

additional Right-of-Way have been satisfied. Any remaining funds provided will be returned to the Design-Build Firm.

Any additional Right-of-Way must be acquired prior to the commencement of any construction on or affecting the subject property. The Design-Build Firm waives any and all rights or claims for information, compensation, or reimbursement of expenses with respect to the Design-Build Firm's payment to the Department for costs associated with the acquisition of the additional Right-of-Way. The additional Right-of-Way cannot be used for any construction activity or other purpose until the Department has issued an applicable parcel clear letter or a Right-of-Way Certification for Construction.

If the Department's attempt to acquire the additional Right-of-Way is unsuccessful, then the Design-Build Firm shall provide a design of the Project within existing Right-of-Way and be required to complete the Project solely for the Lump Sum Price Bid, with no further monetary or time adjustments arising therefrom. Under no circumstances will the Department be liable for any increase in either time or money impacts the Design-Build Firm suffers due to the Design-Build Firm's proposed acquisition of additional Right-of-Way, whether or not the acquisition is successful.

Description of Work

This project includes ITS Freeway Management for Tampa Bay SunGuide™ on I-75 (SR93A) from existing communication Hub north of I-275 interchange to the Manatee/Hillsborough County Line in Manatee County. The project length is 5.320 miles. This project will be a portion of an overall system that will provide ITS facilities encompassing the I-75 corridor in Manatee County and an extension of the system from Hillsborough County.

The Design-Build Firm shall design and prepare a complete set of construction plans, specifications package and technical special provisions for an ITS system and subsystem with devices and supporting infrastructure and equipment within the scope of this project. Elements of work shall include providing: communications design, ITS software (SunGuide™ 6.2) and hardware design, technical specifications, design plans, traffic control plans, splice plans, test plans, ITS FM documents, access plans, Project System Engineering Management Plan (P-SEMP), Project ITS Architecture (P-ITSA), Required Traceability Verification Matrix (RTVM), schedule of events, required specification documents, engineer's cost estimates, utility coordination, quantity computation booklet, design documentation report, environmental permitting, development of system test and acceptance procedures, and incidental items as applicable to this project. The Design-Build Firm shall be responsible for survey, geotechnical investigation, subsurface utility engineering (SUE), design, acquisition of all permits not acquired by the Department and any required modification of permits acquired by the Department.

Design and Construction shall include the following:

1. Full Color Dynamic Message Signs (DMS) and Arterial Dynamic Message Signs (ADMS).
2. CCTV Cameras spaced at a maximum one mile interval to obtain 100% visual coverage of the roadway and clear zone.
3. Microwave Video Detection System (MVDS) spaced at one-mile intervals.
4. Roadway Weather Information System (RWIS)
5. A 72-count fiber optic backbone from the Hillsborough/Manatee County Line to the existing hub at the I-275/I-75 interchange.
6. Record keeping with ITS Fiber Management Tool (FMT)/ITS Facility Management (FM).
7. RTVM.
8. P-ITSA.
9. P-SEMP.

The design services provided by the Design-Build Firm shall include but not be limited to the following for the Department's Review and approval:

1. Preparation of complete Plans, Specifications and Estimates for the construction contract to install the subsystems that are within Department specifications, TSP's and the scope of the project.
2. Hardware configuration analysis and design including system architecture, all interfaces, communications, power equipment, devices, fiber optic splice plans, test plans, access plans, ITS FM documents, integration and computers SunGuide™ Network. This design shall be consistent with STATEWIDE and DISTRICT SEVEN ITS projects. This project will be operable with previous District Seven ITS deployments.
3. Development of proper sequencing and coordination of the various subsystem deployments.
4. Development of system test and acceptance procedures.
5. ITS design coordination.
6. The Design-Build Firm shall review the District Seven ITS Design and Construction Checklists and assist the Construction Engineering and Inspection (CEI) Company to complete the checklists thoroughly and accurately.
7. Integration inclusive of the conversion of the system to communicate with Tampa Bay SunGuide™.

A. Design-Build Responsibility

The Design-Build Firm shall be responsible for survey, geotechnical investigation, design, preparation of all documentation related to the acquisition of all permits not acquired for the Department, preparation of any and all information required to prepare, modify and/or coordinate permits acquired for the Department if necessary, maintenance of traffic, demolition, recovery and construction on or before the Project completion date indicated in the Proposal. The Design-Build Firm shall coordinate all utility relocations.

The Design-Build Firm shall be responsible for compliance with Design and Construction Criteria (Section VI) which sets forth requirements regarding survey, design, construction, and maintenance of traffic during construction, requirements relative to Project management, scheduling, and coordination with other agencies and entities such as state and local government, utilities and the public.

The Design-Build Firm shall examine the Contract Documents and the site of the proposed work carefully before submitting a Proposal for the work contemplated and shall investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and as to the requirements of all Contract Documents. Written notification of differing site conditions discovered during the design or construction phase of the Project will be given to the Department's Project Manager.

~~The Design Build Firm shall prepare/examine boring data, where available, and make their own interpretation of the subsoil investigations and other preliminary data, and shall base their bid on their own opinion of the conditions likely to be encountered. The submission of a proposal is prima facie evidence that the Design Build Firm has made an examination as described in this provision.~~

The Design-Build Firm 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.

	Pre-Proposal meeting.
<u>05/26/16</u>	Utility Pre-Proposal Meeting facilitated by the District Utility Administrator at 1:00-3:00 pm local time in Auditorium at 11201 N. McKinley Drive, Tampa, Florida 33612.
<u>06/01/16</u>	Deadline for Design-Build Firm to request participation in One-on-One Alternative Technical Concept Discussion Meeting No. 1
<u>06/03/16</u>	Deadline for Design-Build Firm to submit preliminary list of Alternative Technical Concepts prior to One-on-One Alternative Technical Concept Discussion Meeting No. 1
<u>06/09/16</u>	One-on-One Alternative Technical Concept Discussion Meeting No. 1. 90 Minutes will be allotted for this Meeting.
<u>06/17/16</u>	Deadline for submittal of Alternative Technical Concept Proposals 5:00 pm local time.
<u>06/17/16</u>	Final deadline for submission of requests for Design Exceptions or Design Variations.
<u>07/01/16</u>	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Technical Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
<u>07/07/16</u>	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Technical Proposal.
<u>07/12/16</u>	Technical Proposals due in District Office by 12:00 p.m. local time.
<u>07/12/16</u>	Deadline for Design-Build to "opt out" of Technical Proposal Page Turn meeting.
<u>07/14/16</u>	Technical Proposal Page Turn Meeting. Times will be assigned during the Pre-Proposal Meeting. 30 Minutes will be allotted for this Meeting.
<u>07/26/16</u>	Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.
<u>08/02/16</u>	Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time
<u>08/08/16</u>	Deadline for submittal of questions (answer assured) prior to the submittal of Addendum to Technical Proposal. 5:00 pm local time.
<u>08/10/16</u>	Deadline to post responses to the Pre-Bid Q&A website prior to the submittal of the Addendum to Technical Proposal. 5:00 pm local time.
<u>08/17/16</u>	Deadline for submittal of the Addendum to the Technical Proposal due in District Office by 5:00 pm local time.
<u>08/19/16</u>	Deadline for Department to provide a preliminary list of questions for Question and Answer Session#2. 5:00 pm local time.
<u>08/23/16</u>	Question and Answer Session #2. One hour will be allotted for questions and responses.
08/02/16 <u>08/30/16</u>	Deadline for submittal of Written Clarification letter following Question and Answer Session #2 at 5:00 pm local time
08/10/16 <u>09/01/16</u>	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Price Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
08/17/16 <u>09/08/16</u>	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Price Proposal.
08/30/16 <u>09/15/16</u>	Price Proposals due in District Office by 2:30 pm local time.

08/30/16-09/15/16	Public announcing of Technical Scores and opening of Price Proposals at 2:30 pm local time in Auditorium at 11201 N. McKinley Drive, Tampa, Florida 33612
09/13/16-09/27/16	Public Meeting of Selection Committee to determine intended Award. 1:30 pm local time.
09/13/16-09/27/16	Posting of the Department's intended decision to Award. 5:00 pm local time.
09/23/16-10/07/16	Anticipated Award Date
10/07/16-10/21/16	Anticipated Execution Date

III. Threshold Requirements.

A. Qualifications

Proposers are required to be pre-qualified in all work types required for the Project. The technical qualification requirements of Florida Administrative Code (F.A.C.) Chapter 14-75 and all qualification requirements of F.A.C. Chapter 14-22, based on the applicable category of the Project, must be satisfied.

B. Joint Venture Firm

Two or more Firms submitting as a Joint Venture must meet the Joint Venture requirements of Section 14-22.007, F.A.C. Parties to a Joint Venture must submit a Declaration of Joint Venture and Power of Attorney Form No. 375-020-18, prior to the deadline for receipt of Letters of Interest.

If the Proposer is a Joint Venture, the individual empowered by a properly executed Declaration of Joint Venture and Power of Attorney Form shall execute the proposal. The proposal shall clearly identify who will be responsible for the engineering, quality control, and geotechnical and construction portions of the Work.

C. Price Proposal Guarantee

A Price Proposal guaranty in an amount of not less than five percent (5%) of the total bid amount shall accompany each Proposer's Price Proposal. The Price Proposal guaranty may, at the discretion of the Proposer, be in the form of a cashier's check, bank money order, bank draft of any national or state bank, certified check, or surety bond, payable to the Department. The surety on any bid bond shall be a company recognized to execute bid bonds for contracts of the State of Florida. The Price Proposal guaranty shall stand for the Proposer's obligation to timely and properly execute the contract and supply all other submittals due therewith. The amount of the Price Proposal guaranty shall be a liquidated sum, which shall be due in full in the event of default, regardless of the actual damages suffered. The Price Proposal guaranty of all Proposers' shall be released pursuant to 3-4 of the Division I Design-Build Specifications.

D. Pre-Proposal Meeting

Attendance at the pre-proposal meeting is mandatory. Any affirmatively declared proposer failing to attend will be deemed non-responsive and automatically disqualified from further consideration. The purpose of this meeting is to provide a forum for the Department to discuss with all concerned parties the

The Design-Build Firm will be required to furnish the Project's CADD files after the plans have been Released for Construction. The Design-Build Firm's role and responsibilities are defined in the Department's CADD Manual. The Design-Build Firm will be required to submit final documents and files which shall include complete CADD design and coordinate geometry files in Intergraph / Micro station format.

As part of the As-Built Set deliverables, field conditions shall be incorporated into MicroStation and/or AutoCAD design files. Use the cloud revision utility as well as an "AB" revision triangle to denote field conditions on plan sheets.

U. Construction Engineering and Inspection:

The Department is responsible for providing Construction Engineering and Inspection (CEI) and Quality Assurance Engineering.

The Design-Build Firm is subject to the Department's Independent Assurance (IA) Procedures.

V. Testing:

The Department or its representative will witness and perform verification and resolution sampling and testing activities at both on site, as well as, off site locations such as pre-stress plants, batch plants, structural steel and weld, fabrication plants, etc. in accordance with the latest Specifications.

W. Value Added:

The Design-Build Firm may provide Value Added Project Features, in accordance with Article 5-14 of the Specifications for the following features:

- Specified ITS field elements and software not listed in the APL
- And any other products or features the Design-Build Firm desires.

The Design-Build Firm shall develop the Value Added criteria, measurable standards, and remedial work plans in the Design-Build Firm's Technical Proposal for features proposed by the Design-Build Firm.

X. Adjoining Construction Projects:

The Design-Build Firm shall be responsible for coordinating construction activities with all other construction Projects that are impacted by or impact this Project. This includes all Projects under the jurisdiction of local governments, the Department, or other regional and state agencies, but not limited to the following:

FPID 437082-1-52-01, I-75 @ I-275 and CR 683 Interchanges, High Mast Lighting

FPID 438595-1-52-01, I-275 @ I-75 (SR93) Landscape Improvements

FPID 434025-1-52-01, I-75 from Manatee County Line to south of Big Bend Road, ITS Freeway Management

FPID 434929-1-52-01, I-75 S of Moccasin Wallow Rd to Hillsborough County Line

Y. Issue Escalation:

The Design-Build Firm shall be responsible for the design of all new or retrofit sign supports (post, overhead span, overhead cantilever, bridge mount and any applicable foundations). The Design-Build Firm shall show all details (anchor bolt size, bolt circle, bolt length, etc.) as well as all design assumptions (wind loads, support reactions, etc.) used in the analysis. Mounting types for various signs shall not be changed by the Design-Build Firm (i.e. if the proposed or existing sign is shown as overhead it shall be overhead and not changed to ground mount) unless approved by the Department. Any existing sign structure to be removed shall not be relocated and reused, unless approved by the Department.

~~It shall be the Design-Build Firm's responsibility to field inventory and show all existing signs within the Project limits and address all regulatory, warning and signage along the Project. Existing single and multi post sign assemblies impacted by construction shall be entirely replaced and upgraded to meet current standards. Existing sign assemblies not impacted by construction can remain.~~

P. Lighting Plans: N/A

Q. Intelligent Transportation System Plans:

1. General

The Design-Build Firm shall prepare Intelligent Transportation System and subsystem Plans in accordance with Department criteria. The Design-Build Firm shall provide ITS deployment along I-75 which includes DMS, ADMS, RWIS, CCTV cameras and MVDS from I-275 Interchange to the Manatee/Hillsborough County Line. The Project will provide backbone and local Ethernet network communication over the new FOC. The Project will enable continuous permanent ITS communication and ITS field element coverage of I-75 from the District Seven Regional Transportation Management Center (RTMC).

The Design-Build Firm shall closely coordinate with the adjacent project (FPID 434025-1-52-01) when placing ITS devices and installing FOC backbone, in order to maintain minimum required device spacing and to ensure a continuous FOC communication network.

ITS work elements for the Project shall include, but not be limited to, the following:

- Development and update of the P-ITSA, P-SEMP, and RTVM
- ITS maintenance services
- ITS design services
- DMS and ADMS field elements
- CCTV field elements
- MVDS field elements
- RWIS field elements
- Electrical and ITS conduit and pull boxes
- Electrical power service for ITS field elements
- Lightning protection systems, including grounding systems and surge protective devices
- ITS FOC communication infrastructure including splice plan
- ITS Ethernet network and network devices
- Physical network diagram, including Layer 2 (device) and Layer 3 (backbone) diagrams
- ITS integration services
- ITS testing services

- ITS training services
- Restoration of ITS services
- ITS FM data entry sheets preparation
- As-built plans
- Warranties
- Grounding
- Site Survey (Cameras)
- Access Plan
- Splice Plan with Proposed Loss
- Electrical service power coordination

The Design-Build Firm shall prepare design plans ~~and provide necessary documentation~~ for the procurement and installation of the Signalization and Intelligent Transportation System devices as well as overall system construction and integration. The construction plan sheets shall be in accordance with Department requirements and include, but not be limited to:

- Project Layout / Overview sheets outlying the locations of field elements
- Detail sheets on:
 - DMS/ADMS Structure, DMS/ADMS attachment, DMS/ADMS display/layout
 - CCTV structure, CCTV attachment, CCTV operation/layout
 - MVDS structure, MDVS attachment, MDVS operation/layout
 - Structure, attachment, display/layout (All ITS field elements)
 - Fiber optic splice plans
 - Power Service Distribution
 - Wiring and connection details
 - Conduit, pull box, and vault installation
 - Communication Hub and Field Cabinets and supply
 - System-level block diagrams
 - Device-level block diagrams
 - Field hub/router cabinet configuration details
 - Fiber optic Splicing Diagrams
 - Existing and planned butt splice location(s) System configuration/Wiring diagram/Equipment Interface for field equipment at individual locations and communications hubs.
 - Voltage drop calculations for electrical wire sizing
 - Approved System access plan
 - Maintenance of Communications (MOC) Plan (existing and new ITS elements)
 - Test(s) plan
 - Integration plan
- ~~Inspection(s)~~
- ~~Power coordination~~

Anticipated DMS features and details:

DMS/ADMS Feature	Approximate Location	Direction	Notes
20 mm pixel pitch Full color matrix DMS	Centered over approach lanes	SB I-75 approaching Moccasin Wallow	DMS shall not be installed on a

		Road Interchange	structure supporting a static guide sign installed for traffic in the same direction of travel. The selected structure location shall be such that it provides unhindered access for maintenance.
20 mm pixel pitch Full color matrix ADMS	Placed over outside approach lane	EB and WB Mocassin Wallow Road between ¼ to ½ mile from the decision point to I-75 on-ramps	ADMS shall not be installed on a structure supporting a static guide sign installed for traffic in the same direction of travel. The selected structure location shall be such that it provides unhindered access for maintenance.

The Design-Build firm is responsible for ensuring project compliance with the Regional ITS Architecture and Rule 940 as applicable. This includes, but is not limited to, the development and update of a concept of operations, the development and update of a project system engineering master plan, and project ITS architecture (P-SEMP/P-ITSA), ITS FM requirement traceability verification (RTVM) as well as coordination of document review.

1. The Design-Build Firm shall be responsible for designing the entire ITS to be fully integrated into the existing Tampa Bay SunGuide™ Program. The Department has developed one integrated and readily scalable system configuration for future District-wide ITS deployments. The ITS shall be designed to operate from the Tampa Bay SunGuide™ Regional Transportation Management Center (RTMC) and incorporate such functional capabilities as an Incident Detection System, Wrong Way Driving detection, ~~Thermal Imaging~~ Vehicle Detection System, advanced traveler information system, advanced traffic management system, access plan, testing plan, and data storage, retrieval and analysis. The ITS shall encompass a myriad of advanced technologies including hardware integration, Microwave Vehicle Detection System (MVDS) subsystem, Closed-Circuit Television (CCTV) Camera subsystem, Road Weather Information System (RWIS), Dynamic Message Signs (DMS), Arterial Dynamic Message Signs (ADMS). The communication sub-systems should include as a minimum:
 - One 20 mm pixel pitch full Color Freeway DMS sign located on Southbound I-75 approaching Mocassin Wallow interchange in advance of the 1 mile advance guide sign.

- Two 20 mm pixel pitch full Color fiber-fed ADMS signs located on 97th St/Moccasin Wallow Rd approaching I-75 from both the east and west, one ADMS in each direction. The ADMS shall be located at a distance of between ¼ to ½ mile from the decision point to I-75 on-ramps.
 - MVDS on I-75 at a spacing of one mile or less. The Design-Build Firm shall provide MVDS north and south of the I-75/Mocassin Wallow Interchange. .
 - CCTV on I-75 spaced at an interval of one (1) mile or less. Spacing may need to be adjusted in order to ensure full surveillance coverage of both Northbound and Southbound directions of mainline I-75, ramps and crossroads including roadway and clear zones.
 - The existing CCTV at 97th St/Moccasin Wallow Rd interchange shall be upgraded and the existing camera should be recovered and delivered to the Department including the wireless equipment.
 - A 72-count FOC backbone along I-75 from existing Hub at I-275 interchange to the Manatee/Hillsborough County line. The FOC backbone shall only be placed along one side of I-75 within the project limits.
 - Dedicated fiber-fed CCTV to monitor all DMS's and ADMS's to be placed between 200 to 500 feet in advance of each DMS and ADMS for visibility purposes.
 - One RWIS located within the project limits. Initial sight location shall be determined by the Design-Build Firm. The final site location shall be approved by the ITS Operations Engineer or their representative.
2. The existing static guide signs and associated sign supports shall be referenced in the ITS plans along with the Freeway DMS's. The freeway DMS's shall maintain a minimum of 800 feet spacing to the static guide signs. The Design-Build Firm shall document the actual sign spacing data and submitted to the Department for approval.
 3. Freeway DMS's are to be located on full span overhead truss sign structures spanning the entire roadway section I-75 southbound lanes. Freeway DMS's shall not be installed on cantilever sign structures. The Freeway DMS's shall be centered over the center through lanes. ADMS's are to be located only on overhead truss cantilever structures. The ADMS's shall be placed over the outside approach lane. The sign structure type shall be consistent with the adjacent I-75 Design-Build Projects.
 4. The Design-Build Firm shall prepare the ITS plans package. This work effort shall include the design of a complete ITS utilizing a MVDS system and subsystem, CCTV Camera system and subsystem, RWIS, DMS and ADMS system and subsystem, and fiber optic communications system and subsystems along with power and connection to adjoining projects.
 5. All ITS devices (proposed and existing devices to remain) shall be (FOC) wire-connected. No wireless connections will be accepted.

6. The CCTV's and MVDS's shall be installed on separate poles with no other devices sharing these poles. The CCTV's and MVDS's shall not be interfered or obstructed by other devices and landscaping elements such as trees and shrubbery in the vicinity.
7. The Design-Build Firm shall perform all surveys, site visits, utility coordination, electrical service coordination, subsurface utility engineering (SUE) services, geotechnical services, structural design of support structures (for equipment and personnel), and maintenance of traffic plan development that are necessary, including coordination with other elements of this project and elements of other projects, for the complete design of the proposed ITS.
8. ITS communications conduit, splices, pull boxes, splice boxes, and power poles, cabinets, and devices shall be placed within 10 feet of the Right-of-Way line, or as close to this requirement as possible outside the clear zone, or behind guard rail or barrier wall (see Section 6. Material, Equipment and Subsystem Requirements for more information). Any changes to this requirement shall be approved by the Project CEI and the ITS Program Manager.
9. FO splices shall be performed inside the device cabinets. Adequate FO cable slack shall be provided inside the appropriate splice box per Specifications. The device cabinet shall be adequately sized to include a lockable splice drawer. Connection from Splice drawer to equipment shall be made using plenum-rated fiber optic material.
10. The Design-Build Firm shall also establish the necessary electrical power service, meter addresses, and accounts on behalf of the Department. Submit letters of request to acquire electrical power service from the power company to the Department Project Manager and/or Operations Manager for approval from District ITS, Maintenance and CEI. The associated costs, including the monthly power service bills, for any new power service established shall be paid by the Design-Build Firm until Final Acceptance of the project.
11. The Design-Build Firm shall not install any aluminum-wound electrical products in the project.
12. The Design-Build Firm shall procure and install all new equipment, field elements, communications infrastructure and the associated components. The equipment to be procured shall meet the requirements of the National Transportation Communications Intelligent Transportation System protocol (NTCIP) (if applicable) versions supported by the SunGuide™ software specified in this RFP. The Design-Build Firm is responsible for ensuring the proposed ITS field elements are on the Approved Product List (APL) and are 100 percent compatible with all SunGuide™ software (version 6.2) at the time of deployment.
13. The Design-Build Firm shall submit shop drawings for all proposed technologies/products that are to be procured for the project, along with selection alternatives and the reasons for selection, to the Department for acceptance. The Department or its representative may request additional information and/or demonstration of the equipment for approval and the Department reserves the right to reject any equipment that in its discretion is determined to be non-compliant with the Department's design standards, specifications or the requirements of this project. The Design-Build Firm shall not submit a large volume of shop drawings (not in bulk) at one time.
14. The Design-Build Firm may request review and release by the Department of an individual subsystem design in order to allow advanced procurement of equipment that requires a longer lead time. Any component plan set shall reference any and all other components plans. However, the Department reserves the right to evaluate this request based on the requirements included in this

RFP, the impact to minimum system functionality or maintainability and the needs of the traveling public. The Department's decision shall be final and the Design-Build Firm shall solely bear any associated costs or delays.

15. All components, equipment and subsystems furnished and installed by the Design-Build Firm shall be tested to determine conformance with project requirements and Contract Documents. The Design-Build Firm shall provide an ITS ~~Inspection and~~ Testing Plan (part of the P-SEMP-P-ITSA and RTVM which should be signed and dated by the EOR and CEI) to the Department for review prior to conducting any testing or inspection services. This plan shall be kept updated as necessary. The ITS ~~Inspection and~~ Testing Plan shall include: test requirements, procedures and conditions; time frame and schedule; acceptance criteria and the specific element of the Design Criteria requiring the test; and the associated necessary resources and those responsible and witness for each type of test. Independent factory acceptance testing by the Design-Build Firm shall not be required for any proposed field elements included on the APL. See Section 4. Testing and Acceptance for more information on ITS testing requirements.
16. The Design-Build Firm shall be responsible for the integration of all ITS and communications systems and subsystems. Once the Design-Build Firm has installed and supplied the power and communications interconnect to each ITS device as stated in the plans and specifications and approved by the CEI, the Design-Build Firm shall integrate each device into the existing passive communications network. The Design-Build Firm shall coordinate with the Department's Project Manager and/or Operations Manager a schedule of installation and integration. Once the Design-Build Firm has completed the installation of fiber plant and devices and receives acceptance by the CEI and Department, the Design-Build Firm shall then field-integrate the ITS devices/cabinets in accordance with the approved schedule. The Design-Build Firm shall verify that all ITS devices are in the correct locations and are functioning properly at each location at the time of installation and integration. The Design-Build Firm shall verify communications between all ITS devices as designed, between each ITS device location, and between all communications hubs and RTMC. The Design-Build Firm shall install and integrate all active layer 2 communications components and layer 2 communications equipment in all communications hubs. This shall include, but is not limited to, field switches, video encoders, device servers, UPSs, remote power management devices, RWIS controllers, DMS and ADMS controllers, alarm interfaces, and all cables and connectors necessary for the successful operation of the communications system. Excluded is modification of any existing or new Core Switches/Routers operating at Layer 2 or Layer 3. Such devices shall be configured by the DEPARTMENT or other DEPARTMENT designated CONTRACTOR. ~~Mutual testing shall occur of system field device communications.~~ The Design-Build Firm shall provide a Field Integration Checklist indicating that all integration tasks have been completed and are documented. DEPARTMENT or other DEPARTMENT designated CONTRACTOR will perform configuration of the existing Hub switch and SunGuide™. (see Section 3.3 System Integration for more information).
17. The Design-Build Firm shall provide all equipment, parts, and configuration data necessary to integrate the ITS and communications systems and subsystems to the RTMC. The Design-Build Firm shall integrate Layer 2. The Design-Build Firm shall schedule and coordinate the Layer 3 integration with District RTMC Staff (see Section 3.3 System Integration for more information).
18. The Design-Build Firm shall provide complete and comprehensive documentation of all elements of this project as specified in this RFP.

19. The Design-Build Firm shall be responsible to provide **and maintain** locates throughout the corridor for both Sunshine and non-Sunshine subscribers for any portion(s) of the proposed system for the duration of the project when requested by the Department or third parties authorized to work within the project limits.
20. The Design-Build Firm shall prepare design plans and provide necessary documentation for the procurement and installation of the ITS. The Design-Build Firm shall submit 60%, 90%, and Final (100%) design plans and technical specifications packages to the Department for review and approval.
21. The construction plan sheets identifying the final design shall include, but not be limited to:
- Key sheet
 - Tabulation of Quantities, with reference to FDOT Pay Item Numbers
 - General Notes and Pay Item Notes
 - Legend
 - Pole Data Sheet
 - Project Layout/Overview sheets outlining the locations of new and existing ITS field elements
 - Plan and schedule for accessing existing ITS system and subsystem
 - Fiber optics communications and outside plant facilities and routing index sheets to existing butt splices and schedule and plan for accessing existing fiber optic network
 - Plan sheets providing details on ITS field device locations and interface with the fiber optics communications cables, fiber optic cable routing and outside plant facilities including pull boxes, cabinets, fiber optic vaults, outlying structures and roadways, schedule and plan for accessing existing ITS network, etc.
 - Splice plan with proposed loss
 - Roadway cross-sections at ITS field device locations
 - Field surveyed heights for proposed ITS structures
 - Detail sheets for all field elements included in the final design such as mounting details, cabinets, cabinet wiring diagrams, electrical wiring diagrams, power network, service disconnect, conduit, grounding array and surge protection diagrams, etc.
 - Structure detail(s)
 - Geotechnical information supporting ITS foundation and structure design.
 - Traffic Control Plans
- The above-referenced sheets shall be included as a minimum at the 60% submittal phase. Each subsequent submittal shall include additional information which advances the design.
22. The Design-Build Firm shall prepare, submit and seek Department approval for all the required Plans and documents, schematic diagrams, cabling/wiring diagrams, splice diagrams, splice plan, and all other pertinent information related to the equipment, materials and incidentals for the

installation of ITS cabinets, CCTV cameras, DMS, ADMS, MVDS RWIS communications network equipment, distribution conduit facilities, cabling, electrical power service and distribution, etc., prior to the commencement of the installation phase. (See Section 2. Design and Engineering Services for more information on design requirements.)

23. The Design-Build Firm shall prepare detailed Modified Special Provisions and Technical Special Provisions, as needed and/or identified during the project design phase, that will expand upon the minimum requirements included in this RFP.
24. The Design-Build Firm shall incorporate all existing ITS facilities into new plans. All existing ITS systems and subsystems shall be maintained during construction.
- ~~25. The Design-Build Firm shall coordinate with the Department for existing facility identification in accordance with Chapter 556, F.S. (Sunshine 811).~~
26. ITS contact ~~representative number: Ramona Burke or William Reynolds at~~ 813-615-8600.
- ~~27. The Design-Build Firm shall be responsible for maintaining locates once provided by the Department.~~
28. The Design-Build Firm shall utilize the ITS Design and Construction Checklist referenced in this RFP (See Attachments).

The Design-Build Firm shall detail existing Signalization and Intelligent Transportation System equipment and report which devices will be removed, replaced, recovered or impacted by project work.

An appropriate schedule, showing the proposed access plan shall be submitted and approved by the Department for accessing existing ITS facilities/systems in order to minimize system downtime. Any existing ITS facility shall not be taken offline without Department approval.

All proposed ITS systems and subsystems shall be compatible with existing ITS systems and subsystems. Coordination with District One ITS Operations office shall be required for ITS systems and subsystems that are maintained by District One.

District Seven's existing ITS field elements consist of but not be limited to CCTV, MVDS, DMS, ADMS, communication HUBs, and ITS control cabinets. ITS cabinets contain equipment to support the ITS field elements connected to the cabinet, the infrastructure to connect to the FOC communication infrastructure, and the equipment to connect to the Ethernet network for communicating with the RTMC and the SunGuide™ central system software.

District Seven's ITS communication infrastructure typically consists of a 72-count single-mode FOC communication backbone and 12-count single-mode FOC drops to ITS field elements at ITS cabinet locations. The FOC and cable communication are placed in an underground conduit system typically consisting of a 4-inch HDPE conduit containing one 1-inch and two 1-1/4-inch innerducts. The locate wire is placed inside the 4-inch outterduct outside the innerducts. At locations where fiber splicing is performed outside the device cabinets, splice boxes are placed in the vicinity of ITS cabinets to facilitate the 12-count FOC drops. Fiber pull/splice boxes are spaced no more than 1,000 feet apart to facilitate installation of the FOC and changes of direction of the conduit path.

ITS cabinets are installed for CCTV, MVDS, RWIS, DMS, and ADMS and installations can be for individual or multiple ITS field elements at the same or nearby location(s). ITS cabinets include network equipment, H.264 encoders, media converters, device servers, PDU, UPS, and batteries. The ITS cabinets have 100 mbps or 1 gbps MFES and a manual disconnect for a portable generator. Some ITS poles have NEMA boxes installed to allow ITS maintenance staff to connect into and calibrate the MVDS when the associated cabinet type 332, 334 or 336 is in an inaccessible location. The NEMA box shall be placed away from traffic for protection. All exposed conduits shall be placed neat and uniform.

Mowing aprons are installed for CCTV and MVDS poles, pull and splice boxes, and equipment cabinets.

Various forms of conduit and splice/pull box locate systems have been installed primarily consisting of conduit warning tape, conduit route markers and tone wires. Supplementary electronic box markers are in all pull and splice boxes.

Communication between local ITS cabinets and the hubs use TCP/IP over a 10/100 mbps or 1 gbps Ethernet Optical Network. From hub to hub, communication is accomplished using TCP/IP over a 1 or 10 gbps Ethernet Optical Network. District Seven limits the demand on the Ethernet segments and fiber pairs to 60% or less of the capacity supported by optical communication devices in order to maximize the quality of the signal. District Seven also limits the number of IP addresses on the hub to local devices to prevent Spanning Tree Protocol issues. The Design-Build Firm shall fully implement NTCIP compliant subsystems for the Project. The Design-Build Firm shall utilize the latest FDOT Management Information Base (MIB) definitions and objects for this project.

Within the 72-count FOC backbone, District Seven has designated assignments for the six 12-count FOC buffer tubes, as follows:

Buffer Tube Color	District 7 Assignment
Blue	10 gbps Ethernet Backbone
Orange	100/1000 mbps Ethernet Field Device Groups
Green	100/1000 mbps ITS Expansion
Brown	Shared with local agencies and Center-to-Center Communication (C-2-C). Fibers 9-12 (45-48) are used for C-2-C
Slate	Shared with local agencies and Florida Turnpike Enterprise (FTE). Fibers 1-8 (49-56) shared with FTE
White	Future

~~Communication from hub to ITS field cabinets are at 10/100/1000 mbps using Layer 2 Ethernet Switches and communication from hub to RTMC is at 1 gbps Ethernet or 10 gbps using OSI Layer 3 Ethernet switches through FOC backbone.~~ The hub ITS equipment shelters are secure, air-conditioned and contain backup UPS and other equipment and hardware required to make them fully functional and to support operations and maintenance. Hubs have been equipped with commercial electrical service and permanent generators. The existing hub located at I-75 and I-275 interchange shall be the designated hub for this Project.

There are existing electrical services within the Project limits that have been designed for the existing ITS devices. District Seven requires commercial electrical power for ITS field elements. Electrical service, including transformers, have been designed on a case-by-case basis to meet the electrical requirements of

the ITS field elements and ITS cabinets and the length of the electrical cabling. Copper conductors for ITS electrical service are typically installed in underground conduit. District Seven electrical conductors are installed in a separate conduit from the ITS FOC. ITS electrical service pull and junction boxes have been equipped with additional locking devices to prevent unauthorized access and theft of copper cables.

The Design-Build Firm shall assume the responsibility of maintenance of all existing ITS devices and infrastructure, ~~either:~~

- ~~• Beginning at 180 days after Notice To Proceed, or~~
- When any ITS device is taken out of service or altered, or
- At the beginning of construction,

whichever occurs first (as shown in the Design-Build Firm's schedule). The Design-Build Firm's ITS maintenance responsibility shall continue until the completion of stand-alone testing and acceptance of all ITS devices and infrastructure by the Department.

The Design-Build Firm shall fully cooperate with all utility owners during the design, survey, and construction activities of this project. ~~The Design-Build Firm shall call Sunshine State One Call a minimum of 48 hours and a maximum of 96 hours prior to commencement of any excavation work. The Design-Build Firm shall cooperate with Department's maintenance contractor(s) to locate the existing ITS devices, underground conduits, cables and infrastructures on site.~~

~~The Design-Build Firm shall be responsible for all locates from the issuance of Notice to Proceed through the end of project period. The Design-Build Firm shall also be responsible for maintaining and locating all existing, temporary, and new ITS facilities after the start of construction.~~

2. Design and Engineering Services:

2.1 General

The Design-Build Firm shall be responsible for all ITS design and engineering services relating to the Project. ~~All ITS system components shall be new unless otherwise identified for relocation.~~

The design of the new system shall integrate with the existing devices. The design shall include the necessary infrastructure and components to ensure proper connection of the new ITS components. This shall include, but not be limited to, all proposed ITS components of this project as well as existing sub-systems that remain or are re-deployed as part of the final project.

At a minimum, the ITS work in this project consists of the following major components:

- Replacement of any ITS System components that are impacted by the Design-Build Firm's scope of work as approved by the Department. ~~All equipment shall be new unless otherwise specified.~~
- DMS and ADMS – Includes sign support structures, static signs, and mounting brackets for DMS and ADMS.
- CCTV – Includes poles, camera lowering devices and mountings to provide 100% CCTV coverage of travel lanes and clear zone within the entire project corridor including cross roads and ramps. In addition, each ADMS shall have a dedicated verification CCTV.

- MVDS - Includes poles and mountings to detect all travel lanes along the project corridor.
- Removal and/or protection of any ITS System components that are impacted by the Design-Build Firm's scope of work as approved by the Department.
- Testing of fiber optic backbone and lateral drops furnished and installed or modified by the Design-Build Firm.
- Testing of the Intelligent Transportation System.
- Coordination with District Seven and District One ITS Operations Offices.

The Design-Build Firm shall deliver all systems and subsystems/devices/components required in the RFP and shall determine the exact locations and quantities of the ITS field elements.

~~The Design-Build Firm shall ensure that all ITS field elements and ancillary components comply with the Contract documents, FDOT's APL, and are supported within the SunGuide™ software, unless otherwise approved by the Department. The Design-Build Firm shall provide a listing of APL approval numbers for all ITS field elements proposed for utilization on this Project in accordance with the Specifications.~~

All ITS field elements and ancillary components shall be new commercial off-the-shelf (COTS) production products with the latest version of FDOT APL-certified hardware and software (at the time of installation). Neither untried nor prototype units will be approved or accepted by the Department. The Design-Build Firm shall not use reconditioned equipment. All new products must be compatible with all existing components and all functions of existing components within the ITS facility.

The Design-Build Firm shall ensure that the design plans include station numbering on each plan sheet. The Engineering scale for the plan sheet shall be 1 inch= 100 feet.

The Design-Build Firm shall not install system and subsystem devices and ancillary components until the Department has reviewed and approved the final design plans and specifications.

The Design-Build Firm shall coordinate their schedule with Department when the Department's presence is needed or requested per the Access Plan.

Any documents, plans, maps, or calculations developed by the Design-Build Firm and/or submitted to the Department for this contract shall use English units.

The Design-Build Firm shall submit manufacturers' Mean Time To Failure and Mean Time Between Failure (MTTF/MTBF) information for all electronic devices installed on this Project and the method used to determine this information to the Department for review and approval.

~~The Design-Build Firm shall obtain and pay for all permits and licenses, and~~ conduct all utility coordination necessary for the construction of the Project. The Design-Build Firm shall be responsible to coordinate and resolve all conflicts and permitting and/or utility issues occurring during the Project, at no additional cost to the Department.

When electrical or communication conduits are proposed for bridge attachment, the Design-Build Firm shall work with the District Structure Maintenance Engineers to obtain approval of bridge attachments.

The Design-Build Firm shall perform site preparation and other site upgrades required for subsystem ITS field elements and ancillary components installations and maintenance. Examples of these upgrades

include, but are not limited to, ground leveling, facility access, concrete leveling pads, and/or addition of retaining walls. ITS field element installations shall meet all applicable clear zone requirements. Additional installation requirements that are system and subsystem specific are included in the subsystems and ITS field element requirements presented in the remainder of the RFP and specified in the FDOT Specifications.

~~Regardless of how any requirements are presented, depicted, or formatted herein, the Design-Build Firm shall apply all requirements to each and every system and subsystem, ITS field elements, and ancillary component described, irrespective of its number or location, at all Project locations shown in Department approved final signed and sealed plans, and shall conform to all Project requirements, applicable standards, manufacturer specifications, and these Contract Documents.~~

2.2 ITS Project Schedule

The Design-Build Firm shall submit a project schedule, in accordance with Subarticle 8-3.2 (Design-Build Division I Specifications), to establish contract duration as part of the Technical Proposal. The minimum number of activities shall include:

- ITS Design Submittals (60%, 90% & Final);
- ITS Design Review/Acceptance Milestones;
- ITS Start of Construction;
- ITS Underground Construction (conduits, pull box, splice box and etc.);
- ITS Pole and Structure Construction (ITS poles, structures and foundations);
- ITS Device Installation (DMS, ADMS, RWIS, CCTV, MVDS, Power System);
- ITS Standalone Testing and Department acceptance for each system and subsystem;
- Document Submittal Schedule including updates
- System integration
- Additional ITS Construction Milestones as determined by the Design-Build Firm
- As-Built Drawing Preparation and Submittal Schedule, and
- Final Completion Date for All ITS Work.

2.3 FDOT Specifications

ITS field elements and communication infrastructure and network components shall, as a minimum, meet the Minimum Technical Requirements and Governing Regulations in Section V. A. of this RFP.

2.4 Industry Standards

The materials used by and workmanship completed by the Design-Build Firm shall meet or exceed industry standards. All materials, equipment, supplies, installations and testing shall comply with the Project requirements, the following standards, as applicable, and all other applicable standards and requirements. If multiple requirements or standards are specified for any single item or component of the Project, the most stringent requirement or standard shall govern.

The following list of standards and organizations that guide industry standards and best practices is not meant to be all inclusive:

- The American Society of Testing and Materials standards (ASTM)
- Institute of Electrical and Electronics Engineers (IEEE) standards
- International Standards Organization standards

- The American National Standards Institute (ANSI)
- The National Electrical Manufacturers Association (NEMA)
- The Underwriters' Laboratories Inc. (UL)
- The National Board of Fire Underwriters (NBFU)
- The National Fire Protection Association (NFPA)
- The Society of Automotive Engineers (SAE)
- The Electrical Testing Laboratories (ETL)
- Bellcore Technical Advisories and Technical Requirements
- The Electronic Industries Alliance (EIA)
- The National Electrical Code (NEC)
- The National Electrical Safety Code (NESC)
- The Joint Electronic Devices Engineering Council (JEDEC)
- The Radio-Electronics-Television Manufacturers Association (RETMA)
- The Lightning Protection Institute (LPI)
- The Rural Electrification Administration (REA)
- The International Radio Consultative Committee (CCIR)
- The International Telephone and Telegraph Consultative Committee (CCITT)
- The American Standard Code for Information Interchange (ASCII)
- The National Television Systems Committee (NTSC)
- The International Telecommunications Union (ITU)
- The Moving Picture Experts Group (MPEG)
- The Bureau of Radiological Health – Optical Radiation Hazard specifications
- The Telecommunications Industries Association (TIA)
- The American Association of State Highway & Transportation Officials (AASHTO)
- The Federal Aviation Administration (FAA)
- The Federal Communications Commission (FCC)

2.5 Design Phase

The Design-Build Firm, as a minimum, shall provide the following systems engineering documents as required ~~by Rule 940~~:

1. P-ITSA
2. P-SEMP
3. RTVM
4. Optical Time-Domain Reflectometer (OTDR) test plan
5. Splice plan with integration plan
6. Material data submittal
7. Electrical calculations
8. Structural documentation
9. Design plans (60%, 90%, and Final)
10. Access plans
11. Camera view
12. Lightning analysis

The above documents shall meet the requirements of the following;

1. National ITS Architecture –Latest version.
2. Florida Statewide ITS Architecture – Latest Update
3. Tampa Bay SunGuide™ Regional ITS Architecture
4. FDOT Guidelines for the Implementation of Federal Highway Administration (FHWA) 23 CFR

Part 940 in Florida

5. FDOT Guidelines for Writing a Project Systems Engineering Management Plan
6. Florida's Statewide Systems Engineering Management Plan, Version 2
7. RFP as presented herein

FHWA 23 CFR Part 940 requires that the systems engineering process shall include, at a minimum:

1. Identification of portions of the regional architecture being implemented
2. Identification of participating agencies' roles and responsibilities
3. Requirements definition
4. Analysis of alternative system configurations and technology options to meet requirements
5. Procurement options
6. Identification of applicable standards and testing procedures
7. Procedures and resources necessary for operations and management of the system; and,
8. System engineering Document update and/or review.

The Design-Build Firm shall comply with the Department's SEMP requirements and submit applicable P-ITSA and P-SEMP and RTVM documentation for the Department's review and approval.

The ITS section within the District Seven Traffic Operations Division is responsible for the development and operation of ITS programs. These programs increase the efficiency of existing freeway infrastructure through rapid detection and response to incidents, and collection and dissemination of traffic information to travelers.

To maximize the benefit of these programs, they must be planned, designed, deployed, operated and maintained using a very structured process that:

1. Defines and validates the problems to be solved;
2. Employs standards;
3. Supports configuration requirements; and,
4. Frequently verifies that the program is properly addressing the validated problems.

Further, a process that addresses the entire life cycle of the Project ensures that early phases of the Project position it well for deployment, operation and maintenance, and that operations and maintenance requirements and procedures comply with the original program requirements. This process is called the Systems Engineering Process.

This process shall focus on ensuring that:

1. Project goals are well-defined and validated
2. Project requirements are developed that comply with the Project goals
3. The Project is assessed against those requirements.

The Design-Build Firm shall develop a P-ITSA and a P-SEMP and submit them to the Department for review and approval within 60 calendar days of the written date of Notice to Proceed (NTP). The P-ITSA shall document the elements of the Tampa Bay SunGuide™ Regional ITS Architecture that are being implemented with the Project. The P-SEMP shall incorporate FDOT Standard Specifications, Supplemental Specifications, Modified Special Provisions, Technical Special Provisions and the requirements contained in the RFP that must be met for the Project. The Design-Build Firm shall adhere to and meet or exceed all requirements in the P-SEMP, including all applicable appendices and updates during phases, throughout the life of the Contract term.

The initial RTVM shall be submitted to the Department for review and approval no later than 30 calendar days after the approval of the P-SEMP and PISTA. At a minimum, the P-SEMP, PISTA and RTVM shall

be reviewed at every major milestone (such as phase submittals and/or with an equipment/device type change) after the initial approval and updated, as needed. The updated and revised P-SEMP, PISTA, and RTVM documents shall be submitted to the Department for review and approval.

The Design-Build Firm shall design the ITS field elements to meet FDOT and applicable industry standards. In addition, the Design-Build Firm shall complete and submit the checklists in the District Seven ITS Design Guidelines Checklist included in the RFP package, or the latest version which can be obtained by contacting the FDOT Project Manager/ITS Operations Manager. The Design-Build Firm shall submit the applicable checklists with each design submittal.

The Design-Build Firm shall label each device location as follows: device SR 60 MM.M MP BB where device can be a CCTV, MVDS, or RWIS; MM.M is the mile post rounded to tenth of a mile (example: 45.4); BB is the travel direction (example WB). For a single location with multiple devices, list all devices. Any documents, plans, maps, or calculations developed by the Design-Build Firm and submitted to the Department for this Contract shall use English units.

The engineering scale for the plan sheets shall be 1 inch = 100 feet. Blowups or insets shall be provided at each ITS field element and electrical power service point. Inset scale shall be 1 inch = 40 feet or other scale as needed to clearly depict the details of the installation, as approved by the Department.

The Design-Build Firm shall design the location of ITS field elements so that they are accessible for maintenance personnel and vehicles without lane closures. All ITS devices shall be located such that full-size equipment required for the replacement of the ITS device can be accommodated. Appropriate culverts shall be provided if necessary for maintenance access. The Design-Build Firm shall not install any ITS devices (i.e., CCTV, MVDS, etc.) or cabinets within the median of I-75. The Design-Build Firm shall minimize conduit crossings of I-75 to minimize conflicts with future construction projects along I-75. All ITS device locations shall be clear of vegetation and shall be away from ditches and low-laying areas.

During the design phase, the Design-Build Firm shall submit documents ~~and plans~~ for review in accordance with the RFP. Following, ~~for information only~~, is a listing of the required submittals. It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract Documents whether listed below or not.

1. P-ITSA
2. P-SEMP
3. RTVM
4. FDOT Standard Specifications, Section 603-5 documentation
5. Physical network diagram
6. FOC splicing diagrams
7. Layer 2 (device) and Layer 3 (backbone) Ethernet network diagrams
8. IP addressing scheme
9. Completed design checklists
10. Electrical design calculation which shall include:
 - Voltage drop calculation spreadsheet showing voltage drop and current for each link, transformer voltages.
 - Electrical riser diagram
 - Electrical one line diagram
 - Conduit
 - Grounding details

11. Final Plans for electrical and fiber optic conduits (if proposed to expedite construction in advance of the entire ITS package, the conduit plans shall include approval of the electrical design document).
12. Video camera survey showing actual coverage of the proposed CCTV (see Section 5.4.2 for additional requirements). Each video clip file name shall match the CCTV name.
13. Plan for OSHA compliance when working around power lines
14. Soil survey results and geotechnical analysis
15. Structural design and plans
16. Plans and specifications for the Project
17. FOC transmission loss design report
18. All FCC permits and licenses
19. Federal Aviation Administration (FAA) permits
20. Wetland encroachment permits
21. Right-of-way easements
22. Evidence of utility coordination, including locating existing ITS FOC and electrical conduit
23. Cabinet configuration sheets
24. Maintenance of Communications Plan (existing and new ITS elements)

The Design-Build Firm shall ensure that all submitted documents are the latest version and completely filled out. The Design-Build Firm shall grant all project documents submitted to the Department to have a 2010 calendar-day review period.

3. Construction and Integration Services:

3.1 General

The Design-Build Firm shall be responsible for all Signalization and ITS construction and integration services relating to the Project.

3.2 Construction Phase

The Design-Build Firm shall furnish, install, integrate, configure, test, and document all ITS infrastructure components, ITS field elements, and network equipment necessary to make the Project operational and able to be fully integrated with the RTMC.

Other projects are anticipated on or around I-75 and Moccasin Wallow Road, including local agency projects, and including, but not limited to, the projects shown in Section V.X of the RFP during the life of the Project. The Design-Build Firm shall review and apply the District Seven ITS Construction Checklists (included in the RFP package). The Design-Build Firm shall assist the Construction Engineering and Inspection (CEI) Firm to complete the checklists thoroughly and accurately.

The Design-Build Firm shall install the ITS field elements, subsystems and ancillary components that are detailed in the Department-approved final design plans and specifications including, but not limited to, all required structures and foundations. Any deviations from the final design plans shall be submitted for review and approval by the Department.

The Design-Build Firm shall provide at least five (5) working day advance notice when FDOT representatives are needed for meetings and field reviews. For other construction meetings, the Design-Build Firm shall provide at least two weeks' notice to the applicable FDOT representatives, unless the CEI Senior Project Engineer approves a shorter notification period for specific topics.

The Design-Build Firm shall obtain all permits and licenses including, but not limited to, equipment, and software/firmware licenses. All licenses shall be obtained in the name of the FDOT.

Recover all existing ITS-related equipment to be removed. The Department will have the discretion of allowing Design-Build Firm to discard recovered items.

The Design-Build Firm shall prepare and submit to the Engineer a comprehensive plan for meeting Occupational Safety and Health Administration (OSHA) criteria when working in the vicinity of overhead power lines and below bridges.

The Design-Build Firm shall furnish all tools, equipment, materials, supplies, and manufactured hardware, and shall perform all operations and equipment integration necessary to provide a complete, fully operational communication network as specified in the Project Requirements. The Design-Build Firm shall install all items in accordance with the manufacturer's recommendations, ~~federal~~ Federal and State guidelines, ~~or as directed by the Department~~ and contract documents.

During the Construction phase, the Design-Build Firm shall submit the following for Department review and approval. The following, for information only, is a listing of the required submittals (see Section V.I Submittals for an additional list). It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract documents whether listed below or not.

Prior to installation:

1. Updated RTVM
2. Testing schedule
3. OTDR results for FOC on reel prior to installation
4. Updated P-SEMP/P-ISTA
5. CPM

After installation:

1. Witnessed grounding full fall-of-potential test reports including signature of the witness
2. Test plans including testing equipment, setup, manpower, and conditions needed for testing
3. Test procedures
4. Test data format
5. Witnessed OTDR results for FOC after installation and splicing including signature of the witness
6. Cabinet configuration sheets
7. Power approval from CEI

Prior to Integration:

1. Updated RTVM
2. Integration and network configuration plans
3. Integration and network configuration schedule
4. If different from resumes included in the technical proposal, names and resumes of persons who will perform integration, tests and document test results.
5. Equipment information per site:
 - a) Name
 - b) Model number
 - c) APL number
 - d) Serial number

- e) Request for IP Address
- f) Technical support and warranty telephone numbers
- g) GPS Coordinates

6. Summary of the experience and qualifications of the instructional personnel

Prior to Final Acceptance:

1. Test results performed by any manufacturer, the Design-Build Firm, and/or the Department
2. CEI and FDOT maintenance signed off of final inspection
3. Evidence that previously failed equipment has been corrected and retested
4. Complete training course outline
5. Training materials
6. Operation and maintenance manuals
7. Training sessions and training videos, using DVD R+W, covering all portions of all training.
8. Corrected/Final test results to be submitted to the Department's Project Manager.

As-built documentation:

1. Warranty documentation
2. Completed ITS FM data entry sheets
3. All documentation required by Standard Specifications
4. Copy and licenses of all diagnostic software and full documentation
5. Failure Report Logs in demonstration that error rates are within requirements set herein
6. Updated P-SEMP/P-ITSA
7. Updated RTVM to demonstrate that all units have been successfully reconfigured or updated
8. Power service form

3.3 System Integration

The Design-Build Firm shall provide a detailed plan of action, which discusses the process for integrating the new devices into the existing SunGuide™ software at the RTMC. The Design-Build Firm shall closely coordinate with Department ITS Maintenance office during system integration.

The Design-Build Firm shall design, construct, and integrate the Project such that all subsystem field elements, ITS field elements and ancillary components within the Project are integrated with all the SunGuide™ software and hardware at the RTMC. The Design-Build Firm shall ensure that all the ITS field elements installed are 100% compatible with all the RTMC and ITS field elements installed during previous ITS Projects in District Seven.

The Design-Build Firm shall coordinate all integration activities with the Department prior to commencement of any integration activities. RTMC is a secured facility and access to it shall be scheduled at least two (2) weeks in advance with the ITS Operations Manager. All integration within the RTMC shall be scheduled at times other than during the normal weekday peak traffic hours (7:00 am to 9:00 am, and 3:30 pm to 7:00 pm) or as approved by the Department. The Design-Build Firm shall schedule and perform all field integration activities and coordinate all RTMC integration activities with the ITS Operations Manager. Remote VPN access shall not be provided to the Design-Build Firm to access the ITS network of the District. The District Seven ITS Operations Manager, or his designated representative, will perform the SunGuide™ integration tasks with the guidance and coordination of the Design-Build Firm, as necessary. The Design-Build Firm shall coordinate with the Central Office and Southwest Research Institute (SwRI) SunGuide™ Configuration Manager, as necessary, to facilitate the District Seven integration activities. The Design-Build Firm shall provide to the District Seven ITS

Operations Manager all necessary information and data to facilitate Subsystem configuration and integration activities.

The Design-Build Firm shall incorporate the as-built CADD plans for all existing and new underground utilities installed under this Project, including but not limited to, outside plant fiber subsystem, FOC, splices schematics, pull boxes, splice vaults, power service and cables, and underground conduit system, in an electronic format that shall be 100% compatible with Department's ~~Geographic Information System (GIS)~~ and ITS FM forms. The Design-Build Firm shall prepare ITS FM data entry worksheets for each ITS field installation as required by the Department.

4. Testing and Acceptance:

4.1 General

All equipment furnished by the Design-Build Firm shall be subject to monitoring and testing to determine conformance with all applicable requirements. The Design-Build Firm is responsible for the coordination and performance of material inspection and testing, field acceptance tests, and system acceptance tests. The times and dates of tests must be accepted in writing by the Department's Project Manager and CEI. The Design-Build Firm shall conduct all tests in the presence of the Department's Project Manager or designated representative. Once in operation, the entire system shall be subject to a 30-day operation period (burn-in period) to be included in the contract time.

The Design-Build Firm shall develop test plans, conduct tests, and provide test results that demonstrate compliance with the Project requirements. The Design-Build Firm shall submit test plans, and updated RTVM to the Department for review at least ~~60 calendar~~30 working days in advance of the schedule testing date. If the Department rejects or requests modifications to a test plan, the Design-Build Firm shall update and resubmit a revised test plan to the Department for approval. The Design-Build Firm shall allow 14 work days for the Department's review of the revised test plan. No test shall be conducted until the Department has approved the test plan. Test plans shall be based on and include the following:

1. The P-ITSA
2. The P-SEMP
3. The Updated RTVM
4. A step-by-step outline of the test procedures and sequence to be followed demonstrating compliance with the Project requirements
5. A test set-up/configuration diagram showing what is being tested
6. A description of expected operation, output, and test results
7. An estimate of the test duration and proposed test schedule
8. A data form to be used to record all data and quantitative results obtained during the tests
9. ~~A description of any special equipment, setup, manpower, or conditions required for the test~~
10. The number of test cases shall reflect the complexity of each subsystem, ITS field element or ancillary component and the content of test cases shall cover all functionalities claimed by the respective manufacturer
11. The Design-Build Firm shall submit a description of any special equipment, setup, manpower, or conditions required for each respective test
12. The Design-Build Firm is required to have the CEI present to witness all testing and provide signature for approval.
13. Approval of the Engineer of Record

The Design-Build Firm shall conduct at a minimum the following test on all equipment.

1. ~~Factory tests~~
2. Standalone tests
3. Subsystem tests
4. System test
5. Final acceptance test

When the detailed RTVM is approved, the Design-Build Firm shall submit a testing schedule to the Department in accordance with the requirements of the RFP, perform the tests, document the results, and supply all necessary test equipment.

The Design-Build Firm shall furnish and maintain all required test equipment along with their services. All test equipment utilized shall have up-to-date calibration certification in accordance with the manufacturer's recommendations. The test equipment shall be made ready for use by the Design-Build Firm and/or the CEI at the time it is needed.

The Design-Build Firm shall notify the Department of the time, date and place of each test at least 21 calendar days prior to the date the test is planned.

The tests shall be conducted in the presence of the CEI and EOR, unless otherwise approved in writing by the Department. The Department reserves the right to waive the right to witness certain tests. If any subsystem, ITS field element, or ancillary component fails any part of any test, the entire test shall be repeated at the discretion of the Department.

Neither witnessing of the tests by the Department, nor the waiving of the right to do so, shall relieve the Design-Build Firm of the responsibility to comply with the Project Requirements.

The Design-Build Firm shall submit in writing all test results performed by the manufacturer, and the Design-Build Firm within 14 calendar days of the documented respective test date for review and approval by the Department.

Failure of any subsystem, ITS field element or ancillary component to pass any test shall be counted as failed and non-compliant, and shall be replaced or repaired as needed until it passes the failed test.

Replacement, repair, and retest of failed subsystem, ITS field element, or ancillary component shall be at no additional cost to the Department. ~~The Design-Build Firm shall not be granted time extensions for replacement, repair, and retest, even if the manufacturer or other cause beyond the Design-Build Firm's control caused the failure.~~

All testing, test documents, test equipment, and associated work and materials shall be at no additional cost to the Department.

4.2 Factory Acceptance Tests

The Design-Build Firm shall work with equipment manufacturers to conduct the Factory Acceptance Tests (FAT's) and document FAT results in accordance with FDOT Specifications and the RFP. The Design-Build Firm is not required to perform FAT for ITS devices and equipment on the FDOT-APL.

4.3 Stand-Alone Tests

The Design-Build Firm shall perform Stand-Alone Tests to demonstrate that all subsystem field elements

and components meet the relevant sections of FDOT Specifications and the RFP. The Stand-Alone Tests shall be performed on each ITS field element and component prior to connection of the field element to the communication subsystem. All the test results shall be documented and submitted to the Department after CEI and EOR approval.

The Design-Build Firm's Stand-Alone Tests Plans shall verify the following items, as a minimum:

1. ~~Verify that physical construction has been completed as per the requirements detailed herein, within the plan set, and as per Project requirements~~
2. Verify quality and tightness of ground and surge protector connections and that surge suppression complies with Specifications.
3. Verify power supply voltages and outputs
4. Verify grounding meets the requirements of Specifications including performing the full fall-of-potential method for grounding tests. Full fall-of-potential tests shall include a minimum of 10 test points spaced evenly from the ITS field element to the farthest grounding electrode from the ITS field element
5. Verify ITS field element are properly connected to the power source and grounding
6. Verify installation of specified cables and connections between the MFES and the ITS field element
7. Verify configuration of Internet protocol (IP) address and sub-network mask
8. Verify presence and quality of ITS field element data and/or image output
9. Verify interconnection of the ITS field element with the Access Network's assigned FOC and verify that there is a green transmission LED illuminated
10. Perform a "ping" to verify connection of ITS field element

If any ITS field element or ancillary component fails to pass its Stand-Alone Test more than twice, it shall be replaced by the Design-Build Firm with a new ITS field element or ancillary component of same make and model, and the entire Stand-Alone Test shall be repeated until proven successful. The Stand-Alone Tests shall be performed on each and every ITS field element and ancillary component, including, but not limited to, the following:

- DMS/ADMS
- CCTV Cameras
- Camera Lowering Devices
- MVDS
- Device Controllers
- Video Encoders (H.264)
- MFES
- FOC, all fibers, including splices, jumper cables and connectors
- Patch Panels
- PDU
- Manual Transfer Switches
- UPS Assemblies

4.4 Subsystem Tests

The Design-Build Firm shall perform Subsystem Tests to demonstrate that all subsystem field elements and components meet the relevant sections of Specifications and the RFP. No Subsystem Tests shall be performed without a Department-approved Subsystem Test Plan. The Subsystem Test may begin when the Design-Build Firm has satisfied the Department that all work on the subsystem has been completed.

The Subsystem Test shall be performed utilizing the Project field equipment and communication system.

The Design-Build Firm shall provide qualified personnel to support the diagnosis and repair of system equipment during the Subsystem Test as required.

Subsystem Tests shall be conducted for:

- Communication
- CCTV
- MVDS
- RWIS
- Power
- DMS/ADMS

Each Subsystem Test shall consist of 2 parts:

- Part 1: Test the subsystem communication with the RTMC over the Layer 2/Layer 3 Ethernet network using the manufacturer's proprietary software. Part 1 shall demonstrate all installed ITS field elements and ancillary components meet the Project Requirements.
- Part 2: After integration of the subsystem with the SunGuide™ central system software, the Design-Build Firm shall demonstrate full control of all ITS field elements associated with the subsystem within the Project limits from the RTMC utilizing SunGuide™ software. The Design-Build Firm shall also demonstrate that the functionalities of the local/remote trouble shooting/diagnostics perform as specified in the specific subsystem functional requirements.

In the event a subsystem fails and the Subsystem Test is rejected by the Department, the Design-Build Firm shall correct the problem. The Design-Build Firm shall repeat the Subsystem Test within 7 days after receiving the approval from the Department that a retest can be conducted.

4.5 System Test

The Design-Build Firm shall conduct the System Test covering all Project subsystems integrated with SunGuide™ software and operable from the RTMC according to specifications operating continuously for a period of 60 consecutive calendar days without failure of any subsystem, ITS field element, or ancillary component. The Design-Build Firm shall notify the Department in writing 14 calendar days before the scheduled commencement of the System Test. The System Test shall not be performed without prior written approval from the ITS Operations Manager.

In the event that a subsystem, ITS field element, or ancillary component failure is identified by the Department or the Design-Build Firm, the System Test shall be shut down (System Test Shutdown). The Design-Build Firm shall diagnose and correct all deficiencies causing the System Test Shutdown. After the deficiency or deficiencies causing the System Test Shutdown has been corrected, the Design-Build Firm shall perform all applicable Stand-Alone and Subsystem Tests. Once the Stand-Alone and Subsystem Tests have passed, the Design-Build Firm shall request approval to restart the System Test. If approved by the ITS Operations Manager, the System Test shall be restarted at day zero for a new 60 consecutive calendar day test period unless corrections are made according to the requirements below.

Item	Allowable Times
Communication Subsystem	8 hours
CCTV Subsystem	12 hours
MVDS Subsystem	48 hours
Power Subsystem	8 hours
DMS/ADMS	8 hours
RWIS	8 hours

If the allowable times as shown above have been met, then the System Test Shutdown shall be reclassified as a System Test Suspension and the System Test shall recommence at the point it was stopped upon approval of the ITS Operations Manager.

When the total number of System Test Shutdowns is 3 for to the same subsystem, ITS field element, or ancillary component, the Design-Build Firm shall;

1. Remove and replace the subsystem, ITS field element or ancillary component with a new and unused unit as per the requirements of the RFP.
2. Repeat all applicable Stand-Alone and Subsystem Tests, as deemed necessary by the Department.
3. Upon written approval from the ITS Operations Manager, restart the System Test for a new 60 consecutive calendar-day period.

~~The System Test steps described herein shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of this RFP.~~

If the Design-Build Firm is unable to determine whether the cause of a problem is hardware or software related, the 60 calendar-day System Test shall be allowed to restart from day zero, unless otherwise directed by the Department. However, the System Test shall not be deemed to have been successfully completed until the problem has been corrected.

All software required for diagnosing malfunctions of hardware and software/firmware shall be supplied by the Design-Build Firm and approved by the Department. A copy of all diagnostic software shall be submitted to the Department with full documentation. The Design-Build Firm shall submit diagnostic reports to demonstrate that errors were detected and corrected.

The System Test shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of Project Requirements.

The Design-Build Firm shall maintain a daily log for all operations after the start of the System Test. Any and all replacement parts, hours, and a brief description of what was corrected shall be reported in the log. The Design-Build Firm shall submit to the Department the required documentation to prove that all subsystems, ITS field elements and ancillary components have been successfully integrated and configured.

The System Test shall be performed with the RTMC Operators managing, monitoring, and controlling the ITS field elements in real-time to assure conformance of the Project Requirements, and Section 611, Acceptance Procedures, of the FDOT Standard Specifications for Road and Bridge Construction.

5. Post-Construction Services

CCTV video streams and the remaining needs. The IP address file will be provided in Excel spreadsheet format.

The Design-Build Firm shall be required to submit for approval a current cabinet configuration document listing all IP addresses utilized in the Project in a format easily understood depicting, at a minimum, the following information:

1. Page Number (from Plans)
2. Mile Marker
3. GPS coordinates
4. Device Type
5. IP Address, etc.

The Design-Build Firm shall not use any IP addressing scheme or IP addresses other than those provided by the Department. The Department shall review and approve the Design-Build Firm's IP addressing scheme submittal prior to the Design-Build Firm's implementation of the scheme.

The Design-Build Firm shall design and deploy multiple virtual local area networks (VLANs) to segment ITS field elements into logical workgroups. The Design-Build Firm shall ensure that the new ITS field elements are configured in new sets of VLANs. The design of VLANs shall take into consideration the optical network requirements described elsewhere in the RFP.

6.3 Digital Video Encoders

Digital video encoders shall meet the requirements of Specifications.

The Design-Build Firm shall furnish, install, and integrate digital video encoders in all new ITS cabinets where new CCTV subsystems are being installed. Digital Video Encoders shall meet H.264 standards and be compatible with existing RTMC video encoding.

6.4 Fiber Optic Cable

FOC shall meet the requirements of ~~current~~ Specifications.

The Design-Build Firm shall provide a 72-count single-mode FOC backbone. The FOC backbone should preferably be installed along the east side of I-75 and shall be consistent with the FOC backbone location of the adjacent project to the north as necessary. Any deviation to the FOC backbone location shall be approved by the Department. The Design-Build Firm shall meet the FOC backbone installed under the adjacent project to the north as necessary to ensure continuity. If the FOC backbone to be terminated at the northern end of the project, a redundant loop shall be provided back to the Hub at the I-275 interchange.

While connecting the proposed FOC backbone to the existing FOC backbone, the Design-Build Firm shall fusion (butt) splice new FOC to the existing FOC only in ITS splice boxes used for FOC drops to ITS cabinets. Reel-to-reel splicing shall be a minimum of 20,000 feet apart and shall be located at proposed 12-count FOC drop locations. Any/all fiber splices shall be approved by the Department. The Design-Build Firm shall furnish any needed fiber splice enclosures and splice panels. Splicing shall not be allowed within the bridges.

The Design-Build Firm shall test new FOC using OTDR equipment in accordance with the requirements in Specifications. The OTDR testing shall be conducted on the new 72-count FOC prior to installation (reel test) and post installation after the cable is terminated.

All the FO splices shall be performed inside the device cabinets. Adequate FO cable slack shall be provided inside the appropriate splice box per Specifications. Connection from splice drawer to equipment shall be made using plenum-rated fiber optic material. Minimum of 30 feet of FOC slack shall be provided inside the device cabinet to allow splice chamber to be removed for access.

The Design-Build Firm shall provide 12-count single-mode FOC drops from the 72-count FOC backbone to ITS cabinets, unless 24-count single-mode FOC is required due to the number of ITS field elements at a site and the District's network architecture, in which case, a 24-count single-mode FOC drop shall be provided.

Individual fibers shall be looped one full turn within the splice tray to avoid micro bending. ~~Maintain a minimum bend radius of twenty (20) times the cable diameter during installation and ten (10) times the cable diameter after final assembly in the optical fiber splice tray.~~ Place buffer tubes and bare optical fibers such that there is no discernible tensile force placed upon them. There shall be only one buffer tube per splice tray. All splice trays shall be deep trays and capable of closing without the use of tape or other adhesive devices. Fiber optic strands shall not enter more than one splice tray.

In no case shall the Design-Build Firm install FOC in the same conduit, pull box or splice box as electrical cables.

In the event of fiber cable damage, immediately repair FOC by removing local slack and adding a fusion splice in the location of the damage. All testing procedures shall be followed in accordance with Specifications for the acceptance of the repaired FOC. Once repaired, complete review of the existing fiber network and facility shall be completed and a permanent splice plan shall be presented to the ITS Program Manager for approval. The permanent splicing plan shall include a minimum of 20,000 feet of replacement FOC and shall meet optical loss requirements in accordance with Specifications. The permanent splicing plan shall also provide appropriate access to cabinets, pull boxes, hubs, etc., and an integration plan with schedule for all devices that will be affected with the permanent splice replacement. The new fiber cable shall be approved through Department review specifications. The Design-Build Firm's approved ITS engineer may adjust the 20,000 feet minimum specification based upon evaluation of adjacent existing fiber splices. At no time shall a full conductor fiber splice be allowed for permanent placement that is closer than 20,000 feet to another full conductor fiber splice. Allowance of additional fusion splices shall be at the discretion of the ITS Program Manager.

Any request to access the existing ITS system including, but not limited to, fiber optic cable (handholes and pull boxes), ITS equipment control cabinet(s), ITS power facilities, ITS specific equipment (CCTV, MVDS, DMS, RWIS, etc.), and/or the RTMC will require a submitted and approved access schedule. This document shall identify access necessities, schedule expectation(s), specific ITS facilities to be accessed, and an action plan for potential failure. This document shall be submitted thru Traffic Operation's ITS Program Manager for approval within 60 days of project construction start or 90 days prior to system access for long duration project(s). In the event this document is not properly filed with the ITS department and project CEI, the department will invoke the damage recovery detail for damages incurred.

6.5 Fiber Optic Conduit and Locate System

The fiber optic conduit and locate system shall meet the requirements of Specifications.

The Design-Build Firm shall provide an ITS communication conduit system consisting of the following:

1. Two (2) 1-¼ inch and one (1) 1 inch SIDR Schedule 40 innerducts in a 4-inch SIDR

- Schedule 40 outer duct. The innerducts shall be colored orange (1 inch), gray and green (1-¼ inch). The 72-count FOC backbone shall be placed in the orange innerduct. The other two innerducts shall be spares.
2. Two 2-inch SIDR Schedule 40 orange color conduits at FOC drops to ITS cabinets. One conduit shall be a spare.
 3. Accessible by a maintenance vehicle (typically a ¾ ton pickup truck).

The Design-Build Firm shall install directional bores perpendicular to the roadway when crossing an interchange ramp or crossroad or other roadway. Where multiple conduits are required, the directional bore shall place all conduits into a single outer conduit appropriately sized to contain the required number and sizes of conduit.

~~The conduit furnished shall be resistant to benzene, calcium chloride, ethyl alcohol, fuel oil, gasoline, lubricating oil, potassium chloride, sodium chloride, sodium nitrate and transformer oil, and shall be protected against degradation due to oxidation and general corrosion.~~

A pull tape or rope with a tensile strength of at least 1,250 pounds shall be furnished in each conduit. The ends of the pull tape or rope shall be tied or terminated to prevent them from inadvertently entering the conduit. Ends of conduits shall be plugged (or capped in the case of spare/unused conduits) to prevent entry of water, dirt, vermin, etc.

The Design-Build Firm shall locate conduit and pull boxes for ITS FOC backbone **within 10 feet of the Right-of-Way line, or as close to this requirement as possible** ~~at or outside the clear zone~~. Any deviation from this requirement shall be approved by the Department. This requirement may be adjusted as necessary with Department approval to coordinate with and avoid conflicts as follows.

1. Existing field conditions, such as when required to traverse interchanges, ramps and crossroads
2. Bridge sections
3. Existing/proposed wetlands and drainage facilities

The Design-Build Firm shall clearly show conduit locations on the 90% and Final ITS plans. The Design-Build Firm shall highlight areas where conduit is located outside the 10-foot zone and state the reason why this non-typical location is necessary. The Department will review exceptions to the conduit placement requirement and notify the Design-Build Firm if any of the exceptions are not acceptable. The Design-Build Firm shall work closely with the Department to resolve any conduit location questions. The Design-Build Firm shall make any necessary conduit location changes to the ITS plans at no additional cost to the Department.

For all underground conduits, the Design-Build Firm shall furnish and install conduit locate systems consisting of warning tape, route markers, and electronic route markers at all splice box locations as described in Specifications.

6.6 ITS Pull/Splice Box and Locate System

ITS pull/splice boxes shall meet the requirements of Specifications.

All pull boxes shall be installed at grade. ~~and shall have TIER 15 rated lids. All pull boxes shall have concrete mowing aprons around them and shall meet all the requirements of Standards Index Numbers 17500, and 17700 for reinforcement spacing and slab dimensions.~~ Low and high voltage wires shall not run into or from the same pull box. Rigid galvanized metal conduit shall be used to run conduits above

1. Local/remote selectable that defaults to remote after 5 minutes of inactivity
2. Front panel pan/tilt/zoom control of the CCTV
3. Front panel BNC to allow technicians to easily interface the camera video
4. A front panel DB9 connection for RS-232 control of the camera while in local mode

The Design-Build Firm shall furnish and install new CCTV field components to meet CCTV spacing and roadway coverage requirements. For CCTV locations along I-75, the CCTV cameras with auto focus zoom lens shall be placed at a minimum mounting height of 50 feet above highest elevation of any portion of the I-75 mainline lanes roadway surface that falls within the 0.5 mile of mainline coverage area for that camera location. Camera-mounting heights exceeding 50 feet above the highest point of I-75 at the CCTV location shall be approved by the Department. The Design-Build Firm shall specifically identify and request Department approval for any mounting height not within these requirements. The Design-Build Firm shall install camera lowering devices on all CCTV poles. Any variation to this requirement shall be reviewed and approved by the Department.

All CCTV Camera poles exceeding 50 feet in height will require full survey to support the 150 feet rolling ball evaluation. All CCTV Camera poles that are 50 feet and below in height will have 8 feet blunt tip air terminal with 4 feet exposed above and opposite the component to be protected. Supports for this air terminal shall be at the base of the air terminal and at 4 feet mounted at the top of the pole terminal in accordance with the applicable standard index.

CCTV poles shall be constructed of length and stiffness that can meet the vertical placement and camera stability requirements and the following additional requirements:

1. CCTV poles shall meet the following requirements: All CCTV poles shall meet the requirements of current Design Standards. Concrete mowing apron around CCTV poles shall be provided per the requirements of all applicable Design Standards.
2. All CCTV poles measuring up to and equal to 75 feet in length shall be designed to have a maximum deflection not greater than 1 inch during wind speeds of 30 mph. All CCTV poles measuring more than 75 feet in length shall be designed to have a maximum deflection not greater than 1.5 inches in a 30-mph wind speed. This deflection shall be measured at the top of the support structure where the base of the pan-tilt device is attached.
3. All camera poles shall be located outside the clear zone as applicable to ramps and mainline travel lanes or behind existing guardrail in accordance with the FDOT Roadway Design Standards.
4. Electrical ground: All CCTV poles shall be supplied with an electrical ground meeting the requirements of Specifications, and Design Standards.

The CCTV pole shall be designed and constructed so that all wiring facilities meet the requirements of Specifications and Design Standards. All hand holes, couplings, through-bolt holes, and ground wires shall be cast into the pole during the manufacturing process. ~~The camera composite cable shall be placed in conduit inside the pole to keep camera cable lowering device cable from coming into contact and becoming tangled.~~

The Camera Lowering Device (CLD) shall be mounted to a specially designed tenon bolted to the top of the pole as required. All poles shall have a minimum inside raceway dimension of 4 inches at the tip of the pole. All poles shall be provided with a fish wire to facilitate cable installation.

The Design-Build Firm shall design-build the CCTV poles with CLDs in such a manner that the personnel operating the CLD lowering mechanism are not standing directly beneath the CCTV assembly and the access to the CLDs are not obstructed in any manner. The lowering arm shall be mounted

perpendicular to the roadway unless otherwise approved by the Department. ~~The CLDs shall be equipped with both digital and analog connections for the CCTV.~~

The Design-Build Firm shall ensure the camera pole to include the opening for CLD's at 180 degrees from the CCTV camera. The Design-Build Firm shall submit the details of placement of CLD and CCTV camera assembly as part of 90% design submittal for Department's review and approval. The CLD shall include a suspension contact unit for electrically connecting the camera assembly to the power, data, and video cables; divided support arm; and a pole adapter for the assembly's attachment to a pole-top tenon, a pole top junction box, and a camera connection box. The weather head shall be within 2 feet of the component.

~~The Lowering Device manufacturer shall supply a portable lowering tool with both manual hand crank and a portable electric drill motor with custom clutch adapter.~~

The Design-Build Firm shall provide all equipment necessary to transmit full motion video images to the RTMC and bi-directional control of the camera through the FOC utilizing Ethernet technology.

Ground-mounted, ITS cabinets shall be utilized to the extent possible. If pole-mounted cabinets are utilized the brackets should not obstruct the access point. Where CCTV, MVDS, and/or RWIS installations are in close proximity, one ITS cabinet capable of housing all associated equipment shall be used for all ITS field elements, if possible. This requirement applies to CCTV located approximately 300 feet from the DMS as described above. The Design-Build Firm may use a single ITS cabinet for devices located farther than 300 feet apart to reduce construction and maintenance costs. For all combined ITS cabinets, the Design-Build Firm shall design, furnish and install power, communication, and/or composite cables based on the distance between field elements and on the capability of the cabling and grounding, lightning protection and surge suppression requirements described in the RFP.

~~There shall be one Digital Video Encoder (DVE) for each new CCTV camera and it shall be compatible with the existing display controller located at the District Seven SunGuide™ Center. The Design Build Firm shall replace/upgrade the DVE at the existing CCTV camera locations to the same model used for the new installations.~~

~~A DVE shall be connected to each analog digital CCTV camera for conversion of the video to MPEG streaming video facilitating transmission to the RTMC. Each DVE shall use MPEG 2 video compression at rates of six (6) megabits per second (Mbps) and above. These devices shall encode (i.e., digitize) analog digital video at the CCTV remote site with a DVE and deliver the multicasting streaming video, as well as the duplex and bidirectional data sub channels, to the chosen remote/local network interface device (i.e., the Ethernet switch) which shall transmit and receive data streams to and from the communications hub and/or the TMC, which are known collectively as the head end. The DVE for CCTV cameras shall be 100% compatible with the existing encoders deployed along the freeways within the District. Each DVE shall conform to the requirements of Specifications.~~

The Design-Build Firm shall also pay for any utility adjustments required for these CCTV field elements at no additional cost to the Department.

6.10 MVDS Subsystem

The MVDS shall meet the requirements of Specifications.

The Design-Build Firm shall furnish and install new MVDS field elements to provide volume, lane

occupancy and speed information in multiple detection zones for the I-75 Corridor. Each vehicle detector device shall be able to collect and process the data on a lane-by-lane basis. The vehicle detector units shall be ~~dual radar microwave detectors that are~~ capable of self-calibrating with a minimum detection range of 250 feet. The new MVDS shall be placed at no more than one mile spacing and positioned so that speed, volume, and occupancy of each through lane at the MVDS site can be detected and measured independently. The Design-Build Firm shall provide MVDS north and south of the I-75/Mocassin Wallow Interchange.

The Design-Build Firm shall place the MVDS on separate concrete poles and shall be located ensuring no interference from other devices and shrubbery. All MVDS structures shall be tall enough to locate the MVDS detectors to monitor both directions of traffic flow at the height above the roadway recommended by the detector manufacturer based on the distance from the travel lanes, number of lanes to be detected, and offset of the pole from the lanes. All MVDS shall be calibrated using MVDS Calibration Procedure provided in the Attachments of the RFP.

No more than one microwave vehicle detection device is allowed per pole unless otherwise permitted by the Department. The devices shall be placed on the same side of the roadway as the lanes they are monitoring. No MVDS shall be placed in the median unless otherwise approved by the Department. Poles installed for new MVDS locations shall be placed outside of the clear zone or behind guardrail per FDOT requirements. Roadside barriers or guardrails shall not be introduced for the sole purpose of protecting the MVDS. No MVDS units shall be installed on existing or proposed sign support structures.

The setback and mounting height must follow the manufacturer recommendations in order to meet the performance requirements described in the RFP. Each lane must be detected in an individual detection zone. The weather head shall be within 2 feet of the equipment.

The Design-Build Firm shall design and install the vehicle detection subsystem such that it is capable of meeting or exceeding ~~specifications. minimum accuracy of 95% for volume, speed and occupancy. The 95% accuracy shall be demonstrated on a lane by lane basis.~~

6.11 DMS and ADMS Subsystem

The DMS and ADMS shall meet the requirements of Specifications.

The Design-Build Firm shall furnish and install DMS field elements as follows:

1. One new full color 20 mm pixel pitch freeway DMS on new ~~full-span support sign~~ structure ~~over spanning the I-75~~ southbound ~~I-75 lanes~~ approaching 97th St/Mocassin Wallow Road interchange in advance of the 1 mile advance guide sign. ~~Freeway DMS's shall not be installed on cantilever sign structures.~~
2. Two new ADMS on new structures on 97th St/Mocassin Wallow Rd approaching I-75 located at a distance of between ¼ to ½ mile from the decision point to I-75 on-ramps.

The Design-Build Firm shall submit the proposed DMS and ADMS locations to the Department for approval and shall demonstrate that the requirements of the MUTCD regarding minimum sign spacing are met. If a DMS or ADMS is proposed for placement on a structure with static guide signs, the Design-Build Firm shall demonstrate compliance with the MUTCD regarding numbers of signs and messages. The DMS placements shall be closely coordinated with the both existing and proposed (see Section O) signing. ~~Sign support uprights shall be placed outside the clear zone.~~

operates first.

All ancillary components shall be delivered along with the needed cables and connectors for power and communication. All installations and wiring shall meet the requirements of the NEC, and NESC. Grounding shall be in accordance with the requirements of NEC Article 250 and Specifications.

6.13.1 Transformers

When the commercial power is not supplied with the correct voltage or phasing, the Design-Build Firm shall design, construct, install and integrate the transformer (Power Feed Transformer) at each commercial power supply location to convert the power supply from the Utility Company(ies) to the appropriate secondary voltage single phase power and with suitable wire sizes that are capable of providing power to the operations of ITS field elements within the Project. The transformer shall be equipped with two 2.5 percent taps above and two 2.5 percent taps below normal voltage. All taps shall be full capacity taps. However, the Design-Build Firm shall not include the plus or minus tap in the voltage drop calculations during the design of the power subsystem. All transformers shall be copper wound.

The Design-Build Firm shall design, construct, install and integrate the transformer (ITS field element Transformer) at each of the ITS field element location cabinets to step-down from the voltage supplied from the underground distribution wire to the 120/240v power requirement for that location.

6.13.2 ITS Electrical Conduit, Pull and Junction (Splice) Boxes

Electrical conductors shall not be placed in the same conduit, pull box or splice (junction) box as FOC. The Design-Build Firm shall furnish and install ITS electrical conduit and pull/splice boxes for non-fiber optic wiring needs (power, communication, etc., for ITS). The Design-Build Firm shall meet the following requirements.

1. Detail type, size and quantity of ITS electrical pull/splice boxes on the Plans.
2. Provide installation details including connections with conduit in compliance with Specifications and Design Standards.
3. ~~Ensure that box construction includes internal reinforcement by means of steel or fiberglass, or a combination of the two. Ensure that the splice box is equipped with a nonskid cover secured by hex head bolts; cable racks and hooks; pulling eyes; and any other miscellaneous hardware required for installation.~~
4. Address site restoration and disposal of excavated materials.
5. Use only equipment and components that meet the requirements of the RFP, which are listed on the Department's APL.
6. ITS electrical pull/splice boxes shall meet the requirements of Specifications.
7. ITS electrical pull/splice boxes shall be a minimum of 24 inches long by 18 inches wide by 12 inches deep. Ensure that the pull/splice box is large enough to house non-fiber cables, as required, without subjecting the cables to bend radii less than industry standards for the types and diameters of cables in the box. Ensure there is enough room to provide any necessary cable splicing. Ensure the boxes are large enough for storage of slack cable. Pull boxes shall not be located in ditches where there is a potential for them to be submerged by seasonal high-water.
8. The maximum spacing between ITS electrical pull/splice boxes shall be 400 feet.
9. ~~Ensure that all pull box and splice box covers include the words approved by FDOT permanently cast into their top surface. Ensure that the manufacturer's logo is stamped on each pull box cover, along with the Department's APL approval number. Ensure that markings are permanently affixed and clearly visible after installation.~~

10. The Design-Build Firm shall develop specifications in accordance with industry standards to:
 - A. Address cable placement and spacing in accordance with industry recommendations for the types and sizes of cables used on the Project
 - B. ~~Address bonding and grounding per FDOT and industry standards.~~
11. Provide supplemental electronic box markers in all ITS pull/splice box.
12. Meet Guaranty provisions in accordance with FDOT Standard Specifications, Section 5-1, including any longer warranties provided by manufacturers.
13. Surface boxes shall be mounted at constant height
14. Provide locking and security systems on electrical ITS pull/splice boxes to prevent theft of copper cable. The security system shall include, as a minimum, a system for securing the lid that includes hardened metal bars or other cover and locks/bolts with unique keys that are not available in the consumer marketplace. Ten keys shall be provided for the RTMC. The keys shall be delivered to the District upon Final Acceptance. The security system shall also include a 12-inch thick concrete mowing apron, supplemental security locking systems, and/or other systems designed and proven to deter theft. The Design-Build Firm shall submit the locking and security systems to the Department for review and approval with other required design submittals.
15. If the Design-Build Firm elects to install surface mounted conduits on the existing bridges, the conduits must be supported with fiberglass, aluminum, or stainless steel type 316 supports with stainless steel hardware, attachment to the bridge structure shall use adhesive vibration resistant anchors. The conduits shall be installed on the back of barrier walls and support systems hanging from the bridge structure are not allowed.

6.13.3 Cabinets

New ITS cabinets shall meet the requirements of Specifications.

The Design-Build Firm shall ensure that all cable terminations and connecting terminal blocks are contained in a weather-proof, aluminum enclosure that shall meet the applicable requirements for a NEMA 3R rated cabinet. The Design-Build Firm shall furnish and install an ITS field cabinet for housing ITS equipment and network devices including, but not limited to, encoders, MFES, device servers, DVE, fiber optic cable patch panels, UPS, and equipment racks for MVDS. The Design-Build Firm shall place cabinet away from ditches and low-laying areas.

In order to minimize construction and maintenance costs, the Design-Build Firm shall optimize the number of ITS cabinets installed along I-75. CCTV sites and MVDS only sites will be allowed to communicate and obtain power over multiconductor copper cables to the nearest ITS cabinet. Power and communication multiconductor cables shall include RS-485/422 cable and other cabling as approved by the Department.

A Calibration/SPD cabinet shall be installed at the CCTV sites dedicated for DMS monitoring and MVDS only sites. The Calibration/SPD cabinet shall have local access to the CCTV and MVDS for configuration, maintenance, and testing. Calibration/SPD cabinet shall be NEMA 3R rated and shall meet the following requirements.

1. SPD devices for all copper conductors
2. An RS-232 connection at MVDS sites. This connection shall be separate from the MVDS connection to the nearby ITS cabinet.
3. Pole mounted with bottom of the SPD cabinet 4 feet above the adjacent ground surface.
4. When pole mounted, orient cabinet to avoid conflicts with lowering camera and cabinet/cabinet door facing away from the traffic
5. Mounted with stainless steel banding without covering access ports

6. All conduit connections shall be “liquid tight”, weatherproof, and uniform
7. Grounding and surge suppression according to Specifications and the RFP.
8. ~~Fabricated from 5052 H32 0.125” aluminum~~
9. Minimum dimensions: 13.125 inches tall, 10.75 inches wide, 10.5 inches deep
10. ~~Locking door, keyed to standard lock type #2A, with 2 sets of keys per box~~
11. Neoprene gasket door seal
12. Foldable Laptop Computer shelf with a minimum 12 inches depth
13. Electrical breakers for each MVDS and CCTV component. The breaker shall be sized per CCTV and MVDS manufacturer recommendations.

Ground-mounted, ITS cabinets shall be utilized to the extent possible. If pole-mounted cabinets are utilized the brackets should not obstruct the access point. The cabinets shall be adequately sized to include a lockable splice drawer and provide proper ventilation per Specifications. The ground-mounted cabinets shall be appropriately sized and located outside the clear zone and protected against flooding. The orientation of the cabinet shall be such that the cabinet door shall be facing away from the traffic. Additionally, the cabinet door shall be able to be fully opened within FDOT right-of-way so that a technician will have adequate space to perform work within right-of-way. The Design-Build Firm shall utilize ITS cabinets of appropriate size based on the ITS field elements associated with the cabinet. The Design-Build Firm shall provide ITS cabinet interior spaces that are sized and organized based on the ITS field elements associated with the cabinet. ITS cabinets shall be provided with adequate space and equipment for multiple ITS field elements (DMS, ADMS, CCTV, MVDS, RWIS) to minimize the number of ITS cabinets deployed. ~~All new ITS cabinets shall include cabinet locks keyed to a standard #2 key as required by Specifications. At least 1 lock per cabinet on the job is to be provided. Three keys for CEI staff plus a sufficient number to provide access to the Design Build Firm shall be provided. All keys and locks shall become the property of the Department at the end of the construction job.~~ All keys shall be turned in to the FDOT Project Manager before Final Acceptance. ITS cabinets installed on bridges shall be provided with adequate space for maintenance and shall be accessible via pedestal.

The Design-Build Firm shall furnish and install rebootable PDU that are remotely manageable via web browser and are 19 inch rack mountable in all ITS cabinets to allow District Seven to “reboot” cabinets from the RTMC.

The Design-Build Firm shall ensure the cabinets are clean, neat and consistently organized. The cabinet with same/similar equipment shall be organized in the same fashion:

- Components shall be mounted by the same means and in the same locations
- Power cords shall be connected to the same outlets
- Devices shall be plugged in the same ports on the switch
- Fiber optic cables shall be connected the same way (such as the fiber heading north is always on port one, etc.)
- IP addresses shall be ordered in the same way (such as the switch IP is always a multiple of 16, the encoder is always one IP higher than that of the switch, the UPS is always 2 higher than that of the switch, etc.)
- Cables and connectors shall be properly labeled
- No loose cabling within the cabinet shall be permitted. Cables shall be of proper length with some slack. Cables shall be carefully and neatly routed within the cabinet and loosely tied so as to not crimp or deform the cables.
- The Design-Build Firm shall include the typical cabinet details in the 90% ITS Design Plans Submittal.

The ITS field cabinet shall be equipped with sunshields outside to deflect solar heat away from the cabinet, as indicated in the plans, the sunshields must be offset a minimum of one inch from the exterior cabinet walls. Ensure that the sunshields are fabricated from 5052-H32 aluminum sheet that is 0.125 inch thick, and that sunshield corners are rounded and smoothed for safety. Mount the sunshields on standoffs at the top and each side of the cabinet.

The Design-Build Firm shall provide the field cabinet with two 20-watt fluorescent lamps and clear shatter-proof shield assemblies which are mounted on the inside front and rear top of the cabinet. Ensure that these lamps are unobstructed and able to cast light on the equipment. Equip the field cabinet with door-actuated switches so that the lamps automatically turn on when either cabinet door is opened and go off when the doors are closed.

All cabinets shall have a minimum of two switched interior mounted NEMA 5-15R type, 120-volt outdoor rated ground fault interrupter (GFCI) electrical receptacles to supply power for devices and/or maintenance equipment (including Shop-Vac and laptops) while in the field.

The cabinets shall be equipped with a normally closed interlock switch. The UPS in the cabinet shall have the capability to monitor a minimum of 2 zones via the use of dry contacts using the normally closed interlock switches. Surge Protection Devices require dry contacts to indicate their status- Normal or Failed. The UPS shall have the ability to email the contact status (door status) and SPD status to a configurable email address each time the state of the contacts change. ~~The Device Server shall convert serial data (EIA-232/422/485) to Ethernet and shall allow for the connection of a minimum of two serial devices to the Ethernet network. The Device Server shall be environmentally hardened in accordance with NEMA TS-2 (latest edition) standard. The Device Servers shall deliver universal, high performance Serial-to-Ethernet connectivity, which is required when a particular ITS device needs COM ports, serial tunneling, or where Transmission Control Protocol (TCP) Socket, User Datagram Protocol (UDP) Socket, or UDP Multicast functionality is being utilized and the ITS device only has Serial Data as an output.~~

~~The Device Server shall be able to support local and remote configuration and management, which includes access to all user programmable features, device monitoring, diagnostic utilities, and security functions.~~

~~Each Device Server shall conform to the requirements of Specifications.~~

6.13.4 UPS

The Design-Build Firm shall install a UPS at each device cabinet as required in the RFP document. Each UPS shall supply all electronic components housed in and associated with ITS field element cabinets with uninterrupted power for a minimum of 2 hours in the event of power loss. At a minimum, the UPS in DMS cabinets shall provide 2 hours of continuous power for a DMS displaying 3 full lines of text plus operation of all other equipment in and connected to the cabinet, including fans and lights. Each UPS shall be sized according to the maximum expected load for each cabinet plus 50 additional Watts. The service outlets shall not be connected to the UPS.

~~The UPS batteries shall include a 5-year full replacement warranty. The warranty shall cover the cost of new batteries if the battery capacity falls below one-half of the original battery capacity. The warranty shall also cover the shipping cost to and from the manufacture.~~

The UPS shall provide commercial power pass through during all failures of UPS. The Design-Build Firm shall ensure that the UPS is generator compatible to ensure clean, uninterrupted power to protected

6.14 Environmental Requirements

All subsystem ITS field elements and ancillary components, while housed in their associated environmental enclosures, shall, at a minimum, comply with all applicable NEMA TS II (latest edition) environmental specifications and Project Requirements.

All enclosures, structures, poles, and mounts shall be designed to withstand sustained wind loads and wind gust factors in accordance with all appropriate FDOT ~~and District Seven~~ standards.

The Design-Build Firm shall use manufacturer-recommended storage, handling and installation methods to ensure that all new and relocated ITS field elements and ancillary components have complete protection from moisture and airborne contaminants, blowing rain at storm rates, wind, blowing sand, blowing dust, temperature, humidity, roadside pollutants, vandalism and theft of equipment. Fatigue failures, internal moisture, corrosion, internal dust, and fungal growths noted during Department inspections shall be evidence that ITS field elements have not been properly protected or maintained and will be cause for the Department to reject any ITS field elements and ancillary components until they are replaced or satisfactorily maintained or repaired.

The Design-Build Firm shall provide appropriate enclosures to prevent pests from attacking and damaging the subsystem ITS field elements and ancillary components.

6.15 FDOT SunGuide™ Software Development Project

All available information can be found at the SunGuide™ Project Website:

- http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Arch/SunGuide.shtm

The Design-Build Firm shall provide new, and upgrade existing, ITS field component software and firmware to be compatible with the latest SunGuide™ requirements. See requirements for individual ITS field components for additional details.

6.15.1 SunGuide™ Software Compatibility & Integration

The I-75 ITS field devices are to be operated from the RTMC using the SunGuide™ software system. The Design-Build Firm shall integrate the individual ITS field elements (i.e., CCTV cameras, H.264 decoders, DMS, MVDS, serial and Ethernet communication devices and RWIS) with the respective vendor-provided subsystem software such that each of the subsystems shall be operated as a stand-alone system. This configuration will form the basis for Part 1 of the Subsystem Tests. Once Part 1 of the Subsystem Tests are complete and the results approved by the Department, the Design-Build Firm shall provide all integration and configuration data and settings so the Department can integrate the ITS field elements into the existing SunGuide™ central software and Core Layer 3 Ethernet Switches. As soon as possible, after completion of Part 1 of the Subsystem Tests, the Design-Build Firm shall provide to the District RTMC Manager all necessary information and data to facilitate the District's RTMC configuration and integration activities. The District shall complete Core Layer 3 Ethernet Switch and SunGuide™ integration and configuration within 14 calendar days of receipt of the configuration and integration data and information from the Design-Build Firm. After SunGuide™ integration is completed, the Design-Build Firm shall conduct Part 2 of the Subsystem Tests.

The Design-Build Firm shall provide all the temporary central equipment, including the workstations or

information not included on the roll plots, such as typical sections, special emphasis details, structure plans, etc., shall be provided on 11"x17" sheets.

- Right-of-Way Maps and Legal Descriptions (including area in square feet) of any proposed additional Right-of-Way parcels if applicable and approved through the ATC process. Provide Technical Proposal Plans in accordance with the requirements of the Plans Preparation Manual, except as modified herein.
- The Plans shall complement the Project Approach.
- Provide any Technical Special Provisions which apply to the proposed work.
Paper Size: 8½" x 11".

In regards to changes made to this RFP in Addendum 2, the Design-Build Firms shall submit roll plots (at a minimum) depicting the associated changes which are not included with the Technical Proposal as an Addendum to the Technical Proposal. At the sole discretion of the Design-Build Firm, additional documentation is permissible as long as it follows the guidelines under VII. Technical Proposal Requirements. Furthermore, the aforementioned SHALL BE INCLUDED in the Bid Price Proposal.

C. Evaluation Criteria:

The Department shall evaluate the written Technical Proposal by each Design-Build Firm. The Design-Build Firm should not discuss or reveal elements of the price proposal in the written proposals. A technical score for each Design-Build Firm will be based on the following criteria:

Item	Value
1. Design and Geotechnical Services Investigation	30
2. Construction	30
3. Maintainability	10
4. Environmental Protection	10
Maximum Score	80

The following is a description of each of the above referenced items:

1. Design and Geotechnical Services Investigation (30 points)

Credit will be given for the quality and suitability of the following elements:

- Project Design (ITS) Technical Detail Quality
- Design coordination and plans preparation schedule
- Geotechnical investigation plan
- Construction coordination plan minimizing design changes
- Minimizing impacts through design to:
 - Environment
 - Public
 - Adjacent Properties

Florida Department of Transportation
District 7

**DESIGN-BUILD
REQUEST FOR PROPOSAL
for
I-75 (SR 93A) from N of I-275 to Manatee/Hillsborough
County Line, Manatee County**

**Financial Project Number:434026-1-52-01
Federal Aid Project Number: N/A
Contract Number: E7R00**



Table of Contents

I.	Introduction.....	1
A.	Design-Build Responsibility	3
B.	Department Responsibility.....	3
II.	Schedule of Events.....	4
III.	Threshold Requirements.....	6
A.	Qualifications	6
B.	Joint Venture Firm	6
C.	Price Proposal Guarantee	6
D.	Pre-Proposal Meeting.....	6
E.	Technical Proposal Page-Turn Meeting.....	7
F.	Question and Answer Session.....	7
G.	Protest Rights	8
H.	Non-Responsive Proposals	8
I.	Waiver of Irregularities.....	9
J.	Modification or Withdrawal of Technical Proposal	9
K.	Department’s Responsibilities	9
L.	Design-Build Contract.....	10
IV.	Disadvantaged Business Enterprise (DBE) Program.....	10
A.	DBE Availability Goal Percentage:.....	10
B.	DBE Supportive Services Providers:.....	10
C.	Bidders Opportunity List:.....	10
V.	Project Requirements and Provisions for Work.....	11
A.	Governing Regulations:	11
B.	Innovative Aspects:	13
C.	Geotechnical Services:.....	16
D.	Department Commitments: N/A.....	17
E.	Environmental Permits:	17
F.	Railroad Coordination: N/A.....	18
G.	Survey:	18
H.	Verification of Existing Conditions:.....	18
I.	Submittals:	18
J.	Contract Duration:	21
K.	Project Schedule:	21
L.	Key Personnel/Staffing:.....	22
M.	Partner/Teaming Arrangement:.....	22
N.	Meetings and Progress Reporting:.....	22

O.	Public Involvement:.....	23
P.	Quality Management Plan (QMP):.....	24
Q.	Liaison Office:.....	25
R.	Engineers Field Office: N/A.....	25
S.	Schedule of Values:	25
T.	Computer Automation:.....	25
U.	Construction Engineering and Inspection:.....	26
V.	Testing:	26
W.	Value Added:.....	26
X.	Adjoining Construction Projects:.....	26
Y.	Issue Escalation:	26
VI.	Design and Construction Criteria.....	27
A.	General:.....	27
B.	Vibration and Settlement Monitoring:.....	27
C.	Geotechnical Services:	28
D.	Utility Coordination:	29
E.	Roadway Plans: N/A	31
F.	Geometric Design:	31
G.	Design Documentation, Calculations, and Computations:.....	31
H.	Structure Plans:.....	31
I.	Specifications:	32
J.	Shop Drawings:.....	33
K.	Sequence of Construction:	33
L.	Stormwater Pollution Prevention Plans (SWPPP):	33
M.	Temporary Traffic Control Plan:	34
N.	Environmental Services/Permits/Mitigation:.....	35
O.	Signing and Pavement Marking Plans:	35
P.	Lighting Plans: N/A	36
Q.	Intelligent Transportation System Plans:	36
R.	Landscape Opportunity Plans: N/A	80
VII.	Technical Proposal Requirements:.....	80
A.	General:.....	80
B.	Submittal Requirements:.....	80
C.	Evaluation Criteria:.....	82
D.	Final Selection Formula:.....	84
E.	Final Selection Process:.....	84
F.	Stipend Awards:.....	84
VIII.	Bid Proposal Requirements.....	85
A.	Bid Price Proposal:.....	85

ATTACHMENTS

The Attachments listed below are hereby incorporated into and made a part of this Request for Proposal (RFP) as though fully set forth herein.

- Project Advertisement
- Division I Design-Build Specifications
- Divisions II and III Special Provisions identified by the Department to be used on the Project:
 - Mobilization (SP1010000DB)
 - Contractor Quality Control General Requirements (SP1050813DB)
 - Structures Foundations (SP4550000DB)
- Value Added Developmental Specifications
 - Road Weather Information System (DEV688)
- Revised Microwave Vehicle Detection System (MVDS) Calibration Procedure
- ITS Construction Checklist (February 2013)
- ITS Design Guidelines Checklist (February 2013)
- ITS Facility Management System Forms
 - ITSFM029 Transportation Management Center Form (Revised July 2010)
 - ITSFM030 Hub Equipment Site Form (Revised July 2010)
 - ITSFM031 ITS Field Equipment Site Form (Revised September 2010)
 - ITSFM032 Electrical Load Center Site Form (Revised January 2011)
 - ITSFM033 Utility Service Demarcation Site Form (Revised January 2011)
 - ITSFM034 Fiber Optic Concrete Vault Detail (Revised September 2010)
 - ITSFM035 Fiber Optic Pullbox Detail (Revised September 2010)
 - ITSFM036 Fiber Optic Cable & Equipment Form (Revised July 2010)
 - ITSFM037 Fiber Optic Patch Panel Connection Form (Revised January 2011)
 - ITSFM038 Wireless Communication Equipment Form (Revised November 2010)
 - ITSFM039 Miscellaneous Communication Equipment Form (Revised July 2010)
 - ITSFM040 Electrical Equipment Form (Revised January 2011)
 - ITSFM041 Closed Circuit Television Form (Revised September 2010)
 - ITSFM042 Vehicle Detection System Form (Revised September 2010)
 - ITSFM043 Dynamic Message Sign Form (Revised July 2010)
 - ITSFM045 Roadway Weather Information System Form (Revised July 2010)
 - ITSFM046 Electronic Feedback Speed Sign Form (Revised July 2010)
 - ITSFM047 Warning Beacon Form (Revised November 2010)
 - ITSFM048 Trail Blazer Form (Revised July 2010)
 - ITSFM049 Signal Controller Form (Revised November 2010)
 - ITSFM050 Cable Barrier Warning System Form (Revised September 2010)
 - ITSFM051 Travel Time System Form (Revised September 2010)
- Road Weather Information System Simplified Installation Consideration Points
- Rolling Ball Analysis for CCTV Pole and DMS
- Right of Way Certification (Construction)
- SPN 13075-2406 Right of Way Maps
- SPN 13075-2405 Right of Way Maps
- Contamination Impact Certification

Bid Price Proposal Forms:

1. Bid Blank (375-020-17)
2. Design Build Proposal of Proposer (375-020-12)
3. Design Build Bid Proposal Form (700-010-65)
4. Bid or Proposal Bond (375-020-34)
5. DBE Forms (as applicable)

REFERENCE DOCUMENTS

The following documents are being provided with this RFP. Except as specifically set forth in the body of this RFP, these documents are being provided for reference and general information only. They are not being incorporated into and are not being made part of the RFP, the contract documents or any other document that is connected or related to this Project except as otherwise specifically stated herein. No information contained in these documents shall be construed as a representation of any field condition or any statement of facts upon which the Design-Build Firm can rely upon in performance of this contract. All information contained in these reference documents must be verified by a proper factual investigation. The bidder agrees that by accepting copies of the documents, any and all claims for damages, time or any other impacts based on the documents are expressly waived.

As-Built and Other Plans

FPID 201009-2-52-01 As-Built Roadway, S&PM Plans (2004)

FPID 410909-6-52-01 As-Built ITS Plans (2014)

FPID 420253-1-52-01 As-Built Roadway, S&PM Plans (2009)

FPID 434929-1-52-01, Phase II Roadway, S&PM Plans

Geotechnical Data

Inventory of Commercial Inspection(s)

Label and Locate Wire Examples

Project Systems Engineering Management Plan Template (Aug 2015)

Requirements Traceability Verification Matrix Template (Aug 2015)

RWIS Siting Guidelines (Nov 2008)

Straight Line Diagram

Cabinet Configuration Power Procedure Sheet

ITS Functional Requirements for the District Seven District-wide Implementation (Feb 2016)

I. Introduction.

The Florida Department of Transportation (Department) has issued this Request for Proposal (RFP) to solicit competitive bids and proposals from Proposers for the design and construction of ITS facilities on I-75 (SR 93A) from north of I-275 to the Manatee/Hillsborough County Line in Manatee County.

It is the Department's intent that all Project construction activities be conducted within the existing Right-of-Way. The Design-Build Firm may submit a Technical Proposal that requires the acquisition of additional Right-of-Way if the subject acquisition was approved during the Alternative Technical Concept (ATC) process. Any Technical Proposal that requires the acquisition of additional Right-of-Way will not extend the contract duration as set forth in the Request for Proposal under any circumstances. The Department will have sole authority to determine whether the acquisition of additional Right-of-Way on the Project is in the Department's best interest, and the Department reserves the right to reject the acquisition of additional Right-of-Way.

If a Design-Build Firm intends to submit a Technical Proposal that requires the acquisition of additional Right-of-Way, the Design-Build Firm shall discuss such a proposal with the Department as part of the ATC process. If a Design-Build Firm submits a Technical Proposal that requires the acquisition of additional Right-of-Way and the Design-Build Firm fails to obtain Department approval as part of the ATC process, then the Department will not consider such aspects of the Proposal during the Evaluation process. If the Design-Build Firm's Technical Proposal requires additional Right-of-Way approved by the ATC process, the additional Right-of-Way will be required to be directly acquired by the Department. The Design-Build Firm shall submit, along with the Technical Proposal, Right-of-Way maps and legal descriptions including area in square feet of any proposed additional Right-of-Way parcels in the Technical Proposal. The additional Right-of-Way will be acquired by the Department in accordance with all applicable state and federal laws, specifically including but not limited to the Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs (42 USC Chapter 61) and its implementing regulations. This includes completing a NEPA evaluation as appropriate. All costs concerning the acquisition of additional Right-of-Way will be borne solely by the Design-Build Firm. These costs include, but are not limited to consultant acquisition, appraisal services, court fees, attorney and any expert fees, property cost, etc. The Department will have sole discretion with respect to the entire acquisition process of the additional Right-of-Way.

If the Design-Build Firm's Technical Proposal requires additional Right-of-Way, the acquisition of any such Right-of-Way shall be at no cost to the Department, and all costs associated with securing and making ready for use such Right-of-Way for the Project shall be borne solely by the Design-Build Firm as a part of the Design-Build Firm's Lump Sum Price Bid. The Department will not advance any funds for any such Right-of-Way acquisition and the Design-Build Firm shall bear all risk of delays in the acquisition of the additional property, regardless of cause or source.

The Department will provide to the successful Design-Build Firm an estimate of all costs related to the acquisition and use of the additional Right-of-Way for the project. At the time the Design-Build Firm returns the executed contract to the Department, the Design-Build Firm will provide the Department funds equal to the amount of the Department's estimate along with a Letter of Credit approved by the Department in an amount equal to 100% of the Department's estimate. If additional funds beyond the Department's estimate are anticipated, the Design-Build Firm shall be solely responsible for all such costs and provide the same to the Department upon ten (10) days written notice from the Department. The Letter of Credit is for the purpose of securing the obligations of the Design-Build Firm with respect to the acquisition and use of additional Right-of-Way. The Letter of Credit will be released upon the Department's determination that all costs related to the acquisition of and making ready for use of the

additional Right-of-Way have been satisfied. Any remaining funds provided will be returned to the Design-Build Firm.

Any additional Right-of-Way must be acquired prior to the commencement of any construction on or affecting the subject property. The Design-Build Firm waives any and all rights or claims for information, compensation, or reimbursement of expenses with respect to the Design-Build Firm's payment to the Department for costs associated with the acquisition of the additional Right-of-Way. The additional Right-of-Way cannot be used for any construction activity or other purpose until the Department has issued an applicable parcel clear letter or a Right-of-Way Certification for Construction.

If the Department's attempt to acquire the additional Right-of-Way is unsuccessful, then the Design-Build Firm shall provide a design of the Project within existing Right-of-Way and be required to complete the Project solely for the Lump Sum Price Bid, with no further monetary or time adjustments arising therefrom. Under no circumstances will the Department be liable for any increase in either time or money impacts the Design-Build Firm suffers due to the Design-Build Firm's proposed acquisition of additional Right-of-Way, whether or not the acquisition is successful.

Description of Work

This project includes ITS Freeway Management for Tampa Bay SunGuide™ on I-75 (SR93A) from existing communication Hub north of I-275 interchange to the Manatee/Hillsborough County Line in Manatee County. The project length is 5.320 miles. This project will be a portion of an overall system that will provide ITS facilities encompassing the I-75 corridor in Manatee County and an extension of the system from Hillsborough County.

The Design-Build Firm shall design and prepare a complete set of construction plans, specifications package and technical special provisions for an ITS system and subsystem with devices and supporting infrastructure and equipment within the scope of this project. Elements of work shall include providing: communications design, ITS software (SunGuide™ 6.2) and hardware design, technical specifications, design plans, traffic control plans, splice plans, test plans, ITS FM documents, access plans, Project System Engineering Management Plan (P-SEMP), Project ITS Architecture (P-ITSA), Required Traceability Verification Matrix (RTVM), schedule of events, required specification documents, engineer's cost estimates, utility coordination, quantity computation booklet, design documentation report, environmental permitting, development of system test and acceptance procedures, and incidental items as applicable to this project. The Design-Build Firm shall be responsible for survey, geotechnical investigation, subsurface utility engineering (SUE), design, acquisition of all permits not acquired by the Department and any required modification of permits acquired by the Department.

Design and Construction shall include the following:

1. Full Color Dynamic Message Signs (DMS) and Arterial Dynamic Message Signs (ADMS).
2. CCTV Cameras spaced at a maximum one mile interval to obtain 100% visual coverage of the roadway and clear zone.
3. Microwave Video Detection System (MVDS) spaced at one-mile intervals.
4. Roadway Weather Information System (RWIS)
5. A 72-count fiber optic backbone from the Hillsborough/Manatee County Line to the existing hub at the I-275/I-75 interchange.
6. Record keeping with ITS Fiber Management Tool (FMT)/ITS Facility Management (FM).
7. RTVM.
8. P-ITSA.
9. P-SEMP.

The design services provided by the Design-Build Firm shall include but not be limited to the following for the Department's Review and approval:

1. Preparation of complete Plans, Specifications and Estimates for the construction contract to install the subsystems that are within Department specifications, TSP's and the scope of the project.
2. Hardware configuration analysis and design including system architecture, all interfaces, communications, power equipment, devices, fiber optic splice plans, test plans, access plans, ITS FM documents, integration and SunGuide™ Network. This project will be operable with previous District Seven ITS deployments.
3. Development of proper sequencing and coordination of the various subsystem deployments.
4. Development of system test and acceptance procedures.
5. ITS design coordination.
6. The Design-Build Firm shall review the District Seven ITS Design and Construction Checklists and assist the Construction Engineering and Inspection (CEI) Company to complete the checklists thoroughly and accurately.
7. Integration inclusive of the conversion of the system to communicate with Tampa Bay SunGuide™.

A. Design-Build Responsibility

The Design-Build Firm shall be responsible for survey, geotechnical investigation, design, preparation of all documentation related to the acquisition of all permits not acquired for the Department, preparation of any and all information required to prepare, modify and/or coordinate permits acquired for the Department if necessary, maintenance of traffic, demolition, recovery and construction on or before the Project completion date indicated in the Proposal. The Design-Build Firm shall coordinate all utility relocations.

The Design-Build Firm shall be responsible for compliance with Design and Construction Criteria (Section VI) which sets forth requirements regarding survey, design, construction, and maintenance of traffic during construction, requirements relative to Project management, scheduling, and coordination with other agencies and entities such as state and local government, utilities and the public.

The Design-Build Firm shall examine the Contract Documents and the site of the proposed work carefully before submitting a Proposal for the work contemplated and shall investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and as to the requirements of all Contract Documents. Written notification of differing site conditions discovered during the design or construction phase of the Project will be given to the Department's Project Manager.

The Design-Build Firm 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 Design-Build Firm will provide Litter Removal and Mowing in accordance with Specification Section 107 with a 30 day mowing frequency and a 30 day litter removal.

B. Department Responsibility

The Department will provide contract administration, management services, construction engineering inspection services, environmental oversight, and quality acceptance reviews of all work associated with the development and preparation of the contract plans, permits, and construction of the improvements. The Department will provide Project specific information and/or functions as outlined in this document.

In accordance with 23 CFR 636.109 of the FHWA, in a Federal Aid project, the Department shall have oversight, review, and approval authority of the permitting process.

The Department will determine the environmental impacts and coordinate with the appropriate agencies during the preparation of the NEPA related documentation. For federal projects, the Department will coordinate the NEPA documentation with the FHWA.

II. Schedule of Events.

Below is the current schedule of the events that will take place in the procurement process. The Department reserves the right to make changes or alterations to the schedule as the Department determines is in the best interests of the public. Proposers will be notified sufficiently in advance of any changes or alterations in the schedule. Unless otherwise notified in writing by the Department, the dates indicated below for submission of items or for other actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time stated shall cause a Proposer to be disqualified.

Date	Event
<u>03/15/16</u>	Advertisement
<u>04/05/16</u>	Letters of Interest for Phase I of the procurement process due in District Office by 12:00 pm local time
<u>04/28/16</u>	Proposal Evaluators submit Letter of Interest Scores to Contracting Unit 5:00 pm local time
<u>05/03/16</u>	Contracting Unit provides Letter of Interest scores and Proposal Evaluators comments to Selection Committee 5:00 pm local time
<u>05/10/16</u>	Public Meeting of Selection Committee to review and confirm Letter of Interest scores 1:30 pm local time
<u>05/10/16</u>	Notification to Responsive Design-Build Firms of the Letter of Interest scores 5:00 pm local time
<u>05/13/16</u>	Deadline for all responsive Design-Build firms to affirmatively declare intent to continue to Phase II of the procurement process 5:00 pm local time
<u>05/18/16</u>	Shortlist Posting 12:00 pm local time
<u>05/20/16</u>	Final RFP provided to Design-Build firms providing Affirmative Declaration of Intent to continue to Phase II of the procurement process
<u>05/25/16</u>	Mandatory Pre-proposal meeting at 10:00 am local time in the Auditorium at 11201 N. McKinley Drive, Tampa, Florida 33612. All Utility Agency/Owners that the Department contemplates an adjustment, protection, or relocation is possible are to be invited to the mandatory Pre-Proposal meeting.
<u>05/26/16</u>	Utility Pre-Proposal Meeting facilitated by the District Utility Administrator at 1:00-3:00 pm local time in Auditorium at 11201 N. McKinley Drive, Tampa, Florida 33612.
<u>06/01/16</u>	Deadline for Design-Build Firm to request participation in One-on-One

	Alternative Technical Concept Discussion Meeting No. 1
<u>06/03/16</u>	Deadline for Design-Build Firm to submit preliminary list of Alternative Technical Concepts prior to One-on-One Alternative Technical Concept Discussion Meeting No. 1
<u>06/09/16</u>	One-on-One Alternative Technical Concept Discussion Meeting No. 1. 90 Minutes will be allotted for this Meeting.
<u>06/17/16</u>	Deadline for submittal of Alternative Technical Concept Proposals 5:00 pm local time.
<u>06/17/16</u>	Final deadline for submission of requests for Design Exceptions or Design Variations.
<u>07/01/16</u>	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Technical Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
<u>07/07/16</u>	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Technical Proposal.
<u>07/12/16</u>	Technical Proposals due in District Office by 12:00 p.m. local time.
<u>07/12/16</u>	Deadline for Design-Build to "opt out" of Technical Proposal Page Turn meeting.
<u>07/14/16</u>	Technical Proposal Page Turn Meeting. Times will be assigned during the Pre-Proposal Meeting. 30 Minutes will be allotted for this Meeting.
<u>07/26/16</u>	Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.
<u>08/02/16</u>	Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time
<u>08/08/16</u>	Deadline for submittal of questions (answer assured) prior to the submittal of Addendum to Technical Proposal. 5:00 pm local time.
<u>08/10/16</u>	Deadline to post responses to the Pre-Bid Q&A website prior to the submittal of the Addendum to Technical Proposal. 5:00 pm local time.
<u>08/17/16</u>	Deadline for submittal of the Addendum to the Technical Proposal due in District Office by 5:00 pm local time.
<u>08/19/16</u>	Deadline for Department to provide a preliminary list of questions for Question and Answer Session#2. 5:00 pm local time.
<u>08/23/16</u>	Question and Answer Session #2. One hour will be allotted for questions and responses.
<u>08/30/16</u>	Deadline for submittal of Written Clarification letter following Question and Answer Session #2 at 5:00 pm local time
<u>09/01/16</u>	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Price Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
<u>09/08/16</u>	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Price Proposal.
<u>09/15/16</u>	Price Proposals due in District Office by 2:30 pm local time.
<u>09/15/16</u>	Public announcing of Technical Scores and opening of Price Proposals at 2:30 pm local time in Auditorium at 11201 N. McKinley Drive, Tampa, Florida 33612
<u>09/27/16</u>	Public Meeting of Selection Committee to determine intended Award. 1:30 pm local time.

<u>09/27/16</u>	Posting of the Department's intended decision to Award. 5:00 pm local time.
<u>10/07/16</u>	Anticipated Award Date
<u>10/21/16</u>	Anticipated Execution Date

III. Threshold Requirements.

A. Qualifications

Proposers are required to be pre-qualified in all work types required for the Project. The technical qualification requirements of Florida Administrative Code (F.A.C.) Chapter 14-75 and all qualification requirements of F.A.C. Chapter 14-22, based on the applicable category of the Project, must be satisfied.

B. Joint Venture Firm

Two or more Firms submitting as a Joint Venture must meet the Joint Venture requirements of Section 14-22.007, F.A.C. Parties to a Joint Venture must submit a Declaration of Joint Venture and Power of Attorney Form No. 375-020-18, prior to the deadline for receipt of Letters of Interest.

If the Proposer is a Joint Venture, the individual empowered by a properly executed Declaration of Joint Venture and Power of Attorney Form shall execute the proposal. The proposal shall clearly identify who will be responsible for the engineering, quality control, and geotechnical and construction portions of the Work.

C. Price Proposal Guarantee

A Price Proposal guaranty in an amount of not less than five percent (5%) of the total bid amount shall accompany each Proposer's Price Proposal. The Price Proposal guaranty may, at the discretion of the Proposer, be in the form of a cashier's check, bank money order, bank draft of any national or state bank, certified check, or surety bond, payable to the Department. The surety on any bid bond shall be a company recognized to execute bid bonds for contracts of the State of Florida. The Price Proposal guaranty shall stand for the Proposer's obligation to timely and properly execute the contract and supply all other submittals due therewith. The amount of the Price Proposal guaranty shall be a liquidated sum, which shall be due in full in the event of default, regardless of the actual damages suffered. The Price Proposal guaranty of all Proposers' shall be released pursuant to 3-4 of the Division I Design-Build Specifications.

D. Pre-Proposal Meeting

Attendance at the pre-proposal meeting is mandatory. Any affirmatively declared proposer failing to attend will be deemed non-responsive and automatically disqualified from further consideration. The purpose of this meeting is to provide a forum for the Department to discuss with all concerned parties the proposed Project, the design and construction criteria, Critical Path Method (CPM) schedule, and method of compensation, instructions for submitting proposals, Design Exceptions, Design Variations, and other relevant issues. In the event that any discussions at the pre-proposal meeting require, in the Department's opinion, official additions, deletions, or clarifications of the Request for Proposal, the Design and Construction Criteria, or any other document, the Department will issue a written addendum to this

Request for Proposals as the Department determines is appropriate. No oral representations or discussions, which take place at the pre-proposal meeting, will be binding on the Department. FHWA will be invited on oversight Projects, in order to discuss the Project in detail and to clarify any concerns. Proposers shall direct all questions to the Departments Question and Answer website: <https://www3b.dot.state.fl.us/BidQuestionsAndAnswers/Proposal.aspx/SearchProposal>

E. Technical Proposal Page-Turn Meeting

The Department will meet with each Proposer, formally for thirty (30) minutes, for a page-turn meeting. FHWA will be invited on FA Oversight Projects. The purpose of the page-turn meeting is for the Design-Build Firm to guide the Technical Review Committee through the Technical Proposal, highlighting sections within the Technical Proposal that the Design-Build Firm wishes to emphasize. The page-turn meeting will occur between the date the Technical Proposal is due and the Question and Answer session occurs, per the Schedule of Events section of this RFP. The Department will terminate the page-turn meeting promptly at the end of the allotted time. The Department will record all or part of the page-turn meeting. All recordings will become part of the Contract Documents. The page-turn meeting will not constitute discussions or negotiations. The Design-Build Firm will not be permitted to ask questions of the Technical Review Committee during the page-turn meeting. An unmodified aerial or map of the project limits provided by the Design-Build Firm is acceptable for reference during the page-turn meeting. The unmodified aerial or map may not be left with the Department upon conclusion of the page turn meeting. Use of other visual aids, electronic presentations, handouts, etc., during the page turn meeting is expressly prohibited. Upon conclusion of the thirty (30) minutes, the Technical Review Committee is allowed five (5) minutes to ask questions pertaining to information highlighted by Design-Build Firm. Participation in the page-turn meeting by the Design-Build Firm shall be limited to eight (8) representatives from the Design-Build Firm. Design-Build Firms desiring to opt out of the page-turn meeting may do so by submitting a request to the Department.

F. Question and Answer Session

The Department may meet with each Proposer, formally, for a Question and Answer (Q&A) session. FHWA shall be invited on FA Oversight Projects. The purpose of the Q & A session is for the Department to seek clarification and ask questions, as it relates to the Technical Proposal, of the Proposer. The Department may terminate the Q & A session promptly at the end of the allotted time. The Department shall record all or part of the Q & A session. All recordings will become part of the Contract Documents. The Q & A session will not constitute “discussions” or negotiations. Proposers will not be permitted to ask questions of the Department except to ask the meaning of a clarification question posed by the Department. No supplemental materials, handouts, etc. will be allowed to be presented in the Q & A session. No additional time will be allowed to research answers.

Within one (1) week of the Q & A session, the Design-Build Firm shall submit to the Department a written clarification letter summarizing the answers provided during the Q & A session. The questions, answers, and written clarification letter will become part of the Contract Documents and will be considered by the Department as part of the Technical Proposal. The Design-Build Firm shall not include information in the clarification letter which was not discussed during the Q&A session. In the event the Design-Build Firm includes additional information in the clarification letter which was not discussed during the Q&A session and is not otherwise included in the Technical Proposal, such additional information will not be considered by the Department during the evaluation of the Technical Proposal.

The Department will provide some (not necessarily all) proposed questions to each Design-Build Firm as it relates to their Technical Proposal approximately 24 hours before the scheduled Q & A session.

G. Protest Rights

Any person who is adversely affected by the specifications contained in this Request for Proposal must file a notice of intent to protest in writing within seventy-two hours of the posting of this Request for Proposals. Pursuant to Sections 120.57(3) and 337.11, Florida Statutes, and Rule Chapter 28-110, F.A.C., any person adversely affected by the agency decision or intended decision shall file with the agency both a notice of protest in writing and bond within 72 hours after the posting of the notice of decision or intended decision, or posting of the solicitation with respect to a protest of the terms, conditions, and specifications contained in a solicitation and will file a formal written protest within 10 days after the filing of the notice of protest. The formal written protest shall be filed within 10 days after the date of the notice of protest if filed. The person filing the Protest must send the notice of intent and the formal written protest to:

Clerk of Agency Proceedings
Department of Transportation
605 Suwannee Street, MS 58
Tallahassee, Florida 32399-0458

Failure to file a notice of protest or formal written protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120 Florida Statutes.

H. Non-Responsive Proposals

Proposals found to be non-responsive shall not be considered. Proposals may be rejected if found to be in nonconformance with the requirements and instructions herein contained. A proposal may be found to be non-responsive by reasons, including, but not limited to, failure to utilize or complete prescribed forms, conditional proposals, incomplete proposals, indefinite or ambiguous proposals, failure to meet deadlines and improper and/or undated signatures.

Other conditions which may cause rejection of proposals include evidence of collusion among Proposers, obvious lack of experience or expertise to perform the required work, submission of more than one proposal for the same work from an individual, firm, joint venture, or corporation under the same or a different name (also included for Design-Build Projects are those proposals wherein the same Engineer is identified in more than one proposal), failure to perform or meet financial obligations on previous contracts, employment of unauthorized aliens in violation of Section 274A (e) of the Immigration and Nationalization Act, or in the event an individual, firm, partnership, or corporation is on the United States Comptroller General's List of Ineligible Design-Build Firms for Federally Financed or Assisted Projects.

The Department will not give consideration to tentative or qualified commitments in the proposals. For example, the Department will not give consideration to phrases as "we may" or "we are considering" in the evaluation process for the reason that they do not indicate a firm commitment.

Proposals will also be rejected if not delivered or received on or before the date and time specified as the due date for submission.

I. Waiver of Irregularities

The Department may waive minor informalities or irregularities in proposals received where such is merely a matter of form and not substance, and the correction or waiver of which is not prejudicial to other Proposers. Minor irregularities are defined as those that will not have an adverse effect on the Department's interest and will not affect the price of the Proposals by giving a Proposer an advantage or benefit not enjoyed by other Proposers.

1. Any design submittals that are part of a proposal shall be deemed preliminary only.
2. Preliminary design submittals may vary from the requirements of the Design and Construction Criteria. The Department, at their discretion, may elect to consider those variations in awarding points to the proposal rather than rejecting the entire proposal.
3. In no event will any such elections by the Department be deemed to be a waiving of the Design and Construction Criteria.
4. The Proposer who is selected for the Project will be required to fully comply with the Design and Construction Criteria for the price bid, regardless that the proposal may have been based on a variation from the Design and Construction Criteria.
5. Proposers shall identify separately all innovative aspects as such in the Technical Proposal. An innovative aspect does not include revisions to specifications or established Department policies. Innovation should be limited to Design-Build Firm's means and methods, roadway alignments, approach to Project, use of new products, new uses for established products, etc.
6. The Proposer shall obtain any necessary permits or permit modifications not already provided.
7. Those changes to the Design Concept may be considered together with innovative construction techniques, as well as other areas, as the basis for grading the Technical Proposals in the area of innovative measures.

J. Modification or Withdrawal of Technical Proposal

Proposers may modify or withdraw previously submitted Technical Proposals at any time prior to the Technical Proposal due date. Requests for modification or withdrawal of a submitted Technical Proposal shall be in writing and shall be signed in the same manner as the Technical Proposal. Upon receipt and acceptance of such a request, the entire Technical Proposal will be returned to the Proposer and not considered unless resubmitted by the due date and time. Proposers may also send a change in sealed envelope to be opened at the same time as the Technical Proposal provided the change is submitted prior to the Technical Proposal due date.

K. Department's Responsibilities

This Request for Proposal does not commit the Department to make studies or designs for the preparation of any proposal, nor to procure or contract for any articles or services.

The Department does not guarantee the details pertaining to borings, as shown on any documents supplied by the Department, to be more than a general indication of the materials likely to be found adjacent to

holes bored at the site of the work, approximately at the locations indicated.

L. Design-Build Contract

The Department will enter into a Lump Sum contract with the successful Design-Build Firm. In accordance with Section V, the Design-Build Firm will provide a schedule of values to the Department for their approval. The total of the Schedule of Values will be the lump sum contract amount.

The terms and conditions of this contract are fixed price and fixed time. The Design-Build Firm's submitted bid (time and cost) is to be a lump sum bid for completing the scope of work detailed in the Request for Proposal.

IV. Disadvantaged Business Enterprise (DBE) Program.

A. DBE Availability Goal Percentage:

The Department of Transportation has an overall, race-neutral DBE goal. This means that the State's goal is to spend a portion of the highway dollars with Certified DBE's as prime Design-Build Firms or as subcontractors. Race-neutral means that the Department believes that the overall goal can be achieved through the normal competitive procurement process. The Department has reviewed this Project and assigned a DBE availability goal shown in the Project Advertisement and on the bid blank/contract front page under "% DBE Availability Goal". The Department has determined that this DBE percentage can be achieved on this Project based on the number of DBE's associated with the different types of work that will be required.

Under 49 Code of Federal Regulations Part 26, if the overall goal is not achieved, the Department may be required to return to a race-conscious program where goals are imposed on individual contracts. The Department encourages Design-Build Firms to actively pursue obtaining bids and quotes from Certified DBE's.

The Department is reporting to the Federal Highway Administration the planned commitments to use DBE's. This information is being collected through the Department's Equal Opportunity Compliance (EOC) system.

B. DBE Supportive Services Providers:

The Department has contracted with a consultant, referred to as DBE Supportive Services Provider, to provide managerial and technical assistance to DBE's. This consultant is also required to work with prime Design-Build Firms, who have been awarded contracts, to assist in identifying DBE's that are available to participate on the Project. The successful Design-Build Firm should meet with the DBE Supportive Services Provider to discuss the DBE's that are available to work on this Project. The current DBE Supportive Services Provider for the State of Florida can be found in the Equal Opportunity website at: <http://www.dot.state.fl.us/equalopportunityoffice/serviceproviders.shtm>

C. Bidders Opportunity List:

The Federal DBE Program requires States to maintain a database of all Firms that are participating, or attempting to participate, on DOT-assisted contracts. The list must include all Firms that bid on prime contracts or bid or quote subcontracts on DOT-assisted Projects, including both DBE's and Non-DBE's.

A Bid Opportunity List should be submitted through the Equal Opportunity Compliance system which is available at the Equal Opportunity Office Website. This information should be returned to the Equal Opportunity Office within 3 days of submission.

V. Project Requirements and Provisions for Work.

A. Governing Regulations:

The services performed by the Design-Build Firm shall be in compliance with all applicable Manuals and Guidelines including the Department, FHWA, AASHTO, and additional requirements specified in this document. Except to the extent inconsistent with the specific provisions in this document, the current edition, including updates, of the following Manuals and Guidelines shall be used in the performance of this work. Current edition is defined as the edition in place and adopted by the Department at the date of advertisement of this contract with the exception of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, Manual on Uniform Traffic Control Devices (MUTCD), Design Standards and Revised Index Drawings. The Design-Build Firm shall use the edition of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, Design Standards and Revised Index Drawings in effect at the time the bid price proposals are due in the District Office. The Design-Build Firm shall use the 2009 edition of the MUTCD (as amended in 2012). It shall be the Design-Build Firm's responsibility to acquire and utilize the necessary manuals and guidelines that apply to the work required to complete this Project. The services will include preparation of all documents necessary to complete the Project as described in Section I of this document.

1. Florida Department of Transportation Roadway Plans Preparation Manuals (PPM)
<http://www.dot.state.fl.us/rddesign/PPManual/PPM.shtm>
2. Florida Department of Transportation Specifications Package Preparation Procedure
<http://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/FormsAndProcedures/ViewDocument?topicNum=630-010-005>
3. Florida Department of Transportation Design Standards
<http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm>
4. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
<http://www.dot.state.fl.us/programmanagement/Implemented/SpecBooks/default.shtm>
5. Florida Department of Transportation Surveying and Mapping Procedure
<http://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/FormsAndProcedures/ViewDocument?topicNum=550-030-101>
6. Florida Department of Transportation EFB User Handbook (Electronic Field Book)
http://www.dot.state.fl.us/surveyingandmapping/doc_pubs.shtm
7. Florida Department of Transportation Drainage Manual
<http://www.dot.state.fl.us/rddesign/Drainage/ManualsandHandbooks.shtm>
8. Florida Department of Transportation Soils and Foundations Handbook
<http://www.dot.state.fl.us/structures/Manuals/SFH.pdf>
9. Florida Department of Transportation Structures Manual
<http://www.dot.state.fl.us/structures/DocsandPubs.shtm>

10. Florida Department of Transportation Current Structures Design Bulletins
<http://www.dot.state.fl.us/structures/Memos/currentbulletins.shtm>
11. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Manual
<http://www.dot.state.fl.us/ecso/downloads/publications/Manual/default.shtm>
12. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Production Criteria Handbook
<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>
13. Florida Department of Transportation Production Criteria Handbook CADD Structures Standards
<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>
14. Instructions for Design Standards
<http://www.dot.state.fl.us/structures/IDS/IDSportal.pdf>
15. AASHTO – A Policy on Geometric Design of Highways and Streets
https://bookstore.transportation.org/collection_detail.aspx?ID=110
16. MUTCD - 2009
<http://mutcd.fhwa.dot.gov/>
17. Safe Mobility For Life Program Policy Statement
<http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/000750001.pdf>
18. Traffic Engineering and Operations Safe Mobility for Life Program
<http://www.dot.state.fl.us/trafficoperations/Operations/SafetyisGolden.shtm>
19. Florida Department of Transportation American with Disabilities Act (ADA) Compliance – Facilities Access for Persons with Disabilities Procedure
<http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/625020015.pdf>
20. Florida Department of Transportation Florida Sampling and Testing Methods
<http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/publications/fstm/disclaimer.shtm>
21. Florida Department of Transportation Flexible Pavement Coring and Evaluation Procedure
<http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/publications/materialsmanual/documents/v1-section32-clean.pdf>
22. Florida Department of Transportation Design Bulletins and Update Memos
<http://www.dot.state.fl.us/rddesign/Bulletin/Default.shtm>
23. Florida Department of Transportation Utility Accommodation Manual
<http://www.dot.state.fl.us/specificationsoffice/utilities/UAM.shtm>
24. AASHTO LRFD Bridge Design Specifications
https://bookstore.transportation.org/category_item.aspx?id=BR
25. Florida Department of Transportation Flexible Pavement Design Manual
<http://www.dot.state.fl.us/rddesign/PM/publicationS.shtm>
26. Florida Department of Transportation Rigid Pavement Design Manual
<http://www.dot.state.fl.us/rddesign/PM/publicationS.shtm>

27. Florida Department of Transportation Pavement Type Selection Manual
<http://www.dot.state.fl.us/rddesign/PM/publicationS.shtm>
28. Florida Department of Transportation Right-of-Way Manual
<http://www.dot.state.fl.us/rightofway/Documents.shtm>
29. Florida Department of Transportation Traffic Engineering Manual
<http://www.dot.state.fl.us/TrafficOperations//Operations/Studies/TEM/TEM.shtm>
30. Florida Department of Transportation Intelligent Transportation System Guide Book
http://www.dot.state.fl.us/TrafficOperations/Doc_Library/Doc_Library.shtm
31. Federal Highway Administration Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications
<http://www.fhwa.dot.gov/engineering/geotech/pubs/reviewguide/checklist.cfm>
32. AASHTO Guide for the Development of Bicycle Facilities
https://bookstore.transportation.org/collection_detail.aspx?ID=116
33. Federal Highway Administration Hydraulic Engineering Circular Number 18 (HEC 18).
http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17
34. Florida Department of Transportation Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways
<http://www.dot.state.fl.us/rddesign/FloridaGreenbook/FGB.shtm>
35. Florida Department of Transportation Project Development and Environment Manual, Parts 1 and 2
<http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm>
36. Florida Department of Transportation Driveway Information Guide
<http://www.dot.state.fl.us/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf>
37. AASHTO Highway Safety Manual
<http://www.highwaysafetymanual.org/>
38. Florida Statutes
<http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFID=14677574&CFTOKEN=80981948>
39. Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition, with 2015 Interim Revisions
https://bookstore.transportation.org/category_item.aspx?id=BR

B. Innovative Aspects:

All innovative aspects shall be identified separately as such in the Technical Proposal.

An innovative aspect does not include revisions to specifications, standards or established Department policies. Innovation should be limited to Design-Build Firm's means and methods, roadway alignments, approach to Project, etc.

1. Alternative Technical Concept (ATC) Proposals

The ATC process allows innovation, flexibility, time and cost savings on the design and construction of

Design-Build Projects while providing the best value for the public. Any deviation from the RFP that the Design-Build Firms seeks to obtain approval to utilize prior to Technical Proposal submission is, by definition, an ATC and therefore must be submitted to the Department for consideration through the ATC process. Any proposed material or technology not addressed by the RFP is considered an ATC and therefore must be submitted to the Department for consideration through the ATC process. The proposed ATC shall provide an approach that is equal to or better than the requirements of the RFP, as determined by the Department. ATC Proposals which reduce scope, quality, performance, or reliability should not be proposed. A proposed concept does not meet the definition of an ATC if the concept is contemplated by the RFP.

The Department will keep all ATC submissions confidential prior to the Final Selection of the Proposer to the fullest extent allowed by law, with few exceptions. Although the Department will issue an addendum for all ATC Proposals contained in the list below, the Department will endeavor to maintain confidentiality of the Design-Build Firms specific ATC proposal. Prior to approving ATC's which would result in the issuance of an Addendum as a result of the item being listed below, the Design-Build Firm will be given the option to withdraw previously submitted ATC proposals. Any approved ATC Proposal related to following requirements described by this RFP shall result in the issuance of an Addendum to the RFP:

- **No defined elements for this ITS project.**

The following requirements described by this RFP may be modified by the Design-Build Firm provided they are presented in the One-on-One ATC discussion meeting, as defined below, and submitted to the Department for review and approval through the ATC process described herein. The Department may deem a Proposal Non-Responsive should the Design-Build Firm include but fail to present and obtain Department approval of the proposed alternates through the ATC process. Department approval of an ATC proposal that is related to the items listed below will NOT result in the issuance of an Addendum to the RFP.

- **No defined elements for this ITS project.**

2. One-on-One ATC Proposal Discussion Meetings

One-on-One ATC discussion meetings may be held in order for the Design-Build Firm to describe proposed changes to supplied basic configurations, Project scope, design criteria, and/or construction criteria. Each Design-Build Firm with proposed changes may request a One-on-One ATC discussion meeting to describe the proposed changes. The Design-Build Firm shall provide, by the deadline shown in the Schedule of Events of this RFP, a preliminary list of ATC proposals to be reviewed and discussed during the One-on-One ATC discussion meetings. This list may not be inclusive of all ATC's to be discussed but it should be sufficiently comprehensive to allow the Department to identify appropriate personnel to participate in the One-on-One ATC discussion meetings. The purpose of the One-on-One ATC discussion meeting is to discuss the ATC proposals, answer questions that the Department may have related to the ATC proposal, review other relevant information and when possible establish whether the proposal meets the definition of an ATC thereby requiring the submittal of a formal ATC submittal. The meeting should be between representatives of the Design-Build Firm and/or the Design-Build Engineer of Record and District/Central Office staff as needed to provide feedback on the ATC proposal. Immediately prior to the conclusion of the One-on-One ATC discussion meeting, the Department will advise the Design-Build Firm as to the following related to the ATC proposals which were discussed:

- The Proposal meets the criteria established herein as a qualifying ATC Proposal; therefore an ATC Proposal submission IS required, or
- The Proposal does not meet the criteria established herein as a qualifying ATC proposal since the Proposal is already allowed or contemplated by the original RFP; therefore an ATC Proposal submission is NOT required.

3. Submittal of ATC Proposals

All ATC submittals must be in writing and may be submitted at any time following the Shortlist Posting but shall be submitted prior to the deadline shown in the Schedule of Events of this RFP.

All ATC submittals are required to be on roll plots no larger than 36” or plan sheets and shall be sequentially numbered and include the following information and discussions:

- a) Description: A description and conceptual drawings of the configuration of the ATC or other appropriate descriptive information, including, if appropriate, product details and a traffic operational analysis;
- b) Usage: The locations where and an explanation of how the ATC would be used on the Project;
- c) Deviations: References to requirements of the RFP which are inconsistent with the proposed ATC, an explanation of the nature of the deviations from the requirements and a request for approval of such deviations along with suggested changes to the requirements of the RFP which would allow the alternative proposal;
- d) Analysis: An analysis justifying use of the ATC and why the deviation, if any, from the requirements of the RFP should be allowed;
- e) Impacts: A preliminary analysis of potential impacts on vehicular traffic (both during and after construction), environmental impacts, community impacts, safety, and life-cycle Project and infrastructure costs, including impacts on the cost of repair, maintenance, and operation;
- f) Risks: A description of added risks to the Department or third parties associated with implementation of the ATC;
- g) Quality: A description of how the ATC is equal or better in quality and performance than the requirements of the RFP;
- h) Operations: Any changes in operation requirements associated with the ATC, including ease of operations;
- i) Maintenance: Any changes in maintenance requirements associated with the ATC, including ease of maintenance;
- j) Anticipated Life: Any changes in the anticipated life of the item comprising the ATC.

4. Review and Approval of ATC Submittals

After receipt of the ATC submittal, the District Design Engineer (DDE), or designee, will communicate

with the appropriate staff (i.e. District Structures Design Engineer, District Construction Engineer, District Maintenance Engineer, State Structures Engineer, State Roadway Design Engineer, FHWA, as applicable) as necessary, and respond to the Design-Build Firm in writing within 14 calendar days of receipt of the ATC submittal as to whether the ATC is acceptable, not acceptable, or requires additional information. If the DDE, or designee, determines that more information is required for the review of an ATC, questions should be prepared by the DDE, or designee, to request and receive responses from the Design-Build Firm. The review should be completed within 14 calendar days of the receipt of the ATC submittal. If the review will require additional time, the Design-Build Firm should be notified in advance of the 14 day deadline with an estimated timeframe for completion.

Approved Design Exceptions or Design Variations required as part of an approved ATC submittal will result in the issuance of an addendum to the RFP notifying all Shortlisted Design-Build Firms of the approved Design Exception(s) or Design Variation(s). Such a change will be approved by FHWA, as applicable. Prior to approving ATC's which would result in the issuance of an Addendum as a result of a Design Exception and/or Design Variation, the Design-Build Firm will be given the option to withdraw previously submitted ATC proposals.

The Department reserves the right to disclose to all Design-Build Firms, via an Addendum to the RFP, any errors of the RFP that are identified during the One-on-One ATC meetings, except to the extent that the Department determines, in its sole discretion, such disclosure would reveal confidential or proprietary information of the ATC.

ATC's are accepted by the Department at the Department's discretion and the Department reserves the right to reject any ATC submitted. The Department reserves the right to issue an Addendum to the RFP based upon a previously denied ATC Proposal, without regard to the confidentiality of the denied ATC Proposal.

The Project file will clearly document all communications with any Design-Build Firm.

5. Incorporation of Approved ATC's into the Technical Proposal

The Design-Build Firm will have the option to include any Department Approved ATC's in the Technical Proposal. The Proposal Price should reflect any incorporated ATC's. All approved ATC's that are incorporated into the Technical Proposal must be clearly identified in the Technical Proposal Plans and/or Roll Plots. The Technical Proposal shall also include a listing of the incorporated, approved ATCs.

By submitting a Proposal, the Design-Build Firm agrees, if it is not selected, to disclosure of its work product to the successful Design-Build Firm, only after receipt of the designated stipend (if applicable) or after award of the contract whichever occurs first.

C. Geotechnical Services:

1. General Conditions:

The Design-Build Firm shall be responsible for identifying and performing any geotechnical investigation, analysis and design of foundations, foundation construction, foundation load and integrity testing, and inspection dictated by the Project needs in accordance with Department guidelines, procedures and specifications. All geotechnical work necessary shall be performed in accordance with the Governing Regulations. The Design-Build Firm shall be solely responsible for all geotechnical aspects of the Project.

D. Department Commitments: N/A

E. Environmental Permits:

1. Storm Water and Surface Water:

Plans shall be prepared in accordance with Chapters 373 and 403 (F.S.) and Chapters 40 and 62 (F.A.C.).

2. Permits:

The Design-Build Firm shall be responsible for obtaining permits as necessary to accurately depict the final design. The Design-Build Firm shall be responsible for any necessary permit time extensions or re-permitting in order to keep the environmental permits valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit time extensions, for review and approval by the Department prior to submittal to the agencies.

All applicable data shall be prepared in accordance with Chapter 373 and 403, Florida Statutes, Chapters 40 and 62, F.A.C.; Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, 23 CFR 771, 23 CFR 636, and parts 114 and 115, Title 33, Code of Federal Regulations. In addition to these Federal and State permitting requirements, any dredge and fill permitting required by local agencies shall be prepared in accordance with their specific regulations. Preparation of all documentation related to the acquisition of all applicable permits will be the responsibility of the Design-Build Firm. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. The Design-Build Firm is responsible for the accuracy of all information included in permit application packages. As the permittee, the Department is responsible for reviewing, approving, and signing, the permit application package including all permit modifications, or subsequent permit applications. This applies whether the project is Federal or state funded. Once the Department has approved the permit application, the Design-Build Firm is responsible for submitting the permit application to the environmental permitting agency. A copy (electronic) of any and all correspondence with any of the environmental permitting agencies shall be sent to the District Permit Office. If any agency rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit application is approved. The Design-Build Firm shall be responsible for any necessary permit extensions or re-permitting in order to keep the environmental permits valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit extensions, for review and approval by the Department prior to submittal to the agencies.

The Design-Build Firm will be required to pay all permit fees. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm. The Design-Build Firm shall be responsible for complying with all permit conditions.

However, notwithstanding anything above to the contrary, upon the Design-Build Firm's preliminary request for extension of Contract Time, pursuant to 8-7.3, being made directly to the District Construction Engineer, the Department reserves unto the District Construction Engineer, in their sole and absolute discretion, according to the parameters set forth below, the authority to make a determination to grant a non-compensable time extension for any impacts beyond the reasonable control of the Design-Build Firm in securing permits. Furthermore, as to any such impact, no modification provision will be considered by the District Construction Engineer unless the Design-Build Firm clearly establishes that it has

continuously from the beginning of the Project aggressively, efficiently and effectively pursued the securing of the permits including the utilization of any and all reasonably available means and methods to overcome all impacts. There shall be no right of any kind on behalf of the Design-Build Firm to challenge or otherwise seek review or appeal in any forum of any determination made by the District Construction Engineer under this provision.

F. Railroad Coordination: N/A

G. Survey:

The Design-Build Firm shall perform all surveying and mapping services necessary to complete the Project. Survey services must also comply with all pertinent Florida Statutes and applicable rules in the Florida Administrative Code. All field survey data will be furnished to the District Location Surveyor in a Department approved digital format, readily available for input and use in CADD Design files. All surveying and mapping work must be accomplished in accordance with the Department's Surveying and Mapping Procedure, Topic No. 550-030-101. This work must comply with Chapter 5J-17, F.A.C., pursuant to Section 472.027, F.S. This survey also must comply with Chapter 177, F.S.

The Design-Build Firm will be responsible for all photogrammetric work necessary to interpret measure, digitize and compile, by stereoscopic techniques, the mapping and survey data from the aerial photography, as required for this Project.

H. Verification of Existing Conditions:

The Design-Build Firm shall be responsible for verification of existing conditions, including research of all existing Department records and other information.

By execution of the contract, the Design-Build Firm specifically acknowledges and agrees that the Design-Build Firm is contracting and being compensated for performing adequate investigations of existing site conditions sufficient to support the design developed by the Design-Build Firm and that any information is being provided merely to assist the Design-Build Firm in completing adequate site investigations. Notwithstanding any other provision in the contract documents to the contrary, no additional compensation will be paid in the event of any inaccuracies in the preliminary information.

I. Submittals:

1. Component Submittals:

The Design-Build Firm may submit components of the contract plans set instead of submitting the entire contract plan set; however, sufficient information from other components must be provided to allow for a complete review. In accordance with the Plans Preparation Manual, components of the contract plans set are roadway, signing and pavement marking, signalization, ITS, lighting, landscape, architectural, structural, and toll facilities.

2. Phase Submittals:

The Design-Build Firm shall provide the documents for each phase submittal listed below to the Department's Project Manager. The particular phase shall be clearly indicated on the documents. The Department's Project Manager will send the documents to the appropriate office for review and comment. Once all comments requiring a response from the Design-Build Firm have been satisfactorily resolved as

determined by the Department, the Department's Project Manager will initial, date and stamp the signed and sealed plans and specifications as "Released for Construction".

The Design-Build Firm shall submit the P-SEMP and P-ITSA to the Department within 60 calendar days after Notice to Proceed as stated in the guidelines. In addition, the Design-Build Firm shall be required to prepare ITS design document submittals (RTVM, Data Submittal Forms, etc.) throughout the duration of the Project to support the final design (See Section VI.Q. Intelligent Transportation System Plans).

60% Phase Submittal

- 1 paper copy of 11" X 17" plans
- 1 paper copy of design documentation
- 1 copy of Technical Special Provisions
- Independent Peer reviewer's comments and comment responses
- 2 CD's containing the above information in .pdf format

90% Phase Submittal

- 1 paper copy of 11" X 17" plans
- 1 signed and sealed geotechnical report
- 1 paper copy of Settlement and Vibration Monitoring Plan (SVMP) for Department acceptance and update throughout the construction period
- 1 paper copy of design documentation
- 1 copy of Technical Special Provisions
- Independent Peer reviewer's comments and comment responses
- 2 CD's containing the above information in .pdf format

Final Submittal

- 1 set of signed and sealed 11" X 17" plans
- 1 copy of signed and sealed 11" X 17" plans
- 1 sets of signed and sealed design documentation
- 1 copy of signed and sealed design documentation
- 1 copy of Settlement and Vibration Monitoring Plan (SVMP)
- 1 sets of final documentation
- 1 signed and sealed copy of Construction Specifications Package or Supplemental Specifications Package
- 1 copies of signed and sealed copy of Construction Specifications Package or Supplemental Specifications Package
- 2 sets of electronic copies of Technical Special Provisions on CD
- Independent Peer Reviewer's signed and sealed cover letter that all comments have been addressed and resolved.
- 2 CD's containing the above information in .pdf format

3. Requirements to Begin Construction:

The Design-Build Firm may choose to begin construction prior to completion of the Phase Submittals and the Department stamping the plans and specifications Released for Construction except for bridge construction. To begin construction the Design-Build Firm shall submit signed and sealed plans for the specific activity; submit a signed and sealed Construction Specifications Package or Supplemental Specifications Package; obtain regulatory permits as required for the specific activity; obtain utility

agreements and permits, if applicable; and provide five (5) days notice before starting the specific activity. The plans to begin construction may be in any format including report with details, 8 1/2" X 11" sheets, or 11" X 17" sheets, and only the information needed by the Design-Build Firm to construct the specific activity needs to be shown. Beginning construction prior to the Department stamping the plans and specifications Released for Construction does not reduce or eliminate the Phase Submittal requirements.

As-Built Set:

The Design-Build Firm's Professional Engineer in responsible charge of the Project's design shall professionally endorse (sign, seal, and certify) the As-Built Plans, the special provisions and all reference and support documents. The professional endorsement shall be performed in accordance with the Department Plans Preparation Manual.

The Design-Build Firm shall complete the As-Built Plans as the Project is being constructed. All changes made subsequent to the "Released for Construction" Plans shall be signed/sealed by the EOR. The As-Built Plans shall reflect all changes initiated by the Design-Build Firm or the Department in the form of revisions. The As-Built Plans shall be submitted prior to Project completion for Department review and acceptance as a condition precedent to the Departments issuance of Final Acceptance.

The Department shall review, certify, and accept the As-Built Plans prior to issuing Final Acceptance of the project in order to complete the As-Built Plans.

The Department shall certify the As-Built Plans per Chapter 5.12 of the Construction Project Administration Manual (TOPIC No. 700-000-000).

The Design-Build Firm shall furnish to the Department, upon Project completion, the following:

- 1 set of 11" X 17" signed and sealed plans
- 1 set of 11 "X 17" copies of the signed and sealed plans
- 1 set of Final Documentation
- Survey Information including electronic files and field books
- 2 (two) Final Project CD's and one (1) flash drive with all above

4. Milestones:

Component submittals, in addition to the plan submittals listed in the previous section will be required. In addition to various submittals mentioned throughout this document the following milestone submittals will be required.

- ITS Systems Engineering Master Schedule (SEMS)
- P-ITSA
- P-SEMP
- 60% Design Submittal
- 60% Plan Review
- 90% Design Submittal
- 90% Plan Review
- Final Design Submittal
- Final Plan Review
- RTVM Project Specifications
- Shop Drawings
- Shop Drawing Review

- Design Approval for Construction
- Material Acquisition
- ITS Test Plans and Test Results
- As-Built Plans/Record Drawings/ITS FM
- ITS Access Plans
- ITS Integration Plans

5. Railroad Submittals: N/A

J. Contract Duration:

The Department has established a Contract Duration of 390 calendar days for the subject Project.

K. Project Schedule:

The Design-Build Firm shall submit a Schedule, in accordance with Subarticle 8-3.2 (Design-Build Division I Specifications). The Design-Build Firm's Schedule shall allow for up to fifteen (15) calendar days (excluding weekends and Department observed Holidays) review time for the Department's review of all submittals.

The Department will perform the review of Foundation Construction submittals in accordance with Section 455.

The following Special Events have been identified in accordance with Specification 8-6.4: **N/A**

The minimum number of activities included in the Schedule shall be those listed in the Schedule of Values and those listed below:

- Anticipated Award Date
- Design Submittals
- Shop Drawing Submittals
- Design Survey
- Submittal Reviews by the Department and FHWA
- Design Review / Acceptance Milestones
- Materials Quality Tracking
- Geotechnical Investigation
- Start of Construction
- Clearing and Grubbing
- Construction Mobilization
- Embankment/Excavation
- Environmental Permit Acquisition
- Foundation Design
- Foundation Construction
- Signing and Pavement Marking Design
- Signing and Pavement Marking Construction
- Overhead truss span and overhead truss cantilever and ITS pole Foundation Design
- Overhead truss span and overhead truss cantilever and ITS pole Foundation Construction
- Intelligent Transportation System Design
- Intelligent Transportation System Construction

- Maintenance of Traffic Design
- Permit Submittals
- Maintenance of Traffic Set-Up (per duration)
- Erosion Control
- Holidays and Special Events (shown as non-work days)
- Additional Construction Milestones as determined by the Design-Build Firm
- Final Completion Date for All Work
- ITS System Testing
- Utility Coordination
- Subsurface Utility Engineering
- As-Built Preparation and Review Coordination Timeline

L. Key Personnel/Staffing:

The Design-Build Firm's work shall be performed and directed by key personnel identified in the Letter of Interest and/or Technical Proposal by the Design-Build Firm. In the event a change in key personnel is requested, the Design-Build Firm shall submit the qualifications of the proposed key personnel and include the reason for the proposed change. Any changes in the indicated personnel shall be subject to review and approval by the District Construction Engineer. The Department shall have sole discretion in determining whether or not the proposed substitutions in key personnel are comparable to the key personnel identified in the Letter of Interest and/or Technical Proposal. The Design-Build Firm shall have available professional staff meeting the minimum training and experience set forth in Florida Statute Chapter 455.

M. Partner/Teaming Arrangement:

Partner/Teaming Arrangements of the Design-Build Firm (i.e., Prime Contractor or Lead Design Firm) cannot be changed after submittal of the Letter of Interest without written consent of the Department. In the event a change in the Partner/Teaming Arrangement is requested, the Design-Build Firm shall submit the reason for the proposed change. Any changes in the Partner/Teaming Arrangement shall be subject to review and approval by the Department's Chief Engineer. The Department shall have sole discretion in determining whether or not the proposed substitutions in Partner/Teaming Arrangements are comparable to the Partner/Teaming Arrangements identified in the Letter of Interest and/or Technical Proposal.

N. Meetings and Progress Reporting:

The Design-Build Firm shall anticipate periodic meetings with Department personnel and other agencies as required for resolution of design and/or construction issues. These meetings may include:

- Department technical issue resolution
- Local government agency coordination
- Maintenance of Traffic Workshop
- Permit agency coordination
- Scoping Meetings
- System Integration Meetings

During design, the Design-Build Firm shall meet with the Department's Project Manager on a monthly basis and provide a one month look ahead of the activities to be completed during the upcoming month.

During construction, the Design-Build Firm shall meet with the Department's Project Manager on a weekly basis and provide a one-week look ahead for activities to be performed during the coming week.

The Design-Build Firm shall meet with the Department's Project Manager at least thirty (30) calendar days before beginning system integration activities. The purpose of these meetings shall be to verify the Design-Build Firm's ITS and signalization integration plans by reviewing site survey information, proposed splicing diagrams, IP addressing schemes, troubleshooting issues, and other design issues. In addition, at these meetings the Design-Build Firm shall identify any concerns regarding the Integration and provide detailed information on how such concerns will be addressed and/or minimized.

The Design-Build Firm shall provide all documentation required to support system integration meetings, including detailed functional narrative text, system and subsystem drawings and schematics. Also included shall be the documentation to demonstrate all elements of the proposed design which includes, but is not limited to: technical, functional, and operational requirements; ITS/communications; equipment; termination/patch panels; performance criteria; and details relating to interfaces to other ITS subsystems.

System Integration Meetings will be held on mutually agreeable dates.

All action items resulting from the System Integration Meeting shall be satisfactorily addressed by the Design-Build Firm and reviewed and approved by the Department.

The Design-Build Firm shall, on a monthly basis, provide written progress reports that describe the items of concern and the work performed on each task.

O. Public Involvement:

1. General:

Public involvement is an important aspect of the Project. Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the Project. A Public Involvement Consultant (PIC) will not be hired by the Department for this project. The Design-Build Firm shall be responsible for the execution of the Public Involvement effort described in this Section. The Design-Build Firm shall coordinate all Public Involvement activities with the Department.

2. Community Awareness:

The Design-Build Firm shall provide the following Community Awareness Plan:

Fact Sheet (internal use only): A fact sheet will be created and forwarded to Department Public Information. The fact sheet will be posted on the mytbi website.

YES NO - Explain: _____

Project Brochure (public distribution): An informational brochure will be created for this project and posted on the mytbi website.

YES Not Applicable

Elected Officials Design Phase Submittal Notification:

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

review. The Design-Build Firm shall provide the updated list to the Department for each design submittal.

YES NO - Explain: _____

3. **Public Involvement Data:**

The Design-Build Firm is responsible for the following:

- Identifying possible permit and review agencies and providing names and contact information for these agencies to the Department.
- Providing required expertise (staff members) to assist the Department on an as-needed basis.
- Preparing color graphic renderings and/or computer generated graphics to depict the proposed improvements for coordination with the Department, local governments, and other agencies.
- Provide required information/deliverables necessary to fulfill needs for media requests and website.

P. Quality Management Plan (QMP):

1. **Design:**

The Design-Build Firm shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by the Design-Build Firm under this contract.

The Design-Build Firm shall provide a Design Quality Management Plan, which describes the Quality Control (QC) procedures to be utilized to verify, independently check, and review all design drawings, specifications, and other documentation prepared as a part of the contract. In addition the QMP shall establish a Quality Assurance (QA) program to confirm that the Quality Control procedures are followed. The Design-Build Firm shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The QMP may be one utilized by the Design-Build Firm, as part of their normal operation or it may be one specifically designed for this Project. The Design-Build Firm shall submit a QMP within fifteen (15) working days following issuance of the written Notice to Proceed. A marked up set of prints from the Quality Control review will be sent in with each review submittal. The responsible Professional Engineers or Professional Surveyor that performed the Quality Control review, as well as the QA manager will sign a statement certifying that the review was conducted.

The Design-Build Firm shall, without additional compensation, correct all errors or deficiencies in the surveys, designs, drawings, specifications and/or other services.

2. **Construction:**

The Design-Build Firm shall be responsible for developing and maintaining a Construction Quality Control Plan in accordance with Section 105 of Standard Specifications which describes their Quality Control procedures to verify, check, and maintain control of key construction processes and materials.

The sampling, testing and reporting of all materials used shall be in compliance with the Sampling, Testing and Reporting Guide (STRG) provided by the Department. The Design-Build Firm will use the Department's database(s) to allow audits of materials used to assure compliance with the STRG. The

Department has listed the most commonly used materials and details in the Department's database. When materials being used are not in the Department's database list, the Design-Build Firm shall use appropriate material details from the STRG to report sampling and testing. Refer to the State Materials Office website for instructions on gaining access to the Department's databases: <http://www.dot.state.fl.us/statematerialsoffice/quality/programs/qualitycontrol/contractor.shtm>

Prepare and submit to the Engineer a Job Guide Schedule (JGS) using the Department database in accordance with Section 105 of Standard Specifications.

The Department shall maintain its rights to inspect construction activities and request any documentation from the Design-Build Firm to ensure quality products and services are being provided in accordance with the Department's Materials Acceptance Program.

Q. Liaison Office:

The Department and the Design-Build Firm will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project.

R. Engineers Field Office: N/A

S. Schedule of Values:

The Design-Build Firm is responsible for submitting estimates requesting payment. Estimates requesting payment will be based on the completion or percentage of completion of tasks as defined in the schedule of values. Final payment will be made upon final acceptance by the Department of the Design-Build Project. Tracking DBE participation will be required under normal procedures according to the Construction Project Administration Manual. The Design-Build Firm must submit the schedule of values to the Department for approval. No estimates requesting payment shall be submitted prior to Department approval of the schedule of values.

Upon receipt of the estimate requesting payment, the Department's Project Manager will make judgment on whether or not work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.

T. Computer Automation:

The Project shall be developed utilizing computer automation systems in order to facilitate the development of the contract plans. Various software and operating systems were developed to aid in assuring quality and conformance with Department policies and procedures. The Department supports MicroStation and GEOPAK as its standard graphics and roadway design platform as well as Autodesk's AutoCAD Civil 3D as an alternate platform. Seed Files, Cell Libraries, User Commands, MDL Applications and related programs developed for roadway design and drafting are in the FDOT CADD Software Suite. Furnish As-Built documents for all building related components of the project in AutoCAD format. It is the responsibility of the Design-Build Firm to obtain and utilize current Department releases of all CADD applications.

The Design-Build Firm will be required to furnish the Project's CADD files after the plans have been Released for Construction. The Design-Build Firm's role and responsibilities are defined in the Department's CADD Manual. The Design-Build Firm will be required to submit final documents and files which shall include complete CADD design and coordinate geometry files in Intergraph / Micro

station format.

As part of the As-Built Set deliverables, field conditions shall be incorporated into MicroStation and/or AutoCAD design files. Use the cloud revision utility as well as an “AB” revision triangle to denote field conditions on plan sheets.

U. Construction Engineering and Inspection:

The Department is responsible for providing Construction Engineering and Inspection (CEI) and Quality Assurance Engineering.

The Design-Build Firm is subject to the Department’s Independent Assurance (IA) Procedures.

V. Testing:

The Department or its representative will witness and perform verification and resolution sampling and testing activities at both on site, as well as, off site locations such as pre-stress plants, batch plants, structural steel and weld, fabrication plants, etc. in accordance with the latest Specifications.

W. Value Added:

The Design-Build Firm may provide Value Added Project Features, in accordance with Article 5-14 of the Specifications for the following features:

- Any products or features the Design-Build Firm desires.

The Design-Build Firm shall develop the Value Added criteria, measurable standards, and remedial work plans in the Design-Build Firm’s Technical Proposal for features proposed by the Design-Build Firm.

X. Adjoining Construction Projects:

The Design-Build Firm shall be responsible for coordinating construction activities with all other construction Projects that are impacted by or impact this Project. This includes all Projects under the jurisdiction of local governments, the Department, or other regional and state agencies, but not limited to the following:

FPID 437082-1-52-01, I-75 @ I-275 and CR 683 Interchanges, High Mast Lighting

FPID 438595-1-52-01, I-275 @ I-75 (SR93) Landscape Improvements

FPID 434025-1-52-01, I-75 from Manatee County Line to south of Big Bend Road, ITS Freeway Management

FPID 434929-1-52-01, I-75 S of Moccasin Wallow Rd to Hillsborough County Line

Y. Issue Escalation:

In the event issues arise during prosecution of the work, the resolution of those issues will be processed as described below unless revised by a project specific Partnering Agreement:

The escalation process begins with the Construction Project Manager. All issues are to be directed to the Construction Project Manager. If the issue cannot be resolved by the Construction Project Manager in coordination with the Resident Engineer and Design Project Manager as

applicable, the Construction Project Manager shall forward the issue to the District Construction Engineer who will coordinate with the District Design Engineer, as applicable. Each level shall have a maximum of five (5) calendar days (excluding weekends and Department observed holidays) to answer, resolve, or address the issue. The Design-Build Firm shall provide all supporting documentation relative to the issue being escalated. The five (5) calendar day period (excluding weekends and Department observed holidays) begins when each level in the issue escalation process has received all required supporting documentation necessary to arrive at an informed and complete decision. The five (5) calendar day period (excluding weekends and Department observed holidays) is a response time and does not infer resolution. Questions asked by the Department may be expressed verbally and followed up in writing within one (1) calendar day (excluding weekends and Department observed holidays). Responses provided by the Design-Build Firm may be expressed verbally and followed up in writing within one (1) working day. Once a response is received from the District Construction Engineer, the Construction Project Manager will respond to the Design-Build Firm in a timely manner but not to exceed three (3) calendar days (excluding weekends and Department observed holidays).

The Design-Build Firm shall provide a similar issue escalation process for their organization with personnel of similar levels of responsibility.

Should an impasse develop, the Dispute Review Board shall assist in the resolution of disputes and claims arising out of the work on the Contract.

VI. Design and Construction Criteria.

A. General:

All design and construction work completed under the Contract shall be in accordance with the United States Standard Measures.

B. Vibration and Settlement Monitoring:

The Department has identified vibration sensitive sites along the Project corridor. The Design-Build Firm shall be responsible for the identification of and coordination with vibration sensitive sites impacted by the Work for the duration of the construction period.

The Design-Build Firm is responsible for evaluating the need for, design of, and the provision of any necessary precautionary features to protect existing structures from damage, including, at a minimum, selecting construction methods and procedures that will prevent damage. The Design-Build Firm shall submit for Department acceptance a Settlement and Vibration Monitoring Plan (SVMP) as part of the 90% plans submittal and update the SVMP throughout the Construction Period. The Design-Build Firm is responsible for establishing maximum settlement and vibration thresholds equivalent to or lower than the Department Specification requirements for all construction activities, including vibratory compaction operations and excavations.

Submittals for Settlement and Vibration Monitoring Plan (SVMP) shall include the following as a minimum:

- Identify any existing structures in addition to those identified that will be monitored for vibrations during the construction period.
- Establish the maximum vibration levels. The maximum vibration levels stated for existing structures shall not be exceeded.
- Identify any existing structures in addition to those identified that will be monitored for settlement during the construction period.
- Establish the maximum settlement levels for the existing structures that must not be exceeded. The maximum settlement level stated shall not be exceeded.
- Identify any existing structures in addition to those identified that require pre-construction and post-construction surveys.

The Department will perform the review of Vibration and Settlement submittals in accordance with Department Specifications.

C. Geotechnical Services:

Drilled Shaft Foundations for Miscellaneous Structures

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions to determine the drilled shaft diameter and length and construction methods to be used.
2. Performing the subsurface investigation and drilling pilot holes prior to establishing the drilled shaft tip elevations and socket requirements.
3. Preparing and submitting a Drilled Shaft Installation Plan for the Department's acceptance.
4. Constructing all drilled shafts to the required tip elevation and socket requirement in accordance with the specifications.
5. Inspecting and documenting the construction of all drilled shafts in accordance with the specifications.
6. For redundant drilled shaft bridge foundations and drilled shafts for miscellaneous structures, perform CSL or Thermal Integrity testing on any shaft suspected of containing defects.
7. Repairing all detected defects and conducting post repair integrity testing using 3D tomographic imaging and gamma-gamma density logging.
8. Submitting Foundation Certification Packages in accordance with the specifications.
9. Providing safe access, and cooperating with the Department in verification of the drilled shafts, both during construction and after submittal of the certification package.

Spread Footings Foundations

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions and designing the spread footing.
2. Constructing the spread footing to the required footing elevation, at the required soil or rock material, and at the required compaction levels, in accordance with the specifications.

3. Inspecting and documenting the spread footing construction.
4. Submitting Foundation Certification Packages in accordance with the specifications.
5. Providing safe access, and cooperating with the Department in verification of the spread footing, both during construction and after submittal of the certification package.

Auger Cast Piles for Sound Barrier Walls - N/A

Specialty Geotechnical Services Requirements

Specialty geotechnical work is any alternative geotechnical work not covered by Department Specifications and requires the development of a Technical Special Provision (TSP). Any TSP for geotechnical work shall include the following:

- Criteria of measurable parameters to be met in order to accept the specialty geotechnical work,
- A field testing and instrumentation program to verify design assumptions and performance,
- A quality control program to be performed by the Design-Build Firm that includes sampling and testing to ensure the material quality, products, and installation procedures meet , requirements,
- A verification testing program to be performed by the Geotechnical Foundation Design Engineer of Record (GFDEOR) that includes inspection, sampling, and testing to verify the material, products, and procedures meet requirements. The TSP shall include language providing separate lab samples to be used for the Department’s independent verification.
- A certification process

After construction of the specialty geotechnical work, the Design-Build Firm shall submit a certification package for Department’s review. The certification package shall include the results of all the field testing, instrumentation and lab testing performed and a signed and sealed letter by the GFDEOR certifying that the specialty geotechnical work meets the requirements. The Department may issue comments and request additional verification testing.

D. Utility Coordination:

The Design-Build Firm shall utilize a single dedicated person responsible for managing all utility coordination. This person shall be contractually referred to as the Utility Coordination Manager and shall be identified in the Design-Build Firm’s proposal. The Design-Build Firm shall notify the Department in writing of any change in the identity of the Utility Coordination Manager. The Utility Coordination Manager shall have the following knowledge, skills, and abilities:

1. A minimum of 4 years of experience performing utility coordination in accordance with Department standards, policies, and procedures.
2. Knowledge of the Department plans production process and utility coordination practices,
3. Knowledge of Department agreements, standards, policies, and procedures.

The Design-Build Firm’s Utility Coordination Manager shall be responsible for managing all utility coordination, including, but not limited to, the following:

1. Ensuring that all utility coordination and activities are conducted in accordance with the requirements of the Contract Documents.
2. Identifying all existing utilities and coordinating any new installations
3. Reviewing proposed utility permit application packages and recommending

- approval/disapproval of each permit application based on the compatibility of the permit as related to the Design-Build firm's plans.
4. Scheduling and attending utility meetings, preparing and distributing minutes of all utility meetings, and ensuring expedient follow-up on all unresolved issues.
 5. Distributing all plans, conflict matrices and changes to affected Utility Agency/Owners and making sure this information is properly coordinated.
 6. Identifying and coordinating the execution and performance under any agreement that is required for any utility work needed in with the Design-Build Project.
 7. Preparing, reviewing, approving, signing, coordinating the implementation of and submitting to the Department for review, all Utility Agreements.
 8. Resolving utility conflicts.
 9. Obtaining and maintaining all appropriate "Sunshine State One Call of Florida" tickets.
 10. Performing Constructability Reviews of plans prior to construction activities with regard to the installation, removal, temporary removal, de-energizing, deactivation, relocation, or adjustment of utilities.
 11. Providing periodic Project updates to the Department Project Manager and District Utility Office as requested.
 12. Coordination with the Department on any issues that arise concerning reimbursement of utility work costs.

The following Utility Agency/Owners (UA/O's) have been identified by the Department as having facilities within the Project corridor. Provided below is a determination made by the Department as to the eligibility of reimbursement for each UA/O identified herein.

Table A - Summary of UAO having facilities within the Proposed Project Limits

UAO	Contact Information	UAO Eligible for Reimbursement (Y/N)
Level 3	To be determined by DB Firm	Y
Peace River Electric Coop, Inc.	To be determined by DB Firm	Y
Florida Power and Light (FPL)	To be determined by DB Firm	Y
Frontier(Verizon) Florida	To be determined by DB Firm	Y
Bright House Networks	To be determined by DB Firm	Y
Manatee County Utility Operations	To be determined by DB Firm	Y

For this project, the Design-Build Firm shall design and construct ITS features with the understanding that all existing utilities should be avoided. The Design-Build Firm may request the utility to be relocated, however, these relocations require the Department's approval.

For a reimbursable utility relocation where the UA/O desires the work to be done by their contractor, the UA/O will perform the work in accordance with the utility work schedule and permit, and bill the Department directly.

The relocation agreements, plans, work schedules and permit application are to be forwarded to the Department for review by the District Utility Office (DUO) and Department's Construction Manager. The DUO and Department's Construction Manager only review the documents and are not to sign them. Once reviewed, the utility permit application will be forwarded to the District Maintenance office for the permit to be signed and recorded or submitted through the Online System Permitting (OSP) system.

E. Roadway Plans: N/A

F. Geometric Design:

The Design-Build Firm shall prepare the geometric design for the Project using the Design Standards and criteria that are most appropriate with proper consideration given to the design traffic volumes, adjacent land use, design consistency, aesthetics, ADA requirements, and this document.

The design elements shall include, but not be limited to, the horizontal and vertical alignments, lane widths, shoulder widths, median widths, cross slopes, borders, sight distance, side slopes, front slopes and ditches. The geometric design developed by the Design-Build Firm shall be an engineering solution that is not merely an adherence to the minimum AASHTO and/or Department standards.

Design Speed shall be utilized for design and construction of all permanent above ground objects for all roadway alignments/facilities.

G. Design Documentation, Calculations, and Computations:

The Design-Build Firm shall submit to the Department design documentation, notes, calculations, and computations to document the design conclusions reached during the development of the construction plans.

The design notes and computation sheets shall be fully titled, numbered, dated, indexed, and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to a standard size 8½" x 11". The data shall be in a hard-back folder for submittal to the Department. At the Project completion, a final set of design notes and computations, signed by the Design-Build Firm, shall be submitted with the As-Built Plans and tracings.

The design documentation, notes, calculations and computations shall include, but not be limited to the following data:

1. Design Standards and criteria used for the Project
2. Geometric design calculations for horizontal alignments
3. Vertical geometry calculations
4. Documentation of decisions reached resulting from meetings, telephone conversations or site visits
5. ITS Design Guidelines Checklist
6. ITS Construction Checklist
7. RTVM
8. P-SEMP and P-ITSA
9. QC Plans
10. Splice plans

H. Structure Plans:

1. Structure Design Analysis:

- a. The Design-Build Firm shall submit to the Department final signed and sealed design documentation prepared during the development of the plans.

- b. The Design-Build Firm shall ensure that the final geotechnical recommendations and reports required for design are submitted with the 90% plans.

2. Criteria

The Design-Build Firm shall incorporate the following into the design of this facility:

- a. All plans and designs are to be prepared in accordance with the Governing Regulations of Section V. A.
- b. Critical Temporary Retaining Walls: Whenever the construction of a component requires excavation that may endanger the public or an existing structure that is in use the Design-Build Firm must protect the existing facility and the public. If a critical temporary retaining wall is, therefore, required during the construction stage only, it may be removed and reused after completion of the work. Such systems as steel sheet pilings, soldier beams and lagging or other similar systems are commonly used. In such cases, the Design-Build Firm is responsible for designing detailing the wall in the set of contract plans. These plans must be signed and sealed by the Structural Engineer in responsible charge of the wall design.

I. Specifications:

Department Specifications may not be modified or revised. Technical Special Provisions shall be written only for items not addressed by Department Specifications, and shall not be used as a means of changing Department Specifications.

The Design-Build Firm shall prepare and submit a signed and sealed Construction Specifications Package for the Project, containing all applicable Division II and III Special Provisions and Supplemental Specifications from the Specifications Workbook in effect at the time the Bid Price Proposals were due in the District Office all Division II and III specifications provided as Attachments to this RFP, and any signed and sealed Technical Special Provisions. Any subsequent modifications to the Construction Specifications Package shall be prepared, signed and sealed as a Supplemental Specifications Package. The Specifications Package shall be prepared, signed and sealed by the Design-Build Firms Engineer of Record who has successfully completed the mandatory Specifications Package Preparations Training.

The website for completing the training is at the following URL address:

<http://www2.dot.state.fl.us/SpecificationsEstimates/PackagePreparation/TrainingConsultants.aspx>

Specification Workbooks are posted on the Department's website at the following URL address:

<https://www2.dot.state.fl.us/SpecificationsPackage/Utilities/Membership/login.aspx?ReturnUrl=%2fspecificationspackage%2fDefault.aspx>.

Upon review and approval by the Department, the Construction Specifications Package will be stamped "Released for Construction" and initialed and dated by the Department.

J. Shop Drawings:

The Design-Build Firm shall be responsible for the preparation and approval of all Shop Drawings. Shop Drawings shall be in conformance with the Departments Plans Preparation Manual when submitted to the Department and shall bear the stamp and signature of the Design-Build Firm's Engineer of Record (EOR), and Specialty Engineer, as appropriate. The Department shall review the Shop Drawing(s) to evaluate compliance with Project requirements and provide any findings to the Design-Build Firm. The Departments procedural review of shop drawings is to assure that the Design-Build Firm's EOR has approved and signed the drawing, the drawing has been independently reviewed and is in general conformance with the plans. The Department's review is not meant to be a complete and detailed review. Upon review and approval of the shop drawing, the Department will initial, date, and stamp "Released for Construction" or "Released for Construction as Noted".

Shop drawings shall be submitted independently as they are prepared by the Design-Build Firm in order for the Department to have adequate time (minimum of Ten (10) working days) to review prior to making recommendations. The Design-Build Firm shall not submit a large volume of shop drawings (not in bulk) at one time.

Shop Drawing submittals must be accompanied by sufficient information for adjoining components or areas of work to allow for proper evaluation of the Shop Drawing(s) submitted for review.

K. Sequence of Construction:

The Design-Build Firm shall construct the work in a logical manner and with the following objectives as guides:

1. Maintain or improve, to the maximum extent possible, the quality of existing traffic operations, both in terms of flow rate and safety, throughout the duration of the Project.
2. Minimize the number of different Traffic Control Plan (TCP) phases, i.e., number of different diversions and detours for a given traffic movement.
3. Take advantage of newly constructed portions of the permanent facility as soon as possible when it is in the best interest of traffic operations and construction activity.
4. Maintain reasonable direct access to adjacent properties at all times, with the exception in areas of limited access Right-of-Way where direct access is not permitted.
5. Coordinate with adjacent construction Projects and maintaining agencies.
6. Maintain all existing ITS and lighting components during construction.

L. Stormwater Pollution Prevention Plans (SWPPP):

The Design-Build Firm shall prepare a Storm Water Pollution Prevention Plan (SWPPP) as required by the National Pollution Discharge Elimination System (NPDES). The Design-Build Firm shall refer to the Department's Project Development and Environment Manual and Florida Department of Environmental Protection (FDEP) Rule 62-621.300(4)(a) for information in regard to the SWPPP. The SWPPP and the Design-Build Firm's Certification (FDEP Form 62-621.300(4) (b) **NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES**) shall be submitted for Department review and approval. Department approval must be obtained prior to beginning construction activities.

M. Temporary Traffic Control Plan:

1. Traffic Control Analysis:

The Design-Build Firm shall design a safe and effective Temporary Traffic Control Plan to move vehicular and pedestrian traffic during all phases of construction. Topics to be addressed shall include, but are not limited to, construction phasing, utility relocation, drainage structures, signalization, ditches, front slopes, back slopes, drop offs within clear zone, temporary roadway lighting and traffic monitoring sites. Special consideration shall be given to the drainage system when developing the construction phases. Positive drainage must be maintained at all times.

The Temporary Traffic Control Plan shall address how to assist with maintenance of traffic throughout the duration of the contract.

The existing regulatory speed limits shall be maintained during construction.

The Temporary Traffic Control Plan shall be prepared by a certified designer who has completed the Department's Advanced Maintenance of Traffic training course, and in accordance with the Department's Design Standards and the Plans Preparation Manual.

Transportation Management Plans (TMPs) are required for significant Projects which are defined as:

1. A Project that, alone or in combination with other concurrent Projects nearby, is anticipated to cause sustained work zone impacts.
2. All Interstate system Projects within the boundaries of a designated Transportation Management Area (TMA) that occupy a location for more than three days with either intermittent or continuous lane closures shall be considered as significant Projects.

A TMP will consist of three components:

- (1) Temporary Traffic Control (TTC) plan component;
- (2) Transportation Operations (TO) component; and
- (3) Public Information (PI) component

Additional information can be found in Volume 1 / Chapter 10 of the PPM.

2. Temporary Traffic Control Plans:

The Design-Build Firm shall utilize Index Series 600 of the Department's Design Standards where applicable. Should these standards be inadequate, a detailed Temporary Traffic Control Plan shall be developed. The Design-Build Firm shall prepare plan sheets, notes, and details to include the following: typical section sheet(s), general notes and construction sequence sheet(s), typical detail sheet(s), traffic control plan sheet(s).

The Design-Build Firm shall prepare additional plan sheets such as detours, cross sections, profiles, drainage structures, temporary roadway lighting, retaining wall details, and sheet piling as necessary for proper construction and implementation of the Temporary Traffic Control Plan.

3. Traffic Control Restrictions:

There will be NO LANE CLOSURES allowed between the hours of **6:00 AM to 10:00 PM**. A lane may only be closed during active work periods. There will be NO PACING OPERATIONS allowed between the hours of 6:00 AM to 8:00 PM. There will be no DETOURS allowed between the hours of 6:00 AM and 7:00 PM. All lane closures, including ramp closures, must be reported to the local emergency agencies, the media and the District Seven information officer. Also, the Design-Build Firm shall develop the Project to be able to provide for all lanes of traffic to be open in the event of an emergency.

N. Environmental Services/Permits/Mitigation:

The Design-Build Firm will be responsible for preparing designs and proposing construction methods that are permissible. The Design-Build Firm will be responsible for any required permit fees. All permits required for a particular construction activity will be acquired prior to commencing the particular construction activity. Delays due to incomplete or erroneous permit application packages, agency rejection, agency denials, agency processing time, or any permit violations, except as provided herein, will be the responsibility of the Design-Build Firm, and will not be considered sufficient reason for a time extension or additional compensation. As the permittee, the Department is responsible for reviewing, approving, signing, and submitting the permit application package including all permit modifications, or subsequent permit applications.

For unavoidable impacts to gopher tortoise burrows within the construction limits, the Department shall be responsible for preparing required documentation to obtain a FWC permit for the relocation of gopher tortoises and commensals from burrows. The Department will be responsible for the permit application fees and relocation fees associated with this permit. A copy of the permit and any subsequent reports to FWC will be provided to the Design-Build Firm as appropriate. All permits and revisions to permits provided by the Department must be displayed on the job board for the duration of the project.

It will be imperative that the Design-Build Firm be aware of the FWC Guidelines regarding gopher tortoise relocations and restrictions regarding working in these habitats. The Design-Build Firm shall be aware that they will be required to coordinate closely with the Department and/or consultants tasked with assisting the Department on gopher tortoise relocation and burrow protection efforts throughout the life of the project.

The Design-Build Firm is responsible for permitting and coordination of any alternative design concept proposed.

O. Signing and Pavement Marking Plans:

The Design-Build Firm shall prepare signing and pavement marking plans in accordance with Department criteria. The Design-Build Firm shall replace existing signs and pavement markings that are impacted due to construction.

The Design-Build Firm shall be responsible for the design of all new or retrofit sign supports (post, overhead span, overhead cantilever, bridge mount and any applicable foundations). The Design-Build Firm shall show all details (anchor bolt size, bolt circle, bolt length, etc.) as well as all design assumptions (wind loads, support reactions, etc.) used in the analysis. Mounting types for various signs shall not be changed by the Design-Build Firm (i.e. if the proposed or existing sign is shown as overhead it shall be overhead and not changed to ground mount) unless approved by the Department. Any existing sign structure to be removed shall not be relocated and reused, unless approved by the Department.

P. Lighting Plans: N/A

Q. Intelligent Transportation System Plans:

1. General

The Design-Build Firm shall prepare Intelligent Transportation System and subsystem Plans in accordance with Department criteria. The Design-Build Firm shall provide ITS deployment along I-75 which includes DMS, ADMS, RWIS, CCTV cameras and MVDS from I-275 Interchange to the Manatee/Hillsborough County Line. The Project will provide backbone and local Ethernet network communication over the new FOC. The Project will enable continuous permanent ITS communication and ITS field element coverage of I-75 from the District Seven Regional Transportation Management Center (RTMC).

The Design-Build Firm shall closely coordinate with the adjacent project (FPID 434025-1-52-01) when placing ITS devices and installing FOC backbone, in order to maintain minimum required device spacing and to ensure a continuous FOC communication network.

ITS work elements for the Project shall include, but not be limited to, the following:

- Development and update of the P-ITSA, P-SEMP, and RTVM
- ITS maintenance services
- ITS design services
- DMS and ADMS field elements
- CCTV field elements
- MVDS field elements
- RWIS field elements
- Electrical and ITS conduit and pull boxes
- Electrical power service for ITS field elements
- Lightning protection systems, including grounding systems and surge protective devices
- ITS FOC communication infrastructure including splice plan
- ITS Ethernet network and network devices
- Physical network diagram, including Layer 2 (device) and Layer 3 (backbone) diagrams
- ITS integration services
- ITS testing services
- ITS training services
- Restoration of ITS services
- ITS FM data entry sheets preparation
- As-built plans
- Warranties
- Grounding
- Site Survey (Cameras)
- Access Plan
- Splice Plan with Proposed Loss
- Electrical power service coordination

The Design-Build Firm shall prepare design plans for the procurement and installation of the Signalization and Intelligent Transportation System devices as well as overall system construction and integration. The construction plan sheets shall be in accordance with Department requirements and include, but not be limited to:

- Project Layout / Overview sheets outlying the locations of field elements
- Detail sheets on:
 - DMS/ADMS Structure, DMS/ADMS attachment, DMS/ADMS display/layout
 - CCTV structure, CCTV attachment, CCTV operation/layout
 - MDVS structure, MDVS attachment, MDVS operation/layout
 - Structure, attachment, display/layout (All ITS field elements)
 - Fiber optic splice plans
 - Power Service Distribution
 - Wiring and connection details
 - Conduit, pull box, and vault installation
 - Communication Hub and Field Cabinets and supply
 - System-level block diagrams
 - Device-level block diagrams
 - Field hub/router cabinet configuration details
 - Fiber optic Splicing Diagrams
 - Existing and planned butt splice location(s) System configuration/Wiring diagram/Equipment Interface for field equipment at individual locations and communications hubs.
 - Voltage drop calculations for electrical wire sizing
 - Approved System access plan
 - Maintenance of Communications (MOC) Plan (existing and new ITS elements)
 - Test(s) plan
 - Integration plan

Anticipated DMS features and details:

DMS/ADMS Feature	Approximate Location	Direction	Notes
20 mm pixel pitch Full color matrix DMS	Centered over approach lanes	SB I-75 approaching Mocassin Wallow Road Interchange	DMS shall not be installed on a structure supporting a static guide sign installed for traffic in the same direction of travel. The selected structure location shall be such that it provides unhindered access for maintenance.
20 mm pixel pitch Full color matrix ADMS	Placed over outside approach lane	EB and WB Mocassin Wallow Road between ¼ to ½ mile from the	ADMS shall not be installed on a structure supporting a

		decision point to I-75 on-ramps	static guide sign installed for traffic in the same direction of travel. The selected structure location shall be such that it provides unhindered access for maintenance.

The Design-Build firm is responsible for ensuring project compliance with the Regional ITS Architecture and Rule 940 as applicable. This includes, but is not limited to, the development and update of a concept of operations, the development and update of a project system engineering master plan, and project ITS architecture (P-SEMP/P-ITSA), ITS FM requirement traceability verification (RTVM) as well as coordination of document review.

1. The Design-Build Firm shall be responsible for designing the entire ITS to be fully integrated into the existing Tampa Bay SunGuide™ Program. The Department has developed one integrated and readily scalable system configuration for future District-wide ITS deployments. The ITS shall be designed to operate from the Tampa Bay SunGuide™ Regional Transportation Management Center (RTMC) and incorporate such functional capabilities as an Incident Detection System, Wrong Way Driving detection, Vehicle Detection System, advanced traveler information system, advanced traffic management system, access plan, testing plan, and data storage, retrieval and analysis. The ITS shall encompass a myriad of advanced technologies including hardware integration, Microwave Vehicle Detection System (MVDS) subsystem, Closed-Circuit Television (CCTV) Camera subsystem, Road Weather Information System (RWIS), Dynamic Message Signs (DMS), Arterial Dynamic Message Signs (ADMS). The communication sub-systems should include as a minimum:
 - One 20 mm pixel pitch full Color Freeway DMS sign located on Southbound I-75 approaching Mocassin Wallow interchange in advance of the 1 mile advance guide sign.
 - Two 20 mm pixel pitch full Color fiber-fed ADMS signs located on 97th St/Mocassin Wallow Rd approaching I-75 from both the east and west, one ADMS in each direction. The ADMS shall be located at a distance of between ¼ to ½ mile from the decision point to I-75 on-ramps.
 - MVDS on I-75 at a spacing of one mile or less. The Design-Build Firm shall provide MVDS north and south of the I-75/Mocassin Wallow Interchange. .
 - CCTV on I-75 spaced at an interval of one (1) mile or less. Spacing may need to be adjusted in order to ensure full surveillance coverage of both Northbound and Southbound directions of mainline I-75, ramps and crossroads including roadway and clear zones.

- The existing CCTV at 97th St/Moccasin Wallow Rd interchange shall be upgraded and the existing camera should be recovered and delivered to the Department including the wireless equipment.
 - A 72-count FOC backbone along I-75 from existing Hub at I-275 interchange to the Manatee/Hillsborough County line. The FOC backbone shall only be placed along one side of I-75 within the project limits.
 - Dedicated fiber-fed CCTV to monitor all DMS's and ADMS's to be placed between 200 to 500 feet in advance of each DMS and ADMS for visibility purposes.
 - One RWIS located within the project limits. Initial sight location shall be determined by the Design-Build Firm. The final site location shall be approved by the ITS Operations Engineer or their representative.
2. The existing static guide signs and associated sign supports shall be referenced in the ITS plans along with the Freeway DMS's. The freeway DMS's shall maintain a minimum of 800 feet spacing to the static guide signs. The Design-Build Firm shall document the actual sign spacing data and submitted to the Department for approval.
 3. Freeway DMS's are to be located on span sign structures spanning the I-75 southbound lanes. Freeway DMS's shall not be installed on cantilever sign structures. The Freeway DMS's shall be centered over the center through lanes. ADMS's are to be located only on overhead truss cantilever structures. The ADMS's shall be placed over the outside approach lane. The sign structure type shall be consistent with the adjacent I-75 Design-Build Projects.
 4. The Design-Build Firm shall prepare the ITS plans package. This work effort shall include the design of a complete ITS utilizing a MVDS system and subsystem, CCTV Camera system and subsystem, RWIS, DMS and ADMS system and subsystem, and fiber optic communications system and subsystems along with power and connection to adjoining projects.
 5. All ITS devices (proposed and existing devices to remain) shall be (FOC) wire-connected. No wireless connections will be accepted.
 6. The CCTV's and MVDS's shall be installed on separate poles with no other devices sharing these poles. The CCTV's and MVDS's shall not be interfered or obstructed by other devices and landscaping elements such as trees and shrubbery in the vicinity.
 7. The Design-Build Firm shall perform all surveys, site visits, utility coordination, electrical service coordination, subsurface utility engineering (SUE) services, geotechnical services, structural design of support structures (for equipment and personnel), and maintenance of traffic plan development that are necessary, including coordination with other elements of this project and elements of other projects, for the complete design of the proposed ITS.
 8. ITS communications conduit, splices, pull boxes, splice boxes, and power poles shall be placed within 10 feet of the Right-of-Way line, or as close to this requirement as possible (see Section 6. Material, Equipment and Subsystem Requirements for more information). Any changes to this requirement shall be approved by the Project CEI and the ITS Program Manager.

9. FO splices shall be performed inside the device cabinets. Adequate FO cable slack shall be provided inside the appropriate splice box per Specifications. The device cabinet shall be adequately sized to include a lockable splice drawer. Connection from Splice drawer to equipment shall be made using plenum-rated fiber optic material.
10. The Design-Build Firm shall also establish the necessary electrical power service, meter addresses, and accounts on behalf of the Department. Submit letters of request to acquire electrical power service from the power company to the Department Project Manager and/or Operations Manager for approval from District ITS, Maintenance and CEI. The associated costs, including the monthly power service bills, for any new power service established shall be paid by the Design-Build Firm until Final Acceptance of the project.
11. The Design-Build Firm shall not install any aluminum-wound electrical products in the project.
12. The Design-Build Firm shall procure and install all new equipment, field elements, communications infrastructure and the associated components. The equipment to be procured shall meet the requirements of the National Transportation Communications Intelligent Transportation System protocol (NTCIP) (if applicable) versions supported by the SunGuide™ software specified in this RFP. The Design-Build Firm is responsible for ensuring the proposed ITS field elements are on the Approved Product List (APL) and are 100 percent compatible with all SunGuide™ software (version 6.2).
13. The Design-Build Firm shall submit shop drawings for all proposed technologies/products that are to be procured for the project, along with selection alternatives and the reasons for selection, to the Department for acceptance. The Department or its representative may request additional information and/or demonstration of the equipment for approval and the Department reserves the right to reject any equipment that in its discretion is determined to be non-compliant with the Department's design standards, specifications or the requirements of this project. The Design-Build Firm shall not submit a large volume of shop drawings (not in bulk) at one time.
14. The Design-Build Firm may request review and release by the Department of an individual subsystem design in order to allow advanced procurement of equipment that requires a longer lead time. Any component plan set shall reference any and all other components plans. However, the Department reserves the right to evaluate this request based on the requirements included in this RFP, the impact to minimum system functionality or maintainability and the needs of the traveling public. The Department's decision shall be final and the Design-Build Firm shall solely bear any associated costs or delays.
15. All components, equipment and subsystems furnished and installed by the Design-Build Firm shall be tested to determine conformance with project requirements and Contract Documents. The Design-Build Firm shall provide an ITS Testing Plan (part of the P-SEMP-P-ITSA and RTVM which should be signed and dated by the EOR and CEI) to the Department for review prior to conducting any testing or inspection services. This plan shall be kept updated as necessary. The ITS Testing Plan shall include: test requirements, procedures and conditions; time frame and schedule; acceptance criteria and the specific element of the Design Criteria requiring the test; and the associated necessary resources and those responsible and witness for each type of test. Independent factory acceptance testing by the Design-Build Firm shall not be required for any proposed field elements included on the APL. See Section 4. Testing and Acceptance for more information on ITS testing requirements.

16. The Design-Build Firm shall be responsible for the integration of all ITS and communications systems and subsystems. Once the Design-Build Firm has installed and supplied the power and communications interconnect to each ITS device as stated in the plans and specifications and approved by the CEI, the Design-Build Firm shall integrate each device into the existing passive communications network. The Design-Build Firm shall coordinate with the Department's Project Manager and/or Operations Manager a schedule of installation and integration. Once the Design-Build Firm has completed the installation of fiber plant and devices and receives acceptance by the CEI and Department, the Design-Build Firm shall then field-integrate the ITS devices/cabinets in accordance with the approved schedule. The Design-Build Firm shall verify that all ITS devices are in the correct locations and are functioning properly at each location at the time of installation and integration. The Design-Build Firm shall verify communications between all ITS devices as designed, between each ITS device location, and between all communications hubs and RTMC. The Design-Build Firm shall install and integrate all active layer 2 communications components and layer 2 communications equipment in all communications hubs. This shall include, but is not limited to, field switches, video encoders, device servers, UPSs, remote power management devices, RWIS controllers, DMS and ADMS controllers, alarm interfaces, and all cables and connectors necessary for the successful operation of the communications system. Excluded is modification of any existing or new Core Switches/Routers operating at Layer 2 or Layer 3. Such devices shall be configured by the DEPARTMENT or other DEPARTMENT designated CONTRACTOR. The Design-Build Firm shall provide a Field Integration Checklist indicating that all integration tasks have been completed and are documented. DEPARTMENT or other DEPARTMENT designated CONTRACTOR will perform configuration of the existing Hub switch and SunGuide™. (see Section 3.3 System Integration for more information).
17. The Design-Build Firm shall provide all equipment, parts, and configuration data necessary to integrate the ITS and communications systems and subsystems to the RTMC. The Design-Build Firm shall integrate Layer 2. The Design-Build Firm shall schedule and coordinate the Layer 3 integration with District RTMC Staff (see Section 3.3 System Integration for more information).
18. The Design-Build Firm shall provide complete and comprehensive documentation of all elements of this project as specified in this RFP.
19. The Design-Build Firm shall be responsible to provide and maintain locates throughout the corridor for both Sunshine and non-Sunshine subscribers for any portion(s) of the proposed system for the duration of the project when requested by the Department or third parties authorized to work within the project limits.
20. The Design-Build Firm shall prepare design plans and provide necessary documentation for the procurement and installation of the ITS. The Design-Build Firm shall submit 60%, 90%, and Final (100%) design plans and technical specifications packages to the Department for review and approval.
21. The construction plan sheets identifying the final design shall include, but not be limited to:
 - Key sheet
 - Tabulation of Quantities, with reference to FDOT Pay Item Numbers
 - General Notes and Pay Item Notes
 - Legend

- Pole Data Sheet
- Project Layout/Overview sheets outlining the locations of new and existing ITS field elements
- Plan and schedule for accessing existing ITS system and subsystem
- Fiber optics communications and outside plant facilities and routing index sheets to existing butt splices and schedule and plan for accessing existing fiber optic network
- Plan sheets providing details on ITS field device locations and interface with the fiber optics communications cables, fiber optic cable routing and outside plant facilities including pull boxes, cabinets, fiber optic vaults, outlying structures and roadways, schedule and plan for accessing existing ITS network, etc.
- Splice plan with proposed loss
- Roadway cross-sections at ITS field device locations
- Field surveyed heights for proposed ITS structures
- Detail sheets for all field elements included in the final design such as mounting details, cabinets, cabinet wiring diagrams, electrical wiring diagrams, power network, service disconnect, conduit, grounding array and surge protection diagrams, etc.
- Structure detail(s)
- Geotechnical information supporting ITS foundation and structure design.
- Traffic Control Plans

The above-referenced sheets shall be included as a minimum at the 60% submittal phase. Each subsequent submittal shall include additional information which advances the design.

22. The Design-Build Firm shall prepare, submit and seek Department approval for all the required Plans and documents, schematic diagrams, cabling/wiring diagrams, splice diagrams, splice plan, and all other pertinent information related to the equipment, materials and incidentals for the installation of ITS cabinets, CCTV cameras, DMS, ADMS, MVDS RWIS communications network equipment, distribution conduit facilities, cabling, electrical power service and distribution, etc., prior to the commencement of the installation phase. (See Section 2. Design and Engineering Services for more information on design requirements.)
23. The Design-Build Firm shall prepare detailed Modified Special Provisions and Technical Special Provisions, as needed and/or identified during the project design phase, that will expand upon the minimum requirements included in this RFP.
24. The Design-Build Firm shall incorporate all existing ITS facilities into new plans. All existing ITS systems and subsystems shall be maintained during construction.
25. ITS contact number: 813-615-8600.
26. The Design-Build Firm shall utilize the ITS Design and Construction Checklist referenced in this RFP (See Attachments).

The Design-Build Firm shall detail existing Signalization and Intelligent Transportation System equipment and report which devices will be removed, replaced, recovered or impacted by project work.

An appropriate schedule, showing the proposed access plan shall be submitted and approved by the Department for accessing existing ITS facilities/systems in order to minimize system downtime. Any existing ITS facility shall not be taken offline without Department approval.

All proposed ITS systems and subsystems shall be compatible with existing ITS systems and subsystems. Coordination with District One ITS Operations office shall be required for ITS systems and subsystems that are maintained by District One.

District Seven's existing ITS field elements consist of but not be limited to CCTV, MVDS, DMS, ADMS, communication HUBs, and ITS control cabinets. ITS cabinets contain equipment to support the ITS field elements connected to the cabinet, the infrastructure to connect to the FOC communication infrastructure, and the equipment to connect to the Ethernet network for communicating with the RTMC and the SunGuide™ central system software.

District Seven's ITS communication infrastructure typically consists of a 72-count single-mode FOC communication backbone and 12-count single-mode FOC drops to ITS field elements at ITS cabinet locations. The FOC and cable communication are placed in an underground conduit system typically consisting of a 4-inch HDPE conduit containing one 1-inch and two 1-¼-inch innerducts. The locate wire is placed inside the 4-inch outterduct outside the innerducts. At locations where fiber splicing is performed outside the device cabinets, splice boxes are placed in the vicinity of ITS cabinets to facilitate the 12-count FOC drops. Fiber pull/splice boxes are spaced no more than 1,000 feet apart to facilitate installation of the FOC and changes of direction of the conduit path.

ITS cabinets are installed for CCTV, MVDS, RWIS, DMS, and ADMS and installations can be for individual or multiple ITS field elements at the same or nearby location(s). ITS cabinets include network equipment, H.264 encoders, media converters, device servers, PDU, UPS, and batteries. The ITS cabinets have 100 mbps or 1 gbps MFES and a manual disconnect for a portable generator. Some ITS poles have NEMA boxes installed to allow ITS maintenance staff to connect into and calibrate the MVDS when the associated cabinet type 332, 334 or 336 is in an inaccessible location. The NEMA box shall be placed away from traffic for protection. All exposed conduits shall be placed neat and uniform.

Mowing aprons are installed for CCTV and MVDS poles, pull and splice boxes, and equipment cabinets.

Various forms of conduit and splice/pull box locate systems have been installed primarily consisting of conduit warning tape, conduit route markers and tone wires. Supplementary electronic box markers are in all pull and splice boxes.

Communication between local ITS cabinets and the hubs use TCP/IP over a 10/100 mbps or 1 gbps Ethernet Optical Network. From hub to hub, communication is accomplished using TCP/IP over a 1 or 10 gbps Ethernet Optical Network. District Seven limits the demand on the Ethernet segments and fiber pairs to 60% or less of the capacity supported by optical communication devices in order to maximize the quality of the signal. District Seven also limits the number of IP addresses on the hub to local devices to prevent Spanning Tree Protocol issues. The Design-Build Firm shall fully implement NTCIP compliant subsystems for the Project. The Design-Build Firm shall utilize the latest FDOT Management Information Base (MIB) definitions and objects for this project.

Within the 72-count FOC backbone, District Seven has designated assignments for the six 12-count FOC buffer tubes, as follows:

Buffer Tube Color	District 7 Assignment
Blue	10 gbps Ethernet Backbone
Orange	100/1000 mbps Ethernet Field Device Groups
Green	100/1000 mbps ITS Expansion
Brown	Shared with local agencies and Center-to-Center Communication (C-2-C). Fibers 9-12 (45-48) are used for C-2-C
Slate	Shared with local agencies and Florida Turnpike Enterprise (FTE). Fibers 1-8 (49-56) shared with FTE
White	Future

The hub ITS equipment shelters are secure, air-conditioned and contain backup UPS and other equipment and hardware required to make them fully functional and to support operations and maintenance. Hubs have been equipped with commercial electrical service and permanent generators. The existing hub located at I-75 and I-275 interchange shall be the designated hub for this Project.

There are existing electrical services within the Project limits that have been designed for the existing ITS devices. District Seven requires commercial electrical power for ITS field elements. Electrical service, including transformers, have been designed on a case-by-case basis to meet the electrical requirements of the ITS field elements and ITS cabinets and the length of the electrical cabling. Copper conductors for ITS electrical service are typically installed in underground conduit. District Seven electrical conductors are installed in a separate conduit from the ITS FOC. ITS electrical service pull and junction boxes have been equipped with additional locking devices to prevent unauthorized access and theft of copper cables.

The Design-Build Firm shall assume the responsibility of maintenance of all existing ITS devices and infrastructure:

- When any ITS device is taken out of service or altered, or
- At the beginning of construction,

whichever occurs first (as shown in the Design-Build Firm's schedule). The Design-Build Firm's ITS maintenance responsibility shall continue until the completion of stand-alone testing and acceptance of all ITS devices and infrastructure by the Department.

The Design-Build Firm shall fully cooperate with all utility owners during the design, survey, and construction activities of this project.

2. Design and Engineering Services:

2.1 General

The Design-Build Firm shall be responsible for all ITS design and engineering services relating to the Project.

The design of the new system shall integrate with the existing devices. The design shall include the

necessary infrastructure and components to ensure proper connection of the new ITS components. This shall include, but not be limited to, all proposed ITS components of this project as well as existing sub-systems that remain or are re-deployed as part of the final project.

At a minimum, the ITS work in this project consists of the following major components:

- Replacement of any ITS System components that are impacted by the Design-Build Firm's scope of work as approved by the Department.
- DMS and ADMS – Includes sign support structures, static signs, and mounting brackets for DMS and ADMS.
- CCTV – Includes poles, camera lowering devices and mountings to provide 100% CCTV coverage of travel lanes and clear zone within the entire project corridor including cross roads and ramps. In addition, each ADMS shall have a dedicated verification CCTV.
- MVDS - Includes poles and mountings to detect all travel lanes along the project corridor.
- Removal and/or protection of any ITS System components that are impacted by the Design-Build Firm's scope of work as approved by the Department.
- Testing of fiber optic backbone and lateral drops furnished and installed or modified by the Design-Build Firm.
- Testing of the Intelligent Transportation System.
- Coordination with District Seven and District One ITS Operations Offices.

The Design-Build Firm shall deliver all systems and subsystems/devices/components required in the RFP and shall determine the exact locations and quantities of the ITS field elements.

All ITS field elements and ancillary components shall be new commercial off-the-shelf (COTS) production products with the latest version of FDOT APL-certified hardware and software (at the time of installation). Neither untried nor prototype units will be approved or accepted by the Department. The Design-Build Firm shall not use reconditioned equipment. All new products must be compatible with all existing components and all functions of existing components within the ITS facility.

The Design-Build Firm shall ensure that the design plans include station numbering on each plan sheet. The Engineering scale for the plan sheet shall be 1 inch= 100 feet.

The Design-Build Firm shall not install system and subsystem devices and ancillary components until the Department has reviewed and approved the final design plans and specifications.

The Design-Build Firm shall coordinate their schedule with Department when the Department's presence is needed or requested per the Access Plan.

Any documents, plans, maps, or calculations developed by the Design-Build Firm and/or submitted to the Department for this contract shall use English units.

The Design-Build Firm shall submit manufacturers' Mean Time To Failure and Mean Time Between Failure (MTTF/MTBF) information for all electronic devices installed on this Project and the method used to determine this information to the Department for review and approval.

The Design-Build Firm shall conduct all utility coordination necessary for the construction of the Project.

The Design-Build Firm shall be responsible to coordinate and resolve all conflicts and permitting and/or utility issues occurring during the Project, at no additional cost to the Department.

When electrical or communication conduits are proposed for bridge attachment, the Design-Build Firm shall work with the District Structure Maintenance Engineers to obtain approval of bridge attachments.

The Design-Build Firm shall perform site preparation and other site upgrades required for subsystem ITS field elements and ancillary components installations and maintenance. Examples of these upgrades include, but are not limited to, ground leveling, facility access, concrete leveling pads, and/or addition of retaining walls. ITS field element installations shall meet all applicable clear zone requirements. Additional installation requirements that are system and subsystem specific are included in the subsystems and ITS field element requirements presented in the remainder of the RFP and specified in the FDOT Specifications.

2.2 ITS Project Schedule

The Design-Build Firm shall submit a project schedule, in accordance with Subarticle 8-3.2 (Design-Build Division I Specifications), to establish contract duration as part of the Technical Proposal. The minimum number of activities shall include:

- ITS Design Submittals (60%, 90% & Final);
- ITS Design Review/Acceptance Milestones;
- ITS Start of Construction;
- ITS Underground Construction (conduits, pull box, splice box and etc.);
- ITS Pole and Structure Construction (ITS poles, structures and foundations);
- ITS Device Installation (DMS, ADMS, RWIS, CCTV, MVDS, Power System);
- ITS Standalone Testing and Department acceptance for each system and subsystem;
- Document Submittal Schedule including updates
- System integration
- Additional ITS Construction Milestones as determined by the Design-Build Firm
- As-Built Drawing Preparation and Submittal Schedule, and
- Final Completion Date for All ITS Work.

2.3 FDOT Specifications

ITS field elements and communication infrastructure and network components shall, as a minimum, meet the Minimum Technical Requirements and Governing Regulations in Section V. A. of this RFP.

2.4 Industry Standards

The materials used by and workmanship completed by the Design-Build Firm shall meet or exceed industry standards. All materials, equipment, supplies, installations and testing shall comply with the Project requirements, the following standards, as applicable, and all other applicable standards and requirements. If multiple requirements or standards are specified for any single item or component of the Project, the most stringent requirement or standard shall govern.

The following list of standards and organizations that guide industry standards and best practices is not meant to be all inclusive:

- The American Society of Testing and Materials standards (ASTM)
- Institute of Electrical and Electronics Engineers (IEEE) standards

- International Standards Organization standards
- The American National Standards Institute (ANSI)
- The National Electrical Manufacturers Association (NEMA)
- The Underwriters' Laboratories Inc. (UL)
- The National Board of Fire Underwriters (NBFU)
- The National Fire Protection Association (NFPA)
- The Society of Automotive Engineers (SAE)
- The Electrical Testing Laboratories (ETL)
- Bellcore Technical Advisories and Technical Requirements
- The Electronic Industries Alliance (EIA)
- The National Electrical Code (NEC)
- The National Electrical Safety Code (NESC)
- The Joint Electronic Devices Engineering Council (JEDEC)
- The Radio-Electronics-Television Manufacturers Association (RETMA)
- The Lightning Protection Institute (LPI)
- The Rural Electrification Administration (REA)
- The International Radio Consultative Committee (CCIR)
- The International Telephone and Telegraph Consultative Committee (CCITT)
- The American Standard Code for Information Interchange (ASCII)
- The National Television Systems Committee (NTSC)
- The International Telecommunications Union (ITU)
- The Moving Picture Experts Group (MPEG)
- The Bureau of Radiological Health – Optical Radiation Hazard specifications
- The Telecommunications Industries Association (TIA)
- The American Association of State Highway & Transportation Officials (AASHTO)
- The Federal Aviation Administration (FAA)
- The Federal Communications Commission (FCC)

2.5 Design Phase

The Design-Build Firm, as a minimum, shall provide the following systems engineering documents as required:

1. P-ITSA
2. P-SEMP
3. RTVM
4. Optical Time-Domain Reflectometer (OTDR) test plan
5. Splice plan with integration plan
6. Material data submittal
7. Electrical calculations
8. Structural documentation
9. Design plans (60%, 90%, and Final)
10. Access plans
11. Camera view
12. Lightning analysis

The above documents shall meet the requirements of the following;

1. National ITS Architecture –Latest version.
2. Florida Statewide ITS Architecture – Latest Update
3. Tampa Bay SunGuide™ Regional ITS Architecture

4. FDOT Guidelines for the Implementation of Federal Highway Administration (FHWA) 23 CFR Part 940 in Florida
5. FDOT Guidelines for Writing a Project Systems Engineering Management Plan
6. Florida's Statewide Systems Engineering Management Plan, Version 2
7. RFP as presented herein

FHWA 23 CFR Part 940 requires that the systems engineering process shall include, at a minimum:

1. Identification of portions of the regional architecture being implemented
2. Identification of participating agencies' roles and responsibilities
3. Requirements definition
4. Analysis of alternative system configurations and technology options to meet requirements
5. Procurement options
6. Identification of applicable standards and testing procedures
7. Procedures and resources necessary for operations and management of the system; and,
8. System engineering document update and/or review.

The Design-Build Firm shall comply with the Department's SEMP requirements and submit applicable P-ITSA and P-SEMP and RTVM documentation for the Department's review and approval.

The ITS section within the District Seven Traffic Operations Division is responsible for the development and operation of ITS programs. These programs increase the efficiency of existing freeway infrastructure through rapid detection and response to incidents, and collection and dissemination of traffic information to travelers.

To maximize the benefit of these programs, they must be planned, designed, deployed, operated and maintained using a very structured process that:

1. Defines and validates the problems to be solved;
2. Employs standards;
3. Supports configuration requirements; and,
4. Frequently verifies that the program is properly addressing the validated problems.

Further, a process that addresses the entire life cycle of the Project ensures that early phases of the Project position it well for deployment, operation and maintenance, and that operations and maintenance requirements and procedures comply with the original program requirements. This process is called the Systems Engineering Process.

This process shall focus on ensuring that:

1. Project goals are well-defined and validated
2. Project requirements are developed that comply with the Project goals
3. The Project is assessed against those requirements.

The Design-Build Firm shall develop a P-ITSA and a P-SEMP and submit them to the Department for review and approval within 60 calendar days of the written date of Notice to Proceed (NTP). The P-ITSA shall document the elements of the Tampa Bay SunGuide™ Regional ITS Architecture that are being implemented with the Project. The P-SEMP shall incorporate FDOT Standard Specifications, Supplemental Specifications, Modified Special Provisions, Technical Special Provisions and the requirements contained in the RFP that must be met for the Project. The Design-Build Firm shall adhere to and meet or exceed all requirements in the P-SEMP, including all applicable appendices and updates during phases, throughout the life of the Contract term.

The initial RTVM shall be submitted to the Department for review and approval no later than 30 calendar

days after the approval of the P-SEMP and PISTA. At a minimum, the P-SEMP, PISTA and RTVM shall be reviewed at every major milestone (such as phase submittals and/or with an equipment/device type change) after the initial approval and updated, as needed. The updated and revised P-SEMP, PISTA, and RTVM documents shall be submitted to the Department for review and approval.

The Design-Build Firm shall design the ITS field elements to meet FDOT and applicable industry standards. In addition, the Design-Build Firm shall complete and submit the checklists in the District Seven ITS Design Guidelines Checklist included in the RFP package, or the latest version which can be obtained by contacting the FDOT Project Manager/ITS Operations Manager. The Design-Build Firm shall submit the applicable checklists with each design submittal.

The Design-Build Firm shall label each device location as follows: device SR 60 MM.M MP BB where device can be a CCTV, MVDS, or RWIS; MM.M is the mile post rounded to tenth of a mile (example: 45.4); BB is the travel direction (example WB). For a single location with multiple devices, list all devices. Any documents, plans, maps, or calculations developed by the Design-Build Firm and submitted to the Department for this Contract shall use English units.

The engineering scale for the plan sheets shall be 1 inch = 100 feet. Blowups or insets shall be provided at each ITS field element and electrical power service point. Inset scale shall be 1 inch = 40 feet or other scale as needed to clearly depict the details of the installation, as approved by the Department.

The Design-Build Firm shall design the location of ITS field elements so that they are accessible for maintenance personnel and vehicles without lane closures. All ITS devices shall be located such that full-size equipment required for the replacement of the ITS device can be accommodated. Appropriate culverts shall be provided if necessary for maintenance access. The Design-Build Firm shall not install any ITS devices (i.e., CCTV, MVDS, etc.) or cabinets within the median of I-75. The Design-Build Firm shall minimize conduit crossings of I-75 to minimize conflicts with future construction projects along I-75. All ITS device locations shall be clear of vegetation and shall be away from ditches and low-laying areas.

During the design phase, the Design-Build Firm shall submit documents for review in accordance with the RFP. Following is a listing of the required submittals. It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract Documents whether listed below or not.

1. P-ITSA
2. P-SEMP
3. RTVM
4. FDOT Standard Specifications, Section 603-5 documentation
5. Physical network diagram
6. FOC splicing diagrams
7. Layer 2 (device) and Layer 3 (backbone) Ethernet network diagrams
8. IP addressing scheme
9. Completed design checklists
10. Electrical design calculation which shall include:
 - Voltage drop calculation spreadsheet showing voltage drop and current for each link, transformer voltages.
 - Electrical riser diagram
 - Electrical one line diagram
 - Conduit

- Grounding details
11. Final Plans for electrical and fiber optic conduits (if proposed to expedite construction in advance of the entire ITS package, the conduit plans shall include approval of the electrical design document).
 12. Video camera survey showing actual coverage of the proposed CCTV (see Section 5.4.2 for additional requirements). Each video clip file name shall match the CCTV name.
 13. Plan for OSHA compliance when working around power lines
 14. Soil survey results and geotechnical analysis
 15. Structural design and plans
 16. Plans and specifications for the Project
 17. FOC transmission loss design report
 18. All FCC permits and licenses
 19. Federal Aviation Administration (FAA) permits
 20. Wetland encroachment permits
 21. Right-of-way easements
 22. Evidence of utility coordination, including locating existing ITS FOC and electrical conduit
 23. Cabinet configuration sheets
 24. Maintenance of Communications Plan (existing and new ITS elements)

The Design-Build Firm shall ensure that all submitted documents are the latest version and completely filled out. The Design-Build Firm shall grant all project documents submitted to the Department to have a 10 calendar-day review period.

3. Construction and Integration Services:

3.1 General

The Design-Build Firm shall be responsible for all Signalization and ITS construction and integration services relating to the Project.

3.2 Construction Phase

The Design-Build Firm shall furnish, install, integrate, configure, test, and document all ITS infrastructure components, ITS field elements, and network equipment necessary to make the Project operational and able to be fully integrated with the RTMC.

Other projects are anticipated on or around I-75 and Moccasin Wallow Road, including local agency projects, and including, but not limited to, the projects shown in Section V.X of the RFP during the life of the Project. The Design-Build Firm shall review and apply the District Seven ITS Construction Checklists (included in the RFP package). The Design-Build Firm shall assist the Construction Engineering and Inspection (CEI) Firm to complete the checklists thoroughly and accurately.

The Design-Build Firm shall install the ITS field elements, subsystems and ancillary components that are detailed in the Department-approved final design plans and specifications including, but not limited to, all required structures and foundations. Any deviations from the final design plans shall be submitted for review and approval by the Department.

The Design-Build Firm shall provide at least five (5) working day advance notice when FDOT representatives are needed for meetings and field reviews. For other construction meetings, the Design-Build Firm shall provide at least two weeks' notice to the applicable FDOT representatives, unless the

CEI Senior Project Engineer approves a shorter notification period for specific topics.

The Design-Build Firm shall obtain all permits and licenses including, but not limited to, equipment, and software/firmware licenses. All licenses shall be obtained in the name of the FDOT.

Recover all existing ITS-related equipment to be removed. The Department will have the discretion of allowing Design-Build Firm to discard recovered items.

The Design-Build Firm shall prepare and submit to the Engineer a comprehensive plan for meeting Occupational Safety and Health Administration (OSHA) criteria when working in the vicinity of overhead power lines and below bridges.

The Design-Build Firm shall furnish all tools, equipment, materials, supplies, and manufactured hardware, and shall perform all operations and equipment integration necessary to provide a complete, fully operational communication network as specified in the Project Requirements. The Design-Build Firm shall install all items in accordance with the manufacturer's recommendations, Federal and State guidelines, and contract documents.

During the Construction phase, the Design-Build Firm shall submit the following for Department review and approval. The following, for information only, is a listing of the required submittals (see Section V.I Submittals for an additional list). It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract documents whether listed below or not.

Prior to installation:

1. Updated RTVM
2. Testing schedule
3. OTDR results for FOC on reel prior to installation
4. Updated P-SEMP/P-ISTA
5. CPM

After installation:

1. Witnessed grounding full fall-of-potential test reports including signature of the witness
2. Test plans including testing equipment, setup, manpower, and conditions needed for testing
3. Test procedures
4. Test data format
5. Witnessed OTDR results for FOC after installation and splicing including signature of the witness
6. Cabinet configuration sheets
7. Power approval from CEI

Prior to Integration:

1. Updated RTVM
2. Integration and network configuration plans
3. Integration and network configuration schedule
4. If different from resumes included in the technical proposal, names and resumes of persons who will perform integration, tests and document test results.
5. Equipment information per site:
 - a) Name
 - b) Model number
 - c) APL number

- d) Serial number
- e) Request for IP Address
- f) Technical support and warranty telephone numbers
- g) GPS Coordinates

6. Summary of the experience and qualifications of the instructional personnel

Prior to Final Acceptance:

- 1. Test results performed by any manufacturer, the Design-Build Firm, and/or the Department
- 2. CEI and FDOT maintenance signed off of final inspection
- 3. Evidence that previously failed equipment has been corrected and retested
- 4. Complete training course outline
- 5. Training materials
- 6. Operation and maintenance manuals
- 7. Training sessions and training videos, using DVD R+W, covering all portions of all training.
- 8. Corrected/Final test results to be submitted to the Department's Project Manager.

As-built documentation:

- 1. Warranty documentation
- 2. Completed ITS FM data entry sheets
- 3. All documentation required by Standard Specifications
- 4. All diagnostic software and full documentation
- 5. Failure Report Logs in demonstration that error rates are within requirements set herein
- 6. Updated P-SEMP/P-ITSA
- 7. Updated RTVM to demonstrate that all units have been successfully reconfigured or updated
- 8. Power service form

3.3 System Integration

The Design-Build Firm shall provide a detailed plan of action, which discusses the process for integrating the new devices into the existing SunGuide™ software at the RTMC. The Design-Build Firm shall closely coordinate with Department ITS Maintenance office during system integration.

The Design-Build Firm shall design, construct, and integrate the Project such that all subsystem field elements, ITS field elements and ancillary components within the Project are integrated with all the SunGuide™ software and hardware at the RTMC. The Design-Build Firm shall ensure that all the ITS field elements installed are 100% compatible with all the RTMC and ITS field elements installed during previous ITS Projects in District Seven.

The Design-Build Firm shall coordinate all integration activities with the Department prior to commencement of any integration activities. RTMC is a secured facility and access to it shall be scheduled at least two (2) weeks in advance with the ITS Operations Manager. All integration within the RTMC shall be scheduled at times other than during the normal weekday peak traffic hours (7:00 am to 9:00 am, and 3:30 pm to 7:00 pm) or as approved by the Department. The Design-Build Firm shall schedule and perform all field integration activities and coordinate all RTMC integration activities with the ITS Operations Manager. Remote VPN access shall not be provided to the Design-Build Firm to access the ITS network of the District. The District Seven ITS Operations Manager, or his designated representative, will perform the SunGuide™ integration tasks with the guidance and coordination of the Design-Build Firm, as necessary. The Design-Build Firm shall coordinate with the Central Office and SunGuide™ Configuration Manager, as necessary, to facilitate the District Seven integration activities.

The Design-Build Firm shall provide to the District Seven ITS Operations Manager all necessary information and data to facilitate Subsystem configuration and integration activities.

The Design-Build Firm shall incorporate the as-built CADD plans for all existing and new underground utilities installed under this Project, including but not limited to, outside plant fiber subsystem, FOC, splices schematics, pull boxes, splice vaults, power service and cables, and underground conduit system, in an electronic format that shall be 100% compatible with Department's ITS FM forms. The Design-Build Firm shall prepare ITS FM data entry worksheets for each ITS field installation as required by the Department.

4. Testing and Acceptance:

4.1 General

All equipment furnished by the Design-Build Firm shall be subject to monitoring and testing to determine conformance with all applicable requirements. The Design-Build Firm is responsible for the coordination and performance of material inspection and testing, field acceptance tests, and system acceptance tests. The times and dates of tests must be accepted in writing by the Department's Project Manager and CEI. The Design-Build Firm shall conduct all tests in the presence of the Department's Project Manager or designated representative. Once in operation, the entire system shall be subject to a 30-day operation period (burn-in period) to be included in the contract time.

The Design-Build Firm shall develop test plans, conduct tests, and provide test results that demonstrate compliance with the Project requirements. The Design-Build Firm shall submit test plans, and updated RTVM to the Department for review at least 30 working days in advance of the schedule testing date. If the Department rejects or requests modifications to a test plan, the Design-Build Firm shall update and resubmit a revised test plan to the Department for approval. The Design-Build Firm shall allow 14 work days for the Department's review of the revised test plan. No test shall be conducted until the Department has approved the test plan. Test plans shall be based on and include the following:

1. The P-ITSA
2. The P-SEMP
3. The Updated RTVM
4. A step-by-step outline of the test procedures and sequence to be followed demonstrating compliance with the Project requirements
5. A test set-up/configuration diagram showing what is being tested
6. A description of expected operation, output, and test results
7. An estimate of the test duration and proposed test schedule
8. A data form to be used to record all data and quantitative results obtained during the tests
9. The number of test cases shall reflect the complexity of each subsystem, ITS field element or ancillary component and the content of test cases shall cover all functionalities claimed by the respective manufacturer
10. The Design-Build Firm shall submit a description of any special equipment, setup, manpower, or conditions required for each respective test
11. The Design-Build Firm is required to have the CEI present to witness all testing and provide signature for approval.
12. Approval of the Engineer of Record

The Design-Build Firm shall conduct at a minimum the following test on all equipment.

1. Standalone tests
2. Subsystem tests

3. System test
4. Final acceptance test

When the detailed RTVM is approved, the Design-Build Firm shall submit a testing schedule to the Department in accordance with the requirements of the RFP, perform the tests, document the results, and supply all necessary test equipment.

The Design-Build Firm shall furnish and maintain all required test equipment along with their services. All test equipment utilized shall have up-to-date calibration certification in accordance with the manufacturer's recommendations. The test equipment shall be made ready for use by the Design-Build Firm and/or the CEI at the time it is needed.

The Design-Build Firm shall notify the Department of the time, date and place of each test at least 21 calendar days prior to the date the test is planned.

The tests shall be conducted in the presence of the CEI and EOR, unless otherwise approved in writing by the Department. The Department reserves the right to waive the right to witness certain tests. If any subsystem, ITS field element, or ancillary component fails any part of any test, the entire test shall be repeated at the discretion of the Department.

Neither witnessing of the tests by the Department, nor the waiving of the right to do so, shall relieve the Design-Build Firm of the responsibility to comply with the Project Requirements.

The Design-Build Firm shall submit in writing all test results performed by the manufacturer, and the Design-Build Firm within 14 calendar days of the documented respective test date for review and approval by the Department.

Failure of any subsystem, ITS field element or ancillary component to pass any test shall be counted as failed and non-compliant, and shall be replaced or repaired as needed until it passes the failed test.

Replacement, repair, and retest of failed subsystem, ITS field element, or ancillary component shall be at no additional cost to the Department.

All testing, test documents, test equipment, and associated work and materials shall be at no additional cost to the Department.

4.2 Factory Acceptance Tests

The Design-Build Firm shall work with equipment manufacturers to conduct the Factory Acceptance Tests (FAT's) and document FAT results in accordance with FDOT Specifications and the RFP. The Design-Build Firm is not required to perform FAT for ITS devices and equipment on the FDOT-APL.

4.3 Stand-Alone Tests

The Design-Build Firm shall perform Stand-Alone Tests to demonstrate that all subsystem field elements and components meet the relevant sections of FDOT Specifications and the RFP. The Stand-Alone Tests shall be performed on each ITS field element and component prior to connection of the field element to the communication subsystem. All the test results shall be documented and submitted to the Department after CEI and EOR approval.

The Design-Build Firm's Stand-Alone Tests Plans shall verify the following items, as a minimum:

1. Verify quality and tightness of ground and surge protector connections and that surge suppression complies with Specifications.
2. Verify power supply voltages and outputs
3. Verify grounding meets the requirements of Specifications including performing the full fall-of-potential method for grounding tests. Full fall-of-potential tests shall include a minimum of 10 test points spaced evenly from the ITS field element to the farthest grounding electrode from the ITS field element
4. Verify ITS field element are properly connected to the power source and grounding
5. Verify installation of specified cables and connections between the MFES and the ITS field element
6. Verify configuration of Internet protocol (IP) address and sub-network mask
7. Verify presence and quality of ITS field element data and/or image output
8. Verify interconnection of the ITS field element with the Access Network's assigned FOC and verify that there is a green transmission LED illuminated
9. Perform a "ping" to verify connection of ITS field element

If any ITS field element or ancillary component fails to pass its Stand-Alone Test more than twice, it shall be replaced by the Design-Build Firm with a new ITS field element or ancillary component of same make and model, and the entire Stand-Alone Test shall be repeated until proven successful. The Stand-Alone Tests shall be performed on each and every ITS field element and ancillary component, including, but not limited to, the following:

- DMS/ADMS
- CCTV Cameras
- Camera Lowering Devices
- MVDS
- Device Controllers
- Video Encoders (H.264)
- MFES
- FOC, all fibers, including splices, jumper cables and connectors
- Patch Panels
- PDU
- Manual Transfer Switches
- UPS Assemblies

4.4 Subsystem Tests

The Design-Build Firm shall perform Subsystem Tests to demonstrate that all subsystem field elements and components meet the relevant sections of Specifications and the RFP. No Subsystem Tests shall be performed without a Department-approved Subsystem Test Plan. The Subsystem Test may begin when the Design-Build Firm has satisfied the Department that all work on the subsystem has been completed.

The Subsystem Test shall be performed utilizing the Project field equipment and communication system. The Design-Build Firm shall provide qualified personnel to support the diagnosis and repair of system equipment during the Subsystem Test as required.

Subsystem Tests shall be conducted for:

- Communication
- CCTV

- MVDS
- RWIS
- Power
- DMS/ADMS

Each Subsystem Test shall consist of 2 parts:

- Part 1: Test the subsystem communication with the RTMC over the Layer 2/Layer 3 Ethernet network using the manufacturer's proprietary software. Part 1 shall demonstrate all installed ITS field elements and ancillary components meet the Project Requirements.
- Part 2: After integration of the subsystem with the SunGuide™ central system software, the Design-Build Firm shall demonstrate full control of all ITS field elements associated with the subsystem within the Project limits from the RTMC utilizing SunGuide™ software. The Design-Build Firm shall also demonstrate that the functionalities of the local/remote trouble shooting/diagnostics perform as specified in the specific subsystem functional requirements.

In the event a subsystem fails and the Subsystem Test is rejected by the Department, the Design-Build Firm shall correct the problem. The Design-Build Firm shall repeat the Subsystem Test within 7 days after receiving the approval from the Department that a retest can be conducted.

4.5 System Test

The Design-Build Firm shall conduct the System Test covering all Project subsystems integrated with SunGuide™ software and operable from the RTMC according to specifications. The Design-Build Firm shall notify the Department in writing 14 calendar days before the scheduled commencement of the System Test. The System Test shall not be performed without prior written approval from the ITS Operations Manager.

In the event that a subsystem, ITS field element, or ancillary component failure is identified by the Department or the Design-Build Firm, the System Test shall be shut down (System Test Shutdown). The Design-Build Firm shall diagnose and correct all deficiencies causing the System Test Shutdown. After the deficiency or deficiencies causing the System Test Shutdown has been corrected, the Design-Build Firm shall perform all applicable Stand-Alone and Subsystem Tests. Once the Stand-Alone and Subsystem Tests have passed, the Design-Build Firm shall request approval to restart the System Test.

Item	Allowable Times
Communication Subsystem	8 hours
CCTV Subsystem	12 hours
MVDS Subsystem	48 hours
Power Subsystem	8 hours
DMS/ADMS	8 hours
RWIS	8 hours

If the allowable times as shown above have been met, then the System Test Shutdown shall be reclassified as a System Test Suspension and the System Test shall recommence at the point it was stopped upon approval of the ITS Operations Manager.

When the total number of System Test Shutdowns is 3 for to the same subsystem, ITS field element, or

ancillary component, the Design-Build Firm shall;

1. Remove and replace the subsystem, ITS field element or ancillary component with a new and unused unit as per the requirements of the RFP.
2. Repeat all applicable Stand-Alone and Subsystem Tests, as deemed necessary by the Department.
3. Upon written approval from the ITS Operations Manager, restart the System Test for a new 60 consecutive calendar-day period.

If the Design-Build Firm is unable to determine whether the cause of a problem is hardware or software related, the 60 calendar-day System Test shall be allowed to restart from day zero, unless otherwise directed by the Department. However, the System Test shall not be deemed to have been successfully completed until the problem has been corrected.

All software required for diagnosing malfunctions of hardware and software/firmware shall be supplied by the Design-Build Firm and approved by the Department. A copy of all diagnostic software shall be submitted to the Department with full documentation. The Design-Build Firm shall submit diagnostic reports to demonstrate that errors were detected and corrected.

The System Test shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of Project Requirements.

The Design-Build Firm shall maintain a daily log for all operations after the start of the System Test. Any and all replacement parts, hours, and a brief description of what was corrected shall be reported in the log. The Design-Build Firm shall submit to the Department the required documentation to prove that all subsystems, ITS field elements and ancillary components have been successfully integrated and configured.

The System Test shall be performed with the RTMC Operators managing, monitoring, and controlling the ITS field elements in real-time to assure conformance of the Project Requirements, and Section 611, Acceptance Procedures, of the FDOT Standard Specifications for Road and Bridge Construction.

5. Post-Construction Services

4.1 General

The Design-Build Firm shall provide post-construction services including, but not limited to:

1. Development of As-Built Plans in standard FDOT Computer Assisted Drafting and Design (CADD) formats
2. The Design-Build Firm shall fill out the ITS FM data entry forms (see RFP Attachments) for the entire ITS infrastructure, field elements, pull boxes, and splice boxes. GPS coordinates required for the ITS FM form shall meet the following accuracy and format requirements
 - a. All GPS coordinates shall be based on sub-foot accuracy
 - b. GPS coordinates in decimal degree formatWhen specifying GPS coordinates, single datum shall be utilized for all measurements and the datum used shall be noted in the forms. Any variation to the above accuracy requirements shall be reviewed and approved by the Department.
3. Completion of the RTVM document demonstrating all Project Requirements and other applicable documents were satisfied. The final RTVM document shall be signed and dated by the Design-Build Firm's ITS Engineer(s) of Record and by the CEI's Senior Project Engineer

During Maintenance Phase:

1. ITS Maintenance and Repair Plan
2. Written documentation that all personnel involved in the maintenance/repair of the ITS have had previous experience.
3. Names and resumes for personnel who will maintain and repair ITS infrastructure and field elements.

4.2 Training

The Design-Build Firm or its designee shall conduct training for all Project subsystems and ITS field elements and shall accommodate up to 20 people at the RTMC or other location approved by the ITS Operations Manager. All training shall be conducted prior to the Final Acceptance.

The total hours of training conducted shall be a minimum of 8 hours and a maximum of 16 hours for each of the subsystems, per each training session. Training shall be designed to familiarize the Department and/or its designees with the design, operation and maintenance of the subsystems furnished under this Contract. The training shall cover functionality, theory of operation, installation, calibration, operation, testing, maintenance, trouble-shooting, repair, and performance and operating parameters.

At least 4 hours of each training class shall be devoted to details of ITS field element placement, numbering and naming conventions, and any other information that shall assist the operations and maintenance personnel to become familiar with the ITS field elements.

Training shall be provided by personnel thoroughly familiar with the technology, operation and maintenance of all equipment installed on the Project. This shall be the combination of the Design-Build Firm's personnel and equipment manufacturer's representatives. The Design-Build Firm's personnel shall provide a single cohesive training session for the entire system as a unit in addition to specific ITS field element/subsystem training provided by the device vendor / manufacturer. A complete course outline and summary of the experience and qualifications of the instructional personnel shall be submitted to the Department for approval prior to the start of training. The instructional personnel shall have both technical ability and communication skills to convey the information to the attendees and to respond to technical and procedural questions. Training sessions may be combined and/or shortened with the agreement of Department and the Design-Build Firm.

The Design-Build Firm or its designee shall provide the training materials. These materials shall include, as a minimum, a course outline, a Microsoft Office PowerPoint presentation showing detailed subject material to be covered during training, operation and maintenance manuals, test equipment and tools and any other needed information.

The Design-Build Firm shall video record, using DVD R+W, all portions of all training, including Maintenance Personnel Training. All DVD recordings shall become the property of the Department at the end of each course given, with 1 copy of each DVD recording provided to the District.

If, at any time during a training course, the Department determines that the course is not being presented in an effective manner, the training for the course shall be suspended. The Design-Build Firm shall make the necessary changes to the course, resubmit the required training materials to the Department for approval, and reschedule the training course.

The Design-Build Firm shall provide training for maintenance personnel. This training shall consist of

two separate and identical courses of 16 hours. Each course shall have classroom and system demonstration hours, as appropriate, to properly instruct the participants. These courses shall be conducted as follows:

- Part I - 16 hours: The objective of Part I is to provide operational description, routine preventative maintenance requirements and procedures, trouble-shooting procedures, recommendations for test equipment, test equipment use, repair procedures, design data and drawings for communications equipment as part of this Project. This training shall be provided prior to Final Acceptance.
- Part II – 16 hours: The objective of Part II is to provide a hands-on training lab for designated maintenance personnel. These training sessions shall provide the opportunity to apply the theory presented in Part I. Part II shall also be provided prior to Final Acceptance.

Training shall be conducted at a Department-approved location prior to the Final Acceptance. The training shall, when possible, make use of and be centered around test equipment approved for use and to be turned over to the Department. If different equipment is required to conduct the training, the Design-Build Firm shall supply the equipment during the class period and the equipment shall be turned over to the Department following the approved training. Class size for each of the two courses shall be limited to 10 persons to afford maximum individual experience.

6. Material, Equipment, and Subsystem Requirements

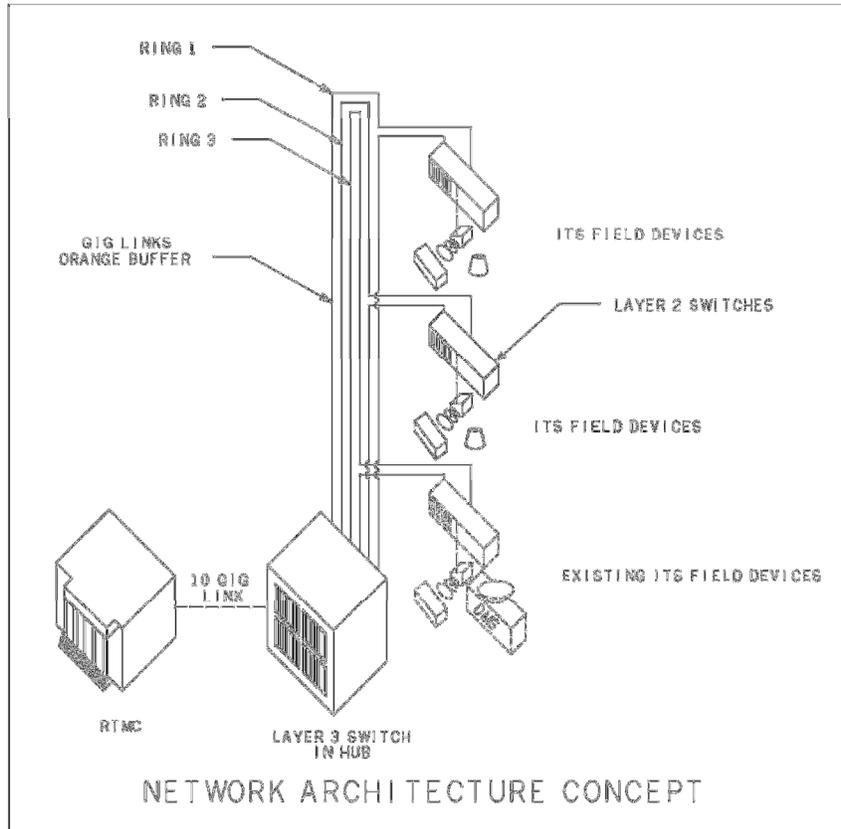
6.1 Communication Subsystems

For purposes of the RFP, the term “connectivity” refers to the physical connection between the ITS field devices and the Layer 2 Ethernet switches in the ITS cabinets. The term “interconnectivity” refers to the connection between any two adjacent hubs and the RTMC. The Design-Build Firm shall provide full connectivity for ITS field elements installed with the Project.

The Design-Build Firm shall provide a communication subsystem that is an open-architecture, non-proprietary, real-time multimedia communication network, which is fault-tolerant. The Design-Build Firm shall design a hierarchical network design, which includes the following layers:

- The interconnectivity layer: comprised of the Layer 3 Ethernet switches in the RTMC and hubs. The Department will perform configuration of these Layer 3 Ethernet switches.
- The connectivity layer: the local-access layer that connects ITS field devices, Layer 2 Ethernet switches, and all necessary encoders, media converters and device servers in the ITS cabinets.
- The FOC physical layer: the physical media that connects the Layer 2 and Layer 3 Ethernet switches.

The Design-Build Firm shall integrate the ITS field elements into the RTMS without disrupting existing functions and ITS field elements. The Design-Build Firm shall expand the existing three network rings as shown below in Network Architecture Concept layout. New ITS cabinets and ITS field elements shall be integrated into this network. The Design-Build Firm shall develop and deploy new connectivity 1 gbps Layer 2 MFES in all new ITS cabinets. The Design-Build Firm shall design and implement a “leap-frog” network architecture such that no adjacent ITS field elements of the same fiber pair ring as shown in the Network Architecture Concept layout below.



The Design-Build Firm shall implement the RSTP for ITS field elements managed by District Seven at the FOC physical and connectivity layer networks.

The Design-Build Firm shall work closely with the District to confirm the preferred network architecture. The final network architecture, along with the associated FOC splicing diagrams, shall be included with the 90% plans for review and approval by the Department.

6.2 IP Addressing Scheme

The Design-Build Firm shall utilize the FDOT Standard IP Addressing Scheme to create a Project-specific list for all new/existing ITS field elements that are installed as part of the project. The Department will provide the Design-Build Firm with as many multicast IP addresses required for the CCTV video streams and the remaining needs. The IP address file will be provided in Excel spreadsheet format.

The Design-Build Firm shall be required to submit for approval a current cabinet configuration document listing all IP addresses utilized in the Project in a format easily understood depicting, at a minimum, the following information:

1. Page Number (from Plans)
2. Mile Marker
3. GPS coordinates
4. Device Type
5. IP Address, etc.

The Design-Build Firm shall not use any IP addressing scheme or IP addresses other than those provided by the Department. The Department shall review and approve the Design-Build Firm's IP addressing scheme submittal prior to the Design-Build Firm's implementation of the scheme.

The Design-Build Firm shall design and deploy multiple virtual local area networks (VLANs) to segment ITS field elements into logical workgroups. The Design-Build Firm shall ensure that the new ITS field elements are configured in new sets of VLANs. The design of VLANs shall take into consideration the optical network requirements described elsewhere in the RFP.

6.3 Digital Video Encoders

Digital video encoders shall meet the requirements of Specifications.

The Design-Build Firm shall furnish, install, and integrate digital video encoders in all new ITS cabinets where new CCTV subsystems are being installed. Digital Video Encoders shall meet H.264 standards and be compatible with existing RTMC video encoding.

6.4 Fiber Optic Cable

FOC shall meet the requirements of Specifications.

The Design-Build Firm shall provide a 72-count single-mode FOC backbone. The FOC backbone should preferably be installed along the east side of I-75 and shall be consistent with the FOC backbone location of the adjacent project to the north as necessary. Any deviation to the FOC backbone location shall be approved by the Department. The Design-Build Firm shall meet the FOC backbone installed under the adjacent project to the north as necessary to ensure continuity. If the FOC backbone to be terminated at the northern end of the project, a redundant loop shall be provided back to the Hub at the I-275 interchange.

While connecting the proposed FOC backbone to the existing FOC backbone, the Design-Build Firm shall fusion (butt) splice new FOC to the existing FOC only in ITS splice boxes used for FOC drops to ITS cabinets. Reel-to-reel splicing shall be a minimum of 20,000 feet apart and shall be located at proposed 12-count FOC drop locations. Any/all fiber splices shall be approved by the Department. The Design-Build Firm shall furnish any needed fiber splice enclosures and splice panels. Splicing shall not be allowed within the bridges.

The Design-Build Firm shall test new FOC using OTDR equipment in accordance with the requirements in Specifications. The OTDR testing shall be conducted on the new 72-count FOC prior to installation (reel test) and post installation after the cable is terminated.

All the FO splices shall be performed inside the device cabinets. Adequate FO cable slack shall be provided inside the appropriate splice box per Specifications. Connection from splice drawer to equipment shall be made using plenum-rated fiber optic material. Minimum of 30 feet of FOC slack shall be provided inside the device cabinet to allow splice chamber to be removed for access.

The Design-Build Firm shall provide 12-count single-mode FOC drops from the 72-count FOC backbone to ITS cabinets, unless 24-count single-mode FOC is required due to the number of ITS field elements at a site and the District's network architecture, in which case, a 24-count single-mode FOC drop shall be provided.

Individual fibers shall be looped one full turn within the splice tray to avoid micro bending. Place buffer tubes and bare optical fibers such that there is no discernible tensile force placed upon them. There shall

be only one buffer tube per splice tray. All splice trays shall be deep trays and capable of closing without the use of tape or other adhesive devices. Fiber optic strands shall not enter more than one splice tray.

In no case shall the Design-Build Firm install FOC in the same conduit, pull box or splice box as electrical cables.

In the event of fiber cable damage, immediately repair FOC by removing local slack and adding a fusion splice in the location of the damage. All testing procedures shall be followed in accordance with Specifications for the acceptance of the repaired FOC. Once repaired, complete review of the existing fiber network and facility shall be completed and a permanent splice plan shall be presented to the ITS Program Manager for approval. The permanent splicing plan shall include a minimum of 20,000 feet of replacement FOC and shall meet optical loss requirements in accordance with Specifications. The permanent splicing plan shall also provide appropriate access to cabinets, pull boxes, hubs, etc., and an integration plan with schedule for all devices that will be affected with the permanent splice replacement. The new fiber cable shall be approved through Department review specifications. The Design-Build Firm's approved ITS engineer may adjust the 20,000 feet minimum specification based upon evaluation of adjacent existing fiber splices. At no time shall a full conductor fiber splice be allowed for permanent placement that is closer than 20,000 feet to another full conductor fiber splice. Allowance of additional fusion splices shall be at the discretion of the ITS Program Manager.

Any request to access the existing ITS system including, but not limited to, fiber optic cable (handholes and pull boxes), ITS equipment control cabinet(s), ITS power facilities, ITS specific equipment (CCTV, MVDS, DMS, RWIS, etc.), and/or the RTMC will require a submitted and approved access schedule. This document shall identify access necessities, schedule expectation(s), specific ITS facilities to be accessed, and an action plan for potential failure. This document shall be submitted thru Traffic Operation's ITS Program Manager for approval within 60 days of project construction start or 90 days prior to system access for long duration project(s). In the event this document is not properly filed with the ITS department and project CEI, the department will invoke the damage recovery detail for damages incurred.

6.5 Fiber Optic Conduit and Locate System

The fiber optic conduit and locate system shall meet the requirements of Specifications.

The Design-Build Firm shall provide an ITS communication conduit system consisting of the following:

1. Two (2) 1-¼ inch and one (1) 1 inch SIDR Schedule 40 innerducts in a 4-inch SIDR Schedule 40 outer duct. The innerducts shall be colored orange (1 inch), gray and green (1-¼ inch). The 72-count FOC backbone shall be placed in the orange innerduct. The other two innerducts shall be spares.
2. Two 2-inch SIDR Schedule 40 orange color conduits at FOC drops to ITS cabinets. One conduit shall be a spare.
3. Accessible by a maintenance vehicle (typically a ¾ ton pickup truck).

The Design-Build Firm shall install directional bores perpendicular to the roadway when crossing an interchange ramp or crossroad or other roadway. Where multiple conduits are required, the directional bore shall place all conduits into a single outer conduit appropriately sized to contain the required number and sizes of conduit.

A pull tape or rope with a tensile strength of at least 1,250 pounds shall be furnished in each conduit. The ends of the pull tape or rope shall be tied or terminated to prevent them from inadvertently entering the

conduit. Ends of conduits shall be plugged (or capped in the case of spare/unused conduits) to prevent entry of water, dirt, vermin, etc.

The Design-Build Firm shall locate conduit and pull boxes for ITS FOC backbone within 10 feet of the Right-of-Way line, or as close to this requirement as possible. Any deviation from this requirement shall be approved by the Department. This requirement may be adjusted as necessary with Department approval to coordinate with and avoid conflicts as follows.

1. Existing field conditions, such as when required to traverse interchanges, ramps and crossroads
2. Bridge sections
3. Existing/proposed wetlands and drainage facilities

The Design-Build Firm shall clearly show conduit locations on the 90% and Final ITS plans. The Design-Build Firm shall highlight areas where conduit is located outside the 10-foot zone and state the reason why this non-typical location is necessary. The Department will review exceptions to the conduit placement requirement and notify the Design-Build Firm if any of the exceptions are not acceptable. The Design-Build Firm shall work closely with the Department to resolve any conduit location questions. The Design-Build Firm shall make any necessary conduit location changes to the ITS plans at no additional cost to the Department.

For all underground conduits, the Design-Build Firm shall furnish and install conduit locate systems consisting of warning tape, route markers, and electronic route markers at all splice box locations as described in Specifications.

6.6 ITS Pull/Splice Box and Locate System

ITS pull/splice boxes shall meet the requirements of Specifications.

All pull boxes shall be installed at grade. Low and high voltage wires shall not run into or from the same pull box. Rigid galvanized metal conduit shall be used to run conduits above ground. Pull/splice boxes (including underground power runs) shall not be located in ditches where there is a potential for them to be submerged by seasonal high-water. All ITS pull/splice boxes shall be provided with a locking and security systems, preferably by bolting them down, to prevent theft/vandalism.

The Design-Build Firm shall furnish and install ITS splice boxes and all necessary splicing hardware at points where the FOC drops to ITS cabinets are to be installed. A Ground Bar and a 20-foot long, 5/8-inch diameter copper clad grounding rod shall be furnished and installed in each pull/splice box. The spacing between ITS pull/splice boxes shall not exceed 1,000 feet.

The Design-Build Firm shall use conduit coupling in lieu of pull boxes at the begin and end points of directional drilling unless the change in direction of the conduit is greater than 10 degrees.

The Design-Build Firm shall furnish and install electronic box markers, as described in Specifications, in all new ITS pull boxes and all existing pull boxes that are to remain in service within the Project limits. In addition, the Design-Build Firm shall provide 2 electronic box marker receivers. The radio frequency of the electronic box marker receivers shall be the same as existing electronic box marker receivers used by District Seven. The Design-Build Firm shall coordinate with the ITS Operations Manager to obtain the existing radio frequency.

6.7 Managed Field-Hardened Ethernet Switches (MFES)

Managed field-hardened Ethernet switches shall meet the requirements of Specifications, or the following minimum technical requirements, depending upon which is more stringent.

The Design-Build Firm shall furnish and install new 1 gbps Layer 2 MFES in all new ITS cabinets.

The Design-Build Firm shall ensure the MFES has a minimum of 14 ports as described below:

1. Each MFES shall meet the following requirements:
 - a. Have a minimum of 2 optical 1 gbps Ethernet ports. Each optical port shall consist of a pair of fibers, 1 fiber shall transmit (TX) data and 1 fiber shall receive (RX) data.
 - b. The optical ports shall have the ability to TX and RX Ethernet data at a minimum distance of 25 kilometers with an RX sensitivity of -26 decibels per milliwatt (dBm) and a loss budget of 19 dBm.
2. Each MFES shall have a minimum of 12 copper ports.

The Design-Build Firm shall ensure that the configurations of the MFES are able to be downloaded and stored on a PC and later shall be able to be uploaded to the unit when necessary.

The Design-Build Firm shall ensure that the configuration of the MFES meets or exceeds the following minimum trouble shooting and diagnostic specifications:

1. Displaying the contents of a specified address
2. Displaying information about hardware registers for a specified port
3. Displaying configuration and status of physical and logical ports
4. Displaying detailed information about Spanning Tree (configuration and status)
5. Displaying active status of the unit

The Design-Build Firm shall ensure that each MFES supports, at a minimum, the following security features:

1. Passwords – Multi-level user passwords secure switch against unauthorized configuration;
2. SSH / SSL – Extends capability of password protection to add encryption of passwords and data as they cross the network;
3. Enable /Disable Ports – Capability to disable ports so that traffic cannot pass;
4. 802.1q VLAN – Provides the ability to logically segregate traffic between predefined ports on switches;
5. MAC Based Port Security – The ability to secure ports on a switch so only specific ITS field elements / MAC addresses can communicate through that port;
6. 802.1x Port Based Network Access Control – The ability to lock down ports on a switch so that only authorized clients can communicate via that port;
7. RADIUS – Provides centralized password management; and,
8. SNMPv3 – Encrypted authentication and access security.

6.8 Device Servers

Device servers shall meet the requirements of Specifications. The Design-Build Firm shall furnish and install new device servers in all new ITS cabinets as required for the ITS field elements associated with the ITS cabinet.

6.9 CCTV Subsystem

Closed-circuit television camera (CCTV) Subsystems including CCTV poles and lowering devices shall meet the requirements of Specifications.

The Design-Build Firm shall design the placement of CCTV cameras as follows:

1. CCTV at approximately 1 mile intervals

2. Provide unobstructed view both directions of travel on I-75 including the clear zones and on cross roads as applicable
3. Full CCTV coverage of the project to ensure that all portions of the roadway including the clear zones can be observed at an angle sufficient to discriminate between vehicles, regardless of the distance between the CCTV and the vehicle

The Design-Build Firm shall perform a 360-degree field of view video survey at the proposed camera height for each CCTV camera site utilizing a bucket truck and the Design-Build Firm's proposed camera. The intent of the video survey is to verify 100% CCTV coverage of I-75 freeway lanes, auxiliary lanes, and crossroads to 1,000 feet from the centerline of I-75 as applicable. The Design-Build Firm shall record the video survey for the Engineer's review and acceptance. The Design-Build Firm shall submit the video survey for review and approval prior to the 90% ITS plan submittal.

Any additional CCTV cameras and field elements required to obtain the coverage requirements described above shall be included in the Design-Build Firm's ITS plans and furnished, installed, integrated and tested at no additional cost to the Department.

The Design-Build Firm shall orient the CCTV camera on the pole to minimize occlusion and maintenance issues. Two cameras may be installed on one pole if required to meet coverage requirements.

In addition to the requirements of Specifications, new CCTV cameras shall meet the following specific requirements:

1. The CCTV camera shall have a minimum 35x motorized optical zoom lens
2. The CCTV camera shall utilize Digital Signal Processor (DSP) technology to compensate for slight movements in the camera image.
3. The CCTV cameras shall be high-definition

The Design-Build Firm shall furnish and install local control interface units (LCIU) in all CCTV cabinets that provide the following:

1. Local/remote selectable that defaults to remote after 5 minutes of inactivity
2. Front panel pan/tilt/zoom control of the CCTV
3. Front panel BNC to allow technicians to easily interface the camera video
4. A front panel DB9 connection for RS-232 control of the camera while in local mode

The Design-Build Firm shall furnish and install new CCTV field components to meet CCTV spacing and roadway coverage requirements. For CCTV locations along I-75, the CCTV cameras with auto focus zoom lens shall be placed at a minimum mounting height of 50 feet above highest elevation of any portion of the I-75 mainline lanes roadway surface that falls within the 0.5 mile of mainline coverage area for that camera location. Camera-mounting heights exceeding 50 feet above the highest point of I-75 at the CCTV location shall be approved by the Department. The Design-Build Firm shall specifically identify and request Department approval for any mounting height not within these requirements. The Design-Build Firm shall install camera lowering devices on all CCTV poles. Any variation to this requirement shall be reviewed and approved by the Department.

All CCTV Camera poles exceeding 50 feet in height will require full survey to support the 150 feet rolling ball evaluation. All CCTV Camera poles that are 50 feet and below in height will have 8 feet blunt tip air terminal with 4 feet exposed above and opposite the component to be protected. Supports for this air terminal shall be at the base of the air terminal and at 4 feet mounted at the top of the pole terminal in accordance with the applicable standard index.

CCTV poles shall be constructed of length and stiffness that can meet the vertical placement and camera stability requirements and the following additional requirements:

1. CCTV poles shall meet the following requirements: All CCTV poles shall meet the requirements of current Design Standards. Concrete mowing apron around CCTV poles shall be provided per the requirements of all applicable Design Standards.
2. All CCTV poles measuring up to and equal to 75 feet in length shall be designed to have a maximum deflection not greater than 1 inch during wind speeds of 30 mph. All CCTV poles measuring more than 75 feet in length shall be designed to have a maximum deflection not greater than 1.5 inches in a 30-mph wind speed. This deflection shall be measured at the top of the support structure where the base of the pan-tilt device is attached.
3. All camera poles shall be located outside the clear zone as applicable to ramps and mainline travel lanes or behind existing guardrail in accordance with the FDOT Roadway Design Standards.
4. Electrical ground: All CCTV poles shall be supplied with an electrical ground meeting the requirements of Specifications, and Design Standards.

The CCTV pole shall be designed and constructed so that all wiring facilities meet the requirements of Specifications and Design Standards. All hand holes, couplings, through-bolt holes, and ground wires shall be cast into the pole during the manufacturing process.

The Camera Lowering Device (CLD) shall be mounted to a specially designed tenon bolted to the top of the pole as required. All poles shall have a minimum inside raceway dimension of 4 inches at the tip of the pole. All poles shall be provided with a fish wire to facilitate cable installation.

The Design-Build Firm shall design-build the CCTV poles with CLDs in such a manner that the personnel operating the CLD lowering mechanism are not standing directly beneath the CCTV assembly and the access to the CLDs are not obstructed in any manner. The lowering arm shall be mounted perpendicular to the roadway unless otherwise approved by the Department.

The Design-Build Firm shall ensure the camera pole to include the opening for CLD's at 180 degrees from the CCTV camera. The Design-Build Firm shall submit the details of placement of CLD and CCTV camera assembly as part of 90% design submittal for Department's review and approval. The CLD shall include a suspension contact unit for electrically connecting the camera assembly to the power, data, and video cables; divided support arm; and a pole adapter for the assembly's attachment to a pole-top tenon, a pole top junction box, and a camera connection box. The weather head shall be within 2 feet of the component.

The Design-Build Firm shall provide all equipment necessary to transmit full motion video images to the RTMC and bi-directional control of the camera through the FOC utilizing Ethernet technology.

Ground-mounted, ITS cabinets shall be utilized to the extent possible. If pole-mounted cabinets are utilized the brackets should not obstruct the access point. Where CCTV, MVDS, and/or RWIS installations are in close proximity, one ITS cabinet capable of housing all associated equipment shall be used for all ITS field elements, if possible. This requirement applies to CCTV located approximately 300 feet from the DMS as described above. The Design-Build Firm may use a single ITS cabinet for devices located farther than 300 feet apart to reduce construction and maintenance costs. For all combined ITS cabinets, the Design-Build Firm shall design, furnish and install power, communication, and/or composite cables based on the distance between field elements and on the capability of the cabling and grounding, lightning protection and surge suppression requirements described in the RFP.

The Design-Build Firm shall also pay for any utility adjustments required for these CCTV field elements at no additional cost to the Department.

6.10 MVDS Subsystem

The MVDS shall meet the requirements of Specifications.

The Design-Build Firm shall furnish and install new MVDS field elements to provide volume, lane occupancy and speed information in multiple detection zones for the I-75 Corridor. Each vehicle detector device shall be able to collect and process the data on a lane-by-lane basis. The vehicle detector units shall be capable of self-calibrating with a minimum detection range of 250 feet. The new MVDS shall be placed at no more than one mile spacing and positioned so that speed, volume, and occupancy of each through lane at the MVDS site can be detected and measured independently. The Design-Build Firm shall provide MVDS north and south of the I-75/Mocassin Wallow Interchange.

The Design-Build Firm shall place the MVDS on separate concrete poles and shall be located ensuring no interference from other devices and shrubbery. All MVDS structures shall be tall enough to locate the MVDS detectors to monitor both directions of traffic flow at the height above the roadway recommended by the detector manufacturer based on the distance from the travel lanes, number of lanes to be detected, and offset of the pole from the lanes. All MVDS shall be calibrated using MVDS Calibration Procedure provided in the Attachments of the RFP.

No more than one microwave vehicle detection device is allowed per pole unless otherwise permitted by the Department. The devices shall be placed on the same side of the roadway as the lanes they are monitoring. No MVDS shall be placed in the median unless otherwise approved by the Department. Poles installed for new MVDS locations shall be placed outside of the clear zone or behind guardrail per FDOT requirements. Roadside barriers or guardrails shall not be introduced for the sole purpose of protecting the MVDS. No MVDS units shall be installed on existing or proposed sign support structures.

The setback and mounting height must follow the manufacturer recommendations in order to meet the performance requirements described in the RFP. Each lane must be detected in an individual detection zone. The weather head shall be within 2 feet of the equipment.

The Design-Build Firm shall design and install the vehicle detection subsystem such that it is capable of meeting or exceeding specifications.

6.11 DMS and ADMS Subsystem

The DMS and ADMS shall meet the requirements of Specifications.

The Design-Build Firm shall furnish and install DMS field elements as follows:

1. One new full color 20 mm pixel pitch freeway DMS on new span sign structure spanning the I-75 southbound lanes approaching 97th St/Mocassin Wallow Road interchange in advance of the 1 mile advance guide sign. Freeway DMS's shall not be installed on cantilever sign structures.
2. Two new ADMS on new structures on 97th St/Mocassin Wallow Rd approaching I-75 located at a distance of between ¼ to ½ mile from the decision point to I-75 on-ramps.

The Design-Build Firm shall submit the proposed DMS and ADMS locations to the Department for approval and shall demonstrate that the requirements of the MUTCD regarding minimum sign spacing are met. If a DMS or ADMS is proposed for placement on a structure with static guide signs, the Design-Build Firm shall demonstrate compliance with the MUTCD regarding numbers of signs and messages. The DMS placements shall be closely coordinated with the both existing and proposed (see Section O) signing. Sign support uprights shall be placed outside the clear zone.

The new DMS shall be walk-in, full color, and have 18” character height, and 3 lines of text with 21 characters per line. The new ADMS shall be front-access, full color, and shall be capable of displaying 3 lines of text with 18 characters per line with 15 inch character height. The DMS and ADMS shall also meet Standard Specifications Section 700-4 and shall follow FDOT PPM, Volume 1, Chapter 7, Subsection 7.5.4.1.

DMS field elements with walk-in enclosures shall meet the requirements of FDOT Design Standards, Index Number 18300, “Dynamic Message Sign Walk-in”. All DMS and ADMS shall have 20 mm pixel pitch and shall be capable of displaying 32,000 colors using red-green-blue (RGB) LEDs. Concrete mowing apron around DMS and ADMS structure upright/s shall be provided. The apron shall meet all the requirements of Standards Index, Numbers 17500 and 17700 for slab dimensions. The DMS shall be positioned in accordance with FDOT Standard Index No. 18300. Walkway design and installation shall comply with AISC, AASHTO and OSHA requirements as applicable. Each assembly shall include but not be limited to the sign case with all associated internal components, sign controller and network-manageable sign controller UPS unit, communications devices, controller cabinet, cabling, connectors, conduits, electrical service, surge suppression, and hardware & software associated with a complete installation.

Access doors, when open at a 90-degree angle from the DMS housing end wall, shall not extend more than 38-inches (965 mm) from the housing. The bottom edge of each door shall be at least 3.5-inches (89mm) from the bottom edge of the DMS housing. This will provide clearance for the doors to swing open over the external access platform. One (1) access door shall be provided for each 30-45 pixel wide section of the sign housing. These doors shall be vertically hinged and shall contain a section of the sign housing. Each door shall extend the full height of the display matrix. To prevent open doors from blowing in the wind, they shall each have a retaining latch mechanism to hold the door open at a 90-degree angle. Each door shall contain a minimum of two (2) captive-type latches to lock them in the closed position. These latches shall be captive to prevent them from falling off. They shall pull the door tight and compress a gasket located around the perimeter of each door. They shall also be capable of providing leverage to easily release the gasket seal when opening the doors. The gasket shall prevent water from entering the cabinet around the doors.

The DMS and ADMS shall be designed in accordance with NEMA Standards Publication TS 4-2005, Hardware

Standards for Dynamic Message Signs (DMS), with NTCIP Requirements. All new and replacement signs shall be integrated into the SunGuide™ control software and have the ability to display messages remotely generated from RTMC operators. The Design-Build Firm shall design the final locations of each new I-75 DMS sign, in relation to sight distance, as per the standards within the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

The Design-Build Firm shall not design the new DMS and ADMS in competition with existing roadway overhead static signs where the DMS blocks the view of the static sign, or vice versa, at highway design speeds.

The Design-Build Firm shall design-build each DMS and ADMS location (including sign support structure) to meet or exceed all applicable OSHA standards, at a minimum, for the DEPARTMENT or its representative to conduct their maintenance activities.

A separate pad-mounted ITS Field Control Cabinet at ground level shall be provided at each DMS and ADMS location to house the sign controller and required systems communications equipment. All ITS field devices and cabinets shall be grounded in accordance with applicable standards including but not limited to the National Electric Code (NEC) and Specifications.

The minimum vertical clearance between the highest portion of the roadway surface and the lowest point of the overhead elements of the DMS and ADMS assembly shall be no less than 19.5 feet and no more than 20.5 feet.

The Design-Build Firm will verify all DMS and ADMS assembly locations and submit as part of the 90% ITS design plans submittal for approval by the Department.

The DMS and ADMS shall contain a full color display matrix with pixel pitch of 20 mm. The matrix shall display messages that are continuous, uniform, and unbroken in appearance to motorists.

Each display pixel shall be composed of multiple red, green, and blue LEDs. Other pixel technologies, such as fiber optic, flip disk, combination flip disk-fiber optic, combination flip disk-LED, liquid crystal, LED Lenses and incandescent lamp will not be accepted.

The pixel matrix shall be capable of displaying alphanumeric 18-combination flip disk-LED, liquid crystal with the definition defined by NEMA TS 4-2005 Hardware Standards for Dynamic Message Signs Standards.

The DMS and ADMS shall be able to display messages composed of any combination of alphanumeric text, punctuation symbols, and graphic images across multiple frames.

The DMS and ADMS messages shall be legible for a minimum of 10 seconds when vehicles are moving at posted speed limits, and be legible within a distance range of 100 to 1100 feet from the display face under the following conditions:

- Whenever the DMS or ADMS is displaying alphanumeric text that is 18 inches high using 23 x15 fonts
- Viewed within the minimum 30 degree cone of vision centered around the optical axis of the pixel. The cone perimeter shall be defined by its 50% intensity points
- 24 hours per day and in most normally encountered weather conditions
- During dawn and dusk hours when sunlight is shining directly on the display face or when the sun is directly behind (silhouetting) the DMS or ADMS
- When viewed by motorists and travelers that have 20-20 corrected vision
- When the motorist eye level is 3 feet (914 mm) to 12 feet (3,658 mm) above the roadway surface

6.12 RWIS

The Design-Build Firm shall design-build RWIS per FDOT Developmental Specifications (Dev688) and PPM. The Design-Build Firm shall propose a RWIS environmental sensor station local site per FHWA-HOP-05-06/FHWA-JPO-09-012, RWIS Siting Guidelines dated November 2008 in the Reference Documents and RWIS white paper in the Attachments of the RFP. The RWIS shall include sensors to provide roadway visibility and wind (speed and direction), and be connected to the RTMC via FOC network being installed. The RWIS Shall not be co-located with the other devices at its site. Separate cabinet shall be utilized for the RWIS system. One RWIS shall be included in the project. The RWIS Sensor system shall also be powered by the resettable UPS for minimum of 2 hours. The RWIS shall include temperature, relative humidity, visibility (as affected by fog, smoke or combination thereof), barometric pressure, precipitation, and wind atmospheric sensors.

The RWIS software units shall be compatible with the SunGuide™ software.

The Design/Build Firm shall furnish all materials with the most recently developed and approved product versions that meet or exceed all applicable standards, specifications, and requirements before the system is considered for acceptance. It is the Design/Build Firm's responsibility to ensure that all features, functions, and performance requirements are met.

Remote Processing Unit shall be capable of transmitting all collected data to the RTMC using Ethernet communications over single mode fiber optic cable that transfers data at a minimum rate of 10 Mbps. The RPU concrete service pad shall be level and 6 inches above finished grade. RWIS and associated cabinets shall be mounted on a Type P-III pre-stressed concrete pole. The RWIS shall be listed in Department's Innovative Product List (IPL).

6.13 Power Subsystems

As noted in Section 5.4.7, the Design-Build Firm shall optimize the number of ITS cabinets for economy of construction and maintenance. In addition, the Design-Build Firm shall apply the following criteria to the design of the power service.

1. The power distribution shall support future expansion of the ITS network and ITS field elements
2. The power distribution system shall minimize the length of electrical conductors located in the right-of-way
3. The power distribution shall leave as much of the electrical network in the ownership of the commercial electrical supply company as possible
4. The number of transformers to be maintained by the Department shall be minimized
5. Aluminum wound electrical products shall not be installed
6. All elements shall be new and free of damage

Electrical power design and plans shall include the following;

1. Electric service panel in the cabinet, based on electrical load of the cabinet
2. Electrical power shall be designed based on the load requirement of the ITS field element(s), cabinet, network equipment, UPS, and other electrical equipment at each ITS field element location.
3. Step-up or step-down transformers as needed for each location
4. Loads shall be calculated per NEC requirements and allowable voltage drops
5. Additional cabinet power requirements: In addition to the electrical load of the ITS devices, cabinets, etc., an additional 200W of power shall be provided for each new ITS cabinet and one additional 20A circuit shall be provided for miscellaneous electrical loads for maintenance contractor tools
6. Grounding, lightning, and surge protection for all electrical subsystems
7. Plans shall clearly show all electrical requirements, loads, wire sizes, grounding, lightning, and surge protection, meters, disconnects, generator plugs and all elements necessary for a complete and functional design

8. Final electrical plans signed and sealed by a Professional Engineer registered with the State of Florida Board of Professional Engineers
9. All electrical cabling shall be new copper cabling. The Design-Build Firm shall use cables that are resistant to saltwater, suitable for direct burial and spliced with submersible rated splice kits.

The Design-Build Firm shall be responsible for contact and coordination with the commercial electrical companies along the Project corridor. The Design-Build Firm shall work with the electrical companies to designate locations of electrical sources to provide new and adjusted electrical service as required for the Project. The Design-Build Firm shall pay all necessary fees and expenses required by the commercial electrical companies to establish new electrical power and for adjustment of existing service. The Design-Build Firm shall work with District Seven to establish billing addresses for each new power service location along with the responsible party for future bills. Along with other as-built documentation, the Design-Build Firm shall provide electrical calculations and other details of the implemented power service to the Department including the GPS location of each power source.

For each power distribution system, the Design-Build Firm shall also provide equipment to automatically assume and power the loads in the event of an interruption of commercial power to include emergency generator(s) with automatic start, ATS, transformers, cabinets, power panels, circuit breakers and all related equipment. The Design-Build Firm shall be responsible for verifying these locations, determining final available power sources and voltages, coordinating with Utility Company(ies), and paying any and all connection and monthly service fees for the power supply until the project has been turned over to the Department on the written date of Final Acceptance.

All ancillary components shall be delivered along with the needed cables and connectors for power and generator/ATS communications. Power conduits shall have smooth walls and be sized adequately, as determined by the overall cable diameter and recommended percentage of fill of conduit area, per requirements in the latest NEC and specifications.

The power conductors shall be adequately sized per requirements in the latest NEC and specifications. Conductors shall be rated for underground installation in wet locations. The power system design shall include convenience outlets that may be used by the maintenance crew. Within each ITS equipment cabinet, at least two NEMA 5-15R type GFCI protected outdoor rated receptacles for use by maintenance personnel shall be provided.

For the purposes of load calculations, the Design-Build Firm can assume that the maintenance receptacles in only one cabinet on a power circuit (link) will be in use at one time. The system shall be capable of supplying no less than 9 Amperes total to the maintenance receptacles while not exceeding the supply voltage tolerance of 5% drop from the nominal 120 VAC within the cabinet or any other point in the power circuit (link). For voltage drop calculations within the power report, the worst case assumption of one 9 amp load at the furthest point on each link should be used, and shall be clearly identified within the Power Report. Power cables shall be marked with 1 tag indicating direction or exit from underground facilities (i.e., vaults, primary junction boxes, service holes, manholes, secondary junction boxes, transformers). This tag shall indicate the general direction of the cable(s) to the next facility where the cable is located. The Department must approve the tags used before the procurement and installation. All tags shall be labeled with the next point of connection (i.e. transformer 1 to transformer 2). All equipment shall be numbered prior to tagging the cable to be accurate. The Department, prior to energizing, will inspect the tagging.

The power subsystem shall contain readily accessible, manually resettable or replaceable circuit protection devices (such as circuit breakers or fuses) for equipment and power source protection. Power

equipment shall be installed in areas to avoid wet locations and easy access by vehicles and maintenance personnel. All connections and equipment should be outdoor-rated and protected from moisture and water intrusion. No exposed wiring is permitted.

Coordination of protection devices is required to minimize interruption of electrical service to other areas of the power system. The system shall be designed so that the protective device closest to the fault operates first.

All ancillary components shall be delivered along with the needed cables and connectors for power and communication. All installations and wiring shall meet the requirements of the NEC, and NESC. Grounding shall be in accordance with the requirements of NEC Article 250 and Specifications.

6.13.1 Transformers

When the commercial power is not supplied with the correct voltage or phasing, the Design-Build Firm shall design, construct, install and integrate the transformer (Power Feed Transformer) at each commercial power supply location to convert the power supply from the Utility Company(ies) to the appropriate secondary voltage single phase power and with suitable wire sizes that are capable of providing power to the operations of ITS field elements within the Project. The transformer shall be equipped with two 2.5 percent taps above and two 2.5 percent taps below normal voltage. All taps shall be full capacity taps. However, the Design-Build Firm shall not include the plus or minus tap in the voltage drop calculations during the design of the power subsystem. All transformers shall be copper wound.

The Design-Build Firm shall design, construct, install and integrate the transformer (ITS field element Transformer) at each of the ITS field element location cabinets to step-down from the voltage supplied from the underground distribution wire to the 120/240v power requirement for that location.

6.13.2 ITS Electrical Conduit, Pull and Junction (Splice) Boxes

Electrical conductors shall not be placed in the same conduit, pull box or splice (junction) box as FOC. The Design-Build Firm shall furnish and install ITS electrical conduit and pull/splice boxes for non-fiber optic wiring needs (power, communication, etc., for ITS). The Design-Build Firm shall meet the following requirements.

1. Detail type, size and quantity of ITS electrical pull/splice boxes on the Plans.
2. Provide installation details including connections with conduit in compliance with Specifications and Design Standards.
3. Address site restoration and disposal of excavated materials.
4. Use only equipment and components that meet the requirements of the RFP, which are listed on the Department's APL.
5. ITS electrical pull/splice boxes shall meet the requirements of Specifications.
6. ITS electrical pull/splice boxes shall be a minimum of 24 inches long by 18 inches wide by 12 inches deep. Ensure that the pull/splice box is large enough to house non-fiber cables, as required, without subjecting the cables to bend radii less than industry standards for the types and diameters of cables in the box. Ensure there is enough room to provide any necessary cable splicing. Ensure the boxes are large enough for storage of slack cable. Pull boxes shall not be located in ditches where there is a potential for them to be submerged by seasonal high-water.
7. The maximum spacing between ITS electrical pull/splice boxes shall be 400 feet.
8. The Design-Build Firm shall develop specifications in accordance with industry standards to:
 - A. Address cable placement and spacing in accordance with industry recommendations for the types

- and sizes of cables used on the Project
9. Provide supplemental electronic box markers in all ITS pull/splice box.
 10. Meet Guaranty provisions in accordance with FDOT Standard Specifications, Section 5-1, including any longer warranties provided by manufacturers.
 11. Surface boxes shall be mounted at constant height
 12. Provide locking and security systems on electrical ITS pull/splice boxes to prevent theft of copper cable. The security system shall include, as a minimum, a system for securing the lid that includes hardened metal bars or other cover and locks/bolts with unique keys that are not available in the consumer marketplace. Ten keys shall be provided for the RTMC. The keys shall be delivered to the District upon Final Acceptance. The security system shall also include a 12-inch thick concrete mowing apron, supplemental security locking systems, and/or other systems designed and proven to deter theft. The Design-Build Firm shall submit the locking and security systems to the Department for review and approval with other required design submittals.
 13. If the Design-Build Firm elects to install surface mounted conduits on the existing bridges, the conduits must be supported with fiberglass, aluminum, or stainless steel type 316 supports with stainless steel hardware, attachment to the bridge structure shall use adhesive vibration resistant anchors. The conduits shall be installed on the back of barrier walls and support systems hanging from the bridge structure are not allowed.

6.13.3 Cabinets

New ITS cabinets shall meet the requirements of Specifications.

The Design-Build Firm shall ensure that all cable terminations and connecting terminal blocks are contained in a weather-proof, aluminum enclosure that shall meet the applicable requirements for a NEMA 3R rated cabinet. The Design-Build Firm shall furnish and install an ITS field cabinet for housing ITS equipment and network devices including, but not limited to, encoders, MFES, device servers, DVE, fiber optic cable patch panels, UPS, and equipment racks for MVDS. The Design-Build Firm shall place cabinet away from ditches and low-laying areas.

In order to minimize construction and maintenance costs, the Design-Build Firm shall optimize the number of ITS cabinets installed along I-75. CCTV sites and MVDS only sites will be allowed to communicate and obtain power over multiconductor copper cables to the nearest ITS cabinet. Power and communication multiconductor cables shall include RS-485/422 cable and other cabling as approved by the Department.

A Calibration/SPD cabinet shall be installed at the CCTV sites dedicated for DMS monitoring and MVDS only sites. The Calibration/SPD cabinet shall have local access to the CCTV and MVDS for configuration, maintenance, and testing. Calibration/SPD cabinet shall be NEMA 3R rated and shall meet the following requirements.

1. SPD devices for all copper conductors
2. An RS-232 connection at MVDS sites. This connection shall be separate from the MVDS connection to the nearby ITS cabinet.
3. Pole mounted with bottom of the SPD cabinet 4 feet above the adjacent ground surface.
4. When pole mounted, orient cabinet to avoid conflicts with lowering camera and cabinet/cabinet door facing away from the traffic
5. Mounted with stainless steel banding without covering access ports
6. All conduit connections shall be "liquid tight", weatherproof, and uniform
7. Grounding and surge suppression according to Specifications and the RFP.

8. Minimum dimensions: 13.125 inches tall, 10.75 inches wide, 10.5 inches deep
9. Neoprene gasket door seal
10. Foldable Laptop Computer shelf with a minimum 12 inches depth
11. Electrical breakers for each MVDS and CCTV component. The breaker shall be sized per CCTV and MVDS manufacturer recommendations.

Ground-mounted, ITS cabinets shall be utilized to the extent possible. If pole-mounted cabinets are utilized the brackets should not obstruct the access point. The cabinets shall be adequately sized to include a lockable splice drawer and provide proper ventilation per Specifications. The ground-mounted cabinets shall be appropriately sized and located outside the clear zone and protected against flooding. The orientation of the cabinet shall be such that the cabinet door shall be facing away from the traffic. Additionally, the cabinet door shall be able to be fully opened within FDOT right-of-way so that a technician will have adequate space to perform work within right-of-way. The Design-Build Firm shall utilize ITS cabinets of appropriate size based on the ITS field elements associated with the cabinet. The Design-Build Firm shall provide ITS cabinet interior spaces that are sized and organized based on the ITS field elements associated with the cabinet. ITS cabinets shall be provided with adequate space and equipment for multiple ITS field elements (DMS, ADMS, CCTV, MVDS, RWIS) to minimize the number of ITS cabinets deployed. All keys shall be turned in to the FDOT Project Manager before Final Acceptance. ITS cabinets installed on bridges shall be provided with adequate space for maintenance and shall be accessible via pedestal.

The Design-Build Firm shall furnish and install rebootable PDU that are remotely manageable via web browser and are 19 inch rack mountable in all ITS cabinets to allow District Seven to “reboot” cabinets from the RTMC.

The Design-Build Firm shall ensure the cabinets are clean, neat and consistently organized. The cabinet with same/similar equipment shall be organized in the same fashion:

- Components shall be mounted by the same means and in the same locations
- Power cords shall be connected to the same outlets
- Devices shall be plugged in the same ports on the switch
- Fiber optic cables shall be connected the same way (such as the fiber heading north is always on port one, etc.)
- IP addresses shall be ordered in the same way (such as the switch IP is always a multiple of 16, the encoder is always one IP higher than that of the switch, the UPS is always 2 higher than that of the switch, etc.)
- Cables and connectors shall be properly labeled
- No loose cabling within the cabinet shall be permitted. Cables shall be of proper length with some slack. Cables shall be carefully and neatly routed within the cabinet and loosely tied so as to not crimp or deform the cables.
- The Design-Build Firm shall include the typical cabinet details in the 90% ITS Design Plans Submittal.

The ITS field cabinet shall be equipped with sunshields outside to deflect solar heat away from the cabinet, as indicated in the plans, the sunshields must be offset a minimum of one inch from the exterior cabinet walls. Ensure that the sunshields are fabricated from 5052-H32 aluminum sheet that is 0.125 inch thick, and that sunshield corners are rounded and smoothed for safety. Mount the sunshields on standoffs at the top and each side of the cabinet.

The Design-Build Firm shall provide the field cabinet with two 20-watt fluorescent lamps and clear

shatter-proof shield assemblies which are mounted on the inside front and rear top of the cabinet. Ensure that these lamps are unobstructed and able to cast light on the equipment. Equip the field cabinet with door-actuated switches so that the lamps automatically turn on when either cabinet door is opened and go off when the doors are closed.

All cabinets shall have a minimum of two switched interior mounted NEMA 5-15R type, 120-volt outdoor rated ground fault interrupter (GFCI) electrical receptacles to supply power for devices and/or maintenance equipment (including Shop-Vac and laptops) while in the field.

The cabinets shall be equipped with a normally closed interlock switch. The UPS in the cabinet shall have the capability to monitor a minimum of 2 zones via the use of dry contacts using the normally closed interlock switches. Surge Protection Devices require dry contacts to indicate their status- Normal or Failed. The UPS shall have the ability to email the contact status (door status) and SPD status to a configurable email address each time the state of the contacts change.

6.13.4 UPS

The Design-Build Firm shall install a UPS at each device cabinet as required in the RFP document. Each UPS shall supply all electronic components housed in and associated with ITS field element cabinets with uninterrupted power for a minimum of 2 hours in the event of power loss. At a minimum, the UPS in DMS cabinets shall provide 2 hours of continuous power for a DMS displaying 3 full lines of text plus operation of all other equipment in and connected to the cabinet, including fans and lights. Each UPS shall be sized according to the maximum expected load for each cabinet plus 50 additional Watts. The service outlets shall not be connected to the UPS.

The UPS shall provide commercial power pass through during all failures of UPS. The Design-Build Firm shall ensure that the UPS is generator compatible to ensure clean, uninterrupted power to protected equipment when generator power is used. The UPS shall be environmentally rated for the environment that the UPS is installed in. The recharging all of the UPS batteries which may be drained shall be included within the power design calculations.

The Design-Build Firm shall supply a SNMP network management interface to determine operational status of the UPS, the internal UPS temperature and the external temperature as recorded by a remote sensor mounted elsewhere in the cabinet, and state of the cabinet door switch(es) (open or closed) and Surge Protection Device (SPD) failures (open or closed SPD alarm contacts). All UPS shall be designed and integrated to email events over the ITS Ethernet network, such as; power loss, battery levels, and alarms. Any software required to monitor the UPSs shall be furnished, configured and integrated into the RTMC monitoring computer.

6.13.5 Grounding, Lightning, and Surge Protection

All I-75 project systems shall be protected from damage caused by lightning strikes, transient voltage surges, and induced current. The Design-Build Firm shall design, install and test all grounding, lightning protection, and Surge Protective Device (SPD) subsystems in accordance with Underwriters Lab (UL) 96A specifications.

The Design-Build Firm shall furnish and install resettable surge protectors for all cables and conductors (power, video, and data). All project subsystems, devices and ancillary components with electrical interconnects shall be protected from voltage surges caused by lightning, transient voltage surges, induced current and external electromagnetic fields at the time of installation of each device, as specified in

Specifications.

The Design-Build Firm shall provide a grounding system that meets the grounding requirements of the National Electric Code (latest edition) and Specifications.

The Design-Build Firm shall provide a PDS both ahead of and behind (i.e., on the supply side and the load side of) all ITS device electronics. The PDS for the ITS device's power source (supply side) shall be rated at a minimum rating of 80 kiloamps (kA) per phase, or greater. The PDS for the ITS device's point of use (load side) shall be rated at minimum of 20 kiloamps (kA) per phase. The PDS on both sides shall have an operating voltage of 120 V single phase and a maximum continuous operating voltage of 150 V single phase.

The Design-Build Firm shall ensure that the required lightning protection equipment for each device pole is securely attached on the pole at an elevation higher than the highest attached ITS device and/or component described herein (e.g. CCTV cameras, MVDS sensor).

The Design-Build Firm shall provide all ITS field installation sites with both primary and secondary surge protection on the AC power. The Design-Build Firm shall connect the primary surge protection at the service entrance or main disconnect. The Design-Build Firm shall connect the secondary surge protection on the power distribution to the equipment.

The Design-Build Firm shall install PDS on all power, data, video and any other conductive connection. Use only equipment and components that are listed on the Department's APL.

All grounding and equipment grounding down conductors shall be encased within the pole or within rigid galvanized metal conduit both above and below ground per the current FDOT Design Standards. Air terminals shall be blunt-tipped and shall not be attached to structures with stainless steel bandings.

6.14 Environmental Requirements

All subsystem ITS field elements and ancillary components, while housed in their associated environmental enclosures, shall, at a minimum, comply with all applicable NEMA TS II (latest edition) environmental specifications and Project Requirements.

All enclosures, structures, poles, and mounts shall be designed to withstand sustained wind loads and wind gust factors in accordance with all appropriate FDOT standards.

The Design-Build Firm shall use manufacturer-recommended storage, handling and installation methods to ensure that all new and relocated ITS field elements and ancillary components have complete protection from moisture and airborne contaminants, blowing rain at storm rates, wind, blowing sand, blowing dust, temperature, humidity, roadside pollutants, vandalism and theft of equipment. Fatigue failures, internal moisture, corrosion, internal dust, and fungal growths noted during Department inspections shall be evidence that ITS field elements have not been properly protected or maintained and will be cause for the Department to reject any ITS field elements and ancillary components until they are replaced or satisfactorily maintained or repaired.

The Design-Build Firm shall provide appropriate enclosures to prevent pests from attacking and damaging the subsystem ITS field elements and ancillary components.

6.15 FDOT SunGuide™ Software Development Project

All available information can be found at the SunGuide™ Project Website:

- http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Arch/SunGuide.shtm

The Design-Build Firm shall provide new, and upgrade existing, ITS field component software and firmware to be compatible with the latest SunGuide™ requirements. See requirements for individual ITS field components for additional details.

6.15.1 SunGuide™ Software Compatibility & Integration

The I-75 ITS field devices are to be operated from the RTMC using the SunGuide™ software system. The Design-Build Firm shall integrate the individual ITS field elements (i.e., CCTV cameras, H.264 decoders, DMS, MVDS, serial and Ethernet communication devices and RWIS) with the respective vendor-provided subsystem software such that each of the subsystems shall be operated as a stand-alone system. This configuration will form the basis for Part 1 of the Subsystem Tests. Once Part 1 of the Subsystem Tests are complete and the results approved by the Department, the Design-Build Firm shall provide all integration and configuration data and settings so the Department can integrate the ITS field elements into the existing SunGuide™ central software and Core Layer 3 Ethernet Switches. As soon as possible, after completion of Part 1 of the Subsystem Tests, the Design-Build Firm shall provide to the District RTMC Manager all necessary information and data to facilitate the District's RTMC configuration and integration activities. The District shall complete Core Layer 3 Ethernet Switch and SunGuide™ integration and configuration within 14 calendar days of receipt of the configuration and integration data and information from the Design-Build Firm. After SunGuide™ integration is completed, the Design-Build Firm shall conduct Part 2 of the Subsystem Tests.

The Design-Build Firm shall provide all the temporary central equipment, including the workstations or laptop computers, necessary for the Part 1 testing of the individual subsystems.

Prior to the Final Acceptance, the Design-Build Firm shall demonstrate to the Department that all of the equipment specified in the RFP that were installed and configured by the Design-Build Firm flawlessly operates from the SunGuide™ client workstation located at the RTMC.

The integration of the various subsystems with the SunGuide™ software shall be the responsibility District. The Design-Build Firm shall coordinate with the RTMC and provide the following services.

1. Conduct a site survey to prepare the creation of the system database, configuration files, system graphics, and other preparatory work for the integration of the SunGuide™ software
2. Troubleshoot any Design-Build Firm-installed field hardware issues that affect the integration work
3. Furnish and install the field hardware and software required to operate the SunGuide™ software
4. Provide ITS field device information, such as equipment configuration diagrams, IP addresses, protocols, and documentation (e.g., users' manual, troubleshooting guide, etc.)
5. Configure the ITS field devices for integration with the SunGuide™ software, including link, lane, roadway, and device configurations
6. Provide post-installation services after testing the SunGuide™ software. The services shall include providing documentation to allow the District to perform SunGuide™ integration tasks, including but not limited to, populating the tables and creating map links
7. Meet with the Department to validate all required documents

All the licenses for all the products shall be transferred to the Department. The installation media for the

above products shall be provided and shall become the property of the Department after installation.

6.15.2 Device Protocol Compliance

For the devices being deployed, the Design-Build Firm shall ensure that the protocol used by the devices to be controlled by the SunGuide™ software is compliant with the protocols listed online at:

- <http://sunguide.datasys.swri.edu/ReadingRoom/Etc/SunGuide%20Protocol%20Support.htm>

The Design-Build Firm may propose alternate ITS equipment; however, the Design-Build Firm shall be responsible for developing the drivers for these devices for integration into the SunGuide™ software. The drivers for any devices shall conform to the latest SunGuide™ Interface Control Document available at:

- <http://sunguide.datasys.swri.edu/>

to ensure compatibility for integration with the SunGuide™ software. The Design-Build Firm shall coordinate with the SunGuide™ software developer in developing the device drivers. Any drivers developed by the Design-Build Firm for the Project shall become the property of the Department upon Final Acceptance.

6.15.3 Network Infrastructure

The Design-Build Firm Integrator shall meet with the FDOT ITS Operations Manager prior to any network-related or integration work being done on the Project. This Pre-Integration meeting is to discuss any issues, concerns, and the Design-Build Firm's plan to minimize the impact to the existing ITS. The Design-Build Firm shall provide detailed overview of the schedule for bring ITS field elements onto the network so the District can schedule their resources to configure the RTMC servers and switches in cooperation with the Design-Build Firm's schedule. Once network and integration work begin, the Design-Build Firm shall meet with the District ITS Operations Manager, or his designated representative, weekly or at other frequencies agreed upon in writing by the Department to discuss and coordinate integration activities. The Design-Build Firm shall provide a minimum of a two-week look-ahead of integration activities at each integration meeting. The Design-Build Firm shall designate an integration/network schedule coordinator. The integration/network schedule coordinator shall be responsible for coordinating and scheduling all network and integration activities that involve the RTMC.

6.15.4 Device Worksheets

The Design-Build Firm shall coordinate with the District ITS Operations Manager to collect and provide the required information about each device that is to be utilized by the SunGuide™ software. Examples of information for CCTV cameras are identified below. Other devices shall require similar information to be provided. The Design-Build Firm shall coordinate with the District ITS Operations Manager for the exact information to be provided for these devices.

These device worksheets shall be used to update the RTVM and as tracking sheets for the ITS devices included as part of the I-75 FMS. The Design-Build Firm and the ITS Operations Manager shall participate in a Pre-Integration Meeting to discuss the expectations of both parties during the Integration portion of the Project.

CCTV Camera Data Configuration Documentation Requirements:

<i>Data</i>	<i>Description</i>
<i>Camera Name</i>	<i>The data identifies the unique name of each camera.</i>

<i>Data</i>	<i>Description</i>
Center ID	<i>The data identifies the unique name of the center where each camera resides.</i>
Protocol	<i>The data specifies the protocol (values: SNMP, SNMP (PMPP)) for each camera.</i>
Poll Process	<i>The data provides the name of the driver for each camera.</i>
Manufacturer	<i>The data identifies the manufacturer of each camera.</i>
Location Description	<i>The data describes where each camera resides.</i>
Roadway	<i>The data identifies the roadway where each camera resides.</i>
Direction	<i>The data identifies the direction of the roadway where each camera is installed.</i>
Latitude	<i>The data identifies the latitude where each camera resides.</i>
Longitude	<i>The data identifies the longitude where each camera resides.</i>
Op Status	<i>The data identifies the operational status (values: Active, Error, Failed, OutOfService) of each camera.</i>
Address Type1	<i>The data identifies the address type (values: pmppAddress, commAddress) for each camera. (If pmppAddress, then the camera uses SNMP (PMPP); if commAddress, then the camera uses SNMP.)</i>
Address Type2	<i>The data specifies the address type (value: portServerAddress) of Address Type 2.</i>
Address	<i>The data identifies the device address of each camera.</i>
Port Server IP	<i>The data identifies the IP address for the port server where each camera resides.</i>
Port Server Port Number	<i>The data identifies the port number for the port server where each camera resides.</i>
Community Name	<i>The data identifies the community name for each camera.</i>
Attach to Video Device	<i>If selected, additional IP video parameters must be supplied.</i>

IP Video Data Documentation Requirements:

<i>Data</i>	<i>Description</i>
Video Device IP Address	<i>The data identifies the IP address for the encoder.</i>
Blackout	<i>The data determines if the camera is restricted.</i>
Video Device Type	<i>The data identifies the video device type (IP video device) for the encoder.</i>
IP Streaming Driver ID	<i>The data identifies the unique IP video switch driver name.</i>
Card Number	<i>The data identifies the card number for the encoder.</i>
Manufacturer	<i>The data identifies the manufacturer values of the encoder.</i>
Model	<i>The data identifies the model of the encoder.</i>

<i>Data</i>	<i>Description</i>
<i>Streaming Type</i>	<i>The data identifies the streaming type (values: elementary, transport, program) for the encoder.</i>
<i>Secondary Interface</i>	<i>The data identifies the secondary interface for the encoder that enables users to maximize the number of inputs for the encoder.</i>
<i>Snapshot Requested</i>	<i>The data determines if snapshots are generated for the encoder.</i>

The Design-Build Firm shall be responsible for providing all data necessary to populate the SunGuide™ database. The Design-Build Firm shall provide this data to the ITS Operations Manager. The ITS Operations Manager, or his designated representative, will enter the appropriate data into the SunGuide™ database at the RTMC under the oversight of the Design-Build Firm. At no time shall the Design-Build Firm be granted SunGuide™ administrative rights or access to the Department's RTMC SunGuide™ system.

R. Landscape Opportunity Plans: N/A

VII. Technical Proposal Requirements:

A. General:

Each Design-Build Firm being considered for this Project is required to submit a Technical Proposal. The proposal shall include sufficient information to enable the Department to evaluate the capability of the Design-Build Firm to provide the desired services. The data shall be significant to the Project and shall be innovative, when appropriate, and practical.

B. Submittal Requirements:

The Technical Proposal shall be bound with the information, paper size and page limitation requirements as listed herein.

A copy of the written Technical Proposal must also be submitted in .pdf format including bookmarks for each section on a CD, DVD, or Flash Drive. Bookmarks which provide links to content within the Technical Proposal are allowed. Bookmarks which provide direct to information not included within the content of the Technical Proposal shall not be utilized. No macros will be allowed. Minimum font size of ten (10) shall be used. Times New Roman shall be the required font type.

Only upon request by the Department, provide calculations, studies and/or research to support features identified in the Technical Proposal. This only applies during the Technical Proposal Evaluation phase.

Submit 1 Original, two (2) CD's and five (5) hard copies of the Technical Proposal to:
Rahnee Oliver, 11201 N McKinley Drive, Tampa, Fl. 33612

The minimum information to be included:

Section 1: Project Approach

- Paper size: 8½" x 11". The maximum number of pages shall be 10, single-sided, typed pages including text, graphics, tables, charts, and photographs. Double-sided 8½" x 11" sheets will be counted as 2 pages. 11"X17" sheets are prohibited.
- Describe how the proposed design solutions and construction means and methods meet the project needs described in this Request for Proposal. Provide sufficient information to convey a thorough knowledge and understanding of the project and to provide confidence the design and construction can be completed as proposed.
- Provide the term, measureable standards, and remedial work plan for any proposed Value Added features that are not Value Added features included in this RFP, or for extending the Value Added period of a feature that is included in this RFP. Describe any material requirements that are exceeded.
- Provide a Written Schedule Narrative that describes the Design and Construction phases and illustrates how each phase will be scheduled to meet the Project needs required of this Request for Proposal. Bar or Gantt charts are prohibited. Do not reveal or describe the Proposed Contract Time. Proposed Contract Time will be evaluated when Bid Price Proposals are received.

Section 2: Plans and Technical Special Provisions

- Plan and Profile views of the proposed improvements shall be submitted in roll-plot format. The maximum width of the roll-plots shall be 36". The maximum length of the roll-plot shall be 8'. Inclusion of additional information on the roll-plot, other than depictions of the Plan and Profile views, is allowed provided it clarifies the plan and profile views. However, the Department may determine that such additional information is excessive and may require the Design-Build Firm to revise and resubmit the roll-plots. If this occurs, the Design-Build Firm will have 2 business days to revise and resubmit the roll-plots upon notification by the Department. All other information not included on the roll plots, such as typical sections, special emphasis details, structure plans, etc., shall be provided on 11"x17" sheets.
- Right-of-Way Maps and Legal Descriptions (including area in square feet) of any proposed additional Right-of-Way parcels if applicable and approved through the ATC process. Provide Technical Proposal Plans in accordance with the requirements of the Plans Preparation Manual, except as modified herein.
- The Plans shall complement the Project Approach. Provide any Technical Special Provisions which apply to the proposed work. Paper Size: 8½" x 11".

In regards to changes made to this RFP in Addendum 2, the Design-Build Firms shall submit roll plots (at a minimum) depicting the associated changes which are not included with the Technical Proposal as an Addendum to the Technical Proposal. At the sole discretion of the Design-Build Firm, additional documentation is permissible as long as it follows the guidelines under VII. Technical Proposal Requirements. Furthermore, the aforementioned SHALL BE INCLUDED in the Bid Price Proposal.

C. Evaluation Criteria:

The Department shall evaluate the written Technical Proposal by each Design-Build Firm. The Design-Build Firm should not discuss or reveal elements of the price proposal in the written proposals. A technical score for each Design-Build Firm will be based on the following criteria:

Item	Value
1. Design and Geotechnical Services Investigation	30
2. Construction	30
3. Maintainability	10
4. Environmental Protection	10
Maximum Score	80

The following is a description of each of the above referenced items:

1. Design and Geotechnical Services Investigation (30 points)

Credit will be given for the quality and suitability of the following elements:

- Project Design (ITS) Technical Detail Quality
- Design coordination and plans preparation schedule
- Geotechnical investigation plan
- Construction coordination plan minimizing design changes
- Minimizing impacts through design to:
 - Environment
 - Public
 - Adjacent Properties
- Design considerations
 - System Grounding
 - Documentation
 - Coordination with SunGuide
 - Integration
 - Permitting
 - Coordination with other projects
 - Maintenance Access
 - Survey

Credit will be given for development of design approaches which minimize periodic and routine maintenance. The following elements should be considered: access to provide adequate inspections and maintenance, and impacts to long term maintenance costs.

2. Construction (30 points)

Credit will be given for the quality and suitability of the following elements:

- Safety
- ITS construction
- Construction coordination plan minimizing construction changes
- Minimizing impacts through construction to:
 - Environment
 - Public
 - Adjacent Properties
 - Structures
- Minimize contract duration
- Integration Method Quality
- Reduce Cost
- Permitting
- Recovery
- Coordination
- Documentation
- Maintenance Access
- Survey

Credit will be given for developing and deploying construction techniques that enhance project durability, reduce long term and routine maintenance, and those techniques which enhance public and worker safety. This shall include, but not be limited to, minimization of lane and driveway closures, lane widths, visual obstructions, construction sequencing, and drastic reductions in speed limits.

Credit will be given for construction and utility coordination efforts that minimize the potential for adverse impacts and project delays due to utility conflicts.

3. Maintainability (10 points)

Credit will be given for a design that minimizes periodic and routine maintenance. The following elements should be considered: access to provide adequate inspections and maintenance, and quality of construction materials.

4. Environmental Protection (10 points)

Credit will be given for minimizing impacts to the environment during all phases of design and construction and insuring all environmental commitments are honored.

D. Final Selection Formula:

The Department shall publicly open the sealed bid proposals and calculate an adjusted score using the following formula:

$$\frac{BPP}{TS} = \text{Adjusted Score}$$

BPP = Bid Price Proposal

TS = Technical Score (Combined Scores from LOI and Technical Proposal)

The Design-Build Firm selected will be the Design-Build Firm whose adjusted score is lowest.

The Department reserves the right to consider any proposal as non-responsive if any part of the Technical Proposal does not meet established codes and criteria.

E. Final Selection Process:

After the sealed bids are received, the Department will have a public meeting for the announcement of the Technical Scores and opening of sealed Bid Price Proposals. This meeting will be recorded. At this meeting, the Department will announce the score for each member of the Technical Review Committee, by category, for each Proposer and each Proposer's Technical Score. Following announcement of the Technical Scores, the sealed Bid Price Proposals will be opened and the adjusted scores calculated. The Selection Committee should meet a minimum of two (2) calendar days (excluding weekends and Department observed holidays) after the public opening of the Technical Scores and Bid Price Proposals. The Department's Selection Committee will review the evaluation of the Technical Review Committee and the Bid Price Proposal of each Proposer as to the apparent lowest adjusted score and make a final determination of the lowest adjusted score. The Selection Committee has the right to correct any errors in the evaluation and selection process that may have been made. The Department is not obligated to award the contract and the Selection Committee may decide to reject all proposals. If the Selection Committee decides not to reject all proposals, the contract will be awarded to the Proposer determined by the Selection Committee to have the lowest adjusted score.

F. Stipend Awards:

The Department has elected to pay a stipend to a limited number of non-selected Short-Listed Design-Build Firms to offset some of the costs of preparing the Proposals. The non-selected Short-Listed Design-Build Firms meeting the stipend eligibility requirements of the Project Advertisement and complying with the requirements contained in this section will ultimately be compensated. The stipend will only be payable under the terms and conditions of the Design-Build Stipend Agreement and Project Advertisement, copies of which are included with this Request for Proposal. This Request for Proposal does not commit the Department or any other public agency to pay any costs incurred by an individual firm, partnership, or corporation in the submission of Proposals except as set forth in the Design-Build Stipend Agreement. The amount of the stipend will be \$25,000 per non-selected Short-Listed Design-Build Firm that meets the stipend eligibility requirements contained in the Project Advertisement. The stipend is not intended to compensate any non-selected Short-Listed Design-Build Firm for the total cost

of preparing the Technical and Price Proposals. The Department reserves the right, upon payment of stipend, to use any of the concepts or ideas within the Technical Proposals, as the Department deems appropriate.

In order for a Short-Listed Design-Build Firm to remain eligible for a stipend, the Short-Listed Design-Build Firm must fully execute with original signatures and have delivered to the Department within one (1) week after the Short-List protest period, four (4) originals of the Design-Build Stipend Agreement, Form No. 700-011-14. The Short-Listed Design-Build Firm shall reproduce the necessary copies. Terms of said agreement are non-negotiable. A fully executed copy of the Design-Build Stipend Agreement will be returned to the Short-Listed Design-Build Firm.

A non-selected Short-Listed Design-Build Firm eligible for stipend compensation must submit an invoice for a lump sum payment of services after the selection/award process is complete. The invoice should include a statement similar to the following: "All work necessary to prepare Technical Proposal and Price Proposals in response to the Department's RFP for the subject Project".

VIII. Bid Proposal Requirements.

A. Bid Price Proposal:

Bid Price Proposals shall be submitted on the Bid Blank form attached hereto and shall include one lump sum price for the Project and the number of calendar days within which the Proposer will complete the Project. The lump sum price shall include all costs for all design, geotechnical surveys, architectural services, engineering services, Design-Build Firms quality plan, construction of the Project, and all other work necessary to fully and timely complete that portion of the Project in accordance with the Contract Documents, as well as all job site and home office overhead, and profit, it being understood that payment of that amount for that portion of the Project will be full, complete, and final compensation for the work required to complete that portion of the Project. One (1) hard copy Bid Price Proposal shall be hand delivered in a separate sealed package to the following:

Rahnee Oliver

11201 N. McKinley Drive,

Tampa, Florida 33612

The package shall indicate clearly that it is the Bid Price Proposal and shall identify clearly the Proposer's name, and Project description. The Bid Price Proposal shall be secured and unopened until the date specified for opening of Bid Price Proposals.