# ITS Checklist

<table>
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<tr>
<th>Check</th>
<th>Description</th>
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<tr>
<td><strong>1. Contract Management Documents</strong></td>
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<td>☐</td>
<td>Read RFP (if applicable) and Addendums as well as Conceptual Plans</td>
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<td>☐</td>
<td>Review latest version of the Standards Specifications</td>
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<td>☐</td>
<td>Review latest version of the Plans Preparation Manual</td>
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| ☐ | **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/FDM210, 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 footprint.

☐ 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/semp.shtm

http://www.cflsmartroads.com/projects/systems_engineering.html

☐ Verify the Project Risk Assessment and Regulatory Compliance has been completed for the proposed project. (Form 750-040-05)

☐ 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)
  
  ☐ Verify if the project is in the D5 RITSA, 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)

7. **Proprietary Products**

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.cflsmartroads.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.

<table>
<thead>
<tr>
<th>ITS Plan Details</th>
<th>Phase I</th>
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<th>Phase III</th>
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<td>Maintenance of Communication Plan (MOC)</td>
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<td>C</td>
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<td>Stormwater Pollution Prevention Plan</td>
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<td>Temporary Traffic Control Plan</td>
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<td>Sediment Barrier Details</td>
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<td>Power Service Details</td>
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<td>ITS Mounting Details*</td>
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<td>Clearzone Detail</td>
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<td>DMS Cross Sections</td>
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<td>Directional Bore Detail</td>
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<td>Splice Vault Detail</td>
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<td>Concrete Apron Detail</td>
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<td>Route Marker Detail</td>
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<td>Cabinet Details</td>
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<td>Managed Field Ethernet Switch Detail</td>
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<td>Logical Network Diagram</td>
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<td>Splicing Diagrams</td>
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<td>Concrete Pole Data Sheet</td>
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<td>Report of Core Borings</td>
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* 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. **Summary of Pay Items**
☐ 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.

11. **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.


12. **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.

13. **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 AND SHOULD ONLY BE RELIED UPON FOR ESTABLISHING GENERAL LOCATIONS FOR EXISTING AND PROPOSED FEATURES.
☐ 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. THEREFORE, THE CONTRACTOR IS TO WORK WITHIN THE LIMITED ACCESS R/W FENCE LINE AND PLACE DEVICES AS SHOWN.

☐ THE FOLLOWING DAYS ARE CONSIDERED SPECIAL EVENT DAYS FOR THIS PROJECT:
   - {List any special event days here per Specification 8-6.4. Note: Do not include the Holidays that are already detailed in 8-6.4 in the list of special events. Those holidays are covered by the Specification.}

☐ END OF REEL SPLICES SHALL OCCUR AT A SPLICE VAULT THAT IS ADJACENT TO A LHUB. SPACING BETWEEN END OF REEL SPLICES SHALL BE NO LESS THAN 10,000 LF APART. (For freeway projects)

☐ ALL FIELD WIRING INSIDE CABINETS SHALL BE NEATLY BUNDLED AND CLEARLY IDENTIFIED WITH PERMANENT LEGIBLE, WEATHER PROOF TAGS THAT ARE SECURELY ATTACHED TO EACH CABLE. THE TAGGING SYSTEM PROPOSED SHALL BE SUBMITTED FOR APPROVAL WITH THE OTHER EQUIPMENT SUBMITTAL'S REQUIRED FOR THIS PROJECT. THE COST SHALL BE INCIDENTAL TO THE INSTALLATION OF THE FIBER OPTIC CABLE AND ITS DEVICES.

☐ THE PROPOSED ITS FIELD DEVICE AND COMMUNICATION INFRASTRUCTURE MUST BE ESTABLISHED, TESTED, AND PASSED PRIOR TO DECOMMISSIONING OF EXISTING ITS DEVICE.

☐ PROVIDE ALL NECESSARY MAINTENANCE INCLUDING RESPONDING TO TROUBLE TICKETS GENERATED BY THE RTMC AND ROUTINE PREVENTATIVE MAINTENANCE.

☐ CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE {Insert FPID#} PROJECT CEI AND CONTRACTOR FOR ANY CONSTRUCTION WITHIN THE SHARED PROJECT LIMITS. (For projects with adjacent or shared project limits.)

☐ ALL UPS BATTERIES SHALL BE GEL CELL BATTERIES WITH SILVER ALLOY GRIDS.

**CONDUIT:**

☐ HDPE CONDUIT COLOR CODES: (For freeway projects)
   - BACKBONE (4-1.25"):
     1. ORANGE (FIBER & COMPOSITE IF REQUIRED)
     2. ORANGE W/ WHITE STRIPE (SPARES)

   - DROP CABLE (2-1.25"):
     1. ORANGE (FIBER & COMPOSITE IF REQUIRED)
     2. ORANGE W/ WHITE STRIPE (TONE WIRE)
POWER (2-2" OR LARGER) (SEE PLAN SHEETS SIZE MAY VARY):
1. RED
2. RED W/WHITE STRIPE (SPACE)
(For arterial projects coordinate with the local maintaining agency and FDOT)

PULL BOXES:
☐ ALL PULL AND SPLICE BOXES TO BE INSTALLED ADJACENT TO ITS POLES ON A SLOPE SHALL BE INSTALLED ON THE SIDE OF THE POLE WITH THE HIGHEST SLOPE.
☐ THE STACKING OF PULL BOXES IS NOT ALLOWED.

CABINET NOTES:

GENERAL
☐ ALL SERIAL COMMUNICATIONS SHALL COMPLY WITH THE RS485 COMMUNICATIONS STANDARD AND WILL HAVE THE MINIMUM NUMBER OF ADAPTERS REQUIRED TO SUPPORT COMMUNICATIONS.
☐ RS232 SERIAL COMMUNICATIONS SHALL NOT BE USED AND WILL BE CONVERTED TO RS485 WITH THE MINIMUM AMOUNT EQUIPMENT USED TO MAKE THE CONVERSION SO THAT THERE IS NO MORE THAN ONE CONVERSION AT EACH END.
☐ ANY OLD EQUIPMENT WILL BE REMOVED AND SENT TO SURPLUS AS PER THE PROPER PROCEDURES FOR INVENTORY.
☐ ALL SLIDER DRAWERS INSTALLED INTO A CABINET WILL BE 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.
☐ IF MORE THAN 2 FIBER PORTS ARE NEEDED IN A CABINET TO SUPPORT COMMUNICATIONS THEN A 24 PORT SWITCH SHALL BE USED. THE USE OF MEDIA CONVERTERS FOR THIS IS PROHIBITED.
☐ ALL FORMS OF POWER OVER ETHERNET (POE) FROM THE ETHERNET SWITCH SHALL NOT BE ALLOWED. A POE INJECTOR MAY BE USED SO LONG AS IT IS A SEPARATE SOURCE OF POWER FROM THE ETHERNET SWITCH.
☐ ALL MEDIA CONVERTERS AND OPTICS MUST SUPPORT A MINIMUM OF 1 GBPS. A MEDIA CONVERTER SHALL NOT BE USED IF A FIBER PORT THAT CAN SUPPORT COMMUNICATION LINK IS AVAILABLE.
MASTER HUBS

☐ MASTER HUB LOCATIONS WHERE BACKBONE CABLES ENTER, SHALL HAVE ALL FIBERS TERMINATED IN A PATCH PANEL WITH A RATIO OF ONE COUPLER TO ONE BUFFER TUBE TO FACILITATE PROPER TERMINATING AND TESTING.

☐ PATCH PANELS SHALL BE DESIGNED TO ADD ADDITIONAL CABLES FOR FUTURE EXPANSION, WHEN NECESSARY.

☐ EACH RPM AND UPS SHALL HAVE THE CABINET SITE IDENTIFICATION INFORMATION CONFIGURED IN THE HOSTNAME AND LOCATION FIELD IN ITS SOFTWARE.

☐ MASTER HUB LOCATIONS WILL HAVE DOCUMENTATION THAT SHOWS 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.

LOCAL HUBS

☐ ON NORTH-SOUTH ROADWAYS, FIBERS IN LATERAL (DROP) CABLE SHOULD BE SPLICED TO BACKBONE CABLE IN ORDER FROM SOUTH TO NORTH DIRECTION WITH LOWER FIBER NUMBERS STARTING FROM THE SOUTH.

☐ ON EAST-WEST ROADWAYS, FIBERS IN LATERAL (DROP) CABLES SHOULD BE SPLICED 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.

☐ IF A DROP CABLE FROM THE BACKBONE FIBER USES ONLY 1 BUFFER TUBE THEN EACH DIRECTION OF TRAVEL WILL HAVE A SEPARATE COUPLER FOR THE FIBERS TO BE TERMINATED. OTHER FIBER TERMINATION PLANS MAY BE ALLOWED, BUT ONLY AFTER DISTRICT 5 HAS REVIEWED AND APPROVED THE TERMINATION PLAN.

☐ ALL LOCAL HUB CABINETS, TYPE 334 AND 336, PROVIDE RACK-STYLE MOUNTING. THE CONTRACTOR SHALL USE RACK-MOUNTED PATCH-PANELS, NOT A WALL-MOUNTED PANEL NOR DIN-RAIL, AND EACH DIRECTION OF FIBER TRANSMISSION SHALL BE CONTAINED IN A SINGLE COUPLER.

☐ A COUPLER SHALL NOT CONTAIN FIBERS FROM MORE THAN 1 CABLE.

☐ THE FIRST PATCH PANEL WILL BE USED FOR THE MID-ENTRY SPLICE TO THE BACKBONE FIBER. ANY ADDITIONAL DROP CABLES WILL REQUIRE AN ADDITIONAL 1U RACK MOUNT PATCH PANEL PLACED DIRECTLY BELOW THE FIRST ENCLOSURE.
☐ EACH FIBER PORT THAT IS USED ON THE SWITCH SHALL BE CONFIGURED WITH THE SITE LOCATION OF THE NETWORK DEVICE THAT PORT IS DIRECTLY COMMUNICATING WITH.

☐ EACH RPM AND UPS WILL HAVE THE CABINET SITE IDENTIFICATION INFORMATION CONFIGURED IN THE HOSTNAME AND LOCATION FIELD IN ITS SOFTWARE.

SINGLE DOOR 3R

☐ SMALL SINGLE-PANEL DIN-RAIL STYLE HOUSINGS SHOULD BE USED WITHIN EQUIPMENT CABINETS THAT ARE KNOWN AS THE SINGLE DOOR 3R (SD3R) AND ARE NOT LARGE ENOUGH TO ALLOW A RACK MOUNT PATCH PANEL.

☐ TERMINATIONS SHOULD NOT BE LAYING LOOSE IN THE CABINET AND THE HOUSING SHALL BE MOUNTED MAKING THE FIBER TERMINATIONS VISIBLE AND EASILY ACCESSIBLE.

PATCH CORD NOTES:

☐ ALL FIBER PATCH CORDS WILL MEET THE FOLLOWING 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. THERE WILL BE 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. PATCH CORDS WILL BE THE MINIMUM LENGTH REQUIRED PLUS ONE ADDITIONAL FOOT OF SLACK TO CONNECT THE NETWORK DEVICE TO THE PATCH PANEL WITH THE FOLLOWING EXCEPTIONS:
   A. THE PATCH CORD WILL OCCUPY THE CABLE MANAGEMENT PATHS BETWEEN THE SWITCH AND THE PATCH PANEL.
   B. THE PATCH CORD PLACEMENT MUST ALLOW COMPLIANCE WITH MINIMUM BEND RADIUS REQUIREMENTS.
4. EACH PATCH CORD WILL BE LABELED WITH THE SAME DESIGNATION AT BOTH ENDS FOR EASY IDENTIFICATION.
5. FIBER PATCH CORDS MUST 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.

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

1. THERE WILL BE A SINGLE CONTINUOUS PATCH CORD BETWEEN THE DEVICE AND THE NETWORK SWITCH.
2. SPLICING OF COPPER CABLING IS NOT ALLOWED.
3. Patch cords will be the minimum length required plus one additional foot of slack to connect the network switch to the end device with the following exceptions
   A. The patch cord will occupy the cable management paths between the switch and the device
   B. The patch cord must be long enough to avoid being crimped but not so long as to allow coiling of the cord

4. Each patch cord will have a label on the end closest to the switch that identifies the device it provides communications for.

**CABLING NOTES:**

☐ Zip ties are not allowed 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.

☐ Fiber cabling will not be coiled inside the cabinet. Fiber cable slack shall be coiled in the pull box or splice vault next to the cabinet.

☐ Contractor shall ensure reels of fiber long enough to install a continuous unbroken run for fiber backbones.

☐ Power cables and communications cables will not occupy the same cable management raceway.

☐ All unused cables will be removed from the cabinet and conduit, as well as any housing that supported them.

☐ Stranded wires that have the insulation stripped in order to access the conductive material will be tinned or have a terminal crimped on the end.

☐ Loose wires that are not used must be cut to provide a clean end or dressed in order to avoid making contact with other objects.

☐ All fiber patch cords must be factory terminated and polished.

☐ All copper patch cords must be properly terminated with the sheath properly crimped by the RJ45 housing.

☐ All cable management equipment will have brackets that 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 SHALL INCLUDE 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 SHALL INCLUDE PATCH PANELS THAT HAVE THE ABILITY TO STORE SPLICE TRAYS AS A PART OF THE PATCH PANEL. FACTORY TERMINATED SINGLE MODE PATCH CORDS SHALL BE INCIDENTAL TO THESE ITEMS. CONNECTORS SHALL BE AS REQUIRED BY THE EQUIPMENT AND PATCH PANELS INSTALLED. THE CABLES SHALL BE SIZED TO LENGTH (3' MINIMUM).

☐ 633-8-1 TO PAY FOR 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 SHALL INCLUDE THE FURNISHING AND INSTALLATION OF MAINTENANCE CONCRETE APRONS AS SHOWN IN THE PLANS.

☐ 660-3-12 TO PAY FOR INSTALLATION OF MICROWAVE VEHICLE DETECTION SYSTEM (MVDS) CAPABLE OF INDIVIDUAL NEGATIVE SPEED DETECTION. ALL MOUNTING HARDWARE, MVDS LOCAL COMPOSITE CABLES AND GROUNDING SHALL BE INCLUDED.

☐ 676-2-122 SHALL INCLUDE 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 TO PAY FOR FURNISHING AND INSTALLING A SPECIAL ITS ENCLOSURE (NEMA 4R) AS INDICATED ON THE PLANS. THE ENCLOSURE SHALL INCLUDE A CYBERLOCK ELECTRONIC LOCK MECHANISM COMPATIBLE WITH THE EXISTING DEPARTMENT ELECTRONIC LOCK SYSTEM. THIS SHALL ALSO PAY FOR 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 SHALL INCLUDE THE 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 TO PAY FOR FURNISHING AND INSTALLING A LOCAL HUB ETHERNET SWITCH MEETING THE PROJECT TECHNICAL SPECIAL PROVISIONS.

☐ 684-5-1 TO PAY FOR FURNISHING AND INSTALLING OF A RS-485 TO SINGLEMODE FIBER MEDIA CONVERTER AS INDICATED ON THE PLANS.

☐ 684-7 TO PAY FOR THE 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.

☐ IT SHOULD BE NOTED THAT NO LOCATES HAVE BEEN PERFORMED OF THE EXISTING FIBER INFRASTRUCTURE WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL PROVIDE LOCATE SERVICES AND PERFORM TEST OF THE TONE WIRE TO VERIFY ITS INTEGRITY WITHIN 30 DAYS OF NOTICE TO PROCEED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY DAMAGED INFRASTRUCTURE AT NO ADDITIONAL COST TO THE DEPARTMENT.

☐ UTILITY/AGENCIES OWNERS:

- {List all utility contacts here}

MAINTENANCE OF TRAFFIC NOTES: (IF APPLICABLE)

☐ THE EXISTING POSTED SPEED IS TO BE MAINTAINED DURING CONSTRUCTION, EXCEPT DURING TRAFFIC PACING OPERATIONS. ALL SPEED LIMIT SIGNS ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

☐ THE CONTRACTOR SHALL INFORM THE REGIONAL TRAFFIC MANAGEMENT CENTER, (407) 736-1900, PRIOR TO BEGINNING AND AFTER COMPLETION OF ANY AND ALL LANE CLOSURES AND/OR DETOURS ASSOCIATED WITH THE PROJECT.

☐ AT THE DISCRETION OF THE ENGINEER, IF A LANE CLOSURE SHOULD CAUSE EXTENDED CONGESTION, THE CONTRACTOR WILL BE DIRECTED TO REOPEN THE CLOSED LANE UNTIL THE TRAFFIC IS RETURNED TO AN ACCEPTABLE FLOW.
☐ TEMPORARY ROAD CLOSURES AND PACING OPERATIONS SHALL BE PERFORMED AS SHOWN IN THE ROAD CLOSURE DETAILS IN THE TCP PLANS BETWEEN THE HOURS OF ??:?? AM AND ??:?? AM AS INDICATED ABOVE. NO LANE CLOSURES ALLOWED BETWEEN THE HOURS OF ??:?? AM AND ??:?? PM (SIGNS MAY BE PUT OUT STARTING AT ??:?? PM AND MUST BE REMOVED BY ??:?? AM). UNDER NO CIRCUMSTANCES WILL THE DEPARTMENT CHANGE THESE HOURS WITHOUT WRITTEN APPROVAL.

☐ 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

14. 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.”

15. Legend and Abbreviations

☐ All symbols are shown with description matching the plans.

☐ Show all abbreviations with description.

16. 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.

17. **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.

18. **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.

19. **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).

20. **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.

☐ 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/43544615201_PLANS.pdf

21. 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.


22. 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.
23. **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.


24. **ITS Mounting Details**

- Verify that the mounting details match the plan sheets.

Examples of ITS Mounting Details from previous successful ITS Projects click the links below:


25. **Clear Zone Details**

- Verify the clear zone details with the clear zone requirements in the PPM and the FDOT Design Standards.

Examples of Clear Zone Details from previous successful ITS Projects click the links below:


26. **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 details from previous successful ITS Projects click the links below:

  Directional Bore Example
Concrete Apron Example
http://www.cflsmartroads.com/projects/design/model/Concrete%20Apron%20Detail.pdf

Splice Vault Example

27. 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:

☐ 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.)


☐ 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

29. Other Related Items (remove or subtract from list) and comments
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