

Addendum #8

SR 400 (I-4) Interchange at SR 46

Seminole County

Financial Projects Number(s): 407573-1-52-01

Federal Aid Project Number(s): 0042-248-I

Contract Number: E5N96

March 31, 2011

The Request for Proposal for the above referenced project is amended as follows:

**1. Section VI, Design and Construction Criteria, U. Intelligent Transportation System (ITS).
Page 55 of 70 is amended as follow:**

U. Intelligent Transportation Systems (ITS) Plans:

1. Dynamic Message Sign (DMS) Requirements

i. Removal of Existing DMS

The Design/Build Firm shall be responsible for the removal and disposal of all existing DMS, components, structures and foundations. The Design/Build Firm shall partially remove all existing drill shaft foundations per FDOT 110 Specification. The Design/Build Firm shall provide the Department with an excel spreadsheet listing Global Positioning System (GPS) coordinates (sub-foot accuracy) for each existing DMS foundation. Existing DMS locations are provided in Table 1 below. All work shall be in accordance with all applicable FDOT Specifications at all DMS locations.

The Design/Build Firm shall disassemble, retain and supply the internal communication components from the existing DMS enclosures to the Department's ITS Project Manager. Said components shall include the DMS light boards, Central Processing Unit (CPU) communication cards, display driver panel and pixel panels. The Design/Build Firm shall deliver all retained equipment to an FDOT inventory facility specified by the FDOT ITS Project Manager and shall properly dispose of all non-salvageable equipment, to including but not limited to DMS enclosures with components and sign structure, at the expense of the Design/Build Firm.

The table below provides an approximate location of the existing DMS that are to be replaced. It will be the responsibility of the Design/Build team to verify their location in the field.

Table 1

DMS	Approximate MM
DMS 1: I4 E of Lake Mary WB	99.2
DMS 2: I4 E of Lake Mary EB	99.6
DMS 3: I4 E of SR 46 WB	104.2
DMS 4: I4 E of SR 46 EB	104.4

ii. New Dynamic Message Signs (DMS)

The work in this section specifies the type of DMS’s that the Design/Build Firm shall be responsible for furnishing and installing. These items of work shall consist of furnishing and installing DMS’s using Light Emitting Diode (LED) technology in accordance with these requirements and their respective structures and mounting hardware. The DMS shall be equipped with two (2) controllers; one located inside the enclosure and one to be located inside the ground mount cabinet (local hub). A manufacturer’s warranty shall apply to all equipment furnished. User’s Manuals and Maintenance Manuals for all equipment shall be supplied in printed form and on CD-ROM.

All DMS’s shall be mounted on Full Span structures with DMS 1 and 2 on one structure and DMS 3 and 4 on one structure for a total of two (2) full span structures. The proposed DMS structure for DMS 1 and DMS 2 shall also include mounting the two (2) advance guide signs located between the existing DMS 1 and 2 structures shown in Table 2 below. It is the Departments wishes that the proposed DMS full span structures be placed at a location between the existing DMS structures. The proposed DMS structures shall have a line of sight distance of at least 1000 ft. The DMS shall provide a minimum vertical clearance of 19’-6” as per the 2010 FDOT Plans and Preparation Manual. The DMS structure shall not be located within clear zone. **The DMS shall be mounted on the truss over the left and center travel lane.** The DMS full span structures are require to be equipped with catwalks. The catwalk system shall preferably be designed such that lane closures are not required for access to the DMS enclosures for routine maintenance.

Table 2

Guide Signs Description	Purpose
Sign 1: Lake Mary/Heathrow Exit 98	Advanced Guide Sign
Sign 2: Sanford/Heathrow 1 Mile Exit 101A	Advanced Guide Sign

The DMS signs shall be connected to the FDOT network as described below:

- **The DMS Auxiliary Controller located inside the DMS enclosure shall be connected to the Distribution Board, then to a DMS Controller located inside the existing ground mounted cabinet via fiber. The DMS Controller located in the ground mounted cabinet shall be connected to the existing Layer 2 switch using the same port assignment as the equipment being replaced. If the existing port cannot be used, the Design/Build Firm will coordinate with the FDOT ITS**

Project Manager to retrieve a new port assignment.

The sign enclosure, equipment cabinet and their components shall withstand all typical environmental conditions of the location in which they are to be installed. Operation of the sign system equipment shall not be degraded by rain, snow, sleet, and fog or normally encountered ambient humidity conditions. Salt or chemicals in the air shall not adversely affect the sign, equipment cabinet, and their components. Corrosion protection shall be provided between dissimilar metals. Equipment located inside the sign enclosure or equipment cabinet shall meet the environmental requirements of the National Electrical Manufacturers Association (NEMA) specification TS-2 (1998): -34°C (-29°F) to +74°C (+165°F) internal air temperature, 5% to 95% relative humidity, and non-condensing.

The equipment cabinet, sign enclosure and structure shall withstand wind driven rain without significant leakage of water inside the enclosure. The sign enclosure shall withstand a basic wind speed of 130 miles/hr without damage.

The DMS controller shall fully support full color National Transportation Communication for ITS Protocol (NTCIP) version 2 and shall be backwards compatible with NTCIP version 1.

iii. DMS Enclosure:

The sign shall be a full LED matrix of 54 X 210 pixels, 34mm pixel pitch, full color, walk-in type display enclosure with a minimum of 18-inch letter height and a minimum 3 rows of 21 characters per row. The display technology shall be composed of multiple red, green, and blue high resolution LEDs and shall not rely on any mechanical components or other pixel technologies, such as fiber optic, flip disk, combination flip disk-fiber optic, combination flip disk-LED, liquid crystal, LED Lenses or incandescent lamp. The display panel shall be 100% solid state with no moving parts except for the environmental control fans and thermostats. All panels shall be identical and mutually interchangeable with all other panels and shall include a mechanism of easily setting the position address of the panel. The DMS shall be able to display messages composed of any combination of alphanumeric text, punctuation symbols, and graphic images across multiple frames.

The DMS housing bottom side shall contain small weep holes for draining any water that may accumulate due to condensation. Weep holes and ventilation/exhaust hoods shall be screened to prevent the entrance of insects and small animals. No field hardware modifications or programming modifications shall be required to exchange or replace individual display panels. LEDs shall have a nominal viewing cone of 30 degrees with a half-power angle of 15 degrees measured from the longitudinal axis of the LED. The DMS shall contain LED display modules that include an LED pixel array and LED driver circuitry. These modules shall be mounted adjacently in a two-dimensional array to form a continuous LED pixel matrix. All LED display modules, as well as the LED pixel boards and driver circuit boards, shall be identical and interchangeable throughout the DMS. Each LED shall be rated for a minimum of 100,000 hours of service life. The failure of one LED shall not affect the operation of the other LED's in that string. The display units are intended to provide motorist information and shall be designed to provide at least 10 (ten) years useable life. The display enclosure shall contain the LED Display Modules, DMS Driver, electronics, electrical and mechanical devices required.

Functionality of the existing equipment and fiber optic connections will be maintained during this replacement process. Exception will be made as follows; a maximum of six (6) hours of downtime

per each DMS along with devices attached to the DMS structure shall be allowed in order to cutover the existing DMS to the new DMS. At maximum, no more than two (2) DMS shall be non-functional at any given six (6) hour interval of a downtime. Additionally, no two (2) consecutive DMS on the same side of the roadway shall be non-functional or visually hindered at one time. If the new sign is placed behind the existing sign such that visibility to the new sign is hindered, the portion of the existing sign structure hindering visibility shall be removed within 30 hours of cutover to the new sign. Likewise, if the new sign structure is placed in front of an existing sign and hinders visibility, the new sign must be activated and fully operational within 30 hours of hindering visibility. Whether or not a sign is visually hindered shall be determined by viewing the display face of the sign from the travel lanes approaching the sign for a range of 100 to 800 feet from the sign.

Other ITS field devices (i.e. detector, wireless radio, etc.) that are attached to the existing DMS structure shall be removed and relocated to new structures once constructed (where applicable) and it shall be the responsibility of the Design/Build Firm to restore said devices to their previous working conditions or better.

U. Intelligent Transportation Systems (ITS) Plans:

2. Communication Network

The communications network for the project shall consist of all required equipment necessary to provide a fully operational communications sub-system. The project includes any parts or devices needed at the Regional Transportation Management Center (RTMC) or other control center to provide fully functional communication within the ITS network including, but not limited to, all field devices, fiber optic patch panels, splice enclosures, Layer 2 switches, Layer 3 switches, port servers, sub-system devices, optics within existing switch and other devices.

The communications system shall provide, at a minimum, the transmission of:

- Video with real-time PTZ control of the CCTV sub-system
- Volume, occupancy, and speed data, in addition to detector status information of the VDS sub-system.
- Control and monitoring commands of the DMS sub-system.
- Command and control of any other ITS deployed sub-system

The Design Build Firm shall replace the existing 72 fiber with 144 fiber on both sides of I-4. The 144 cable on the westbound side shall tie in the existing fiber on both ends of the project (a new splice vault at the CR 46A overpass to a new splice vault just East of Orange Blvd past the CSX railroad tracks) and their shall be a lateral between the new splice vault located East of Orange Blvd and the existing splice vault located East of Orange Blvd on the Eastbound side of I4. The 144 cable on the eastbound side shall remain dark and shall run from the 72 crossing of I-4 at CR 46A to the existing splice vault located East of Orange Blvd on the Eastbound side of I4. All drops shall be off of the 144 cable on the westbound side of I-4. 24 strand drop cable shall be used to make all drops and 144 strand fiber optic cable shall be used for all laterals. Local Hubs are to be daisy chain together as currently configured. The Design Build Firm shall not change network setting or logical topology unless approved through Maintenance of Communication Plans. The first two lateral connections from one 144 to the other shall be put into place on the south-side of the 417 underpass of I-4. The 144 cables shall be pulled into ground mounted cabinets with a minimum 50 ft of slack in a splice-box in from of the cabinet, but shall not be cut or mid-entried. A 24 strand drop cable shall run from one cabinet to the other and be fully terminated at each cabinet.

Communications shall be maintained and remain fully operational throughout construction. Any cuts to the existing trunkline fiber shall require a 48 hour advance notice and approval from Michael Smith, ITS Systems Manager, of the location and the work that is to be completed. A minimum of 5 working days for review of the request for downtime shall be allowed for each request. These cuts shall occur at nights (8:00PM to 6:00AM) or weekends, excluding any holiday weekends and at no time shall the cuts result in outages greater than 4 hours unless otherwise approved. It is the Design Build Firm's responsibility to review all impacts of their proposed activity. Approval of downtime does not remove any obligations of system maintenance outside of the times of the request. Anytime in excess of the allowed outage time will result in the use of the Damage Recovery Liquidated Damages being utilized.

All final construction ITS communications infrastructure shall be hardwired; no wireless communications shall be implemented as part of the interim or final ITS system.

Posted: March 31, 1:30 p.m.

By: Lisa Hightower

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