May 29th, 2018

EXHIBIT A

SCOPE OF SERVICES

FOR

FINANCIAL PROJECT ID(S). 439976-1-32-01 and 439976-2-32-01

DISTRICT SIX

MIAMI-DADE COUNTY

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SCOPE OF SERVICES FOR CONSULTING ENGINEERING SERVICES

HIGHWAY AND BRIDGE/STRUCTURAL DESIGN

This Exhibit forms an integral part of the agreement between the State of Florida Department of Transportation (hereinafter referred to as the DEPARTMENT or FDOT) and _____ (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

Financial Project ID: ***439976-1-32-01 and 439976-2-32-01***

Federal Aid Project No.: ***N/A***

County Section No.: ***87190000***

Description: ***SR 909/West Dixie Hwy From NE 119 Street to NE 124 Street, Miami-Dade County, Fl.***

Bridge No(s).: ***N/A***

Rail Road Crossing No: ***N/A***

1 PURPOSE

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the DEPARTMENT in connection with the design and preparation of a complete set of construction contract documents and incidental engineering services, as necessary, for improvements to the transportation facility described herein.

Major work mix includes: ***0012 – Resurfacing, 0233 – Intersection Improvement***
Major work groups include: ***3.1: Minor Highway Design***
Minor work groups include: ***7.1: Signing, Pavement marking, and Channelization; 7.2: Lighting; 7.3: Signalization; 15.0: Landscape Architect***

Known alternative construction contracting methods include: ***N/A***

The general objective is for the CONSULTANT to prepare a set of contract documents including plans, specifications, supporting engineering analysis, calculations and other technical documents in accordance with FDOT policy, procedures and requirements. These Contract documents will be used by the contractor to build the project and test the project components. These Contract documents will be used by the DEPARTMENT or its Construction Engineering Inspection (CEI) representatives for inspection and final acceptance of the project. The CONSULTANT shall follow a systems engineering process to ensure that all required project components are included in the development of the Contract documents and the project can be built as designed and to specifications.

The Scope of Services establishes which items of work in the Plans Preparation Manual and other pertinent manuals are specifically prescribed to accomplish the work included in this contract, and also indicate which items of work will be the responsibility of the CONSULTANT and/or the DEPARTMENT.

The CONSULTANT shall be aware that as a project is developed, certain modifications and/or improvements to the original concepts may be required. The CONSULTANT shall incorporate these refinements into the design and consider such refinements to be an anticipated and integral part of the work. This shall not be a basis for any supplemental fee request(s).

The CONSULTANT shall demonstrate good project management practices while working on this project. These include communication with the DEPARTMENT and others as necessary, management of time and resources, and documentation. The CONSULTANT shall set up and maintain throughout the design of the project a contract file in accordance with DEPARTMENT procedures. CONSULTANTs are expected to know the laws and rules governing their professions and are expected to provide services in accordance with current regulations, codes and ordinances and recognized standards applicable to such professional services. The Consultant shall provide qualified technical and professional personnel to perform to Department standards and procedures, the duties and responsibilities assigned under the terms of this agreement. The Consultant shall minimize to the maximum extent possible the Department's need to apply its own resources to assignments authorized by the Department.

The DEPARTMENT will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of contract documents, including Construction documents. The Department's technical reviews are for high-level conformance and are not meant to be comprehensive reviews. The CONSULTANT shall be fully responsible for all work performed and work products developed under this Scope of Services. The DEPARTMENT may provide job-specific information and/or functions as outlined in this contract, if favorable.

1 PURPOSE

2 PROJECT DESCRIPTION

The CONSULTANT shall investigate the status of the project and become familiar with concepts and commitments (typical sections, alignments, etc.) developed from prior studies and/or activities. If a Preliminary Engineering Report is available from a prior or current Project Development and Environmental (PD&E) study, the CONSULTANT shall use the approved concepts as a basis for the design unless otherwise directed by the DEPARTMENT.

SR 909/West Dixie Hwy From NE 119 Street to NE 124 Street.

- ***Section (87190000), MP 0.000 to 0.513***

The principal purpose of this RRR Project is to preserve and extend the service life of the roadway by milling and resurfacing the existing pavement, as well as to enhance general highway safety. The project objectives also include necessary pedestrian modifications to comply with the Americans with Disabilities Act (ADA) and Standards, including the upgrade of pedestrian curb ramps. All pavement markings and sub-standard ground-mounted signs are recommended to be upgraded to the latest editions of the FDOT Standard Plans, the FDOT Traffic Engineering Manual (TEM), and the Manual on Uniform Traffic Control Devices (MUTCD).

Signing and Pavement Markings. Update all sub-standard ground mounted signs to comply with the latest editions of the FDOT Standard Plans, FDOT TEM, and the MUTCD. Replace and upgrade all pavement markings to meet the latest FDOT Design Standards. Upgrade all crosswalks at signalized intersections to high emphasis.

Signalization. Replace outdated pedestrian detector crossing signs. Replace signal pull boxes impacted by the reconstruction of sidewalk segments or pedestrian curb ramps. Coordinate the feasibility of upgrading the signalized intersections to full video actuation; otherwise replace the loop assemblies impacted by milling.

Lighting. Replace lighting pull boxes impacted by the sidewalk and or pedestrian curb ramps.

Safety or Traffic Operations Improvements.
SR 909 / West Dixie Highway at NE 119th Street. Protected/permissive phasing for the eastbound left-turn movement instead of the permissive phase will be installed. The leftmost three-section signal head on the eastbound approach will be replaced with a four-section signal head. The new signal head with black-plates will require replacing the existing mast arm, therefore ROW acquisition should be investigated.

Install an advance Signal Ahead (W3-3) sign on the eastbound approach to the intersection.
Install a supplemental post-mounted signal head facing the eastbound approach.

SR 909 / West Dixie Highway at NE 123rd Street. Redesign the trailblazer guide signs to West Dixie Highway North and install the signs in the median and at the raised island. Install advance intersection lane control signs (R3-8b) on the north-eastbound approach.
Install Route Sign Assemblies on the north-eastbound approach.
Extend the northeast-bound mandatory right-turn lane pavement markings and signs upstream by approximately 150 feet.
Extend the mandatory turn-lane pavement markings.

SR 909 / West Dixie Highway at NE 124th Street. Remove one parking spot at the south-east corner intersection, construct a curb bulb-out, modify the median nose and relocate the stop bar on the north-eastbound approach.
Increase the size of the STOP (R1-1) signs on the north-eastbound approach to 36"x36" and add a W4-4P (CROSS TRAFFIC DOES NOT STOP) supplemental plaque to the stop signs.
Add two sets of through directional arrow pavement markings with ONLY pavement message on the north-eastbound approach.
Install a DEAD END (W14-1) sign just to the north of NE 124 Street facing north-eastbound traffic.
Add Type 4 Object Markers at the cul-de-sac.
Add a Turn/Advisory speed (W1-1a) sign on the westbound approach.

2.1 Project General and Roadway (Activities 3, 4, and 5)

Public Involvement: ***CAP level 2, one public meeting****.*

Other Agency Presentations/Meetings: ***N/A***

Joint Project Agreements: ***N/A***

Specification Package Preparation: ***Specification Package required***

Value Engineering: ***N/A***

Risk Assessment Workshop: ***N/A***

Plan Type: ***Roadway plans required***

Typical Section: 2 Roadway Typical Sections.

Pavement Design: 1 Pavement Design

*Pavement Type Selection Report(s): **N/A***

Cross Slope: Cross slopes vary; Analysis of crash data and cross slope correction

*Access Management Classification: **Class 2***

*Transit Route Features: **N/A, existing to remain***

*Major Intersections/Interchanges: **No additional plan sheets required***

*Roadway Alternative Analysis: **N/A***

Level of TCP Plans:

*Temporary Lighting: **N/A***

*Temporary Signals: **N/A***

*Temporary Drainage: **N/A***

Design Variations/Exceptions:

*Back of Sidewalk Profiles: **N/A***

2.2 Drainage (Activities 6a and 6b) *the existing drainage system is to remain. Adjust manholes and inlets.*

The Designer is responsible to coordinate with District Maintenance Office to determine if any outstanding drainage maintenance issues should be addressed by this project.

2.3 Utilities Coordination (Activity 7) *N/A*

The CONSULTANT is responsible to certify that all necessary arrangements for utility work on this project have been made and will not conflict with the physical construction schedule. The CONSULTANT should coordinate with DEPARTMENT personnel to coordinate transmittals to Utility Companies and meet production schedules.

The CONSULTANT shall ensure FDOT standards, policies, procedures, practices, and design criteria are followed concerning utility coordination.

The CONSULTANT may employ more than one individual or utility engineering consultant to provide utility coordination and engineering design expertise. The CONSULTANT shall identify a dedicated person responsible for managing all utility coordination activities. This person shall be contractually referred to as the Utility Coordination Manager and shall be identified in the CONSULTANT proposal. The Utility Coordination Manager shall be required to satisfactorily demonstrate to the

FDOT District Utilities Administrator that they have the following knowledge, skills, and expertise:

A minimum of 4 years of experience performing utility coordination in accordance with FDOT, Federal Highway Administration (FHWA), and American Association of State Highway and Transportation Officials (AASHTO) standards, policies, and procedures.

A thorough knowledge of the FDOT plans production process and District utility coordination process.

A thorough knowledge of FDOT agreements, standards, policies, and procedures.

The Utility Coordination Manager shall be responsible for managing all utility coordination, including the following:

Assuring that Utility Coordination and accommodation is in accordance to the FDOT, FHWA, and AASHTO standards, policies, procedures, and design criteria.

Assisting the engineer of record in identifying all existing utilities and coordinating any new installations. Assisting the Engineer of Record with resolving utility conflicts.

Scheduling and performing utility coordination meetings, keeping and distribution of minutes/action items of all utility meetings, and ensuring expedient follow-up on all unresolved issues.

Distributing all plans, conflict matrixes and changes to affected utility owners and making sure this information is properly coordinated and documented.

Identifying and coordinating the completion of any FDOT or utility owner agreement that is required for reimbursement, or accommodation of the utility facilities associated with the project.

Review and certify to the District Utilities Administrator that all Utility Work Schedules are correct and in accordance with the Department's standards, policies, and procedures.

Prepare, review and process all utility related reimbursable paperwork inclusive of betterment and salvage determination.

The CONSULTANT's utility coordination work shall be performed and directed by the Utility Coordination Manager that was identified and approved by FDOT's Project Manager. Any proposed change of the approved Utility Coordination Manager shall be subject to review and approval by FDOT's Project Manager prior to any change being made in this contract.

[List utilities anticipated on the project].
N/A, the project utility coordination is to be completed by the District Utilities Group and the Project Utility Coordinator consultant; utility coordination tasks

include processing of any JPA, Utility Work Schedules (UWS), and Utility Clear Letters.
Ten Utility Agencies/Owners (UAOs) are identified within 0.25 mile of the project limits. No significant utility impacts are anticipated for this RRR Project.
Test holes will be required for the proposed drainage improvements at SR 826 WB at N Bay Road.
Existing water valves and sanitary sewer manholes within the limits of milling and resurfacing should be adjusted. A JPA may be required with the Miami-Dade Water & Sewer Department (MDWASD) for adjustment of sanitary sewer manholes and water valves within the limits of milling and resurfacing.
The Designer is expected to attend the Utility Kick-Off Meeting.

2.4 Environmental Permits, Compliances, and Clearances (Activity 8) *No significant environmental impacts are anticipated. The Class of Action has been determined to be a Non-Major State Action (NMSA). The designer is responsible to prepare the Permit Involvement Form (PIF)*

The DEPARTMENT will provide compensatory wetland mitigation in accordance with Section 373.4137, Florida Statutes.

2.5 Structures (Activities 9 – 18)

Bridge(s): ***N/A***

Type of Bridge Structure Work: ***N/A***

Retaining Walls: ***N/A***

Noise Barrier Walls: ***N/A***

Miscellaneous: ***[mast arm replacement at NE 119th Street]***

2.6 Signing and Pavement Markings (Activities 19 & 20)

Signing and pavement marking plans are required

Signing improvements include the upgrade of all sub-standard ground-mounted signs to meet current FDOT and MUTCD requirements. All pavement markings within the limits of milling and resurfacing shall be replaced to meet current FDOT Design Standards.

2.7 Signalization (Activities 21 & 22)

Intersections: ***[3 intersections]****.*

Traffic Data Collection: ***[N/A]****.*

Traffic Studies: ***[N/A]****.*

Count Stations:

*Traffic Monitoring Sites: **[N/A]**.*

2.8 Lighting (Activities 23 & 24) [N/A]. No impacts are anticipated to the existing lighting fixtures.

2.9 Landscape Architecture (Activities 25 & 26) [N/A]. All existing trees are to remain.

Include coordination with existing and/or proposed underground utilities including but not limited to FDOT lighting, drainage and ITS. Landscape coordination with ITS shall include both underground conflicts and above-ground impacts to existing and/or proposed ITS coverage. The CONSULTANT shall closely coordinate with the Department's ITS units to ensure that all conflicts are identified, addressed and mitigated in the Contract Documents.

*Planting Plans: **N/A***

*Irrigation Plans: **N/A***

*Hardscape Plans: **N/A***

*Outdoor Advertising: **N/A***

2.10 **Survey (Activity 27) [N/A] to be provided by the District. N/A, survey services to be provided by the District. The Designer is responsible for including the Project Network Control sheets in the Roadway Plans component set.**

*Design Survey: **[N/A]**.*

*Subsurface Utility: **[N/A]**.*

*Right of Way Survey: **N/A***

2.11 Photogrammetry (Activity 28) [N/A] to be provided by the District

2.12 Mapping (Activity 29) [N/A] to be provided by the District

*Control Survey Map: **N/A***

*Right of Way Map: **N/A***

*Legal Descriptions: **N/A***

*Maintenance Map: **N/A***

*Miscellaneous Items: **N/A***

2.13 Terrestrial Mobile LiDAR (Activity 30) [N/A]

2.14 Architecture (Activity 31) [N/A]

2.15 Noise Barriers (Activity 32) [N/A]

2.16 Intelligent Transportation Systems (Activities 33 & 34) [N/A]

The CONSULTANT shall provide all items of work needed to maintain the operation of the Intelligent Transportation System. The CONSULTANT shall provide an ITS Clear Memo at production indicating how the plans reflect the maintenance of communication and operation features impacted by the project. It is solely the CONSULTANT'S responsibility to investigate and resolve conflicts that arise in completing the scope of work. Maintaining Agency will provide records of approximate location of facilities but will not be responsible for relocation of the facilities.

For projects with existing ITS, the CONSULTANT shall include in the design any required upgrade to existing ITS equipment to meet the latest FDOT standards, NEC requirements or as directed by the FDOT project manager and to make the subsystems fully operations from the TMC facilities.

2.17 Geotechnical (Activity 35) [N/A]

2.18 Project Schedule

*Within ten (10) days after the Notice-To-Proceed, and prior to the CONSULTANT beginning work, the CONSULTANT shall provide a detailed project activity/event schedule for DEPARTMENT and CONSULTANT scheduled activities required to meet the current DEPARTMENT Production Date. The schedule shall be based upon an **28 month** schedule. The current production date is **April 12, 2021.** The schedule shall be accompanied by an anticipated payout and fiscal progress curve. For the purpose of scheduling, the CONSULTANT shall allow for a **four** week review time for each phase submittal and any other submittals as appropriate.*

The schedule shall indicate all required submittals.

*All fees and price proposals are to be based on the negotiated schedule of **28** months for final construction contract documents. However, the contract deadline is **48** months from the Notice to Proceed.*

Periodically, throughout the life of the contract, the project schedule and payout and fiscal progress curves shall be reviewed and, with the approval of the DEPARTMENT, adjusted as necessary to incorporate changes in the Scope of Services and progress to date.

The approved schedule and schedule status report, along with progress and payout curves, shall be submitted with the monthly progress report.

The schedule shall be submitted in an FDOT system-compatible format.

2.19 Submittals

The CONSULTANT shall furnish construction contract documents as required by the DEPARTMENT to adequately control, coordinate, and approve the work concepts. The CONSULTANT shall distribute submittals as directed by the DEPARTMENT. The DEPARTMENT will determine the specific number of copies required prior to each submittal.

2.20 Provisions for Work

All work shall be prepared with English units in accordance with the latest editions of standards and requirements utilized by the DEPARTMENT which include, but are not limited to, publications such as:

- General
  - Title 29, Part 1910, Standard 1910.1001, Code of Federal Regulations (29 C.F.R. 1910.1001) – Asbestos Standard for Industry, U.S. Occupational Safety and Health Administration (OSHA)
  - 29 C.F.R. 1926.1101 – Asbestos Standard for Construction, OSHA
  - 40 C.F.R. 61, Subpart M - National Emission Standard for Hazardous Air Pollutants (NESHAP), Environmental Protection Agency (EPA)
  - 40 C.F.R. 763, Subpart E – Asbestos-Containing Materials in Schools, EPA
  - 40 C.F.R. 763, Subpart G – Asbestos Worker Protection, EPA
  - ADA Standards for Accessible Design
  - AASHTO – A Policy for Geometric Design of Highways and Streets
  - AASHTO – Highway Safety Manual
  - Rule Chapter 5J-17, F.A.C., Minimum Technical Standards for Professional Surveyors and Mappers
  - Chapter 469, Florida Statutes (F.S.) – Asbestos Abatement
  - Rule Chapter 62-257, F.A.C., Asbestos Program
  - Rule Chapter 62-302, F.A.C., Surface Water Quality Standards
  - Code of Federal Regulations (C.F.R.)
  - Florida Administrative Codes (F.A.C.)
  - Chapters 20, 120, 215, 455, Florida Statutes (F.S.) – Florida Department of Business & Professional Regulations Rules
  - Florida Department of Environmental Protection Rules
  - FDOT Basis of Estimates Manual
  - FDOT CADD Manual
  - FDOT CADD Production Criteria Handbook
  - FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System
  - FDOT Flexible Pavement Design Manual
  - FDOT Handbook for Preparation of Specifications Package
  - FDOT Instructions for Design Standards
  - FDOT Instructions for Structures Related Design Standards
  - FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (“Florida Greenbook”)
  - FDOT Materials Manual
  - FDOT Pavement Type Selection Manual

- FDOT Design Manual
- FDOT Procedures and Policies
- FDOT Project Development and Environmental Manual
- FDOT Project Traffic Forecasting Handbook
- FDOT Public Involvement Handbook
- FDOT Rigid Pavement Design Manual
- FDOT Standard Specifications for Road and Bridge Construction
- FDOT Utility Accommodation Manual
- FHWA - Manual on Uniform Traffic Control Devices (MUTCD)
- FHWA - NCHRP Report 672, Roundabouts: An Informational Guide
- FHWA Roadway Construction Noise Model (RCNM) and Guideline Handbook
- Florida Fish and Wildlife Conservation Commission - Standard Manatee Construction Conditions 2005
- Florida Statutes (F.S.)
- Florida's Level of Service Standards and Guidelines Manual for Planning
- Model Guide Specifications – Asbestos Abatement and Management in Buildings, National Institute for Building Sciences (NIBS)
- Quality Assurance Guidelines
- Safety Standards
- Any special instructions from the DEPARTMENT

▪ Roadway

- FDOT – Florida Intersection Design Guide
- FDOT - Project Traffic Forecasting Handbook
- FDOT - Quality/Level of Service Handbook
- Florida's Level of Service Standards and Highway Capacity Analysis for the SHS
- Transportation Research Board (TRB) - Highway Capacity Manual

▪ Permits

- Chapter 373, F.S. – Water Resources
- US Fish and Wildlife Service Endangered Species Programs
- Florida Fish and Wildlife Conservation Commission Protected Wildlife Permits
- Bridge Permit Application Guide, COMDTPUB P16591.3C
- Building Permit

▪ Drainage

- FDOT Bridge Hydraulics Handbook
- FDOT Culvert Handbook
- FDOT Drainage Manual
- FDOT Erosion and Sediment Control Manual
- FDOT Exfiltration Handbook
- FDOT Hydrology Handbook
- FDOT Open Channel Handbook
- FDOT Optional Pipe Materials Handbook

2 PROJECT DESCRIPTION

- FDOT Storm Drain Handbook
- FDOT Stormwater Management Facility Handbook
- FDOT Temporary Drainage Handbook

- Survey and Mapping
  - All applicable Florida Statutes and Administrative Codes
  - Applicable Rules, Guidelines Codes and authorities of other Municipal, County, State and Federal Agencies.
  - FDOT Aerial Surveying Standards for Transportation Projects Topic 550-020-002
  - FDOT Right of Way Mapping Handbook
  - FDOT Surveying Procedure Topic 550-030-101
  - Florida Department of Transportation Right of Way Procedures Manual
  - Florida Department of Transportation Surveying Handbook
  - Right of Way Mapping Procedure 550-030-015
- Traffic Engineering and Operations and ITS
  - AASHTO - An Information Guide for Highway Lighting
  - AASHTO - Guide for Development of Bicycle Facilities
  - FHWA Standard Highway Signs Manual
  - FDOT - Florida Roundabout Guide
  - FDOT Manual on Uniform Traffic Studies (MUTS)
  - FDOT Median Handbook
  - FDOT Traffic Engineering Manual
  - Minimum Specifications for Traffic Control Signal Devices
  - National Electric Safety Code
  - National Electrical Code
- Florida's Turnpike Enterprise
  - Florida's Turnpike Plans Preparation and Practices Handbook (TPPPH)
  - Florida's Turnpike Traffic Pacing Design Guide Drawings
  - Florida's Turnpike Lane Closure Policy
  - Florida's Turnpike Drainage Manual Supplement
  - Rigid Pavement Design Guide for Toll Locations with Electronic Toll Collection
  - Flexible Pavement Design Guide for Toll Locations with Electronic Toll Collection
- Traffic Monitoring
  - American Institute of Steel Construction (AISC) Manual of Steel Construction, referred to as "AISC Specifications"
  - American National Standards Institute (ANSI) RP-8-00 Recommended Practice for Roadway Lighting
  - AASHTO AWS D1.1/ANSI Structural Welding Code – Steel
  - AASHTO D1.5/AWS D1.5 Bridge Welding Code
  - FHWA Traffic Detector Handbook
  - FDOT General Interest Roadway Data Procedure

2 PROJECT DESCRIPTION

- FHWA Traffic Monitoring Guide
- FDOT's Traffic/Polling Equipment Procedures

- Structures
  - AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications and Interims
  - AASHTO LRFD Movable Highway Bridge Design Specifications and Interims
  - AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, and Interims.
  - AASHTO/-AWS-D1. 5M/D1.5: An American National Standard Bridge Welding Code
  - AASHTO Guide Specifications for Structural Design of Sound Barriers
  - AASHTO Manual for Condition Evaluation and Load and Resistance Factor Rating (LRFR) of Highway Bridges
  - FDOT Structures Manual
  - FDOT Structures Design Office Temporary Design Bulletins (available on FDOT Structures web site only)
  - FDOT Preferred Details (available on FDOT Structures web site only)

- Geotechnical
  - FHWA Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Specifications
  - Manual of Florida Sampling and Testing Methods
  - Soils and Foundation Handbook

- Landscape Architecture
  - Florida Department of Agriculture and Consumer Services Grades and Standards for Nursery Plants

- Architectural
  - Building Codes
  - Florida Building Code:
    - Building
    - Fuel Gas
    - Mechanical
    - Plumbing
    - Existing Building
  - Florida Accessibility Code for Building Construction
  - Rule Chapter 60D, F.A.C., Division of Building Construction
  - Chapter 553, F.S. – Building Construction Standards
  - ANSI A117.1 2003 Accessible and Usable Building and Facilities
  - Titles II and III, Americans With Disabilities Act (ADA), Public Law 101-336; and the ADA Accessibility Guidelines (ADAAG)

- Architectural – Fire Codes and Rules

- National Fire Protection Association (NFPA) - Life Safety Code
- NFPA 70 - National Electrical Code
- NFPA 101 - Life Safety Code
- NFPA 10 - Standard for Portable Fire Extinguishers
- NFPA 11 - Standard for Low-Expansion Foam Systems
- NFPA 11A - Standard for High- and Medium-Expansion Foam Systems
- NFPA 12 - Standard for Carbon Dioxide Extinguishing Systems
- NFPA 13 - Installation of Sprinkler Systems
- NFPA 30 - Flammable and Combustible Liquids Code
- NFPA 54 - National Gas Fuel Code
- NFPA 58 - LP-Gas Code
- Florida Fire Prevention Code as adopted by the State Fire Marshal – Consult with the Florida State Fire Marshal's office for other frequently used codes.

▪ Architectural – Extinguishing Systems

- NFPA 10 - Fire Extinguishers
- NFPA 13 - Sprinkler
- NFPA 14 - Standpipe and Hose System
- NFPA 17 - Dry Chemical
- NFPA 20 - Centrifugal Fire Pump
- NFPA 24 - Private Fire Service Mains
- NFPA 200 - Standard on Clean Agent Fire Extinguishing Systems

▪ Architectural – Detection and Fire Alarm Systems

- NFPA 70 - Electrical Code
- NFPA 72 - Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems
- NFPA 72E - Automatic Fire Detectors
- NFPA 72G - Installation, Maintenance, and Use of Notification Appliances
- NFPA 72H -Testing Procedures for Remote Station and Proprietary Systems
- NFPA 74 - Household Fire Warning Equipment
- NFPA 75 - Protection of Electronic Computer Equipment

▪ Architectural – Mechanical Systems

- NFPA 90A - Air Conditioning and Ventilating Systems
- NFPA 92A - Smoke Control Systems
- NFPA 96 - Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment
- NFPA 204M - Smoke and Heating Venting

▪ Architectural – Miscellaneous Systems

- NFPA 45 - Laboratories Using Chemicals
- NFPA 80 - Fire Doors and Windows
- NFPA 88A - Parking Structures
- NFPA 105- Smoke and Draft-control Door Assemblies
- NFPA 110 - Emergency and Standby Power Systems

- NFPA 220 - Types of Building Construction
- NFPA 241 - Safeguard Construction, Alteration, and Operations
- Rule Chapter 69A-47, F.A.C., Uniform Fire Safety For Elevators
- Rule Chapter 69A-51, F.A.C., Boiler Safety

▪ Architectural – Energy Conservation

- Rule Chapter 60D-4, F.A.C., Rules For Construction and Leasing of State Buildings To Insure Energy Conservation
- Section 255.255, F.S., Life-Cycle Costs

▪ Architectural – Elevators

- Rule Chapter 61C-5, F.A.C., Florida Elevator Safety Code
- ASME A-17.1, Safety Code for Elevators and Escalators
- Architectural – Flood Plain Management Criteria
- Section 255.25, F.S., Approval Required Prior to Construction or Lease of Buildings
- Rules of the Federal Emergency Management Agency (FEMA)

▪ Architectural – Other

- Rule Chapter 64E-6, F.A.C., Standards for On Site Sewage Disposal Systems (Septic Tanks)
- Rule Chapter 62-600, F.A.C., Domestic Wastewater Facilities
- Rule Chapter 62-761, F.A.C., Underground Storage Tank Systems
- American Concrete Institute
- American Institute of Architects - Architect's Handbook of Professional Practice
- American Society for Testing and Materials - ASTM Standards
- Brick Institute of America
- DMS - Standards for Design of State Facilities
- Florida Concrete Products Association
- FDOT – ADA/Accessibility Procedure
- FDOT – Building Code Compliance Procedure
- FDOT – Design Build Procurement and Administration
- LEED (Leadership in Energy and Environmental Design) Green Building Rating System
- National Concrete Masonry Association
- National Electrical Code
- Portland Cement Association - Concrete Masonry Handbook
- United State Green Building Council (USGBC)

2.21 Services to be Performed by the DEPARTMENT When appropriate and /or available, the DEPARTMENT will provide project data including:

▪ Numbers for field books.
▪ Preliminary Horizontal Network Control.
▪ Access for the CONSULTANT to utilize the DEPARTMENT's Information Technology Resources.
▪ All Department agreements with Utility Agency Owner (UAO).

- All certifications necessary for project letting.
- Building Construction Permit Coordination (Turnpike)
- All information that may come to the DEPARTMENT pertaining to future improvements.
- All future information that may come to the DEPARTMENT during the term of the CONSULTANT's Agreement, which in the opinion of the DEPARTMENT is necessary for the prosecution of the work.
- Available traffic and planning data.
- All approved utility relocations.
- Project utility certification to the DEPARTMENT's Central Office.
- Any necessary title searches.
- Engineering standards review services.
- All available information in the possession of the DEPARTMENT pertaining to utility companies whose facilities may be affected by the proposed construction.
- All future information that may come to the DEPARTMENT pertaining to subdivision plans so that the CONSULTANT may take advantage of additional areas that can be utilized as part of the existing right of way.
- Systems traffic for Projected Design Year, with K, D, and T factors.
- Existing right of way maps.
- Existing cross slope data for all RRR projects.
- Existing pavement evaluation report for all RRR projects.
- PD&E Documents
- Design Reports
- Letters of authorization designating the CONSULTANT as an agent of the DEPARTMENT in accordance with F.S. 337.274.
- Phase reviews of plans and engineering documents.
- Regarding Environmental Permitting Services:
  - Approved Permit Document when available.
  - Approval of all contacts with environmental agencies.
  - General philosophies and guidelines of the DEPARTMENT to be used in the fulfillment of this contract. Objectives, constraints, budgetary limitations, and time constraints will be completely defined by the Project Manager.
  - Appropriate signatures on application forms.

3 PROJECT COMMON AND PROJECT GENERAL TASKS

Project Common Tasks

Project Common Tasks, as listed below, are work efforts that are applicable to many project activities, 4 Roadway Analysis through 35 Geotechnical. These tasks are to be included in the project scope in each applicable activity when the described work is to be performed by the CONSULTANT.

Cost Estimates: The CONSULTANT shall be responsible for producing a construction cost estimate and reviewing and updating the cost estimate when scope changes occur and/or at milestones of the project. Prior to 60% plans and completion of quantities, the DEPARTMENT's Long Range Estimate (L.R.E.) system will be used to produce a conceptual estimate, according to District policy. Once the quantities have been developed (beginning at 60% plans and no later than 90% plans) the CONSULTANT shall be responsible for inputting the pay items and quantities into TRNS*PORT PES (Proposal Estimating System) through the use of the DEPARTMENT's Designer Interface. A Summary of Pay Items sheet shall be prepared with all required Phase II, III, and IV Plans submittals.

Technical Special Provisions: The CONSULTANT shall provide Technical Special Provisions for all items of work not covered by the Standard Specifications for Road and Bridge Construction and the workbook of implemented modifications.

A Technical Special Provision shall not modify the first nine sections of the Standard Specifications and implemented modifications in any way. All modifications to other sections must be justified to the appropriate District Specifications Office to be included in the project's specifications package.

The Technical Special Provisions shall be technical in nature and shall provide a description of work, materials, equipment and specific requirements, method of measurement and basis of payment. Proposed Technical Special Provisions will be submitted to the District Specifications Office for initial review at the time of the Phase III plans review submission to the DEPARTMENT's Project Manager. This timing will allow for adequate processing time prior to final submittal. The Technical Special Provisions will be reviewed for suitability in accordance with the Handbook for Preparation of Specification Packages. The District Specifications Office will forward the Technical Special Provisions to the District Legal Office for their review and comment. All comments will be returned to the CONSULTANT for correction and resolution. Final Technical Special Provisions shall be electronically signed and sealed in accordance with applicable Florida Statutes.

The CONSULTANT shall contact the appropriate District Specifications Office for details of the current format to be used before starting preparations of Technical Special Provisions.

Field Reviews: The CONSULTANT shall make as many trips to the project site as required to obtain necessary data for all elements of the project.

Technical Meetings: The CONSULTANT shall attend all technical meetings necessary to execute the Scope of Services of this contract. This includes meetings with DEPARTMENT and/or Agency staff, between disciplines and subconsultants, such as access management meetings, pavement design meetings, local governments, railroads, airports,, progress review meetings (phase review), and miscellaneous meetings. The CONSULTANT shall prepare, and submit to the DEPARTMENT's Project Manager for review, the meeting minutes for all meetings attended by them. The meeting minutes are due within five (5) days of attending the meeting.

Quality Assurance/Quality Control: It is the intention of the DEPARTMENT that design CONSULTANTS, including their subconsultant(s), are held responsible for their work, including plans review. Detailed checking of CONSULTANT plans or assisting in designing portions of the project for the CONSULTANT is not the intent of having external design consultants. The purpose of CONSULTANT plan reviews is to ensure that CONSULTANT plans follow the plan preparation procedures outlined in the Plans Preparation Manual, that state and federal design criteria are followed with the DEPARTMENT concept, and that the CONSULTANT submittals are complete. All subconsultant document submittals shall be submitted by the subconsultant directly to the CONSULTANT for their independent Quality Assurance/Quality Control review and subsequent submittal to the DEPARTMENT.

It is the CONSULTANT'S responsibility to independently and continually QC their plans and other deliverables. The CONSULTANT should regularly communicate with the DEPARTMENT's Design Project Manager to discuss and resolve issues or solicit opinions from those within designated areas of expertise.

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications and other services furnished by the CONSULTANT and their subconsultant(s) under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all maps, design drawings, specifications, and other documentation prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan shall be one specifically designed for this project, and it may be one utilized by the CONSULTANT as part of their normal operation or it may be one specifically designed for this project. The CONSULTANT shall submit a Quality Control Plan for approval within twenty (20) business days of the written Notice to Proceed and it shall be signed by the CONSULTANT's Project Manager and the CONSULTANT QC Manager. The Quality Control Plan shall include the names of the CONSULTANT's staff that will perform the quality control reviews. The Quality Control reviewer shall be a Florida Licensed Professional Engineer fully prequalified under F.A.C. 14-75 in the work type being reviewed. A marked up set of prints from a Quality Control Review indicating the reviewers for each component (structures, roadway, drainage, signals, geotechnical, signing and marking, lighting, surveys, etc.) and a written resolution of comments on a point-by-point basis will be required, if requested by the DEPARTMENT, with each phase submittal. The responsible Professional Engineer, Landscape Architect, or Professional Surveyor & Mapper

that performed the Quality Control review will sign a statement certifying that the review was conducted and found to meet required specifications.

The CONSULTANT shall, without additional compensation, correct all errors or deficiencies in the designs, maps, drawings, specifications and/or other services.

Independent Peer Review: When directed by the DEPARTMENT, a subconsultant may perform Independent Peer Reviews.

Independent Peer Review and a Constructability/Bidability Review for design Phase Plans document submittals are required on this project. These separate reviews shall be completed by someone who has not worked on the plan component that is being reviewed. These could include, but are not limited to a separate office under the Prime's umbrella, a subconsultant that is qualified in the work group being reviewed, or a CEI. It does not include persons who have knowledge of the day to day design efforts. The Constructability/Bidability Review shall be performed by a person with experience working on Department construction projects (CEI, Contractor, etc.)

The Independent Peer Review for design Phase Plans submittals shall ensure the plans meet the PPM, Design Standards and CADD Manual. The Constructability/Bidability Review shall ensure the project can be constructed and paid for as designed. Constructability/Bidability Reviews should be conducted prior to the Phase III and Phase IV submittals, using the Phase Review Checklist (Guidance Document 1-1-A) from the Construction Project Administration Manual (CPAM) as a minimum guideline. The CONSULTANT shall submit this checklist, as well as the "marked-up" set of plans during this review, and review comments and comment responses from any previous Constructability/Bidability reviews. These items will be reviewed by District Design and District Construction.

Supervision: The CONSULTANT shall supervise all technical design activities.

Coordination: The CONSULTANT shall coordinate with all disciplines of the project to produce a final set of construction documents.

Project General Tasks

Project General Tasks, described in Sections 3.1 through 3.7 below, represent work efforts that are applicable to the project as a whole and not to any one or more specific project activity. The work described in these tasks shall be performed by the CONSULTANT when included in the project scope.

3.1 Public Involvement

Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the project. The CONSULTANT shall provide to the DEPARTMENT drafts of all Public Involvement documents (i.e., newsletters, property owner letters, advertisements, etc.) associated with the following tasks for review and approval at least ***5*** *business days prior to*

printing and / or distribution.

3.1.1 Community Awareness Plan

Prepare a Community Awareness Plan (CAP) for review and approval by the DEPARTMENT within 30 calendar days after receiving Notice to Proceed. The objective of the plan is to notify local governments, affected property owners, tenants, and the public of the DEPARTMENT'S proposed construction and the anticipated impact of that construction. The CAP shall address timeframes for each review and shall include tentative dates for each public involvement requirement for the project. The CAP will also document all public involvement activities conducted throughout the project's duration. In addition to the benefits of advance notification, the process should allow the DEPARTMENT to resolve controversial issues during the design phase. This item shall be reviewed and updated periodically as directed by the DEPARTMENT throughout the life of the project.

3.1.2 Notifications

*In addition to public involvement data collection, the CONSULTANT shall assist the DEPARTMENT or prepare notifications, flyers, and/or letters to elected officials and other public officials, private property owners, and tenants at intervals during plans production as identified by the DEPARTMENT. All letters and notices shall be reviewed by the **DEPARTMENT** to ensure that they are addressed to the correct and current public officials.*

3.1.3 Preparing Mailing Lists

At the beginning of the project, The CONSULTANT shall identify all impacted property owners and tenants (within a minimum of 300 feet of the project corridor) The CONSULTANT shall prepare a mailing list of all such entities and shall update the mailing list as needed during the life of the project.

3.1.4 Median Modification Letters

*The CONSULTANT shall prepare a median modification letter to be sent to property owners along the corridor. In addition, the CONSULTANT shall prepare a sketch of each proposed median modification for inclusion in the letter. The letters will be sent on DEPARTMENT letterhead by the **DEPARTMENT**.*

3.1.5 Driveway Modification Letters

The CONSULTANT shall prepare a driveway modification letter to be sent to property owners along the corridor. In addition, the CONSULTANT shall prepare a sketch of each proposed driveway modification for inclusion in the letter. The letters will be sent on DEPARTMENT letterhead.

3.1.6 Newsletters

The CONSULTANT shall prepare newsletters for distribution to elected officials,

public officials, property owners along the corridor and other interested parties. The letters will be sent by the CONSULTANT.

3.1.7 Renderings and Fly-Throughs [N/A]

3.1.8 PowerPoint Presentations

The CONSULTANT shall prepare PowerPoint presentations for use in public meetings.

3.1.9 Public Meeting Preparations

The CONSULTANT shall prepare the necessary materials for use in public meetings.

*The CONSULTANT will investigate potential meeting sites to advise the DEPARTMENT on their suitability. The **DEPARTMENT/CONSULTANT** will pay all costs for meeting site rents and insurance. No DEPARTMENT meetings will be held on public school system properties.*

3.1.10 Public Meeting Attendance and Follow-up

The CONSULTANT shall attend public meeting(s), assist with meeting setup and take down. The CONSULTANT shall also prepare a summary of the public meeting that includes all copies of all materials shown or provided at the public meeting. The summary shall also include a listing of all written comments made during or after the meeting and responses to those written comments.

The CONSULTANT will attend the meetings with an appropriate number of personnel to assist the DEPARTMENT'S Project Manager.

*It is estimated for this project there will be **1** Public meetings during the design.*

3.1.11 Other Agency Meetings [N/A]

*In addition to scheduled public meetings the CONSULTANT may be required to participate in meetings with the local governing authorities and/or Metropolitan Planning Organization (MPO). The CONSULTANT's participation may include, but not limited to, presentations during the meeting, note taking, and summarizing the meeting in a memo to the file. It is estimated for this project there will be **[XXX]** meetings with local governing authorities and/or MPOs during the design.*

3.1.12 Web Site [N/A]

The CONSULTANT shall create and/or maintain a web site for the project.

3.2 Joint Project Agreements [N/A]

3.3 Specifications Package Preparation

The CONSULTANT shall prepare and provide a specifications package prepared in

accordance with the DEPARTMENT'S Handbook for the Preparation of Specification Packages and associated training. The CONSULTANT shall provide the DEPARTMENT names of at least two team members who have successfully completed the Specifications Package Preparation Training and will be responsible for preparing the Specifications Package for the project. The Specifications Package shall be prepared using the DEPARTMENT's Specs on the Web application. The CONSULTANT shall be able to document that the procedure defined in the Handbook for the Preparation of Specifications Packages is followed, which includes the quality assurance/quality control procedures. The specifications package shall address all items and areas of work and include any Mandatory Specifications, Modified Special Provisions, and Technical Special Provisions.

The specifications package must be submitted for review to the District Specifications Office at least 30 days prior to the contract package to Tallahassee or District due date, or sooner if required by the District Specifications Office. This submittal does not require signing and sealing and shall be coordinated through the District's Project Manager. The CONSULTANT shall coordinate with the DEPARTMENT on the submittal requirements, but at a minimum shall consist of (1) the complete specifications package, (2) a copy of the marked-up workbook used to prepare the package, and (3) a copy of the final project plans.

Final submittal of the specifications package must occur at least 10 working days prior to the contract package to Tallahassee due date. This submittal shall be electronically/digitally signed, dated, and sealed in accordance with applicable Florida Statutes.

3.4 Contract Maintenance and Electronic Document Management System (EDMS)

Contract maintenance includes project management effort for complete setup and maintenance of files, developing monthly progress reports, schedule updates, work effort to develop and execute subconsultant agreements, etc.

3.5 Value Engineering (Multi-Discipline Team) Review [N/A]

3.6 Prime Consultant Project Manager Meetings

Includes only the Prime Consultant Project Manager's time for travel and attendance at Activity Technical Meetings and other meetings listed in the meeting summary for Task 3.6 on tab 3 Project General Task of the staff hour forms. Staff hours for other personnel attending Activity Technical Meetings are included in the meeting task for that specific Activity.

3.7 Plans Update

The effort needed for Plans Update services will vary from project to project, depending on size and complexity of the project, as well as the duration of time spent "on the shelf".

Specific services will be negotiated as necessary as a contract amendment.

3.8 Post Design Services

Post Design Services may include, but not limited to, meetings, construction assistance, plans revisions, shop drawing review, survey services, as-built drawings, and load ratings. Specific services will be negotiated at a later date as necessary as a contract amendment.

Post Design Services are not intended for instances of CONSULTANT errors and/or omissions.

3.9 Electronic/Digital Delivery

The CONSULTANT shall deliver final contract plans in electronic/digital format using the DEPARTMENT's Electronic/Digital Delivery software. The final contract plans shall be digitally signed and sealed files delivered to the DEPARTMENT on acceptable electronic media, as determined by the DEPARTMENT.

3.10 Risk Assessment Workshop [N/A]

3.11 Railroad, Transit and/or Airport Coordination

3.12 Other Project General Tasks [N/A]

This includes all efforts for a project general task not covered by an existing defined task.

4 ROADWAY ANALYSIS

The CONSULTANT shall analyze and document Roadway Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

4.1 Typical Section Package

The CONSULTANT shall provide an approved Typical Section Package prior to the Phase I plans submittal date.

4.2 Pavement Type Selection Report [N/A]

4.3 Pavement Design Package

The CONSULTANT shall provide an approved Pavement Design Package in accordance with applicable FDOT pavement design manuals prior to the Phase II plans submittal date.

4.4 Cross-Slope Correction

The CONSULTANT shall coordinate with the DEPARTMENT to obtain existing cross slope data and determine roadway limits where cross slope is potentially out of tolerance.

4.5 Horizontal/Vertical Master Design Files

The CONSULTANT shall design the geometrics using the design standards that are most appropriate with proper consideration given to the design traffic volumes, design speed, capacity and levels of service, functional classification, adjacent land use, design consistency and driver expectancy, aesthetics, pedestrian and bicycle concerns, ADA requirements, elder road user policy, access management, PD&E documents and scope of work.

4.6 Access Management

The CONSULTANT shall incorporate access management standards for each project in coordination with DEPARTMENT staff. The CONSULTANT shall review adopted access management standards and the existing access conditions (interchange spacing, signalized intersection spacing, median opening spacing, and connection spacing). Median openings that will be closed, relocated, or substantially altered shall be shown on plan sheets and submitted with supporting documentation for review with the first plans submittal.

The DEPARTMENT shall provide access management classification information and information derived from PD&E studies and public hearings to be used by the CONSULTANT.

4.7 Cross Section Design Files

The CONSULTANT shall establish and develop cross section design files in accordance with the CADD manual.

4.8 Traffic Control Analysis

The CONSULTANT shall design a safe and effective Traffic Control Plan to move vehicular and pedestrian traffic during all phases of construction. The design shall include construction phasing of roadways ingress and egress to existing property owners and businesses, routing, signing and pavement markings, and detour quantity tabulations, roadway pavement, drainage structures, ditches, front slopes, back slopes, drop offs within clear zone, and traffic monitoring sites. Special consideration shall be given to the construction of the drainage system when developing the construction phases. Positive drainage must be maintained at all times. The design shall include construction phasing of roadways to accommodate the construction or relocation of utilities when the contract includes Joint Project Agreements (JPAs).

The CONSULTANT shall investigate the need for temporary traffic signals, temporary lighting, alternate detour roads, and the use of materials such as sheet piling in the analysis. The Traffic Control Plan shall be prepared by a certified designer who has completed training as required by the DEPARTMENT. Before proceeding with the Traffic Control Plan, the CONSULTANT shall meet with the appropriate DEPARTMENT personnel. The purpose of this meeting is to provide information to the CONSULTANT that will better coordinate the Preliminary and Final Traffic Control Plan efforts.

The CONSULTANT shall consider the local impact of any lane closures or alternate routes. When the need to close a road is identified during this analysis, the CONSULTANT shall notify the DEPARTMENT's Project Manager as soon as possible. Proposed road closings must be reviewed and approved by the DEPARTMENT. Diligence shall be used to minimize negative impacts by appropriate specifications, recommendations or plans development. Local impacts to consider will be local events, holidays, peak seasons, detour route deterioration and other eventualities. CONSULTANT shall be responsible to obtain local authorities permission for use of detour routes not on state highways.

4.9 Master TCP Design Files [N/A]

The CONSULTANT shall develop master Traffic Control Plan (TCP) files (for Level II and Level III only) showing each phase of the Traffic Control Plan.

4.10 Design Variations and Exceptions

If available, the DEPARTMENT shall furnish the Variation/Exception Report. The CONSULTANT shall prepare the documentation necessary to gain DEPARTMENT

approval of all appropriate Design Variations and/or Design Exceptions before the Phase 1 submittal.

4.11 Design Report

The CONSULTANT shall prepare all applicable report(s) as listed in the Project Description section of this scope.

The CONSULTANT shall submit to the DEPARTMENT design notes, data, and calculations to document the design conclusions reached during the development of the contract plans.

The design notes, data, and computations shall be recorded on size 8½"x11" sheets, fully titled, numbered, dated, indexed and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to 8½"x11" size. The data shall be in a hardback folder for submittal to the DEPARTMENT.

4.12 Quantities

The CONSULTANT shall prepare all required summary of quantities sheets. This includes all efforts required to develop accurate quantities and the supporting documentation, including construction days when required.

4.13 Cost Estimate

4.14 Technical Special Provisions [N/A]

4.15 Other Roadway Analysis [N/A]

4.16 Field Reviews

4.17 Technical Meetings

4.18 Quality Assurance/Quality Control

4.19 Independent Peer Review [N/A]

4.20 Supervision

4.21 Coordination

5 ROADWAY PLANS

The CONSULTANT shall prepare Roadway, Drainage, Traffic Control, Utility Adjustment Sheets, plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction.

5.1 Key Sheet

5.2 Summary of Pay Items Including Quantity Input

5.3 Drainage Map (Including Interchanges)

5.4 Typical Section Sheets

5.4.1 Typical Sections

5.4.2 Typical Section Details

5.5 General Notes/Pay Item Notes

5.6 Summary of Quantities

5.7 Box Culvert Data Sheet [N/A]

5.8 Bridge Hydraulics Recommendation Sheets [N/A]

5.9 Summary of Drainage Structures [N/A]

5.10 Optional Pipe/Culvert Material [N/A]

5.11 Project Layout

5.12 Plan/Profile Sheet [N/A]

5.13 Profile Sheet

5.14 Plan Sheet

5.15 Special Profile [N/A]

5.16 Back-of-Sidewalk Profile Sheet [N/A]

5.17 Interchange Layout Sheet [N/A]

5.18 Ramp Terminal Details (Plan View) [N/A]

5.19 Intersection Layout Details [N/A]

5.20 Special Details

5.21 Drainage Structure Sheet (Per Structure) [N/A]

5.22 Miscellaneous Drainage Detail Sheets [N/A]

5.23 Lateral Ditch Plan/Profile

5.24 Lateral Ditch Cross Sections

5.25 Retention/Detention Ponds Detail Sheet

5.26 Retention Pond Cross Sections

5.27 Cross-Section Pattern Sheet

5.28 Roadway Soil Survey Sheet

5.29 Cross Sections

5.30 Temporary Traffic Control Plan Sheets

5.31 Temporary Traffic Control Cross Section Sheets

5.32 Temporary Traffic Control Detail Sheets

5.33 Utility Adjustment Sheets

5.34 Selective Clearing and Grubbing

5.35 Erosion Control Plan

5.36 SWPPP

5.37 Project Network Control Sheet

5.38 Environmental Detail Sheets

5.39 Utility Verification Sheet (SUE Data)

5.40 Quality Assurance/Quality Control

5.41 Supervision

6a DRAINAGE ANALYSIS

The CONSULTANT shall analyze and document Drainage Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

The CONSULTANT shall be responsible for designing a drainage and stormwater management system. All design work shall comply with the requirements of the appropriate regulatory agencies and the DEPARTMENT's Drainage Manual.

The CONSULTANT shall coordinate fully with the appropriate permitting agencies and the DEPARTMENT's staff. All activities and submittals should be coordinated through the DEPARTMENT's Project Manager. The work will include the engineering analyses for any or all of the following:

6a.1 Drainage Map Hydrology

Create a (pre and/or post condition) working drainage basin map to be used in defining the system hydrology. This map shall incorporate drainage basin boundaries, existing survey and/or LiDAR and field observations, as necessary, to define the system. Basin delineations shall also include any existing collection systems in a logical manner to aid in the development of the hydraulic model. Include coordination hours needed to convey drainage hydrologic features onto produced drainage maps.

6a.2 Base Clearance Calculations

Analyze, determine, and document high water elevations per basin which will be used to set roadway profile grade and roadway materials. Determine surface water elevations at cross drains, floodplains, outfalls and adjacent stormwater ponds. Determine groundwater elevations at intervals between the above-mentioned surface waters. Document findings in a Base Clearance Report.

6a.3 Pond Siting Analysis and Report [N/A]

Evaluate pond sites using a preliminary hydrologic analysis. Document the results and coordination for all the project's pond site analyses. The Drainage Manual provides specific documentation requirements.

6a.4 Design of Cross Drains [N/A]

Analyze the hydraulic design and performance of cross drains. Check existing cross drains to determine if they are structurally sound and can be extended. Document the design as required. Determine and provide flood data as required.

6a.5 Design of Ditches [N/A]

Design roadway conveyance and outfall ditches. This task includes capacity calculations, longitudinal grade adjustments, flow changes, additional adjustments for ditch convergences, selection of suitable channel lining, design of side drain pipes, and documentation. (Design of linear stormwater management facilities in separate task.)

6a.6 Design of Stormwater Management Facility (Offsite or Infield Pond)

Design stormwater management facilities to meet requirements for stormwater quality treatment, attenuation and aesthetics. Develop proposed pond layout (contributing drainage basin, shape, contours, slopes, volumes, tie-ins, aesthetics, etc.), perform routing, pollutant/nutrient loading calculations, recovery calculations, design the outlet control structure and buoyancy calculations for pond liners when necessary.

6a.7 Design of Stormwater Management Facility (Roadside Treatment Swales and Linear Ponds) [N/A]

Design stormwater management facilities to meet requirements for stormwater quality treatment, attenuation and aesthetics. Develop proposed pond layout (contributing drainage basin, shape, contours, slopes, volumes, tie-ins, aesthetics, etc.), perform routing, pollutant/nutrient loading calculations, recovery calculations and design the outlet control structure.

6a.8 Design of Floodplain Compensation [N/A]

Determine floodplain encroachments, coordinate with regulatory agencies, and develop proposed compensation area layout (shape, contours, slopes, volumes, etc.). Document the design following the requirements of the regulatory agency.

6a.9 Design of Storm Drains

Delineate contributing drainage areas, determine runoff, inlet locations, and spread. Calculate hydraulic losses (friction, utility conflict and, if necessary, minor losses). Determine design tailwater and, if necessary, outlet scour protection.

6a.10 Optional Culvert Material

Determine acceptable options for pipe materials using the Culvert Service Life Estimator.

6a.11 French Drain Systems [N/A]

Design French Drain Systems to provide stormwater treatment and attenuation. Identify location for percolation tests and review these, determine the size and length of French Drains, design the control structure/weir, and model the system of inlets, conveyances, French Drains, and other outfalls using a routing program.

6a.11a Existing French Drain Systems [N/A]

Include this task if French Drains are proposed and the existing systems must be analyzed for a pre- versus post comparison of the peak stages and/or discharges.

6a.12 Drainage Wells [N/A]

Design the discharge into deep wells to comply with regulatory requirements. Identify the location of the well, design the control structure/weir, and model the system using a routing program.

6a.13 Drainage Design Documentation Report

Compile drainage design documentation into report format. Include documentation for all the drainage design tasks and associated meetings and decisions, except for stand-alone reports, such as the Pond Siting Analysis Report and Bridge Hydraulics Report.

6a.14 Bridge Hydraulic Report [N/A]

Calculate hydrology, hydraulics, deck drainage, scour, and appropriate counter measures. Prepare report and the information for the Bridge Hydraulics Recommendation Sheet.

6a.15 Temporary Drainage Analysis

Evaluate and address drainage to adequately drain the road and maintain existing offsite drainage during all construction phases. Provide documentation.

6a.16 Cost Estimate

Prepare cost estimates for the drainage components, except bridges and earthwork for stormwater management and flood compensation sites.

6a.17 Technical Special Provisions / Modified Special Provisions [N/A]

6a.18 Hydroplaning Analysis

Perform a hydroplaning analysis to assist in the determination of the appropriate roadway geometry for all necessary locations (both typical sections and critical cross sections) as needed. See the FDOT Hydroplaning Guidance and FDOT FDM Chapters 210 and 211 for more information.

6a.19 Existing Permit Analysis

Data gathering including desktop analysis of local, state and federal Drainage permits.

6a.20 Other Drainage Analysis

Includes all efforts for a drainage task not covered by an existing defined task.

6a.21 Field Reviews

6a.22 Technical Meetings

Meetings with Department staff, regulatory agencies, local governments such as meetings with District Drainage Engineer, the Water Management District, FDEP, etc.

6a.23 Environmental Look-Around Meetings

Convene a meeting with Department staff, regulatory agencies, local governments and other stakeholders to explore watershed wide stormwater needs and alternative permitting approaches.

6a.24 Quality Assurance/Quality Control

6a.25 Independent Peer Review

6a.26 Supervision

6a.27 Coordination

6b DRAINAGE PLANS

The CONSULTANT shall prepare Drainage plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction.

6b.1 Drainage Map (Including Interchanges)

6b.2 Bridge Hydraulics Recommendation Sheets [N/A]

6b.3 Summary of Drainage Structures

6b.4 Optional Pipe/Culvert Material

6b.5 Drainage Structure Sheet(s) (Per Structure)

6b.6 Miscellaneous Drainage Detail Sheets [N/A]

6b.7 Lateral Ditch Plan/Profile [N/A]

6b.8 Lateral Ditch Cross Sections [N/A]

6b.9 Retention/Detention Pond Detail Sheet(s) [N/A]

6b.10 Retention Pond Cross Sections [N/A]

6b.11 Erosion Control Plan Sheet(s)

6b.12 SWPPP Sheet(s)

6b.13 Quality Assurance/Quality Control

6b.14 Supervision

7 UTILITIES

The CONSULTANT shall identify utility facilities and secure agreements, utility work schedules, and plans from the Utility Agency Owners (UAO) ensuring all conflicts that exist between utility facilities and the DEPARTMENT's construction project are addressed. The CONSULTANT shall certify all utility negotiations have been completed and that arrangements have been made for utility work to be undertaken.

7.1 Kickoff Meeting

Before any contact with the UAO(s), the CONSULTANT shall meet with the District

Utility Office (DUO) to receive guidance, as may be required, to assure that all necessary coordination will be accomplished in accordance with DEPARTMENT procedures. CONSULTANT shall bring a copy of the design project work schedule reflecting utility activities.

7.2 Identify Existing UAO(s)

The Consultant shall identify all utilities within and adjacent to the project limits that may be impacted by the project.

7.3 Make Utility Contacts

First Contact: The CONSULTANT shall send letters and two sets of plans to each utility, one set for the utility office, and one set to the DEPARTMENT Offices as required by the District. Includes contact by phone for meeting coordination. Request type, size, location, easements, and cost for relocation if reimbursement is claimed Request the voltage level for power lines in the project area. Send UAO requests for reimbursement to FDOT for a legal opinion. Include the meeting schedule (if applicable) and the design schedule. Include typical meeting agenda. If scheduling a meeting, give 4 weeks advance notice.

Second Contact: At a minimum of 4 weeks prior to the meeting, the CONSULTANT shall transmit two complete sets of Phase II plans and the Utility Conflict Matrix (when applicable) to each UAO having facilities located within the project limits, and one set to the DEPARTMENT Offices as required by the District.

Third Contact: Identify agreements and assemble packages. The Consultant shall send agreements, letters, the Utility Conflict Matrix (when applicable) and two sets of plans to the UAO(s) including all component sets, one set for the utility office, one set to construction and maintenance if required. Include the design schedule.

Not all projects will have all contacts as described above.

7.4 Exception Processing

The CONSULTANT shall be responsible for transmitting/coordinating the appropriate design reports including, but not limited to, the Resurfacing, Restoration and Rehabilitation (RRR) report, Preliminary Engineering Report, Project Scope and/or the Concept Report (if applicable) to each UAO to identify any condition that may require a Utility Exception. The CONSULTANT shall identify and communicate to the UAO any facilities in conflict with their location or project schedule. The CONSULTANT shall assist with the processing of design exceptions involving Utilities with the UAO and the DEPARTMENT. Assist with processing per the UAM.

7.5 Preliminary Utility Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a preliminary utility meeting with all UAO(s) having facilities located within the project limits for the purpose of presenting the project, review the current design

schedule, evaluate the utility information collected, provide follow-up information on compensable property rights from the FDOT Legal Office, discuss the utility work by highway contractor option with each utility, and discuss any future design issues that may impact utilities. This is also an opportunity for the UAO(s) to present proposed facilities. The CONSULTANT shall keep accurate minutes and distribute a copy to all attendees.

7.6 Individual/Field Meetings

The CONSULTANT shall meet with each UAO as necessary, separately or together, throughout the project design duration to provide guidance in the interpretation of plans, review changes to the plans and schedules, optional clearing and grubbing work, and assist in the development of the UAO(s) plans and work schedules. The CONSULTANT is responsible for motivating the UAO to complete and return the necessary documents after each Utility Contact or Meeting.

7.7 Collect and Review Plans and Data from UAO(s)

The CONSULTANT shall review utility marked plans and data individually as they are received for content. Ensure information from the UAO (utility type, material and size) is sent to the designer for inclusion in the plans. Forward all requests for utility reimbursement and supporting documentation to the DUO.

7.8 Subordination of Easements Coordination [N/A]

The CONSULTANT, if requested by the DEPARTMENT, shall transmit to and secure from the UAO the executed subordination agreements prepared by the appropriate DEPARTMENT office. The CONSULTANT shall coordinate with the DUO the programming of the necessary work program funds to compensate the UAO.

7.9 Utility Design Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a Utility meeting with all affected UAO(s). The CONSULTANT shall be prepared to discuss drainage, traffic signalization, maintenance of traffic (construction phasing), review the current design schedule and letting date, evaluate the utility information collected, provide follow-up information on compensable property rights from FDOT Legal Office, discuss with each UAO the utility work by highway contractor option, discuss any future design issues that may impact utilities, etc., to the extent that they may have an effect on existing or proposed utility facilities with particular emphasis on drainage and maintenance of traffic with each UAO. The intent of this meeting shall be to assist the UAOs in identifying and resolving conflicts between utilities and proposed construction before completion of the plans, including utility adjustment details. Also to work with the UAOs to recommend potential resolution between known utility conflicts with proposed construction plans as may deemed practical by the UAO. The CONSULTANT shall keep accurate minutes of all meetings and distribute a copy to all attendees within 3 days. See Task 4.7 (Cross Section Design Files) for utility conflict location identification and adjustments.

7.10 Review Utility Markups & Work Schedules and Processing of Schedules & Agreements

The CONSULTANT shall review utility marked up plans and work schedules as they are received for content and coordinate review with the designer. Send color markups and schedules to the appropriate DEPARTMENT office(s) for review and comment if required by the District. Coordinate with the District for execution. Distribute Executed Final Documents. Prepare Work Order for UAO(s). The CONSULTANT shall coordinate with the DUO the programming of necessary Work Program funds.

7.11 Utility Coordination/Follow-up

The CONSULTANT shall provide utility coordination and follow up. This includes follow-up, interpreting plans, and assisting the UAOs with completion of their work schedules and agreements. Includes phone calls, face-to-face meetings, etc., to motivate and ensure the UAO(s) complete and return the required documents in accordance with the project schedule. Ensure the resolution of all known conflicts. The CONSULTANT shall keep accurate minutes of all meetings and distribute a copy to all attendees. This task can be applied to all phases of the project.

7.12 Utility Constructability Review [N/A]

The CONSULTANT shall review utility schedules against construction contract time, and phasing for compatibility. Coordinate with and obtain written concurrence from the construction office. See Task 4.7 (Cross Section Design Files) for utility conflict identification and adjustments.

7.13 Additional Utility Services [N/A]

The CONSULTANT shall provide additional utility services. Additional services will be determined when the services are required and requested. This item is not usually included in the scope at the time of negotiation. It is normally added as a supplemental agreement when the need is identified.

7.14 Processing Utility Work by Highway Contractor (UWHC)

This includes coordination of utility design effort between the DEPARTMENT and the UAO(s). The CONSULTANT shall conduct additional coordination meetings, prepare and process the agreements, review tabulation of quantities, perform UWHC constructability and bidability review, review pay items, cost estimates and Technical Special Provisions (TSP) prepared by the UAO. This does not include utility the utility design effort. This item is not usually included in the scope at the time of negotiation. It is normally added as a supplemental agreement when the need is identified. Effort for the EOR is not included in this task, see Roadway Analysis Task Group 4.

7.15 Contract Plans to UAO(s)

If requested by the District, the CONSULTANT shall transmit the contract plans as processed for letting to the UAO(s). Transmittals to UAO(s) may be by certified mail, return receipt requested.

7.16 Certification/Close-Out

This includes hours for transmitting utility files to the DUO and preparation of the Utility Certification Letter. The CONSULTANT shall certify to the appropriate DEPARTMENT representative the following:

All utility negotiations (Full execution of each agreement, approved Utility Work Schedules, technical special provisions written, etc.) have been completed with arrangements made for utility work to be undertaken and completed as required for proper coordination with the physical construction schedule.

OR

An on-site inspection was made and no utility work will be involved.

OR

Plans were sent to the Utility Companies/Agencies and no utility work is required.

7.17 Other Utilities

The CONSULTANT shall provide other utility services. This includes all efforts for a utility task not covered by an existing defined task. Required work will be defined in the scope and negotiated on a case-by-case basis.

8 ENVIRONMENTAL PERMITS, Compliance, and ENVIRONMENTAL Clearances

The CONSULTANT shall notify the DEPARTMENT Project Manager, Environmental Permit Coordinator, and other appropriate DEPARTMENT personnel in advance of all scheduled meetings with the regulatory agencies to allow a DEPARTMENT representative to attend. The CONSULTANT shall copy in the Project Manager and the Environmental Permit Coordinator on all permit related correspondence and meetings. The Consultant shall use current regulatory guidelines and policies for all permits required as identified in Section 2.4.

8.1 Preliminary Project Research. Submit PIF.

The CONSULTANT shall perform preliminary project research and shall be responsible for regulatory agency coordination to assure that design efforts are properly directed toward permit requirements. The research shall include but should not be limited to a review of the project's PD&E documents including the Environmental Document, Natural Resources Evaluation, and Cultural Resources Assessment Survey.

The CONSULTANT shall research any existing easements or other restrictions that may exist both within or adjacent to the proposed project boundary. Project research may include but should not be limited to review of available: federal, state, and local permit files and databases; and local government information including county and property appraiser data. The CONSULTANT shall determine if any Sovereign Submerged Lands easements need to be modified or acquired. Any applicable information will be shown on the plans as appropriate.

8.2 Field Work

8.2.1 Pond Site Alternatives:
The CONSULTANT shall review alternative pond sites as directed by the DEPARTMENT and information shall be included in the Pond Siting Report.

8.2.2 Establish Wetland Jurisdictional Lines and Assessments:

The CONSULTANT shall be responsible for, but not limited to, the following activities:

- Determine landward extent of wetlands and other surface waters as defined in Rule Chapter 62-340, F.A.C., as ratified in Section 373.4211, F.S.
- Collect all data and information necessary to determine the jurisdictional boundaries of wetlands and other surface waters as defined by the rules or regulations of each permitting agency processing a DEPARTMENT permit application for the project.
- Set seasonal high water levels
- Obtain a jurisdictional determination as defined by the rules or regulations of each permitting agency processing a DEPARTMENT permit application for the project.
- Prepare aerial maps showing the jurisdictional boundaries of wetlands and other surface waters. Aerial maps shall be reproducible, of a scale of 1"=400'or more detailed and be recent photography. The maps shall show the jurisdictional boundaries of each agency. Photo copies of aerials are not acceptable. When necessary, a wetland specific survey will be prepared by a registered surveyor and mapper. All surveyed jurisdictional

boundaries are to be tied to the project's baseline of survey.

- Prepare a written assessment of the current condition and functional value of the wetlands and other surface waters. Prepare data in tabular form which includes the ID number for each wetland (and other surface water, if necessary) impacted, size of wetland to be impacted, type of impact, and identify any wetland (by ID number and size) within the project limits that will not be impacted by the project.
- Prepare appropriate agency forms to obtain required permits. Forms may include but are not limited to the United States Army Corps of Engineers (USACE) "Wetland Determination Data Form – Atlantic and Gulf Coastal Plain Region"; the USACE "Approved Jurisdictional Determination Form"; Uniform Mitigation Assessment Method forms and/or project specific data forms.

8.2.3 Species Surveys:
The CONSULTANT shall conduct wildlife surveys as defined by rules or regulations of any permitting agency, or commenting agency that is processing a DEPARTMENT permit.

8.3 Agency Verification of Wetland Data

The CONSULTANT shall be responsible for verification of wetland and other surface water data identified in Section 8.2 and coordinating regulatory agency field reviews, including finalization of assessments and jurisdictional determinations with applicable agencies.

8.4 Complete and Submit All Required Permit Applications

The CONSULTANT shall collect all of the data and information necessary to prepare the permit applications and obtain the environmental permits required to construct the project as identified in the Project Description and as described in 8.4.1, 8.4.2, and 8.12 (Other Permits). The CONSULTANT shall prepare each permit application in accordance with the rules and/or regulations of the regulatory agency responsible for issuing a specific permit and/or authorization to perform work. The permit application packages must be approved by the DEPARTMENT prior to submittal to regulatory agencies.

The CONSULTANT will submit all permit applications, as directed by the DEPARTMENT, and be responsible for payment of all permit and public noticing fees.

8.4.1 Complete and Submit all Required Wetland Permit Applications:

The CONSULTANT shall prepare, complete, and submit required wetland permit (i.e. ERP, Section 404) application packages to the appropriate regulatory agencies. This includes, but is not limited to, applications submitted to WMDs and/or DEP, and USACE. The application package may include but is not limited to attachments (i.e. project location map, aerials, affidavit of ownership, pictures, additional technical analysis, etc.), a cover letter with project description as well as completion of applicable agency forms. The CONSULTANT shall prepare and respond to agency Requests for Additional Information (RAIs), including necessary revisions to the application package. All responses and completed application packages must be approved by the District Permit Coordinator prior to submittal to the regulatory agencies. Geotechnical permitting should also be prepared, submitted, and obtained.

8.4.2 Complete and Submit all Required Species Permit Applications:

The CONSULTANT shall prepare, complete and submit required species permit

applications to the appropriate agencies. This includes federal and state protected species permit application packages as required. The work includes completion of application package (i.e. project location map, aerials, affidavit of ownership, pictures, additional technical analysis, etc.), and cover letter with project description as well as completion of applicable forms. The CONSULTANT shall respond to agency RAIs, including necessary revisions to the application package. All responses and completed applications must be approved by the District Permit Coordinator prior to submittal to the regulatory agency.

8.5 Coordinate and Review Dredge and Fill Sketches

The CONSULTANT shall review Dredge and Fill Detail sheets to ensure information on the sketch(es) meet the requirements of the regulatory agencies and are appropriate for environmental permit application submittal and acquisition. The CONSULATANT will also provide environmental data/information as needed to support the preparation of the Dredge and Fill sketches.

8.6 Prepare USCG Permit Application

8.7 Prepare Water Management District or Local Water Control District Right of Way Occupancy Permit Application

8.8 Prepare Coastal Construction Control Line (CCCL) Permit Application

The CONSULTANT shall be responsible for the preparation of the CCCL permit application and acquire the final "Notice to Proceed" authorization from the Florida Department of Environmental Protection (FDEP). Legal advertisements shall be published one time in a newspaper that meets the notification requirements of the FDEP.

8.9 Prepare Tree Permit Information

8.10 Compensatory Mitigation Plan

If impacts cannot be avoided, the CONSULTANT shall prepare a mitigation plan to be included as a part of the applications.

Prior to the development of mitigation alternatives, the CONSULTANT shall meet with the Project Manager and Environmental Permit Coordinator to determine the DEPARTMENT's policies in proposing mitigation. The CONSULTANT shall develop a mitigation plan based upon the general guidelines provided by the DEPARTMENT.

The CONSULTANT will be directed by the DEPARTMENT to investigate the mitigation options that meet federal and state requirements in accordance with section 373.4137, F.S. Below are mitigation options:

- Purchase of mitigation credits from a mitigation bank
- Payment to DEP/WMD for mitigation services
- Monetary participation in offsite regional mitigation plans
- Creation/restoration of wetlands

In the event that physical creation or restoration is the only feasible alternative to offset wetland impacts, the CONSULTANT shall collect all of the data and information necessary to prepare mitigation plans acceptable to all permitting agencies and commenting agencies who are processing or reviewing a permit application for a DEPARTMENT project.

Prior to selection of a final creation/restoration mitigation site, the CONSULTANT will provide the following services in the development of a mitigation plan:

- Preliminary jurisdictional determination for each proposed site
- Selection of alternative sites
- Coordination of alternative sites with the DEPARTMENT/all environmental agencies
- Written narrative listing potential sites with justifications for both recommended and non-recommended sites.

8.11 Mitigation Coordination and Meetings

The CONSULTANT shall coordinate with DEPARTMENT personnel prior to approaching any environmental permitting or commenting agencies. Once a mitigation plan has been reviewed and approved by the DEPARTMENT, the CONSULTANT will be responsible for coordinating the proposed mitigation plan with the environmental agencies. The CONSULTANT will provide mitigation information needed to update the FDOT Environmental Impact Inventory.

8.12 Other Environmental Permits

ENVIRONMENTAL CLEARANCES, RE-EVALUATIONS, AND TECHNICAL SUPPORT

8.13 Technical Support to the DEPARTMENT for Environmental Clearances and Re-evaluations (use when CONSULTANT provides technical support only)

The CONSULTANT shall provide engineering and environmental support for the DEPARTMENT to obtain environmental clearances for all changes to the project after the PD&E study was approved. These changes include but are not limited to pond and/or mitigation sites identified, land use or environmental changes, and significant design changes.

8.13.1 NEPA or SEIR Re-evaluation: During the development of the final design plans, the CONSULTANT shall be responsible for coordinating with the District Project Manager to provide necessary engineering information required in the preparation of the re-evaluation by the DEPARTMENT. The preparation of environmental re-evaluations includes those as listed in Part 1, Chapter 13 of the DEPARTMENT's PD&E Manual: Right of Way, Design Change, and Construction Advertisement.

Re-evaluations will be completed in accordance with Part 1, Chapter 13 of the PD&E Manual. The CONSULTANT shall provide information to update the Project Commitment Record for incorporation into the re-evaluation.

It is the responsibility of the CONSULTANT to provide the District Project Manager with engineering information on major design changes including changes in typical section, roadway alignment, pond site selection, right of way requirements, bridge to box culvert, drainage, and traffic volumes that may affect noise models.

8.13.2 Archaeological and Historical Features: The CONSULTANT shall provide necessary technical information to the District's Project Manager to analyze the impacts to all cultural and historical resources due to changes in the project in accordance with Part 2, Chapter 8 of the PD&E Manual.

8.13.3 Wetland Impact Analysis: The CONSULTANT shall provide necessary technical information to the District's Project Manager to analyze the impacts to wetlands and other surface waters in accordance with Part 2, Chapter 9 of the PD&E Manual due to changes in the project.

8.13.4 Essential Fish Habitat Impact Analysis: The CONSULTANT shall provide necessary technical information to the District's Project Manager to analyze the impacts to essential fish habitat in accordance Part 2, Chapter 17 of the PD&E Manual due to changes in the project.

8.13.5 Protected Species and Habitat Impact Analysis: The CONSULTANT shall provide necessary technical information to the District's Project Manager to analyze the impacts to all protected species and habitat in accordance with Part 2, Chapter 16 of the PD&E Manual due to changes in the project. The CONSULTANT shall perform the necessary analysis to complete agency consultation in accordance with Section 7 or Section 10 of the Endangered Species Act.

8.14 Preparation of Environmental Clearances and Re-evaluations (use when CONSULTANT prepares all documents associated with a re-evaluation)

The CONSULTANT shall prepare reports and clearances for all the changes to the project that occurred after the PD&E study was approved. These changes could include but are not limited to pond and/or mitigation sites identified, land use or environmental changes, and significant design changes.

8.14.1 NEPA or SEIR Re-evaluation: During the development of the final design plans, the CONSULTANT shall be responsible for collecting the data and preparing a re-evaluation in accordance with Part 1, Chapter 13 of the PD&E Manual.

8.14.2 Archaeological and Historical Features: The CONSULTANT shall collect data necessary to completely analyze the impacts, due to changes in the project or project area, to all cultural and historic resources, and prepare a Cultural Resource Assessment Report, in accordance with Part 2, Chapter 8 of the PD&E Manual.

8.14.3 Wetland Impact Analysis: The CONSULTANT shall analyze the impacts to wetlands due to changes to the project and complete the wetlands section of a Natural Resources Report, in accordance with Part 2, Chapter 9 of the PD&E Manual.

8.14.4 Essential Fish Habitat Impact Analysis: The CONSULTANT shall analyze the impacts to essential fish habitat due to changes to the project and complete the Essential Fish Habitat section of a Natural Resources Report, in accordance with Part 2, Chapter 17 of the PD&E Manual.

8.14.5 Protected Species and Habitat Impact Analysis: The CONSULTANT shall collect data necessary to prepare the protected species and habitat section of the Natural Resources Report, and analyze the impacts to protected species and habitat by the changes to the project, in accordance with Part 2, Chapter 16 of the PD&E Manual. The CONSULTANT

shall perform the necessary analysis to complete agency consultation in accordance with Section 7 or Section 10 of the Endangered Species Act.

8.15 Contamination Impact Analysis

The CONSULTANT shall prepare Contamination Screening Evaluation for the project limits including stormwater ponds and floodplain compensation sites as described in Part 2, Chapter 20, of the PD&E Manual. The appropriate level of analysis and deliverable type will be approved by the DEPARTMENT's Project Manager and District Contamination Impact Coordinator. The draft Level 1 Contamination Screening Evaluation document shall be submitted to the DEPARTMENT's Project Manager and District Contamination Impact Coordinator for review and final approval. The CONSULTANT shall include an evaluation of any new contamination impacts due to changes to the project from the PD&E design concept, if applicable, and any new discharges or new potential contamination impacts not evaluated in any previously completed Contamination Screening Evaluation. The project impacts, conclusions and recommendations, figures, tables and appendices will be provided in a Level I Contamination Screening Evaluation Report.

The DEPARTMENT will provide Level II assessment services. If contamination is identified within the limits of construction, the CONSULTANT shall coordinate with the District Contamination Impact Coordinator to properly mark identified contamination areas in the plans and develop specifications as appropriate.

8.16 Asbestos Survey

The Department will provide asbestos and metal based coatings survey services.

If asbestos or metal based coatings above threshold levels are found on the bridge(s), the CONSULTANT shall coordinate with the District Contamination Impact Coordinator to obtain plan notes, general notes, specifications, pay item notes, and Operation and Maintenance (O&M) plan for any asbestos to remain in place.

8.17 Technical Meetings

8.18 Quality Assurance/Quality Control

8.19 Supervision

8.20 Coordination

9 STRUCTURES - SUMMARY AND MISCELLANEOUS TASKS AND DRAWINGS

The CONSULTANT shall analyze, design, and develop contract documents for all structures in accordance with applicable provisions as defined in Section 2.19, Provisions for Work. Individual tasks identified in Sections 9 through 18 are defined in the Staff Hour Estimation Handbook and within the provision defined in Section 2. 20, Provisions for Work. Contract documents shall display economical solutions for the given conditions.

The CONSULTANT shall provide Design Documentation to the DEPARTMENT with each submittal consisting of structural design calculations and other supporting documentation developed during the development of the plans. The design calculations submitted shall adequately address the complete design of all structural elements. These calculations shall be neatly and logically presented on digital media or, at the DEPARTMENT's request, on 8 ½"x11" paper and all sheets shall be numbered. The final design calculations shall be signed and sealed by a Florida-licensed professional engineer. A cover sheet indexing the contents of the calculations shall be included and the engineer shall sign and seal that sheet. All computer programs and parameters used in the design calculations shall include sufficient backup information to facilitate the review task.

9.1 Key Sheet and Index of Drawings

9.2 Project Layout

9.3 General Notes and Bid Item Notes

9.4 Miscellaneous Common Details

9.5 Incorporate Report of Core Borings

9.6 Standard Plans- Bridges

9.7 Existing Bridge Plans

9.8 Assemble Plan Summary Boxes and Quantities

9.9 Cost Estimate

9.10 Technical Special Provisions and Modified Special Provisions

9.11 Field Reviews

9.12 Technical Meetings

9.13 Quality Assurance/Quality Control

9.14 Independent Peer Review

9.15 Supervision

9.16 Coordination

19 SIGNING AND PAVEMENT MARKING ANALYSIS

10 STRUCTURES - BRIDGE DEVELOPMENT REPORT [N/A]

11 STRUCTURES - TEMPORARY BRIDGE [N/A]

12 STRUCTURES - SHORT SPAN CONCRETE BRIDGE [N/A]

13 STRUCTURES - MEDIUM SPAN CONCRETE BRIDGE [N/A]

14 STRUCTURES - STRUCTURAL STEEL BRIDGE [N/A]

15 STRUCTURES - SEGMENTAL CONCRETE BRIDGE [N/A]

16 STRUCTURES - MOVABLE SPAN [N/A]

17 STRUCTURES - RETAINING WALLS [N/A]

18 STRUCTURES - MISCELLANEOUS

The CONSULTANT shall prepare plans for Miscellaneous Structure(s) as specified in Section 2.5.

Concrete Box Culverts [N/A]

18.1 Concrete Box Culverts

18.2 Concrete Box Culverts Extensions

18.3 Concrete Box Culvert Data Table Plan Sheets

18.4 Concrete Box Culvert Special Details Plan Sheets

Strain Poles [N/A]

18.5 Steel Strain Poles

18.6 Concrete Strain Poles

18.7 Strain Pole Data Table Plan Sheets

18.8 Strain Pole Special Details Plan Sheets

19 SIGNING AND PAVEMENT MARKING ANALYSIS

Mast Arms

18.9 Mast Arms

18.10 Mast Arms Data Table Plan Sheets

18.11 Mast Arms Special Details Plan Sheets

Overhead/Cantilever Sign Structure [N/A]

18.12 Cantilever Sign Structures

18.13 Overhead Span Sign Structures

18.14 Special (Long Span) Overhead Sign Structures

18.15 Monotube Overhead Sign Structure

18.16 Bridge Mounted Signs (Attached to Superstructure)

18.17 Overhead/Cantilever Sign Structures Data Table Plan Sheets

18.18 Overhead/Cantilever Sign Structures Special Details Plan Sheets

High Mast Lighting [N/A]

18.19 Non-Standard High Mast Lighting Structures

18.20 High Mast Lighting Special Details Plan Sheets

Noise Barrier Walls (Ground Mount) [N/A]

18.21 Horizontal Wall Geometry

18.22 Vertical Wall Geometry

18.23 Summary of Quantities – Aesthetic Requirements

18.24 Control Drawings

18.25 Design of Noise Barrier Walls Covered by Standards

18.26 Design of Noise Barrier Walls not Covered by Standards

18.27 Aesthetic Details

Special Structures [N/A]

18.28 Fender System

19 SIGNING AND PAVEMENT MARKING ANALYSIS

18.29 Fender System Access

18.30 Special Structures

18.31 Other Structures

18.32 Condition Evaluation of Signal and Sign Structures, and High Mast Light Poles

18.33 Condition Evaluation of Signal and Sign Structures, and High Mast Light Poles (No As built or Design Plans Available)

18.34 Analytical Evaluation of Signal and Sign Structures, and High Mast Light Poles

18.35 Ancillary Structures Report

19 SIGNING AND PAVEMENT MARKING ANALYSIS

The CONSULTANT shall analyze and document Signing and Pavement Markings Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

19.1 Traffic Data Analysis [N/A]

The CONSULTANT shall review the approved preliminary engineering report, typical section package, traffic technical memorandum and proposed geometric design alignment to identify proposed sign placements and roadway markings. Perform queue analysis.

19.2 No Passing Zone Study [N/A]

The CONSULTANT shall perform all effort required for field data collection, and investigation in accordance with the DEPARTMENT's Manual on Uniform Traffic Studies.

The CONSULTANT shall submit the signed and sealed report to the DEPARTMENT for review and approval.

19.3 Reference and Master Design File

The CONSULTANT shall prepare the Signing & Marking Design file to include all necessary design elements and all associated reference files.

19.4 Multi-Post Sign Support Calculations

The CONSULTANT shall determine the appropriate column size from the DEPARTMENT's Multi-Post Sign Program(s).

19.5 Sign Panel Design Analysis

Establish sign layout, letter size and series for non-standard signs.

19.6 Sign Lighting/Electrical Calculations [N/A]

The CONSULTANT shall analyze and document Lighting/Electrical Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

The CONSULTANT shall prepare a photometric analysis to be submitted as part of the Lighting Design Analysis Report. An analysis shall be provided for each new and/or modified sign panel which requires lighting.

The Consultant shall submit voltage drop calculations and load analysis for each new and/or modified sign panel which requires lighting.

19.7 Quantities

19.8 Cost Estimate

19.9 Technical Special Provisions

19.10 Other Signing and Pavement Marking Analysis

19.11 Field Reviews

19.12 Technical Meetings

19.13 Quality Assurance/Quality Control

19.14 Independent Peer Review

19.15 Supervision

19.16 Coordination

20 SIGNING AND PAVEMENT MARKING PLANS

The CONSULTANT shall prepare a set of Signing and Pavement Marking Plans in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums that includes the following.

20.1 Key Sheet

20.2 Summary of Pay Items Including TRNS*Port Input

20.3 Tabulation of Quantities

20.4 General Notes/Pay Item Notes

20.5 Project Layout

20.6 Plan Sheet

20.7 Typical Details [N/A]

20.8 Guide Sign Work Sheet(s)

20.9 Traffic Monitoring Site

20.10 Cross Sections

20.11 Special Service Point Details

20.12 Special Details

20.13 Interim Standards

20.14 Quality Assurance/Quality Control

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of traffic design drawings, specifications and other services furnished by the CONSULTANT under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all design drawings, specifications and other services prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan may be one utilized by the CONSULTANT as part of their normal operation or it may be one specifically designed for this project.

20.15 Supervision

21 SIGNALIZATION ANALYSIS

The CONSULTANT shall analyze and document Signalization Analysis Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

21.1 Traffic Data Collection [N/A]

21.2 Traffic Data Analysis [N/A]

21.3 Signal Warrant Study [N/A]

21.4 Systems Timings [N/A]

21.5 Reference and Master Signalization Design File

The CONSULTANT shall prepare the Signalization Design file to include all necessary design elements and all associated reference files.

21.6 Reference and Master Interconnect Communication Design File

The CONSULTANT shall prepare the Interconnect Communication Design file to include all necessary design elements and all associated reference files.

21.7 Overhead Street Name Sign Design

The CONSULTANT shall design Signal Mounted Overhead Street Name signs.

21.8 Pole Elevation Analysis

21.9 Traffic Signal Operation Report [N/A]

21.10 Quantities

21.11 Cost Estimate

21.12 Technical Special Provisions

21.13 Other Signalization Analysis

21.14 Field Reviews

The CONSULTANT shall collect information from the maintaining agencies and conduct a field review. The review should include, but is not limited to, the following:

- Existing Signal and Pedestrian Phasing
- Controller Make, Model, Capabilities and Condition/Age

- Condition of Signal Structure(s)
- Type of Detection as Compared With Current District Standards
- Interconnect Media
- Controller Timing Data

21.15 Technical Meetings

21.16 Quality Assurance/Quality Control

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of traffic design drawings, specifications and other services furnished by the CONSULTANT under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all design drawings, specifications and other services prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan may be one utilized by the CONSULTANT as part of their normal operation or it may be one specifically designed for this project.

21.17 Independent Peer Review [N/A]

21.18 Supervision

21.19 Coordination

22 SIGNALIZATION PLANS

The CONSULTANT shall prepare a set of Signalization Plans in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums, which includes the following:

22.1 Key Sheet

22.2 Summary of Pay Items Including TRNS*Port Input

22.3 Tabulation of Quantities

22.4 General Notes/Pay Item Notes

22.5 Plan Sheet

22.6 Interconnect Plans [N/A]

22.7 Traffic Monitoring Site. To be provided by the Department.

22.8 Guide Sign Worksheet

22.9 Special Details

22.10 Special Service Point Details

22.11 Mast Arm/Monotube Tabulation Sheet

22.12 Strain Pole Schedule

22.13 TCP Signal (Temporary)

22.14 Temporary Detection Sheet

22.15 Utility Conflict Sheet

22.16 Interim Standards

22.17 Quality Assurance/Quality Control

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of traffic design drawings, specifications and other services furnished by the CONSULTANT under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all design drawings, specifications and other services prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be

documented to verify that the required procedures were followed. The Quality Control Plan may be one utilized by the CONSULTANT as part of their normal operation or it may be one specifically designed for this project.

22.18 Supervision

23 LIGHTING ANALYSIS [N/A]

24 LIGHTING PLANS [N/A]

25 LANDSCAPE ARCHITECTURE ANALYSIS [N/A]

26 LANDSCAPE ARCHITECTURE PLANS [N/A]

27 SURVEY [N/A]

The CONSULTANT shall perform survey tasks in accordance with all applicable statutes, manuals, guidelines, standards, handbooks, procedures, and current design memoranda.

The CONSULTANT shall submit all survey notes and computations to document the surveys. All field survey work shall be recorded in approved media and submitted to the DEPARTMENT. Field books submitted to the DEPARTMENT must be of an approved type. The field books shall be certified by the surveyor in responsible charge of work being performed before the final product is submitted.

The survey notes shall include documentation of decisions reached from meetings, telephone conversations or site visits. All like work (such as bench lines, reference points, etc.) shall be recorded contiguously. The DEPARTMENT may not accept field survey radial locations of section corners, platted subdivision lot and block corners, alignment control points, alignment control reference points and certified section corner references. The DEPARTMENT may instead require that these points be surveyed by true line, traverse or parallel offset.

27.1 Horizontal Project Control (HPC)

Establish or recover HPC, for the purpose of establishing horizontal control on the Florida State Plane Coordinate System or datum approved by the District Surveyor (DS) or District Location Surveyor (DLS); may include primary or secondary control points. Includes analysis and processing of all field collected data, and preparation of forms.

27.2 Vertical Project Control (VPC)

Establish or recover VPC, for the purpose of establishing vertical control on datum approved by the District Surveyor (DS) or the District Location Surveyor (DLS).; may include primary or secondary vertical control points. Includes analysis and processing of all field collected data, and preparation of forms.

27.3 Alignment and/or Existing Right of Way (R/W) Lines

Establish, recover or re-establish project alignment. Also includes analysis and processing of all field collected data, existing maps, and/or reports for identifying mainline, ramp, offset, or secondary alignments. Depict alignment and/or existing R/W lines (in required format) per DEPARTMENT R/W Maps, platted or dedicated rights of way.

27.4 Aerial Targets

Place, locate, and maintain required aerial targets and/or photo identifiable points. Includes analysis and processing of all field collected data, existing maps, and/or reports. Placement of the targets will be at the discretion of the aerial firm.

27.5 Reference Points

Reference Horizontal Project Network Control (HPNC) points, project alignment, vertical control points, section, ¼ section, center of section corners and General Land Office (G.L.O.) corners as required.

27.6 Topography/Digital Terrain Model (DTM) (3D)

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of creating a DTM with sufficient density. Shoot all break lines, high and low points. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.7 Planimetric (2D)

Locate all above ground features and improvements. Deliver in appropriate electronic format. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.8 Roadway Cross Sections/Profiles

Perform cross sections or profiles. May include analysis and processing of all field-collected data for comparison with DTM.

27.9 Side Street Surveys

Refer to tasks of this document as applicable.

27.10 Underground Utilities

Designation includes 2-dimensional collection of existing utilities and selected 3-dimensional verification as needed for designation. Location includes non-destructive excavation to determine size, type and location of existing utility, as necessary for final 3-dimensional verification. Survey includes collection of data on points as needed for designates and locates. Includes analysis and processing of all field collected data, and delivery of all appropriate electronic files.

27.11 Outfall Survey

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of a DTM. Survey with sufficient density of shots. Shoot all break lines, high and low points. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.12 Drainage Survey

Locate underground data (XYZ, pipe size, type, condition and flow line) that relates to above ground data. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.13 Bridge Survey (Minor/Major)

Locate required above ground features and improvements for the limits of the bridge. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.14 Channel Survey

Locate all topographic features and improvements for the limits of the project by collecting the required data. Includes field edits, analysis and processing of all field collected data, maps, and/or reports.

27.15 Pond Site Survey

Refer to tasks of this document as applicable.

27.16 Mitigation Survey

Refer to tasks of this document as applicable.

27.17 Jurisdiction Line Survey

Perform field location (2-dimensional) of jurisdiction limits as defined by respective authorities, also includes field edits, analysis and processing of all field collected data, preparation of reports.

27.18 Geotechnical Support

Perform 3-dimensional (X, Y, Z) field location, or stakeout, of boring sites established by geotechnical engineer. Includes field edits, analysis and processing of all field collected data and/or reports.

27.19 Sectional/Grant Survey

Perform field location/placement of section corners, 1/4 section corners, and fractional corners where pertinent. Includes analysis and processing of all field-collected data and/or reports.

27.20 Subdivision Location

Survey all existing recorded subdivision/condominium boundaries, tracts, units, phases, blocks, street R/W lines, common areas. Includes analysis and processing of all field collected data and/or reports. If unrecorded subdivision is on file in the public records of the subject county, tie existing monumentation of the beginning and end of unrecorded subdivision.

27.21 Maintained R/W

Perform field location (2-dimensional) of maintained R/W limits as defined by respective authorities, if needed. Also includes field edits, analysis and processing of all field collected data, preparation of reports.

27.22 Boundary Survey

Perform boundary survey as defined by DEPARTMENT standards. Includes analysis and processing of all field-collected data, preparation of reports.

27.23 Water Boundary Survey

Perform Mean High Water, Ordinary High Water and Safe Upland Line surveys as required by DEPARTMENT standards.

27.24 Right of Way Staking, Parcel / Right of Way Line

Perform field staking and calculations of existing/proposed R/W lines for on-site review purposes.

27.25 Right of Way Monumentation

Set R/W monumentation as depicted on final R/W maps for corridor and water retention areas.

27.26 Line Cutting

Perform all efforts required to clear vegetation from the line of sight.

27.27 Work Zone Safety

Provide work zone as required by DEPARTMENT standards.

27.28 Miscellaneous Surveys

Refer to tasks of this document, as applicable, to perform surveys not described herein. The percent for Supplemental will be determined at negotiations. This item can only be used if authorized in writing by the District Surveyor (DS), District Location Surveyor (DLS) or their representative.

27.29 Supplemental Surveys

Supplemental survey days and hours are to be approved in advance by DS or DLS. Refer to tasks of this document, as applicable, to perform surveys not described herein.

27.30 Document Research

Perform research of documentation to support field and office efforts involving surveying and mapping.

27.31 Field Review

Perform verification of the field conditions as related to the collected survey data.

27.32 Technical Meetings

Attend meetings as required and negotiated by the Surveying and Mapping Department.

27.33 Quality Assurance/Quality Control (QA/QC)

Establish and implement a QA/QC plan. Also includes subconsultant review, response to comments and any resolution meetings if required, preparation of submittals for review, etc.

27.34 Supervision

Perform all activities required to supervise and coordinate project. These activities must be performed by the project supervisor, a Florida P.S.M. or their delegate as approved by the District Surveying Office.

27.35 Coordination

Coordinate survey activities with other disciplines. These activities must be performed by the project supervisor, a Florida P.S.M. or their delegate as approved by the District Surveying Office.

28 PHOTOGRAMMETRY [N/A]

29 MAPPING [N/A]

30 TERRESTRIAL MOBILE LiDAR [N/A]

31 ARCHITECTURE DEVELOPMENT [N/A]

32 NOISE BARRIERS IMPACT DESIGN ASSESSMENT IN THE DESIGN PHASE [N/A]

33 INTELLIGENT TRANSPORTATION SYSTEMS ANALYSIS [N/A]

The CONSULTANT shall analyze and document Intelligent Transportations System (ITS) Analysis Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, existing ITS standard operating procedures, strategic plans, Florida's SEMP guidelines, National and regional ITS architectures, and current design memoranda.

ITS work includes the application of sensor, computer, electronics and communication technologies and management strategies, in an integrated manner, to improve the safety and efficiency of the surface transportation system. ITS includes, but is not limited to, Advanced Traffic Management Systems (ATMS), Advanced Traveler Information Systems (ATIS), Advanced Rural Transportation Systems (ARTS), Advanced Public Transportation Systems (APTS), Advanced Highway Systems (AHS), Commercial Vehicle Operation (CVO) and Electronic Toll Collection (ETC) Systems.

In instances where the CONSULTANT performs analysis or prepares the design packages for the deployment of ITS, the CONSULTANT will not be allowed to compete as a proposing firm, or participate as a subconsultant to a proposing firm during subsequent advertisements involving work performed under this contract.

33.1 ITS Analysis

The CONSULTANT shall review the approved preliminary engineering report, typical section package, traffic technical memorandum and proposed geometric design alignment to identify impacts to existing ITS components (if applicable) and proposed ITS field device placements. The CONSULTANT shall review all related District ITS plans and documentation for the project corridor to ensure all cited ITS elements are included in this project, and develop a Concept of Operations (ConOps), Project Systems Engineering Management, RTVM, and other documents as necessary for conformance with the Federal Highways Administration (FHWA) requirement. The CONSULTANT shall use applicable DEPARTMENT requirements and guidelines, including, but not limited to, the PPM, Design Standards, and

Standard Specifications for Road and Bridge Construction in the design of ITS. The CONSULTANT design is expected to include the following attributes, facilities, infrastructure, ITS devices, systems, and associated work: ***[Insert project specifics (e.g. TMC facilities; communication system design; SunGuide software system installation or expansion; deployment of ITS device such as DMS, CCTV cameras, vehicle detection systems, etc.)]***

CCTV camera system shall provide 100 percent coverage of all mainline lanes, entrance and exit ramps, interchanges (includes view of crossing arterials), blind spots (such as those caused due to existing and proposed bridges, existing and proposed signage, vegetation, and horizontal and vertical curvatures). CCTV cameras shall be spaced to meet the Project requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

Vehicle detection devices shall be spaced as required to meet the Project requirements (speed, volume, and occupancy detection), guidance from the ConOps and as approved by the DEPARTMENT.

Both expressway and arterial dynamic message signs (DMS) shall be located to meet the Project requirements, guidance from the ConOps, and as approved by the DEPARTMENT. All FDOT PPM requirements shall be met for DMS locations. DMS locations shall be designed in conjunction with the Project's master signing design.Highway Advisory Radio (HAR) frequency information signs shall be located to meet the Project requirements, guidance from ConOps, and as approved by the DEPARTMENT

The CONSULTANT shall review the existing TMC Operations and develop additional incident management service requirements as necessary to support during the Construction Phase of the Project. The CONSULTANT shall coordinate with District's Traffic Operations ITS Office for additional information regarding existing Incident Management and TMC Operational Procedures (If desired by the District)

All ITS devices shall be compatible with the latest version of the National Transportation Communications for ITS Protocol (NTCIP) and compatible with SunGuide software platform.

The CONSULTANT shall design the project such that all ITS field devices and ancillary components comply with FDOT's Approved Product List (APL) / Qualified Product List (QPL) and the existing list of devices and components supported within the SunGuide software or other approved software, unless otherwise approved by the DEPARTMENT.

Closed Circuit Television (CCTV) Camera Assembly

The CONSULTANT shall be responsible for the design and exact field locations for the CCTV camera assemblies. The CCTV camera subsystem shall provide full coverage of the roadway network, with overlapping coverage to ensure 100 percent coverage. The typical spacing shall be one mile with verification that there is no

visual blockage. Effort should be made to provide viewing in all directions at interchanges. All CCTV camera assemblies whall include a camera lowering device (CLD) at all locations.

The CCTV camera subsystem shall be designed to provide additional benefits such as the monitoring of DMS operations and security surveillance of critical infrastructure elements. A stand-alone DMS confirmation camera shall be designed and installed to support TMC operations to verify and confirm the posted DMS messages (if desired by the DEPARTMENT). The position, height, and design of each camera pole shall be finalized during the design phase of the project. Each site shall be designed for overall monitoring capability, as well as designed to provide safe and effective maintenance conditions.

The CCTV camera assembly deployment shall be designed to provide fields of view that give the required corridor coverage. The CONSULTANT shall determine the camera location by performing a videography study at each proposed CCTV site. The study shall include video of the proposed CCTV location and elevation with respect to the roadway level. The CONSULTANT shall identify the final number and locations of the camera assemblies based on the videography study.

The camera assembly design shall ensure that the video quality is not degraded due to wind or vibration. The CONSULTANT shall be responsible for the design of the poles and foundations to minimize the potential for vibration. The CONSULTANT shall prepare cross section plan sheets showing details of horizontal and vertical clearances of the proposed equipment with identified utilities.

The CONSULTANT shall be responsible for the design of the lightning protector system and surge protection system based on FDOT criteria and designed to minimize damage to cameras.

The CCTV camera assembly shall be approved by the FDOT-TERL and be listed on the APL, as applicable, for use in the State of Florida.

The CCTV camera assembly shall comply with the latest version of FDOT Standard Specifications for Road and Bridge Construction, Supplemental Specification 782.

Traffic Detection Subsystem

The CONSULTANT shall select traffic detection technology to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall be responsible for the design of a non-intrusive traffic detection subsystem for the roadway facilities. The detectors shall be positioned near other ITS field device infrastructure including the fiber-optic splice vaults when feasible to reduce cost. Final detection station locations shall be based on a number of location variables identified during the design phase.

The traffic detection subsystem shall be able to collect and process volume, speed and occupancy data on a lane-by-lane basis for the corridor mainlines, in both

directions of travel. If self-calibration feature is not specified, requirements for calibration shall be stated. The data will be used by the TMC for functions including detecting incidents, determining travel times, estimating traffic conditions for dissemination to travelers, sharing information with other agencies, and data archiving for transportation planning and historical data analysis. The traffic detection subsystem shall allow for connectivity to the TMC.

The traffic detectors shall perform to meet the Project requirements under all environmental and traffic conditions expected for the corridors. The detectors shall detect volumes, speeds and occupancies for all corridor traffic operation conditions within the specified accuracy including all volume levels, all speed levels and traffic compositions. Occlusions, other blocking of vehicles and adjacent lanes detection shall not degrade the detection system performance below specified accuracy. Signs, walls, guardrails, and other physical elements in the system shall not have a significant effect on the detection performance. Vibration and shocks shall not affect the performance of the system.

The detector technology / product shall be certified by the FDOT Traffic Engineering Research Lab (TERL) and be on the APL, as applicable, for use in the State of Florida. The traffic detection utilized shall comply with the latest version of FDOT Standard Specifications for Road and Bridge Construction, Specification 786.

The system shall allow remote configuration, calibration, monitoring, and diagnostic of real-time traffic activities from a remote location, such as the TMC, using the FDOT SunGuide central software and software provided by the detection system vendor.

The CONSULTANT shall determine the exact location of the field devices to meet the desired coverage and functional requirements of traffic detectors. The detector and associated cabinet locations shall be identified by the CONSULTANT. A detailed site survey shall be conducted by a factory trained and certified representative. The site survey shall be designed to identify the exact locations and details for each detection station.

Travel Time Detection Subsystem

The CONSULTANT shall be responsible for the design of a travel time detection subsystem for the roadway facilities. This travel time detection subsystem will enable the FDOT to capture vehicle travel times between pre-defined nodes. The travel time data shall utilize the project communications backbone in order to collect and distribute travel time data to the TMCs.

The travel time detection subsystem shall utilize the FDOT's SunPass Automatic Vehicle Identification (AVI) transponders that are properly mounted on vehicles traveling along the roadway being monitored or utilize other travel time technologies such as license plate readers (LPR).

When utilizing transponders, they will be read by AVI reader equipment placed at checkpoints along the roadway. As a transponder passes a checkpoint, its data shall

be acquired by the AVI system. The AVI system shall automatically add the time, date, transponder reading antenna number, and the antenna location to the transponder identification code and store the data.

The travel time detection system shall utilize supplemental toll tag readers placed at appropriate existing device locations as applicable, as well as interchanges and at intermediate locations throughout the project as required to provide the required coverage to satisfy travel time measurement requirements. Using the designed communications, the transponder information shall be forwarded to the TMC for further processing.

The CONSULTANT shall coordinate all design efforts for use of SunPass AVI transponders with the Florida's Turnpike Enterprise (FTE) Tolls group.

Highway Advisory Radio Subsystem

The CONSULTANT shall be responsible for the design the highway advisory radio (HAR) subsystem to be managed from the FDOT TMC and broadcast to provide a seamless HAR subsystem with other FDOT area HAR stations. The system shall be designed to ensure against the transmission of erroneous data.

The HAR subsystem shall operate on a clear frequency without interference from adjacent frequencies, during both daytime and nighttime conditions. The selected frequency shall be quiet other than normal static. The CONSULTANT shall document all existing HAR and other radio station frequencies and perform all necessary analysis to determine if it is possible to operate the HAR on the selected frequency.

The HAR subsystem shall be licensed for fixed operation by the FCC. The HAR stations shall not interfere with AM broadcast radio stations. In addition, the HAR station shall not interfere with any existing HAR stations or with each other. FCC restrictions shall be followed to decrease the likelihood of interference. The CONSULTANT shall attempt to have the new HAR installation to broadcast at the same frequency as the existing FDOT HAR subsystems if desired.

The HAR subsystem design shall ensure that the field equipment is housed in a sealed enclosure to protect the electronics against moisture and pollution. Cabinet locks shall be used to prevent unauthorized access and vandalism.

The CONSULTANT shall submit maps to the FDOT indicating the coverage of the HAR stations for the proposed station locations. The site locations of the HAR stations shall consider all factors associated with the HAR system. The HAR coverage shall take into consideration interference from adjacent frequencies, the time required by the drivers to listen to the message, make decisions to change lanes, and change lanes to exit at the diversion point.

All HAR subsystem functions shall be controllable from the TMC.

The antenna selection, location and height shall provide the required coverage and

quality of the system and shall meet the FCC licensing requirement.

The ground system shall be designed to provide the required radio performance. Testing shall be performed to ensure that there is proper soil conductivity and hydrogen ion concentration for the HAR ground system. A radial ground system, buried at the appropriate depth beneath the surface, shall be used.

The CONSULTANT shall also be responsible for the design and location of remotely-operated static signs with flashing lights (one sign per direction) to alert motorists in both direction of travel of active HAR broadcasts. The signs shall be located at the outer edges of the transmission zone. The signs shall conform to the appropriate guide sign guidelines as described in the MUTCD. The signs shall be retro-reflective in accordance with FDOT specifications. Flashing lights (beacons) on top of the signs shall be used to indicate to motorists that an urgent HAR message is being broadcast. The flashing beacons shall be activated from the FDOT's TMC facilities.

The HAR subsystems shall be designed in accordance with the FDOT Specifications for Road and Bridge Construction, Supplemental Specification 781.

Dynamic Message Sign Subsystem

The CONSULTANT shall be responsible for the design of the DMS subsystem for the roadway facilities.

The position of each DMS shall be finalized during the design phase of the project. The CONSULTANT shall select DMS technology, type, and display to meet the Project requirements and ConOps requirements.

The CONSULTANT shall locate the DMS to satisfy the required sign functionality and to provide the required visibility of the signs. The project communications system shall enable full control of the DMS from the TMC facilities. All DMS hardware, software and related infrastructure components shall be fully compatible SunGuide software. All DMS shall include a dedicated confirmation camera that allows for visual verification of the messages posted on the DMS by a TMC Operator (if desired by the District).

The CONSULTANT shall design support structures to accommodate the specified DMS to meet the design functional, operational, and maintenance requirements.

The DMS shall be certified by the FDOT TERL and be on the APL, as applicable, for use in the State of Florida

The DMS shall be designed in accordance with the latest version of FDOT Standard Specifications for Road and Bridge Construction, Supplemental Specification 781.

Roadway Weather Information Systems (RWIS)

The CONSULTANT shall ensure that, each RWIS site consists of:

Remote Processing Unit (RPU);

Fog/Smoke Detection sensor;

Passive Pavement Sensor (PPS);

Classifying Precipitation;

Precipitation Occurrence Sensor;

Air Temperature/Relative Humidity Sensor;

Wind Speed and Direction Sensor;

RWIS Tower/Pole Structure, foundation, base, and cabinet with electrical service, and lightning protection & grounding assembly; and,

Communication hardware.

The Design/Build Firm shall ensure that the RWIS subsystem shall include all hardware, software, and licenses to operate as follows:

RWIS Central Software including SQL database for the RTMC;

RWIS Central Hardware for RTMC;

Atmospheric sensors shall measure their respective weather parameters and communicate the signals from each to the RPU;

The RPU shall process and temporarily store the output from the pavement sensors and atmospheric sensors;

The RWIS server shall poll each RPU on a scheduled basis via communications telemetry as specified in the design plans. The RPU shall respond to the poll and transfer all of its data to the RWIS server;

All data transfers between the RWIS server and RPUs shall be compliant with the most current Federal and State of Florida standard NTCIP ESS protocols;

The RWIS server system shall store the RWIS data in a standard SQL Server database for access by Department users via SunGuide® software; and,

The RWIS user displays shall include all sensor and forecast data in a browser-based data display format.

The RWIS will comply with the FDOT Standard Specifications Section 781-5.

33.2 Communications Plan

The CONSULTANT shall be responsible for the development of a communications

plan to determine the optimal communications medium for the project corridor. The plan shall be developed prior to submittal of Phase I plans. The plan shall identify communications media alternatives and provide a cost estimate that includes initial, operations and maintenance cost for the life cycle of the communications network. The plan shall ensure that video, voice, and data will be communicated in real-time between center-to-field and center-to-center (C2C) nodes as applicable. The communications system design must utilize non-proprietary, open-architecture, standards-based, robust, scalable, and proven technology. The communication plan analysis shall address communication and connections between field devices, communications and connections between field devices and the TMC, center-to-center communications between TMCs, and any other communication links or connections required to meet project goals. The plan must include bandwidth analysis and recommendations, needs assessment, and provide recommendations regarding minimum requirements, media, network devices, protocols, network topology, communication redundancy, future needs, spare capacity, and any communications or data sharing with other agencies.

After approval of the plan, the CONSULTANT shall submit a revised plan including a detailed design analysis for each submittal. The CONSULTANT's communications design shall include multiple redundant paths for each location, which allows for automatic switching of communications path onto a secondary path, if the primary path is impacted (if desired by the District).

The communications system components shall be in accordance with Section 783 of the latest FDOT Standard Specifications for Road and Bridge Construction (online edition).

33.3 Lightning Protection Analysis

The CONSULTANT shall be responsible for a complete and reliable lightning protection system design for each structure and pole and the devices attached therto as well as ITS field device cabinets and communications hubs if not addressed by the FDOT's Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System and the Interim Drawings. The ITS components of the project shall be protected from damage caused by lightning strikes, transient voltage surges, and induced current. The CONSULTANT shall design all grounding, lightning protection, and surge protection in accordance with Underwriters Lab (UL) 96A specifications.

The CONSULTANT shall include surge protection devices for all cables and conductors (power, video, and data). All Project ITS subsystems, devices and ancillary components with electrical interconnects shall be protected from voltage surges caused by lightning, transient voltage surges, and external electromagnetic fields at the time of installation of each device.

The lightning protection system shall be designed in accordance with the latest version of the FDOT Standard Specifications for Road and Bridge Construction, Supplemental Specification 785.

33.4 Power Subsystem

The CONSULTANT shall be responsible for an electrical design in accordance with all NEC requirements. No solar power should be utilized as a power solution for the Project unless otherwise approved by the DEPARTMENT. To enhance power reliability, the CONSULTANT shall design a power distribution and backup system consisting of, at a minimum, underground power conduits and conductors, transformers, generators, automatic transfer switches, UPS, and all associated equipment. The power backup system shall supply electrical power in event of commercial power supply failure for all system components. Power equipment shall be installed in areas to avoid wet locations. All connections and equipment shall be protected from moisture and water intrusion. The CONSULTANT shall ensure that vandal resistant mechanisms for all electrical infrastructure shall be included as part of the Design.

The CONSULTANT shall submit the power system design and voltage drop calculations for the power distribution system as part of phase II, III, and IV design submittals. The CONSULTANT shall conduct a short circuit and protection coordination study for the designed power system and document the study as part of the power system design report.

33.5 Voltage Drop Calculations

The electrical design shall address allowable voltage drops per the NEC. The CONSULTANT shall submit voltage drop calculations for any electrical circuit providing power to the ITS field devices beyond the electric utility service point. The calculations shall document the length of each circuit, its load, the size conductor or conductors used and their ohm resistance values and the required voltages from the service point to the respective ITS devices to maintain voltage drops with allowable limits. The voltage drop incurred on each circuit (total volts and percentage of drop) shall be calculated, and all work necessary to calculate the voltage drop values for each circuit should be presented in such a manner as to be duplicated by the District. Load analysis calculations shall be submitted. All voltage drop calculations shall allow for future expansion of ITS infrastructure, if identified in the Project ConOps.

33.6 Design Documentation

The CONSULTANT shall submit a Design Documentation Book with each plan submittal under separate cover and not part of the roadway documentation book. At a minimum, the design documentation book shall include:

- Computation books for all applicable items on plans.
- Phase submittal checklist.
- Three-way quantity check list
- Structural calculations for all structures
- Voltage drop calculations.
- Load analysis calculations.

33.7 Existing ITS

The CONSULTANT shall research any required legacy system or system components that may be impacted by new work, such as: existing communications; existing types, numbers, locations, models, manufacturers, and age of ITS devices; as-built plans; existing operating software; existing center-to-field devices; and C2C communications and capabilities.

33.8 Queue Analysis

The CONSULTANT shall perform a queue analysis at high volume interchanges and high frequency conflict / crash locations to determine optimal placement of DMS using project forecasted traffic volumes. This analysis shall be performed prior to submittal of the Phase I plans. The Consultant shall perform other traffic engineering analysis as necessary to ensure that the DMS locations are selected based on optimum message delivery to the motorists.

33.9 Reference and Master ITS Design File

The CONSULTANT shall prepare the ITS design file to include all necessary design elements and the reference files for topo, R/W roadway, utilities files, etc. This effort includes the design and layout of proposed ITS devices, including but not limited to: CCTV / Detection poles, DMS, detection devices, advanced traffic controllers, conduit, cabinet-related pull boxes, service points, fiber optic sizing, and communications hubs. All existing ITS infrastructure shall be referenced to the new ITS plan sheets (if applicable).

33.10 Reference and Master Communications Design File

The CONSULTANT shall prepare the communication design file to include all necessary design elements and all associated reference files as well as reference files of topo, R/W, roadway, utilities files, existing ITS communications infrastructure, etc. This effort includes design and layout of proposed communications conduit, cabinet, pull boxes, splice boxes, standard route markers, communications plan overview, fiber optic splicing, connections, communications hubs, etc.

33.11 Pole Elevation Analysis

The CONSULTANT shall evaluate pole elevation requirements and design pole heights to meet the Project requirements including field of view; elimination of occlusion; site access for maintenance vehicles and personnel; access to pole mounted equipment, such as CCTV cameras, traffic detectors, and cabinets; and probability of lightning strike.

33.12 Sign Panel Design Analysis

The CONSULTANT shall design all ITS signing in conjunction with the Roadway Master Signing. This includes any static sign panel design analysis where DMS is

in-laid within a static sign or for HAR signage. Expressway and arterial full size DMS shall not be co-located with other static signs. ***[If desired by the District]****.*

33.13 Quantities

The CONSULTANT shall include all work required to determine the quantities for all items, including ITS structures and devices, interconnect, and infrastructure (such as conduits, pull boxes, splice boxes, fusion splices, splice enclosures, etc.). This work effort shall include generating accurate quantities for computing the engineer's estimate as required by the District. Use electronic submittal of plans as required by the DEPARTMENT.

33.14 Cost Estimate

*The CONSULTANT shall prepare an engineer's cost estimate for the project using historical data from the FDOT or from other Industry sources. The CONSULTANT shall also load the pay items and quantities into TRNS*PORT for generating the summary of quantities and the FDOT's in-house estimates.*

33.15 Technical Special Provisions

The CONSULTANT shall develop Technical Special Provisions (TSP) for the specific items or conditions of the project that are not addressed in the FDOT'S Standard Specifications, Supplemental Specifications and Special Provisions.

33.16 Other ITS Analyses

[Add detailed project needs for any other ITS-related analyses here]

33.17 Field Reviews

The CONSULTANT shall conduct a field review for the required phase submittals. The review shall identify necessary data for all elements of the project including, but not limited to, the following:

- Existing ITS Field Devices as compared with the latest FDOT standards and District requirements
- Device Make, Model, Capabilities, Condition / Age, Existence of SunGuide Software Driver
- Condition of Structure(s), cabinets, and other above-ground infrastructure and devices
- Type of Detection as Compared With Current District Standards
- Underground Infrastructure
- Proximity of other utilities
- Traffic Operations
- Any other field reconnaissance as necessary to develop a complete ITS design package

33.18 Technical Meetings

The CONSULTANT shall attend meetings as necessary support the project.

33.19 Quality Assurance / Quality Control

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of designs, drawings, specifications, and other services and work furnished by the CONSULTANT under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all design drawings, specifications, and other documentation prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan may be one utilized by the CONSULTANT as part of their normal operation or may be one specifically designed for this project. The CONSULTANT shall utilize the District's quality control checklist. The responsible Professional Engineer that performed the Quality Control review shall sign a statement certifying that the review was conducted.

The CONSULTANT shall, without additional compensation, correct all errors or deficiencies in their works.

33.20 Supervision

The CONSULTANT shall provide all efforts required to supervise all technical design activities.

33.21 Coordination

The CONSULTANT shall coordinate with Survey, Geotech, Drainage, Structures, Lighting, Roadway Design, Utilities, municipalities, maintaining agencies and Traffic Operations to produce a final set of construction contract documents and to ensure that a high degree of accuracy for the design plans is achieved.

34 INTELLIGENT TRANSPORTATION SYSTEMS PLANS [N/A]

The CONSULTANT shall prepare a set of ITS Plans in accordance with the Plans Preparation Manual that includes the following:

34.1 Key Sheet

The CONSULTANT shall prepare the key sheet in accordance with the latest format depicted in the Plans Preparation Manual.

MUTCD

Standard Specs

Standard Index

34.2 Summary of Pay Items Including TRNS*PORT Input

*The CONSULTANT shall include input into TRNS*PORT and create the CADD generated sheet.*

34.3 Tabulation of Quantities

The CONSULTANT shall place pay item numbers, descriptions, quantities and grand totals on the tabulation sheet(s) and provide updating of the tabulation of quantities sheets during the design period.

34.4 General Notes / Pay Item Notes

The CONSULTANT shall include all pertinent general notes and pay item notes as deemed fit and as established by the District.

34.5 Project Layout

The CONSULTANT shall prepare plan sheet(s) with an overview of the entire project that include stations and offsets, project limits, intersection locations, devices, device identification using with SunGuide nomenclature, and plan sheet coverage.

34.6 Typical and Special Details

The CONSULTANT shall prepare typical and / or special details for conditions in the project not addressed by the DEPARTMENT's Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System. The CONSULTANT shall prepare special details not addressed by FDOT Design Standards, including block diagrams, hub cabinets, wiring diagrams, solar power service, and special mounting details.

34.7 Plan Sheet

The CONSULTANT shall prepare the ITS plan sheets utilizing the Design file to include all necessary information related to the project design elements and all associated reference files. The plan sheets shall include general and pay item notes and pay items. The plans shall depict the location of pull boxes, splice boxes, conduit runs and device locations with setbacks from the travel way. Devices shall be located by station and offset.

34.8 ITS Communications Plans

The CONSULTANT shall prepare plans for the communications network. These plans shall consist of block diagrams, splicing diagrams, port assignments, wiring diagrams, and all other information necessary to convey the design concept to the contractor. These plans shall be included in the ITS plan set and be prepared in a manner consistent with immediately adjacent ITS project installations (planned or installed).

The communication system shall be an open-architecture, non-proprietary, real-time, multimedia communications network. The communication system design must be compatible and completely interoperable with the existing systems.

[Discuss any needs or allowance for temporary communication connectivity options here].

The CONSULTANT's design shall include protecting and maintaining the existing ITS infrastructure. For locations where existing ITS infrastructure is impacted, the CONSULTANT's design shall include mitigation to minimize the downtime of existing system as per the District's requirements.

The CONSULTANT is responsible for the design of the communication infrastructure and its integration with the DEPARTMENT's communication system. Additionally, the CONSULTANT shall determine the most cost effective, best performing, communication connectivity option. The communication system must allow command and control as well as data and video transmission between the field devices and the TMCs at ***[insert location]***.

Conduit paths shall be selected to provide a continuous duct system on one side of the road unless otherwise requested by the FDOT. The various components of ITS deployment will be located on both sides of the freeway and therefore under pavement bore and lateral conduits will be necessary to access equipment locations.

34.9 Fiber Optic Splice Diagrams

The CONSULTANT shall produce fiber optic cable splicing diagrams to show the connectivity of the fiber optic cable from its termini at field devices to the TMC. The diagrams shall denote new and existing fiber routes, splices, and terminations involved in the work. The diagrams shall identify cables by size, tube color / number and stand colors / numbers. All cables shall be identified either by numbering system identified either by numbering system identified on the plans or by bounding devices. The diagrams shall denote the types of connectors in the patch panels.

34.10 Lightning Protection Plans

The CONSULTANT shall include efforts to design a complete and reliable lightning protection design for each pole and associated devices, ITS device installation, as well as device cabinets and communications hubs, etc. if not already addressed in the FDOT's Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System.

34.11 Cross Sections

The CONSULTANT shall prepare cross sections for ITS devices.

34.12 Guide Sign Work Sheet(s)

The CONSULTANT shall prepare the guide sign work sheets to include all necessary information related to the design of the static and dynamic message signs in the project corridor.

34.13 Special Service Point Details

The CONSULTANT shall design any special service point and electrical distribution system beyond the electric utility company's service point. The plan shall depict with pay items, general and plan notes the locations of transformers, switches, disconnects, conduits, pull boxes and power conductors. The plans shall identify the location of underground and overhead service points with identifying pole and transformer numbers.

34.14 Strain Pole Schedule

The CONSULTANT shall incorporate the schedule detail chart for concrete or steel strain poles in the plan set.

34.15 Overhead / Cantilever Sign Structure

For overhead truss and cantilever mounted devices, the CONSULTANT shall evaluate pertinent data and information to develop the layout for locating and mounting devices to the horizontal element of the structure, and coordinate the design of the structures with the roadway and structural engineers.

The CONSULTANT shall be responsible for determining the overhead/cantilever structure requirements for proper installation of the DMS, viewing angle and site distance requirement as per Chapter 2e – Guide Signs-Freeways and Expressways in the Manual on Uniform Traffic Control Devices (MUTCD) and Florida Department of Transportation (FDOT) Plans Preparation Manual and all other applicable manuals and guidelines as per governing regulations.

34.16 Other Overhead Sign Structures (Long Span, Monotube, etc.)

For other overhead sign structures, the CONSULTANT shall evaluate pertinent data

and information to develop layout for locating and mounting device to the horizontal element of the structure, and coordinate the design of the structures with the roadway and structural engineers.

The CONSULTANT shall be responsible for determining the requirements for other type of structures (long span, monotube, etc) used as part of the project for proper installation of the DMS, viewing angle and site distance requirement as per Chapter 2e – Guide Signs-Freeways and Expressways in the Manual on Uniform Traffic Control Devices (MUTCD) and Florida Department of Transportation (FDOT) Plans Preparation Manual and all other applicable manuals and guidelines as per governing regulations.

34.17 Traffic Control Plans

The CONSULTANT shall prepare Traffic Control Plans (TCP) to minimize impact to traffic during the construction of ITS field devices and associated communications infrastructure that will be deployed along the project corridor.

The TCP shall strive to maintain and sustain center-to-field device connectivity and operability to the ITS field devices previously deployed along the project corridor. The TCP effort shall consider and mitigate the impacts of the project's various construction phases so as to sustain center-to-field devices connectivity and operability, maintaining operational quality as a minimum at the level provided prior to construction start and minimizing down time as much as possible. The CONSULTANT shall develop the TCP sheets for the project, providing temporary communications as necessary, notes, details, and direction applicable to the ITS elements and associated communications for inclusion in the TCP.

The CONSULTANT shall review the existing TMC Operations and develop additional incident management service requirements as necessary to support during the Construction Phase of the Project. The CONSULTANT shall coordinate with District's Traffic Operations ITS Office for additional information regarding existing Incident Management and TMC Operational Procedures. ***[If desired by the District]***

34.18 Interim Standards

The CONSULTANT shall adhere to all Department's Interim Standards for ITS applications.

34.19 GIS Data and Asset Management Requirements

The CONSULTANT is responsible for providing Geographic Information System (GIS), spatial data, for the ITS components design. This information is required to integrate ITS components to the SunGuide software. A coordinate point compatible with the Florida State Plane System or FDOT's current coordinate plane system shall be collected for all ITS components part of the Project design. All GIS information provided shall be compatible with the FDOT's ITS FM asset management software.

The information shall be transferred to the as-built plans and submitted to the District in electronic format along with the as-built plans.

The Global Positioning System (GPS) unit shall be provided by the CONSULTANT and used to collect data with a minimum accuracy of three (3) meters when differentially corrected. The CONSULTANT shall collect spatial data points and physical address location for:

- DMS location (mainline and arterial)
- Vehicle detection pole location
- HAR system components
- CCTV camera pole location
- Ground mounted cabinets
- Fiber optic cable path (fiber backbone)
- Communications hubs
- Standard route markers
- Lateral fiber optic cable connections
- Lateral power cable connections
- Pull boxes (power and fiber)
- Splice boxes
- Power drops (service point and cable path)

34.20 Quality Assurance / Quality Control

The CONSULTANT shall utilize the District's quality control checklist for traffic design drawings in addition to the QC effort described in section three.

34.21 Supervision

The CONSULTANT shall supervise all technical design activities.

35 GEOTECHNICAL [N/A]

36 PROJECT REQUIREMENTS

36.1 Liaison Office

The DEPARTMENT and the CONSULTANT will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project. While it is expected the CONSULTANT shall seek and receive advice from various state, regional, and local agencies, the final direction on all matters of this project remain with the DEPARTMENT Project Manager.

36.2 Key Personnel

The CONSULTANT's work shall be performed and directed by the key personnel identified in the proposal presentations by the CONSULTANT. Any changes in the

indicated personnel shall be subject to review and approval by DEPARTMENT.

36.3 Progress Reporting

The CONSULTANT shall meet with the DEPARTMENT as required and shall provide a written monthly progress report with approved schedule, schedule status, and payout curve or by using the earned value method that describe the work performed on each task. The report will include assessing project risk through monthly documentation of identifying and updating the risk category and approach for monitoring those tasks. Invoices shall be submitted after the DEPARTMENT approves the monthly progress report and the payout curve or with earned value analysis. The Project Manager will make judgment on whether work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.

36.4 Correspondence

Copies of all written correspondence between the CONSULTANT and any party pertaining specifically to this contract shall be provided to the DEPARTMENT for their records within one (1) week of the receipt or mailing of said correspondence.

36.5 Professional Endorsement

The CONSULTANT shall have a Licensed Professional Engineer in the State of Florida sign and seal all reports, documents, technical special provisions, and plans as required by DEPARTMENT standards.

36.6 Computer Automation

The project will be developed utilizing Computer Aided Drafting and Design (CADD) systems. The DEPARTMENT makes available software to help assure quality and conformance with policy and procedures regarding CADD. It is the responsibility of the CONSULTANT to meet the requirements in the DEPARTMENT's CADD Manual. The CONSULTANT shall submit final documents and files as described therein.

36.7 Coordination with Other Consultants

The CONSULTANT is to coordinate his work with any and all adjacent and integral consultants so as to effect complete and homogenous plans and specifications for the project(s) described herein.

36.8 Optional Services

At the DEPARTMENT's option, the CONSULTANT may be requested to provide optional services. The fee for these services shall be negotiated in accordance with the terms detailed in Exhibit B, Method of Compensation, for a fair, competitive and reasonable cost, considering the scope and complexity of the project(s). Additional services may be authorized by Letter of Authorization or supplemental amendment in

accordance with paragraph 2.00 of the Standard Consultant Agreement. The additional services may include Construction Assistance, Review of Shop Drawings, Final Bridge Load Rating, update (Category II) bridge plans electronically (CADD) for the Final "As-Built" conditions, based on documents provided by the DEPARTMENT (CADD Services Only) or other Services as required.

37 INVOICING LIMITS

Payment for the work accomplished shall be in accordance with Method of Compensation of this contract. Invoices shall be submitted to the DEPARTMENT, in a format prescribed by the DEPARTMENT. The DEPARTMENT Project Manager and the CONSULTANT shall monitor the cumulative invoiced billings to ensure the reasonableness of the billings compared to the project schedule and the work accomplished and accepted by the DEPARTMENT.

The CONSULTANT shall provide a list of key events and the associated total percentage of work considered to be complete at each event. This list shall be used to control invoicing. Payments will not be made that exceed the percentage of work for any event until those events have actually occurred and the results are acceptable to the DEPARTMENT.