veh):	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	912	0	0	306	143	38	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	1002	0	0	450	181	47	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

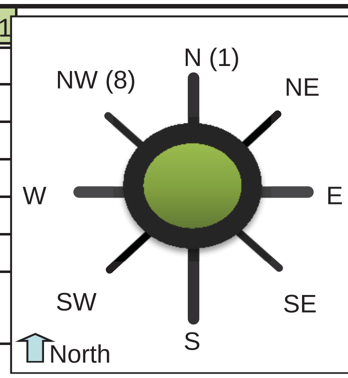
Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	-	-	0	0	1227	~	501
Stage 1	-	-	-	-	-	-	1002	-	-
Stage 2	-	-	-	-	-	-	225	-	-
Follow-up Headway	0	-	0	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	0	0	-	-	137	0	510
Stage 1	0	-	0	0	-	-	264	0	-
Stage 2	0	-	0	0	-	-	763	0	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	137	-	510
Mov Capacity-2 Maneuver	-	-	-	-	-	-	137	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	763	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	25.9
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	WBT	WBR
Capacity (vph)	137	510			
HCM Control Delay (s)	44.4	13.1	-	-	-
HCM Lane VC Ratio	0.342	0.133	-	-	-
HCM Lane LOS	E	B	-	-	-
HCM 95th Percentile Queue (veh)	1.391	0.456	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt C PM



Volumes — Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					134			
Exit	NE (2), vph								
Legs	E (3), vph		97						
(TO)	SE (4), vph								
	S (5), vph	583							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	583	97	0	0	134	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		204						
	NE (2), vph								
	E (3), vph	162							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	162	204	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	146	0	222	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	105	0	0	0	176	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	634	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	739	0	146	0	398	0	0	0
	Entry flow Lane 1, pcu/h	634	0	146	0	176	0	0	0
	Entry flow Lane 2, pcu/h	105	0	0	0	222	0	0	0
	Conflicting flow, pcu/h	0	0	222	0	105	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	968	NA	1017	1017	NA	NA
Entry Flow Rates, veh/h	634	105	146	NA	176	222	NA	NA
V/C ratio	**0.56**	**0.09**	**0.15**		**0.17**	**0.22**		
Control Delay, s/veh	**10.0**	**4.0**	**5.1**		**5.1**	**5.6**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**90**	**8**	**13**		**16**	**21**		
Approach Delay, LOS	9.1 sec, LOS A		5.1 sec, LOS A		5.4 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1343	NA	1296	1296	NA	NA
Entry Flow Rates, veh/h	634	105	146	NA	176	222	NA	NA
V/C ratio	**0.39**	**0.06**	**0.11**		**0.14**	**0.17**		
Control Delay, s/veh	**5.5**	**2.7**	**3.5**		**3.9**	**4.2**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**47**	**5**	**9**		**12**	**15**		
Approach Delay, LOS	5.1 sec, LOS A		3.5 sec, LOS A		4.1 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

Base + Alt D AM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	191	416	373	80	30	308	78	279	1093	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	55	623	287	429	915	355	92	380	323	305	1224	500
Arriving On Green	0.03	0.18	0.00	0.12	0.27	0.00	0.20	0.20	0.00	0.32	0.32	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	461.1	1900.0	1615.0	945.3	3798.1	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	60.0	440.0	0.0	310.0	1228.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	461.1	1900.0	1615.0	945.3	1899.1	1552.9
Q Serve(g_s), s	2.5	12.6	0.0	11.0	10.8	0.0	10.8	18.0	0.0	29.0	29.0	0.0
Cycle Q Clear(g_c), s	2.5	12.6	0.0	11.0	10.8	0.0	10.8	18.0	0.0	29.0	29.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	623.1	287.1	429.1	915.5	355.4	92.2	380.0	323.0	304.6	1223.8	500.4
V/C Ratio(X)	0.817	0.821	0.000	1.127	0.529	0.000	0.651	1.158	0.000	1.018	1.003	0.000
Avail Cap(c_a), veh/h	127.9	623.1	287.1	429.1	915.5	355.4	92.2	380.0	323.0	304.6	1223.8	500.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	43.2	35.6	0.0	39.5	28.2	0.0	33.1	36.0	0.0	30.5	30.5	0.0
Incr Delay (d2), s/veh	24.2	8.6	0.0	83.0	0.6	0.0	15.0	96.6	0.0	56.2	26.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	67.4	44.2	0.0	122.5	28.8	0.0	48.1	132.6	0.0	86.7	57.1	0.0
Lane Group LOS	E	D		F	C		D	F		F	F	
Approach Volume, veh/h		557			968			500			1538	
Approach Delay, s/veh		46.1			75.6			122.5			63.0	
Approach LOS		D			E			F			E	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	7.04	20.00		15.00	27.96			22.00			33.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	7.00	16.00		11.00	20.00			18.00			29.00	
Max Q Clear Time (g_c+I1), s	4.46	14.64		13.00	12.83			20.00			31.00	
Green Extension Time (p_c)	0.01	0.86		0.00	3.67			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			72.1									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Base + Alt D AM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	710	515	173	32	296	264	198	1254	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	237	828	382	861	1126	513	58	946	738	258	1381	612
Arriving On Green	0.07	0.24	0.00	0.17	0.34	0.34	0.03	0.26	0.00	0.15	0.38	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	835.3	572.2	192.2	45.7	416.9	0.0	220.0	1409.0	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Cycle Q Clear(g_c), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	236.9	828.3	381.7	861.4	1126.4	513.4	58.3	946.1	737.5	258.3	1381.3	611.8
V/C Ratio(X)	0.689	1.012	0.000	0.970	0.508	0.374	0.785	0.441	0.000	0.852	1.020	0.000
Avail Cap(c_a), veh/h	312.9	828.3	381.7	861.4	1126.4	513.4	81.5	946.1	737.5	399.7	1381.3	611.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.5	33.9	0.0	36.7	23.6	22.4	42.7	27.4	0.0	36.7	27.4	0.0
Incr Delay (d2), s/veh	4.1	34.2	0.0	23.4	0.4	0.5	27.4	0.3	0.0	10.2	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.5	68.1	0.0	60.1	23.9	22.8	70.1	27.7	0.0	46.9	56.8	0.0
Lane Group LOS	D	F		E	C	C	E	C		D	F	
Approach Volume, veh/h		1001			1600			463			1629	
Approach Delay, s/veh		64.3			42.7			31.9			55.5	
Approach LOS		E			D			C			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	10.06	25.00		19.00	33.94		6.86	27.29		17.57	38.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		15.00	28.00		4.00	17.00		21.00	34.00	
Max Q Clear Time (g_c+I1), s	6.08	23.00		16.46	14.17		4.23	10.56		13.26	36.00	
Green Extension Time (p_c)	0.09	0.00		0.00	8.50		0.00	5.28		0.37	0.00	
Intersection Summary												
HCM 2010 Control Delay			50.7									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	111	55	53	155	85	37	195	64	403	503	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1841	1841	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	127	193	97	181	213	143	81	253	75	474	762	654
Arriving On Green	0.07	0.18	0.18	0.03	0.07	0.07	0.04	0.18	0.18	0.27	0.41	0.41
Sat Flow, veh/h	1739.9	1072.2	539.1	1809.5	1028.8	690.5	1809.5	1404.1	414.2	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	241.8	89.8	0.0	315.9	62.7	0.0	355.7	468.6	591.8	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1611.2	1809.5	0.0	1719.3	1809.5	0.0	1818.3	1756.8	1881.2	1615.0
Q Serve(g_s), s	5.0	0.0	12.9	4.3	0.0	16.2	3.0	0.0	16.0	23.6	24.3	7.2
Cycle Q Clear(g_c), s	5.0	0.0	12.9	4.3	0.0	16.2	3.0	0.0	16.0	23.6	24.3	7.2
Proportion In Lane	1.000		0.335	1.000		0.402	1.000		0.228	1.000		1.000
Lane Grp Cap(c), veh/h	126.8	0.0	289.9	181.4	0.0	356.4	80.9	0.0	327.2	474.2	762.2	654.3
V/C Ratio(X)	0.788	0.000	0.834	0.495	0.000	0.886	0.775	0.000	1.087	0.988	0.776	0.427
Avail Cap(c_a), veh/h	195.7	0.0	289.9	203.5	0.0	356.4	101.8	0.0	327.2	474.2	762.2	654.3
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	40.5	0.0	35.2	40.8	0.0	40.4	42.0	0.0	36.5	32.3	22.9	8.0
Incr Delay (d2), s/veh	11.1	0.0	23.7	2.1	0.0	26.1	24.6	0.0	75.0	38.1	5.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	51.6	0.0	58.8	42.9	0.0	66.5	66.6	0.0	111.5	70.4	28.0	8.5
Lane Group LOS	D		E	D		E	E		F	E	C	A
Approach Volume, veh/h		342			406			418			1340	
Approach Delay, s/veh		56.7			61.2			104.7			38.8	
Approach LOS		E			E			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	12.48	22.00		14.91	24.43		9.98	22.00		30.00	42.02	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	16.00		10.00	16.00		5.00	16.00		24.00	35.00	
Max Q Clear Time (g_c+I1), s	7.03	14.87		6.34	18.20		5.05	18.00		25.61	26.27	
Green Extension Time (p_c)	0.05	0.59		0.05	0.00		0.00	0.00		0.00	4.59	
Intersection Summary												
HCM 2010 Control Delay			55.9									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	333	86	264	915	173	135	127	124	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1869	1869	1869	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	94	905	266	634	1888	369	359	493	411	339	209	193
Arriving On Green	0.84	0.84	0.84	0.13	0.61	0.61	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	195.2	1968.1	635.8	1791.6	3090.2	603.3	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	245.0	0.0	282.8	310.6	645.5	612.2	153.4	144.3	174.6	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1321.8	0.0	1588.8	1791.6	1900.0	1793.5	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	4.0	8.2	18.0	18.1	9.6	5.7	8.6	5.9	0.0	5.0
Cycle Q Clear(g_c), s	2.6	0.0	4.0	8.2	18.0	18.1	14.5	5.7	8.6	11.5	0.0	5.0
Proportion In Lane	0.148		0.400	1.000		0.336	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	599.7	0.0	665.7	634.2	1161.1	1096.0	358.6	492.6	410.9	339.1	0.0	401.8
V/C Ratio(X)	0.408	0.000	0.425	0.490	0.556	0.559	0.428	0.293	0.425	0.278	0.000	0.260
Avail Cap(c_a), veh/h	599.7	0.0	665.7	708.1	1161.1	1096.0	358.6	492.6	410.9	339.1	0.0	401.8
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	4.4	0.0	4.6	10.5	10.3	10.3	31.3	25.9	27.0	30.5	0.0	25.6
Incr Delay (d2), s/veh	1.0	0.0	0.9	2.1	1.0	1.1	3.7	1.5	3.2	2.0	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	5.4	0.0	5.5	12.7	11.3	11.4	35.0	27.4	30.2	32.5	0.0	27.2
Lane Group LOS	A		A	B	B	B	D	C	C	C		C
Approach Volume, veh/h		528			1568			472			199	
Approach Delay, s/veh		5.4			11.6			30.9			29.7	
Approach LOS		A			B			C			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		43.71		17.29	61.00			29.00			29.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		35.00		15.00	55.00			24.50			24.50	
Max Q Clear Time (g_c+I1), s		6.03		10.18	20.14			16.54			13.54	
Green Extension Time (p_c)		23.68		1.12	27.59			2.94			3.63	
Intersection Summary												
HCM 2010 Control Delay			15.0									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	630	104	215	220	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	716	132	295	297	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	848	0	0	1681	~	782	1682	1743	157
Stage 1	-	-	-	-	-	-	782	-	-	895	895	-
Stage 2	-	-	-	-	-	-	899	-	-	787	848	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1260	-	-	764	-	-	76	0	397	76	88	894
Stage 1	-	-	-	-	-	-	390	0	-	338	362	-
Stage 2	-	-	-	-	-	-	336	0	-	388	380	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1260	-	-	764	-	-	45	-	397	47	47	894
Mov Capacity-2 Maneuver	-	-	-	-	-	-	45	-	-	47	47	-
Stage 1	-	-	-	-	-	-	390	-	-	338	193	-
Stage 2	-	-	-	-	-	-	174	-	-	379	380	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	6.1	37.8	49.4
HCM LOS	A	A	E	E

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	45	397							89
HCM Control Delay (s)	92.7	14.3	0	-	-	12.637	-	-	49.4
HCM Lane VC Ratio	0.089	0.024	-	-	-	0.385	-	-	0.09
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.278	0.072	0	-	-	1.825	-	-	0.288

Intersection	
Intersection Delay (sec/veh):	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	9	0	37	0	2	7	1	309	1	15	1103	313
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	18	0	63	0	2	8	4	418	1	16	1362	348
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2000	1995	855	1140	2169	419	1710	0	0	419	0	0
Stage 1	1568	1568	-	427	427	-	-	-	-	-	-	-
Stage 2	432	427	-	713	1742	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	36	60	282	156	46	583	376	-	-	1137	-	-
Stage 1	118	170	-	576	584	-	-	-	-	-	-	-
Stage 2	577	584	-	389	139	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	34	59	282	120	45	583	376	-	-	1137	-	-
Mov Capacity-2 Maneuver	34	59	-	120	45	-	-	-	-	-	-	-
Stage 1	116	170	-	568	576	-	-	-	-	-	-	-
Stage 2	559	576	-	302	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	103.7	29.1	0.1	0.1
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				107	159			
HCM Control Delay (s)	14.677	0	-	103.7	29.1	8.212	-	-
HCM Lane VC Ratio	0.011	-	-	0.754	0.062	0.014	-	-
HCM Lane LOS	B	A	-	F	D	A	-	-
HCM 95th Percentile Queue (veh)	0.032	-	-	4.099	0.195	0.044	-	-

Intersection
Intersection Delay (sec/veh): $ 323.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	439	38	10	8	34	159	26	325	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	499	54	13	14	41	212	59	342	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	67	0	0	283	0	0	1432	1263	142	1383	1342	34
Stage 1	-	-	-	-	-	-	198	198	-	1059	1059	-
Stage 2	-	-	-	-	-	-	1234	1065	-	324	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1551	-	-	1279	-	-	112	170	906	107	# 152	1053
Stage 1	-	-	-	-	-	-	808	741	-	244	# 300	-
Stage 2	-	-	-	-	-	-	217	300	-	640	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1551	-	-	1279	-	-	-	104	906	# 41	# 92	1053
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	104	-	# 41	# 92	-
Stage 1	-	-	-	-	-	-	808	741	-	244	# 183	-
Stage 2	-	-	-	-	-	-	-	183	-	463	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	8.5	-	$ 1193.6
HCM LOS	A	A	-	F

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	403							41	94
HCM Control Delay (s)	-	27.8	0	-	-	9.603	0	-	$ -1	$ 27.8
HCM Lane VC Ratio	-	0.628	-	-	-	0.39	-	-	1.441	3.723
HCM Lane LOS	-	D	A	-	-	A	A	-	F	F
HCM 95th Percentile Queue (veh)	-	4.143	0	-	-	1.882	-	-	5.972	35.679

Intersection	
Intersection Delay (sec/veh):	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	448	44	63	542	9	36	60	80	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	503	54	72	723	13	45	86	145	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	736	0	0	557	0	0	1096	1456	279	1215	1477	369
Stage 1	-	-	-	-	-	-	576	576	-	874	874	-
Stage 2	-	-	-	-	-	-	520	880	-	341	603	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1139	-	-	1295	-	-	*429	221	*1246	*342	189	*1197
Stage 1	-	-	-	-	-	-	*739	687	-	*524	475	-
Stage 2	-	-	-	-	-	-	*1197	507	-	*1246	629	-
Time blocked-Platoon(%)	20	-	-	17	-	-	30	30	17	30	30	20
Mov Capacity-1 Maneuver	1139	-	-	1295	-	-	*334	194	*1246	*181	166	*1197
Mov Capacity-2 Maneuver	-	-	-	-	-	-	*334	194	-	*181	166	-
Stage 1	-	-	-	-	-	-	*717	666	-	*509	430	-
Stage 2	-	-	-	-	-	-	*995	459	-	*930	611	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1	32.2	22.3
HCM LOS	A	A	D	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*398							*181	*267
HCM Control Delay (s)	32.2	8.225	0.1	-	7.943	0.3	-	25.6	21.9
HCM Lane VC Ratio	0.694	0.02	-	-	0.055	-	-	0.033	0.202
HCM Lane LOS	D	A	A	-	A	A	-	D	C
HCM 95th Percentile Queue (veh)	5.096	0.061	-	-	0.175	-	-	0.103	0.739

Intersection	
Intersection Delay (sec/veh):	54.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	492	34	492	1309	41	458
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	600	41	566	1438	68	627
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	641	0	2472	321
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	1851	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1190	-	# 25	*1246
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	112	-
Time blocked-Platoon(%)	-	-	17	-	17	17
Mov Capacity-1 Maneuver	-	-	1190	-	# 13	*1246
Mov Capacity-2 Maneuver	-	-	-	-	# 13	-
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	# 59	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3	254.6
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*13	*1246				
HCM Control Delay (s)	$ 2493.5	10.8	-	-	10.734	-
HCM Lane VC Ratio	5.256	0.504	-	-	0.475	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th Percentile Queue (veh)	9.589	2.932	-	-	2.628	-

Intersection	
Intersection Delay (sec/veh):	61.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	81	11	225	107	196	422	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	137	17	326	126	284	480	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1556	1536	242	1494	1475	226	484	0	0	452	0	0
Stage 1	1050	1050	-	423	423	-	-	-	-	-	-	-
Stage 2	506	486	-	1071	1052	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	93	117	743	100	128	818	1038	-	-	1103	-	-
Stage 1	277	307	-	605	591	-	-	-	-	-	-	-
Stage 2	552	554	-	265	306	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	48	85	743	# 65	93	818	1038	-	-	1103	-	-
Mov Capacity-2 Maneuver	48	85	-	# 65	93	-	-	-	-	-	-	-
Stage 1	272	228	-	595	581	-	-	-	-	-	-	-
Stage 2	430	545	-	176	227	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	32.8	$ 371.1	0.3	3.5
HCM LOS	D	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				170	147			
HCM Control Delay (s)	8.528	0	-	32.8	$ 371.1	9.392	0	-
HCM Lane VC Ratio	0.017	-	-	0.243	1.641	0.258	-	-
HCM Lane LOS	A	A	-	D	F	A	A	-
HCM 95th Percentile Queue (veh)	0.051	-	-	0.912	17.083	1.03	-	-

Intersection	
Intersection Delay (sec/veh)	39.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	38	128	82	46	123	12	170	207	32	17	71	41
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	54	175	95	77	176	31	200	296	55	27	104	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.4	22.4	65.7	16.8
HCM LOS	C	C	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	42%	15%	25%	13%
Volume Thru (%)	51%	52%	68%	55%
Volume Right (%)	8%	33%	7%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	409	248	181	129
Left Turning Volume	207	128	123	71
Through Volume	32	82	12	41
Right Turning Volume	170	38	46	17
Lane Flow Rate	551	324	283	195
Geometry Group	1	1	1	1
Degree of Utilization, X	1	0.661	0.615	0.431
Departure Headway, Hd	6.924	7.344	7.821	7.941
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	529	496	467	455
Service Time	4.924	5.308	5.774	5.943
HCM Lane V/C Ratio	1.042	0.653	0.606	0.429
HCM Control Delay	65.7	23.4	22.4	16.8
HCM Lane LOS	F	C	C	C
HCM 95th Percentile Queue	108.2	5.8	4.8	2.3

Intersection	
Intersection Delay (sec/veh)	39.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	35	0	7	21	225	18	15	663	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	140	0	28	36	304	72	60	745	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.1	13.4	18.3	56.7
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	93%	0%	33%	0%	0%	0%	96%
Volume Right (%)	0%	7%	0%	67%	0%	100%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	243	8	9	35	7	15	688
Left Turning Volume	0	225	0	3	0	0	0	663
Through Volume	0	18	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	35	0	15	0
Lane Flow Rate	36	376	14	26	140	28	60	790
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.066	0.639	0.036	0.054	0.308	0.052	0.118	1
Departure Headway, Hd	6.671	6.12	9.267	7.338	7.91	6.663	7.055	5.886
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	538	590	387	489	456	539	509	617
Service Time	4.394	3.843	6.995	5.065	5.63	4.384	4.786	3.616
HCM Lane V/C Ratio	0.067	0.637	0.036	0.053	0.307	0.052	0.118	1.28
HCM Control Delay	9.9	19.1	12.3	10.5	14.1	9.8	10.7	60.2
HCM Lane LOS	A	C	B	B	B	A	B	F
HCM 95th Percentile Queue	0.2	5.3	0.1	0.2	1.3	0.2	0.4	117

Intersection	
Intersection Delay (sec/veh):	125.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	456	6	41	296	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	507	19	59	333	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1178	1069	371	1099	1098	517	409	0	0	526	0	0
Stage 1	489	489	-	571	571	-	-	-	-	-	-	-
Stage 2	689	580	-	528	527	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	169	223	673	192	215	562	1161	-	-	1051	-	-
Stage 1	564	553	-	509	508	-	-	-	-	-	-	-
Stage 2	439	503	-	538	532	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 58	200	673	152	193	562	1161	-	-	1051	-	-
Mov Capacity-2 Maneuver	# 58	200	-	152	193	-	-	-	-	-	-	-
Stage 1	545	513	-	492	491	-	-	-	-	-	-	-
Stage 2	254	486	-	439	493	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 718.5	64.9	0.4	1.1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				62	673	273			
HCM Control Delay (s)	8.173	0	-	$ 64.9	10.9	64.9	8.63	0	-
HCM Lane VC Ratio	0.023	-	-	2.838	0.094	0.861	0.057	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.07	-	-	17.925	0.308	7.312	0.18	-	-

Intersection	
Intersection Delay (sec/veh):	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	110	0	0	218	68	0	1	0	137	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	153	0	0	376	82	0	4	0	167	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	458	0	-	153	0	0	678	683	77	644	642	229
Stage 1	-	-	-	-	-	-	225	225	-	417	417	-
Stage 2	-	-	-	-	-	-	453	458	-	227	225	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	1114	-	0	1440	-	-	369	374	990	386	395	793
Stage 1	-	-	0	-	-	-	782	721	-	613	595	-
Stage 2	-	-	0	-	-	-	590	570	-	776	721	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1114	-	-	1440	-	-	327	362	990	373	382	793
Mov Capacity-2 Maneuver	-	-	-	-	-	-	327	362	-	373	382	-
Stage 1	-	-	-	-	-	-	757	698	-	593	595	-
Stage 2	-	-	-	-	-	-	537	570	-	747	698	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.6	0	15.1	18.7
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	362						373	747
HCM Control Delay (s)	15.1	8.339	0	0	-	-	22.3	10.3
HCM Lane VC Ratio	0.011	0.032	-	-	-	-	0.448	0.095
HCM Lane LOS	C	A	A	A	-	-	C	B
HCM 95th Percentile Queue (veh)	0.033	0.1	-	0	-	-	2.239	0.312

15: 25th St & Lane Av

Intersection	
Intersection Delay (sec/veh):	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	196	68	15	234	189	20	44	5	53	43	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	41	268	91	23	282	266	31	68	10	65	73	41
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	548	0	0	359	0	0	914	990	180	896	902	274
Stage 1	-	-	-	-	-	-	396	396	-	461	461	-
Stage 2	-	-	-	-	-	-	518	594	-	435	441	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	1032	-	-	1211	-	-	245	249	868	263	266	760
Stage 1	-	-	-	-	-	-	612	608	-	584	547	-
Stage 2	-	-	-	-	-	-	524	496	-	604	559	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1032	-	-	1211	-	-	172	235	868	194	251	760
Mov Capacity-2 Maneuver	-	-	-	-	-	-	172	235	-	194	251	-
Stage 1	-	-	-	-	-	-	588	584	-	561	537	-
Stage 2	-	-	-	-	-	-	420	487	-	507	537	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.3	34.9	43.7
HCM LOS	A	A	D	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	226							263
HCM Control Delay (s)	34.9	8.632	0	-	8.03	0	-	43.7
HCM Lane VC Ratio	0.482	0.039	-	-	0.019	-	-	0.682
HCM Lane LOS	D	A	A	-	A	A	-	E
HCM 95th Percentile Queue (veh)	2.399	0.123	-	-	0.058	-	-	4.497

17: N. Range Rd/15th St & 111th St

Intersection	
Intersection Delay (sec/veh):	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	0	0	0	0	1	3	219	0	1	61	20
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	4	0	0	0	0	4	12	270	0	4	81	53
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	4	0	0	0	0	0	77	12	0	145	10	2
Stage 1	-	-	-	-	-	-	8	8	-	2	2	-
Stage 2	-	-	-	-	-	-	69	4	-	143	8	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	-	-	-	917	885	-	828	867	1056
Stage 1	-	-	-	-	-	-	1019	891	-	1026	877	-
Stage 2	-	-	-	-	-	-	946	894	-	865	871	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	-	-	-	807	883	-	-	865	1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	807	883	-	-	865	-
Stage 1	-	-	-	-	-	-	1017	889	-	1024	877	-
Stage 2	-	-	-	-	-	-	815	894	-	601	869	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	7.2	0	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	7.213	0	-	0	-	-	-
HCM Lane VC Ratio	-	0.002	-	-	-	-	-	-
HCM Lane LOS	-	A	A	-	A	-	-	-
HCM 95th Percentile Queue (veh)	-	0.007	-	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	158

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	41	23	10	47	170	1140	53	87	280	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	64	32	13	63	243	1407	77	136	406	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1886	2660	215	2412	2633	743	429	0	0	1484	0	0
Stage 1	690	690	-	1932	1932	-	-	-	-	-	-	-
Stage 2	1196	1970	-	480	701	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	44	23	796	# 18	24	362	1141	-	-	454	-	-
Stage 1	406	449	-	70	114	-	-	-	-	-	-	-
Stage 2	201	109	-	541	444	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	-	13	796	# 5	# 13	362	1141	-	-	454	-	-
Mov Capacity-2 Maneuver	-	13	-	# 5	# 13	-	-	-	-	-	-	-
Stage 1	320	314	-	55	90	-	-	-	-	-	-	-
Stage 2	111	86	-	338	311	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	$ 3567.3	1.6	4.5
HCM LOS	-	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				-	14			
HCM Control Delay (s)	9.006	0.4	-	-	$ 3567.3	16.283	0.8	-
HCM Lane VC Ratio	0.213	-	-	-	7.742	0.299	-	-
HCM Lane LOS	A	A	-	-	F	C	A	-
HCM 95th Percentile Queue (veh)	0.805	-	-	-	14.586	1.243	-	-

Intersection	
Intersection Delay (sec/veh):	13.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	251	36	36	997	0	0	0	0	34	0	297
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	0	364	64	49	1146	0	0	0	0	59	0	376
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	1146	0	0	428	0	-				1390	~	573
Stage 1	-	-	-	-	-	-				1244	-	-
Stage 2	-	-	-	-	-	-				146	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	338	-	-	707	-	0				153	0	400
Stage 1	-	-	-	-	-	0				137	0	-
Stage 2	-	-	-	-	-	0				779	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	338	-	-	707	-	-				145	-	400
Mov Capacity-2 Maneuver	-	-	-	-	-	-				145	-	-
Stage 1	-	-	-	-	-	-				137	-	-
Stage 2	-	-	-	-	-	-				779	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.4	61.2
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						145	400
HCM Control Delay (s)	0	-	-	10.473	-	45.7	63.6
HCM Lane VC Ratio	-	-	-	0.07	-	0.404	0.94
HCM Lane LOS	A	-	-	B	-	E	F
HCM 95th Percentile Queue (veh)	0	-	-	0.224	-	1.752	10.465

Intersection	
Intersection Delay (sec/veh):	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	211	76	0	781	150	253	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	278	100	0	908	203	298	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

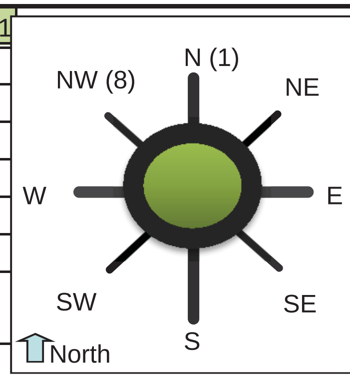
Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	782	~	189
Stage 1	-	-	-	-	-	-	328	-	-
Stage 2	-	-	-	-	-	-	454	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	# 288	0	805
Stage 1	0	-	-	0	-	-	664	0	-
Stage 2	0	-	-	0	-	-	560	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	# 288	-	805
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 288	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	560	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	89.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	288	805				
HCM Control Delay (s)	101.7	9.7	-	-	-	-
HCM Lane VC Ratio	1.033	0.057	-	-	-	-
HCM Lane LOS	F	A	-	-	-	-
HCM 95th Percentile Queue (veh)	11.185	0.18	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt D AM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					48			
Exit	NE (2), vph								
Legs	E (3), vph		71						
(TO)	SE (4), vph								
	S (5), vph	264							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	264	71	0	0	48	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		584						
	NE (2), vph								
	E (3), vph	310							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	310	584	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	52	0	635	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	77	0	0	0	337	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	287	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	364	0	52	0	972	0	0	0
	Entry flow Lane 1, pcu/h	287	0	52	0	337	0	0	0
	Entry flow Lane 2, pcu/h	77	0	0	0	635	0	0	0
	Conflicting flow, pcu/h	0	0	635	0	77	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	725	NA	1046	1046	NA	NA
Entry Flow Rates, veh/h	287	77	52	NA	337	635	NA	NA
V/C ratio	**0.25**	**0.07**	**0.07**		**0.32**	**0.61**		
Control Delay, s/veh	**5.5**	**3.8**	**5.7**		**6.7**	**11.6**		
LOS	A	A	A		A	B		
95th % Queue (ft)	**25**	**5**	**6**		**35**	**107**		
Approach Delay, LOS	5.2 sec, LOS A		5.7 sec, LOS A		9.9 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	926	NA	1333	1333	NA	NA
Entry Flow Rates, veh/h	287	77	52	NA	337	635	NA	NA
V/C ratio	**0.17**	**0.05**	**0.06**		**0.25**	**0.48**		
Control Delay, s/veh	**3.5**	**2.5**	**4.4**		**4.9**	**7.5**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**16**	**4**	**4**		**25**	**66**		
Approach Delay, LOS	3.3 sec, LOS A		4.4 sec, LOS A		6.6 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	23	25	362	511	144	924	637	146	130	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1889	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	828	382	73	768	298	596	898	763	56	510	210
Arriving On Green	0.03	0.24	0.00	0.02	0.22	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1261.6	1900.0	1615.0	414.1	3777.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	288.0	1320.0	0.0	162.2	146.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1261.6	1900.0	1615.0	414.1	1888.7	1552.9
Q Serve(g_s), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Cycle Q Clear(g_c), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	828.4	381.7	73.0	768.0	298.2	596.4	898.2	763.4	55.9	510.2	209.7
V/C Ratio(X)	1.056	0.394	0.000	0.398	0.612	0.000	0.483	1.470	0.000	2.900	0.286	0.000
Avail Cap(c_a), veh/h	55.5	828.4	381.7	118.5	812.6	315.5	596.4	898.2	763.4	55.9	510.2	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	38.1	0.0	57.3	41.4	0.0	21.3	31.2	0.0	51.2	46.1	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	1.2	0.0	0.6	217.4	0.0	901.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	38.4	0.0	60.7	42.6	0.0	21.9	248.7	0.0	953.0	46.4	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1608			308	
Approach Delay, s/veh		62.2			43.7			208.1			523.4	
Approach LOS		E			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	32.00		6.46	30.46			60.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	28.00		4.00	28.00			56.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.29		2.97	16.57			58.00			18.00	
Green Extension Time (p_c)	0.00	4.95		0.00	4.06			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			193.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	244	670	418	156	1074	1324	310	233	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	322	784	361	315	644	294	252	1578	1230	261	1632	723
Arriving On Green	0.09	0.22	0.00	0.06	0.19	0.19	0.14	0.44	0.00	0.15	0.45	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	287.1	744.4	464.4	222.9	1512.7	0.0	344.4	261.8	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Cycle Q Clear(g_c), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	252.1	1578.1	1230.2	260.8	1631.9	722.8
V/C Ratio(X)	1.363	0.884	0.000	0.912	1.155	1.581	0.884	0.959	0.000	1.321	0.160	0.000
Avail Cap(c_a), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	362.8	1586.6	1236.8	260.8	1631.9	722.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	58.8	48.7	0.0	60.5	52.3	52.3	54.8	35.4	0.0	54.8	21.0	0.0
Incr Delay (d2), s/veh	182.4	11.7	0.0	29.3	86.7	277.4	16.4	14.0	0.0	168.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	241.2	60.4	0.0	89.8	139.0	329.7	71.2	49.3	0.0	223.5	21.0	0.0
Lane Group LOS	F	E		F	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1496			1736			606	
Approach Delay, s/veh		130.5			188.8			52.1			136.1	
Approach LOS		F			F			D			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	16.00	33.00		12.00	29.00		22.07	60.70		24.00	62.63	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	12.00	29.00		8.00	25.00		26.00	57.00		20.00	51.00	
Max Q Clear Time (g_c+I1), s	14.00	26.79		9.25	27.00		17.68	54.65		22.00	7.56	
Green Extension Time (p_c)	0.00	1.88		0.00	0.00		0.39	2.05		0.00	20.92	
Intersection Summary												
HCM 2010 Control Delay			121.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	128	28	28	68	358	10	498	23	45	103	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1730	1730	1900	1858	1858	1900	1898	1898	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	407	575	128	120	54	350	33	500	21	67	557	478
Arriving On Green	0.23	0.42	0.42	0.07	0.25	0.25	0.02	0.28	0.28	0.04	0.30	0.30
Sat Flow, veh/h	1739.9	1372.0	304.5	1809.5	216.5	1395.1	1809.5	1810.1	75.1	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	226.7	47.5	0.0	617.3	16.9	0.0	730.5	52.3	121.2	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1676.6	1809.5	0.0	1611.6	1809.5	0.0	1885.2	1756.8	1881.2	1615.0
Q Serve(g_s), s	28.0	0.0	10.9	3.0	0.0	30.0	1.1	0.0	33.0	3.5	5.8	0.5
Cycle Q Clear(g_c), s	28.0	0.0	10.9	3.0	0.0	30.0	1.1	0.0	33.0	3.5	5.8	0.5
Proportion In Lane	1.000		0.182	1.000		0.866	1.000		0.040	1.000		1.000
Lane Grp Cap(c), veh/h	407.5	0.0	702.1	120.1	0.0	404.4	32.6	0.0	520.4	67.0	557.1	478.3
V/C Ratio(X)	1.414	0.000	0.323	0.395	0.000	1.526	0.520	0.000	1.404	0.781	0.218	0.022
Avail Cap(c_a), veh/h	407.5	0.0	702.1	151.4	0.0	404.4	75.7	0.0	520.4	73.5	557.1	478.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	45.8	0.0	23.4	53.5	0.0	44.8	58.2	0.0	43.3	57.0	31.7	29.8
Incr Delay (d2), s/veh	200.4	0.0	1.2	2.1	0.0	249.1	12.3	0.0	193.1	38.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	246.2	0.0	24.6	55.6	0.0	293.9	70.4	0.0	236.3	95.0	31.8	29.8
Lane Group LOS	F		C	E		F	E		F	F	C	C
Approach Volume, veh/h		803			665			747			184	
Approach Delay, s/veh		183.6			276.9			232.6			49.7	
Approach LOS		F			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	34.00	56.07		13.93	36.00		8.15	39.00		10.56	41.41	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	28.00	48.00		10.00	30.00		5.00	33.00		5.00	33.00	
Max Q Clear Time (g_c+I1), s	30.00	12.86		5.01	32.00		3.11	35.00		5.53	7.79	
Green Extension Time (p_c)	0.00	13.77		0.03	0.00		0.00	0.00		0.00	6.56	
Intersection Summary												
HCM 2010 Control Delay			214.5									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	916	122	250	224	42	57	44	337	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	65	1221	186	352	1912	365	306	434	362	393	346	48
Arriving On Green	0.42	0.42	0.42	0.12	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	71.2	2974.3	447.4	1791.6	3102.4	593.0	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	646.1	0.0	580.9	294.1	156.1	151.4	64.8	50.0	474.6	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1802.3	0.0	1619.0	1791.6	1900.0	1795.4	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	8.0	0.0	23.9	6.3	2.5	2.6	3.4	1.6	17.5	12.9	0.0	5.3
Cycle Q Clear(g_c), s	23.5	0.0	23.9	6.3	2.5	2.6	8.7	1.6	17.5	14.5	0.0	5.3
Proportion In Lane	0.040		0.276	1.000		0.330	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	799.7	0.0	672.4	351.9	1171.1	1106.6	305.7	433.9	361.9	393.0	0.0	394.6
V/C Ratio(X)	0.808	0.000	0.864	0.836	0.133	0.137	0.212	0.115	1.312	0.632	0.000	0.364
Avail Cap(c_a), veh/h	839.9	0.0	713.5	384.4	1223.5	1156.1	305.7	433.9	361.9	393.0	0.0	394.6
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	19.2	0.0	19.5	15.1	5.9	5.9	26.7	21.7	27.7	27.3	0.0	23.1
Incr Delay (d2), s/veh	6.6	0.0	11.5	18.7	0.1	0.1	1.6	0.5	158.7	7.5	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	25.8	0.0	30.9	33.8	6.0	6.0	28.3	22.2	186.5	34.9	0.0	25.7
Lane Group LOS	C		C	C	A	A	C	C	F	C		C
Approach Volume, veh/h		1227			602			589			392	
Approach Delay, s/veh		28.2			19.6			155.1			31.5	
Approach LOS		C			B			F			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		36.31		14.68	50.99			22.00			22.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		32.00		10.00	47.00			17.50			17.50	
Max Q Clear Time (g_c+I1), s		25.88		8.29	4.58			19.50			16.46	
Green Extension Time (p_c)		5.43		0.41	27.70			0.00			0.65	
Intersection Summary												
HCM 2010 Control Delay			53.4									
HCM 2010 Level of Service			D									

Intersection	
Intersection Delay (sec/veh)	31.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	111	136	53	71	10	77	129	147	21	185	24
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	90	126	194	63	81	13	104	157	233	27	234	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	30.1	15.3	44.4	20.8
HCM LOS	D	C	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	22%	15%	40%	9%
Volume Thru (%)	37%	38%	53%	80%
Volume Right (%)	42%	47%	7%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	353	291	134	230
Left Turning Volume	129	111	71	185
Through Volume	147	136	10	24
Right Turning Volume	77	44	53	21
Lane Flow Rate	495	410	157	288
Geometry Group	1	1	1	1
Degree of Utilization, X	0.904	0.779	0.347	0.592
Departure Headway, Hd	6.581	6.835	7.962	7.402
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	549	529	449	487
Service Time	4.646	4.898	6.055	5.481
HCM Lane V/C Ratio	0.902	0.775	0.35	0.591
HCM Control Delay	44.4	30.1	15.3	20.8
HCM Lane LOS	E	D	C	C
HCM 95th Percentile Queue	26.5	10.4	1.6	4.3

Intersection	
Intersection Delay (sec/veh)	39.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	72	14	30	0	387	258	78	88	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	103	37	67	0	435	363	163	126	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12	12.1	60.5	12.4
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	60%	0%	90%	0%	32%	0%	92%
Volume Right (%)	0%	40%	0%	10%	0%	68%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	645	19	71	72	44	78	96
Left Turning Volume	0	387	0	64	0	14	0	88
Through Volume	0	258	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	72	0	78	0
Lane Flow Rate	0	798	31	90	103	104	162	140
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.073	0.191	0.226	0.199	0.322	0.254
Departure Headway, Hd	6.205	5.938	8.4	7.594	7.914	6.904	7.135	6.56
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	615	428	474	455	522	505	548
Service Time	3.941	3.674	6.125	5.319	5.638	4.628	4.862	4.287
HCM Lane V/C Ratio	0	1.298	0.072	0.19	0.226	0.199	0.321	0.255
HCM Control Delay	8.9	60.5	11.8	12.1	12.9	11.3	13.2	11.5
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	116.4	0.2	0.7	0.9	0.7	1.4	1

Intersection	
Intersection Delay (sec/veh):	112.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	412	2	77	431	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	485	4	118	479	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1300	1247	504	1291	1270	487	529	0	0	489	0	0
Stage 1	740	740	-	505	505	-	-	-	-	-	-	-
Stage 2	560	507	-	786	765	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 140	175	572	142	170	585	1048	-	-	1085	-	-
Stage 1	412	426	-	553	544	-	-	-	-	-	-	-
Stage 2	516	543	-	388	415	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 86	146	572	89	142	585	1048	-	-	1085	-	-
Mov Capacity-2 Maneuver	# 86	146	-	89	142	-	-	-	-	-	-	-
Stage 1	407	360	-	546	537	-	-	-	-	-	-	-
Stage 2	416	536	-	265	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 610.2	28.2	0.2	1.6
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				93	572	266			
HCM Control Delay (s)	8.466	0	-	$ 28.2	11.9	28.2	8.724	0	-
HCM Lane VC Ratio	0.009	-	-	2.42	0.087	0.426	0.109	-	-
HCM Lane LOS	A	A	-	F	B	D	A	A	-
HCM 95th Percentile Queue (veh)	0.027	-	-	20.607	0.286	2.015	0.367	-	-

Intersection	
Intersection Delay (sec/veh):	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	339	0	1	95	192	0	0	1	129	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	408	0	4	158	234	0	0	4	174	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	392	0	-	408	0	0	853	934	204	819	817	196
Stage 1	-	-	-	-	-	-	534	534	-	283	283	-
Stage 2	-	-	-	-	-	-	319	400	-	536	534	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1167	-	0	1162	-	-	281	268	842	297	313	850
Stage 1	-	-	0	-	-	-	534	528	-	728	681	-
Stage 2	-	-	0	-	-	-	697	605	-	532	528	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1167	-	-	1162	-	-	245	253	842	283	295	850
Mov Capacity-2 Maneuver	-	-	-	-	-	-	245	253	-	283	295	-
Stage 1	-	-	-	-	-	-	505	499	-	689	679	-
Stage 2	-	-	-	-	-	-	635	603	-	501	499	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.1	0.1	9.3	28.6
HCM LOS	A	A	A	D

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	842						283	770
HCM Control Delay (s)	9.3	8.262	0	8.109	0	-	36.2	10.2
HCM Lane VC Ratio	0.005	0.054	-	0.003	-	-	0.616	0.094
HCM Lane LOS	A	A	A	A	A	-	E	B
HCM 95th Percentile Queue (veh)	0.014	0.172	-	0.01	-	-	3.767	0.309

Intersection	
Intersection Delay (sec/veh):	210.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	34	452	75	7	243	72	37	47	19	150	124	17
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	50	595	99	14	279	86	54	58	54	181	168	27
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	365	0	0	694	0	0	1193	1138	348	1151	1144	183
Stage 1	-	-	-	-	-	-	745	745	-	350	350	-
Stage 2	-	-	-	-	-	-	448	393	-	801	794	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1115	-	-	836	-	-	161	197	700	# 177	202	865
Stage 1	-	-	-	-	-	-	400	414	-	671	636	-
Stage 2	-	-	-	-	-	-	582	597	-	381	403	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1115	-	-	836	-	-	# 37	185	700	# 118	190	865
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 37	185	-	# 118	190	-
Stage 1	-	-	-	-	-	-	382	395	-	641	625	-
Stage 2	-	-	-	-	-	-	406	587	-	286	385	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.6	0.3	$ 497.9	$ 712.4
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	90							154
HCM Control Delay (s)	$ 497.9	8.38	0	-	9.38	0	-	$ 497.9
HCM Lane VC Ratio	1.844	0.045	-	-	0.017	-	-	2.437
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	13.952	0.141	-	-	0.051	-	-	32.05

Intersection	
Intersection Delay (sec/veh):	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	12	0	1	0	0	0	5	33	0	0	176	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	22	0	4	0	0	0	10	41	0	0	267	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	333	333	272	335	338	41	277	0	0	41	0	0
Stage 1	272	272	-	61	61	-	-	-	-	-	-	-
Stage 2	61	61	-	274	277	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	591	590	772	622	586	1036	1298	-	-	1581	-	-
Stage 1	700	688	-	955	848	-	-	-	-	-	-	-
Stage 2	912	848	-	736	685	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	587	585	772	615	581	1036	1298	-	-	1581	-	-
Mov Capacity-2 Maneuver	587	585	-	615	581	-	-	-	-	-	-	-
Stage 1	694	688	-	947	841	-	-	-	-	-	-	-
Stage 2	905	841	-	732	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	11.2	0	1.5	0
HCM LOS	B	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				610	0			
HCM Control Delay (s)	7.795	0	-	11.2	0	0	-	-
HCM Lane VC Ratio	0.008	-	-	0.042	-	-	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th Percentile Queue (veh)	0.023	-	-	0.132	-	0	-	-

18: Avenue of the States & N. Range Rd

Intersection	
Intersection Delay (sec/veh):	135.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	189	41	16	37	28	268	34	93	1069	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	225	64	28	76	36	312	36	116	1137	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1620	1798	578	1227	1788	174	1154	0	0	348	0	0
Stage 1	1378	1378	-	402	402	-	-	-	-	-	-	-
Stage 2	242	420	-	825	1386	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	70	81	464	137	82	846	613	-	-	1215	-	-
Stage 1	155	214	-	601	604	-	-	-	-	-	-	-
Stage 2	746	593	-	337	212	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	39	69	464	# 27	70	846	613	-	-	1215	-	-
Mov Capacity-2 Maneuver	39	69	-	# 27	70	-	-	-	-	-	-	-
Stage 1	146	194	-	566	569	-	-	-	-	-	-	-
Stage 2	609	558	-	117	192	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 414.1	$ 976.4	1.2	0.9
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				168	59			
HCM Control Delay (s)	11.238	0.2	-	$ 976.4	$ 976.4	8.276	0.2	-
HCM Lane VC Ratio	0.059	-	-	1.764	2.833	0.096	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.186	-	-	21.269	17.171	0.317	-	-

19: US 1 SB & Avenue of the States/Tobacco Rd

Intersection	
Intersection Delay (sec/veh):	19.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	1001	199	73	270	0	0	0	0	161	2	116
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	0	1151	249	107	370	0	0	0	0	194	4	190
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	370	0	0	1400	0	-				1044	1984	185
Stage 1	-	-	-	-	-	-				584	584	-
Stage 2	-	-	-	-	-	-				460	1400	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	787	-	-	250	-	0				237	62	703
Stage 1	-	-	-	-	-	0				380	501	-
Stage 2	-	-	-	-	-	0				499	209	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	787	-	-	250	-	-				# 158	35	703
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 158	35	-
Stage 1	-	-	-	-	-	-				380	287	-
Stage 2	-	-	-	-	-	-				499	209	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	6.7	108.1
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						158	703
HCM Control Delay (s)	0	-	-	29.815	-	202.4	12
HCM Lane VC Ratio	-	-	-	0.429	-	1.228	0.271
HCM Lane LOS	A	-	-	D	-	F	B
HCM 95th Percentile Queue (veh)	0	-	-	2.027	-	11.069	1.094

Intersection	
Intersection Delay (sec/veh):	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	912	257	0	306	143	38	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	1002	273	0	450	181	47	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	1364	~	638
Stage 1	-	-	-	-	-	-	1139	-	-
Stage 2	-	-	-	-	-	-	225	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	108	0	415
Stage 1	0	-	-	0	-	-	218	0	-
Stage 2	0	-	-	0	-	-	763	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	108	-	415
Mov Capacity-2 Maneuver	-	-	-	-	-	-	108	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	763	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	34.4
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	108	415				
HCM Control Delay (s)	61.8	15.4	-	-	-	-
HCM Lane VC Ratio	0.434	0.163	-	-	-	-
HCM Lane LOS	F	C	-	-	-	-
HCM 95th Percentile Queue (veh)	1.854	0.578	-	-	-	-

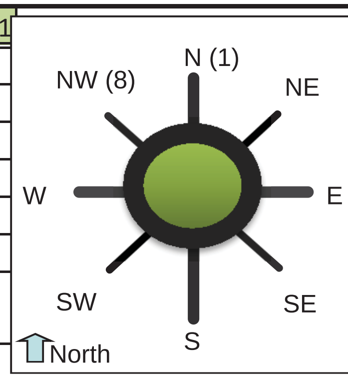
Roundabout Analysis Tool
Multi-Lane

9/12/2012
Version 2.1

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt D PM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					102			
Exit	NE (2), vph								
Legs	E (3), vph		91						
(TO)	SE (4), vph								
	S (5), vph	672							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	672	91	0	0	102	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph		220						
NE (2), vph								
E (3), vph	157							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	157	220	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	111	0	239	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	99	0	0	0	171	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	730	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	829	0	111	0	410	0	0	0
	Entry flow Lane 1, pcu/h	730	0	111	0	171	0	0	0
	Entry flow Lane 2, pcu/h	99	0	0	0	239	0	0	0
	Conflicting flow, pcu/h	0	0	239	0	99	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	956	NA	1024	1024	NA	NA
Entry Flow Rates, veh/h	730	99	111	NA	171	239	NA	NA
V/C ratio	**0.65**	**0.09**	**0.12**		**0.17**	**0.23**		
Control Delay, s/veh	**12.0**	**3.9**	**4.8**		**5.1**	**5.8**		
LOS	B	A	A		A	A		
95th % Queue (ft)	**125**	**7**	**10**		**15**	**23**		
Approach Delay, LOS	11.1 sec, LOS B		4.8 sec, LOS A		5.5 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1322	NA	1304	1304	NA	NA
Entry Flow Rates, veh/h	730	99	111	NA	171	239	NA	NA
V/C ratio	**0.45**	**0.06**	**0.08**		**0.13**	**0.18**		
Control Delay, s/veh	**6.2**	**2.6**	**3.4**		**3.8**	**4.3**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**59**	**5**	**7**		**11**	**17**		
Approach Delay, LOS	5.8 sec, LOS A		3.4 sec, LOS A		4.1 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	191	416	373	80	30	308	78	279	1093	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	57	529	244	471	862	335	104	430	366	335	1344	550
Arriving On Green	0.03	0.15	0.00	0.13	0.25	0.00	0.23	0.23	0.00	0.35	0.35	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	461.1	1900.0	1615.0	945.3	3798.1	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	60.0	440.0	0.0	310.0	1228.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	461.1	1900.0	1615.0	945.3	1899.1	1552.9
Q Serve(g_s), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Cycle Q Clear(g_c), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	56.6	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	334.6	1344.3	549.6
V/C Ratio(X)	0.801	0.966	0.000	1.026	0.562	0.000	0.574	1.022	0.000	0.927	0.914	0.000
Avail Cap(c_a), veh/h	124.2	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	341.0	1370.3	560.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.1	50.3	0.0	51.6	38.9	0.0	41.0	46.1	0.0	37.0	36.8	0.0
Incr Delay (d2), s/veh	22.1	30.5	0.0	48.4	0.8	0.0	7.4	49.1	0.0	30.3	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	79.2	80.8	0.0	100.0	39.8	0.0	48.4	95.2	0.0	67.3	46.3	0.0
Lane Group LOS	E	F		F	D		D	F		E	D	
Approach Volume, veh/h		557			968			500			1538	
Approach Delay, s/veh		80.7			69.8			89.6			50.5	
Approach LOS		F			E			F			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.10	22.00		20.00	33.90			31.00			46.18	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	9.00	18.00		16.00	25.00			27.00			43.00	
Max Q Clear Time (g_c+I1), s	5.26	19.28		18.00	16.64			29.00			39.57	
Green Extension Time (p_c)	0.02	0.00		0.00	4.10			0.00			2.61	
Intersection Summary												
HCM 2010 Control Delay			66.0									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	710	515	173	32	296	264	198	1254	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	237	828	382	861	1126	513	58	946	738	258	1381	612
Arriving On Green	0.07	0.24	0.00	0.17	0.34	0.34	0.03	0.26	0.00	0.15	0.38	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	835.3	572.2	192.2	45.7	416.9	0.0	220.0	1409.0	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Cycle Q Clear(g_c), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	236.9	828.3	381.7	861.4	1126.4	513.4	58.3	946.1	737.5	258.3	1381.3	611.8
V/C Ratio(X)	0.689	1.012	0.000	0.970	0.508	0.374	0.785	0.441	0.000	0.852	1.020	0.000
Avail Cap(c_a), veh/h	312.9	828.3	381.7	861.4	1126.4	513.4	81.5	946.1	737.5	399.7	1381.3	611.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.5	33.9	0.0	36.7	23.6	22.4	42.7	27.4	0.0	36.7	27.4	0.0
Incr Delay (d2), s/veh	4.1	34.2	0.0	23.4	0.4	0.5	27.4	0.3	0.0	10.2	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.5	68.1	0.0	60.1	23.9	22.8	70.1	27.7	0.0	46.9	56.8	0.0
Lane Group LOS	D	F		E	C	C	E	C		D	F	
Approach Volume, veh/h		1001			1600			463			1629	
Approach Delay, s/veh		64.3			42.7			31.9			55.5	
Approach LOS		E			D			C			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	10.06	25.00		19.00	33.94		6.86	27.29		17.57	38.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		15.00	28.00		4.00	17.00		21.00	34.00	
Max Q Clear Time (g_c+I1), s	6.08	23.00		16.46	14.17		4.23	10.56		13.26	36.00	
Green Extension Time (p_c)	0.09	0.00		0.00	8.50		0.00	5.28		0.37	0.00	
Intersection Summary												
HCM 2010 Control Delay			50.7									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	133	55	53	332	70	37	186	64	283	432	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1712	1712	1900	1834	1834	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	124	361	152	146	457	118	81	273	84	356	666	572
Arriving On Green	0.07	0.32	0.32	0.05	0.22	0.22	0.04	0.20	0.20	0.20	0.35	0.35
Sat Flow, veh/h	1739.9	1146.4	481.1	1809.5	1407.0	363.1	1809.5	1386.6	428.8	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	273.6	89.8	0.0	509.4	62.7	0.0	343.0	329.1	508.2	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1627.5	1809.5	0.0	1770.1	1809.5	0.0	1815.4	1756.8	1881.2	1615.0
Q Serve(g_s), s	6.6	0.0	16.2	5.7	0.0	32.6	4.0	0.0	21.9	21.5	28.0	11.5
Cycle Q Clear(g_c), s	6.6	0.0	16.2	5.7	0.0	32.6	4.0	0.0	21.9	21.5	28.0	11.5
Proportion In Lane	1.000		0.296	1.000		0.205	1.000		0.236	1.000		1.000
Lane Grp Cap(c), veh/h	123.7	0.0	512.7	146.3	0.0	574.9	81.0	0.0	356.9	355.6	666.4	572.1
V/C Ratio(X)	0.808	0.000	0.534	0.614	0.000	0.886	0.774	0.000	0.961	0.925	0.763	0.488
Avail Cap(c_a), veh/h	148.7	0.0	512.7	185.6	0.0	574.9	108.3	0.0	356.9	375.4	666.4	572.1
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	53.6	0.0	33.0	53.5	0.0	43.7	55.3	0.0	46.6	45.8	33.4	15.8
Incr Delay (d2), s/veh	23.5	0.0	3.9	4.1	0.0	18.0	21.4	0.0	37.3	27.7	5.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	77.0	0.0	36.9	57.7	0.0	61.7	76.7	0.0	83.9	73.5	38.6	16.4
Lane Group LOS	E		D	E		E	E		F	E	D	B
Approach Volume, veh/h		374			599			406			1117	
Approach Delay, s/veh		47.7			61.1			82.8			43.4	
Approach LOS		D			E			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	14.32	42.86		15.46	44.00		11.24	29.00		29.68	47.44	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	36.00		12.00	38.00		7.00	23.00		25.00	41.00	
Max Q Clear Time (g_c+I1), s	8.63	18.20		7.68	34.63		6.01	23.90		23.51	29.97	
Green Extension Time (p_c)	0.03	8.35		0.06	2.19		0.01	0.00		0.17	4.89	
Intersection Summary												
HCM 2010 Control Delay			54.7									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	325	86	299	851	173	135	127	128	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1869	1869	1869	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	97	953	292	685	1955	411	337	490	409	317	208	192
Arriving On Green	0.92	0.92	0.92	0.13	0.64	0.64	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	193.3	1971.2	636.8	1791.6	3046.6	640.4	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	236.3	0.0	282.3	351.8	609.4	574.7	153.4	144.3	180.3	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1263.1	0.0	1588.7	1791.6	1900.0	1787.0	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	2.7	11.5	20.3	20.4	12.8	7.6	11.9	7.8	0.0	6.7
Cycle Q Clear(g_c), s	1.7	0.0	2.7	11.5	20.3	20.4	19.4	7.6	11.9	15.4	0.0	6.7
Proportion In Lane	0.153		0.401	1.000		0.358	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	613.8	0.0	728.5	685.3	1219.2	1146.7	336.6	490.1	408.8	317.2	0.0	399.7
V/C Ratio(X)	0.385	0.000	0.388	0.513	0.500	0.501	0.456	0.294	0.441	0.297	0.000	0.261
Avail Cap(c_a), veh/h	613.8	0.0	728.5	820.1	1219.2	1146.7	336.6	490.1	408.8	317.2	0.0	399.7
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	2.8	0.0	2.8	11.6	11.3	11.4	41.9	34.7	36.2	40.8	0.0	34.3
Incr Delay (d2), s/veh	0.8	0.0	0.7	2.2	0.7	0.7	4.4	1.5	3.4	2.4	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	3.6	0.0	3.5	13.8	12.0	12.1	46.3	36.2	39.7	43.2	0.0	35.9
Lane Group LOS	A		A	B	B	B	D	D	D	D		D
Approach Volume, veh/h		519			1536			478			199	
Approach Delay, s/veh		3.6			12.4			40.8			39.3	
Approach LOS		A			B			D			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		61.02		21.98	83.00			37.00			37.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		47.00		25.00	77.00			32.50			32.50	
Max Q Clear Time (g_c+I1), s		4.74		13.48	22.39			21.43			17.42	
Green Extension Time (p_c)		30.64		2.49	36.71			3.68			4.37	
Intersection Summary												
HCM 2010 Control Delay			17.7									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	630	104	215	220	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	716	132	295	297	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	848	0	0	1681	~	782	1682	1743	157
Stage 1	-	-	-	-	-	-	782	-	-	895	895	-
Stage 2	-	-	-	-	-	-	899	-	-	787	848	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1260	-	-	764	-	-	76	0	397	76	88	894
Stage 1	-	-	-	-	-	-	390	0	-	338	362	-
Stage 2	-	-	-	-	-	-	336	0	-	388	380	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1260	-	-	764	-	-	45	-	397	47	47	894
Mov Capacity-2 Maneuver	-	-	-	-	-	-	45	-	-	47	47	-
Stage 1	-	-	-	-	-	-	390	-	-	338	193	-
Stage 2	-	-	-	-	-	-	174	-	-	379	380	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	6.1	37.8	49.4
HCM LOS	A	A	E	E

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	45	397							89
HCM Control Delay (s)	92.7	14.3	0	-	-	12.637	-	-	49.4
HCM Lane VC Ratio	0.089	0.024	-	-	-	0.385	-	-	0.09
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.278	0.072	0	-	-	1.825	-	-	0.288

Intersection	
Intersection Delay (sec/veh):	97.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	0	37	0	2	290	1	285	1	50	912	504
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	66	0	63	0	2	315	4	385	1	54	1126	560
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2066	1908	843	1065	2188	386	1686	0	0	386	0	0
Stage 1	1514	1514	-	394	394	-	-	-	-	-	-	-
Stage 2	552	394	-	671	1794	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	# 32	68	287	177	45	612	384	-	-	1169	-	-
Stage 1	128	181	-	602	604	-	-	-	-	-	-	-
Stage 2	491	604	-	412	131	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 15	67	287	137	44	612	384	-	-	1169	-	-
Mov Capacity-2 Maneuver	# 15	67	-	137	44	-	-	-	-	-	-	-
Stage 1	126	181	-	594	596	-	-	-	-	-	-	-
Stage 2	234	596	-	322	131	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1902.5	19.4	0.1	0.3
HCM LOS	F	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				28	562			
HCM Control Delay (s)	14.474	0	-	$ 19.4	19.4	8.23	-	-
HCM Lane VC Ratio	0.01	-	-	4.597	0.565	0.046	-	-
HCM Lane LOS	B	A	-	F	C	A	-	-
HCM 95th Percentile Queue (veh)	0.032	-	-	15.669	3.493	0.146	-	-

Intersection	
Intersection Delay (sec/veh):	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	616	38	10	8	58	181	26	516	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	700	54	13	14	70	241	59	543	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	67	0	0	283	0	0	1934	1665	142	1814	1744	34
Stage 1	-	-	-	-	-	-	198	198	-	1461	1461	-
Stage 2	-	-	-	-	-	-	1736	1467	-	353	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1549	-	-	1279	-	-	50	97	906	# 52	# 85	1052
Stage 1	-	-	-	-	-	-	808	741	-	141	# 193	-
Stage 2	-	-	-	-	-	-	111	193	-	617	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1549	-	-	1279	-	-	-	# 44	906	-	# 39	1052
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	# 44	-	-	# 39	-
Stage 1	-	-	-	-	-	-	808	741	-	141	# 87	-
Stage 2	-	-	-	-	-	-	-	87	-	410	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	10.2	-	-
HCM LOS	A	B	-	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	168							-	40
HCM Control Delay (s)	-	$ 452	0	-	-	11.163	0	-	-	$ 452
HCM Lane VC Ratio	-	1.852	-	-	-	0.547	-	-	-	13.776
HCM Lane LOS	-	F	A	-	-	B	A	-	-	F
HCM 95th Percentile Queue (veh)	-	22.98	0	-	-	3.461	-	-	-	66.967

Intersection	
Intersection Delay (sec/veh):	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	436	44	98	443	9	36	60	84	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	490	54	111	591	13	45	86	153	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	604	0	0	544	0	0	1095	1389	272	1154	1410	303
Stage 1	-	-	-	-	-	-	563	563	-	820	820	-
Stage 2	-	-	-	-	-	-	532	826	-	334	590	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1198	-	-	1271	-	-	383	234	*1273	*354	202	*1273
Stage 1	-	-	-	-	-	-	707	670	-	*491	455	-
Stage 2	-	-	-	-	-	-	743	490	-	*1273	611	-
Time blocked-Platoon(%)	15	-	-	15	-	-	27	27	15	27	27	15
Mov Capacity-1 Maneuver	1198	-	-	1271	-	-	291	198	*1273	*183	170	*1273
Mov Capacity-2 Maneuver	-	-	-	-	-	-	291	198	-	*183	170	-
Stage 1	-	-	-	-	-	-	687	651	-	*477	395	-
Stage 2	-	-	-	-	-	-	589	425	-	*946	594	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1.6	32.9	21.7
HCM LOS	A	A	D	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*401							*183	*274
HCM Control Delay (s)	32.9	8.063	0.1	-	8.104	0.4	-	25.3	21.3
HCM Lane VC Ratio	0.707	0.019	-	-	0.088	-	-	0.033	0.197
HCM Lane LOS	D	A	A	-	A	A	-	D	C
HCM 95th Percentile Queue (veh)	5.313	0.058	-	-	0.288	-	-	0.102	0.717

Intersection	
Intersection Delay (sec/veh):	59.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	489	34	520	1281	41	461
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	596	41	598	1408	68	632
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	637	0	2517	319
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	1900	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1206	-	# 23	*1237
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	106	-
Time blocked-Platoon(%)	-	-	18	-	18	18
Mov Capacity-1 Maneuver	-	-	1206	-	# 12	*1237
Mov Capacity-2 Maneuver	-	-	-	-	# 12	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	# 53	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3.2	276.8
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*12	*1237				
HCM Control Delay (s)	$ 2734	10.9	-	-	10.881	-
HCM Lane VC Ratio	5.694	0.511	-	-	0.496	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th Percentile Queue (veh)	9.687	3.009	-	-	2.842	-

Intersection	
Intersection Delay (sec/veh):	23.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	72	11	225	107	125	422	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	122	17	326	126	181	480	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1342	1330	242	1288	1269	226	484	0	0	452	0	0
Stage 1	844	844	-	423	423	-	-	-	-	-	-	-
Stage 2	498	486	-	865	846	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	131	156	743	139	170	818	1038	-	-	1103	-	-
Stage 1	361	382	-	605	591	-	-	-	-	-	-	-
Stage 2	558	554	-	346	381	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	82	128	743	104	140	818	1038	-	-	1103	-	-
Mov Capacity-2 Maneuver	82	128	-	104	140	-	-	-	-	-	-	-
Stage 1	355	319	-	595	581	-	-	-	-	-	-	-
Stage 2	444	545	-	264	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	23.1	133.9	0.3	2.4
HCM LOS	C	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				240	209			
HCM Control Delay (s)	8.528	0	-	23.1	133.9	8.904	0	-
HCM Lane VC Ratio	0.017	-	-	0.172	1.082	0.164	-	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th Percentile Queue (veh)	0.051	-	-	0.609	10.333	0.587	-	-

Intersection	
Intersection Delay (sec/veh)	31.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	38	128	73	46	123	12	99	211	32	17	106	41
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	54	175	85	77	176	31	116	301	55	27	156	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.1	22.8	48.3	19.8
HCM LOS	C	C	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	16%	25%	10%
Volume Thru (%)	62%	54%	68%	65%
Volume Right (%)	9%	31%	7%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	342	239	181	164
Left Turning Volume	211	128	123	106
Through Volume	32	73	12	41
Right Turning Volume	99	38	46	17
Lane Flow Rate	473	314	283	247
Geometry Group	1	1	1	1
Degree of Utilization, X	0.916	0.645	0.616	0.537
Departure Headway, Hd	6.969	7.406	7.838	7.83
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	520	486	459	457
Service Time	5.046	5.498	5.933	5.93
HCM Lane V/C Ratio	0.91	0.646	0.617	0.54
HCM Control Delay	48.3	23.1	22.8	19.8
HCM Lane LOS	E	C	C	C
HCM 95th Percentile Queue	29.9	5.4	4.8	3.5

Intersection	
Intersection Delay (sec/veh)	67.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	205	0	7	21	270	39	15	1031	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	820	0	28	36	365	156	60	1158	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	13.2	70.5	65.9	67.2
HCM LOS	B	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	87%	0%	33%	0%	0%	0%	98%
Volume Right (%)	0%	13%	0%	67%	0%	100%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	309	8	9	205	7	15	1056
Left Turning Volume	0	270	0	3	0	0	0	1031
Through Volume	0	39	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	205	0	15	0
Lane Flow Rate	36	521	14	26	820	28	60	1204
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.082	1	0.043	0.067	1	0.055	0.149	1
Departure Headway, Hd	8.313	7.726	11.148	9.217	8.372	7.123	8.946	7.802
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	431	469	323	391	443	503	402	482
Service Time	6.053	5.466	8.85	6.919	6.113	4.864	6.682	5.539
HCM Lane V/C Ratio	0.084	1.111	0.043	0.066	1.851	0.056	0.149	2.498
HCM Control Delay	11.8	69.6	14.4	12.6	72.6	10.3	13.2	69.9
HCM Lane LOS	B	F	B	B	F	B	B	F
HCM 95th Percentile Queue	0.3	102.1	0.1	0.2	98.1	0.2	0.5	101.7

HCM 2010 TWSC
12: Kilbourne St & Brainard Ave

Intersection	
Intersection Delay (sec/veh):	237.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	468	6	41	395	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	520	19	59	444	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1302	1193	482	1223	1222	530	520	0	0	539	0	0
Stage 1	600	600	-	584	584	-	-	-	-	-	-	-
Stage 2	702	593	-	639	638	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 139	188	582	158	181	553	1056	-	-	1040	-	-
Stage 1	491	493	-	501	502	-	-	-	-	-	-	-
Stage 2	432	497	-	468	474	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 33	166	582	120	160	553	1056	-	-	1040	-	-
Mov Capacity-2 Maneuver	# 33	166	-	120	160	-	-	-	-	-	-	-
Stage 1	473	453	-	482	483	-	-	-	-	-	-	-
Stage 2	246	479	-	371	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1505.9	104.8	0.4	0.9
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				35	582	234			
HCM Control Delay (s)	8.497	0	-	$ 104.8	11.9	104.8	8.671	0	-
HCM Lane VC Ratio	0.025	-	-	5.027	0.108	1.005	0.057	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.077	-	-	20.792	0.362	9.455	0.182	-	-

HCM 2010 TWSC
14: 19th St & Lane Av

Intersection	
Intersection Delay (sec/veh):	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	131	0	0	388	68	0	1	0	137	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	182	0	0	669	82	0	4	0	167	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	751	0	-	182	0	0	1000	1005	91	966	964	376
Stage 1	-	-	-	-	-	-	254	254	-	710	710	-
Stage 2	-	-	-	-	-	-	746	751	-	256	254	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	868	-	0	1405	-	-	224	243	972	234	257	655
Stage 1	-	-	0	-	-	-	755	701	-	424	440	-
Stage 2	-	-	0	-	-	-	409	421	-	749	701	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	868	-	-	1405	-	-	192	233	972	224	246	655
Mov Capacity-2 Maneuver	-	-	-	-	-	-	192	233	-	224	246	-
Stage 1	-	-	-	-	-	-	724	672	-	406	440	-
Stage 2	-	-	-	-	-	-	364	421	-	714	672	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.5	0	20.7	43.6
HCM LOS	A	A	C	E

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	233						224	599
HCM Control Delay (s)	20.7	9.327	0	0	-	-	57	11.8
HCM Lane VC Ratio	0.017	0.041	-	-	-	-	0.746	0.118
HCM Lane LOS	C	A	A	A	-	-	F	B
HCM 95th Percentile Queue (veh)	0.052	0.13	-	0	-	-	5.12	0.399

Intersection	
Intersection Delay (sec/veh):	14.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	37	213	68	15	368	118	20	44	5	44	43	67
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	46	292	91	23	443	166	31	68	10	54	73	86
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	609	0	0	383	0	0	1082	1085	192	1041	1047	305
Stage 1	-	-	-	-	-	-	430	430	-	572	572	-
Stage 2	-	-	-	-	-	-	652	655	-	469	475	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	979	-	-	1187	-	-	187	219	855	210	218	730
Stage 1	-	-	-	-	-	-	586	587	-	509	487	-
Stage 2	-	-	-	-	-	-	442	466	-	579	539	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	979	-	-	1187	-	-	114	205	855	147	204	730
Mov Capacity-2 Maneuver	-	-	-	-	-	-	114	205	-	147	204	-
Stage 1	-	-	-	-	-	-	558	559	-	485	478	-
Stage 2	-	-	-	-	-	-	324	457	-	479	514	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.3	53.4	66.1
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	177							252
HCM Control Delay (s)	53.4	8.857	0	-	8.093	0	-	66.1
HCM Lane VC Ratio	0.615	0.047	-	-	0.019	-	-	0.846
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	3.424	0.147	-	-	0.059	-	-	6.833

Intersection	
Intersection Delay (sec/veh):	154.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	68	0	21	0	0	1	173	219	0	1	61	558
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	136	0	84	0	0	4	692	270	0	4	81	1468
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	4	0	0	84	0	0	1091	318	42	451	358	2
Stage 1	-	-	-	-	-	-	314	314	-	2	2	-
Stage 2	-	-	-	-	-	-	777	4	-	449	356	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	1526	-	-	# 194	600	1034	522	554	# 1056
Stage 1	-	-	-	-	-	-	701	658	-	1026	877	-
Stage 2	-	-	-	-	-	-	# 393	894	-	593	613	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	1526	-	-	-	547	1034	300	505	# 1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	547	-	300	505	-
Stage 1	-	-	-	-	-	-	# 639	600	-	936	877	-
Stage 2	-	-	-	-	-	-	-	894	-	297	559	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	4.6	0	-	272.4
HCM LOS	A	A	-	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							993
HCM Control Delay (s)	-	7.408	0	-	0	-	-	272.4
HCM Lane VC Ratio	-	0.083	-	-	-	-	-	1.565
HCM Lane LOS	-	A	A	-	A	-	-	F
HCM 95th Percentile Queue (veh)	-	0.273	-	-	0	-	-	77.603

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	62	23	10	47	340	970	53	87	259	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	97	32	13	63	486	1198	77	136	375	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2237	2906	200	2674	2879	638	398	0	0	1275	0	0
Stage 1	659	659	-	2209	2209	-	-	-	-	-	-	-
Stage 2	1578	2247	-	465	670	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	24	16	814	# 11	17	424	1172	-	-	546	-	-
Stage 1	424	464	-	46	83	-	-	-	-	-	-	-
Stage 2	116	79	-	552	459	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	-	# 7	814	-	# 7	424	1172	-	-	546	-	-
Mov Capacity-2 Maneuver	-	# 7	-	-	# 7	-	-	-	-	-	-	-
Stage 1	248	348	-	# 27	49	-	-	-	-	-	-	-
Stage 2	42	46	-	355	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	-	3.2	3.9
HCM LOS	-	-	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				-	-			
HCM Control Delay (s)	10.228	0.6	-	-	-	13.765	0.5	-
HCM Lane VC Ratio	0.414	-	-	-	-	0.249	-	-
HCM Lane LOS	B	A	-	-	-	B	A	-
HCM 95th Percentile Queue (veh)	2.073	-	-	-	-	0.976	-	-

Intersection	
Intersection Delay (sec/veh):	13.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	16	364	59	49	1152	0	0	0	0	59	0	376
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	1152	0	0	423	0	-				1428	~	576
Stage 1	-	-	-	-	-	-				1250	-	-
Stage 2	-	-	-	-	-	-				178	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	336	-	-	711	-	0				145	0	398
Stage 1	-	-	-	-	-	0				135	0	-
Stage 2	-	-	-	-	-	0				746	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	336	-	-	711	-	-				131	-	398
Mov Capacity-2 Maneuver	-	-	-	-	-	-				131	-	-
Stage 1	-	-	-	-	-	-				126	-	-
Stage 2	-	-	-	-	-	-				699	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.8	0.4	63.2
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						131	398
HCM Control Delay (s)	16.249	0.3	-	10.44	-	53	64.8
HCM Lane VC Ratio	0.048	-	-	0.069	-	0.447	0.945
HCM Lane LOS	C	A	-	B	-	F	F
HCM 95th Percentile Queue (veh)	0.149	-	-	0.223	-	1.991	10.575

Intersection	
Intersection Delay (sec/veh):	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	211	75	0	781	150	253	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	278	99	0	908	203	298	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	782	~	189
Stage 1	-	-	-	-	-	-	328	-	-
Stage 2	-	-	-	-	-	-	454	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	# 288	0	805
Stage 1	0	-	-	0	-	-	664	0	-
Stage 2	0	-	-	0	-	-	560	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	# 288	-	805
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 288	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	560	-	-

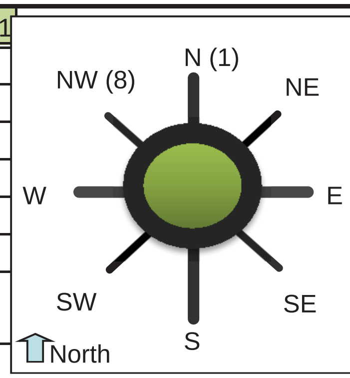
Approach	EB	WB	NB
HCM Control Delay (s)	0	0	89.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	288	805				
HCM Control Delay (s)	101.7	9.7	-	-	-	-
HCM Lane VC Ratio	1.033	0.057	-	-	-	-
HCM Lane LOS	F	A	-	-	-	-
HCM 95th Percentile Queue (veh)	11.185	0.18	-	-	-	-

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt E AM



Volumes

Entry Legs (FROM)

Lane Designation		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					52			
Exit	NE (2), vph								
Legs	E (3), vph		106						
(TO)	SE (4), vph								
	S (5), vph	252							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	252	106	0	0	52	0	0	0

Lane Designation	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph		485						
NE (2), vph								
E (3), vph	338							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	338	485	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	57	0	527	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	115	0	0	0	367	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	274	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	389	0	57	0	895	0	0	0
	Entry flow Lane 1, pcu/h	274	0	57	0	367	0	0	0
	Entry flow Lane 2, pcu/h	115	0	0	0	527	0	0	0
	Conflicting flow, pcu/h	0	0	527	0	115	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	781	NA	1007	1007	NA	NA
Entry Flow Rates, veh/h	274	115	57	NA	367	527	NA	NA
V/C ratio	**0.24**	**0.10**	**0.07**		**0.36**	**0.52**		
Control Delay, s/veh	**5.4**	**4.1**	**5.3**		**7.4**	**10.1**		
LOS	A	A	A		A	B		
95th % Queue (ft)	**24**	**8**	**6**		**42**	**78**		
Approach Delay, LOS	5 sec, LOS A		5.3 sec, LOS A		9 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1020	NA	1283	1283	NA	NA
Entry Flow Rates, veh/h	274	115	57	NA	367	527	NA	NA
V/C ratio	**0.17**	**0.07**	**0.06**		**0.29**	**0.41**		
Control Delay, s/veh	**3.5**	**2.7**	**4.0**		**5.4**	**6.8**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**15**	**6**	**4**		**30**	**51**		
Approach Delay, LOS	3.2 sec, LOS A		4 sec, LOS A		6.2 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

HCM 2010 Signalized Intersection Summary
2: 19th St. & Gordon Hwy

Base + Alt E PM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	23	25	362	511	144	924	637	146	130	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1889	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	828	382	73	768	298	596	898	763	56	510	210
Arriving On Green	0.03	0.24	0.00	0.02	0.22	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1261.6	1900.0	1615.0	414.1	3777.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	288.0	1320.0	0.0	162.2	146.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1261.6	1900.0	1615.0	414.1	1888.7	1552.9
Q Serve(g_s), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Cycle Q Clear(g_c), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	828.4	381.7	73.0	768.0	298.2	596.4	898.2	763.4	55.9	510.2	209.7
V/C Ratio(X)	1.056	0.394	0.000	0.398	0.612	0.000	0.483	1.470	0.000	2.900	0.286	0.000
Avail Cap(c_a), veh/h	55.5	828.4	381.7	118.5	812.6	315.5	596.4	898.2	763.4	55.9	510.2	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	38.1	0.0	57.3	41.4	0.0	21.3	31.2	0.0	51.2	46.1	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	1.2	0.0	0.6	217.4	0.0	901.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	38.4	0.0	60.7	42.6	0.0	21.9	248.7	0.0	953.0	46.4	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1608			308	
Approach Delay, s/veh		62.2			43.7			208.1			523.4	
Approach LOS		E			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	32.00		6.46	30.46			60.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	28.00		4.00	28.00			56.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.29		2.97	16.57			58.00			18.00	
Green Extension Time (p_c)	0.00	4.95		0.00	4.06			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			193.4									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Base + Alt E PM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	244	670	418	156	1074	1324	310	233	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	322	784	361	315	644	294	252	1578	1230	261	1632	723
Arriving On Green	0.09	0.22	0.00	0.06	0.19	0.19	0.14	0.44	0.00	0.15	0.45	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	287.1	744.4	464.4	222.9	1512.7	0.0	344.4	261.8	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Cycle Q Clear(g_c), s	12.0	24.8	0.0	7.3	25.0	25.0	15.7	52.7	0.0	20.0	5.6	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	252.1	1578.1	1230.2	260.8	1631.9	722.8
V/C Ratio(X)	1.363	0.884	0.000	0.912	1.155	1.581	0.884	0.959	0.000	1.321	0.160	0.000
Avail Cap(c_a), veh/h	321.6	783.7	361.1	314.8	644.3	293.7	362.8	1586.6	1236.8	260.8	1631.9	722.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	58.8	48.7	0.0	60.5	52.3	52.3	54.8	35.4	0.0	54.8	21.0	0.0
Incr Delay (d2), s/veh	182.4	11.7	0.0	29.3	86.7	277.4	16.4	14.0	0.0	168.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	241.2	60.4	0.0	89.8	139.0	329.7	71.2	49.3	0.0	223.5	21.0	0.0
Lane Group LOS	F	E		F	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1496			1736			606	
Approach Delay, s/veh		130.5			188.8			52.1			136.1	
Approach LOS		F			F			D			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	16.00	33.00		12.00	29.00		22.07	60.70		24.00	62.63	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	12.00	29.00		8.00	25.00		26.00	57.00		20.00	51.00	
Max Q Clear Time (g_c+I1), s	14.00	26.79		9.25	27.00		17.68	54.65		22.00	7.56	
Green Extension Time (p_c)	0.00	1.88		0.00	0.00		0.39	2.05		0.00	20.92	
Intersection Summary												
HCM 2010 Control Delay			121.4									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
6: 19th St. & Chamberlain Ave.

Base + Alt E PM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	287	28	28	96	250	10	434	23	26	92	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1745	1745	1900	1854	1854	1900	1898	1898	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	471	676	67	121	89	284	33	487	23	47	526	451
Arriving On Green	0.27	0.43	0.43	0.07	0.23	0.23	0.02	0.27	0.27	0.03	0.28	0.28
Sat Flow, veh/h	1739.9	1562.8	154.7	1809.5	390.4	1244.1	1809.5	1797.6	85.6	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	457.1	47.5	0.0	490.2	16.9	0.0	640.4	30.2	108.2	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1717.5	1809.5	0.0	1634.5	1809.5	0.0	1883.2	1756.8	1881.2	1615.0
Q Serve(g_s), s	32.0	0.0	24.3	3.0	0.0	27.0	1.1	0.0	32.0	2.0	5.2	0.6
Cycle Q Clear(g_c), s	32.0	0.0	24.3	3.0	0.0	27.0	1.1	0.0	32.0	2.0	5.2	0.6
Proportion In Lane	1.000		0.090	1.000		0.761	1.000		0.045	1.000		1.000
Lane Grp Cap(c), veh/h	471.3	0.0	742.9	120.9	0.0	373.5	32.7	0.0	510.1	46.8	525.7	451.3
V/C Ratio(X)	1.223	0.000	0.615	0.393	0.000	1.312	0.519	0.000	1.256	0.646	0.206	0.023
Avail Cap(c_a), veh/h	471.3	0.0	742.9	153.2	0.0	373.5	76.6	0.0	510.1	74.3	525.7	451.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	43.1	0.0	25.9	52.8	0.0	45.6	57.5	0.0	43.1	56.9	32.5	30.9
Incr Delay (d2), s/veh	118.1	0.0	3.8	2.1	0.0	158.5	12.1	0.0	130.3	14.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	161.1	0.0	29.7	54.9	0.0	204.1	69.6	0.0	173.4	70.9	32.7	30.9
Lane Group LOS	F		C	D		F	E		F	E	C	C
Approach Volume, veh/h		1033			538			657			149	
Approach Delay, s/veh		103.0			190.9			170.7			40.4	
Approach LOS		F			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	38.00	57.11		13.89	33.00		8.13	38.00		9.15	39.01	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	32.00	49.00		10.00	27.00		5.00	32.00		5.00	32.00	
Max Q Clear Time (g_c+I1), s	34.00	26.31		4.97	29.00		3.10	34.00		4.01	7.20	
Green Extension Time (p_c)	0.00	11.84		0.03	0.00		0.00	0.00		0.00	5.45	
Intersection Summary												
HCM 2010 Control Delay			137.7									
HCM 2010 Level of Service			F									

HCM 2010 Signalized Intersection Summary
8: Rice Rd & Chamberlain Ave.

Base + Alt E PM Peak
9/8/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	858	122	256	214	42	57	44	369	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	68	1117	181	359	1830	366	329	458	382	417	366	51
Arriving On Green	0.38	0.38	0.38	0.12	0.59	0.59	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	75.1	2935.5	472.0	1791.6	3076.8	614.7	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	611.9	0.0	549.2	301.2	150.3	145.7	64.8	50.0	519.7	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1800.3	0.0	1614.8	1791.6	1900.0	1791.5	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	8.0	0.0	21.9	6.5	2.4	2.5	3.1	1.5	17.5	12.0	0.0	4.9
Cycle Q Clear(g_c), s	21.6	0.0	21.9	6.5	2.4	2.5	8.1	1.5	17.5	13.5	0.0	4.9
Proportion In Lane	0.042		0.292	1.000		0.343	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	745.6	0.0	620.1	358.9	1130.3	1065.8	329.4	458.1	382.1	417.2	0.0	416.7
V/C Ratio(X)	0.821	0.000	0.886	0.839	0.133	0.137	0.197	0.109	1.360	0.596	0.000	0.345
Avail Cap(c_a), veh/h	782.1	0.0	657.5	369.8	1154.5	1088.6	329.4	458.1	382.1	417.2	0.0	416.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	19.6	0.0	19.9	14.5	6.2	6.2	24.4	19.8	25.8	25.0	0.0	21.1
Incr Delay (d2), s/veh	7.7	0.0	14.4	19.1	0.1	0.1	1.3	0.5	178.2	6.2	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.3	0.0	34.3	33.6	6.3	6.3	25.8	20.3	204.0	31.1	0.0	23.4
Lane Group LOS	C		C	C	A	A	C	C	F	C		C
Approach Volume, veh/h		1161			597			634			392	
Approach Delay, s/veh		30.6			20.1			171.3			28.3	
Approach LOS		C			C			F			C	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		32.54		14.58	47.12			22.00			22.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		28.00		9.00	42.00			17.50			17.50	
Max Q Clear Time (g_c+I1), s		23.94		8.47	4.48			19.50			15.45	
Green Extension Time (p_c)		3.60		0.14	24.09			0.00			1.29	
Intersection Summary												
HCM 2010 Control Delay			60.1									
HCM 2010 Level of Service			E									

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	306	0	1	612	12	1	0	1	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	348	0	1	827	36	4	0	1	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	863	0	0	348	0	0	1213	~	348	1204	1203	432
Stage 1	-	-	-	-	-	-	356	-	-	847	847	-
Stage 2	-	-	-	-	-	-	857	-	-	357	356	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	788	-	-	1178	-	-	160	0	700	162	186	628
Stage 1	-	-	-	-	-	-	666	0	-	359	381	-
Stage 2	-	-	-	-	-	-	355	0	-	665	633	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	788	-	-	1178	-	-	154	-	700	161	185	628
Mov Capacity-2 Maneuver	-	-	-	-	-	-	154	-	-	161	185	-
Stage 1	-	-	-	-	-	-	662	-	-	357	380	-
Stage 2	-	-	-	-	-	-	343	-	-	660	629	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	24.3	25.7
HCM LOS	A	A	C	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	154	700							225
HCM Control Delay (s)	29	10.2	9.592	0	-	8.06	-	-	25.7
HCM Lane VC Ratio	0.026	0.002	0.005	-	-	0.001	-	-	0.231
HCM Lane LOS	D	B	A	A	-	A	-	-	D
HCM 95th Percentile Queue (veh)	0.08	0.006	0.015	-	-	0.003	-	-	0.867

Intersection	
Intersection Delay (sec/veh):	16

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	440	0	0	3	0	69	0	1288	5	255	115	41
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	880	0	0	3	0	75	0	1741	5	277	142	46
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	2500	2465	94	2369	2486	1744	188	0	0	1746	0	0
Stage 1	719	719	-	1744	1744	-	-	-	-	-	-	-
Stage 2	1781	1746	-	625	742	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	# 15	30	913	18	29	76	1398	-	-	356	-	-
Stage 1	# 390	431	-	90	139	-	-	-	-	-	-	-
Stage 2	# 87	139	-	439	420	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 0	4	913	5	4	76	1398	-	-	356	-	-
Mov Capacity-2 Maneuver	# 0	4	-	5	4	-	-	-	-	-	-	-
Stage 1	# 390	54	-	90	139	-	-	-	-	-	-	-
Stage 2	# 1	139	-	55	53	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	$ 496	0	25.6
HCM LOS	-	F	A	D

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				0	48			
HCM Control Delay (s)	0	-	-	-	$ 496	42.913	-	-
HCM Lane VC Ratio	-	-	-	-	1.63	0.779	-	-
HCM Lane LOS	A	-	-	-	F	E	-	-
HCM 95th Percentile Queue (veh)	0	-	-	-	7.629	6.396	-	-

Intersection	
Intersection Delay (sec/veh):	276.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	111	32	6	36	352	529	27	67	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	126	45	8	62	424	705	61	71	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	53	0	0	160	0	0	630	598	80	1159	605	-
Stage 1	-	-	-	-	-	-	293	293	-	301	301	-
Stage 2	-	-	-	-	-	-	337	305	-	858	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	398	# 419	980	155	412	0
Stage 1	-	-	-	-	-	-	719	674	-	662	666	0
Stage 2	-	-	-	-	-	-	683	666	-	320	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	305	# 364	980	-	358	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	305	# 364	-	-	358	-
Stage 1	-	-	-	-	-	-	686	643	-	632	607	-
Stage 2	-	-	-	-	-	-	550	607	-	# 29	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	5.5	$ 401	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	305	599							-	-
HCM Control Delay (s)	19.8	$ 421.9	7.406	0	-	7.784	0	-	-	-
HCM Lane VC Ratio	0.204	1.886	0.046	-	-	0.089	-	-	-	-
HCM Lane LOS	C	F	A	A	-	A	A	-	-	-
HCM 95th Percentile Queue (veh)	0.748	72.172	0.144	-	-	0.292	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	440	36	86	243	1	41	30	146	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	494	44	98	324	1	51	43	265	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	325	0	0	538	0	0	950	1039	269	792	1061	163
Stage 1	-	-	-	-	-	-	518	518	-	521	521	-
Stage 2	-	-	-	-	-	-	432	521	-	271	540	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1246	-	-	1278	-	-	317	311	*1273	*459	271	721
Stage 1	-	-	-	-	-	-	760	705	-	*512	485	-
Stage 2	-	-	-	-	-	-	546	530	-	*1273	651	-
Time blocked-Platoon(%)	0	-	-	15	-	-	15	15	15	15	15	0
Mov Capacity-1 Maneuver	1246	-	-	1278	-	-	147	282	*1273	*298	245	721
Mov Capacity-2 Maneuver	-	-	-	-	-	-	147	282	-	*298	245	-
Stage 1	-	-	-	-	-	-	760	705	-	*511	439	-
Stage 2	-	-	-	-	-	-	312	480	-	*945	650	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2	27.6	39.5
HCM LOS	A	A	D	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*507							*298	*280
HCM Control Delay (s)	27.6	7.893	0	-	8.05	0.2	-	17.9	41.6
HCM Lane VC Ratio	0.709	0.001	-	-	0.076	-	-	0.064	0.682
HCM Lane LOS	D	A	A	-	A	A	-	C	E
HCM 95th Percentile Queue (veh)	5.609	0.003	-	-	0.248	-	-	0.202	4.569

Intersection	
Intersection Delay (sec/veh): $ 359.3	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1333	89	382	496	14	782
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1626	107	439	545	23	1071
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1733	0	2831	867
Stage 1	-	-	-	-	1680	-
Stage 2	-	-	-	-	1151	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	# 369	-	# 14	# 298
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	268	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	# 369	-	# 14	# 298
Mov Capacity-2 Maneuver	-	-	-	-	# 14	-
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	268	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	63.1	$ 1194.3
HCM LOS	A	F	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	14	298				
HCM Control Delay (s)	$ 876.2	$ 1201.2	-	-	141.453	-
HCM Lane VC Ratio	1.667	3.595	-	-	1.19	-
HCM Lane LOS	F	F	-	-	F	-
HCM 95th Percentile Queue (veh)	3.598	100.645	-	-	17.939	-

Intersection	
Intersection Delay (sec/veh):	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	83	6	370	92	25	143	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	141	10	536	108	36	162	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	929	901	84	851	849	322	167	0	0	644	0	0
Stage 1	237	237	-	610	610	-	-	-	-	-	-	-
Stage 2	692	664	-	241	239	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	250	280	915	278	300	724	1364	-	-	936	-	-
Stage 1	771	713	-	478	488	-	-	-	-	-	-	-
Stage 2	437	461	-	758	711	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	183	267	915	263	286	724	1364	-	-	936	-	-
Mov Capacity-2 Maneuver	183	267	-	263	286	-	-	-	-	-	-	-
Stage 1	765	686	-	474	484	-	-	-	-	-	-	-
Stage 2	334	458	-	721	684	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	19.9	22.4	0.1	1.6
HCM LOS	C	C	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				253	434			
HCM Control Delay (s)	7.658	0	-	19.9	22.4	9.001	0	-
HCM Lane VC Ratio	0.007	-	-	0.046	0.535	0.039	-	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th Percentile Queue (veh)	0.021	-	-	0.144	3.072	0.121	-	-

Intersection	
Intersection Delay (sec/veh)	26.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	111	72	53	71	10	66	161	147	21	191	24
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	90	126	103	63	81	13	89	196	233	27	242	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19.9	14.3	38.3	18.9
HCM LOS	C	B	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	18%	19%	40%	9%
Volume Thru (%)	43%	49%	53%	81%
Volume Right (%)	39%	32%	7%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	374	227	134	236
Left Turning Volume	161	111	71	191
Through Volume	147	72	10	24
Right Turning Volume	66	44	53	21
Lane Flow Rate	519	319	157	296
Geometry Group	1	1	1	1
Degree of Utilization, X	0.877	0.607	0.33	0.571
Departure Headway, Hd	6.212	6.854	7.573	6.952
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	586	529	476	520
Service Time	4.212	4.878	5.608	4.986
HCM Lane V/C Ratio	0.886	0.603	0.33	0.569
HCM Control Delay	38.3	19.9	14.3	18.9
HCM Lane LOS	E	C	B	C
HCM 95th Percentile Queue	20.6	4.6	1.5	4

Intersection	
Intersection Delay (sec/veh)	45.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	99	14	30	0	719	411	78	147	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	141	37	67	0	808	579	163	210	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12.5	13.3	62.5	14.1
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	64%	0%	90%	0%	32%	0%	95%
Volume Right (%)	0%	36%	0%	10%	0%	68%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	1130	19	71	99	44	78	155
Left Turning Volume	0	719	0	64	0	14	0	147
Through Volume	0	411	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	99	0	78	0
Lane Flow Rate	0	1387	31	90	141	104	162	224
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.076	0.199	0.319	0.204	0.332	0.423
Departure Headway, Hd	6.561	6.319	8.729	7.923	8.112	7.103	7.353	6.8
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	582	412	454	444	507	491	530
Service Time	4.298	4.056	6.454	5.648	5.835	4.825	5.081	4.528
HCM Lane V/C Ratio	0	2.383	0.075	0.198	0.318	0.205	0.33	0.423
HCM Control Delay	9.3	62.5	12.2	12.6	14.6	11.6	13.7	14.4
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	112.9	0.2	0.7	1.4	0.8	1.5	2.2

Intersection	
Intersection Delay (sec/veh):	153.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	501	2	77	447	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	589	4	118	497	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1422	1369	522	1413	1392	591	547	0	0	593	0	0
Stage 1	758	758	-	609	609	-	-	-	-	-	-	-
Stage 2	664	611	-	804	783	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 115	148	559	117	143	511	1033	-	-	993	-	-
Stage 1	402	418	-	486	488	-	-	-	-	-	-	-
Stage 2	453	487	-	380	407	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 65	121	559	68	117	511	1033	-	-	993	-	-
Mov Capacity-2 Maneuver	# 65	121	-	68	117	-	-	-	-	-	-	-
Stage 1	397	346	-	480	482	-	-	-	-	-	-	-
Stage 2	354	481	-	253	337	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 903.5	37.3	0.1	1.6
HCM LOS	F	E	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				71	559	221			
HCM Control Delay (s)	8.517	0	-	$ 37.3	12.1	37.3	9.116	0	-
HCM Lane VC Ratio	0.009	-	-	3.17	0.089	0.513	0.119	-	-
HCM Lane LOS	A	A	-	F	B	E	A	A	-
HCM 95th Percentile Queue (veh)	0.027	-	-	22.94	0.293	2.641	0.405	-	-

Intersection	
Intersection Delay (sec/veh):	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	492	0	1	122	192	0	0	1	129	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	593	0	4	203	234	0	0	4	174	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	437	0	-	593	0	0	1083	1164	297	1049	1047	219
Stage 1	-	-	-	-	-	-	719	719	-	328	328	-
Stage 2	-	-	-	-	-	-	364	445	-	721	719	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1123	-	0	993	-	-	197	196	747	207	230	826
Stage 1	-	-	0	-	-	-	423	436	-	689	651	-
Stage 2	-	-	0	-	-	-	659	578	-	422	436	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1123	-	-	993	-	-	170	184	747	196	216	826
Mov Capacity-2 Maneuver	-	-	-	-	-	-	170	184	-	196	216	-
Stage 1	-	-	-	-	-	-	399	412	-	650	648	-
Stage 2	-	-	-	-	-	-	599	576	-	396	412	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.8	0.1	9.8	65.2
HCM LOS	A	A	A	F

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	747						196	714
HCM Control Delay (s)	9.8	8.397	0	8.64	0	-	87.8	10.6
HCM Lane VC Ratio	0.005	0.056	-	0.004	-	-	0.889	0.101
HCM Lane LOS	A	A	A	A	A	-	F	B
HCM 95th Percentile Queue (veh)	0.016	0.179	-	0.012	-	-	6.843	0.335

Intersection	
Intersection Delay (sec/veh):	177.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	66	573	75	7	264	61	37	47	19	86	124	23
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	97	754	99	14	303	73	54	58	54	104	168	37
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	376	0	0	853	0	0	1468	1402	427	1422	1415	189
Stage 1	-	-	-	-	-	-	998	998	-	368	368	-
Stage 2	-	-	-	-	-	-	470	404	-	1054	1047	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1105	-	-	726	-	-	103	137	632	115	# 139	858
Stage 1	-	-	-	-	-	-	289	315	-	656	625	-
Stage 2	-	-	-	-	-	-	566	591	-	276	308	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1105	-	-	726	-	-	-	123	632	# 61	# 124	858
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	123	-	# 61	# 124	-
Stage 1	-	-	-	-	-	-	264	287	-	598	613	-
Stage 2	-	-	-	-	-	-	386	580	-	184	281	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.4	-	$ 1040.8
HCM LOS	A	A	-	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							99
HCM Control Delay (s)	-	8.571	0	-	10.056	0	-	$ -1
HCM Lane VC Ratio	-	0.088	-	-	0.019	-	-	3.108
HCM Lane LOS	-	A	A	-	B	A	-	F
HCM 95th Percentile Queue (veh)	-	0.288	-	-	0.059	-	-	29.94

Intersection	
Intersection Delay (sec/veh):	$ 693.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	497	0	154	0	0	0	32	33	0	0	176	91
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	904	0	616	0	0	0	64	41	0	0	267	182
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	527	527	358	835	618	41	449	0	0	41	0	0
Stage 1	358	358	-	169	169	-	-	-	-	-	-	-
Stage 2	169	169	-	666	449	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 437	459	691	289	408	1036	1122	-	-	1581	-	-
Stage 1	# 628	631	-	838	763	-	-	-	-	-	-	-
Stage 2	# 797	763	-	452	576	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 418	432	691	30	384	1036	1122	-	-	1581	-	-
Mov Capacity-2 Maneuver	# 418	432	-	30	384	-	-	-	-	-	-	-
Stage 1	# 592	631	-	789	719	-	-	-	-	-	-	-
Stage 2	# 751	719	-	49	576	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 946	0	5.1	0
HCM LOS	F	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				498	0			
HCM Control Delay (s)	8.403	0	-	$ 0	0	0	-	-
HCM Lane VC Ratio	0.057	-	-	3.051	-	-	-	-
HCM Lane LOS	A	A	-	F	A	A	-	-
HCM 95th Percentile Queue (veh)	0.181	-	-	132.021	-	0	-	-

Intersection	
Intersection Delay (sec/veh):	258.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	342	41	16	37	55	241	34	93	916	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	407	64	28	76	71	280	36	116	974	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1511	1673	496	1184	1663	158	991	0	0	316	0	0
Stage 1	1215	1215	-	440	440	-	-	-	-	-	-	-
Stage 2	296	458	-	744	1223	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	84	97	525	147	98	866	706	-	-	1248	-	-
Stage 1	195	256	-	571	581	-	-	-	-	-	-	-
Stage 2	694	570	-	377	254	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	49	79	525	# 14	80	866	706	-	-	1248	-	-
Mov Capacity-2 Maneuver	49	79	-	# 14	80	-	-	-	-	-	-	-
Stage 1	175	232	-	514	523	-	-	-	-	-	-	-
Stage 2	540	513	-	# 60	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 428.5	$ 2070.6	2.1	1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				259	33			
HCM Control Delay (s)	10.664	0.2	-	$ 2070.6	$ 2070.6	8.181	0.2	-
HCM Lane VC Ratio	0.1	-	-	1.847	5.065	0.093	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.331	-	-	32.892	19.917	0.307	-	-

Intersection	
Intersection Delay (sec/veh):	152.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	32	994	173	73	302	0	0	0	0	161	2	116
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	128	1143	216	107	414	0	0	0	0	194	4	190
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	414	0	0	1359	0	-				1341	2243	207
Stage 1	-	-	-	-	-	-				628	628	-
Stage 2	-	-	-	-	-	-				713	1615	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	751	-	-	262	-	0				# 158	43	680
Stage 1	-	-	-	-	-	0				355	479	-
Stage 2	-	-	-	-	-	0				350	164	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	751	-	-	262	-	-				# 42	6	680
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 42	6	-
Stage 1	-	-	-	-	-	-				# 81	283	-
Stage 2	-	-	-	-	-	-				# 80	38	-

Approach	EB	WB	SB
HCM Control Delay (s)	2.5	5.8	$ 926.1
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						42	680
HCM Control Delay (s)	10.776	2.1	-	27.959	-	$ -1	12.3
HCM Lane VC Ratio	0.17	-	-	0.41	-	4.618	0.28
HCM Lane LOS	B	A	-	D	-	F	B
HCM 95th Percentile Queue (veh)	0.612	-	-	1.896	-	22.264	1.143

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	912	251	0	306	143	38	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	1002	267	0	450	181	47	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

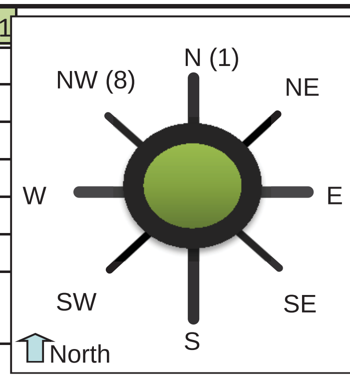
Major/Minor		Major 1			Major 2			Minor 1	
Conflicting Flow Rate - All	-	0	0	-	0	0	1361	~	635
Stage 1	-	-	-	-	-	-	1136	-	-
Stage 2	-	-	-	-	-	-	225	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	109	0	416
Stage 1	0	-	-	0	-	-	218	0	-
Stage 2	0	-	-	0	-	-	763	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	109	-	416
Mov Capacity-2 Maneuver	-	-	-	-	-	-	109	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	763	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	34
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	109	416				
HCM Control Delay (s)	60.9	15.3	-	-	-	-
HCM Lane VC Ratio	0.43	0.163	-	-	-	-
HCM Lane LOS	F	C	-	-	-	-
HCM 95th Percentile Queue (veh)	1.834	0.576	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt E PM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					134			
Exit	NE (2), vph								
Legs	E (3), vph		97						
(TO)	SE (4), vph								
	S (5), vph	583							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	583	97	0	0	134	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		204						
	NE (2), vph								
	E (3), vph	162							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	162	204	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	146	0	222	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	105	0	0	0	176	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	634	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	739	0	146	0	398	0	0	0
	Entry flow Lane 1, pcu/h	634	0	146	0	176	0	0	0
	Entry flow Lane 2, pcu/h	105	0	0	0	222	0	0	0
	Conflicting flow, pcu/h	0	0	222	0	105	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	968	NA	1017	1017	NA	NA
Entry Flow Rates, veh/h	634	105	146	NA	176	222	NA	NA
V/C ratio	**0.56**	**0.09**	**0.15**		**0.17**	**0.22**		
Control Delay, s/veh	**10.0**	**4.0**	**5.1**		**5.1**	**5.6**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**90**	**8**	**13**		**16**	**21**		
Approach Delay, LOS	9.1 sec, LOS A		5.1 sec, LOS A		5.4 sec, LOS A			

	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1343	NA	1296	1296	NA	NA
Entry Flow Rates, veh/h	634	105	146	NA	176	222	NA	NA
V/C ratio	**0.39**	**0.06**	**0.11**		**0.14**	**0.17**		
Control Delay, s/veh	**5.5**	**2.7**	**3.5**		**3.9**	**4.2**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**47**	**5**	**9**		**12**	**15**		
Approach Delay, LOS	5.1 sec, LOS A		3.5 sec, LOS A		4.1 sec, LOS A			

	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	191	416	373	80	30	308	78	279	1093	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	57	529	244	471	862	335	104	430	366	335	1344	550
Arriving On Green	0.03	0.15	0.00	0.13	0.25	0.00	0.23	0.23	0.00	0.35	0.35	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	461.1	1900.0	1615.0	945.3	3798.1	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	60.0	440.0	0.0	310.0	1228.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	461.1	1900.0	1615.0	945.3	1899.1	1552.9
Q Serve(g_s), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Cycle Q Clear(g_c), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	56.6	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	334.6	1344.3	549.6
V/C Ratio(X)	0.801	0.966	0.000	1.026	0.562	0.000	0.574	1.022	0.000	0.927	0.914	0.000
Avail Cap(c_a), veh/h	124.2	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	341.0	1370.3	560.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.1	50.3	0.0	51.6	38.9	0.0	41.0	46.1	0.0	37.0	36.8	0.0
Incr Delay (d2), s/veh	22.1	30.5	0.0	48.4	0.8	0.0	7.4	49.1	0.0	30.3	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	79.2	80.8	0.0	100.0	39.8	0.0	48.4	95.2	0.0	67.3	46.3	0.0
Lane Group LOS	E	F		F	D		D	F		E	D	
Approach Volume, veh/h		557			968			500			1538	
Approach Delay, s/veh		80.7			69.8			89.6			50.5	
Approach LOS		F			E			F			D	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.10	22.00		20.00	33.90			31.00			46.18	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	9.00	18.00		16.00	25.00			27.00			43.00	
Max Q Clear Time (g_c+I1), s	5.26	19.28		18.00	16.64			29.00			39.57	
Green Extension Time (p_c)	0.02	0.00		0.00	4.10			0.00			2.61	
Intersection Summary												
HCM 2010 Control Delay			66.0									
HCM 2010 Level of Service			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	710	515	173	32	296	264	198	1254	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	237	828	382	861	1126	513	58	946	738	258	1381	612
Arriving On Green	0.07	0.24	0.00	0.17	0.34	0.34	0.03	0.26	0.00	0.15	0.38	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	835.3	572.2	192.2	45.7	416.9	0.0	220.0	1409.0	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Cycle Q Clear(g_c), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	236.9	828.3	381.7	861.4	1126.4	513.4	58.3	946.1	737.5	258.3	1381.3	611.8
V/C Ratio(X)	0.689	1.012	0.000	0.970	0.508	0.374	0.785	0.441	0.000	0.852	1.020	0.000
Avail Cap(c_a), veh/h	312.9	828.3	381.7	861.4	1126.4	513.4	81.5	946.1	737.5	399.7	1381.3	611.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.5	33.9	0.0	36.7	23.6	22.4	42.7	27.4	0.0	36.7	27.4	0.0
Incr Delay (d2), s/veh	4.1	34.2	0.0	23.4	0.4	0.5	27.4	0.3	0.0	10.2	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.5	68.1	0.0	60.1	23.9	22.8	70.1	27.7	0.0	46.9	56.8	0.0
Lane Group LOS	D	F		E	C	C	E	C		D	F	
Approach Volume, veh/h		1001			1600			463			1629	
Approach Delay, s/veh		64.3			42.7			31.9			55.5	
Approach LOS		E			D			C			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	10.06	25.00		19.00	33.94		6.86	27.29		17.57	38.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		15.00	28.00		4.00	17.00		21.00	34.00	
Max Q Clear Time (g_c+I1), s	6.08	23.00		16.46	14.17		4.23	10.56		13.26	36.00	
Green Extension Time (p_c)	0.09	0.00		0.00	8.50		0.00	5.28		0.37	0.00	
Intersection Summary												
HCM 2010 Control Delay			50.7									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
6: 19th St. & Chamberlain Ave.

Base + Alt F AM Peak
9/11/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	111	55	53	155	79	37	201	64	354	552	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1841	1841	1900	1892	1892	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	124	244	123	149	253	158	81	323	92	443	818	703
Arriving On Green	0.07	0.23	0.23	0.06	0.16	0.16	0.04	0.23	0.23	0.25	0.44	0.44
Sat Flow, veh/h	1739.9	1072.2	539.1	1809.5	1061.5	662.2	1809.5	1415.2	405.0	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	241.8	89.8	0.0	306.9	62.7	0.0	364.1	411.6	649.4	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1611.2	1809.5	0.0	1723.7	1809.5	0.0	1820.1	1756.8	1881.2	1615.0
Q Serve(g_s), s	6.5	0.0	15.6	5.5	0.0	19.4	3.9	0.0	22.1	26.2	34.0	9.3
Cycle Q Clear(g_c), s	6.5	0.0	15.6	5.5	0.0	19.4	3.9	0.0	22.1	26.2	34.0	9.3
Proportion In Lane	1.000		0.335	1.000		0.384	1.000		0.222	1.000		1.000
Lane Grp Cap(c), veh/h	124.0	0.0	366.7	149.2	0.0	411.6	81.1	0.0	414.9	442.6	818.4	702.6
V/C Ratio(X)	0.806	0.000	0.659	0.602	0.000	0.746	0.774	0.000	0.878	0.930	0.793	0.397
Avail Cap(c_a), veh/h	152.3	0.0	366.7	158.4	0.0	411.6	110.9	0.0	430.2	507.5	872.7	749.2
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	52.3	0.0	40.1	52.1	0.0	44.7	54.0	0.0	42.6	41.7	27.8	10.4
Incr Delay (d2), s/veh	22.2	0.0	9.0	5.7	0.0	11.6	20.2	0.0	17.8	22.3	4.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	74.5	0.0	49.1	57.8	0.0	56.3	74.2	0.0	60.4	64.0	32.7	10.8
Lane Group LOS	E		D	E		E	E		E	E	C	B
Approach Volume, veh/h		342			397			427			1340	
Approach Delay, s/veh		56.5			56.7			62.4			37.7	
Approach LOS		E			E			E			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	14.14	32.00		15.42	33.28		11.12	32.04		34.78	55.70	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	26.00		10.00	26.00		7.00	27.00		33.00	53.00	
Max Q Clear Time (g_c+I1), s	8.47	17.58		7.54	21.40		5.92	24.06		28.15	36.03	
Green Extension Time (p_c)	0.03	3.49		0.04	2.13		0.01	1.98		0.63	7.40	
Intersection Summary												
HCM 2010 Control Delay			47.5									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
8: Rice Rd & Chamberlain Ave.

Base + Alt F AM Peak
9/11/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	370	86	264	648	173	135	127	124	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1869	1869	1869	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	95	1056	282	574	1816	502	348	505	421	328	215	197
Arriving On Green	0.93	0.93	0.93	0.12	0.63	0.63	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	187.4	2176.2	603.6	1791.6	2867.3	792.8	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	271.0	0.0	298.8	310.6	493.6	457.2	153.4	144.3	174.6	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1403.7	0.0	1594.0	1791.6	1900.0	1760.1	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	2.4	10.1	15.4	15.4	12.6	7.5	11.3	7.7	0.0	6.6
Cycle Q Clear(g_c), s	12.7	0.0	2.4	10.1	15.4	15.4	19.2	7.5	11.3	15.2	0.0	6.6
Proportion In Lane	0.133		0.379	1.000		0.450	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	689.0	0.0	743.7	574.4	1203.3	1114.7	348.2	505.2	421.4	328.4	0.0	412.0
V/C Ratio(X)	0.393	0.000	0.402	0.541	0.410	0.410	0.441	0.286	0.414	0.287	0.000	0.253
Avail Cap(c_a), veh/h	689.0	0.0	743.7	693.6	1203.3	1114.7	348.2	505.2	421.4	328.4	0.0	412.0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	2.2	0.0	2.2	13.0	10.9	10.9	41.0	33.9	35.3	39.8	0.0	33.5
Incr Delay (d2), s/veh	0.8	0.0	0.7	2.9	0.5	0.5	4.0	1.4	3.0	2.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	3.0	0.0	3.0	15.9	11.4	11.4	45.0	35.3	38.2	42.0	0.0	35.0
Lane Group LOS	A		A	B	B	B	D	D	D	D		D
Approach Volume, veh/h		570			1261			472			199	
Approach Delay, s/veh		3.0			12.5			39.5			38.4	
Approach LOS		A			B			D			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		61.99		20.01	82.00			38.00			38.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		49.00		22.00	76.00			33.50			33.50	
Max Q Clear Time (g_c+I1), s		14.75		12.07	17.44			21.20			17.24	
Green Extension Time (p_c)		23.27		1.95	32.48			3.88			4.49	
Intersection Summary												
HCM 2010 Control Delay			17.5									
HCM 2010 Level of Service			B									

1: 13th St & Gordon Hwy

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	630	104	215	220	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	716	132	295	297	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	848	0	0	1681	~	782	1682	1743	157
Stage 1	-	-	-	-	-	-	782	-	-	895	895	-
Stage 2	-	-	-	-	-	-	899	-	-	787	848	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1260	-	-	764	-	-	76	0	397	76	88	894
Stage 1	-	-	-	-	-	-	390	0	-	338	362	-
Stage 2	-	-	-	-	-	-	336	0	-	388	380	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1260	-	-	764	-	-	45	-	397	47	47	894
Mov Capacity-2 Maneuver	-	-	-	-	-	-	45	-	-	47	47	-
Stage 1	-	-	-	-	-	-	390	-	-	338	193	-
Stage 2	-	-	-	-	-	-	174	-	-	379	380	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	6.1	37.8	49.4
HCM LOS	A	A	E	E

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	45	397							89
HCM Control Delay (s)	92.7	14.3	0	-	-	12.637	-	-	49.4
HCM Lane VC Ratio	0.089	0.024	-	-	-	0.385	-	-	0.09
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.278	0.072	0	-	-	1.825	-	-	0.288

4: 19th St. & 13th St

Intersection	
Intersection Delay (sec/veh):	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	9	0	37	0	2	7	1	309	1	15	1103	313
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	18	0	63	0	2	8	4	418	1	16	1362	348
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2000	1995	855	1140	2169	419	1710	0	0	419	0	0
Stage 1	1568	1568	-	427	427	-	-	-	-	-	-	-
Stage 2	432	427	-	713	1742	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	36	60	282	156	46	583	376	-	-	1137	-	-
Stage 1	118	170	-	576	584	-	-	-	-	-	-	-
Stage 2	577	584	-	389	139	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	34	59	282	120	45	583	376	-	-	1137	-	-
Mov Capacity-2 Maneuver	34	59	-	120	45	-	-	-	-	-	-	-
Stage 1	116	170	-	568	576	-	-	-	-	-	-	-
Stage 2	559	576	-	302	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	103.7	29.1	0.1	0.1
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				107	159			
HCM Control Delay (s)	14.677	0	-	103.7	29.1	8.212	-	-
HCM Lane VC Ratio	0.011	-	-	0.754	0.062	0.014	-	-
HCM Lane LOS	B	A	-	F	D	A	-	-
HCM 95th Percentile Queue (veh)	0.032	-	-	4.099	0.195	0.044	-	-

Intersection	
Intersection Delay (sec/veh): $ 323.4	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	439	38	10	8	34	159	26	325	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	499	54	13	14	41	212	59	342	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	67	0	0	283	0	0	1432	1263	142	1383	1342	34
Stage 1	-	-	-	-	-	-	198	198	-	1059	1059	-
Stage 2	-	-	-	-	-	-	1234	1065	-	324	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1549	-	-	1279	-	-	112	171	906	107	# 151	1052
Stage 1	-	-	-	-	-	-	808	741	-	244	# 300	-
Stage 2	-	-	-	-	-	-	217	301	-	640	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1549	-	-	1279	-	-	-	104	906	# 41	# 92	1052
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	104	-	# 41	# 92	-
Stage 1	-	-	-	-	-	-	808	741	-	244	# 183	-
Stage 2	-	-	-	-	-	-	-	184	-	463	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	8.5	-	$ 1193.6
HCM LOS	A	A	-	F

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	403							41	94
HCM Control Delay (s)	-	27.8	0	-	-	9.603	0	-	$ -1	$ 27.8
HCM Lane VC Ratio	-	0.628	-	-	-	0.39	-	-	1.441	3.723
HCM Lane LOS	-	D	A	-	-	A	A	-	F	F
HCM 95th Percentile Queue (veh)	-	4.143	0	-	-	1.882	-	-	5.972	35.679

Intersection	
Intersection Delay (sec/veh):	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	485	44	63	275	9	36	60	80	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	545	54	72	367	13	45	86	145	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	380	0	0	599	0	0	960	1142	300	880	1163	191
Stage 1	-	-	-	-	-	-	618	618	-	518	518	-
Stage 2	-	-	-	-	-	-	342	524	-	362	645	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1374	-	-	1253	-	-	319	269	*1237	*396	232	*1345
Stage 1	-	-	-	-	-	-	703	661	-	*677	598	-
Stage 2	-	-	-	-	-	-	848	633	-	*1237	604	-
Time blocked-Platoon(%)	10	-	-	18	-	-	16	16	18	16	16	10
Mov Capacity-1 Maneuver	1374	-	-	1253	-	-	261	243	*1237	*236	209	*1345
Mov Capacity-2 Maneuver	-	-	-	-	-	-	261	243	-	*236	209	-
Stage 1	-	-	-	-	-	-	686	645	-	*660	555	-
Stage 2	-	-	-	-	-	-	734	587	-	*923	589	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	1.4	27.2	18.2
HCM LOS	A	A	D	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*430							*236	*333
HCM Control Delay (s)	27.2	7.664	0.1	-	8.047	0.2	-	20.7	17.9
HCM Lane VC Ratio	0.642	0.017	-	-	0.057	-	-	0.026	0.162
HCM Lane LOS	D	A	A	-	A	A	-	C	C
HCM 95th Percentile Queue (veh)	4.386	0.051	-	-	0.182	-	-	0.079	0.571

Intersection	
Intersection Delay (sec/veh): $ 531.6	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	458	105	768	1033	50	492
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	559	127	883	1135	83	674
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	686	0	2957	344
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	2334	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1147	-	# 10	*1237
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	# 61	-
Time blocked-Platoon(%)	-	-	18	-	18	18
Mov Capacity-1 Maneuver	-	-	1147	-	# 2	*1237
Mov Capacity-2 Maneuver	-	-	-	-	# 2	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	# 14	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	7.8	$ 2408.2
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*2	*1237				
HCM Control Delay (s)	$ 21793.5	11.3	-	-	17.736	-
HCM Lane VC Ratio	41.667	0.545	-	-	0.77	-
HCM Lane LOS	F	B	-	-	C	-
HCM 95th Percentile Queue (veh)	12.639	3.425	-	-	8.057	-

Intersection	
Intersection Delay (sec/veh):	104.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	87	11	225	107	245	422	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	147	17	326	126	355	480	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1703	1678	242	1636	1617	226	484	0	0	452	0	0
Stage 1	1192	1192	-	423	423	-	-	-	-	-	-	-
Stage 2	511	486	-	1213	1194	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	73	96	743	80	105	818	1038	-	-	1103	-	-
Stage 1	230	263	-	605	591	-	-	-	-	-	-	-
Stage 2	549	554	-	220	262	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	31	64	743	# 46	70	818	1038	-	-	1103	-	-
Mov Capacity-2 Maneuver	31	64	-	# 46	70	-	-	-	-	-	-	-
Stage 1	226	178	-	595	581	-	-	-	-	-	-	-
Stage 2	421	545	-	130	178	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	44.2	$ 641	0.3	4.2
HCM LOS	E	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				132	113			
HCM Control Delay (s)	8.528	0	-	44.2	$ 641	9.806	0	-
HCM Lane VC Ratio	0.017	-	-	0.313	2.225	0.322	-	-
HCM Lane LOS	A	A	-	E	F	A	A	-
HCM 95th Percentile Queue (veh)	0.051	-	-	1.233	21.661	1.403	-	-

Intersection	
Intersection Delay (sec/veh)	55
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	38	248	73	46	138	12	99	207	32	17	71	41
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	54	340	85	77	197	31	116	296	55	27	104	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	69.7	31.3	69.9	20.6
HCM LOS	F	D	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	11%	23%	13%
Volume Thru (%)	61%	69%	70%	55%
Volume Right (%)	9%	20%	6%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	338	359	196	129
Left Turning Volume	207	248	138	71
Through Volume	32	73	12	41
Right Turning Volume	99	38	46	17
Lane Flow Rate	467	478	305	195
Geometry Group	1	1	1	1
Degree of Utilization, X	1	1	0.729	0.495
Departure Headway, Hd	7.811	7.731	8.614	9.126
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	472	473	426	401
Service Time	5.776	5.724	6.55	7.069
HCM Lane V/C Ratio	0.989	1.011	0.716	0.486
HCM Control Delay	69.9	69.7	31.3	20.6
HCM Lane LOS	F	F	D	C
HCM 95th Percentile Queue	102.1	102.4	8	2.9

Intersection	
Intersection Delay (sec/veh)	39.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	35	0	7	21	225	18	15	663	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	140	0	28	36	304	72	60	745	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.1	13.4	18.3	56.7
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	93%	0%	33%	0%	0%	0%	96%
Volume Right (%)	0%	7%	0%	67%	0%	100%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	243	8	9	35	7	15	688
Left Turning Volume	0	225	0	3	0	0	0	663
Through Volume	0	18	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	35	0	15	0
Lane Flow Rate	36	376	14	26	140	28	60	790
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.066	0.639	0.036	0.054	0.308	0.052	0.118	1
Departure Headway, Hd	6.671	6.12	9.267	7.338	7.91	6.663	7.055	5.886
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	538	590	387	489	456	539	509	617
Service Time	4.394	3.843	6.995	5.065	5.63	4.384	4.786	3.616
HCM Lane V/C Ratio	0.067	0.637	0.036	0.053	0.307	0.052	0.118	1.28
HCM Control Delay	9.9	19.1	12.3	10.5	14.1	9.8	10.7	60.2
HCM Lane LOS	A	C	B	B	B	A	B	F
HCM 95th Percentile Queue	0.2	5.3	0.1	0.2	1.3	0.2	0.4	117

Intersection	
Intersection Delay (sec/veh):	$ 502.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	626	6	41	317	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	696	19	59	356	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1390	1281	394	1311	1310	706	432	0	0	715	0	0
Stage 1	512	512	-	760	760	-	-	-	-	-	-	-
Stage 2	878	769	-	551	550	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 121	167	653	137	161	439	1138	-	-	895	-	-
Stage 1	548	540	-	401	418	-	-	-	-	-	-	-
Stage 2	345	413	-	522	519	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 16	146	653	104	141	439	1138	-	-	895	-	-
Mov Capacity-2 Maneuver	# 16	146	-	104	141	-	-	-	-	-	-	-
Stage 1	527	492	-	385	402	-	-	-	-	-	-	-
Stage 2	171	397	-	418	473	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 3425.3	163	0.3	1.1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				17	653	202			
HCM Control Delay (s)	8.239	0	-	$ 163	11.1	163	9.308	0	-
HCM Lane VC Ratio	0.023	-	-	10.35	0.096	1.164	0.066	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.072	-	-	22.767	0.319	11.679	0.213	-	-

Intersection	
Intersection Delay (sec/veh):	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	110	0	0	218	68	0	1	0	137	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	153	0	0	376	82	0	4	0	167	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	458	0	-	153	0	0	678	683	77	644	642	229
Stage 1	-	-	-	-	-	-	225	225	-	417	417	-
Stage 2	-	-	-	-	-	-	453	458	-	227	225	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	1114	-	0	1440	-	-	369	374	990	386	395	793
Stage 1	-	-	0	-	-	-	782	721	-	613	595	-
Stage 2	-	-	0	-	-	-	590	570	-	776	721	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1114	-	-	1440	-	-	327	362	990	373	382	793
Mov Capacity-2 Maneuver	-	-	-	-	-	-	327	362	-	373	382	-
Stage 1	-	-	-	-	-	-	757	698	-	593	595	-
Stage 2	-	-	-	-	-	-	537	570	-	747	698	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.6	0	15.1	18.7
HCM LOS	A	A	C	C

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	362						373	747
HCM Control Delay (s)	15.1	8.339	0	0	-	-	22.3	10.3
HCM Lane VC Ratio	0.011	0.032	-	-	-	-	0.448	0.095
HCM Lane LOS	C	A	A	A	-	-	C	B
HCM 95th Percentile Queue (veh)	0.033	0.1	-	0	-	-	2.239	0.312

Intersection	
Intersection Delay (sec/veh):	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	196	68	15	234	118	20	44	5	44	43	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	41	268	91	23	282	166	31	68	10	54	73	41
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	448	0	0	359	0	0	864	890	180	846	852	224
Stage 1	-	-	-	-	-	-	396	396	-	411	411	-
Stage 2	-	-	-	-	-	-	468	494	-	435	441	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	1123	-	-	1211	-	-	265	284	868	284	285	810
Stage 1	-	-	-	-	-	-	612	608	-	622	576	-
Stage 2	-	-	-	-	-	-	559	550	-	604	559	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1123	-	-	1211	-	-	191	268	868	217	269	810
Mov Capacity-2 Maneuver	-	-	-	-	-	-	191	268	-	217	269	-
Stage 1	-	-	-	-	-	-	590	586	-	599	565	-
Stage 2	-	-	-	-	-	-	453	540	-	509	539	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.8	0.4	29.3	32.4
HCM LOS	A	A	D	D

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	255							294
HCM Control Delay (s)	29.3	8.326	0	-	8.03	0	-	32.4
HCM Lane VC Ratio	0.427	0.036	-	-	0.019	-	-	0.572
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th Percentile Queue (veh)	2.015	0.113	-	-	0.058	-	-	3.314

Intersection	
Intersection Delay (sec/veh):	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	0	0	0	0	1	3	219	0	1	61	20
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	4	0	0	0	0	4	12	270	0	4	81	53
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	4	0	0	0	0	0	77	12	0	145	10	2
Stage 1	-	-	-	-	-	-	8	8	-	2	2	-
Stage 2	-	-	-	-	-	-	69	4	-	143	8	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	-	-	-	917	885	-	828	867	1056
Stage 1	-	-	-	-	-	-	1019	891	-	1026	877	-
Stage 2	-	-	-	-	-	-	946	894	-	865	871	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	-	-	-	807	883	-	-	865	1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	807	883	-	-	865	-
Stage 1	-	-	-	-	-	-	1017	889	-	1024	877	-
Stage 2	-	-	-	-	-	-	815	894	-	601	869	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	7.2	0	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	7.213	0	-	0	-	-	-
HCM Lane VC Ratio	-	0.002	-	-	-	-	-	-
HCM Lane LOS	-	A	A	-	A	-	-	-
HCM 95th Percentile Queue (veh)	-	0.007	-	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	266.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	41	32	10	47	170	1069	124	87	271	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	64	45	13	63	243	1320	180	136	393	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1830	2663	209	2370	2584	750	416	0	0	1500	0	0
Stage 1	677	677	-	1896	1896	-	-	-	-	-	-	-
Stage 2	1153	1986	-	474	688	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	49	23	803	# 19	26	358	1154	-	-	448	-	-
Stage 1	414	455	-	73	119	-	-	-	-	-	-	-
Stage 2	213	107	-	545	450	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 4	13	803	# 5	14	358	1154	-	-	448	-	-
Mov Capacity-2 Maneuver	# 4	13	-	# 5	14	-	-	-	-	-	-	-
Stage 1	327	317	-	58	94	-	-	-	-	-	-	-
Stage 2	119	84	-	339	313	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1104.4	$ 4704.7	1.6	4.6
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				29	12			
HCM Control Delay (s)	8.949	0.4	-	$ 4704.7	$ 4704.7	16.498	0.8	-
HCM Lane VC Ratio	0.21	-	-	2.81	10.089	0.303	-	-
HCM Lane LOS	A	A	-	F	F	C	A	-
HCM 95th Percentile Queue (veh)	0.794	-	-	9.708	16.402	1.266	-	-

Intersection	
Intersection Delay (sec/veh):	13.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	16	364	59	49	1152	0	0	0	0	59	0	376
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	1152	0	0	423	0	-				1428	~	576
Stage 1	-	-	-	-	-	-				1250	-	-
Stage 2	-	-	-	-	-	-				178	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	336	-	-	711	-	0				145	0	398
Stage 1	-	-	-	-	-	0				135	0	-
Stage 2	-	-	-	-	-	0				746	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	336	-	-	711	-	-				131	-	398
Mov Capacity-2 Maneuver	-	-	-	-	-	-				131	-	-
Stage 1	-	-	-	-	-	-				126	-	-
Stage 2	-	-	-	-	-	-				699	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.8	0.4	63.2
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						131	398
HCM Control Delay (s)	16.249	0.3	-	10.44	-	53	64.8
HCM Lane VC Ratio	0.048	-	-	0.069	-	0.447	0.945
HCM Lane LOS	C	A	-	B	-	F	F
HCM 95th Percentile Queue (veh)	0.149	-	-	0.223	-	1.991	10.575

Intersection	
Intersection Delay (sec/veh):	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	211	75	0	781	150	253	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	278	99	0	908	203	298	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

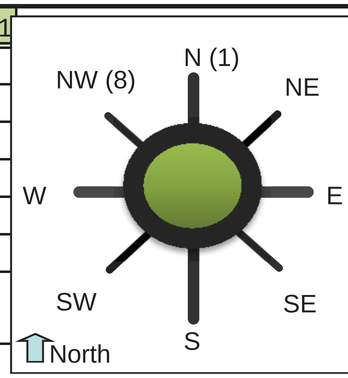
Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	782	~	189
Stage 1	-	-	-	-	-	-	328	-	-
Stage 2	-	-	-	-	-	-	454	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	# 288	0	805
Stage 1	0	-	-	0	-	-	664	0	-
Stage 2	0	-	-	0	-	-	560	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	# 288	-	805
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 288	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	560	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	89.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	288	805				
HCM Control Delay (s)	101.7	9.7	-	-	-	-
HCM Lane VC Ratio	1.033	0.057	-	-	-	-
HCM Lane LOS	F	A	-	-	-	-
HCM 95th Percentile Queue (veh)	11.185	0.18	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt F AM



Volumes

	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
N (1), vph					48			
Exit NE (2), vph								
Legs E (3), vph		71						
(TO) SE (4), vph								
S (5), vph	264							
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	264	71	0	0	48	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph		584						
NE (2), vph								
E (3), vph	239							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	239	584	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	52	0	635	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	77	0	0	0	260	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	287	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	364	0	52	0	895	0	0	0
	Entry flow Lane 1, pcu/h	287	0	52	0	260	0	0	0
	Entry flow Lane 2, pcu/h	77	0	0	0	635	0	0	0
	Conflicting flow, pcu/h	0	0	635	0	77	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	725	NA	1046	1046	NA	NA
Entry Flow Rates, veh/h	287	77	52	NA	260	635	NA	NA
V/C ratio	**0.25**	**0.07**	**0.07**		**0.25**	**0.61**		
Control Delay, s/veh	**5.5**	**3.8**	**5.7**		**5.8**	**11.6**		
LOS	A	A	A		A	B		
95th % Queue (ft)	**25**	**5**	**6**		**25**	**107**		
Approach Delay, LOS	5.2 sec, LOS A		5.7 sec, LOS A		9.9 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	926	NA	1333	1333	NA	NA
Entry Flow Rates, veh/h	287	77	52	NA	260	635	NA	NA
V/C ratio	**0.17**	**0.05**	**0.06**		**0.19**	**0.48**		
Control Delay, s/veh	**3.5**	**2.5**	**4.4**		**4.3**	**7.5**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**16**	**4**	**4**		**18**	**66**		
Approach Delay, LOS	3.3 sec, LOS A		4.4 sec, LOS A		6.6 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	23	25	362	511	144	924	637	146	130	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1889	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	828	382	73	768	298	596	898	763	56	510	210
Arriving On Green	0.03	0.24	0.00	0.02	0.22	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1261.6	1900.0	1615.0	414.1	3777.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	288.0	1320.0	0.0	162.2	146.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1261.6	1900.0	1615.0	414.1	1888.7	1552.9
Q Serve(g_s), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Cycle Q Clear(g_c), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	828.4	381.7	73.0	768.0	298.2	596.4	898.2	763.4	55.9	510.2	209.7
V/C Ratio(X)	1.056	0.394	0.000	0.398	0.612	0.000	0.483	1.470	0.000	2.900	0.286	0.000
Avail Cap(c_a), veh/h	55.5	828.4	381.7	118.5	812.6	315.5	596.4	898.2	763.4	55.9	510.2	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	38.1	0.0	57.3	41.4	0.0	21.3	31.2	0.0	51.2	46.1	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	1.2	0.0	0.6	217.4	0.0	901.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	38.4	0.0	60.7	42.6	0.0	21.9	248.7	0.0	953.0	46.4	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1608			308	
Approach Delay, s/veh		62.2			43.7			208.1			523.4	
Approach LOS		E			D			F			F	
Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	32.00		6.46	30.46			60.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	28.00		4.00	28.00			56.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.29		2.97	16.57			58.00			18.00	
Green Extension Time (p_c)	0.00	4.95		0.00	4.06			0.00			0.00	
Intersection Summary												
HCM 2010 Control Delay			193.4									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	244	670	418	156	1074	1324	310	233	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	319	818	377	298	669	305	254	1534	1196	254	1569	695
Arriving On Green	0.09	0.23	0.00	0.06	0.20	0.20	0.14	0.43	0.00	0.15	0.43	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	287.1	744.4	464.4	222.9	1512.7	0.0	344.4	261.8	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	11.0	22.6	0.0	6.7	24.0	24.0	14.5	49.8	0.0	18.0	5.3	0.0
Cycle Q Clear(g_c), s	11.0	22.6	0.0	6.7	24.0	24.0	14.5	49.8	0.0	18.0	5.3	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	318.6	817.8	376.8	297.7	668.5	304.7	254.0	1534.3	1196.1	253.7	1569.0	695.0
V/C Ratio(X)	1.376	0.847	0.000	0.964	1.114	1.524	0.877	0.986	0.000	1.358	0.167	0.000
Avail Cap(c_a), veh/h	318.6	817.8	376.8	297.7	668.5	304.7	361.9	1534.3	1196.1	253.7	1569.0	695.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	54.5	43.9	0.0	56.4	48.0	48.0	50.6	34.1	0.0	51.0	20.7	0.0
Incr Delay (d2), s/veh	187.9	8.2	0.0	42.4	70.3	252.0	15.7	19.6	0.0	184.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	242.4	52.2	0.0	98.8	118.3	300.0	66.2	53.8	0.0	235.5	20.7	0.0
Lane Group LOS	F	D		F	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1496			1736			606	
Approach Delay, s/veh		125.9			171.0			55.4			142.8	
Approach LOS		F			F			E			F	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	15.00	32.00		11.00	28.00		20.85	55.00		22.00	56.15	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	11.00	28.00		7.00	24.00		24.00	51.00		18.00	45.00	
Max Q Clear Time (g_c+I1), s	13.00	24.65		8.74	26.00		16.49	51.77		20.00	7.30	
Green Extension Time (p_c)	0.00	2.78		0.00	0.00		0.37	0.00		0.00	19.54	
Intersection Summary												
HCM 2010 Control Delay			116.9									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	128	28	28	68	314	10	542	23	37	111	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1730	1730	1900	1857	1857	1900	1899	1899	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	410	544	121	121	55	312	33	551	21	56	596	512
Arriving On Green	0.24	0.40	0.40	0.02	0.08	0.08	0.02	0.30	0.30	0.03	0.32	0.32
Sat Flow, veh/h	1739.9	1372.0	304.5	1809.5	242.8	1372.3	1809.5	1817.1	69.3	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	226.7	47.5	0.0	551.6	16.9	0.0	792.5	43.0	130.6	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1676.6	1809.5	0.0	1615.1	1809.5	0.0	1886.4	1756.8	1881.2	1615.0
Q Serve(g_s), s	28.0	0.0	11.2	3.1	0.0	27.0	1.1	0.0	36.0	2.9	6.1	0.5
Cycle Q Clear(g_c), s	28.0	0.0	11.2	3.1	0.0	27.0	1.1	0.0	36.0	2.9	6.1	0.5
Proportion In Lane	1.000		0.182	1.000		0.850	1.000		0.037	1.000		1.000
Lane Grp Cap(c), veh/h	410.1	0.0	664.6	120.5	0.0	367.1	32.6	0.0	571.7	56.1	596.2	511.9
V/C Ratio(X)	1.405	0.000	0.341	0.394	0.000	1.503	0.519	0.000	1.386	0.767	0.219	0.020
Avail Cap(c_a), veh/h	410.1	0.0	664.6	152.3	0.0	367.1	76.2	0.0	571.7	73.9	596.2	511.9
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	45.4	0.0	25.0	55.7	0.0	54.9	57.8	0.0	41.4	57.1	29.8	27.9
Incr Delay (d2), s/veh	196.4	0.0	1.4	2.1	0.0	240.0	12.2	0.0	184.5	28.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	241.8	0.0	26.4	57.8	0.0	294.9	70.0	0.0	225.9	85.7	30.0	27.9
Lane Group LOS	F		C	E		F	E		F	F	C	C
Approach Volume, veh/h		803			599			809			184	
Approach Delay, s/veh		181.0			276.1			222.6			42.9	
Approach LOS		F			F			F			D	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	34.00	53.09		13.91	33.00		8.14	42.00		9.79	43.65	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	28.00	45.00		10.00	27.00		5.00	36.00		5.00	36.00	
Max Q Clear Time (g_c+I1), s	30.00	13.21		5.07	29.00		3.10	38.00		4.89	8.05	
Green Extension Time (p_c)	0.00	11.77		0.03	0.00		0.00	0.00		0.00	7.63	
Intersection Summary												
HCM 2010 Control Delay			208.2									
HCM 2010 Level of Service			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	678	122	250	244	42	57	44	337	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1867	1867	1867	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	54	1246	256	374	1942	341	343	535	447	432	427	60
Arriving On Green	0.15	0.15	0.15	0.11	0.62	0.62	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	89.9	2772.1	565.3	1791.6	3148.6	553.7	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	502.5	0.0	454.1	294.1	167.7	162.7	64.8	50.0	474.6	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1769.5	0.0	1599.0	1791.6	1900.0	1802.3	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	8.2	0.0	32.0	9.8	4.5	4.6	5.1	2.4	35.5	19.6	0.0	8.1
Cycle Q Clear(g_c), s	31.0	0.0	32.0	9.8	4.5	4.6	13.2	2.4	35.5	22.0	0.0	8.1
Proportion In Lane	0.051		0.354	1.000		0.307	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	832.6	0.0	724.0	374.0	1171.7	1111.4	343.2	535.3	446.5	432.2	0.0	486.9
V/C Ratio(X)	0.603	0.000	0.627	0.786	0.143	0.146	0.189	0.093	1.063	0.575	0.000	0.295
Avail Cap(c_a), veh/h	832.6	0.0	724.0	498.4	1171.7	1111.4	343.2	535.3	446.5	432.2	0.0	486.9
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	40.8	0.0	41.5	21.5	9.7	9.7	37.7	30.6	42.3	38.6	0.0	32.6
Incr Delay (d2), s/veh	1.9	0.0	2.5	12.9	0.1	0.1	1.2	0.3	60.3	5.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	42.7	0.0	44.0	34.4	9.8	9.8	38.9	30.9	102.6	44.1	0.0	34.1
Lane Group LOS	D		D	C	A	A	D	C	F	D		C
Approach Volume, veh/h		957			625			589			392	
Approach Delay, s/veh		43.3			21.4			89.5			40.4	
Approach LOS		D			C			F			D	
Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		60.33		19.67	80.00			40.00			40.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		47.00		22.00	74.00			35.50			35.50	
Max Q Clear Time (g_c+I1), s		33.98		11.82	6.57			37.50			24.02	
Green Extension Time (p_c)		9.69		1.85	26.91			0.00			4.99	
Intersection Summary												
HCM 2010 Control Delay			48.2									
HCM 2010 Level of Service			D									

HCM 2010 TWSC
1: 13th St & Gordon Hwy

Base + Alt F PM Peak
9/11/2012

Intersection	
Intersection Delay (sec/veh):	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	306	0	1	612	12	0	0	0	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	1	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	348	0	1	827	36	0	0	0	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	863	0	0	349	0	0	1214	~	349	1204	1204	432
Stage 1	-	-	-	-	-	-	357	-	-	847	847	-
Stage 2	-	-	-	-	-	-	857	-	-	357	357	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	788	-	-	1177	-	-	160	0	699	162	186	628
Stage 1	-	-	-	-	-	-	665	0	-	359	381	-
Stage 2	-	-	-	-	-	-	355	0	-	665	632	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	788	-	-	1177	-	-	154	-	698	161	184	628
Mov Capacity-2 Maneuver	-	-	-	-	-	-	154	-	-	161	184	-
Stage 1	-	-	-	-	-	-	660	-	-	357	380	-
Stage 2	-	-	-	-	-	-	343	-	-	661	628	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	0	25.7
HCM LOS	A	A	A	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	0	0							225
HCM Control Delay (s)	0	0	9.592	0	-	8.062	-	-	25.7
HCM Lane VC Ratio	-	-	0.005	-	-	0.001	-	-	0.231
HCM Lane LOS	A	A	A	A	-	A	-	-	D
HCM 95th Percentile Queue (veh)	-	-	0.015	-	-	0.003	-	-	0.867

HCM 2010 TWSC
4: 19th St. & 13th St

Base + Alt F PM Peak
9/11/2012

Intersection	
Intersection Delay (sec/veh)	$ 3659.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	268	0	0	3	0	24	0	1460	5	0	145	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	536	0	0	3	0	26	0	1973	5	0	179	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2174	2163	96	2066	2167	1976	191	0	0	-	0	0
Stage 1	185	185	-	1976	1976	-	-	-	-	-	-	-
Stage 2	1989	1978	-	90	191	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	0	-	-
Pot Capacity-1 Maneuver	# 27	47	910	31	46	52	1395	-	-	0	-	-
Stage 1	805	746	-	64	106	-	-	-	-	0	-	-
Stage 2	# 64	106	-	907	741	-	-	-	-	0	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 13	47	910	31	46	52	1395	-	-	-	-	-
Mov Capacity-2 Maneuver	# 13	47	-	31	46	-	-	-	-	-	-	-
Stage 1	805	746	-	64	106	-	-	-	-	-	-	-
Stage 2	# 32	106	-	907	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 18665.3	160.7	0	0
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (vph)				13	48		
HCM Control Delay (s)	0	-	-	$ 160.7	160.7	-	-
HCM Lane VC Ratio	-	-	-	41.231	0.611	-	-
HCM Lane LOS	A	-	-	F	F	-	-
HCM 95th Percentile Queue (veh)	0	-	-	68.317	2.351	-	-

Intersection	
Intersection Delay (sec/veh):	41

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	83	32	6	36	180	370	27	37	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	94	45	8	62	217	493	61	39	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	53	0	0	160	0	0	550	534	80	885	541	-
Stage 1	-	-	-	-	-	-	293	293	-	237	237	-
Stage 2	-	-	-	-	-	-	257	241	-	648	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	450	456	980	241	449	0
Stage 1	-	-	-	-	-	-	719	674	-	719	710	0
Stage 2	-	-	-	-	-	-	755	711	-	421	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	382	406	980	64	400	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	382	406	-	64	400	-
Stage 1	-	-	-	-	-	-	686	643	-	686	663	-
Stage 2	-	-	-	-	-	-	663	664	-	132	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	4.9	64.9	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	382	684							64	-
HCM Control Delay (s)	16.2	69.2	7.406	0	-	7.718	0	-	208	-
HCM Lane VC Ratio	0.162	1.038	0.046	-	-	0.066	-	-	0.959	-
HCM Lane LOS	C	F	A	A	-	A	A	-	F	-
HCM 95th Percentile Queue (veh)	0.574	18.039	0.144	-	-	0.213	-	-	4.635	-

Intersection	
Intersection Delay (sec/veh):	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	292	36	80	279	1	41	30	114	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	328	44	91	372	1	51	43	207	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	373	0	0	372	0	0	794	907	186	743	929	187
Stage 1	-	-	-	-	-	-	352	352	-	555	555	-
Stage 2	-	-	-	-	-	-	442	555	-	188	374	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1383	-	-	1385	-	-	548	447	*1345	*636	399	*1345
Stage 1	-	-	-	-	-	-	836	767	-	*641	571	-
Stage 2	-	-	-	-	-	-	728	612	-	*1345	710	-
Time blocked-Platoon(%)	10	-	-	10	-	-	21	21	10	21	21	10
Mov Capacity-1 Maneuver	1383	-	-	1385	-	-	344	409	*1345	*463	366	*1345
Mov Capacity-2 Maneuver	-	-	-	-	-	-	344	409	-	*463	366	-
Stage 1	-	-	-	-	-	-	835	766	-	*641	524	-
Stage 2	-	-	-	-	-	-	467	561	-	*1073	710	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	1.7	13.2	19.7
HCM LOS	A	A	B	C

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*739							*463	*424
HCM Control Delay (s)	13.2	7.606	0	-	7.782	0.2	-	13.1	20.3
HCM Lane VC Ratio	0.408	0.001	-	-	0.066	-	-	0.041	0.451
HCM Lane LOS	B	A	A	-	A	A	-	B	C
HCM 95th Percentile Queue (veh)	1.993	0.003	-	-	0.21	-	-	0.128	2.282

Intersection	
Intersection Delay (sec/veh):	$ 453

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1110	100	421	457	78	1005
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1354	120	484	502	130	1377
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	1474	0	2633	737
Stage 1	-	-	-	-	1414	-
Stage 2	-	-	-	-	1219	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	728	-	# 17	*# 840
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	246	-
Time blocked-Platoon(%)	-	-	44	-	44	44
Mov Capacity-1 Maneuver	-	-	728	-	# 6	*# 840
Mov Capacity-2 Maneuver	-	-	-	-	# 6	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	# 82	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	9.4	$ 1186.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*6	*840				
HCM Control Delay (s)	$ 10496.4	$ 307.4	-	-	19.183	-
HCM Lane VC Ratio	21.667	1.639	-	-	0.665	-
HCM Lane LOS	F	F	-	-	C	-
HCM 95th Percentile Queue (veh)	18.181	74.06	-	-	5.096	-

Intersection	
Intersection Delay (sec/veh):	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	191	6	370	92	44	143	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	324	10	536	108	64	162	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1076	957	84	907	905	322	167	0	0	644	0	0
Stage 1	293	293	-	610	610	-	-	-	-	-	-	-
Stage 2	783	664	-	297	295	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	199	260	915	255	278	724	1364	-	-	936	-	-
Stage 1	719	674	-	478	488	-	-	-	-	-	-	-
Stage 2	390	461	-	707	673	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	97	240	915	235	257	724	1364	-	-	936	-	-
Mov Capacity-2 Maneuver	97	240	-	235	257	-	-	-	-	-	-	-
Stage 1	714	628	-	474	484	-	-	-	-	-	-	-
Stage 2	204	458	-	651	627	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	27.6	38.2	0.1	2.5
HCM LOS	D	E	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				171	501			
HCM Control Delay (s)	7.658	0	-	27.6	38.2	9.127	0	-
HCM Lane VC Ratio	0.007	-	-	0.068	0.828	0.068	-	-
HCM Lane LOS	A	A	-	D	E	A	A	-
HCM 95th Percentile Queue (veh)	0.021	-	-	0.217	8.212	0.219	-	-

11: 25th St & Barnes Ave

Intersection	
Intersection Delay (sec/veh)	36.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	44	130	72	53	179	10	66	129	147	21	185	24
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	90	148	103	63	203	13	89	157	233	27	234	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	29.1	24	56.3	24.8
HCM LOS	D	C	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	19%	18%	22%	9%
Volume Thru (%)	38%	53%	74%	80%
Volume Right (%)	43%	29%	4%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	342	246	242	230
Left Turning Volume	129	130	179	185
Through Volume	147	72	10	24
Right Turning Volume	66	44	53	21
Lane Flow Rate	480	340	280	288
Geometry Group	1	1	1	1
Degree of Utilization, X	0.953	0.73	0.629	0.645
Departure Headway, Hd	7.151	7.716	8.087	8.066
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	504	466	445	446
Service Time	5.223	5.795	6.174	6.154
HCM Lane V/C Ratio	0.952	0.73	0.629	0.646
HCM Control Delay	56.3	29.1	24	24.8
HCM Lane LOS	F	D	C	C
HCM 95th Percentile Queue	47.8	8	5.1	5.4

13: 15th St & Lane Av

Intersection	
Intersection Delay (sec/veh)	39.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	72	14	30	0	387	258	78	88	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	103	37	67	0	435	363	163	126	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12	12.1	60.5	12.4
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	60%	0%	90%	0%	32%	0%	92%
Volume Right (%)	0%	40%	0%	10%	0%	68%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	645	19	71	72	44	78	96
Left Turning Volume	0	387	0	64	0	14	0	88
Through Volume	0	258	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	72	0	78	0
Lane Flow Rate	0	798	31	90	103	104	162	140
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.073	0.191	0.226	0.199	0.322	0.254
Departure Headway, Hd	6.205	5.938	8.4	7.594	7.914	6.904	7.135	6.56
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	615	428	474	455	522	505	548
Service Time	3.941	3.674	6.125	5.319	5.638	4.628	4.862	4.287
HCM Lane V/C Ratio	0	1.298	0.072	0.19	0.226	0.199	0.321	0.255
HCM Control Delay	8.9	60.5	11.8	12.1	12.9	11.3	13.2	11.5
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	116.4	0.2	0.7	0.9	0.7	1.4	1

12: Kilbourne St & Brainard Ave

Intersection	
Intersection Delay (sec/veh):	182.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	439	2	77	584	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	516	4	118	649	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1501	1448	674	1492	1471	518	699	0	0	520	0	0
Stage 1	910	910	-	536	536	-	-	-	-	-	-	-
Stage 2	591	538	-	956	935	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 101	133	458	103	128	562	907	-	-	1056	-	-
Stage 1	332	356	-	532	527	-	-	-	-	-	-	-
Stage 2	497	526	-	313	347	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 55	107	458	55	103	562	907	-	-	1056	-	-
Mov Capacity-2 Maneuver	# 55	107	-	55	103	-	-	-	-	-	-	-
Stage 1	327	290	-	525	520	-	-	-	-	-	-	-
Stage 2	397	519	-	195	283	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 1131.8	42.7	0.2	1.3
HCM LOS	F	E	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				60	458	204			
HCM Control Delay (s)	9.01	0	-	$ 42.7	13.8	42.7	8.839	0	-
HCM Lane VC Ratio	0.01	-	-	3.751	0.109	0.556	0.112	-	-
HCM Lane LOS	A	A	-	F	B	E	A	A	-
HCM 95th Percentile Queue (veh)	0.031	-	-	24.133	0.365	2.972	0.378	-	-

14: 19th St & Lane Av

Intersection	
Intersection Delay (sec/veh):	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	339	0	1	95	192	0	0	1	129	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	408	0	4	158	234	0	0	4	174	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	392	0	-	408	0	0	853	934	204	819	817	196
Stage 1	-	-	-	-	-	-	534	534	-	283	283	-
Stage 2	-	-	-	-	-	-	319	400	-	536	534	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1167	-	0	1162	-	-	281	268	842	297	313	850
Stage 1	-	-	0	-	-	-	534	528	-	728	681	-
Stage 2	-	-	0	-	-	-	697	605	-	532	528	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1167	-	-	1162	-	-	245	253	842	283	295	850
Mov Capacity-2 Maneuver	-	-	-	-	-	-	245	253	-	283	295	-
Stage 1	-	-	-	-	-	-	505	499	-	689	679	-
Stage 2	-	-	-	-	-	-	635	603	-	501	499	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.1	0.1	9.3	28.6
HCM LOS	A	A	A	D

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	842						283	770
HCM Control Delay (s)	9.3	8.262	0	8.109	0	-	36.2	10.2
HCM Lane VC Ratio	0.005	0.054	-	0.003	-	-	0.616	0.094
HCM Lane LOS	A	A	A	A	A	-	E	B
HCM 95th Percentile Queue (veh)	0.014	0.172	-	0.01	-	-	3.767	0.309

Intersection	
Intersection Delay (sec/veh):	130.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	34	452	75	7	243	61	37	47	19	86	124	17
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	50	595	99	14	279	73	54	58	54	104	168	27
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	352	0	0	694	0	0	1186	1125	348	1145	1138	177
Stage 1	-	-	-	-	-	-	745	745	-	344	344	-
Stage 2	-	-	-	-	-	-	441	380	-	801	794	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1128	-	-	836	-	-	163	201	700	178	203	871
Stage 1	-	-	-	-	-	-	400	414	-	676	641	-
Stage 2	-	-	-	-	-	-	587	605	-	381	403	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1128	-	-	836	-	-	# 38	189	700	120	191	871
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 38	189	-	120	191	-
Stage 1	-	-	-	-	-	-	382	396	-	646	630	-
Stage 2	-	-	-	-	-	-	411	595	-	287	385	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.6	0.4	$ 478.8	$ 418.7
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	92							168
HCM Control Delay (s)	$ 478.8	8.339	0	-	9.38	0	-	$ 478.8
HCM Lane VC Ratio	1.804	0.044	-	-	0.017	-	-	1.775
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	13.763	0.139	-	-	0.051	-	-	21.477

Intersection	
Intersection Delay (sec/veh):	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	12	0	1	0	0	0	5	33	0	0	176	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	22	0	4	0	0	0	10	41	0	0	267	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	333	333	272	335	338	41	277	0	0	41	0	0
Stage 1	272	272	-	61	61	-	-	-	-	-	-	-
Stage 2	61	61	-	274	277	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	591	590	772	622	586	1036	1298	-	-	1581	-	-
Stage 1	700	688	-	955	848	-	-	-	-	-	-	-
Stage 2	912	848	-	736	685	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	587	585	772	615	581	1036	1298	-	-	1581	-	-
Mov Capacity-2 Maneuver	587	585	-	615	581	-	-	-	-	-	-	-
Stage 1	694	688	-	947	841	-	-	-	-	-	-	-
Stage 2	905	841	-	732	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	11.2	0	1.5	0
HCM LOS	B	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				610	0			
HCM Control Delay (s)	7.795	0	-	11.2	0	0	-	-
HCM Lane VC Ratio	0.008	-	-	0.042	-	-	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th Percentile Queue (veh)	0.023	-	-	0.132	-	0	-	-

Intersection	
Intersection Delay (sec/veh): $ 302.9	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	189	105	16	37	28	257	45	93	1005	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	225	164	28	76	36	299	48	116	1069	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1546	1729	544	1186	1713	174	1086	0	0	347	0	0
Stage 1	1310	1310	-	395	395	-	-	-	-	-	-	-
Stage 2	236	419	-	791	1318	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	79	89	488	# 146	91	846	650	-	-	1216	-	-
Stage 1	171	231	-	607	608	-	-	-	-	-	-	-
Stage 2	752	593	-	353	229	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	47	76	488	# 34	78	846	650	-	-	1216	-	-
Mov Capacity-2 Maneuver	47	76	-	# 34	78	-	-	-	-	-	-	-
Stage 1	162	209	-	573	574	-	-	-	-	-	-	-
Stage 2	616	560	-	# 131	207	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 328.2	$ 2066.5	1.1	1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				188	51			
HCM Control Delay (s)	10.862	0.1	-	$ 2066.5	$ 2066.5	8.273	0.2	-
HCM Lane VC Ratio	0.055	-	-	1.576	5.238	0.096	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.175	-	-	19.301	30.324	0.316	-	-

Intersection	
Intersection Delay (sec/veh):	152.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	32	994	173	73	302	0	0	0	0	161	2	116
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	128	1143	216	107	414	0	0	0	0	194	4	190
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	414	0	0	1359	0	-				1341	2243	207
Stage 1	-	-	-	-	-	-				628	628	-
Stage 2	-	-	-	-	-	-				713	1615	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	751	-	-	262	-	0				# 158	43	680
Stage 1	-	-	-	-	-	0				355	479	-
Stage 2	-	-	-	-	-	0				350	164	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	751	-	-	262	-	-				# 42	6	680
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 42	6	-
Stage 1	-	-	-	-	-	-				# 81	283	-
Stage 2	-	-	-	-	-	-				# 80	38	-

Approach	EB	WB	SB
HCM Control Delay (s)	2.5	5.8	$ 926.1
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						42	680
HCM Control Delay (s)	10.776	2.1	-	27.959	-	$ -1	12.3
HCM Lane VC Ratio	0.17	-	-	0.41	-	4.618	0.28
HCM Lane LOS	B	A	-	D	-	F	B
HCM 95th Percentile Queue (veh)	0.612	-	-	1.896	-	22.264	1.143

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	912	251	0	306	143	38	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	1002	267	0	450	181	47	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	1361	~	635
Stage 1	-	-	-	-	-	-	1136	-	-
Stage 2	-	-	-	-	-	-	225	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	109	0	416
Stage 1	0	-	-	0	-	-	218	0	-
Stage 2	0	-	-	0	-	-	763	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	109	-	416
Mov Capacity-2 Maneuver	-	-	-	-	-	-	109	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	763	-	-

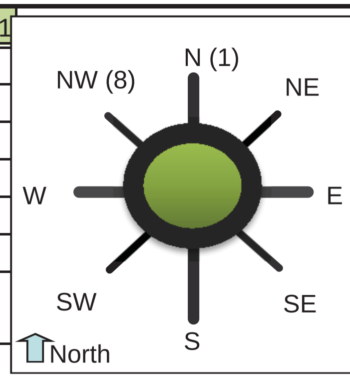
Approach	EB	WB	NB
HCM Control Delay (s)	0	0	34
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	109	416				
HCM Control Delay (s)	60.9	15.3	-	-	-	-
HCM Lane VC Ratio	0.43	0.163	-	-	-	-
HCM Lane LOS	F	C	-	-	-	-
HCM 95th Percentile Queue (veh)	1.834	0.576	-	-	-	-

General & Site Information

v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt E PM



Volumes

Entry Legs (FROM)

		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					102			
Exit	NE (2), vph								
Legs	E (3), vph		91						
(TO)	SE (4), vph								
	S (5), vph	672							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	672	91	0	0	102	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		220						
	NE (2), vph								
	E (3), vph	146							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	146	220	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	111	0	239	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	99	0	0	0	159	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	730	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	829	0	111	0	398	0	0	0
	Entry flow Lane 1, pcu/h	730	0	111	0	159	0	0	0
	Entry flow Lane 2, pcu/h	99	0	0	0	239	0	0	0
	Conflicting flow, pcu/h	0	0	239	0	99	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	956	NA	1024	1024	NA	NA
Entry Flow Rates, veh/h	730	99	111	NA	159	239	NA	NA
V/C ratio	**0.65**	**0.09**	**0.12**		**0.16**	**0.23**		
Control Delay, s/veh	**12.0**	**3.9**	**4.8**		**4.9**	**5.8**		
LOS	B	A	A		A	A		
95th % Queue (ft)	**125**	**7**	**10**		**14**	**23**		
Approach Delay, LOS	11.1 sec, LOS B		4.8 sec, LOS A		5.4 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1322	NA	1304	1304	NA	NA
Entry Flow Rates, veh/h	730	99	111	NA	159	239	NA	NA
V/C ratio	**0.45**	**0.06**	**0.08**		**0.12**	**0.18**		
Control Delay, s/veh	**6.2**	**2.6**	**3.4**		**3.8**	**4.3**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**59**	**5**	**7**		**10**	**17**		
Approach Delay, LOS	5.8 sec, LOS A		3.4 sec, LOS A		4.1 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Intersection												
Intersection Delay (sec/veh):	3.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	630	104	215	220	5	1	0	7	0	1	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	0	716	132	295	297	15	4	0	9	0	4	4
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	312	0	0	848	0	0	1681	~	782	1682	1743	157
Stage 1	-	-	-	-	-	-	782	-	-	895	895	-
Stage 2	-	-	-	-	-	-	899	-	-	787	848	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1260	-	-	764	-	-	76	0	397	76	88	894
Stage 1	-	-	-	-	-	-	390	0	-	338	362	-
Stage 2	-	-	-	-	-	-	336	0	-	388	380	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1260	-	-	764	-	-	45	-	397	47	47	894
Mov Capacity-2 Maneuver	-	-	-	-	-	-	45	-	-	47	47	-
Stage 1	-	-	-	-	-	-	390	-	-	338	193	-
Stage 2	-	-	-	-	-	-	174	-	-	379	380	-

Approach	EB			WB			NB			SB		
HCM Control Delay (s)	0			6.1			37.8			49.4		
HCM LOS	A			A			E			E		

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	45	397							89
HCM Control Delay (s)	92.7	14.3	0	-	-	12.637	-	-	49.4
HCM Lane VC Ratio	0.089	0.024	-	-	-	0.385	-	-	0.09
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th Percentile Queue (veh)	0.278	0.072	0	-	-	1.825	-	-	0.288

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	409	191	416	373	80	30	308	78	279	1093	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1899	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	57	529	244	471	862	335	104	430	366	335	1344	550
Arriving On Green	0.03	0.15	0.00	0.13	0.25	0.00	0.23	0.23	0.00	0.35	0.35	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	461.1	1900.0	1615.0	945.3	3798.1	1552.9
Grp Volume(v), veh/h	45.3	511.3	0.0	483.7	484.4	0.0	60.0	440.0	0.0	310.0	1228.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	461.1	1900.0	1615.0	945.3	1899.1	1552.9
Q Serve(g_s), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Cycle Q Clear(g_c), s	3.3	17.3	0.0	16.0	14.6	0.0	13.8	27.0	0.0	37.6	36.8	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	56.6	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	334.6	1344.3	549.6
V/C Ratio(X)	0.801	0.966	0.000	1.026	0.562	0.000	0.574	1.022	0.000	0.927	0.914	0.000
Avail Cap(c_a), veh/h	124.2	529.3	243.9	471.3	862.4	334.8	104.5	430.4	365.9	341.0	1370.3	560.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.1	50.3	0.0	51.6	38.9	0.0	41.0	46.1	0.0	37.0	36.8	0.0
Incr Delay (d2), s/veh	22.1	30.5	0.0	48.4	0.8	0.0	7.4	49.1	0.0	30.3	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	79.2	80.8	0.0	100.0	39.8	0.0	48.4	95.2	0.0	67.3	46.3	0.0
Lane Group LOS	E	F		F	D		D	F		E	D	
Approach Volume, veh/h		557			968			500			1538	
Approach Delay, s/veh		80.7			69.8			89.6			50.5	
Approach LOS		F			E			F			D	

Timer												
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.10	22.00		20.00	33.90			31.00			46.18	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	9.00	18.00		16.00	25.00			27.00			43.00	
Max Q Clear Time (g_c+I1), s	5.26	19.28		18.00	16.64			29.00			39.57	
Green Extension Time (p_c)	0.02	0.00		0.00	4.10			0.00			2.61	

Intersection Summary			
HCM 2010 Control Delay			66.0
HCM 2010 Level of Service			E

HCM 2010 Signalized Intersection Summary
3: 7th Ave/7th Av & Gordon Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	662	102	710	515	173	32	296	264	198	1254	366
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	237	828	382	861	1126	513	58	946	738	258	1381	612
Arriving On Green	0.07	0.24	0.00	0.17	0.34	0.34	0.03	0.26	0.00	0.15	0.38	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	163.1	838.0	0.0	835.3	572.2	192.2	45.7	416.9	0.0	220.0	1409.0	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Cycle Q Clear(g_c), s	4.1	21.0	0.0	14.5	12.2	8.5	2.2	8.6	0.0	11.3	34.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	236.9	828.3	381.7	861.4	1126.4	513.4	58.3	946.1	737.5	258.3	1381.3	611.8
V/C Ratio(X)	0.689	1.012	0.000	0.970	0.508	0.374	0.785	0.441	0.000	0.852	1.020	0.000
Avail Cap(c_a), veh/h	312.9	828.3	381.7	861.4	1126.4	513.4	81.5	946.1	737.5	399.7	1381.3	611.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	40.5	33.9	0.0	36.7	23.6	22.4	42.7	27.4	0.0	36.7	27.4	0.0
Incr Delay (d2), s/veh	4.1	34.2	0.0	23.4	0.4	0.5	27.4	0.3	0.0	10.2	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	44.5	68.1	0.0	60.1	23.9	22.8	70.1	27.7	0.0	46.9	56.8	0.0
Lane Group LOS	D	F		E	C	C	E	C		D	F	
Approach Volume, veh/h		1001			1600			463			1629	
Approach Delay, s/veh		64.3			42.7			31.9			55.5	
Approach LOS		E			D			C			E	
Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	10.06	25.00		19.00	33.94		6.86	27.29		17.57	38.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	8.00	21.00		15.00	28.00		4.00	17.00		21.00	34.00	
Max Q Clear Time (g_c+I1), s	6.08	23.00		16.46	14.17		4.23	10.56		13.26	36.00	
Green Extension Time (p_c)	0.09	0.00		0.00	8.50		0.00	5.28		0.37	0.00	
Intersection Summary												
HCM 2010 Control Delay			50.7									
HCM 2010 Level of Service			D									

HCM 2010 TWSC
4: 19th St. & 13th St

Intersection	
Intersection Delay (sec/veh):	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	9	0	37	0	2	7	1	309	1	15	1103	313
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	18	0	63	0	2	8	4	418	1	16	1362	348
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2000	1995	855	1140	2169	419	1710	0	0	419	0	0
Stage 1	1568	1568	-	427	427	-	-	-	-	-	-	-
Stage 2	432	427	-	713	1742	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Capacity-1 Maneuver	36	60	282	156	46	583	376	-	-	1137	-	-
Stage 1	118	170	-	576	584	-	-	-	-	-	-	-
Stage 2	577	584	-	389	139	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	34	59	282	120	45	583	376	-	-	1137	-	-
Mov Capacity-2 Maneuver	34	59	-	120	45	-	-	-	-	-	-	-
Stage 1	116	170	-	568	576	-	-	-	-	-	-	-
Stage 2	559	576	-	302	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	103.7	29.1	0.1	0.1
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				107	159			
HCM Control Delay (s)	14.677	0	-	103.7	29.1	8.212	-	-
HCM Lane VC Ratio	0.011	-	-	0.754	0.062	0.014	-	-
HCM Lane LOS	B	A	-	F	D	A	-	-
HCM 95th Percentile Queue (veh)	0.032	-	-	4.099	0.195	0.044	-	-

Intersection												
Intersection Delay (sec/veh): $ 323.4												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	73	123	439	38	10	8	34	159	26	325	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	0	112	171	499	54	13	14	41	212	59	342	8
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	67	0	0	283	0	0	1432	1263	142	1383	1342	34
Stage 1	-	-	-	-	-	-	198	198	-	1059	1059	-
Stage 2	-	-	-	-	-	-	1234	1065	-	324	283	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	3.3
Pot Capacity-1 Maneuver	1549	-	-	1279	-	-	112	171	906	107	# 151	1052
Stage 1	-	-	-	-	-	-	808	741	-	244	# 300	-
Stage 2	-	-	-	-	-	-	217	301	-	640	677	-
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	1
Mov Capacity-1 Maneuver	1549	-	-	1279	-	-	-	104	906	# 41	# 92	1052
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	104	-	# 41	# 92	-
Stage 1	-	-	-	-	-	-	808	741	-	244	# 183	-
Stage 2	-	-	-	-	-	-	-	184	-	463	677	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	8.5	-	$ 1193.6
HCM LOS	A	A	-	F

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	-	403							41	94
HCM Control Delay (s)	-	27.8	0	-	-	9.603	0	-	$ -1	$ 27.8
HCM Lane VC Ratio	-	0.628	-	-	-	0.39	-	-	1.441	3.723
HCM Lane LOS	-	D	A	-	-	A	A	-	F	F
HCM 95th Percentile Queue (veh)	-	4.143	0	-	-	1.882	-	-	5.972	35.679

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	111	55	53	155	70	37	210	64	283	623	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1839	1839	1900	1892	1892	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	124	246	124	150	269	148	81	385	105	364	811	697
Arriving On Green	0.07	0.23	0.23	0.06	0.16	0.16	0.04	0.27	0.27	0.21	0.43	0.43
Sat Flow, veh/h	1739.9	1072.2	539.1	1809.5	1114.7	616.1	1809.5	1430.8	391.9	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	241.8	89.8	0.0	293.5	62.7	0.0	376.8	329.1	732.9	279.2
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1611.2	1809.5	0.0	1730.8	1809.5	0.0	1822.7	1756.8	1881.2	1615.0
Q Serve(g_s), s	6.4	0.0	15.4	5.5	0.0	18.2	3.9	0.0	21.6	20.7	41.2	9.3
Cycle Q Clear(g_c), s	6.4	0.0	15.4	5.5	0.0	18.2	3.9	0.0	21.6	20.7	41.2	9.3
Proportion In Lane	1.000		0.335	1.000		0.356	1.000		0.215	1.000		1.000
Lane Grp Cap(c), veh/h	124.1	0.0	369.4	150.1	0.0	417.0	81.1	0.0	490.6	363.6	811.4	696.6
V/C Ratio(X)	0.806	0.000	0.654	0.598	0.000	0.704	0.774	0.000	0.768	0.905	0.903	0.401
Avail Cap(c_a), veh/h	153.4	0.0	369.4	159.6	0.0	417.0	111.7	0.0	490.6	511.2	879.2	754.8
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	51.9	0.0	39.6	51.7	0.0	43.7	53.6	0.0	38.2	43.9	30.0	10.5
Incr Delay (d2), s/veh	21.8	0.0	8.7	5.5	0.0	9.6	19.8	0.0	7.2	15.3	12.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	73.7	0.0	48.4	57.2	0.0	53.3	73.4	0.0	45.4	59.2	42.1	10.9
Lane Group LOS	E		D	E		D	E		D	E	D	B
Approach Volume, veh/h		342			383			439			1341	
Approach Delay, s/veh		55.8			54.2			49.4			39.8	
Approach LOS		E			D			D			D	

Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	14.09	32.00		15.41	33.32		11.08	36.52		29.47	54.91	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	10.00	26.00		10.00	26.00		7.00	27.00		33.00	53.00	
Max Q Clear Time (g_c+I1), s	8.42	17.43		7.50	20.19		5.89	23.60		22.73	43.16	
Green Extension Time (p_c)	0.03	3.44		0.04	2.53		0.01	2.40		0.74	5.75	

Intersection Summary	
HCM 2010 Control Delay	45.9
HCM 2010 Level of Service	D

HCM 2010 TWSC
7: 25th St. & Chamberlain Ave.

Base + Alt G AM Peak
7/18/2013

Intersection	
Intersection Delay (sec/veh):	52.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	16	414	44	240	266	9	36	60	102	8	16	7
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	23	465	54	273	355	13	45	86	185	9	28	23
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	368	0	0	519	0	0	1276	1452	260	1230	1473	185
Stage 1	-	-	-	-	-	-	538	538	-	908	908	-
Stage 2	-	-	-	-	-	-	738	914	-	322	565	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1338	-	-	1303	-	-	156	156	*1273	*186	130	*1381
Stage 1	-	-	-	-	-	-	737	689	-	*355	354	-
Stage 2	-	-	-	-	-	-	429	390	-	*1273	631	-
Time blocked-Platoon(%)	8	-	-	15	-	-	13	13	15	13	13	8
Mov Capacity-1 Maneuver	1338	-	-	1303	-	-	94	112	*1273	*48	93	*1381
Mov Capacity-2 Maneuver	-	-	-	-	-	-	94	112	-	*48	93	-
Stage 1	-	-	-	-	-	-	719	673	-	*346	260	-
Stage 2	-	-	-	-	-	-	278	287	-	*926	616	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	3.8	239.8	49.3
HCM LOS	A	A	F	E

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*228							*48	*143
HCM Control Delay (s)	239.8	7.737	0.1	-	8.493	0.4	-	90.6	44.7
HCM Lane VC Ratio	1.387	0.017	-	-	0.209	-	-	0.126	0.377
HCM Lane LOS	F	A	A	-	A	A	-	F	E
HCM 95th Percentile Queue (veh)	17.714	0.052	-	-	0.789	-	-	0.403	1.59

HCM 2010 Signalized Intersection Summary
8: Rice Rd & Chamberlain Ave.

Base + Alt G AM Peak
7/18/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	321	86	363	816	173	135	127	136	66	50	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1869	1869	1869	1881	1900	1900	1863	1810	1776	1863	1601	1601
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	93	894	277	686	1913	420	348	505	421	328	215	197
Arriving On Green	0.86	0.86	0.86	0.16	0.63	0.63	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	196.8	1973.6	647.0	1791.6	3020.6	662.5	1284.6	1809.5	1509.3	1238.8	768.7	707.2
Grp Volume(v), veh/h	236.6	0.0	277.5	427.1	589.6	554.3	153.4	144.3	191.5	94.3	0.0	104.3
Grp Sat Flow(s),veh/h/ln	1287.5	0.0	1586.9	1791.6	1900.0	1783.1	1284.6	1809.5	1509.3	1238.8	0.0	1476.0
Q Serve(g_s), s	0.0	0.0	4.7	15.0	19.8	19.8	12.6	7.5	12.6	7.7	0.0	6.6
Cycle Q Clear(g_c), s	2.9	0.0	4.7	15.0	19.8	19.8	19.2	7.5	12.6	15.2	0.0	6.6
Proportion In Lane	0.153		0.408	1.000		0.372	1.000		1.000	1.000		0.479
Lane Grp Cap(c), veh/h	585.0	0.0	678.4	685.6	1203.3	1129.3	348.2	505.2	421.4	328.4	0.0	412.0
V/C Ratio(X)	0.404	0.000	0.409	0.623	0.490	0.491	0.441	0.286	0.455	0.287	0.000	0.253
Avail Cap(c_a), veh/h	585.0	0.0	678.4	734.9	1203.3	1129.3	348.2	505.2	421.4	328.4	0.0	412.0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	5.2	0.0	5.3	13.0	11.7	11.7	41.0	33.9	35.7	39.8	0.0	33.5
Incr Delay (d2), s/veh	1.0	0.0	0.8	3.5	0.7	0.7	4.0	1.4	3.5	2.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	6.2	0.0	6.2	16.5	12.4	12.4	45.0	35.3	39.2	42.0	0.0	35.0
Lane Group LOS	A		A	B	B	B	D	D	D	D		D
Approach Volume, veh/h		514			1571			489			199	
Approach Delay, s/veh		6.2			13.5			39.9			38.4	
Approach LOS		A			B			D			D	

Timer	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		57.30		24.70	82.00			38.00			38.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		49.00		22.00	76.00			33.50			33.50	
Max Q Clear Time (g_c+I1), s		6.68		17.02	21.85			21.20			17.24	
Green Extension Time (p_c)		29.83		1.68	35.29			3.99			4.62	

Intersection Summary		
HCM 2010 Control Delay		18.6
HCM 2010 Level of Service		B

Intersection	
Intersection Delay (sec/veh):	54.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	492	34	492	1309	41	458
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	600	41	566	1438	68	627
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	641	0	2472	321
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	1851	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	1201	-	# 25	*1237
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	112	-
Time blocked-Platoon(%)	-	-	18	-	18	18
Mov Capacity-1 Maneuver	-	-	1201	-	# 13	*1237
Mov Capacity-2 Maneuver	-	-	-	-	# 13	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	# 59	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	3	254.7
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*13	*1237				
HCM Control Delay (s)	$ 2493.5	10.9	-	-	10.636	-
HCM Lane VC Ratio	5.256	0.507	-	-	0.471	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th Percentile Queue (veh)	9.589	2.972	-	-	2.586	-

Intersection	
Intersection Delay (sec/veh):	50.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	9	14	57	14	72	11	249	107	125	613	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	0	18	23	76	28	122	17	361	126	181	697	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1594	1582	351	1540	1521	244	701	0	0	487	0	0
Stage 1	1061	1061	-	458	458	-	-	-	-	-	-	-
Stage 2	533	521	-	1082	1063	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	87	110	643	93	120	800	860	-	-	1071	-	-
Stage 1	273	303	-	579	570	-	-	-	-	-	-	-
Stage 2	534	535	-	261	302	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	50	90	643	# 65	98	800	860	-	-	1071	-	-
Mov Capacity-2 Maneuver	50	90	-	# 65	98	-	-	-	-	-	-	-
Stage 1	268	252	-	568	559	-	-	-	-	-	-	-
Stage 2	421	524	-	194	251	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	31.8	$ 358.1	0.3	1.9
HCM LOS	D	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				175	141			
HCM Control Delay (s)	9.273	0	-	31.8	$ 358.1	9.044	0	-
HCM Lane VC Ratio	0.02	-	-	0.236	1.603	0.169	-	-
HCM Lane LOS	A	A	-	D	F	A	A	-
HCM 95th Percentile Queue (veh)	0.062	-	-	0.881	15.945	0.607	-	-

Intersection	
Intersection Delay (sec/veh)	77.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	60	149	73	46	293	12	99	207	32	17	71	218
Peak Hour Factor	0.71	0.73	0.86	0.60	0.70	0.39	0.85	0.70	0.58	0.63	0.68	0.64
Heavy Vehicles(%)	3	3	2	15	5	9	0	3	0	20	2	0
Movement Flow Rate	85	204	85	77	419	31	116	296	55	27	104	341
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	75.2	79.3	78.2	77.9
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	29%	21%	13%	6%
Volume Thru (%)	61%	53%	83%	23%
Volume Right (%)	9%	26%	3%	71%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	338	282	351	306
Left Turning Volume	207	149	293	71
Through Volume	32	73	12	218
Right Turning Volume	99	60	46	17
Lane Flow Rate	467	374	526	472
Geometry Group	1	1	1	1
Degree of Utilization, X	1	0.989	1	1
Departure Headway, Hd	9.571	9.535	9.83	9.493
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	383	385	373	387
Service Time	7.571	7.535	7.83	7.493
HCM Lane V/C Ratio	1.219	0.971	1.41	1.22
HCM Control Delay	78.2	75.2	79.3	77.9
HCM Lane LOS	F	F	F	F
HCM 95th Percentile Queue	92	77.4	90.8	92.4

Intersection	
Intersection Delay (sec/veh):	125.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	97	6	34	0	77	69	21	456	6	41	296	65
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.60	0.42	0.54	0.25	0.59	0.66	0.79	0.90	0.31	0.69	0.89	0.85
Heavy Vehicles(%)	0	0	3	0	0	0	0	1	0	0	0	0
Movement Flow Rate	162	14	63	0	131	105	27	507	19	59	333	76
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1178	1069	371	1099	1098	517	409	0	0	526	0	0
Stage 1	489	489	-	571	571	-	-	-	-	-	-	-
Stage 2	689	580	-	528	527	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	169	223	673	192	215	562	1161	-	-	1051	-	-
Stage 1	564	553	-	509	508	-	-	-	-	-	-	-
Stage 2	439	503	-	538	532	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 58	200	673	152	193	562	1161	-	-	1051	-	-
Mov Capacity-2 Maneuver	# 58	200	-	152	193	-	-	-	-	-	-	-
Stage 1	545	513	-	492	491	-	-	-	-	-	-	-
Stage 2	254	486	-	439	493	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 718.5	64.9	0.4	1.1
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				62	673	273			
HCM Control Delay (s)	8.173	0	-	$ 64.9	10.9	64.9	8.63	0	-
HCM Lane VC Ratio	0.023	-	-	2.838	0.094	0.861	0.057	-	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th Percentile Queue (veh)	0.07	-	-	17.925	0.308	7.312	0.18	-	-

Intersection	
Intersection Delay (sec/veh)	39.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	3	6	35	0	7	21	225	18	15	663	25
Peak Hour Factor	0.58	0.25	0.42	0.25	0.25	0.25	0.59	0.74	0.25	0.25	0.89	0.55
Heavy Vehicles(%)	57	0	20	3	0	0	0	0	6	38	1	0
Movement Flow Rate	14	12	14	140	0	28	36	304	72	60	745	45
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.1	13.4	18.3	56.7
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	0%	93%	0%	33%	0%	0%	0%	96%
Volume Right (%)	0%	7%	0%	67%	0%	100%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	21	243	8	9	35	7	15	688
Left Turning Volume	0	225	0	3	0	0	0	663
Through Volume	0	18	0	6	0	7	0	25
Right Turning Volume	21	0	8	0	35	0	15	0
Lane Flow Rate	36	376	14	26	140	28	60	790
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0.066	0.639	0.036	0.054	0.308	0.052	0.118	1
Departure Headway, Hd	6.671	6.12	9.267	7.338	7.91	6.663	7.055	5.886
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	538	590	387	489	456	539	509	617
Service Time	4.394	3.843	6.995	5.065	5.63	4.384	4.786	3.616
HCM Lane V/C Ratio	0.067	0.637	0.036	0.053	0.307	0.052	0.118	1.28
HCM Control Delay	9.9	19.1	12.3	10.5	14.1	9.8	10.7	60.2
HCM Lane LOS	A	C	B	B	B	A	B	F
HCM 95th Percentile Queue	0.2	5.3	0.1	0.2	1.3	0.2	0.4	117

Intersection	
Intersection Delay (sec/veh):	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	27	110	0	0	218	238	0	1	0	158	2	48
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.72	0.25	0.25	0.58	0.83	0.25	0.25	0.25	0.82	0.50	0.72
Heavy Vehicles(%)	0	3	0	0	4	5	0	0	0	2	0	9
Movement Flow Rate	36	153	0	0	376	287	0	4	0	193	4	67
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	663	0	-	153	0	0	780	888	77	747	745	332
Stage 1	-	-	-	-	-	-	225	225	-	520	520	-
Stage 2	-	-	-	-	-	-	555	663	-	227	225	-
Follow-up Headway	2.2	-	0	2.2	-	-	3.5	4	3.3	3.518	4	3.381
Pot Capacity-1 Maneuver	935	-	0	1440	-	-	315	285	990	329	345	694
Stage 1	-	-	0	-	-	-	782	721	-	539	536	-
Stage 2	-	-	0	-	-	-	520	462	-	776	721	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	935	-	-	1440	-	-	274	274	990	316	332	694
Mov Capacity-2 Maneuver	-	-	-	-	-	-	274	274	-	316	332	-
Stage 1	-	-	-	-	-	-	752	693	-	518	536	-
Stage 2	-	-	-	-	-	-	467	462	-	742	693	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.7	0	18.3	26.9
HCM LOS	A	A	C	D

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	274						316	654
HCM Control Delay (s)	18.3	9.004	0	0	-	-	32.7	11.2
HCM Lane VC Ratio	0.015	0.039	-	-	-	-	0.61	0.108
HCM Lane LOS	C	A	A	A	-	-	D	B
HCM 95th Percentile Queue (veh)	0.044	0.12	-	0	-	-	3.767	0.362

Intersection	
Intersection Delay (sec/veh):	13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	33	217	68	15	404	118	20	44	5	44	43	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.73	0.75	0.65	0.83	0.71	0.64	0.65	0.50	0.81	0.59	0.78
Heavy Vehicles(%)	0	8	0	0	2	5	11	0	0	0	13	4
Movement Flow Rate	41	297	91	23	487	166	31	68	10	54	73	41
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	653	0	0	388	0	0	1098	1124	195	1080	1086	327
Stage 1	-	-	-	-	-	-	425	425	-	616	616	-
Stage 2	-	-	-	-	-	-	673	699	-	464	470	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.599	4	3.3	3.5	4.117	3.336
Pot Capacity-1 Maneuver	943	-	-	1182	-	-	183	207	851	197	207	710
Stage 1	-	-	-	-	-	-	590	590	-	481	465	-
Stage 2	-	-	-	-	-	-	430	445	-	582	542	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	943	-	-	1182	-	-	117	194	851	136	194	710
Mov Capacity-2 Maneuver	-	-	-	-	-	-	117	194	-	136	194	-
Stage 1	-	-	-	-	-	-	564	564	-	460	456	-
Stage 2	-	-	-	-	-	-	334	436	-	484	518	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.9	0.3	55.2	75.2
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	174							202
HCM Control Delay (s)	55.2	8.99	0	-	8.106	0	-	75.2
HCM Lane VC Ratio	0.626	0.043	-	-	0.02	-	-	0.833
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th Percentile Queue (veh)	3.509	0.135	-	-	0.06	-	-	6.108

Intersection	
Intersection Delay (sec/veh):	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	2	0	0	0	0	1	3	219	0	1	61	20
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.81	0.25	0.25	0.75	0.38
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	0	11	11
Movement Flow Rate	4	0	0	0	0	4	12	270	0	4	81	53
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	4	0	0	0	0	0	77	12	0	145	10	2
Stage 1	-	-	-	-	-	-	8	8	-	2	2	-
Stage 2	-	-	-	-	-	-	69	4	-	143	8	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.5	4.009	3.3	3.5	4.099	3.399
Pot Capacity-1 Maneuver	1631	-	-	-	-	-	917	885	-	828	867	1056
Stage 1	-	-	-	-	-	-	1019	891	-	1026	877	-
Stage 2	-	-	-	-	-	-	946	894	-	865	871	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1631	-	-	-	-	-	807	883	-	-	865	1056
Mov Capacity-2 Maneuver	-	-	-	-	-	-	807	883	-	-	865	-
Stage 1	-	-	-	-	-	-	1017	889	-	1024	877	-
Stage 2	-	-	-	-	-	-	815	894	-	601	869	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	7.2	0	-	-
HCM LOS	A	A	-	-

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							-
HCM Control Delay (s)	-	7.213	0	-	0	-	-	-
HCM Lane VC Ratio	-	0.002	-	-	-	-	-	-
HCM Lane LOS	-	A	A	-	A	-	-	-
HCM 95th Percentile Queue (veh)	-	0.007	-	-	-	-	-	-

Intersection	
Intersection Delay (sec/veh):	158

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	3	6	41	23	10	47	170	1140	53	87	280	16
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.63	0.64	0.71	0.75	0.75	0.70	0.81	0.69	0.64	0.69	0.70
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	1	1	0
Movement Flow Rate	8	10	64	32	13	63	243	1407	77	136	406	23
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	1886	2660	215	2412	2633	743	429	0	0	1484	0	0
Stage 1	690	690	-	1932	1932	-	-	-	-	-	-	-
Stage 2	1196	1970	-	480	701	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	44	23	796	# 18	24	362	1141	-	-	454	-	-
Stage 1	406	449	-	70	114	-	-	-	-	-	-	-
Stage 2	201	109	-	541	444	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	-	13	796	# 5	# 13	362	1141	-	-	454	-	-
Mov Capacity-2 Maneuver	-	13	-	# 5	# 13	-	-	-	-	-	-	-
Stage 1	320	314	-	55	90	-	-	-	-	-	-	-
Stage 2	111	86	-	338	311	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	-	$ 3567.3	1.6	4.5
HCM LOS	-	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				-	14			
HCM Control Delay (s)	9.006	0.4	-	-	$ 3567.3	16.283	0.8	-
HCM Lane VC Ratio	0.213	-	-	-	7.742	0.299	-	-
HCM Lane LOS	A	A	-	-	F	C	A	-
HCM 95th Percentile Queue (veh)	0.805	-	-	-	14.586	1.243	-	-

Intersection	
Intersection Delay (sec/veh):	13.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.69	0.56	0.73	0.87	0.25	0.25	0.25	0.25	0.58	0.25	0.79
Heavy Vehicles(%)	0	0	0	9	0	0	0	0	0	0	0	0
Movement Flow Rate	16	364	59	49	1152	0	0	0	0	59	0	376
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor		Major 1			Major 2						Minor 2	
Conflicting Flow Rate - All	1152	0	0	423	0	-				1428	~	576
Stage 1	-	-	-	-	-	-				1250	-	-
Stage 2	-	-	-	-	-	-				178	-	-
Follow-up Headway	3.1	-	-	3.19	-	0				3.8	0	3.9
Pot Capacity-1 Maneuver	336	-	-	711	-	0				145	0	398
Stage 1	-	-	-	-	-	0				135	0	-
Stage 2	-	-	-	-	-	0				746	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	336	-	-	711	-	-				131	-	398
Mov Capacity-2 Maneuver	-	-	-	-	-	-				131	-	-
Stage 1	-	-	-	-	-	-				126	-	-
Stage 2	-	-	-	-	-	-				699	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.8	0.4	63.2
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						131	398
HCM Control Delay (s)	16.249	0.3	-	10.44	-	53	64.8
HCM Lane VC Ratio	0.048	-	-	0.069	-	0.447	0.945
HCM Lane LOS	C	A	-	B	-	F	F
HCM 95th Percentile Queue (veh)	0.149	-	-	0.223	-	1.991	10.575

Intersection	
Intersection Delay (sec/veh):	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	211	75	0	781	150	253	0	32	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.76	0.76	0.25	0.86	0.74	0.85	0.25	0.70	0.25	0.25	0.25
Heavy Vehicles(%)	0	0	0	0	0	2	0	0	7	0	0	0
Movement Flow Rate	0	278	99	0	908	203	298	0	46	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

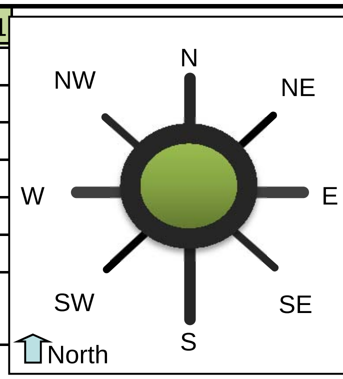
Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	782	~	189
Stage 1	-	-	-	-	-	-	328	-	-
Stage 2	-	-	-	-	-	-	454	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.37
Pot Capacity-1 Maneuver	0	-	-	0	-	-	# 288	0	805
Stage 1	0	-	-	0	-	-	664	0	-
Stage 2	0	-	-	0	-	-	560	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	# 288	-	805
Mov Capacity-2 Maneuver	-	-	-	-	-	-	# 288	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	560	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	89.5
HCM LOS	A	A	F

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	288	805				
HCM Control Delay (s)	101.7	9.7	-	-	-	-
HCM Lane VC Ratio	1.033	0.057	-	-	-	-
HCM Lane LOS	F	A	-	-	-	-
HCM 95th Percentile Queue (veh)	11.185	0.18	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, AM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt G AM



Volumes

Entry Legs (FROM)		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					48			
Exit	NE (2), vph								
Legs	E (3), vph		71						
(TO)	SE (4), vph								
	S (5), vph	252							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	252	71	0	0	48	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		485						
	NE (2), vph								
	E (3), vph	409							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	409	485	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	52	0	527	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	77	0	0	0	445	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	274	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	351	0	52	0	972	0	0	0
	Entry flow Lane 1, pcu/h	274	0	52	0	445	0	0	0
	Entry flow Lane 2, pcu/h	77	0	0	0	527	0	0	0
	Conflicting flow, pcu/h	0	0	527	0	77	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	781	NA	1046	1046	NA	NA
Entry Flow Rates, veh/h	274	77	52	NA	445	527	NA	NA
V/C ratio	**0.24**	**0.07**	**0.07**		**0.42**	**0.50**		
Control Delay, s/veh	**5.4**	**3.8**	**5.3**		**8.1**	**9.4**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**24**	**5**	**5**		**54**	**73**		
Approach Delay, LOS	5.1 sec, LOS A		5.3 sec, LOS A		8.8 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1020	NA	1333	1333	NA	NA
Entry Flow Rates, veh/h	274	77	52	NA	445	527	NA	NA
V/C ratio	**0.17**	**0.05**	**0.05**		**0.33**	**0.40**		
Control Delay, s/veh	**3.5**	**2.5**	**4.0**		**5.7**	**6.4**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**15**	**4**	**4**		**37**	**48**		
Approach Delay, LOS	3.3 sec, LOS A		4 sec, LOS A		6.1 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A

****Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***

Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Intersection	
Intersection Delay (sec/veh):	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	306	0	1	612	12	0	0	0	8	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	1	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	Free	Free	Free	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.88	0.79	0.73	0.74	0.33	0.25	0.25	0.75	0.25	0.25	0.25
Heavy Vehicles(%)	0	2	0	8	2	0	0	0	0	0	0	0
Movement Flow Rate	4	348	0	1	827	36	0	0	0	32	0	20
Number of Lanes	0	1	0	0	1	1	1	0	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	863	0	0	349	0	0	1214	~	349	1204	1204	432
Stage 1	-	-	-	-	-	-	357	-	-	847	847	-
Stage 2	-	-	-	-	-	-	857	-	-	357	357	-
Follow-up Headway	2.2	-	-	2.272	-	-	3.5	0	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	788	-	-	1177	-	-	160	0	699	162	186	628
Stage 1	-	-	-	-	-	-	665	0	-	359	381	-
Stage 2	-	-	-	-	-	-	355	0	-	665	632	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	788	-	-	1177	-	-	154	-	698	161	184	628
Mov Capacity-2 Maneuver	-	-	-	-	-	-	154	-	-	161	184	-
Stage 1	-	-	-	-	-	-	660	-	-	357	380	-
Stage 2	-	-	-	-	-	-	343	-	-	661	628	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	0	0	25.7
HCM LOS	A	A	A	D

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	0	0							225
HCM Control Delay (s)	0	0	9.592	0	-	8.062	-	-	25.7
HCM Lane VC Ratio	-	-	0.005	-	-	0.001	-	-	0.231
HCM Lane LOS	A	A	A	A	-	A	-	-	D
HCM 95th Percentile Queue (veh)	-	-	0.015	-	-	0.003	-	-	0.867

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	261	23	25	362	511	144	924	637	146	130	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1845	1900	1900	1810	1570	1900	1900	1900	1863	1889	1827
Lanes	1	2	1	2	2	1	1	1	1	1	2	1
Capacity, veh/h	56	828	382	73	768	298	596	898	763	56	510	210
Arriving On Green	0.03	0.24	0.00	0.02	0.22	0.00	0.47	0.47	0.00	0.14	0.14	0.00
Sat Flow, veh/h	1645.0	1615.0	1615.0	3510.5	1334.7	1334.7	1261.6	1900.0	1615.0	414.1	3777.5	1552.9
Grp Volume(v), veh/h	58.7	326.3	0.0	29.1	470.1	0.0	288.0	1320.0	0.0	162.2	146.1	0.0
Grp Sat Flow(s),veh/h/ln	1645.0	1752.4	1615.0	1755.2	1719.0	1334.7	1261.6	1900.0	1615.0	414.1	1888.7	1552.9
Q Serve(g_s), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Cycle Q Clear(g_c), s	4.0	9.3	0.0	1.0	14.6	0.0	18.5	56.0	0.0	16.0	4.1	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	55.5	828.4	381.7	73.0	768.0	298.2	596.4	898.2	763.4	55.9	510.2	209.7
V/C Ratio(X)	1.056	0.394	0.000	0.398	0.612	0.000	0.483	1.470	0.000	2.900	0.286	0.000
Avail Cap(c_a), veh/h	55.5	828.4	381.7	118.5	812.6	315.5	596.4	898.2	763.4	55.9	510.2	209.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	57.2	38.1	0.0	57.3	41.4	0.0	21.3	31.2	0.0	51.2	46.1	0.0
Incr Delay (d2), s/veh	137.4	0.3	0.0	3.5	1.2	0.0	0.6	217.4	0.0	901.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	194.6	38.4	0.0	60.7	42.6	0.0	21.9	248.7	0.0	953.0	46.4	0.0
Lane Group LOS	F	D		E	D		C	F		F	D	
Approach Volume, veh/h		385			499			1608			308	
Approach Delay, s/veh		62.2			43.7			208.1			523.4	
Approach LOS		E			D			F			F	

Timer	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Assigned Phase	5	2		1	6			8			4	
Phase Duration (G+Y+Rc), s	8.00	32.00		6.46	30.46			60.00			20.00	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00			4.00			4.00	
Max Green Setting (Gmax), s	4.00	28.00		4.00	28.00			56.00			16.00	
Max Q Clear Time (g_c+I1), s	6.00	11.29		2.97	16.57			58.00			18.00	
Green Extension Time (p_c)	0.00	4.95		0.00	4.06			0.00			0.00	

Intersection Summary	
HCM 2010 Control Delay	193.4
HCM 2010 Level of Service	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	547	27	244	670	418	156	1074	1324	310	233	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1881	1845	1900	1900	1759	1792	1900	1900	1881	1776	1900	1881
Lanes	2	2	1	3	2	1	1	2	2	1	2	1
Capacity, veh/h	319	818	377	298	669	305	254	1534	1196	254	1569	695
Arriving On Green	0.09	0.23	0.00	0.06	0.20	0.20	0.14	0.43	0.00	0.15	0.43	0.00
Sat Flow, veh/h	3475.7	1615.0	1615.0	5102.9	1523.6	1523.6	1809.5	2814.3	2814.3	1691.1	1599.0	1599.0
Grp Volume(v), veh/h	438.5	692.4	0.0	287.1	744.4	464.4	222.9	1512.7	0.0	344.4	261.8	0.0
Grp Sat Flow(s),veh/h/ln	1737.9	1752.4	1615.0	1701.0	1671.3	1523.6	1809.5	1805.0	1407.1	1691.1	1805.0	1599.0
Q Serve(g_s), s	11.0	22.6	0.0	6.7	24.0	24.0	14.5	49.8	0.0	18.0	5.3	0.0
Cycle Q Clear(g_c), s	11.0	22.6	0.0	6.7	24.0	24.0	14.5	49.8	0.0	18.0	5.3	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	318.6	817.8	376.8	297.7	668.5	304.7	254.0	1534.3	1196.1	253.7	1569.0	695.0
V/C Ratio(X)	1.376	0.847	0.000	0.964	1.114	1.524	0.877	0.986	0.000	1.358	0.167	0.000
Avail Cap(c_a), veh/h	318.6	817.8	376.8	297.7	668.5	304.7	361.9	1534.3	1196.1	253.7	1569.0	695.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	54.5	43.9	0.0	56.4	48.0	48.0	50.6	34.1	0.0	51.0	20.7	0.0
Incr Delay (d2), s/veh	187.9	8.2	0.0	42.4	70.3	252.0	15.7	19.6	0.0	184.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	242.4	52.2	0.0	98.8	118.3	300.0	66.2	53.8	0.0	235.5	20.7	0.0
Lane Group LOS	F	D		F	F	F	E	D		F	C	
Approach Volume, veh/h		1131			1496			1736			606	
Approach Delay, s/veh		125.9			171.0			55.4			142.8	
Approach LOS		F			F			E			F	

Timer												
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	15.00	32.00		11.00	28.00		20.85	55.00		22.00	56.15	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	11.00	28.00		7.00	24.00		24.00	51.00		18.00	45.00	
Max Q Clear Time (g_c+I1), s	13.00	24.65		8.74	26.00		16.49	51.77		20.00	7.30	
Green Extension Time (p_c)	0.00	2.78		0.00	0.00		0.37	0.00		0.00	19.54	

Intersection Summary			
HCM 2010 Control Delay			116.9
HCM 2010 Level of Service			F

Intersection	
Intersection Delay (sec/veh)$ 3659.7	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	268	0	0	3	0	24	0	1460	5	0	145	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.59	0.92	0.92	0.92	0.25	0.74	0.92	0.92	0.81	0.90
Heavy Vehicles(%)	0	2	12	2	2	2	0	0	2	2	0	0
Movement Flow Rate	536	0	0	3	0	26	0	1973	5	0	179	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	2	1

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	2174	2163	96	2066	2167	1976	191	0	0	-	0	0
Stage 1	185	185	-	1976	1976	-	-	-	-	-	-	-
Stage 2	1989	1978	-	90	191	-	-	-	-	-	-	-
Follow-up Headway	3.5	4.02	3.42	3.52	4.02	3.32	2.2	-	-	0	-	-
Pot Capacity-1 Maneuver	# 27	47	910	31	46	52	1395	-	-	0	-	-
Stage 1	805	746	-	64	106	-	-	-	-	0	-	-
Stage 2	# 64	106	-	907	741	-	-	-	-	0	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 13	47	910	31	46	52	1395	-	-	-	-	-
Mov Capacity-2 Maneuver	# 13	47	-	31	46	-	-	-	-	-	-	-
Stage 1	805	746	-	64	106	-	-	-	-	-	-	-
Stage 2	# 32	106	-	907	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 18665.3	160.7	0	0
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (vph)				13	48		
HCM Control Delay (s)	0	-	-	$ 160.7	160.7	-	-
HCM Lane VC Ratio	-	-	-	41.231	0.611	-	-
HCM Lane LOS	A	-	-	F	F	-	-
HCM 95th Percentile Queue (veh)	0	-	-	68.317	2.351	-	-

Intersection	
Intersection Delay (sec/veh):	41

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	18	90	16	83	32	6	36	180	370	27	37	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.65	0.72	0.88	0.71	0.75	0.58	0.83	0.75	0.44	0.95	0.38
Heavy Vehicles(%)	0	14	3	2	6	0	0	0	2	26	2	0
Movement Flow Rate	72	138	22	94	45	8	62	217	493	61	39	0
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	53	0	0	160	0	0	550	534	80	885	541	-
Stage 1	-	-	-	-	-	-	293	293	-	237	237	-
Stage 2	-	-	-	-	-	-	257	241	-	648	304	-
Follow-up Headway	2.2	-	-	2.218	-	-	3.5	4	3.318	3.734	4.018	0
Pot Capacity-1 Maneuver	1568	-	-	1419	-	-	450	456	980	241	449	0
Stage 1	-	-	-	-	-	-	719	674	-	719	710	0
Stage 2	-	-	-	-	-	-	755	711	-	421	663	0
Time blocked-Platoon(%)	1	-	-	0	-	-	1	1	0	1	1	0
Mov Capacity-1 Maneuver	1568	-	-	1419	-	-	382	406	980	64	400	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	382	406	-	64	400	-
Stage 1	-	-	-	-	-	-	686	643	-	686	663	-
Stage 2	-	-	-	-	-	-	663	664	-	132	633	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	2.3	4.9	64.9	-
HCM LOS	A	A	F	-

Lane	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	382	684							64	-
HCM Control Delay (s)	16.2	69.2	7.406	0	-	7.718	0	-	208	-
HCM Lane VC Ratio	0.162	1.038	0.046	-	-	0.066	-	-	0.959	-
HCM Lane LOS	C	F	A	A	-	A	A	-	F	-
HCM 95th Percentile Queue (veh)	0.574	18.039	0.144	-	-	0.213	-	-	4.635	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	128	28	28	68	250	10	606	23	26	122	8
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1730	1730	1900	1856	1856	1900	1899	1899	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	412	547	121	121	67	303	33	556	19	47	589	506
Arriving On Green	0.24	0.40	0.40	0.02	0.08	0.08	0.02	0.30	0.30	0.03	0.31	0.31
Sat Flow, veh/h	1739.9	1372.0	304.5	1809.5	294.9	1327.0	1809.5	1825.5	62.3	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	576.3	0.0	226.7	47.5	0.0	456.1	16.9	0.0	882.6	30.2	143.5	10.4
Grp Sat Flow(s),veh/h/ln	1739.9	0.0	1676.6	1809.5	0.0	1621.9	1809.5	0.0	1887.8	1756.8	1881.2	1615.0
Q Serve(g_s), s	28.0	0.0	11.1	3.1	0.0	27.0	1.1	0.0	36.0	2.0	6.7	0.5
Cycle Q Clear(g_c), s	28.0	0.0	11.1	3.1	0.0	27.0	1.1	0.0	36.0	2.0	6.7	0.5
Proportion In Lane	1.000		0.182	1.000		0.818	1.000		0.033	1.000		1.000
Lane Grp Cap(c), veh/h	412.4	0.0	668.5	120.9	0.0	370.7	32.7	0.0	575.2	46.8	589.3	505.9
V/C Ratio(X)	1.398	0.000	0.339	0.393	0.000	1.230	0.519	0.000	1.534	0.646	0.244	0.021
Avail Cap(c_a), veh/h	412.4	0.0	668.5	153.2	0.0	370.7	76.6	0.0	575.2	74.3	589.3	505.9
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	45.1	0.0	24.7	55.4	0.0	54.6	57.5	0.0	41.1	56.9	30.2	28.0
Incr Delay (d2), s/veh	193.1	0.0	1.4	2.1	0.0	125.2	12.1	0.0	249.2	14.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	238.2	0.0	26.1	57.5	0.0	179.8	69.6	0.0	290.2	70.9	30.4	28.1
Lane Group LOS	F		C	E		F	E		F	E	C	C
Approach Volume, veh/h		803			504			900			184	
Approach Delay, s/veh		178.3			168.2			286.1			36.9	
Approach LOS		F			F			F			D	

Timer	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Assigned Phase	5	2		1	6		3	8		7	4	
Phase Duration (G+Y+Rc), s	34.00	53.11		13.89	33.00		8.13	42.00		9.15	43.01	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	28.00	45.00		10.00	27.00		5.00	36.00		5.00	36.00	
Max Q Clear Time (g_c+I1), s	30.00	13.11		5.06	29.00		3.10	38.00		4.01	8.70	
Green Extension Time (p_c)	0.00	9.87		0.03	0.00		0.00	0.00		0.00	8.93	

Intersection Summary	
HCM 2010 Control Delay	205.9
HCM 2010 Level of Service	F

Intersection	
Intersection Delay (sec/veh):	32.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	281	36	108	215	1	41	30	273	25	86	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.89	0.81	0.88	0.75	0.67	0.80	0.70	0.55	0.88	0.58	0.30
Heavy Vehicles(%)	0	4	0	0	2	0	12	2	0	0	21	50
Movement Flow Rate	1	316	44	123	287	1	51	43	496	28	148	33
Number of Lanes	0	2	0	0	2	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	288	0	0	360	0	0	804	874	180	716	896	145
Stage 1	-	-	-	-	-	-	340	340	-	534	534	-
Stage 2	-	-	-	-	-	-	464	534	-	182	362	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.62	4.02	3.3	3.5	4.21	3.8
Pot Capacity-1 Maneuver	1439	-	-	1382	-	-	257	287	*1357	*321	247	*1381
Stage 1	-	-	-	-	-	-	829	764	-	*617	557	-
Stage 2	-	-	-	-	-	-	652	598	-	*1357	708	-
Time blocked-Platoon(%)	8	-	-	10	-	-	0	0	10	0	0	8
Mov Capacity-1 Maneuver	1439	-	-	1382	-	-	107	256	*1357	*163	221	*1381
Mov Capacity-2 Maneuver	-	-	-	-	-	-	107	256	-	*163	221	-
Stage 1	-	-	-	-	-	-	828	763	-	*616	498	-
Stage 2	-	-	-	-	-	-	399	534	-	*812	707	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	2.5	67.2	50.3
HCM LOS	A	A	F	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	*583							*163	*254
HCM Control Delay (s)	67.2	7.504	0	-	7.859	0.2	-	30	52.3
HCM Lane VC Ratio	1.013	0.001	-	-	0.089	-	-	0.116	0.752
HCM Lane LOS	F	A	A	-	A	A	-	D	F
HCM 95th Percentile Queue (veh)	15.355	0.003	-	-	0.292	-	-	0.386	5.401

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	826	122	266	208	42	57	44	426	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	50	1259	213	359	1887	388	343	535	447	432	427	60
Arriving On Green	0.29	0.29	0.29	0.13	0.62	0.62	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	77.1	2912.2	484.9	1791.6	3060.5	628.6	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	590.9	0.0	533.8	312.9	146.8	142.3	64.8	50.0	600.0	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1785.3	0.0	1612.7	1791.6	1900.0	1789.1	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	13.3	0.0	36.0	11.6	3.9	4.0	5.1	2.4	35.5	19.6	0.0	8.1
Cycle Q Clear(g_c), s	35.3	0.0	36.0	11.6	3.9	4.0	13.2	2.4	35.5	22.0	0.0	8.1
Proportion In Lane	0.043		0.301	1.000		0.351	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	814.4	0.0	707.4	359.0	1171.7	1103.3	343.2	535.3	446.5	432.2	0.0	486.9
V/C Ratio(X)	0.726	0.000	0.755	0.872	0.125	0.129	0.189	0.093	1.344	0.575	0.000	0.295
Avail Cap(c_a), veh/h	814.4	0.0	707.4	458.1	1171.7	1103.3	343.2	535.3	446.5	432.2	0.0	486.9
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	36.0	0.0	36.5	25.7	9.6	9.6	37.7	30.6	42.3	38.6	0.0	32.6
Incr Delay (d2), s/veh	4.0	0.0	5.5	21.5	0.1	0.1	1.2	0.3	169.1	5.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	40.0	0.0	42.0	47.2	9.7	9.7	38.9	30.9	211.3	44.1	0.0	34.1
Lane Group LOS	D		D	D	A	A	D	C	F	D		C
Approach Volume, veh/h		1125			602			715			392	
Approach Delay, s/veh		40.9			29.2			183.1			40.4	
Approach LOS		D			C			F			D	

Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		58.64		21.36	80.00			40.00			40.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		47.00		22.00	74.00			35.50			35.50	
Max Q Clear Time (g_c+I1), s		38.04		13.62	5.98			37.50			24.02	
Green Extension Time (p_c)		7.45		1.74	32.02			0.00			5.82	

Intersection Summary			
HCM 2010 Control Delay			74.2
HCM 2010 Level of Service			E

Intersection	
Intersection Delay (sec/veh):	119.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	1359	89	377	501	14	757
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Free	Free
Storage Length		0	0		0	0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.82	0.83	0.87	0.91	0.60	0.73
Heavy Vehicles(%)	3	3	0	1	0	1
Movement Flow Rate	1657	107	433	551	23	1037
Number of Lanes	2	0	1	2	1	1

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	0	0	1764	0	2853	883
Stage 1	-	-	-	-	1711	-
Stage 2	-	-	-	-	1142	-
Follow-up Headway	-	-	2.2	-	3.5	3.31
Pot Capacity-1 Maneuver	-	-	573	-	# 8	*# 696
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	271	-
Time blocked-Platoon(%)	-	-	54	-	54	54
Mov Capacity-1 Maneuver	-	-	573	-	# 2	*# 696
Mov Capacity-2 Maneuver	-	-	-	-	# 2	-
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	66	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	12.4	$ 418.4
HCM LOS	A	B	F

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	*2	*696				
HCM Control Delay (s)	$ 8105	245.4	-	-	28.174	-
HCM Lane VC Ratio	11.667	1.49	-	-	0.756	-
HCM Lane LOS	F	F	-	-	D	-
HCM 95th Percentile Queue (veh)	4.578	50.347	-	-	6.721	-

Intersection	
Intersection Delay (sec/veh):	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	83	6	542	92	25	173	1
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	141	10	786	108	36	197	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1213	1185	101	1135	1133	447	201	0	0	894	0	0
Stage 1	271	271	-	860	860	-	-	-	-	-	-	-
Stage 2	942	914	-	275	273	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.525	3.536	4	3.3	2.29	-	-	2.227	-	-
Pot Capacity-1 Maneuver	160	191	895	178	205	616	1325	-	-	755	-	-
Stage 1	739	689	-	348	376	-	-	-	-	-	-	-
Stage 2	318	355	-	727	688	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	108	181	895	166	194	616	1325	-	-	755	-	-
Mov Capacity-2 Maneuver	108	181	-	166	194	-	-	-	-	-	-	-
Stage 1	733	656	-	345	373	-	-	-	-	-	-	-
Stage 2	229	352	-	685	655	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	28.9	45.9	0.1	1.5
HCM LOS	D	E	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				162	306			
HCM Control Delay (s)	7.737	0	-	28.9	45.9	10.008	0	-
HCM Lane VC Ratio	0.007	-	-	0.072	0.758	0.048	-	-
HCM Lane LOS	A	A	-	D	E	B	A	-
HCM 95th Percentile Queue (veh)	0.022	-	-	0.23	5.787	0.151	-	-

Intersection	
Intersection Delay (sec/veh)	56.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	203	264	72	53	98	10	66	129	147	21	185	52
Peak Hour Factor	0.49	0.88	0.70	0.84	0.88	0.75	0.74	0.82	0.63	0.79	0.79	0.88
Heavy Vehicles(%)	0	3	0	0	3	0	0	4	4	10	2	0
Movement Flow Rate	414	300	103	63	111	13	89	157	233	27	234	59
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	70	19.2	65.5	30.2
HCM LOS	F	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Volume Left (%)	19%	38%	33%	8%
Volume Thru (%)	38%	49%	61%	72%
Volume Right (%)	43%	13%	6%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	342	539	161	258
Left Turning Volume	129	264	98	185
Through Volume	147	72	10	52
Right Turning Volume	66	203	53	21
Lane Flow Rate	480	817	188	320
Geometry Group	1	1	1	1
Degree of Utilization, X	0.988	1	0.459	0.726
Departure Headway, Hd	7.413	7.701	8.807	8.169
Convergence(Y/N)	Yes	Yes	Yes	Yes
Capacity	489	474	408	441
Service Time	5.469	5.8	6.901	6.239
HCM Lane V/C Ratio	0.982	1.724	0.461	0.726
HCM Control Delay	65.5	70	19.2	30.2
HCM Lane LOS	F	F	C	D
HCM 95th Percentile Queue	84.1	101.9	2.5	7.9

Intersection	
Intersection Delay (sec/veh):	112.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	127	32	26	1	23	59	7	412	2	77	431	43
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.78	0.52	0.25	0.63	0.81	0.75	0.85	0.50	0.65	0.90	0.86
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	184	41	50	4	37	73	9	485	4	118	479	50
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1300	1247	504	1291	1270	487	529	0	0	489	0	0
Stage 1	740	740	-	505	505	-	-	-	-	-	-	-
Stage 2	560	507	-	786	765	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	# 140	175	572	142	170	585	1048	-	-	1085	-	-
Stage 1	412	426	-	553	544	-	-	-	-	-	-	-
Stage 2	516	543	-	388	415	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 86	146	572	89	142	585	1048	-	-	1085	-	-
Mov Capacity-2 Maneuver	# 86	146	-	89	142	-	-	-	-	-	-	-
Stage 1	407	360	-	546	537	-	-	-	-	-	-	-
Stage 2	416	536	-	265	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 610.2	28.2	0.2	1.6
HCM LOS	F	D	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (vph)				93	572	266			
HCM Control Delay (s)	8.466	0	-	$ 28.2	11.9	28.2	8.724	0	-
HCM Lane VC Ratio	0.009	-	-	2.42	0.087	0.426	0.109	-	-
HCM Lane LOS	A	A	-	F	B	D	A	A	-
HCM 95th Percentile Queue (veh)	0.027	-	-	20.607	0.286	2.015	0.367	-	-

Intersection	
Intersection Delay (sec/veh)	39.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	19	64	7	72	14	30	0	387	258	78	88	8
Peak Hour Factor	0.61	0.89	0.38	0.70	0.38	0.45	0.25	0.89	0.71	0.48	0.70	0.58
Heavy Vehicles(%)	18	4	0	2	0	0	0	1	4	4	3	0
Movement Flow Rate	31	72	18	103	37	67	0	435	363	163	126	14
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12	12.1	60.5	12.4
HCM LOS	B	B	F	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Volume Left (%)	0%	0%	100%	0%	100%	0%	100%	0%
Volume Thru (%)	100%	60%	0%	90%	0%	32%	0%	92%
Volume Right (%)	0%	40%	0%	10%	0%	68%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	0	645	19	71	72	44	78	96
Left Turning Volume	0	387	0	64	0	14	0	88
Through Volume	0	258	0	7	0	30	0	8
Right Turning Volume	0	0	19	0	72	0	78	0
Lane Flow Rate	0	798	31	90	103	104	162	140
Geometry Group	7	7	7	7	7	7	7	7
Degree of Utilization, X	0	1	0.073	0.191	0.226	0.199	0.322	0.254
Departure Headway, Hd	6.205	5.938	8.4	7.594	7.914	6.904	7.135	6.56
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	0	615	428	474	455	522	505	548
Service Time	3.941	3.674	6.125	5.319	5.638	4.628	4.862	4.287
HCM Lane V/C Ratio	0	1.298	0.072	0.19	0.226	0.199	0.321	0.255
HCM Control Delay	8.9	60.5	11.8	12.1	12.9	11.3	13.2	11.5
HCM Lane LOS	N	F	B	B	B	B	B	B
HCM 95th Percentile Queue	0	116.4	0.2	0.7	0.9	0.7	1.4	1

Intersection	
Intersection Delay (sec/veh):	65.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	339	0	1	95	219	0	0	1	282	1	32
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.83	0.25	0.25	0.60	0.82	0.25	0.25	0.25	0.74	0.25	0.47
Heavy Vehicles(%)	2	4	0	0	2	2	0	0	0	0	0	0
Movement Flow Rate	63	408	0	4	158	267	0	0	4	381	4	68
Number of Lanes	1	1	0	1	1	0	0	1	0	1	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	425	0	-	408	0	0	870	967	204	836	834	213
Stage 1	-	-	-	-	-	-	534	534	-	300	300	-
Stage 2	-	-	-	-	-	-	336	433	-	536	534	-
Follow-up Headway	2.218	-	0	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1134	-	0	1162	-	-	274	256	842	# 289	306	832
Stage 1	-	-	0	-	-	-	534	528	-	713	670	-
Stage 2	-	-	0	-	-	-	682	585	-	532	528	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1134	-	-	1162	-	-	238	241	842	# 275	288	832
Mov Capacity-2 Maneuver	-	-	-	-	-	-	238	241	-	# 275	288	-
Stage 1	-	-	-	-	-	-	504	499	-	673	668	-
Stage 2	-	-	-	-	-	-	620	583	-	500	499	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	1.1	0.1	9.3	195.2
HCM LOS	A	A	A	F

Lane	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (vph)	842						275	753
HCM Control Delay (s)	9.3	8.362	0	8.109	0	-	230.2	10.3
HCM Lane VC Ratio	0.005	0.056	-	0.003	-	-	1.386	0.096
HCM Lane LOS	A	A	A	A	A	-	F	B
HCM 95th Percentile Queue (veh)	0.014	0.177	-	0.01	-	-	20.3	0.316

Intersection	
Intersection Delay (sec/veh):	139.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	34	605	75	7	270	61	37	47	19	86	124	17
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.76	0.76	0.50	0.87	0.84	0.69	0.81	0.35	0.83	0.74	0.63
Heavy Vehicles(%)	17	2	6	17	3	2	6	7	0	0	0	0
Movement Flow Rate	50	796	99	14	310	73	54	58	54	104	168	27
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Major/Minor		Major 1			Major 2			Minor 1			Minor 2	
Conflicting Flow Rate - All	383	0	0	895	0	0	1418	1357	448	1377	1370	192
Stage 1	-	-	-	-	-	-	946	946	-	375	375	-
Stage 2	-	-	-	-	-	-	472	411	-	1002	995	-
Follow-up Headway	2.353	-	-	2.353	-	-	3.554	4.063	3.3	3.5	4	3.3
Pot Capacity-1 Maneuver	1098	-	-	699	-	-	112	146	615	123	# 148	855
Stage 1	-	-	-	-	-	-	309	334	-	650	621	-
Stage 2	-	-	-	-	-	-	565	586	-	295	325	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1098	-	-	699	-	-	-	137	615	# 72	# 138	855
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	137	-	# 72	# 138	-
Stage 1	-	-	-	-	-	-	295	319	-	620	609	-
Stage 2	-	-	-	-	-	-	389	574	-	210	310	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.4	0.4	-	$ 844.8
HCM LOS	A	A	-	F

Lane	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	-							111
HCM Control Delay (s)	-	8.435	0	-	10.255	0	-	$ -1
HCM Lane VC Ratio	-	0.046	-	-	0.02	-	-	2.686
HCM Lane LOS	-	A	A	-	B	A	-	F
HCM 95th Percentile Queue (veh)	-	0.143	-	-	0.061	-	-	27.467

Intersection	
Intersection Delay (sec/veh):	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	12	0	1	0	0	0	5	33	0	0	176	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.25	0.25	0.25	0.25	0.25	0.50	0.81	0.25	0.25	0.66	0.50
Heavy Vehicles(%)	18	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	22	0	4	0	0	0	10	41	0	0	267	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Major/Minor		Minor 2			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All	333	333	272	335	338	41	277	0	0	41	0	0
Stage 1	272	272	-	61	61	-	-	-	-	-	-	-
Stage 2	61	61	-	274	277	-	-	-	-	-	-	-
Follow-up Headway	3.662	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	591	590	772	622	586	1036	1298	-	-	1581	-	-
Stage 1	700	688	-	955	848	-	-	-	-	-	-	-
Stage 2	912	848	-	736	685	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	587	585	772	615	581	1036	1298	-	-	1581	-	-
Mov Capacity-2 Maneuver	587	585	-	615	581	-	-	-	-	-	-	-
Stage 1	694	688	-	947	841	-	-	-	-	-	-	-
Stage 2	905	841	-	732	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	11.2	0	1.5	0
HCM LOS	B	A	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				610	0			
HCM Control Delay (s)	7.795	0	-	11.2	0	0	-	-
HCM Lane VC Ratio	0.008	-	-	0.042	-	-	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th Percentile Queue (veh)	0.023	-	-	0.132	-	0	-	-

Intersection	
Intersection Delay (sec/veh):	135.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	11	38	189	41	16	37	28	268	34	93	1069	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.77	0.84	0.64	0.58	0.49	0.78	0.86	0.94	0.80	0.94	0.63
Heavy Vehicles(%)	0	0	0	0	0	0	0	1	0	1	0	0
Movement Flow Rate	22	49	225	64	28	76	36	312	36	116	1137	17
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1620	1798	578	1227	1788	174	1154	0	0	348	0	0
Stage 1	1378	1378	-	402	402	-	-	-	-	-	-	-
Stage 2	242	420	-	825	1386	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.21	-	-
Pot Capacity-1 Maneuver	70	81	464	137	82	846	613	-	-	1215	-	-
Stage 1	155	214	-	601	604	-	-	-	-	-	-	-
Stage 2	746	593	-	337	212	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	39	69	464	# 27	70	846	613	-	-	1215	-	-
Mov Capacity-2 Maneuver	39	69	-	# 27	70	-	-	-	-	-	-	-
Stage 1	146	194	-	566	569	-	-	-	-	-	-	-
Stage 2	609	558	-	117	192	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	$ 414.1	$ 976.4	1.2	0.9
HCM LOS	F	F	A	A

Lane	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (vph)				168	59			
HCM Control Delay (s)	11.238	0.2	-	$ 976.4	$ 976.4	8.276	0.2	-
HCM Lane VC Ratio	0.059	-	-	1.764	2.833	0.096	-	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th Percentile Queue (veh)	0.186	-	-	21.269	17.171	0.317	-	-

Intersection	
Intersection Delay (sec/veh):	152.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	32	994	173	73	302	0	0	0	0	161	2	116
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	Free	Free	Free
Storage Length	0		0	0		0	0		0	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.80	0.68	0.73	0.25	0.25	0.25	0.25	0.83	0.50	0.61
Heavy Vehicles(%)	0	0	0	2	0	0	0	0	0	4	0	2
Movement Flow Rate	128	1143	216	107	414	0	0	0	0	194	4	190
Number of Lanes	0	3	0	1	2	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2						Minor 2		
Conflicting Flow Rate - All	414	0	0	1359	0	-				1341	2243	207
Stage 1	-	-	-	-	-	-				628	628	-
Stage 2	-	-	-	-	-	-				713	1615	-
Follow-up Headway	3.1	-	-	3.12	-	0				3.84	4	3.92
Pot Capacity-1 Maneuver	751	-	-	262	-	0				# 158	43	680
Stage 1	-	-	-	-	-	0				355	479	-
Stage 2	-	-	-	-	-	0				350	164	-
Time blocked-Platoon(%)	0	-	-	0	-	0				0	0	0
Mov Capacity-1 Maneuver	751	-	-	262	-	-				# 42	6	680
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 42	6	-
Stage 1	-	-	-	-	-	-				# 81	283	-
Stage 2	-	-	-	-	-	-				# 80	38	-

Approach	EB	WB	SB
HCM Control Delay (s)	2.5	5.8	$ 926.1
HCM LOS	A	A	F

Lane	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)						42	680
HCM Control Delay (s)	10.776	2.1	-	27.959	-	$ -1	12.3
HCM Lane VC Ratio	0.17	-	-	0.41	-	4.618	0.28
HCM Lane LOS	B	A	-	D	-	F	B
HCM 95th Percentile Queue (veh)	0.612	-	-	1.896	-	22.264	1.143

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	912	251	0	306	143	38	0	61	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	Yield	Yield	Yield	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.91	0.94	0.25	0.68	0.79	0.81	0.25	0.90	0.25	0.25	0.25
Heavy Vehicles(%)	0	1	1	0	0	3	0	0	4	0	0	0
Movement Flow Rate	0	1002	267	0	450	181	47	0	68	0	0	0
Number of Lanes	0	2	0	0	2	1	1	0	1	0	0	0

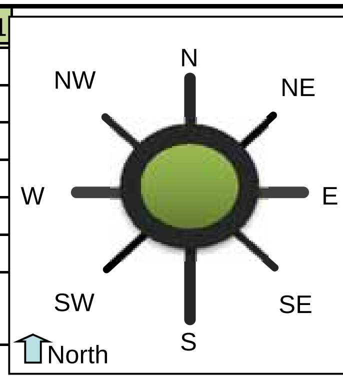
Major/Minor	Major 1			Major 2			Minor 1		
Conflicting Flow Rate - All	-	0	0	-	0	0	1361	~	635
Stage 1	-	-	-	-	-	-	1136	-	-
Stage 2	-	-	-	-	-	-	225	-	-
Follow-up Headway	0	-	-	0	-	-	3.5	0	3.34
Pot Capacity-1 Maneuver	0	-	-	0	-	-	109	0	416
Stage 1	0	-	-	0	-	-	218	0	-
Stage 2	0	-	-	0	-	-	763	0	-
Time blocked-Platoon(%)	0	-	-	0	-	-	0	0	0
Mov Capacity-1 Maneuver	-	-	-	-	-	-	109	-	416
Mov Capacity-2 Maneuver	-	-	-	-	-	-	109	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	763	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	34
HCM LOS	A	A	D

Lane	NBLn1	NBLn2	EBT	EBR	WBT	WBR
Capacity (vph)	109	416				
HCM Control Delay (s)	60.9	15.3	-	-	-	-
HCM Lane VC Ratio	0.43	0.163	-	-	-	-
HCM Lane LOS	F	C	-	-	-	-
HCM 95th Percentile Queue (veh)	1.834	0.576	-	-	-	-

General & Site Information v2.1

Analyst:	Cardno TEC, Inc.
Agency/Co:	Solana Beach, CA
Date:	9/10/2012
Project or PI#:	ARCYBER
Year, Peak Hour:	2016, PM
County/District:	Augusta GA
Intersection:	Lane Rd./Ave. of the States Base + Alt G PM



Volumes

		Entry Legs (FROM)							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
	N (1), vph					102			
Exit	NE (2), vph								
Legs	E (3), vph		91						
(TO)	SE (4), vph								
	S (5), vph	583							
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	583	91	0	0	102	0	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		Left-Thru	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph		204						
	NE (2), vph								
	E (3), vph	173							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	173	204	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	1	0	2	0	0	0
# of Conflict Flow Lanes	2	2	2	2	1	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% Heavy Vehicles	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	111	0	222	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	99	0	0	0	188	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	634	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	733	0	111	0	410	0	0	0
	Entry flow Lane 1, pcu/h	634	0	111	0	188	0	0	0
	Entry flow Lane 2, pcu/h	99	0	0	0	222	0	0	0
	Conflicting flow, pcu/h	0	0	222	0	99	0	0	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1130	1130	968	NA	1024	1024	NA	NA
Entry Flow Rates, veh/h	634	99	111	NA	188	222	NA	NA
V/C ratio	**0.56**	**0.09**	**0.11**		**0.18**	**0.22**		
Control Delay, s/veh	**10.0**	**3.9**	**4.8**		**5.2**	**5.6**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**90**	**7**	**10**		**17**	**21**		
Approach Delay, LOS	9.2 sec, LOS A		4.8 sec, LOS A		5.4 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
Control Delay, sec/pcu			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	**N**		**E**		**S**		**W**	
Lane Designations	*Left-Thru*	*Right-Thru*	*Left-Thru*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1640	1640	1343	NA	1304	1304	NA	NA
Entry Flow Rates, veh/h	634	99	111	NA	188	222	NA	NA
V/C ratio	**0.39**	**0.06**	**0.08**		**0.14**	**0.17**		
Control Delay, s/veh	**5.5**	**2.6**	**3.3**		**3.9**	**4.2**		
LOS	A	A	A		A	A		
95th % Queue (ft)	**47**	**5**	**7**		**13**	**15**		
Approach Delay, LOS	5.1 sec, LOS A		3.3 sec, LOS A		4.1 sec, LOS A			
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
Control Delay, sec/pcu			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			**#VALUE!**	**#VALUE!**			**#VALUE!**	**#VALUE!**
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
*******Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.***						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

Attachment 7

Mitigation Worksheets – Fort Meade

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	32	19	46	7	158	7	828	141	380	858	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1900	1900	1881	1900	1881	1900	1900	1900	1900
Lanes	0	1	0	0	1	1	1	1	1	1	1	1
Capacity, veh/h	0	147	100	0	265	223	23	925	794	445	1376	1170
Arriving On Green	0.00	0.14	0.14	0.00	0.14	0.14	0.01	0.49	0.49	0.33	0.96	0.96
Sat Flow, veh/h	0.0	1055.7	717.7	0.0	1599.0	1599.0	1809.5	1615.0	1615.0	1809.5	1615.0	1615.0
Grp Volume(v), veh/h	0.0	0.0	68.0	0.0	21.2	190.4	14.0	880.9	183.1	463.4	1009.4	21.4
Grp Sat Flow(s),veh/h/ln	0.0	0.0	1773.4	0.0	1900.0	1599.0	1809.5	1881.2	1615.0	1809.5	1900.0	1615.0
Q Serve(g_s), s	0.0	0.0	3.4	0.0	0.9	11.4	0.8	43.7	6.3	24.0	6.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	3.4	0.0	0.9	11.4	0.8	43.7	6.3	24.0	6.4	0.0
Proportion In Lane	0.000		0.405	0.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	0.0	0.0	247.8	0.0	265.4	223.4	23.4	924.8	793.9	444.8	1376.5	1170.0
V/C Ratio(X)	0.000	0.000	0.275	0.000	0.080	0.852	0.598	0.952	0.231	1.042	0.733	0.018
Avail Cap(c_a), veh/h	0.0	0.0	290.6	0.0	311.3	262.0	74.1	924.8	793.9	444.8	1376.5	1170.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	0.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.927	0.927	0.927
Uniform Delay (d), s/veh	0.0	0.0	37.6	0.0	36.5	41.0	47.9	23.7	14.2	32.9	0.6	0.5
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.1	20.3	22.0	19.1	0.1	52.4	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	0.0	0.0	38.2	0.0	36.7	61.3	69.9	42.8	14.4	85.3	2.5	0.5
Lane Group LOS			D		D	E	E	D	B	F	A	A
Approach Volume, veh/h		68			212			1078			1494	
Approach Delay, s/veh		38.2			58.9			38.3			28.2	
Approach LOS		D			E			D			C	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	0.00	17.64		0.00	17.64		5.26	52.00		28.00	74.74	
Change Period (Y+Rc), s	4.00	4.00		4.00	4.00		4.00	4.00		4.00	4.00	
Max Green Setting (Gmax), s	16.00	16.00		16.00	16.00		4.00	48.00		24.00	68.00	
Max Q Clear Time (g_c+I1), s	0.00	5.35		0.00	13.35		2.75	45.71		26.00	8.45	
Green Extension Time (p_c)	0.00	0.81		0.00	0.29		0.00	2.10		0.00	30.27	
Intersection Summary												
HCM 2010 Control Delay			34.5									
HCM 2010 Level of Service			C									

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1068	5	27	1783	31	102
Number	2	12	1	6	3	18
Initial Queue, veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking, Bus Adj	1.00	1.00	0.00	1.00	1.00	0.00
Adj Sat Flow Rate	1881	1881	1878	1878	1872	1872
Lanes	1	0	0	1	1	0
Capacity, veh/h	1794	10	0	1802	0	0
Arriving On Green	0.96	0.96	0.00	0.96	0.00	0.00
Sat Flow, veh/h	1868.7	10.7	0.0	1877.5	0.0	
Grp Volume(v), veh/h	0.0	1167.5	0.0	1857.3	0.0	
Grp Sat Flow(s),veh/h/ln	0.0	1879.4	0.0	1877.5	0.0	
Q Serve(g_s), s	0.0	6.6	0.0	96.0	0.0	
Cycle Q Clear(g_c), s	0.0	6.6	0.0	96.0	0.0	
Proportion In Lane		0.006	0.000		0.000	
Lane Grp Cap(c), veh/h	0.0	1804.2	0.0	1802.4	0.0	
V/C Ratio(X)	0.000	0.647	0.000	1.030	0.000	
Avail Cap(c_a), veh/h	0.0	1804.2	0.0	1802.4	0.0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	0.000	1.000	0.000	1.000	0.000	
Uniform Delay (d), s/veh	0.0	0.2	0.0	2.0	0.0	
Incr Delay (d2), s/veh	0.0	0.8	0.0	29.4	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	
Lane Group Delay (d), s/veh	0.0	1.0	0.0	31.4	0.0	
Lane Group LOS		A		F		
Approach Volume, veh/h	1168			1857	0	
Approach Delay, s/veh	1.0			31.4	0.0	
Approach LOS	A			C		

Timer						
Assigned Phase	2		1	6		
Phase Duration (G+Y+Rc), s	100.00		0.00	100.00		
Change Period (Y+Rc), s	4.00		4.00	4.00		
Max Green Setting (Gmax), s	88.00		4.00	96.00		
Max Q Clear Time (g_c+I1), s	8.56		0.00	98.00		
Green Extension Time (p_c)	78.40		0.00	0.00		

Intersection Summary		
HCM 2010 Control Delay		19.7
HCM 2010 Level of Service		B

Attachment 8

Mitigation Worksheets – Fort Gordon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	133	55	53	332	70	37	186	64	283	432	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1712	1712	1900	1834	1834	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	240	477	200	418	586	151	300	335	104	426	837	719
Arriving On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.24	0.24	0.24	0.16	0.45	0.45
Sat Flow, veh/h	869.7	1146.4	481.1	1123.1	1407.0	363.1	905.4	1386.6	428.8	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	273.6	89.8	0.0	509.4	62.7	0.0	343.0	329.1	508.2	279.2
Grp Sat Flow(s),veh/h/ln	869.7	0.0	1627.5	1123.1	0.0	1770.1	905.4	0.0	1815.4	1756.8	1881.2	1615.0
Q Serve(g_s), s	9.2	0.0	10.2	5.3	0.0	20.4	4.9	0.0	15.3	11.5	17.8	10.0
Cycle Q Clear(g_c), s	29.6	0.0	10.2	15.5	0.0	20.4	5.1	0.0	15.3	11.5	17.8	10.0
Proportion In Lane	1.000		0.296	1.000		0.205	1.000		0.236	1.000		1.000
Lane Grp Cap(c), veh/h	240.1	0.0	677.4	418.2	0.0	736.8	300.2	0.0	438.9	425.7	837.2	718.7
V/C Ratio(X)	0.416	0.000	0.404	0.215	0.000	0.691	0.209	0.000	0.781	0.773	0.607	0.389
Avail Cap(c_a), veh/h	240.1	0.0	677.4	418.2	0.0	736.8	332.5	0.0	503.8	434.3	913.5	784.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.617	0.000	0.617	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	32.8	0.0	17.7	23.1	0.0	20.7	26.9	0.0	30.7	20.2	18.3	16.1
Incr Delay (d2), s/veh	3.3	0.0	1.1	1.2	0.0	5.3	0.3	0.0	6.8	8.3	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	36.1	0.0	18.8	24.3	0.0	26.0	27.2	0.0	37.5	28.5	19.3	16.4
Lane Group LOS	D		B	C		C	C		D	C	B	B
Approach Volume, veh/h		374			599			406			1117	
Approach Delay, s/veh		23.4			25.7			35.9			21.3	
Approach LOS		C			C			D			C	

Timer	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Assigned Phase		2			6			8		7	4	
Phase Duration (G+Y+Rc), s		42.00			42.00			26.91		17.58	44.49	
Change Period (Y+Rc), s		6.00			6.00			6.00		4.00	6.00	
Max Green Setting (Gmax), s		36.00			36.00			24.00		14.00	42.00	
Max Q Clear Time (g_c+I1), s		31.61			22.40			17.28		13.52	19.77	
Green Extension Time (p_c)		3.16			8.13			3.64		0.06	7.29	

Intersection Summary			
HCM 2010 Control Delay			25.0
HCM 2010 Level of Service			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	131	0	0	388	68	0	1	0	137	2	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1845	0	0	1825	1825	0	1900	0	1863	1751	1751
Lanes	1	1	0	1	1	0	0	1	0	1	1	0
Capacity, veh/h	419	1114	0	190	963	118	0	352	0	448	16	263
Arriving On Green	0.60	0.60	0.00	0.00	0.60	0.60	0.00	0.19	0.00	0.19	0.19	0.19
Sat Flow, veh/h	722.9	1844.7	0.0	0.0	1595.2	195.4	0.0	1900.0	0.0	1406.7	85.0	1416.3
Grp Volume(v), veh/h	36.0	181.9	0.0	0.0	0.0	750.9	0.0	4.0	0.0	167.1	0.0	70.7
Grp Sat Flow(s),veh/h/ln	722.9	1844.7	0.0	0.0	0.0	1790.5	0.0	1900.0	0.0	1406.7	0.0	1501.3
Q Serve(g_s), s	1.4	1.6	0.0	0.0	0.0	10.9	0.0	0.1	0.0	4.2	0.0	1.5
Cycle Q Clear(g_c), s	12.2	1.6	0.0	0.0	0.0	10.9	0.0	0.1	0.0	4.2	0.0	1.5
Proportion In Lane	1.000		0.000	1.000		0.109	0.000		0.000	1.000		0.943
Lane Grp Cap(c), veh/h	419.3	1114.0	0.0	189.5	0.0	1081.4	0.0	352.4	0.0	448.0	0.0	278.5
V/C Ratio(X)	0.086	0.163	0.000	0.000	0.000	0.694	0.000	0.011	0.000	0.373	0.000	0.254
Avail Cap(c_a), veh/h	1086.3	2816.3	0.0	189.5	0.0	2733.7	0.0	1200.3	0.0	1075.8	0.0	948.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	9.3	3.3	0.0	0.0	0.0	5.1	0.0	12.6	0.0	14.4	0.0	13.2
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.4	3.4	0.0	0.0	0.0	5.9	0.0	12.6	0.0	14.9	0.0	13.7
Lane Group LOS	A	A				A		B		B		B
Approach Volume, veh/h		218			751			4			238	
Approach Delay, s/veh		4.4			5.9			12.6			14.5	
Approach LOS		A			A			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		26.94			26.94			11.05			11.05	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		58.00			58.00			24.00			24.00	
Max Q Clear Time (g_c+I1), s		14.23			12.87			2.07			6.24	
Green Extension Time (p_c)		8.72			8.75			0.86			0.80	

Intersection Summary			
HCM 2010 Control Delay			7.4
HCM 2010 Level of Service			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	213	68	15	368	118	20	44	5	44	43	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1791	1791	1900	1848	1848	1842	1842	1842	1791	1791	1791
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Capacity, veh/h	457	734	228	628	718	269	172	276	33	167	140	128
Arriving On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	824.4	1311.4	407.5	1016.6	1282.4	480.7	445.4	758.1	142.5	348.3	418.2	550.8
Grp Volume(v), veh/h	45.7	0.0	382.4	23.1	0.0	609.6	108.9	0.0	0.0	213.1	0.0	0.0
Grp Sat Flow(s),veh/h/ln	824.4	0.0	1718.9	1016.6	0.0	1763.1	1552.8	0.0	0.0	1366.4	0.0	0.0
Q Serve(g_s), s	1.5	0.0	4.8	0.5	0.0	9.0	0.0	0.0	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	4.8	5.4	0.0	9.0	1.9	0.0	0.0	5.0	0.0	0.0
Proportion In Lane	1.000		0.237	1.000		0.273	0.287		0.092	0.255		0.403
Lane Grp Cap(c), veh/h	456.6	0.0	961.8	627.9	0.0	986.6	481.4	0.0	0.0	435.1	0.0	0.0
V/C Ratio(X)	0.100	0.000	0.398	0.037	0.000	0.618	0.226	0.000	0.000	0.490	0.000	0.000
Avail Cap(c_a), veh/h	1131.3	0.0	2368.5	1459.9	0.0	2429.5	1117.7	0.0	0.0	1072.8	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	9.2	0.0	4.8	6.3	0.0	5.7	12.1	0.0	0.0	12.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.6	0.2	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.3	0.0	5.1	6.3	0.0	6.3	12.3	0.0	0.0	13.7	0.0	0.0
Lane Group LOS	A		A	A		A	B			B		
Approach Volume, veh/h		428			633			109			213	
Approach Delay, s/veh		5.5			6.3			12.3			13.7	
Approach LOS		A			A			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		25.52			25.52			12.94			12.94	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		53.00			53.00			29.00			29.00	
Max Q Clear Time (g_c+I1), s		12.47			10.95			3.89			6.96	
Green Extension Time (p_c)		9.05			9.10			2.06			1.98	

Intersection Summary			
HCM 2010 Control Delay			7.7
HCM 2010 Level of Service			A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	68	21	173	219	61	558
Number	7	14	5	2	6	16
Initial Queue, veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1900	1900	1881	1712	1712
Lanes	1	1	1	1	1	1
Capacity, veh/h	227	203	1043	1205	1096	932
Arriving On Green	0.13	0.13	0.64	0.64	0.64	0.00
Sat Flow, veh/h	1809.5	1615.0	1337.9	1881.2	1711.7	1455.0
Grp Volume(v), veh/h	136.0	84.0	692.0	270.4	81.3	0.0
Grp Sat Flow(s),veh/h/ln	1809.5	1615.0	1337.9	1881.2	1711.7	1455.0
Q Serve(g_s), s	2.4	1.6	13.8	2.1	0.6	0.0
Cycle Q Clear(g_c), s	2.4	1.6	14.5	2.1	0.6	0.0
Proportion In Lane	1.000	1.000	1.000			1.000
Lane Grp Cap(c), veh/h	227.5	203.0	1043.3	1204.9	1096.3	931.9
V/C Ratio(X)	0.598	0.414	0.663	0.224	0.074	0.000
Avail Cap(c_a), veh/h	846.1	755.2	5113.0	6927.2	6303.1	5357.7
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	14.1	13.8	5.0	2.6	2.3	0.0
Incr Delay (d2), s/veh	2.5	1.3	0.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	16.6	15.1	5.8	2.7	2.4	0.0
Lane Group LOS	B	B	A	A	A	
Approach Volume, veh/h	220			962	81	
Approach Delay, s/veh	16.1			4.9	2.4	
Approach LOS	B			A	A	
Timer						
Assigned Phase				2	6	
Phase Duration (G+Y+Rc), s				25.92	25.92	
Change Period (Y+Rc), s				4.00	4.00	
Max Green Setting (Gmax), s				126.00	126.00	
Max Q Clear Time (g_c+I1), s				16.45	2.61	
Green Extension Time (p_c)				5.46	5.46	
Intersection Summary						
HCM 2010 Control Delay			6.7			
HCM 2010 Level of Service			A			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	497	154	32	33	176	91
Number	7	14	5	2	6	16
Initial Queue, veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking, Bus Adj	0.00	0.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1610	1900	1900	1845	1900	1900
Lanes	1	1	1	1	1	1
Capacity, veh/h	0	0	1335	1065	1097	932
Arriving On Green	0.00	0.00	0.58	0.58	0.58	0.58
Sat Flow, veh/h	0		1130.3	1844.7	1900.0	1615.0
Grp Volume(v), veh/h	0.0		64.0	40.7	266.7	182.0
Grp Sat Flow(s),veh/h/ln			1130.3	1844.7	1900.0	1615.0
Q Serve(g_s), s			0.3	0.1	0.7	0.5
Cycle Q Clear(g_c), s			0.9	0.1	0.7	0.5
Proportion In Lane			1.000			1.000
Lane Grp Cap(c), veh/h			1335.5	1064.6	1096.5	932.0
V/C Ratio(X)			0.048	0.038	0.243	0.195
Avail Cap(c_a), veh/h			3192.6	4095.5	4218.3	3585.6
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh			1.2	0.9	1.0	1.0
Incr Delay (d2), s/veh			0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh			1.2	0.9	1.1	1.1
Lane Group LOS			A	A	A	A
Approach Volume, veh/h				105	449	
Approach Delay, s/veh				1.1	1.1	
Approach LOS				A	A	

Timer						
Assigned Phase				2	6	
Phase Duration (G+Y+Rc), s				9.46	9.46	
Change Period (Y+Rc), s				4.00	4.00	
Max Green Setting (Gmax), s				21.00	21.00	
Max Q Clear Time (g_c+I1), s				2.93	2.65	
Green Extension Time (p_c)				2.53	2.54	

Intersection Summary						
HCM 2010 Control Delay			1.1			
HCM 2010 Level of Service			A			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	251	36	36	997	0	0	0	0	34	0	297
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Adj Sat Flow Rate	0	1900	1900	1743	1900	0	0	0	0	1900	0	1900
Lanes	0	3	0	1	2	0	0	0	0	1	0	1
Capacity, veh/h	0	3166	544	836	2564	0	0	0	0	73	0	0
Arriving On Green	0.00	0.71	0.71	0.71	0.71	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h		4596.1	765.9	894.4	3705.0	0.0		0		1809.5	59	
Grp Volume(v), veh/h		279.9	148.1	49.3	1146.0	0.0		0.0		58.6	33.7	
Grp Sat Flow(s),veh/h/ln		1729.0	1764.8	894.4	1805.0	0.0				1809.5	C	
Q Serve(g_s), s		0.8	0.9	0.6	4.3	0.0				1.0		
Cycle Q Clear(g_c), s		0.8	0.9	1.4	4.3	0.0				1.0		
Proportion In Lane			0.434	1.000		0.000				1.000		
Lane Grp Cap(c), veh/h		2456.2	1253.6	836.1	2564.2	0.0				72.7		
V/C Ratio(X)		0.114	0.118	0.059	0.447	0.000				0.807		
Avail Cap(c_a), veh/h		4961.9	2532.4	1484.2	5180.0	0.0				2032.0		
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00				1.00		
Upstream Filter(I)		1.000	1.000	1.000	1.000	0.000				1.000		
Uniform Delay (d), s/veh		1.5	1.5	1.7	2.0	0.0				15.3		
Incr Delay (d2), s/veh		0.0	0.0	0.0	0.1	0.0				18.4		
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0				0.0		
Lane Group Delay (d), s/veh		1.5	1.5	1.7	2.1	0.0				33.7		
Lane Group LOS		A	A	A	A					C		
Approach Volume, veh/h		428			1195							
Approach Delay, s/veh		1.5			2.1							
Approach LOS		A			A							

Timer												
Assigned Phase		2			6					7		
Phase Duration (G+Y+Rc), s		26.77			26.77					5.29		
Change Period (Y+Rc), s		4.00			4.00					4.00		
Max Green Setting (Gmax), s		46.00			46.00					36.00		
Max Q Clear Time (g_c+I1), s		2.85			6.32					3.03		
Green Extension Time (p_c)		16.96			16.45					0.13		

Intersection Summary			
HCM 2010 Control Delay			3.0
HCM 2010 Level of Service			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	111	55	53	155	85	37	195	64	403	503	215
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1706	1706	1900	1841	1841	1900	1891	1891	1845	1881	1900
Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Capacity, veh/h	371	440	221	437	423	284	251	347	102	427	851	730
Arriving On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.25	0.25	0.25	0.16	0.45	0.45
Sat Flow, veh/h	1039.0	1072.2	539.1	1156.3	1028.8	690.5	838.1	1404.1	414.2	1756.8	1615.0	1615.0
Grp Volume(v), veh/h	100.0	0.0	241.8	89.8	0.0	315.9	62.7	0.0	355.7	468.6	591.8	279.2
Grp Sat Flow(s),veh/h/ln	1039.0	0.0	1611.2	1156.3	0.0	1719.3	838.1	0.0	1818.3	1756.8	1881.2	1615.0
Q Serve(g_s), s	6.7	0.0	9.1	5.1	0.0	11.6	5.7	0.0	16.0	14.0	22.0	10.0
Cycle Q Clear(g_c), s	18.4	0.0	9.1	14.2	0.0	11.6	9.7	0.0	16.0	14.0	22.0	10.0
Proportion In Lane	1.000		0.335	1.000		0.402	1.000		0.228	1.000		1.000
Lane Grp Cap(c), veh/h	371.2	0.0	661.9	436.9	0.0	706.3	250.5	0.0	448.9	427.3	850.8	730.4
V/C Ratio(X)	0.269	0.000	0.365	0.206	0.000	0.447	0.250	0.000	0.792	1.097	0.696	0.382
Avail Cap(c_a), veh/h	371.2	0.0	661.9	436.9	0.0	706.3	273.2	0.0	498.0	427.3	901.6	774.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.749	0.000	0.749	1.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	25.3	0.0	17.9	22.8	0.0	18.6	30.2	0.0	30.9	23.3	19.2	15.9
Incr Delay (d2), s/veh	1.3	0.0	1.2	1.1	0.0	2.0	0.5	0.0	7.8	72.3	2.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	26.6	0.0	19.1	23.9	0.0	20.7	30.8	0.0	38.7	95.6	21.4	16.2
Lane Group LOS	C		B	C		C	C		D	F	C	B
Approach Volume, veh/h		342			406			418			1340	
Approach Delay, s/veh		21.3			21.4			37.5			46.2	
Approach LOS		C			C			D			D	
Timer												
Assigned Phase		2			6			8		7	4	
Phase Duration (G+Y+Rc), s		42.00			42.00			27.63		18.00	45.63	
Change Period (Y+Rc), s		6.00			6.00			6.00		4.00	6.00	
Max Green Setting (Gmax), s		36.00			36.00			24.00		14.00	42.00	
Max Q Clear Time (g_c+I1), s		20.36			16.23			18.05		16.00	24.03	
Green Extension Time (p_c)		6.78			7.76			3.58		0.00	7.48	
Intersection Summary												
HCM 2010 Control Delay			37.4									
HCM 2010 Level of Service			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	128	82	46	123	12	170	207	32	17	71	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1850	1850	1850	1757	1757	1757	1870	1870	1870	1830	1830	1830
Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Capacity, veh/h	136	281	136	178	310	48	298	397	66	153	512	281
Arriving On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	256.7	737.2	457.2	398.8	707.3	160.1	448.5	615.3	123.7	223.2	702.4	529.9
Grp Volume(v), veh/h	324.2	0.0	0.0	283.2	0.0	0.0	550.9	0.0	0.0	195.5	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1554.7	0.0	0.0	1472.9	0.0	0.0	1235.4	0.0	0.0	1616.8	0.0	0.0
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.6	0.0	0.0	6.3	0.0	0.0	16.4	0.0	0.0	2.8	0.0	0.0
Proportion In Lane	0.165		0.294	0.271		0.109	0.363		0.100	0.138		0.328
Lane Grp Cap(c), veh/h	552.0	0.0	0.0	535.9	0.0	0.0	761.3	0.0	0.0	946.1	0.0	0.0
V/C Ratio(X)	0.587	0.000	0.000	0.528	0.000	0.000	0.724	0.000	0.000	0.207	0.000	0.000
Avail Cap(c_a), veh/h	1059.3	0.0	0.0	960.1	0.0	0.0	1414.7	0.0	0.0	1695.7	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.7	0.0	0.0	8.2	0.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.8	0.0	0.0	1.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.9	0.0	0.0	14.5	0.0	0.0	9.5	0.0	0.0	5.9	0.0	0.0
Lane Group LOS	B			B			A			A		
Approach Volume, veh/h		324			283			551			195	
Approach Delay, s/veh		14.9			14.5			9.5			5.9	
Approach LOS		B			B			A			A	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	17.75	17.75	28.58	28.58
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	31.00	31.00	51.00	51.00
Max Q Clear Time (g_c+I1), s	9.63	8.35	18.45	4.77
Green Extension Time (p_c)	4.13	4.21	6.14	6.44

Intersection Summary	
HCM 2010 Control Delay	11.3
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	196	68	15	234	189	20	44	5	53	43	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1793	1793	1900	1837	1837	1842	1842	1842	1789	1789	1789
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Capacity, veh/h	496	700	236	652	475	448	186	257	31	210	151	64
Arriving On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	872.6	1283.2	433.3	1038.5	870.1	821.5	438.7	766.7	140.4	465.1	453.3	291.6
Grp Volume(v), veh/h	40.7	0.0	359.2	23.1	0.0	548.1	108.9	0.0	0.0	179.3	0.0	0.0
Grp Sat Flow(s),veh/h/ln	872.6	0.0	1716.5	1038.5	0.0	1691.6	1529.2	0.0	0.0	1274.8	0.0	0.0
Q Serve(g_s), s	1.1	0.0	4.1	0.4	0.0	7.5	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	4.1	4.6	0.0	7.5	1.7	0.0	0.0	3.8	0.0	0.0
Proportion In Lane	1.000		0.252	1.000		0.486	0.287		0.092	0.365		0.229
Lane Grp Cap(c), veh/h	496.0	0.0	936.1	651.7	0.0	922.5	473.3	0.0	0.0	425.2	0.0	0.0
V/C Ratio(X)	0.082	0.000	0.384	0.035	0.000	0.594	0.230	0.000	0.000	0.422	0.000	0.000
Avail Cap(c_a), veh/h	1370.5	0.0	2656.3	1692.5	0.0	2617.8	1245.4	0.0	0.0	1123.2	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	8.1	0.0	4.5	5.8	0.0	5.2	11.1	0.0	0.0	11.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.6	0.2	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.2	0.0	4.7	5.8	0.0	5.9	11.3	0.0	0.0	12.1	0.0	0.0
Lane Group LOS	A		A	A		A	B			B		
Approach Volume, veh/h		400			571			109			179	
Approach Delay, s/veh		5.1			5.8			11.3			12.1	
Approach LOS		A			A			B			B	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	22.68	22.68	11.57	11.57
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	53.00	53.00	29.00	29.00
Max Q Clear Time (g_c+I1), s	10.59	9.46	3.71	5.82
Green Extension Time (p_c)	8.09	8.11	1.79	1.75

Intersection Summary	
HCM 2010 Control Delay	7.0
HCM 2010 Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	251	36	36	997	0	0	0	0	34	0	297
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Adj Sat Flow Rate	0	1900	1900	1743	1900	0	0	0	0	1900	0	1900
Lanes	0	3	0	1	2	0	0	0	0	1	0	1
Capacity, veh/h	0	3166	544	836	2564	0	0	0	0	73	0	0
Arriving On Green	0.00	0.71	0.71	0.71	0.71	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h		4596.1	765.9	894.4	3705.0	0.0		0		1809.5	59	
Grp Volume(v), veh/h		279.9	148.1	49.3	1146.0	0.0		0.0		58.6	33.7	
Grp Sat Flow(s),veh/h/ln		1729.0	1764.8	894.4	1805.0	0.0				1809.5	C	
Q Serve(g_s), s		0.8	0.9	0.6	4.3	0.0				1.0		
Cycle Q Clear(g_c), s		0.8	0.9	1.4	4.3	0.0				1.0		
Proportion In Lane			0.434	1.000		0.000				1.000		
Lane Grp Cap(c), veh/h		2456.2	1253.6	836.1	2564.2	0.0				72.7		
V/C Ratio(X)		0.114	0.118	0.059	0.447	0.000				0.807		
Avail Cap(c_a), veh/h		4961.9	2532.4	1484.2	5180.0	0.0				2032.0		
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00				1.00		
Upstream Filter(I)		1.000	1.000	1.000	1.000	0.000				1.000		
Uniform Delay (d), s/veh		1.5	1.5	1.7	2.0	0.0				15.3		
Incr Delay (d2), s/veh		0.0	0.0	0.0	0.1	0.0				18.4		
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0				0.0		
Lane Group Delay (d), s/veh		1.5	1.5	1.7	2.1	0.0				33.7		
Lane Group LOS		A	A	A	A					C		
Approach Volume, veh/h		428			1195							
Approach Delay, s/veh		1.5			2.1							
Approach LOS		A			A							
Timer												
Assigned Phase		2			6					7		
Phase Duration (G+Y+Rc), s		26.77			26.77					5.29		
Change Period (Y+Rc), s		4.00			4.00					4.00		
Max Green Setting (Gmax), s		46.00			46.00					36.00		
Max Q Clear Time (g_c+I1), s		2.85			6.32					3.03		
Green Extension Time (p_c)		16.96			16.45					0.13		
Intersection Summary												
HCM 2010 Control Delay			3.0									
HCM 2010 Level of Service			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	858	122	256	214	42	57	44	369	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	48	1422	232	351	1969	393	323	525	598	412	419	59
Arriving On Green	0.49	0.49	0.49	0.11	0.64	0.64	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	74.7	2935.5	469.5	1791.6	3076.8	614.7	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	608.7	0.0	552.3	301.2	150.3	145.7	64.8	50.0	519.7	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1780.5	0.0	1615.3	1791.6	1900.0	1791.5	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	10.5	0.0	39.5	11.7	4.6	4.8	6.4	3.0	43.5	24.7	0.0	10.2
Cycle Q Clear(g_c), s	37.9	0.0	39.5	11.7	4.6	4.8	16.6	3.0	43.5	27.8	0.0	10.2
Proportion In Lane	0.042		0.291	1.000		0.343	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	903.7	0.0	797.1	350.9	1216.0	1146.6	323.2	524.8	598.5	412.1	0.0	477.3
V/C Ratio(X)	0.674	0.000	0.693	0.858	0.124	0.127	0.200	0.095	0.868	0.603	0.000	0.301
Avail Cap(c_a), veh/h	903.7	0.0	797.1	482.5	1216.0	1146.6	323.2	524.8	598.5	412.1	0.0	477.3
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	0.991	0.991	0.991	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	28.6	0.0	29.2	26.3	10.6	10.6	47.9	38.9	41.7	49.0	0.0	41.4
Incr Delay (d2), s/veh	2.6	0.0	3.3	19.8	0.1	0.1	1.4	0.4	15.7	6.4	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	31.3	0.0	32.6	46.1	10.7	10.7	49.3	39.2	57.4	55.4	0.0	43.0
Lane Group LOS	C		C	D	B	B	D	D	E	E		D
Approach Volume, veh/h		1161			597			634			392	
Approach Delay, s/veh		31.9			28.5			55.1			50.9	
Approach LOS		C			C			E			D	

Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		80.02		21.98	102.00			48.00			48.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		64.00		27.00	96.00			43.50			43.50	
Max Q Clear Time (g_c+I1), s		41.48		13.72	6.78			45.50			29.76	
Green Extension Time (p_c)		16.63		2.26	37.47			0.00			5.90	

Intersection Summary			
HCM 2010 Control Delay			39.1
HCM 2010 Level of Service			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	131	0	0	388	68	0	1	0	137	2	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1845	0	0	1825	1825	0	1900	0	1863	1751	1751
Lanes	1	1	0	1	1	0	0	1	0	1	1	0
Capacity, veh/h	419	1114	0	190	963	118	0	352	0	448	16	263
Arriving On Green	0.60	0.60	0.00	0.00	0.60	0.60	0.00	0.19	0.00	0.19	0.19	0.19
Sat Flow, veh/h	722.9	1844.7	0.0	0.0	1595.2	195.4	0.0	1900.0	0.0	1406.7	85.0	1416.3
Grp Volume(v), veh/h	36.0	181.9	0.0	0.0	0.0	750.9	0.0	4.0	0.0	167.1	0.0	70.7
Grp Sat Flow(s),veh/h/ln	722.9	1844.7	0.0	0.0	0.0	1790.5	0.0	1900.0	0.0	1406.7	0.0	1501.3
Q Serve(g_s), s	1.4	1.6	0.0	0.0	0.0	10.9	0.0	0.1	0.0	4.2	0.0	1.5
Cycle Q Clear(g_c), s	12.2	1.6	0.0	0.0	0.0	10.9	0.0	0.1	0.0	4.2	0.0	1.5
Proportion In Lane	1.000		0.000	1.000		0.109	0.000		0.000	1.000		0.943
Lane Grp Cap(c), veh/h	419.3	1114.0	0.0	189.5	0.0	1081.4	0.0	352.4	0.0	448.0	0.0	278.5
V/C Ratio(X)	0.086	0.163	0.000	0.000	0.000	0.694	0.000	0.011	0.000	0.373	0.000	0.254
Avail Cap(c_a), veh/h	1086.3	2816.3	0.0	189.5	0.0	2733.7	0.0	1200.3	0.0	1075.8	0.0	948.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	9.3	3.3	0.0	0.0	0.0	5.1	0.0	12.6	0.0	14.4	0.0	13.2
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.4	3.4	0.0	0.0	0.0	5.9	0.0	12.6	0.0	14.9	0.0	13.7
Lane Group LOS	A	A				A		B		B		B
Approach Volume, veh/h		218			751			4			238	
Approach Delay, s/veh		4.4			5.9			12.6			14.5	
Approach LOS		A			A			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		26.94			26.94			11.05			11.05	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		58.00			58.00			24.00			24.00	
Max Q Clear Time (g_c+I1), s		14.23			12.87			2.07			6.24	
Green Extension Time (p_c)		8.72			8.75			0.86			0.80	

Intersection Summary			
HCM 2010 Control Delay			7.4
HCM 2010 Level of Service			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	213	68	15	368	118	20	44	5	44	43	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1791	1791	1900	1848	1848	1842	1842	1842	1791	1791	1791
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Capacity, veh/h	457	734	228	628	718	269	172	276	33	167	140	128
Arriving On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	824.4	1311.4	407.5	1016.6	1282.4	480.7	445.4	758.1	142.5	348.3	418.2	550.8
Grp Volume(v), veh/h	45.7	0.0	382.4	23.1	0.0	609.6	108.9	0.0	0.0	213.1	0.0	0.0
Grp Sat Flow(s),veh/h/ln	824.4	0.0	1718.9	1016.6	0.0	1763.1	1552.8	0.0	0.0	1366.4	0.0	0.0
Q Serve(g_s), s	1.5	0.0	4.8	0.5	0.0	9.0	0.0	0.0	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	4.8	5.4	0.0	9.0	1.9	0.0	0.0	5.0	0.0	0.0
Proportion In Lane	1.000		0.237	1.000		0.273	0.287		0.092	0.255		0.403
Lane Grp Cap(c), veh/h	456.6	0.0	961.8	627.9	0.0	986.6	481.4	0.0	0.0	435.1	0.0	0.0
V/C Ratio(X)	0.100	0.000	0.398	0.037	0.000	0.618	0.226	0.000	0.000	0.490	0.000	0.000
Avail Cap(c_a), veh/h	1131.3	0.0	2368.5	1459.9	0.0	2429.5	1117.7	0.0	0.0	1072.8	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	9.2	0.0	4.8	6.3	0.0	5.7	12.1	0.0	0.0	12.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.6	0.2	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.3	0.0	5.1	6.3	0.0	6.3	12.3	0.0	0.0	13.7	0.0	0.0
Lane Group LOS	A		A	A		A	B			B		
Approach Volume, veh/h		428			633			109			213	
Approach Delay, s/veh		5.5			6.3			12.3			13.7	
Approach LOS		A			A			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		25.52			25.52			12.94			12.94	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		53.00			53.00			29.00			29.00	
Max Q Clear Time (g_c+I1), s		12.47			10.95			3.89			6.96	
Green Extension Time (p_c)		9.05			9.10			2.06			1.98	

Intersection Summary												
HCM 2010 Control Delay			7.7									
HCM 2010 Level of Service			A									

Intersection	
Intersection Delay (sec/veh)	12.8
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	2	0	3	389	82	20
Peak Hour Factor	0.50	0.25	0.25	0.81	0.75	0.38
Heavy Vehicles(%)	0	0	0	1	11	11
Movement Flow Rate	4	0	12	480	109	53
Number of Lanes	1	1	1	1	1	1

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	2
HCM Control Delay	9.3	14.3	8.3
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	SBLn1	SBLn2
Volume Left (%)	100%	0%	100%	0%	0%	0%
Volume Thru (%)	0%	100%	0%	100%	98%	0%
Volume Right (%)	0%	0%	0%	0%	2%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	3	389	2	0	84	18
Left Turning Volume	0	389	0	0	82	0
Through Volume	0	0	0	0	2	18
Right Turning Volume	3	0	2	0	0	0
Lane Flow Rate	12	480	4	0	115	47
Geometry Group	7	7	7	7	7	7
Degree of Utilization, X	0.017	0.614	0.007	0	0.16	0.057
Departure Headway, Hd	5.087	4.603	6.511	6.007	5.025	4.339
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	701	783	552	0	719	830
Service Time	2.835	2.351	4.219	3.715	2.725	2.039
HCM Lane V/C Ratio	0.017	0.613	0.007	0	0.16	0.057
HCM Control Delay	7.9	14.5	9.3	8.7	8.7	7.3
HCM Lane LOS	A	B	A	N	A	A
HCM 95th Percentile Queue	0.1	4.8	0	0	0.6	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Adj Sat Flow Rate	1900	1900	1900	1743	1900	0	0	0	0	1900	0	1900
Lanes	0	3	0	1	2	0	0	0	0	1	0	1
Capacity, veh/h	167	2942	464	734	2592	0	0	0	0	73	0	0
Arriving On Green	0.72	0.72	0.72	0.72	0.72	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h	169.7	3937.8	646.5	885.6	3705.0	0.0		0		1809.5	59	
Grp Volume(v), veh/h	152.7	138.8	147.2	49.3	1151.7	0.0		0.0		58.6	34.0	
Grp Sat Flow(s),veh/h/ln	1619.8	1573.4	1614.9	885.6	1805.0	0.0				1809.5	C	
Q Serve(g_s), s	0.0	4.5	4.0	0.8	4.4	0.0				1.1		
Cycle Q Clear(g_c), s	0.8	4.5	4.0	5.3	4.4	0.0				1.1		
Proportion In Lane	0.105		0.400	1.000		0.000				1.000		
Lane Grp Cap(c), veh/h	1283.3	0.0	0.0	733.6	2592.3	0.0				72.9		
V/C Ratio(X)	0.119	0.000	0.000	0.067	0.444	0.000				0.805		
Avail Cap(c_a), veh/h	2162.0	0.0	0.0	1328.3	5016.0	0.0				1967.7		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00		
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000				1.000		
Uniform Delay (d), s/veh	1.4	0.0	0.0	3.1	1.9	0.0				15.8		
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.1	0.0				18.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0		
Lane Group Delay (d), s/veh	1.5	0.0	0.0	3.1	2.1	0.0				34.0		
Lane Group LOS	A			A	A					C		
Approach Volume, veh/h		439			1201							
Approach Delay, s/veh		0.5			2.1							
Approach LOS		A			A							

Timer												
Assigned Phase		2			6					7		
Phase Duration (G+Y+Rc), s		27.77			27.77					5.33		
Change Period (Y+Rc), s		4.00			4.00					4.00		
Max Green Setting (Gmax), s		46.00			46.00					36.00		
Max Q Clear Time (g_c+I1), s		6.48			7.29					3.06		
Green Extension Time (p_c)		16.61			16.48					0.13		

Intersection Summary			
HCM 2010 Control Delay			2.8
HCM 2010 Level of Service			A

Intersection	
Intersection Delay (sec/veh)	34.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	3	1	52	11	191	6	370	92	44	143	1
Peak Hour Factor	0.25	0.50	0.60	0.75	0.50	0.59	0.63	0.69	0.85	0.69	0.88	0.25
Heavy Vehicles(%)	0	0	25	4	0	0	10	0	1	3	3	0
Movement Flow Rate	4	6	2	69	22	324	10	536	108	64	162	4
Number of Lanes	0	1	0	0	1	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	10.7	21	50.3	12.7
HCM LOS	B	C	F	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Volume Left (%)	2%	0%	20%	20%	100%	0%
Volume Thru (%)	98%	0%	60%	4%	0%	99%
Volume Right (%)	0%	100%	20%	75%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume by Lane	376	92	5	254	44	144
Left Turning Volume	370	0	3	11	0	143
Through Volume	0	92	1	191	0	1
Right Turning Volume	6	0	1	52	44	0
Lane Flow Rate	546	108	12	415	64	166
Geometry Group	7	7	2	2	7	7
Degree of Utilization, X	0.979	0.167	0.024	0.683	0.134	0.327
Departure Headway, Hd	6.456	5.562	7.505	5.927	7.585	7.066
Convergence(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	557	640	479	606	476	511
Service Time	4.239	3.344	5.518	4.021	5.285	4.766
HCM Lane V/C Ratio	0.98	0.169	0.025	0.685	0.134	0.325
HCM Control Delay	58.4	9.5	10.7	21	11.5	13.2
HCM Lane LOS	F	A	B	C	B	B
HCM 95th Percentile Queue	75	0.6	0.1	6.4	0.5	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	248	73	46	138	12	99	207	32	17	71	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1848	1848	1848	1760	1760	1760	1865	1865	1865	1830	1830	1830
Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Capacity, veh/h	128	495	115	196	439	60	203	421	70	133	409	221
Arriving On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	180.1	1056.3	285.7	371.8	719.3	149.2	352.7	818.1	167.1	220.9	716.0	524.4
Grp Volume(v), veh/h	478.1	0.0	0.0	304.6	0.0	0.0	467.4	0.0	0.0	195.5	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1609.1	0.0	0.0	1477.0	0.0	0.0	1415.2	0.0	0.0	1600.1	0.0	0.0
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	5.8	0.0	0.0	12.1	0.0	0.0	3.4	0.0	0.0
Proportion In Lane	0.112		0.178	0.252		0.101	0.249		0.118	0.138		0.328
Lane Grp Cap(c), veh/h	737.9	0.0	0.0	695.6	0.0	0.0	693.8	0.0	0.0	762.8	0.0	0.0
V/C Ratio(X)	0.648	0.000	0.000	0.438	0.000	0.000	0.674	0.000	0.000	0.256	0.000	0.000
Avail Cap(c_a), veh/h	1309.5	0.0	0.0	1122.8	0.0	0.0	1452.8	0.0	0.0	1549.6	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	10.9	0.0	0.0	9.8	0.0	0.0	10.2	0.0	0.0	8.6	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.4	0.0	0.0	1.1	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	11.8	0.0	0.0	10.3	0.0	0.0	11.4	0.0	0.0	8.8	0.0	0.0
Lane Group LOS	B			B			B			A		
Approach Volume, veh/h		478			305			467			195	
Approach Delay, s/veh		11.8			10.3			11.4			8.8	
Approach LOS		B			B			B			A	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	22.45	22.45	23.20	23.20
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	36.00	36.00	46.00	46.00
Max Q Clear Time (g_c+I1), s	12.66	7.81	14.13	5.37
Green Extension Time (p_c)	5.79	6.12	5.07	5.24

Intersection Summary	
HCM 2010 Control Delay	11.0
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	130	72	53	179	10	66	129	147	21	185	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1876	1876	1876	1859	1859	1859	1840	1840	1840	1853	1853	1853
Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Capacity, veh/h	225	247	142	210	429	25	203	237	288	153	623	68
Arriving On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	378.0	528.7	433.0	359.7	931.9	76.0	263.8	421.5	690.3	158.9	1229.8	163.0
Grp Volume(v), veh/h	340.4	0.0	0.0	279.8	0.0	0.0	479.8	0.0	0.0	288.0	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1432.8	0.0	0.0	1595.2	0.0	0.0	1419.5	0.0	0.0	1722.0	0.0	0.0
Q Serve(g_s), s	1.9	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.7	0.0	0.0	3.8	0.0	0.0	8.7	0.0	0.0	3.4	0.0	0.0
Proportion In Lane	0.264		0.302	0.225		0.048	0.186		0.486	0.092		0.095
Lane Grp Cap(c), veh/h	614.4	0.0	0.0	663.1	0.0	0.0	728.5	0.0	0.0	843.9	0.0	0.0
V/C Ratio(X)	0.554	0.000	0.000	0.422	0.000	0.000	0.659	0.000	0.000	0.341	0.000	0.000
Avail Cap(c_a), veh/h	837.9	0.0	0.0	898.4	0.0	0.0	848.9	0.0	0.0	985.7	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	8.6	0.0	0.0	8.4	0.0	0.0	7.1	0.0	0.0	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.4	0.0	0.0	1.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.4	0.0	0.0	8.8	0.0	0.0	8.6	0.0	0.0	6.6	0.0	0.0
Lane Group LOS	A			A			A			A		
Approach Volume, veh/h		340			280			480			288	
Approach Delay, s/veh		9.4			8.8			8.6			6.6	
Approach LOS		A			A			A			A	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		14.25			14.25			17.07			17.07	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		16.00			16.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s		7.66			5.77			10.70			5.43	
Green Extension Time (p_c)		2.64			3.01			2.37			3.88	

Intersection Summary			
HCM 2010 Control Delay			8.4
HCM 2010 Level of Service			A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Adj Sat Flow Rate	1900	1900	1900	1743	1900	0	0	0	0	1900	0	1900
Lanes	0	3	0	1	2	0	0	0	0	1	0	1
Capacity, veh/h	167	2942	464	734	2592	0	0	0	0	73	0	0
Arriving On Green	0.72	0.72	0.72	0.72	0.72	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h	169.7	3937.8	646.5	885.6	3705.0	0.0		0		1809.5	59	
Grp Volume(v), veh/h	152.7	138.8	147.2	49.3	1151.7	0.0		0.0		58.6	34.0	
Grp Sat Flow(s),veh/h/ln	1619.8	1573.4	1614.9	885.6	1805.0	0.0				1809.5	C	
Q Serve(g_s), s	0.0	4.5	4.0	0.8	4.4	0.0				1.1		
Cycle Q Clear(g_c), s	0.8	4.5	4.0	5.3	4.4	0.0				1.1		
Proportion In Lane	0.105		0.400	1.000		0.000				1.000		
Lane Grp Cap(c), veh/h	1283.3	0.0	0.0	733.6	2592.3	0.0				72.9		
V/C Ratio(X)	0.119	0.000	0.000	0.067	0.444	0.000				0.805		
Avail Cap(c_a), veh/h	2162.0	0.0	0.0	1328.3	5016.0	0.0				1967.7		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00		
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000				1.000		
Uniform Delay (d), s/veh	1.4	0.0	0.0	3.1	1.9	0.0				15.8		
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.1	0.0				18.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0		
Lane Group Delay (d), s/veh	1.5	0.0	0.0	3.1	2.1	0.0				34.0		
Lane Group LOS	A			A	A					C		
Approach Volume, veh/h		439			1201							
Approach Delay, s/veh		0.5			2.1							
Approach LOS		A			A							

Timer	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Assigned Phase		2			6					7		
Phase Duration (G+Y+Rc), s		27.77			27.77					5.33		
Change Period (Y+Rc), s		4.00			4.00					4.00		
Max Green Setting (Gmax), s		46.00			46.00					36.00		
Max Q Clear Time (g_c+I1), s		6.48			7.29					3.06		
Green Extension Time (p_c)		16.61			16.48					0.13		

Intersection Summary		
HCM 2010 Control Delay		2.8
HCM 2010 Level of Service		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	414	44	240	266	9	36	60	102	8	16	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1837	1837	1837	1879	1879	1879	1858	1858	1858	1900	1424	1424
Lanes	0	2	0	0	2	0	0	1	0	1	1	0
Capacity, veh/h	118	1185	132	214	779	30	157	146	256	332	204	173
Arriving On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	117.0	2794.7	276.4	0.0	1879.2	62.0	217.0	384.5	894.1	1080.3	713.8	603.7
Grp Volume(v), veh/h	223.4	0.0	319.0	272.7	0.0	368.1	316.2	0.0	0.0	9.1	0.0	50.9
Grp Sat Flow(s),veh/h/ln	1142.9	0.0	1622.9	0.0	0.0	1699.1	1524.3	0.0	0.0	1080.3	0.0	1317.5
Q Serve(g_s), s	0.0	0.0	4.3	0.0	0.0	4.9	2.1	0.0	0.0	0.3	0.0	1.0
Cycle Q Clear(g_c), s	16.0	0.0	4.3	16.0	0.0	4.9	6.0	0.0	0.0	6.2	0.0	1.0
Proportion In Lane	0.102		0.170	1.000		0.036	0.142		0.587	1.000		0.458
Lane Grp Cap(c), veh/h	661.9	0.0	772.3	214.1	0.0	808.6	558.5	0.0	0.0	331.8	0.0	377.0
V/C Ratio(X)	0.337	0.000	0.413	1.274	0.000	0.455	0.566	0.000	0.000	0.027	0.000	0.135
Avail Cap(c_a), veh/h	661.9	0.0	772.3	214.1	0.0	808.6	827.6	0.0	0.0	536.8	0.0	627.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	5.8	0.0	5.7	16.8	0.0	5.9	10.4	0.0	0.0	13.5	0.0	8.9
Incr Delay (d2), s/veh	0.3	0.0	0.4	154.3	0.0	0.4	0.9	0.0	0.0	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	6.1	0.0	6.1	171.1	0.0	6.3	11.3	0.0	0.0	13.5	0.0	9.1
Lane Group LOS	A		A	F		A	B			B		A
Approach Volume, veh/h		542			641			316			60	
Approach Delay, s/veh		6.1			76.4			11.3			9.7	
Approach LOS		A			E			B			A	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	13.62	13.62
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	16.00	16.00
Max Q Clear Time (g_c+I1), s	18.00	18.00	7.96	8.21
Green Extension Time (p_c)	0.00	0.00	1.44	1.41

Intersection Summary	
HCM 2010 Control Delay	36.2
HCM 2010 Level of Service	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	826	122	266	208	42	57	44	426	174	116	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1866	1866	1866	1881	1900	1900	1863	1810	1776	1863	1681	1681
Lanes	0	2	0	1	2	0	1	1	1	1	1	0
Capacity, veh/h	50	1259	213	359	1887	388	343	535	640	432	427	60
Arriving On Green	0.29	0.29	0.29	0.13	0.62	0.62	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	77.1	2912.2	484.9	1791.6	3060.5	628.6	1239.4	1809.5	1509.3	1349.4	1443.7	202.1
Grp Volume(v), veh/h	590.9	0.0	533.8	312.9	146.8	142.3	64.8	50.0	600.0	248.6	0.0	143.7
Grp Sat Flow(s),veh/h/ln	1785.3	0.0	1612.7	1791.6	1900.0	1789.1	1239.4	1809.5	1509.3	1349.4	0.0	1645.8
Q Serve(g_s), s	13.3	0.0	36.0	11.6	3.9	4.0	5.1	2.4	35.5	19.6	0.0	8.1
Cycle Q Clear(g_c), s	35.3	0.0	36.0	11.6	3.9	4.0	13.2	2.4	35.5	22.0	0.0	8.1
Proportion In Lane	0.043		0.301	1.000		0.351	1.000		1.000	1.000		0.123
Lane Grp Cap(c), veh/h	814.4	0.0	707.4	359.0	1171.7	1103.3	343.2	535.3	639.8	432.2	0.0	486.9
V/C Ratio(X)	0.726	0.000	0.755	0.872	0.125	0.129	0.189	0.093	0.938	0.575	0.000	0.295
Avail Cap(c_a), veh/h	814.4	0.0	707.4	458.1	1171.7	1103.3	343.2	535.3	639.8	432.2	0.0	486.9
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	36.0	0.0	36.5	25.7	9.6	9.6	37.7	30.6	33.1	38.6	0.0	32.6
Incr Delay (d2), s/veh	4.0	0.0	5.5	21.5	0.1	0.1	1.2	0.3	23.2	5.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	40.0	0.0	42.0	47.2	9.7	9.7	38.9	30.9	56.3	44.1	0.0	34.1
Lane Group LOS	D		D	D	A	A	D	C	E	D		C
Approach Volume, veh/h		1125			602			715			392	
Approach Delay, s/veh		40.9			29.2			52.9			40.4	
Approach LOS		D			C			D			D	

Timer												
Assigned Phase		2		1	6			8			4	
Phase Duration (G+Y+Rc), s		58.64		21.36	80.00			40.00			40.00	
Change Period (Y+Rc), s		6.00		6.00	6.00			4.50			4.50	
Max Green Setting (Gmax), s		47.00		22.00	74.00			35.50			35.50	
Max Q Clear Time (g_c+I1), s		38.04		13.62	5.98			37.50			24.02	
Green Extension Time (p_c)		7.45		1.74	32.02			0.00			5.82	

Intersection Summary			
HCM 2010 Control Delay			41.4
HCM 2010 Level of Service			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	3	1	52	11	83	6	542	92	25	173	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1824	1824	1824	1878	1878	1878	1727	1898	1898	1845	1846	1846
Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Capacity, veh/h	220	239	50	213	55	179	737	849	117	280	937	19
Arriving On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	548.8	576.6	228.7	402.1	116.9	815.8	1091.4	1633.0	225.0	614.0	1802.6	36.7
Grp Volume(v), veh/h	11.7	0.0	0.0	232.0	0.0	0.0	9.5	0.0	893.7	36.2	0.0	200.6
Grp Sat Flow(s),veh/h/ln	1600.7	0.0	0.0	1345.4	0.0	0.0	1091.4	0.0	1858.0	614.0	0.0	1839.3
Q Serve(g_s), s	0.0	0.0	0.0	3.2	0.0	0.0	0.1	0.0	13.7	1.8	0.0	1.8
Cycle Q Clear(g_c), s	0.2	0.0	0.0	4.8	0.0	0.0	2.0	0.0	13.7	15.5	0.0	1.8
Proportion In Lane	0.343		0.143	0.299		0.606	1.000		0.121	1.000		0.020
Lane Grp Cap(c), veh/h	509.2	0.0	0.0	447.9	0.0	0.0	737.5	0.0	966.2	280.2	0.0	956.5
V/C Ratio(X)	0.023	0.000	0.000	0.518	0.000	0.000	0.013	0.000	0.925	0.129	0.000	0.210
Avail Cap(c_a), veh/h	845.6	0.0	0.0	817.8	0.0	0.0	737.5	0.0	966.2	280.2	0.0	956.5
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	9.4	0.0	0.0	10.4	0.0	0.0	4.5	0.0	6.8	14.0	0.0	4.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	14.3	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.4	0.0	0.0	11.3	0.0	0.0	4.5	0.0	21.1	14.2	0.0	4.1
Lane Group LOS	A			B			A		C	B		A
Approach Volume, veh/h		12			232			903			237	
Approach Delay, s/veh		9.4			11.3			20.9			5.6	
Approach LOS		A			B			C			A	
Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		10.77			10.77			20.00			20.00	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		16.00			16.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s		2.16			6.80			15.69			17.47	
Green Extension Time (p_c)		1.18			0.93			0.23			0.00	
Intersection Summary												
HCM 2010 Control Delay			16.6									
HCM 2010 Level of Service			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Volume (vph)	60	149	73	46	293	12	99	207	32	17	71	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1849	1849	1849	1781	1781	1781	1865	1865	1865	1870	1870	1870
Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Capacity, veh/h	219	415	151	166	522	36	235	432	73	119	153	435
Arriving On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	374.6	641.9	376.2	221.7	1085.2	89.0	405.0	747.6	191.9	90.7	329.8	1145.1
Grp Volume(v), veh/h	373.5	0.0	0.0	526.0	0.0	0.0	467.4	0.0	0.0	472.0	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1655.4	0.0	0.0	1521.3	0.0	0.0	1625.1	0.0	0.0	1586.9	0.0	0.0
Q Serve(g_s), s	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	5.8	0.0	0.0	11.0	0.0	0.0	7.7	0.0	0.0	9.2	0.0	0.0
Proportion In Lane	0.226		0.227	0.146		0.058	0.249		0.118	0.057		0.722
Lane Grp Cap(c), veh/h	785.6	0.0	0.0	723.8	0.0	0.0	739.9	0.0	0.0	706.4	0.0	0.0
V/C Ratio(X)	0.475	0.000	0.000	0.727	0.000	0.000	0.632	0.000	0.000	0.668	0.000	0.000
Avail Cap(c_a), veh/h	827.7	0.0	0.0	772.6	0.0	0.0	808.2	0.0	0.0	792.7	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	8.3	0.0	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	3.2	0.0	0.0	1.4	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	8.7	0.0	0.0	12.6	0.0	0.0	10.8	0.0	0.0	11.6	0.0	0.0
Lane Group LOS	A			B			B			B		
Approach Volume, veh/h		374			526			467			472	
Approach Delay, s/veh		8.7			12.6			10.8			11.6	
Approach LOS		A			B			B			B	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	18.69	18.69	17.88	17.88
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	16.00	16.00
Max Q Clear Time (g_c+I1), s	7.77	12.98	9.68	11.20
Green Extension Time (p_c)	3.89	1.71	3.36	2.68

Intersection Summary	
HCM 2010 Control Delay	11.1
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	264	72	53	98	10	66	129	147	21	185	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1879	1879	1879	1867	1867	1867	1840	1840	1840	1857	1857	1857
Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Capacity, veh/h	454	329	113	75	132	16	108	148	203	62	367	89
Arriving On Green	0.50	0.50	0.50	0.12	0.12	0.12	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	909.5	658.6	225.8	609.3	1075.5	128.8	296.7	418.2	776.2	152.3	1114.6	338.7
Grp Volume(v), veh/h	817.1	0.0	0.0	187.8	0.0	0.0	479.8	0.0	0.0	319.9	0.0	0.0
Grp Sat Flow(s),veh/h/ln	1794.0	0.0	0.0	1813.6	0.0	0.0	1596.2	0.0	0.0	1833.1	0.0	0.0
Q Serve(g_s), s	43.3	0.0	0.0	10.5	0.0	0.0	10.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	43.3	0.0	0.0	10.5	0.0	0.0	27.0	0.0	0.0	16.3	0.0	0.0
Proportion In Lane	0.507		0.126	0.336		0.071	0.186		0.486	0.083		0.185
Lane Grp Cap(c), veh/h	896.0	0.0	0.0	223.0	0.0	0.0	458.6	0.0	0.0	516.9	0.0	0.0
V/C Ratio(X)	0.912	0.000	0.000	0.842	0.000	0.000	1.046	0.000	0.000	0.619	0.000	0.000
Avail Cap(c_a), veh/h	1128.9	0.0	0.0	280.9	0.0	0.0	458.6	0.0	0.0	516.9	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	23.8	0.0	0.0	44.3	0.0	0.0	37.9	0.0	0.0	34.2	0.0	0.0
Incr Delay (d2), s/veh	9.5	0.0	0.0	16.7	0.0	0.0	54.7	0.0	0.0	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	33.3	0.0	0.0	61.0	0.0	0.0	92.6	0.0	0.0	36.5	0.0	0.0
Lane Group LOS	C			E			F			D		
Approach Volume, veh/h		817			188			480			320	
Approach Delay, s/veh		33.3			61.0			92.6			36.5	
Approach LOS		C			E			F			D	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		55.59			16.70			31.00			31.00	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		65.00			16.00			27.00			27.00	
Max Q Clear Time (g_c+I1), s		45.25			12.46			29.00			18.30	
Green Extension Time (p_c)		6.34			0.30			0.00			3.57	

Intersection Summary			
HCM 2010 Control Delay			52.5
HCM 2010 Level of Service			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	217	68	15	404	118	20	44	5	44	43	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1900	1790	1790	1900	1849	1849	1842	1842	1842	1782	1782	1782
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Capacity, veh/h	423	663	202	617	663	227	216	242	30	226	154	68
Arriving On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	791.9	1317.6	401.9	1011.5	1319.1	450.4	433.9	769.6	138.8	422.1	500.7	318.8
Grp Volume(v), veh/h	40.7	0.0	387.9	23.1	0.0	652.9	108.9	0.0	0.0	168.2	0.0	0.0
Grp Sat Flow(s),veh/h/ln	791.9	0.0	1719.4	1011.5	0.0	1769.4	1512.6	0.0	0.0	1307.3	0.0	0.0
Q Serve(g_s), s	1.2	0.0	4.1	0.4	0.0	8.2	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	9.4	0.0	4.1	4.5	0.0	8.2	1.4	0.0	0.0	2.9	0.0	0.0
Proportion In Lane	1.000		0.234	1.000		0.255	0.287		0.092	0.323		0.244
Lane Grp Cap(c), veh/h	422.7	0.0	864.8	616.9	0.0	889.9	487.7	0.0	0.0	448.4	0.0	0.0
V/C Ratio(X)	0.096	0.000	0.449	0.037	0.000	0.734	0.223	0.000	0.000	0.375	0.000	0.000
Avail Cap(c_a), veh/h	472.6	0.0	973.1	680.6	0.0	1001.4	923.5	0.0	0.0	855.0	0.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d), s/veh	9.2	0.0	4.5	6.0	0.0	5.5	9.3	0.0	0.0	9.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	2.5	0.2	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	9.3	0.0	4.9	6.0	0.0	8.0	9.5	0.0	0.0	10.1	0.0	0.0
Lane Group LOS	A		A	A		A	A			B		
Approach Volume, veh/h		429			676			109			168	
Approach Delay, s/veh		5.3			7.9			9.5			10.1	
Approach LOS		A			A			A			B	
Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		18.22			18.22			10.05			10.05	
Change Period (Y+Rc), s		4.00			4.00			4.00			4.00	
Max Green Setting (Gmax), s		16.00			16.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s		11.43			10.22			3.42			4.86	
Green Extension Time (p_c)		2.79			3.40			1.28			1.20	
Intersection Summary												
HCM 2010 Control Delay			7.5									
HCM 2010 Level of Service			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	251	33	36	1002	0	0	0	0	34	0	297
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj Sat Flow Rate	1900	1900	1900	1743	1900	0	0	0	0	1900	0	1900
Lanes	0	3	0	1	2	0	0	0	0	1	0	1
Capacity, veh/h	603	1502	257	1155	1547	0	0	0	0	0	0	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	119.7	3937.8	598.9	885.6	3705.0	0.0		0			0	
Grp Volume(v), veh/h	128.8	150.2	159.7	49.3	1151.7	0.0		0.0			0.0	
Grp Sat Flow(s),veh/h/ln	963.5	1573.4	1623.3	885.6	1805.0	0.0						
Q Serve(g_s), s	0.1	0.4	0.4	0.4	1.9	0.0						
Cycle Q Clear(g_c), s	2.0	0.4	0.4	2.4	1.9	0.0						
Proportion In Lane	0.124		0.369	1.000		0.000						
Lane Grp Cap(c), veh/h	991.1	0.0	0.0	1155.1	1547.1	0.0						
V/C Ratio(X)	0.130	0.000	0.000	0.043	0.744	0.000						
Avail Cap(c_a), veh/h	991.1	0.0	0.0	1155.1	1547.1	0.0						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000						
Uniform Delay (d), s/veh	1.3	0.0	0.0	2.7	1.7	0.0						
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	2.0	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
Lane Group Delay (d), s/veh	1.4	0.0	0.0	2.7	3.7	0.0						
Lane Group LOS	A			A	A							
Approach Volume, veh/h		439			1201							
Approach Delay, s/veh		0.4			3.6							
Approach LOS		A			A							
Timer												
Assigned Phase		2			6							
Phase Duration (G+Y+Rc), s		7.00			7.00							
Change Period (Y+Rc), s		4.00			4.00							
Max Green Setting (Gmax), s		3.00			3.00							
Max Q Clear Time (g_c+I1), s		4.00			4.35							
Green Extension Time (p_c)		0.00			0.00							
Intersection Summary												
HCM 2010 Control Delay			2.8									
HCM 2010 Level of Service			A									

APPENDIX E

AIR QUALITY CALCULATIONS
AND
RECORD OF NON-APPLICABILITY (RONA)

Army Command and Control Facility - Fort Meade, Maryland

PROPOSED ACTION: CONSTRUCTION EMISSIONS SUMMARY

Estimated Emissions	Emissions (tons/year)							
	CO	**VOC**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**
Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18	334.41	0.03
Operational Emissions (work force commute)	36.89	2.01	3.38	0.05	0.39	0.21	4541.83	0.32
TOTAL =	**38.49**	**2.39**	**6.49**	**0.05**	**0.66**	**0.38**	**4876.24**	**0.35**

PROPOSED ACTION: GHG EMISSIONS SUMMARY

Estimated GHG Emissions Per Construction Phase	Emissions (Metric tons/year)			
	CO_2	**CH_4**	**N_20**	**CO_{2e}**
Construction Emissions	303.37	0.03	0.27	387
Operational Emissions (work force commute)	4120.28	0.29	0.29	4217
TOTAL =	**4423.65**	**0.32**	**0.56**	**4603.77**

Notes:

Conversion to Metrix Tons = 1 short ton = 0.90718474 metric tons

$N_20 = NOx * 0.095$

$CO_{2e} = (CO_2*1)+ (CH_4*21)+(N_2O*310)$

Construction Equipment Emissions

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	6	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.27	0.08	0.47	0.00	0.04	0.04	37.21	0.01
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.27	0.09	0.84	0.00	0.04	0.04	85.52	0.01
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.13	0.04	0.38	0.00	0.02	0.02	39.15	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	6	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.12	0.03	0.32	0.00	0.01	0.01	29.99	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	6	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.01	0.00	0.01	0.00	0.00	0.00	1.08	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	6	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.11	0.04	0.22	0.00	0.02	0.02	15.94	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	6	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.15	0.05	0.30	0.00	0.03	0.02	19.42	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	6	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.02	0.01	0.06	0.00	0.00	0.00	6.58	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**1.07**	**0.33**	**2.60**	**0.00**	**0.17**	**0.15**	**234.89**	**0.03**

Construction Truck Emissions

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059

Emissions, lbs/day								Emissions, tons/year							
CO	**NOx**	**VOCs**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**CO**	**NOx**	**VOCs**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.17	0.47	0.03	0.00	0.02	0.02	54.91	0.00
							TOTAL =	**0.17**	**0.47**	**0.03**	**0.00**	**0.02**	**0.02**	**54.91**	**0.00**

Unpaved Road Emissions		**PM10**	**PM2.5**
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.08**	**0.01**

Construction Worker Personal Vehicle Emissions

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	CO Start-Up (g/start)[a]	NO_X Running Exhaust (g/mi)	NO_X Start-Up (g/start)[a]	VOCs Running Exhaust (g/mi)	VOCs Start-Up (g/start)[a]	VOCs Hot-Soak (g/trip)	VOCs Resting Loss (g/hr)	VOCs Running Evaporative (g/mi)	VOCs Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx Running Exhaust (g/mi)	SOx Start-Up (g/start)[a]	PM10 Running Exhaust (g/mi)	PM10 Start-Up (g/start)[a]	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Start-Up (g/start)[a]	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CO2 Start-Up (g/start)[a]	CH4 Running Exhaust (g/mi)	CH4 Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.35	0.03	0.02	0.00	0.00	0.00	44.60	0.00
							TOTAL =	**0.35**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**44.60**	**0.00**

Work Force Commute - Personal Vehicle Emissions

Note: 1) Annual operational emissions is assumed to be 12 months total (260 days subtracting weekends).

2) For purposes of providing a conservative air quality analysis, all personal vehicles were assumed to be gasoline powered light-duty trucks.

3) Vehicle miles traveled per day was conservativly estimated to be 30 miles per day.

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	1,300	33	30	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	**NOx**	**VOCs**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**CO**	**NOx**	**VOCs**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
283.76	26.02	15.44	0.35	2.97	1.59	34937.1	2.45	36.89	3.38	2.01	0.05	0.39	0.21	4541.83	0.32
							TOTAL =	**36.89**	**3.38**	**2.01**	**0.05**	**0.39**	**0.21**	**4541.83**	**0.32**

Army Command and Control Facility - Fort Gordon, Georgia

PROPOSED ACTION: CONSTRUCTION EMISSIONS SUMMARY

Estimated Emissions	Emissions (tons/year)							
	CO	**VOC**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**
Alternative C Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18	334.41	0.03
Alternative D Construction Emissions	1.34	0.32	2.61	0.00	0.23	0.15	280.90	0.03
Alternative E Construction Emissions	0.90	0.21	1.74	0.00	0.15	0.10	187.27	0.02
Alternative F Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18	334.41	0.03
Alternative G Construction Emissions	1.60	0.38	3.11	0.00	0.27	0.18	334.41	0.03
Operational Emissions (work force commute)	42.56	2.32	3.90	0.05	0.45	0.24	5240.57	0.37
TOTAL =	**44.17**	**2.70**	**7.01**	**0.06**	**0.72**	**0.42**	**5574.98**	**0.40**

PROPOSED ACTION: GHG EMISSIONS SUMMARY

Estimated GHG Emissions Per Construction Phase	Emissions (Metric tons/year)			
	CO_2	**CH_4**	**N_20**	**CO_{2e}**
Alternative C Construction Emissions	303.37	0.03	0.27	387
Alternative D Construction Emissions	254.83	0.03	0.22	325
Alternative E Construction Emissions	169.89	0.02	0.15	217
Alternative F Construction Emissions	303.37	0.03	0.27	387
Alternative G Construction Emissions	303.37	0.03	0.27	387
Operational Emissions (work force commute)	4754.17	0.33	0.34	4865
TOTAL =	**6088.99**	**0.47**	**1.51**	**6568.43**

Notes:

Conversion to Metrix Tons = 1 short ton = 0.90718474 metric tons

N_20 = NOx * 0.095

$CO_{2e} = (CO_2*1)+ (CH_4*21)+(N_2O*310)$

Construction Equipment Emissions - Alternative C

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	6	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.27	0.08	0.47	0.00	0.04	0.04	37.21	0.01
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.27	0.09	0.84	0.00	0.04	0.04	85.52	0.01
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.13	0.04	0.38	0.00	0.02	0.02	39.15	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	6	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.12	0.03	0.32	0.00	0.01	0.01	29.99	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	6	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.01	0.00	0.01	0.00	0.00	0.00	1.08	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	6	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.11	0.04	0.22	0.00	0.02	0.02	15.94	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	6	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.15	0.05	0.30	0.00	0.03	0.02	19.42	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	6	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.02	0.01	0.06	0.00	0.00	0.00	6.58	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**1.07**	**0.33**	**2.60**	**0.00**	**0.17**	**0.15**	**234.89**	**0.03**

Construction Equipment Emissions - Alternative D

Note: Construction duration is assumed to be 5 months total (105 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	5	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.22	0.07	0.39	0.00	0.04	0.03	31.26	0.01
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	5	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.23	0.07	0.70	0.00	0.04	0.03	71.84	0.01
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	5	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.11	0.03	0.32	0.00	0.02	0.02	32.89	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	5	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.10	0.03	0.27	0.00	0.01	0.01	25.20	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	5	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.91	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	5	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.10	0.03	0.18	0.00	0.02	0.01	13.39	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	5	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.13	0.04	0.25	0.00	0.02	0.02	16.31	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	5	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.02	0.01	0.05	0.00	0.00	0.00	5.53	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**0.90**	**0.28**	**2.18**	**0.00**	**0.14**	**0.13**	**197.31**	**0.02**

Construction Equipment Emissions - Alternative E

Note: Construction duration is assumed to be 3 months total (70 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	3	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.15	0.04	0.26	0.00	0.02	0.02	20.84	0.00
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	3	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.15	0.05	0.47	0.00	0.02	0.02	47.89	0.00
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	3	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.07	0.02	0.21	0.00	0.01	0.01	21.93	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	3	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.06	0.02	0.18	0.00	0.01	0.01	16.80	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	3	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	3	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.06	0.02	0.12	0.00	0.01	0.01	8.92	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	3	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.08	0.03	0.17	0.00	0.01	0.01	10.88	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	3	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.01	0.00	0.04	0.00	0.00	0.00	3.68	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**0.60**	**0.18**	**1.46**	**0.00**	**0.09**	**0.08**	**131.54**	**0.02**

Construction Equipment Emissions - Alternative F

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	6	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.27	0.08	0.47	0.00	0.04	0.04	37.21	0.01
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.27	0.09	0.84	0.00	0.04	0.04	85.52	0.01
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.13	0.04	0.38	0.00	0.02	0.02	39.15	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	6	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.12	0.03	0.32	0.00	0.01	0.01	29.99	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	6	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.01	0.00	0.01	0.00	0.00	0.00	1.08	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	6	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.11	0.04	0.22	0.00	0.02	0.02	15.94	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	6	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.15	0.05	0.30	0.00	0.03	0.02	19.42	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	6	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.02	0.01	0.06	0.00	0.00	0.00	6.58	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**1.07**	**0.33**	**2.60**	**0.00**	**0.17**	**0.15**	**234.89**	**0.03**

Construction Equipment Emissions - Alternative G

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Construction Equipment Emissions	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	6	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.27	0.08	0.47	0.00	0.04	0.04	37.21	0.01
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	4.38	1.37	13.36	0.01	0.71	0.63	1368.31	0.12	0.27	0.09	0.84	0.00	0.04	0.04	85.52	0.01
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.13	0.04	0.38	0.00	0.02	0.02	39.15	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	6	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.12	0.03	0.32	0.00	0.01	0.01	29.99	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	6	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.01	0.00	0.01	0.00	0.00	0.00	1.08	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	6	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.11	0.04	0.22	0.00	0.02	0.02	15.94	0.00
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	6	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.15	0.05	0.30	0.00	0.03	0.02	19.42	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	6	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.02	0.01	0.06	0.00	0.00	0.00	6.58	0.00
														TOTAL =	**17.18**	**5.28**	**41.60**	**0.04**	**2.70**	**2.40**	**3758.23**	**0.48**	**1.07**	**0.33**	**2.60**	**0.00**	**0.17**	**0.15**	**234.89**	**0.03**

Construction Truck Emissions - Alternative C

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.17	0.47	0.03	0.00	0.02	0.02	54.91	0.00
							TOTAL =	**0.17**	**0.47**	**0.03**	**0.00**	**0.02**	**0.02**	**54.91**	**0.00**

Unpaved Road Emissions		PM10	PM2.5
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.08**	**0.01**

Construction Truck Emissions - Alternative D

Note: Construction duration is assumed to be 5 months total (105 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.15	0.40	0.03	0.00	0.02	0.02	46.13	0.00
							TOTAL =	**0.15**	**0.40**	**0.03**	**0.00**	**0.02**	**0.02**	**46.13**	**0.00**

Unpaved Road Emissions		PM10	PM2.5
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.07**	**0.01**

Construction Truck Emissions - Alternative E

Note: Construction duration is assumed to be 3 months total (70 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.10	0.27	0.02	0.00	0.01	0.01	30.75	0.00
							TOTAL =	**0.10**	**0.27**	**0.02**	**0.00**	**0.01**	**0.01**	**30.75**	**0.00**

Unpaved Road Emissions		PM10	PM2.5
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.04**	**0.00**

Construction Truck Emissions - Alternative F

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.17	0.47	0.03	0.00	0.02	0.02	54.91	0.00
							TOTAL =	**0.17**	**0.47**	**0.03**	**0.00**	**0.02**	**0.02**	**54.91**	**0.00**

Unpaved Road Emissions		PM10	PM2.5
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.08**	**0.01**

Construction Truck Emissions - Alternative G

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Proj. Construction Trucks	No. of Trucks	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.17	0.47	0.03	0.00	0.02	0.02	54.91	0.00
							TOTAL =	**0.17**	**0.47**	**0.03**	**0.00**	**0.02**	**0.02**	**54.91**	**0.00**

Unpaved Road Emissions		PM10	PM2.5
E = k(s/12)^a(W/3)^b	k	1.5	0.15
Assume s = 8.5	a	0.9	0.9
Assume W = 10	b	0.45	0.45
Assume 5 miles of travel per vehicle per day			
Emission Factor		1.890604	0.18906
Control Efficiency		61%	61%
Emissions, lbs/day		1.263056	0.11005
Emissions, tons/year =		**0.08**	**0.01**

Construction Worker Personal Vehicle Emissions - Alternative C

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.35	0.03	0.02	0.00	0.00	0.00	44.60	0.00
							TOTAL =	**0.35**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**44.60**	**0.00**

Construction Worker Personal Vehicle Emissions - Alternative D

Note: Construction duration is assumed to be 5 months total (105 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.30	0.03	0.01	0.00	0.00	0.00	37.47	0.00
							TOTAL =	**0.30**	**0.03**	**0.01**	**0.00**	**0.00**	**0.00**	**37.47**	**0.00**

Construction Worker Personal Vehicle Emissions - Alternative E

Note: Construction duration is assumed to be 3 months total (70 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.20	0.02	0.01	0.00	0.00	0.00	24.98	0.00
							TOTAL =	**0.20**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**24.98**	**0.00**

Construction Worker Personal Vehicle Emissions - Alternative F

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.35	0.03	0.02	0.00	0.00	0.00	44.60	0.00
							TOTAL =	**0.35**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**44.60**	**0.00**

Construction Worker Personal Vehicle Emissions - Alternative G

Note: Construction duration is assumed to be 6 months total (125 days subtracting weekends and holidays).

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.35	0.03	0.02	0.00	0.00	0.00	44.60	0.00
							TOTAL =	**0.35**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**44.60**	**0.00**

Work Force Commute - Personal Vehicle Emissions

Note: 1) Annual operational emissions is assumed to be 12 months total (260 days subtracting weekends).

2) For purposes of providing a conservative air quality analysis, all personal vehicles were assumed to be gasoline powered light-duty trucks.

3) Vehicle miles traveled per day was conservativly estimated to be 30 miles per day.

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO_X		VOCs					
				Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)
Light-duty truck, catalyst	1,500	33	30	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054

Vehicle Class	SOx		PM10				PM2.5				CO2		CH4	
	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046

Emissions, lbs/day								Emissions, tons/year							
CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4	CO	NOx	VOCs	SOx	PM10	PM2.5	CO2	CH4
327.42	30.03	17.82	0.40	3.43	1.83	40312.1	2.83	42.56	3.90	2.32	0.05	0.45	0.24	5240.57	0.37
							TOTAL =	**42.56**	**3.90**	**2.32**	**0.05**	**0.45**	**0.24**	**5240.57**	**0.37**

APPENDIX F

ARCYBER
SOCIOECONOMIC REPORT

ARCYBER Socioeconomic Report

March 2013

ACRONYMS AND ABBREVIATIONS

ARCYBER	Army Cyber
EA	Environmental Assessment
IMPLAN	Impact Analysis for Planning
NAICS	North American Industry Classification System
ROI	Region of Influence
U.S.	United States

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TABLES

FIGURES

EXECUTIVE SUMMARY

The United States (U.S.) Army Cyber Command (ARCYBER) is proposing to construct and operate a command and control facility that would be located at Fort Meade in Anne Arundel County, Maryland or at Fort Gordon in Richmond County, Georgia (with portions of the Fort extending into Jefferson, Columbia, and McDuffie Counties).

Anne Arundel County was selected as the ROI for the Fort Meade alternatives and even though Fort Gordon extends into other counties, Richmond County was selected as the ROI for the Fort Gordon alternatives. The decision to use Richmond County, singularly, was made for two reasons. First, the proposed site locations are located within the cantonment area, which is within Richmond County. Secondly, Augusta is the largest nearby economic hub and is also within Richmond County. Fort Gordon's training areas are located in counties other than Richmond County and personnel working at Fort Gordon live in several surrounding counties. The induced impacts presented in this report would flow outside of Richmond County.

The purpose of this socioeconomic report is to provide estimates of the potential economic impacts of the proposed project on the economic conditions of the counties that would potentially host the facility. Analysis in this socioeconomic report quantifies economic impacts that would be generated by three potential alternatives: 1) a new facility at Fort Meade, 2) a new facility at Fort Gordon, and 3) a renovated facility at Fort Gordon.

This socioeconomic report was prepared using the most current and best available data. Primary data were provided by ARCYBER and the Impact Analysis for Planning (IMPLAN) model (MIG 2012). IMPLAN, a standard tool for estimating economic impacts, was used to generate estimates of economic impacts. The impact analysis, however, is essentially a snapshot in time; ongoing planning, scheduling, and federal legislative activities could result in changes to various input assumptions and therefore to the impact conclusions as well.

The socioeconomic report was prepared as a stand-alone study to the ARCYBER Environmental Assessment (EA) for the proposed construction and operations of ARCYBER at either Fort Meade or at Fort Gordon. The socioeconomic analysis quantifies the following types of impacts on the two proposed locations:

- Jobs,
- Labor Income, and
- Economic Output.

Impacts are presented on a year-by-year basis and both *construction* and *operational* activities are considered. It is currently expected that for each alternative construction would begin in 2015 and be completed in 2017. For a portion of 2017 construction and operational activities would occur simultaneously, as construction winds down and operations ramp up. Operations would be expected to begin, at a low level of capacity, in 2017, subject to the completion of portions of construction. During 2018, it would be expected that construction would be completed and operations would be ramping-up to reach full capacity by year end. The year 2019 would be expected to be the first full year at full operations; this year represents the first year of *steady-state* operations. The phasing considered in this socioeconomic report is summarized, in Table ES-1, as follows:

Table ES-1. Construction and Operations Timeline

Year	Construction	Operations
2015	Construction start	None
2016	Continuing construction	None
2017	Construction end	Start-up operations
2018	None	Operations ramp-up (reach full operations by year end)
2019	None	Entire year at full operations (first year of steady-state)

Economic Impact Summary Results

Table ES-2 shows the steady-state impacts for each alternative; steady-state impacts would be expected to begin in the year 2019. Impacts shown in Table ES-2 are total impacts (including direct plus indirect/induced impacts).

Table ES-2. Total Economic Impacts[1] at Steady-State[2] Operations

	Jobs	Labor Income	Economic Output
Anne Arundel County			
Fort Meade	2,286	\$173,696,002	\$328,349,665
Richmond County			
Fort Gordon (New Construction)	2,029	\$154,331,368	\$287,803,673
Fort Gordon (Renovation)	2,033	\$154,532,046	\$288,320,113

Note[1]: Estimates measured in currency are presented in 2014 constant dollars.
Note[2]: Steady-state operations would be expected to begin in 2019.

Over the course of construction and throughout the buildup in operations, economic impacts would grow over time, but would level off beginning in 2019 (as steady-state operations are reached). Figures ES-1, ES-2, and ES-3 show the growth of impacts and the leveling off that would be expected to occur as steady state operations are reached.

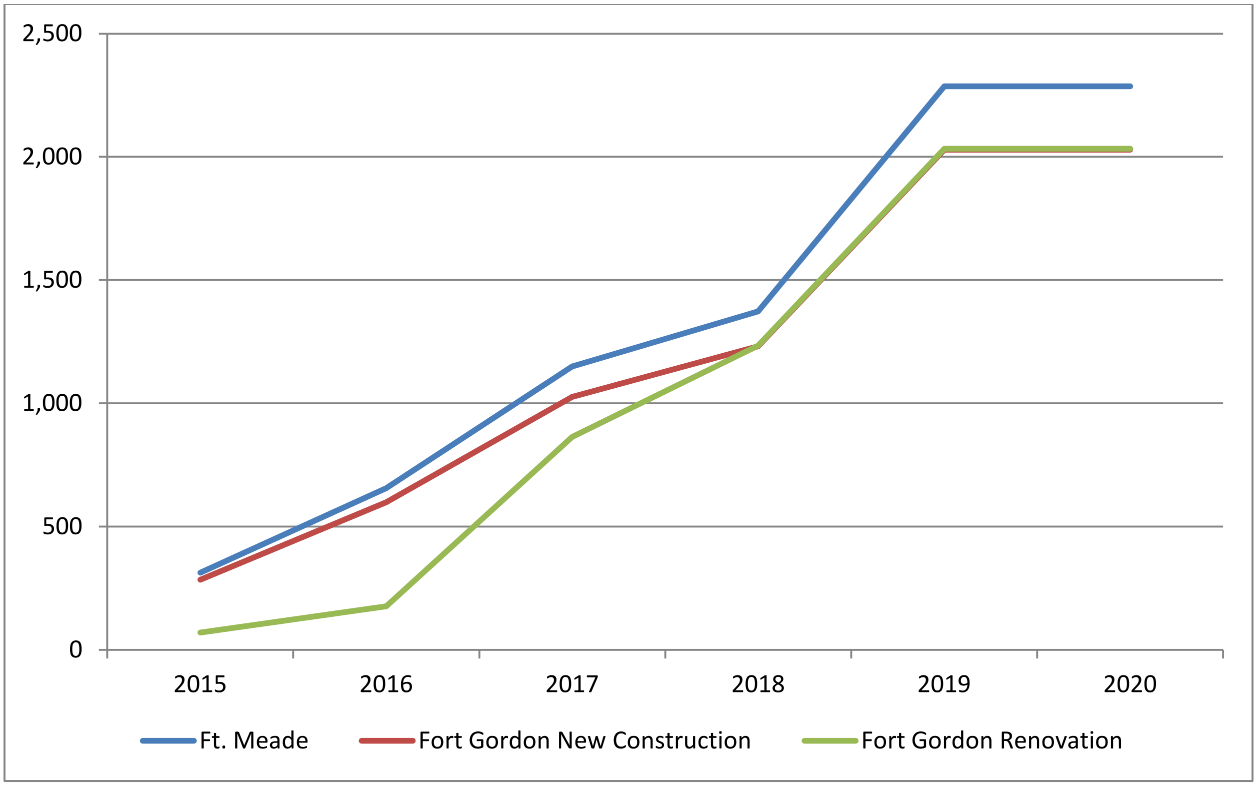

Figure ES-1. Total Jobs Impacts for the three ARCYBER Alternatives

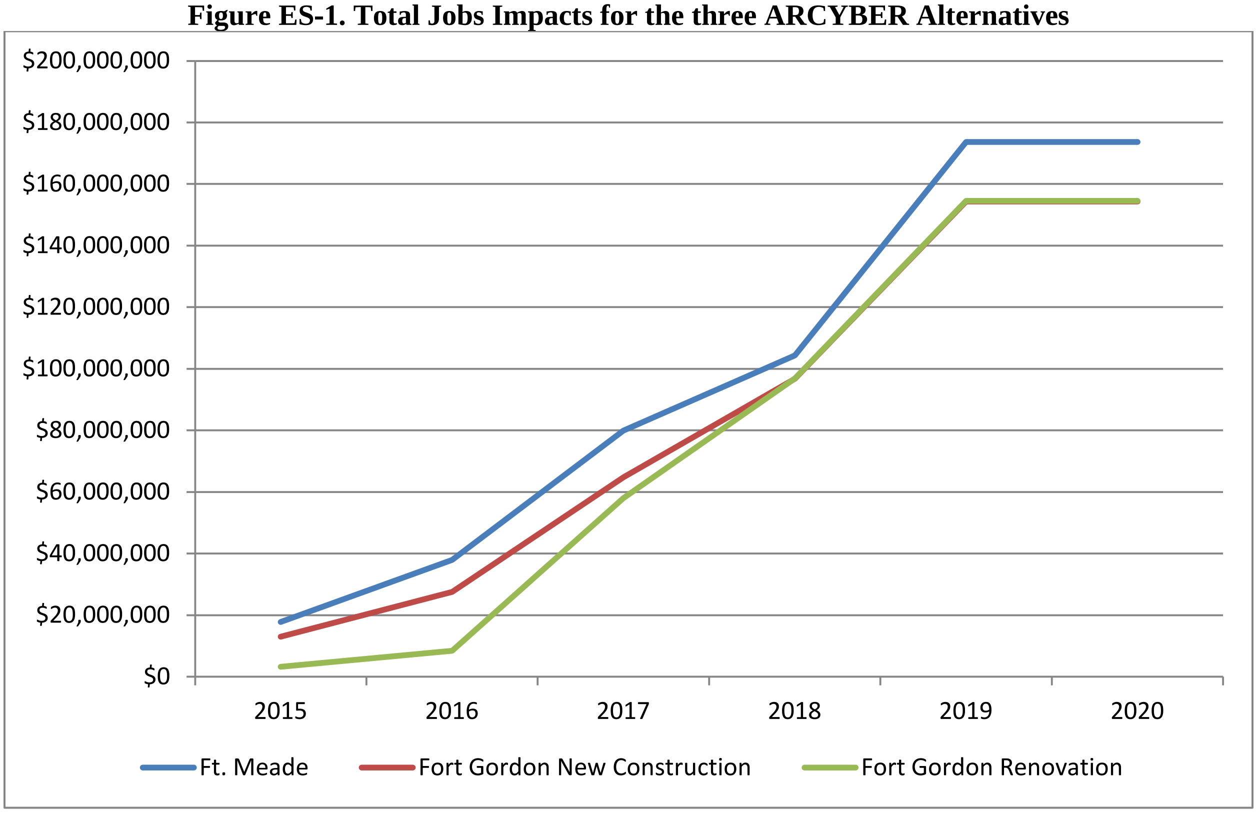

Figure ES-2. Total Labor Income Impacts for the three ARCYBER Alternatives

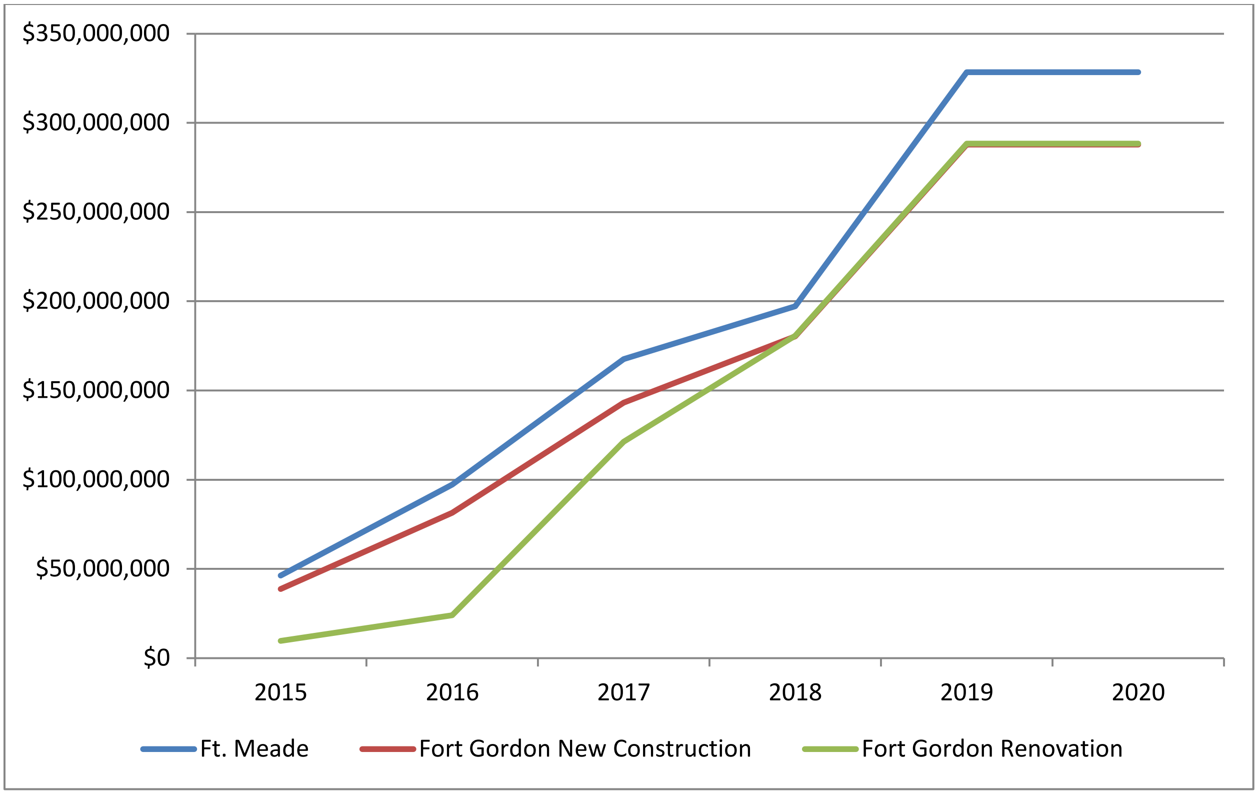

Figure ES-3. Total Economic Output Impacts for the three ARCYBER Alternatives

CHAPTER 1. INTRODUCTION

1.1 PURPOSE OF THE STUDY

The United States (U.S.) Army Cyber Command (ARCYBER) is proposing to construct and operate a command and control facility that would be located at Fort Meade in Anne Arundel County, Maryland or at Fort Gordon in Richmond County, Georgia (with portions of the Fort extending into Jefferson, Columbia, and McDuffie Counties). The purpose of this socioeconomic report is to provide estimates of the potential economic impacts of the proposed project on the economic conditions of the counties that would potentially host the facility. Analysis in this socioeconomic report quantifies economic impacts that would be generated by three potential alternatives: 1) a new facility at Fort Meade, 2) a new facility at Fort Gordon, and 3) a renovated facility at Fort Gordon.

The socioeconomic report was prepared as a stand-alone study to the ARCYBER Environmental Assessment (EA) for the proposed construction and operations of ARCYBER at either Fort Meade or at Fort Gordon. The findings of this socioeconomic report will be incorporated into the ARCYBER EA.

1.2 PROJECT TIMELINE

Impacts are presented on a year-by-year basis and both *construction* and *operational* activities are considered. It is currently expected that, for each alternative, construction would begin in 2015 and be completed in 2017. For a portion of 2017 construction and operational activities would occur simultaneously, as construction winds down and operations ramp up. Operations would be expected to begin, at a low level of capacity, in 2017, subject to the completion of portions of construction. During 2018, it would be expected that construction would be completed and operations would be ramping-up to reach full capacity by year end. The year 2019 would be expected to be the first full year at full operations; this year represents the first year of *steady-state* operations. The phasing considered in this socioeconomic report is summarized, in Table 1-1, as follows:

Table 1-1. Construction and Operations Timeline

Year	Construction	Operations
2015	Construction start	None
2016	Continuing construction	None
2017	Construction end	Start-up operations
2018	None	Operations ramp-up (reach full operations by year end)
2019	None	Entire year at full operations (first year of steady-state)

1.3 OVERVIEW OF RESULT VARIABLES

Analysis in this socioeconomic report quantifies the following types of impacts on the two proposed locations:

- Jobs,
- Labor Income, and
- Economic Output.

When measured in dollar terms, impacts are presented in constant dollars. By presenting impacts in constant dollars, this report implicitly assumes that general economic conditions, during the years for which results are presented, will be similar to current economic conditions. Constant dollar analysis is presented in year 2014 dollars due to the nature of the estimates of expenditures and employment data provided by ARCYBER, which were projected to 2014 levels.

1.4 REGIONS OF INFLUENCE

Anne Arundel County was selected as the Region of Influence (ROI) for the Fort Meade alternatives and even though Fort Gordon extends into other counties, Richmond County was selected as the ROI for the Fort Gordon alternatives. The decision to use Richmond County, singularly, was made for two reasons. First, the proposed site locations are located within the cantonment area, which is within Richmond County. Secondly, Augusta is the largest nearby economic hub and is also within Richmond County. While Fort Gordon's training areas are located in counties other than Richmond County and personnel working at Fort Gordon live in several surrounding counties, the ROI is limited to Richmond County for the reasons mentioned previously. The induced impacts presented in this report (i.e., the spending of the wages and salaries of the direct and indirect employees) would naturally flow outside the ROI into surrounding counties.

CHAPTER 2. APPROACH TO ANALYSIS

2.1 REGIONS OF INFLUENCE

This socioeconomic report conducts analysis for two Regions of Influence (ROIs). One ROI covers the Fort Meade alternative; the ROI for this alternative is Anne Arundel County, Maryland. The second ROI covers the two Fort Gordon alternatives; the ROI for these alternatives is Richmond County, Georgia.

2.1.1 Primary Data

Primary economic data were provided by ARCYBER. For analysis of the construction phase, ARCYBER provided information on construction expenditures and a general timeline for the project. For analysis of the operations phase, ARCYBER provided data on total employment and payroll as well as non-payroll operational expenditures categorized by type of expenditure. A general timeline for the ramp up in operations and a target for full (steady-state) operations were also provided.

2.1.1.1 Construction and Installed Equipment Expenditures

<u>Construction Expenditures</u>

Depending on the alternative carried forward, ARCYBER estimated construction expenditures to be between $28 and $122.7 million. As shown in Table 2-1, the highest expenditures figure, $122.7 million, is associated with the Fort Meade alternative, which would require the construction of a new facility. The Fort Gordon new construction alternative is estimated to cost $112.9 million and the Fort Gordon renovation alternative would require the lowest level of construction expenditures ($28 million). These expenditures include labor, materials, and contractor overhead.

Construction expenditures were input into the Impact Analysis for Planning (IMPLAN) model by allocating them into an appropriate IMPLAN sector. The IMPLAN model requires that expenditures be allocated into sectors because, by virtue of their unique expenditure patterns, every sector of the economy generates different levels of economic impacts. Construction expenditures were allocated to the IMPLAN sector “Construction of new nonresidential commercial and health care structures” which is best correlated to the type of construction required for ARCYBER.

Table 2-1. Construction Expenditures for each Alternative, 2015 to 2017 (Constant 2014 Dollars)

Alternative	2015	2016	2017	Totals
Fort Meade	$30,676,532	$61,353,063	$30,676,532	**$122,706,127**
Fort Gordon (New Construction)	$28,222,409	$56,444,818	$28,222,409	**$112,889,636**
Fort Gordon (Renovation)	$7,016,192	$14,032,385	$7,016,192	**$28,064,769**

Source: ARCYBERARCYBER 2012

Construction employment was generated by the IMPLAN model, based on the expenditures data provided in Table 1-1. Estimates of construction employment are included in the results section of this report.

<u>Installed Furnishings and Equipment Expenditures</u>

Along with the actual construction of ARCYBER, permanent furnishings and equipment would be installed. These furnishings and equipment would be installed into the facility as feasible subject to completion of portions of construction; it is projected that installation would take place during the years 2016 and 2017. Table 2-2 provides details on expected expenditures on installed furnishings and equipment.

Expenditures on installed furnishings and equipment were input into the IMPLAN model by allocating them into appropriate IMPLAN sectors. The IMPLAN model requires that expenditures be allocated into sectors because, by virtue of their unique expenditure patterns, every sector of the economy generates different levels of economic impacts. Expenditures on installed furnishings and equipment (Table 2-2) were input into the IMPLAN model's "Wholesale Trade" sector. The Wholesale Trade sector comprises establishments engaged in an intermediate step in the distribution of merchandise. Expenditures on installed furnishings and equipment were input into this sector because it was assumed that the installed furnishings and equipment would be manufactured outside of the region, but procured from local wholesale distributers. Because products would be purchased from wholesalers, the IMPLAN model only includes wholesale margins in its estimate of output in the region; wholesale margins are calculated as sales excluding the cost that the wholesaler paid.

Table 2-2. Installed Furnishings and Equipment Expenditures for each Alternative, 2016 and 2017 (Constant 2014 Dollars)

	2016	2017	Totals
Fort Meade			
Furnishings and Equipment	$8,670,851	$70,935,149	$79,606,000
Information Systems	$8,966,149	$73,350,941	$82,317,090
Fort Gordon (New Construction)			
Furnishings and Equipment	$7,977,183	$65,260,337	$73,237,520
Information Systems	$8,248,857	$67,482,866	$75,731,723
Fort Gordon (Renovation)			
Furnishings and Equipment	$9,747,002	$79,739,008	$89,486,010
Information Systems	$10,078,950	$82,454,627	$92,533,577

Source: ARCYBER 2012

2.1.1.2 Operational Employment

Employment totals in Table 2-3 represent all government employees (i.e., active duty military, government civilians, and contract personnel) that would work at ARCYBER. As Table 2-3 indicates, direct operational employment related to ARCYBER would build up from the first year of operations in 2018 until full operational status is reached sometime in 2019. The first full year of operations would occur in 2019, so the 2019 total reflects a steady-state in which the same number of employees would work at ARCYBER absent any unforeseen changes. Please note the total number of full-time positions at ARCYBER and associated labor income and economic output are based on the creation of 1,500 jobs at ARCYBER, which reflects the maximum scenario. It is possible the steady-state operations would require fewer full-time positions than the maximum scenario, resulting in reduced projected labor income and economic output. In addition, direct jobs were not entered into the IMPLAN model because, according to the model, jobs do not generate other jobs. Jobs impacts are generated through increases in economic activity that would be spurred by expenditures that would be associated with the construction and operations of ARCYBER.

Table 2-3. Estimated Direct Operational Employment, 2017 to 2019

	2017	2018	2019*
All Alternatives	375	900	1,500

Source: ARCYBER 2012
Note: *2019 represents a steady-state. This number of jobs would be expected to continue annually for the foreseeable future.

2.1.1.3 Operational Expenditures

There would be two major sources of local expenditures derived from operational activities at ARCYBER: 1) payroll; 2) non-payroll expenditures – purchases of goods and services that would be required to operate ARCYBER. Since it is expected that ARCYBER would maintain operations for the foreseeable future, impacts related to ARCYBER operations would be considered economically sustainable in comparison to the construction phase (which would last less than three full years and be completed in 2017). The following sections discuss the sources and magnitude of ARCYBER operational expenditures during the early start-up stages (2017-2018) and the steady-state (2019 forward).

Operational Payroll Expenditures

Table 2-4 shows payroll expenditures that would be associated with direct operational employment; this information was provided by ARCYBER. Similar to growth in employment (shown in Table 2-3), payroll expenditures would increase from the start of operations in 2017 until full operations are reached by the end of 2018. The first full year of full operations would be expected in 2019.

Operational payroll expenditures were allocated to the IMPLAN sector “Employment and payroll only (federal govt. military)” which is best correlated to payroll of ARCYBER employees.

Table 2-4. Estimated Income of Direct Operations Workers, 2017 to 2019, Constant 2014 Dollars

Alternative	2017	2018	2019*
Fort Meade	$35,125,067	$84,300,160	$140,500,266
Fort Gordon (both alternatives)	$33,645,482	$84,300,160	$134,581,927

Source: ARCYBER 2012.
Note: *Estimate for 2019 represents steady-state payroll expenditures. This level of payroll would be expected to continue annually for the foreseeable future.

Non-payroll Operational Expenditures

Non-payroll operational expenditures refer to expenditures that are made for goods and services that would facilitate operations of ARCYBER. ARCYBER provided information on ARCYBER non-payroll operational expenditures. These data represent purchases of goods and services within the ROI that would be made to maintain the operations of ARCYBER. These expenditures would be paid to firms in the respective ROI’s that would be contracted to provide goods and services. Table 2-5 details the types of goods and services that would be required to operate ARCYBER and the expected level of expenditures for each type of goods and services.

Non-labor operational expenditures were allocated into several IMPLAN sectors based on the expenditure categories in Table 2-5, which were provided by ARCYBER. In order to model the expenditures, the categories provided by ARCYBER required conversion into IMPLAN sectors. To convert ARCYBER expenditure categories into IMPLAN sectors, the categories were first converted into North American

Industry Classification System (NAICS) industries. Once classified according to NAICS industry, a table bridging NAICS industries and IMPLAN sectors (Minnesota IMPLAN Group 2012) was used to ensure operational expenditures were allocated into appropriate IMPLAN sectors. Table 2-6 shows non-payroll operational expenditures categorized as provided by ARCYBER and the IMPLAN sectors that the expenditures were subsequently assigned to.

Table 2-5. Non-payroll Operational Expenditures in the ROI, 2018 to 2021, Constant 2014 Dollars

	2017	2018	2019*
Fort Meade			
Sustainment (Facilities Support)	$221,196	$530,869	$884,782
Energy	$204,805	$491,531	$819,218
Water/Wastewater	$5,199	$12,478	$20,797
Real property management	$21,056	$50,534	$84,224
Custodial services	$59,553	$142,927	$238,211
Refuse collection	$4,197	$10,073	$16,788
Grounds maintenance	$6,381	$15,314	$25,523
Pest control	$1,574	$3,778	$6,296
Equipment (Supplies & Upgrades)	$2,016,660	$2,016,660	$2,016,660
Totals	**$2,540,621**	**$3,274,164**	**$4,112,499**
Fort Gordon New Construction			
Sustainment (Facilities Support)	$201,288	$483,091	$805,152
Energy	$136,257	$327,017	$545,028
Water/Wastewater	$4,731	$11,355	$18,925
Real property management	$19,161	$45,986	$76,644
Custodial services	$54,193	$130,063	$216,772
Refuse collection	$3,819	$9,166	$15,277
Grounds maintenance	$5,807	$13,936	$23,226
Pest control	$1,432	$3,437	$5,729
Equipment (Supplies & Upgrades)	$2,016,660	$2,016,660	$2,016,660
Totals	**$2,443,348**	**$3,040,711**	**$3,723,413**
Fort Gordon Renovation			
Sustainment (Facilities Support)	$245,946	$590,270	$983,783
Energy	$166,487	$399,569	$665,948
Water/Wastewater	$5,781	$13,874	$23,123
Real property management	$23,412	$56,189	$93,649
Custodial services	$66,216	$158,919	$264,865
Refuse collection	$4,667	$11,200	$18,667
Grounds maintenance	$7,097	$17,032	$28,387
Pest control	$1,750	$4,200	$7,000
Equipment (Supplies & Upgrades)	$2,016,660	$2,016,660	$2,016,660
Totals	**$2,538,016**	**$3,267,913**	**$4,102,082**

Source: ARCYBER 2012.
Note: *Estimate for 2019 represents steady-state non-payroll operational expenditures. This level of expenditure would be expected to continue annually for the foreseeable future.

Table 2-6. Allocation on Non-Payroll Operational Expenditures into IMPLAN Sectors

Expenditure Category	IMPLAN Sector Description
Sustainment (Facilities Support)	Facilities support services
Energy	State and local government electrical utilities
Water/Wastewater	State and local government electrical utilities
Real property management	Real estate establishments
Custodial services	Services to buildings and dwellings
Refuse collection	Waste management and remediation services
Grounds maintenance	Services to buildings and dwellings
Pest control	Services to buildings and dwellings
Equipment (Supplies & Upgrades)	Wholesale trade

2.1.2 Result Variables and Key Concepts

2.1.2.1 Result Variables

Economic impact variables that are presented as results include Jobs, Labor Income, and Economic Output.

Jobs

Jobs impacts represent the number of jobs that would be created or sustained within the ROI as a result of the construction and operations of ARCYBER. The IMPLAN model generates jobs numbers that include part-time jobs and as such this report does not report full-time equivalent jobs but rather all jobs.

Labor Income

Labor income impacts represent the income generated through the jobs that would be created or sustained within the ROI as a result of the construction and operations of ARCYBER.

Economic Output

Economic output impacts represent total production and sales volume that would be generated in the ROI as a result of the construction and operations of ARCYBER. Economic output is generated by increases in personal expenditures, non-payroll expenditures.

2.1.2.2 Key Concepts

Each of the result variables consists of a direct, an indirect, and an induced element.

Direct Impacts

Direct impacts are associated with the construction and operations of ARCYBER itself. Direct jobs include jobs constructing and operating the ARCYBER facility. Direct labor income is the incomes earned by those workers and direct economic output is associated with initial purchases of local construction materials and supplies, as well as goods and services that would facilitate the operations of ARCYBER.

Indirect Impacts

Indirect impacts are the jobs, income, and economic output generated by the businesses that would supply goods and services to ARCYBER. Indirect jobs include jobs at companies that supply construction materials/supplies or support jobs directly related to ARCYBER operations. Indirect jobs can extend to include jobs related to the manufacture of products used to construct and operate the facility. Indirect labor income includes the income earned by people working indirect jobs. Indirect output includes the total sales volume related to the supply of goods and services to the suppliers of businesses that would supply ARCYBER with construction and operational support.

Induced Impacts

Induced impacts are the result of spending of the wages and salaries of the direct and indirect employees on items such as food, housing, transportation, and medical services. This spending creates induced employment in nearly all sectors of the economy, especially service sectors.

CHAPTER 3. ECONOMIC IMPACT RESULTS

3.1 FORT MEADE ALTERNATIVE – ANNE ARUNDEL COUNTY, MARYLAND

3.1.1 Jobs

Table 3-1 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 656 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 1,149 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,373 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; 2,286 jobs would be generated annually in 2019 and every year for the foreseeable future. Figure 3-1 illustrates the results presented in Table 3-1.

Table 3-1. Jobs Impact from Combined Construction and Operations, Anne Arundel County, 2015-2019

	2015	2016	2017	2018	2019*
Direct	193	402	723	909	1,514
Indirect/Induced	120	254	426	464	772
Total	**313**	**656**	**1,149**	**1,373**	**2,286**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

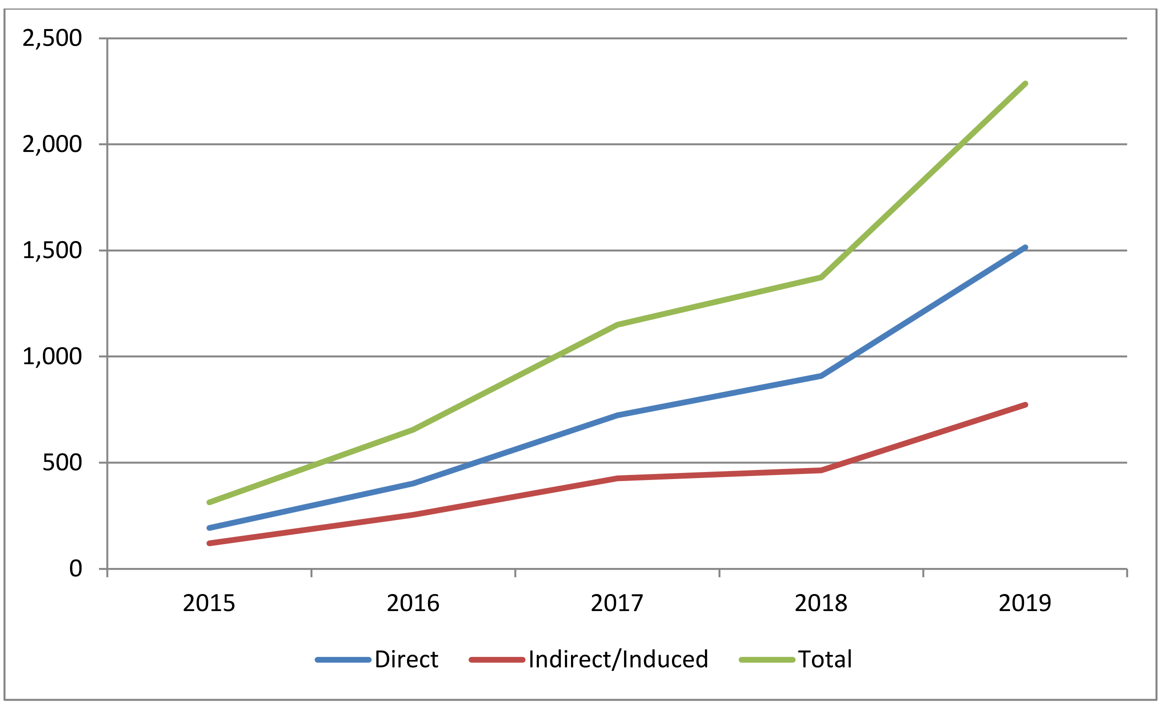

Figure 3-1. Jobs Impact from Combined Construction and Operations, Anne Arundel County, 2015-2019

3.1.2 Labor Income

Table 3-2 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $37,900,788 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $76,809,019 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $104,321,175 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $173,696,002 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-2 illustrates the results presented in Table 3-2.

Table 3-2. Labor Income Impact from Combined Construction and Operations, Anne Arundel County, 2015-2019, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$11,775,173	$25,181,578	$58,237,126	$84,957,730	$141,471,869
Indirect/Induced	$6,042,950	$12,719,210	$18,571,893	$19,363,446	$32,224,133
Total	**$17,818,123**	**$37,900,788**	**$76,809,019**	**$104,321,175**	**$173,696,002**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

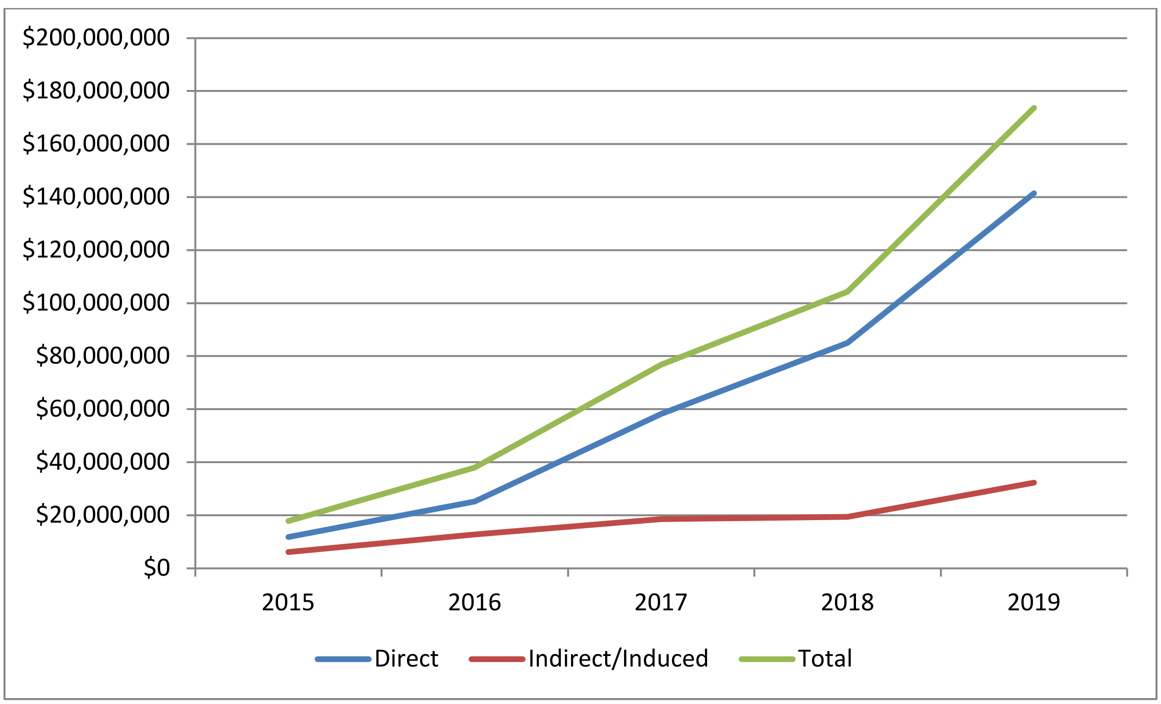

Figure 3-2. Labor Income Impact from Combined Construction and Operations, 2015-2019, Anne Arundel County, Constant 2014 Dollars

3.1.3 Economic Output

Table 3-3 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $97,237,418 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $159,589,892 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $197,227,085 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $328,349,665 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-3 illustrates the results presented in Table 3-3.

Table 3-3. Economic Output Impact from Combined Construction and Operations, Anne Arundel County, 2015-2019, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$30,676,531	$64,386,627	$108,333,334	$141,231,811	$235,155,106
Indirect/Induced	$15,566,887	$32,850,940	$51,256,558	$55,995,274	$93,194,559
Total	**$46,243,418**	**$97,237,567**	**$159,589,892**	**$197,227,085**	**$328,349,665**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

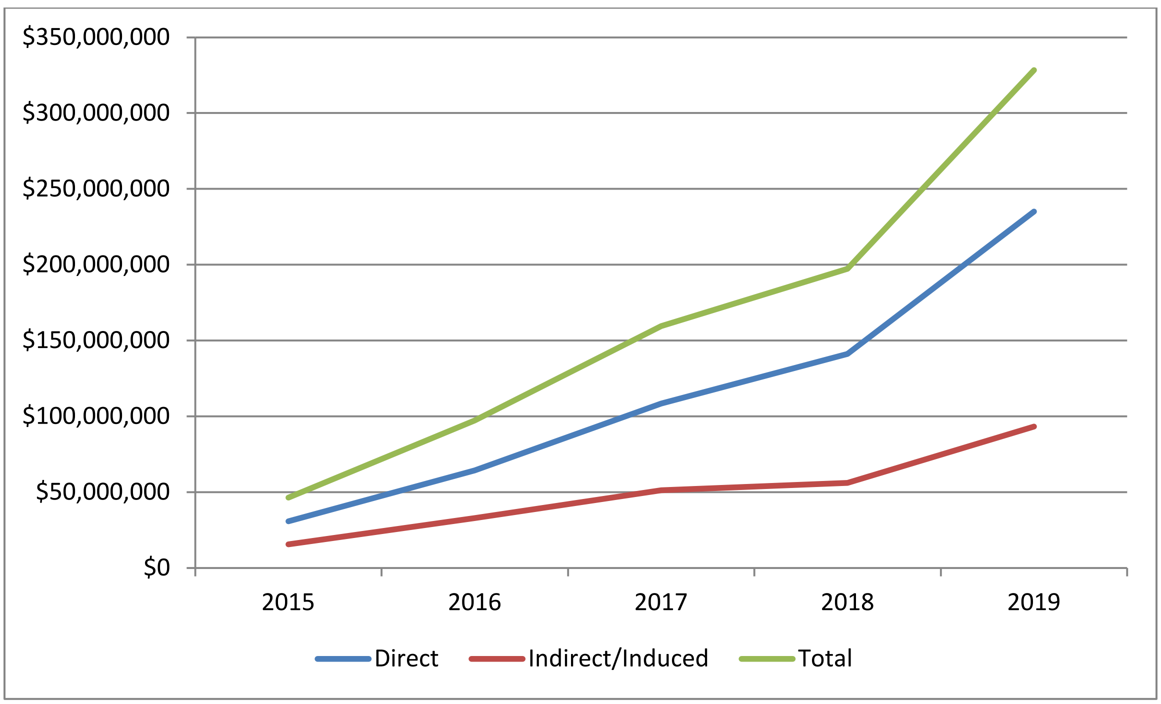

Figure 3-3. Economic Output Impact from Combined Construction and Operations, 2015-2019, Anne Arundel County, Constant 2014 Dollars

3.2 FORT GORDON NEW CONSTRUCTION ALTERNATIVE – RICHMOND COUNTY, GEORGIA

3.2.1 Jobs

Table 3-4 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 599 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 1,026 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,232 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum 2,029 jobs would be generated annually in 2019 and every year for the foreseeable future if upwards of 1,500 people are employed at ARCYBER. Figure 3-4 illustrates the results presented in Table 3-4.

Table 3-4. Jobs Impact from Combined Construction and Operations, Richmond County, 2015-2019

	2015	2016	2017	2018	2019*
Direct	202	423	735	909	1,514
Indirect/Induced	83	175	291	323	515
Total	**285**	**599**	**1,026**	**1,232**	**2,029**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

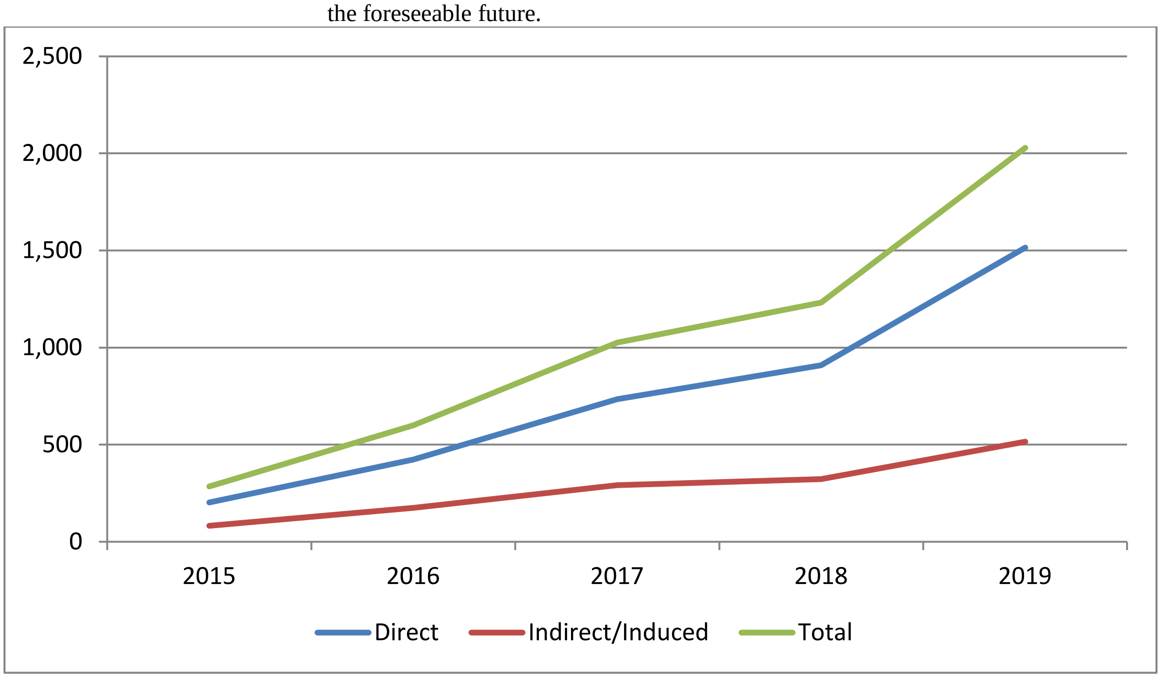

Figure 3-4. Jobs Impact from Combined Construction and Operations, Richmond County, 2015-2019

3.2.2 Labor Income – Combined Construction and Operations

Table 3-5 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $27,526,175 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $62,212,780 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $96,721,246 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $154,331,368 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-5 illustrates the results presented in Table 3-5.

Table 3-5. Labor Income Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$9,480,441	$20,176,026	$51,286,681	$84,869,423	$135,430,015
Indirect/Induced	$3,483,783	$7,350,149	$10,926,099	$11,851,824	$18,901,353
Total	**$12,964,224**	**$27,526,175**	**$62,212,780**	**$96,721,246**	**$154,331,368**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

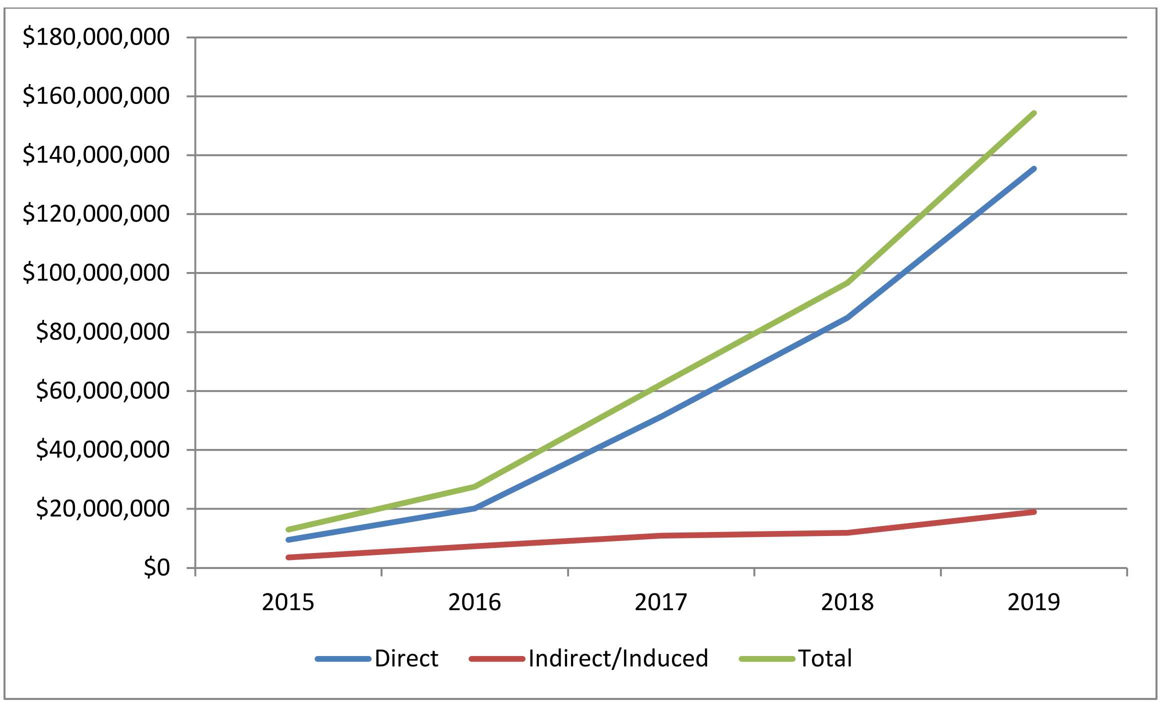

Figure 3-5. Labor Income Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

3.2.3 Economic Output - Combined Construction and Operations

Table 3-6 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $81,387,177 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $135,850,166 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $180,396,813 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $287,803,673 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-6 illustrates the results presented in Table 3-6.

Table 3-6. Economic Output Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$28,222,409	$59,235,697	$102,686,292	$143,745,964	$229,349,845
Indirect/Induced	$10,509,283	$22,151,480	$33,163,874	$36,650,848	$58,453,828
Total	**$38,731,692**	**$81,387,177**	**$135,850,166**	**$180,396,813**	**$287,803,673**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

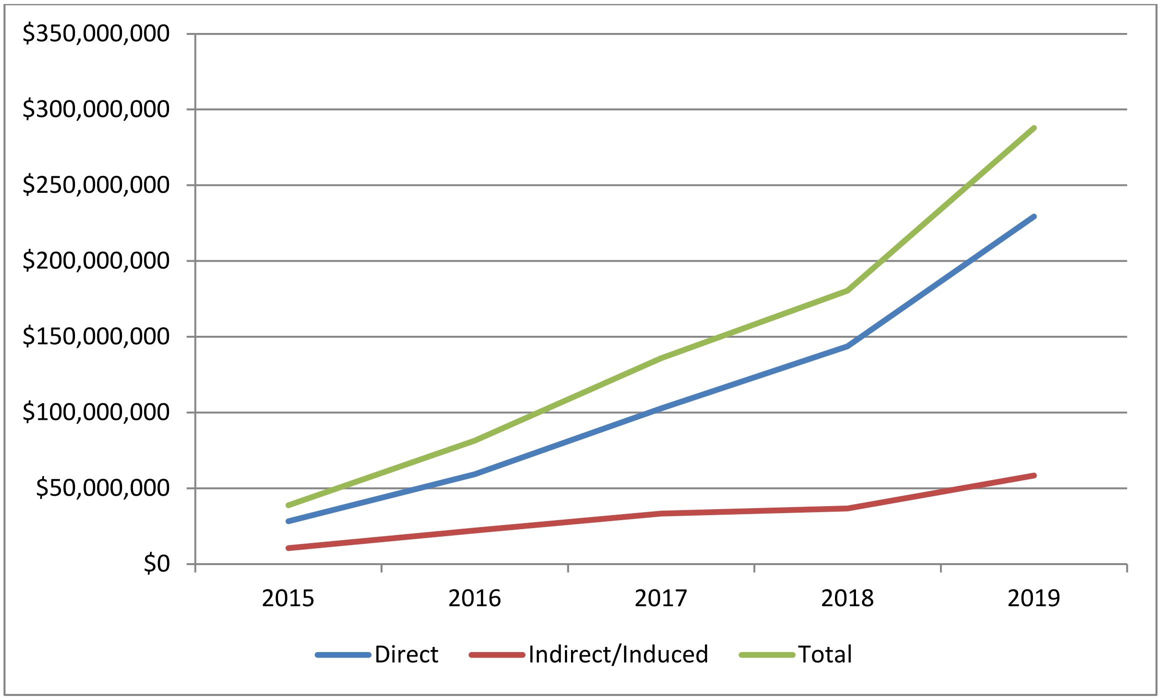

Figure 3-6. Economic Output Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

3.3 FORT GORDON RENOVATION ALTERNATIVE – RICHMOND COUNTY, GEORGIA

3.3.1 Jobs

Table 3-7 presents jobs impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of 176 jobs would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; 864 jobs would be generated in 2017. Operations would ramp up continually during 2018; the number of total jobs would grow throughout the year, with an estimated 1,235 jobs generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum 2,033 jobs would be generated annually in 2019 and every year for the foreseeable future if upwards of 1,500 people are employed at ARCYBER. Figure 3-7 illustrates the results presented in Table 3-7.

Table 3-7. Jobs Impact from Combined Construction and Operations, 2015-2019, Richmond County

	2015	2016	2017	2018	2019*
Direct	50	123	617	911	1,517
Indirect/Induced	54	119	271	323	516
Total	**71**	**176**	**864**	**1,235**	**2,033**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

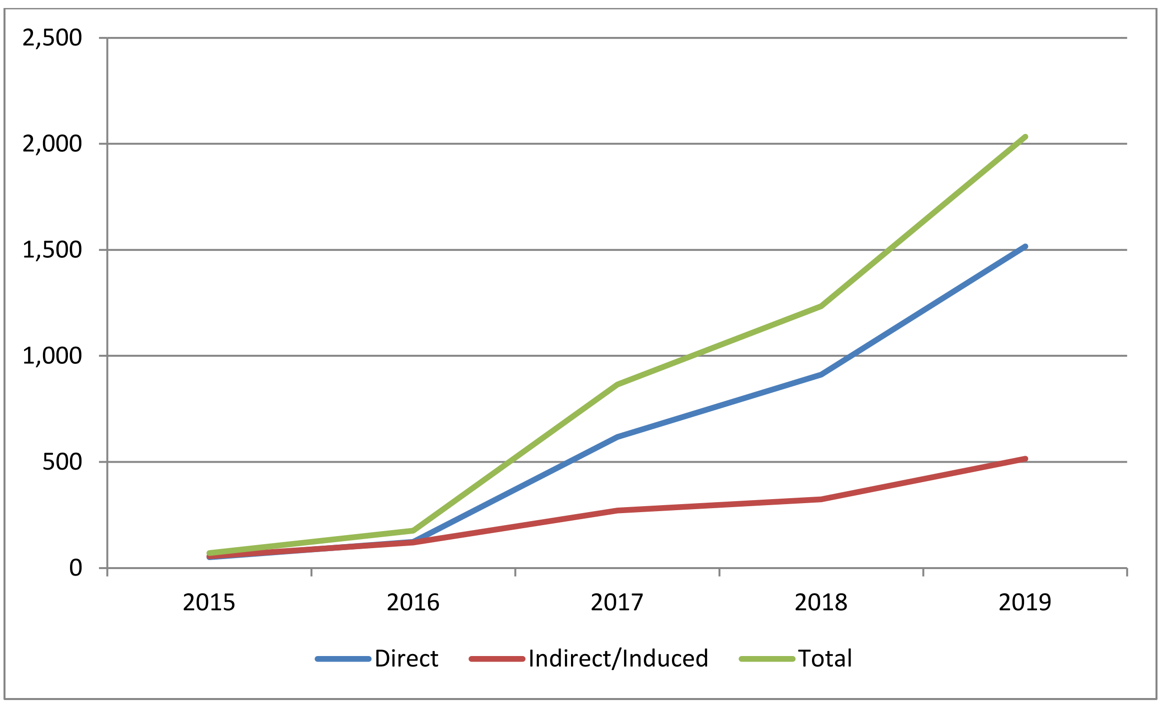

Figure 3-7. Jobs Impact from Combined Construction and Operations, 2015-2019, Richmond County

3.3.2 Labor Income

Table 3-8 presents labor income impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $8,398,104 in labor income would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $55,689,374 in labor income would be generated in 2017. Operations would ramp up continually during 2018; the amount of labor income generated would grow throughout the year, with an estimated $96,841,653 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $154,532,046 in labor income would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-8 illustrates the results presented in Table 3-8.

Table 3-8. Labor Income Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$2,356,872	$6,198,479	$46,599,688	$84,962,215	$135,584,669
Indirect/Induced	$866,081	$2,199,625	$9,089,686	$11,879,439	$18,947,377
Total	**$3,222,953**	**$8,398,104**	**$55,689,374**	**$96,841,653**	**$154,532,046**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

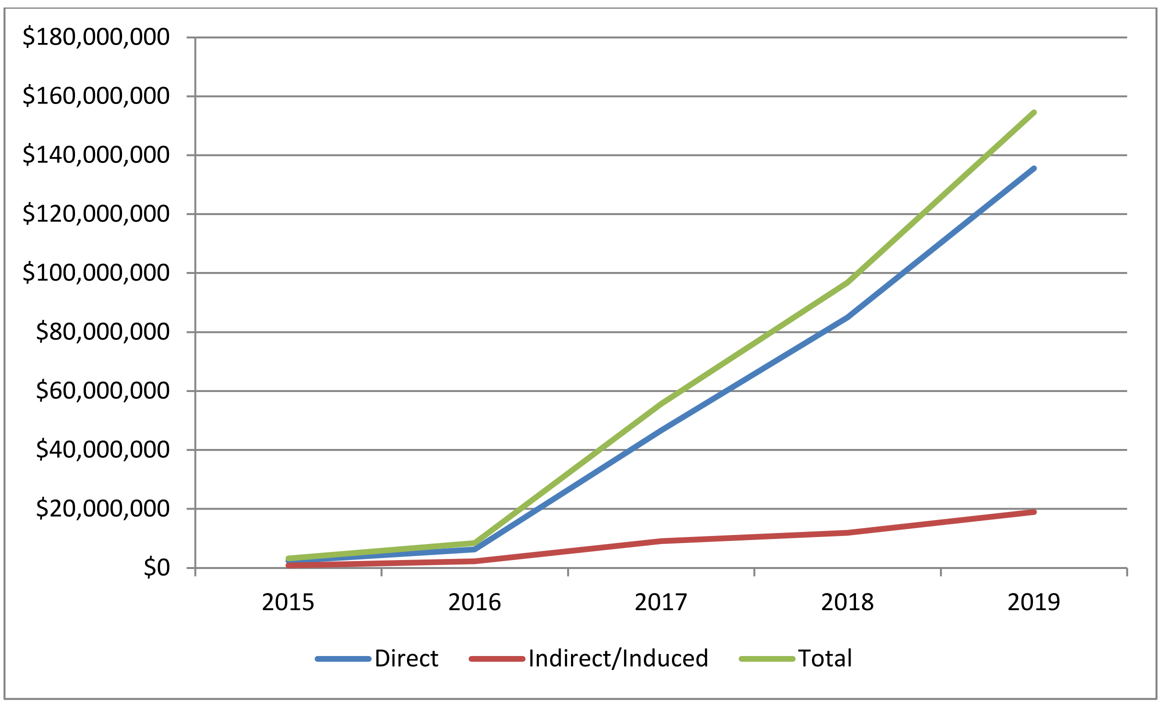

Figure 3-8. Labor Income Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

3.3.3 Economic Output - Combined Construction and Operations

Table 3-9 presents economic output impacts that would result from the combined construction and operations of ARCYBER. The years 2015 and 2016 would consist solely of construction activities; in 2016 a total of $24,052,003 in economic output would be generated by the construction activities. The year 2017 would consist of both construction and operations activities; $116,080,900 in economic output would be generated in 2017. Operations would ramp up continually during 2018; the amount of economic output generated would grow throughout the year, with an estimated $180,706,677 generated over the course of the year. The year 2019 represents the first full year of full operations; a maximum $288,320,113 in economic output would be generated annually in 2019 and every year for the foreseeable future (on a constant dollar basis) if upwards of 1,500 people are employed at ARCYBER. Figure 3-9 illustrates the results presented in Table 3-9.

Table 3-9. Economic Output Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

	2015	2016	2017	2018	2019*
Direct	$7,016,192	$17,442,449	$88,509,691	$143,973,166	$229,728,514
Indirect/Induced	$2,612,645	$6,609,554	$27,571,209	$36,733,511	$58,591,599
Total	**$9,628,837**	**$24,052,003**	**$116,080,900**	**$180,706,677**	**$288,320,113**

Note: *Estimate for 2019 represents steady-state operations. This level of jobs would be expected to continue annually for the foreseeable future.

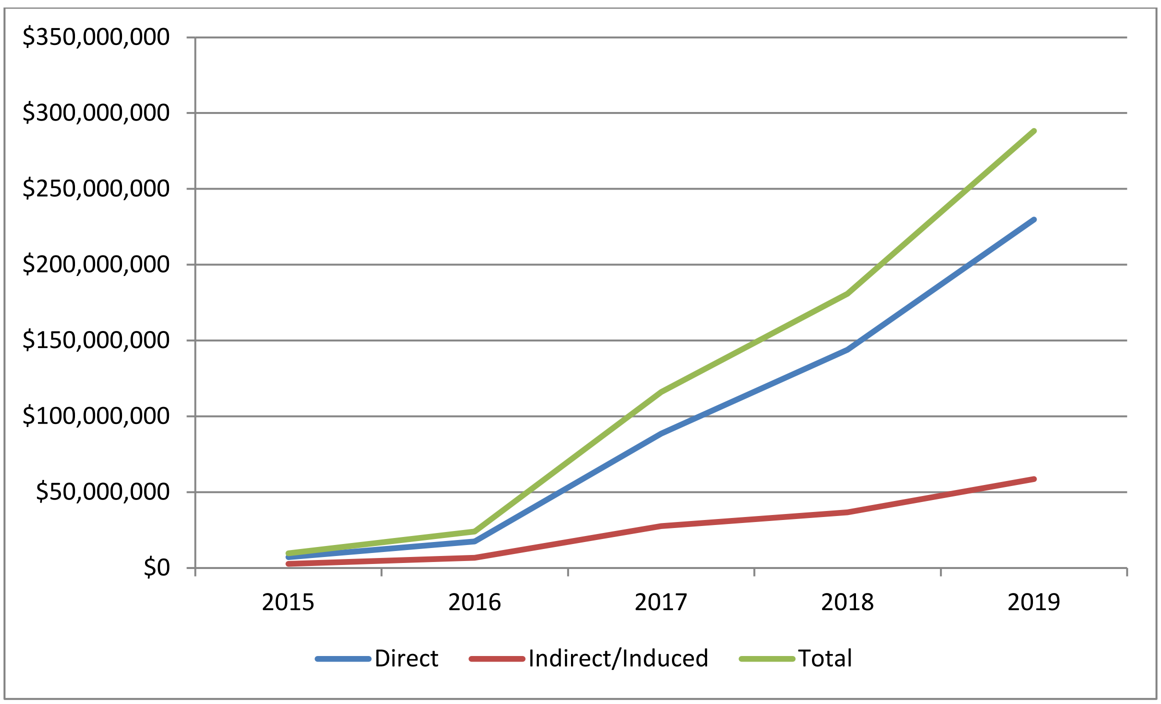

Figure 3-9. Economic Output Impact from Combined Construction and Operations, 2015-2019, Richmond County, Constant 2014 Dollars

CHAPTER 4. REFERENCES

(MIG) Minnesota IMPLAN Group. 2012. Table to bridge NAICS industries to IMPLAN sectors. Available online at http://implan.com/V4/index.php?option=com_docman&task=cat_view&gid=145&Itemid=60

(ARCYBER) U.S. Army Cyber Command. 2012. Data provided upon request in support of socioeconomic report.