SCOPE OF SERVICES
FOR
FINANCIAL PROJECT ID 440225-1-32-01
FEDERAL AID NO. D118 091 B

ADAPTIVE SYSTEM ON US 27
FROM HIGHLANDS AVE TO SEBRING PKWY

HIGHLANDS COUNTY

DISTRICT ONE

June 7, 2018


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SCOPE OF SERVICES
HIGHLANDS COUNTY
US 27 ADAPTIVE SIGNAL CONTROL TECHNOLOGY
DESIGN-BUILD CRITERIA PACKAGE DEVELOPMENT
FINANCIAL PROJECT ID: 440225-1-32-01
FEDERAL AID NO.: D118 091 B

SECTION I: PURPOSE

The purpose of this exhibit is to describe the scope of work and responsibilities of the CONSULTANT and the Florida Department of Transportation (FDOT), District One, hereinafter referred to as the DEPARTMENT, in connection with the research and development of a Design-Build Criteria Package, hereinafter referred to as the CONTRACT, for the design, construction, and integration of the Highlands County US 27 Adaptive Signal Control Technology (ASCT) System, Financial Project ID: 440225-1-52-01, hereinafter referred to as the PROJECT. The CONSULTANT is responsible for obtaining or developing all data and information necessary to allow the DEPARTMENT to receive legitimate bids. The Design-Build Team selected for the PROJECT based on these bids shall be responsible for the detailed design and equipment recommendations, all construction, testing, training, and integration of the PROJECT. These requirements shall be thoroughly outlined in the Design-Build Criteria Package. The PROJECT limits include Highlands County traffic signals on US 27 from South Highlands Avenue to Sebring Parkway/Schumacher Road encompassing a total of 14 signalized intersections.

All plans and designs shall be prepared using English units in accordance with all DEPARTMENT manuals, procedures, and guidelines. The contract length to complete the tasks as described in this Scope of Services is 18 months from issuance of Notice to Proceed.

The CONSULTANT shall perform those engineering and surveying services required to verify the existing features previously constructed within Highlands County, for the development of the Design-Build Criteria Package for bidding, including a Project Layout Sheet. The CONSULTANT shall use sound engineering expertise, best practices and principles, and lessons-learned from previous projects during the execution of the work commissioned under this CONTRACT. The CONSULTANT shall be aware that as the PROJECT is developed, certain modifications and/or improvements to the original recommendation may be required. The CONSULTANT is to incorporate these refinements into the product and will consider this effort to be an anticipated and integral part of the work. This will not be a basis for any supplemental fee request(s). The CONSULTANT shall demonstrate superior project management practices while working on this CONTRACT. These include regular communication with the DEPARTMENT and others, as necessary, thorough management of time and resources, and complete documentation of those communications.

The DEPARTMENT will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of the Design-Build Criteria Package. The CONSULTANT shall anticipate a DEPARTMENT review period of 20 working
days unless an exception is granted by the DEPARTMENTs Project Manager. The DEPARTMENT will provide job specific information as outlined in this CONTRACT. References to the DEPARTMENT may include the TRAFFIC OPERATIONS INTELLIGENT TRANSPORTATION SYSTEMS (ITS) CONSULTANT for FDOT, District One.

SECTION II: STUDY OBJECTIVE

The objective of this CONTRACT is for the CONSULTANT to prepare a Design-Build Criteria Package to be used by the DEPARTMENT to secure a Design-Build Team to complete the design and to build the PROJECT and for the DEPARTMENT to ensure the PROJECT is built as designed and within specifications. Elements of work shall include technical writing, research, field reviews, plans development, and all necessary incidentals for a complete PROJECT. PROJECT requirements shall be described completely and clearly, for ease of understanding. Adequate research and investigation shall be conducted to determine the PROJECT requirements and to document those requirements in an unambiguous manner.

Specific PROJECT subsystems to be provided under the Design-Build Contract include those listed below. Sufficient information shall be included in the Design-Build Criteria Package to allow legitimate bids to be received for the design and construction of these items.

- Design and implementation of an ASCT system including the installation of ASCT hardware, software, firmware, and any modifications in the controller cabinets, at a FDOT District One facility or other to be determined location. This would include any necessary detection equipment, as required for ASCT functionality and operation.
- Closed-circuit television (CCTV) cameras, Bluetooth automatic vehicle identification (AVI) systems, and any other infrastructure necessary needed to support the ASCT system.
- Communications infrastructure and hardware required to provide monitoring and control capabilities of the ASCT at a FDOT District One facility or other to be determined location.
- A new fiber optic cable trunk line between all signalized intersection cabinets as listed below to establish communications between the signalized locations. The communications trunk line shall be 96 strand single-mode fiber optic cable and the lateral drops shall be 12 strand single-mode fiber optic cable. A spare conduit shall be provided.

The following 14 intersections are identified for implementation of ASCT:

- US 27 at South Highlands Avenue
- US 27 at Desoto Square
- US 27 at Sebring Drive / SR 17
- US 27 at Lakeview Drive
- US 27 at Sparta Road
- US 27 at Golfview Road
- US 27 at Country Club Lane (Emergency Signal)
- US 27 at Hammock Road
- US 27 at Flare Road
- US 27 at Vicki Drive
• US 27 at Sparrow Avenue / Jeri Kay Lane
• US 27 at Thunderbird Road
• US 27 at New Life Way / Bayview Street
• US 27 at Schumacher Road / Sebring Parkway

It is the goal of the PROJECT that all ITS equipment and subsystems be in conformance with the National ITS Architecture (NITSA), the Statewide ITS Architecture (SITSA), the Regional ITS Architecture (RITSA), and the National Transportation Communications ITS Protocol (NTCIP). The major objective is for an open architecture that will foster, to the largest extent possible, the interoperability and interchangeability of hardware and software available from different manufacturers.

SECTION III: CONTRACT MANAGEMENT

The DEPARTMENT will designate a Project Manager from the Traffic Operations Division to ensure the fulfillment of the CONTRACT terms and receipt of a quality work product. The Department Project Manager will be responsible for enforcing the terms of the CONTRACT, will serve as the primary point of contact with the CONSULTANT for matters relative to the CONTRACT, and will approve all CONTRACT invoices prior to payment. The Department Project Manager will be responsible for approval of activities relative to the CONTRACT and will serve as the liaison between the CONSULTANT and the DEPARTMENT.

During the term of the CONTRACT, the DEPARTMENT will conduct reviews of the various phases of the CONSULTANT's operations. The CONSULTANT will cooperate and assist the DEPARTMENT representatives in conducting these reviews. The Department Project Manager will be responsible for reviews of the CONSULTANT's work.

The CONSULTANT shall be responsible for the professional quality, technical accuracy, and systematic coordination of all surveys, designs, 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 used to verify, independently check, and review all CONTRACT deliverables. The CONSULTANT shall describe how the checking and reviewing processes are to be documented for verification the required procedures were followed. The quality control plan may be one used by the CONSULTANT as part of their normal operation, or it may be specifically designed for this CONTRACT. The CONSULTANT shall submit the quality control plan for approval within 20 calendar days of the written Notice to Proceed. A marked-up set of documents from a quality control review will be sent in with each submittal. The responsible Professional Engineer or Professional Surveyor who performed the quality control review will sign a statement certifying the review was conducted.

The CONSULTANT shall, without additional compensation, correct all errors or deficiencies in the CONTRACT deliverables and respond to all comments in writing.
The CONSULTANT’s work shall be performed and directed by the key personnel identified in the technical proposal. Any changes in the indicated personnel shall be subject to review and approval by the DEPARTMENT.

SECTION IV: DESIGN SERVICES

The services performed by the CONSULTANT shall be in compliance with all applicable DEPARTMENT manuals, procedures, and guidelines. The DEPARTMENT’s manuals, procedures, and guidelines incorporate by requirement or reference all applicable State and Federal regulations.

The services performed by the CONSULTANT shall be in compliance with all applicable current edition manuals and guidelines including the FDOT, Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), and additional requirements specified in this document. All maps, plans, and designs are to be prepared with English units in accordance with all applicable current edition DEPARTMENT manuals, memorandums, and guidelines. Except to the extent inconsistent with the specific provisions in this document, the current edition, including updates, of the following manuals, procedures, and guidelines shall be used in the performance of the work associated with this CONTRACT. Current edition is defined as the edition in place at the date of letting of the PROJECT. It shall be the CONSULTANT’s responsibility, at the CONSULTANT’s expense, to acquire and utilize the necessary manuals and guidelines that apply to the work required to complete this CONTRACT. The services will include preparation of all documents necessary to complete the development of the PROJECT bid documents as described in Section I of this scope of services. The latest version of FDOT, FHWA and AASHTO manuals and guidelines with web addresses needed to obtain those documents are listed below.

1. FDOT Design Manual (FDM)
   http://www.fdot.gov/roadway/FDM/

2. FDOT Specification Development Procedure 630-010-001
   https://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/?viewBy=0&procType=pr

3. FDOT Standard Plans for Road and Bridge Construction
   http://www.fdot.gov/design/standardplans/SPRBC.shtm

4. FDOT Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
   http://www.fdot.gov/programmanagement/specs.shtm

5. FDOT Surveying & Mapping Procedure 550-030-101
   https://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/?viewBy=0&procType=pr
6. FDOT Electronic Field Book (EFB) User Handbook
   http://www.fdot.gov/geospatial/doc_pubs.shtm

7. FDOT Drainage Manual
   http://www.fdot.gov/roadway/Drainage/ManualsandHandbooks.shtm

8. FDOT Soils and Foundations Handbook
   http://www.fdot.gov/structures/Manuals/SFH.pdf

9. FDOT Structures Manual
   http://www.fdot.gov/structures/DocsandPubs.shtm

10. FDOT Computer Aided Design and Drafting (CADD) Manual

11. AASHTO – A Policy on Geometric Design of Highways and Streets

12. MUTCD - 2009
    http://mutcd.fhwa.dot.gov/

13. Safe Mobility for Life Program Policy 000-750-001
    https://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/?viewBy=0&procType=pr

14. Traffic Engineering and Operations Safe Mobility for Life Program
    http://www.fdot.gov/traffic/TrafficServices/SafetyisGolden.shtm/

15. FDOT American with Disabilities Act (ADA) Requirements for Access to Department Facilities Procedure 625-020-015
    https://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/?viewBy=0&procType=pr

16. FDOT Florida Sampling and Testing Methods
    http://www.fdot.gov/materials/administration/resources/library/publications/fstm/disclaimer.shtm

17. FDOT Flexible Pavement Coring and Evaluation Procedure

18. FDOT Design Bulletins and Update Memos

19. FDOT Utility Accommodation Manual
    http://www.fdot.gov/programmanagement/utilities/UAM.shtm
20. AASHTO LRFD Bridge Design Specifications  
https://bookstore.transportation.org/category_item.aspx?id=BR

21. FDOT Flexible Pavement Design Manual  
http://www.fdot.gov/roadway/PM/publicationS.shtm

22. FDOT Rigid Pavement Design Manual  
http://www.fdot.gov/roadway/PM/publicationS.shtm

23. FDOT Pavement Type Selection Manual  
http://www.fdot.gov/roadway/PM/publicationS.shtm

24. FDOT Right of Way Manual  
http://www.fdot.gov/rightofway/Documents.shtm

http://www.fdot.gov/traffic/TrafficServices/Studies/TEM/tem.shtm

26. FDOT ITS Integration Guidebook  

27. FHWA Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications  

28. AASHTO Guide for the Development of Bicycle Facilities  

http://www.fdot.gov/roadway/FloridaGreenbook/FGB.shtm

30. FDOT Project Development and Environment Manual, Parts 1 and 2  
http://www.fdot.gov/environment/pubs/pdeman/pdeman1.shtm

31. FDOT Driveway Information Guide  

32. AASHTO Highway Safety Manual  
http://www.highwaysafetymanual.org/

33. Florida Statutes  
http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFID=14677574&CFTOKEN=80981948
Task 1 – Project Management

This task includes any management activities by the CONSULTANT necessary for the successful completion of the design services as defined in this CONTRACT. This task also involves the monitoring and coordination of work required by the DEPARTMENT or others to assure the timely and efficient completion of the work associated with this CONTRACT. Included are: interagency and utility coordination, status reports, meetings, permits, and project records and files.

Project management is a continuous task that shall be performed by the CONSULTANT for the duration of this CONTRACT. The monitoring, coordination, scheduling, and reporting requirements of this task will be used to facilitate periodic review by the DEPARTMENT to ascertain the CONSULTANT’s conformance with the requirements of this task.

Subtask 1A – Coordination

Interagency Coordination

This task consists of all activities necessary on the part of the CONSULTANT to obtain design approvals, input, agreements, permits, etc., from all agencies involved in or affected by the implementation of the Design-Build Criteria Package prepared by the CONSULTANT. This requires close and continuous liaison with the DEPARTMENT and other agencies to assure that the requirements of the DEPARTMENT and the needs of the appropriate agencies are met during all phases of this CONTRACT and the PROJECT. The list of other agencies includes, but is not limited to:

- Highlands County Traffic Operations
- Federal Highway Administration (FHWA)
- Heartland Regional Transportation Planning Organization (TPO)
- City of Sebring
- FDOT Central Office

This task includes meetings and correspondence between the CONSULTANT and individual agencies; the identification of support data and agreements for processing by the DEPARTMENT and other appropriate agencies; and coordination of input, reviews, and other project-related information from the DEPARTMENT and other agencies. This task may also include development of Memorandums of Understanding (MOUs) and/or Joint Participation Agreements (JPAs) between the DEPARTMENT and other agencies for execution prior to the finalization of this CONTRACT. The existing MOUs will be reviewed and updated as necessary.

Coordination with Other Consultants

The CONSULTANT is to coordinate all work with all adjacent and integral consultants to affect
complete and homogeneous specifications for the PROJECT described herein.

**Department Responsibility**

The DEPARTMENT will provide the CONSULTANT, upon request, forms for any necessary standard agreements and available samples of any special interagency MOUs and/or JPAs required for the development of project design requirements, plans, specification and estimates or during construction of the PROJECT. The DEPARTMENT will expeditiously review and process all draft documents prepared by the CONSULTANT and will provide advice and guidance as necessary.

**Subtask 1A Deliverables**

- Memorandums of Understanding
- Joint Participation Agreements
- Design Approvals

**Subtask 1B – Status Reports**

Within ten calendar days of the Notice to Proceed, the CONSULTANT shall provide a Production Schedule that identifies key milestone dates and establishes a Payout Schedule of Services. The Production Schedule and Payout Schedule shall be approved by the DEPARTMENT prior to the commencement of work.

Each month during this CONTRACT, the CONSULTANT shall prepare and submit a concise monthly status report covering work progress and contract fulfillment. The status report shall address the following topics at a minimum:

**Technical Progress**

Each month the CONSULTANT shall address all technical activities performed and/or completed during the previous month and all technical activities anticipated to be performed and/or completed during the current month. The CONSULTANT shall document all problems related to technical activities encountered during the previous month and anticipated during the current month and describe in detail all action taken and/or proposed to solve such problems.

**Contract Progress**

Each month the CONSULTANT shall present in graphical format, a schedule for all work specified in this CONTRACT. The time line graph shall be comprised of each Contract Task and Subtask and the duration scheduled for each Contract Task and Subtask by the CONSULTANT. The total amount of time scheduled for completion of all Contract Tasks and Subtasks shall be consistent with the terms and conditions of the CONTRACT. The time line graph shall specify completion dates for the submittal of the identified elements of the CONTRACT. As work progresses on each Contract Task and Subtask, the CONSULTANT shall depict such progress on the time line such that actual work progress may be compared to the schedule originally prepared.
by the CONSULTANT for each Contract Task and Subtask. The DEPARTMENT shall approve the time line graph prior to processing the first invoice.

Each month the CONSULTANT shall present in tabular format, a summary of each Contract Task and Subtask, the estimated percentage of total contract work each represents, the percent completion of each, and the total percent completion of all contract work.

The CONSULTANT shall format all CONTRACT invoices in a format to be specified by the DEPARTMENT. Current DEPARTMENT procedures for electronic invoicing shall be utilized by the CONSULTANT.

**Management**

The CONSULTANT shall document any significant deviation from the CONTRACT schedule, including what impact these problems might have on fulfillment of the Contract terms, and what actions the CONSULTANT proposes to minimize negative impact on contract fulfillment. This section should also address any management or interagency coordination problems that might affect the CONTRACT.

The CONSULTANT shall prepare and submit a format for the monthly status reports to the DEPARTMENT for review and approval. The DEPARTMENT will not approve payment to the CONSULTANT until a monthly status report format has been approved.

The monthly status report for a given month shall be submitted to the Department Project Manager by the tenth day of the following month. The monthly status report shall be submitted prior to any invoice submittals for the previous month.

**Department Responsibility**

The DEPARTMENT will review and provide comments on the monthly status reports within five (5) working days of submittal and provide guidance as necessary for the resolution of reported problems or schedule variations.

**Subtask 1B Deliverables**

- Time Line Graph
- Invoice Format
- Monthly Status Report Format
- Monthly Status Report

**Subtask 1C – Meetings and Presentations**

The CONSULTANT shall attend and document a Notice-to-Proceed meeting with DEPARTMENT representatives, where the DEPARTMENT will provide relevant project information, along with procedures for administering the CONTRACT. The CONSULTANT shall
also be available within five (5) working days to attend meetings or make presentations at the request of the DEPARTMENT. Such meetings may be held at any hour between 8:00 A.M. and 10:00 P.M., Monday through Friday. The CONSULTANT may be called upon to provide maps, press releases, advertisements, audiovisual displays, handouts and similar materials for such meetings. The CONSULTANT shall be responsible for providing all required materials and providing written documentation of any type of meeting conducted throughout the CONTRACT.

The CONSULTANT shall have full responsibility for identifying the need for organizing, scheduling and conducting technical and/or management meetings required for the successful completion of the work defined in this CONTRACT. At a minimum, one (1) project management meeting shall be held each month and shall be scheduled to take place at least three (3) working days after the Department Project Manager receives the monthly status report.

The CONSULTANT shall prepare the agenda for all meetings and provide all necessary materials and handouts for discussion. A copy of the agenda shall be sent to all attendees at least five (5) working days prior to the scheduled monthly meeting. The CONSULTANT shall prepare minutes of each meeting and provide a cumulative list of “action items” for assignment to the appropriate party. The CONSULTANT shall track the “action items” throughout this CONTRACT. The CONSULTANT shall distribute these items to the attendees and appropriate others within five (5) working days following the meeting.

The CONSULTANT shall have full responsibility for organizing, scheduling, and conducting Public Information Meetings/Presentations required by the DEPARTMENT for the PROJECT. This CONTRACT requires as many as three (3) Public Information Meetings/Presentations. Public Information Meetings/Presentations are anticipated for the Sebring City Counsel, Heartland Regional TPO, and Highlands County Board of Commissioners.

At the Notice-to-Proceed meeting scheduled by the DEPARTMENT, the CONSULTANT and the DEPARTMENT shall develop a list of attendees for various types of meetings required to accomplish the work in this CONTRACT and the location(s) where the meetings are to take place. Prior to any meeting, the Department Project Manager shall approve the CONSULTANT’s request for a meeting, the agenda, the location and the list of attendees.

**Department Responsibility**

The DEPARTMENT will assist the CONSULTANT in the development of an attendees list and promptly respond to requests from the CONSULTANT for meetings. The DEPARTMENT will actively participate in all meetings.

**Subtask 1C Deliverables**

- Meeting Notices and Agendas
- Technical Meetings
- Management Meetings
- Meeting Minutes including “Action Items” List
- Public Information Meetings/Presentations
- List of Meeting Attendees and Meeting Location(s)
- Presentation Development/Materials

**Subtask 1D – Project Records and Filing**

The CONSULTANT shall maintain the project records and files for the work required in this CONTRACT. Project records shall include such items as project status reports, meeting minutes and “action items,” design reports, inventory records, etc. The project files shall contain all correspondence to and from the CONSULTANT that is related to the work in this CONTRACT and any other materials, information, or data related to this CONTRACT obtained, sent, or given to the CONSULTANT.

Copies of all correspondence between the CONSULTANT and any party pertaining specifically to this CONTRACT shall be provided to the DEPARTMENT for their records within five (5) working days of their receipt of said correspondence.

Records shall be organized by activity and/or subject and shall be filed as such in reverse chronological order. This task shall be limited to the clerical effort necessary to maintain the files, plus the necessary supervision.

The project records and files shall be delivered to the Department Project Manager prior to final payment.

**Department Responsibility**

The Project Manager will send the CONSULTANT copies of all correspondences, materials, information, and data directed to others related to the services in this CONTRACT and appropriate for the project files.

**Subtask 1D Deliverables**

- Project records and files in electronic format on disc

**Task 2 – ASCT Systems Engineering Analysis**

**Subtask 2A – Concept of Operations**

The Consultant shall develop a Concept of Operations (CONOPS) in accordance with the “FHWA Model for System Engineering Documents for ASCT Systems” and examples provided by the DEPARTMENT. The CONOPS will list the primary goals of the project, identify the roles and responsibilities and interactions of the participating jurisdictions, define the functional requirements, and define the performance measures that will be used to evaluate the system. The CONOPS will also detail the operation of the system, outlining the procedures that will be utilized to enhance normal arterial operations.
An electronic copy of the CONOPS shall be submitted by the CONSULTANT at the Draft and Final Report stages. Each submittal shall be reviewed by the DEPARTMENT and accepted or rejected, as appropriate. In the event the DEPARTMENT rejects the submittal, the CONSULTANT shall revise the submittal as necessary and resubmit the document for another review.

**Department Responsibility**

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT’S submittal of the Draft CONOPS Plan. The DEPARTMENT will review and approve, as appropriate, the CONSULTANT’S submittal of the final CONOPS Plan.

**Subtask 2A Deliverables**

- Draft CONOPS Plan - Electronic copy
- Final CONOPS Plan - Electronic copy
- Final CONOPS Plan on Disc

**Subtask 2B – DEVELOPMENT OF A SYSTEM REQUIREMENTS DOCUMENT**

The Consultant shall develop a System Requirements document in accordance with the “FHWA Model for System Engineering Documents for ASCT Systems” and examples provided by the DEPARTMENT. The document will describe what the system is to do, how well it is to perform, under what conditions it will perform, and what other actions are required for the system to be fully operational. These requirements satisfy the operational needs described in the CONOPS document.

An electronic copy of the System Requirements document shall be submitted by the CONSULTANT at the Draft and Final Report stages. Each submittal shall be reviewed by the DEPARTMENT and accepted or rejected, as appropriate. In the event the DEPARTMENT rejects the submittal, the CONSULTANT shall revise the submittal as necessary and resubmit the document for another review.

**Department Responsibility**

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT’S submittal of the Draft System Requirements document. The DEPARTMENT will review and approve, as appropriate, the CONSULTANT’S submittal of the final System Requirements document.

**Subtask 2B Deliverables**

- Draft System Requirements Document - Electronic copy
- Final System Requirements Document - Electronic copy
Subtask 2C Verification Plan

The CONSULTANT shall develop a Verification Plan document in accordance with the “FHWA Model for Systems Engineering Documents for Adaptive Signal Control Technology (ASCT) Systems” and examples provided by the DEPARTMENT. This document will describe the scope of the project, the referenced documents used to prepare the verification plan, details on how the verification will be conducted and a list of the verification cases and the corresponding requirements to be tested.

An electronic copy of the Verification Plan shall be submitted by the CONSULTANT at the Draft and Final Report stages. Each submittal shall be reviewed by the DEPARTMENT and accepted or rejected, as appropriate. In the event the DEPARTMENT rejects the submittal, the CONSULTANT shall revise the submittal as necessary and resubmit the document for another review.

Department Responsibility

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT’S submittal of the Draft Verification Plan. The DEPARTMENT will review and approve, as appropriate, the CONSULTANT’S submittal of the final Verification Plan.

Subtask 2C Deliverables

- Draft Verification Plan - Electronic copy
- Final Verification Plan - Electronic copy
- Final Verification Plan on Disc

Subtask 2D Validation Plan

The CONSULTANT shall develop a Validation Plan document in accordance with the “FHWA Model for Systems Engineering Documents for Adaptive Signal Control Technology (ASCT) Systems” and examples provided by the DEPARTMENT. This document describes the scope of the project, the referenced documents used to prepare the validation plan, details on how the validation will be conducted and the operational needs and scenarios to be tested.

An electronic copy of the Validation Plan shall be submitted by the CONSULTANT at the Draft and Final Report stages. Each submittal shall be reviewed by the DEPARTMENT and accepted or rejected, as appropriate. In the event the DEPARTMENT rejects the submittal, the CONSULTANT shall revise the submittal as necessary and resubmit the document for another review.

Department Responsibility

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The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT’S submittal of the Draft Validation Plan. The DEPARTMENT will review and approve, as appropriate, the CONSULTANT’S submittal of the final Validation Plan.

Subtask 2D Deliverables

- Draft Validation Plan - Electronic copy
- Final Validation Plan - Electronic copy
- Final Validation Plan on Disc

Task 3 – Design-Build Criteria Package for the Highlands County US 27 ASCT Project

This task includes the development of a detailed Design-Build Criteria Package for the US 27 ASCT Project within Highlands County. The Design-Build Criteria Package will be based on the recommendations of the Highlands County US 27 ASCT Systems Engineering Analysis that was developed for the project and coordination with Highlands County. The Design-Build Criteria Package will be prepared in the form of a Request for Proposal (RFP) / Minimum Technical Requirements (MTR) document along with a Project Layout Sheet, a Requirements Traceability Verification Matrix (RTVM), and a construction estimate. The CONSULTANT shall use the Highlands County US 27 ASCT Systems Engineering Analysis as a basis of design for the Criteria Package and Project Layout Sheet, unless otherwise directed by the DEPARTMENT. The Criteria Package shall be suitable for immediate advertisement upon completion of the CONSULTANT’s services with no required modifications.

The primary function of this task is for the CONSULTANT to prepare a Design-Build Criteria Package, an RTVM, a Project Layout Sheet, and a construction estimate. The selected Design-Build Contractor will use the Design-Build Criteria Package to complete the design and build the PROJECT. The Design-Build Criteria Package will ensure the PROJECT is constructed to meet the needs as determined by the CONSULTANT and approved by the DEPARTMENT.

The CONSULTANT shall document any design services necessary at the intersections, communications system, and central control sites to fully implement an ASCT at the list of project intersections shown in Section II of this document. The list of project intersections shall be verified by the CONSULTANT with Highlands County and the DEPARTMENT as part of the development of the Design-Build Criteria Package. The design requirements developed by the CONSULTANT shall ensure the communication system and central control sites are capable of monitoring and controlling the ASCT intersections and any ITS devices. The CONSULTANT shall develop the MTRs that will facilitate construction and implementation of a complete and fully functional system.

The Design-Build Criteria Package, RTVM, Project Layout Sheet and construction estimate will be used by the DEPARTMENT as the basis of procurement for the design, construction, and implementation of the PROJECT. The PROJECT will be advertised and let by the DEPARTMENT.
The Design-Build Criteria Package shall be developed in accordance with the FDOT Design-Build Procurement and Administration Procedure, Topic 625-020-010, which can be found at the following Construction Office website:

http://www.fdot.gov/construction/DesignBuild/AllSites/DesignBuildSites.shtm

Subtask 3A – Development of RFP Package

The CONSULTANT shall utilize the latest version of the DEPARTMENT’s standard template document for Design-Build RFPs, which can be found at the following Construction Office website:

http://www.dot.state.fl.us/construction/DesignBuild/DBDocuments/DBDocsMain.shtm

The CONSULTANT shall modify the RFP document as needed to meet the project requirements and shall incorporate and/or write any additional requirements such as NTCIP standards and minimum functional requirements for all recommended ASCT components and software.

The RFP will be consistent with the DEPARTMENT’s requirements. The CONSULTANT shall prepare and submit a Draft RFP to the DEPARTMENT for review and approval. When all comments are addressed, a Draft Final RFP shall be submitted for review and approval. The Final RFP document shall be submitted to the DEPARTMENT prior to the time of advertisement of the project. One electronic copy of the standard template Design-Build RFP document shall be submitted in Microsoft Word format with all modifications and changes required to develop the RFP for this project shown using tracked changes. This copy will be submitted to the State Construction Office for review and approval. The CONSULTANT shall incorporate any future revisions to the standard Design-Build RFP template into the RFP for the project.

The CONSULTANT is responsible for the complete development of the Design-Build Criteria Package. The CONSULTANT services include, but are not limited to:

- Develop draft and final RFPs
- Develop and compile required Standards, Specifications, and MTRs
- Compile all other required contract documents

General

The CONSULTANT shall develop the design and construction criteria that should clearly and completely identify the Design-Build requirements, including any information, data, and services to be furnished by the DEPARTMENT. The design and construction criteria shall provide a summary of the project's objectives and furnish sufficient information upon which firms may prepare bid proposals (i.e., technical and price proposals). The design and construction criteria shall state the specifications, design criteria, and standards to be used in the design and construction of the project unless otherwise noted in the RFP.

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Design Services Requirements

The design requirements and criteria are essential to ensure the project is constructed to meet the needs as determined by the CONSULTANT and approved by the DEPARTMENT. The CONSULTANT shall clearly define the various design services requirements and traffic systems project requirements that include, but are not limited to:

- Elements involving location of field infrastructure
  - Controllers, vehicle detection, and other equipment
- Central control center hardware
- Communications hardware
- Communication plant requirements
- Software requirements for traffic management software and operating software
- Traffic control plan
- Maintenance

These requirements shall also include the functional and/or performance specifications for the equipment and software. All specifications prepared by the CONSULTANT shall be included in the text of the RFP or added to the RFP as an attachment or reference document, as directed by the DEPARTMENT. The functional specifications shall, at a minimum, contain appropriate provisions addressing:

- Equipment (anything not covered by the FDOT Standard Specifications, field and central communications, computers, displays, workstations, any other field devices, etc.)
- System software functional requirements
- Interconnections and integration requirements
- Multi-level testing and acceptance testing procedures

Construction Services / Requirements

The CONSULTANT shall reference any applicable DEPARTMENT specifications, including standard specifications, developmental specifications, or special provisions, etc. It may also be necessary to reference national standards or other specification requirements pertinent to the PROJECT.

Permits

The CONSULTANT shall coordinate with the DEPARTMENT to determine the responsibility of the permits and the coordination process. The CONSULTANT shall clearly state in the RFP when the Design-Build Team is responsible for identifying and obtaining any required permits.

Design Plans and Engineering Calculations Review

The CONSULTANT shall clearly define any documentation (including, but not limited to, design plans, shop drawings, or engineering calculations) that should be reviewed/retained by the DEPARTMENT relating to the PROJECT features. These submittals are not for the
DEPARTMENT's approval but rather for verification of compliance with the Criteria Package requirements. The CONSULTANT shall clearly state any requirements for packaging submittals and backup information the DEPARTMENT may desire to avoid fragmented submittals. The CONSULTANT shall define the shop drawing submittal requirements process.

Utilities

The CONSULTANT shall identify all Utility Agency/Owners within the PROJECT to determine any impacts to the facilities and determine if Utility Agency/Owners are reimbursable for the proposed impacts. The CONSULTANT shall clearly specify all utility coordination efforts required of the Design-Build Team. For example, if the Design-Build Team is expected to use the District's standard practices in coordinating with utility companies, those details must be provided in the Criteria Package requirements.

It is the Design-Build Team’s responsibility to coordinate and clear all utilities on the PROJECT.

Easements / Right-of-Way

The CONSULTANT shall obtain existing right-of-way limits from the DEPARTMENT and Highlands County.

The CONSULTANT shall perform an on-site inspection of the right-of-way to verify there are no encroachments. The CONSULTANT shall provide all known information about the existing right-of-way or easements to provide a clear and accurate RFP upon which Design-Build Teams may base their bid proposals.

It is the Design-Build Team’s responsibility to ensure all proposed components of the PROJECT are constructed within the existing FDOT or local agency right-of-way.

Quality Control (QC) Requirements

The CONSULTANT shall address any QC requirements the Design-Build Team must follow, which are in addition to those already in the referenced specifications, policies, and procedures. This section of the RFP shall also require the Design-Build Team to explain their QC program to assure quality products (plans, construction, etc.) are delivered to the DEPARTMENT.

Independent Assurance

The CONSULTANT shall specify in the Criteria Package requirements that the DEPARTMENT will continue with its independent assurance program during the project. In addition, the Department Project Manager, or his/her designee, has the right to review records and conduct tests at any time to ensure quality products and services are being provided.

Survey Requirements
The CONSULTANT shall specify in the Criteria Package any survey requirements for the Design-Build Team.

It is the Design-Build Team’s responsibility to provide all survey services required for the PROJECT.

**Final Documents**

The CONSULTANT shall define the final documents required by the DEPARTMENT from the Design-Build Team upon completion of the PROJECT. These should include: record set (as-built) plans, final RTVM, ITS Facilities Management (ITSFM) documentation, engineering reports, shop drawings, test results, daily reports, quantities list, warranties for equipment installed on the project, other ancillary documentation, etc.

**Staffing Requirements**

The CONSULTANT shall outline the minimum training and experience requirements for any professional personnel deemed appropriate by the DEPARTMENT Project Manager and/or required by regulatory agencies.

**Geotechnical Requirements**

The CONSULTANT shall specify any geotechnical information or reports required by the DEPARTMENT. The DEPARTMENT may perform some preliminary geotechnical work in the preparation of the Criteria Package. The CONSULTANT shall provide information relating to any existing geotechnical information that is available through the DEPARTMENT.

**Items to be Furnished by the Department**

The CONSULTANT shall include a section that details any items or services to be furnished by the DEPARTMENT. This shall include any information (data, reports, etc.), support functions (computer services, etc.), materials, equipment, testing devices, or other items that would affect the bid or technical approach. Such information might include survey data, existing plans (if available), right-of-way maps, etc.

**Computer Services**

The CONSULTANT shall include a list of the DEPARTMENT's computer programs that are available for use by the Design-Build Teams during the design and construction of the project. The CONSULTANT shall also require the Design-Build Teams to identify in their technical proposal which computer programs they will use during the execution of the PROJECT.

**Warranty**

The CONSULTANT shall include requirements for PROJECT warranties with a specified number of years and the details of coverage above those requirements as defined in the Specifications.
Any warranties that are developed for Federal-aid projects on the National Highway System (NHS) shall be tied to specific features or products. All warranty language in the RFP used in construction contracts on the NHS shall be approved by FHWA.

Public Involvement

The CONSULTANT, working in conjunction with the appropriate DEPARTMENT staff, shall clearly define the level of public involvement required for the project.

Department Responsibility

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT's submittal of the Draft RFP documents. The DEPARTMENT will review and approve, as appropriate, the CONSULTANT's submittal of the RFP Documents.

Subtask 3A Deliverables

- Draft RFP documents - Electronic copy
- Draft Final RFP Documents - Electronic copy
- Final RFP Documents - Electronic copy
  - Final RFP
  - Preliminary RTVM
  - Final Project Layout Sheet
  - Final Intersection Design Requirements Technical Memorandum
  - Final Construction Estimate
  - Disc of all files in PDF and original file format

Subtask 3B – Intersection Design Requirements Technical Memorandum

The CONSULTANT shall conduct a field review of each signalized intersection to identify the specific improvements to be included at each intersection. The CONSULTANT shall prepare and submit to the DEPARTMENT a brief technical memorandum, entitled, "Intersection Design Requirements" documenting the equipment required at each project intersection to allow the intersection to operate in a traffic adaptive manner. This should include the following services:

- Detailed inventory of existing traffic signal control system
- Document existing signal phasing
- Develop criteria for conduit placement or repair
- Detailed inventory of existing Highlands County communications infrastructure (communications cable type, number of pairs, routing, termination points)
- Describe existing features
- Determine existing vehicle detection locations and functionality
- Define work at each intersection
• Determine recommended placement of new cabinets, video camera poles, other components, and miscellaneous equipment

Department Responsibility

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT's submittal of the intersection design requirement technical memorandum.

Subtask 3B Deliverables

- Draft Intersection Design Requirements Technical Memo - Electronic Copy
- Draft Final Intersection Design Requirements Technical Memo - Electronic Copy
- Final Intersection Design Requirements Technical Memo is included in Task 3A Deliverables

Subtask 3C – Project Layout Sheet

The CONSULTANT shall prepare a Project Layout Sheet. The Project Layout Sheet shall include the entire length of the PROJECT and clearly identify all signalized intersections within the PROJECT limits.

The CONSULTANT is responsible for obtaining all base mapping needed to develop the Project Layout Sheet for the project corridor. The CONSULTANT is responsible for obtaining any plans they determine are in the DEPARTMENT's possession.

The CONSULTANT shall submit the Project Layout Sheet for two (2) reviews by the DEPARTMENT.

Department Responsibility

The DEPARTMENT will provide any available base design files for the project intersections. The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT's submittal of the intersection design requirement technical memorandum.

Subtask 3C Deliverables

- Draft Project Layout Sheet - Electronic copy
- Draft final Project Layout Sheet - Electronic copy
- Final Project Layout Sheet is included in Task 3A Deliverables

Subtask 3D – Requirements Traceability Verification Matrix (RTVM)

The CONSULTANT shall prepare the RTVM. The RTVM is a matrix of the contract requirements as detailed in the RFP and applicable Specifications. The RTVM shall detail the verification method for all contract requirements using one (1) of the four (4) verification methods: analysis,
demonstration, inspection, and testing. The Design-Build Team will use the RTVM to document when contract requirements are met. The Design-Build Team will also use the RTVM to develop the Test Evaluation Matrix (TEM) and test plans for cross-referencing contract requirements with test steps.

The Final RTVM shall be delivered after the Draft Final RFP is approved.

**Department Responsibility**

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT’s submittal of the RTVM.

**Subtask 3D Deliverables**

Initial RTVM - Electronic copy  
Final draft RTVM - Electronic copy  
Final RTVM is included in Task 3A Deliverables

**Subtask 3E – Construction Estimate**

The CONSULTANT shall prepare the construction cost estimate for the contract letting of the PROJECT. The construction cost estimate shall include an individual unit cost estimate for each FDOT pay item anticipated to be used by the Design-Build Team, the rational and basis for the estimated cost of all items, and a total cost estimate for the project. The construction cost estimate shall be based on current FDOT pay items as defined in the Basis of Estimates Manual.

The construction cost estimate shall include documented estimates for the PROJECT's Construction Engineering and Inspection (CEI) and construction contract duration for project field construction. Cost estimates shall be provided to the DEPARTMENT for review and will be submitted simultaneously with the draft Project Layout Sheet, draft final Project Layout Sheet, and the final Project Layout Sheet.

**Department Responsibility**

The DEPARTMENT will review and comment upon, as appropriate, the CONSULTANT's submittal of the construction estimates.

**Subtask 3E Deliverables**

- Draft construction estimate - Electronic copy  
- Draft final construction estimate - Electronic copy  
- Final construction estimate is included in Task 3A Deliverables
Task 4 – Design-Build Firm Procurement Process Support

The CONSULTANT shall provide support to the DEPARTMENT during the Design-Build Firm procurement process. The CONSULTANT shall prepare materials for and assist the Department in conducting the Mandatory Pre-Proposal Meeting for the PROJECT. The CONSULTANT shall assist the DEPARTMENT in the Design-Build Firm procurement process by preparing responses to Pre-Bid Questions, preparing responses to Pre-Proposal Meeting questions, recommendations regarding Alternative Technical Concept (ATC) presentations, preparing Addendums, preparing questions based on the Technical Proposals, and acting as a Technical Advisor. The CONSULTANT shall attend the Mandatory Pre-Proposal Meeting, Page Turn Meetings, ATC Discussion Meetings, and Question and Answer Meetings.

The CONSULTANT shall provide an evaluation criteria checklist covering all elements of the RFP to the DEPARTMENT during the review and evaluation of the Design-Build technical proposals submitted by the shortlisted Design-Build Firms. The checklist shall include an assessment as to whether each technical proposal meets all requirements of the Criteria Package and shall note any deficiencies or upgrades to the requirements. The DEPARTMENT will use the checklist as a basis for the development of a recommended ranking system of the shortlisted Design-Build Firms. No selection recommendations shall be provided by the CONSULTANT.

Task 4 Deliverables

- Prepare materials for and participate in the pre-proposal meeting
- Participate in ATC discussion meetings
- Provide evaluation of ATC concepts
- Provide responses to technical questions
- Participate in technical proposal page-turn meetings
- Provide evaluation criteria checklist
- Develop questions for and participate in question and answer sessions
- Prepare addendums, as necessary
- Provide recommendations regarding the evaluation criteria checklist

Task 5 – Optional Post-Design and Construction Engineering and Inspection (CEI) Services/Requirements

The CONSULTANT may be requested to perform additional Optional Services to assist the DEPARTMENT in the design, construction, and implementation phases of the PROJECT. The Optional Services shall be performed only upon the receipt of an executed supplemental agreement from the DEPARTMENT. The fee for these services shall be negotiated at the time this Optional Service is exercised 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. The deliverables of the Optional Services will be negotiated at the time this Optional Service is exercised. The Optional Services will be limited to the support required for the proper implementation of the PROJECT. The Optional Services includes, but is not be limited to the following:
• System managerial and Post-Design services during Construction, Implementation and Integration
• Full or Part-time Construction Engineering and Inspection (CEI) Services
• Upon System Acceptance, update and finalize SEMP documents
• Providing presentations to project stakeholders