

# ITS Checklist

<b>Check</b>	<b>Description</b>
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**1. Contract Management Documents**

- Read RFP (if applicable) and Addendums as well as Conceptual Plans
- Review latest version of the [Standards Specifications](#)
- Review latest version of the [FDOT Design Manual](#)

**2. Is the ITS a component set?**

- Yes, continue                       No, go to section 3
- Review Roadway plan sheets for concurrency. (Structures, Drainage, Alignment, etc.)
- Review Roadway cross sections for conflicts with ITS devices, pull boxes and conduit line.
- Review Drainage cross sections for conflicts – Ensure that pull boxes/poles are not proposed on bottom of ditches or swales.
- Review Signing and Pavement Plans – If DMS signs are being proposed, ensure minimum distance of 800FT is maintained to guide signs.
- Review Lighting Plans –Ensure no conflicts with light poles or lighting conduit.
- Review Landscape Plans –Ensure that the trees do not conflict with CCTV view and tree lines (roots) are not in conflict with conduit run.
- Review MOT Plans –ensure MOT or temporary asphalt is not in conflict with existing or proposed pull box or ITS poles. If there is a lane shift, then MVDS will need to be adjusted as well.
- Review Signalization Plans –ensure conduit run and ITS devices are not in conflict with signalization.
- Review Utility Adjustment Plans – Ensure existing communications are not impacted by moving utility poles.

**3. Is there existing ITS? (Existing ITS needs to be maintained during construction unless otherwise directed by Jim Miller (386-943-5322))**

- Yes, continue                       No, go to section 4
- Verify existing ITS features match as-builts (pull boxes, poles, etc.).

- Add a note restricting downtime to a prescribed length of time, if conflict or relocation is anticipated. Coordinate with Jim Miller (386 943-5322) for allowable downtime.

Does the existing ITS need to be maintained during construction?

- Yes, continue  No, go to section 4
- Review Maintenance of Communications Plans to ensure existing ITS is relocated prior to construction start, when in conflict.
- Review Maintenance of Communications Phasing notes to ensure that the equipment will be relocated/replaced in during the required construction phase. (Frequently this is due to cut/fill sections or utility pole relocations)

#### 4. Existing Roadway Conditions

- When using aerial photography, verify that it is of the most recent year available that is provided by the FDOT.
- Wetland Information –Verify conduit and pull boxes are not installed within wetland limits. If wetlands limits cannot be avoided, verify that a permit application has been initiated/submitted.
- Verify that Right-of-way information is accurate.
- Verify that railroad information is accurate, if railroads are crossed by conduit line or work is done within the railroad right-of-way, verify railroad permit application(s) have been initiated/submitted.
- Utilities – Verify that plans have been sent out to utility owners for mark-ups. If a component of Roadway, this step is not required to be done by the ITS designer.
- Verify street names.
- Verify horizontal and vertical clear zone requirements for device placement in the latest version of the Florida Design Manual (FDM) for design projects or the version at the time of contract letting for design-build projects. <http://www.fdot.gov/roadway/FDM/> [FDM 210](#), [FDM 215](#), [FDM 232](#) and [FDM 233](#)

#### 5. Soft Digs

Do the ITS limits include arterial roadways?

- Yes, continue  No, go to section 6
- Verify that the soft digs were performed at pole/ADMS locations and that there are no conflicts with other utilities within the foundation foot print.
- Review the VVH drawings against the plan sheets.

- Verify if utilities cannot be avoided and require relocation, verify plans have appropriate relocation notes and relocation is paid for.

## 6. Systems Engineering Documents

The Systems Engineering process and examples of Systems Engineering Documents from past projects can be found at the links below for reference:

[http://www.dot.state.fl.us/trafficoperations/its/projects\\_deploy/semptemp.shtm](http://www.dot.state.fl.us/trafficoperations/its/projects_deploy/semptemp.shtm)

- Verify the Project Risk Assessment and Regulatory Compliance has been completed for the proposed project. (Form 750-040-05) <https://pdl.fdot.gov/>
- If Project is Low Risk-go to section 7. If project is High-Risk, then:
  - Verify all Systems Engineering Documentation has been completed for the project, using the System Engineering Project Checklist. (Form 750-040-06) <https://pdl.fdot.gov/>
  - Verify if the project is in the D5 RITSA <https://teo.fdot.gov/architecture/architectures/d5/index.html>, if the project is not in the RITSA, then:
  - Complete the ITS Architecture Change Request Form including flow diagrams as an attachment. (Form 750-040-04) <https://pdl.fdot.gov/>

## 7. Sole Sourced Products (Formerly Proprietary Product Certification Process)

Sole sourcing products or processes occurs when the EOR specifies a proprietary product or process within the construction contract documents which results in the exclusion of other products or processes that may perform the same or similar function. Sole sourcing of Traffic and ITS Devices must be justified by the EOR and approved by the District Traffic Operations Engineer. Identify these features as early in the design process as possible and provide the approved justification prior to the Phase III submittal. Provide justifications that factually and technically support the sole sourcing of the proprietary product or process. Address why sole sourcing is reasonable and necessary to fulfill the project's needs. Complete the Sole Sourcing Approval along with supporting documents and justification as needed in the PSEE module. [FDM 110.4.1](#)

Proprietary Products Certification Forms, Justification Letter Requirements and examples of previously certified products can be found online using the link below for reference:

[http://www.cflsmarthighways.com/projects/technical\\_docs.html](http://www.cflsmarthighways.com/projects/technical_docs.html)

- Verify if any Proprietary Product applications need to be submitted for the project by contacting the maintaining agency concerning synchronization with their existing systems. The number of

proprietary product certifications and types of ITS/Traffic Signalization devices will vary based on maintaining agency. Some items known to typically need Proprietary Product certification, includes (but may not be limited to) the following.

- ATMS Traffic Signal Controller System items (Controllers, cabinets, cabinet accessories, etc)
- CyberLock
- GPS Preemption for TSP/EVP
- CV Equipment (RSU)
- Vehicle Detection Systems
- Uninterruptible Power Supply
- Microwave Vehicle Detectors
- Network Switches
- CV Software Modules
- Licensed Radios for Wireless
- CCTV Cameras
- Bluetooth Travel Time Sensors
- DMS
- Software/Firmware/License Keys

The designer is **NOT** to use plan notes to ensure compatibility with existing ATMS or ITS systems. Proprietary Product Certification process shall be used.

## 8. Summary of Phase Submittal Supplemental Guidance

[FDM 301](#) Sequence of Plans Preparation, ITS Plans – Detail Sheets are Project Specific. Below is additional guidance for FDOT District 5 project specific ITS Plans - Detail Sheets and the typical sequence of plans production.

Summary of Phase Submittals				
Provide ITS Plans – Detail Sheets listed as applicable				
ITS Plan Details	Phase I	Phase II	Phase III	Phase IV
Maintenance of Communication Plan (MOC)		P	C	F
Stormwater Pollution Prevention Plan		P	C	F

Temporary Traffic Control Plan		P	C	F
Sediment Barrier Details		P	C	F
Power Service Details		P	C	F
ITS Mounting Details*		P	C	F
Clearzone Detail		P	C	F
DMS Cross Sections			P	F
Miscellaneous Structure Plans			P	F
Catwalk Details			P	F
Directional Bore Detail		P	C	F
Splice Vault Detail		P	C	F
Concrete Apron Detail		P	C	F
Route Marker Detail		P	C	F
Cabinet Details		P	C	F
Managed Field Ethernet Switch Detail		P	C	F
Logical Network Diagram		P	C	F
Splicing Diagrams		P	C	F
Wiring Diagrams		P	C	F
Link Loss Budget		P	C	F
Concrete Pole Data Sheet		P	C	F
Report of Core Borings			P	F

\* Examples of typical ITS Mounting Details include but are not limited to mounting details for the following types of devices: CCTV, MVDS, DMS, Bluetooth, RWIS, RSU, and HAR.

**Status Key:**

- P – Preliminary
- C – Complete but subject to change
- F – Final

**9. Key Sheet**

- Verify key map is correct, if ITS plans are a component set, Key Map is not required.
- Verify Governing Standard Plans” and “Governing Standard Specifications” notes have the correct information and year per the FDM, if ITS is a component set, note is not required.
- Verify sheet numbers.
- Verify EOR name and number.
- Verify company name and address.
- Verify FDOT project manager name spelling.

- Verify fiscal year.
- Be sure project description and FPID# match the RFP or other components.
- Verify if the project has Federal Funds.
- Verify shop drawing submittal information is correct.
- Verify that the submittal date and phase (60%, 100%, etc.) are correct.

## 10. Signature Sheet

- Verify signature sheet meets the requirements of [FDM 302](#).

## 11. Estimated Quantities Report

The EQ Report is required for all projects that begin the design phase starting in January 2021. It replaces the Summary of Pay Items from [FDM 304](#). See [FDM 902](#) for Estimated Quantities Report requirements.

- Verify that the Pay Item Descriptions match the BOE/Transport (If Available Trns\*port Overrides).
- Verify that all Pay Item Nos. in the plans are shown.
- Verify all quantities.
- Verify that the Units are correct.

## 12. Summary of Devices

- Verify that device numbers, mile markers, station numbers, plan sheet number and local hub (LHUB) numbers are correct.

An example of the summary of devices from a model past project can be found using the link below for reference.

<http://www.cflsmartroads.com/projects/design/model/Device%20Schedule.pdf>

## 13. Tabulation of Quantities

- Verify that the pay item descriptions match the BOE/Trns\*port.
- Verify that Pay Item Nos. in the plans are shown.
- Verify all quantities.
- Verify that the Units are correct.
- Verify that the sheet numbers are correct.

- Verify that the formulas are correct and adding all of the quantities correctly.

**14. Project Notes:**

- Verify that the General Notes are not in conflict with Standard Specifications, Standard Plans, FDM, TSPs, MSPs, BOE, and RFP.

Verify that the following notes are included (if applicable):

**GENERAL:**

- NO BENCHMARK DATUM USED FOR THIS PROJECT. THE BASE MAPPING DEPICTED ON ALL PLAN SHEETS WAS OBTAINED FROM EXISTING PLANS PROVIDED BY FDOT AND AERIAL PHOTOGRAPHY. THEREFORE, THE ACCURACY OF THE BASE MAPPING IS NOT THAT OF SURVEYED MAPPING TYPICALLY USED WITH ROADWAY DESIGN PROJECTS.
- BASELINES ON {Insert Road Name} SHOWN ON THE PLANS ARE NOT SURVEY AND ARE FOR INFORMATION PURPOSES ONLY AND ARE NOT STAKED IN THE FIELD.
- THE RIGHT OF WAY DESIGNATIONS SHOWN ON THE PLANS ARE NOT TIED TO A SURVEYED CENTERLINE AND AS SUCH ARE APPROXIMATE.
- THE FOLLOWING DAYS ARE CONSIDERED SPECIAL EVENT DAYS FOR THIS PROJECT:  
 {Note to Designer: Do not include the Holidays that are already detailed in Specification 8-6.4 in the list of special events on the general notes page. Those holidays are covered by the Specification. Special event information that should be shown on the plans go to [https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/designsupport/districts/d5/files/specs/specialeventsplannotes.pdf?sfvrsn=a8591a11\\_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/designsupport/districts/d5/files/specs/specialeventsplannotes.pdf?sfvrsn=a8591a11_2)  
 And coordinate with the construction office for any additional special events that need to be considered.}
- PLACE END OF REEL SPLICES AT A SPLICE VAULT THAT IS ADJACENT TO A LHUB. SPACE BETWEEN END OF REEL SPLICES NO LESS THAN 10,000 LF APART. (For freeway projects)
- ESTABLISH, TEST, AND PASS THE PROPOSED ITS FIELD DEVICE AND COMMUNICATION INFRASTRUCTURE PRIOR TO DECOMMISSIONING OF EXISTING ITS DEVICE.
- PROVIDE ALL NECESSARY MAINTENANCE INCLUDING RESPONDING TO TROUBLE TICKETS GENERATED BY THE RTMC AND ROUTINE PREVENTATIVE MAINTENANCE.

**PULL BOXES:**

- THE STACKING OF PULL BOXES IS NOT ALLOWED.

## **CABINET NOTES:**

### **GENERAL**

- REQUIRE ALL SERIAL COMMUNICATIONS TO COMPLY WITH THE RS485 COMMUNICATIONS STANDARD AND TO HAVE THE MINIMUM NUMBER OF ADAPTERS REQUIRED TO SUPPORT COMMUNICATIONS.
- CONVERT RS232 SERIAL COMMUNICATIONS TO RS485 WITH THE MINIMUM AMOUNT EQUIPMENT TO MAKE THE CONVERSION SO THAT THERE IS NO MORE THAN ONE CONVERSION AT EACH END.
- REMOVE ANY OLD EQUIPMENT AND SEND TO SURPLUS AS PER THE PROPER PROCEDURES FOR INVENTORY.
- INSTALL ALL SLIDER DRAWERS INTO A CABINET AT A HEIGHT TO ALLOW A TECHNICIAN TO PROPERLY OPERATE A LAPTOP WHILE CONDUCTING TESTING OR MAINTENANCE (APPROXIMATELY 48 IN. ABOVE GROUND LEVEL AT THE DOOR OF THE CABINET.)
- DO NOT INSTALL POWER OVER ETHERNET (POE) FROM THE ETHERNET SWITCH. USE OF A POE INJECTOR IS ALLOWABLE SO LONG AS IT IS A SEPARATE SOURCE OF POWER FROM THE ETHERNET SWITCH.
- SUPPORT A MINIMUM OF 1 GBPS FROM ALL MEDIA CONVERTERS AND OPTICS. DO NOT USE A MEDIA CONVERTER IF A FIBER PORT THAT CAN SUPPORT COMMUNICATION LINK IS AVAILABLE.

### **MASTER HUBS**

- TERMINATE ALL FIBERS IN A PATCH PANEL WITH A RATIO OF ONE COUPLER TO ONE BUFFER TUBE TO FACILITATE PROPER TERMINATING AND TESTING IN MASTER HUB LOCATIONS WHERE BACKBONE CABLES ENTER.
- DESIGN ALL PATCH PANELS TO ADD ADDITIONAL CABLES FOR FUTURE EXPANSION, WHEN NECESSARY.
- CONFIGURE CABINET SITE IDENTIFICATION INFORMATION IN THE HOSTNAME AND LOCATION FIELD IN ITS SOFTWARE FOR EACH RPM AND UPS.
- DOCUMENT WHICH PATCH CORD DESIGNATIONS ARE BEING USED AND WHICH ARE AVAILABLE IN ORDER TO ELIMINATE THE POTENTIAL FOR 2 PATCH CORDS HAVING THE SAME DESIGNATION ON THEM IN EACH MASTER HUB LOCATION..

### **LOCAL HUBS**

- ON NORTH-SOUTH ROADWAYS, SPLICE FIBERS IN LATERAL (DROP) CABLE TO BACKBONE CABLE IN ORDER FROM SOUTH TO NORTH DIRECTION WITH LOWER FIBER NUMBERS STARTING FROM THE SOUTH.
- ON EAST-WEST ROADWAYS, SPLICE FIBERS IN LATERAL (DROP) CABLES TO BACKBONE CABLE WITH LOWER FIBER NUMBERS STARTING FROM THE WEST.
- THE TYPICAL FIBER TERMINATION WILL CONSIST OF 6 FIBERS OUT AND 6 FIBERS IN WITH THE REMAINING 6 FIBERS IN THAT TUBE REMAINING INTACT AND ALLOWING COMMUNICATIONS TO EXPRESS THROUGH.
- INSTALL A SEPARATE COUPLER FOR THE FIBERS TO BE TERMINATED FROM EACH DIRECTION OF TRAVEL IF A DROP CABLE FROM THE BACKBONE FIBER USES ONLY 1 BUFFER TUBE. . SUBMIT ALTERNATE TERMINATION PLANS FOR REVIEW AND APPROVAL BY DISTRICT 5, IF AN ALTERNATIVE METHOD WILL BE USED.
- PROVIDE RACK-STYLE MOUNTING IN ALL LOCAL HUB CABINETS, TYPE 334, AND 336 CABINETS. USE RACK-MOUNTED PATCH-PANELS, NOT A WALL-MOUNTED PANEL NOR DIN-RAIL, AND USE A SINGLE COUPLER TO CONTAIN EACH DIRECTION OF FIBER TRANSMISSION.
- DO NOT CONTAIN FIBERS FROM MORE THAN 1 CABLE IN A COUPLER.
- USE THE FIRST PATCH PANEL FOR THE MID-ENTRY SPLICE TO THE BACKBONE FIBER. USE AN ADDITIONAL 1U RACK MOUNT PATCH PANEL PLACED DIRECTLY BELOW THE FIRST ENCLOSURE FOR ANY ADDITIONAL DROP CABLES.
- CONFIGURE THE SITE LOCATION OF THE NETWORK DEVICE THAT THE PORT IS DIRECTLY COMMUNICATING WITH FOR EACH FIBER PORT THAT IS USED ON THE SWITCH.
- CONFIGURE THE CABINET SITE IDENTIFICATION INFORMATION IN THE HOSTNAME AND LOCATION FIELD IN ITS SOFTWARE FOR EACH RPM AND UPS.

#### **SINGLE DOOR 3R**

- USE SMALL SINGLE-PANEL DIN-RAIL STYLE HOUSINGS WITHIN EQUIPMENT CABINETS THAT ARE KNOWN AS THE SINGLE DOOR 3R (SD3R) AND ARE NOT LARGE ENOUGH TO ALLOW A RACK MOUNT PATCH PANEL.
- MOUNT FIBER TERMINATION HOUSING TO BE VISIBLE AND ACCESSIBLE.

#### **PATCH CORD NOTES:**

- MEET THE FOLLOWING FIBER PATCH CORDS REQUIREMENTS:
  1. EACH FIBER PATCH CORD HAVE AN LC CONNECTION TYPE (FOR NETWORK SWITCH) AT ONE END AND AN SC CONNECTION TYPE (FOR PATCH PANEL) AT THE OTHER END.

2. USE A SINGLE CONTINUOUS PATCH CORD BETWEEN THE TERMINATION IN THE PATCH PANEL AND THE NETWORK DEVICE. TWO OR MORE PATCH CORDS WITH A CONNECTOR WILL NOT BE ALLOWED.
3. CONNECT THE NETWORK DEVICE WITH PATCH CORDS USING THE MINIMUM LENGTH REQUIRED PLUS ONE ADDITIONAL FOOT OF SLACK TO THE PATCH PANEL WITH THE FOLLOWING EXCEPTIONS:
  - A. OCCUPY THE CABLE MANAGEMENT PATHS BETWEEN THE SWITCH AND THE PATCH PANEL.
  - B. COMPLY THE PATCH CORD PLACEMENT WITH MINIMUM BEND RADIUS REQUIREMENTS.
4. LABEL EACH PATCH CORD WITH THE SAME DESIGNATION AT BOTH ENDS FOR EASY IDENTIFICATION.
5. ENSURE FIBER PATCH CORDS BY TYPE DUPLEX WITH THE SHEATH BEING FACTORY CONNECTED FOR THE LENGTH OF THE CORD.
6. NON-DUPLEX TYPE FIBER PATCH CORDS ARE NOT ALLOWED.

MEET THE FOLLOWING CAT5 OR ANY OTHER COPPER PATCH CORD REQUIREMENTS:

1. USE A SINGLE CONTINUOUS PATCH CORD BETWEEN THE DEVICE AND THE NETWORK SWITCH.
2. DO NOT SPLICE COPPER CABLING.
3. CONNECT THE NETWORK SWITCH WITH PATCH CORDS USING THE MINIMUM LENGTH REQUIRED PLUS ONE ADDITIONAL FOOT OF SLACK TO THE END DEVICE WITH THE FOLLOWING EXCEPTIONS
  - A. OCCUPY THE CABLE MANAGEMENT PATHS BETWEEN THE SWITCH AND THE DEVICE
  - B. ENSURE LENGTH OF THE PATCH CORD LONG ENOUGH TO AVOID BEING CRIMPED BUT NOT SO LONG AS TO ALLOW COILING OF THE CORD
4. LABEL EACH PATCH CORD ON THE END CLOSEST TO THE SWITCH THAT IDENTIFIES THE DEVICE IT PROVIDES COMMUNICATIONS FOR.

**CABLING NOTES:**

- DO NOT USE ZIP TIES ON ANY COMMUNICATIONS CABLING, IF CABLES NEED TO BE SECURED OUTSIDE THE CABLE MANAGEMENT EQUIPMENT (I.E. PANDUIT, NEAT PATCH, ETC), THEN VELCRO IS ACCEPTABLE FOR THIS PURPOSE.
- DO NOT COIL FIBER CABLING INSIDE THE CABINET. COIL FIBER CABLE SLACK IN THE PULL BOX OR SPLICE VAULT NEXT TO THE CABINET.
- ENSURE REELS OF FIBER LONG ENOUGH TO INSTALL A CONTINUOUS UNBROKEN RUN FOR FIBER BACKBONES.

- DO NOT OCCUPY THE SAME CABLE MANAGEMENT RACEWAY WITH POWER CABLES AND COMMUNICATIONS CABLES.
- REMOVE ALL UNUSED CABLES FROM THE CABINET AND CONDUIT, AS WELL AS ANY HOUSING THAT SUPPORTED THEM.
- TIN OR HAVE A TERMINAL CRIMPED ON THE END ANY STRANDED WIRES THAT HAVE THE INSULATION STRIPPED IN ORDER TO ACCESS THE CONDUCTIVE MATERIAL.
- CUT LOOSE WIRES THAT ARE NOT USED TO PROVIDE A CLEAN END OR DRESSED IN ORDER TO AVOID MAKING CONTACT WITH OTHER OBJECTS.
- USE FACTORY TERMINATED AND POLISHED FIBER PATCH CORDS.
- PROPERLY TERMINATE ALL COPPER PATCH CORDS WITH THE SHEATH PROPERLY CRIMPED BY THE RJ45 HOUSING.
- BRACKET ALL CABLE MANAGEMENT EQUIPMENT TO ALLOW THE CABLE MANAGEMENT EQUIPMENT TO CONNECT TO THE RACK WHILE STILL ALLOWING OTHER EQUIPMENT TO BE INSTALLED OR REMOVED WITHOUT HAVING TO ADJUST OR REMOVE THE CABLE MANAGEMENT EQUIPMENT.

**PAY ITEM NOTES:**

- 633-3-15 INCLUDES FIBER OPTIC CABLE JUMPERS AS REQUIRED BY THE PLANS, EQUIPMENT, AND PATCH PANELS INSTALLED. THE CABLES SHALL BE SIZED TO LENGTH (3' MINIMUM).
- 633-3-16 INCLUDES PATCH PANELS THAT HAVE THE ABILITY TO STORE SPLICE TRAYS AS A PART OF THE PATCH PANEL. INCLUDES FACTORY TERMINATED SINGLE MODE PATCH CORDS AS INCIDENTAL TO THESE ITEMS. SIZE CONNECTORS AS REQUIRED BY THE EQUIPMENT AND PATCH PANELS INSTALLED WITH THE MINIMUM LENGTH BEING 3 FT.
- 633-8-1 INCLUDES FURNISHING AND INSTALLING A MULTI-CONDUCTOR COMMUNICATIONS CABLE AS SPECIFIED BELOW:
  - CCTV CABLE
    - 1-CAT5E ETHERNET CABLE (FOR CCTV COMMUNICATIONS)
    - 2-AWG#14 (FOR CCTV POWER)
    - 1-DRAIN WIRE
  - MVDS CABLE (REMOTE)
    - 2-SINGLE MODE FIBERS (FOR MVDS COMMUNICATIONS)
    - 2-AWG#12 (FOR MVDS/MEDIA CONVERTER POWER/PORT SERVER POWER)
    - 1-DRAIN WIRE (FOR MVDS GROUND)

- 641-2-19 INCLUDES THE FURNISHING AND INSTALLATION OF MAINTENANCE CONCRETE APRONS AS SHOWN IN THE PLANS.
- 660-3-12 INCLUDES INSTALLATION OF MICROWAVE VEHICLE DETECTION SYSTEM (MVDS) CAPABLE OF INDIVIDUAL NEGATIVE SPEED DETECTION AND ALL MOUNTING HARDWARE, MVDS COMPOSITE CABLES, AND GROUNDING.
- 676-2-122 INCLUDES A CYBERLOCK ELECTRONIC LOCK MECHANISM COMPATIBLE WITH THE EXISTING DEPARTMENT LOCK SYSTEM, RGS CONDUITS TO THE BOTTOM OF THE CABINET FOR COMMUNICATION/POWER, ALL REQUIRED CABLE MANagements DUCTS, AND A CABINET IDENTIFICATION TAG.
- 676-3-10 INCLUDES FURNISHING AND INSTALLING A SPECIAL ITS ENLCOSURE (NEMA 4R) AS INDICATED ON THE PLANS. THE ENCLOSURE SHALL INCLUDE A CYBERLOCK ELECTRONIC LOCK MECHANISM COMPATIBLE WITH THE EXISTING DEPARTMENT ELECTRONIC LOCK SYSTEM. ALSO INCLUDES, FURNISHING, INSTALLING, AND GROUNDING OF THE RGS CONDUITS FROM THE PROPOSED UNDERGROUND CONDUIT TO THE BOTTOM OF THE ENCLOSURE FOR COMMUNICATION/POWER.
- 682-1-1XX INCLUDES FURNISHING AND INSTALLATION OF A CCTV CAMERA CAPABLE OF SUPPORTING 30FPS 720P MULTICAST STREAMING WITH A 1000 KPBS MAXIMUM BANDWIDTH AND 30FPS 1 CIF UNICAST STREAMING WITH A 250 KBPS MAXIMUM BANDWIDTH SIMULTANEOUSLY VIA UNIQUE URLS.
- 684-1-1 INCLUDES FURNISHING AND INSTALLING A LOCAL HUB ETHERNET SWITCH MEETING THE PROJECT TECHNICAL SPECIAL PROVISIONS.
- 684-5-1 INCLUDES FURNISHING AND INSTALLING OF A RS-485 TO SINGLEMODE FIBER MEDIA CONVERTER AS INDICATED ON THE PLANS.
- 684-7 INCLUDES FURNISHING AND INSTALLATION OF A MASTER HUB ETHERNET SWITCH MEETING THE PROJECT TECHNICAL SPECIAL PROVISIONS.

**UTILITY NOTES:**

- THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS (INCLUDING THOSE DESIGNATED Vv, Vh, AND Vvh) ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE VERIFIED LOCATIONS/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN THESE POINTS HAVE NOT BEEN VERIFIED.
- UTILITY/AGENCIES OWNERS:
  - [{List all utility contacts here}](#)

**MAINTENANCE OF TRAFFIC NOTES: (IF APPLICABLE)**

- MAINTAIN THE EXISTING POSTED SPEED DURING CONSTRUCTION, EXCEPT DURING TRAFFIC PACING OPERATIONS. MAINTAIN ALL SPEED LIMIT SIGNS THROUGHOUT THE CONSTRUCTION PERIOD.
- INFORM THE REGIONAL TRAFFIC MANAGEMENT CENTER, (321) 257-7200, PRIOR TO BEGINNING AND AFTER COMPLETION OF ANY AND ALL LANE CLOSURES AND/OR DETOURS ASSOCIATED WITH THE PROJECT.
- PERFORM TEMPORARY ROAD CLOSURES AND PACING OPERATIONS AS SHOWN IN THE ROAD CLOSURE DETAILS IN THE TCP PLANS BETWEEN THE HOURS OF {insert time} AM AND {insert time} AM AS INDICATED ABOVE. NO LANE CLOSURES ALLOWED BETWEEN THE HOURS OF {insert time} AM AND {insert time} PM (SIGNS MAY BE PUT OUT STARTING AT {insert time} PM AND MUST BE REMOVED BY {insert time} AM). DEPARTMENT WRITTEN APPROVAL IS REQUIRED TO CHANGE THESE HOURS.
- NOTIFY FDOT-DISTRICT 5 45 CALENDAR DAYS PRIOR TO THE PACING OPERATION TO COORDINATE RAMP CLOSURES.
- NOTIFY FDOT TMC 21 DAYS PRIOR TO PACING OR LANE CLOSURE OPERATIONS.
- NOTIFY FDOT PUBLIC INFORMATION OFFICER FOR ALL LANE CLOSURES FROM TWO LANES DOWN TO ONE LANE OF TRAVEL.

An example of the Project Notes from a model past project can be found using the link below for reference.

<http://www.cflsmartroads.com/projects/design/model/Project%20Notes.pdf>

#### 15. **Utility Contacts:**

- Verify that all utility contacts and agencies are listed and accurate (call the phone number listed to ensure that the number is correct), including the ones NOT on Sunshine One. If the ITS plans are a component set, ensure that the following notes are included:  
“See roadway plans for list of utilities contact.”

#### 16. **Legend and Abbreviations**

- All symbols are shown with description matching the plans.
- Show all abbreviations with description.

#### 17. **SWPPP and Erosion Control Plan**

- Determine if an NPDES permit is required; if so verify permit application has been initiated/submitted.

- Verify that SWPPP sheets are included if NPDES permit is required.
- Verify Erosion Control Sheets are included in the plans if NPDES permit is required.

An example of the SWPPP sheets from a model past project can be found using the link below for reference.

<http://www.cflsmartroads.com/projects/design/model/Stormwater%20Pollution%20Prevention%20Plan.pdf>

## 18. **Traffic Control Plans**

- Verify that Traffic Control Plans (TCP) were developed if pacing or detour activities are required. TCP should not be included if using 600 Series.

## 19. **Pole Data Sheets**

- Verify device number, Station number, road name, pole length, above ground height, embedment length, device mounting height matches the plan sheets, manufacture recommendations, cross sections, and structure plans.
- Verify that clear zone requirements are met for all poles.

## 20. **Project Layout Sheet**

- Verify that sheet numbers are shown.
- Verify that device numbers are called out.
- Verify that the full project limits are included.
- Verify road name/number.
- Verify that North arrow and scale are included.
- Verify that the county line call out is included (If applicable).

## 21. **Plan Sheets**

- Verify EOR and company information, road number, FP#, sheet title, sheet numbers.
- Verify that plan sheets are to scale.
- Verify match lines.
- Verify that North arrow is correctly placed.

- Verify bar scale is provided.
- Verify R/W is labeled.
- Verify that all devices, conduit and pull boxes are inside R/W.
- Verify wetland's limits are shown and labeled.
- Ensure that all devices and labels are visible; if not, request that insets (blow ups) be included.
- Verify that all the proposed equipment pay items are labeled per the BOE.
- Verify pull boxes (power and fiber) spacing are maintained (see specifications and RFP for spacing requirements).
- Ensure electrical service wires, communications cables and fiber are in separate pull boxes.
- If design uses composite cable, check not only the communications distance requirement (from manufactures) but also the power distance requirement. If the composite cable power wire sizes shown in plans are not listed in manufactures manual, request that the EOR provide voltage drop calculation for the low voltage cable.
- Ensure that plan sheet labels, number and size of conduit match pay item numbers.
- Directional bore conduit length must meet the pullback requirements of the Specification.
- Verify that one side of the bore has 20' of relatively flat area to place a directional bore machine that can be accessed from the roadway.
- Verify all slack FOC cable and pay item numbers are labeled on plans sheets.
- Verify all labels for existing FOC on State Road arterials are labeled "Existing FDOT owned {Insert County/City Name} maintained FOC"
- Install snow-shoes at all aerial splice points.
- Verify that the labels and add pay item numbers are included for the number of splices, patch panels, splice trays, splice enclosure.
- Verify that the labels and add pay item numbers for switch, port servers, video encoder and cabinet are included.
- Verify the labels, voltage and add pay item numbers for all power conductors with pay item numbers.
- Verify the power conductor size against the voltage drop calculations and the NEC.
- Verify labels for transformers and voltage. Verify pay item numbers.
- Verify all electrical device pay items with the power service diagrams.

- Verify the labels for power sources, pole numbers and voltage.
- Verify the labels for power services, disconnects, service poles and pay item numbers.
- Verify the labels and call outs for ITS device poles with pay item numbers.
- Verify the labels for ITS devices (BT, DMS, CCTV, MVDS, RSU, RWIS, WWD, etc.) and pay item numbers.
- Verify that the RWIS is not near something that will obstruct the wind.
- Verify the conduit run to the roadway for the roadway sensors of the RWIS (if required).
- Be sure that a CCTV can view each DMS.
- Verify that the DMS are a minimum of 19.5' above grade.
- Verify DMS is >800' away from nearest the Guide Sign.
- Verify the length of the DMS structure vs. the cross section vs. the plan sheet.
- Verify that the clear zone for all structures is maintained.
- Verify that the size of the DMS cabinet will accommodate batteries, controller, communication devices, etc.
- Verify poles have proper distance from overhead power lines (20 feet).
- Verify the spacing required between power pull boxes. Spacing may need to be reduced to less than the 600 foot maximum spacing allowable depending on conductor size.

Examples of Plan Sheets from past model projects can be found using the links below for reference.

<http://www.cflsmartroads.com/projects/design/model/Bluetooth%20Location%20Plan%20Sheets.pdf>

[http://www.cflsmartroads.com/projects/design/model/43544615201\\_PLANS.pdf](http://www.cflsmartroads.com/projects/design/model/43544615201_PLANS.pdf)

## 22. Power Service Details

- Verify power sources are complete and matching the plan sheets (Include Pole Number and Transformer Size and Voltage).
- Verify that all ITS devices and locations shown in the plan sheets have a power design and that they are receiving power.
- Review the voltage drop calculations to ensure that the power requirements are met for each device.

Examples of Power Service Details from a past model project can be found using the link below.

<http://www.cflsmartroads.com/projects/design/model/Power%20Service%20Details.pdf>

### 23. Splicing Diagrams

- Verify that the splicing diagrams match plan sheets. Ensure that the device numbers, hub numbers, station numbers, and splice count matches the plans.
- Verify that the fibers used are continuous from one end to the other.
- Verify that the splicing diagrams are consistent with the D5 Cabinet Wiring information provided on the CFL Smart Roads website.

Examples of Splicing Diagrams from a past model project can be found using the link below.

<http://www.cflsmartroads.com/projects/contractor/docs/Cabinet%20Wiring.pdf>

### 24. Wiring Diagrams and Cabinet Details

- Verify that the wiring diagrams match plan sheets and cabinet details.
- Verify that the wiring diagrams and cabinet details are consistent with the D5 Cabinet Wiring information provided on the CFL Smart Roads website.

Examples of Wiring Diagrams from a past model project can be found using the link below.

<http://www.cflsmartroads.com/projects/contractor/docs/Cabinet%20Wiring.pdf>

### 25. ITS Mounting Details

- Verify that the mounting details with the FDOT Design Standards. For examples of ITS Mounting Details from previous successful ITS Projects click the links below:

<http://www.cflsmartroads.com/projects/design/model/DMS%20Installation%20Detail.pdf>

<http://www.cflsmartroads.com/projects/design/model/ITS%20Mounting%20Details.pdf>

<http://www.cflsmartroads.com/projects/design/model/MVDS%20and%20Bluetooth%20Mounting%20Details.pdf>

<http://www.cflsmartroads.com/projects/design/model/Bluetooth%20Device%20Installation%20Details.pdf>

- Verify that the mounting details match the plan sheets.

### 26. Clear Zone Details

- Verify the clear zone details with the clear zone requirements in the PPM and the FDOT Design Standards. For examples of Clear Zone Details from previous successful ITS Projects click the links below:

<http://www.cflsmartroads.com/projects/design/model/Clear%20Zone%20Detail.pdf>

## 27. Directional Bore, Splice Vault, and Concrete Pad Details

- Verify that the directional bore, splice vault and concrete mounting details with the FDOT Design Standards. For examples of Directional Bore, Splice Vault, and Concrete Pad

For examples details from previous successful ITS Projects click the links below:

Directional Bore Example

<http://www.cflsmartroads.com/projects/design/model/Directional%20Bore%20Detail.pdf>

Concrete Apron Example

<http://www.cflsmartroads.com/projects/design/model/Concrete%20Apron%20Detail.pdf>

Splice Vault Example

<http://www.cflsmartroads.com/projects/design/model/Splice%20Vault%20Detail.pdf>

## 28. Fiber Optic Loss Budget

- Verify that the Fiber Optic Loss Budget has been provided for the proper sizing of optical transceivers capable of communication links in the plans. For an example of a Fiber Optic Loss Budget from a previous successful ITS Project click the links below:

For an example details from a model ITS Project click the links below:

<http://www.cflsmartroads.com/projects/design/model/Fiber%20Optic%20Loss%20Budget%20Detail.pdf>

## 29. Special Provisions, Modified Special Provisions (MSP) and Technical Special Provisions (TSP)

- Is the project on limited access right of way? All projects on Limited Access right of way shall include Special Provision SP0071101-Tolls (Legal Requirements and Responsibilities to the Public – Toll Facilities.)

<http://www.fdot.gov/programmanagement/Implemented/WorkBooks/JanWorkbook2016/Default.shtm>

- Are MSPs or TSPs required? If yes, ensure that they have been submitted to the District Specifications office soon after the 60% plans submittal. For examples of MSPs and TSPs approved for recent ITS projects click the link below.

[http://www.cflsmartroads.com/projects/Project\\_DesignerLinks.shtm](http://www.cflsmartroads.com/projects/Project_DesignerLinks.shtm)

- Does this project involve the installation of UPS batteries? If so, an MSP must be submitted to require Gel Cell Batteries with Silver Alloy Grids.

