

NOTICE TO CONTRACTORS  
OFFICE OF THE STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
801 N. BROADWAY AVENUE  
BARTOW, FLORIDA 33830

**March 16, 2012**

District Procurement Office  
District One

**ADDENDUM NUMBER TWO**

PROJECT DESCRIPTION: Lee County ATMS  
FINANCIAL PROJECT NO.: 412636-2-52-01  
COUNTY: Lee County  
CONTRACT NO.: E1J71

The following is a list of the revisions made to the Request for Proposal Package.

Request For Proposal	Page											
	iv	Attachments; added the Cost Savings Initiative Proposal 4-3.9										
	2	Section I, Introduction, B. ATMS Filed Devices, Traffic Signal System Infrastructure, first bullet: revised the number of intersections from six to <b>seven</b>										
	2	Section I, Introduction, B. ATMS Filed Devices, Traffic Signal System Infrastructure, second first bullet: revised the number of intersections from 55 to <b>54</b> .										
	7	Section I, Introduction, F. Documentation of Existing Conditions. Communications Infrastructure; <b>deleted</b> the following sentence from the paragraph: However, it is the Design/Build Firm’s responsibility to ensure the fiber can be reused.										
	9	Section II. Schedule: The Schedule is revised as follows: <table border="1" style="width: 100%; margin-top: 5px;"> <tbody> <tr> <td style="width: 25%;">March 28, 2012</td> <td>Technical Proposals due in District Office by 4:00 p.m. local time</td> </tr> <tr> <td>May 16, 2012</td> <td>Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.</td> </tr> <tr> <td>May 23 , 2012</td> <td>Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time</td> </tr> <tr> <td>May 31, 2012</td> <td>Price Proposals due in District Office by 2:00 p.m. local time.</td> </tr> <tr> <td>May 31, 2012</td> <td>Public announcing of Technical Scores and opening of Price Proposals at 2:00 p.m. local time in District One Headquarters, Transportation Support Conference Room, 801 N. Broadway Ave., Bartow Fl., 33830.</td> </tr> </tbody> </table>	March 28, 2012	Technical Proposals due in District Office by 4:00 p.m. local time	May 16, 2012	Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.	May 23 , 2012	Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time	May 31, 2012	Price Proposals due in District Office by 2:00 p.m. local time.	May 31, 2012	Public announcing of Technical Scores and opening of Price Proposals at 2:00 p.m. local time in District One Headquarters, Transportation Support Conference Room, 801 N. Broadway Ave., Bartow Fl., 33830.
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	20	<p>Section V, Project Requirements and Provisions for Work, D. Geotechnical Services, 4. <b>Drilled Shaft Foundations for Miscellaneous Structures (Not Applicable to the Project)</b>, deleted (Not Applicable to the Project) and inserted the following: <b>Drilled Shaft Foundations for Miscellaneous Structures</b></p> <p><b>The Design-Build Firm shall provide Geotechnical Consultant Services in accordance with the Department standards, policies and procedures to perform geotechnical design, foundation construction services, inspection and foundation testing. In addition to the standard policies, the following qualifications are required:</b></p> <ul style="list-style-type: none"> <li>• <b>Use professional engineers registered in the State of Florida with at least three (3) years of post-registration experience in drilled shaft foundation design and construction.</b></li> <li>• <b>The drilled shaft installation shall be supervised and certified by the Geotechnical Foundation Design Engineer of Record. These services shall include providing CTQP-qualified Drilled Shaft Inspectors in the numbers necessary to comply with Department specifications for recording drilled shaft construction records.</b></li> <li>• <b>Use drilled shaft superintendents in responsible charge of drilling operations experienced in drilled shaft installation and testing in the State of Florida meeting the requirements of section 455-15.1.2 of FDOT Standard Specifications. This "responsible charge" experience shall include at least three (3) Department projects with drilled shaft foundations of similar size and depth.</b></li> </ul>								
	39	<p>Section V, Project Requirements and Provisions for Work, Y. Adjoining Construction Projects, added the following project: <b>PUSH BUTTON SIGNALS CONSTRUCTION FPID No. 427399-2, TWO 17 SR 739 (Fowler Street) at Thompson Street</b></p>								
	41	<p>Section VI, Design and Construction Criteria, B. Geotechnical services (Not Applicable to the Project), deleted (Not Applicable to the Project) and inserted the following:</p> <p><b>Drilled Shaft Foundations for Miscellaneous Structures</b></p> <p><b>The Design-Build Firm shall develop a Foundation Plan (FP) for drilled shaft construction. The FP shall be reviewed and approved by the Geotechnical Foundation Design Engineer of Record before</b></p>								

		<p>submitting to the Department. Submit the proposed FP to the Department for review and approval. The FP is intended to establish process control standards and quality assurance for drilled shaft construction. Include in the FP the items required in Specification 455-15.1.2 (Drilled Shaft Installation Plan), the equipment and procedures for visual inspection of drilled shaft excavations, and any additional methods to identify and remediate drilled shaft deficiencies. Include the names of the CTQP qualified inspectors assigned to inspect the drilled shaft installation. If the FP is updated based on the construction of the method shaft(s) (Test Hole), or other changes in circumstances, the update will not be in effect until approved by the Department.</p> <p>The FP will be used to govern all drilled shaft construction activities. In the event that deviations from the FP are observed, the Department may perform Independent Verification Testing/Review of the Design-Build Firm's equipment, procedures, personnel and drilled shaft construction FP at any time during production drilled shaft construction. If, as determined by the Department, drilled shaft construction equipment, procedures and/or personnel for the FP is deemed inadequate to consistently provide drilled shafts meeting the contract requirements, the Design-Build Firm's FP approval may be withdrawn pending corrective actions. All drilled shaft construction activities shall then cease and not restart until corrective actions have been taken and the FP has been re-approved.</p> <p>The Design-Build Firm shall be responsible for the following:</p> <ul style="list-style-type: none"> <li>• Evaluating geotechnical conditions and designing the foundations including the drilled shaft diameter and length, and construction methods to be used.</li> <li>• Completing the subsurface investigation prior to establishing the drilled shaft tip elevations</li> <li>• Constructing the method shaft (test hole) successfully and conducting integrity tests on the shaft using crosshole sonic logging.</li> <li>• Determining the production shaft lengths.</li> <li>• Documenting and providing a report that includes all data, analysis, and recommendations to the Department. The report should include but not be limited to the following: results of soil borings for all drilled shafts, and recommended production drilled shaft tip elevations. This report shall be signed and sealed by a Florida licensed Professional Engineer and shall be submitted to the Department for review and approval at least seven (7) calendar days prior to beginning production shaft construction. Additional data or analysis may be required</li> </ul>
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		<p>by the Engineer. Constructing all drilled shafts to the required tip elevation and socket requirements.</p> <ul style="list-style-type: none"> <li>• Verifying level and clean hole bottom conditions and properties of the drilling fluid at the time of concrete placement.</li> <li>• Documenting and submitting the drilled shaft construction logs to the Department within twenty-four (24) hours of concrete placement. The documentations shall include the drilled shaft installation procedures and sequencing as well as any problems encountered during construction and concrete placement. Allow two (2) working days for the Department to review the data before any further construction on the shafts.</li> <li>• Performing Cross-Hole Sonic Logging (CSL) tests on at least 30% of the shafts (rounded up to the next whole number) selected by the Department.</li> <li>• Repairing all detected defects and conducting post repair integrity testing using 3D tomographic imaging and gamma-gamma density logging. Submitting all results to the Department within seven (7) calendar days of test completion.</li> <li>• Submitting the Foundation Certification Packages. <ul style="list-style-type: none"> <li>○ Each Foundation Certification Package shall contain an original signed and sealed letter certifying capacity (axial, lateral and torsional) and integrity of all drilled shafts, and clearly legible copies of all shaft excavation and concreting logs, all CSL reports and electronic data, slurry test data, supplemental testing data and analyses for the foundation unit. The certification shall not be contingent on any future testing or approval by the Department.</li> <li>○ Submit two (2) copies of the Foundation Certification Package signed and sealed by the Geotechnical Foundation Design Engineer of Record to the Department within three (3) weeks of finishing each foundation unit and prior to Verification Testing. A foundation unit is defined as all the shafts within one (1) intersection/interchange or for each phase of an intersection/interchange.</li> </ul> </li> <li>• Providing safe access and needed equipment, and cooperating with and working with the Department in verification of the drilled shafts, both during construction</li> </ul>
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		<p>of shafts and after submittal of the certification package.</p> <ul style="list-style-type: none"> <li>○ The Department may verify the bottom cleanliness of all drilled shaft excavations prior to and at the time of concreting. The Department may verify bottom cleanliness by over the shoulder review of the Design-Build Firm’s inspection methods and/or by independent means.</li> <li>○ The Department may verify properties of drilling fluid at the time of concreting. The Department shall determine whether verification of drilling fluid properties shall be accomplished by over the shoulder review of the Design-Build Firm’s slurry testing and/or by independent means.</li> </ul> <p>Within two (2) working days of receipt of a Foundation Certification Package, the Department will examine the certification package and determine whether shafts in that foundation unit will be selected for Verification Testing. The Department may select every shaft for Verification Testing, if defects are suspected. The Department will provide equipment and personnel as needed for Verification Testing. Methods used for Verification Testing of a completed shaft are at the discretion of the Department and may include coring, cross-hole sonic logging, gamma-gamma density logging, low-strain dynamic integrity testing, or other methods.</p> <p>After Verification Testing for a foundation unit is performed, the Department will provide the results within seven (7) calendar days. Integrity testing access tubes shall not be grouted and construction of caps, columns or any superstructure elements shall not occur until the Department has notified the Design-Build Firm that additional Verification Testing is not required.</p> <p>If any shaft is found to be deficient, the Design-Build Firm shall correct the deficiency (i.e. repair or replace the shaft) and/or modify the design to compensate for the deficiency. After the deficiency is corrected, the shaft shall be retested and recertified by the Design-Build Firm. The Department may then perform additional Verification Testing. In case of disagreement of test results, the Department’s results will be final and used for determination of acceptance.</p>
	46	Section VI, Design and Construction Criteria, D. Intelligent Transportation Systems, Communications Infrastructure, second paragraph, <b>deleted</b> the following sentence: House the Ethernet Edge switches in environmentally controlled cabinets or buildings.
	49	Section VI, Design and Construction Criteria, J. Specifications, added the following to the first paragraph: <b>Incorporate the Cost Savings Initiative Proposal, 4-3.9 into the Division One Design Build Specifications.</b>
	57	Section VII Technical Proposal Requirements, Section 5: Preliminary Plans; revised the paragraph following the bullets as follows: Plan and Profile views of the proposed improvements <b>shall be submitted as</b>

		<b>11"x17" sheets</b> and included with the Technical Proposal. <b>The plan set shall pin and post for submittal.</b>
	Phase I Intersections	Int. 316, Thompson @ Fowler St. (SR 739), revised the Work Type from II to I
	New UPS Locations	Deleted Int. 316, Thompson @ Fowler St. (SR 739)
Minimum Technical Requirements		
	21	Section 5.0 Fiber Optics Communications Infrastructure, 5.1.1 Conduit and Locate System, third paragraph was revised as follows: The Design/Build Firm shall furnish and install a locate system compliant with the FDOT Supplemental Specification 783-2. Locate wire shall not be installed in the same conduit <b>or pull box</b> as fiber optic cable. The Design/Build Firm shall furnish <b>and install a 6" x 8" x 6" pull box to house the locate wire connection at each fiber optic pull box location. The fiber optic pull box and the small pull box shall be contained in a single concrete collar.</b> Electronic box markers <b>and route markers are not required.</b> The Design/Build Firm shall provide <b>two electronic locators</b> as part of this project.
	50	Section 11.0 ATMS Software, revised paragraph five as follows: The Design/Build Firm shall perform all work necessary to successfully implement Traffic Responsive Plan Selection (TRPS) on the Phase I intersections. <b>TRPS shall automatically select timing plans in response to changing traffic conditions at the County's required thresholds. Timing plans shall be provided by the County from their established library of timing plans. The Design/Build Firm shall program these timing plans in the new controllers and Centrac's® databases.</b> The Design/Build firm shall collect <b>all other data and information</b> to develop and implement the TRPS for the project intersections.
	50	Section 11.0 ATMS Software, 11.1 Description, revised paragraph six as follows: The County will supply the required thresholds for TRPS. <b>The Design/Build Firm shall utilize the County supplied thresholds for establishing automatic timing plan selection under TRPS operation</b>
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph one as follows: TRPS shall be programmed by the Design/Build Firm using the software functions of the existing Centrac's® ATMS system software. <b>Lee County will provide timing plans and required thresholds for the Phase I intersections. The Design/Build Firm shall be responsible for all other data and programming necessary to run TRPS on the Phase 1 intersections.</b> The Design/Build Firm shall be responsible for inputting the provided data into the existing software for the Phase 1 intersections.
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, <b>deleted</b> paragraph two in its entirety: The Design/Build Firm shall perform all work necessary to successfully design and implement TRPS on the Phase I intersections.
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph three as follows: The Design/Build Firm shall complete all required software and hardware modifications to the County's existing Econolite Centrac's® for the implementation of TRPS for Phase I

		intersections and devices. These modifications shall include, but not be limited to, any one or more of the following: software TRPS database, TOD and timing database, graphics, maps, detector assignment or configuration modifications in the software and hardware, timing plan <b>databases</b> and TRPS diagnostics and outputs.
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph four as follows: TRPS shall demonstrate dynamic and automatic adjustment to variations in traffic pattern characteristics based upon the Design/Build Firms designs and <b>programming of the provided thresholds.</b>
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, deleted paragraph five and replaced it: <b>The Design/Build Firm shall verify full functionality of the TRPS at the project intersections through the Centrac® status reports.</b>
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph seven as follows: The Design/Build Firm shall program and implement the TRPS. TRPS programming shall demonstrate responsive timing plans changes selected from a library of <b>programmed timing plans.</b>
	52	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph nine as follows: TRPS programming shall include all necessary programmable entries. The programmed entries may be in percentage values. The TRPS programming features shall provide <b>County</b> defined thresholds based on cycle, offset and split, and include any override programming options to permit a priority pattern to be applied when over-saturation is identified by the TRPS programming.
	53	Section 11.0 ATMS Software, 11.5 Traffic Responsive Plan Section, revised paragraph fourteen as follows: The TRPS off-line mode shall operate for a minimum of 7 days, including Saturday and Sunday, while logging the pattern changes and system detectors prior to the TRSP running in on-line mode. During this 7 day off-line mode, the Design/Build Firm shall track TRPS operation and TOD operations and plot the initial system response plot. Once successful TRPS operations has been accomplished as illustrated on the system response plot <b>and demonstration that the County required thresholds are achieved by the TRPS,</b> the Department <b>will</b> approve modification of the programming to on-line TRPS mode. In on-line mode, the controllers in the street shall utilize the programmed TRSP operation while logging the pattern changes that occur.

Attached to this Addendum is a revised copy of the Request for Proposal package (dated March 16, 2012) with updated Phase I Intersections and Existing UPS Location list and Attachment A, Minimum Technical Requirements (dated March 12, 2012), and Attachment "D" Cost Savings Initiative Specification 4-3.9.

Acknowledge receipt of Addendum Number Two in the space provided on the proposal.

Felipe Alvarez

*Felipe Alvarez*

Design Build Administrator

**PLEASE SIGN BELOW IN RECEIPT OF THIS NOTICE AND  
ADDITIONAL DOCUMENTS ANNOTATED ABOVE.**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Company Name



*Florida Department of Transportation*  
*District One*

**DESIGN/BUILD  
REQUEST FOR PROPOSAL**

**For**

**Lee County Advanced Traffic Management System  
Lee County**

**Financial Projects Number: 412636-2-52-01  
Federal Aid Project Number: 8886-052A  
Contract Number: E1J71**

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## **ATTACHMENTS**

- Attachment A – Minimum Technical Requirements
- Attachment B – 30% Preliminary Plans
- Attachment C – Bid Blank
- Attachment D – Division I Design/Build Specifications
- Attachment E - Cost Savings Initiative Proposal 4-3.9

The attachments listed in the Table of Contents are by this reference hereby incorporated into and made a part of this RFP as though fully set forth herein.

## **OTHER 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 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 other 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.

- Phase I Signalized Intersections
- New Uninterruptible Power Supply (UPS) Locations
- Existing UPS Locations
- Existing Opticom Preemption Locations
- Closed-Circuit Television (CCTV) Camera Locations
- System Detection Locations
- County Count Stations
- Communications Map

## **I. Introduction.**

The Florida Department of Transportation (Department) has issued this Request for Proposal (RFP) to solicit competitive bids and proposals from Proposers to design, procure, install, integrate, and test all components of the Lee County Advanced Traffic Management System (ATMS).

### **A. Description of Work**

The Department seeks a Design/Build Firm to design, procure, install, integrate, and test ATMS field elements, including traffic controllers and cabinets, closed-circuit television (CCTV) cameras, non-intrusive microwave vehicle detector system (MVDS), and fiber optics communications cable and transmission equipment along roadways throughout Lee County.

The ATMS will operate out of the Traffic Operations Center (TOC) located at 5650 Enterprise Parkway, Fort Myers, Florida.

The project work includes furnishing, installing, integrating, and testing the elements listed below:

- ATMS field devices
- A new dedicated communications network
- TOC facility modifications and equipment upgrades
- Upgrades to existing intersections for specified standards conformance
- The addition of pedestrian features

This project requires that all Intelligent Transportation System (ITS) equipment and subsystems be in conformance with the National ITS Architecture and the National Transportation Communications for ITS Protocol (NTCIP). The project shall use an open architecture to foster, to the largest extent possible, the interoperability and interchangeability of hardware and software available from different manufacturers.

Failure to provide the equipment described above or to meet the minimum requirements outlined in this RFP and accompanying attachments shall provide cause to disqualify a Proposer. The minimum functional and technical requirements for the design, procurement, installation, integration, and testing of the various project elements are included in Section VI, Design and Construction Criteria, and Attachment A – ITS Minimum Technical Requirements (MTRs) document.

The ITS field devices as defined in the Department's Minimum Specifications for Traffic Control Signals and Devices must be on the Approved Products List (APL) prior to issuance of the Released for Construction (RFC) plans. The Design/Build Firm may propose alternate ITS equipment; however, the Design/Build Firm shall be responsible for shepherding those devices not on the APL through the process so the devices are on the APL at the time of installation. The protocols used by the devices must be compatible with the existing Econolite Centrac® software. The Design/Build Firm shall complete and provide to the Department Construction Project Manager the Department Form 750-010-02 for all certified or approved traffic control devices to be used on the project. The Form shall be submitted prior to the installation of any of the devices listed on the Form.

The Design/Build Firm shall integrate the individual ITS subsystems (CCTV cameras and vehicle detectors) with the individual vendor-provided control software such that each of the subsystems shall

operate as a stand-alone system. After the completion and acceptance of the individual ITS subsystems, the Design/Build Firm shall integrate the ITS subsystems with the Econolite Centrac® software.

The Design/Build Firm shall identify, furnish, and install all of the equipment that is required for a complete integrated system as defined in this RFP and its attachments. All system auxiliaries and peripheral equipment including, but not limited to, video encoders/decoders, fiber optics transceivers, Ethernet switches, media converters, connectors, cables, testing equipment and software, etc., are considered as part of and are to be included under the individual subsystems.

Attachment B – 30% Preliminary Plans provides information about placement of the controller cabinets, proposed CCTV camera locations, and vehicle detector locations, as well as the required intersection improvements. Attachment B shows preliminary locations for these new devices with respect to existing field conditions and hardware at the time of field review. The Communications Map, listed under Other Documents, shows the locations where there is existing fiber optic cable in existing conduit, where new fiber optic cable shall be installed in existing conduit, and where they shall install new fiber optic cable in new conduit. The Design/Build Firm is responsible for reviewing the existing conditions to determine the final placement of proposed devices.

## **B. ATMS Field Devices**

The following provides an overview of this project’s primary ATMS field devices to be implemented. The primary components include:

- Traffic signal system infrastructure
- CCTV monitoring system
- System detection

### Traffic Signal System Infrastructure

The Design/Build Firm will expand Lee County’s existing Econolite Centrac® traffic signal system by the 61 intersections listed in the Phase I Signalized Intersection list included with this RFP. The new signal system shall include implementation of the following components:

- Communications interface - Seven project intersections only need a communications interface.
- New NEMA TS2 Type 1 controllers and new NEMA TS2 Type 1 cabinets – Install new Econolite ASC 3 NEMA controllers and new cabinets at 54 project intersections.
- Controller support hardware.
- Cabinet foundations – Utilize existing foundations as noted in Attachment B – 30% Preliminary Plans. Cabinet foundations unsuitable for integration with this project shall be replaced.
- Uninterruptable power supplies (UPS) – Install new UPS and reinstall existing UPS as noted in Attachment B – 30% Preliminary Plans. Locations are listed in the New UPS Locations list and the Existing UPS Locations list included with this RFP.
- Reconnect in the cabinet the Existing Opticom Preemption locations – included in the Existing Opticom Preemption locations list included in the RFP.

### CCTV Monitoring System

The Design/Build Firm shall deploy 36 CCTV cameras at the locations shown in the Closed-Circuit Television (CCTV) Camera Locations list included with this RFP. The cameras shall provide real-time monitoring capabilities and be operated and controlled from the TOC. The CCTV monitoring system will include the deployment of the following field subsystem components:

- CCTV camera assemblies, including internal encoders
- CCTV poles and foundations
- Surge protection

The Design/Build Firm shall determine a location for each camera that provides an unobstructed view of each approach at the intersection and meets the requirements as defined in the MTRs. The locations shown in Attachment B – 30% Preliminary Plans are recommendations only. Using a bucket truck, the Design/Build Firm shall record video of the roadway view with their proposed camera from their proposed locations and mounting height. Provide the video to the Department for review and acceptance prior to installation of any CCTV cameras.

### System Detection

The Design/Build Firm shall install a minimum of 28 system detectors. Locations shown in Attachment B – 30% Preliminary Plans are recommendations only. The Design/Build Firm shall determine the exact number and locations required to provide adequate data for each approach shown in the System Detection Locations Table included with this RFP and as defined in the MTRs. Each control section of the Lee County ATMS shall operate in a traffic responsive mode using inputs from this detection.

## **C. Communications Network**

As part of the Lee County ATMS project, the Design/Build Firm shall deploy a new fiber optic network utilizing Internet Protocol (IP) over Ethernet communications technologies and protocols. Integrate ATMS field devices with centralized command and control hardware and software at the TOC.

### Network Architecture

The Design/Build Firm shall finalize the ATMS communications architecture, node locations, and network configuration to provide a fortified, redundant, and secured network for the ATMS. This shall include a redundant, self-healing ring architecture for connecting the field cabinets, nodes, and TOC.

### Network Media

The Design/Build Firm shall deploy a 96-strand single-mode fiber optic cable for all backbone communications links within the new communications network. Provide 12-strand single-mode fiber optic cables as drop cables from the trunk to each of the cabinets.

### Cable Conveyance

The Design/Build Firm shall install new fiber optic cable in either existing 1¼-inch conduit as defined elsewhere in the contract documents or new 1¼-inch High Density Polyethylene (HDPE) conduit. All ATMS network communications infrastructure shall be underground, unless accepted by the Department.

The Design/Build Firm shall install new conduit and fiber optic cable where noted in the attached communications map. The Design/Build Firm may utilize existing conduit and fiber optic cable where noted in the attached communications map.

#### **D. TOC**

The Lee County TOC is located in the Lee County DOT building at 5650 Enterprise Parkway. The Design/Build Firm shall integrate the Lee County ATMS project with the central ATMS components in the TOC, including:

##### Control Room

- Operator workstations
- Operator consoles
- Video wall displays

##### Network Room

- Additional video wall controller cards

##### Software

- Support software
- System Detection Network software
- Network Management software
- CCTV software

##### ATMS Central Software

The Design/Build Firm shall integrate the new ATMS devices with the County's existing Econolite Centrac® central software applications to provide command and control for the project elements defined in this RFP and in Attachment A – MTRs. The Design/Build Firm shall fully integrate all required project components, including signalized intersections, CCTV camera components, system detection components, and ATMS network communications components with the central software. The Design/Build Firm shall populate all databases and construct all system display graphics and maps necessary for a complete and functional system.

#### **E. Design Services**

The Design/Build Firm shall provide all design and construction services required to implement an expanded ATMS as defined in this RFP and its Attachments.

##### Signalized Intersections

The Design/Build Firm shall provide all design services necessary to upgrade 55 work type II project intersections. This includes upgrading to new Econolite ASC3 NEMA TS2 Type 1 controllers and controller cabinets. The Design/Build Firm shall provide all controller support hardware and support software required for a complete and functional upgrade of the project intersections. The Design/Build Firm shall provide the design for 6 work type I intersections to receive only the equipment necessary for communication with the TOC over the fiber optic network. The intersection work types are included in

the Phase I Signalized Intersections List (Other Documents). The Design/Build Firm shall provide all necessary cabinet support equipment, firmware, and miscellaneous materials required to integrate each of the project intersections with the existing Econolite Centrac® software.

The Design/Build Firm shall utilize existing cabinet foundations where noted in Attachment B - 30% Preliminary Plans. The design of new foundations or modification of existing foundations shall be in accordance with all Department specifications and standards for controller cabinets, cabinet foundations, and cabinet technician pads.

#### Standards Conformance Upgrades

The design criteria contained in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) were used to evaluate intersection layouts and geometry. Field data collection included a detailed evaluation of the intersection layout, lane geometry, signing and pavement markings, signal head heights, pedestrian signal heads and pedestrian buttons, pedestrian crosswalks, curb cut ramps, and other features required by the American with Disabilities Act (ADA).

Attachment B – 30% Preliminary Plans shows the anticipated scope of work at each signalized intersections. The Design/Build Firm shall review each signalized intersection and determine which pedestrian facilities must be upgraded to current standards.

#### ADA

The Design/Build Firm shall design intersection improvements associated with upgrades necessary to bring specified intersections into conformance with current ADA standards. The anticipated improvements are noted in Attachment B – 30% Preliminary Plans. This work shall include, but is not limited to, design and construction of:

- Pedestrian countdown signals
- Pedestrian pushbuttons and pushbutton signs
- Upgrades to existing handicapped curb cut ramps
- New handicapped curb cut ramps
- New pedestrian pavement markings, including crosswalks
- Lane markings and stop bars

New pedestrian timings shall be developed and implemented by the Design/Build Firm for any crossings added in the project. All new pedestrian timings shall be reviewed and accepted by the Department prior to the plans being released for construction. Upon approval of the new pedestrian timings, the Design/Build Firm will provide the Department with a copy of the timings that is signed and sealed by a Florida Professional Engineer.

The Design/Build Firm shall also evaluate whether an existing pedestrian crossing needs recalculation of the timings due to changes in crosswalk lengths. If a change is required, the Design/Build Firm will provide the revised timings to the Department for review and approval. Upon approval of the revised timings, the Design/Build Firm will provide the Department with a copy of the timings that is signed and sealed by a Florida Professional Engineer.

At all intersections where new crosswalks are installed or existing crosswalks or stop bars are moved, the Design/Build Firm shall calculate the all-red timing interval to ensure consistency with the latest version

of the Traffic Engineering Manual. The calculations and new all-red intervals shall be submitted to the Department for review and approval. Upon approval of the all-red timings, the Design/Build Firm will provide the Department with a copy of the timings that is signed and sealed by a Florida Professional Engineer.

#### **F. Documentation of Existing Conditions**

The Design/Build Firm shall inventory all project intersections and project intersection components and identify all malfunctioning, damaged, or non-working system components prior to the 60% design submittal. Once the inventory is completed, the Design/Build Firm shall submit all compiled information to the Department. This shall include, but is not limited to:

- Signal timing and operations
- Pedestrian signals and associated equipment
- Loop detectors
- System detectors
- Video detectors
- Signal controllers and cabinet equipment
- TOC
- Communications infrastructure
- Preemption detection

#### Signal Timing and Operations

The Design/Build Firm shall document all existing signal operations parameters, including signal timing plans, control section configurations, and system operational strategies.

Following the implementation of the new signal system and prior to official system acceptance, the Design/Build Firm shall be responsible for re-installing the timing data, timing plans, control section configurations, and overall operations. The Design/Build Firm shall be responsible for re-installing the “existing conditions” timing parameters as-is, unless: 1) updated or alternative timing data is supplied to the Design/Build Firm by the County or the Department prior to the final system acceptance; 2) existing timings need to be revised to match approved timings; or 3) the Design/Build Firm develops new pedestrian signal timings as part of this project. All new timings must be signed and sealed by a Florida Professional Engineer. The Design/Build Firm shall ensure that the existing signal coordination is maintained until the new coordinated timings are installed. The Design/Build Firm shall ensure that coordinated signal operation is provided during the entire life of the project.

#### Pedestrian Signals and Associated Equipment

The Design/Build Firm shall inventory and examine all existing pedestrian signals and associated equipment. The Design/Build Firm shall identify all non-working or malfunctioning components. At those locations where no new pedestrian features are to be added by the Design/Build Firm, the County will repair any malfunctioning equipment.

#### Loop Detectors, System Detectors, and Video Detectors

The Design/Build Firm shall inventory all existing intersection detectors. The Design/Build Firm shall identify all malfunctioning or nonfunctioning detectors or other issues pertaining to detection and present a summary of the inventory issues to the Department. The local Maintaining Agency will repair the

malfunctioning detectors. The Design/Build Firm shall repair malfunctioning detectors if the inventory is not completed and the Department is not advised of faulty detectors within the required timeframe.

#### Signal Controllers and Cabinet Equipment

The Design/Build Firm shall inventory and examine all existing signal controller cabinets included in the project to fully understand their components and operation. The Design/Build Firm shall also identify all non-working, malfunctioning, or damaged cabinet components. The Design/Build Firm shall audit all field wiring labels to confirm their accuracy. The Design/Build Firm shall apply new labels to all existing and newly installed field wiring as part of this project. At those intersections receiving new controller cabinets, the Design/Build Firm shall remove the existing Opticom unit from the existing cabinet and install it in the new cabinet. Intersections that currently have Opticom units are defined in the Opticom Locations list included with this RFP.

#### TOC

The Design/Build Firm shall examine the TOC and identify all issues or items of concern regarding the integration of the ATMS components with the TOC.

#### Communications Infrastructure

The Design/Build Firm will utilize existing County fiber in existing County conduit for a portion of the interconnect system. The County will provide Optical Time Domain Reflectometer (OTDR) traces of this fiber to the Design/Build Firm prior to the submittal of the 60% plans. The Design/Build Firm will install new fiber optic cable in existing Department conduit. The Department will have inspected this conduit to ensure its viability.

#### Preemption Detection

The Design/Build Firm shall inventory all controllers with preemption timing. After installation of a new controller, the preemption timing parameters shall be installed exactly as they were prior to any construction.

### **G. Interim Operations**

The Design/Build Firm shall plan, design, and deploy interim operations for the existing Aries closed-loop signal system (includes signal control), the existing Centrac® system (includes CCTV cameras and signal control), and new signal system components as they are systematically deployed during the construction phase of the project. Maintain all existing operational functionality and control throughout the entire project limits and during the entire project construction time. Operational functionality shall include, but is not limited to:

- Signal timing
- Maintenance of Traffic (MOT)

### **H. Design/Build Responsibility**

The Design/Build Firm shall be responsible for survey, geotechnical investigation, design, acquisition of all permits not acquired by the Department, any required modification of permits acquired by the Department, MOT, demolition, and construction on or before the project completion date indicated in the

Technical Proposal. The Design/Build Firm will coordinate all utility relocations.

The Design and Construction Criteria (Section VI.) sets forth requirements regarding survey, design, construction, and MOT during construction, requirements relative to project management, scheduling, and coordination with other agencies and entities such as state and local government, utilities and environmental permitting agencies, and the public.

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 complete documentation.

### **I. Department Responsibility**

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

### **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.

<b>Date</b>	<b>Event</b>
<u>December 12, 2011</u>	Advertisement
<u>December 23, 2011</u>	Expanded Letters of Interest for Phase I of the procurement process due in District Office by 5:00pm local time
<u>January 6, 2012</u>	Proposal Evaluators submit Expanded Letter of Interest Scores to Contracting Unit 2:00 pm local time
<u>January 9, 2012</u>	Contracting Unit provides Expanded Letter of Interest scores and comment of Proposal Evaluators to Selection Committee 11:00 am am/pm local time
<u>January 10, 2012</u>	Public Meeting of Selection Committee to review and confirm Expanded Letter of Interest scores 10:00 am local time
<u>January 10, 2012</u>	Notification to Responsive Design-Build firms of the Expanded Letter of Interest scores 5:00 pm local time
<u>January 12, 2012</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>January 13, 2012</u>	Shortlist Posting
<u>January 20, 2012</u>	Final RFP provided to Design-Build firms providing Affirmative Declaration of Intent to continue to Phase II of the procurement process

<b>Date</b>	<b>Event</b>
<u>January 23, 2012</u>	Pre-proposal meeting at 1:30 p.m. local time in District One Headquarters, 801 N. Broadway Ave., Bartow Fl., 33830.
<u>January 30, 2012</u>	Alternative Technical Concept Meeting No. 1
<u>February 2, 2012</u>	District determination of proposed ATC
<u>February 9, 2012</u>	Deadline for submittal of Alternative Technical Concept Proposals 5:00pm local time.
<u>February 12, 2012</u>	Final deadline for submission of Design Exceptions or Variances
<u>February 16, 2012</u>	District Approval of ATC
<u>February 29, 2012</u>	Final deadline for submission of questions/requests for information
<u>March 7, 2012</u>	Information Cut-off date (Last Date Department may provide any information to Design-Build Firms prior to the submittal of Technical Proposals)
<u>March 28, 2012</u>	Technical Proposals due in District Office by 4:00 p.m. local time
<u>May 16, 2012</u>	Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.
<u>May 23, 2012</u>	Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time
<u>May 31, 2012</u>	Price Proposals due in District Office by 2:00 p.m. local time.
<u>May 31, 2012</u>	Public announcing of Technical Scores and opening of Price Proposals at 2:00 p.m. local time in District One Headquarters, Transportation Support Conference Room, 801 N. Broadway Ave., Bartow Fl., 33830.
<u>June 12, 2012</u>	Public Meeting of Selection Committee to determine intended Award
<u>June 12, 2012</u>	Posting of the Department's intended decision to Award (will remain posted for 72 hours)
<u>June 20, 2012</u>	Anticipated Award Date
<u>July 23, 2012</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 bid guaranty in an amount of not less than five percent of the total bid amount shall accompany each Proposer's Price Proposal. The 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 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 guaranty shall be a liquidated sum, which shall be due in full in the event of default, regardless of the actual damages suffered. The bid guaranty of all Proposers shall be released at such time as the successful Proposer has complied with the condition stated herein, but not prior to that time.

### **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 purposes of this meeting are to provide a forum for all concerned parties to discuss the proposed project; answer questions on the design and construction criteria, CPM schedule, and method of compensation; provide instructions for submitting proposals and design exceptions/variances; and address other relevant issues. In the event that any discussions or questions at the pre-proposal meeting require, in the Department's opinion, official additions, deletions, or clarifications of the RFP, the Design and Construction Criteria, or any other document, the Department will issue a written summary of questions and answers or an addendum to this RFP 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. The Federal Highway Administration (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 Department's Question and Answer website:

<http://www2.dot.state.fl.us/construction/bidquestionmain.asp>

During and after the meeting, it is the responsibility of the Project Manager/Contracting Unit to ensure that each Proposer develops their technical proposal with the same information. If a Proposer receives information from the Department relating to the project prior to the information cutoff date, the Department will ensure that all Proposers receive the same information in a timely fashion. The project file will clearly document all communications with any Firm regarding the design and construction criteria by the Contracting Unit or the Project Manager.

### **E. Question and Answer Session**

The Department may meet with each Proposer, formally, for a 60-minute Question and Answer (Q&A) session. The FHWA shall be invited on Federal Aid Oversight Projects. The purpose of the Q&A session is for the Technical Review Committee to seek clarification and ask questions, as it relates to the Technical Proposal, of the Proposer. The Q&A session will occur a minimum of two weeks after the date the Technical Proposals are due, and be part of the Overall Technical Proposal Scoring. The Proposers shall be given a minimum of one week after the Q&A session to submit their Price Proposal. The Department will terminate the Q&A session promptly at the end of the allotted time. The Department may tape record or videotape all or part of the Q&A session. 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. Within one 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 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. No additional time will be allowed to research answers.

The Department will provide some (not necessarily all) of the proposed questions to each Design/Build Firm approximately 24 hours before the scheduled Q&A session. No supplemental materials, handouts, etc. will be allowed to be presented in the Q&A session.

#### **F. Protest Rights**

Any person who is adversely affected by the specifications contained in this RFP must file a notice of intent to protest in writing within 72 hours of the receipt of this RFP. 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, Room 562  
Tallahassee, Florida 32399-0458

The formal written protest must state with particularity the facts and law upon which the protest is based and be legible, on 8 ½ x 11-inch white paper, and contain the following:

1. Name, address, telephone number, and Department identifying number on the Notice, if known, and name, address, and telephone number of a representative, if any; and
2. An explanation of how substantial interest will be affected by the action described in the RFP; and
3. A statement of when and how the RFP was received; and
4. A statement of all disputed issues of material fact. If there are none, this must be indicated; and
5. A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle to relief; and
6. A demand for relief; and
7. Conform to all other requirements set out in Florida Statutes (F.S.), Chapter 120 and F.A.C., Chapter 28-106, including but not limited to Section 120.57, F.S., and Rules 28-106.301, F.A.C., as may be applicable.

A formal hearing will be held if there are disputed issues of material fact. If a formal hearing is held, this matter will be referred to the Division of Administrative Hearings, where witnesses and evidence may be presented and other witnesses may be cross-examined before an administrative law judge. If there are no

disputed issues of material fact, an informal hearing will be held, in which case the person filing the protest will have the right to provide the Department with any written documentation or legal arguments which they wish the Department to consider.

Mediation pursuant to Section 120.573, F.S., may be available if agreed to by all parties, and on such terms as may be agreed upon by all parties. The right to administrative hearing is not affected when mediation does not result in a settlement.

Failure to file a protest within the time prescribed in Section 120.57(3), F.S., shall constitute a waiver of proceedings under Chapter 120, F.S.

#### **G. 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.

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

#### **H. 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. 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.

#### **I. Modification or Withdrawal of Proposal**

Proposers may modify or withdraw previously submitted proposals at any time prior to the proposal due date. Requests for modification or withdrawal of a submitted proposal shall be in writing and shall be signed in the same manner as the Proposal. Upon receipt and acceptance of such a request, the entire 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 Proposal, provided the change is submitted prior to the proposal due date.

#### **J. Department's Responsibilities**

This RFP 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. Proposers 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 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. Proposers shall 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 Proposer has made an examination as described in this provision.

#### **K. 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 RFP.

#### **IV. Disadvantaged Business Enterprise (DBE) Program.**

##### **A. DBE Availability Goal Percentage**

The Department of Transportation has an overall 8.6% race-neutral DBE goal. This means that the State's goal is to spend at least 8.6% of the highway dollars with Certified DBEs as prime Design/Build Firms or as subcontractors. Race-neutral means that the Department believes that the 8.6% overall goal can be achieved through the normal competitive procurement process. The Department has reviewed this project and assigned a DBE availability goal shown on the bid blank/contract front page under "% DBE Availability Goal". Although not a contract requirement, the Department believes that this DBE percentage can realistically be achieved on this project based on the number of DBEs associated with the different types of work that will be required.

Under 49 Code of Federal Regulations (C.F.R.) Part 26, if the 8.6% 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 all of our Design/Build Firms to actively pursue obtaining bids and quotes from Certified DBEs.

##### **B. Anticipated DBE Participation Statement**

The Department is reporting to the FHWA the planned commitments to use DBEs. This information is being collected through the Anticipated DBE Participation Statement. This statement shall be submitted to the District Contract Compliance Manager/ Resident Compliance Officer who will then submit it electronically to the Equal Opportunity Office. Although these statements WILL NOT become a mandatory part of the contract, they will assist the Department in tracking and reporting planned or estimated DBE utilization.

##### **C. Equal Opportunity Reporting System**

The Design/Build Firm is required to report monthly, through the Department's Equal Opportunity Reporting System on the Internet at, <http://www.dot.state.fl.us/equalopportunityoffice/> actual payments, minority status, and the work type of all subcontractors and suppliers. All DBE payments must be reported whether or not the prime initially planned to utilize the company. Each month the prime must report actual payments to all DBE and Minority Business Enterprise (MBE) subcontractors and suppliers. In order for the race-neutral DBE Program to be successful, cooperation is imperative.

##### **D. 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 DBEs. This consultant is also required to work with prime Design/Build Firms who have been awarded contracts to assist in identifying DBEs that are available to participate on the project. The successful Design/Build Firm should meet with the DBE Supportive Services Provider to discuss the DBEs that are available to work on this project. The current Provider for the State of Florida is the Blackmon Roberts Group and can be reached at (863) 802-1280 in Lakeland or (305) 777-0231 in Coral Gables.

##### **E. DBE Affirmative Action Plan**

A DBE Affirmative Action Plan must be approved and on file with the Equal Opportunity Office prior to award of the contract for each prime Design/Build Firm. Update and resubmit the Plan every three years.

No contract will be awarded until the Department approves the Plan. The DBE Affirmative Action Plan must be on your company's letterhead, signed by a company official, dated, and contain all elements of an effective DBE Affirmative Action Plan. These Plans should be mailed to:

Florida Department of Transportation  
Equal Opportunity Office  
605 Suwannee Street, MS 65  
Tallahassee, FL 32399-0450

Questions concerning the DBE Affirmative Action Plan may be directed to the Equal Opportunity Office by calling (850) 414-4747.

**F. 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 DBEs and non-DBEs.

On the Bidders Opportunity Form if the answers to numbers 2, 3, 4, or 5 are not known, leave them blank and the Department will complete the information. This information should be returned with the bid package or proposal package or submitted to the Equal Opportunity Office within three days of submission of the proposal package. It can be mailed to the Equal Opportunity Office or faxed to (850) 414-4879.

**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, American Association of State Highway and Transportation Officials (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, the MUTCD, and the Design Standards and Design Standards Modifications. 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 Design Standard Modifications 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. 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/PPMManual/PPM.shtm>
2. Florida Department of Transportation Design Standards  
<http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm>

3. 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/specificationsoffice/Default.shtm>
4. Florida Department of Transportation Surveying Procedure  
<http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/550030101.pdf>
5. Florida Department of Transportation EFB User Handbook (Electronic Field Book)  
<http://www.dot.state.fl.us/surveyingandmapping/regulations.shtm>
6. Florida Department of Transportation Drainage Manual  
<http://www.dot.state.fl.us/rddesign/dr/Manualsandhandbooks.shtm>
7. Florida Department of Transportation Soils and Foundations Handbook  
<http://www.dot.state.fl.us/structures/Manuals/SFH.pdf>
8. Florida Department of Transportation Structures Manual  
<http://www.dot.state.fl.us/structures/manlib.shtm>
9. Florida Department of Transportation Current Structures Design Bulletins  
<http://www.dot.state.fl.us/structures/Memos/currentbulletins.shtm>
10. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Production Criteria Handbook  
<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>
11. Florida Department of Transportation Production Criteria Handbook CADD Structures Standards  
<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>
12. Instructions for Design Standards  
<http://www.dot.state.fl.us/structures/IDS/IDSportal.pdf>
13. AASHTO – A Policy on Geometric Design of Highways and Streets  
[https://bookstore.transportation.org/item\\_details.aspx?ID=110](https://bookstore.transportation.org/item_details.aspx?ID=110)
14. MUTCD - 2009  
<http://mutcd.fhwa.dot.gov/>
15. Safe Mobility For Life Program Policy Statement  
<http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/000750001.pdf>
16. Traffic Engineering and Operations Safe Mobility for Life Program  
<http://www.dot.state.fl.us/trafficoperations/Operations/SafetyisGolden.shtm>
17. 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>
18. Florida Department of Transportation Florida Sampling and Testing Methods  
<http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/publications/fstm/disclaimer.shtm>
19. 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>

20. Florida Department of Transportation Design Bulletins and Update Memos  
<http://www.dot.state.fl.us/rddesign/updates/files/updates.shtm>
21. Florida Department of Transportation Utility Accommodation Manual  
<http://www.dot.state.fl.us/rddesign/utilities/UAM.shtm>
22. AASHTO LRFD Bridge Design Specifications  
[https://bookstore.transportation.org/category\\_item.aspx?id=BR](https://bookstore.transportation.org/category_item.aspx?id=BR)
23. Florida Department of Transportation Flexible Pavement Design Manual  
<http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm>
24. Florida Department of Transportation Rigid Pavement Design Manual  
<http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm>
25. Florida Department of Transportation Pavement Type Selection Manual  
<http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm>
26. Florida Department of Transportation Right of Way Manual  
<http://www.dot.state.fl.us/rightofway/Documents.shtm>
27. Florida Department of Transportation Intelligent Transportation System Guide Book  
[http://www.dot.state.fl.us/TrafficOperations/Doc\\_Library/Doc\\_Library.shtm](http://www.dot.state.fl.us/TrafficOperations/Doc_Library/Doc_Library.shtm)
28. 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>
29. Florida Department of Transportation Bicycle and Pedestrian Policies and Standards  
[http://www.dot.state.fl.us/safety/ped\\_bike/ped\\_bike\\_standards.shtm](http://www.dot.state.fl.us/safety/ped_bike/ped_bike_standards.shtm)
30. Federal Highway Administration Hydraulic Engineering Circular Number 18 (HEC 18).  
[http://www.fhwa.dot.gov/engineering/hydraulics/library\\_arc.cfm?pub\\_number=17](http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17)
31. 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>
32. Florida Statutes  
<http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFID=14677574&CFTOKEN=80981948>
33. Florida Department of Transportation Minimum Specifications for Traffic Control Signals and Devices (MSTCSD)  
[http://www.dot.state.fl.us/trafficoperations/Traf\\_Sys/terl/apl4.shtm](http://www.dot.state.fl.us/trafficoperations/Traf_Sys/terl/apl4.shtm)
34. Florida Department of Transportation Traffic Engineering Manual  
<http://www.dot.state.fl.us/trafficoperations/Operations/Studies/TEM/TEM.shtm>
35. Florida Department of Transportation Project Development and Environmental Manual  
<http://www.dot.state.fl.us/emo/pubs/pdeman/pdemanI.shtm>

## **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.

## **C. Alternative Technical Concept (ATC) Proposals**

### **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. ATC's allow the Department to obtain the best value for the public. ATC meeting(s) may be held (maximum of two meetings per Design/Build Firm), in order for the Design/Build Firm to propose changes to supplied basic configurations, project scope, design criteria, or construction criteria. The proposed changes shall provide a solution that is equal or better than what is required by the Request for Proposal (RFP) as determined by the Department. A concept is not an ATC if it reduces quality, performance, reliability or scope or if the proposed concept is contemplated or not specifically prohibited by the RFP.

The purpose of this meeting is to discuss the proposed changes, answer questions and other relevant issues. Each Design/Build Firm with proposed changes may request a meeting to describe the proposed changes. 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. The meeting should take place prior to the ATC due date noted in the RFP.

### **2. Submittal and Review of ATC'S**

After the meeting, the District Design Engineer (DDE) will communicate with the appropriate staff (i.e. District Structures 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 as to whether the ATC is acceptable, not acceptable, needs additional information or does not qualify as an ATC within two weeks of the ATC meeting. If the DDE or his designee determines that more information is required for the review of an ATC, questions should be prepared by the DDE or his designee to request and receive responses from the Design/Build Firm. The review should be completed within one week of the receipt of the ATC. If the review will require additional time, the Design/Build Firm should be notified in advance with an estimated timeframe for completion.

If the ATC will result in changes to design standards or criteria, the changes will need to be approved in accordance with the Department's procedures prior to responding to the Design/Build Firm.

The project file will clearly document all communications with any Design/Build Firm.

ATC's are accepted by the Department at its discretion and the Department reserves the right to reject any ATC submitted.

### 3. Contents of ATC Submittal

All ATC submittals shall be sequential 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 or a determination that the ATC is consistent with the requirements of the RFP;
- 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; and
- 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; and
- j) Anticipated Life: Any changes in the anticipated life of the item comprising the ATC.

After the ATC meetings, the Contracting Unit, along with the Project Manager, will update the RFP criteria or issue an Addendum, if the ATC deviates from the RFP and is approved by the Department (**FHWA must approve such change as applicable**). Approved Design Exceptions or Design Variances will require an update to the RFP.

The Department reserves the right to disclose to all Design/Build Firms any issues raised during the ATC meetings, except to the extent that FDOT determines, in its sole discretion, such disclosure would reveal confidential or proprietary information of the ATC.

### 4. Incorporation into Proposal

The Design/Build Firm will have the option to include any ATC's to which it received approval in their proposal and the Proposal Price should reflect any incorporated ATC's.

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, after award of the contract whichever occurs first.

**D. Geotechnical Services**

**1. General Conditions**

The Design/Build Firm will be responsible for identifying and performing any geotechnical investigation, analysis, and design dictated by the project needs. All geotechnical work necessary shall be performed in accordance with the governing regulations.

The Design/Build Firm shall provide the Department signed and sealed design and construction reports, as required. The reports shall be a record set of all geotechnical information, including relevant support data.

**2. Pile Foundations (Not Applicable to this Project)**

**3. Drilled Shaft Foundations for Bridges and Major Structures (Not Applicable to this Project)**

**4. Drilled Shaft Foundations for Miscellaneous Structures**

The Design-Build Firm shall provide Geotechnical Consultant Services in accordance with the Department standards, policies and procedures to perform geotechnical design, foundation construction services, inspection and foundation testing. In addition to the standard policies, the following qualifications are required:

- Use professional engineers registered in the State of Florida with at least three (3) years of post-registration experience in drilled shaft foundation design and construction.
- The drilled shaft installation shall be supervised and certified by the Geotechnical Foundation Design Engineer of Record. These services shall include providing CTQP-qualified Drilled Shaft Inspectors in the numbers necessary to comply with Department specifications for recording drilled shaft construction records.
- Use drilled shaft superintendents in responsible charge of drilling operations experienced in drilled shaft installation and testing in the State of Florida meeting the requirements of section 455-15.1.2 of FDOT Standard Specifications. This “responsible charge” experience shall include at least three (3) Department projects with drilled shaft foundations of similar size and depth.

**E. Environmental Permits**

**1. Storm Water and Surface Water**

Plans shall be prepared in accordance with Chapter 62-25, Regulation of Stormwater Discharge, F.A.C.

## 2. Permits

All applicable data shall be prepared in accordance with Chapter 373 and 403, F.S., Chapters 40 and 62, F.A.C.; Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and parts 114 and 115, Title 33, C.F.R. 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. 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 will obtain permits while acting as an authorized representative for the "Department" for permitting purposes only. If any agency rejects or denies the permit application, it is the Design/Build Firm's responsibility to make whatever changes are necessary to ensure the permit is approved.

The project is within the South Florida Water Management District (SFWMD). The project may require an Environmental Resource Permit (ERP), U.S. Army Corps of Engineers (USACOE) Nationwide Permits, a Florida Fish and Wildlife Conservation Commission (FWC) – Gopher Tortoise Relocation Permit, a U.S. Coast Guard Permit, and a U.S. Environmental Protection Agency (EPA) – National Pollutant Discharge Elimination System (NPDES) Permit.

However, notwithstanding anything above to the contrary, upon the Design/Build Firm's preliminary request for extension of Contract Time, pursuant to Section 8-7.3 of the Standard Specifications, being made directly to the District Construction Engineer, the Department reserves unto the District Construction Engineer, in his 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.

## 3. Protected Species

As part of the Design/Build Firm's responsibility to acquire all necessary permits or modify any approved permits, an evaluation of the project for impacts to protected species shall be performed by the Design/Build Firm in accordance with the Endangered Species Act, State Statutes, and all rules and regulations of each regulatory agency with jurisdiction on the project. This evaluation shall be of sufficient detail and properly documented so as to satisfy permit acquisition and/or any mitigation requirements. The Design/Build Firm shall be responsible for any agency coordination required to perform the evaluation, including all activities that impact any wildlife permits and any mitigation.

The Design/Build Firm is responsible for avoidance and minimization of impacts to protected species and their habitats within and adjacent to project limits to the maximum practicable extent. The Design/Build Firm shall be responsible for an assessment of all federal and state-protected species and their habitat that could be impacted by the project. Species-specific surveys conducted for protected species shall be in accordance with guidelines/protocol accepted by the regulatory agencies with the appropriate jurisdiction (e.g., U.S. Fish and Wildlife Service for federally-listed species and Florida FWC for state-listed/regulated species). The Design/Build Firm is advised that Federal, State, and/or local permits (including take/incidental take permits) may be required prior to impacting certain species (including, but not limited to, bald eagles, gopher tortoises, and tortoise commensal species), and/or prior to impacting

individual animals, nests, burrows, or their habitat. The Design/Build Firm shall coordinate all applicable permit applications and discussions of protected species and/or habitat impact mitigation through the Department's Environmental Management Office for concurrence prior to coordination with any regulatory agency. The Department will be allotted 30 days to review and comment on any submittal or re-submittal.

The Design/Build Firm shall include the most recent version of the FDOT's General Plan Notes regarding Construction Precautions for threatened or endangered species as Special Provisions in the construction plans as determined by actual site conditions. The Design/Build Firm shall also include any other applicable provisions as directed by the Department.

The Design/Build Firm shall be responsible for all activities associated with the project (including any mitigation and/or any off-site activities such as borrow pits and staging areas) and all costs associated with any wildlife related permit, coordination, commitments, conditions, requirements, understandings, or agreements throughout the life of the project.

The Design/Build Firm must develop into their project schedules the statutory time allowed and/or other reasonable timeframe for agencies to review submittals, time necessary to prepare responses to agency questions/comments, additional review time by agencies, and the maximum and/or reasonable time period allowed for agency action.

#### **4. Archaeological and Historical Features**

The Design/Build Firm shall collect all data necessary to completely analyze the impacts to all cultural and historic resources for all off-project right-of-way.

The Design/Build Firm shall collect all data necessary to completely analyze the impacts to all cultural and historic resources for all project right-of-way, including any ponds and/or mitigation sites, and prepare a Cultural Resource Assessment Survey (CRAS) in accordance with the FDOT *PD&E Manual* Part 2, Chapter 13. This CRAS shall be provided to the Department's Environmental Management Office for review, approval, and further coordination with FHWA and the State Historic Preservation Office (SHPO). The Department will be allotted 30 days to review and comment on any submittal or re-submittal.

The Design/Build Firm shall be responsible for all off-project activities associated with the project (including any off-site activities such as borrow pits and staging areas) and all costs associated with any archaeological and historical features and/or coordination, commitments, conditions, requirements, understandings, or agreements throughout the life of the project.

The Design/Build Firm must develop into their project schedules the statutory time allowed and/or other reasonable timeframe for agencies to review submittals, time necessary to prepare responses to agency questions/comments, additional review time by agencies, and the maximum and/or reasonable time period allowed for agency action.

#### **5. Project Development and Environmental (PD&E)**

Any design proposal that changes the intent of the existing approved PD&E documents must be approved by the Department and may require a re-evaluation. It is the responsibility of the Department to determine the need and complete a re-evaluation. The Design/Build Firm shall, at the Department's request, furnish all necessary information to assist with the Department's re-evaluation effort(s).

Commitments made in the approved PD&E documents (See Other Documents) will be honored by the Design/Build Firm. Costs associated with adherence to these commitments are the responsibility of the Design/Build Firm.

Copies of all the PD&E documents including any approved re-evaluations will be provided to shortlisted proposers.

**F. ITS Plans**

All plans are to be prepared in accordance with the latest design standards and practices, Department's Standard Specifications, Indices, Department's PPM, and shall be accurate, legible, complete in design, drawn to the scale indicated in the Department's manuals, and furnished in reproducible form.

**G. Signing and Marking Plans**

All plans are to be prepared in accordance with the latest design standards and practices (MUTCD), Department's Standard Specifications, Indexes, Department's PPM, and shall be accurate, legible, complete in design, drawn to the scale indicated in the Department's manuals, and furnished in reproducible form.

**H. Structures Plans**

All structures plans shall be prepared in accordance with the latest Department's Structures Manual, and interims and other Department's standards, policies, procedures, applicable temporary design bulletins and directions from the State and District Structures Design Engineers. This shall be accurate, legible, complete in design, drawn to appropriate scale, and furnished in reproducible form on material acceptable to the Department.

**I. Railroad Coordination**

The Department does not anticipate a need to coordinate with the Railroad for this project. The Design/Build Firm shall review all information provided by the Department to determine if existing facilities are in place to eliminate railroad coordination. If it becomes necessary for the Design/Build Firm to place infrastructure either below or above the rail corridor, they shall provide the necessary railroad coordination. The Design/Build Firm shall be responsible for the cost of agreements and flagging services that may be required by the Railroad.

**J. 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 F.A.C. All surveying and mapping work must be accomplished in accordance with the Department's Surveying Procedure, Topic Nos. 550-030-101; Right-of-Way Mapping Procedure, Topic No. 550-030-015; and Aerial Surveying Standards for Transportation Projects Procedure, Topic No. 550-020-002. This work must comply with the Minimum Technical Standards for Professional Surveyors and Mappers, Chapter 5J-17, F.A.C., pursuant to Section 472.027, F.S., and any special instructions from the Department. This survey also must comply with the Department of Environmental Protection Rule, Chapter 18-5, F.A.C., pursuant to Chapter 177, F.S., and the Department of Environmental Protection.

**K. 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 provided by the Department is 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.

**L. Submittals**

**1. Plans**

Plans must meet the minimum contents of a particular phase submittal prior to submission for review. The particular phase of each submittal shall be clearly indicated on the cover sheet. Component submittals must be accompanied by sufficient information for adjoining components or areas of work to allow for proper evaluation of the component under review.

The Design/Build Firm shall provide copies of required review documents as listed below.

**60% Component Plans**

15 sets of 11" X 17" ITS Plans  
1 set of 11" X 17" ITS Plans in PDF format  
CCTV Camera Video Survey

**90% Component Plans**

15 sets of 11" X 17" ITS Plans  
1 set of 11" X 17" ITS Plans in PDF format  
6 copies of Draft Final Geotechnical Report  
6 sets of documentation – structures  
6 sets of power drop calculations  
6 sets of product cut sheets – electronic and networking equipment  
5 copies of Technical Special Provisions  
Independent Peer reviewer's comments and comment responses

**Final Component Plans**

15 sets of 11" X 17" ITS Plans  
1 set of 11" X 17" ITS Plans in PDF format  
6 sets of final documentation  
6 copies of Final Geotechnical Report  
1 signed and sealed copy of 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.

**Construction Set**

- 1 set of 11" X 17" copies of the signed and sealed plans for the Department to stamp "Released for Construction"
- 2 sets of electronic plans each in Microstation and PDF format (converted from Microstation)

**Record Set**

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" signed and sealed Plans in PDF format
- 15 sets of 11" X 17" copies of the signed and sealed Plans
- 15 sets of final documentation (if different from final component submittal)
- 2 Final Project CDs
- 2 sets of electronic plans each in Microstation and PDF format (converted from Microstation)

The submittal of device specifications and equipment product sheets will not be accepted prior to the 90% plans submittal. The review time will begin upon receipt of a complete submittal. No fabrication, casting or construction will occur until all related design, shop drawings, plans, and specifications comments are resolved to the Department's satisfaction, except at the Design/Build Firm's own risk.

If utilizing printed literature, such as cut-sheets, to satisfy some or all of the requirements, there shall be no statements within the literature that conflict with this RFP, the MTRs, or the Design/Build Firm's written Technical Proposal, or that cause interpretation problems by the Department. The Design/Build Firm shall cross off, initial any such conflicting statements or data, and attach an appropriate statement clearly indicating how the RFP requirements are fulfilled. Submittals that are, in the judgment of the Department, insufficient to permit proper evaluation will be rejected.

The Design/Build Firm's Professional Engineer in responsible charge of the project's design shall professionally endorse (sign and seal and certify) the record prints, the Special Provisions, and all reference and support documents. The professional endorsement shall be performed in accordance with the Department's PPM.

The Design/Build Firm shall complete the record set as the project is being constructed. The record set becomes the as-builts at the end of the project. All changes shall be signed/sealed by the Engineer of Record (EOR). The record set shall reflect all changes initiated by the Design/Build Firm or the Department in the form of revisions.

The record set shall show Global Positioning System (GPS) coordinate (sub-foot accuracy) locations of all ATMS field elements and equipment, including cabinets, equipment boxes, pull boxes (electrical and fiber), splice boxes, access points, conduit routing at 500-foot intervals, complete measurement of the fiber optic cable length including all slack cable, CCTV camera poles, vehicle detector poles, power drops, generator locations, etc. Provide a separate table listing the GPS coordinates for all field elements installed by the Design/Build Firm as a part of the record set. The Design/Build Firm shall convert these coordinates into State Plane format for ease of importing into Computer Aided Design and Drafting (CADD) software (such as Microstation). All aerials used as base maps shall be orthorectified and the GPS coordinates of the project elements shall be tied to the aerials on the final

record set plans. The record set submitted by the Design/Build Firm shall include fiber optic cable test results and fiber optic cable splice diagrams identifying the individual fiber splices on the various fiber optic cables. The fiber optic splice diagram shall be developed and presented in a format specified by the Department. The record set shall also include all directional bore logs, the actual splice link loss budget information, and the final power drop load calculations.

The record set shall be submitted on a Final Project CD upon completion of field construction activities and prior to beginning the 30-day Systems Operation Test. The CEI shall do a review of the record set prior to final acceptance in order to complete the record set.

The CEI shall certify the final plans as per Section 4.5.7 of Chapter 4 of the Preparation and Documentation Manual (TOPIC No. 700-050-010)

## 2. Milestones

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

- Shop Drawings
- Test Evaluation Matrix
- Test Plan Submittal
- Training Plan Submittal

## 3. Railroad Coordination (Not Applicable to this Project)

### M. Contract Duration

The Design/Build Firm shall establish the contract duration for the subject project. In no event shall the contract duration exceed **565** calendar days. The schedule supporting the proposed contract duration will be submitted with the Technical Proposal and should identify if the work activity durations are based on calendar days or working days. The Proposed Contract Time (PCT) reflected in the schedule may be amended in the bid proposal. The official PCT will be the one submitted with the Bid Price Proposal.

### N. Project Schedule

The Design/Build Firm shall submit a project schedule, in accordance with Subarticle 8-3.2 (Design/Build Division I Specifications), which supports the established contract duration submitted as part of the Proposal. The Design-Build Firm's schedule should allow for a 15 working day review time for the Department's review of all submittals.

The minimum number of activities shall be those listed in the payout schedule and those listed below:

- Anticipated Award Date
- Notice to Proceed (NTP)
- Intersection Inventory
- Design Submittals
- Material Acquisition
- Design Survey

- Design Workshops for 60% and 90% Plan Submittals
- Design Reviews by the Department and FHWA
- Design Review / Acceptance Milestones
- Materials Quality Tracking
- Geotechnical Investigation
- Structural Design
- Test Evaluation Matrix Submittal
- Test Evaluation Matrix Review
- Design Approval for Construction
- Start of Construction
- Clearing and Grubbing
- Construction Mobilization
- Environmental Permit Acquisition
- Erosion Control
- Test Plan Submittal
- Test Plan Review
- Training Plan Submittal
- Training Plan Review
- Subsystem Testing
- As-built Plans/Record Drawings
- Additional Construction Milestones as determined by the Design/Build Firm
- Final Completion Date for All Work

The Department will review submittals through the Electronic Review Comment (ERC) system so all applicable Department personnel may comment on the various aspects of the plans. The Design/Build Firm shall designate one person to manage the responses to comments by Department personnel.

**O. Key Personnel/Staffing**

The Design/Build Firm's work shall be performed and directed by key personnel identified in the Technical Proposal. Any changes in the indicated personnel shall be subject to review and approval by the Department's Project Manager. The Design/Build Firm shall have available a professional staff that meets the minimum training and experience set forth in F.S. Chapter 455.

**P. 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. The Design/Build Firm shall contact Ms. Debbie Tower, District Public Information Officer, at (239) 461-4311 for coordination with the District Public Information Office. These meetings may include, but are not limited to:

- Project NTP (Kick-Off) meeting
- Metropolitan Planning Organization (MPO) meetings
- County Board Meetings
- Pre-Construction meeting
- Pre-Integration meeting
- Department technical issue resolution
- Permit agency coordination

- Local government agency coordination
- Design Workshops (for the 60% and 90% plans submittals)
- Scoping Meetings

During design, the Design/Build Firm shall meet with the Department's Construction Project Manager on a monthly basis and provide a 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 Construction 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, on a monthly basis, provide written progress reports to the Construction Project Manager that describe the items of concern and the work performed on each task.

A minimum of five primary project/design review meetings (NTP/Kick-Off, 60% Design Workshop, 90% Design Workshop, Pre-Construction, and Pre-Integration) shall be conducted:

**NTP (Kick-Off) Meeting** - The purposes of the Kick-Off Meeting will be to review the contract specifications, to ascertain the adequacy of the Design/Build Firm's efforts in defining and understanding the requirements as contained and detailed in these Design and Construction Criteria, and to identify any areas, which shall be clarified. In addition, the Project Schedule and Quality Assurance/Quality Control (QA/QC) Plan shall be reviewed.

All action items resulting from this meeting shall be satisfactorily addressed before design and construction planning activities can begin. All items reviewed at the meeting shall be coordinated with the Design and Construction Criteria to ensure contract compliance.

The meeting will be held at the Department's facilities on a mutually agreeable date after the NTP date. All information, review documentation, and materials required to conduct and support the meeting including the Project Schedule shall be submitted for review by the Department at least 10 calendar days prior to the scheduled meeting date.

The Kick-Off Meeting shall address, at a minimum, the following items:

- Review of coordination issues
- Review of technical and contractual requirements
- Review of the QA/QC Plan
- Review of submittal process and control
- Review of the action item / problem resolution process
- Review of detailed Project Schedule
- Agree on next project meeting and tentative project meeting schedule

**60% Design Workshop** – The purpose of the 60% Design Workshop is for the Department and the Design/Build Firm to meet and discuss the preliminary 60% plans submittal at a face-to-face meeting to provide feedback on the initial design. The Design/Build Firm shall submit preliminary 60% plans for review by the Department at least seven days prior to the workshop. This review is intended to be cursory in nature to flush out any major issues and shall not be considered as an all-encompassing review. During the workshop, the Department and Design/Build Firm shall be involved in a page-by-page review of the

plans and discussion of all design issues. Once the workshop is completed, the Design/Build Firm shall revise the design as discussed and submit the formal 60% plans for a 15-working-day review by the Department.

**90% Design Workshop** – The purpose of the 90% Design Workshop is for the Department and the Design/Build Firm to meet and discuss the preliminary 90% plans submittal at a face-to-face meeting to provide feedback on the design. The Design/Build Firm shall submit preliminary 90% plans for review by the Department at least seven days prior to the workshop. This review is intended to be cursory in nature to flush out any major issues and shall not be considered as an all-encompassing review. During the workshop, the Department and Design/Build Firm shall be involved in a page-by-page review of the plans and discussion of all design issues. Once the workshop is completed, the Design/Build Firm shall revise the design as discussed and submit the formal 90% plans for a 15-working-day review by the Department.

**Pre-Construction Meeting** - The purpose of the Pre-Construction Meeting shall be to verify the Design/Build Firm's installation and deployment plans by reviewing factory and pre-installation test results, the Installation/Construction Plan, utility coordination issues, and other issues.

The Pre-Construction Meeting shall be scheduled by the CEI at least 30 calendar days before the beginning of construction / installation activities. The Design/Build Firm shall identify any concerns regarding deployment and provide detailed information on how such concerns will be addressed and minimized.

The CEI Senior Project Engineer will schedule the Pre-Construction Meeting. The Design/Build Firm shall provide all documentation as required to support the meeting to include detailed functional narrative text, and system and subsystem drawings and schematics. Also included shall be the plans and engineering specifications 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 with other agencies and subsystems.

The Pre-Construction Meeting shall address, at a minimum, the following items:

- Review of the technical and operational details of the Lee County ATMS including, but not limited to, the proposed equipment list, equipment configuration, cabinet layout, network interfaces, fiber splice plan, reconfiguration and fiber utilization plans
- Review enclosure / cabinet design and configuration
- Review any outstanding action items/system issues from previous project meetings
- Identify and document all unresolved items with action responsibilities defined
- Review of the Installation/Construction Plans
- Review of detailed Integration Plans and schedule
- Submittal of the Test Evaluation Matrix for review
- Submittal of the Test Plans for review
- Review plans for maintaining existing operations during the construction and integration activities of this project
- Review of MOT and lane closure plans, if any
- Review any potential safety issues during installation

All action items resulting from the Pre-Construction Meeting shall be satisfactorily addressed by the Design/Build Firm and reviewed and accepted by the Department before granting final Pre-Construction Meeting approval. Construction shall not commence until all actions have been resolved.

All items reviewed at the Pre-Construction Meeting shall be coordinated with the RFP to ensure contract compliance with all items. Approval of the Pre-Construction Meeting does not release the Design/Build Firm's overall responsibility for ensuring that all design requirements, as specified, have been achieved in the final design and implementation.

**Pre-Integration Meeting** - The purpose of the Pre-Integration Meeting is to verify the Design/Build Firm's integration plans by reviewing proposed splicing diagrams, device placement plans, IP addressing schemes, proposed TOC network upgrades, and other network design issues.

The Pre-Integration Meeting shall occur at least 30 calendar days before the beginning of integration activities. The Design/Build Firm shall identify any concerns regarding the integration and provide detailed information on how to address and minimize such concerns.

The CEI Senior Project Engineer will schedule the Pre-Integration Meeting. The Design/Build Firm shall provide all documentation as required to support the meeting to include detailed functional narrative text, and system and subsystem drawings and schematics. Also included shall be the device installation worksheets 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 with other agencies and subsystems.

The Pre-Integration Meeting shall address, at a minimum, the following items:

- The site survey to prepare the creation of the system database, configuration files, and system graphics.
- Troubleshooting of any Design/Build Firm-installed hardware issues (both field and central) that affect the integration work.
- Preparing for the installation of the hardware and software required to operate the vendor-provided software.
- Provide ITS field device information, such as equipment configuration diagrams, IP addresses, protocols, and documentation (e.g., users' manual, troubleshooting guide, etc.).
- Provide the configuration of the ITS field devices for integration with the Econolite Centracs® software, including link, lane, roadway, and device configurations.
- Provide post-installation services. The services shall include populating the database and tables and creating map links.
- Procurement of all software licenses for workstations.

All action items resulting from the Pre-Integration Meeting shall be satisfactorily addressed by the Design/Build Firm and reviewed and accepted by the Department before granting final Pre-Integration Meeting approval. Integration shall not commence until all actions have been resolved.

All items reviewed at the Pre-Integration Meeting shall be coordinated with the RFP to ensure contract compliance with all items. Approval of the Pre-Integration Meeting does not release the Design/Build Firm's overall responsibility for ensuring that all design requirements, as specified, have been achieved in the final design and implementation.

**Q. 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) has been hired by the Department to carry out an exhaustive Public Involvement Campaign and a marketing effort. The Design/Build Firm shall contact Ms. Debbie Tower, District Public Information Officer, at (239) 461-4311 for coordination with the District Public Information Office. The Design/Build Firm will continue to be part of the Public Involvement effort but on a limited basis as described below.

**2. Community Awareness**

The Design/Build Firm will review and comment on a Community Awareness Program provided by the PIC for the project.

**3. Public Meetings**

The Design/Build Firm shall provide all support necessary for the PIC to hold various public meetings, which may include:

- Kick-off or introductory meeting
- MPO Citizens Advisory Committee Meetings
- MPO Transportation Technical Committee Meetings
- MPO Meetings
- Public Information Meetings
- Elected and appointed officials
- Special interest groups (private groups, homeowners associations, environmental groups, minority groups and individuals)

The Design/Build Firm shall include attendance at two meetings per month for the term of the contract to support the public involvement program.

For any of the above type meetings, the Design/Build Firm shall provide all technical assistance, data, and information necessary for the PIC to produce display boards, printed material, video graphics, computerized graphics, etc., and information necessary for the day-to-day exchange of information with the public, all agencies, and elected officials in order to keep them informed as to the progress and impacts that the proposed project will create. This includes workshops, information meetings, and public hearings.

The Design/Build Firm shall, on an as-needed basis, attend the meetings with an appropriate number of personnel to assist the Department's Project Representative/PIC. The Design/Build Firm shall forward all requests for group meetings to the PIC. The Design/Build Firm shall inform the PIC of any meetings with individuals that occur without prior notice.

#### 4. **Public Workshops, Information Meetings**

The Design/Build Firm shall provide all the support services listed in No. 3 above. All legal/display ads announcing workshops, information meetings, and public meetings will be prepared and paid for by the PIC.

The Department will be responsible for the legal/display advertisements for design concept acceptance. The PIC will be responsible for preparing and mailing (including postage) for all letters announcing workshops and information meetings.

#### 5. **Public Involvement Data**

The Design/Build Firm is responsible for the following:

- Coordinating with the PIC
- Identifying possible permit and review agencies and providing names and contact information for these agencies to the PIC
- Providing required expertise (staff members) to assist the PIC 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, the Urban Design Guidelines Committee, and other agencies

The collection of public input occurs throughout the life of the project and requires maintaining files, newspaper clippings, letters, and especially direct contacts before, during, and after any of the public meetings. Articles such as those mentioned shall be provided to the PIC for their use and records.

In addition to collecting public input data, the Design/Build Firm may be asked by the PIC to prepare responses to any public inquiries as a result of the public involvement process. The Department shall review all responses prior to mailing.

### **R. 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 QMP, 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 QC 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 15 working days of the written NTP. A marked up set of prints from the QC review will be included with each review submittal. The responsible Professional Engineers or

Professional Surveyor that performed the QC 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.

No fabrication, casting, or construction will occur until all related design review and shop drawing review comments are resolved.

## 2. Construction

The Design/Build Firm shall be responsible for developing and maintaining a Construction QC Plan in accordance with Section 105 of Standard Specifications which describes their QC 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 "Access Instruction for LIMS" for more information on how to gain 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 Laboratory Information Management System (LIMS) 21 calendar days prior to commencement of construction. Update the JGS and submit it to the Engineer prior to each monthly progress estimate. The Department may not authorize payment of any progress estimate not accompanied by an up-to-date JGS. Maintain the JGS throughout the project including the quantity placed since the previous submittal, total to date quantity, and any additional materials placed. Do not commence work activities that require testing until the JGS has been reviewed and accepted by the Engineer. At final acceptance, submit a final JGS that includes all materials used on the project in the same format as the monthly reports.

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.

### S. 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.

### T. Schedule of Values

The Design/Build Firm will be responsible for preparing a Schedule of Values. Invoicing the Department will be based on current invoicing policy and procedure. Invoicing will be based on the completion or percentage of completion of major, well-defined 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 Projects

Administration Manual (CPAM). The Design/Build Firm must submit the Schedule of Values to the Department for approval. No invoices shall be submitted prior to Department approval of the Schedule of Values.

Upon receipt of the invoice, 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.

#### **U. 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. Seed Files, Cell Libraries, User Commands, MDL Applications, and related programs developed for roadway design and drafting are available for the MicroStation V8 format in the FDOT CADD Software Suite. However, it is the responsibility of the Design/Build Firm to obtain and utilize current Department releases of all CADD applications.

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 described in the above-referenced document.

The archived submittal shall also include either a TIMS database file, CADD Index file (generated from RDMENU), or documentation that shall contain the project history, file descriptions of all (and only) project files, reference file cross references, and plotting criteria a (e.g. batch, level symbology, view attributes, and display requirements). A printed directory of the archived submittal shall be included.

#### **V. Construction Engineering and Inspection**

The Department is responsible for providing CEI and QA Engineering.

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

#### **W. Testing**

The Department or its representative will perform verification and resolution testing services in accordance with the latest Specifications. On all Federal Aid Projects, the Department or its representative shall perform verification sampling and testing on site as well as off-site locations such as pre-stress plants, batch plants, structural steel and weld, fabrication plants, etc.

Per FHWA guidance, the Systems Engineering Process consists of tying contract and functional requirements to verification methods using a Requirements Traceability Verification Matrix (RTVM). The Department shall provide the project RTVM to the Design/Build Firm for their use in verifying that all project requirements are met. The RTVM is a table that lists requirements from the RFP and MTRs by section and description. The Design/Build Firm shall verify each requirement within the RTVM using one of four methods of verification: analysis, demonstration, inspection, or testing. The final completed RTVM shall be delivered to the Department prior to Final Acceptance.

All items requiring a test must be included in the Design/Build Firm-developed Test Evaluation Matrix. The Design/Build Firm shall utilize this Test Evaluation Matrix to develop the project test plans for the Factory Acceptance Tests, Stand-alone Tests, Subsystem Tests, and 30 consecutive calendar day Operational Test.

Thirty days after receiving “Released for Construction” plans, the Design/Build Firm shall submit a comprehensive Test Plan to the Department for review and approval. The Design/Build Firm shall follow it throughout the project. The Test Plan Submittal shall indicate the tests and procedures to be used at various stages of testing during design/development and deployment of this project. The submittal shall include a list of tests, a description of each test, a schedule for conducting the tests (i.e., factory, pre-installation, post-installation, final acceptance tests, etc.), test procedures, and test forms to be utilized during each test.

Upon Department review and approval of the submittal, the tests, procedures, and test forms shall be used by the Design/Build Firm to verify system performance and to record the results of all testing for this project in accordance with the schedule. Furthermore, the Department maintains the right to have testing performed and/or observed by a third party.

Any deviations or changes to the approved Test Plan shall be resubmitted for review and approval by the Department 14 calendar days prior to any planned test activity stage. No tests shall be conducted until the Department has approved the Test Plan.

#### **X. 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:

- ATMS components – hardware and software
- CCTV system components
- Communications components – hardware and software
- Video wall display components – hardware and software
- Computer hardware and software
- Test equipment and software
- 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.

The Design/Build Firm shall provide a warranty covering workmanship and materials as part of their Technical Proposal to be effective upon contract execution. The Design/Build Firm shall develop the warranty criteria, measurable standards, and remedial work plans for all products or features as specified in their Technical Proposal.

The Design/Build Firm shall submit a repair or replacement plan within 48 hours from the receipt of the notice of the occurrence by the Department. If the Design/Build Firm is unable or unwilling to begin the repair of defects within five days of the submittal of a repair plan, the Department may perform the repair of the deficiencies or defects and submit a claim for the repairs.

The Design/Build Firm shall conduct a review of the Contractor Guaranteed project features during the guarantee period in accordance with the frequency established in the contract, but in any case, at least once annually. The Department may conduct a review at intermediate times as determined necessary by the Department. The Design/Build Firm will conduct a final review no later than 45 calendar days before the end of the guarantee period for each item.

All reviews by the Design/Build Firm will be conducted at no cost to the Department. The Department will be advised of the review schedule at least five calendar days prior to the review taking place. The results of the review, intermediate or final, shall be made available to the Department within 15 calendar days after completion of the review.

If the review findings, intermediate or final, are not accepted by the Department, the Department will provide written notification to the Design/Build Firm within 30 calendar days of the date of receipt of the results of the review.

The Design/Build Firm shall guarantee the performance of all signal components in accordance with Sections 645 and 611, Value Added Signal Installation of the Standard Specifications.

#### **Y. Adjoining Construction Projects**

The Design/Build Firm shall be responsible for coordinating construction activities with other construction projects that are impacted by or impact this project. This includes projects under the jurisdiction of local governments, the Department, or other regional and state agencies.

Listed below are on-going projects within the Lee County ATMS limits. This list is not all-inclusive.

- REHABILITATE PAVEMENT FPID No. 428151-1  
Daniels Parkway From Chamberlin Parkway To Gateway Boulevard
- INTRASTATE INTERSTATE FPID No. 411042-1  
I-75 At SR 80 Interchange
- INTRASTATE INTERSTATE FPID No. 413065-1  
I-75 At SR 884 (Colonial Boulevard) Interchange
- INTRASTATE INTERSTATE FPID No. 406225-3  
I-75 At Corkscrew Road Interchange
- INTRASTATE INTERSTATE FPID No. 406224-2  
I-75 At Daniels Parkway Interchange
- SIDEWALK 425555-1  
Safe Routes to School
- OFF STATE HIGHWAY SYSTEM/OFF FEDERAL SYSTEM FPID No. 425555-1  
Safe Routes To School
- NON-INTRASTATE STATE HIGHWAY FPID No. 408040-1  
SR 739 From Six Mile Cypress Parkway To Daniels Parkway
- NON-INTRASTATE STATE HIGHWAY FPID No. 195719-1  
SR 739 From US 41(South of Alico) To Six Mile Cypress Parkway

- NON-INTRASTATE STATE HIGHWAY FPID No. 425231-1  
SR 78 From East of Royal Tee Boulevard To East of SW 19th Avenue
- NON-INTRASTATE STATE HIGHWAY FPID No. 413695-1  
SR 78 (Pine Island Road) From Burnt Store Road To West of Chiquita Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 425230-1  
SR 78 (Pine Island Road) From East of Del Prado Boulevard To West of US 41 (SR 45)
- BIKE LANE/SIDEWALK FPID No. 430119-1  
SR 78 From US 41 Business To Hart Road
- RESURFACING FPID No. 425230-1  
SR 78 (Pine Island Road) From East of Del Prado Boulevard to West of US 41
- NON-INTRASTATE STATE HIGHWAY FPID No. 424812-1  
SR 82 at Columbus Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 417244-2  
SR 82 (Immokalee Road) From West of Sunshine Boulevard To West of Columbus Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 429894-1  
SR 82 (Immokalee Road) At Homestead Road
- NON-INTRASTATE STATE HIGHWAY FPID No. 195488-2  
SR 82 (MLK Boulevard) From East of Ortiz Avenue (CR 865) To South of Lee Boulevard (CR 884)
- NON-INTRASTATE STATE HIGHWAY FPID No. 420115-1  
SR 867 (McGregor Boulevard) From College Parkway To Wilson Avenue
- NON-INTRASTATE STATE HIGHWAY FPID No. 427306-1  
SR 884 At Six Mile Cypress Parkway
- OFF STATE HIGHWAY SYSTEM/OFF FEDERAL SYSTEM FPID No. 425554-1  
Tarpon Street From SR 80 (Palm Beach Boulevard) To Edgewood Avenue
- NON-INTRASTATE STATE HIGHWAY FPID No. 427407-1  
US 41 From Collier County Line To Corkscrew Road
- NON-INTRASTATE STATE HIGHWAY WIDENING FPID No. 195765-1  
US 41 From Corkscrew Road To San Carlos Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 425127-1  
US 41 (SR 45) From Caloosahatchee River To SR 78 (Pine Island Road)
- NON-INTRASTATE STATE HIGHWAY FPID No. 425132-1  
US 41 (SR 45) From Littleton Road To Del Prado Boulevard

- NON-INTRASTATE STATE HIGHWAY FPID No. 195536-3  
US 41 (SR 45) From North of SR 78 To South of US 41 Business
- NON-INTRASTATE STATE HIGHWAY FPID No. 422630-1  
US 41 (SR 45) From South of Daniels Parkway To Palm Drive
- NON-INTRASTATE STATE HIGHWAY FPID No. 195737-1  
US 41 From North of Bonita Beach Road To Old US 41
- NON-INTRASTATE STATE HIGHWAY FPID No. 429099-1  
US 41 From North Fork Road To Sabal Springs Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 4299547-1  
US 41 (SR 45) From Sabal Springs Boulevard to Charlotte County Line
- NON-INTRASTATE STATE HIGHWAY FPID No. 429895-1  
US 41 (SR 45) From SR 78 (Pine Island Road) to Stockton Street
- NON-INTRASTATE STATE HIGHWAY FPID No. 429509-1  
US 41 (SR 45) From Hanson Street to SR 82
- WIDENING FPID No. 428151-1  
Daniels Parkway from Chamberlin Parkway to Gateway Boulevard
- NON-INTRASTATE STATE HIGHWAY FPID No. 425867-1  
Del Prado Boulevard From NE 7<sup>th</sup> Street to South of Diplomat Parkway
- NON-INTRASTATE STATE HIGHWAY FPID No. 421116-1  
US 41 Business From Littleton Road To US 41
- I-75 AT BONITA BEACH ROAD  
Interchange improvements including installation of shared use paths and turn lanes on Bonita Beach Road
- COLONIAL BOULEVARD (FOUR TO SIX LANES)  
From I-75 to SR 82
- SIX MILE CYPRESS PARKWAY (TWO TO FOUR LANES)  
From North of Daniels Parkway to South of Winkler Avenue
- DANIELS PARKWAY (FOUR TO SIX LANES)  
From Chamberlin Parkway to Gateway Boulevard
- DEL PRADO BOULEVARD (FOUR TO SIX LANES)  
From Diplomat Parkway to Kismet Parkway
- DEL PRADO BOULEVARD AT SR 78  
Intersection Improvements

- SUMMERLIN ROAD (OVERPASS AT COLLEGE PARKWAY, FOUR TO SIX LANES FROM OVERPASS TO BOY SCOUT ROAD)  
From Cypress Lake Boulevard to Boy Scout Road
- PUSH BUTTON SIGNALS CONSTRUCTION FPID No. 427399-2, TWO 17 SR 739 (Fowler Street) at Thompson Street

**Z. Use of Department Owned Right-of-Way**

Use of Department owned Right-of-Way by the Design/Build Firm for the purpose of equipment or material storage, lay-down facilities, pre-cast material fabrication sites, batch plants for the production of asphalt, concrete or other construction related materials, etc. shall require advance approval by the Department. Use of Department owned Right-of-Way by the Design/Build Firm for these purposes is expressly limited to the project referenced in this RFP.

**AA. Design Issue Escalation**

The Department has established the issue escalation process for design questions and conflict resolution that the Design/Build Firm shall follow unless revised by the Partnering agreement. All issues are to be directed to the Department Project Manager. If the issue cannot be resolved at this level, the Department Project Manager shall forward the issue to the next level in the process. The escalation process begins with the District Design Engineer, followed by the Director of Transportation Operations, and finally to the District Secretary. Each level shall have a maximum of three working days to answer, resolve, or address the issue. This three-day window is a response time and does not infer resolution. Questions may be expressed verbally and followed up in writing. The Department Project Manager will respond in a timely manner but not to exceed three working days. The Design/Build Firm shall provide any available supporting documentation.

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

The District Secretary will have the final authority on design decisions.

**BB. Construction Clarification, Conflict Resolution, and Issue Escalation**

In the event that construction problems occur, the resolution of those problems will be processed in one of the following two ways unless revised by a Partnering agreement:

- If the resolution does not change the original intent of the Technical Proposal/RFP, the Design/Build Firm Engineer of Record will be responsible for developing the design solution to the construction problem and the District Resident Engineer will be responsible for review and response within 10 working days. The District Resident Engineer will either concur with the proposed solution or, if the District Resident Engineer has concerns, the issue will be escalated as described in the process below.
- If the resolution does alter the original intent of the Technical Proposal/RFP, the Engineer of Record will develop the proposed solution, copy in the District Resident Engineer, and send it to the District Construction Office for review and response

through the Department Project Manager. The District Construction Office will respond to the proposed solution within 10 working days. The District Construction Office will either concur with the proposed solution or, if the District Resident Engineer has concerns, the issue will be escalated as described in the process below. Changes to the original intent of the Technical Proposal/RFP will require a contract change order and FHWA approval.

- The Department has established the issue escalation process for construction questions and conflict resolution that the Design/Build Firm shall follow unless revised by the Partnering agreement. All issues are to be directed to the Department Project Manager. If the issue cannot be resolved at this level, the Department Project Manager shall forward the issue to the next level in the process. The escalation process begins with the District Construction Engineer, followed by the Director of Transportation Operations, and finally to the District Secretary. Each level shall have a maximum of three working days to answer, resolve, or address the issue. This three-day window is a response time and does not infer resolution. Questions may be expressed verbally and followed up in writing. The Department Project Manager will respond in a timely manner but not to exceed three working days. The Design/Build Firm shall provide any available supporting documentation.

The Design/Build Firm shall provide a similar chain of command for his 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**

The Design/Build Firm shall be responsible for: detailed plan checking as outlined in the PPM, as described in the RFP, and the Design and Construction criteria package. This includes a checklist of the items listed in the PPM for each completed phase submittal. Roadway submittals may be broken down into grading, drainage, walls, ITS, signing & pavement marking, signalization, landscaping, and final geometry components. The component design must be in conformity with the Design and Construction Criteria requirements, approved preliminary layout, and the concept as provided in the Technical Proposal.

Before construction activities can begin for a specific component, signed and sealed design plans and calculations supporting the design for that component must be reviewed by the Department. Component submittals shall be complete submittals along with all the supporting information necessary for review. The work must represent logical work activities and must show impacts on subsequent work on this project. Any modification to the component construction due to subsequent design changes as the result of design development is solely the Design/Build Firm's risk. Upon review by the Department, the plans will be stamped "Released for Construction" and initialed and dated by the reviewer. Any construction initiated by the Design/Build Firm prior to receiving signed and sealed plans stamped "Released for Construction" shall be at the sole risk of the Design/Build Firm.

All design and construction documents shall be prepared using the English system.

The Design/Build Firm's design and construction shall place ATMS components to meet minimum clear zone requirements. New guardrail is not allowed and shall not be used to reduce clear zone requirements. Components may be placed behind existing guardrail but shall provide adequate room for access and maintenance activities. Where possible, do not place components in areas that require shutting down a lane for maintenance activities. All work shall be within the existing right-of-way. The Design/Build Firm shall take responsibility for litter removal and mowing of all disturbed areas, including a five-foot perimeter around each such area. Disturbed areas include all trenching operations, all installed boxes, pole/device installations, staging areas, and stockpile areas. The Design/Build Firm shall coordinate with affected local maintaining agencies and mowing contractors to eliminate work conflicts. The cost of litter removal and mowing shall be included in the Design/Build Firm's price proposal. This responsibility shall last until final acceptance of the project.

Place all fiber communications in conduit, pull boxes, and splice boxes separate from all other cables or wires to any components on the project.

All concrete poles (except index 17504, service point details) shall have concrete foundations designed by a licensed structural engineer.

Existing signal structures and foundations (mast arms, strain poles, etc.) that will carry additional loads shall be investigated for structural adequacy according to current standards by a licensed structural engineer.

Attachment to existing bridges shall be designed by a licensed structural engineer. Overhead or upwardly inclined installations of Adhesive Anchors are prohibited regardless of their design factor. There shall be no overstress to any structural element of the bridge as a result of any new attachment.

## **B. Geotechnical Services**

### **Drilled Shaft Foundations for Miscellaneous Structures**

The Design-Build Firm shall develop a Foundation Plan (FP) for drilled shaft construction. The FP shall be reviewed and approved by the Geotechnical Foundation Design Engineer of Record before submitting to the Department. Submit the proposed FP to the Department for review and approval. The FP is intended to establish process control standards and quality assurance for drilled shaft construction. Include in the FP the items required in Specification 455-15.1.2 (Drilled Shaft Installation Plan), the equipment and procedures for visual inspection of drilled shaft excavations, and any additional methods to identify and remediate drilled shaft deficiencies. Include the names of the CTQP qualified inspectors assigned to inspect the drilled shaft installation. If the FP is updated based on the construction of the method shaft(s) (Test Hole), or other changes in circumstances, the update will not be in effect until approved by the Department.

The FP will be used to govern all drilled shaft construction activities. In the event that deviations from the FP are observed, the Department may perform Independent Verification Testing/Review of the Design-Build Firm's equipment, procedures, personnel and drilled shaft construction FP at any time during production drilled shaft construction. If, as determined by the Department, drilled shaft construction equipment, procedures and/or personnel for the FP is deemed inadequate to consistently provide drilled shafts meeting the contract requirements, the Design-Build Firm's FP approval may be withdrawn pending corrective actions. All drilled shaft construction activities shall then cease and not restart until corrective actions have been taken and the FP has been re-approved.

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

- Evaluating geotechnical conditions and designing the foundations including the drilled shaft diameter and length, and construction methods to be used.
- Completing the subsurface investigation prior to establishing the drilled shaft tip elevations
- Constructing the method shaft (test hole) successfully and conducting integrity tests on the shaft using crosshole sonic logging.
- Determining the production shaft lengths.
- Documenting and providing a report that includes all data, analysis, and recommendations to the Department. The report should include but not be limited to the following: results of soil borings for all drilled shafts, and recommended production drilled shaft tip elevations. This report shall be signed and sealed by a Florida licensed Professional Engineer and shall be submitted to the Department for review and approval at least seven (7) calendar days prior to beginning production shaft construction. Additional data or analysis may be required by the Engineer. Constructing all drilled shafts to the required tip elevation and socket requirements.
- Verifying level and clean hole bottom conditions and properties of the drilling fluid at the time of concrete placement.
- Documenting and submitting the drilled shaft construction logs to the Department within twenty-four (24) hours of concrete placement. The documentations shall include the drilled shaft installation procedures and sequencing as well as any problems encountered during construction and concrete placement. Allow two (2) working days for the Department to review the data before any further construction on the shafts.
- Performing Cross-Hole Sonic Logging (CSL) tests on at least 30% of the shafts (rounded up to the next whole number) selected by the Department.
- Repairing all detected defects and conducting post repair integrity testing using 3D tomographic imaging and gamma-gamma density logging. Submitting all results to the Department within seven (7) calendar days of test completion.
- Submitting the Foundation Certification Packages.
  - Each Foundation Certification Package shall contain an original signed and sealed letter certifying capacity (axial, lateral and torsional) and integrity of all drilled shafts, and clearly legible copies of all shaft excavation and concreting logs, all CSL reports and electronic data, slurry test data, supplemental testing data and analyses for the foundation unit. The certification shall not be contingent on any future testing or approval by the Department.
  - Submit two (2) copies of the Foundation Certification Package signed and sealed by the Geotechnical Foundation Design Engineer of Record to the Department within

three (3) weeks of finishing each foundation unit and prior to Verification Testing. A foundation unit is defined as all the shafts within one (1) intersection/interchange or for each phase of an intersection/interchange.

- Providing safe access and needed equipment, and cooperating with and working with the Department in verification of the drilled shafts, both during construction of shafts and after submittal of the certification package.
  - The Department may verify the bottom cleanliness of all drilled shaft excavations prior to and at the time of concreting. The Department may verify bottom cleanliness by over the shoulder review of the Design-Build Firm's inspection methods and/or by independent means.
  - The Department may verify properties of drilling fluid at the time of concreting. The Department shall determine whether verification of drilling fluid properties shall be accomplished by over the shoulder review of the Design-Build Firm's slurry testing and/or by independent means.

Within two (2) working days of receipt of a Foundation Certification Package, the Department will examine the certification package and determine whether shafts in that foundation unit will be selected for Verification Testing. The Department may select every shaft for Verification Testing, if defects are suspected. The Department will provide equipment and personnel as needed for Verification Testing. Methods used for Verification Testing of a completed shaft are at the discretion of the Department and may include coring, cross-hole sonic logging, gamma-gamma density logging, low-strain dynamic integrity testing, or other methods.

After Verification Testing for a foundation unit is performed, the Department will provide the results within seven (7) calendar days. Integrity testing access tubes shall not be grouted and construction of caps, columns or any superstructure elements shall not occur until the Department has notified the Design-Build Firm that additional Verification Testing is not required.

If any shaft is found to be deficient, the Design-Build Firm shall correct the deficiency (i.e. repair or replace the shaft) and/or modify the design to compensate for the deficiency. After the deficiency is corrected, the shaft shall be retested and recertified by the Design-Build Firm. The Department may then perform additional Verification Testing. In case of disagreement of test results, the Department's results will be final and used for determination of acceptance.

### **C. 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:

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. 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.
3. Scheduling utility meetings, keeping and distributing minutes of all utility meetings, and ensuring expedient follow-up on all unresolved issues.
4. Distributing all plans, conflict matrixes, and changes to affected utility owners and making sure this information is properly coordinated.
5. Identifying and coordinating the execution and performance under any agreement that is required for any utility work needed in the Design/Build project. Reviewing, approving, signing, and coordinating the implementation of all Utility Work Schedules.
6. Resolving utility conflicts.
7. Obtaining and maintaining all appropriate Sunshine State One Call Tickets.
8. 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.
9. Providing periodic project updates to the Department Project Manager and District Utility Office as requested.
10. Coordination with the Department on any issues that arise concerning reimbursement of utility work costs.

The Department has reviewed the project limits and has determined which utility facilities located within the project limits may be impacted by the Project and whether the cost of any necessary utility work as to that impacted utility is to be borne by the utility or by the Design/Build Firm. That information is contained herein. The following Utility Agency/Owners (UA/Os) have been identified by the Department as having facilities within the project corridor which may be impacted by the Project. Also provided below is a determination made by the Department as to the eligibility of reimbursement for each potentially impacted UA/O identified herein.

<b>UA/O</b>	<b>Eligible for Reimbursement (Y/N)</b>
Aqua Utilities FL - Fountain Lakes	N
ATT/T	N
Bonita Springs Utilities, INC	N
CENTURYLINK	N
City of Bonita Springs	N
City of Cape Coral	N
City of Fort Myers	N
Collier County Stake & Locates	N
COMCAST	N
COMCAST Cable	N
Connexion Technologies	N

UA/O	Eligible for Reimbursement (Y/N)
FDOT District One	N
FGUA/North Fort Myers Utility	N
Florida Power and Light	N
FPL Fibernet, LLC	N
Lee County Electric Co-Op	N
Lee County Signal Department	N
Lee County Utilities	N
Level 3 Communications, LLC	N
NI Florida, INC	N
QWEST Communications	N
TECO Peoples Gas – Fort Myers	N
US Metropolitan Telecom, LLC	N

**D. Intelligent Transportation System (ITS)**

The following are descriptions of the major project elements and required services for this project, which include, but are not limited to:

**Design Services** – Provide complete design for the installation of ATMS field elements, including traffic controller assemblies, CCTV cameras, non-intrusive vehicle detectors, fiber optic backbone cable, and communications between ATMS field elements and the TOC. The design services shall include all survey, site visits, obtaining all necessary utility and base plans, and arranging for all required coordination on relevant issues for the complete design of the system. The design shall consider future known design and construction roadway projects. Do not install pull boxes and splice boxes on slopes. Present the design in the form of signed and sealed construction plans.

**CCTV Cameras** – Install CCTV cameras as part of this project. The Design/Build Firm shall determine the final location of the CCTV cameras per the requirements of the MTRs. Do not place CCTV cameras in roadway medians. Convert the NTSC camera video images into optical signals and transmit on fiber optic cable using Ethernet technology. Send the camera control data signals as a sub-channel on the fiber optic cable. The Design/Build Firm shall verify the right-of-way for all proposed camera locations. The Design/Build Firm shall identify all equipment necessary to transmit full motion camera video images to the TOC and bi-directional control of the cameras. Install the CCTV cameras on new concrete poles. The Department shall approve any deviation from this direction. If the Design/Build Firm proposes to utilize an existing upright structure for a CCTV camera, the Design/Build Firm is responsible for obtaining the structural data, performing a structural analysis, and providing this information to the FDOT Structural Department for review and approval. If the Department deems the existing pole is not acceptable for any reason (including, but not limited to unacceptable sight restrictions), the Design/Build Firm is required to utilize a new pole at no additional cost to the Department.

**Detectors** – Install non-intrusive vehicle detectors as part of this project. The Design/Build Firm shall determine the final number and location needed to meet the requirements of the MTRs. Do not place detectors in roadway medians. Each detector shall be capable of detecting up to eight lanes of vehicles and shall provide roadway vehicle information including speed, volume, and occupancy. In no way shall the installation of detectors impede vehicular traffic. Transmit the detection data to the TOC through the fiber optic cable. The Design/Build Firm shall identify all equipment that is necessary to transmit data to the TOC. The Design/Build Firm shall verify the right-of-way for all proposed detector locations. Install

the detectors on new poles. Department approval shall be required for any deviation from this direction. If the Design/Build Firm proposes to utilize an existing upright structure for a detector, the Design/Build Firm is responsible for obtaining the structural data, performing a structural analysis, and providing this information to the FDOT Structural Department for review and approval. If the Department deems the existing pole is not acceptable for any reason, the Design/Build Firm is required to utilize a new pole at no additional cost to the Department.

**Communications Infrastructure** – Provide communications from the ITS field elements to the TOC through Ethernet technology utilizing single-mode fiber optic cable (96-strand trunkline) as the communications medium. Some portions of the network will use existing County fiber in existing County conduit. Some portions of the network will install new fiber in existing Department conduit. These locations are shown on the Interconnect Plan sheets in the 30% Preliminary Plans.

The Design/Build Firm shall design the communications utilizing a series of 100 Mbps and 1 Gbps Ethernet Node switches. The locations of the communication nodes that will house the 1 Gbps (Gig-E) Ethernet switches are shown in Attachment B – 30% Preliminary Plans. Each ITS field element location shall include an IP Edge switch that in turn connects to a Node switch. The Design/Build Firm shall identify all the equipment that is required, including media converters, terminal servers, transceivers, modems, etc. to ensure communication (video and data) between the ITS field elements and the TOC.

The Department assigns IP address ranges for projects and this project must follow that guidance.

The Design/Build Firm shall install a splice box and 200 feet of slack cable in all cable runs that pass an existing County traffic count station. A list of the locations is included in the Other Documents section of this RFP document.

**Construction/Build Services** – Construction/Build services include the procurement and installation of all equipment related to ATMS field elements and communication components/elements as specified herein. The equipment to be procured shall meet the requirements and the NTCIP protocol (if applicable). The Design/Build Firm is responsible for ensuring 100 percent compatibility of device components with the Econolite Centracs® software at the time of deployment.

The Design/Build Firm shall submit cut sheets of all selected technologies/products for procurement for the project along with selection alternatives and the reasons for selection, to the Department for acceptance. It is up to the Department or its representative to request a demonstration of the equipment for approval. No procurement of any hardware, software, or services shall occur until the Department reviews and accepts the construction plans and cut sheets. The Design/Build Firm may request permission for advanced procurement of any equipment that requires a longer lead-time.

**Testing Services** – Test all equipment and systems furnished and installed by the Design/Build Firm to determine conformance with project requirements and contract documents. Provide testing documents to the Department for review. Testing requirements for the individual subsystems are as defined in the MTRs. Testing of the equipment and system shall include:

- Factory acceptance tests conducted prior to equipment procurement and installation.
- Stand-alone tests, conducted following the field installation, but prior to connection with the rest of the system.
- Subsystem tests performed after the completion of the field installation.

- System Operational Test – Upon completion of the subsystem test, a 30-day System Operational Test shall commence for all equipment furnished and installed as part of this contract. Each of the subsystems shall run continuously during the System Operational Test. Requirements for the System Operational Test are outlined in the MTRs.
- Final Acceptance occurs after completion of the System Operational Test. Prior to Final Acceptance, a final inspection of the entire system will be performed by the Department in the presence of a representative of the Design/Build Firm.

Submit all “As-built” documentation to the Department prior to the start of the System Operational Test. Final acceptance of the work associated with this project will be made after all of the required submittals, testing, training, documentation, and warranties have been successfully submitted or completed as specified in the MTRs as well as in the requirements of the Department’s latest version of the Standard Specifications for Road and Bridge Construction and all applicable standards.

**Integration Services** – Deliver and operate each of the ITS field elements, including CCTV cameras, system detectors, the video wall display, operator workstations, and all contractor-supplied TOC hardware and software, as individual systems. It is the responsibility of the Design/Build Firm to integrate the subsystems into the TOC. The Design/Build Firm shall integrate the individual ATMS field elements (i.e., CCTV cameras) with the respective vendor-provided subsystem software such that each of the subsystems operates as a stand-alone system.

The integration of various subsystems into the Econolite Centrac® software is the responsibility of the Design/Build Firm. Coordinate the integration with the TOC Manager after the Design/Build Firm tests and the Department accepts the individual ATMS subsystems.

The Design/Build Firm shall provide all equipment necessary to integrate the new video feeds into the new video wall display at the TOC.

The Design/Build Firm shall begin construction activities with the installation of the video wall controller cards, video wall displays, console furniture, and computer workstations. Complete this work including all testing within 180 days of receiving NTP. See MTRs for more detailed requirements.

**Training Services** – Provide training for the operations and maintenance of ATMS subsystems – controller assemblies, CCTV cameras, non-intrusive vehicle detectors, communication, and field troubleshooting/testing. Tailor and focus training to the individual functional groups such as the operators, maintenance technicians, managers, and system administrators. The requirements for the training along with the duration of the training for each subsystem are included in the MTRs. Training will commence only after the subsystem tests have been accepted by the Department.

**Documentation** – Provide complete and comprehensive documentation of all elements of this project as specified in the MTRs. Documentation shall include, at a minimum:

- Field equipment operational manuals
- Central equipment manuals
- Device protocols
- Warranty documentation
- Test Evaluation Matrix
- Trouble-shooting guides for each of the subsystems

- System administration guides
- Structural calculations
- As-built plans/record drawings

#### **E. ITS Plans and Specifications**

The Design/Build Firm shall design plans and provide necessary documentation for the procurement and installation of the ATMS. The Design/Build Firm shall submit 60%, 90%, and 100% (final) design plans and Technical Special Provisions to the Department for review and approval. The construction plan sheets identifying the final design shall include, but not be limited to:

- Title sheet
- Tabulation of Quantities
- General Notes
- Legend
- Pole Data Sheets
- Traffic Control Plans
- Project Layout / Overview sheets outlining the locations of all ITS field elements with respect each other
- Fiber optic communications and outside plant facilities and routing index sheets
- Plan sheets providing details on ATMS field device locations and interface with the fiber optic communications cables, fiber optic cable routing and outside plant facilities including pull boxes, cabinets, fiber splice boxes, outlying structures and roadways, etc.
- Intersection modifications and upgrades
- Roadway cross-sections at CCTV camera and vehicle detector locations
- Detail sheets on:
  - CCTV pole and camera mounting details
  - Non-intrusive detection pole and mounting details
  - Power service distribution
  - Wiring and connection details for all ATMS elements
  - Conduit, pull box, splice box, and installation
  - Equipment rack configuration at the TOC, communication hubs, and field cabinets
  - System-level block diagrams
  - Device-level block diagrams
  - Field node/router cabinet configuration details
  - Video wall equipment configuration
  - Fiber optic splicing diagrams
  - System configuration/Wiring diagram/Equipment interface for the ATMS field equipment – individual locations and communications nodes and port identification and IP addressing scheme
  - Tabulation of Equipment connection list
  - Directional bore charts
  - Device cabinet layouts and patch panel diagrams
  - TOC floor plan schematic identifying central equipment layout

The Design/Build Firm shall prepare, submit, and seek Department approval for all the required Plans, schematic diagrams, cabling/wiring diagrams, splice diagrams, and other pertinent information related to

the equipment, materials and incidentals for the installation of controllers and cabinets, CCTV cameras, non-intrusive vehicle detection, communications network equipment, distribution conduit facilities, etc. prior to the commencement of the installation phase.

**F. Roadway Plans (Not Applicable to this Project)**

**G. Geometric**

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

**H. Design Documentation, Computations and Quantities**

The Design/Build Firm shall submit to the Department design notes 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 record set of plans and tracings.

The design notes and calculations shall include, but not be limited to:

1. Design standards 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. Final quantities list

**I. Structure Plans (Not Applicable to this Project)**

**J. Specifications**

Department Specifications may not be modified or revised. The Design/Build Firm shall also include all Technical Special Provisions which will apply to the work in the Proposal. 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. Incorporate the Cost Savings Initiative Proposal, 4-3.9 into the Division One Design Build Specifications.

Before construction activities can begin, 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 Supplement Specifications from the Specifications Workbook in effect at the time the Bid Price Proposals were due in the District Office. The Specifications Package shall be prepared by the individual(s) identified in the Technical Proposal as having successfully completed the mandatory Specifications 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>.

The signed and sealed Specifications Package shall also include individually signed and sealed Technical Special Provisions for any and all work not addressed by Department Specifications. Any Technical Special Provisions included in the signed and sealed Construction Specifications Package which had not been included in the Proposal may require a contract cost modification as a condition of approval.

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

Any subsequent modifications to the Construction Specifications Package shall be prepared, signed, and sealed as a Supplemental Specifications Package, subject to the same process for submittal, review, and, release for construction, as described above, for the original Construction Specifications Package. Construction work affected by Supplemental Specifications Packages shall not begin until the stamped "Released for Construction" Supplemental Specification Package is obtained.

#### **K. 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 Department's PPM when submitted to the Department and shall bear the stamp and signature of the Design/Build Firm's EOR and Specialty Engineer as appropriate. The Department shall review the Shop Drawings to evaluate compliance with project requirements and provide any findings to the Design/Build Firm. The Department's procedural review of shop drawings is to assure that the Design/Build Firm's EOR has approved and signed the drawing, that the drawing has been independently reviewed, and that it is in general conformance with the plans. The Department's review is not meant to be a complete and detailed review. Upon review of the shop drawing, the Department will stamp "Released for Construction" or "Released for Construction as noted" and initial and date by the reviewer.

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

#### **L. 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. Proper coordination with adjacent construction projects and maintaining agencies.

**M. Stormwater Pollution Prevention Plans**

The Design/Build Firm shall prepare an erosion control plan that complies with the SWPPP as required by the NPDES. The Design/Build Firm shall refer to the PPM for information in regard to the SWPPP and Florida Department of Environmental Protection (FDEP) Rule 62-25 for requirements on the ECP. Detailed limits of the erosion control items will be necessary but may be shown on the communications network plans sheets. This plan shall be submitted along with the Design/Build Firm's Certification at least 15 working days prior to beginning construction activities.

**N. Temporary Traffic Control Plan**

**1. Traffic Control Analysis**

The Design/Build Firm shall design a safe and effective Temporary TCP to move vehicular traffic during all phases of construction. The areas shall include, but are not limited to, construction phasing, utility relocation, drainage structures, signalization, ditches, front slopes, back slopes, drop offs within clear zone, 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 TCP shall address how to assist with MOT throughout the duration of the contract.

The Temporary TCP shall be prepared by a certified designer who has completed the Department's training course, and in accordance with the Department's Design Standards and the Roadway PPM.

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

- A project that, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts.
- 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.

For significant projects, a TMP will consist of:

- (1) Temporary TCP component
- (2) Transportation Operations (TO) component
- (3) Public Information (PI) component

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

## 2. Temporary TCP

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 TCP shall be developed. The Design/Build Firm shall prepare plan sheets, notes, and details to include the following: general notes and construction sequence sheet(s), typical detail sheet(s), and TCP sheets.

The Design/Build Firm shall prepare additional plan sheets such as cross sections, profiles, drainage structures, retaining wall details, and sheet piling as necessary for proper construction and implementation of the Temporary TCP.

## 3. Traffic Control Restrictions

There will be NO LANE CLOSURES ALLOWED between the hours of 5:00 AM to 9:00 PM (signs may be put out starting at 8:00 PM and must be removed by 6:00 AM). Should the Design/Build Firm propose alternate lane closure hours, a detailed lane closure analysis shall be furnished for the Department's review and approval. Under no circumstances will the Department change these hours without written approval. Lane closure requests must be made to the Department 45 calendar days prior to the lane closure event. A lane may only be closed during active work periods. Lane closures on holidays, holiday weekends, and special event days (such as major sports events, major community events, and other local events that generate large traffic volumes) will not be allowed without prior approval by the Department. All lane closures must be reported to the local emergency agencies, the media, and the District PIO. 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 or if the lane closure causes a driver delay greater than 20 minutes.

The Design/Build Firm will need to coordinate with the local governments on specific dates and timeframes for the following special events:

### City of Ft. Myers

#### January

- Surf And Song Concert in Centennial Park and on First St. so they travel from one to the other
- Celtic Festival in Centennial Park

#### February

- From January into February you have Edison Festival of Light Events from Crafts on the River, Children's Parade, Big Parade. Fire Works and 5K Run.
- Art Fest- Closes Edwards Drive, Monroe and Centennial Park for event

#### March

- Hooters Marathon runs through Fort Myers
- St. Patrick's Day Block Party which includes Bay St. so we direct traffic to Edwards Dr.
- Reading Festival in Centennial Park and Harborside Event Center
- Florida Repertory Charity Dinner Closes Bay St. direct traffic to Edwards Dr.
- Twilight Charity Event for Boys and Girls Club at the Harborside Event Center Close Edwards Dr.

April

- Easter Egg Hunt in Centennial Park
- Dunbar Easter Parade ends in Centennial Park by way of Monroe St. from the Dunbar Community
- March of Dimes Walk is on Edwards Dr. and Heitman and West First St.

May

- Cancer Society Relay for Life is held in Centennial Park for 24 hours.
- Tribute to America Memorial Celebration in Centennial Park

August

- Labor Day Block party Closes Bay St. so we direct traffic to Edwards Dr.

September

- Cops and Joggers Run down Edwards Dr. from Centennial Park over Edison bridge and back.

November

- Taste of Town- Centennial Park and tents throughout Edwards Dr. with food vendors
- Fort Myers Boat Show- boats in the street on Edwards Dr.
- City of Palm Run from Centennial Park down McGregor back to Back over Bridge through N. Ft. Myers to Pondella and back over Edison Bridge and down Edwards Dr.
- Holiday Stroll to light the tree on Hendry St. to the Art of the Olympians and back to First St.

December

- New Years Eve Countdown ball drop on Hendry St. and fireworks near Harborside.

**Lee County**

Edison Pageant of light parade in February, Heart Walk in December

The Design/Build Firm shall obtain a written agreement with the maintaining agency for any lane closures, restrictions, or detours. Additionally, the Design/Build Firm shall notify all emergency services including local government agencies, police, fire, and rescue, in advance of a roadway closure.

A damage recovery/user cost will be assessed against the Design/Build Firm if all lanes are not open to traffic during the times agreed to above. Costs will be assessed beginning at the appropriate time and continue until all lanes are open as recorded by the Department's Project Representative. This assessment will be:

- First 15 minutes and under: \$2,000
- Each additional 30-minute period or portion thereof: \$3,000
- Such costs shall not exceed \$10,000 over a 24-hour period

At the discretion of the Department's Project Representative, the damage recovery/user cost shall not be assessed for failure to open lanes if such cause is beyond the control of the Design/Build Firm, i.e., catastrophic events or accidents not related to or caused by the Design/Build Firm's operations. The Department shall have the right to apply as payment on such damages any money that is due to the Design/Build Firm by the Department.

**O. Public Convenience and Safety**

The Design/Build Firm shall be responsible for injuries to the public due to construction activities within the project area. The Design/Build Firm shall give special attention to provide continuous and uninterrupted traffic to the roadway during construction activities. At the end of project construction work, the project site shall be left clean and orderly. A joint inspection by the Design/Build Firm and the Department shall be undertaken to assure all signs, lights, etc., have been removed from the project.

**P. Incident Response Plan**

The Design/Build Firm shall develop an Incident Response Plan. The plan must address the actions that will be taken and the responsibilities of all field personnel in the event of an incident that creates life-threatening conditions for construction field personnel or the traveling public. Specific contact names and phone numbers shall be included. This plan shall be delivered to the Department for review and approval at the Pre-Construction Meeting.

**Q. Design/Build Firm Equipment**

The Design/Build Firm shall not permit their equipment to interfere with traffic while the equipment is on or traversing a road or street.

Any hauling unit or equipment loaded in excess of the maximum weights set out in the Florida Uniform Traffic Control Law (or lower weights that may be legally established for any section of road or bridge by the Department of local authorities) shall not be operated on any road or street except as by special permit issued by the governmental unit having jurisdiction over a particular road or bridge. This restriction applies for all public road and bridges inside and outside the project limits as long as these roads are open for public use.

Positive measures shall be taken by the Design/Build Firm to assure that tractor-type equipment does not cause damage to the roads. If any such damage occurs due to the Design/Build Firm's negligence, the Design/Build Firm shall repair the damage to the satisfaction of the governmental unit having jurisdiction over the road and at no cost to the Department.

**R. 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 permit packages, agency rejection, agency denials, agency processing time, or any permit violations, except as provided in Section V.D.2, will be the responsibility of the Design/Build Firm, and will not be considered sufficient reason for time extension.

**S. Signing and Pavement Marking Plans**

The Design/Build Firm shall prepare signing and pavement marking plans in accordance with Department criteria.

**T. Lighting Plans (Not Applicable to this Project)**

**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 in ACCO binders with tabs labeled for each Section with the information, paper size, and page limitation requirements as listed below.

A copy of the "Written Technical Proposal" must be submitted in electronic format on CD. The format shall be in Microsoft Word and the file saved in searchable PDF. Minimum acceptable font size is ten (10).

The maximum number of pages for the Technical Proposal shall be up to 32 typed pages. This page limitation does not include Section 4 Design Support Documents and Section 5 Preliminary Plans. Paper size shall be 8½" x 11", additional larger charts and graphs may be provided if folded neatly to 8½" x 11".

Design/Build Firms are required to submit one original bound copy containing original signatures. Please mark this copy "Original" on the front cover. In addition, submit seven independently bound copies of the Technical Proposal. The cover of the submittal package of the Technical Proposal shall contain the following information:

TECHNICAL PROPOSAL  
LEE COUNTY ATMS Design/Build Project  
FPID: 412636-1-52-01  
Design/Build Firm's Name:  
Design/Build Firm's Address:

Submit three CDs of the Technical Proposal in its entirety and eight hard copies (one original and seven copies) of the Technical Proposal to:

Mr. Felipe Alvarez  
Design Build Administrator  
MS 1-67  
801 North Broadway Avenue  
Bartow, FL 33830

The minimum information to be included:

- Section 1: Design and Construction Approach
- Maximum allowed pages: 20

Provide the Design/Build Firm's approach to design and construction of the system noting the proposed ATMS components and integration of these components into the existing system. The

Design/Build Firm shall present a comprehensive plan for completing the specified work. The plan should address all significant design and construction issues and constraints and should demonstrate efficient use of manpower, materials, equipment, construction schemes, and techniques for completing the project.

Section 2: Proposed Schedule

- Maximum allowed pages: 4
- Identify if the Schedule is based on calendar or working days

The minimum information to be included in the summary CPM schedule of anticipated major milestones and their associated phasing is:

Anticipated Award Date  
Design Schedule  
60% and 90% Design Workshops  
Design Reviews by the Department  
Geotechnical Investigations  
Permitting  
Start of Construction  
Construction Milestones  
Construction Phasing and Major MOT Shifts  
Utility Relocations  
Integration Schedule  
Acceptance Testing  
Burn-in Period  
Final Completion Date for all Work

Section 3: Value Added

- Maximum allowed pages: 8
- The minimum information to be included shall be in accordance with Section V.W.

The Design/Build Firm shall include a Remedial Plan for how they will address equipment failures, including response times and repair action for different levels of failure.

The Design/Build Firm shall submit the Value Added criteria, measureable standards and remedial work plan for features proposed. The Design/Build Firm shall include a Remedial Plan for how they will address equipment failures, including response times and repair action for different levels of failure.

The Design/Build Firm shall identify various ways to expedite the project and ensure the highest quality of the materials/equipment and workmanship in the installation and testing of the equipment. The Design/Build Firm shall also identify the state-of-the-art equipment applicable to the project and the innovative ways of installing, testing, and integrating. The Design/Build Firm shall provide detailed design and field verification for optimum infrastructure deployment.

Any supportive information associated with the proposed innovative aspects.

Section 4: Design Support Documents

- Maximum allowed pages: As required
- The minimum information to be included shall be in accordance with Section VI. J.

Technical Special Provisions which apply to the work in the Proposal shall be identified. Technical Special Provisions shall be written only for those items not addressed by the Department's Standard Specifications.

The Design-Build firm shall be prepared to submit to the Department during the Technical Proposal Evaluation phase any calculations, studies and/or research to support features identified in the Technical Proposal and detailed in Section 4, Preliminary Plans.

Section 5: Preliminary Plans

- Paper size: 11" x 17"
- Maximum allowed pages: As required
- Aerial base for the intersections are acceptable

Plan and Profile views of the proposed improvements shall be submitted as 11"x17" sheets and included with the Technical Proposal. The plan set shall pin and post for submittal.

The minimum information to be included in the design plans should represent a typical preliminary plans submittal as detailed below:

- Project Limits
- Proposed layout of the complete ATMS network
- Proposed device placement
- Proposed fiber network layout
- Attachments to existing bridges
- Utility provisions
- MOT provisions

Structures (CCTV and Detector Poles):

- General Notes
- Plan and elevation
- Proposed foundation types and location
- Minimum horizontal clearances
- Basic material properties (concrete strengths, classifications)

**C. Evaluation Criteria**

The Technical Review Committee 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:

<b>Item</b>	<b>Value</b>
1. Maintainability	15
2. Value Added	10
3. Schedule	10
4. Design Services	20
5. Maintenance of Traffic	5
6. Construction Methods	20
<b>Maximum Score</b>	<b>80</b>

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

1. **Maintainability ( 15 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, maintenance of navigational system lighting, access to structure's lighting system, and quality of construction materials. Credit will be assigned for exceeding minimum material requirements to enhance durability of structural components.

2. **Value Added ( 10 points)**

Credit will be given for the extent of the Value Added coverage. Credit will be given for exceeding minimum material requirements to enhance durability of structural components.

3. **Schedule ( 10 points)**

Credit will be given for a comprehensive and logical schedule that minimizes contract duration. Proper attention should be provided to the project's critical path elements.

4. **Design Services ( 20 points)**

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

- Project design (roadway, structures, drainage, pavement, etc., as applicable)
- Design coordination and plans preparation schedule
- Construction coordination plan minimizing design changes
- Geotechnical investigation plan
- Test load program

5. **Maintenance of Traffic ( 5 points)**

Credit will be given for a MOT scheme that minimizes disruption of roadway traffic. This shall include, but not be limited to, minimization of lane and driveway closures, lane widths, visual obstructions, and drastic reductions in speed limits.

**6. Construction Methods ( 20 points)**

Credit will be given for construction methods that minimize impacts to the traveling public, business owners, property owners and the environment; reduces costs; improves worker safety; and minimizes contract duration.

A plan for how the existing signal system will be maintained while the new system is being installed, implemented, and integrated should be included.

The Design/Build Firm shall clearly convey, using drawings, figures, etc. as necessary, how their proposed design solution will meet or exceed the requirements specified in this RFP. The discussion shall also cover testing, maintainability, and access issues.

A thorough understanding and approach to utility coordination and permitting as necessary and/or required and how coordination will be maintained with the Department and/or other agencies throughout the project. A suggested method for assuring proper coordination shall be addressed. Project highlights summarizing the major proposed approaches, techniques, construction methods, and cost/time saving suggestions/solutions.

**D. Final Selection Formula**

The Selection Committee 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 ELOI 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. Also, if the PCT is greater than Maximum Allowable Contract Time (MCT) (565 days), the proposal will be considered non-responsive.

**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 bids. At this meeting, the Department will announce the score for each member of the Technical Review Committee for each Proposer and each Proposer's average Technical Score. Following announcement of the technical scores, the sealed bid proposals will be opened and the adjusted scores calculated. The Selection Committee should meet a minimum of five working days after the public opening of the Technical Scores and Price Proposals. The Department's Selection Committee will review the evaluation of the Technical Review Committee and the 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.

**VIII. BID PROPOSAL REQUIREMENTS.**

**A. Bid Price Proposal**

Bid Price Proposals shall be submitted on the Bid Blank form attached hereto as Attachment C 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 that portion 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. The Price Proposal shall be hand delivered in a separate sealed package to the following:

Mr. Felipe Alvarez  
Design Build Administrator  
MS 1-67  
801 North Broadway Avenue  
Bartow, FL 33830

The package shall indicate clearly that it is the 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 Price Proposals.

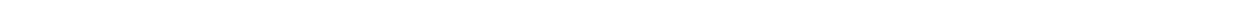
## **Phase I Signalized Intersections**



<b>PHASE I INTERSECTIONS</b>			
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Work Type</b>
220	Fowler St (SR 739)	First St (SR 80)	Type II
221	Bus US 41 (SR 739)	Pondella Rd/Cardinal Dr	Type II
229	Second St (SR 80)	Park Ave (SR 739)	Type II
240	US 41 (SR 45)	Six Mile Cypress Pkwy (SR 865)	Type II
241	Six Mile Cypress Pkwy (SR 865)	Walmart/Home Depot	Type II
243	US 41 (SR 45)	Colonial Blvd (SR 884)	Type II
255	US 41 (SR 45)	Bonita Beach Rd	Type II
262	US 41 (SR 45)	Coconut Rd	Type II
263	US 41 (SR 45)	Village Shops Way	Type II
264	US 41 (SR 45)	Williams Rd	Type II
268	US 41 (SR 45)	Constitution Blvd	Type I
270	US 41 (SR 45)	Alico Rd	Type II
271	US 41 (SR 45)	Island Park Rd	Type II
272	US 41 (SR 45)	Briarcliff Rd	Type II
273	US 41 (SR 45)	Jamaica Bay Blvd	Type II
274	US 41 (SR 45)	Andrea Lane	Type II
275	US 41 (SR 45)	Cypress Terrace Cir	Type II
276	US 41 (SR 45)	Cypress Lake Dr	Type II
277	US 41 (SR 45)	Cypress Trace Mall	Type II
278	US 41 (SR 45)	Big Pine Way	Type II
279	US 41 (SR 45)	College Pkwy	Type II
280	US 41 (SR 45)	Crystal Dr	Type II
281	US 41 (SR 45)	Palm Dr	Type II
282	US 41 (SR 45)	Beacon Manor Dr	Type II
283	US 41 (SR 45)	South Rd	Type II
284	US 41 (SR 45)	Boy Scout Dr	Type II
285	US 41 (SR 45)	Page Field Commons	Type II
286	US 41 (SR 45)	N Airport Rd	Type II
287	US 41 (SR 45)	Edison Mall	Type II
288	US 41 (SR 45)	Winkler Ave	Type II
289	US 41 (SR 45)	Oakley Ave	Type II
290	US 41 (SR 45)	Collier Ave	Type II
291	US 41 (SR 45)	Hill Ave	Type II
292	US 41 (SR 45)	Carrell Ave	Type II
293	US 41 (SR 45)	Grace Ave	Type II
294	US 41 (SR 45)	Hanson St	Type II

<b>PHASE I INTERSECTIONS</b>			
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Work Type</b>
295	US 41 (SR 45)	South St	Type II
296	US 41 (SR 45)	Edison Ave	Type II
297	US 41 (SR 45)	Victoria Ave	Type II
298	US 41 (SR 45)	North Key Dr	Type II
299	US 41 (SR 45)	Hancock Bridge Pkwy	Type I
300	US 41 (SR 45)	Pondella Rd	Type II
301	US 41 (SR 45)	Pine Island Rd (SR 78)	Type I
302	US 41 (SR 45)	Stockton St	Type I
303	US 41 (SR 45)	Littleton Rd	Type I
316	Thompson St	Fowler St (SR 739)	Type I
317	Second St (SR 80)	Fowler St (SR 739)	Type II
318	US 41 (SR 45)	MLK Blvd (SR 82)/Main St/McGregor Blvd	Type II
356	Pine Island Rd (SR 78)	Merchants Crossing	Type II
357	Pine Island Rd (SR 78)	Walmart/Woodward Ave	Type II
358	Pine Island Rd (SR 78)	Piney Rd	Type II
359	Bayshore Rd (SR 78)	Evalena Ln	Type II
360	Bayshore Rd (SR 78)	Hart Rd/New Post Rd	Type II
366	MLK Blvd (SR 82)	Monroe St (SR 82)	Type II
367	MLK Blvd (SR 82)	Hendry St	Type II
368	MLK Blvd (SR 82)	Thompson St/Lee St	Type II
1023	US 41 (SR 45)	Woods Edge Pkwy	Type II
1036	US 41 (SR 45)	Fountain Lakes Blvd	Type I
1290	Bonita Beach Rd	Bonita Shopping Center	Type II
1291	Bonita Beach Rd	Arroyal Rd	Type II
1301	W Terry St	Bay Landing Dr	Type II

## **New UPS Locations**



<b>NEW UPS LOCATIONS</b>		
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
220	Fowler St (SR 739)	First St (SR 80)
229	Second St (SR 80)	Park Ave (SR 739)
241	Six Mile Cypress Pkwy (SR 865)	Walmart/Home Depot
262	US 41 (SR 45)	Coconut Rd
263	US 41 (SR 45)	Village Shops Way
264	US 41 (SR 45)	Williams Rd
271	US 41 (SR 45)	Island Park Rd
272	US 41 (SR 45)	Briarcliff Rd
273	US 41 (SR 45)	Jamaica Bay Blvd
275	US 41 (SR 45)	Cypress Terrace Cir
280	US 41 (SR 45)	Crystal Dr
281	US 41 (SR 45)	Palm Dr
282	US 41 (SR 45)	Beacon Manor Dr
283	US 41 (SR 45)	South Rd
285	US 41 (SR 45)	Page Field Commons
286	US 41 (SR 45)	N Airport Rd
287	US 41 (SR 45)	Edison Mall
288	US 41 (SR 45)	Winkler Ave
289	US 41 (SR 45)	Oakley Ave
290	US 41 (SR 45)	Collier Ave
291	US 41 (SR 45)	Hill Ave
292	US 41 (SR 45)	Carrell Ave
293	US 41 (SR 45)	Grace Ave
294	US 41 (SR 45)	Hanson St
295	US 41 (SR 45)	South St
296	US 41 (SR 45)	Edison Ave
297	US 41 (SR 45)	Victoria Ave
317	Second St (SR 80)	Fowler St (SR 739)
356	Pine Island Rd (SR 78)	Merchants Crossing
357	Pine Island Rd (SR 78)	Walmart/Woodward Ave
358	Pine Island Rd (SR 78)	Piney Rd
359	Bayshore Rd (SR 78)	Evalena Ln
360	Bayshore Rd (SR 78)	Hart Rd/New Post Rd
366	MLK Blvd (SR 82)	Monroe St (SR 82)
367	MLK Blvd (SR 82)	Hendry St
368	MLK Blvd (SR 82)	Thompson St/Lee St
1023	US 41 (SR 45)	Woods Edge Pkwy

## **Existing UPS Locations**

<b>EXISTING UPS LOCATIONS</b>		
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
221	Bus US 41 (SR 739)	Pondella Rd/Cardinal Dr
240	US 41 (SR 45)	Six Mile Cypress Pkwy (SR 865)
243	US 41 (SR 45)	Colonial Blvd (SR 884)
255	US 41 (SR 45)	Bonita Beach Rd
270	US 41 (SR 45)	Alico Rd
274	US 41 (SR 45)	Andrea Lane
276	US 41 (SR 45)	Cypress Lake Dr
277	US 41 (SR 45)	Cypress Trace Mall
278	US 41 (SR 45)	Big Pine Way
279	US 41 (SR 45)	College Pkwy
284	US 41 (SR 45)	Boy Scout Dr
298	US 41 (SR 45)	North Key Dr
300	US 41 (SR 45)	Pondella Rd
318	US 41 (SR 45)	MLK Blvd (SR 82)/Main St/McGregor Blvd

## **Existing Opticom Preemption Locations**

<b>EXISTING OPTICOM PREEMPTION LOCATIONS</b>		
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
240	US 41 (SR 45)	Six Mile Cypress Pkwy (SR 865)
241	Six Mile Cypress Pkwy (SR 865)	Walmart/Home Depot
242	Metro Pkwy (SR 739)	Six Mile Cypress Pkwy (SR 865)
243	US 41 (SR 45)	Colonial Blvd (SR 884)
271	US 41 (SR 45)	Island Park Rd
272	US 41 (SR 45)	Briarcliff Rd
273	US 41 (SR 45)	Jamaica Bay Blvd
274	US 41 (SR 45)	Andrea Lane
275	US 41 (SR 45)	Cypress Terrace Cir
276	US 41 (SR 45)	Cypress Lake Dr
277	US 41 (SR 45)	Cypress Trace Mall
278	US 41 (SR 45)	Big Pine Way
279	US 41 (SR 45)	College Pkwy
280	US 41 (SR 45)	Crystal Dr
281	US 41 (SR 45)	Palm Dr
282	US 41 (SR 45)	Beacon Manor Dr
283	US 41 (SR 45)	South Rd
284	US 41 (SR 45)	Boy Scout Dr
286	US 41 (SR 45)	N Airport Rd
1036	US 41 (SR 45)	Fountain Lakes Blvd
1290	Bonita Beach	Bonita Shopping Center

## **CCTV Camera Locations**

<b>CCTV CAMERA LOCATIONS</b>		
<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
223	Bus US 41 (SR 739)	Pine Island Rd (SR 78)/Bayshore Rd
225	Bus US 41 (SR 739)	Littleton Rd
227	US 41 (SR 45)	Bus US 41 (SR 739)
240	US 41 (SR 45)	Six Mile Cypress Pkwy (SR 865)
243	US 41 (SR 45)	Colonial Blvd (SR 884)
245	Colonial Blvd (SR 884)	Fowler St
247	Colonial Blvd (SR 884)	Metro Pkwy (SR 739)
249	Colonial Blvd (SR 884)	McGregor Baptist Church
250	Colonial Blvd (SR 884)	Winkler Ave
255	US 41 (SR 45)	Bonita Beach Rd
257	US 41 (SR 45)	W Terry St
261	US 41 (SR 45)	Pelican Landing Pkwy/Old US 41
262	US 41 (SR 45)	Coconut Rd
265	US 41 (SR 45)	Corkscrew Rd
267	US 41 (SR 45)	Sanibel Blvd
268	US 41 (SR 45)	Constitution Blvd
270	US 41 (SR 45)	Alico Rd
272	US 41 (SR 45)	Briarcliff Rd
276	US 41 (SR 45)	Cypress Lake Dr
279	US 41 (SR 45)	College Pkwy
280	US 41 (SR 45)	Crystal Dr
282	US 41 (SR 45)	Beacon Manor Dr
284	US 41 (SR 45)	Boy Scout Dr
286	US 41 (SR 45)	N Airport Rd
288	US 41 (SR 45)	Winkler Ave
291	US 41 (SR 45)	Hill Ave
294	US 41 (SR 45)	Hanson St
296	US 41 (SR 45)	Edison Ave
301	US 41 (SR 45)	Pine Island Rd (SR 78)
303	US 41 (SR 45)	Littleton Rd
304	US 41 (SR 45)	Del Prado Blvd
306	US 41 (SR 45)	Tara Woods Blvd
315	Fowler St (SR 739)	MLK Blvd (SR 82)
360	Bayshore Rd (SR 78)	Hart Rd/New Post Rd
372	MLK Blvd (SR 82)	Veronica Shoemaker Blvd
373	MLK Blvd (SR 82)	Michigan Ave

## **System Detection Locations**

<b>SYSTEM DETECTION LOCATIONS</b>		
<b>FDOT ID</b>	<b>Location</b>	<b>Approach</b>
221-223	Bus US 41 (SR 739) between Pondella Rd and Pine Island Rd (SR 78)/Bayshore Rd	NB/SB
225-226	Bus US 41 (SR 739) between Littleton Rd and Laurel Drive	NB/SB
243	US 41 (SR 45) and Colonial Blvd (SR 884)	NB/SB
249-250	Colonial Blvd (SR 884) between McGregor Baptist Church and Winkler Avenue	EB/WB
256-257	US 41 (SR 45) between Center of Bonita and W Terry Street	NB
261-262	US 41 (SR 45) between Pelican Landing Pkwy/Old US 41 and Coconut Rd	NB/SB
268-270	US 41 (SR 45) between Constitution Blvd and Alico Rd	NB/SB
274-275	US 41 (SR 45) between Andrea Lane and Cypress Terrace Circle	NB/SB
283-284	US 41 (SR 45) between South Drive and Boy Scout Drive	NB/SB
288-289	US 41 (SR 45) between Winkler Avenue and Oakley Avenue	NB/SB
297	US 41 (SR 45) and Victoria Avenue	NB/SB
300-301	US 41 (SR 45) between Pondella Rd and Pine Island Rd (SR 78)	NB/SB
227-303	US 41 (SR 45) between Littleton Rd and Bus US 41 (SR 739)	NB/SB
306	US 41 (SR 45) and Tara Woods Blvd	NB/SB
318	US 41 (SR 45) and MLK Blvd (SR 82) /Main St/McGregor Blvd	EB
344	College Pkwy and McGregor Blvd	NB/SB
356	Pine Island Rd (SR 78) and Merchants Crossing	EB
360	Bayshore Rd (SR 78) and Hart Rd/Newpost Rd	WB
369	MLK Blvd (SR 82) and Cranford Street	EB/WB
377	Immokalee Rd (SR 82) and Colonial Blvd/Lee Blvd	NB
1204	Del Prado Blvd and Viscaya Pkwy	NB/SB
1238	College Parkway and New Brittany Blvd	WB
1242	College Pkwy and South Pointe Blvd	EB/WB
1247	Cypress Lake Drive and Reflections Pkwy	WB
1252	Cypress Lake Drive and South Pointe Blvd	EB/WB
1271	Daniels Pkwy and Gateway Blvd	WB
1353-1356	Del Prado Blvd between Beach Pkwy and SE 46th Street	NB/SB
1364	Colonial Blvd and Treeline Avenue	WB

## **County Count Stations**

COUNTY COUNT STATIONS											
LC#	PCS#	LOCATION (S = SOLAR; E = ELECTRIC)	ADDRESS	PHONE	MODEM	LANES	LOOPS	ACTIVE	REBUILT	SOLAR	ELECTRIC
1	30	DANIELS PARKWAY 100' E. OF PONDEROSA WAY (S)	5881 DANIELS PARKWAY	482-2111	S	6	12	91		X	
2	31	DANIELS PARKWAY 140' W. OF EAGLE RIDGE (S)	7381 DANIELS PARKWAY	768-5461	S	6	12	91		X	
3	52	DANIELS PARKWAY 210' W. OF JET PORT COMMERCE PARKWAY (E)	10180 DANIELS PARKWAY	561-2179	U	6	MW	OCT. 01			X
4	40	DEL PRADO BOULEVARD 30' S. OF FOUR MILE COVE PARKWAY (E)	1604 FOUR MILE COVE PARKWAY	573-1586	U	6	MW	OCT. 99			X
5	2	DEL PRADO BOULEVARD 150' S. OF CORNWALLIS PARKWAY (E)	1791 CORNWALLIS PARKWAY.	945-0346	U	6	6	84			X
6	14	COLONIAL BOULEVARD 50' W OF BOLING GREEN BOULEVARD (E)	1608 COLONIAL BOULEVARD	275-5727	U	6	6	89			X
7	9	US 41 285' N. OF BRANTLEY ROAD (S)	12453 S. CLEVELAND AVENUE	936-2045	S	6	6	86		X	
8	23	US 41 140' N. OF FOLEY ROAD (S)	28721 S. TANAMI TRAIL	495-0839	S	4	8	89		X	
9	1	US 41 150' OF N. KEY DRIVE (E)	13161 N. CLEVELAND AVENUE	652-4503	U	5	10	84			X

**ATTACHMENT A**



**FLORIDA DEPARTMENT OF TRANSPORTATION  
DISTRICT ONE**

**DESIGN/BUILD  
MINIMUM TECHNICAL REQUIREMENTS**

**For**

**Lee County Advanced Traffic Management System  
Lee County**

**Financial Projects Number(s): 412636-2-52-01  
Federal Aid Project Number(s): 8886-052A  
Contract Number: E1J71**

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## ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AC/DC	Alternating Current/Direct Current
ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
APL	Approved Products List
ASTM	American Society for Testing and Materials
ATMS	Advanced Traffic Management System
A/V	Audio/Visual
CADD	Computer Aided Drafting Design
CCTV	Closed Circuit Television
CCD	Charge Coupled Device
COTS	Commercial Off The Shelf
DHCP	Dynamic Host Configuration Protocol
DMS	Dynamic Message Sign
EIA	Electronic Industries Alliance
EOC	Emergency Operations Center
ETA	Electronics Technician Association International
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FOA	Fiber Optic Association
FoE	Failover Engine
FTP	File Transfer Protocol
GFIC	Ground Fault Interrupter Circuit
GPS	Global Positioning System
GRES	Graceful Routing Engine Switchover
HAR	Highway Advisory Radio
HD	High Definition
HTTP /S	Hypertext Transfer Protocol /Secure
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IS-IS	Intermediate System To Intermediate System
ISO	International Organization for Standardization
ITG	Information Technology Group
ITS	Intelligent Transportation Systems
LACP	Link Aggregation Control Protocol
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MBPS	Megabits Per Second
MMU	Malfunction Management Unit
MPEG	Moving Picture Experts Group
MTR	Minimum Technical Requirements
MVDS	Microwave Vehicle Detection System
NEMA	National Electrical Manufacturers Association
NMS	Network Management Software
NSB	Non-Stop Bridging
NSR	Nonstop active routing
OIR	Online insertion and removal
OSPF	Open Shortest Path First
PIM	Protocol Independent Multicast

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PIM-DM.....	Protocol Independent Multicast – Dense Mode
PIM-SM .....	Protocol Independent Multicast – Sparse Mode
PIM-SSM .....	Protocol Independent Multicast – Source-Specific Multicast
PTZ .....	Pan-Tilt-Zoom
RFP .....	Request for Proposal
RIP .....	Routing Information Protocol
RTVM.....	Requirements Traceability Verification Matrix
SFP.....	Small Form-Factor Pluggable
SNMP.....	Simple Network Management Protocol
SNTP.....	Simple Network Time Protocol
SRM.....	Standard Route Marker
SSH.....	Secure Shell
TCP/IP .....	Transmission Control Protocol/Internet Protocol
TEM.....	Test Evaluation Matrix
TIP .....	Terra Interface Panel
TOC .....	Traffic Operations Center
TRPS.....	Traffic Responsive Plan Selection
UL .....	Underwriters Laboratories
UPS .....	Uninterruptible Power Supply
VAC.....	Volts Alternating Current
VDCS.....	Video Display Control System
VLAN .....	Virtual Local Area Network
VWDS.....	Video Wall Display System
WAN.....	Wide Area Network

## **1.0 INTRODUCTION**

The Lee County Advanced Traffic Management System (ATMS) Phase 1 Project consists of Traffic Operations Center (TOC) improvements, fiber optic cable and Ethernet communications, signalization control and cabinets, enhanced video monitoring capabilities and speed/traffic count data collection. The project shall be integrated into the existing Lee County TOC, Econolite Centrac<sup>®</sup> system and communications network.

Lee County has an existing ATMS software in place and operational at the County's TOC. As a project cost-saving measure, the Federal Highway Administration (FHWA) has provided approval for sole source acquisition of Econolite cabinets and controllers. The Design/Build Firm shall provide cabinets and controllers, minor ancillary equipment and cabinet accessories to maintain compatibility with the existing configuration of Lee County's Econolite Centrac<sup>®</sup> ATMS.

This Minimum Technical Requirements (MTR) document sets forth the minimum requirements for the design, procurement, installation, integration and testing of the various project elements aforementioned. Each of these project elements shall be installed and seamlessly integrated into the existing TOC. All integration, programming, and configuration of the individual subsystems or field components shall be considered as part of the subsystem or component installation.

All devices implemented as part of this project that are detailed in the Florida Department of Transportation (FDOT) Intelligent Transportation System (ITS) Supplement Specifications must meet the requirements of the associated specifications and/or be on the Department's Approved Products List (APL) or Qualified Products List (QPL).

Intersection components, such as controllers and controller cabinets, ancillary controller accessories and devices shall be Econolite Centrac<sup>®</sup> compatible. The devices must be on the APL prior to issuance of the Released for Construction (RFC) plans. The Design/Build firm is responsible to ensure that all devices are compatible and/or software drivers exist for integration with the Econolite Centrac<sup>®</sup> software. The Design/Build Firm shall develop the device drivers or otherwise make compatible all proposed project components.

The Design/Build Firm shall perform all work involving lane closures in accordance with FDOT and District 1 policies and procedures. Construction activities on this project that require lane closures shall follow the District 1 Lane Closure Policy & Procedures.

### **1.1 Guaranty Provision**

The Design/Build Firm shall provide manufacturer warranties for all furnished and installed project elements against all defects and/or failures in design, assembly, fabrication and materials for a minimum warranty period of three years or as specified for each type of equipment in the FDOT Standard Specifications for Road and Bridge Construction Supplemental Specification Sections 780, 781, 782, 783, 784, 785, 786, and this MTR document. Signalization equipment as defined in the FDOT Standard Specifications Sections 611, 620, 670, 671, 676, 678 and 690 shall meet the warranty bond requirements as described in these sections. If the manufacturer's warranties for the furnished and installed components are for a longer period, those longer period warranties shall apply. The warranty period for all Design/Build Firm provided project features shall not begin until the date that the Department issues written notice of Final Acceptance. The Design/Build Firm shall secure additional or extended manufacturer warranties as necessary for the effective date of Final Acceptance of the project.

The Design/Build Firm shall provide a workmanship warranty for a minimum period of 3 years for all project elements.

The warranty shall provide that, in the event of a malfunction or failure during the warranty period, the defective equipment shall be removed by the County and reported to the Department for warranty service.

Any field element or ancillary component that, in the opinion of the Department, fails three times prior to the expiration of the warranty period shall be judged as unsuitable and shall be replaced by the Design/Build Firm with a new field element or ancillary component of the same make and model at no cost to the Department. The unsuitable field element or ancillary component shall be permanently removed from the project.

The Design/Build Firm as part of their Technical Proposal shall develop the warranty criteria, measurable standards, and remedial work plans for all products or features within the Lee County ATMS Phase 1 Project. At the start of the Systems Operation test, the Design/Build Firm shall update this information to reflect any changes made during design and construction and submit with the as-built plan submittal for review by the Department. The Design/Build Firm shall clearly identify, in writing, the designated contact person and alternate responsible for equipment support and equipment warranties as part of this submittal.

The Design/Build Firm shall install the video wall controller cards, video wall displays, console furniture and computer workstations within 180 days of receiving NTP. The Design/Build Firm shall make these TOC systems operational and test the systems according to the Requirements Traceability Verification Matrix (RTVM), the Test Evaluation Matrix (TEM) and the approved test plan. Upon written partial acceptance of all testing results, the Design/Build Firm shall make the system available to Lee County to operate the system utilizing the new equipment on an interim basis. The Design/Build Firm shall provide maintenance and an initial warranty for this hardware and software through Final Acceptance of the project. Once written notice of Final Acceptance has been given, the Design/Build Firm shall provide the standard warranty as defined in the MTR sections for each type of hardware and software.

## **1.2 Documentation Requirements**

The Design/Build Firm shall provide three sets of documentation for all components in accordance with these MTRs. The documentation shall be assembled in volumes of three-ring binders that include title pages, indices, page numbering, and section dividers. The project documentation shall be delivered to the Department for review and acceptance prior to beginning the Operational Test. The documentation shall consist of the following types of manuals:

*User's Manuals:* The user's manual shall describe, in sufficient level of detail, how the equipment must be operated. The user's manual shall include pertinent operational information such as control layout, displays, and procedures for properly operating a fully functional unit.

*Maintenance Manual:* The manufacturer/vendor-provided maintenance manual shall indicate clearly and pictorially the maintenance procedures for all components, subassemblies, and assemblies. The manual shall include pertinent information on maintaining and repairing the equipment, hardware, software, connections, interfaces, and peripheral cabling as applicable. The manual shall include timeframes for manufacturer/vendor recommended preventative maintenance activities. The manual shall include sections that completely describe the theory of operation using block diagrams and schematic drawings; diagnostic and repair procedures for corrective maintenance of the unit; assembly and disassembly instructions and drawings; layout drawings showing location of all components; and a complete components listing showing component type and ratings.

*System Documentation Manual:* The system documentation manual shall describe the overall operation of the equipment with block level diagrams, identify all equipment in the system with module and option numbers, give a functional description for each system element, and explain how they function together in a complete operational system. The system documentation manual shall document operating procedures describing the initial turn-on and adjustments to ensure an operational system within the performance requirements as well as system-level corrective maintenance procedures.

*Software Manual:* The software manual shall fully document the device management software including full descriptions of functions, flowcharts, and utilities required to support, configure, monitor, and manage each type of device, as well as listings and associated descriptions for complete operation of software programs.

#### 1.2.1 Material Submittals

The Design/Build Firm shall provide the following submittals for equipment, controller assemblies, ITS devices, and ancillary components for each of the project elements identified in these MTRs.

*Catalog Cut-Sheet:* The manufacturer/vendor-provided catalog cut sheets shall pictorially describe the item or component in detail.

*Installation Procedures:* The manufacturer/vendor-provided manual shall indicate clearly and pictorially the installation procedures for all components, assemblies, and subassemblies.

*Warranty Documentation:* The warranty documentation for the equipment shall guarantee against all defects and/or failures in design, materials, and workmanship for the minimum duration specified for each piece of equipment in the FDOT Supplemental Specifications Sections 780, 781, 782, 783, 784, 785, 786, or these MTRs, whichever is greater.

*As-Builts:* All as-built plans shall be produced electronically using CADD software, signed and sealed by the Engineer of Record, and submitted by the Design/Build Firm to the Department as a condition precedent to issuance of written notice of Final Acceptance. The Design/Build Firm shall provide as-built documentation for each assembly, including detailed specifications and information regarding the inventory of installed assemblies by location and corresponding serial numbers. The Design/Build Firm shall also provide documentation, one set per site, detailing the technical and operational aspects of the completed installation. This documentation shall include device manuals, system diagrams, cabling diagrams, all field engineering notes specific to each location, full warranty information, and any other documentation required by the Department. These site packages shall be installed within the device cabinet once the package is accepted, but prior to Final Acceptance.

*Test Plans:* The Design/Build Firm shall prepare Test Plans for the individual subsystems provided for this project. The Test Plans shall be prepared based on the testing requirements identified in the individual subsystem sections of the FDOT Specifications, the Requirements Traceability Verification Matrix (RTVM) and these MTRs. Where the test requirements are not identified, the Design/Build Firm shall prepare detailed plans for review and acceptance by the Department before testing. The Test Plan shall include, as a minimum, the following sections:

- Date, time, location, and estimated duration of the test
- Name of the firm and names of the engineers designated as witnesses
- Description of subsystem to be tested, showing a test of every function of the equipment or system to be tested

- Test equipment List
- Test objectives
- Test sequence details – a step-by-step outline of the test sequence to be followed
- Test duration and proposed test schedule
- Expected results – a description of the expected operation outputs and test results
- Test result forms – forms to be used to record all data and quantitative results obtained during the test
- A connection diagram wherever applicable
- Software –the Design/Build Firm shall supply the Department with full documentation and shall supply a copy of all diagnostic software.
- A description of any special equipment, setup, manpower, or conditions required for the test

### **1.3 Training Requirements**

The Design/Build Firm shall provide a Training Plan for each of the subsystems and components provided. The Training Plan shall include, at a minimum, the elements defined in the following paragraphs. All training shall be conducted in Lee County and at times that are agreeable to the Department and Lee County. The Training Plan shall include the proposed number of hours and intended participants for each training session. The Design/Build Firm shall solicit input from the Department and Lee County as to the actual content and hours required for each of the training elements.

The Training Plan and course materials shall be submitted to the Department for review and acceptance at least 30 calendar days before training is expected to commence. The training shall be delivered on dates mutually agreeable to the Design/Build Firm and to the Department and Lee County.

The training courses shall be developed to pertain specifically to the system, presuming that the course participants have no prior knowledge of the system and associated technology. The Design/Build Firm shall be responsible for providing an indoor classroom for training, which shall be comfortable and within close proximity of the Lee County TOC. The Design/Build Firm shall include all training-related costs in the unit price bid for each device. There shall be no separate payment for training.

#### **1.3.1 Training Module 1**

This module shall include training on the basic description of capabilities and functions and the purpose of each subsystem and component. Training shall be conducted using vendor-provided software and hardware.

#### **1.3.2 Training Module 2**

This module shall include training on the operation and maintenance of each subsystem and component provided in this project using the Centrac® ATMS Software and the Network Management Software (NMS). SNMP-based alarm management shall be emphasized for maintenance personnel to quickly diagnose and resolve network and component problems that affect the performance of the total ATMS.

#### **1.3.3 Training Documentation**

The training materials shall include an introductory level briefing to familiarize attendees with the subsystems and components. The training materials shall also include an engineering/operations course that provides an overview for basic understanding of the subsystem and component operation and how it fits into the overall system. The materials shall include subsystem and component elements, theory of operation, operating procedures and capabilities, hardware and software configuration and software applications.

The Design/Build Firm shall furnish 15 sets of accepted training course materials for each of the training modules. All materials, including any figures and drawings, shall be submitted in electronic format on CD or DVD. Fifteen copies of the CD or DVD shall be submitted to the Department.

The Design/Build Firm shall record video in DVD format of all training in its entirety unless noted otherwise. One copy each of the recorded training shall be provided to the Department and to Lee County.

#### **1.4 Material Requirements**

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 subsystem assemblies, features, functions, and performance measures specified herein are met and are compatible with Lee County's existing Econolite Centrac<sup>®</sup> ATMS software system.

All materials furnished, assembled, fabricated, or installed shall be new products obtained from the manufacturer or reseller. The materials, equipment, and components shall be Commercial Off The Shelf (COTS) products. Any variations to the defined requirements stated herein shall be submitted to the Department for review and acceptance prior to procurement of materials.

The Design/Build Firm shall provide all patch cables for connecting the devices and communication equipment furnished and installed according to these MTRs. The patch cables shall include all necessary data (Category 6 and single mode fiber optic cables) and video (Composite, S-Video, Component Video, HDMI) cables.

#### **1.5 Spare Equipment**

Spare equipment shall be provided under this contract. This shall include a minimum of:

- 1 Controller cabinet with external Uninterruptible Power Supply (UPS)
- 2 Controllers
- 1 Closed Circuit Television (CCTV) camera
- 2 Field Ethernet switches
- 1 Vehicle detector

All of the spare equipment provided shall be of the same make and model as the equipment furnished for the project. Prior to Final Acceptance of the project, the Department shall verify all spare equipment before delivery by the Design/Build Firm to the Lee County TOC. Lee County must sign and date an acknowledgement form to verify receipt of the spare equipment.

## **2.0 TESTING REQUIREMENTS**

The Department will provide the Design/Build Firm with a RTVM that identifies all contract requirements and the method of verification: analysis, demonstration, inspection or testing. The Design/Build Firm is responsible for all contract requirements and shall document the verification within the RTVM as contract requirements are met.

The Design/Build Firm shall develop as part of the Test Plan Submittal and subsequent updates thereof, a TEM to be used as a tool to cross-reference each planned test to a specific contract requirement to be verified as shown in the RTVM. The Design-Build Firm shall use this TEM to indicate the specific functional requirements as tested and the results achieved and verified by the Department. This shall provide a mechanism to ensure that all contract requirements have been successfully tested and verified. The TEM shall be delivered to the Department as part of the Pre-Construction conference.

The Design/Build Firm shall develop a comprehensive test plan, submit it for review and acceptance by the Department, incorporate all of the Department's comments, execute the plan, and document the results. All Test Plans as defined below shall be submitted for review and acceptance by the Department within 90 calendar days of the Pre-Construction conference. The Design/Build Firm shall submit any deviations or changes to the accepted Test Plan for review and acceptance by the Department.

The Design/Build Firm shall not begin testing until the Department provides acceptance of the Test Plan, procedures, and data forms. The test results for each subsystem/component tested shall meet the performance requirements identified for the particular subsystem/component defined in the FDOT's Standard Specifications for Road and Bridge Construction 2010 Supplemental Specifications 780, Intelligent Transportation Systems – General Requirements; 781, Intelligent Transportation Systems – Motorist Information Systems; 782, Intelligent Transportation Systems – Video Equipment; 783, Intelligent Transportation Systems – Fiber Optic Cable and Interconnect; 784, Intelligent Transportation Systems – Network Devices; 785, Intelligent Transportation Systems – Infrastructure; and 786, Intelligent Transportation Systems – Vehicle Detection and Data Collection; test requirements specified in this MTR document; and all requirements defined by the Design/Build Firm in the Test Plan for the subsystem/component.

Neither witnessing of the test by the Department, nor the waiving of the right to do so, will relieve the Design/Build Firm of the responsibility to comply with the contract documents. Such actions by the Department or the acceptance of any test results by the Department will not be deemed acceptance of the equipment or system tested until project Final Acceptance. Contract time shall not be extended for time loss or delays related to testing. The cost of testing shall be considered as included in the unit cost for the item tested; no separate payment will be made for testing.

All test equipment utilized shall have the latest calibration certification in accordance with the test set manufacturer's recommendations.

Failure of any item to conform to the requirements of any test shall be counted as a defect, and the equipment under test shall be subject to test failure as determined by the Department. The Design/Build Firm may offer previously failed equipment for retest provided all areas of non-compliance have been corrected and retested, and evidence thereof is submitted and acceptable to the Department.

All software required for diagnosing malfunctions of hardware and software/firmware shall be supplied by the Design/Build Firm and accepted by the Department. A copy of all diagnostic software shall be submitted to the Department and Lee County with full documentation.

Testing of the devices, equipment and system shall include the following in the order below.

## **2.1 Factory Acceptance Test**

All applicable Factory Acceptance Tests shall comply with the test requirements of the relevant sections of the current FDOT Specification Sections 611, 620, 670, 671, 676, 678, 690, 780, 781, 782, 783, 784, 785, 786, and this MTR document.

## 2.2 Stand-Alone Test

All applicable Stand-Alone Test shall comply with the test requirements of the relevant sections of the current FDOT Specification Sections 611, 620, 670, 671, 676, 678, 690, 780, 781, 782, 783, 784, 785, 786, and this MTR document.

The Stand-Alone Test shall exercise all Stand-Alone (non-network) functional operations of the ITS devices and ancillary components installed utilizing the manufacturer's software.

If any ITS device 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 device or ancillary component of the same make and model, and the entire Stand-Alone Test shall be repeated until proven successful. The Stand-Alone Test shall be performed on each and every ITS device and ancillary component, including, but not limited to:

- CCTV Cameras
- Microwave Vehicle Detectors (MVDS)
- Device Controllers
- Video Display Controllers
- Video Display Units
- Layer 3 Distribution Switches
- Managed Field Ethernet Switches
- Fiber Optic Cable and Communications Hardware
- UPSs
- Traffic Controller Assemblies

## 2.3 Subsystem Test

All applicable Subsystem Tests shall comply with the test requirements of relevant sections of the current FDOT Specification Sections 611, 620, 670, 671, 676, 678, 690, 780, 781, 782, 783, 784, 785, 786, and this MTR document.

Subsystem Test shall be performed based on the construction project milestones. The Subsystem Test shall demonstrate that all equipment furnished, adjusted, or modified by the Design/Build Firm has been installed properly and operates according to the Department accepted Test Plans. The Design/Build Firm shall conduct the Subsystem Test in the presence of the Department or designated representative. The Subsystem Test shall begin seven days after the Design/Build Firm advises the Department that they are ready to begin the test. The Subsystem Test may not begin until the Design/Build Firm has satisfied the Department that all work has been completed. The Subsystem Test shall verify that all of the requirements of this MTR document defined for the subsystem being tested have been met. This Subsystem Test shall be performed utilizing the project field equipment and communications system. The Subsystem Test shall demonstrate full control of the field devices from the TOC over the Ethernet Network, as well as the functions of the local/remote trouble shooting/diagnostics specified in the equipment's functional requirements. The Subsystem Test shall be conducted using the manufacturer-supplied software. The Design/Build Firm shall provide qualified personnel to support the diagnosis and repair of system equipment during the Subsystem Test as required. These personnel shall be available for this support within 24 hours of notification that their services are needed.

In the event that a subsystem fails the test or is rejected by the Department, the Design/Build Firm shall correct the problem and repeat the test within seven days after receiving the rejection notice. The test

shall be re-conducted until the test results are acceptable to the Department.

## **2.4 Operational Test**

The Operational Test shall commence upon successful completion of all other required tests. The Operational Test shall include all project subsystems integrated into the Econolite Centrac<sup>®</sup> software and operable from the TOC, operating for a period of 30 consecutive calendar days without failure of any subsystem, ITS device, or ancillary component. During the Operational Test, the Design/Build Firm shall submit daily Failure Report Logs from both the Econolite Centrac<sup>®</sup> software and the Network Management Software (NMS).

The Design/Build Firm shall notify the Department in writing of the scheduled date of the Operational Test 14 calendar days prior to the commencement of the test. The Operational Test shall not be performed without prior written approval from the Department.

In the event of a subsystem, ITS device, or ancillary component failure, with the exception of consumable items such as fuses, the Operational Test shall be shut down for the purposes of testing and correcting identified deficiencies (System Shutdown). System Shutdown is defined as any condition which, due to work being performed by the Design/Build Firm and/or its designee, results in the project, any subsystem, ITS device, or ancillary component to cease operation, fail or enter an error state.

For each period of System Shutdown and after the identified deficiency has been corrected and met all applicable tests per these MTRs, the Operational Test shall be restarted from the point at which the failure occurred.

If the total number of System Shutdowns exceeds three due to the same system, ITS device, or ancillary component, the Design/Build Firm shall:

- Remove and replace the subsystem, ITS device, or ancillary component with a new and unused unit as per the requirements of these MTRs;
- Perform all applicable Stand-Alone and Subsystem Tests, as deemed necessary by the Department and;
- Upon written approval from the Department, restart the Operational Test for a new 30 consecutive calendar day period.

The Operational Test steps described herein shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of these MTRs. The Design/Build Firm shall not be granted time extensions to perform the Operational Test due to any failures as described herein. The Design/Build Firm shall correct all failures during the Operational Test at no additional cost to the Department.

## **2.5 Final Acceptance**

Upon the Design/Build Firm's successful completion of the Operational Test and after all the required submittals, testing, training, documentation, and warranty items have been accepted by the Department as specified in these MTRs and the requirements of the FDOT Standard and Supplemental Specifications (latest version) and all applicable standards, the Department shall grant written notice of Final Acceptance.

The Department shall provide written notice of Final Acceptance of the work associated with the Lee County ATMS Phase 1 project based on the Department's final inspection of the project. The

Department shall perform the final inspections of the Lee County ATMS Phase 1 Project in the presence of a representative of the Design/Build Firm.

### **3.0 CCTV CAMERA SYSTEM**

#### **3.1 Description**

The CCTV camera system in place at the Lee County TOC operates with the existing Econolite Centrac® ATMS software. As part of this project, the Design/Build Firm shall add 36 new CCTV cameras to the existing system. The Design/Build Firm shall provide a complete CCTV camera system that is fully functional, constructed at the camera sites listed in the Request for Proposal (RFP) Other Documents and shown in the preliminary plans. The Phase 1 CCTV camera sites shall be integrated seamlessly into the existing Econolite Centrac® ATMS software. The Design/Build Firm is responsible for completing structural calculations for review and acceptance by the Department for any CCTV cameras proposed on existing structures.

#### **3.2 Design Requirements**

The CCTV cameras shall be color/monochrome, enclosed in a domed environmental housing, an integral motorized lens, a clear dome lens, a camera positioner, an integral Ethernet network capable transmitter/receiver/driver with integrated encoder, fiber optic interface, and all mounting hardware and power supplies. The CCTV camera assembly shall be a modular system assembly that permits ready exchange of interchangeable modules to perform updates and repairs.

The CCTV camera shall provide local camera site control by way of a laptop computer to provide access to the camera from the field site. Connection to the CCTV camera site shall be through a Windows web browser or other Windows application.

##### **3.2.1 CCTV camera Site**

A CCTV camera site is a single roadway location, with grounding and lightning protection, a camera assembly, all mounting hardware, and any and all other equipment required for a fully functional CCTV camera site. The ITS minimum grounding requirements shall be met for all sites including devices installed on existing structures.

The Design/Build Firm shall review the approximate CCTV camera sites shown in the preliminary plans and determine the final location of the sites. Review of the CCTV camera sites shown in the preliminary plans shall include verification that the preliminary camera site provides full viewing coverage of all approaches to the intersection to cover the range from the stopbar to a minimum of 500 feet from the stopbar on each approach, the site is located more than 50 feet away from any lighting to prevent light saturation and that no utility conflicts exist.

The Design/Build Firm shall perform a 360-degree field of view video survey at the proposed CCTV camera location and height for each CCTV camera site utilizing a bucket truck and the Design/Build Firm's proposed CCTV camera. The Design/Build Firm shall record these surveys onto a DVD for the Department's review and acceptance. The Design/Build Firm shall submit the video survey with the 60% plan submittal.

All CCTV camera poles shall be located outside the clear zone in accordance with the FDOT Roadway Design Standards. If placing behind existing guardrail, there shall be enough room for a vehicle, including high lift trucks, to access the site for maintenance of the CCTV camera. CCTV camera poles shall not be

placed in the median or on the top or side of any steeply graded slopes. The Design/Build Firm shall detail the pole positioning for each camera site as part of the 90% plan submittal.

The minimum mounting height of the CCTV camera varies by installation and location. For new pole mounted locations, the minimum height shall be 40 feet above ground level. For existing pole mounted locations, the CCTV camera shall be mounted as high as possible on the existing structure while ensuring the approach viewing requirements are met. The CCTV camera height shall be such that optimum viewing coverage can be accomplished and traffic signal equipment does not obstruct the view. The Design/Build Firm is responsible for positioning the CCTV camera so the view is free of obstructions. The maximum pole height shall be 50 feet above ground level.

### **3.3 Functional Requirements**

Each CCTV camera site shall share with the intersection cabinet the appropriate communication equipment, including the Ethernet switch that takes the encoded images and duplex data stream and transmits this digital data to the TOC.

### **3.4 Applicable Standards**

The image from each CCTV camera site and the control data being transmitted to the camera assembly from the TOC shall be transmitted over an Ethernet network. The image shall be encoded in the MPEG-4 digital format within the camera housing and decoded at the TOC.

The system operators shall have the ability to address each CCTV camera assembly contained within a camera site by way of an Ethernet communications network. All communications between the TOC and the CCTV camera site shall comply with existing communications protocols and software requirements.

### **3.5 Pole Material Requirements**

All new CCTV camera poles shall be square concrete poles that comply with the FDOT Supplemental Specification 785-3 and are listed on the Department's Qualified Products List (QPL).

The pole shall be designed and constructed so that all wiring and grounding facilities are concealed within the pole. All hand holes, couplings, through-bolt holes, and ground wires shall be cast into the pole during the manufacturing process.

All cable entry holes shall be installed according to the location selected by the Design/Build Firm based on the requirements. The cable entry holes shall be sized as required and shall be free from sharp edges for the passage of electrical wiring. Entry holes shall be compliant with the FDOT Design Standards Index No. 18113. All poles shall be provided with a fish wire to facilitate cable installation.

### **3.1 Construction Requirements**

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, operational monitoring system. The Design/Build Firm shall install the CCTV cameras and poles level so that the horizon is level when viewing from the TOC.

### **3.2 Training and Manual Requirements**

The Design/Build Firm shall provide a maintenance manual for each assembly, including detailed specifications and information regarding the inventory of installed assemblies by location and corresponding serial numbers. The manual shall include weight and dimension information, the operating temperature and relative humidity requirements, and the system's general maintenance procedures. The manual shall also include:

- Resolution
- Sensitivity
- Optical zoom range
- Digital zoom range
- Zoom and focus presets
- Pan and tilt presets
- Ethernet connection specifications
- Power consumption
- Ethernet camera control interface

The Design/Build Firm shall supply a minimum of eight hours of on-site training for operations and maintenance personnel regarding all functional, operational, and mechanical aspects of the CCTV camera assembly and the supporting network communication devices.

## **4.0 VIDEO DISPLAY CONTROL SYSTEM (VDCS) AND VIDEO WALL DISPLAY SYSTEM (VWDS)**

### **4.1 Description**

At the Lee County TOC, furnish and install a Liquid Crystal Display (LCD) panel video wall display system (VWDS) dedicated to the operation of the Lee County ATMS. The current Lee County video display control system (VDCS) requires enhancements for the addition of the new LCD panel display system. The Design/Build Firm shall provide design, VDCS enhancements, installation of the new LCD panel VWDS and associated equipment and hardware. The VDCS are required to meet all the applicable standards listed in the FDOT Supplemental Specifications 780, 781, 782, 783, 784, 785, and 786 and this MTR.

### **4.2 Software**

The VDCS images shall be integrated and accessed by the existing Lee County Centrac® Software in addition to the manufacturers software. The Design/Build Firm shall integrate the images and image control into the Centrac® Software and provide any additional licenses required to ensure legal compliance.

### **4.3 Video Wall Control System Enhancements**

#### **4.3.1 Design Requirements**

There is an existing Jupiter Fusion Catalyst 4000 VDCS. Lee County will provide an inventory of the current VDCS input and output cards upon completion of the current project. The Design/Build Firm shall conduct a site survey of the Lee County TOC and existing VDCS to evaluate and determine the

design requirements to upgrade and integrate the existing VDCS with the new LCD VWDS and the new CCTV cameras.

- The design shall take into consideration the rack space allocated to the Audio Visual (A/V) system in the Lee County Communications Room. If the design requires rack space in excess of the allocated space, Lee County Information Technology Group (ITG) will have to approve and assign the additional space in the existing racks.
- The design shall ensure that all new and existing image feeds are integrated seamlessly onto the new LCD VWDS and that current functionality remains.
- The design shall ensure that the existing equipment warranties are not voided as part of the VDCS enhancements.

#### 4.3.2 Material Requirements

The Design/Build Firm shall procure and install the additional equipment needed such that all new and existing image feeds are integrated seamlessly into the new LCD VWDS and that the previously available functionality is maintained.

#### 4.3.3 Functional Requirements

- The VDCS enhancements shall display images to a VWDS of 18 LCD monitors.
- The VDCS enhancements shall display 4 separate and distinct images simultaneously on each of the 18 LCD monitors.
- The VDCS enhancements shall provide scaling a single image simultaneously from 1 to 18 LCD monitors.
- The VDCS enhancements shall provide touring or scrolling through 200 CCTV camera images.
- The VDCS enhancements shall display input sources from each of the TOC workstations.
- The VDCS enhancements shall be display all new video images installed by this project.
- The VDCS enhancements shall maintain all previously available functionality.
- The VDCS enhancements shall provide synchronized audio to a sound system.
- The VDCS images shall be integrated with and accessible by the Lee County Centracs® Software.

### 4.4 Video Wall Display System

The VWDS shall consist of eighteen 55-inch Light Emitting Diode (LED)-Backlit Full High Definition (HD) LCD Video displays mounted on the wall of the Lee County TOC. The Design/Build Firm shall arrange the VWDS in a three high by six wide configuration to create a near seamless display.

#### 4.4.1 Design Requirements

The Design/Build Firm shall furnish and install a VWDS that supports the images provided by the VDCS and shall provide seamless integration of all the new and existing images onto the video wall. The design shall be based on industry accepted engineering practices and the following considerations.

- The design shall take into consideration room size, ambient lighting, and wall placement.
- The design shall take into consideration eyestrain and ergonomics to reduce operator fatigue.
- The design shall consider the second row of operators to be the primary viewing recipients.
- The design shall meet the requirements set forth by the American with Disabilities Act (ADA) for wall mounted protruding objects.

- The design shall integrate all the new and existing images seamlessly onto the new LCD VWDS.
- The design shall be compatible with the Lee County TOC VDCS.

#### 4.4.2 Material Requirements

The Design/Build Firm shall furnish a commercial grade VWDS.

The Design/Build Firm shall furnish 18 LED-Backlit LCD Full HD panel displays with the following technical requirements:

- Commercial grade LED-Backlit LCD Full HD 55-inch diagonal display
- Aspect ratio 16:9
- 1920x1800 or greater resolution
- 700 nits or greater brightness
- 3000 to 1 or greater contrast ratio
- 178 degree or greater viewing angle
- 5-35 degree Celsius Operating Temperature
- 20-90% Operating Humidity Range non-condensing
- Less than 1000 BTU/hr Heat Load at maximum backlight
- Fanless operation
- 5.7 millimeter or less tiled image to image gap

The Design/Build Firm shall furnish a VWDS with redundant power supplies. The power supplies may be external or internal. If utilizing external power supplies, sufficient power and space shall be provided in the A/V rack of the Lee County TOC. If utilizing internal redundant power supplies, the Design/Build Firm shall evaluate the power availability and may choose to design, upgrade, and install a new power distribution system with the approval of the Department.

The Design/Build Firm shall furnish a mounting system consisting of at least a 6 point integrated axis adjustment system, and install according to manufacturer and design specifications to create a near seamless VWDS.

As part of the VWCS enhancements, the Design/Build Firm shall provide a sound system able to project audible sound into the Lee County TOC. The sound system shall route digital or analog audible sound sources such as that from a DVD player, television receiver, satellite receiver or other existing Lee County TOC source to speakers mounted in, on, or near the wall that supports the VWDS. Ensure that an operator can control all inputs and outputs in order to route the appropriate sound signal to the TOC sound system speakers. The sound speaker system shall allow the operators to clearly hear and understand audible speech or other audible sound from their workstation areas.

#### 4.4.3 Functional Requirements

The VWDS shall be compatible with the existing and enhanced Lee County video wall controller. Each LED-Backlit LCD panel shall display up to four separate and distinct images simultaneously. The VWDS shall scale a single image simultaneously from one to all of the LED-Backlit LCD monitors. The VWDS shall provide a tour or scrolling image from the VDCS. The VWDS shall display input sources from each of the TOC workstations and all other Lee County input sources. The VWDS shall display all new video images installed by this project.

The VWDS shall provide automatic switching to a redundant power supply in the event of a failure of the primary power supply. The VWDS shall provide calibration for color and brightness uniformity. The

VWDS shall provide health and status monitoring over the Lee County TOC Ethernet network. The VWDS shall display images produced by the Lee County Centrac® System.

#### **4.5 Construction and Integration Requirements**

Before the VDCS enhancements and VWDS are constructed and/or integrated, the Design/Build Firm shall complete a site survey to verify suitability and constructability. The Design/Build Firm shall develop and submit a VDCS and VWDS design document and provide materials documentation for review and acceptance by the Department.

The Design/Build Firm shall develop an integration plan for updating the existing VDCS and installation of the new VWDS to minimize disruptions to the current operations at the Lee County TOC. Any necessary interruptions of service shall not exceed 4 hours. The Design/Build Firm shall seek Department approval if downtime is expected to exceed this maximum time limit.

The Design/Build Firm shall furnish all tools, equipment, materials, supplies, cables, and manufactured hardware, and shall perform all operations and equipment integration necessary to provide a complete, fully operational VDCS and VWDS assemblies.

#### **4.6 Testing Requirements**

The Design/Build Firm shall perform testing as required by the FDOT Standard Specifications, the RTVM, the TEM and this MTR document.

A VDCS Standalone test shall be performed and shall utilize manufacturer software to demonstrate that all inputs and outputs of the VDCS and VWDS are operational.

A VWDS Standalone test shall be performed and utilize manufacturer software to demonstrate that images can be seen clearly on the VWDS. Colors and brightness levels shall be calibrated and uniformly consistent across all of the panels. Image alignment shall be verified for vertical and horizontal consistency. Panels and components should be visually inspected to verify proper construction and to be damage free. Manufacturer diagnostics and health status checks shall be checked and verified.

VDCS and VWDS Subsystem tests shall be performed to demonstrate that all the inputs and outputs from all TOC workstations, all the Lee County Traffic Operations video sources, external input sources and external peripherals can be routed and display properly and there are no video quality issues with the VDCS and VWDS. Each of the functional requirements shall be demonstrated during the VDCS and VWDS Subsystem tests.

#### **4.7 Training and Manual Requirements**

The Design/Build Firm shall provide a training and maintenance manual for the VDCS and VWDS assemblies, including detailed specifications and information for any installed cards and/or assemblies. The Design/Build Firm shall provide an inventory of installed assemblies by location and corresponding serial numbers. The manual shall also include weight and dimension specifications, power consumption information, the operating temperature range and humidity specifications, and the system's general maintenance procedures.

The Design/Build Firm shall provide eight hours of training on the maintenance procedures for the VDCS and the VWDS.

## 5.0 FIBER OPTICS COMMUNICATIONS INFRASTRUCTURE

### 5.1 Description

The fiber optic communications infrastructure shall provide an Ethernet network infrastructure over single mode fiber optic transmission media between the field devices and the Lee County TOC. The required fiber optic items shall include, but may not be limited to:

- Conduit and Locate Systems
- Fiber optic cable
- Fiber optic pull boxes
- Splice enclosures
- Splice trays
- Fiber optic splices
- Fiber optic patch panels
- Fiber optic patch cord cables

#### 5.1.1 Conduit and Locate System

The Department is constructing a sidewalk project (422630-1-52-01) on US 41/SR 45 from 800 feet south of Daniels Parkway/Cypress Lakes Drive to 280 feet north of Cypress Drive . This project is installing conduit and fiber optic pull boxes and splice boxes for the Lee ATMS Phase 1 fiber optic cable interconnect. Once this construction project is completed, as-built plans will be provided to the Design/Build Firm. It is the responsibility of the Design/Build Firm to verify that the newly installed conduit is viable for use in the Lee ATMS Phase 1 project. The Design/Build Firm is responsible for any cost due to repair or replacement of the existing conduit. In the event that the existing conduit cannot be used for installing fiber optic cable, the Design/Build Firm shall notify the Department. The Design/Build Firm shall make the connection between the spare stubbed out conduit from the controller cabinet to the spare conduit stubbed out from the splice box at the cabinet.

The Design/Build Firm shall install three 1.25-inch SDR 11 HDPE conduits for underground communications as shown on the Communications Map (RFP Other Documents). The fiber optic cable shall be housed in one of these 1.25-inch conduits, the trace wire in the second and the third 1.25-inch conduit shall be left empty as a spare for future use. No other cable shall occupy the same conduit as the fiber optic cable and the Design/Build Firm shall provide additional conduits for other cables as necessary. The conduit shall comply with the FDOT Supplemental Specification Section 783-2. The Design/Build Firm shall install a minimum 2-inch conduit(s) for electrical power wire.

The Design/Build Firm shall furnish and install a locate system compliant with the FDOT Supplemental Specification 783-2. Locate wire shall not be installed in the same conduit or pull box as fiber optic cable. The Design/Build Firm shall furnish and install a 6" x 8" x 6" pull box to house the locate wire connection at each fiber optic pull box location. The fiber optic pull box and the small pull box shall be contained in a single concrete collar. Electronic box markers and route markers are not required. The Design/Build Firm shall provide two electronic locators as part of this project.

#### 5.1.2 Fiber Optic Cable

The Design/Build Firm shall install fiber optic infrastructure including the items listed below to provide an Ethernet network over single mode fiber optic transmission media between the ITS field devices, the signal controllers, the nodes, and the Lee County TOC. Fiber Optic cable shall provide data and device

control and communications within the Lee County ATMS Phase 1 Project. The fiber optic cable shall comply with the FDOT Supplemental Specification Section 783-1.

Fiber optic cable sizes shall be:

- *Trunk Cable:*  
 The Design/Build Firm shall provide 96-strand single mode fiber optic cable compliant with the FDOT Standards Specifications 783-1.
- *Drop Cables:*  
 The Design/Build Firm shall provide 12-strand single mode cable into cabinets.

The splicing of the fiber optic cable plant shall include the assignment of:

- One buffer tube for node switch to node switch communications
- Two buffer tubes for node switch to local switch communications
- The five remaining buffers are reserved as spare for future use

Existing and new fiber optic infrastructure will be incorporated into the Project at the following locations:

<b>FDOT Signal ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Connect New CCTV to Existing Switch</b>	<b>Connect New Drop to New Trunkline</b>	<b>Connect New Drop to Existing Trunkline</b>	<b>Connect New Trunkline to Existing Trunkline</b>
220	Fowler St (SR 739)	First St (SR 80)			X	
221	Bus US 41 (SR 739)	Pondella Rd/ Cardinal Dr		X		X
223	Bus US 41 (SR 739)	Pine Island Rd (SR 78)/ Bayshore Rd	X			X
225	Bus US 41 (SR 739)	Littleton Rd	X			
227	US 41 (SR 45)	Bus US 41 (SR 739)	X			X
229	Second St (SR 80)	Park Ave (SR 739)			X	
240	US 41 (SR 45)	Six Mile Cypress Pkwy (SR 865)		X		
241	Six Mile Cypress Pkwy (SR 865)	Walmart/ Home Depot			X	
243	US 41 (SR 45)	Colonial Blvd (SR 884)		X		X
245	Colonial Blvd (SR 884)	Fowler St	X			

<b>FDOT Signal ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Connect New CCTV to Existing Switch</b>	<b>Connect New Drop to New Trunkline</b>	<b>Connect New Drop to Existing Trunkline</b>	<b>Connect New Trunkline to Existing Trunkline</b>
247	Colonial Blvd (SR 884)	Metro Pkwy (SR 739)	X			
249	Colonial Blvd (SR 884)	McGregor Baptist Church	X			
250	Colonial Blvd (SR 884)	Winkler Ave	X			
255	US 41 (SR 45)	Bonita Beach Rd		X		
257	US 41 (SR 45)	W Terry St	X			X
261	US 41 (SR 45)	Pelican Landing Pkwy/ Old US 41	X			X
262	US 41 (SR 45)	Coconut Rd		X		
263	US 41 (SR 45)	Village Shops Way		X		
264	US 41 (SR 45)	Williams Rd		X		
265	US 41 (SR 45)	Corkscrew Rd	X			X
267	US 41 (SR 45)	Sanibel Blvd	X			X
268	US 41 (SR 45)	Constitution Blvd		X		
270	US 41 (SR 45)	Alico Rd		X		
271	US 41 (SR 45)	Island Park Rd		X		
272	US 41 (SR 45)	Briarcliff Rd		X		
273	US 41 (SR 45)	Jamaica Bay Blvd		X		
274	US 41 (SR 45)	Andrea Lane		X		
275	US 41 (SR 45)	Cypress Terrace Cir		X		
276	US 41 (SR 45)	Cypress Lake Dr		X		X
277	US 41 (SR 45)	Cypress Trace Mall		X		
278	US 41 (SR 45)	Big Pine Way		X		

<b>FDOT Signal ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Connect New CCTV to Existing Switch</b>	<b>Connect New Drop to New Trunkline</b>	<b>Connect New Drop to Existing Trunkline</b>	<b>Connect New Trunkline to Existing Trunkline</b>
279	US 41 (SR 45)	College Pkwy		X		
280	US 41 (SR 45)	Crystal Dr		X		
281	US 41 (SR 45)	Palm Dr		X		
282	US 41 (SR 45)	Beacon Manor Dr		X		
283	US 41 (SR 45)	South Rd		X		
284	US 41 (SR 45)	Boy Scout Dr		X		
285	US 41 (SR 45)	Page Field Commons		X		
286	US 41 (SR 45)	N Airport Rd		X		
287	US 41 (SR 45)	Edison Mall		X		
288	US 41 (SR 45)	Winkler Ave		X		
289	US 41 (SR 45)	Oakley Ave		X		
290	US 41 (SR 45)	Collier Ave		X		
291	US 41 (SR 45)	Hill Ave		X		
292	US 41 (SR 45)	Carrell Ave		X		
293	US 41 (SR 45)	Grace Ave		X		
294	US 41 (SR 45)	Hanson St		X		
295	US 41 (SR 45)	South St		X		
296	US 41 (SR 45)	Edison Ave			X	
297	US 41 (SR 45)	Victoria Ave			X	
298	US 41 (SR 45)	North Key Dr			X	
299	US 41 (SR 45)	Hancock Bridge Pkwy			X	
300	US 41 (SR 45)	Pondella Rd		X		X

<b>FDOT Signal ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Connect New CCTV to Existing Switch</b>	<b>Connect New Drop to New Trunkline</b>	<b>Connect New Drop to Existing Trunkline</b>	<b>Connect New Trunkline to Existing Trunkline</b>
301	US 41 (SR 45)	Pine Island Rd (SR 78)		X		X
302	US 41 (SR 45)	Stockton St		X		
303	US 41 (SR 45)	Littleton Rd		X		X
304	US 41 (SR 45)	Del Prado Blvd	X			
306	US 41 (SR 45)	Tara Woods Blvd	X			
315	Fowler St. (SR 739)	MLK Blvd. (SR 82)	X			X
316	Thompson St	Fowler St (SR 739)			X	
317	Second St (SR 80)	Fowler St (SR 739)			X	
318	US 41 (SR 45)	MLK Blvd (SR 82)/ Main St/ McGregor Blvd			X	X
356	Pine Island Rd (SR 78)	Merchants Crossing			X	
357	Pine Island Rd (SR 78)	Walmart/ Woodward Ave			X	
358	Pine Island Rd (SR 78)	Piney Rd			X	
359	Bayshore Rd (SR 78)	Evalena Ln			X	
360	Bayshore Rd (SR 78)	Hart Rd/ New Post Rd			X	
366	MLK Blvd (SR 82)	Monroe St (SR 82)		X		
367	MLK Blvd (SR 82)	Hendry St		X		
368	MLK Blvd (SR 82)	Thompson St/ Lee St		X		X
372	MLK Blvd (SR 82)	Veronica Shoemaker Blvd	X			
373	MLK Blvd (SR 82)	Michigan Ave	X			
1023	US 41 (SR 45)	Woods Edge Pkwy		X		
1036	US 41 (SR 45)	Fountain Lakes Blvd		X		

<b>FDOT Signal ID</b>	<b>Major Street</b>	<b>Minor Street</b>	<b>Connect New CCTV to Existing Switch</b>	<b>Connect New Drop to New Trunkline</b>	<b>Connect New Drop to Existing Trunkline</b>	<b>Connect New Trunkline to Existing Trunkline</b>
1290	Bonita Beach Rd	Bonita Shopping Center		X		
1291	Bonita Beach Rd	Arroyal Rd		X		
1301	W Terry St	Bay Landing Dr		X		

The Non-Phase 1 Intersections that require trunkline splicing are included in the following table.

<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
256	US 41 (SR45)	Center of Bonita
1238	College Pkwy	New Brittany Blvd
	US 41 (SR45)	Franklin St

The following existing node locations will use existing County fiber optic cable connections. The Design/Build Firm shall reconfigure the existing switches to include the new and rerouted intersections.

- TOC
- Emergency Operations Center (EOC)
- Thompson Street and Fowler Street (SR 739)

The following existing node location shall require connections with existing and new fiber optic cable. The Design/Build Firm shall reconfigure the existing switch to include the new and rerouted intersections.

- US 41 (SR45) and Pondella Road

The following new node locations shall require connections with existing and/or new fiber optic cable. The Design/Build Firm shall install a new node switch at the following locations.

- Del Prado Boulevard and Veterans Parkway
- Colonial Boulevard and Ortiz Avenue
- US 41 (SR45) and Daniels Parkway/Cypress Lake Dr
- US 41 (SR45) and Corkscrew Road

The Design/Build Firm shall review the splicing information provided for the existing fiber optic cable by the County and incorporate this information into their design. In general, the network will be connected in the blue buffer tube with the blue, orange, green and brown fibers being reserved for node to node communications.

### 5.1.3 Fiber Optic Pull Boxes and Splice Boxes

The Design/Build Firm shall furnish and install fiber optic pull boxes. Fiber optic pull boxes shall not house any other cable other than fiber optic cable. The Design/Build Firm shall furnish and install splice boxes. Fiber optic splice boxes shall not house any other cable other than fiber optic cable. All pull box and splice box covers shall be stamped with "LEE COUNTY FIBER OPTIC CABLE". All pull boxes and splice boxes shall be stackable. Pull boxes shall be installed in accordance with the Lee County

Complete Streets Resolution. The Design/Build Firm shall avoid installation of pull boxes in sidewalks where space is available within the existing right-of-way.

## **5.2 Design Requirements**

The Design/Build Firm shall make every effort to avoid potential conflicts with existing and proposed paved areas, retaining walls, and structures such as bridges and drainage. This includes vertical and alignment changes of the fiber optic communications network. The installation of the fiber optic communications network shall meet the minimum required depth of the conduit system as outlined in the FDOT's Standard Index No. 17721, 18202, and 18204. The suggested route for the fiber optic trunk cable is shown on the communications map.

The Design/Build Firm shall provide all pull boxes and splice boxes as outlined in FDOT Supplemental Specification Section 783-3 and FDOT Design Standard Index 17700.

All splice enclosures, organizers, cable end preparation tools, and procedures shall be compatible with the proposed fiber optic cable and submitted for review and acceptance by the Department.

The Design/Build Firm shall provide all splice loss measurement information as part of their as-built documentation for review at the start of the Operational Test. All optical fiber splices shall be contained within a splice enclosure.

## **5.3 Material Requirements**

The Design/Build Firm shall install a locate wire in a conduit with no other cables in it.

### **5.3.1 Fiber Optic Pull Boxes and Splice Boxes**

The Design/Build Firm shall furnish all labor, tools, equipment, materials, and supplies necessary to install pull boxes and splice boxes, the associated covers, racking, steps, and grouting, including dewatering, shoring, backfilling, compaction tamping, and restoration.

All new fiber optic pull boxes shall be a minimum of 24 inches x 36 inches x 24 inches and new fiber optic splice boxes shall be a minimum of 30 inches x 48 inches x 24 inches. The maximum spacing between fiber optic pull boxes shall be 800 feet. Additionally, an electronic box marker to locate pull and splice boxes shall be provided. The Design/Build Firm shall not install any pull box or splice box on a slope. Coil 50 feet of slack fiber optic cable in each fiber optic pull box and 200 feet in each splice box.

A fiber optic splice box shall be installed at the nine locations identified in the RFP that are existing Lee County count locations. Install a splice box in the fiber optic cable run at these locations with 200 feet of coiled cable and two 2-inch conduit stub outs for a future connection to the count station cabinet.

Before ordering precast structures, the Design/Build Firm shall verify the required installation depth to ensure that any required extensions or adjustment collars will provide for the required construction tolerances.

Assemble pull boxes and splice boxes to provide a plumb structure with uniform bearing at all points. Where conduit enters a box, mechanically seal with a neoprene molded duct organizer device. Seal all joints between precast elements with a sealant material according to the manufacturer's recommendations and all penetrations shall be sealed with a no-shrink grout.

In areas where more than one box is installed, the boxes shall be grouped so that a concrete pad can be installed around all adjacent boxes to make a more stable box structure.

Fiber optic conduit shall be terminated and sealed with preinstalled conduit connectors. Conduit connectors shall be factory-installed to accept the type, size, and quantity of conduit or pipe being installed. The Design/Build Firm shall take precautions to ensure that the conduit at the pull box or splice box connections is not damaged during the installation of backfill material.

#### **5.4 Testing Requirements**

##### **5.4.1 Pre-Installation Testing of Fiber Optic Cable**

The Design/Build Firm shall provide the manufacturer's on-reel test results for the Department's review and acceptance before the fiber optic cable is installed. Additionally, the Design/Build firm shall perform an end-to-end reel test after delivery to ensure damage free delivery before installation. These on-reel tests shall include, but not be limited to, end-to-end loss of every one of the 12 or 96 single mode fiber strands. The on-reel OTDR test results shall clearly show each one of the 12 single mode fiber strands is tested in each one of the buffer tubes.

##### **5.4.2 Post-Installation Testing of Fiber Optic Cable**

No active devices shall be connected during post-installation testing and all fiber optic connectors shall be capped.

#### **5.5 Training and Manual Requirements**

The Design/Build Firm shall conduct a minimum of 32 hours of training for up to 15 representatives designated by the Department on procedures of basic installation, splicing, terminating, testing of the fiber optic cable, maintenance and typical failures and failure resolution for the fiber. The training shall include the use of basic test instruments and a fusion splicing machine, splice closures, cleaning agents and other care products, connectors, fiber distribution panels, drop cables, and any other applicable element used in the project.

The goal of the training is to leave the attendee with a basic understanding of fiber optics, typical test instruments including an OTDR and power meter and source, an understanding of typical fixes and hazards associated with fiber optic transmissions, and basic theory of fiber optic transmission. The Design/Build Firm shall submit to the Department for review and acceptance a draft training plan and course content. Once accepted, the Design/Build Firm shall supply 15 copies of the training material for distribution to the attendees.

## **6.0 COMMUNICATIONS HARDWARE**

### **6.1 Description**

The network shall consist of a complete, redundant Ethernet Network with hardened managed field Ethernet switches (Edge switches), hardened Ethernet Node switches, communications media, and field devices. The network shall transmit video and data streams to and from the Lee County TOC and the Lee County EOC.

The Design/Build Firm shall submit a draft communications plan, which details the design of the comprehensive communications network, including intended topology, general architecture, node locations, virtual local area network (VLAN) strategies, Internet Protocol (IP) numbering scheme, general

fiber assignment strategies, and bandwidth calculations. The Department shall review and can request additional design data as part of that review to confirm intended communications network design. This draft communications plan shall be submitted at the time of the 60% design submittal.

The Department has provided a range of unicast IP addresses for use on this project. This range of IP addresses is in accordance with the Department’s statewide IP addressing requirements for the ITS Wide Area Network (WAN) plan. All project IP addresses shall fall within the range of addresses provided by the Department. All project IP addresses shall be distributed and assigned to devices in order to establish a logical numbering scheme. All device addressing and IP numbering schemes shall be included in the final as-builts.

The IP address master scheme shall contain the assigned IP ranges subnetted using a /24 bit subnet address providing 254 usable IP address per subnet. Each location with an Ethernet switch shall follow the following IP assignment scheme.

<b>IP Address</b>	<b>Associated Equipment</b>
1st	Switch
2nd	Controller
3rd	MMU
4th	Detection TIP
5th	UPS
6th	ITS 1 (Camera PTZ or Spare_
7th	ITS 2 (MVDS 1 or Spare)
8th	ITS 3 (MVDS 2, DMS, HAR, Wireless or Spare)
9th	Vid Camera 1
10th	Vid Camera 2
11th	Vid Camera 3
12th	Vid Camera 4
13th	Vid Camera 5
14th	Vid Camera 6
15th	Vid Camera 7
16th	Vid Camera 8

Additionally, the first and last 8 IP addresses in each /24 subnet shall be reserved for Ethernet Node and Ethernet Node ancillary equipment functions. Any exceptions or deviations from this scheme shall be reviewed and accepted by the Department. All device addressing shall be documented in the final as-builts.

The Design/Build Firm shall provide Ethernet Node switches at the sites indicated in the Communications Map and this MTR. These sites shall connect the local fiber optic rings to the fiber optic backbone. The Ethernet Node switches provide aggregation points for the Ethernet Edge switches located at the CCTV camera, signal controller, and MVDS sites. All Ethernet Node and Ethernet Edge switches shall be 1000/100 Mbps Ethernet compatible.

## **6.2 Design Requirements**

### **6.2.1 General**

The Design/Build Firm shall identify ITS equipment and Ethernet devices that are compliant with these MTRs and are compatible with those used by Lee County.

The Design/Build Firm shall assume that the CCTV cameras will use six Mbps of bandwidth per camera. The design shall consider the allowable loss of the fiber optic loss budget for the fiber optic cable and communications hardware.

The Design/Build Firm shall design a fully redundant network for Ethernet Node backbone and Ethernet Edge communications.

#### 6.2.2 Ethernet Edge Switch

The design shall include hardened Ethernet edge switches with a minimum of two 1000/100 Mbps single mode fiber optic ports and eight 10/100 Base T ports to be used at the device sites identified by the Design/Build Firm and accepted by the Department. At a minimum, these sites may include CCTV camera, signal controller, and MVDS sites.

The design shall include Ethernet Edge switches compliant with these MTRs and be capable of handling expansion within the Lee County network. The design shall be one that each Ethernet Edge Switch shall have a redundant path to an Ethernet Node switch.

#### 6.2.3 Ethernet Node Switch

The Design/Build Firm shall install, configure, and make operational, Layer 2/3 Ethernet Node switches as detailed in these MTRs. The Design/Build Firm shall install Ethernet Node switches in four field node locations. These locations are located at:

- Del Prado Boulevard and Veterans Parkway
- Colonial Boulevard and Ortiz Avenue
- US 41 (SR45) and Daniels Parkway/Cypress Lake Dr
- US 41 (SR45) and Corkscrew Road

The Design/Build Firm shall reconfigure and make operational the existing Layer 3 switches at the TOC, EOC, Thompson Street and Fowler Street (SR 739) intersection, and US 41 (SR45) and Pondella Road intersection.

The Design shall include Ethernet Node switches equipped with fully integrated, dual-redundant power supply systems for High 120 VAC AC/DC voltage. One power supply must power the entire Ethernet Node switch.

The Design/Build Firm shall determine the minimum required number of single mode fiber ports that are capable of transmitting data at 1000 Mbps. The Design/Build Firm shall determine the minimum required number of optical ports (for communications with the edge switches) that are capable of transmitting data at 1000 Mbps.

The design shall include an Ethernet Node switch capable of 100% additional capacity in the number of Ethernet ports. In order to achieve operations and maintenance compatibility, all Node switches provided shall be of the same make and model.

Additionally, as part of this project, the Design/Build Firm shall be responsible for integrating the fiber rings from this project into existing Lee County field node switches to provide a complete path to the Lee County EOC and TOC. The existing field node switches are Cisco Catalyst 4507R-E switches located at the following locations:

- U.S. 41 (SR45) and Pondella Road
- Thompson Street and Fowler Street (SR 739)

It is the Design/Build Firm's responsibility to verify that a sufficient number of fiber ports exist in the field node switches to accommodate the new fiber rings installed within this project. In the event that there are not a sufficient number of available ports on the existing fiber blades, the Design/Build firm shall install a new fiber blade of the same type and quantity as the existing blade at no cost to the Department or Lee County. Integration of new fiber rings into the existing switches and Lee County centers shall be coordinated with Lee County to minimized disruption to normal activities.

### **6.3 Technical Requirements**

#### **6.3.1 Ethernet Node Switch**

The Node switches shall be rack mountable, non-blocking, full gigabit, Layer 3, fiber switches. For Node cabinet ancillary components such as the UPS, a copper SFP, module, or blade may be used for communications.

#### **6.3.2 Electrical Power**

Each Node switch shall be supplied with autosensing 100-120 Volt dual load internal redundant power supplies. Failure of one power supply shall not affect switch operations.

#### **6.3.3 Environmental and Cooling**

The Node switch at a minimum shall be convection cooled (no fans) and shall meet the following environmental ranges.

- Operating temperature: -29° to 165° F (-34 to 74°C)
- Relative humidity operating: 10% to 85% (noncondensing)
- Relative humidity non-operating: 0% to 95% (noncondensing)

#### **6.3.4 Layer 2 Switching**

At a minimum, the Node switch shall support the following Layer 2 features:

- Number of VLANs: 256
- Generic VLAN Registration Protocol (GVRP)
- Routed VLAN Interface (RVI)
- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1w: Rapid Spanning Tree Protocol
- IEEE 802.1p: Class of Service prioritization
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1X: Port Access Control
- IEEE 802.3u: 100BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3ad: Link Aggregation Control Protocol
- IEEE 802.3x: Flow Control

### 6.3.5 Layer 3 Switching / Routing

At a minimum, the Node switch shall support the following IPv4 Layer 3 features:

- RIP v1, v2,
- OSPF v2
- SNMP: v1, v2, v3
- Static routing
- Virtual Router Redundancy Protocol
- Routed VLAN Interface

### 6.3.6 Multicast

At a minimum, the Node switch shall support the following multicast technologies:

- IGMP: v1, v2, v3
- IGMP snooping
- PIM-SM, PIM-SSM, PIM-DM

### 6.3.7 Services and Manageability

At a minimum, the Node switch shall support the following services and management features:

- Command Line Interface
- Web interface
- SNMP: v1, v2c, v3
- SNTP
- DHCP server
- DHCP client and DHCP proxy
- DHCP relay and helper
- SSHv2
- HTTP/HTTPs
- Syslog logging
- Temperature sensor

### 6.3.8 Gigabit Optical Ports

The SFP based ports shall transmit data at 1 Gbps (1,000 Mbps) with standard reach (LX) optics capable of transmitting up to 6.2 miles over single mode fiber, or with extended reach (ZX) optics capable of transmitting up to 43.5 miles over single mode fiber. The Design/Build Firm shall determine the appropriate modules to utilize depending on the link distance. Each SFP shall consist of a pair of LC connectors, one fiber will transmit data and one fiber will receive data.

## 6.4 Construction Requirements

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 Ethernet network. All Ethernet Node switches shall be mounted in 19-inch communications racks. All Ethernet Edge switches shall include be din rail mountable.

All cabling shall be:

- Neatly tagged with permanent labels at both ends of every cable
- Secured with wire ties and cable management hardware in the communications racks
- Grounded to rack grounding hardware

## **6.5 Testing Requirements**

The Design/Build Firm shall perform the following additional tests:

For each Ethernet Edge switch, a trunkline shall be disconnected and communications observed to demonstrate the redundancy requirement.

For each Ethernet Node switch, the primary backbone link to the TOC shall be disconnected, demonstrating alternative paths and network redundancy.

IGMP and IGMP snooping control of Multicast video streams shall be demonstrated operational.

For each Ethernet Node switch, each power supply will be disconnected separately to demonstrate the redundant power requirements of this MTR.

Baseline utilization of the backbone communications shall be tested and recorded as a baseline metric for monitoring.

The Design/Build Firm shall notify the Engineer at least 14 calendar days prior to testing of the communications.

## **6.6 Training and Manual Requirements**

The Design/Build Firm shall prepare and deliver training courses on the communications devices and applicable components for individuals designated by the Department, to include up to 10 personnel. Two types of training courses shall be provided involving engineering/operation personnel and maintenance personnel (two-day course for engineering/operations personnel and one-day course for maintenance personnel).

The training materials shall include an introductory-level briefing to familiarize attendees with each device. The engineering/operations course shall include an overview of the basic understanding of IP and Ethernet, subsystem elements, theory of operation of components, operating procedures and capabilities, hardware and software configuration, and software applications. The Design/Build Firm shall provide training that includes “hands-on” use of all communications devices installed. The maintenance course shall include relevant topics in electronics, communications, and cabling, and provide a detailed description and explanation of theory of operation of major device components; operation, test, and installation procedures; plus troubleshooting, diagnostics, and maintenance to the replaceable module level. The maintenance course shall also show how the system documentation should be used to operate, diagnose, maintain, and expand the system. The maintenance course shall also provide “hands-on” use of the system, laptop computer and software (to be provided by the Design/Build Firm during the course), system test equipment, and any other system equipment supplied.

## 7.0 NODE CABINETS

### 7.1 Description

The Design/Build Firm shall design, furnish and install a Node cabinet for housing ITS equipment and networking devices including, but not limited to, Ethernet Node switches, communications and ITS equipment, fiber optic cable, patch panels, UPS, and equipment racks. The Design/Build Firm shall install and make fully operational base-mounted, lockable and weatherproof cabinets near the intersections of:

- Colonial Boulevard and Ortiz Avenue
- US 41 and Corkscrew Road
- US 41 and Daniels Parkway
- Del Prado Blvd and Veterans Parkway

Cabinets shall protect those electrical and electronic devices from rain, dust, dirt, and other harmful elements of nature. The cabinets shall include:

- Lightning protection for all devices installed at the site
- Interior cabinet lighting
- #2 Corbin lock with 2 keys for each lock
- Re-usable metal air filters
- UPS
- Grounding and bonding
- Concrete service pad

All field cabinet devices shall have grounding and surge suppression compliant with the FDOT Supplemental Specification Section 785-2. Equipment enclosures shall not be allowed.

### 7.2 Requirements

The cabinet shall be compliant with the FDOT Supplemental Specification 785-4 for ITS Field Cabinets with the following additional requirements.

- The minimum dimensions for the ITS Node cabinet shall be 62 inches high x 44.5 inches wide x 26 inches deep. Ensure that the ITS node cabinet includes two standard 19 inch DIN rails, one mounted in each rack. The cabinets shall be sized to space the equipment appropriately to ensure easy access to the proposed equipment.
- Prior to ordering the node cabinet, provide cabinet drawings and calculations to the Department for review and acceptance.
- Provide a UPS with sufficient capacity to hold the electrical load of all of the equipment in the cabinet for two hours.
- Each cabinet shall contain four duplex 120 VAC) industrial-grade receptacles. Two of these receptacles shall be ground fault interrupter circuit (GFIC) compliant units to be used for field maintenance purposes only. The maintenance receptacles shall be orange in color and marked GFIC. Two standard duplex receptacles shall be used for auxiliary devices.
- Each cabinet shall be provided with a one-unit rack-mount power distribution unit containing at least eight outlets, and at least one outlet shall be accessible on the front panel. The rack-mount power distribution unit shall be equipped with a master on/off switch and a resettable 15 amp circuit breaker.

- Each cabinet shall be equipped with a contact closure feature that sends an alert via the Ethernet network to the Lee County TOC when the door is opened and closed.
- Each cabinet shall be equipped with an aluminum pull-out drawer mounted in the rack assembly. The pull-out drawer shall have ball bearing telescoping guides to allow full extension from the rack assembly. When extended, the storage compartment shall open to provide storage space for cabinet documentation and other miscellaneous items. The pull-out drawer shall be provided with a recessed handle and be of adequate construction to support a weight of 20 pounds without sagging when extended. The top of the storage compartment shall be hinged aluminum. The height of the storage compartment shall not exceed 3.5 inches (two-units). The pull-out drawer shall be placed at a height within the cabinet to allow a person to use a laptop supported by the drawer.
- Each cabinet shall be supplied with a 10-inch x 2-inch x ¼-inch copper grounding buss with mounting holes.

Alternating current (AC) isolation shall be provided within the cabinet. All cabinets shall be configured to accept 120 VAC from the utility. Cabinets shall be configured with the following minimum number of breakers and outlets:

- Two 15 amp branch circuit breakers in cabinets that are provided with 120 or 120/240 VAC power. One breaker shall feed the GFIC duplex outlet. The second breaker shall feed the other devices in the cabinet.
- Outlets shall be provided for each piece of equipment plus 2 spare outlets.

The circuit breakers shall be Underwriters Laboratories (UL) listed and have an interrupt capacity of 5,000 amperes and insulation resistance of 100 Mega ohms at 500 VDC). The power distribution blocks shall be suitable for use as power feed and junction points for two- and three-wire circuits. The AC neutral and equipment ground wiring and terminal blocks shall be isolated from the line wiring by an insulation resistance of at least 10 Mega ohms when measured at the AC neutral.

All cabinet wiring shall be tagged and identified by the use of insulated pre-printed sleeves. The wire markers shall identify the cable in plain words with sufficient details without abbreviations or codes.

The location of the cabinets shall be:

- Outside the clear zone or behind guardrail; guardrail shall not be installed solely to protect cabinets
- Convenient and accessible for maintenance personnel
- Not in conflict with known future widening projects
- Convenient to power sources and field devices
- Not located in low lying/wet areas
- Not on a slope or where there is a drop off

The cabinet power service shall have its own breaker. The signal cabinet and the node cabinet shall be capable of being powered down individually without disrupting power to the other cabinet.

### **7.3 Applicable Standards**

Each cabinet manufacturer shall be ISO 9001 certified at the time of equipment submittal.

## **7.4 Construction Requirements**

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 and operational cabinet. All components shall be securely mounted inside the cabinet. For cabinets housing the same types of equipment, they shall be consistent; all cabinets shall be configured the same including, but not limited to, placement of the equipment inside the cabinet, equipment type and model, wiring, labeling, and mounting technique. The placement and mounting of equipment and cabling shall not interfere with general maintenance activities, testing, and future replacement of failed devices or removal of the cabinet from the foundation, and/or removal of working equipment or other cabinet contents.

The Design/Build Firm shall use stranded copper for all conductors, including those in jacketed cables. Neatly arrange all wiring, firmly lace or bundle it, and mechanically secure the wiring without the use of adhesive fasteners. Route and secure all wiring and cabling to avoid sharp edges and to avoid conflicts with other equipment or cabling. Terminate all wiring on a terminal block, strip, buss bar, device clamp, lug, or connector; do not splice any wiring. Label all wiring, cables, terminal strips, patch panels and distribution blocks. Use strain relieves for all cabling with connectors, all cabling entering knockouts or ports at the equipment, and where appropriate.

Fasten all components of the cabinet assembly to be mounted on cabinet side panels with hex-head or Phillips-head machine screws. Install the screws into tapped and threaded holes in the panels. The components include, but are not limited to, terminal blocks, bussbars, panel, socket or DIN mounted TVSS, circuit breakers, accessory and equipment outlets, and DC power supply chassis. Each cabinet mounted UPS unit shall be configured for remote monitoring from the Lee County TOC.

Fasten all other cabinet components with hex-head or Phillips-head machine screws installed with nuts (with locking washer or insert) or into tapped and threaded holes. Fasten stud-mounted components to a mounting bracket providing complete access to the studs and mounting nuts. All fastener heads and nuts (when used) shall be fully accessible within a complete cabinet assembly, and any component shall be removable without requiring removal of other components, panels or mounting rails. Do not use self-tapping or self-threading fasteners.

The Design/Build Firm shall install a concrete service pad at each cabinet location. The service pad shall be installed flush with the cabinet face. The service pad shall measure 30 inches from the face of the cabinet by 36 inches wide. The service pad shall provide a level surface for a technician to access the cabinet and have a slope of 1/4 to 1 inch for drainage.

## **7.5 Document Requirements**

All cabinet shop drawings shall be submitted to the Department for review and acceptance prior to installation in the cabinet. All markings and identifications shall be silk screened on the panel and sealed with a clear sealer, an acrylic, or a material acceptable to the Engineer.

## **7.6 Node Cabinet UPS**

### **7.6.1 Description**

The Node cabinet shall contain a UPS housed inside the node cabinet. This UPS shall contain all necessary equipment including the UPS, batteries and a Power Interface Module (PIM). The PIM shall be a 19" rack mount panel and contain a TVSS, terminal blocks, a GFCI outlet, circuit breakers, fluorescent light, fan, thermostat, door switch and all necessary cabling and all other necessary items.

When the utility power is lost, the UPS shall utilize battery power in support of the system via the PIM. In the normal operation, the UPS shall be operated in the real-time true on-line mode with the inverter supplying power to all loads. In addition, the UPS shall be operated in hot standby mode with power transfer being accomplished in 100msec or less. In the event of the UPS failure and/or battery depletion, the PIM shall ensure UPS termination and upon restoration of utility power, the traffic control system will be re-powered automatically.

Connectors shall be supplied with a safety lock feature.

#### 7.6.2 Design Requirements

The UPS shall be rack mountable to the equipment racks provided inside the node cabinet. The UPS shall be capable of providing power at 120 VAC for a continuous operation of the Ethernet Node switch and cabinet components for a period of two hours. The UPS shall continuously regenerate and condition the output AC sine wave, where 100% of the power to the load, whether on utility or batteries, shall be generated 100% of the time by the on-board inverter. The inverter shall have a minimum operating efficiency of 90%.

The UPS shall contain two serial ports to allow interface to the UPS via laptop. Alarm output functions shall be selectable such as low battery and inverter active with utility fail indicated.

The UPS shall have remote monitoring and event notification capabilities using SNMP.

The UPS shall use Absorbed Glass Mat / Valve Regulated Lead Acid (AGM/VRLA) batteries. Batteries shall be shelf mount or in 19" mounting trays on 19" rack.

#### 7.6.3 Functional Requirements

- INPUT: Power factor corrected
- Voltage Ranges: 85 VAC to 135 VAC (without battery discharge)
- Current: 8.8 A
- Frequency: 48 to 62 Hz
- OUTPUT: True on-line continuous power
- Waveform: Low distortion Sine wave
- Voltage: 120 VAC  $\pm$ 3%
- Current: 10.4 A
- Frequency: 50 or 60 Hz
- Power Rating: 1,250 VA / 875 Watts
- Crest Factor Ratio: at 50% load up to 4.8:1 (Non-linear load at 75% load up to 3.2:1 and < 5% THD) at 100% load up to 2.4:1
- Total Harmonic Distortion (THD): 4.0% Max.
- Dynamic Response:  $\pm$ 4% for 100% Step Load Change 0.5 millisecond Recovery Time
- Overload: 110% for 10 min; 200% for .05 sec

UPS Protection:

- Input and Output Short Circuit
- Input and Output Overload
- Excessive Battery Discharge

Environmental:

- Operating Temperature: -40°C to +74°C (-40°F to +165°F)
- Humidity: 0% to 95% Non-condensing
- Altitude: Sea Level to 10,000 ft (some derating of temp. w/altitude > 6,000 ft)

Mechanical:

- Input Connectors: Hardwired to PIM
- Outputs (Standard: Hardwired to PIM, w/single 15 Amp Receptacle)

Management:

- Standard EIA/RS232 Data interface
- SNMP management over TCP/IP

Standards:

- FCC Class A
- IEEE 587/ANSI C62.4
- IEC 555@ 120 VAC and
- NEMA Stds
- Calculated MTBF: Inverter: > 100,000 hrs
- System w/Bypass: 150,000 hrs Calculated from Component Spec

7.6.4 Controls and Indicators

Ramping LEDs:

- Battery Level

Single LEDs:

- Load Level AC In
- Inverter On
- Low Battery and Summary Alarm
- Alarm Single LEDs
- Alarm Silence

Control Panel:

- Power ON
- Cold Start
- Test
- Alarm Silence
- Event Counter
- Hour Meter
- Battery Disconnect

Audible Alarms:

- Utility interrupt
- Inverter Failure
- Overload
- Low Battery
- Self Test

### **7.7 Testing Requirements**

The UPS shall be tested to verify it meets the specified requirements prior to final acceptance. The Design/Build Firm is responsible for all inspections and tests to ensure that all requirements are met.

## **8.0 NON-INTRUSIVE MICROWAVE VEHICLE DETECTION SYSTEM**

### **8.1 Description**

The non-intrusive microwave vehicle detection system (MVDS) is a non-invasive detection system installed above ground on the roadside (i.e., side-fire-mounted). The detection system uses a low-power microwave radar beam to measure vehicle presence, and generate volume, occupancy, and speed data. The connection to the network shall be through a device server. The Design/Build Firm shall install system detection for the ATMS network. The recommended approaches for the detection are shown in System Detection Locations (RFP Other Documents) and in the preliminary plans.

### **8.2 Design Requirements**

The new MVDS assemblies shall be installed at the approximate locations shown on the preliminary plans by the Design/Build Firm. The detectors shall be located to provide system detection data to the ATMS for traffic responsive operations.

The MVDS sites shall be operated from the TOC over the fiber optic Ethernet network and utilized at the TOC with the County's existing Econolite Centrac® ATMS software.

A MVDS assembly consists of microwave radar sensor(s) in enclosed housing(s) (i.e., the detectors); an installation kit with mounting brackets; home run cable for the transmission and receipt of data and communications between the field detector and the communication system hardware; and all required power and data cables. A pole mounted enclosure shall be used to house surge suppression equipment at the device site. The Design/Build Firm shall provide AC power to each MVDS assembly location.

A MVDS site is defined as a single roadway location containing a new or existing pole with grounding and lightning protection, a MVDS assembly, a grounded field enclosure, Ethernet edge switch, power supplies including a UPS, all mounting hardware, and all other equipment required for a fully functional MVDS assembly. Each MVDS site shall be connected to a controller cabinet for communications back to the TOC.

The Design/Build Firm shall review the sites in the preliminary plans to determine if the sites may be configured as a remote site. MVDS sites determined as remote sites may use a small equipment box and be connected to another cabinet.

The Design/Build shall review the sites in the preliminary plans to determine if it may be necessary to place two detectors to produce accurate measurements for both directions of travel on wider roadway cross-sections. The setback and mounting height must follow the manufacturer's recommended criteria in order to meet the performance requirements described in these MTRs. Each lane must be detected as an individual detection zone.

The Design/Build Firm shall ensure placement of the MVDS sites are accessible for maintenance and shall not be located on or near steeply graded slopes or in locations where maintenance accessibility would be hindered.

### **8.3 Functional Requirements**

The Design/Build Firm shall provide software updates at no cost to the Department during the warranty period. It shall be possible to use a laptop computer with an operating system compatible with the Centrac<sup>®</sup> software for detector assembly, setup, calibration, diagnosis, and data retrieval.

### **8.4 Construction Requirements**

A factory-trained and certified representative shall conduct a detailed preconstruction site survey prior to the 90% plans submittal so that the recommended MVDS locations are clearly identified on that submittal. The site survey shall identify the exact location and details of each detection station. The Design/Build Firm shall submit the detailed location information to the Department with the 90% plans submittal.

The Design/Build Firm shall prepare shop drawings that detail a complete detection assembly, and all other components to be furnished and installed. The drawings shall detail the exact location and placement of system components, and shall include installation details for the required cables. All cabling shall be installed according to the manufacturer's recommendations.

Each detector shall be mounted in a side-fire configuration. The detector shall be mounted level from side to side. The Design/Build Firm shall supply the software and a laptop computer to be used for zone calibration.

The Design/Build Firm shall oversee assembly installation on a pole at a height above the road's surface as recommended by the manufacturer. All detection zones shall be contained within the specified elevation angle according to the manufacturer's recommendations and shall detect all vehicle types in a maximum of ten lanes.

All equipment shall be installed according to the manufacturer's recommendations.

Maintenance and construction of an installed assembly shall not require lane closures.

### **8.5 Manual Requirements**

The Design/Build Firm shall provide an inventory of installed assemblies by location and corresponding serial number. The inventory shall include weight and dimension specifications; power consumption information; the operating temperature range and relative humidity specifications; and general maintenance procedures.

## 9.0 TRAFFIC CONTROLLER ASSEMBLY

### 9.1 Description

The Design/Build Firm shall replace the controller cabinet assembly at signalized intersections included in the RFP. The Design/Build Firm shall provide a completely assembled, installed, and tested controller cabinet assembly with an external UPS cabinet mounted on the side of the cabinet to be integrated into and fully compatible with Lee County's existing Econolite Centrac<sup>®</sup> ATMS system software. The controllers shall be equipped, configured and capable of operation in Traffic Responsive Plan Selection (TRPS) mode to seamlessly permit activation of TRPS mode at the cabinet or TOC. The new cabinets shall be mounted either on new Quazite foundations, or on existing foundations as specified by location in the preliminary plans. The Design/Build Firm shall reinstall existing UPS, or install a new UPS as specified by location in the preliminary plans and the RFP.

The Design/Build Firm shall provide Econolite NEMA TS2 Type 1 cabinets and an Econolite ASC3 model series traffic controllers for the specified Phase I intersections. Lee County has an existing, fully functional ATMS software system in place and operational at the Lee County TOC. The existing ATMS software system is Econolite Centrac<sup>®</sup>. Approval for sole source acquisition of 100% compatible Econolite cabinets and controllers has been provided by the FHWA for this project to provide cost-savings to the Department and the County. All traffic controllers shall be 100% compatible with the County's existing Econolite Centrac<sup>®</sup> system. The Design/Build Firm shall provide a completely assembled, tested, and installed controller assembly and integrate into the existing system.

The Design/Build Firm shall reinstall into the new controllers all existing controller database information. This shall include all existing signal timings, preemption parameters, detector configurations and any other controller database entries necessary to return the operation to the original configuration.

The Design/Build Firm shall provide controller cabinet assemblies at the intersections identified in the RFP. For the intersections not otherwise noted, the controller cabinet assemblies provided shall be configured for 16 phases. Ten intersections have been reviewed and determined to have combined existing vehicular and pedestrian signal phasing requirements that are equal to or less than 12, have right-of-way constraints that indicate an apparent hindrance to future intersection geometric expansion, and are currently operating with an established SOP approved by the Department. The Design/Build Firm shall provide replacement controller cabinet assemblies that are of equivalent configuration to the existing vehicular and pedestrian phasing and the established SOP for these intersections. These intersections include:

<b>FDOT ID</b>	<b>Major Street</b>	<b>Minor Street</b>
283	US 41 (SR 45)	South Rd
286	US 41 (SR 45)	N Airport Rd
289	US 41 (SR 45)	Oakley Ave
290	US 41 (SR 45)	Collier Ave
291	US 41 (SR 45)	Hill Ave
292	US 41 (SR 45)	Carrell Ave
293	US 41 (SR 45)	Grace Ave
294	US 41 (SR 45)	Hanson St

295	US 41 (SR 45)	South St
367	MLK Blvd (SR 82)	Hendry St

The Design/Build Firm shall furnish all hardware and software components, component documentation, training manuals, and product documentation.

### 9.2 Design Requirements

The Design/Build Firm shall furnish the controllers, firmware and software required, all external wiring harnesses and cables, fully assembled and installed within Econolite NEMA TS 2 Type 1 controller cabinets. The controller hardware procured for Phase I of this project shall be centrally operated and controlled by the Econolite Centrac<sup>®</sup>s software.

The controller shall be fully compatible with the existing system and selected from the FDOT APL. The controller shall be integrated into the existing Econolite Centrac<sup>®</sup>s ATMS software and perform in accordance with all project requirements.

The controller cabinets shall contain a UPS housed in its own cabinet that shall be mounted on the outside of the controller cabinet per manufacturer's recommendations. This UPS cabinet shall contain all necessary equipment including the UPS, batteries, and a Power Interface Module (PIM) and transfer switch. The PIM shall be modular and shall contain a TVSS (surge suppression) , terminal blocks, a GFCI outlet, circuit breakers, fluorescent light, fan, thermostat, door switch, and all necessary cabling and all other ancillary items. UPS activation shall be indicated by an external UPS cabinet mounted light indicating when UPS power is in use.

For locations that require new cabinet assembly installations and UPS, the external UPS cabinet shall be attached to the controller cabinet by the fabricator in their facility.

For locations that require the installation of an existing UPS on a new cabinet, the Design/Build Firm shall follow the controller cabinet, UPS cabinet, and UPS manufacturer procedures as well as any FDOT specifications.

The grounding shall be tested at each controller cabinet location where the foundation is to be reused. If the grounding does not meet the Department's specifications of 25 ohms or less, additional grounding shall be installed until the requirement is met.

At controller cabinet locations where power service facilities are to be upgraded, the Design/Build firm shall use the existing service unless the power company requires a new meter.

### 9.3 Functional Requirements

All Econolite Centrac<sup>®</sup>s features shall be fully supported by the controller without requiring additional modules or software and shall be fully compatible with latest software and firmware in use by Lee County.

The Design/Build Firm shall provide operations and maintenance personnel with IMSA Level 3 certification for controller change-outs. The controller change-out schedule shall be submitted to the Department for acceptance.

All furnished equipment shall be new. The traffic controller, wiring harnesses and cables shall be fully compatible with Econolite TS 2 Type 1 cabinet and Econolite ASC3 controllers.

To ensure proper operation, each controller shall be bench tested for a minimum of 48 hours prior to field installation and operation.

The controller shall be shelf mounted and fit properly and securely in the controller cabinet assembly. The controller model number and serial number shall be displayed on the housing.

The controller cabinet assembly shall comply with the FDOT Standard Specification Sections 620, 670, 671, 676, 678 and 699 and have all necessary ancillary components to provide a configuration that is consistent with Lee County's existing system. Controller cabinets within Lee County's existing system may include, but are not limited to, the following components:

- Two Thermostat Controlled Fans
- Internal fluorescent lighting activated by door switch
- Interface panels, mounted and cabled for video detection
- One pedestrian isolator configured to be compatible with the County's typical cabinet

The cabinet shall not be painted. The controller cabinet shall be provided with a base mounting pattern appropriate for the existing Type 5/6 foundation mounting configuration. New cabinet foundation shall have a minimum of three spare two-inch conduit stubs routed to a standard electrical pull box adjacent to the cabinet.

The Design/Build Firm shall ensure that the controller cabinet assembly replacement at each signalized intersection location is completed at night and shall take no longer than 6 hours. The new controller and ancillary devices shall immediately resume the functions of the replaced equipment with no degradation of service.

Controller cabinets shall be designed, furnished and installed to house any combination of the following field hardware:

- Signal controllers (and controller support hardware)
- Loop detectors/amplifiers
- CCTV camera equipment
- Ethernet edge switch
- Terminal server
- TVSS
- Video detection equipment
- MVDS Equipment

#### **9.4 Salvage of Existing Materials**

The Design/Build Firm shall salvage the controllers and other related equipment removed as part of this project. The salvaged controller location and controller serial number by location shall be compiled in a list that will be provided to the Department and maintaining agency. These items shall be delivered to the Lee County maintenance facility. All other non-salvageable items shall be disposed of in accordance with any relevant regulations set forth by the Florida Department of Environmental Protection (FDEP) or as directed by the Department.

## 9.5 UPS

The Design/build Firm shall meet the requirements listed here to remain consistent with the UPSs that are currently installed in the County. The Design/Build Firm shall configure all programmable and adjustable features of the UPS installations in a manner consistent with Lee County's existing system.

When utility power is lost, the UPS shall utilize battery power in support of the system via the PIM. In the normal operation, the UPS shall operate in the real-time true on-line mode with the inverter supplying power to all loads. In addition, the UPS shall operate in hot standby mode with power transfer accomplished within 65 milliseconds or less. In the event of UPS failure and/or battery depletion, the PIM shall ensure UPS shutdown and upon restoration of utility power, the traffic control system will be re-powered automatically.

The PIM shall enable the removal and replacement of the UPS without shutting down the traffic control system (i.e., hot swap). Supply connectors with a safety lock feature. The UPS cabinet shall meet NEMA 3R rating and shall include waterproof washable filters installed in the filtered intake on the door.

Provide UPS cabinets with Corbin #2 locks installed, and supply two Corbin #2 keys for each. Doorstops shall be included at 90 and 180-degree positions. The UPS cabinet shall be provided with a quick connect 30 AMP generator connector and accessed through a flush mount police door with a Corbin #2 lock. The external side of the police door shall be flush to the outside of the UPS cabinet. The door shall be secured while the generator is plugged in.

Mount the UPS inside the UPS cabinet. The UPS shall continuously regenerate and condition the output AC sine wave, where 100% of the power to the load, whether on utility or batteries, shall be generated 100% of the time by the on-board inverter. The inverter shall have a minimum operating efficiency of 95%.

The UPS shall contain two serial ports to allow interface to the UPS via laptop. The UPS shall contain an Ethernet 10/100 Mbps auto-detect communications port. Alarm output functions shall be selectable such as low battery and inverter active with utility fail indicated. Provide a CD-ROM for each UPS containing Windows-based configuration software.

The UPS shall use the appropriate number of AGM/VRLA batteries to provide uninterrupted battery operation for all signal related equipment at the intersection for a period of four hours. The equipment may include, but is not limited to, the signal cabinet and contents, signal heads, pedestrian features, CCTV cameras and MVDS.

Provide batteries rated as non-spillable. Batteries shall be shelf mounted. The UPS shall be provided with the SNMP management module with 10/100 BaseT Ethernet port.

## 9.6 Training and Manual Requirements

The Design/Build firm shall supply the controller manufacturer's manuals, one for each controller furnished as part of the project. Bind all controller manuals and supply in resalable waterproof plastic bags and labeled with the controller serial number and intersection location for placement in the controller cabinet. Provide one electronic copy to the Department in PDF format. The manual shall include minimum equipment features and options, wiring diagram and troubleshooting guide.

The Design/Build Firm shall provide a minimum of eight hours training to familiarize designated personnel with the operation and maintenance of the controller assembly. The training shall include:

- Use of the controller keyboard and display interface
- Controller database and coding
- Error messages and troubleshooting
- Log report generation
- Overview of cabinet
- Cabinet assembly and setup
- Communication equipment and troubleshooting

## **10.0 TOC EQUIPMENT**

Install the equipment required for the TOC in the designated area within the Lee County Traffic Operations Center (TOC). The Design/Build Firm shall be responsible for installing the consoles, computer workstations, video displays and all other required equipment for a fully functional TOC.

The Design/Build Firm shall verify that the electrical requirements are met for the operator consoles, computer workstations, video displays and all other required equipment within the TOC. Access to the TOC is limited to normal business hours for Lee County. These hours are 6:00 AM to 7:00 PM Monday through Friday. The Design/Build Firm shall plan their work in the facility accordingly. The Lee County TOC has existing ITS and signal systems in place and under daily operation. The Design/Build Firm shall coordinate all work to ensure that the existing TOC systems and the impacts on daily operations are minimized. Any network modifications or changeovers necessary for the installation of the operator consoles and workstations shall be coordinated with the appropriate County staff. The Design/Build Firm may be required to perform other network modifications outside of normal business hours.

### **10.1 Computer Workstations**

For the Lee County ATMS Phase I, the Design/Build Firm shall provide two new computer workstations at the County's TOC. The workstations shall be equipped with three 22" LED/LCD monitors each, and shall include any additional graphics cards necessary to provide graphics output capabilities to support three monitors. The hardware and software for these new workstations shall be configured as Econolite Centrac<sup>®</sup> clients.

The Design/Build Firm is responsible for all necessary work to integrate these workstations into the existing TOC network.

The Design/Build Firm is responsible for providing all power, graphics, network and communications cabling necessary to integrate these workstations into the TOC and the TOC network.

Lee County's ITG staff will provide any anti-virus or management software, other than the Network Management software, as necessary.

These workstations shall meet or exceed the following minimum specifications:

- Intel Core i3 2100 3.1 GHz, 3M or better CPU
- 4 GB of DDR3 RAM, 1333MHz, Dual Channel
- 320 GB, 7,200 RPM, 3.5" SATA, 16 MB Cache hard drive
- 16X DVD +/- RW SATA CDROM drive
- 10/100/1000 Network Interface card

- Expansion slots to support additional graphics cards
- PS2 Keyboard
- USB optical mouse
- Speakers
- Restoration CD - Operating system, diagnostic and driver set
- Dimensions (H x W x D): 14.17 inches x 6.89 inches x 16.42 inches
- Three year warranty with 24/7 telephone tech support and next day on-site service, including labor and parts
- Manufacturer compatible expansion graphics card(s) to support four monitors
- Energy Efficient - Energy Star 5.0 compliant
- These workstations shall have the following software installed:
- Windows XP Professional 32-bit Operating System
- Windows XP SP3 updates and security patches
- Microsoft Office Professional (XP compatible version)
- Econolite Centrac<sup>®</sup> client and any ancillary software needed to support the client
- Software needed to support multiple monitor configuration
- All required cabling

#### 10.1.1 Monitor Graphics Cards

Install the graphics cards and properly configure in the workstations prior to delivery. Provide additional software as needed to support multiple monitor configurations to move or assign open windows for display on all monitors, or separately on a user specified monitor. The software shall automatically assign numbers for the attached multiple monitors, with numbers ascending from left to right. Graphic expansion cards shall be workstation manufacturer compatible and fully compatible with the workstation expansion slot capabilities. The graphics expansion card shall be capable of actively changing to a different display resolutions for individual monitors without restarting the workstation. If additional software is needed for the graphics expansion card(s), then it shall be accessible from the operating system's desktop and be compatible with the workstation operating system. Graphics cards shall have a three year warranty.

The graphics cards shall meet the following minimum requirements:

- 1GB memory dedicated graphics memory
- Graphics processing unit dedicated to graphics
- 2 DVI or 2 DP outputs that require no cable adapters at the card output
- 2560 x 1600 resolution
- When installed in the expansion slot, shall not disable any on-board (native to motherboard) graphics outputs
- Card height (half-height or full-height) compatible with workstations expansion capabilities

## 10.2 Operator Consoles

Provide five operator consoles and meet the requirements of these MTRs. The Design/Build Firm shall design, furnish, install, and integrate five complete operator consoles in the TOC. The console furniture shall serve as individual task areas for the TOC operators. Each console shall include a table-desk with cabinets, drawers, chair, task lighting, and provisions for viewing three flat panel monitors. The Department shall approve all console furniture, fixtures, and finishes.

The Design/Build firm shall review the existing TOC layout, available floor space and conduct an evaluation to develop an operator console configuration. The configuration shall include an evaluation of any alternative arrangements to provide an ergonomically and efficient utilization of space. The useable space shall be arranged to obtain optimum efficiency.

Any variations to the below design criteria shall be submitted to the Department for review and acceptance prior to procurement.

#### 10.2.1 Design Requirements

The Design/Build Firm shall follow these standards:

- ADA
- Video Electronics Standards Association (VESA) flat display mounting interface (FDMI) Compliance
- Preliminary Human Factors Guidelines for Traffic Management Centers – FHWA-JPO-99-042
- FDOT Facilities Design Manual – Topic 625-020-016-a
- Console manufacturer shall be ISO 9001 certified

#### 10.2.2 Purchasing Requirements

Per Section 946.515 (2), F.S., furniture purchases must be made from PRIDE unless a “reasonable determination” can be made that the product available from PRIDE does not meet the performance specifications, comparable price and quality requirements of the agency. The “reasonable determination” must state the specific deficiencies or shortcomings in quality and/or disparity in pricing of the PRIDE products. Form No. [375-040-66](#) should be used to document your determination and must be attached to the MFMP requisition or included in your purchasing card documentation.

This is the link to the PRIDE furniture estore. Furniture selections can be found at the left of the page.

<http://www.prideestore.com/Pridestore/Products/Furniture/Default.aspx>

If it is determined that furniture cannot be purchased from PRIDE, you should use a state contract for the procurement. If the product needed is not available from either PRIDE or State Contract, it must be documented using Form No. [375-040-02](#).

State contracts available for the purchase of furniture:

[http://dms.myflorida.com/business\\_operations/state\\_purchasing/vendor\\_information/state\\_contracts\\_agreements\\_and\\_price\\_lists/state\\_term\\_contracts/furniture\\_office\\_and\\_files](http://dms.myflorida.com/business_operations/state_purchasing/vendor_information/state_contracts_agreements_and_price_lists/state_term_contracts/furniture_office_and_files)

[http://dms.myflorida.com/business\\_operations/state\\_purchasing/vendor\\_information/state\\_contracts\\_agreements\\_and\\_price\\_lists/state\\_term\\_contracts/furniture\\_educational\\_institutional](http://dms.myflorida.com/business_operations/state_purchasing/vendor_information/state_contracts_agreements_and_price_lists/state_term_contracts/furniture_educational_institutional)

[http://dms.myflorida.com/business\\_operations/state\\_purchasing/vendor\\_information/state\\_contracts\\_agreements\\_and\\_price\\_lists/state\\_term\\_contracts/furniture\\_library](http://dms.myflorida.com/business_operations/state_purchasing/vendor_information/state_contracts_agreements_and_price_lists/state_term_contracts/furniture_library)

#### 10.2.3 Material Requirements

The consoles shall be ergonomically designed to minimum depth with enhanced functionality. The console shall be sized to ensure that the required number of consoles can be installed with optimized sight lines and ergonomics. The selected console shall not infringe upon the minimum walkway space between

each console row as mandated by the building fire code and ADA requirements. The consoles shall be situated to allow concealed cable conveyance to the server room.

The Design/Build Firm shall provide all of the necessary services by the console manufacturer to prepare recommended console designs that incorporate placement of workstations, system equipment, connections, task work surfaces, storage drawers, and cabinets to meet the Department's requirements for ergonomic operations, as defined in the FDOT Facilities Design Manual - Topic 625-020-016-a.

The console shall be curved, with integrated task lighting. The console desk shall be designed for flat-screen monitor technology and shall accommodate a minimum of three 22-inch flat screen monitors, with room for an additional screen. The central portion of the desk shall have sufficient space for the operator to extend their legs and to accommodate the bottom of the chair when slid underneath the central desk space. The console shall have integrated levelers to provide up to 1.75 inches of adjustment to accommodate uneven floor conditions. The console shall conform to the following minimum dimensions:

- Desktop height: 28 inches
- Depth of console: Not greater than 51 inches
- Work surface depth: 20 inches

Design the consoles to enclose and conceal equipment, power cables, telephone and data lines, and connections in a solid integrated housing. The consoles shall be fully equipped with cabinets, drawers, task surfaces, housing, and supports for equipment, including flat screen monitors, workstations, task lighting, and hardware, to be a completely finished and usable system. All wiring holes shall be fitted with grommets designed not to chafe the wire and cables.

The console shall provide an unobstructed view of the video display wall and shall conceal the functional task lighting for glare elimination. The desk shall include a recessed monitor shelf to accommodate the added height of the 22-inch flat screen monitors and to provide a natural viewing angle for operators seated on the chair both at the minimum and maximum height position. The recessed shelf shall not obstruct the operator's viewing angle. The height shall be adequate without blocking the operator's view of the bottom edge of the bottom row of the video display wall.

The console shall include four drawers, two shelves, and two file drawers to include letter-size folders. One drawer shall be equipped with a pencil tray. The equipment tray shall be designed to support the TOC workstations furnished in this project.

#### 10.2.4 Chairs

Provide chairs that complement the console. Provide chairs designed so that the bottom portion shall slide into and fit completely under the desk at the maximum height position. Provide chairs that reduce pressure points for the operator in the seated position. Provide chairs with sufficient lumbar support, as well as a high back that is height adjustable by the operator to support the shoulder and the head. The chair shall include armrests and wheels for 360-degree swivel and provide flexibility of movement in all directions by the operator in the seated position. The chair shall be height adjustable with all controls easily accessible by the operator in the seated position.

The chair shall conform to the minimum dimensions:

- Minimum seat height: 16 inches
- Maximum seat height: 21 inches

- Minimum arm height: 25 inches
- Maximum arm height: 33 inches
- Maximum overall width: 26 inches
- Maximum overall depth: 25 inches
- Maximum overall height: 45 inches

#### 10.2.5 Task Lighting

The console shall include integrated task lighting to provide illumination of the desk work area. The task lighting shall be integrated into the console and positioned to illuminate the work area in a narrow optimal range that neither creates monitor glare nor shines into the operator's eyes while seated or standing. The task lighting shall not be visible when viewed standing in front or back of the console. The lighting shall be fully encapsulated in glass, include illumination control and shall be fully dimmable. Task lighting shall not hinder viewing of the video wall.

#### 10.2.6 Construction Requirements

The Department shall review all console furniture prior to the installation. Upon acceptance, the Design/Build Firm shall furnish and install the consoles and integrate all equipment and connections. All furniture components shall be plumbed and leveled for smooth and level connections between units.

#### 10.2.7 Testing Requirements

The Design/Build Firm shall develop a test plan that demonstrates all requirements for the Control Room Operator Consoles are provided. The Design/Build Firm shall test all console equipment and moving components and make necessary adjustments for a complete and finished appearance. This shall include testing and verification of:

- Sight lines to all points on video wall from each operator console
- Lighting conditions at each operator console

### 10.3 Network Management Software

The Design/Build Firm shall furnish, install, and populate/configure a new NMS to monitor and manage existing devices and new devices installed by this project. Provide the software with enough licenses to allow for a minimum of three simultaneous users.

The NMS shall:

- Monitor and analyze real-time, in-depth, network performance statistics for routers, switches, wireless access points, servers, UPS systems, and any other SNMP-enabled devices;
- Display the Lee County Traffic network pictorially. The Design/Build firm shall provide an approved map with the NMS software to pictorially display the location of the networked devices;
- Automated Network Discovery – The NMS should automatically discover devices on the network;
- Poll and query device status using multiple protocols such as SNMP, ping, tracert, http, telnet, ssh, RMON, Netflow, or use a custom poller to query any SNMP-enable device that has a MIB.
- Deliver prioritized alerts via E-mail, paging, sound, and pictorially on real issues by enabling advanced network alerting dependencies for correlated events, sustained conditions, and complex combinations of device states;

- Monitor network metrics including bandwidth utilization, packet loss, latency, errors, discards, and QoS;
- Have a message center or centralized screen for a central view for all of the notification messages about network performance. This message center should allow the operator to quickly troubleshoot network performance issues by analyzing SNMP trap and Syslog data from a single interface, instead of by polling various machines;
- Contain an integrated wireless poller for monitoring wireless link status;
- Customize the collected data for graphing, alerting, and reporting purposes;
- Contain a report writer to generate custom network reports; and
- Be scalable to accommodate growth and enterprise network management needs with a Failover Engine (FoE), multiple polling engines and additional web servers.

The Design/Build Firm shall provide eight hours of training on the maintenance procedures for the NMS.

## **11.0 ATMS SOFTWARE**

### **11.1 Description**

The Lee County ATMS Phase I project involves adding intersections and devices to an existing ATMS software platform. Lee County has an existing, fully functional ATMS software system in place and operational at the Lee County TOC. The existing ATMS software system is Econolite Centrac<sup>®</sup>. FHWA has approved the sole source acquisition of 100% compatible Econolite cabinets and controllers for this project. This sole source approval includes the condition that the Project utilize the County's existing Econolite Centrac<sup>®</sup> ATMS software system.

No additional ATMS software or server hardware are required for this project. The project involves adding workstations at the Lee County TOC, video wall components, and intersections and devices at the locations shown on the preliminary plans. The Design/Build Firm shall complete all work necessary to add these workstations to the existing Centrac<sup>®</sup> ATMS software and all work involved with adding video wall and related components at the Lee County TOC.

The Design/Build Firm shall collect all pertinent information to document the existing Econolite Centrac<sup>®</sup> ATMS system software and server hardware, as well as other related existing features at the TOC. From this, the Design/Build Firm shall sufficiently evaluate the existing ATMS system to determine all design and integration requirements to seamlessly incorporate the Phase I intersections and devices into the existing Econolite Centrac<sup>®</sup> ATMS software system. The Design/Build Firm may elect to obtain the specialized technical skills and knowledge in Econolite ATMS systems from an Econolite representative.

All intersections and devices constructed as part of the Phase I project shall be controlled with the existing Centrac<sup>®</sup> software at the TOC.

The Design/Build Firm shall perform all work necessary to successfully implement Traffic Responsive Plan Selection (TRPS) on the Phase I intersections. TRPS shall automatically select timing plans in response to changing traffic conditions at the County's required thresholds. Timing plans shall be provided by the County from their established library of timing plans. The Design/Build Firm shall program these timing plans in the new controllers and Centrac<sup>®</sup> databases. The Design/Build firm shall collect all other data and information to develop and implement the TRPS for the project intersections.

The County will supply the required thresholds for TRPS. The Design/Build Firm shall utilize the County supplied thresholds for establishing automatic timing plan selection under TRPS operation.

## 11.2 Design Requirements

The Design/Build Firm shall utilize the County's existing Centrac<sup>®</sup> ATMS software and server platform to seamlessly incorporate all new/added Phase I intersections and devices.

Any enhancements to the Phase I intersections and devices shall be fully compatible with the existing Centrac<sup>®</sup> ATMS software.

The Design/Build Firm shall collect all relevant information on the existing Econolite Centrac<sup>®</sup> ATMS system software and server hardware. A comprehensive inventory of the existing Econolite Centrac<sup>®</sup> ATMS system software and server hardware shall be performed by the Design/Build Firm. Any devices, field components or equipment that will be impacted by the addition of the Phase I intersections and devices shall be included. This inventory shall include documenting all relevant system features and developing a comprehensive listing of the existing system prior to any work being performed. The listing shall include, at a minimum location, description, type of equipment, model number, serial number, firmware or software version, and communication or network features.

The Design/Build Firm shall utilize this to develop and provide an appropriate document that outlines any required modifications to the system to add the Phase I devices and intersections to the existing Econolite Centrac<sup>®</sup> system. This information may also be utilized for integration, database modifications, maps, graphics, timing plans, TRPS or other related design work needing to be performed by the Design/Build Firm.

The collection of any required information or data on the existing system necessary for the Design/Build Firm to successfully accomplish any designs, enhancements, any required changes and a complete installation shall be the responsibility of the Design/Build Firm.

DBF shall evaluate the existing system and perform all necessary updates to provide a functional Phase 1 project as required in this document.

The Design/Build Firm shall complete all software and hardware modifications to provide fully functional Econolite Centrac<sup>®</sup> ATMS system software database, graphics, maps, timing plans and TRPS.

All Phase I device drivers and supporting software shall be 100% compatible with Centrac<sup>®</sup>.

The Design/Build Firm shall update and upgrade the existing system and all new devices and software and it shall be 100% compatible with the existing:

- Econolite Centrac<sup>®</sup> ATMS system software
- Local intersection software
- All field devices
- All local software
- Video display systems
- All computer hardware
- Ethernet communications network software and hardware

### **11.3 Material Requirements**

The Design/Build Firm shall provide a complete backup copy of both the existing Econolite Centrac<sup>®</sup>s and the Econolite Centrac<sup>®</sup>s system modified with Phase I intersections and devices. The existing system backup copy shall be provided prior to any modifications. The Design/Build Firm shall provide backup copies of all ATMS software, algorithms, device drivers, and all other software components, to the FDOT on CD/DVD prior to issuance of Final Acceptance.

### **11.4 Functional Requirements**

The Design/Build Team shall add the new intersections and devices to the existing Econolite Centrac<sup>®</sup>s system and shall include all graphics, databases, maps, displays, timing databases, TRPS and all other supporting databases to provide a fully functional system.

### **11.5 Traffic Responsive Plan Selection**

TRPS shall be programmed by the Design/Build Firm using the software functions of the existing Centrac<sup>®</sup>s ATMS system software. Lee County will provide timing plans and required thresholds for the Phase I intersections. The Design/Build Firm shall be responsible for all other data and programming necessary to run TRPS on the Phase 1 intersections.

The Design/Build Firm shall be responsible for inputting the provided data into the existing software for the Phase 1 intersections.

The Design/Build Firm shall complete all required software and hardware modifications to the County's existing Econolite Centrac<sup>®</sup>s for the implementation of TRPS for Phase I intersections and devices. These modifications shall include, but not be limited to, any one or more of the following: software TRPS database, TOD and timing database, graphics, maps, detector assignment or configuration modifications in the software and hardware, timing plan databases and TRPS diagnostics and outputs.

TRPS shall demonstrate dynamic and automatic adjustment to variations in traffic pattern characteristics based upon the Design/Build Firms designs and programming of the provided thresholds.

The Design/Build Firm shall verify full functionality of the TRPS at the project intersections through the Centrac<sup>®</sup>s status reports.

The TRPS shall be configured to control an intersection or a group of intersections in the Phase I ATMS. In the TRPS mode, the number of active intersections shall respond to the programmed TRPS.

The Design/Build Firm shall program and implement the TRPS. TRPS programming shall demonstrate responsive timing plans changes selected from a library of programmed timing plans.

The Design/Build Firm shall perform all software, device and controller programming for TRPS control mode. TRPS implementation of timing plans shall be accomplished through the programmable traffic responsive algorithm from the existing Centrac<sup>®</sup>s ATMS system software at the TOC. The Design/Build Firm shall provide defined description or names for each programmed TRPS.

TRPS programming shall include all necessary programmable entries. The programmed entries may be in percentage values. The TRPS programming features shall provide County defined thresholds based on cycle, offset and split, and include any override programming options to permit a priority pattern to be applied when over-saturation is identified by the TRPS programming.

TRPS shall be programmed with selectable program options to operate TRPS by TOD or with TRPS calculations. The Design/Build Firm shall determine how the patterns are to be implemented as either; a TOD timing plan implementation with TRPS selected automatically to override the TOD plan, or TRPS implementation without TOD. Programming shall also include TRPS to command FREE on a local or control section basis. Programming of the TRPS shall conform to the existing Centrac<sup>®</sup> ATMS system software algorithm. TRPS programming shall be configured to automatically send results/events of the TRPS program changes, and any errors in the TRPS, to the existing Centrac<sup>®</sup> ATMS system software at the TOC.

TRPS programming shall include any necessary modifications for detectors. Programming shall include detector diagnostics and assignment of detectors. Assignment of several detectors is to be to named groups that are assigned to a TRPS threshold functions and/or pattern selections. Detectors group selection and programming shall be based on the detector's capabilities to provide and scale both occupancy and volume detector data. The programming shall include a minimum number of functioning detectors in the group, and assignment of the programmed group to multiple thresholds.

The TRPS programming shall be configured to have the option of running and logging pattern changes in both off-line and on-line mode.

The Design/Build Firms programming shall initially operate in the in off-line mode and the existing Centrac<sup>®</sup> ATMS system software shall be programmed to utilize existing TOD plan operation.

The TRPS off-line mode shall operate for a minimum of 7 days, including Saturday and Sunday, while logging the pattern changes and system detectors prior to the TRPS running in on-line mode. During this 7 day off-line mode, the Design/Build Firm shall track TRPS operation and TOD operations and plot the initial system response plot. Once successful TRPS operations has been accomplished as illustrated on the system response plot and demonstration that the County required thresholds are achieved by the TRPS, the Department will approve modification of the programming to on-line TRPS mode. In on-line mode, the controllers in the street shall utilize the programmed TRPS operation while logging the pattern changes that occur.

Upon successful completion of TRPS implementation, the Design/Build firm shall provide the Department with all documentation necessary to illustrate the TRPS development and results. Results shall include, at a minimum, plots of weekday and weekend averages of the TRPS response and the programmed TOD plan, traffic volume or occupancy data, plotted over time of day (system response plot).

## **11.6 Integration and Testing Requirements**

All added intersections and devices, and other related components, shall be tested to verify they are fully functional prior to Final Acceptance. All documentation regarding these tests shall be developed by the Design/Build firm and delivered to the Department in an acceptable digital file format.

Verification that the existing Econolite Centrac<sup>®</sup> system is fully functional and operational prior to integration and testing shall be the responsibility of the County. The County shall provide documentation attesting and confirming the condition of their existing system prior to any work being performed in the TOC by the Design/Build Firm. Any deficiencies that need to be addressed to return the existing system to a fully functional operation shall be the responsibility of the County.

The Design/Build Firm may elect to have a factory representative from Econolite participate in the verification of the existing Econolite Centrac<sup>®</sup>s system and testing of the system. If the representative participates, then the Design/Build Firm shall also provide documentation from Econolite attesting and confirming as to the condition of the existing Econolite Centrac<sup>®</sup>s system.

The Design/Build Firm shall perform integration for all new Phase I intersections and devices into the central software. Integration shall be followed by demonstration of key software functions. These demonstrations shall include simultaneous verification of key functions at the TOC and at the intersection and device location in the field. Key function demonstrations shall also include, at a minimum, demonstration of the following:

- TOC to device communication
- TOC to cabinet communication
- TOC to intersection controller communication
- Network device to TOC communication
- CCTV to network device communication

Additionally, all key Econolite Centrac<sup>®</sup>s software command functions shall be demonstrated for the Phase I intersections, to include at a minimum:

- Upload/Download
- Time Set
- Manual enable
- Event reporting in monitor mode
- Log transfer
- Event transfer
- Map display
- Intersection Graphics Display
- Green band display
- Detector display
- CCTV display
- CCTV command functions, pan-tilt-zoom

#### 11.6.1 Documentation

The Design/Build Firm shall provide five hard copies and one electronic copy of the software system configuration document. This documentation shall include all configuration data for the Centrac<sup>®</sup>s database as updated by the new Design/Build Firm provided project features. The documentation shall also include the existing data and any database feature that were altered by the Design/Build Firm.

**ATTACHMENT “D”**

**COST SAVINGS INITIATIVE PROPOSAL**

#### **4-3.9 Cost Savings Initiative Proposal:**

##### **4-3.9.1 Intent and Objective:**

(1) This Subarticle applies to any cost reduction proposal (hereinafter referred to as a Proposal) that the Contractor initiates and develops, following the submission of technical and price proposals, for the purpose of refining the Contract to increase cost effectiveness or significantly improve the quality of the end result. A mandatory Cost Savings Initiative Workshop for the Contractor and Department to discuss potential Proposals will be held within 30 calendar days following the issuance of the Notice to Proceed.

(2) The Department will consider Proposals that would result in net savings to the Department by providing a decrease in the cost of the Contract. Proposals must result in savings without impairing essential functions and characteristics such as safety, service, life, reliability, economy of operation, ease of maintenance, aesthetics and necessary standard design features. However, nothing herein prohibits the Contractor from submitting Proposals when the required functions and characteristics can be combined, reduced or eliminated because they are nonessential or excessive.

(3) The Department reserves the right to reject at its discretion any Proposal submitted that proposes a change in the design of the pavement system or that would require additional right-of-way. Pending the Department's execution of a formal supplemental agreement implementing an approved Proposal, the Contractor shall remain obligated to perform the work in accordance with the terms of the existing Contract. The Department may grant time extensions to allow for the time required to develop and review a Proposal.

(4) The Department reserves the right to reject at its discretion any Proposal submitted which is based on or related to a previously rejected Alternative Technical Concept proposal submitted during the procurement process.

(5) For potential Proposals, a mandatory concept meeting will be held for the Contractor and Department to discuss the potential Proposal prior to development of the Proposal.

**4-3.9.2 Subcontractors:** The Department encourages the Contractor to include the provisions of this Subarticle in Contracts with subcontractors and to encourage submission of Proposals from subcontractors. However, it is not mandatory to submit Proposals to the Department or to accept or transmit subcontractor proposed Proposals to the Department.

**4-3.9.3 Data Requirements:** As a minimum, submit the following information with each Proposal:

(1) a description of the difference between the existing Contract requirement, including any time extension request, and the proposed change, and the comparative advantages and disadvantages.

(2) separate detailed cost estimates for both the existing Contract requirement and the proposed change. Break down the cost estimates by pay item numbers indicating quantity increases or decreases. Identify additional proposed work not covered by using pay item numbers in the Basis of Estimates Manual. In preparing the estimates, include overhead, profit, and bond within pay items.

(3) an itemization of the changes, deletions or additions to plan details, plan sheets, design standards and Specifications that are required to implement the Proposal if the Department adopts it. Provide preliminary plan drawings sufficient to describe the proposed changes.

(4) engineering or other analysis in sufficient detail to identify and describe specific features of the Contract that must be changed if the Department accepts the Proposal with a proposal as to how these changes can be accomplished and an assessment of their effect on other project elements. The Department may require that engineering analyses be performed by a prequalified consultant in the applicable class of work. Support all design changes that result from the Proposal with prints of drawings and computations signed and sealed by the Contractor's Engineer of Record. Written documentation or drawings will be provided clearly delineating the responsibility of the Contractor's Engineer of Record.

(5) the date by which the Department must approve the Proposal to obtain the total estimated cost reduction during the remainder of the Contract, noting any effect on the Contract completion time or delivery schedule.

(6) a revised project schedule that would be followed upon approval of the Proposal. This schedule would include submittal dates and review time for the Department and Peer reviews.

**4-3.9.4 Processing Procedures:** Submit two copies of each Proposal to the Engineer or his duly authorized representative. The Department will process Proposals expeditiously; however, the Department is not liable for any delay in acting upon a Proposal submitted pursuant to this Subarticle. The Contractor may withdraw, in whole or in part, a Proposal not accepted by the Department within the period specified in the Proposal. The Department is not liable for any Proposal development cost in the case where the Department rejects or the Contractor withdraws a Proposal.

The Engineer is the sole judge of the acceptability of a Proposal and of the estimated net savings in construction costs from the adoption of all or any part of such proposal.

Prior to approval, the Engineer may modify a Proposal, with the concurrence of the Contractor, to make it acceptable. If any modification increases or decreases the net savings resulting from the Proposal, the Department will determine the Contractor's fair share upon the basis of the Proposal as modified. The Department will compute the net savings by subtracting the revised total cost affected by the Proposal from the total cost represented in the original Contract.

Prior to approval of the Proposal that initiates the supplemental agreement, provide acceptable Contract-quality plan sheets revised to show all details consistent with the Proposal design.

**4-3.9.5 Computations for Change in Contract Cost of Performance:** If the Proposal is adopted, the Contractor's share of the net savings as defined hereinafter represents full compensation to the Contractor for the Proposal.

The Department will not include its costs to process and implement a Proposal in the estimate. However, the Department reserves the right, where it deems such action appropriate, to require the Contractor to pay the Department's cost of investigating and implementing a Proposal as a condition of considering such proposal. When the Department imposes such a condition, the Contractor shall accept this condition in writing, authorizing the Department to deduct amounts payable to the Department from any monies due or that may become due to the Contractor under the Contract.

**4-3.9.6 Conditions of Acceptance for Major Design Modifications of Category 2 Bridges:** A Proposal that proposes major design modifications of a category 2 bridge, as determined by the Engineer, shall have the following conditions of acceptance:

All bridge plans relating to the Proposal shall undergo an independent peer review conducted by a single independent engineering firm referred to for the purposes of this article as the Independent Review Engineer pre-qualified by the Department in accordance with Rule 14-75 and who is not the originator of the Proposal design Florida Administrative Code. The independent peer review is intended to be a comprehensive, thorough verification of the original work, giving assurance that the design is in compliance with all Department requirements. The Independent Review Engineer's comments, along with the resolution of each comment, shall be submitted to the Department. The Independent Review Engineer shall sign and seal the submittal cover letter stating that all comments have been adequately addressed and the design is in compliance with the Department requirements. If there are any unresolved comments the Independent Review Engineer shall specifically list all unresolved issues in the signed and sealed cover letter.

The Contractor shall designate a primary engineer responsible for the Proposal design and as such will be designated as the Contractors Engineer of Record for the Proposal design.

New designs and independent peer reviews shall be in compliance with all applicable Department, FHWA and AASHTO criteria requirements including bridge load ratings.

**4-3.9.7 Sharing Arrangements:** If the Department approves a Proposal, the Contractor shall receive 50% of the net reduction in the cost of performance of the Contract as determined by the final negotiated agreement between the Contractor and the Department. The net reduction will be determined by subtracting from the savings of the construction costs the reasonable documented engineering costs incurred by the contractor to design and develop a Proposal. Engineering costs will be based on the consultant's certified invoice and may include the costs of the Independent Review Engineer in 4-3.9.6. The total engineering costs to be subtracted from the savings to determine the net reduction will be limited to 25% of the construction savings and shall not include any markup by the Contractor or the costs for engineering services performed by the Contractor. Engineering costs shall only be considered for Proposals initiated after plans have been stamped "Released for Construction" by the Department as described in the Request for Proposal.

**4-3.9.8 Notice of Intellectual Property Interests and Department's Future Rights to a Proposal:**

**4-3.9.8.1 Notice of Intellectual Property Interests:** The Contractor's Proposal submittal shall identify with specificity any and all forms of intellectual property rights that either the Contractor or any officer, shareholder, employee, consultant, or affiliate, of the Contractor, or any other entity who contributed in any measure to the substance of the Contractor's Proposal development, have or may have that are in whole or in part implicated in the Proposal. Such required intellectual property rights notice includes, but is not limited to, disclosure of any: issued patents, copyrights, or licenses; pending patent, copyright or license applications; and any intellectual property rights that though not yet issued, applied for or intended to be pursued, could nevertheless otherwise be subsequently the subject of patent, copyright or license protection by the Contractor or others in the future. This notice requirement does not extend to intellectual property rights as to stand-alone or integral components of the Proposal that are already on the Department's QPL or design standard indexes, or are otherwise generally known in the industry as being subject to patent or copyright protection.

**4-3.9.8.2 Department's Future Rights to a Proposal:** Notwithstanding 7-3 nor any other provision of the Standard Specifications, upon acceptance of a Proposal, the Contractor hereby grants to the Department and its contractors (such grant being expressly limited solely to any and all existing or future Department construction projects and any other Department projects that are partially or wholly funded by or for the Department) a royalty-free and perpetual license under all forms of intellectual property rights to manufacture, to use, to design, to construct, to disclose, to reproduce, to prepare and fully utilize derivative works, to distribute, display and publish, in whole or in part, and to permit others to do any of the above, and to otherwise in any manner and for any purpose whatsoever do anything reasonably necessary to fully utilize any and all aspects of such Proposal on any and all existing and future construction projects and any other Department projects.

Contractor shall hold harmless, indemnify and defend the Department and its contractors and others in privity therewith from and against any and all claims, liabilities, other obligations or losses, and reasonable expenses related thereto (including reasonable attorneys' fees), which are incurred or are suffered by any breach of the foregoing grants, and regardless of whether such intellectual property rights were or were not disclosed by the Contractor pursuant to 4-3.9.8.1, unless the Department has by express written exception in the Proposal acceptance process specifically released the Contractor from such obligation to hold harmless, indemnify and defend as to one or more disclosed intellectual property rights.