Month XX, 2022

EXHIBIT A



SCOPE OF SERVICES

FOR

FINANCIAL PROJECT ID(S) 999999-1-22-01 and 999999-1-32-01

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***[Enter County Name]*** COUNTY

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SCOPE OF SERVICES FOR PROJECT DEVELOPMENT AND ENVIRONMENT STUDY AND DESIGN 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: ***000000-0-32-00***

Related Financial Project ID(s): ***[Related FM Numbers]***

 Federal Aid Project No.: ***000000X [If applicable or N/A]***

ETDM No.:***0000***

 County Section No.: ***00000***

 Roadways: ***[Insert Roadways]***

Project Description: ***[Insert Project Description]***

Bridge No(s).: ***000000***

 Railroad Crossing No.: ***[Insert RR Xing No. (See FDM Chapter 220)]***

**Lead Agency: *[Insert project lead agency]***

 Context Classification: ***[List applicable classification]***

# 1 PURPOSE AND PROJECT DESCRIPTION

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the DEPARTMENT regarding the Project Development and Environment (PD&E) Study, 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: ***[Work types*]**

Major work groups include: ***[Major work groups]***

Minor work groups include: ***[Minor work groups]***

Known alternative contracting methods include: ***[Alternative contracting methods or N/A]***

The general objective is for the CONSULTANT to conduct a PD&E study and 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. The PD&E Study will enable the DEPARTMENT to obtain the Location and Design Concept Acceptance (LDCA) for the project concurrent with preparation of Phase II design plans. The contract documents will be used by the contractor to build the project and test the project components. The 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 contact documents and the project can be built as designed and to specifications.

The Scope of Services establishes which items of work in the PD&E Manual, FDOT Design Manual (FDM), and other pertinent manuals are specifically prescribed to accomplish the work included in this contract and indicates 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 prior (planning) 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 PD&E Study and design of the project a contract file in accordance with DEPARTMENT procedures.

The CONSULTANT is 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 approval of the environmental document, and 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 Scope of Services.

1.1 Project Description

[ Project description]

1.2 Project General (Activities 2, 3, 4, and 5)

Public Involvement**:**

**Cap Level: *[X]* *[Describe public involvement (ex: public meetings, workshops, public hearing)]***

Other Agency Presentations/Meetings: ***[List agencies and number of meetings or N/A]***

|  |  |
| --- | --- |
| **Agency** | **Number of Meetings** |
| [*Agency Name*] | [*Number*] |

Joint Project Agreements: ***[Describe any Joint Project Agreements or N/A]***

Specification Package Preparation: [***List any significant effort or N/A****]*

Value Engineering: ***[Describe level of effort or N/A]***

Risk Assessment Workshop:

Number of Risk Assessment Workshop: [Number of meetings] *[****Describe level of effort required to support Risk Assessment Workshop and associated meetings, number of follow up meetings expected or N/A]***

Plan Type: ***[Describe type of roadway plans, e.g., plan/profile, plan only, letter plans, or as directed]***

Typical Section:

Number of Typical Sections: ***[Number]***

**[*Description of typical sections, e.g., mainline: four-lane divided urban curb and gutter, 4-foot bike lanes, 5-foot sidewalk…]***

Pavement Designs:

Number of Pavement Designs: ***[Number] [List number of anticipated pavement designs on this project or* *N/A*]**

Pavement Type Selection Report(s): ***[Describe level of effort required – submitted with*** ***phase reviews or N/A]***

Cross Slope Correction: ***[Identify deficiencies or N/A]***

Access Management Classification*:* ***[Select an Access Management Classification Number]***

Transit Route Features: ***[Describe transit route features or N/A]***

Major Intersections and Interchanges:

Number of Major Intersections and Interchanges: ***[Number]*[*List all intersections and interchanges that will require additional plan sheets or N/A]***

Roadway Alternative Analysis: ***[Provide Description or N/A]***

Level of Temporary Traffic Control Plan (TTCP):: ***The CONSULTANT shall develop*** [***Level of TTCP]*** ***Temporary Traffic Control Plans (TTCP) for this project. The CONSULTANT shall schedule a meeting before Phase II to present the TTCP phasing with the District Construction Office. The consultant shall prepare Roll Plots 1”=100’ to discuss the phasing in a workshop.***

***[Level of TTCP Comments]***

**Traffic Management Plan: *[Required or N/A]***Temporary Lighting: ***[Provide limits or N/A]***

Temporary Signals: ***[Provide a list of locations or N/A]***

Temporary Drainage: ***[Provide description or N/A]***

Design Variations: ***[Design Variations or N/A]***

Design Exceptions: ***[Design Exceptions or N/A]***

Back of Sidewalk Profiles:

Number of Back of Sidewalk Profiles: ***[Number][Describe back of sidewalk profiles]***

Selective Clearing and Grubbing:

Number of acres of Selective Clearing and Grubbing and/or Plant Prevention Area: ***[Number]*** acres.***[List number of acres of Selective Clearing and Grubbing]***

1.3 PD&E Study (Activities 2, 3, 4, 6a, 7, 10, and 32)

Participating and Cooperating Agencies: ***[List any cooperating or participating agencies for the PD&E Study.]***

Anticipated Class of Action: ***[Specify anticipated COA]***

Environmental Resource Involvement: ***[List anticipated resource involvement (wetlands, species, relocations, 4(f), noise, etc.) based on ETDM Screening, SWAT Scoping Form, and previously completed planning studies.]***

Previously Studied Project Alternatives: Development of alternatives will consider previously completed planning products. ***[Describe specific alternatives if known, e.g. alternatives recommended for further study from Alternative Corridor Evaluation, Interchange Justification Study, or similar planning studies that will be adopted in this Project in accordance with the procedures outlined in the PD&E Manual.]***

Environmental Analysis: Prior to beginning environmental work, the CONSULTANT must review the ETDM Programming Screen Summary Report, resource agencies’ comments, permits that may be required, and GIS information from the Environmental Screening Tool (EST). CONSULTANT activities to conduct and prepare environmental analysis and reports shall be done under the direction of the DEPARTMENT Project Manager.

Preliminary Engineering Analysis: The CONSULTANT shall perform engineering activities essential to develop and evaluate Project alternatives as outlined in Part 2 Chapter 3 of the PD&E Manual. Based on engineering analysis, the public involvement process, and environmental analysis, the DEPARTMENT will recommend a preferred design concept to advance to final design plans. Some of the tasks under Activity 4 Roadway Analysis, Activity 6a Drainage Analysis, Activity 7 Utilities, and Activity 10 Bridge Development Report will be used to perform preliminary engineering analysis for this project.

1.4 Drainage (Activities 6a and 6b)

Drainage System Type: The CONSULTANT shall develop the PD&E (preliminary design) and final design of a stormwater management system including but not limited to open conveyance ditches and swales, closed storm sewer systems, cross drains, retention/detention ponds, exfiltration systems and floodplain compensation sites as required to satisfy the regulations and criteria of the DEPARTMENT and permitting agencies. The stormwater management systems shall be accurately depicted in the contract documents to the extent required for successful implementation by the contractor.

***[Describe expected systems; e.g., open, closed, ditches, ponds, exfiltration, floodplain involvement, etc.]***

Number of stormwater management facility sites: ***[Number]***

Number of cross drains: ***[Number]***

Location Hydraulics: ***[List number of cross drains.***]

Bridge Hydraulics: ***[List bridges over water.]***

1.5 Utilities Coordination (Activity 7)

***[The DEPARTMENT (or the CONSULTANT) will be responsible for utility coordination. If the CONSULTANT is responsible, use the following language; otherwise replace with, “the DEPARTMENT is responsible for utility coordination associated with this project”.]***

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 will assist the 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’s 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 with the FDOT, FHWA, and AASHTO standards, policies, procedures, and design criteria.
* Assisting the Engineer of Record (EOR) in identifying all existing utilities and coordinating any new installations. Assisting the EOR with resolving utility conflicts, including new services (power, water, sewer, communications, etc.) serving DEPARTMENT owned facilities.
* 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 matrices 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.
* Reviewing and certifying to the District Utilities Administrator that all Utility Work Schedules are correct and in accordance with the DEPARTMENT’s standards, policies, and procedures.
* Preparing, reviewing and processing all utility related reimbursable paper work inclusive of betterment and salvage determinations.

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.

Expected Utilities:

***[List utilities anticipated on the project.]***

1.6 Environmental Permits and Environmental Clearances (Activity 8)

Expected Permits:

***[List expected permits, e.g., USCG, USACE, WMD, etc.]***

1.7 Structures (Activities 9 – 18)

Bridge: ***[List bridge number(s) (for each bridge describe the typical section, location, length, and other pertinent information to define the scope of the proposed bridge work) or N/A.]***

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Bridge Number** | **Length** | **Description** |
| 1 | [*Number*] | [*Length*] | [*Description*] |

Type of Bridge Structure Work:

* BDR (Activity 10)
* Temporary Bridge (Activity 11)
* Short Span Concrete (Activity 12)
* Medium Span Concrete (Activity 13)

Structural Steel (Activity 14)

Retaining Walls: ***[List lengths, and types of temporary and/or permanent retaining walls. Temporary LF, Permanent: LF or N/A.]***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Location** | **Temp Type** | **Temp Length** | **Perm Type** | **Perm Length** |
| 1 | [*Location*] | [*Type*] | [*Length*] | [*Type*] | [*Length*] |

Noise Barrier Walls: ***[Feasibility of noise barrier will be determined as part of the PD&E Study for this project or N/A.]***

Miscellaneous Structures:

***[List miscellaneous structure services (e.g., box culvert extensions, overhead sign structures, foundations, mast arms, high mast lighting, special drainage structures, perimeter walls, etc.) or N/A.]***

1.8 Signing and Pavement Markings (Activities 19 & 20)

Sign Structures: ***[List number and location of sign structures (e.g., cantilevers, overhead, etc.) or N/A.]***

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Type** | **Number** | **Location** |
| 1 | [*Type*] | [*Number*] | [*Location*] |

1.9 Signalization (Activities 21 & 22)

Intersections: ***[List all existing and proposed signalized intersections and requirements, (e.g., loop replacement, mast arms, etc.) or N/A.]***

Traffic Data Collection: ***[List all locations that will require data collection. Data will be collected and analyzed under Activity 3 PD&E Study or N/A.]***

Traffic Studies: ***[List studies required and locations, in addition to those required under Activity 3 PD&E Study or N/A.]***

Traffic Monitoring Sites: ***[List number of Traffic Monitoring Sites on or within one- half mile of project or N/A.]***

**1.10 Lighting (Activities 23 & 24)**

Limits and Proposed Type of Lighting: ***[Provide limits and proposed type of lighting. Describe lighting reports required or N/A.]***

|  |  |
| --- | --- |
| **Type** | **Limit** |
| [*Type*] | [*Limits*] |

The CONSULTANT shall provide all professional services and complete all associated tasks necessary to prepare the lighting portion of the construction plans and documents for all work within the Project limits.

Services shall include, but are not limited to, lighting design analysis report, lighting plans for temporary and permanent facilities, lightning protection and grounding systems, layouts, typical sections, key sheet, quantities (including lighting quantities), lighting computations, service point details, tabulation of pole data sheets, and any special detail sheets necessary.

The CONSULTANT shall also coordinate with the power utility company the design and costs of utility infrastructure as required for new power service points proposed for lighting facilities in the construction documents.

1.11 Landscape (Activities 25 & 26)

Include coordination with existing and/or proposed underground utilities, including but not limited to, FDOT lighting, drainage, and Intelligent Transportation Systems (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: ***[List project length and location), landscape intensity and landscape type or N/A.]***

Irrigation Plans: ***[List applicable local codes and ordinance, system type water source), power source , control options and provide for sleeve location coordination or N/A.]***

Hardscape Plans: ***[Indicate if plans include the following: street furniture specialty lighting , specialty paving , sidewalks, plazas, steps, fountains…, or N/A.]***

Outdoor Advertising: ***[Indicate if view zones of legally permitted outdoor advertising signs are within the project limits. List the number of sign structures…, or N/A.]***

1.12 Survey (Activity 27)

Design Survey: ***[Provide limits and description or N/A.]***

Subsurface Utility Exploration: ***[Provide locations and description or N/A.]***

Right of Way Survey: ***[Provide limits and description or N/A.]***

Vegetation Survey: ***[Provide limits and description or N/A.]***

1.13 Photogrammetry (Activity 28)

***[Provide limits and description or N/A.]***

1.14 Mapping(Activity 29)

Control Survey Map: ***[Provide limits or N/A.]***

Right of Way Map: ***[Provide limits or N/A.]***

Legal Descriptions: ***[Provide number or N/A.]***

Maintenance Map: ***[Provide limits or N/A.]***

Miscellaneous Items***: [List items or N/A.]***

1.15 Terrestrial Mobile LiDAR (Activity 30)

***[Provide limits and describe type or N/A.]***

1.16 Architecture (Activity 31)

***[Provide description of work and add project specific scope language or N/A.]***

 Green Building Rating System (GBRS)

There are several Green Building Rating Systems available for consideration. They include the US Green Building Council LEED program, The Florida Green Building Coalition (FGBC) Certified Green Building program, and the Green Building Initiative (GBI) Green Globes program.

The intent of a Green Building Rating System is the promotion of the design, construction and maintenance of buildings that are durable, healthy, affordable, and environmentally sound. This is achieved through an approach that looks not only at the building but also includes the surrounding area. Among the elements, a GBRS includes access to public transportation, energy usage, daylighting and views, indoor air quality, transportation, water usage, stormwater runoff, recycling and renewable resources.

Prerequisites and credits are the two types of tasks required by a GBRS to rate a building’s environmental impact. Prerequisites are mandatory and must be achieved for a building to meet any certification level; however, no points are earned for their completion. Points are earned for each credit that is achieved with points varying from credit to credit. Not all credits will be achievable due to external conditions while other credits will be too involved or costly to pursue. This is where the design team and the FDOT must determine what credits are to be pursued and the level of certification to strive to meet.

Each GBRS has several levels of certification (Certified, Silver, Gold, or Platinum). Each level requires a higher credit point total.

The State has set “Gold” as the minimum target level of certification for air conditioned/heated buildings larger than 1,000 SF, and occupied by the equivalent of at least one full time person or as specifically stated in the GBRS documents.

Hours include the efforts to design, document, submit to the GBRS, and receive certification for the building(s). These hours include all design team disciplines involved in the effort.

1.17 Noise Barriers (Activity 32)

***[Provide description of work and add project specific scope language or N/A.]***

1.18 Intelligent Transportation Systems (Activities 33 & 34)

***[Provide description of ITS elements and work expected within project limits or N/A.]***

The Federal Highway Administration issued Rule 940 entitled Intelligent Transportation Systems (ITS) Architecture and Standards to ensure new projects conform to the National ITS Architecture and Standards as well as with regional ITS architecture developed to reflect the local needs, issues, problems, and objectives for implementation.

For all projects with ITS activities, the CONSULTANT shall follow the Rule 940 requirements and use a Systems Engineering approach for determining the requirements for the project. The CONSULTANT shall develop all necessary documents to support the Rule 940 requirements like Concept of Operations (ConOPS), Systems Engineering Management Plan (SEMP), Requirements Traceability Verification Matrix (RTVM) and others as deemed necessary by the Department.

***[Describe the hardware configuration analysis and design including system architecture, interfaces, communications, equipment, devices and computers.]***

[***If relevant, mention any prior reports done such as concept reports, etc.]***

The ITS shall operate from the ***[NAME]*** TMC located at ***[LOCATION]*** using the SunGuide® (SunGuide®) Software, or if SunGuide® is not in use at ***[NAME]*** TMC, using the appropriate ***[NAME SOFTWARE PACKAGE]***.

Interchanges: ***[List all existing and proposed interchanges and ITS field device requirements for tie in to arterials or N/A].***

Traffic Data Collection: ***[List all locations that will require data collection. Describe data to be collected at each location.]***

Geographical Information System (GIS) Requirements: CONSULTANT shall include in the design the GIS data collection requirements and deliverables for integration with SunGuide® software and other Department GIS based asset management applications like ITS FM software.

All design efforts shall be based on deploying “open architecture” subsystems while remaining fully compatible with previous designs (as applicable) and the FDOT ITS Specifications. All ITS field devices and support systems shall be designed and located outside of the clear zone, or behind protective barrier, within the right of way. This includes cabinets, poles, and support hardware. Utility conflicts shall be identified and resolved during the design phase. The location of design elements will be coordinated with the District Landscape Architect to optimize landscape opportunities. The design shall minimize theft and vandalism. The CONSULTANT shall include in the design vandal resistant mechanisms to minimize theft. The CONSULTANT shall provide additional redundant power and communications systems to minimize system downtime due to vandalism.

The CONSULTANT shall design the project subsystems such that they will be monitored and controlled from the FDOT’s TMC facilities located at ***[Location(s)]***. The CONSULTANT shall ensure that all ITS field devices and ancillary components comply with the FDOT’s Approved Product List (APL) and are supported within the SunGuide® software or other specified software, unless otherwise approved by the DEPARTMENT.

The CONSULTANT shall include in the design any required upgrade to the TMC central hardware, equipment racks, and equipment wiring as directed by the FDOT project manager, to make the subsystems fully operations from the TMC 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 operational from the TMC facilities.

ITS coordination with Landscape Architecture shall include both underground conflicts and above ground impacts to existing and/or proposed Landscaping. The CONSULTANT shall closely coordinate with the Landscape Architect to ensure that all conflicts are identified, addressed and mitigated in the Contract Documents.

1.19 Geotechnical (Activity 35)

***[Define geotechnical responsibilities: i.e., DEPARTMENT or CONSULTANT or N/A.]***

***[List types of borings and unique lab tests]***

1.20 3D Modeling (Activity 36)

**[*Describe level of effort or N/A.]***

1.21 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 the ***[DISTRICT SCHEDULE INFORMATION]***. The anticipated date for final approval of the Environmental Document is **[Month 00, 20XX].** The current production date is **[Month 00, 20XX]**. The schedule shall be accompanied by an anticipated payout and fiscal progress curve. For the purpose of scheduling, the CONSULTANT shall allow for a ***[Number]*** week review time for each phase submittal, Environmental Document, and any other submittals as appropriate.

The schedule shall indicate, at a minimum, proposed dates for Public Hearing, LDCA, Phase I plans, Phase II plans, Phase III plans, Phase IV plans, and all other appropriate milestones and required submittals.

The schedule shall reflect project-specific input from each affected DEPARTMENT discipline, including Permits, Utilities, and Right-of-Way. The CONSULTANT shall be responsible for ensuring that such input is received and reviewed with the DEPARTMENT Project Manager.

All fees and price proposals are to be based on the negotiated schedule of ***[Number]*** months for final construction contract documents. However, the contract deadline is ***[Number]*** 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 scheduled 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.

When Phase II plans are complete and approved, if the project includes federal funds or involves interstate right of way, the CONSULTANT shall await DEPARTMENT approval before proceeding to Phase III plans. If the project is state-funded the CONSULTANT can proceed to Phase IV plans as directed by the DEPARTMENT.

1.22 Submittals

The CONSULTANT shall furnish the technical reports and the Environmental Document as required by the PD&E Manual. Additionally, the CONSULTANT will prepare or upload all final submittals and appropriate supporting project files to the StateWide Environmental Project Tracker (SWEPT) upon completion of technical reports and Environmental Document and as directed by the DEPARTMENT.

The CONSULTANT shall submit all deliverables to the DEPARTMENT electronically in Portable Document Format (PDF), unless notified by the DEPARTMENT’s Project Manager. Design files shall be submitted at Phase ***XX*** and beyond. For each submittal, the CONSULTANT shall include a Transmittal Memorandum that includes, at a minimum, the file name of each PDF file as well as the number of hardcopies (if any) as directed by the DEPARTMENT’s Project Manager.

A Google Earth ready KMZ file will be developed and submitted for all plan or roll plot submittals to the DEPARTMENT. The file will have both existing and proposed information for each discipline. [***Enter when it will be submitted, e.g. Phase II and beyond.***]

Each CONSULTANT document submittal shall be accompanied by a completed Quality Control Checklist form indicating the document submittal items that have been checked and back-checked. At the request of the Department, the CONSULTANT shall provide evidence of said quality control review.

1.23 Provisions for Work

The services performed by the CONSULTANT must comply with all applicable DEPARTMENT’s manuals, procedure, policies, and guidelines. Specifically, the CONSULTANT must comply with DEPARMENT’s Project Development and Environmental (PD&E) Manual, FDOT Design Manual (FDM), Structures Manual, and Computer Aided Design and Drafting (CADD) Manual. The DEPARTMENT’s manuals and guidelines incorporate, by requirement or reference, all applicable federal and state laws, regulations, and Executive Orders. The CONSULTANT will use the latest editions of the manuals, procedures, and guidelines to perform work for this project.

All work shall be prepared with English units (unless otherwise specified) in accordance with the latest editions of standards and requirements utilized by the DEPARTMENT.

1.24 Services to be Performed by the DEPARTMENT

When appropriate 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.
* Project traffic for Design Year, with K, D, and T factors.
* Previously constructed Highway Beautification or Landscape Construction Plans.
* Landscape Opportunity Plan(s).
* Existing right of way maps.
* Existing cross slope data for all RRR projects.
* Existing pavement evaluation report for all RRR projects.
* 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, and 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.
* Lead and participate in coordination efforts with Public Transit Office, Office of Environmental Management, Federal Transit Administration, environmental resource and regulatory agencies, the public and other stakeholders, as appropriate.
* Efficient Transportation Decision Making (ETDM) Programming Summary Report.
* Crash data.
* Traffic counts.
* Review of technical reports and Environmental Document.
* Right of way cost estimates.

# 2a PROJECT COMMON AND PROJECT GENERAL TASKS

2a.1 Project Common Tasks

Project Common Tasks, as listed below, are work efforts that are applicable to many project activities, 3 (PD&E Study) through 36 (3D Modeling). 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 is 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 Phase II Plans or completion of quantities, the CONSULTANT shall prepare cost estimates for the comparison of alternatives. The CONSULTANT will use the DEPARTMENT’s Long-Range Estimate (LRE) system to develop construction cost estimates. The CONSULTANT will obtain right of way cost from the DEPARTMENT for use in the comparison of alternatives.

Once the quantities have been developed (beginning at Phase II Plans and no later than Phase III Plans) the CONSULTANT shall be responsible for inputting category information, the pay items and quantities into AASHTOWare Project Preconstruction through the use of the DEPARTMENT’s Designer Interface.

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

A Technical Special Provision shall not modify the Standard Specifications and implemented modifications in any way.

The Technical Special Provisions 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 digitally 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.

Modified Special Provisions: The CONSULTANT shall provide Modified Special Provisions as required by the project. Modified Special Provisions are defined in the Specifications Handbook.

A Modified 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 and Central Specifications Offices to be included in the project’s specifications package.

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. ***[Identify and list out number of anticipated field visits; i.e. preliminary, Phase II/III plans in hand review.]***

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 environmental resource agencies meetings, access management meetings, pavement design meetings, local governments meetings, railroads coordination meetings, airports coordination meetings, 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) working days of attending the meeting.

Quality Assurance/Quality Control: It is the intention of the DEPARTMENT that the CONSULTANT, including their subconsultant(s), are held responsible for their work, including plans review. The purpose of CONSULTANT plan reviews is to ensure that the PD&E study and contract plans are prepared in accordance with the PD&E Manual and the plan preparation procedures outlined in the FDOT Design Manual. 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, Environmental Document, and other deliverables. The CONSULTANT should regularly communicate with the DEPARTMENT’s 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 technical reports, surveys, designs, drawings, specifications and other services furnished by the CONSULTANT and their subconsultant(s) under this contract. The CONSULTANT will independently and continually review deliverables for accuracy and completeness.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review the Environmental Document, technical reports, 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 the 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’s 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 for engineering reports and design plans shall be a Florida Licensed Professional Engineer, Landscape Architect, or Professional Surveyor and Mapper fully prequalified under F.A.C. 14-75, F.A.C 5J-17, or 61G10-15.001 in the work type being reviewed. A marked-up set of prints from a Quality Control Review indicating the reviewers for each component (PD&E, structures, roadway, drainage, signals, geotechnical, signing and marking, lighting, landscape, surveys, etc.) and a written resolution of comments on a point-by-point basis will be required, if requested by the DEPARTMENT, with each 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 environmental document, designs, maps, drawings, specifications and/or other products and services.

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

Independent Peer Review and a Constructability/Biddability 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 Consultant’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/Biddability 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 FDM, Standard Plans for Road and Bridge Construction, and CADD Manual. The Constructability/Biddability Review shall ensure the project can be constructed and paid for as designed. Constructability/Biddability 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/Biddability reviews. These items will be reviewed by District Design and District Construction Offices.

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.

2a.2 Project General Tasks

Project General Tasks, described in Sections 2a.2.1 through 2a.2.12, 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.

2a2.1 Joint Project Agreements

When the Joint Project Agreement (JPA) deliverable is not prepared by the CONSULTANT, services may include all coordination, meetings, etc., required to ensure compatibility, include JPA documents in the contract plans package and include the JPA documents in the digital delivery package.

2a.2.2 Specifications & Estimates

2a.2.2.1 Specifications Package Preparation

The CONSULTANT shall prepare and provide a specifications package in accordance with the DEPARTMENT’s Procedure Topic No. 630-010-005 Specifications Package Preparation and the Specifications Handbook. 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 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 due date. This submittal shall be digitally signed, dated, and sealed in accordance with applicable Florida Statutes.

2a.2.2.2 Estimated Quantities Report Preparation

The CONSULTANT shall prepare an Estimated Quantities (EQ) Report in accordance with FDM 902. Includes loading category information, pay items, and quantities into Designer Interface for AASHTOWare Project Preconstruction (PrP), QA/QC efforts associated with AASHTOWare PrP and the EQ Report.

2a.2.3 Contract Management

The CONSULTANT is responsible for maintaining Project files, including copies of submittals and underlying data, electronic folders and documents, calculations, information and supporting documentation. The CONSULTANT is responsible for preparing monthly progress reports and schedule updates. Project documentation includes the compilation and delivery of final documents, reports or calculations that support the development of the contract plans; and includes uploading files to Electronic Document Management System (EDMS) or Project Suite Enterprise Edition (PSEE).

2a.2.4 Value Engineering (Multi-Discipline Team) Review

***The design for this project will be subjected to a Value Engineering (VE) review or N/A.*** The VE review will be conducted by a multidisciplined independent team of DEPARTMENT and CONSULTANT personnel for improving the value of the project.

The CONSULTANT shall develop the project using sound value engineering practices to the fullest extent possible, in order to evaluate impacts and support appropriate design decisions in producing the contract plans for the most efficient and economical design.

Value Engineering is an event-related activity and should occur at a time when it will provide the greatest opportunity for value improvement, as determined by the Department Project Manager and Value Engineering Coordinator. The VE study will be performed during preparation of Phase I design plans and prior to completion of Draft Environmental Documents. VE recommendations shall be included in the PD&E’s comparative alternatives evaluation and the Environmental Document.

Activities required by the CONSULTANT in support of the VE team are:

The CONSULTANT shall allow ample time for the appropriate knowledgeable members of their staff to present alternatives development, design documentation and data to the VE team.

The Consultant Project Manager and other key members of the project team shall meet with the VE team to explain the development of the recommended alternative and design features and how and why they were selected. The information will be provided in the form of a personal verbal presentation and the submittal of a package containing current plans and other documentation. This presentation will take place at the location of the VE study and may be followed up with additional meetings, written communications and phone inquiries.

Information and data that should be available to the VE Team include, but are not limited to, the following:

* + One copy of the Draft Environmental Document.
	+ One copy of the Draft Preliminary Engineering Report and all technical. reports used to prepare the Environmental Document.
	+ Three sets of all plan drawings.
	+ Drainage alternatives information.
	+ One copy of Bridge Development Reports.
	+ One copy of Pavement Type Selection Report.
	+ One copy of Pavement Design Package.
	+ One copy of other miscellaneous reports.
	+ Project Cost Estimate.

The Project Cost Estimate shall include a tabulation of estimated construction costs for the recommended alternative and proposed design feature. This list shall, at a minimum, contain a breakdown of costs for each major element of the design.

The CONSULTANT shall provide, in the form of a matrix, criteria and weighted impacts used in arriving at decisions for the selection of specific design features. These criteria must include Safety, Operation, Environment, Maintenance and Public Acceptance.

All reports provided by the CONSULTANT will be returned after the VE review has been completed. However, copies of plans and drawings may be kept by the VE team.

2a.2.5 Prime Consultant Project Manager Meetings

Includes only the Consultant Project Manager’s time for travel and attendance at Activity Technical Meetings and other meetings listed in the meeting summary for Task 2a.2.5 on tab 2a - 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. Travel time shall be in accordance with the FDOT Procurement Procedure 001-375-030, Compensation for Consultant Travel Time on Professional Services Agreements.

For all meetings attended, the CONSULTANT will be responsible for developing the agenda, sign-in sheets and preparation and submittal of the meeting minutes to the DEPARTMENT’s Project Manager for review.

2a.2.6 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.

2a.2.7 Post Design Services

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

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

2a.2.8 Digital Delivery

As directed by the DEPARTMENT, the CONSULTANT will upload all final submittals and appropriate project files that support the Environmental Document to the StateWide Environmental Project Tracker (SWEPT).

The CONSULTANT shall deliver final contract plans and documents in digital format. The final contract plans and documents shall be digitally signed and sealed files delivered to the DEPARTMENT on acceptable electronic media, as determined by the DEPARTMENT.

2a.2.9 Risk Assessment Workshop

This project will be subject to Risk Assessment (RA) and Management for the purpose of identifying, quantifying and managing the potential cost and schedule risks of the project. The RA for the Project will be managed by the DEPARTMENT Project Manager and supported by a multidiscipline team (RA Team) of DEPARTMENT and CONSULTANT personnel and subject-matter experts (SMEs). The DEPARTMENT Project Manager will be the lead for the RA Team.

There will be a Risk Assessment (RA) Workshop and workshop-related meetings during the development of the project. The Workshop will generally occur before completion of Phase I design plans (right after the recommended alternative is identified), but may occur at any time during the development of the project as determined by the DEPARTMENT Project Manager. The DEPARTMENT Project Manager will develop a Risk Register following the RA Workshop, and utilize the Risk Register throughout the life of the project to mitigate and manage the risks.

The CONSULTANT (and key subconsultant(s) if applicable), and other key members of the design team will attend and participate in the Risk Assessment Workshop for the Project. This will involve a Risk Preparatory Session (half-day to 1 day plus information assessment), a Risk Assessment Workshop (1 to 3 days), and Risk Follow-Up Meeting (half-day to 1 day).

The CONSULTANT and other key members of the design team will attend and participate in associated follow-up RA meetings (approximately one meeting every three to six months as deemed necessary) with the DEPARTMENT Project Manager (and RA team if applicable) to discuss the risks, mitigation strategies and any updates to the Risk Register. This includes written communications and phone inquiries. The CONSULTANT will coordinate with subconsultants who need to attend the Workshop and associated meetings.

CONSULTANT shall provide the RA Team meeting materials that are deemed necessary by the Department Project Manager to conduct the Workshop and associated meetings. The meeting materials include the following:

* + - One copy of the Draft Environmental Document.
	+ One copy of the Draft Preliminary Engineering Report and all technical reports used to prepare the Environmental Document.
		- Three sets of all plan drawings.
		- Drainage alternatives information.
		- One copy of Bridge Development Reports.
		- One copy of Pavement Type Selection Report.
		- One copy of Pavement Design Package.
		- One copy of other miscellaneous reports.
		- Project Schedule.
		- Project Cost Estimate.

Project Cost Estimate shall include a tabulation of estimated construction costs for the proposed design, and a breakdown of costs for each major element of the design, such as Right of Way, Design, CEI, Utilities, JPA/LAP funds, etc.

The CONSULTANT shall allow ample time for the appropriate knowledgeable members of their staff to prepare and provide current design documentation and data. All reports provided by the CONSULTANT will be returned after the RA Workshop has been completed; however, copies of plans and drawings may be kept by the RA team. The CONSULTANT will be responsible for providing follow-up actions as necessary.

2a.2.10 Railroad, Transit and/or Airport Coordination

Railroad

The DEPARTMENT Project Manager will initiate coordination with the District Railroad Coordinator (DRC). The DEPARTMENT will coordinate with the Railroad Company and local government regarding highway-railroad grade crossing in accordance with Part 2, Chapter 21 of the PD&E Manual.

Transit

***[Provide project specific information or N/A.]***

Aeronautical Evaluation

***[Provide project specific information or N/A.]***

The Consultant shall be responsible for complying with the requirements of Title 14 of the Code of Federal Regulations Part 77 (14 CFR Part 77), and for determining whether it is necessary to file a Notice of Proposed Construction or Alteration (FAA Form 7460-1)with the Federal Aviation Administration (FAA), utilizing the FAA Notice Criteria Tool. Place a copy of all pertinent documentation in the Project Documentation folder structure; e.g., Notice Criteria Tool inquiries and responses; FAA Form 7460-1 filled with FAA; Letters of Determination (along with the records demonstrating compliance with the conditions and deadlines). Report any Letters of Determination, designated other than "Does Not Exceed", to the Central Office (Aviation Office, Airspace and Land Use Manager).

2a.2.11 Landscape and Existing Vegetation Coordination

Coordinate to ensure preservation and protection of existing vegetation. Relocation of existing vegetation may be necessary in some cases. Space for proposed landscape should be preserved and conflicts with drainage, utilities, ITS, and signage should be minimized. Coordination with the District Landscape Architect may be necessary as defined in 1.11. Additionally, coordination with the Florida Scenic Highways (FSH) program should be included to ensure any requirements of the FSH program are met.

2a.2.12 Other Project General Tasks

***[Describe other project general tasks or N/A.]***

# 2b PUBLIC INVOLVEMENT

Public involvement includes communicating to and receiving input from all interested persons, groups, and government organizations information regarding the development of the project. The Public Involvement Activity covers both PD&E and Design phases of the Project. The CONSULTANT shall provide to the DEPARTMENT drafts of all Public Involvement documents (e.g., newsletters, property owner letters, advertisements, etc.) associated with the following tasks for review and approval at least [Number] business days prior to printing and/or distribution.

2b.1 Public Involvement Plan

The CONSULTANT will prepare the Public Involvement Plan (PIP) in accordance with Part 1, Chapter 11 of the PD&E Manual using existing work developed by the DEPARTMENT as a starting reference. The PIP must include a public involvement schedule and identify potentially affected stakeholders and communities near the Project area, and establish the appropriate outreach methods. This includes consideration of the demographics of the Project area and any reasonable accommodations including, but not limited to, disabled, transit-dependent, limited English proficient (LEP), elderly, low income, or minority. The CONSULTANT will review and attach the Sociocultural Data Report (SDR) to the PIP. A sample template for the PIP is located in Part 1, Chapter 11 of the PD&E Manual.

The PIP should be updated throughout the PD&E and Design for use during the construction phase in accordance with FDM Chapter 104. At the conclusion of the PD&E phase, the CONSULTANT will update the PIP to includes the following:

* Community concerns/issues.
* Discussion of construction schedule and TTCP.
* Public involvement level.
* Proposed public involvement activities during construction.

2b.2 Public Involvement Data Collection

The CONSULTANT will assist the DEPARTMENT in collecting data specific to the public involvement process and preparing responses to any public inquiries received throughout the development of the Project. The Consultant will maintain and regularly update the public involvement file, which will document a record of all public involvement activities for the Project.

The CONSULTANT will work with the DEPARTMENT to generate or obtain mailing labels of property owners using the ETDM Environmental Screening Tool (EST) and the County Property Appraiser’s Offices. At the beginning of the project, 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.

The CONSULTANT shall identify and include in the Project mailing list all impacted property owners and tenants located within a minimum of 300 feet of either side of the centerline of each Project alternative. The CONSULTANT also will identify and include in the Project mailing list local elected and appointed public officials; interested parties (any person or institution expressing an interest in the project); local citizens who may be impacted by the project; and potential permit and review agencies.

2b.3 Scheduled Public Meetings

The CONSULTANT will assist the DEPARTMENT in conducting various public meetings, which may be conducted during weekends or after normal working hours. The CONSULTANT will support the DEPARTMENT in preparation, scheduling, attendance, note taking, documentation, and follow-up services for each meeting.

It is estimated there will be [***Number***] public meetings during development of the project. The following public meetings are anticipated to be scheduled to support the PD&E phase for this Project:

* Project Kick-off Meeting.
* Alternatives Public Meeting or Corridor Workshops.
* Public Information Meetings.
* Final Design Public Meeting.
* [List other meetings]

The CONSULTANT will investigate potential meeting locations to advise the DEPARTMENT of their suitability. The DEPARTMENT will ultimately approve the meeting location. The [***Select either DEPARTMENT or CONSULTANT***] will pay the cost for renting meeting venue and insurance (if required).

The CONSULTANT will be responsible for logistics associated with setting up the meeting. The DEPARTMENT will approve the meeting format developed by the Consultant.

For any of the listed meetings, the CONSULTANT will prepare the following:

* Agenda.
* PowerPoint slides and presentation scripts.
* Handouts.
* Graphics (creative design exhibits) for presentation.
* Meeting equipment set-up and tear-down.
* Display advertisements (Local Newspaper and Florida Administrative Register).
* Display boards (and / or use of Smart Screens).
* Letters for notification of elected and appointed officials, property owners, and other interested parties. The letters will be prepared by the CONSULTANT on DEPARTMENT letterhead. After the DEPARTMENT signs the letters, the CONSULTANT will send them by First Class US Mail.
* News releases or project fact sheets. The DEPARTMENT must review news releases and fact sheets at least two (2) weeks before the meeting or mail out.
* Meeting summaries provided to the DEPARTMENT no later than five (5) business days after the meeting.
* Response letters for DEPARTMENT signature on public comments.

Any materials prepared by the CONSULTANT for such meetings as listed above are subject to review and approval by the DEPARTMENT. The CONSULTANT shall provide the DEPARTMENT with a draft of any proposed materials at least ***[Number]*** weeks prior to the meeting.

The CONSULTANT will assist the DEPARTMENT when facilitating the public meetings or workshops to present Project results and obtain comments related to the Project. The CONSULTANT will attend such meetings or workshops with a suitable number of personnel with appropriate technical expertise (based on project issues), as authorized by the DEPARTMENT Project Manager.

The CONSULTANT will participate in briefing meetings with the DEPARTMENT staff related to the scheduled public meetings.

The DEPARTMENT may request the CONSULTANT to identify the effect of the Project to individual properties on aerial maps or plans in response to requests from property owners. The DEPARTMENT may also request the CONSULTANT to meet with individual property owners with DEPARTMENT representative in attendance as well.

2b.4 Other Public and Agency Meetings or Informal Meetings

In addition to scheduled public meetings the CONSULTANT may be required to participate in meetings with local governing authorities, Metropolitan Planning Organization (MPO), environmental resources agencies, Homeowner Associations, and Key Stakeholders. The CONSULTANT’s participation may include, but not be limited to, presentations during the meeting, note taking, and summarizing the meeting in a memo to the file. It is estimated that there will be [Number] meetings with agencies for both PD&E and Design phases for the Project.

2b.5 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/CONSULTANT].

2b.6 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.

2b.7 Public Hearing

The CONSULTANT will send notifications to the Lead Agency, local governments, and regulatory agencies at least 25 but no more than 30 calendar days prior to the public hearing date.

The CONSULTANT will prepare the public hearing notifications on the DEPARTMENT’s letterhead for DEPARTMENT review and signature 15 days prior to mailing or as directed by the DEPARTMENT. The CONSULTANT will first prepare an initial sample draft notification for review and approval by the DEPARTMENT prior to submitting all notifications for review.

***[Modify this paragraph (elected official notification) to match District process.]***

Notifications to elected officials will be signed by the District Secretary. All other notifications may be signed by the DEPARTMENT Project Manager. The notification letters must have the DEPARTMENT’s return address. After the DEPARTMENT signs the notifications, the CONSULTANT will send them by First Class US Mail. The DEPARTMENT Project Manager will also send the notification letters by email.

The CONSULTANT will prepare the public hearing notifications to property owners on the DEPARTMENT’s letterhead for DEPARTMENT review and signature 15 days prior to mailing or as directed by the DEPARTMENT. After the DEPARTMENT signs the letters, the CONSULTANT will send them by First Class US Mail. The CONSULTANT will obtain a list of names and addresses of property owners from the Environmental Screening Tool (EST) and/or Property Appraisers’ Offices. The letters must have the DEPARTMENT’s return address. The CONSULTANT will send notification letters to property owners at least 17 to 24 calendar days prior to the public hearing.

The CONSULTANT will provide the following:

* Public Hearing Notice and publication in the Florida Administrative Register.
* Notification on the Department’s Public Notice webpages through the District Public Information Officer.
* Identification of the website(s) and/or locations where the technical reports and Environmental Document will be available for public view.
* Voiceover presentation with script.
* Proposed typical sections and aerials depicting alternative corridors and alternative alignments, as specified by the DEPARTMENT using display boards and/or Smart Screens.
* Hard copies of technical reports and Environmental Document.
* Meeting location signs.
* Brochures or handouts.
* Title VI compliance signs.
* NEPA Assignment compliance signs.
* Security (off-duty law enforcement), if needed.
* Display advertisements. Any press releases and/or advertisements will indicate that the meeting is a DEPARTMENT activity; the CONSULTANT will pay the cost of publishing.
* Expenses associated with arranging for a court reporter to be present and obtaining transcripts of comments made during the Public Hearing.
* Response to public comments.

The CONSULTANT will participate in briefing and debriefing meetings with the DEPARTMENT related to the Public Hearing. The CONSULTANT will prepare response letters for DEPARTMENT signature for all public comments. Any such response letters will be reviewed and approved by the DEPARTMENT Project Manager.

2b.8 Comments and Coordination Report

The CONSULTANT will prepare Comments and Coordination Report containing Public Hearing transcript, errata, and signed certification, as well as documentation for all public involvement activities conducted to support Preliminary Design and the PD&E study, in accordance with Part 1, Chapter 11 of the PD&E Manual.

During Final Design phase of the project, the CONSULTANT will prepare an addendum to the Comments and Coordination Report that will contain all public involvement activities conducted throughout the Design phase.

2b.9 Notification of Approved Environmental Document

The CONSULTANT shall prepare a display advertisement for the notification of the Approved Environmental Document. The CONSULTANT will pay for the cost of publishing. The DEPARTMENT must review and approve the notice prior to publication.

2b.10 Communication Aids

The CONSULTANT shall prepare materials to be used in the following communication aids: ***[Add, delete or modify as necessary.]***

* 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 via First Class US Mail.
* Rendering and Fly Throughs: The CONSULTANT shall prepare renderings and fly-throughs for use in public meetings.
* Simulation Videos and Visualizations: The CONSULTANT shall prepare simulation videos and visualizations for use in public meetings.
* Frequently Asked Questions (FAQs): The CONSULTANT shall prepare FAQs for use in various public involvement activities per the DEPARTMENT direction.
* Social Media: The CONSULTANT shall create materials that will be uploaded by the DEPARTMENT to social media to facilitate project communication per the DEPARTMENT direction.
* Web Site: The CONSULTANT will develop public involvement materials using the DEPARTMENT’s approved website template and submit the information to be uploaded to the DEPARTMENT’s project website. The CONSULTANT will provide updates for the website content as necessary, and at the approval of the DEPARTMENT. Content updates are usually completed on a set schedule, at project milestones, or when new information becomes available that should be made available to the public. The DEPARTMENT is responsible for approving content updates and posting to the website as part of the website maintenance.
* Radio/Television: At the request of the DEPARTMENT, the CONSULTANT will be required to develop public informational materials for use in radio and television advertisements.

2b.11 Additional Public Involvement Requirements

The CONSULTANT will assist the DEPARTMENT on the following public involvement tasks:

[***Identify and list any special public involvement requirements such as the small group meetings, preparation of a separate comments and coordination package, preparation of newsletters or fact sheets, design charrettes, or special coordination with specific stakeholders.***]

# 3a PRELIMINARY ENGINEERING ANALYSIS

The CONSULTANT shall perform preliminary engineering and environmental analysis tasks required to obtain the approval of the Environmental Document in accordance with the PD&E Manual and all applicable procedures and guidelines. The PD&E Manual satisfies state and federal processes and incorporates the requirements of the National Environmental Policy Act (NEPA); federal law, regulations, and Executive Orders included in the FHWA Federal-Aid Policy Guide; and applicable state laws and regulations including Section 339.155 of the Florida Statutes and Rule Chapter 14 of the Florida Administrative Code.

3a.1 Existing Conditions

3a.1.1 Previous Studies

The CONSULTANT shall review and summarize previously completed or concurrent planning studies and other studies that are related to the Project and appropriately incorporate their results in the analysis of the Project as described in the PD&E Manual.

The following studies were conducted for this project: ***[List previous studies.]***

The CONSULTANT will review the adequacy of existing traffic data from planning studies to carry out traffic analysis for the project. If there are data gaps, the CONSULTANT must collect additional data for the study area.

The CONSULTANT will review and document the location and condition of existing pedestrian, bicycle, and public transit accommodations and freight services in the study area. This activity includes reviewing existing plans, reports, and studies that outline strategies or define projects associated with each alternative.

3a.1.2 Existing Conditions Analysis

The CONSULTANT will conduct field observations to determine existing field conditions, verify desktop data, and obtain additional data required to understand the Project area, assess Project needs, identify physical and environmental constraints, develop and analyze Project alternatives, and assess constructability issues.

The CONSULTANT will collect data describing existing conditions and characteristics of the project including roadway geometrics, typical section elements, signalization, other operational features, access features, and right of way requirements, and other data applicable to modes and sub-modes of transportation including walking/pedestrians, bicyclists, public transit users (including transit vehicles and riders), paratransit users, freight (including loading/unloading and parking, emergency response vehicles, service vehicles, and freight handler vehicles).

The CONSULTANT will analyze the existing conditions to identify and verify current transportation deficiencies as they relate to the needs and objectives of the Project.

3a.1.3 Base Maps

The CONSULTANT will produce a base map of the project area using the DEPARTMENT’s CADD standards. The base map will be produced at the following scales: [***specify scales***].

The base map will contain an aerial photo and existing characteristics for the project. The base map must show location of environmental issues that are specific to the study area such as cemeteries, wetlands, historic properties, drainage, contamination sites, public parks, and property lines.

3a.2 Travel Demand Forecasting

The CONSULTANT shall collect data, develop methodology and forecast future year volumes according to the DEPARTMENT Project Traffic Forecast procedure.

The development of future forecast volumes will use the most currently adopted version of the Metropolitan Planning Organization (MPO) Long Range Transportation Plan (LRTP) travel demand model [***specify model***] if available. If an MPO does not use the regionaltravel demand model, then a rationale will be provided and future travel data will be developed in accordance with guidance from Chapter 4 of the Project Traffic Forecasting Handbook. Otherwise, the CONSULTANT will validate the travel demand model at a subarea level.

No-Build Volumes: The CONSULTANT will develop opening year and design year hourly volumes for the No-Build Alternative in accordance with the Project Traffic Forecasting Procedure, Topic No. 525-030-120. The need for interim year analysis will be determined in the traffic analysis methodology.

Build Alternatives Volumes: The CONSULTANT will develop opening year and design year design hour volumes only for viable or feasible Build Alternatives.

***[Replace the above paragraphs with the following text if performed by the DEPARTMENT.]***

The CONSULTANT will review the No-Build Traffic Analysis prepared by the DEPARTMENT.

The CONSULTANT will review the Build Alternatives volumes prepared by the DEPARTMENT.

3a.3 Traffic Analysis

The CONSULTANT shall collect traffic data for existing conditions, forecast future year volumes, and analyze safety and operational characteristics of the Project alternatives according to the DEPARTMENT procedures.

***[Replace with the following text if performed by the DEPARTMENT.]***

The DEPARTMENT will perform and provide the existing traffic data and analysis and future alternative analysis for the project. The CONSULTANT may be required to collect additional data for the Project Area if data gaps are identified. The CONSULTANT will review the following Traffic Reports and Planning studies:

• [***List reports and studies***]

3a.3.1 Traffic Analysis Methodology

The CONSULTANT will perform traffic analysis in accordance with guidance from the PD&E Manual, Traffic Analysis Handbook, and Project Traffic Forecasting Handbook. The CONSULTANT will prepare a project traffic forecast and analysis methodology as agreed upon by the DEPARTMENT prior to beginning any analysis. The methodology will state the type of documentation require, define the Project study area to be analyzed, and identify method and assumptions that will be used to analyze existing and future traffic conditions.

Capacity analysis will be based on the latest Highway Capacity Manual (HCM) procedures. Use of micro-simulation traffic analysis software ***[Is/Is Not]*** anticipated for this project. Calibration and validation are required when a microscopic simulation approach is used. Data should be gathered in accordance with the Traffic Analysis Handbook.

Traffic analysis methodology will include an approach or procedure to evaluate safety performance of the project alternatives.

All traffic analysis documentation must be written in plain language and in a format that can be easily followed. The CONSULTANT must submit all traffic analysis files for assumptions, inputs, outputs, network data, calculation, and results to the DEPARTMENT.

3a.3.2 Traffic Counts

The CONSULTANT will collect the following traffic data:

* Current corridor traffic counts [***Required or N/A***].
* 24-72-hour traffic machine counts as deemed necessary by the DEPARTMENT [***Identify intersections or N/A***].
* 4-hour manual vehicle turning movement counts for peak hours ***[Identify intersections or N/A]****.*
* Traffic counts as necessary for the Project ***[Identify or N/A]****.*
* Travel patterns or origin-destination data ***[Required or N/A***].

3a.3.3 Vehicle Classification Counts on Roadway Segments and Ramps

The CONSULTANT will collect the following existing classification data:

* Corridor traffic counts [***Identify locations]***.
* 72-hour machine counts ***[Identify locations]***.

3a.3.4 Pedestrian, Bicycle, and Other Multimodal Data

The CONSULTANT will ***[provide/collect]*** multimodal data for this project.

* Pedestrian counts.
* Bicycle counts.
* Travel patterns or origin-destination (OD) survey.
* Transit data.
* Freight movement.

3a.3.5 Speed and Delay Studies

The CONSULTANT will collect data and perform speed and delay studies for the project.

3a.3.6 Calibration and Validation Data

The CONSULTANT will collect calibration and validation data for the Project analysis in accordance with the PD&E Manual and Traffic Analysis Handbook.

3a.3.7 Existing Traffic Operational Analysis

The CONSULTANT will conduct existing (base year) traffic operational analysis and report the operational performance measures as agreed upon in the analysis methodology. The analysis must include bicycle, pedestrian, and transit (if applicable) operations. The manual count data will be used to obtain the existing design hourly volumes using historical and seasonal adjustments as appropriate. All existing design hourly volumes must be balanced before being used in the analysis. Oversaturated conditions and locations with complex geometry or operations might require microsimulation.

3a.3.8 Calibration and Validation

**[*Replace the text with N/A if no microsimulation is anticipated*]**

The CONSULTANT will calibrate and validate the microsimulation model using data and methodology as agreed upon in the analysis methodology.

3a.3.9 No-Build Analysis

The CONSULTANT will analyze the operational performance of the No-Build Alternative for the analysis years to identify deficiencies related to the purpose and need for the project. The CONSULTANT will evaluate the operational effectiveness of the No-Build Alternative using agreed upon performance measures of effectiveness (MOEs). The analysis should include multimodal evaluation for pedestrian, bicycle, freight, and transit modes, as appropriate.

3a.3.10 Development and Screening of Alternatives

**[Modify this section if Project alternatives were previously studied and documented in the DEPARTMENT approved planning products such as Alternative Corridor Evaluation, Interchange Access Request or Feasibility Study.]**

The CONSULTANT will prepare design controls and criteria for developing Project alternatives according to the FDM.

The CONSULTANT will identify, develop, assess, and screen preliminary or potential alternatives that would meet the purpose and need for the Project in accordance with Part 2, Chapter 3 of the PD&E Manual. The CONSULTANT will prepare concept plans for all viable Project alternatives in appropriate scales overlaid on the base map to show important design features, right of way requirements, and environmental and geometric design constraints including physical features such as railroad crossing and utilities. The CONSULTANT shall include in the sketches only the minimum information needed to establish feasibility of each design concept as a Project alternative.

By considering Project purpose and need, results of the ETDM Programming screening event, and constructability issues, the CONSULTANT in consultation with the DEPARTMENT will identify and document (in the alternatives evaluation memorandum) unfeasible alternatives to be eliminated from further detailed analysis. Only viable or feasible alternatives should be carried forward for detailed analysis.

3a.3.11 Operational Evaluation of Build Alternatives

The CONSULTANT will analyze the operational performance of viable or feasible alternative(s) for opening and design years and any interim years as appropriate. The analysis must include multimodal evaluation for pedestrian, bicycle, and transit modes, as appropriate. The analysis will also include evaluation of access management and refinement of design concepts in relation to traffic safety and operational efficiency within the study area. The CONSULTANT will evaluate the operational effectiveness of Build Alternatives using agreed upon performance MOEs.

**[*Replace with the following text if performed by the DEPARTMENT.*]**

The CONSULTANT will review and include the operational evaluation of Build alternatives prepared by the DEPARTMENT into the Project documents.

3a.3.12 Project Traffic Analysis Report

The CONSULTANT will prepare a Project Traffic Analysis Report as described in Part 2, Chapters 2 and 6 of the PD&E Manual.

**[*Replace with the following text if performed by the DEPARTMENT.*]**

The CONSULTANT will review the DEPARTMENT’s prepared Project traffic analysis report.

3a.4 Interchange Access Request

The CONSULTANT will prepare an interstate access request to ***[select either construct new or modify]*** the following interchanges in accordance with the Interchange Access Request User’s Guide. ***[List interchanges or N/A]***

The CONSULTANT will include the results of the [***select one IJR, IMR, IOAR***] in the engineering analysis according to Part 1, Chapter 4 and Part 2, Chapter 3 of the PD&E Manual.

[***Replace with the following text if performed by the DEPARTMENT.***]

The DEPARTMENT will prepare an Interchange Access Request (IAR) to construct the following new interchanges and any needed modifications in accordance with the Interchange Access Request User's Guide. ***[List interchanges]***

The DEPARTMENT will provide documentation, either within the Traffic Technical Memorandum or in an IAR document, in sufficient detail to satisfy the analysis requirements for a new or modified interchange access. If necessitated by the DEPARTMENT Interchange Review Coordinator (IRC), the DEPARTMENT will provide any additional documentation. The CONSULTANT will be required to attend up to ***[Insert number of meetings]*** interchange review coordination meetings. The CONSULTANT will provide sufficient information to complete the environmental, safety and future signage plan needs within the IAR process.

3a.5 Traffic Data for Noise Study

The CONSULTANT will provide the following data for each road segment (i.e. intersection to intersection), ramps, cross streets, and frontage roads, for the existing year, opening year, and the design year for Build and No-Build Alternatives;

* LOS C directional hourly volumes.
* Demand peak hourly volumes (peak and off-peak directions).
* Existing and proposed posted speed.
* Percentage of heavy trucks (HT) in the design hour.
* Percentage of medium trucks (MT) in the design hour.
* Percentage of buses in the design hour.
* Percentage of motorcycles (MC) in the design hour.

3a.6 Traffic Data for Air Quality Analysis

The CONSULTANT will collect traffic data required for the air quality analysis which will include the following:

* Intersection type and approach speed.
* Intersections – peak hour volumes for each approach.
* Interchanges – peak hour volumes for each ramp (on or off) regardless of percent turning volumes.
* Toll plaza – peak hour volumes for each approach.

3a.7 Traffic Analysis near Railroad Crossings

**[*If there are no railroad crossing, or the railroad crossing will not require pre-emption signal, replace with N/A.*]**

If an intersection is located within 500 feet of a railroad, the CONSULTANT will collect and analyze additional traffic data needed to prepare a report for the railroad signal pre-emption study. Pre-emption study data collection will include:

* 24-hour approach counts.
* 8-hour queue/delay study at railroad crossing.
* 8-hour pedestrian and bicycle counts.
* Crash data.

3a.8 Tolling Concepts

The CONSULTANT will perform the following activities to support development of tolling alternatives/concepts:

* Review sketch level and/or planning level traffic and revenue studies performed for the corridor.
* Work with Florida’s Turnpike Enterprise to evaluate tolling concepts along the corridor for both mainline general purpose lanes and express lanes.
* Prepare preliminary “sketch” level improvement alternatives capable of meeting the travel options and mobility needs.
* Perform high-level analysis of the cost and other impacts associated with each alternative, including input from key stakeholders, as compared to the No-Build Alternative.
* Review the impacts of the proposed mainline and interchange improvements on the ramp and mainline toll facilities.
* Prepare recommended alternatives for location of tolling points along the corridor to address tolling equity throughout the corridor.
* Evaluate the dynamic signing concept for active traffic management and incident management purposes, if the corridor is part of the District’s detour routes.

3a.9 Safety Analysis

3a.9.1 Crash Data

The CONSULTANT will obtain the most recent five (5) years of available data from the DEPARTMENT’s crash database and other local sources for this project. The crash data will include the number and type of crashes, crash locations, number of fatalities and injuries, and estimates of property damage and economic loss.

*[****Replace with N/A if performed by the DEPARTMENT.****]*

3a.9.2 Data Driven Safety Analysis

The CONSULTANT will perform safety analysis in accordance with Part 2, Chapter 2 of the PD&E Manual. Based on the information obtained from the crash data, the CONSULTANT will identify project safety needs associated with the existing and future conditions. The CONSULTANT will use the Highway Safety Manual (HSM) procedures to estimate the safety performance of the Project alternatives as agreed upon in the Traffic Analysis Methodology.

[***Replace with N/A if performed by the DEPARTMENT.***]

3a.9.3 Safety Analysis Documentation

The CONSULTANT will document the results of the safety analysis in the PTAR or a standalone Safety Analysis Memorandum.

[***Replace with the following text if performed by the DEPARTMENT.***]

The CONSULTANT will review the DEPARTMENT’s prepared Safety Analysis report.

3a.10 Alternatives Evaluation

The CONSULTANT will analyze Build Alternatives to a level of detail sufficient to evaluate and compare their performance against the No-Build Alternative. Preliminary engineering analysis of the Build Alternative is covered in Activity 4.

The CONSULTANT will compare the existing right of way width with the proposed right of way requirements to estimate the amount of right of way that the DEPARTMENT must acquire. The CONSULTANT will submit concept plans for the Build Alternative that include the parcel identification number, existing right of way lines, proposed right of way lines and acreage of property required. Additionally, the CONSULTANT will provide a spreadsheet with the following parcel information: owner, address, acreage of parent parcel and required amount of property for the Project, estimated business damages and right of way property costs. The DEPARTMENT will provide right of way cost estimates.

3a.10.1 Comparative Alternatives Evaluation

The CONSULTANT will establish evaluation criteria at the beginning of the Project, which must be agreed upon with the DEPARTMENT before use in the comparative evaluation of alternatives. After developing the viable alternatives, analyzing alternatives and estimating costs, the CONSULTANT will prepare a matrix which compares the impacts, performance, and costs of the alternatives evaluated in detail in the PD&E Study. The matrix will include the performance of the No-Build Alternative as the baseline for comparison.

3a.10.2 Selection of the Preferred Alternative

The DEPARTMENT will select the preferred alternative based on review and analysis of engineering, environmental, and public involvement issues related to this Project.

3a.11 Alternatives Analysis Documentation

The CONSULTANT will document the results of alternatives analysis in the Preliminary Engineering Report (PER) that will be signed and sealed by a Professional Engineer. The CONSULTANT shall inform the DEPARTMENT on content and progress as necessary during development of the PER. The PER will be uploaded in SWEPT and included in the project design documentation.

The CONSULTANT shall include (in the project file) sufficient backup information comprised of all computer programs, calculations, and parameters used in the alternatives analyses and progression of the recommended alternative to final design phase of the Project.

# 3b ENVIRONMENTAL ANALYSIS AND REPORTS

Tasks described within this section are work efforts applicable to the environmental analysis and documentation for this Project. The CONSULTANT will analyze all viable Build Alternatives and the No-Build Alternative with respect to impacts to natural, cultural, social and physical resources and document all analyses. Wherever appropriate the CONSULTANT will describe proposed measures to avoid, minimize, or mitigate project impacts on environmental resources. Additionally, the CONSULTANT will summarize results of the environmental analysis in the Environmental Document. The consultant will summarize in the Environmental Document the results of analysis of environmental resources that were completed as part of another study or performed by others concurrent with this project.

3b.1 Sociocultural Effects

The CONSULTANT will conduct a Sociocultural Effects (SCE) evaluation in accordance with Part 2, Chapter 4 of the PD&E Manual. The CONSULTANT will document the results of the SCE evaluation in the Environmental Document and in the Project file or in a stand-alone SCE report if required. If no involvement for a specific issue is indicated, then standard statements to that effect from Part 2, Chapter 4 of the PD&E Manual will be included in the Environmental Document.

3b.1.1 Social

* Community Cohesion: The CONSULTANT will identify and assess potential Project impacts on physical barriers, traffic pattern changes, social pattern changes, and loss of connectivity to community features and facilities.
* Special Community Designation: The CONSULTANT will identify and assess potential Project impacts on schools, churches, parks, emergency facilities, social services, daycare facilities, retirement centers, community centers, and retail locations.
* Safety/Emergency Response: The CONSULTANT will identify and assess potential project impacts on the creation of isolated areas; emergency response time changes; and location of police, fire, emergency medical services, healthcare facilities, and government offices.
* Demographics: The CONSULTANT will identify and assess potential Project impacts on minority, LEP persons, disabled persons, low-income populations, and/or special populations within the Project area.
* Community Goals and Quality of Life: The CONSULTANT will identify and assess potential Project impacts on social value changes and compatibility with community goals and vision.

3b.1.2 Economic

* Business and Employment: The CONSULTANT will assess potential Project impacts to business and employment activity in the project area, including industries with special needs or significance, economic-oriented land use, economic development plans, special designations, and community development priorities. Assessment will also include identification of changes to routes, access, parking, or visibility that could benefit or impair businesses, employment centers, community facilities, or population.
* Property Values and Tax Base: The CONSULTANT will assess potential Project impacts on the tax base, employment opportunities, and property values.

3b.1.3 Land Use

The CONSULTANT will evaluate the Project’s consistency with the physical character of the area, state-managed lands, and applicable community plans.

3b.1.4 Mobility

The CONSULTANT will evaluate potential Project impact on mobility and accessibility regarding all transportation modes (i.e. pedestrian, bicycle, transit, freight and vehicle) in the study area.

3b.1.5 Aesthetics

The CONSULTANT will evaluate and summarize the Project’s effect on viewshed and vista, community focal points, historic structures, landmarks, and community character in accordance with Part 2, Chapter 5 of the PD&E Manual.

3b.1.6 Relocation Potential

The consultant will identify residences, businesses, and institutional or community facilities that may require relocation to accommodate the Project. It is estimated that [**number**] parcels will require relocation. The CONSULTANT will obtain additional site-specific information needed to evaluate the effect of each Project alternative on the displacement of residences and businesses.

The CONSULTANT will collect the data and perform the analysis necessary to complete a Conceptual Stage Relocation Plan (CSRP) for the proposed alternatives according to Chapter 9 of the Right of Way Procedures Manual and Part 2, Chapter 4 of the PD&E Manual.

3b.1.7 Farmland

If applicable, the CONSULTANT will evaluate the data and document potential farmland impacts in accordance with Part 2, Chapter 6 of the PD&E Manual.

3b.2 Cultural Resources

The CONSULTANT will prepare a Research Design and Survey Methodology for the project, to be submitted to the DEPARTMENT for approval prior to the initiation of field work. The CONSULTANT shall identify and map the zones of probability for the Project Study Area, and identify any previously recorded resources. The Area of Potential Effect (APE) will be determined (including pond sites). The CONSULTANT will summarize each of the cultural resource issues in the Environmental Document. If there is no involvement for a particular issue, then a statement to that effect will be included. The CONSULTANT will use a professional qualified under the provisions of 36 CFR 61 in compliance with the National Historic Preservation Act of 1966 (Public Law 89-665, as amended) and the implementing regulations (36 CFR 800), as well as with the provisions contained in Chapter 267, Florida Statutes, to perform all work in this task.

The CONSULTANT will assess the direct and indirect effects of the alternatives and will document the severity of the following items in the Environmental Document and project file:

3b.2.1 Archaeological and Historic Resources

The CONSULTANT will identify and analyze impacts to archaeological sites and historic resources within the Project’s Area of Potential Effect (APE). The APE must include potential pond sites. The CONSULTANT will prepare a research design and survey methodology and perform a Cultural Resources Assessment Survey (CRAS) in accordance with Part 2, Chapter 8 of the PD&E Manual. All work will be documented and coordinated with appropriate agencies as per Part 2 Chapter 8 of the PD&E Manual and the DEPARTMENT’s Cultural Resource Management Handbook. In addition, attendance at public meetings may be required. The CONSULTANT will review and address any resource issues or comments by the State Historic Preservation Officer (SHPO) listed in the Programming Screen Summary Report. The CONSULTANT will assist the DEPARTMENT in preparing documents for tribal coordination, if needed.

The CONSULTANT will assist the DEPARTMENT in meetings by providing technical support in Section 106 Meetings, such as the Cultural Resource Committee Meeting.

The CONSULTANT will prepare a CRAS detailing the results of the survey and assessments of resource significance, including a Florida Master Site File (FMSF) form.

3b.2.2 Recreational Section 4(f)

CONSULTANT will complete the documentation and coordination required for a Section 4(f) Determination of Applicability in accordance with Part 2, Chapter 7 of the PD&E Manual.

The CONSULTANT will prepare Section 4(f) “de minimis” documentation in accordance with Part 2, Chapter 7 of the PD&E Manual.

The CONSULTANT will complete the documentation for Section 4(f) requirements in accordance with Part 2, Chapter 7 of the PD&E Manual.

3b.3 Natural Resources

The CONSULTANT will assess and summarize each of the natural resource issues in the Environmental Document. The CONSULTANT will identify the natural resource evaluation area. The CONSULTANT will assess the direct and indirect effects and will document the severity of the impact on environmental resources in the Natural Resources Evaluation (NRE), Environmental Document and project file.

3b.3.1 Protected Species and Habitat

The CONSULTANT will perform research, field reviews, appropriate seasonal surveys, and coordination necessary to determine Project involvement with, and any potential impacts to, federal and state protected, threatened or endangered species and their habitats. Additionally, the CONSULTANT will develop a study design (which will be approved by the DEPARTMENT) to evaluate the magnitude of Project involvement with wildlife and their habitat. If required, the CONSULTANT will prepare the Biological Assessment as a part of the NRE.

The CONSULTANT will assess the Project’s potential impacts to wildlife and habitat in accordance with Part 2, Chapter 16 of the PD&E Manual. The CONSULTANT will assist the DEPARTMENT in agency consultations, if required.

The DEPARTMENT Project Manager will provide a description of the habitat conservation measures to be considered. The CONSULTANT will provide an analysis of wildlife and habitat conservation measures and mitigation plan.

3b.3.2 Wetlands and Other Surface Waters

The CONSULTANT will perform an analysis of the Project’s potential impacts on wetlands and other surface waters in accordance with Part 2, Chapter 9 of the PD&E Manual. The CONSULTANT will identify the type, quality, and function of representative wetlands in accordance with Rule 62-345, F.A.C., Uniform Mitigation Assessment Method. The CONSULTANT will evaluate alternatives that avoid wetland impacts and, where unavoidable, identify practicable measures to minimize impacts. Any impact to wetlands requires development of a Conceptual Mitigation Plan. The CONSULTANT will document the results of the Wetlands Evaluation in the Natural Resources Evaluation (NRE) including all coordination activities with resource agencies, wetland impact assessment and mitigation analysis.

During final design, the CONSULTANT shall collect all data and information necessary to determine the boundaries of wetlands and other surface waters defined by the rules or regulation of each agency processing or reviewing a permit application necessary to construct the project.

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.
* Determine the jurisdictional boundaries and obtain a jurisdictional determination of wetlands and other surface waters as defined by rules or regulations of any permitting authority that is processing a DEPARTMENT permit application.
* Prepare aerial maps showing the jurisdictional boundaries of wetlands and surface waters. Aerial maps shall be reproducible, of a scale no greater than 1’’=200’ and be recent photography. The maps shall show the jurisdictional limits of each agency. Photo copies of aerials are not acceptable. All jurisdictional boundaries are to be tied to the project’s baseline of survey. When necessary, a wetland specific survey will be prepared by a registered surveyor and mapper.
* 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 impacted, size of wetland to be impacted, type of impact, and identify any wetland 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.

3b.3.3 Essential Fish Habitat

If applicable the CONSULTANT will conduct field reviews, surveys, and appropriate coordination with resource agencies to assess impacts to essential fish habitat (EFH) in accordance with Part 2, Chapter 17 of the PD&E Manual. The CONSULTANT will prepare the EFH Assessment as a component of the NRE to document potential adverse effects to EFH and measures to address those effects. The CONSULTANT will assist the DEPARTMENT in consultations, if required.

3b.3.4 Natural Resource Evaluation (NRE) Report

The CONSULTANT will document the results of the Wetlands, EFH, and Wildlife and Habitat evaluations in the Natural Resources Evaluation (NRE) report in accordance with Part 2, Chapter 9, Chapter 16 and Chapter 17 of the PD&E Manual.

3b.3.5 Water Quality

The CONSULTANT will evaluate and document the Project’s impact on water quality in the Water Quality Impact Evaluation (WQIE) Checklist, in accordance with Part 2, Chapter 11 of the PD&E Manual.

3b.3.6 Special Designations

The CONSULTANT will evaluate and document the Project’s involvement with the following special designations if applicable: Scenic Highways, Aquatic Preserves, Outstanding Florida Waters, Wild and Scenic Rivers, and Coastal Barrier Resources, in accordance with Part 2, Chapters 5, 10, 12, and 15 of the PD&E Manual.

3b.3.7 Permit Needs

The CONSULTANT will review the Programming Screen Summary Report and identify permits required for the project.

The CONSULTANT will perform activities that will inform and accelerate the environmental permitting process, including activities to acquire permits during PD&E (as required by the DEPARTMENT).

Anticipated environmental permits: ***[List anticipated permits.]***

3b.4 Physical Effects

The CONSULTANT will identify the physical effect evaluation area. The CONSULTANT will summarize each of the physical effect issues in the Environmental Document. The CONSULTANT will assess the Project’s direct and indirect effects and will document the severity of the following:

3b.4.1 Air Quality

The CONSULTANT will gather data, perform the air quality screening analysis, and prepare the Air Quality Technical Memorandum to document the results of the screening analysis in accordance with Part 2, Chapter 19 of the PD&E Manual.

3b.4.2 Construction Impact Analysis

The CONSULTANT will evaluate and document the potential impacts of construction of the Project alternatives in accordance with Part 2, Chapter 3 of the PD&E Manual.

3b.4.3 Contamination

The CONSULTANT will gather data, review data, and investigate contamination issues within the limits of the project and identify potentially contaminated sites in accordance with Part 2, Chapter 20 of the PD&E manual.

The CONSULTANT will document data reviewed, findings, risk ratings of potential contamination sites, and recommendations for additional assessment actions in the Contamination Screening Evaluation Report (CSER).

The CONSULTANT shall include an evaluation of any new contamination impacts due to changes to the PD&E design concept, if applicable, and/or 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.

3b.4.4 Asbestos and Metal Based Coating

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.

3b.4.5 Navigation

The CONSULTANT will collect data that will assist the DEPARTMENT to evaluate potential project impacts to navigation according to Part 1, Chapter 12 of the PD&E Manual.

3b.5 Cumulative Effects Evaluation

***[This may be optional services.]***

The CONSULTANT will perform and document a cumulative effects evaluation on each resource of concern identified based on context and in consultation with the DEPARTMENT as per the process outlined in the Cumulative Effects Evaluation Handbook. The cumulative effects evaluation should build upon information derived from the direct and indirect effects analyses.

3b.6 Project Commitments Record

The CONSULTANT will provide a list of project commitments to include in the Commitments Section of the Environmental Document. The CONSULTANT will assist the DEPARTMENT in filling out Form No. 700-011-35 Project Commitments Record (PCR) in accordance with FDOT Procedure 700-011-035.

# 3c ENVIRONMENTAL DOCUMENT

3c.1 Environmental Document

***[Choose one of the two documents and delete others.]***

[***If Categorical Exclusion***] The CONSULTANT will assist the DEPARTMENT in completing the Type 2 Categorical Exclusion Determination Form, Topic No. 650-000-001, and all attachments in accordance with Part 1 Chapter 5 of the PD&E Manual.

[***If State Environmental Impact Report***] The CONSULTANT will assist the DEPARTMENT in preparing a State Environmental Impact Report (SEIR) and any attachments that will be required per Part 1, Chapter 10 of the PD&E Manual.

3c.2 Planning Consistency

3c.2.1 Review of Transportation Plans and Programs

The CONSULTANT will coordinate with the DEPARTMENT to obtain and review transportation plans and programs applicable to this Project.

3c.2.2 Documentation

The CONSULTANT will assist the DEPARTMENT in the preparation of the Planning Consistency documentation**.**

3c.3 PD&E Re-evaluation

***[If the DEPARTMENT will prepare Re-evaluation, use this paragraph and delete the second paragraph and subsections 3c.3.1 thru 3c.3.5]*** CONSULTANT shall provide environmental support for the DEPARTMENT to complete re-evaluation of [***Specify the type of Environmental Document from 3.c.1***] for all changes to the Project after the PD&E study is completed and LDCA granted. It is the responsibility of the CONSULTANT to provide the DEPARTMENT 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 be needed to complete an update of cultural resource assessment, natural resources evaluation, and noise analysis.

**[*If the CONSULTANT will prepare Re-evaluation, use this paragraph and delete the first paragraph*]** During the development of the final design plans, the CONSULTANT shall complete re-evaluation form and provide associated supporting information in accordance with Part 1, Chapter 13 of the PD&E Manual. The CONSULTANT will review environmental commitments that were included in the [***Specify the type of Environmental Document***] and document updates to the status of the commitments.

3c.3.1 [*Specify Environmental Document from 3c.1*] Re-evaluation

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

3c.3.2 Archaeological and Historical Resources

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 Survey Report, in accordance with Part 2, Chapter 8 of the PD&E Manual.

3c.3.3 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 Evaluation Report, in accordance with Part 2, Chapter 9 of the PD&E Manual.

3c.3.4 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 Evaluation Report, in accordance with Part 2, Chapter 17 of the PD&E Manual.

3c.3.5 Protected Species and Habitat Impact Analysis

The CONSULTANT shall collect data necessary to prepare the protected species and habitat section of the Natural Resources Evaluation 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.

# 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 Design Controls and Criteria

The CONSULTANT shall prepare design controls and criteria for developing Project alternatives and designing roadway geometric and other roadway elements according to the DEPARTMENT standards.

4.2 Typical Section

4.2.1 Typical Section Analysis

The CONSULTANT will develop conceptual typical sections for the Project alternatives which address project purpose and needs and roadway context classification. Development of typical sections must consider Context Sensitive Solutions and Complete Streets approaches and the needs of all Project users.

4.2.2 Typical Section Package

The CONSULTANT shall prepare a Typical Section Package.

4.3 Pavement Type Selection Report

Pavement Type Selection Reports are required for every project one mile or greater in length where work includes a modification to the base materials. The Pavement Type Selection decision will again be reviewed by FDOT Design at the time the pavement is designed to warrant reconsideration. A letter to the Project Design File documenting the pavement type decision is required, even if no report is performed.

4.4 Pavement Design Package

The CONSULTANT shall prepare a Pavement Design Package.

4.5 Cross Slope Correction

The CONSULTANT shall coordinate with the DEPARTMENT to obtain existing cross slope data, determine roadway limits where cross slope is potentially out of tolerance, and determine a resolution ***[or N/A]****.*

4.6 Geometric Design

4.6.1 Development of Design Options

The CONSULTANT will develop the Build Alternative, screened in Task 3a.10, to a level of geometric design sufficient to identify and evaluate alignment (horizontal and vertical) constraints; nonstandard design features that will require Design Variation or Exception; potential environmental impact and mitigation measures; traffic flow and safety characteristics; drainage; structures; drainage and stormwater management; right of way needs; multimodal accommodation; constructability; TTCP during construction; and construction cost factors.

4.6.2 Horizontal/Vertical Master Design Files

The CONSULTANT shall design the geometrics using the Standard Plans 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, existing vegetation to be preserved, pedestrian and bicycle concerns, ADA requirements, Safe Mobility For Life Program, access management, concepts from previous studies and the scope of work. The CONSULTANT shall also develop utility conflict information to be provided to the project Utility Coordinator in the format requested by the DEPARTMENT.

Note: When the project includes a 3D Model deliverable, also include Activity 36 3D Modeling.

4.6.3 Alternatives Concept Plans

The CONSULTANT will prepare concepts by overlaying viable alternatives evaluated in detail on the base map. The concept plan must show potential location for bridges, culverts, retaining walls, right of way lines (existing and proposed), environmental issues, major utility facilities, intersections, critical driveways, and median openings, among other roadway elements, at an appropriate scale according to the DEPARTMENT CADD Manual.

4.7 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.

4.8 Intersections and Interchanges

4.8.1 Intersection and Interchange Concepts Evaluation

The CONSULTANT will develop intersection and interchange concepts/layouts based on the results of traffic operational analysis. The layouts will include through lanes, turn lanes, ramps, auxiliary lanes, storage lengths, ramp terminals, ramp junctions, and other geometric details.

The CONSULTANT will propose appropriate intersection controls and intersection/interchange footprint at the following intersections:

[***List intersections/interchanges.***]

4.8.2 Roundabout Final Design Analysis

The CONSULTANT shall finalize the design of the roundabout in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

The CONSULTANT shall perform a final roundabout operational analysis that recommends a functional geometric layout that is cost effective, safe and meets the needs of the community. A final roundabout design will be recommended for implementation, and all geometric and operational analysis will be documented in a final roundabout report.

4.9 Cross Section Design Files

The CONSULTANT shall establish and develop cross section design files in accordance with the DEPARTMENT’s CADD Manual.

Note: If the cross sections are prepared using a 3D model, use Task 36.5 instead of Task 4.9 for the cross section design files.

4.10 Temporary Traffic Control Plan (TTCP) Analysis

During analysis of the Build Alternatives, the CONSULTANT will evaluate constructability issues and the ability to maintain traffic during construction according to Part 2, Chapter 3 of the PD&E Manual. The CONSULTANT will include the estimated cost to maintain traffic in the construction cost estimate in the comparative alternatives evaluation.

The CONSULTANT shall design a safe and effective TTCP 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, transit features (e.g. bus stops), routing, signing and pavement markings, and detour quantity tabulations, roadway pavement, drainage structures, ditches, front slopes, back slopes, drop offs within clear zone, transit stops, 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 Utility Work by Highway Contractor (UWHC).

The CONSULTANT shall investigate the need for temporary traffic signals (including temporary timing and temporary signal detection), temporary highway lighting, detours, diversions, lane shifts, and the use of materials such as sheet piling in the analysis. The TTCP shall be prepared by a certified designer who has completed training as required by the DEPARTMENT. Before proceeding with the TTCP, 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 TTCP 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 closures 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, emergency vehicle response time, holidays, peak seasons, detour route deterioration, transit agency routes and other eventualities. CONSULTANT shall be responsible to obtain local authorities’ permission for use of detour routes not on state highways.

The CONSULTANT will prepare the Transportation Management Plan in accordance with Part 2, Chapter 3 of the PD&E Manual and Part 2, Chapter 240 of the FDM.

4.11 Master TTCP Files

The CONSULTANT shall develop master TTCP files (for Level II and Level III only) showing each phase of the TTCP. This includes all work necessary for designing lane configurations, diversions, lane shifts, signing and pavement markings, temporary traffic control devices, and temporary pedestrian ways.

4.12 Selective Clearing and Grubbing

Note: Utilize Activities 25 and 26 for Standalone Landscape Projects.

1. **Selective Clearing and Grubbing of Existing Vegetation Field Assessment**

The CONSULTANT shall review information from the DEPARTMENT and conduct a project field assessment(s) of existing vegetation. At least one field assessment visit is to be attended by the District Landscape Architect.

The Result of the Field Assessment(s) will determine the course of action for Selective Clearing and Grubbing and the extent of the Vegetation Survey under Task 2a.2.11.

1. **Selective Clearing and Grubbing Site Inventory Analysis of Existing Vegetation and Cross-Discipline Coordination (OPTIONAL SERVICES)**

The CONSULTANT shall coordinate with the District Utility Office, drainage engineers, and traffic engineers to ensure that preservation of existing vegetation is coordinated between all disciplines. Coordinate with the District Landscape Architect.

Based on the field assessment, the CONSULTANT may be required to do a site inventory analysis of existing vegetation, opportunities for preservation and protection of existing vegetation, relocation options, and selective removal of nuisance and/or non-nuisance vegetation. Coordinate with surveyor to have trees and vegetation tagged and surveyed, per Tasks 27.28 or 27.29.

1. **Selective Clearing and Grubbing- Existing Vegetation Maintenance Report**

The CONSULTANT shall include in the plans instructions for the care and maintenance of the plant preservation areas, and selective clearing and grubbing areas throughout the construction period. The CONSULTANT will coordinate with the District Landscape Architect to ensure that the intent of the plant preservation areas is in alignment with future highway landscape plans. The CONSULTANT should be knowledgeable in arboricultural practices to the extent that they are able to deliver detailed and informed Selective Clearing and Grubbing Plans.

4.13 Tree Disposition Plan

***[This may be scoped as Optional Services.]***

CONSULTANT will prepare a Tree Disposition Plan outlining the requirements for the relocation and protection of trees located within the project boundaries. Will utilize the information collected from the Vegetation Survey and information collected under task 4.12 for Selective Clearing and Grubbing.

4.14 Design Variations and Exceptions

The CONSULTANT shall prepare the documentation necessary to gain DEPARTMENT approval of all appropriate Design Variation Memorandums, Formal Design Variations and/or Design Exceptions.

A Project Design Variation Memorandum (FDM Form 122-B) shall be prepared to document all non-controlling design elements for a project that do not meet Department criteria. Those elements requiring a more detailed analysis, as per FDM Section 122.2, shall be submitted as Formal Design Variations or Design Exceptions.

4.15 Design Report

The CONSULTANT shall prepare all applicable report(s) as listed in the Project Description section of this scope. Reports are to be delivered as a signed and sealed pdf file.

4.16 Roadway Quantities for EQ Report

The CONSULTANT shall determine roadway pay items and quantities and the supporting documentation.

4.17 TTCP Quantities for EQ Report

The CONSULTANT shall determine temporary traffic control pay items and quantities and the supporting documentation.

4.18 Cost Estimate

The CONSULTANT will develop construction cost estimates using the Department’s Long Range Estimate (LRE) program. The CONSULTANT will be responsible for reviewing and updating the cost estimate when scope changes occur, at project milestones, and during the DEPARTMENT’s annual Work Program development cycle. Construction costs must include traffic management and right of way costs.

The DEPARTMENT’s Right of Way Office staff and CONSULTANT will conduct an interactive field trip to review conditions in the corridor as they pertain to actual conditions that might impact the cost of right of way acquisition for the Project.

The CONSULTANT will develop engineer’s estimates of the probable cost and provide required updates.

4.19 Technical Special Provisions and Modified Special Provisions

4.20 Other Roadway Analyses

4.21 Field Reviews

4.22 Monitor Existing Structures

The CONSULTANT shall perform field observations to visually identify existing structures within the project limits which may require settlement, vibration, or groundwater monitoring by the contractor during construction in accordance with FDM Chapter 117. The CONSULTANT shall identify the necessary pay items to be included in the bid documents to monitor existing structures.

Optional Services (may be negotiated at a later date, if needed): The CONSULTANT shall coordinate with and assist the geotechnical engineer and/or structural engineer to develop mitigation strategies (when applicable).

4.23 Technical Meetings

4.24 Quality Assurance/Quality Control

4.25 Independent Peer Review

4.26 Supervision

4.27 Coordination

# ROADWAY PLANS

The CONSULTANT shall prepare Roadway, 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.

## Key Sheet

## Typical Section Sheets

5.3.1 Typical Sections

5.3.2 Typical Section Details

## General Notes/Pay Item Notes

## Project Layout

## Plan/Profile Sheet

## Profile Sheet

## Plan Sheet

## Special Profile

## Back-of-sidewalk Profile Sheet

## Interchange Layout Sheet

## Ramp Terminal Details (Plan View)

## Intersection Layout Details

## Special Details

## Cross-Section Pattern Sheet(s)

## Roadway Soil Survey Sheet(s)

## Cross Sections

## Temporary Traffic Control Plan Sheets

## Temporary Traffic Control Cross Section Sheets

## Temporary Traffic Control Detail Sheets

## Utility Adjustment Sheets

## Selective Clearing and Grubbing Sheets

5.23.1 Selective Clearing and Grubbing

5.23.2 Selective Clearing and Grubbing Details

## Tree Disposition Plan Sheets

5.24.1 Tree Disposition Plan Sheets

Tree Disposition Plan Sheets will be signed and sealed drawings showing the location and vertical/horizontal landscape design of the vegetation to be relocated. The Tree Disposition Plans will be produced at the scale of the roadway drawings or at a scale that best depicts the information. Interchange and details will be shown at no larger than 1”=50’ scale.

5.24.2 Tree Disposition Plan Tables and Schedules

## Project Control Sheets

## Environmental Detail Sheets

Preparation of detail sheets for potential environmental issues such as, underground fuel tanks and monitoring wells, septic tanks, within the proposed right of way. All piping and pumps in association with the above referenced issues shall also be located and identified by the survey. The CONSULTANT shall relay to the DEPARTMENT any findings of contaminated soil, monitoring wells, or any features (particularly springs or sinks) relating to contamination or hazardous material.

Coordination with Permit/Environmental staff and preparing Dredge & Fill sheets where applicable.

## Utility Verification Sheet(s) (SUE Data)

## Quality Assurance/Quality Control

## 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 latest 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.

6a.1 Drainage Map Hydrology

The CONSULTANT will create a (pre- and 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 and Report

The CONSULTANT will analyze, determine, and document high water elevations per basin which will be used to set roadway profile grade and roadway materials. The CONSULTANT will determine surface water elevations at cross drains, floodplains, outfalls and adjacent stormwater ponds. This will include determining groundwater elevations (e.g. Seasonal High Groundwater Table elevations) at intervals between the above-mentioned surface waters. The CONSULTANT will document findings in the Base Clearance Report.

6a.3 Pond Siting Analysis and Report

The CONSULTANT will calculate the stormwater quality and attenuation requirements (for the requisite storm events), and estimate the stormwater management facility needs for each roadway alternative.

The CONSULTANT will schedule an Environmental Look-Around (ELA) meeting (See Part 2, Chapter 24 of the PD&E Manual) with DEPARTMENT staff, regulatory agencies, local governments, and other stakeholders to discuss regional stormwater needs and design and permitting approaches that benefit the watershed as a whole. During the meeting, the CONSULTANT will document the meeting notes in the project file.

If the ELA reveals no regional pond sites within the Study Area, the CONSULTANT will identify practical pond sites in each basin for each project alternative, estimate construction cost, compare the sites, and identify (in coordination with the DEPARTMENT) a preferred pond site for each basin.

 ***[Identify the number of alternative sites to be evaluated for each pond.]***

Additionally, the CONSULTANT will identify inflow and outfall access and easement requirements for each pond site. If additional pond sites are revealed, they will be used as a potential option. The CONSULTANT will evaluate pond sites using a preliminary hydrologic analysis. The CONSULTANT will document the results and coordination for all the project’s pond site analyses in accordance with the Drainage Manual. The CONSULTANT will prepare a Pond Siting Report which shall document all right of way, existing and proposed, that is needed to accomplish the required storm water treatment and attenuation, as well as floodplain compensation that may be required for the project.

6a.4 Design of Cross Drains

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. Analysis should consider age of the existing cross drain and the number of times it has been extended.

6a.5 Design of Ditches

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)

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, etc.), perform routing, pollutant loading calculations, recovery calculations and design the outlet control structure.

6a.8 Floodplain and Environmental Permit Drainage Data Collection

The CONSULTANT will gather floodplain data from FEMA Flood Insurance Rate Maps, and other drainage related data needed to perform stormwater management analysis and obtain permits from relevant sources including local government, local agencies, and regulatory agencies. The CONSULTANT will identify practical floodplain compensation sites for each floodplain impacted for each project alternative, estimate construction cost, compare the sites, and identify (in coordination with the DEPARTMENT) a preferred floodplain compensation site for each floodplain. Additionally, the CONSULTANT will identify inflow/outfall and access easement requirements for each floodplain compensation site. If additional floodplain compensation sites are revealed, they will be used as a potential option.

6a.9 Floodplain Compensation Siting and Design

The CONSULTANT will determine base floodplain elevations (i.e. 100-year, 24-hour rainfall events) from the floodplain data and 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. The CONSULTANT will also document floodplain compensation site requirements into the Pond Siting Report.

6a.10 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. Analysis should consider age of the existing storm sewer and the number of times it has been modified when being incorporated into the design.

6a.11 Optional Culvert Material

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

6a.12 French Drain Systems

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.12.1 Existing French Drain Systems

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 discharges.

6a.13 Drainage Wells

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.14 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.15 Location Hydraulics Report

The CONSULTANT will prepare a Location Hydraulics Report for the project in accordance with Part 2, Chapter 13 of the PD&E Manual.

6a.16 Bridge Hydraulic Report

The CONSULTANT will perform hydrology analysis and evaluate bridge hydraulics to determine the hydraulic length and low member elevation of the bridge or the length and low member elevation necessary to meet the minimum hydraulic opening requirement. The CONSULTANT will evaluate deck drainage, scour, and appropriate counter measures. Prepare report and the information for the Bridge Hydraulics Recommendation Sheet.

6a.17 Temporary Drainage Analysis

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

6a.18 Drainage Quantities for EQ Report

The CONSULTANT shall determine drainage pay items and quantities and the supporting documentation.

6a.19 Cost Estimate

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

6a.20 Technical Special Provisions/Modified Special Provisions

6a.21 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 Design Manual (FDM) Chapter 210 and 211 for more information.

6a.22 Existing Permit Analysis

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

6a.23 Other Drainage Analysis

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

6a.24 Noise Barrier Evaluation

Evaluate the capacity of drainage openings in noise barriers and locate them to ensure flows are accommodated.

6a.25 Erosion Control Plan

Evaluate Includes analysis and design of the Erosion Control Plan. Includes creating the design file.

6a.26 Field Reviews

**6a.27 Technical Meetings**

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

6a.28 Quality Assurance/Quality Control

6a.29 Independent Peer Review

6a.30 Supervision

6a.31 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

6b.3 Drainage Structures

6b.4 Lateral Ditch Plan/Profile & Cross Sections

6b.5 Retention/Detention/Floodplain Compensation Pond Details & Cross Sections

6b.6 Erosion Control Plan

6b.7 SWPPP

6b.8 Quality Assurance/Quality Control

6b.9 Supervision

# UTILITIES

***[Modify this task if the DEPARTMENT is responsible for Utility Coordination.]***

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.

## Utility 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. The Consultant shall be prepared to discuss the projects applied utility schedule logic and current UAO contact information.

It is anticipated that the following Utility Agency Owners (UAOs) are within or adjacent to the Project, but it is the responsibility of the CONSULTANT to determine the final list of UAOs within the project area:

***[List UAOs]***

## Identify Existing Utility Agency Owner(s) (UAO(s))

The Consultant shall identify all Utility Agency Owners (UAOs) in the corridor and within and adjacent to the project limits that may be impacted by the project. Identification shall include the updates UAO contact information. The Consultant shall contact Sunshine 811, perform a field visit, and review prior FDOT utility permits, reports, existing plans, and surveys provided.

## Make Utility Contacts

First Contact: The CONSULTANT shall send letters and plans to each Utility Agency Owner (UAO), 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-week notice.

Second Contact: At a minimum of 4 weeks prior to the meeting, the CONSULTANT shall transmit Phase II plans and the utility conflict information (when applicable and in the format requested by the DEPARTMENT) 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 information (when applicable and in the format requested by the DEPARTMENT) and 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.

## 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 Design Alternative. 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 alternative involving Utilities with the UAO and the DEPARTMENT. Assist with processing per the UAM.

## 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.

## 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, standard or selective clearing and grubbing work, and assist in the development of the UAO(s) marked/RGB 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.

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

The CONSULTANT shall review UAOs marked plans and data individually as they are received for content, accuracy, utility type, material, and size. Provide to the EOR (designer) for inclusion in the plans. Forward all requests for UAO reimbursement and supporting documentation to the DUO.Subordination of Easements Coordination

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.

## 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 impacts to existing trees/vegetation and proposed landscape, drainage, traffic signalization, TTCP (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 TTCP 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 be 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 4.5 (Horizontal/Vertical Master Design File) and Task 4.8 (Cross Section Design Files) for utility conflict location identification and adjustments.

## 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) such as survey, geotechnical, drainage, structures, lighting, roadway, signals, utilities, landscape architecture, municipalities, maintaining agency, and District Traffic Operations 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.

## 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 identified 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.

## Utility Constructability Review

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 4.6.2 (Horizontal/Vertical Master Design Files) and 4.8 (Cross Section Design Files) for utility conflict identification and adjustments.

## Additional Utility Services

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.

## 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 biddability review, review pay items, cost estimates and Technical Special Provisions (TSP) or Modified Special Provision (MSP) prepared by the UAO. This does not include 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.

## 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) via electronic delivery or another agreeable format.

## 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 or Modified 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.

## 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.

# ENVIRONMENTAL PERMITS 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 1.6 and Section 3b.

## Preliminary Project Research

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 Report.

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: District Right of Way files and databases; federal, state, and local permit files and databases; and local government information including county 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.

## Field Work

* + 1. 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 detailed in Rule Chapter 62-340, F.A.C., as ratified in Section 373.4211, F.S.; United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Technical Report Y-87-1); Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (ERD/EL TR-10-20).
* 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 in adjacent wetlands with biological indicators.
* 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 professional 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 USACE “Wetland Determination Data Form – Atlantic and Gulf Coastal Plain Region”; the USACE "Request for Corps Jurisdictional Determination"; Uniform Mitigation Assessment Method forms and/or project specific data forms.

8.2.2 Species Surveys:

The CONSULTANT shall conduct wildlife surveys during appropriate season as defined by rules or regulations of any permitting agency or commenting agency that is processing a DEPARTMENT permit. If species survey was completed under Task 3b.3.1, the CONSULTANT shall update species surveys as necessary to prepare species permit applications to the appropriate agencies.

## 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.

## Complete and Submit All Required Permit Applications

The CONSULTANT shall collect 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 8.15 (Other Environmental 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, unless directed otherwise by the DEPARTMENT.

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 completed 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 (e.g., 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.

## 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 CONSULTANT will also provide environmental data/information as needed to support the preparation of the Dredge and Fill sketches.

## Complete and Submit Documentation for Coordination and/or USCG Bridge Permit Application

The CONSULTANT shall be responsible for the level of effort needed for the USCG authorization in accordance with the regulatory agency requirements.

* + 1. **Prepare and submit required documents for USCG Coordination**

The CONSULTANT shall complete appropriate documentation required for the USCG to determine the navigability of the waterway and whether a USCG permit will be required.

* + 1. **Complete and submit USCG Bridge Permit Application**

The CONSULTANT shall prepare and submit required USCG bridge permit application. The CONSULTANT shall be responsible for acquiring the USCG approval.

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

The CONSULTANT shall be responsible for the preparation of the ROW Occupancy permit application in accordance with the regulatory agency requirements. The CONSULTANT shall be responsible for acquiring the ROW Occupancy permit.

## 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.

## Prepare USACE Section 408 Application to Alter a Civil Works Project

The CONSULTANT shall be responsible for the preparation of the Section 408 (33 USC 408) application and obtaining Section 408 permission.

## 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.

## 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.

## Regulatory Agency Support

The CONSULTANT shall provide regulatory agency support which may include but is not limited to preparing: a Statement of Findings or Memorandum for the Record; Public Notice; Findings of Fact; and Biological Opinion.

## Other Environmental Permits

## Technical Meetings

## Quality Assurance/Quality Control

## Supervision

## Coordination

# 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 1b.21, Provisions for Work. Individual tasks identified in Section 9 through 18 are defined in the Staff Hour Estimation Guidelines and within the provision defined in Section 1b.21, 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 8½”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.

## Key Sheet and Index of Drawings

## Project Layout

## General Notes and Bid Item Notes

## Miscellaneous Common Details

## Incorporate Report of Core Borings

## Standard Plans – Bridges

## Existing Bridge Plans

## Structures Quantities for EQ Report

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions

## Field Reviews

## Technical Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

## Coordination

# STRUCTURES - BRIDGE DEVELOPMENT REPORT

The Consultant shall prepare a Bridge Development Report (BDR). This task includes evaluating various bridge concepts and estimating bridge limits, span lengths, vertical and horizontal clearance requirements, and bent locations. The CONSULTANT shall coordinate with the District Structures Design office regarding conceptual location and design recommendations for each bridge alternative, including cost and any benefit-cost analyses used for selecting or recommending structure alternatives.

The BDR shall be submitted as part of the Phase I Roadway Submittal, General Requirements.

General Requirements

## Bridge Geometry

The CONSULTANT will evaluate conceptual vertical and horizontal geometry, navigation requirements, and clearance requirements for the bridges. If the project involves replacement of a bridge that is considered historic, or has substantial community value, the CONSULTANT will include a rehabilitation or repair alternative.

The CONSULTANT will develop typical sections options for the bridges. These will include the DEPARTMENT’s standard typical sections, and any typical sections that may result in minimizing right of way and environmental impacts.

## Ship Impact Data Collection

## Ship Impact Criteria

Superstructure Alternatives

## Short Span Concrete

## Medium Span Concrete

## Long Span Concrete

Not applicable

## Structural Steel

Foundation and Substructure Alternatives

## Pier/Bent

## Shallow Foundations / GRS Abutments

## Deep Foundations

Movable Span

## Data Collection and Design Criteria

Not applicable.

## Movable Span Geometrics and Clearances

Not applicable.

## Deck System Evaluation

Not applicable.

## Framing Plan Development

Not applicable.

## Main Girder Preliminary Design

Not applicable.

## Conceptual Span Balance/Counterweight

Not applicable.

## Support System Development

Not applicable.

## Drive Power Calculations

Not applicable.

## Drive System Development

Not applicable.

## Power and Control Development

Not applicable.

## Conceptual Pier Design

Not applicable.

## Foundation Analysis (FL PIER)

Not applicable.

## Tender Visibility Study

Not applicable.

Other BDR Issues

## Aesthetics

## TTCP/Staged Construction Requirements

## Constructability Requirements

## Load Rating for Damaged/Widened Structures

## Quantity and Cost Estimates

## Quantity and Cost Estimates (Movable Span)

Not applicable.

## Wall Type Justification

Report Preparation: The CONSULTANT will document structural design calculations and design assumptions used in the analysis which will be later used in the Bridge Development Report (BDR).

## Exhibits

## Exhibits (Movable Span)

Not applicable.

## Report Preparation

## Report Preparation (Movable Span)

Not applicable.

## BDR Submittal Package

Preliminary Plans: When ONLY Phase I plans are final deliverable, use Task Nos. as shown for applicable bridge types for project Activities 12 thru 16. Staff hours to be negotiated and scaled appropriately.

# STRUCTURES – TEMPORARY BRIDGE

The CONSULTANT shall prepare plans for Temporary Bridge(s) at the location(s) specified in Section 2.5. The CONSULTANT shall contact FDOT Office of Maintenance to determine the type and availability of temporary bridge before deciding on the temporary bridge type to be used.

General Layout Design and Plans

## Overall Bridge Final Geometry

## General Plan and Elevation

## Miscellaneous Details

End Bent Design and Plans

## End Bent Structural Design

## End Bent Details

Intermediate Bent Design and Plans

## Intermediate Bent Structural Design

## Intermediate Bent Details

Miscellaneous Substructure Design and Plans

## Foundation Layout

# STRUCTURES – SHORT SPAN CONCRETE BRIDGE

The CONSULTANT shall prepare plans for Short Span Concrete Bridge(s) at the location(s) specified in Section 2.5.

General Layout Design and Plans

## Overall Bridge Final Geometry

## Expansion/Contraction Analysis

## General Plan and Elevation

## Construction Staging

## Approach Slab Plan and Details

## Miscellaneous Details

End Bend Design and Plans

## End Bent Geometry

## End Bent Structural Design

## End Bent Plan and Elevation

## End Bent Details

Intermediate Bent Design and Plans

## Bent Geometry

## Bent Stability Analysis

## Bent Structural Design

## Bent Plan and Elevation

## Bent Details

Miscellaneous Substructure Design and Plans

## Foundation Layout

Superstructure Design and Plans

## Finish Grade Elevation Calculation

## Finish Grade Elevations

Cast-In-Place Slab Bridges

## Bridge Deck Design

## Superstructure Plan

## Superstructure Sections and Details

Prestressed Slab Unit Bridges

## Prestressed Slab Unit Design

## Prestressed Slab Unit Layout

## Prestressed Slab Unit Details and Schedule

## Deck Topping Reinforcing Layout

## Superstructure Sections and Details

Reinforcing Bar Lists

## Preparation of Reinforcing Bar List

Load Rating

## Load Rating

# STRUCTURES – MEDIUM SPAN CONCRETE BRIDGE

The CONSULTANT shall prepare plans for Medium Span Concrete Bridge(s) at the location(s) specified in section 2.5.

General Layout Design and Plans

## Overall Bridge Final Geometry

## Expansion/Contraction Analysis

## General Plan and Elevation

## Construction Staging

## Approach Slab Plan and Details

## Miscellaneous Details

End Bent Design and Plans

## End Bent Geometry

## Wingwall Design and Geometry

## End Bent Structural Design

## End Bent Plan and Elevation

## End Bent Details

Intermediate Bent Design and Plans

## Bent Geometry

## Bent Stability Analysis

## Bent Structural Design

## Bent Plan and Elevation

## Bent Details

Pier Design and Plans

## Pier Geometry

## Pier Stability Analysis

## Pier Structural Design

## Pier Plan and Elevation

## Pier Details

Miscellaneous Substructure Design and Plans

## Foundation Layout

Superstructure Deck Design and Plans

## Finish Grade Elevation (FGE) Calculation

## Finish Grade Elevations

## Bridge Deck Design

## Bridge Deck Reinforcing and Concrete Quantities

## Diaphragm Design

## Superstructure Plan

## Superstructure Section

## Miscellaneous Superstructure Details

Reinforcing Bar Lists

## Preparation of Reinforcing Bar Lists

Continuous Concrete Girder Design

## Section Properties

## Material Properties

## Construction Sequence

## Tendon Layouts

## Live Load Analysis

## Temperature Gradient

## Time Dependent Analysis

## Stress Summary

## Ultimate Moments

## Ultimate Shear

## Construction Loading

## Framing Plan

## Girder Elevation, Including Grouting Plan and Vent Locations

## Girder Details

## Erection Sequence

## Splice Details

## Girder Deflections and Camber

Simple Span Concrete Design

## Prestressed Beam

## Prestressed Beam Schedules

## Framing plan

Beam Stability

## Beam/Girder Stability

Bearing

## Bearing Pad and Bearing Plate Design

## Bearing Pad and Bearing Plate Details

Load Rating

## Load Ratings

# STRUCTURES – STRUCTURAL STEEL BRIDGE

The CONSULTANT shall prepare plans for Structural Steel Bridge(s) at the location(s) specified in Section 2.5.

General Layout Design and Plans

## Overall Bridge Final Geometry

## Expansion/Contraction Analysis

## General Plan and Elevation

## Construction Staging

## Approach Slab Plan and Details

## Miscellaneous Details

End Bent Design and Plans

## End Bent Geometry

## Wingwall Design and Geometry

## End Bent Structural Design

## End Bent Plan and Elevation

## End Bent Details

Intermediate Bent Design and Plans

## Bent Geometry

## Bent Stability Analysis

## Bent Structural Design

## Bent Plan and Elevation

## Bent Details

Pier Design and Plans

## Pier Geometry

## Pier Stability Analysis

## Pier Structural Design

## Pier Plan and Elevation

## Pier Details

Miscellaneous Substructure Design and Plans

## Foundation Layout

Superstructure Deck Design and Plans

## Finish Grade Elevation (FGE) Calculation

## Finish Grade Elevations

## Bridge Deck Design

## Bridge Deck Reinforcing and Concrete Quantities

## Superstructure Plan

## Superstructure Section

## Miscellaneous Bridge Deck Details

Reinforcing Bar Lists

## Preparation of Reinforcing Bar Lists

Structural Steel Plate Girder Design

## Unit Modeling

## Section Design

## Stiffener Design and Locations

## Cross-Frame Design

## Connections

## Bearing Assembly Design and Detailing (with Jacking Analysis)

## Splice Design

## Shear Stud Connectors

## Deflection Analysis

## Framing Plan

## Girder Elevation

## Structural Steel Details

## Splice Details

## Girder Deflections and Camber

Structural Steel Box Girder Design

## Unit Modeling

## Section Design

## Stiffener Design and Locations

## Interior Cross-Frame Design

## Exterior Cross-Frame Design

## Connections

## Bearing Assembly Design and Detailing (with Jacking Analysis)

## Splice Design

## Shear Stud Connectors

## Deflection Analysis

## Framing Plan

## Girder Elevation

## Structural Steel Details

## Splice Details

## Girder Deflections and Camber

Erection Scheme

## Erection Scheme Analysis

## Erection Scheme

Load Rating

## Load Rating

# STRUCTURES – SEGMENTAL CONCRETE BRIDGE

Segmental Concrete Bridge is not applicable to this scope.

# STRUCTURES – MOVABLE SPAN

Movable Span Structures are not applicable to this scope.

# STRUCTURES – RETAINING WALLS

The CONSULTANT shall prepare plans for Retaining Wall(s) as specified in Section 2.5.

General Requirements

## Key Sheet

## Horizontal Wall Geometry

Permanent Proprietary Walls

## Vertical Wall Geometry

## Semi-Standard Drawings

## Wall Plan and Elevations (Control Drawings)

## Details

Temporary Proprietary Walls

## Vertical Wall Geometry

## Semi-Standard Drawings

## Wall Plan and Elevations (Control Drawings)

## Details

Cast-In Place Retaining Walls

## Design

## Vertical Wall Geometry

## General Notes

## Wall Plan and Elevations (Control Drawings)

## Sections and Details

## Reinforcing Bar List

Other Retaining Walls and Bulkheads

## Design

## Vertical Wall Geometry

## General Notes, Tables, and Miscellaneous Details

## Wall Plan and Elevations

## Details

# STRUCTURES – MISCELLANEOUS

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

Concrete Box Culverts

## Concrete Box Culverts

## Concrete Box Culvert Extensions

## Concrete Box Culvert Data Table Plan Sheets

## Concrete Box Culvert Special Details Plan Sheets

Strain Poles

## Steel Strain Poles

## Concrete Strain Poles

## Stain Pole Data Table Plan Sheets

## Strain Pole Special Details Plan Sheets

Mast Arms

## Mast Arms

## Mast Arms Data Table Plan Sheets

## Mast Arms Special Details Plan Sheets

Overhead/Cantilever Sign Structure

## Cantilever Sign Structures

## Overhead Span Sign Structures

## Special (Long Span) Overhead Span Sign Structures

## Monotube Overhead Sign Structure

## Bridge Mounted Signs (Attached to Superstructure)

## Overhead and Cantilever Sign Structures Data Table Plan Sheets

## Overhead and Cantilever Sign Structures Special Details Plan Sheets

High Mast Lighting

## Non-Standard High Mast Lighting Structures

## High Mast Lighting Special Details Plan Sheets

Noise Barrier Walls (Ground Mount)

## Horizontal Wall Geometry

## Vertical Wall Geometry

## Summary of Quantities – Aesthetic Requirements

## Control Drawings

## Design of Noise Barrier Walls Covered by Standards

## Design of Noise Barrier Walls not Covered by Standards

## Aesthetic Details

Special Structures

## Fender System

## Fender System Access

## Special Structures

## Other Structures

Ancillary Structures Reports

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

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

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

## Ancillary Structures Report

# 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.

## Traffic Data Analysis

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.

## No Passing Zone Study

The CONSULTANT shall perform all efforts 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.

## Signing and Pavement Marking Master Design File

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

## Multi-Post Sign Support Calculations

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

## Sign Panel Design Analysis

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

## Sign Lighting/Electrical Calculations

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 new modified sign panel which requires lighting.

## S&PM Quantities for EQ Report

The CONSULTANT shall determine signing and pavement marking pay items and quantities and the supporting documentation.

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions

## Other Signing and Pavement Markings Analysis

## Field Reviews

## Technical Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

## Coordination

# SIGNING AND PAVEMENT MARKINGS 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:

## Key Sheet & Signature Sheet

## General Notes/Pay Item Notes

## Project Layout

## Plan Sheet

## Special Details

## Service Point Details

## Guide Sign Data

## Cross Sections (Sign Installations)

## 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 part of the contract. The CONSULTANT shall describe how the check 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 specifically designated for this project.

## Supervision

# SIGNALIZATION ANALYSIS

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

## Traffic Data Collection

The CONSULTANT shall perform all efforts required for traffic data collection, including crash reports, 24-hr. machine counts, 8-hr. turning movement counts, 7-day machine counts, and speed & delay studies.

## Traffic Data Analysis

The CONSULTANT shall determine signal operation plan, intersection geometry, local signal timings, pre-emption phasing & timings, forecasting traffic, and intersection analysis run.

## Signal Warrant Study

## Systems Timings

The CONSULTANT shall determine proper coordination timing plans including splits, force offs, offsets, and preparation of Timespace Diagram.

## 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.

## Reference and Master Interconnection Communication Design File

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

## Overhead Street Name Sign Design

The CONSULTANT shall design Signal Mounted Overhead Street Name signs.

## Pole Elevation Analysis

## Traffic Signal Operation Report

***[As defined by the District.]***

## Signalization Quantities for EQ Report

The CONSULTANT shall determine signalization pay items and quantities and the supporting documentation.

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions

## Other Signalization Analysis

## 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 Conditions/Age
* Controller Cabinet Make, Model, and load bay type
* Condition of Signal Structure(s)
* Type of Detection as Compared with Current District Standards
* Interconnection Media
* Controller Timing Data
* Presence of LED Vehicular and Pedestrian Signal Indicators
* Presence of Signal Backplates
* Presence of Pedestrian Countdown Type Heads
* Presence of Accessible vs. Standard Pedestrian Detectors

## Technical Meetings

## 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 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 designated for this project.

## Independent Peer Review

## Supervision

## Coordination

# 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 include the following:

## Key Sheet & Signature Sheet

## General Notes/Pay Item Notes

## Signalization Plan Sheets

## Interconnect Plans

## Traffic Monitoring Site

## Guide Sign Data

## Special Details

## Service Point Details

## Mast Arm/Monotube Tabulation Sheet

## Strain Pole Schedule

## TTCP Signal

## Temporary Detection Sheet

## 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 check 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.

## Supervision

# LIGHTING ANALYSIS

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

## Lighting Justification Report

The CONSULTANT shall prepare a Lighting Justification Report. The report shall be submitted under a separate cover with the Phase I plans submittal, titled Lighting Justification Report. The reports shall provide analyses for mainlines, interchanges and arterial roads and shall include all back-up data such that the report stands on its own. Back up data shall include current ADT’s, general crash data average cost from the Florida Highway Safety Improvement Manual, crash details data from the last three years, and preliminary lighting calculations.

The report shall address warrants to determine if lighting warrants are met, and shall include a benefit cost analysis to determine if lighting is justified. The report shall include calculations for the night-to-day crash ratio as well as a table summarizing the day-time and the night time crashes. The report shall follow the procedures outlined in the FDOT Manual on Uniform Traffic Studies (MUTS) which utilizes ADT, Three Year Crash Data, night/day crashes ratio, percentages of night ADT, etc.

## Lighting Design Analysis Report (LDAR)

The CONSULTANT shall prepare a Preliminary Lighting Design Analysis Report. The report shall be submitted under a separate cover with the Phase II plans submittal. The report shall provide analyses for each signalized intersection lighting design and each typical section of the mainline, typical section for the ramps (one and/or two lanes), interchanges, underdeck lighting and arterial roads. Each lighting calculation shall be properly identified as to the area that it covers.

The report shall include the Lighting Design Criteria that will be used. For project with corridor lighting, the report shall include the elevation of at least three lighting design alternatives. The report shall provide a recommendation on the alternative to use. Each alternative shall be properly described; the alternatives shall consider different pole heights, lamp wattage, and arm lengths. Each alternative shall be provided with cost estimate that includes initial cost in addition to operations and maintenance cost for one year.

The report shall also include lighting calculations for each lighted sign.

After approval of the preliminary report, the CONSULTANT shall submit a revised report for each submittal. The lighting Design Analysis Report shall include:

* Voltage drop calculations
* Load analysis calculation for each branch circuit

## Voltage Drop Calculations

The CONSULTANT shall submit voltage drop calculations showing the equation or equations used along with the number of luminaries per circuit, the length of each circuit, the size conductor or conductors used and their ohm resistance values. 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.

The Voltage Drop Calculations shall be submitted as part of the Lighting Design Analysis Report.

## FDEP Coordination and Report

## Reference and Master Design File

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

## Temporary Highway Lighting

The CONSULTANT shall develop a Temporary Highway Lighting design and, when required, a Temporary Highway Lighting design file. The Temporary Highway Lighting design must account for all phases of the TTCP and includes the analysis, calculations, and placement of luminaires, supports, conductors, conduits, pull boxes, and electrical power service.

## Design Documentation

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

* Phase Submittal Checklist
* Structural calculations for special conventional pole concrete foundations. Submitted as part of the Structural Calculations (Phase III and IV submittals).
* Structural calculations for the high mast pole foundations. Submitted as part of the Structural Calculations (Phase III and IV submittals).
* Correspondence with the power company concerning new electrical service and/or modifications to existing circuits, existing loads, and fault currents- Submitted as part of the Lighting Design Analysis Report (Phase IV submittal).
* Voltage drop calculations. Submitted as part of the Lighting Design Analysis Report (Phase III and IV submittals).
* Load analysis calculations Submitted as part of the Lighting Design Analysis Report (Phase III and IV submittals).
* Arc flash hazard analysis - Submitted as part of the Lighting Design Analysis Report (Phase III and IV submittals).
* Short circuit analysis and device coordination - Submitted as part of the Lighting Design Analysis Report (Phase III and IV submittals).

## Lighting Quantities for EQ Report

The CONSULTANT shall determine lighting pay items and quantities and the supporting documentation.

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions

## Other Lighting Analysis

The CONSULTANT shall perform a power design analysis for each new load center and shall include the analysis in the Lighting Design Analysis Report.

## 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 Lighting Equipment
* Load Center, Capabilities and Condition/Age
* Condition of Lighting Structure(s)
* Verification of horizontal clearances
* Verification of breakaway requirements

## Technical Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

## Coordination

# LIGHTING PLANS

The CONSULTANT shall prepare a set of Lighting Plans in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

## Key Sheet & Signature Sheet

## General Notes/Pay Item Notes

## Pole Data, Legend and Criteria

## Project Layout

## Plan Sheets

## Special Details

## Service Point Details

## Temporary Traffic Control Plan Sheets

## 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 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 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.

## Supervision

# LANDSCAPE ANALYSIS

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

## Data Collection

All research required to collect data necessary to complete the initial design analysis. Includes identifying local ordinances and collection of other project data.

## Site Inventory and Analysis for Proposed Landscape

Includes identification of opportunities and constraints for the proposed landscape project based on existing site conditions. Identify available planting areas for nursery landscape material. Summary of analysis, if required, is included in conceptual design. Roll plots may be required.

### 25.2a Selective Clearing and Grubbing Site Inventory

25.2b Inventory and Analysis

25.2c1 Vegetation Disposition Plan- Mainline

25.2c2 Vegetation Disposition Plan- Interchange

## Planting Design

### 25.3a Conceptual Planting Design

Includes delineation of all proposed types, scheme development and preliminary costs and reports. The design shall be submitted with the Phase I plans.

25.3a1 Report Preparation

25.3a2 Mainline

25.3a3 Interchanges, Intersections, and Rest Areas

25.3a4 Toll Plazas

25.3b Final Planting Design

Includes identifying the species/type, size, location, spacing, and quality of all plants.

25.3b1 Master Design File Creation

25.3b2 Mainline

25.3b3 Interchanges, Intersections, and Rest Areas

25.3b4 Toll Plazas

## Irrigation Design

25.4a Conceptual Irrigation Design

Typically not done in master design file. Includes determination of water and power sources. Phase I design level.

25.4a1 Feasibility Report: Includes analysis of methods, materials and operation costs associated with proposed irrigation system design

25.4a2 Mainline

25.4a3 Interchanges, Intersections, and Rest Areas

25.414 Toll Plazas

25.4b Final Irrigation Design

Includes all work in master design files. Irrigation Design includes, but is not limited to, the locations and sizes of pumps, pump stations, mainlines, lateral lines, irrigation heads, valves, backflow and control devices.

25.4b1 Mainline

25.4b2 Interchanges, Intersections, and Rest Areas

25.4b3 Toll Plazas

## Hardscape Design

25.5a Conceptual Hardscape Design

Includes all work in master design files. Hardscape Design includes, but is not limited to, sidewalks, plazas, Steps, Fountains, Walls, Pedestrian bridges, non-regulatory signs or project graphics, roadway aesthetics, site furnishings.

25.5b Final Hardscape Design

Includes all work in master design files. Hardscape Design includes, but is not limited to, sidewalks, plazas, Steps, Foundation, Walls, Pedestrian bridges, non-regulatory signs or project graphics, roadway aesthetics, site furnishings.

## Roll Plots

Task includes any roll plots for the project to aid in developing final plans (landscape opportunity, disposition, site inventory and analysis, etc.)

## Landscape Quantities for EQ Report

The CONSULTANT shall determine landscape pay items and quantities and the supporting documentation.

## Cost Estimates

## Technical Special Provisions and Modified Special Provisions

## Inspection Services

Services may include: on-site inspection, construction, observation, monitoring, supervision, and any reporting requirements.

## Other Landscape Services

## Outdoor Advertising

Includes all work required to determine locations of all outdoor advertising permitted within the roadway project limits. Includes all work required to determine the proposed view zones and the supporting documentation.

## Field Reviews

## Technical Meetings/Public Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

## Project Coordination

## Interdisciplinary Coordination

# LANDSCAPE PLANS

The CONSULTANT shall prepare a set of Landscape Plans which includes the following:

## Key Sheet & Signature Sheet

## Plant Schedule (Sheet no longer produced)

## General Notes/Pay Item Notes

## Planting Plans for Linear Areas

## Planting Plans for Non-Linear Areas (Stormwater Facilities, Rest Areas, Interchanges and Toll Plazas)

## Planting Details

## Irrigation Plans for Linear Areas

## Irrigation Plans for Non-Linear Areas (Stormwater Facilities, Rest Areas, Interchange and Toll Plazas)

## Irrigation Details

## Hardscape Plans and Details

## Maintenance Plan

The CONSULTANT shall include a written plan for care and maintenance of the plants and beds, hardscape, and irrigation system after the established period. The landscape maintenance plan will be developed in performance based language and will be in coordination with the local government entity who assumes the maintenance obligation.

## Quality Assurance/Quality Control

## Supervision

# SURVEY

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 DEPARMENT may instead require that these points be surveyed by true line, traverse or parallel offset.

## 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.

## Vertical Project Control (VPC)/Bench Line

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.

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

Establish, recover or re-establish project alignment. Also includes analysis and processing of 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.

## 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.

## Reference Points

Reference Horizonal 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.

## 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.

## 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.

## Roadway Cross Sections/Profiles

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

## Side Street Surveys

Refer to task of this document as applicable.

## 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.

## 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.

## Drainage Survey

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

## 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.

## 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

## Pond Site Survey

Refer to tasks of this document as applicable.

## Mitigation Survey

Refer to tasks of this document as applicable.

## Jurisdiction Line Survey

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

## Geotechnical Support

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

## Sectional/Grant Survey

Perform field location/placement of section corners, ¼ section corners, and fractional corners where pertinent. Includes analysis and processing of all field collected data and/or reports.

## 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.

## Maintained R/W

Perform field location (2-dmensional) 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.

## Boundary Survey

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

## Water Boundary Survey

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

## 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.

## Right of Way Monumentation

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

## Line Cutting

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

## Work Zone Safety

Provide work zone as required by DEPARTMENT standards.

## Vegetation Survey

Locate vegetation within the project limits.

## Tree Survey

Locate individual trees or palms within the project limits.

## 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.

## 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.

## Document Research

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

## Field Reviews

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

## Technical Meetings

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

## 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.

## 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.

## Coordination

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

# PHOTOGRAMMETRY

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

In addition to the maps and photographic products, the CONSULTANT shall submit all computations to document the mapping. This will include documentation of all decisions reached from meetings, telephone conversations, and site visits.

## Flight Preparation

Review record data, create target diagrams, and plan the mission.

## Control Point Coordination

Determine photo identifiable control points, and mark contact prints.

## Mobilization

Perform pre-and post-flight aircraft inspection, prepare the aircraft and camera for the mission.

## Flight Operations

Operate the aircraft, aerial camera, and other instruments to obtain aerial photography.

## Photo Products

Prepare contact prints, contact diapositives, and photo enlargements.

## LiDAR

Includes data acquisition, post processing of LiDAR data to XYZ coordinates for “bare earth” classification.

## Aerial Triangulation

Measure and adjust control within aerial images.

## Surfaces

Includes collection of break lines and spot elevations.

## Ortho Generation

Includes creation of final images.

## Rectified Digital Imagery (Georeferenced)

Create the rectified digital image.

## Mosaicking

Create the mosaic.

## Sheet Clipping

Create plot files for sheets from the database.

## Topographics (3D)

Prepare topographic maps including surface and planimetrics (Photogrammetrist will not propose hours for Surfaces and Topographics).

## Planimetrics (2D)

Prepare 2D planimetric map.

## Drainage Basin

Includes preparing drainage basin maps in clipped “sheet” format.

## CADD Edit

Perform final edit of graphics for delivery of required Microstation design files(.dgn), CADD and Geopak files.

## Data Merging

Merge photogrammetric files, field survey files, and data from other sources.

## Miscellaneous

Other tasks not specifically addressed in this document.

## Field Reviews

Perform on site review of maps.

## Technical Meetings

Attend meetings as required.

## Quality Assurance/Quality Control

Establish and implement a QA/QC plan.

## Supervision

Supervise all photogrammetric activities. This task must be performed by the project supervisor, a Florida P.S.M.

## Coordination

Coordinate with all elements of the project to product a final photogrammetric product.

# MAPPING

The CONSULTANT will be responsible for the preparation of control survey maps, right of way maps, maintenance maps, sketches, other miscellaneous survey maps, and legal descriptions as required for this project in accordance with all applicable DEPARTMENT manuals, procedures, handbooks, District specific requirements, and Florida Statutes. All maps, surveys and legal descriptions will be prepared under the direction of a Florida Professional Surveyor and Mapper (PSM) to DEPARTMENT size and format requirements utilizing DEPARTMENT approved software, and will be designed to provide a high degree of uniformity and maximum readability. The CONSULTANT will submit maps, legal descriptions, quality assurance check prints, checklists, electronic media files and any other documents as required by this project to the DEPARTMENT for review at stages of completion as negotiated.

Master CADD File

## Alignment

## Section and ¼ Section Lines

## Subdivision/Property Lines

## Existing Right of Way

## Topography

## Parent Track Properties and Existing Easements

## Proposed Right of Way Requirements

The ENGINEERS OF RECORD (EOR) will provide the proposed requirements. The PSM is responsible for calculating the final geometry. Notification of Final Right of Way Requirements along with the purpose and duration of all easements will be specified in writing.

## Limits of Construction

The limits of construction DGN file as provided by the EOR will be imported or referenced to the master CADD file. Additional labeling will be added as required. The PSM is required to advise the EOR of any noted discrepancies between the limits of construction line and the existing/proposed right of way lines, and for making adjustments as needed when a resolution is determined.

## Jurisdictional/Agency Lines

The lines may include, but are not limited to, jurisdictional, wetland, water boundaries, and city/county limit lines.

 Sheet Files

## Control Survey Cover Sheet

## Control Survey Key Sheet

## Control Survey Detail Sheet

## Right of Way Map Cover Sheet

## Right of Way Map Key Sheet

## Right of Way Map Detail Sheet

## Maintenance Map Cover Sheet

## Maintenance Map Key Sheet

## Maintenance Map Detail Sheet

## Reference Point Sheet

This sheet(s) will be included with the Control Survey Map, Right of Way Map and Maintenance Map.

## Project Control Sheet

This sheet depicts the baseline, the benchmarks, the primary and secondary control points and their reference points including the type of material used for each point, their XYZ coordinates, scale factors, and convergence angles. This sheet(s) may be included with the Control Survey Map, Right of Way Map and Maintenance Map.

## Table of Ownership Sheet

Miscellaneous Surveys and Sketches

## Parcel Sketches

## TIITF Sketches

## Other Specific Purpose Survey(s)

## Boundary Survey(s) Map

## Right of Way Monumentation Map

## Title Search Map

## Title Search Report

## Legal Descriptions

## Final Maps/Plans Comparison

The PSM will perform a comparison of the final right of way maps with the available construction plans to review the correctness of the type of parcel to be acquired and the stations/offsets to the required right of way. The PSM will coordinate with the EOR to resolve any conflicts or discrepancies and provide documentation of the review.

## Field Reviews

## Technical Meetings

## Quality Assurance/Quality Control

## Supervision

## Coordination

## Supplemental Mapping

This task is to cover efforts resulting from major design and/or development changes after 60% map development that affect the right of way requirements/parcel tract property lines and may include any number of tasks. Request and approval to utilize the Supplemental Mapping hours will be in writing and approved by the District Right of Way Surveyor prior to any work being done under this task.

# TERRESTRIAL MOBILE LiDAR

The CONSULTANT shall perform Terrestrial Mobile LiDAR tasks in accordance with all applicable statutes, manuals, guideline, standards, handbooks, procedures, and current design memoranda.

In addition to the maps and LiDAR products, the CONSULTANT shall submit all computations and reports to support the mapping. This will include documentation of all decisions reached from meetings, telephone conversations, and site visits.

## Terrestrial Mobile LiDAR Mission Planning

Research and prepare materials necessary for the successful execution of the Mobile LiDAR Mission. This includes but is not limited to route and safety planning, GPS/data acquisition scheduling, weather reports, and site terrain research.

## Project Control Point Coordination

All efforts necessary to coordinate the proper placement of project ground control i.e., base stations, transformation control points, and validation points, supporting the Mobile LiDAR survey.

## Terrestrial Mobile LiDAR Mobilization

Prepare the LiDAR sensor and vehicle for project data collection, and get specialized personnel and equipment on site.

## Terrestrial Mobile LiDAR Mission

Perform site calibrations of LiDAR sensor and collect laser survey data, including any simultaneous base station GPS occupations and operation of any necessary safety equipment.

## Terrestrial Mobile LiDAR Processing

Download and post process collected measurement data from Mobile LiDAR vehicle sensors, and any base stations occupied during the mission. Analyze Mobile LiDAR measurement points and scan route overlaps. Separate any large point cloud data sets into manageable file sizes with corresponding indexes.

## Terrestrial Mobile Photography Processing

Process reference, and name digitation photographic imagery files collected during Mobile LiDAR mission.

## Transformation/Adjustment

Adjust LiDAR point cloud data to Project Control points. Create point cloud data file(s) in approved digital format. Prepare required reports of precision and accuracy achieved. If this task is performed by separate firm, or is the final product to be delivered, include effort for Survey Report.

## Classification / Editing

Identify and attribute (classify) point cloud data into requested groups. Classify or remove erroneous points.

## Specific Surface Reporting

Prepare reports data and/or graphics of specific surface details such as, but not limited to pavement rutting, bridge structure clearance to roadway surface.

## Topographic (3D) Mapping

Produce three dimensional (3D) topographic survey maps(s) from collected Mobile LiDAR data. This includes final preparation of Construction Information Management (CIM) deliverable, if applicable.

## Topographic (2D) Planimetric Mapping

Produce two dimensional (2D) planimetric map(s) from collected Mobile LiDAR data.

## CADD Edits

Perform final edit of graphics for delivery of required CADD files. This includes final presentation of CIM deliverable, if applicable.

## Data Merging

Merge Mobile LiDAR survey and mapping files, with other field survey files, and data from other sources.

## Miscellaneous

Order tasks not specifically addressed in this document.

## Field Reviews

Perform on site review of maps.

## Technical Meetings

Attend meetings as required.

## Quality Assurance/Quality Control

Establish and implement a QA/QC plan.

## Supervision

Supervise all Terrestrial Mobile LiDAR activities. This task must be performed by the project supervisor, a Florida P.S.M.

## Coordination

Coordinate with all elements of the project to produce a final product.

# ARCHITECTURE DEVELOPMENT

**Phase I – 30% SCHEMATIC DESIGN DOCUMENTS SUBMITTAL:**

After receipt of written authorization to proceed from the DEPARTMENT and based on the approvals and any authorized adjustments to the Project Scope, Project Schedule or Budget, the Design Professional shall prepare, submit and present for approval by the DEPARTMENT, Phase I (30%) documents, comprised of, but not limited, to the following:

Documents

* Architectural and Civil site plan(s) showing, in addition to site survey requirements, landscaping, drainage, water retention ponds, sewage disposal and water-supply system, chilled water supply and return piping and such physical features that may adversely affect or enhance the safety, health welfare, visual environment, or comfort of the occupants.
* A statement on the site plan signed and dated by the Design Professional or his designated subconsultant, including identifying the number of existing trees, the number and size of required trees, and the number of proposed trees to be planted, and other relevant features.
* Soil testing results including a copy of the Geotechnical Engineer’s report on the site, and proposed method of treatment when unusual soil conditions or special foundation problems are indicated.
* Review of anticipated GBRS points and certification level; adjust attempted points as needed to meet target certification level. Provide updated GBRS credit scorecard or checklist.

Drawing(s) to include as a minimum, the following deliverables:

* Floor plans drawn at an architectural scale that will allow the entire facility to be shown on one sheet, without breaklines, and which indicates project phasing as applicable to the Scope.
* Floor plans drawn at 3/32 inch or larger scale showing typical occupied spaces or special rooms with dimensions, sanitary facilities, stairs, elevators, identification of accessible areas for the disabled and other program requirements.
* Floor plans drawn at 3/32 inch or larger scale showing typical spaces or special rooms with dimensions, indicating door and window layouts and other relevant features.
* For alterations or additions to an existing facility: Indicate the connections and ties-ins to the existing facilities, including all existing spaces, exits, plumbing fixtures and locations and any proposed changes thereto. Distinguish between new and existing areas for renovation, remodeling, or an addition and show demolition plans of areas to be removed.
* Furniture and Equipment plans draw at 1/8 inch or larger scale showing typical spaces or special rooms with dimensions, major lighting equipment and ceiling panel layouts.
* Reflected ceiling plans drawn at 3/32 inch or larger scale showing typical spaces or specials room with dimensions, major lighting equipment and ceiling panel layouts.
* Roof and miscellaneous plans to be drawn at 3/32 inch or larger scale showing dimensioned features, penetrations, equipment and other relevant features.
* Provide design narrative and plumbing fixture locations.
* All exterior building elevations to illustrate and indicate the scale, finish, size and fenestration of the facility.
* Sufficient building and wall sections to show dimensions, proposed construction material, and relationship of finished floor to finished grades.
* Preliminary Structural drawings to include plans and sections indicating systems, connections and foundations.
* Mechanical Drawings to include ceiling plans, location of grease trap(s), LP gas tank location, natural gas piping connection to existing utilities. Provide narrative description to include a description of proposed HVAC system equipment including the chiller, pumps, AHUs, cooling tower, electric duct heaters and other relevant features.
* Electrical Drawings include plans with lighting layouts for outdoors and major interior spaces. Show location of electrical rooms, transformers, emergency generator.
* Equipment and Furnishing Schedules to indicate major equipment that will be provided by the Contractor and those that will be provided by the DEPARTMENT or others.

Life-Safety plans to show exit strategy, rated doors, emergency wall openings, range and fume hoods, eye wash, emergency showers, ramps, vertical lifts, and other relevant features.

* By symbol, indicate fire extinguishers, fire alarm equipment, smoke vents, master valves and emergency disconnects, emergency lighting, emergency power equipment, fire sprinklers, exit signs, smoke and fire dampers, and other life-safety equipment relevant to the facility.
* By symbol, indicate connections and tie-ins to existing equipment.

For existing facilities where remodeled or renovated spaces are required and where an ADA and code conforming ramp cannot be utilized, document proposed vertical platform lifts or inclined wheelchair lifts and provide the following documents as part of or in addition to the required life safety plans:

* Floor plans of proposed vertical platform lifts including layout drawings showing corridor widths and exiting from the affected facility.
* Sketches of proposed inclined wheel chair lift to include layout drawings showing clear and affected areas of the following conditions: stairway width in the folded and unfolded position, the upper and lower platform storage locations, and the means of egress from the affected areas of the facility.

Outline Specifications (Edited Table of Contents)

* Organized to conform to the formats for outline specifications as established by the Construction Specification Institute’s current edition of Master Format on the date of execution of the Contract.
* Provide only those sections relevant to the project scope.
* Complete the Divisions 2 through 48 finishes, material, and systems including structural, HVAC, electrical, plumbing and specialty items, including fire sprinklers, alarm systems, electronic controls and computer networking components.
* They shall incorporate all GBRS requirements dictated by the credits being pursued for the project.

Other Requirements

* Provide a Life-Cycle Cost Analysis (LCCA) for review and approval. LCCA shall be by a commercially available life-cycle cost analysis program and as required by the State of Florida and the DEPARTMENT.
* Design to meet or exceed Florida Energy Efficiency Code for Building Construction (FEEC). Submit preliminary (input and output) FEEC forms.
* The Design professional shall advise the DEPARTMENT of any adjustments to the budget and shall submit a fully detailed Phase I estimate of probable construction costs, projected to the expected time of bid and containing sufficient detail to provide information necessary to evaluate compliance with the Construction Budget set for this project. Format estimate and provide detail matching the organization and content of the project’s Outline Specifications complete for division 2 through 48.
* Provide an updated Project Development Schedule reflecting development and anticipated schedules for all subsequent project activities.
* Preliminary selection of materials and finishes in digital format to establish design intent. Provide two schemes for selection and approval by the DEPARTMENT. Provide documentation demonstrating compliance with GBRS requirements.

Staff from each of the Design Professional’s major technical disciplines, and subconsultant’s shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolutions of their respective building or site systems.

The Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design professional shall not proceed with the next phase until the completion of all required presentations and reports are provided digitally and the Consultant receives written Authorization to Proceed with the next phase.

**PHASE II – 60%DESIGN DOCUMENTS SUBMITAL:**

After written Authorization to Proceed from DEPARTMENT and based on the approved Phase I documents, and any adjustments in the scope or quality of the project or in the Fixed Limit of Construction cost authorized by DEPARTMENT, the Design Professional shall prepare for approval by DEPARTMENT, Phase II (60% Construction) Documents setting forth in detail the requirements for the construction of the Project. The Design Professional is responsible for the full compliance of the design with all applicable codes. Phase II documents comprised of, but not limited to, the following:

Documents

Updated Florida Energy Efficiency Code for Building Construction (FEEC) (input and output) compliance forms, including calculations for mechanical systems, documenting energy efficiency ratio rating of HVAC equipment, electrical systems, insulation, and building envelope to be submitted to the DEPARTMENT for review and approval..

Calculations: Provide preliminary calculations for structural, mechanical and electrical systems.

Review of anticipated GBRS points and certification level; adjust attempted points as needed to meet target certification level. Provide updated GBRS credit scorecard or checklist.

Drawings

Site Plan(s) and detailing which, in addition to the Phase I requirements, indicate the following:

* Spot elevations, based on the civil grading plan for the perimeter of the new construction, sidewalk, or any other areas pertinent to the drainage of rainwater.
* Location of storm water services for new construction roof drainage.
* Parking lot lighting poles, location and type.
* Final location for manholes, handholds, and pull boxes.
* Layout of underground distribution systems (normal power emergency power, fire alarm, master clock, intercommunication, television, telephone, security, control and spares).
* Location of all site improvements, playground and equipment, street furniture, planters and other features.
* Details of all curbing, typical parking spaces (regular and handicap accessible), handicap ramps, directional signage, site lighting, flagpole and fence foundations, and any other site conditions pertinent to the scope of work.

A plan to delineate staging areas, site barriers, and other area designations to control the public from construction activities and traffic.

Landscape plans and details including, a plant list clearly noted and cross referenced, details for shrub and tree plantings, identification of plants and trees to remain, to be removed or relocated, and other necessary documentation.

Irrigation plans and details delineating the entire area of the project, and addressing necessary connections, alterations, repair or replacement of any existing irrigation.

Floor plans to include the following:

* All dimensions and any cross references explaining the extent of work, wall types, or other component, assembly or direction regarding the Construction.
* Wall chases, floor drains and rainwater leaders.
* Show structural tie columns and coordinate with the floor plan.
* Cross referenced interior elevations.
* Delineate and note all built-in cabinetry or equipment.
* Identify room and door numbers with all doors having individual numbers.

Demolition Plans

Indicate required demolition activities.

* Provide separate demolition plan(s) and other drawings (elevations, sections, etc.) if the scope of work includes demolition which is too excessive to indicate in drawings depicting new construction.
* Indicate notes on the extent of the demolition: address dimensions at location where partial walls are being removed or altered, existing room names and numbers, existing partition, equipment, plumbing, HVAC or electrical elements.
* Include notes dealing with protection of existing areas as a result of demolition.
* Delineate any medications to existing building involving structural elements within the structural documents rather than on the architectural.

Building elevations developed further than a Phase II and including delineation of building joints (including dimensionally located stucco control joints), material locations, elevation height, and other building features.

Building and wall sections to establish vertical controls and construction types. Include clear graphic, and notes on construction assemblies and systems to be used, dimensions, heights. Provide associated detailing to delineate solutions for difficult connections.

Reflected ceiling plans to indicate ceiling types, heights, ceiling grid layout, light fixture types, mechanical diffuser and return location, and sprinkler heads if area is sprinklered. Delineate and detail any dropped soffits or joint conditions between different materials. Coordinate with architectural, electrical, mechanical, and plumbing disciplines.

Roof Plans:

* Indicate all roof penetrations, including drains, scuppers, exhaust fans, and any other equipment on the roof. Show direction of roof slopes with elevations at the high and low points, type of roofing system to be used, expansion joints, typical parapet, and flashing details.
* Provide dimension to locate all penetrations and cross-reference details.

Large scale building details as appropriate to this level of document development and as required to establish vertical controls for the Project. Include clear graphics and notes on construction assemblies and systems to be used, and dimensions and heights. Provide associated detailing to delineate solutions for difficult connections.

Interior elevations of all rooms including cross references of cabinetry details, dimensions and heights, notes indicating type of equipment (and whether equipment is in or out of contract), wall materials, finishes, and classroom equipment, and accessories.

Details of casework as necessary to appropriately delineate custom or pre-manufactured casework. Provide appropriate schedules referencing manufacturer’s numbers or catalogs, finishes, hardware, and other construction characteristics.

Details of the following:

* Door jamb, head and sill conditions.
* Wall and partition types
* Window head, sill and jamb conditions, and anchorage methods shown, in lieu of referencing manufacturer’s standards.
* Interior signage to include classroom and building identification, emergency exiting and equipment signs, and any other items pertinent to the identification of the project. Coordinate with electrical discipline.
* Interior and exterior expansion control connections.
* Any other specialized items necessary to clearly express the intent of the project design.

Room finishes and door schedules coordinated with the floor plans, developed to 60% completion.

Structural foundation and framing plans, with associated diagrams, schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.

Mechanical Drawings:

* Provide double line ductwork layout and HVAC equipment layout drawings with related diagrams and schematic diagrams, schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.
* Provide dimensioned ½ inch scale plans, elevations and sections of the mechanical rooms showing service, clearance, room openings, nominal equipment size, ceiling height, duct clearance between bottom of joist and top of ceiling and any ceiling mounted lighting fixtures, electrical equipment or other building assembly or components etc.

Electrical

Provide drawings for the following systems:

* Electrical Drawings include plans with lighting layouts for outdoors and major interior spaces and electrical outlets for all major spaces. Show locations of electrical rooms, transformers, emergency generator. Also show locations of mechanical equipment such as chillers, compressors, and air handler units and their respective electrical connections and other relevant features.
* Lighting including circuiting and luminaire identification and switching. Also provide illuminance computer print-out for all indoor typical spaces and parking lots.
* Convenience outlets and circuiting, special outlets and circuiting, and power systems and equipment. Provide riser diagrams for all electrical systems including master clock, intercom, fire alarm, ITV, computer networking/telephone, and emergency and normal power distribution. Provide light fixture schedule.
* Panel schedule may be in preliminary form but circuitry must be included.
* Applicable installation details.
* General legend and list of abbreviations.
* Voltage drop computations for all main feeders.
* Short circuit analysis.
* Provide ½ inch scale floor plan and wall elevations for all electrical rooms.
* Indicate surge protection for main switchboard and electrical panels.

Plumbing

Provide drawings for the following systems:

* Provide fixture unit calculations, isometrics, one line diagram and riser details, schedule of common fixtures, and other relevant features.
* Provide plumbing equipment and fixture drawings with related diagrams, schedules, notes, detailing, and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.

Specifications

* Provide preliminary Project Manual including front-end documents. Completion of fill-in items in Bidding documents and other “Division 0” documents is not required.
* Provide a preliminary Division 1 based upon the standard documents provided by the Owner and edited by the Design Professional after consultation with the Owner to establish project specific requirements.
* Include progress set of all other Sections in Division 2 through 48 with each section developed to demonstrate to the Owner an understanding of the project and an appropriate level of developmental progress comparable to that of the drawings.
* Specification sections shall be organized to follow the Construction Specification Institute’s (CSI) current edition of Master Format with each section developed to include CSIs standard 3-part section and page formats with full paragraph numbering. They shall incorporate all GBRS requirements dictated by the credits being pursued for the project.

An updated Project Development Schedule, formatted as a preliminary construction schedule reflecting continued Project Development and illustrating anticipated schedules for all subsequent project activities including permitting submittal coordination with all agencies having jurisdiction of the Project, project phasing, site, mobilization, temporary facilities, general construction sequencing, anticipated substantial completion dates, DEPARTMENT occupancy, and all other significate Project events.

Color boards illustrating color selections, finishes, textures and aesthetic qualities for all finish materials for final review and approval by the DEPARTMENT, and to establish a final palette of material selections for development of subsequent specifications, schedules and other requirements for incorporation into the Contract Documents. This may be submitted digitally if approved by the DEPARTMENT. Provide documentation demonstrating compliance with GBRS requirements.

A letter from the Design Professional and each of the major technical disciplines and any necessary subconsultants or explaining how each previous comment concerning the project has been addressed or corrected.

Staff from each of the Design Professional’s major technical disciplines, and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building or site systems.

The Design Professional’s major technical disciplines and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building or site systems.

The Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design Professional shall not proceed with the next phase until the completion of all required presentations and reports are provided digitally and the Consultant receives a written Authorization to Proceed with the next phase.

**PHASE III – 100% CONSTRUCTION DOCUMENTS SUBMITTAL:**

After written Authorization to Proceed from DEPARTMENT and based on the approved Phase II documents and any adjustments in the scope of quality of the project or in the Fixed Limit of Construction Cost authorized by DEPARTMENT, the Design Professional shall prepare for approval by the DEPARTMENT, Phase III (100% Construction) Documents setting forth in detail the requirements for the construction of the Project. The Design Professional is responsible for the full compliance of the design with all applicable codes. Phase III documents are to be comprised of, but not limited to, the following.

General Requirements – Digital submittals are acceptable upon the approval of the DEPARTMENT.

Updated Florida Energy Efficiency Code for Building Construction (FEEC) (input and output) compliance forms. Submit five (5) copies signed and sealed by a State of Florida registered design professional.

* Signed and Sealed/Statements of Compliance: Only complete documents, properly signed and sealed by the Project Consultant and respective subconsultants, will be accepted for review. In addition, the documents shall contain a statement of compliance by the architect or engineer of record as follows: “To the best of my knowledge and belief these drawings and the project manual are complete, and comply with the Department of Transportation Requirements”.
* Submit engineering calculations for mechanical, electrical, and structural systems in a separately bound manual.
* Review of anticipated GBRS points and certification level; adjust attempted points as needed to meet target certification level. Provide updated GBRS credit scorecard or checklist.

Drawings

The drawings shall include all previous phase review requirements, and the Phase III 100% document requirements specified above, along with the following;

* Site plans including, but not limited to, area location maps, legal description of property demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical, civil/structural, and architectural site plans:
* Drawings include at a minimum, the following:
* Key sheets including a table of contents and statement of compliance by the design professional. Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans.
* Architectural drawings including floor plans, door, window and finish schedules, roof plans, elevations, sections, and details.
* Civil/Structural drawings including paving, traffic loops, service drives, parking, drainage, foundation plans, floor plans, roof plans, structural plans, structural plans sections, details, and pipe, culvert, beam and column schedules.
* Mechanical drawings, including floor plans, sections, details, riser diagrams, kitchen exhaust hoods, and equipment, fan and fixture and schedules.
* Electrical drawings including floor plans, section, details, riser diagrams, and fixture and panel schedules.
* The drawings should indicate that the approved mechanical/electrical systems, from the previous phases FEEC/LCCA analysis, have been incorporated into the documents.

Specifications

* Provide a complete Project Manual including front-end documents. Completion of fill in items in Bidding documents and other "Division 0" documents is not required.
* Provide a complete Division 1 based upon the standard documents provided by the Owner and edited by the Design Professional after consultation with the Owner to establish project specific requirements.
* Provide a complete set of all other Sections in Divisions 2 through 48 with each section developed to demonstrate to the Owner an understanding of the project and an appropriate level of developmental progress comparable to that of the drawings.
* Specifications sections shall be organized to follow the Construction Specification Institute’s (CSI) current edition of Master Format with each section developed to include CSI’s standards 3-part section and page formats with full paragraph numbering. They shall incorporate all GBRS requirements dictated by the credits being pursued for the project.

Staff from each of the Design Processional’s major technical disciplines, and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building site systems.

If requested, the Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design Professional shall not proceed with the next phase until the completion of all required presentations and reports are provided digitally and the Consultant receives a written Authorization to Proceed to the next phase.

**PHASE IV FINAL BID DOCUMENTS SUBMITTAL:**

After written Authorization to Proceed from the DEPARTMENT and based on the approved Phase III documents and any adjustments in the scope or quality of the project or in the Fixed Limit of Construction Cost authorized by the DEPARTMENT, the Design Professional shall prepare for approval by the DEPARTMENT, Phase IV (Release for Construction, or RFC) Documents setting forth in detail the requirements for the construction of the Project: The Design Professional is responsible for the full compliance of the design with all applicable codes. Phase IV documents are to be comprised of, but not limited to, the following:

General Requirements – Digital submittals are acceptable upon approval of the DEPARTMENT.

* This submittal is the official record set and shall be the bid documents.
* Signed and Sealed/Statements of Compliance: Only complete documents, properly signed and sealed by the Project Consultant and respective subconsultants, will be accepted for review. In addition, these documents shall contain a statement of compliance by the architect or engineer of record as follows: “To the best of my knowledge and belief these drawings, and the project manual are complete, and comply with the DEPARTMENT of Transportation Requirements”.
* Submit engineering calculations for mechanical, electrical, and structural systems in a separately bound manual.
* Update anticipated GBRS points and certification level; adjust attempted points as needed to meet target certification level. Provide updated GBRS credit scorecard or checklist.

Drawings

* The drawings shall include all previous phase review requirements, and the Phase IV final documents requirements specified above, along with the following:
* Site plans including, but not limited to, area location map, legal description of property, demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical civil/structural, and architectural site plans:
* Drawings include at a minimum, the following:
* Key Sheets including table of contents and statement of compliance by the Design Professional. Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans.
* Architectural drawings including floor plans, door, window and finish schedules, roof plans, elevations, sections and details.
* Structural drawings including foundation plans, floor plans, roof plans, structural plan, section, detail, and beam and column schedules.
* Mechanical Drawings including floor plans, sections, details, riser diagrams, kitchen exhaust hoods, and equipment, fans, and fixture schedules.
* Electrical drawings, including floor plans, sections, details, riser, diagrams, and fixture and panel schedules.
* The drawings should indicate the approved mechanical/electrical systems, from the previous phases FEEC/LCCA analysis, have been incorporated into the documents.

Specifications

* Provide a complete Project Manual including front-end documents. Completion of fill in items in Bidding documents and other "Division 0" documents is not required.
* Provide a complete Division 1 based upon the standard documents provided by the Owner and edited by the Design Professional after consultation with the Owner to establish project specific requirements.
* Provide a complete set of all other Sections in Divisions 2 through 48 with each section developed to demonstrate to the Owner an understanding of the project and an appropriate level of developmental progress comparable to that of the drawings.
* Specifications sections shall be organized to follow the Construction Specification Institute’s (CSI) current edition of Master Format with each section developed to include CSI’s standards 3-part section and page formats with full paragraph numbering. They shall incorporate all GBRS requirements dictated by the credits being pursued for the project.

Upon completion of the Final Bid Documents, the Design Professional shall submit to the Owner five (5) copies of the Drawings, Specifications, reports, programs, a final updated Project Development Schedule, a final updated State of Probable Construction Cost and such other documents as reasonably required by Owner.

All documents for this phase shall be provided in both hard copy and in electronic media. The DEPARTMENT will approve Phase IV documents for submission to the DEPARTMENT for review and approval.

Architectural Plans

## Architectural Program Review/Verification

## Key Sheet and Index of Sheets

## General Notes, Abbreviations, Symbols, and Legend

## Life Safety Plan(s)

## Site Plan(s)

## Floor Plan(s) (Small Scale)

## Floor Plan(s) (Large Scale)

## Exterior Elevation(s)

## Roof Plan(s)

## Roof Details

## Interior Elevation (s)

## Rest Room Floor Plan(s) (Enlarged)

## Rest Room Elevation (s)

## Building Section(s)

## Stair Section, Enlarged Stair Plan and Details

## Reflective Ceiling Plan(s)

## Room Finish Schedule or Finish Plan

## Door and Window Finish Schedule

## Door Jamb Details(s) and Window Details

## Exterior Wall Section(s)

## Interior Wall Section(s)

## Overhead Door Detail(s)

## Curtain Wall Detail(s)

## Fascia, Soffit and Parapet Details

## Signage Detail(s)

## Miscellaneous Detail(s)

## Repetitive Sheets

## Design Narrative Reports

## Permitting

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Field Reviews

## Technical Meetings

31.34.1 FDOT

31.34.2 Local Governments (cities)

31.34.3 Local Governments (counties)

31.34.4 Other Meetings

31.34.5 Progress Meetings

31.34.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Meeting with Independent Peer Review

## Supervision

Structural Plans

## General Notes, Abbreviations, Symbols, and Legend

## Foundation Plan(s) (Small Scale)

## Foundation Plan(s) (Large Scale)

## Slab Plan(s) (Small Scale)

## Slab Plan(s) (Large Scale)

## Slab Placement Plan(s)

## Slab Placement Detail(s)

## Foundation Section(s)

## Foundation Detail(s)

## Slab Section(s)

## Slab Detail(s)

## Roof Framing Plan(s) (Small Scale)

## Roof Framing Plan(s) (Large Scale)

## Roof Loading Plan(s) and Detail(s)

## Roof Section(s)

## Roof Detail (s)

## Bearing Wall Section(s)

## Bearing Wall Detail(s)

## Column Section(s)

## Column Detail(s)

## Miscellaneous Sections

## Repetitive Sheets

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Fields Reviews

## Technical Meetings

31.64.1 FDOT

31.64.2 Local Governments (cities)

31.64.3 Local Governments (counties)

31.64.4 Other Meetings

31.64.5 Progress Meetings

31.64.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Independent Peer Reviews

## Supervision

Mechanical Plans

## General Notes, Abbreviations, Symbols, Legend, and Code Issues

## Plan(s) (Small Scale)

## Plan(s) (Large Scale)

## Details(s)

## Section(s)

## Piping Schematic(s)

## Control Plan(s)

## Schedule(s)

## HVAC Calculations

## Life Cycle Cost Analysis

## Repetitive Sheets

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Field Reviews

## Technical Meetings

31.83.1 FDOT

31.83.2 Local Governments (cities)

31.83.3 Local Governments (counties)

31.83.4 Other Meetings

31.83.5 Progress Meetings

31.83.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

Plumbing Plans

## General Notes, Abbreviations, Symbols, Legend, and Codes Issues

## Plan(s) (Small Scale)

## Plans(s) (Large Scale)

## Isometric(s) (Large Scale)

## Riser Diagram(s)

## Details(s)

## Repetitive Sheets

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Field Reviews

## Technical Meetings

31.98.1 FDOT

31.98.2 Local Governments (cities)

31.98.3 Local Governments (counties)

31.98.4 Other Meetings

31.98.5 Progress Meetings

31.98.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

Fire Protection Plan

## General Notes, Abbreviations, Symbols, Legend, and Code Issues

## Fire Protection Plan

## Riser Diagram, Details, and Partial Plans

## Hydraulic Calculation

## Repetitive Sheets

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Field Reviews

## Technical Meetings

31.111.1 FDOT

31.111.2 Local Governments (cities)

31.111.3 Local Governments (counties)

31.111.4 Other Meetings

31.111.5 Progress Meetings

31.111.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

Electrical Plans

## General Notes, Abbreviations, Symbols, Legend, and Code Issues

## Electrical Site Plan

## Lighting Plan(s)

## Lighting Fixtures Schedule(s)

## Lighting Fixtures Detail(s)

## Lighting Protection Plan(s)

## Lighting Protection Details

## Power Plan(s)

## Power Distribution Riser Diagram(s)

## Panel Board Schedule(s)

## Data Plan(s)

## Data Detail(s)

## Communication Plan(s)

## Communication Detail(s)

## Security Alarm System Plan(s)

## Miscellaneous Detail(s)

## Repetitive Sheets

## Energy Analysis

## Other Pertinent Project Documentation

## Cost Estimate

## Technical Special Provisions and Modified Special Provisions Packages

## Fields Reviews

## Technical Meetings

31.137.1 FDOT

31.137.2 Local Governments (cities)

31.137.3 Local Governments (counties)

31.137.4 Other Meetings

31.137.5 Progress Meetings

31.137.6 Phase Review Meetings

## Quality Assurance/Quality Control

## Independent Peer Review

## Supervision

## GBRS Certification

* + 1. **GBRS Coordination Meeting**
		2. **GBRS Commissioning**
		3. **GBRS Green Credit**

## Coordination

## Building Information Modeling (BIM)

# NOISE ANALYSIS AND NOISE BARRIER DESIGN

## Noise Study

The CONSULTANT will perform this task to enable the DEPARTMENT to obtain the Project’s LDCA. If the Project is determined to be a Type III project (based on 23 CFR §772.5), the CONSULTANT will state that in the Environmental Document.

The CONSULTANT shall perform noise analysis, noise abatement evaluation, and assessment of construction noise and vibration in accordance with Part 2, Chapter 18 of the PD&E Manual and the Department’s Traffic Noise Modeling and Analysis Practitioners Handbook. Analysis of special use locations shall be performed using the DEPARTMENT’s “A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations” document and shall be coordinated with the District Environmental Management Office.

The CONSULTANT will attend a noise study methodology meeting with the DEPARTMENT prior to beginning analysis.

The CONSULTANT will document methodology and results of noise analysis and noise abatement evaluation in the Noise Study Report (NSR). The CONSULTANT will provide an electronic copy of the NSR, in PDF format, as well as all TNM input/output files, and “readme” file that support the information documented in the report.

## Noise Barrier Evaluation

After LDCA is granted and during preparation of final design plans, the CONSULTANT shall review the PD&E commitments regarding feasible and reasonable noise barriers. The CONSULTANT will coordinate with the DEPARTMENT Project Manager and the District Environmental Management Office prior to initiating any noise analysis to discuss possible effects of design changes on the validity of the PD&E noise study commitments.

The CONSULTANT shall perform a land use review to identify noise sensitive sites that may have received a building permit subsequent to the PD&E noise study but prior to the Date of Public Knowledge (DPK), or to identify areas where the land use may have changed or is subject to change. The CONSULTANT shall perform a noise analysis on new noise sensitive sites meeting DPK requirements that were not considered during the PD&E noise study.

After coordination with the District Environmental Management Office, the CONSULTANT shall perform analysis of special use using the DEPARTMENT’s “A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations” document.

The CONSULTANT shall identify any design changes that would affect noise barrier feasibility and reasonableness determination documented in the Environmental Document and NSR. The CONSULTANT will evaluate proposed noise barriers (locations, barrier heights and lengths) to identify any engineering conflicts or constraints.

The CONSULTANT shall re-analyze noise barrier(s) for feasibility and reasonableness and re-establish barrier height and length if design constraints require alteration in a barrier’s location or dimensions. In addition, the CONSULTANT will also consider the overall visual appearance in relation to the existing and proposed site conditions.  This includes smoothing the profile along the top of a noise barrier to the extent possible while minimizing any loss in the amount of noise reduction provided and extending the ends of a noise barrier to cover additional receivers. Extending the ends of a noise barrier will not exceed the cost criteria and will only be performed when it is appropriate and in the public interest. The CONSULTANT will document in the NSR Addendum any resolutions to engineering conflicts or issues that require modification to or preclude construction of a noise barrier.

After reestablishing the recommended height and length of the barrier(s), the CONSULTANT shall coordinate with design engineers and the District Environmental Management Office to include the barrier(s) on the roadway plan and detail sheets.

## Public Involvement

If noise barriers are determined to be feasible and cost reasonable, the CONSULTANT shall carry out the public involvement and surveys necessary to report to the DEPARTMENT whether the majority of the impacted and/or benefited receptors desire the construction of a noise barrier. Input shall also be obtained from the public regarding barrier aesthetics (color and texture) on one or both sides of the barrier. The CONSULTANT shall be responsible for coordinating with local government officials.

At a minimum, the following tasks shall be completed by the CONSULTANT for public involvement purposes:

* Identification of impacted and/or benefited property owners.
* Identification of renters and non-residing property owners (for a property that may be rented).
* Preparation of a mailing list (property owners, renters and non-residing property owners).
* Preparation of a summary package (including an information letter, aerial showing the noise barrier location, and a survey form to document the recipient’s position) to be sent to property owners and occupants/non-residing property owners informing them of the proposed noise barrier.
* If necessary, preparation of additional mailings and/or door-to-door/telephone surveys until a majority decision is obtained or until directed by the District Noise Specialist.
* Tallying of survey results.
* Noise barrier aesthetics coordination.
* Public meetings logistics (including arranging the meeting location, advertisements, displays, etc.).
* Responding to public inquiries on an individual basis in coordination with the DEPARTMENT.

The CONSULTANT shall bring to the attention of the DEPARTMENT unforeseen conditions and issues which are relevant to the project decision. Other than noise barrier length, height and location, the CONSULTANT shall abstain from indicating preferences for any of the barrier options prior to or during contact with the property owners unless specifically requested to do so by the DEPARTMENT. Following the public involvement process, the CONSULTANT shall produce a final noise barrier recommendation that identifies the starting and ending points for all noise barriers, the top elevation(s), and the aesthetic elements to be provided (e.g. color, texture, graphics).

## Outdoor Advertising Identification

The CONSULTANT shall identify potential noise barriers that may block the view of an existing lawfully erected sign that is governed by and conforms to state and federal requirements for land use, size, height, and spacing consistent with the requirements of Florida Statute (FS) 479.25 and the FDOT Noise Policy (Part 2, Chapter 18 of the PD&E Manual). The CONSULTANT shall notify the Department’s Project Manager of a potential noise barrier(s) that may affect the visibility of a legally permitted outdoor advertising sign. Resolution of the potential conflict shall be documented in the NSR and NSR Addendum, and summarized in the environmental document, as appropriate.

## Noise Study Report (NSR) Addendum

The results of noise barrier evaluations performed by the CONSULTANT shall be documented in the NSR Addendum, in accordance with Chapter 264 of the FDOT Design Manual (FDM). The NSR Addendum shall include the results of the computer modeling (submitted electronically), public involvement activities and final noise abatement commitments.

## Technical Meetings

Prior to proceeding with the noise barrier analysis, the CONSULTANT shall discuss and coordinate with the appropriate District Project Manager and the District Environmental Management Office staff. The purpose of this discussion will be for the DEPARTMENT to provide the CONSULTANT with all pertinent project information and to confirm the methodologies to be used to conduct the noise analysis. This meeting is mandatory and should occur after the Notice to Proceed is given to the CONSULTANT. It is the responsibility of the CONSULTANT to undertake the necessary action (i.e., phone calls, meetings, correspondence, etc.) to ensure that District Project Manager and the District Environmental Management Office staff is kept informed of the noise analysis efforts so that these tasks are accomplished in a manner that will enhance the overall success of the project.

## Quality Assurance/Quality Control

QA/QC reviews will be performed for all NSR Addendums submitted to the DEPARTMENT. Documentation of the QA/QC will be provided to the District Project Manager.

The CONSULTANT shall ensure that the noise barrier(s) location(s), length, height, and aesthetics as shown on the final design plans are consistent with the results of the noise barrier evaluation and recommendation documented in the original NSR and/or the NSR Addendum.

## Supervision

## Coordination

# INTELLIGENT TRANSPORTATION SYSTEMS ANALYSIS

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

## ITS Analysis

The CONSULTANT shall review the previously prepared and approved preliminary engineering report, typical section package, traffic technical memorandum, adjacent projects programmed by the DEPARTMENT and other local highway agencies, and proposed geometric design alignment to identify impacts to existing ITS components (if applicable) and proposed ITS field device placements. The CONSULTANT shall review the project intelligence files provided by the District’s asset maintenance agent(s) related to all previously constructed ITS projects and maintenance documentation for the project corridor to ensure all cited ITS elements are included in this project for replacement and/or restoration.

**Systems Engineering Analysis**

The CONSULTANT shall perform a systems engineering analysis including a Concept of Operations (ConOps), Project System Engineering Management Plan (PSEMP), Requirements Traceability Verification Matrix (RTVM), and other documents as necessary based on project complexity and risk as required by Florida Department of Transportation Systems Engineering and Intelligent Transportation Systems (ITS) Architecture Procedure (Procedure Number 750-040-003).

**Design Guidelines**

The CONSULTANT shall use all applicable DEPARTMENT requirements and guidelines, including, but not limited to, the FDM, Standard Plans, 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. ***[Associated Work]***

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 TSM&O 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) or, when applicable and approved by the DEPARTMENT, FDOT’s Innovative Product List (IPL) and are supported within the SunGuide® software or other software approved by the DEPARTMENT.

**Closed Circuit Television (CCTV) Subsystem**

CCTV devices shall be spaced and located as required to meet the Project requirements, Standard Specifications, FDM Section 233.10, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT. The CONSULTANT shall be responsible for the design and exact field locations for the camera assemblies. The camera subsystem shall provide overlapping coverage to overcome visual blockage and to monitor DMS messages, and toll-amount DMS, as directed by the DEPARTMENT.

The CONSULTANT shall select CCTV technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT. CCTV assemblies may include a camera lowering device (CLD), as directed by the DEPARTMENT.

Per FDM 233.6 and FDM 233.10, the position, height, and design of each camera pole shall be finalized during the design phase of the project. The maximum distance of this type of camera from the DMS sign is specified in FDM. The minimum distance from the DMS sign shall be determined by the CONSULTANT to provide full viewing of the DMS legends based on the analysis performed and approved by the District ITS office. Such analysis includes viewing angle, horizontal and vertical control determination based on the CCTV camera manufacturers that are on APL.

If required by the DEPARTMENT, the CONSULTANT shall determine the camera location by performing videography study at each proposed camera site. The study shall include video at the proposed camera location and elevation with respect to the roadway elevation. The CONSULTANT shall identify the final number and locations of the camera assemblies based on the videography study.

The camera system 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 foundation to minimize the potential for vibration. The CONSULTANT shall prepare cross plan sheets showing details of horizontal and vertical clearances of the proposed equipment with identified utilities.

**Vehicle Detection Subsystem**

Vehicle detection devices shall be spaced as required to meet the Project requirements (speed, volume, and occupancy detection), Standard Specifications, FDM Section 233.9, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select vehicle detection technology to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT. Detection technologies include induction loops, video imaging, microwave, thermal imaging, wireless magnetometer, and vehicle probe detection systems. In the case of the arterial management systems with a systemwide signal controlled intersections, the CONSULTANT shall select vehicle detection technology type that is currently being used by the local maintaining agencies, if applicable..

The CONSULTANT shall be responsible for the design of non-intrusive vehicle detection subsystem for limited access roadway facilities, arterials and sub-arterials with signalized intersections as required by the DEPARTMENT and by local maintaining agencies and specified in the scope of services. 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 the number of location variables identified during the design phase.

**Automatic Vehicle Identification (AVI) Subsystem**

AVI detection devices shall be spaced as required to meet the Project requirements, Standard Specifications, FDM 233.9.5, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select AVI technology to meet the Project needs, Standard Specifications, FDM, District-specific requirements, ConOps requirements, and as approved by the DEPARTMENT.

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

**Dynamic Message Sign (DMS) Subsystem**

The CONSULTANT shall be responsible for the design of the DMS subsystem for the roadway facilities. Both expressway and arterial dynamic message signs (DMS) shall be located to meet the Project requirements, Standard Specifications, FDM 233.11, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT. All FDOT FDM requirements shall be met for DMS locations. DMS locations shall be designed in conjunction with the Project's master signing design. 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 systems shall enable full control of the DMS from the TMC facilities. All DMS hardware, software and related infrastructure components shall be fully compatible with SunGuide® Software. All DMS shall include a dedicated confirmation CCTV 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.

**Arterial Dynamic Message Sign (ADMS) Subsystems (Front Access)**

ADMS shall be spaced as required to meet the Project requirements, Standard Specifications, FDM Section 233.11, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select ADMS technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The ADMS shall be placed for the purpose of Traffic Incident Management (TIM), Integrated Corridor Management (ICM), Active Arterial Management (AAM), and other applications as directed by the DEPARTMENT. ADMS on arterial roadways are to be placed at a distance from the on-ramps of the limited access facilities determined by traffic analysis of the arterial back of queue and to allow time for the motorists to read the sign messages. Communication with ADMS shall be designed so that they can be managed and maintained by the District TMC. All FDOT FDM requirements shall be met for ADMS locations. ADMS locations shall be designed in conjunction with the Project’s master signing design on major widening projects. All ADMS shall include a dedicated confirmation CCTV camera that allows for visual verification of the messages posted on the DMS by a TMC Operator (if desired by the District).

**Embedded Dynamic Message Signs**

Embedded DMS shall be spaced as required to meet the Project requirements, Standard Specifications, FDM Section 233.11, District-specific requirements, express lanes requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select Embedded DMS technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT design shall include Embedded DMS signs when the project is part of a toll facility, part of an express lanes facility, part of a truck parking availability system, or other usage described in the ConOps, as required by the DEPARTMENT. The Embedded DMS signs are comprised of DMS panels embedded in a static sign panel. The Embedded DMS may have one or more line of text depending upon the application. Embedded DMS are to be located on the main line, express lanes, ramps, and on the crossroads as required to meet the project needs.

All Embedded DMS shall include a dedicated confirmation CCTV camera that allows for visual verification of the messages posted on the Embedded DMS by a TMC Operator (if desired by the District).

**Dynamic Trailblazing Sign Subsystems (DTBS)**

DTBS shall be spaced as required to meet the Project requirements, Standard Specifications, FDM, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT to support evacuation, incident management, detour management, special event traffic management, active arterial management and/or integrated corridor. If directed by the DEPARTMENT, the CONSULTANT shall develop the well-defined active traffic management detour plan.

The CONSULTANT shall select DTBS technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall design the DTBS to recommend directions of travel to motorists. The active DTBS Embedded DMS and/or blank-out signs shall be sized based on the proposed legends or cardinal directions used for the active traffic management detour plans. The DTBS shall be connected to the fiber optic network to be operated and managed at the TMC. The DTBS will be mounted on new support structure or if mounted on existing structure, the required structural analysis shall be performed for the existing structure. The size and types of dynamic and active portion of the signs shall be coordinated with the District ITS office prior to design.

**Roadway Weather Information System (RWIS)**

RWIS shall be spaced as required to meet the Project requirements, Standard Specifications, FDM 233.12.1, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select RWIS technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall develop or modify Technical Special Provisions or Modified Special Provisions for RWIS based upon the unique needs of the project. The CONSULTANT shall ensure that, each RWIS site consists of a remote processing unit (RPU), communication hardware, and determine the site-specific components from below, as required by the DEPARTMENT:

* Fog/smoke Detection sensor
* Classifying Precipitation
* Precipitation Occurrence Sensor
* Water Film Height Sensor
* Air Temperature/Relative Humidity Sensor
* Wind Speed and Direction Sensor
* RWIS Tower/Pole Structure, foundation, base, and cabinet with electrical service, and lighting protection & grounding assembly; and,
* Communication hardware.

When required by the DEPARTMENT, the Water Film Height Sensor shall be included in the RWIS design for hydroplaning detection and to activate advance warning signs with flashing beacons. The RWIS Water Film Height Sensor shall be a fully autonomous Non-Invasive Road Weather Intelligent Sensor (NIRS) with optical principles mounted above the roadway that can measure the water film depths and temperature for the purpose of determining hydroplaning conditions and warning the motoring public. In addition, it shall communicate via 120 volts active current (VAC) Web Relay Controller with one (1) or more Flashing Beacon Warning Signs, and Fiber Optic-Based Communications to the TMC. It shall include all ancillary components required for a complete and acceptable operational system. This ITS subsystem shall be connected to the existing Department ITS and fiber optic network via a proposed new Managed Field Ethernet Switch (MFES) inside a proposed local hub. This ITS subsystem shall provide real time data and analog outputs for roadway water film height and ice detection layer thickness and values.

**Traffic Signal Data Subsystem**

The Traffic Signal Data Subsystem shall be provided at locations as required to meet the Project requirements, Standard Specifications, FDM, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select Traffic Signal Data Subsystem technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall design the Traffic Signal Data Subsystem to include, as a minimum, Advance Transportation/Traffic Controllers (ATC) provided at the signalized intersections. The ATC shall include an open architecture hardware and software platform to interface with the latest network-wide supervisory Advanced Traffic Management System (ATMS) software currently being used by the local highway agencies supporting a wide variety of Intelligent Transportation Systems (ITS) applications. This includes traffic management, safety, and security.

The CONSULTANT shall design other data-related applications for the Traffic Signal Data Subsystem, as directed by the DEPARTMENT, such as for basic Connected and Automated Vehicles (CAV) elements, ramp signaling, reliable data collection and analytics using Automated Traffic Signal Performance Measures (ATSPM), and edge computing capabilities.

**Connected and Automated Vehicles (CAV) Subsystems**

The CAV Subsystem shall be provided at locations as required to meet the Project requirements, Standard Specifications, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select CAV Subsystem technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall develop or update CAV Subsystem Technical Special Provisions or Modified Special Provisions (MSP/TSP) for Roadside Units (RSU) and other CAV Subsystem features based upon the unique needs of the project. The CONSULTANT shall ensure that each RSU site consists of a remote processing unit (RPU), communication hardware, mounting hardware, cabling, power supply, and other site-specific components as required. The CONSULTANT shall develop RSU requirements for communication between connected vehicles and roadside equipment such as ATC, detection systems, and warning beacons that are compatible with both Cellular Vehicle to Everything (C-V2X) communication and Dedicated Short Range Communication (DSRC) national standards and protocols. The CONSULTANT shall also coordinate FCC licensing requirements for two-way real-time C-V2X communication and DSRC, depending on national standards and policies, with the DEPARTMENT’s Statewide TSM&O program office. The MSP/TSP shall address integration with the DEPARTMENT’s Security Management Credential System (SCMS) requirements.

The MSP/TSP shall require RSU field equipment to be on the FDOT APL, the FDOT IPL or, as a minimum, tested at the Traffic Engineering Research Laboratory (TERL) prior to approval for use on the project. The MPS/TSP shall require RSU field equipment to be supported by the central system in the TMC and to be capable of transmitting required messages and data to and from the roadway and users via vehicle on-board units (OBU) and other mobile devices over the applicable communication schema in compliance with industry standards.

When used inside a traffic signal cabinet, the CONSULTANT shall ensure the cabinet is equipped with ATC and the RSU is connected to the signal controller, Ethernet switch, and the above ground radio, and GPS antennas.

When used on the interstate, the CONSULTANT shall develop the TSP/MSP to ensure the RSU is housed inside a corrosion-resistant enclosure that is NEMA 4X with IP66 rating, and meets the system requirements broken into the following categories:

* Power
* Environmental
* Physical
* Functional
* Performance
* Interface

**Wrong-way Vehicle Detection System (WWVDS)**

The WWVDS shall be provided at locations as required to meet the Project requirements, Standard Specifications, FDM, Traffic Engineering and Operations Bulletin 19-03, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select WWVDS technologies to meet the Project needs, ConOps requirements, Traffic Engineering and Operations Bulletin 19-03, and as approved by the DEPARTMENT.

The CONSULTANT shall select the WWVDS technology for compatibility with the District SunGuide™ software version and to meet the project needs. The WWVDS shall collect and process data locally prior to sending a notification to the TMC. The CONSULTANT shall design the WWVDS for remote configuration, calibration, monitoring, and diagnostic of real-time traffic activities from the TMC using the SunGuide™ software and software provided by the detection system vendor. The WWVDS shall perform to meet the project requirements under all environmental and traffic conditions expected for the corridor. The WWVDS shall detect wrong way drivers within the specified accuracy. Vibration and shocks shall not affect the performance of the system. The WWVDS and highlighted signs shall be hardwired for power and communications to the main controller. Design shall be in accordance with Traffic Engineering and Operations Bulletin 19-03.

**Structural Health Monitoring System (SHMS) Connectivity Subsystem**

The SHMS connectivity shall be provided at locations as required to meet the Project requirements, Standard Specifications, FDM, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select SHMS connectivity technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall design the SHMS connectivity subsystem which includes a fully operational ITS cabinet containing the data acquisition logger, MFES, UPS, RPMU, and all necessary surge protection devices to receive the data from various optical sensors or non- optical sensors connected to the local data acquisition enclosures installed inside the bridge arches, attached inside the girders, and the stayed cables supporting the main spans. The CONSULTANT shall coordinate with the structural and SHMS disciplines to provide for a collapsed ring topology of the communication scheme and provide for connectivity to the fiber optic network. The SHMS data shall be transmitted via the existing and proposed 10 Gigabits per second fiber optic cable plant to the designated remote operation center for monitoring by the District Bridge Operations and Maintenance.

The CONSULTANT is not responsible for the design and location of the SHMS sensors, sensor types, electrical, and data acquisition enclosures and hardware.

**Ramp Signaling Subsystem (RSS)**

The RSS shall be provided at locations as required to meet the Project requirements, Standard Specifications, FDM 233.12.2, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select RSS technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

The CONSULTANT shall design the Ramp Signaling Subsystem at the locations determined by the Department as part of previous traffic studies that justified the installation. The RSS shall provide the TMC the ability to remotely control the RSS via current controlling software supported by the SunGuide™. The RSS shall include the following components:

* Cabinet equipment including: controller, modem, display panel, detector amplifiers, output/power distribution assembly, load switches, current monitor, flasher for warning sign beacon, ability to support continuous operation for a minimum 2 hours in the event of power loss, and report power management unit.
* Supporting infrastructure including: conduits; RSS monitoring CCTV; two-head (red and green) LED signal display; and, LED flashing beacons.
* Detection including: mainline (upstream and downstream), RSS demand and passage, and ramp queue detectors.
* Signing including: Ramp Signaled When Flashing (W3-4); One Vehicle per Green (R10-13); Two Vehicle per Green (Modified R10-13), if needed; All Vehicles Stop on Red; One car per Green Each Lane (R89-1); Right Lane Ends (W4-2R); Merging Traffic (W4-1)
* Pavement markings including: 12-inch-wide stop bar running from edge line to edge line and 6-inch-wide solid white centerline for a minimum distance of 250 feet upstream of the stop bar and terminated at the stop bar on two-lane metered ramps.

**Truck Parking Availability System (TPAS)**

The TPAS shall be designed at locations as required to meet the Project requirements, Standard Specifications, FDM, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall select TSPA Subsystem technologies to meet the Project needs, ConOps requirements, and as approved by the DEPARTMENT.

**ITS Software Subsystem**

The ITS Software Subsystem shall be provided as required to meet the Project requirements, Standard Specifications, FDM, District-specific requirements, guidance from the ConOps, and as approved by the DEPARTMENT.

The CONSULTANT shall develop ITS Software Subsystem requirements to meet Project needs, the ConOps, and as approved by the DEPARTMENT.

## Communications Subsystem Analysis

See FDM 233.4, 233.5, and 233.8 for communication systems design requirements. The CONSULTANT shall review the existing communication files in GIS or PDF format provided by the DEPARTMENT and or the local highway agencies and create an overall communication map to summarize mapping data associated with the fiber optic conduits and cables connectivity. This provides a communication location-based intelligence for the project and will be used in the communication design. In addition, the CONSULTANT shall include high level overview of how the project corridor(s) are connected to the TMC communication network including the existing and proposed master communication hubs.

The CONSULTANT shall develop a communication 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 the TMCs, and any other communication links or connections required to meet the project goals and ConOps guidance. 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.

The plan must include loss budget analysis and calculations for the optical cable lengths and bandwidth. The CONSULTANT shall provide the calculations confirming the loss budgets are in conformance with allowable values established in the standard specifications. The CONSULTANT shall calculate the loss budgets based on distance, anticipated fusion splices, and connectors to ensure the cabling will work with the links intended to be used. After installation, the loss budget for the cabling is compared to the actual test results during final acceptance to ensure the cable plant is installed properly.

For major widening projects where the existing underground fiber optic communication cables and ITS sites are impacted, the CONSULTANT shall review the roadway, drainage, and TTCP plans to analyze and identify the magnitude of impact to the existing ITS infrastructure. The CONSULTANT shall prepare the Maintenance of Communication (MOC) concept that supports the final design in efforts to maintain and sustain center-to-field device connectivity and operability to the existing ITS field devices previously deployed along the project corridor. The MOC analysis shall consider and mitigate the impacts of the project's various construction phases so as to sustain center-to-field devices connectivity and operability in order to maintain operational quality as a minimum at the level provided prior to construction start and minimizing down time of the critical devices.

After approval of the plan, the CONSULTANT shall submit a revised plan including a detailed design analysis for each submittal. The CONSULTANT’s communication 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).

## Grounding, Surge Suppression, and Lightning Protection Analysis

The CONSULTANT shall be responsible for a complete and reliable grounding, surge suppression, and lightning protection design to provide personnel and equipment protection against faults, surge currents and lightning transients. When Standards Plans depicting air terminal device heights above poles or equipment are not available, the height of the air terminal above poles or equipment shall be determined using applicable standards. See FDM 233.3.8 for additional design requirements.

## Power Subsystem

See FDM Section 233.3 for ITS Power Design Requirements. The CONSULTANT shall be responsible for 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 ensure power reliability, the CONSULTANT shall design a power distribution and backup system consisting of, at a minimum, underground power conduits and conductions, transformers, diesel fuel generators, automatic transfer switches (ATS), uninterruptable power supply (UPS), electrical distribution panel, equipment framing, reinforced concrete pad for the generator, site drainage, site security fencing and security camera (as directed by the DEPARTMENT), power command and control, Ethernet-based Modbus, and ITS Cabinet with Remote Power Management Unit (RPMU), 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 a 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.

## Voltage Drop Calculations

See FDM Section 233.3.6 for voltage drop design requirements. 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 of the conductor or conductors 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 covering electrical path from all power sources to each ITS site connected to each power source. All voltage drop calculations shall allow for future expansion of ITS infrastructure, if identified in the Project ConOps.

## 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:

* Quantities and engineers estimate for all applicable items on plans
* Phase submittal checklist
* Three-way quantity check list
* Structural calculations for all structures
* Power Design Analysis, voltage drop calculations, and load analysis calculations
* Correspondences including utility design meeting and conflict resolutions
* Electrical Power Service Letter of Confirmation
* Subsurface Utility Exploration tables for each ITS support structure

## Existing ITS System

The CONSULTANT shall research any required legacy system or system components that may be impacted by 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.

The project intelligence files provided by the DEPARTMENT and researched by the CONSULTANT may include the following documents:

* Existing ITS field devices compared to the latest FDOT Standards and District requirements: device type, model, manufacturer, capabilities, condition, date installed, and historical maintenance logs. The DEPARTMENT will provide the ITS FM data, when available, to the CONSULTANT upon request.
* Condition of support structure(s), and associated mechanical brackets, and vertical hangers.
* Electrical power related to the existing demand loads, sizes of the main and branch circuit breakers for the service disconnect, underground or overhead service feeder sizes from the power company transformer to the meter base.
* Existing fiber optic allocation as a graphical display of the existing buffer tube for the ITS devices at the Managed Field Ethernet Switch points, the buffer allocated for the existing local communication hubs, given number of connections within a corridor while maintaining the maximum number of physical connection on a specific Local Area Network (LAN), and local hubs to existing master communication hubs.
* A KMZ file of the existing fiber optic pull and splice boxes, ITS devices, local hubs, power service poles with latitudes and longitudes data.
* Underground infrastructure.
* Proximity to utilities.
* Other field reconnaissance as necessary to develop a complete ITS design package.

## 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 motorist.

The CONSULTANT shall perform field observation of the existing traffic patterns during the normal peak hours to determine the optimal placement of DMS, ADMS, CCTV cameras, and detection sites.

The CONSULTANT shall perform lane closure analysis and determine the time periods where construction activities can be performed. The lane closure analysis shall be performed using the available traffic data.

In cases when traffic technical memorandums have been performed by others and are available through the DEPARTMENT, or available from TMC CCTV camera surveillance sites, the CONSULTANT shall use these reports and information in lieu of performing traffic engineering and safety analysis.

The CONSULTANT shall coordinate with District's TSM&O Office for additional information regarding existing Incident Management and TMC Operational Procedures to address maintenance of ITS and post construction requirements.

## 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 all proposed ITS devices and electrical service points, conduits, pull boxes, conductor sizing, generators, and transformers. All existing ITS infrastructure shall be referenced to the new ITS plan sheets (if applicable).

## 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 sizing, fiber optic splicing, connections communications hubs, etc.

## ITS Poles and Overhead Structures Elevation Analysis

See FDM Section 233.6 for ITS Poles and Structures design requirements. 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.

The CONSULTANT shall coordinate with roadway, structures, and drainage disciplines to confirm that the elevations are updated during various design phases, and the ITS poles and overhead structure details are revised and designed with the correct heights, lengths, foundation depths and sizes.

## DMS Sign Panel Design Analysis

The CONSULTANT shall design all ITS signing in conjunction with the Roadway Master Signing. This includes any static sign and panel that includes changeable message elements. Expressway and arterial full size DMS shall not be co-located with other static signs. ***[If desired by the District.]***

The DMS sign panel analysis applies to walk-in DMS, front access ADMS, and embedded Toll Amount and Status DMS and Dynamic Trail Blazing Signs. The CONSULTANT shall provide the following design information for the DMS sign design basis and fabrication:

* Pixel Pitch
* Number of display messages
* Character height
* Number of characters per line
* Character spacing
* Mechanical properties of the sign such as weight, height, width, depth, and not including the vertical hanger size and weight.

## ITS Quantities for EQ Report

The CONSULTANT shall determine ITS pay items and quantities and the supporting documentation.

## 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 category information, pay items, and quantities into AASHTOWare Project Preconstruction.

## Technical Special Provisions and Modified Special Provisions

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

## Other ITS Analyses

***[Add detailed project needs for any other ITS-related Analyses.]***

## 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 Drive
* Condition of Structure(s), cabinets, and other above-ground infrastructure and devices.
* Type of Detection as Compared with Current District Standards and preferences.
* Underground Infrastructure
* Proximity of other utilities
* Any other field reconnaissance as necessary to develop a complete ITS design package.

## Technical Meetings

The CONSULTANT shall attend meetings as necessary to support the project.

## 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.

## Supervision

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

## 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 documents and to ensure that a high degree of accuracy for the design plans is achieved. The CONSULTANT shall coordinate with the roadway Utility Adjustment Plan to incorporate all ITS support structural foundations symbols drawn to scale in the Utility Adjustment Plans and attend the utility design meetings conveying the information to all utility owners to preserve the location of the proposed foundations and avoid any conflicts.

# INTELLIGENT TRANSPORATION SYSTEMS PLANS

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

## Key Sheet

The CONSULTANT shall prepare a key sheet in accordance with the latest format depicted in the FDM.

MUTCD

Standard Specifications, Developmental Specifications

Standard Plans

## 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.

## 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, ramps, railroads crossings, devices, device identification using SunGuide nomenclature, and plan sheet numbering and coverage.

## Typical and Special Details

The CONSULTANT shall prepare typical and/or special details for conditions in the project not addressed by the DEPARTMENT’s Standard Plans for Design Construction, Maintenance, and Utility Operation on the State Highway System. The CONSULTANT shall prepare special details not addressed by FDOT Standard Plans, including block diagrams, hub cabinets, wiring diagrams, solar power service, and special mounting details, horizontal directional drilling at critical crossings, wireless ethernet equipment for local and broadband communication, Ethernet based Blue Toad, Ramp Signaling System, RSU block diagrams, Power station site plan, Field Equipment Shelters for master hubs, electrical and communication conduit, equipment inside box girders.

## 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 locations of ITS devices and cabinets, pull boxes, splice boxes, conduit runs, electrical service points, conduit, pull boxes, and conductors, and underground and overhead utilities, if applicable. Devices shall be located by station and offset as well as setback from the travel way. The CONSULTANT shall ensure the ITS sites and ground mounted cabinets locations are not in wetlands or wet drainage channels, do not interfere with protected species, meet the OSHA circle of safety from the overhead energized lines, and do not conflict with underground utilities.

## 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). Communication plans shall include conduit, fiber, pull and splice boxes, ITS devices, communication lateral drops, fiber connection hardware, pay items etc.

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

***[Discuss any needs or allowance for temporary communication connectivity options***

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 and prepare the Maintenance of Communication (MOC) plans. The CONSULTANT shall develop the MOC 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 MOC plans. The MOC plans shall include the notes, plan sheets, cross sections showing existing and proposed grades with the tables defining the stations limits for the conduit depths below existing and proposed grades for various construction phases.

If applicable, the CONSULTANT shall review the roadway TTCP, drainage, structures, and landscaping plans and prepare the MOC plans for each construction phase. The MOC plans shall include construction phasing notes, half cross sections depicting existing and proposed grades, roadway templates, drainage ponds, flood mitigation zones, provide tables depicting the station range, location and depth of the proposed fiber optic trunk line below existing and proposed grades. The MOC plans shall optimize the reliable field-to-center (F2C) connectivity and operability of the ITS field devices previously deployed along the project corridor. The MOC design effort shall 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.

In cases, where major alteration to the existing roadway begins in the areas where the existing ITS devices and underground communication will be impacted at the initial construction phase, the CONSULTANT shall include the permanent ITS and communication and electrical power work to be constructed in the early phase and stage of the construction to activate the devices. The notes referencing the MOC plan details shall be included in the TTCP plans alerting the CONTRACTOR and emphasizing the importance of keeping the ITS devices operational. Subsequently, the CONSULTANT shall attend the utility design and pre-construction meeting conveying the importance of the MOC and operability of the overall system. The CONSULTANT shall include the MOC plan sheets in the beginning of the ITS plans.

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 TMC (s) at [***Location***] and when applicable master communication hub(s) at [***Location***].

Conduit paths shall be selected to provide a continuous duct system on one side of the road unless otherwise required by DEPARTMENT. The various components of ITS sites will be located on both sides of the freeway and therefore under pavement bore and lateral conduits will be necessary to access equipment locations. The CONSULTANT is responsible to locate the ITS sites so they are accessible by maintenance vans.

## 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.

The CONSULTANT shall determine physical connection points and methods between the existing project limits to make the desired physical connection. The CONSULTANT shall determine and identify the Buffer Tube/Fiber and Ring allocation to maintain acceptable maximum number of the local intersection per ring before redundant ringing to a master communication hub and manage the transmission bandwidth. The CONSULTANT shall analyze existing and proposed fiber optic communication infrastructure for physical and logical connectivity into existing infrastructure.

## 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 communication hubs, etc., if not already addressed in the FDOT’s Standard Plans for Design, Construction, Maintenance and Utility Operations on the State Highway System. Where the ITS site is located on viaducts and bridges, the CONSULTANT shall provide the grounding and lightning protection details in the plans and show the work that is integral to the elevated superstructure and substructure.

## Cross Sections

The CONSULTANT shall prepare cross sections for all ITS devices and support structures including the ground mounted cabinets or local hubs. The cross section shall include the underground and overhead utilities with utility relocation provisions.

## Guide Sign Work Sheets

The CONSULTANT shall prepare the guide sign work sheets to include all necessary information related to the design of the static and DMS, Embedded DMS, and DTBS in the project corridor.

## 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. The CONSULTANT shall prepare the plan sheets depicting the electrical riser diagram and the line diagram for each location.

## Strain Pole Schedule

The CONSULTANT shall incorporate the schedule detail chart for concrete or steel strain poles in the plan set. The strain pole schedule details shall include stations, offsets, the ground elevations, proposed elevations, top of foundation elevation, all attachment tie-in heights, pole length, and embedment length.

## Overhead/Cantilever Sign Structures

The CONSULTANT shall be responsible for preparing the civil and structural plans of the overhead/cantilever structures, for proper installation of the DMS on the horizontal truss, viewing angle and decision site distance as per Chapter 2e - Guide Signs-Freeways and Expressways in the Manual on Uniform Traffic Control Devices (MUTCD) and Florida Department of Transportation FDOT Design Manual (FDM) and all other applicable manuals and guidelines as per governing regulations.

The details shall include stations, offsets, the existing ground elevations, proposed elevations, top of drilled shaft foundation elevation, all attachment tie-in heights, upright length, and drilled shaft embedment length. The CONSULTANT shall coordinate the design with the roadway, structural, and MSE wall disciplines and cross reference the critical information on the respective plans for installation, routing of conduits for electrical power and communication inside the substructure and superstructure, and parapets and pilasters. In segments where concrete median barrier walls are proposed, The CONSULTANT shall coordinate the design with the roadway, drainage, and structural disciplines to design the drilled shafts integral to the barrier walls and minimizing the shoulder width reduction.

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

The CONSULTANT shall be responsible for preparing the civil and structural plans when 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 decision sight distance requirement as per AASHTO Green Book, Chapter 2e - Guide Signs-Freeways and Expressways in the Manual on Uniform Traffic Control Devices (MUTCD) and Florida Department of Transportation FDOT Design Manual (FDM) and all other applicable manuals and guidelines as per governing regulations.

The details shall include stations, offsets, the existing ground elevations, proposed elevations, top of drilled shaft foundation elevation, all attachment tie-in heights, upright length, and drilled shaft diameter and embedment length. The CONSULTANT shall coordinate the design with the roadway, drainage, structural, and MSE wall disciplines and cross reference the critical information in the respective plans for installation, routing of conduits for electrical power and communication inside the substructure and superstructure, bridge deck, and parapets with pilasters.

## Temporary Traffic Control Plans

The CONSULTANT shall prepare TTCPs to minimize impacts to traffic during the construction of ITS field devices and associated communication infrastructure that will be deployed along the project corridor.

The TTCP 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 TTCP 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 TTCP 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 TTCP.

The CONSULTANT shall review the existing TMC Operations and develop additional incident management services 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.

## Interim Standards

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

## 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 Plane System or FDOT’s current coordinate plane systems shall be collected for all ITS components as 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 locations for:

* DMS, Embedded DMS, ADMS, DTBS locations (mainline and arterial)
* Vehicle detection pole locations
* CCTV camera pole locations
* WWVDS sites
* Ramp Signal system sites
* RWIS locations
* RSU sites
* Ground mounted cabinets
* Fiber operatic 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)
* Power station site equipment (Generator, Power Distribution, ITS Cabinet, Pad Mounted Transformers, power service pole)

## 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.

## Supervision

The CONSULTANT shall supervise all technical design activities.

# GEOTECHNICAL

The CONSULTANT shall, for each project, be responsible for complete geotechnical investigation. All work performed by the CONSULTANT shall be in accordance with DEPARTMENT standards, or as otherwise directed by the District Geotechnical Engineer. The District Geotechnical Engineer will make interpretations and changes regarding geotechnical standards, policies and procedures and provide guidance to the CONSULTANT.

Before beginning each phase of investigation and after the Notice to Proceed is given, the CONSULTANT shall submit an investigation plan for approval and meet with the DEPARTMENT’s Geotechnical Engineers or representative to review the project scope and DEPARTMENT requirements. The investigation plan shall include, but not be limited to, the proposed borings locations and depths, and all existing geotechnical information from available sources to generally describe the surface and subsurface conditions of the project site. Additional meetings may be required to plan any additional field efforts, review plans, resolve plans/report comments, resolve responses to comments, and/or other meetings necessary to facilitate the project.

The CONSULTANT shall notify the DEPARTMENT in adequate time to schedule a representative to attend all related meetings and field activities.

## Document Collection and Review

CONSULTANT will review printed literature including topographic maps, county agricultural maps, aerial photography (including historic photos), ground water resources, geology bulletins, potentiometric maps, pile driving records, historic construction records and other geotechnical related resources. Prior to field reconnaissance, CONSULTANT shall review U.S.G.S., S.C.S. and potentiometric maps, and identify areas with problematic soil and groundwater conditions.

Roadway

The CONSULTANT shall be responsible for coordination of all geotechnical related field work activities. The CONSULTANT shall retain all samples until acceptance of Phase IV plans. Rock cores shall be retained as directed in writing by the District Geotechnical Engineer.

Obtain pavement cores as directing in writing by the District Geotechnical Engineer.

If required by the District Geotechnical Engineer, a preliminary roadway exploration shall be performed before the Phase I plans submittal. The preliminary roadway exploration will be performed and results provided to the Engineer of Record to assist in setting roadway grades and locating potential problem areas. The preliminary roadway exploration shall be performed as directed in writing by the District Geotechnical Engineer.

CONSULTANT shall perform specialized field testing as required by project needs and as directing in writing by the District Geotechnical Engineer.

All laboratory testing and classification will be performed in accordance with applicable DEPARTMENT standards, ASTM Standards or AASHTO Standards, unless otherwise specified in the Contract Documents.

## Develop Detailed Boring Location Plan

Develop a detailed boring location plan. Meet with DEPARTMENT Geotechnical Project Manager for boring plan approval. If the drilling program expects to encounter artesian conditions, the CONSULTANT shall submit a methodology(s) for plugging the borehole to the DEPARTMENT for approval prior to commencing with the boring program.

## Stake Borings/Utility Clearance

Stake borings and obtain utility clearance.

## Muck Probing

Probe standing water and surficial muck in a detailed pattern sufficient for determining removal limits to be shown in the Plans.

## Coordinate and Develop TTCPs for Field Investigation

Coordinate and develop TTCP. All work zone traffic control will be performed in accordance with the DEPARTMENT’s Roadway and Traffic Standard Plans Index 102 series.

## Drilling Access Permits

Obtain all State, County, City, and Water Management District permits for performing geotechnical borings, as needed.

## Property Clearances

Notify property tenants in person of drilling and field activities, if applicable. Written notification to property owners/tenants is the responsibility of the DEPARTMENT’s Project Manager.

## Groundwater Monitoring

Monitor groundwater, using piezometers.

## LBR/Resilient Modulus Sampling

Collect appropriate samples for Limerock Bearing Ratio (LBR) testing. Deliver Resilient Modulus samples to the District Materials Office or the State materials Office in Gainesville, as directed by the DEPARTMENT.

## Coordination of Field Work

Coordinate all field work required to provide geotechnical data for the project.

## Soil and Rock Classification – Roadway

Refine soil profiles recorded in the field, based on results of laboratory testing.

## Design LBR

Determine design LBR values from the 90% and mean methods when LBR testing is required by the DEPARTMENT.

## Laboratory Data

Tabulate laboratory test results for inclusion in the geotechnical report, the report of tests sheet (Roadway Soil Survey Sheet), and for any necessary calculations and analyses.

## Seasonal High Water Table

Review the encountered ground water levels and estimate seasonal high ground water levels. Estimate seasonal low ground water levels, if requested.

## Parameters for Water Retention Areas

Calculate parameters for water retention areas, exfiltration trenches, and/or swales.

## Delineate Limits of Unsuitable Material

Delineate limits of unsuitable material(s) in both horizontal and vertical directions. Assist the Engineer of Record with detailing these limits on the cross sections. If requested, prepare a plan view of the limits of unsuitable material.

## Electronic Files for Cross Sections

Create electronic files of boring data for cross sections.

## Embankment Settlement and Stability

Estimate the total magnitude and time rate of embankment settlements. Calculate the factor of safety against slope of stability failure.

## Monitor Existing Structures

Provide Roadway EOR guidance on the radius to review existing structures for monitoring.

Optional services (may be negotiated at a later date if needed): Identify existing structures in need of settlement, vibration and/or ground water monitoring by the contractor during construction and coordinate with the EOR and structural engineer (when applicable) to develop mitigation strategies. When there is risk of damage to the structure or facility, provide recommendations in the geotechnical report addressing project specific needs and coordinate those locations with the EOR. See FDM Chapter 117 and Chapter 9 of the Soils and Foundations Handbook.

## Stormwater Volume Recovery and/or Background Seepage Analysis

Perform stormwater volume recovery analysis as directed by the DEPARTMENT.

## Geotechnical Recommendations

Provide geotechnical recommendations regarding the proposed roadway construction project including the following: description of the site/alignment; design recommendations and discussion of any special considerations (e.g. removal of unsuitable material, consolidation of weak soils, estimated settlement time/amount, groundwater control, high groundwater conditions relative to pavement bases, etc.). Evaluate and recommend types of geosynthetics and properties for various applications, as required.

## Pavement Condition Survey and Pavement Evaluation Report

If a pavement evaluation report is performed, submit the report in accordance with Section 3.2 of the Materials Manual. Flexible Pavement Coring and Evaluation. Enter all core information into the Pavement Coring and Reporting (PCR) system.

## Preliminary Roadway Report

If a preliminary roadway investigation is performed, submit a preliminary roadway report before the Phase I plans submittal. The purpose of the preliminary roadway report will be to assist in setting road grades and locating potential problems.

* Copies of U.S.G.S. and S.C.S. maps with project limits shown.
* A report of tests sheets that summarizes the laboratory test results, the soil stratification (i.e. soils grouped into layers of similar materials) and construction recommendations relative to Standard Plan Indices 120-001 and 120-002.
* The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
* An appendix that contains stratified soil boring profiles, laboratory test data sheets, sample embankment settlement and stability calculations, design LBR calculation/graphs, and other pertinent calculations.
* The CONSULTANT will be respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

## Final Report

The final Road Report shall include the following:

* Copies of U.S.G.S. and S.C.S. maps with project limits shown.
* A report of tests sheet that summarizes the laboratory test results, the soil stratification (i.e. soils grouped into layers of similar materials) and construction recommendations relative to Standard Plans Indices 120-001 and 120-002.
* The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
* An appendix that contains stratified soil boring profiles, laboratory test data sheets, sample embankment settlement and stability calculations, design LBR calculation/graphs and other pertinent calculations.
* The CONSULTANT will respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

## Auger Boring Drafting

Draft Auger borings as directed by the DEPARTMENT.

## SPT Boring Drafting

Draft SPT borings as directed by the DEPARTMENT.

Structures

The CONSULTANT shall be responsible for coordination of all geotechnical related fieldwork activities. The CONSULTANT shall retain all samples until acceptance of Phase IV plans. Rock cores shall be retained as directed in writing by the District Geotechnical Engineer.

CONSULTANT shall perform specialized field-testing as required by needs of the project and as directed in writing by the District Geotechnical Engineer.

All laboratory testing and classification will be performed in accordance with applicable DEPARTMENT standards, ASTM Standards or AASHTO Standards, unless otherwise specified in the Contract Documents.

The staff hour task for high embankment fills and structural foundations for bridges, box culverts, walls, high mast lighting, overhead signs and mast arm signals, strain poles, building and other structures include the following:

## Develop Detailed Boring Location Plan

Develop a detailed boring location plan. Meet with the DEPARTMENT Geotechnical Project Manager for boring plan approval. If the drilling program expects to encounter artesian conditions, the CONSULTANT shall submit a methodology(s) for plugging the borehole to the DEPARTMENT for approval prior to commencing with the boring program.

## Stake Borings/Utility Clearance

Stake borings and obtain utility clearance.

## Coordinate and Develop TTCPs for Field Investigation

Coordinate and develop TTCP. All work zone traffic control will be performed in accordance with the DEPARTMENT’s Roadway and Traffic Standard Plans Index 102 series.

## Drilling Access Permits

Obtain all State, County, City, and Water Management District permits for performing geotechnical borings, as needed.

## Property Clearances

Notify property tenants in person of drilling and field activities, if applicable. Written notification to property owners/tenants is the responsibility of the DEPARTMENT’s Project Manager.

## Collection of Corrosion Samples

Collect corrosion samples for determination of environmental classification.

## Coordination of Field Work

Coordinate all field work required to provide geotechnical data for the project.

## Soil and Rock Classification – Structures

Soil profiles recorded in the field should be refined based on the results of laboratory testing.

## Tabulation of Laboratory Data

Laboratory test results should be tabulated for inclusion in the geotechnical report and for the necessary calculations and analyses.

## Estimate Design Groundwater Level for Structures

Review encountered groundwater levels, estimate seasonal high groundwater levels, and evaluate groundwater levels for structure design.

## Selection of Foundation Alternatives (BDR)

Evaluation and selection of foundation alternative, including the following:

* GRS-IBS
* Spread footings
* Prestressed concrete piling – various sizes
* Steel H-piles
* Steel pipe piles
* Drilled Shafts
* Foundation analyses shall be performed using approved DEPARTMENT methods. Assist in selection of the most economical, feasible foundation alternative.

## Detailed Analysis of Selected Foundation Alternative(s)

Detailed analysis and bases for the selected foundation alternative. Foundation analyses shall be performed using approved DEPARTMENT methods and shall include:

* GRS-IBS (including the parameters identified in the Instructions for Development Design Standard D6025 to be provide by the Geotechnical Engineer)
* Spread footings (including soil bearing capacity, minimum footing width, and minimum embedment depth).
* For pile and drilled shaft foundations, provide graphs of ultimate axial soil resistance versus tip elevations. Calculate scour resistance and/or downdrag (negative skin friction), if applicable.
* CONSULTANT shall assist the Engineer of Record in preparing the Pile Data Table (including test pile lengths, scour resistance, downdrag, minimum tip elevation, etc.)
* Provide the design soil profile(s), which include the soil model/type of each layer and all soil-engineering properties required for the Engineer of Record to run the FBPier computer program. Review lateral analysis of selected foundation for geotechnical compatibility.
* Estimated maximum driving resistance anticipated for pile foundations.
* Provide settlement analysis.

## Bridge Construction and Testing Recommendations

Provide construction and testing recommendations including potential constructability problems.

## Lateral Load Analysis (Optional)

Perform lateral load analyses as directed by the DEPARTMENT.

## Walls

Provide the design soil profile(s), which include the soil model/type of each layer and all soil engineering properties required by the Engineer of Record for conventional wall analyses and recommendations. Review wall design for geotechnical compatibility and constructability.

Evaluate the external stability of conventual retaining walls and retained earth wall systems. For retained earth wall systems, calculate and provide minimum soil reinforcement lengths versus wall heights, and soil parameters assumed in analysis. Estimate differential and total (long term and short term) settlements.

Provide wall construction recommendations.

## Sheet Pile Wall Analysis (Optional)

Analyze sheet pile walls as directed by the DEPARTMENT.

## Design Soil Parameters for Signs, Signals, High Mast Lights, and Strain Poles and Geotechnical Recommendations

* Provide the design soil profile(s) that include the soil model/type of each layer and all soil properties required by the Engineer of Record for foundation design. Review design for geotechnical compatibility and constructability.

## Box Culvert Analysis

* Provide the design soil profile(s) that include the soil model/type of each layer and all soil properties required by the Engineer of Record for foundation design. Review design for geotechnical compatibility and constructability.
* Provide lateral earth pressure coefficients.
* Provide box culvert construction and design recommendations.
* Estimate differential and total (long term and short term) settlements.
* Evaluate wingwall stability.

## Preliminary Report – BDR

The preliminary structures report shall contain the following discussions as appropriate for the assigned project.

* Copies of U.S.G.S. and S.C.S. maps and project limits shown.
* Summary of structure background data, S.C.S., U.S.G.S., geologic and potentiometric data.
* The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
* Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
* Any special provisions required for construction that are not addressed in the DEPARTMENT’s Standard specification.
* An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized field tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile driving records (if available).

## Final Report – Bridge and Associated Walls

The final structures report shall include the following:

* Copies of U.S.G.S. and S.C.S. maps with project limits shown.
* Summary of structure background data, S.C.S., U.S.G.S, geologic and potentiometric data.
* The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
* Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
* Any special provisions required for construction that are not addressed in the DEPARTMENT’S Standard specification.
* An Appendix which includes SPT and CPT borings/sounding profiles, data from any specialized field test, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drill shafts, a complete FHWA check list, pile driving records (if available), and any other pertinent information.

## Final Reports – Sign, Signals, Box Culvert, Walls, and High Mast Lights

The final reports shall include the following

* Copies of U.S.G.S. and S.C.S maps with project shown.
* Summary of structure background data, S.C.S., U.S.G.S, geologic and potentiometric data.
* The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
* Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
* Any special provisions required for construction that are not addressed in the DEPARTMENT’S Standard specification.
* An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized fields tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile during records (if available), any other pertinent information.

Final reports will incorporate comments from the DEPARTMENT and contain any additional field or laboratory test results, recommended foundation alternatives along with design parameters and special provisions for the contract plans. These reports will be submitted to the District Geotechnical Engineer for review prior to project completion. After review by the District Geotechnical Engineer, the reports will be submitted to the District Geotechnical Engineer in a final form and will include the following:

* All original plan sheets (11’x17”)
* One set of all plan and specification documents, in electronic format, according to DEPARTMENT requirements
* Two sets of record prints
* Six sets of any special provisions
* All reference and support documentation used in preparation of contract plan package

Additional final reports (up to four), aside from stated above, may be needed and requested for the DEPARTMENT’s Project Manager and other disciplines.

The final reports, special provisions, as well as record prints, will be signed and sealed by a Professional Engineer licensed in the State of Florida.

Draft the detailed boring/sounding standard sheet, including environmental classification, results of laboratory testing, and specialized construction requirements, for inclusion in final plans.

## SPT Boring Drafting

Prepare a complete set of drawings to include all SPT borings, auger borings and other pertinent soils information in the plans. Include these drawings in the Final Geotechnical Report. Draft borings, location map, S.C.S. map and U.S.D.A map as directed by the DEPARTMENT. Soil symbols must be consistent with those presented in the latest Florida Department of Transportation Soils and Foundations handbook.

## Other Geotechnical

Other geotechnical effort specially required for the project as determined by the Department, and included in the geotechnical upset limit.

## Technical Special Provisions and Modified Special Provisions

## Fields Reviews

Identify and note surface soil and rock conditions, surface, water conditions and locations, and preliminary utility conflicts. Observe and note nearby structures and foundation types.

## Technical Meetings

## Quality Assurance/Quality Control

## Supervision

## Coordination

# 3D MODELING

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

The CONSULTANT shall deliver all master design files, 3D surface design models, and all supporting digital files for the development of plans as required in the FDOT CADD Manual.

The CONSULTANT shall prepare a 3D model using the latest FDOT software in accordance with the FDOT CADD Manual. Includes all efforts required for developing files for 3D deliverables supporting automated machine guidance for design models. This includes importing survey data and creation of existing 3D surface features and models, and developing proposed corridor models with necessary detail of features to depict the proposed project in 3D to comply with the FDOT CADD Manual.

The CONSULTANT shall add detail to the corridor and design model for 3D design. Includes many elements that contribute to this including but not limited to slope transitions, typical section transitions, changes in pavement depth, berms, swales/ditches, and other feature transitions. Extra corridor structure leads to extra assemblies, extra targeting, etc.

The CONSULTANT shall create an accurate roadway design model which includes modeling the intersections.

The CONSULTANT shall submit .dgn files associated with the 3D Model and their respective components.

## Phase I 3D Design Model

The CONSULTANT shall prepare, submit and present for review by the DEPARTMENT, Phase I 3D interactive model, comprised of, but not limited to: Existing features (pavement, shoulders, sidewalk, curb/gutter, utilities-if required per scope, drainage - if required per scope) and proposed corridor(s).

## Phase II 3D Design Model

The CONSULTANT shall prepare, submit and present for review by the DEPARTMENT, Phase II 3D model, comprised of, but not limited to: Modification of the Phase I model to update the model to comply with changes based on the Phase I review comments and to include the addition of ponds, floodplain compensation sites, retaining walls, barrier walls, guardrail terminals, cross overs, gore areas, side street connections, roundabouts and driveways.

***[List optional service to be included, e.g. 3D deliverables files for review, Curb Ramps, Closed Drainage Network, Bridge Modeling, Bridge Abutment, Overhead sign post/structures with foundation, Toll gantry and overhead DMS structures with foundation, proposed utilities (pressure pipe/gravity), etc.].***

## Phase III 3D Design Model

The CONSULTANT shall prepare, submit and present for review by the DEPARTMENT, Phase III 3D model and deliverables files for review, comprised of, but not limited to: Modification of the Phase II model to update the model to comply with changes based on the Phase II review comments and to further refine areas of transition between templates, detailed grading areas, bridge approaches and end bents, median noses, shoulder transition areas, retaining walls, barrier walls and guardrail.

## Final 3D Model Design

The CONSULTANT shall prepare for review by DEPARTMENT, the Phase IV 3D model and deliverables, comprised of, but not limited to: Modification of the Phase III model to update the model to comply with changes based on the Phase III review comments and to accurately generate, export and otherwise prepare the final 3D deliverable files as described in the FDOT CADD Manual.

## Cross Section Design Files

The CONSULTANT shall establish and develop cross section design files in accordance with DEPARTMENT’s CADD manual and FDOT Design Manual. Includes all work required to establish and utilize intelligent/automated methods for creating cross sections including determining the locations for which all cross sections will be shown, existing and proposed features, cross section refinement, placement of utilities and drainage, soil boxes, R/W lines, earthwork calculations, and other required labeling.

## Template and Assembly Development (Optional)

The CONSULTANT shall prepare for approval by DEPARTMENT, project specific templates/assemblies needed to develop the features required to deliver the 3D model.

## Quality Assurance/Quality Control

## Supervision

## Coordination

# PROJECT REQUIREMENTS

## 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.

## 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.

## Progress Reporting

The CONSULTANT shall meet with the DEPARTMENT as required and shall provide a written monthly progress report and approved schedule, schedule status, and payout curve or by using the earned value method that describes 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.

## Correspondence

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

## 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 Modified Special Provisions, and plans as required by DEPARTMENT standards.

## 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 of the DEPARTMENT’s CADD Manual. The CONSULTANT shall submit final documents and files as described therein.

## 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.

## 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 fair, competitive and reasonable costs, 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 re-evaluation of previous PD&E studies, cumulative impact evaluation, support the DEPARTMENT in preparation of Design-Build package, 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.

# 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.