EXHIBIT A

FDOT

SCOPE OF SERVICES

FOR

FINANCIAL PROJECT ID: 437249-1-32-01

FEDERAL PROJECT NO. N/A

US 92/SR 600/S. DALE MABRY HWY. FROM NEPTUNE STREET TO HENDERSON BLVD.

DISTRICT SEVEN

HILLSBOROUGH COUNTY
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PURPOSE</strong></td>
<td>A-1</td>
</tr>
<tr>
<td><strong>PROJECT DESCRIPTION</strong></td>
<td>A-2</td>
</tr>
<tr>
<td><strong>PROJECT COMMON AND PROJECT GENERAL TASKS</strong></td>
<td>A-18</td>
</tr>
<tr>
<td><strong>ROADWAY ANALYSIS</strong></td>
<td>A-24</td>
</tr>
<tr>
<td><strong>ROADWAY PLANS</strong></td>
<td>A-27</td>
</tr>
<tr>
<td><strong>DRAINAGE ANALYSIS</strong></td>
<td>A-28</td>
</tr>
<tr>
<td><strong>UTILITIES</strong></td>
<td>A-31</td>
</tr>
<tr>
<td><strong>ENVIRONMENTAL PERMITS, COMPLIANCE AND ENVIRONMENTAL CLEARANCES</strong></td>
<td>A-34</td>
</tr>
<tr>
<td><strong>STRUCTURES – SUMMARY AND MISC. TASKS AND DRAWINGS</strong></td>
<td>A-36</td>
</tr>
<tr>
<td><strong>STRUCTURES – BRIDGE DEVELOPMENT REPORT – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – TEMPORARY BRIDGE – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – SHORT SPAN CONCRETE BRIDGE – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – MEDIUM SPAN CONCRETE BRIDGE – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – STRUCTURAL STEEL BRIDGE – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – SEGMENTAL CONCRETE BRIDGES – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – MOVABLE SPAN – N/A</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES – RETAINING WALL</strong></td>
<td>A-37</td>
</tr>
<tr>
<td><strong>STRUCTURES - MISCELLANEOUS</strong></td>
<td>A-38</td>
</tr>
<tr>
<td><strong>SIGNING AND PAVEMENT MARKING ANALYSIS</strong></td>
<td>A-38</td>
</tr>
<tr>
<td><strong>SIGNING AND PAVEMENT MARKING PLANS</strong></td>
<td>A-40</td>
</tr>
<tr>
<td><strong>SIGNALIZATION ANALYSIS</strong></td>
<td>A-41</td>
</tr>
<tr>
<td><strong>SIGNALIZATION PLANS</strong></td>
<td>A-43</td>
</tr>
<tr>
<td><strong>LIGHTING ANALYSIS</strong></td>
<td>A-44</td>
</tr>
<tr>
<td><strong>LIGHTING PLANS</strong></td>
<td>A-47</td>
</tr>
<tr>
<td><strong>LANDSCAPE ARCHITECTURE ANALYSIS - N/A</strong></td>
<td>A-48</td>
</tr>
<tr>
<td><strong>LANDSCAPE ARCHITECTURE PLANS - N/A</strong></td>
<td>A-48</td>
</tr>
<tr>
<td><strong>SURVEY</strong></td>
<td>A-48</td>
</tr>
<tr>
<td><strong>PHOTOGRAMMETRY</strong></td>
<td>A-53</td>
</tr>
<tr>
<td><strong>MAPPING</strong></td>
<td>A-55</td>
</tr>
<tr>
<td><strong>TERRESTRIAL MOBILE LiDAR</strong></td>
<td>A-57</td>
</tr>
<tr>
<td><strong>ARCHITECTURE DEVELOPMENT – N/A</strong></td>
<td>A-58</td>
</tr>
<tr>
<td><strong>NOISE BARRIERS – N/A</strong></td>
<td>A-58</td>
</tr>
<tr>
<td><strong>INTELLIGENT TRANSPORTATION SYSTEMS ANALYSIS – N/A</strong></td>
<td>A-59</td>
</tr>
<tr>
<td><strong>INTELLIGENT TRANSPORTATION SYSTEMS PLANS – N/A</strong></td>
<td>A-59</td>
</tr>
<tr>
<td><strong>GEOTECHNICAL</strong></td>
<td>A-59</td>
</tr>
<tr>
<td></td>
<td>3D MODELING</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>36</td>
<td>PROJECT REQUIREMENTS</td>
</tr>
<tr>
<td>37</td>
<td>INVOICING LIMITS</td>
</tr>
<tr>
<td>38</td>
<td></td>
</tr>
</tbody>
</table>
SCAPE OF SERVICES FOR CONSULTING ENGINEERING SERVICES
HIGHWAY AND BRIDGE/STRUCTURAL DESIGN

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

<table>
<thead>
<tr>
<th>Financial Project ID:</th>
<th>437249-1-32-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Aid Project No.:</td>
<td>N/A</td>
</tr>
<tr>
<td>County Section No.:</td>
<td>10130 000</td>
</tr>
<tr>
<td>Description:</td>
<td>US 92/SR 600/S. Dale Mabry Hwy. From Neptune Street to Henderson Blvd. Hillsborough County</td>
</tr>
<tr>
<td>Bridge No(s):</td>
<td>N/A</td>
</tr>
<tr>
<td>Railroad Crossing No(s):</td>
<td>N/A</td>
</tr>
<tr>
<td>Context Classification:</td>
<td>C4 Urban General</td>
</tr>
</tbody>
</table>

1 PURPOSE

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

Major Work Mix includes: Drainage Improvements
Major Work Types include: 3.1
Minor Work Types include: 4.1, 7.1, 7.2, 7.3, 8.1, 8.2, 8.3, 9.1, 9.2, 9.3, 9.4.1, and 9.5

Known Alternative/Innovative Construction Contracting Methods: None at this time

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

The Scope of Services establishes which items of work in the FDOT Design Manual and other pertinent manuals are specifically prescribed to accomplish the work included in this contract, and also indicates which items of work will be the responsibility of the CONSULTANT and/or the DEPARTMENT. Where a type of service is noted herein to be provided by the DEPARTMENT, the CONSULTANT shall communicate to the DEPARTMENT in writing the specific nature of such DEPARTMENT services as are necessary to support the CONSULTANT’s responsibilities under this contract, and shall do so by such time as will support the DEPARTMENT’s original project schedule or any subsequent DEPARTMENT-approved revisions thereto.

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

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

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

2 PROJECT DESCRIPTION

The CONSULTANT shall investigate the status of the project and become familiar with concepts and commitments (typical sections, alignments, etc.) developed from prior studies and/or activities, including applicable documents at http://fdot7studies.com. The CONSULTANT shall refer to the City of Tampa study titled “Dale Mabry; Henderson to Neptune Flooding Relief Project” located on the DEPARTMENT’s FTP site. If a Preliminary Engineering Report is available from a prior or current Project Development and Environmental (PD&E) study, the CONSULTANT shall use the approved concepts as a basis for the design unless otherwise noted herein or directed by the DEPARTMENT.

The purpose of this project is to address severe flooding on US 92/SR 600/S. Dale Mabry Hwy. between Neptune Street and Henderson Blvd. in South Tampa. The project proposes construction of a new box culvert within the US 92/SR 600/S. Dale Mabry Hwy. right-of-way between Neptune Street and Henderson Blvd. The proposed box culvert will connect to a proposed box culvert (by others) running east on Watrous Ave. to S. Dale Mabry Hwy., connect to existing drainage at the intersection of S. Dale Mabry Hwy. and Neptune Street, and connect to existing drainage at the intersection of S. Dale Mabry Hwy. and Henderson Blvd. S. Dale Mabry Hwy. is a four lane divided urban principal arterial. All work is proposed within the existing right of way.

In addition to drainage improvements, other improvements may be required under optional services. The improvements are as follows:

- Complete streets design
- Bring traffic elements up to standard
- Rigid Pavement Rehabilitation
- Milling and resurfacing of flexible pavement
- Rigid pavement design at US 92/SR 600/S. Dale Mabry Hwy. at Henderson Blvd.

The CONSULTANT shall coordinate with the adjacent City of Tampa projects described as Upper Peninsula Watershed Drainage Improvements (Dale Mabry/Henderson Trunkline), Estrella Street Plans (under construction) and S. Manhattan Ave. and W. Watrous Ave. Plans (100% plans Sept. 2018) designed by others. It is anticipated both of these City of Tampa Design Build projects will be constructed before this project.

At the option of the CONSULTANT with the approval of the DEPARTMENT Project Manager, this project may be designed and delivered using either 1) Autodesk AutoCAD Civil 3D 2014, or the DEPARTMENT’s current Autodesk AutoCAD Civil 3D standard, or 2) Bentley MicroStation GEOPAK Corridor Modeler, or the DEPARTMENT’s current MicroStation/GEOPAK Corridor Modeler standard. See http://www.dot.state.fl.us/ecso/main/Version/CurrentVersions.shtm for current versions of acceptable software. In either case, the project shall be designed, delivered and signed and sealed in compliance with the DEPARTMENT’s CADD Manual published at

The CONSULTANT shall deliver a Three-Dimensional (3D) Model of the design project in accordance with the specifications/criteria defined within the CADD Manual, specifically in Chapter 5 (Section 5.10.4).

In the event any of this project’s proposed improvements are funded for construction with Federal Safety funds, those improvements alone shall be constructed under FP ID 437249-1-52-02 (Work Program Sequence® 02), while all other project improvements shall be constructed under FP ID 439249-1-52-01 (Work Program Sequence® 01 with State and/or Federal non-Safety construction funds). In this case, two separate LRE files and later two separate Trns*port files shall be prepared to accommodate this division of work. In the event Federal Safety funds are applied to the project and then withdrawn, all allowable project improvements shall be constructed under FP ID 437249-1-52-01. *Not to be confused with a Work Program Segment (seventh digit of the FP ID number).

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

Public Involvement: The CONSULTANT shall follow the Community Awareness Plan as follows:

**Community Awareness Plan**

**Fact Sheet (public distribution):** A fact sheet will be created and forwarded to District Public Information Office.

☐ YES ☒ NO - Explain: Documented on Website

**Elected Officials Design Phase Submittal Notification:**

An email notification will be sent from the District Secretary to local elected officials at each phase review.

☒ YES ☐ NO - Explain: _____

**Maintenance of Access Plan (business & residential):** - Access to the State Highway System will be maintained.

A list of driveways and the hours of operation for the businesses affected by this project will be provided.

☒ YES ☐ NO

Blue business specific signs will be used. ☒ YES ☐ NO - Explain: _____

**This Project Is Located Near:**

Raymond James Stadium ☒ YES ☐ NO Ybor City ☒ YES ☐ NO
Tropicana Field ☒ YES ☐ NO Plant City ☒ YES ☐ NO
Downtown Tampa ☒ YES ☐ NO Gulf Blvd. in Pinellas County ☒ YES ☐ NO
Downtown St. Petersburg ☒ YES ☐ NO Florida State Fairgrounds ☒ YES ☐ NO

If YES to any of the above a special events traffic control plan will be needed.

**Median Modification:** (Optional Services)

In accordance with 335.199 F.S. written notification regarding proposed median changes will be made to all affected property owners and tenants at least 180 days prior to final design. A public hearing will also be held at
this time. Graphics including aerial overlays will be created by the EOR and included in the notification. These graphics will also be used during the public hearing.

**Driveway Letters:**
Driveway letters will be sent to each property owner if changes are anticipated.  
☒ YES ☐ NO - Explain: _____

**Encroachment Letters:**
Encroachment letters will be sent during design.  
☑ YES ☐ NO

**Design Open House:**
This project will require a design open house.  
☐ YES ☑ NO

**Roll Plot w/Design Overlay:**
A roll plot with design overlay will be created and used at the open house.  
☐ YES ☑ NO

**Frequently Asked Questions Handout:**
A frequently asked questions handout will be created and used at the open house.  
☐ YES ☑ NO

**Other:** Special concerns about local events should be documented in the traffic control plans. In any event a median modification is included with design improvements, a Virtual Public Hearing will be required and shall be added to the contract under Optional Services.

Other Agency Presentations/Meetings:  The CONSULTANT shall attend and/or provide support to the DEPARTMENT for any anticipated agency meetings. See Section 3.1.11.

Joint Project Agreements: N/A

Specification Package Preparation: The CONSULTANT shall prepare the Specification Package, the effort shall be considered normal.

Value Engineering: N/A

Risk Assessment Workshop: N/A

Plan Type:  The roadway plans shall be prepared in a Plan format. Profile sheets shall be provided, if necessary, to show the vertical controls that are needed for the construction of these projects. The plan (and profile) sheets shall be plotted at a horizontal scale of 1" = 40'.


**Typical Section:**

**Dale Mabry Hwy mainline:**
1. Four lane undivided urban with 10 foot travel lanes, curb and gutter and sidewalk on both sides.
2. Four lane divided urban with 11 foot travel lanes, 11 foot paved median, curb and gutter and sidewalk on both sides.
3. Four lane divided urban with 10 foot travel lanes, 10 foot paved median, curb and gutter and sidewalk on both sides.
Pavement Design: The existing pavement consists of flexible pavement on S. Dale Mabry Hwy. from Jetton Ave. to Henderson Blvd, and rigid pavement from Neptune Street to Jetton Ave. A memo can be provided in lieu of a full pavement design report.

Pavement Type Selection Report(s): N/A

Cross Slope: N/A

Access Management Classification: 7

Transit Route Features: Optional Services

Major Intersections/Interchanges: Dale Mabry Hwy. at W. Henderson Blvd., W. Neptune St. and W. Watrous Ave.

Roadway Alternative Analysis: N/A

Level of TCP Plans: II

Temporary Signals: N/A

Temporary Lighting: N/A

Temporary Drainage: Temporary drainage design shall be provided to ensure the project drains adequately during all phases of construction.

Design Variations/Exceptions: Design variation and/or exception requests shall be prepared for any situations not meeting current DEPARTMENT and/or FHWA requirements, as appropriate. The CONSULTANT shall prepare design Variation and Exception reports for the purpose of estimating design and construction needs based on initial observations. The CONSULTANT shall recommend, to the DEPARTMENT, either correction of any deficiencies, or obtaining the appropriate design variations or exceptions, including applicable benefit-cost analyses, in accordance with DEPARTMENT procedures. Currently known or suspected features requiring analysis include: Cross Slope, Turn Lane Lengths, Lane Width, and Bike Lane.

Back of Sidewalk Profiles: Optional Services

Selective Clearing and Grubbing: N/A

2.2 Drainage (Activities 6a and 6b)

The project consists of construction of a box culvert within the US 92/SR 600/Dale Mabry Hwy. right-of-way between Neptune Street and Henderson Blvd. The proposed box culvert will connect to a new box culvert system running east on Watrous Avenue being constructed for the City of Tampa. The goal of the project is to address long standing flooding issues including those along Dale Mabry Hwy. between Neptune Street and Henderson Blvd.

The project is located within the Upper Peninsula Watershed in the City of Tampa. Environmental resource permit (ERP) No. 43043417.000 was issued by the Southwest Florida Water Management District (SWFWMD) in 2018 for the Dale Mabry/Henderson Trunkline project (by others), located east of Dale Mabry Hwy. The Dale Mabry/Henderson Trunkline project consists of construction of concrete box culverts from the outfall at W. Estrella Street east to S. Manhattan Avenue, north to W. Watrous Avenue and east to Dale Mabry Hwy. The proposed SR 600 box culverts were not included in ERP No. 43043417.000, but they were included in the proposed conditions model for the project. The box culvert sizes used in the
The proposed conditions model were based on the City of Tampa’s Upper Peninsula Watershed Model. The CONSULTANT shall review the existing permit and determine if the BMPs address required water quality mitigation for the SR 600 project limits.

System Type: The existing drainage system consists of a closed system with existing curb inlets. As part of a 2008 concrete rehabilitation project along SR 600 (FPID 415201-1-52-01), new pipes were installed and connected to the existing storm drain systems at Neptune Street, Watrous Avenue and Henderson Blvd for future use. The CONSULTANT shall coordinate with the DEPARTMENT and City of Tampa for connection to the existing storm drain systems along SR 600. Curb returns and some gutter lines may need to be adjusted to provide positive drainage. Inlets may need to be added if positive drainage cannot be achieved with gutter profiles, or existing inlet locations are not adequate.

The CONSULTANT shall be responsible for the complete evaluation of the drainage improvements within the SR 600 project limits, as well as the existing storm drain systems to be connected at the north and south ends of the project. Review the existing conditions model (basins, hydrology, nodes, links, rainfall, boundary conditions, etc.) to determine if any updates are required. Evaluate the proposed conditions model consistent with the box culvert sizes in the watershed model; however, other options presented by the CONSULTANT will be considered. Review and evaluation of the segments within the Dale Mabry/Henderson Trunkline project are not required. In addition to the standard 3-year design storm frequency, evaluate an alternative design that meets hydraulic gradient criteria based on a 10-year design storm frequency. Document stages (3-year and 10-year) for existing/revised existing conditions and proposed conditions.

The CONSULTANT shall perform a field review and provide photographs during and after a storm event in support of the evaluation of the surface drainage, inlets, and storm drain system(s) within the limits of proposed improvements. The review shall confirm conformance to current standards and provide design concepts to correct identified deficiencies. Photograph locations and directions shall be shown on a copy of the roadway plan sheets or a plan view aerial. The rainfall depth, duration, and date shall be documented for the storm event. The drainage report format shall be in accordance with the District 7 Preferred Design Preferences and Guidelines. Meeting minutes shall be provided in the documentation. In addition, the CONSULTANT shall be responsible for providing drainage maps, spread calculations, and construction details for the proposed improvements.

The CONSULTANT shall submit the alternatives to the DEPARTMENT’S District Drainage Office and Project Manager along with construction cost estimates. Within a third of the scheduled time between Notice-To-Proceed and the first phase submittal, the CONSULTANT shall meet with the District Drainage Office and Project Manager to discuss design issues which have not been included in the Original Agreement. If the DEPARTMENT agrees to such design work as an Optional Service, an Optional Services scope shall be submitted to the District Drainage Office and Project Manager in a timely manner such that it will not change the due date of the first submittal.

The CONSULTANT shall notify the DEPARTMENT if video inspection of the storm sewer system is recommended. Video inspection services will be performed by others under the DEPARTMENT’s Districtwide video inspection contract. Within three weeks following the Notice-To-Proceed, the CONSULTANT shall provide to the DEPARTMENT figures showing the locations of the pipes to be inspected, and shall quantify the length and pipe sizes for the required work. Prior to the first phase submittal of plans, the CONSULTANT shall review the inspection report and provide to the DEPARTMENT recommendations and construction cost estimates for any pipe repair. The design implementation of any approved recommendations not included in this Scope of Services may be added to the Agreement as an Optional Service.
2.3 Utilities Coordination (Activity 7)

Utilities anticipated on the project: The DEPARTMENT’s Utility Permit search found Seven (7) UAOs within the project limits: Bright House Networks, CenturyLink, Frontier Communications, City of Tampa Water, City of Tampa Wastewater, TECO Energy, and TECO Peoples Gas. The Sunshine 811 design ticket was used for reference, with the DEPARTMENT’s Permit search used as a control for coordination. Other controls include field review, phone contacts and as-built plans for previous projects.

In coordination with the Utility Coordinator, the EOR(s) shall develop a utility conflict matrix for each phase submittal to the potentially affected Utility Agency Owners. If the EOR chooses to have the Utility Coordinator develop the conflict matrix, the EOR shall review and become familiar with the spreadsheet.

The EORs for all disciplines that have the potential to affect utility facilities shall meet prior to any scheduled Utility Design Meeting to ensure that the potential conflicts are understood by the Utility Coordinator, that changes to the plans from the last submittal/Utility Design Meeting are understood, and that the project schedule and critical dates are adequately provided to the Utility Coordinator.

The EOR shall review the draft Utility Work Schedules submitted to the Utility Coordinator prior to sending to the DEPARTMENT for review. The EOR shall sign all of the Utility Work Schedules.

For projects with SUE:

The EORs of all disciplines that have the potential to affect underground utility facilities shall meet with the SUE provider’s team as well as the Utility Coordinator as soon as possible after the Notice-To-Proceed is issued to discuss the strategy for gathering SUE in a timely, efficient and calculated manner.

See Section 27.10 for the timing of obtaining designation on utility facilities, as well as when the EOR shall incorporate the information in the plans. The EOR shall begin using the Quality Level B information in the design as soon as it is available, in order to avoid conflicts with utility facilities to the extent practicable.

The SUE provider shall be invited to the utility design meetings

2.4 Environmental Permits, Compliance, and Environmental Clearances (Activities 8a and 8b)

A SWFWMD Individual permit and a USACE Nationwide Permit are necessary to complete this project.

2.5 Structures (Activities 9 – 18)

Bridge(s): N/A

Retaining Walls:
CONSULTANT shall design temporary sheet pile walls for the construction of the proposed culverts. Temporary 1250 LF

Noise Barrier Walls: N/A

Miscellaneous:
CONSULTANT shall provide the design of:
2.6 Signing and Pavement Markings (Activities 19 & 20)

The CONSULTANT shall prepare the signing and pavement marking design file to include all necessary design elements and all associated reference files.

2.7 Signalization (Activities 21 & 22)

Intersections:

Upgrade the existing traffic signals as follows:

- US 92 / SR 600 / S. Dale Mabry Hwy. at Neptune Street: Replace loop assemblies
- US 92 / SR 600 / S. Dale Mabry Hwy. at Henderson Blvd: Replace loop assemblies

Traffic Data Collection: N/A

Traffic Studies: N/A

Portable Traffic Monitoring Sites or Stations: N/A

2.8 Lighting (Activities 23 & 24) – (Optional Services)

2.9 Landscape Architecture (Activities 25 & 26) – N/A

2.10 Survey (Activity 27a except as otherwise noted)

Design Survey:

The CONSULTANT shall provide horizontal and vertical project control (NAD 1983, 2011 adjustment & NAVD 1988); recover/re-establish the historic alignment; reference the alignment and all control points; may provide targeting for photogrammetry or remote sensing; provide 3D topographic/DTM survey through the project limits; provide check cross-sections to verify the accuracy of the DTM; and perform a drainage survey and geotechnical support as required.

The final Survey Line shall be recorded in field books furnished by the CONSULTANT. Field books shall be 6-1/2" by 8-3/4" cross section book with 10 by 10 grid on both sides of opening.

The methodology that is proposed to perform and prepare the topographic/DTM survey is the discretion of the CONSULTANT. This methodology must be approved by the District Surveying and Mapping Dept., the District Location Surveyor, or his designee. When utilizing conventional survey instruments and technologies, the CONSULTANT shall follow the Florida Department of Transportation Surveying and Mapping Procedure, Topic No. 550-030-101. If Terrestrial Static LiDAR instruments and technologies are utilized, the CONSULTANT shall follow the applicable Terrestrial Mobile LiDAR guidelines in the Surveying and Mapping Handbook.

Project Control sheets shall be prepared depicting the horizontal project control, the vertical project control, and the alignment reference points, pursuant to the FDOT Design Manual, Chapter 310.

Subsurface Utility Exploration (Activity 27b):
Basic SUE services shall be provided by the CONSULTANT at various locations throughout the project limits (locations at the discretion of the EOR) to minimize utility conflicts while maintaining the integrity of the DEPARTMENT’S design criteria. Additional SUE services may be provided as needed with an Optional Services Authorization.

Right-of-Way Survey:

The CONSULTANT shall provide a Right of Way Control Survey. The limits shall be from W. Estrella Street to W. Inman Avenue (to coincide with the Right of Way Control Survey performed under FP ID 436494-1).

The Right of Way Control Survey shall abut and be in complete agreement with existing Right of Way Control Survey(s). Existing monumentation shall be held unless it is in the signing surveyor’s opinion the previous Control Survey is in error.

a. Tie section lines, quarter section lines, (and quarter-quarter section lines when pertinent) to the Survey Line. Ties shall be made by closed traverse, appropriate redundancy, or an approved procedure. All corners shall be found or set in the field with corners properly identified with size and type and recorded in the field book.

b. Tie all subdivisions including condominium boundaries, at the beginning and end; block lines, and street right of way lines to the Survey Line. Ties shall be made by closed traverse, appropriate redundancy, or an approved procedure. All block corners shall be found or set in the field with corners properly identified with size and type and recorded in a field book. A sufficient amount of field ties must be made in order to establish the original block boundaries or existing right of way as shown on existing right of way maps in each subdivision and or condominium. Efforts should be made to identify all vacated streets within a subdivision, along with the recording data of vacation. It should be noted that 90° ties from the centerline of the side streets or radial ties to any corner will not be accepted by the DEPARTMENT. All ties must be shown as intersecting the Survey Line with the respective subdivision lines.

c. Make individual property line ties where apparent property line disputes may occur. If information is available from local surveyors, submit copies of their surveys

Vegetation Survey: N/A

2.11 Photogrammetry (Activity 28)

If photogrammetric instruments and technologies are utilized, the CONSULTANT shall follow the FDOT Surveying and Mapping Procedure, Topic No. 550-030-101. The Surveyor shall furnish to the Photogrammetrist the target positions in x, y, and z, and station/offset format so the Photogrammetrist can obtain surface elevations as close as feasible to the stations the designer will use for cross slope correction.

2.12 Mapping (Activity 29)

Control Survey Map:

The field Control Survey shall be presented in the form of a 24” x 36” certified drawing. The CONSULTANT shall certify this drawing as a Control Survey, which meets the Standards of Practice adopted by the Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code. These survey drawings shall be at a scale of 1 inch = 400 feet for a key map and a scale of 1 inch = 40 feet for detail sheets or a scale acceptable to the DEPARTMENT. Unless otherwise directed, the
surveyor shall furnish the DEPARTMENT with a signed, sealed and certified copy of the above map along with the CADD drawing files on disk.

The Right of Way Control Survey shall abut and be in complete agreement with existing Right of Way Control Survey(s). Existing monumentation shall be held unless it is in the signing surveyor’s opinion the previous Control Survey is in error.

All existing right-of-way shall be plotted on the Control Survey with ties by station/offset to the Survey Line at all breaks, including any maintained right of way. Utilize existing monumentation to establish the position of the existing right-of-way. All secondary monumentation located shall be depicted on the map. When utilized to support or determine the position of a primary corner (i.e. block corner, section corner or parent tract corner), and the secondary monument is on-line between two primary corners, then a single in-line distance is sufficient. If the secondary monument is found to not occupy a proper corner position, then a station/offset to the Survey Line can be used, unless the monument can be positioned, by fallings, to a nearby accepted corner.

The CONSULTANT shall acquire a last deed of record for each property adjoining the project limits and research any additional rights of way that may have been acquired by a local governmental agency (i.e. city or county). All deeds, documentation from local government agencies, and supporting documents shall be delivered to the DEPARTMENT.

a. The Cover Sheet (sheet one) shall contain among other things a vicinity map, legend, index of sheets, all pertinent general survey notes, and the Certification that the Control Survey was made for the purpose of surveying, referencing, describing and mapping the Survey Line and providing horizontal position data for the support or control of right of way related maps for the transportation facility shown and depicted hereon. “I further certify said survey was done under my responsible charge and meets the Standards of Practice set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17 Florida Administrative Code pursuant to Section 472.027 Florida Statutes.”

b. The Key Sheet(s) shall be at a scale of 1 inch = 400 feet, or a scale acceptable to the DEPARTMENT, and shall depict the following:

1) Complete Survey Line alignment data, including beginning of survey station, all curve data, bearings on all tangent lines along the Survey line, all intermediate control point stations, and end of survey station. All control points must be identified as to type and size of material found or set at each respective point.

2) All section lines, quarter section lines, and when pertinent. Quarter-quarter section lines must be shown with the station where their intersection with Survey Line occurs, with a distance from the nearest corner to Survey Line, and bearings and distances between all corners. Type of corner, either found or set, should be spelled out or identified by a legend. All ties shall be shown to depict a closed traverse to assure acceptable closure.

c. The Detail Sheet(s) shall be at a scale of 1 inch = 40 feet, or a scale acceptable to the DEPARTMENT, and along with information shown on the Key Sheets shall depict the following:

1) All existing right of way shall be shown with ties to all breaks in the right of way, including any maintained right of way.

2) All subdivisions, including condominium boundaries, must be shown with a station where the Survey Line and each subdivision line intersect. A distance from Survey Line to the existing right of way line or nearest found or set corner, and bearings and distances on all subdivision lines which were intersected with the
Survey Line. All lot and block numbers, street names, plat book, page, recording date, and name of each subdivision must be shown. All ties shall be shown to depict a closed traverse to assure acceptable closure.

d. The Reference Sheet(s) shall be separate sheet(s), does not need to be plotted to scale, and shall depict the following:

1) All of the Survey Line control points and reference lines/points, along with the type and size of material used for each respective reference point;
2) Reference points for Public Land Survey corners that may potentially be removed during planned construction if any, along with the type and size of material used for each respective reference point shall be shown.

The complete Control Survey shall be submitted to the DEPARTMENT for review and approval.

Right-of-Way Map: N/A
Legal Descriptions: N/A
Maintenance Map: N/A
Miscellaneous Items: N/A

2.13 Terrestrial Mobile LiDAR (Activity 30)

If Terrestrial Mobile LiDAR instruments and technologies are utilized, the CONSULTANT shall follow the Terrestrial Mobile LiDAR guidelines in the Surveying and Mapping Handbook.

2.14 Architecture (Activity 31) – N/A

2.15 Noise Barriers (Activity 32) – N/A

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

2.17 Geotechnical (Activity 35)

The CONSULTANT will provide all necessary Geotechnical services for this project.

2.18 3D Modeling (Activity 36)

2.19 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 current anticipated “Production Date” of December 29, 2021 (subject to change). The schedule shall be accompanied by an anticipated payout and fiscal progress curve. For the purpose of scheduling, the CONSULTANT shall allow for a four week review time for each phase submittal and any other submittals as appropriate.

The schedule shall indicate all required submittals.
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, project milestones and progress to date.

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

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

*The above schedule submittal shall reflect project-specific input from each affected DEPARTMENT discipline, including Permits, Utilities, Right-of-Way, and Modal Planning and Development (noise walls, etc.). The CONSULTANT shall be responsible for ensuring that such input is received and reviewed with the DEPARTMENT Project Manager in advance.*

### 2.20 Submittals

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

*All plans and specifications deliverables provided for herein shall support a fully electronic advertisement, bidding and letting process for the construction contract in a manner acceptable to the DEPARTMENT, including compliance with Section 131 of the FDOT Design Manual and with the CADD Production Criteria Handbook (C.P.C.H.). In addition to any required hard copies, the CONSULTANT shall provide .pdf files for all plans phase submittals thru Phase III. Beginning with the Phase IV submittal, the CONSULTANT shall provide the electronic CADD files. In addition to any required hard-copies, all other documents that require DEPARTMENT review shall be submitted in an electronic medium acceptable to the DEPARTMENT Project Manager, including processing through the DEPARTMENT’s Electronic Review and Comment system (ERC).*

*The CONSULTANT shall provide a Constructability and Biddability review of the design with the Phase III or other designated plans submittal. The CONSULTANT's comments and responses developed from this review shall be forwarded to the DEPARTMENT's Construction Services Unit.*

*The CONSULTANT shall have their Quality Control, Quality Assurance and applicable Constructability documents complete and available for review by the DEPARTMENT at the time of each phase submittal.*

*The DEPARTMENT reserves the right to visit the premises of the CONSULTANT at any time to review the project's status, upon one-hour notice.*

### 2.21 Provisions for Work

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

- **General**
  - 29 C.F.R. 1926.1101 – Asbestos Standard for Construction, OSHA
- 40 C.F.R. 61, Subpart M - National Emission Standard for Hazardous Air Pollutants (NESHAP), Environmental Protection Agency (EPA)
- 40 C.F.R. 763, Subpart E – Asbestos-Containing Materials in Schools, EPA
- 40 C.F.R. 763, Subpart G – Asbestos Worker Protection, EPA
- Americans With Disabilities Act (ADA) Standards for Accessible Design
- AASHTO – A Policy on Design Standards Interstate System
- AASHTO – Roadside Design Guide
- AASHTO – Roadway Lighting Design Guide
- AASHTO – A Policy for Geometric Design of Highways and Streets
- AASHTO – Highway Safety Manual
- Rule Chapter 5J-17, Florida Administrative Code (F.A.C.), Standards of Practice for Professional Surveyors and Mappers
- Chapter 469, Florida Statutes (F.S.) – Asbestos Abatement
- Rule Chapter 62-257, F.A.C., Asbestos Program
- Rule Chapter 62-302, F.A.C., Surface Water Quality Standards
- Code of Federal Regulations (C.F.R.)
- Florida Administrative Codes (F.A.C.)
- Chapters 20, 120, 215, 455, Florida Statutes (F.S.) – Florida Department of Business & Professional Regulations Rules
- Florida Department of Environmental Protection Rules
- FDOT Basis of Estimates Manual
- FDOT Computer Aided Design and Drafting (CADD) Manual
- FDOT Standard Plans
- FDOT Flexible Pavement Design Manual
- FDOT - Florida Roundabout Guide
- FDOT Handbook for Preparation of Specifications Package
- FDOT Standard Plans Instructions
- FDOT Materials Manual
- FDOT Pavement Type Selection Manual
- FDOT Design Manual
- FDOT Procedures and Policies
- FDOT Procurement Procedure 001-375-030, Compensation for Consultant Travel Time on Professional Services Agreements
- FDOT Project Development and Environmental Manual
- FDOT Project Traffic Forecasting Handbook
- FDOT Public Involvement Handbook
- FDOT Rigid Pavement Design Manual
- FDOT Standard Specifications for Road and Bridge Construction
- FDOT Utility Accommodation Manual
- Manual on Speed Zoning for Highways, Roads, and Streets in Florida
- Federal Highway Administration (FHWA) - Manual on Uniform Traffic Control Devices (MUTCD)
- FHWA Roadway Construction Noise Model (RCNM) and Guideline Handbook
- Florida Fish and Wildlife Conservation Commission - Standard Manatee Construction Conditions 2005
- Florida Statutes (F.S.)
- Florida’s Level of Service Standards and Guidelines Manual for Planning
- Model Guide Specifications – Asbestos Abatement and Management in Buildings, National Institute for Building Sciences (NIBS)
- Quality Assurance Guidelines
- Safety Standards
- Any special instructions from the DEPARTMENT
Roadway
- FDOT – Florida Intersection Design Guide
- FDOT - Project Traffic Forecasting Handbook
- FDOT - Quality/Level of Service Handbook
- Florida’s Level of Service Standards and Highway Capacity Analysis for the SHS
- Transportation Research Board (TRB) - Highway Capacity Manual

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

Drainage
- FDOT Drainage Design Guide
- FDOT Drainage Manual
- FDOT Erosion and Sediment Control Manual
- FDOT Drainage Connection Permit Handbook
- FDOT Bridge Scour Manual

Survey and Mapping
- All applicable Florida Statutes and Administrative Codes
- Applicable Rules, Guidelines Codes and authorities of other Municipal, County, State and Federal Agencies.
- Florida Department of Transportation Surveying and Mapping Procedure Topic 550-030-101
- Florida Department of Transportation Surveying and Mapping Handbook
- Florida Department of Transportation Right of Way Procedures Manual

Traffic Engineering and Operations and ITS
- AASHTO - An Information Guide for Highway Lighting
- AASHTO - Guide for Development of Bicycle Facilities
- FHWA Standard Highway Signs Manual
- FDOT Manual on Uniform Traffic Studies (MUTS)
- FDOT Median Handbook
- National Electric Safety Code
- National Electrical Code

Florida's Turnpike Enterprise
- Florida’s Turnpike Plans Preparation and Practices Handbook (TPPPH)
- Florida’s Turnpike Lane Closure Policy
- Florida’s Turnpike Drainage Manual Supplement
- Rigid Pavement Design Guide for Toll Locations with Electronic Toll Collection
- Flexible Pavement Design Guide for Toll Locations with Electronic Toll Collection
- Florida’s Turnpike General Tolling Requirements (GTR)
- Additional Florida’s Turnpike Enterprise standards, guides, and policies for design and construction can be found on the FTE Design Website: http://design.floridasturnpike.com

Traffic Monitoring
- American Institute of Steel Construction (AISC) Manual of Steel Construction, referred to as “AISC Specifications”
- American National Standards Institute (ANSI) RP-8-00 Recommended Practice for Roadway Lighting
o AASHTO AWS D1.1/ANSI Structural Welding Code – Steel
o AASHTO D1.5/ANSI Structural Welding Code
o FHWA Traffic Detector Handbook
o FDOT General Interest Roadway Data Procedure
o FHWA Traffic Monitoring Guide
o FDOT’s Traffic/Polling Equipment Procedures

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

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

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

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

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

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

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

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

- Architectural – Miscellaneous Systems
  - NFPA 45 - Laboratories Using Chemicals
  - NFPA 80 - Fire Doors and Windows
  - NFPA 88A - Parking Structures
  - NFPA 105 - Smoke and Draft-control Door Assemblies
  - NFPA 110 - Emergency and Standby Power Systems
  - NFPA 220 - Types of Building Construction
  - NFPA 241 - Safeguard Construction, Alteration, and Operations
  - Rule Chapter 69A-47, F.A.C., Uniform Fire Safety For Elevators
  - Rule Chapter 69A-51, F.A.C., Boiler Safety

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

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

When appropriate and/or available, the DEPARTMENT will provide project data, including the following, except as otherwise noted herein:

- Numbers for field books.
- Preliminary Horizontal Network Control.
- Access for the CONSULTANT to utilize the DEPARTMENT’s Information Technology Resources.
- All DEPARTMENT agreements with Utility Agency Owner (UAO).
- All certifications necessary for project letting.
- Building Construction Permit Coordination (Turnpike)
- All information that may come to the DEPARTMENT pertaining to future improvements.
- All future information that may come to the DEPARTMENT during the term of the CONSULTANT’s Agreement, which in the opinion of the DEPARTMENT is necessary for the prosecution of the work.
- Available traffic and planning data.
- All approved utility relocations.
- Project utility certification to the DEPARTMENT’s Central Office.
- Any necessary title searches.
- Engineering standards review services.
- All available information in the possession of the DEPARTMENT pertaining to utility companies whose facilities may be affected by the proposed construction.
- All future information that may come to the DEPARTMENT pertaining to subdivision plans so that the CONSULTANT may take advantage of additional areas that can be utilized as part of the existing right of way.
- Systems traffic for Projected Design Year, with K, D, and T factors.
- 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.
- PD&E Documents
- Design Reports
- Letters of authorization designating the CONSULTANT as an agent of the DEPARTMENT in accordance with F.S. 337.274.
Phase reviews of plans and engineering documents.

Regarding Environmental Permitting Services:
- Approved Permit Document when available.
- Approval of all contacts with environmental agencies.
- General philosophies and guidelines of the DEPARTMENT to be used in the fulfillment of this contract. Objectives, constraints, budgetary limitations, and time constraints will be completely defined by the Project Manager.
- Appropriate signatures on application forms.

3 PROJECT COMMON AND PROJECT GENERAL TASKS

PROJECT COMMON TASKS

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

Cost Estimates: The CONSULTANT shall be responsible for producing a construction cost estimate (Engineer’s Estimate and LRE or AASHTOWare Project Preconstruction estimate) and reviewing and updating those cost estimates within twenty-one (21) days after Notice-To-Proceed, when scope changes occur, at production milestones of the project, for the annual Work Program Update Cycle, and when directed by the DEPARTMENT Project Manager. Prior to 60% plans and completion of quantities, the DEPARTMENT’s Long Range Estimate (L.R.E.) system shall be used to produce a conceptual estimate, according to District policy. Once the quantities have been developed (beginning at 60% plans and no later than 90% plans) the CONSULTANT shall be responsible for inputting the pay items and quantities into AASHTOWare Project Preconstruction as approved by the DEPARTMENT through the use of the DEPARTMENT’s Designer Interface for generating the summary of quantities and the DEPARTMENT’s in-house estimates. A Summary of Pay Items sheet shall be prepared with all required Plans submittals as required. Each Engineer’s Estimate and LRE/AASHTOWare submittal shall be accompanied by an equal number of copies of the Preliminary Project Report (PPR) updated by the CONSULTANT in the District standard format, including the updated Record Page.

At each plans phase submittal and for the annual Work Program Update Cycle, the CONSULTANT shall provide a copy of the plans and the most current Right-of-Way Maps to the District Right-of-Way Cost Estimate Coordinator.

Construction Duration: The CONSULTANT shall develop an estimate of construction contract duration based on the guidelines set forth in Chapter 1.2 of the DEPARTMENT’s Construction Project Administration Manual (CPAM). This estimate shall be based on quantities per MOT phase and submitted to the Construction Services Unit with the Phase III or other designated submittal package.

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

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

The Technical Special Provisions shall provide a description of work, materials, equipment and specific requirements, method of measurement and basis of payment. Proposed Technical Special Provisions shall 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 shall allow for adequate processing time prior to final submittal. The Technical Special Provisions shall 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.

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

The CONSULTANT shall coordinate with the DEPARTMENT Project Manager to arrange a Local Government Coordination Meeting for discussion of the plans and solicitation of local government input. The meeting shall coincide with a Plans Phase Submittal or other submittal as directed by the DEPARTMENT’s Project Manager. As a minimum, attendees shall include the Project Manager, local government representatives (preferably Director of Public Works/Municipal Engineer level) and the CONSULTANT. The CONSULTANT, via the DEPARTMENT’s Project Manager, shall give adequate advance notification to the DEPARTMENT’s District Public Information Office of the meeting’s time, date, place and participants, so that local elected officials are aware of the meeting. The CONSULTANT shall prepare timely meeting minutes for attendee approval, so that all parties are aware of project expectations and limitations.

Quality Assurance/Quality Control: It is the intention of the DEPARTMENT that design CONSULTANTS, including their subconsultant(s) are held responsible for their work, including plans review. The purpose of CONSULTANT plan reviews is to ensure that CONSULTANT plans follow the plan preparation procedures outlined in the FDOT Design Manual, that state and federal design criteria are followed with the DEPARTMENT concept, and that the CONSULTANT submittals are complete. All subconsultant document submittals shall be submitted by the subconsultant directly to the CONSULTANT for their independent Quality Assurance/Quality Control review and subsequent submittal to the DEPARTMENT.

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

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

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

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

An Independent Peer Review and a Constructability/Bidability Review for design Phase Plans document submittals are required on this project. These separate reviews shall be completed by someone who has not worked on the plan component that is being reviewed. These could include, but are not limited to a separate office under the Prime 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/Bidability Review shall be performed by a person with experience working on DEPARTMENT construction projects (CEI, Contractor, etc.).

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

Supervision: The CONSULTANT shall supervise all technical design activities.

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

Project General Tasks

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

3.1 Public Involvement

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

In accordance with F.S. 335.199, if the project is on the State Highway System and will divide a highway, erect median barriers that modify currently available vehicle turning movements, or have the effect of closing or modifying an existing access to an abutting property owner, then 1) all affected property owners and local governments shall be so notified at least 180 days before the project design is finalized, 2) the applicable local government shall be consulted with regarding the final project design in a manner that allows such government to present alternatives to relieve impacts to commercial business properties, and 3) at least one advertised and recorded public hearing shall be held to determine how the project will affect access to businesses and the potential economic impact of the project on the local business community. All comments from such public hearing shall be taken into consideration in the final design of the project. The CONSULTANT shall support the DEPARTMENT in implementing the above activities.

In accordance with the Community Awareness Plan, the CONSULTANT shall prepare and mail notification letters and necessary graphics to abutting property owners along those portions of the project where construction activity is proposed outside of the existing roadway pavement and no right-of-way will be acquired. The letters shall inform the owners about the proposed construction and the DEPARTMENT’s intent to utilize the existing right-of-way, including border areas, to the fullest extent possible, notwithstanding any existing amenities, such as parking, landscaping, walls, etc. The letter format shall be reviewed and approved by the DEPARTMENT prior to the mailings.

3.1.1 Community Awareness Plan

See Section 2.1 Public Involvement. The Plan shall be reviewed and updated periodically as directed by the DEPARTMENT throughout the life of the project.

3.1.2 Notifications

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

3.1.3 Preparing Mailing Lists – N/A

3.1.4 Median Modification Letters – (Optional Services)

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. Upon approval by the DEPARTMENT, the letters shall be sent on DEPARTMENT letterhead by the CONSULTANT.

3.1.5 Driveway Modification Letters – (Optional Services)

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 shall be sent by the CONSULTANT on DEPARTMENT letterhead upon approval by the DEPARTMENT.
3.1.6 Newsletters – N/A

3.1.7 Renderings and Fly-Throughs – N/A

3.1.8 PowerPoint Presentations – N/A

3.1.9 Public Meeting Preparations – (Optional Services)

The CONSULTANT shall prepare the necessary materials for use in public meetings. The CONSULTANT shall investigate potential meeting sites in order to advise the DEPARTMENT on their suitability. The CONSULTANT shall pay all costs for meeting site rents and insurance. No DEPARTMENT meetings shall be held on public school system properties.

3.1.10 Public Meeting Attendance and Follow-up – (Optional Services)

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

The CONSULTANT shall attend the meetings with an appropriate number of personnel to assist the DEPARTMENT’s Project Manager.

It is estimated for this project there may be a public meeting during the design.

3.1.11 Other Agency Meetings

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

3.1.12 Web Site – N/A

3.2 Joint Project Agreements – N/A

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

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

3.4 Contract Maintenance and Project Documentation

Contract maintenance includes project management effort for complete setup and maintenance of files, electronic folders and documents, developing technical 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, including uploading files to Electronic Document Management System (EDMS) or Project Suite Enterprise Edition (PSEE).

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

3.6 Prime Consultant Project Manager Meetings

Includes only the Prime CONSULTANT Project Manager’s time for travel and attendance at Activity Technical Meetings and other meetings listed in the meeting summary for Task 3.6 on tab 3.0 Project General Task of the staff hour forms. Staff hours for other personnel attending Activity Technical Meetings are included in the meeting task for that specific Activity.

3.7 Plans Update (Optional Services)

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."

3.8 Post Design Services (Optional Services)

Post Design Construction Assistance Services may include, but are not limited to, meetings, construction assistance, plans revisions, shop drawing review, survey services, as-built drawings, expert witness testimony and load ratings. These services are not intended for instances of CONSULTANT errors and/or omissions.

3.9 Digital Delivery

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.

3.10 Risk Assessment Workshop – N/A

3.11 Railroad, Transit and/or Airport Coordination

3.11.1 Aeronautical Evaluation

The CONSULTANT shall be responsible for complying with the requirements of Title 14 of the Code of Federal Regulations (CFR) Part 77, if any portion of the project is within five (5) nautical miles of the nearest point of the nearest runway of each airport/heliport described in 14 CFR Part 77.9(d). When appropriate the CONSULTANT shall be responsible for determining whether it is
necessary to file a notice of construction or alteration, related to the project structures, with the Federal Aviation Administration (FAA), including utilizing the FAA Notice Criteria Tool. The results of inquiries to the Notice Criteria Tool and copies of any required filings of FAA Form 7460-1 shall be provided to the DEPARTMENT. All filings of 7460-1 shall be done electronically at the FAA website.

When appropriate, the CONSULTANT shall obtain Determinations (aeronautical studies) from the FAA regarding the effect of project structures on the navigable airspace and provide copies to the DEPARTMENT. The DEPARTMENT shall be immediately notified of any Notice of Presumed Hazard which may require modifications to the project plans. The CONSULTANT shall be responsible for designating who will be responsible for compliance with the “conditions” and deadlines of the Determinations.

*Project is approximately 2.4 miles to TPA and 3.4 miles to Peter O Knight. EOR to utilize FAA website to verify project scope will not interfere with Aviation.*

*FAA form requirements when it is within 5 miles of an airport. The link below is to the FAA website and will provide the criteria if the form submittal is needed:*


3.12 Landscape and Existing Vegetation Coordination – N/A

3.13 Other Project General Tasks – N/A

4 ROADWAY ANALYSIS

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

4.1 Typical Section Package

The CONSULTANT shall provide an approved Typical Section Package prior to the first plans submittal.

4.2 Pavement Type Selection Report – N/A

4.3 Pavement Design Package

The CONSULTANT shall provide an approved Pavement Design Package prior to the Phase II plans submittal date.

4.4 Cross-Slope Correction – N/A

4.5 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, PD&E documents and scope of work. The CONSULTANT shall also develop utility conflict information to be provided to project Utility Coordinator in the format requested by the DEPARTMENT, and shall review Utility Work Schedules.
4.6 Access Management

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

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

4.7 Roundabout Evaluation – N/A

4.8 Roundabout Final Design Analysis – N/A

4.9 Cross Section Design Files – See Task 36.5

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

4.10 Traffic Control Analysis

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

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

Every effort shall be made to maintain signal detection throughout the life of the construction. The type of detection and the location shall be included in the Traffic Control Plan.

The CONSULTANT shall consider the local impact of any lane closures or alternate routes. When the need to close a road is identified during this analysis, the CONSULTANT shall notify the DEPARTMENT's Project Manager as soon as possible. Proposed road closings must be reviewed and approved by the DEPARTMENT. Diligence shall be used to minimize negative impacts by appropriate specifications, recommendations or plans development. Local impacts to consider shall include emergency vehicle response time, local events, holidays, peak seasons, detour route deterioration, transit agency routes and features and other eventualities. The CONSULTANT shall be responsible for obtaining the local authorities’ permission for use of detour routes not on state highways. Affected transit agencies shall be notified in advance about...
bus route lane closures and detours. The DEPARTMENT's Construction Services Unit will provide the lane closure calculations to the CONSULTANT.

4.11 Master TCP Design Files

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

4.12 Selective Clearing and Grubbing – N/A

4.13 Tree Disposition Plans – N/A

4.14 Design Variations and Exceptions

If available, the DEPARTMENT shall furnish the Variation/Exception Report. The CONSULTANT shall prepare the documentation necessary to gain DEPARTMENT approval of all appropriate Design Variations and/or Design Exceptions before the first plans submittal.

4.15 Design Report

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

4.16 Quantities

The CONSULTANT shall develop accurate quantities, the required plans sheets and their supporting documentation, including construction days when required.

4.17 Cost Estimate

4.18 Technical Special Provisions and Modified Special Provisions – N/A

4.19 Other Roadway Analyses – (Optional Services)

4.20 Field Reviews

4.21 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 the FDOT Design Manual Chapter 307. The CONSULTANT shall identify the necessary pay items to be included in the bid documents to monitor existing structures.

Optional Services: The CONSULTANT shall coordinate with and assist the geotechnical engineer and/or structural engineer to develop mitigation strategies (when applicable).

4.22 Technical Meetings

4.23 Quality Assurance/Quality Control

4.24 Independent Peer Review – N/A

4.25 Supervision

4.26 Coordination
5 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.

5.1 Key Sheet

5.2 Summary of Pay Items Including Quantity Input

5.3 Typical Section Sheets

5.3.1 Typical Sections

5.3.2 Typical Section Details

5.4 General Notes/Pay Item Notes

5.5 Summary of Quantities Sheets

5.6 Project Layout – N/A

5.7 Plan/Profile Sheet – N/A

5.8 Profile Sheet

5.9 Plan Sheet

The CONSULTANT shall depict all lane lines for the entire plan portion of the roadway plans to include all intersections with directional arrows preceding and following the intersection proper. In addition, directional arrows should be indicated at the beginning and end of each sheet to provide ease of reviewing. A note shall be added to the first plan sheet stating that these lane lines and directional arrows are for informational purposes only. All phase submittals shall include this information except for the final contract documents.

5.10 Special Profile

5.11 Back-of-Sidewalk Profile Sheet – (Optional Services)

5.12 Interchange Layout Sheet – N/A

5.13 Ramp Terminal Details (Plan View) – N/A

5.14 Intersection Layout Details

5.15 Special Details

For projects with required right-of-way acquisition, the CONSULTANT shall provide a set of visual aid maps. These maps shall provide a clean and clear view of the DEPARTMENT’s intentions for the Project’s development. The following map features are required: Baseline/Centerline call-out with bearing and curve information; Begin and End Project with stations; North arrow and scale/ratio; label existing and proposed right-of-way with station and offset; labeling of existing and proposed sidewalks (if applicable), existing and proposed driveways, proposed curb and gutter (Urban) or shoulders (Rural), proposed traffic separators
(if applicable), directional arrows for each travel lane; shading of all property takings/impacts and labeled by parcel ID; legend for proposed design indicated in red; existing features in black; property lines in magenta; and a “FOR VISUAL AID ONLY” stamp on each sheet.

The CONSULTANT shall furnish a minimum of one set of prints for the Phase II review. Two sets shall be required for the Phase IV submittal. At each submittal, the CONSULTANT shall include one or more single session CD-ROM disk(s) written in acceptable format, containing CADD design files in Micro Station format on acceptable media.

5.16 Cross-Section Pattern Sheet(s) – N/A
5.17 Roadway Soil Survey Sheet(s)
5.18 Cross Sections
5.19 Temporary Traffic Control Plan Sheets
5.20 Temporary Traffic Control Cross Section Sheets
5.21 Temporary Traffic Control Detail Sheets
5.22 Utility Adjustment Sheets
5.23 Selective Clearing and Grubbing Sheet(s) – N/A
5.24 Tree Disposition Plan Sheet(s) – N/A
5.25 Project Network Control Sheet(s)
5.26 Environmental Detail Sheets – N/A
5.27 Utility Verification Sheet(s) (SUE Data)
5.28 Quality Assurance/Quality Control
5.29 Supervision

6a DRAINAGE ANALYSIS

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

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

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

6a.1 Drainage Map Hydrology

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

6a.2 Base Clearance Calculations – N/A

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

6a.4 Design of Cross Drains – N/A

6a.5 Design of Ditches – N/A

6a.6 Design of Stormwater Management Facility (Offsite or Infield Pond) – N/A

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

6a.8 Design of Floodplain Compensation – N/A

6a.9 Design of Storm Drains

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

6a.10 Optional Culvert Material

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

6a.11 French Drain Systems – N/A

6a.11a Existing French Drain Systems – N/A

6a.12 Drainage Wells – N/A

6a.13 Drainage Design Documentation Report

Compile drainage design documentation into report format. Include documentation for all the drainage design tasks and associated meetings and decisions, except for stand-alone reports, such as the Pond Siting Analysis Report and Bridge Hydraulics Report. *The report shall include in an appendix a copy of the project scope, negotiated staff-hours and the Long Range Estimate (LRE).*

6a.14 Bridge Hydraulic Report – N/A

6a.15 Temporary Drainage Analysis

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

6a.16 Cost Estimate
Prepare cost estimates for the drainage components, except bridges and earthwork for stormwater management and flood compensation sites.

6a.17 Technical Special Provisions / Modified Special Provisions – N/A

6a.18 Hydroplaning Analysis – N/A

6a.19 Existing Permit Analysis

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

6a.20 Other Drainage Analysis

6a.21 Field Reviews

6a.22 Technical Meetings

6a.23 Environmental Look-Around Meetings – N/A

6a.24 Quality Assurance/Quality Control

6a.25 Independent Peer Review – N/A

6a.26 Supervision

6a.27 Coordination

6b DRAINAGE PLANS

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

6b.1 Drainage Map (Including Interchanges)

6b.2 Bridge Hydraulics Recommendation Sheets – N/A

6b.3 Summary of Drainage Structures

6b.4 Optional Pipe/Culvert Material

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

6b.6 Miscellaneous Drainage Detail Sheets

6b.7 Lateral Ditch Plan/Profile – N/A

6b.8 Lateral Ditch Cross Sections – N/A

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

6b.10 Retention Pond Cross Sections – N/A

6b.11 Erosion Control Plan Sheet(s)
If applicable, the scope and staff-hours for this activity shall be covered under Section 8.4.

6b.12 SWPPP Sheet(s)

If applicable, the scope and staff-hours for this activity shall be covered under Section 8.4.

6b.13 Quality Assurance/Quality Control

6b.14 Supervision

7 UTILITIES

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

7.1 Kickoff Meeting

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

7.2 Identify Existing UAO(s)

The CONSULTANT shall identify all utilities within and adjacent to the project limits that may be impacted by the project. The CONSULTANT shall identify interconnect communications and other DEPARTMENT joint use facilities and fully coordinate the relocation/adjustment of the affected UAO’s.

7.3 Make Utility Contacts

First Contact: The CONSULTANT shall send letters and an electronic set of plans (both pdf and dgn files), to each utility. Hard copies of plans shall be sent upon request of a utility. 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 the UAO requests for reimbursement to the DEPARTMENT for a legal opinion. Include the meeting schedule (if applicable) and the design schedule. Include a typical meeting agenda. If scheduling a meeting, give four weeks advance notice.

Second Contact: At a minimum of four weeks prior to the meeting, the CONSULTANT shall transmit an electronic set (both pdf and dgn files) of the Phase II plans, the List of Plan Changes since first contact and the Utility Conflict Matrix (when applicable) to each UAO having facilities located within the project limits. Hard copies of plans shall be sent upon request of a utility.

Third Contact: Identify agreements and assemble packages. At a minimum of four weeks prior to the meeting, the CONSULTANT shall transmit an electronic set (both pdf and dgn files) of the Phase III plans, agreements, List of Plan Changes since previous contact and the Utility Conflict Matrix to each UAO having facilities located within the project limits. Hard copies of plans shall be sent upon request of a utility.

Final Contact (Phase IV): Transmit an electronic set (both pdf and dgn files) of Phase IV (100%) plans to each of the involved UAO(s).
Not all projects will have all contacts as described above.

7.4 Exception Processing

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

7.5 Preliminary Utility Meeting

The CONSULTANT shall schedule (time and place), notify participants about, and conduct a preliminary utility meeting with all UAO(s) having facilities located within the project limits for the purpose of presenting the project, reviewing the current design schedule, evaluating the utility information collected, providing follow-up information on compensable property rights from the DEPARTMENT’s Legal Office, discussing the utility work by highway contractor option with each utility, and discussing any future design issues that may impact utilities. This meeting is also an opportunity for the UAO(s) to present proposed facilities. The CONSULTANT shall keep accurate minutes and distribute a copy to all attendees.

7.6 Individual/Field Meetings

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

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

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

7.8 Subordination of Easements Coordination

The District Right of Way Office will handle processing of all Subordinations of Easements. The CONSULTANT shall refer all UAOs to the District Right of Way Office.

7.9 Utility Design Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a Utility meeting with all affected UAO(s). The CONSULTANT shall be prepared to discuss impacts to existing trees/vegetation and proposed landscape, drainage, traffic signalization, maintenance of traffic (construction phasing), review the current design schedule and letting date, evaluate the utility information collected, provide follow-up information on compensable property rights from FDOT Legal Office, discuss with each UAO the utility work by highway contractor option, discuss any future design issues that may impact utilities, etc., to the extent that they may have an effect on existing or proposed utility facilities with particular emphasis on drainage and maintenance of traffic with each UAO. The intent of this meeting shall be to assist the UAOs in
identifying and resolving conflicts between utilities and proposed construction before completion of the plans, including utility adjustment details. Also to work with the UAOs to recommend potential resolution between known utility conflicts with proposed construction plans as may be deemed practical by the UAO. The CONSULTANT shall be prepared to discuss all findings from Utility Designating and Locating efforts, and the possible need for additional verification. 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 Files) for utility conflict location identification and adjustments.

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

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

7.11 Utility Coordination/Follow-up

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

7.12 Utility Constructability Review

The CONSULTANT shall review utility schedules against construction contract time, and phasing for compatibility. Coordinate with and obtain written concurrence from the DEPARTMENT’s construction office. See Task 4.5 Horizontal/Vertical Master Design Files for utility conflict identification and adjustments.

7.13 Additional Utility Services (Optional Services)

7.14 Processing Utility Work by Highway Contractor (UWHC)

This includes coordination of utility design effort between the DEPARTMENT and the UAO(s). The CONSULTANT shall conduct additional coordination meetings, prepare and process the agreements, review tabulation of quantities, perform UWHC constructability and bidability review, review pay items, cost estimates and Technical Special Provisions (TSP) or Modified Special Provision (MSP) prepared by the UAO. This does not include utility the utility design effort.

7.15 Contract Plans to UAO(s)

If requested by the District:

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

7.16 Certification/Close-Out

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

All utility negotiations (Full execution of each agreement, approved Utility Work Schedules, Technical Special Provisions 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.

7.17 Other Utilities

The CONSULTANT shall provide other utility services. This includes all efforts for a utility task not covered by an existing defined task. Required work will be defined in the scope and negotiated on a case-by-case basis. The CONSULTANT shall review Utility Permits submitted during design phases of the project to ensure the UAO's proposed work does not create a conflict.

8 ENVIRONMENTAL PERMITS, COMPLIANCE AND ENVIRONMENTAL CLEARANCES

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

8.1 Preliminary Project Research

8.2 Field Work

8.3 Agency Verification of Wetland Data

8.4 Complete and Submit All Required Permit Applications

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

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

The CONSULTANT shall be responsible for the payment of all fees for permit applications and legal notices.

Local Permits:
8.4.1 Complete and Submit all Required Wetland Permit Applications:

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

8.4.2 Prepare Species Permit Applications – N/A

8.4.3 The CONSULTANT shall evaluate the project to determine if a “Storm Water Discharges Associated with Industrial Activity Permit” is required as defined in 40 CFR Part 122.26(b)(14)(x) and/or Chapter 62-621.300(4)(a) FAC. If no permit is required, this determination shall be documented to the Project Manager and the Environmental Permit Coordinator in writing.

8.4.4 Storm Water Pollution Prevention Plan (SWPPP)

If a permit is required, the CONSULTANT shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for each project(s) application package.

8.4.5 Prepare Wetland Protection Plan

If a permit is required, the CONSULTANT shall prepare a Wetland/OSW Protection Plan (WPP) for each project(s) application package.

8.4.6 The CONSULTANT shall determine the pay items and quantities for erosion control devices. The Storm Water Pollution Prevention and “Plan/Work Sheets” shall be developed to a level to provide the erosion control pay items and quantities to be included in the Plans/Construction Documents and Engineers Estimate(s); however, Erosion Control “Plan/Work Sheets” do not need to be submitted with phase submittals or final plans.

8.5 Coordinate and Review Dredge and Fill Sketches

8.6 Prepare USCG Permit Application – N/A

8.7 Prepare Water Management District or Local Water Control District Right-of-Way Occupancy Permit Application – N/A

8.8 Prepare Coastal Construction Control Line (CCCL) Permit Application– N/A

8.9 Prepare Tree Permit Information – N/A

8.10 Compensatory Mitigation Design – N/A

8.11 Mitigation Coordination and Meetings

8.12 Other Environmental Permits – N/A
Environmental Clearances, Reevaluations and Technical Support

8.13 Technical Support To The Department For Environmental Clearances and Re-evaluations – N/A

8.14 Preparation of Environmental Clearances and Re-evaluations – N/A

8.15 Contamination Impact Analysis

_The DEPARTMENT will provide all such necessary services._

8.16 Asbestos Survey

_The DEPARTMENT will provide all such necessary services._

8.17 Technical Meetings – N/A

8.18 Quality Assurance/Quality Control

8.19 Supervision

8.20 Coordination

9 STRUCTURES – SUMMARY AND MISCELLANEOUS TASKS AND DRAWINGS

The CONSULTANT shall analyze, design and develop contract documents for all structures in accordance with applicable provisions as defined in Section 2.20, Provisions for Work. Individual tasks identified in Sections 9 through 18 are defined in the Staff Hour Estimation Handbook and within the provision defined in Section 2.20, Provisions for Work. Contract documents shall display economical solutions for the given conditions and be of such quality that they may be reproduced and used by the DEPARTMENT as bid documents for construction.

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

9.1 Key Sheet and Index of Drawings

9.2 Project Layout – N/A

9.3 General Notes and Bid Item Notes

9.4 Miscellaneous Common Details

9.5 Incorporate Report of Core Borings

9.6 Standard Plans - Bridges

9.7 Existing Bridge Plans
9.8 Assemble Plan Summary Boxes and Quantities – N/A
9.9 Cost Estimate
9.10 Technical Special Provisions and Modified Special Provisions – N/A
9.11 Field Reviews
9.12 Technical Meetings
9.13 Quality Assurance/Quality Control
9.14 Independent Peer Review – N/A
9.15 Supervision
9.16 Coordination

10 STRUCTURES – BRIDGE DEVELOPMENT REPORT – N/A
11 STRUCTURES – TEMPORARY BRIDGE – N/A
12 STRUCTURES – SHORT SPAN CONCRETE BRIDGE – N/A
13 STRUCTURES – MEDIUM SPAN CONCRETE BRIDGE – N/A
14 STRUCTURES – STRUCTURAL STEEL BRIDGE – N/A
15 STRUCTURES – SEGMENTAL CONCRETE BRIDGES – N/A
16 STRUCTURES – MOVABLE SPAN – N/A
17 STRUCTURES – RETAINING WALLS

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

General Requirements
17.1 Key Sheet – N/A
17.2 Horizontal Wall Geometry

Temporary Proprietary Walls – N/A

17.7 Vertical Wall Geometry
17.8 Semi-Standard Drawings
17.9 Wall Plan and Elevations (Control Drawings)
17.10 Details

Cast-In-Place Retaining Walls – N/A
Other Retaining Walls and Bulkheads – N/A

18 STRUCTURES – MISCELLANEOUS

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

Concrete Box Culverts

18.1 Concrete Box Culverts

18.2 Concrete Box Culverts Extensions

18.3 Concrete Box Culvert Data Table Plan Sheets

18.4 Concrete Box Culvert Special Details Plan Sheets

Strain Poles – N/A

Mast Arms - Optional Services

18.9 Mast Arms

18.10 Mast Arms Data Table Plan Sheets

18.11 Mast Arms Special Details Plan Sheets

Overhead/Cantilever Sign Structure – N/A

High Mast Lighting – N/A

Noise Barrier Walls (Ground Mount) – N/A

Special Structures

18.28 Fender System – N/A

18.29 Fender System Access – N/A

18.30 Special Structures – N/A

18.31 Other Structures

Ancillary Structures Report

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

18.33 Condition Evaluation of Signal and Sign Structures, and High Mast Light Poles (No As-Built or Design Plans Available) – N/A

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

18.35 Ancillary Structures Report

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

19.1 Traffic Data Analysis - Optional Services

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

19.2 No Passing Zone Study – N/A

19.3 Reference and Master Design File

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

19.4 Multi-Post Sign Support Calculations - N/A

19.5 Sign Panel Design Analysis-Optional Services

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

19.6 Sign Lighting/Electrical Calculations – N/A

19.7 Quantities

*The CONSULTANT shall provide quantity take off for the project at phases III, IV, and final for the signing and pavement-marking component of the entire project.*

19.8 Cost Estimate

*The CONSULTANT shall be responsible for producing an accurate engineer’s construction cost estimate for the signing and pavement marking component at phases III, IV and final.*

19.9 Technical Special Provisions and Modified Special Provisions-N/A

19.10 Other Signing and Pavement Marking Analysis-N/A

19.11 Field Reviews

*The CONSULTANT shall conduct field reviews of the project. This includes all trips required to obtain necessary data for all elements of the project.*

19.12 Technical Meetings

*The CONSULTANT shall attend phase review meetings for the plan submittal phases of the project with a representative from the District Traffic Design Engineer’s office to resolve technical issues during the design process.*

19.13 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 CONSULTANT under the 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 it may be one specifically designed for this project. The CONSULTANT shall utilize the District’s quality control checklist for traffic design drawings. 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 the designs, maps, drawings, specifications and/or other services.

19.14 Independent Peer Review – N/A

19.15 Supervision

The CONSULTANT shall provide all efforts required to supervise all technical design activities including the work of the subconsultants.

19.16 Coordination

The CONSULTANT shall provide all efforts to coordinate with all disciplines of the project to produce a final set of construction documents and to ensure high degree of accuracy for the design plans is achieved.

20 SIGNING AND PAVEMENT MARKING PLANS

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

20.1 Key Sheet

The CONSULTANT shall prepare the key sheet in accordance with the latest format depicted in the FDOT Design Manual.

20.2 Summary of Pay Items Including Quantity Input - N/A

20.3 Tabulation of Quantities

The CONSULTANT shall include all project quantities in the tabulation of quantities sheets and provide updating of the tabulation of quantities sheets.

20.4 General Notes/Pay Item Notes

The CONSULTANT shall include all pertinent general notes and pay item notes as deemed fit and as established by the District Traffic Design Engineer’s office.

20.5 Project Layout – N/A

20.6 Plan Sheet
The CONSULTANT shall prepare the Signing & Marking plan sheets utilizing the Design file to include all necessary information related to the project design elements and all associated reference files. All traffic plans shall be prepared at a scale of 1″ = 40’.

20.7 Typical Details - Optional Services

20.8 Guide Sign Work Sheet(s) - Optional Services

The CONSULTANT shall prepare Guide Sign Work Sheet for the advanced street name signs approaching the signalized intersections utilizing the District’s Traffic Design Guidelines. The CONSULTANT shall utilize the guide sign design software approved by the DEPARTMENT.

20.9 Traffic Monitoring Site – N/A

20.10 Cross Sections - N/A

20.11 Special Service Point Details – N/A

20.12 Special Details - N/A

20.13 Interim Standards - N/A

20.14 Quality Assurance/Quality Control

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

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

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

20.15 Supervision

The CONSULTANT shall provide all efforts required to supervise all technical design activities including the work of the sub-consultants.

21 SIGNALIZATION ANALYSIS

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

21.1 Traffic Data Collection – Optional Services

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

21.2 Traffic Data Analysis-Optional Services
The CONSULTANT shall determine signal operation plan, intersection geometry, local signal timings, pre-emption phasing & timings, forecasting traffic, and intersection analysis run.

21.3 Signal Warrant Study - *Optional Services*

21.4 Systems Timings – *N/A*

21.5 Reference and Master Signalization Design File

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

21.6 Reference and Master Interconnect Communication Design File – *Optional Services*

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

21.7 Overhead Street Name Sign Design - *Optional Services*

The CONSULTANT shall design Signal Mounted Overhead Street Name signs.

21.8 Pole Elevation Analysis - *Optional Services*

21.9 Traffic Signal Operation Report - *N/A*

21.10 Quantities

*The CONSULTANT shall provide quantity take-offs for the project at phases III, IV and final for the signalization component of the entire project.*

21.11 Cost Estimate

*The CONSULTANT shall be responsible for producing an accurate engineer’s construction cost estimate for the signalization component at phase III, IV and final.*


21.13 Other Signalization Analysis- *Optional Services*

21.14 Field Reviews

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

- Existing Signal and Pedestrian Phasing
- Controller Make, Model, Capabilities and Condition/Age
- Condition of Signal Structure(s)
- Type of Detection as Compared with Current District Standards
- Interconnect Media
- Controller Timing Data

21.15 Technical Meetings

*The CONSULTANT shall attend phase review meetings for the plan submittal phases of the project with a representative from the District Traffic Design Engineer’s office to resolve technical issues during the design process.*
21.16 Quality Assurance/Quality Control

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

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

The CONSULTANT shall utilize the District’s quality control checklist for traffic design drawings. 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 the designs, maps, drawings, specifications and/or other services.

21.17 Independent Peer Review – N/A

21.18 Supervision

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

21.19 Coordination

The CONSULTANT shall provide all efforts to coordinate with all disciplines of the project to produce a final set of construction documents and to ensure a high degree of accuracy for the design plans is achieved.

22 SIGNALIZATION PLANS

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

22.1 Key Sheet

The CONSULTANT shall prepare the key sheet in accordance with the latest format depicted in the FDOT Design Manual.

22.2 Summary of Pay Items Including Designer Interface Quantity Input - N/A

22.3 Tabulation of Quantities

The CONSULTANT shall include all project quantities in the tabulation of quantities sheets and provide updating of the tabulation of quantities sheets.

22.4 General Notes/Pay Item Notes

The CONSULTANT shall include all pertinent general notes and pay item notes as deemed fit and as established by the District Traffic Design Engineer’s office.

22.5 Plan Sheet
22.6 Interconnect Plans – Optional Services

22.7 Traffic Monitoring Site – N/A

22.8 Guide Sign Worksheet - Optional Services

22.9 Special Details - Optional Services

22.10 Special Service Point Details – N/A

22.11 Mast Arm/Monotube Tabulation Sheet - Optional Services

22.12 Strain Pole Schedule – N/A

22.13 TCP Signal (Temporary) – N/A

22.14 Temporary Detection Sheet

22.15 Utility Conflict Sheet - N/A

22.16 Interim Standards - N/A

22.17 Quality Assurance/Quality Control

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

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

_The CONSULTANT shall utilize the District’s quality control checklist for traffic design drawings in addition to the QC effort described in the analysis section._

22.18 Supervision

_The CONSULTANT shall provide all efforts required to supervise all technical design activities including the work of the subconsultants._

23 LIGHTING ANALYSIS – (Optional Services)

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

23.1 Lighting Justification Report – N/A

23.2 Lighting Design Analysis Report - (Optional Services)

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 projects with corridor
lighting, the report shall include the evaluation 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 a cost estimate that includes initial cost in addition to
operations and maintenance cost for one year.

The report shall also include the 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 calculations for each branch circuit

23.3 Voltage Drop Calculations - *(Optional Services)*

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.
All electrical calculations for sizing the conductors, conduit, load centers, main breaker, and
branch circuit breakers shall be signed and sealed by an electrical engineer licensed in Florida
with expertise and licensure by examination in electrical engineering in the State of Florida.

23.4 FDEP Coordination and Report – N/A

23.5 Reference and Master Design Files - *(Optional Services)*

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

23.6 Temporary Lighting – N/A

23.7 Design Documentation - *(Optional Services)*

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.
- Correspondence with the power company concerning new electrical service.

23.8 Quantities - *(Optional Services)*
The CONSULTANT shall provide quantity take off for the project at phases III, IV and final for the lighting component of the entire project.

23.9 Cost Estimate - (Optional Services)

The CONSULTANT shall be responsible for producing an accurate engineer’s construction cost estimate for the lighting component at phases III, IV and final.

23.10 Technical Special Provisions and Modified Special Provisions - (Optional Services)

23.11 Other Lighting Analysis - (Optional Services)

23.12 Field Reviews - (Optional Services)

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

23.13 Technical Meetings- (Optional Services)

The CONSULTANT shall attend phase review meetings for the plan submittal phases of the project with a representative from the District Traffic Design Engineer’s office to resolve technical issues during the design process.

23.14 Quality Assurance/Quality Control - (Optional Services)

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 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 operations, or it may be one specifically designed for this project. The CONSULTANT shall utilize the District’s quality control checklist for traffic design drawings. 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 the design, maps, drawings, specifications and/or other services.

23.15 Independent Peer Review – N/A

23.16 Supervision - (Optional Services)

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

23.17 Coordination - (Optional Services)
The CONSULTANT shall provide all efforts to coordinate with all disciplines of the project to produce a final set of construction documents, and to ensure a high degree of accuracy for the design plans is achieved.

24 LIGHTING PLANS - (Optional Services)

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

24.1 Key Sheet - (Optional Services)

The CONSULTANT shall prepare the key sheet in accordance with the latest format depicted in the FDOT Design Manual.

24.2 Summary of Pay Item Sheet Including Designer Interface Quantity Input - N/A

24.3 Tabulation of Quantities- (Optional Services)

The CONSULTANT shall include all project quantities in the tabulation of quantities sheets and provide updating of the tabulation of quantities sheets.

24.4 General Notes/Pay Item Notes- (Optional Services)

The CONSULTANT shall include all pertinent general notes and pay item notes as deemed fit and as established by the District Traffic Design Engineer's Office.

24.5 Pole Data, Legend & Criteria- (Optional Services)

The CONSULTANT shall complete the Pole Data and Legend Criteria sheets in the standard format as necessary to provide a complete lighting design.

24.6 Service Point Details- (Optional Services)

The CONSULTANT shall prepare any service point details necessary to provide a complete lighting design. The CONSULTANT shall identify the power source after coordination with the local power company and provide the necessary details from the power source to the load center.

24.7 Project Layout – N/A

24.8 Plan Sheet - (Optional Services)

The CONSULTANT shall prepare the Roadway Lighting plan sheets utilizing the Design file to include all necessary information related to the project design elements and all associated reference files. The roadway lighting plan sheet scale shall be 1"=40'.

24.9 Special Details- (Optional Services)

24.10 Temporary Lighting Data and Details – N/A

24.11 Traffic Control Plan Sheets – N/A

24.12 Interim Standards- (Optional Services)

24.13 Quality Assurance/Quality Control- (Optional Services)
The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of traffic design drawings, specifications and other services furnished by the CONSULTANT under this contract.

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

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

24.14 **Supervision (Optional Services)**

*The CONSULTANT shall provide all efforts required to supervise all technical design activities including the work of the subconsultants.*

25 **LANDSCAPE ARCHITECTURE ANALYSIS - N/A**

26 **LANDSCAPE ARCHITECTURE PLANS - N/A**

27 **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 the work being performed before the final product is submitted.

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

27.1 **Horizontal Project Control (HPC)**

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

*Establish/Recover HPC on NAD 83 adjustment of 2011, unless otherwise approved by the District Location Surveyor, for the purpose of establishing the alignment of the project on the Florida State Plane Coordinate System and assure an error free or closed alignment. A horizontal control form will be submitted in both hard copy and an Access database file (template provided by the DEPARTMENT) on all old and new control stations used or set along with the field books. Control points set are to be concrete monuments with an FDOT brass disk, both provided by the CONSULTANT. Control points shall be set at 3,000-foot intervals and in areas likely to survive future construction.*
At a minimum, the CONSULTANT shall tie two (2) existing alignment points per mile of alignment during the Primary Control Network. Said alignment points shall be considered as existing Primary Control during post processing.

27.2 Vertical Project Control (VPC)

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

Establish/recover VPC (a bench line) on NAVD 1988, unless otherwise approved by the District Location Surveyor. A vertical control form will be submitted in both hard copy and an Access database file (template provided by the DEPARTMENT) on all old and new Bench Marks used or set along with the field books. Bench Marks set are to be concrete monuments with an FDOT brass disk, both to be provided by the CONSULTANT. Bench Marks are to be set at 1,000-foot intervals and in areas likely to survive future construction. If any existing FDOT bench mark disks are found in head walls, wing walls, bridges, etc., incorporate these disks in the bench line and submit both a hard copy and an Access database file unless otherwise directed.

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

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

This alignment should be established by recovering the tangent lines of existing DEPARTMENT Right of Way maps if such maps exist, or in the center of dedicated Right of Way as per subdivision plats, or in the center of the pavement when no Right of Way map or dedication exists. Note: This alignment shall be approved by the District Location Surveyor and/or his designee before being placed on the ground. No other phases of the Location Survey shall be performed until this Survey Line has been approved by the DEPARTMENT, placed on the ground by the CONSULTANT, and reviewed in the field by the DEPARTMENT and the CONSULTANT’s Surveyor in responsible charge. The DEPARTMENT alignment approval process includes the delivery of the ALGNRDxx CADD file by the CONSULTANT.

Tie all major alignment control points to this baseline control and establish Florida State Plane Coordinates on each respective control point.

Stake and station the alignment at 100' intervals on the proportioned distances between the major control points so the stations will coincide with the Florida State Plane Coordinate System.

The Project RWDTRDxx CADD file shall be prepared and delivered concurrent with the SURVRDxx CADD file and other required deliverables, in their proper file structure as required for final deliverables.

27.4 Aerial Targets

Place, locate, and maintain required aerial targets and/or photo identifiable points. Includes analysis and processing of all field collected data, existing maps, and/or reports. Placement of the targets will be at the discretion of the aerial firm.
Aerial or terrestrial mobile LiDAR targets may be placed right and left of alignment on flat surfaces visible from above. Targets are spaced along the project as directed by the photogrammetrist or remote sensor. Target size is specified by the photogrammetrist or remote sensor and should have a contrasting black and white pattern. Horizontal values, stations and offsets and Vertical elevations are required on all targets. For 2D planimetric only photography, vertical values may be established using RTK GPS survey methods, and noted as such in the notes and report.

27.5 Reference Points

Reference Horizontal Project Network Control (HPNC) points, project alignment, vertical control points, section, \( \frac{1}{4} \) section, center of section corners and General Land Office (G.L.O.) corners as required.

Reference all Survey Line control points. References shall be at every PC, PI (if possible), PT, POT, and POC, and set outside of the proposed Right of Way. The references shall be at intervals not greater than 1000' along the alignment. These references shall be staked in the field and recorded in field books.

If utilized, reference all Offset Survey Line control points. The references shall be in pairs with reference points at least 50’ apart and at 45 degrees more or less off the ahead and back tangents. References shall be at every PC, PI (if possible), PT, POT, and POC, and set outside of the proposed Right of Way. The Offset Survey Line references shall be at intervals not greater than 1000' along the alignment. These references shall be staked in the field and recorded in field books.

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

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

It is preferred that a field survey party perform field checks, such as for curb type, utility type and void area densification. Make a complete topographic survey including, but not limited to, apparent wells, trees if required, significant roof drains, visible utilities, lane lines, pavement striping for turn lanes, and passing/no passing lane changes. Incorporate R/W information for entire project in the final topography delivery as shown on DEPARTMENT R/W Maps (if such maps exist) that meets the roadway design CADD standards.

All features and improvements shall be labeled in CADD with sufficient frequency and in such a manner that positive identification can be easily made. Labels shall conform to the current specifications for desired text size and spacing, pursuant to Section 3.9.2, CADD Manual, Topic No. 625-050-001.

27.7 Planimetric (2D) – N/A

27.8 Roadway Cross Sections/Profiles

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

The method, approach, and resulting deliverables, to obtain Topographic/DTM checks shall be discussed with and approved by the District Location Surveyor, or their designee.

27.9 Side Street Surveys
Refer to tasks of this document as applicable.

27.10 Underground Utilities

Designation includes two-dimensional collection of existing utilities and selected three-dimensional verification as needed for designation. Location includes non-destructive excavation to determine size, type and location of existing utility, as necessary for final three-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.

Soil removed for obtaining locates on utility lines shall be placed back in the excavation in a way that does not disturb or damage the utility. Locates through asphalt pavement shall be finished with cold pack asphalt to at least the same thickness as the base and asphalt that was removed. Locates through concrete pavement, sidewalks, etc. shall be finished using a high strength concrete mix to the same depth as what was removed. The cuts made in asphalt and concrete for locates shall be made in a manner that provides a patch with regular sides that will be level with no protruding or jagged edges.

27.11 Outfall Survey – N/A

27.12 Drainage Survey

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

Perform drainage survey including pipe type, location, size and flow line elevations. If drainage system branches off the main line, survey should be extended to the next structure.

27.13 Bridge Survey (Minor/Major) – N/A

27.14 Channel Survey – N/A

27.15 Pond Site Survey – N/A

27.16 Mitigation Survey – N/A

27.17 Jurisdiction Line Survey – may be performed as Optional Services

27.18 Geotechnical Support

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

27.19 Sectional/Grant Survey

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

*Tie section lines, quarter section lines, (and quarter-quarter section lines when pertinent) to the Survey Line. All corners shall be found or set in the field with corners properly identified with size and type and recorded in the field book.*
27.20 Subdivision Location

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

*Tie all subdivisions including condominium boundaries, at the beginning and end; block lines, and street right of way lines to the Survey Line. Ties shall be made by closed traverse or acceptable redundancy. All block corners shall be found or set in the field with corners properly identified with size and type and recorded in a field book. Efforts should be made to identify all vacated streets within a subdivision, along with the recording data of vacation. It should be noted that 90° ties from the centerline of the side streets or radial ties to any corner will not be accepted by the DEPARTMENT. All ties must be shown as intersecting the Survey Line with the respective subdivision lines.*

27.21 Maintained R/W – N/A

27.22 Boundary Survey – N/A

27.23 Water Boundary Survey – N/A

27.24 Right-of-Way Staking, Parcel / Right of Way Line – N/A

27.25 Right-of-Way Monumentation – N/A

27.26 Line Cutting – N/A

27.27 Work Zone Safety

Provide work zone as required by DEPARTMENT standards.

27.28 Miscellaneous Surveys – N/A

27.29 Supplemental Surveys – N/A

27.30 Document Research

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

*CONSULTANT shall acquire a last deed of record for each property adjoining the project limits and research any additional rights of way that may have been acquired by a local governmental agency (i.e. city or county). All existing right of way will be plotted on the Control Survey with ties by station/offset to the survey line at all breaks in the right of way. Utilize existing monumentation, if apparent. All deeds and/or any documentation acquired from local governmental agencies must be delivered to the DEPARTMENT upon completion of the Control Survey.*

27.31 Field Review

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

27.32 Technical Meetings

Attend meetings as required and negotiated by the Surveying and Mapping Department.
27.33 **Quality Assurance/Quality Control (QA/QC)**

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

27.34 **Supervision**

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

27.35 **Coordination**

Coordinate survey activities with other disciplines and *any and all adjacent and integral consultants so as to produce a final and complete survey product for the project(s) described herein*. These activities must be performed by the project supervisor, a Florida P.S.M. or their delegate as approved by the District Surveying Office.

28 **PHOTOGRAMMETRY**

The CONSULTANT shall perform photogrammetric 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 *shall* include documentation of all decisions reached from meetings, telephone conversations, and site visits.

28.1 **Flight Preparation**

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

28.2 **Control Point Coordination**

Determine photo identifiable control points, and mark contact prints.

28.3 **Mobilization**

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

28.4 **Flight Operations**

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

28.5 **Film Processing**

Process, check and annotate the aerial film.

28.6 **Photo Products**

Prepare contact prints, contact diapositives, and photo enlargements.

28.7 **Scanning**

Scan photographic images.
28.8 LiDAR
Includes data acquisition, post processing of LiDAR data to XYZ coordinates for "bare earth" classification.

28.9 Aerial Triangulation
Measure and adjust control within aerial images.

28.10 Surfaces
Includes collection of break lines and spot elevations.

28.11 Ortho Generation
Includes creation of final images.

28.12 Rectified Digital Imagery (Georeferenced)
Create the rectified digital image.

28.13 Mosaicking – N/A

28.14 Sheet Clipping
Create plot files for sheets from the database.

28.15 Topographics (3D)
Prepare topographic maps, including surface and planimetrics. (Photogrammetrist shall not propose hours for Surfaces and Topographics.)

28.16 Planimetrics (2D)
Prepare 2D planimetric map.

28.17 Drainage Basin
Includes preparing drainage basin maps in clipped "sheet" format.

28.18 CADD Edit
Perform final edit of graphics for delivery of required Microstation .dgn, CADD, and Geopak files.

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

28.20 Miscellaneous
Other tasks not specifically addressed in this document.

28.21 Field Review
Perform on-site review of maps.
28.22 Technical Meetings

Attend meetings as required.

28.23 Quality Assurance/Quality Control (QA/QC)

Establish and implement a QA/QC plan.

28.24 Supervision

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

28.25 Coordination

Coordinate with all elements of the project to produce a final photogrammetric product. The CONSULTANT shall coordinate their work with any and all adjacent and integral consultants so as to produce a final and complete mapping product for the project(s) described herein.

29 MAPPING

The CONSULTANT shall 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 shall be prepared under the direction of a Florida Professional Surveyor and Mapper (PSM) to DEPARTMENT size and format requirements utilizing DEPARTMENT approved software, and shall be designed to provide a high degree of uniformity and maximum readability. The CONSULTANT shall submit maps, legal descriptions, quality assurance check prints, checklists, electronic media files and any other documents as required for this project to the DEPARTMENT for review at stages of completion as negotiated.

Master CADD File

29.1 Alignment

29.2 Section and 1/4 Section Lines

29.3 Subdivisions / Property Lines

29.4 Existing Right-of-Way

29.5 Topography – N/A

29.6 Parent Tract Properties and Existing Easements – N/A

29.7 Proposed Right-of-Way Requirements – N/A

29.8 Limits of Construction – N/A

29.9 Jurisdictional/Agency Lines – N/A

Sheet Files

29.10 Control Survey Cover Sheet
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>29.11</td>
<td>Control Survey Key Sheet</td>
<td></td>
</tr>
<tr>
<td>29.12</td>
<td>Control Survey Detail Sheet</td>
<td></td>
</tr>
<tr>
<td>29.13</td>
<td>Right-of-Way Map Cover Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.14</td>
<td>Right-of-Way Map Key Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.15</td>
<td>Right-of-Way Map Detail Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.16</td>
<td>Maintenance Map Cover Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.17</td>
<td>Maintenance Map Key Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.18</td>
<td>Maintenance Map Detail Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.19</td>
<td>Reference Point Sheet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This sheet(s) shall be included with the Control Survey Map, Right-of-Way Map and Maintenance Map.</td>
<td></td>
</tr>
<tr>
<td>29.20</td>
<td>Project Network Control Sheet – N/A</td>
<td></td>
</tr>
<tr>
<td>29.21</td>
<td>Table of Ownerships Sheet – N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Miscellaneous Surveys and Sketches**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>29.22</td>
<td>Parcel Sketches – N/A</td>
<td></td>
</tr>
<tr>
<td>29.23</td>
<td>TIITF Sketches – N/A</td>
<td></td>
</tr>
<tr>
<td>29.24</td>
<td>Other Specific Purpose Survey(s) – N/A</td>
<td></td>
</tr>
<tr>
<td>29.25</td>
<td>Boundary Survey(s) Map – N/A</td>
<td></td>
</tr>
<tr>
<td>29.26</td>
<td>Right-of-Way Monumentation Map – N/A</td>
<td></td>
</tr>
<tr>
<td>29.27</td>
<td>Title Search Map – N/A</td>
<td></td>
</tr>
<tr>
<td>29.28</td>
<td>Title Search Report – N/A</td>
<td></td>
</tr>
<tr>
<td>29.29</td>
<td>Legal Descriptions – N/A</td>
<td></td>
</tr>
<tr>
<td>29.30</td>
<td>Final Map/Plans Comparison – N/A</td>
<td></td>
</tr>
<tr>
<td>29.31</td>
<td>Field Reviews</td>
<td></td>
</tr>
<tr>
<td>29.32</td>
<td>Technical Meetings</td>
<td></td>
</tr>
<tr>
<td>29.33</td>
<td>Quality Assurance/Quality Control</td>
<td></td>
</tr>
<tr>
<td>29.34</td>
<td>Supervision</td>
<td></td>
</tr>
<tr>
<td>29.35</td>
<td>Coordination</td>
<td></td>
</tr>
</tbody>
</table>
The CONSULTANT shall coordinate their work with any and all adjacent and integral consultants so as to produce a final and complete mapping product for the project(s) described herein.

29.36 Supplemental Mapping – N/A

30 TERRESTRIAL MOBILE LiDAR

The CONSULTANT shall perform Terrestrial Mobile LiDAR tasks in accordance with all applicable statutes, manuals, guidelines, 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.

30.1 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.

30.2 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.

30.3 Terrestrial Mobile LiDAR Mobilization

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

30.4 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.

30.5 Terrestrial Mobile LiDAR Processing

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

30.6 Terrestrial Mobile Photography Processing

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

30.7 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.

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

**30.9 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.

**30.10 Topographic (3D) Mapping**

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

**30.11 Topographic (2D) Planimetric Mapping**

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

**30.12 CADD Edits**

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

**30.13 Data Merging**

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

**30.14 Miscellaneous**

Other tasks not specifically addressed in this document.

**30.15 Field Reviews**

Perform on site review of maps.

**30.16 Technical Meetings**

Attend meetings as required.

**30.17 Quality Assurance/ Quality Control**

Establish and implement a QA/QC plan.

**30.18 Supervision**

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

**30.19 Coordination**

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

**31 ARCHITECTURE DEVELOPMENT – N/A**

**32 NOISE BARRIERS IMPACT DESIGN ASSESSMENT IN THE DESIGN PHASE – N/A**
33 INTELLIGENT TRANSPORTATION SYSTEMS ANALYSIS – N/A
34 INTELLIGENT TRANSPORTATION SYSTEMS PLANS – N/A
35 GEOTECHNICAL

The CONSULTANT will provide all necessary Geotechnical services for this project.

The CONSULTANT shall, for each project, be responsible for a 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 Engineer or representative to review the project scope and DEPARTMENT requirements (meeting can be waived at the discretion of the Geotechnical Engineer). The investigation plan shall include, but not be limited to, the proposed boring 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 any 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.

35.1 Document Collection and Review

The CONSULTANT shall 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, the 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 directed 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 shall 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.

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

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

35.3 **Stake Borings/Utility Clearance**

Stake borings and obtain utility clearance.

35.4 **Muck Probing**

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

35.5 **Coordinate and Develop MOT Plans for Field Investigation**

Coordinate and develop Maintenance of Traffic (MOT) plan. All work zone traffic control *shall* be performed in accordance with the DEPARTMENT’s Roadway and Traffic Design Standards Index 600 series.

35.6 **Drilling Access Permits**

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

35.7 **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.

35.8 **Groundwater Monitoring**

Monitor groundwater using piezometers.

35.9 **LBR / Resilient Modulus Sampling**

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

35.10 **Coordination of Field Work**

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

35.11 **Soil and Rock Classification – Roadway**

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

35.12 **Resilient Modulus or Design LBR**

Determine design LBR values from the 90% and mean methods when LBR testing is required by the DEPARTMENT.
The Resilient Modulus will be provided from testing performed by the State Materials Office. Design LBR should only be determined when approved by the District Geotechnical Office.

35.13 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.

35.14 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.

35.15 Parameters for Water Retention Areas
Calculate parameters for water retention areas, exfiltration trenches, and/or swales.

35.16 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.

35.17 Electronic Files for Cross-Sections
Create electronic files of boring data for cross-sections.

35.18 Embankment Settlement and Stability
Estimate the total magnitude and time rate of embankment settlements. Calculate the factor of safety against slope stability failure.

35.19 Monitor Existing Structures
Provide Roadway EOR guidance on the radius to review existing structures for monitoring.

Optional Services: Identify existing structures in need of settlement, vibration and/or groundwater 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 the FDOT Design Manual Chapter 307 and Chapter 9 of the Soils and Foundations Handbook.

35.20 Stormwater Volume Recovery and/or Background Seepage Analysis
Perform stormwater volume recovery analysis as directed by the DEPARTMENT.

35.21 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 (i.e. removal of unsuitable material, consolidation of weak soils, estimated settlement time/amount, groundwater control, high groundwater conditions relative to pavement base, etc.) Evaluate and recommend types of geosynthetics and properties for various applications, as required.
35.22 Pavement Condition Survey and Pavement Evaluation Report

If a pavement evaluation 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.

35.23 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. The report shall include, but not be limited to:

- 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 Indices 500 and 505.
- 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 calculations/graphs, and other pertinent calculations.
- The CONSULTANT shall respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

35.24 Final Report

The Final Roadway 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 Indices 500 and 505.
- 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 shall respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

35.25 Auger Boring Drafting

Draft auger borings as directed by the DEPARTMENT.

35.26 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.
The CONSULTANT shall perform specialized field testing as required by needs of project and as directed in writing by the District Geotechnical Engineer.

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

The staff hour tasks for high embankment fills and structural foundations for bridges, box culverts, walls, high-mast lighting, overhead signs, mast arm signals, strain poles, buildings, and other structures include the following:

35.27 \textbf{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 is expected 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.

35.28 \textbf{Stake Borings/Utility Clearance}

Stake borings and obtain utility clearance.

35.29 \textbf{Coordinate and Develop MOT Plans for Field Investigation}

Coordinate and develop MOT plan. All work zone traffic control \textit{shall} be performed in accordance with the DEPARTMENT’s Roadway and Traffic Design Standards Index 600 series.

35.30 \textbf{Drilling Access Permits}

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

35.31 \textbf{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.

35.32 \textbf{Collection of Corrosion Samples}

Collect corrosion samples for determination of environmental classifications \textit{for soil and water, when appropriate}.

35.33 \textbf{Coordination of Field Work}

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

35.34 \textbf{Soil and Rock Classification – Structures}

Soil profiles recorded in the field should be refined based on the results of laboratory testing.

35.35 \textbf{Tabulation of Laboratory Data}

Laboratory test results should be tabulated for inclusion in the geotechnical report and for the necessary calculations and analyses.
35.36 **Estimate Design Groundwater Level for Structures**

Review encountered groundwater levels, estimate seasonal high groundwater levels, and evaluate groundwater levels for structure design.

35.37 **Selection of Foundation Alternatives (BDR) – N/A**

35.38 **Detailed Analysis of Selected Foundation Alternate(s) – N/A**

35.39 **Bridge Construction and Testing Recommendations – N/A**

35.40 **Lateral Load Analysis (Optional)**

Perform lateral load analyses as directed by the DEPARTMENT.

35.41 **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 conventional 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.

35.42 **Sheet Pile Wall Analysis (Optional)**

Analyze sheet pile walls as directed by the DEPARTMENT.

35.43 **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.

35.44 **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.

35.45 **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 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 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), and any other pertinent information.

35.46 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 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), and any other pertinent information.

35.47 Final Reports – Signs, 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 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), and any other pertinent information.

Final reports shall 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 shall be submitted to the District Geotechnical Engineer for review prior to project completion. After review by the District Geotechnical Engineer, the reports shall be submitted to the District Geotechnical Engineer in final form and shall include the following:
• All original plan sheets (11” x 17”)
• 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 plans package

Additional final reports (up to four), in addition to those stated above, may be needed and requested for the DEPARTMENT’s Project Manager and other disciplines.

The final reports and special provisions, as well as record prints, shall 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.

35.48 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.

35.49 Other Geotechnical

Other geotechnical effort specifically required for the project as determined by the DEPARTMENT, and included in the geotechnical upset limit.

35.50 Technical Special Provisions and Modified Special Provisions

35.51 Field 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.

35.52 Technical Meetings

35.53 Quality Assurance/Quality Control

35.54 Supervision

35.55 Coordination

36 3D MODELING

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

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 DEPARTMENT’s 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 DEPARTMENT 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. Dynamic relationships must be maintained. Frequency must be increased to achieve a useable model.

The CONSULTANT shall create an accurate roadway design model which includes modeling the intersections.

The CONSULTANT shall provide sufficient detail in the 3D model to account for driveways, Guardrail Terminal Locations, etc. and other graded areas where surface triangles are delivered as break lines.

36.1 Phase I 3D Design Model (30% Plans)

The CONSULTANT shall prepare, submit and present for approval by the DEPARTMENT, 30% complete 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).

36.2 Phase II 3D Design Model (60% Plans)

The CONSULTANT shall prepare, submit and present for approval by the DEPARTMENT, 60% complete 3D model, comprised of, but not limited to: Modification of 30% model to update the model to comply with changes based on 30% 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.

36.3 Phase III 3D Design Model (90% Plans)

The CONSULTANT shall prepare, submit and present for approval by the DEPARTMENT, 90% complete 3D model, comprised of, but not limited to: Modification of 60% model to update the model to comply with changes based on 60% 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.

36.4 Final 3D Model Design (100% Plans)

The CONSULTANT shall prepare for approval by DEPARTMENT, 100% complete 3D model, comprised of, but not limited to: Modification of 90% model to update the model to comply with changes based on 90% review comments and to accurately generate, export and otherwise prepare the final 3D deliverable files as described in the DEPARTMENT’s CADD Manual.

36.5 Cross Section Design Files

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

36.6 Template and Assembly Development (Optional) – N/A
36.7 Quality Assurance/Quality Control

36.8 Supervision

36.9 Coordination

37 PROJECT REQUIREMENTS

37.1 Liaison Office

The DEPARTMENT and the CONSULTANT shall 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.

37.2 Key Personnel

The CONSULTANT’s work shall be performed and directed by the key personnel identified in the proposal presentations by the CONSULTANT. Any changes in the indicated personnel shall be subject to review and approval by the DEPARTMENT.

37.3 Progress Reporting

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

37.4 Correspondence

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

37.5 Professional Endorsement

The CONSULTANT shall have a Licensed Professional Engineer in the State of Florida sign and seal all reports, documents, Technical Special Provisions, Modified Special Provisions and plans as required by DEPARTMENT standards.

37.6 Computer Automation

The project shall be developed utilizing Computer Aided Drafting and Design (CADD) systems. The DEPARTMENT makes available software to help assure quality and conformance with policy and procedures regarding CADD. It is the responsibility of the CONSULTANT to meet the requirements in the DEPARTMENT’s CADD Manual and CADD Production Criteria Handbook (including the minimum 95% compliance threshold for all design files). The CONSULTANT shall submit final documents and files as described therein.
Coordination With Other Consultants

The CONSULTANT firm shall coordinate their 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 a fair, competitive and reasonable cost, considering the scope and complexity of the project(s). Additional services may be authorized by a Letter of Authorization or Supplemental Amendment in accordance with paragraph 2.00 of the Standard Consultant Agreement. The additional services may include Construction Assistance, Review of Shop Drawings, Plans Update, Expert Witness Testimony, 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 noted as Optional Services herein. Optional Services may also be invoked when a particular service is needed in a greater quantity than already provided under Basic Services or a previous Supplemental Amendment or Optional Services Authorization. When Optional Services are noted herein, such services shall be construed to include all incidental technical discipline services necessary to accomplish the generally-stated purpose, whether or not such incidental services are specifically described herein.

INVOICING LIMITS

Payment for the work accomplished shall be in accordance with the 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 insure 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 will 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.

Each invoice shall be accompanied by a certification by the CONSULTANT's Project Manager, Engineer-of-Record or Project Principal that the invoicing is consistent with the project’s progress and Prima Vera schedule.

For projects with lump sum invoicing for Basic Services, a 100% complete payout will not be approved before the “Plans Package In Tallahassee” or “Plans To District Contracts” schedule milestone is achieved and the DEPARTMENT’s Central Office or District Contracts Office has approved that package.