

RESPONSE 2 COMMENTS FROM INDUSTRY REVIEW – 7830000

Larry Rivera

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Date: Friday, October 28, 2005
Time: 03:20:10 PM

Comments:

In the following section there is no mention of a water blocking agent INSIDE of the buffer tubes. The water blocking compound should be a yarn type as describe for the cable around the outside of the buffer tubes 783-1.2.1.2.

Buffer Tubes: Ensure that the fiber optic cable includes loose buffer tubes that isolate internal optical fibers from outside forces and provide protection from physical damage as well as water ingress and migration. Ensure that buffer tubes provide freedom of movement for internal optical fibers. Ensure buffer tubes allow for expansion and contraction of the cable without damage to internal optical fiber. Ensure that fiber does not adhere to the inside of the tube. Ensure that buffer tubes permit intentional scoring and breakout without damage to the fiber. Ensure that each fiber optic cable buffer tube contains 12 fibers per tube unless otherwise noted in the plans.

ITS SECTION RESPONSE: Comment noted. Document changed. The term “gel free” has been added to 783-1.2.1 in reference to the protection you recommend.

Larry Rivera

File: 7830000 Intelligent Transportation Systems – Fiber Optic Cable and Interconnect

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Time: 04:09:10 PM

Comments:

Experience in field installation indicates that the burying a locate wire with the conduits is prone to get cut, nick or stretch while installing in the field. Can they have the locate wire inside a spare conduit? 1. An end-to-end electrical conductor, such as a locate wire, buried along the conduit system for conductive facility locating.

ITS SECTION RESPONSE: Comment noted. Document not changed. The specification presumes that the locate wire can withstand normal burial, which is sufficient for the system to work. If there is a desire to have the wire installed in a different manner for a specific project, this should be addressed on a per-project basis.

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Larry Rivera

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Time: 03:57:10 PM

Comments:

Two comments on this section 1. pre-terminated panel stub cable is SMf but it can be Multimode fiber specially for signals due to proximity and reduce cost of LED devices for transmission. 2. Is the ST or SC connectors 783-1.2.4.1

Pre-terminated Patch Panels: Ensure that the pre-terminated patch panel is a termination panel that includes a factory installed all-dielectric SMF cable stub. Ensure that the panel includes factory-installed and terminated ST-type panel connectors.

Ensure that the cable stub is of adequate length to splice the stub and provide a fiber connection between the panel and the backbone fiber cable or as directed by the Engineer.

ITS SECTION RESPONSE: Comment noted. Document not changed. The intent of these specifications was to capture the requirements for SMF only. Recommend specific design use of multimode fiber and devices be handled on a project-by-project basis until such time as Department specifications for multimode fiber and devices are developed. The intent of the specification is to require ST connectors by default, but this does not prohibit the use of others types “as shown in the plans” or approved by the Engineer. ST was selected due to the prevalence of this connector type in deployments to date and general consensus of FDOT stakeholders.

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Larry Rivera

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Time: 03:51:20 PM

Comments:

In section 783-1.2.3 It addresses ST connectors only. Most of the equipment use today with Single Moder Fiber uses SC connectors, perhaps you can include both as stated in plans. 783-1.2.3

Cable Terminations: Ensure that all ST-type fiber optic connectors, whether factory pre-terminated or field-installed, are 0.1-inch [2.5-m] physical contact with preradiused tips.

ITS SECTION RESPONSE: Comment accepted. Subsection 783-1.2.3 has been edited to allow either ST or SC connectors at the Engineer's discretion or as noted in the plans.

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Bob Dion

File: 7830000 Intelligent Transportation Systems – Fiber Optic Cable and Interconnect

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Date: Monday, October 31, 2005

Time: 03:24:20 PM

Comments:

The title of this section includes interconnect. Assume this is signal interconnect. If this is the case, suggest removing the portion of the supplemental specification of section 630 (See 6300003SS), dealing with fiber optic cable, be removed from it and included in this section 783-2.3.3? Both mention wire in a fiber optic conduit.

ITS SECTION RESPONSE: The term "interconnect" refers to splices, terminations, and other aspects of providing a complete fiber optic cable system installation. It does not include signals.

783-2.2.1 Should the second paragraph include 'or ERM' after SRM? If both are physically identical (first paragraph, last sentence) will the ERM contain the same information?

ITS SECTION RESPONSE: Comment noted. Document not changed. Intent of the text is to describe the two marker types. They are identical, except that the ERM has the terminal board for connection of the locate wire and ground connectors.

783-2.2.2, last paragraph; suggest changing this, unless the intent is to only install the warning tape on conduit buried 1'. Use 'Include buried cable warning tape with all conduit.' The depth of the warning tape is addressed in 783-2.3.2.

ITS SECTION RESPONSE: Comment accepted and incorporated into the document.

783-2.2.4.1 and 783-2.2.4.2 is a Transmitter and Receiver to be delivered to the Engineer? If so, when? How many? Transmitter is singular here, but plural in 783-5.

ITS SECTION RESPONSE: Comment noted. No quantities for these devices are given in the specification because this will likely vary from one project to the next. The number of transmitters and receivers required for a project would be noted in the project plans. A sentence has been added indicating that the devices are to be delivered to the Engineer upon completion of the installation and acceptance of the work.

783-2.3.2, suggest deleting 'at a depth of 'it isn't necessary, you are directing the Contractor to install the warning tape 1' below the finished grade over the conduit and cable run.

ITS SECTION RESPONSE: Comment accepted and incorporated into the document.

783-4 Guaranty Provisions: A Warranty/Maintenance bond is needed, see 611-5.1 in the spec book and/or 580-5 of the Supplemental Specifications, as examples for one. The Contractor is released from responsibility after the Department has accepted the work. You will need to include similar language, rewriting this article.

ITS SECTION RESPONSE: Comment noted. Document changed. This section is being rewritten to address requirements as contained in 611-5, including the warranty/maintenance bond requirement. The Contractor's warranty period will be 12 months instead of 90 days.

783-5 suggest limiting the 'Method of Measurement' to just that. Such as:

Fiber optic cable shall be measured for payment per foot of cable, completed and accepted.

Conduit and locate system shall be measured for payment per foot of conduit, completed and accepted.

Pull boxes and Splice boxes shall be measured for payment per each, furnished and installed.

1st and 3rd paragraph, delete 'warranted', the warranty takes effect after the cable and conduit are installed. The 1st sentence in 783-6 covers this, also see 4-1.

2nd paragraph; Delete 'splices, terminations, transmitters, receivers', there is no separate payment for these. Either don't mention them (they are covered by the 1st sentence in 783-6) or mention where their cost is included in 783-6.

3rd paragraph; delete 'buried warning tape and locate wire', place this in 783-6. As worded in seems to conflict with 783-6 on what will be paid for, it implies that the conduit, warning tape and locate wire will each be paid for per foot.

ITS SECTION RESPONSE: Comment noted. Document changed. This section has been rewritten to clarify the methods of measurement and make the wording more concise, in keeping with the new pay item numbers. It follows the description of typical work tasks as used in the Spec Book. Use of the word "warranted" is necessary to

indicate not when the coverage takes effect, but that this guarantee has been furnished according to 611-5. The "ITS Fiber Optic Connections" pay item covers splices and terminations. The conduit reference is correct; it is paid for per foot.

783-6 Recommend deleting the 2nd, 3rd and 4th paragraphs, mentioning only that the first sentence, 'Prices and payment will be full compensation for all the work specified in this section and detailed in the plans', and 'Payment will be made under.

ITS SECTION RESPONSE: Comment accepted and incorporated into the document.

Mark Burcham, DRMP, 11/27/05

Proposed Specification Change of 7830000 Intelligent Transportation Systems – Fiber Optic Cable and Interconnect Comments

- 1) For 783-1.2.1 Fiber Optic Cable section, recommend inclusion that no additional equipment (Gigabit Master Hub or field Ethernet switches) will required for any dispersion compensation between all proposed fiber optic cable and existing dispersion-unshifted SMF.

ITS SECTION RESPONSE: Comment accepted and incorporated into the document.

- 2) For 783-1.2.1 Fiber Optic Cable section, suggest inclusion that all fiber optic cable shall be sequentially marked in either 2 feet or 1 meter increments.

ITS SECTION RESPONSE: Comment noted. The requirement for length marking is given in 783-1.2.1.8.

- 3) For 783-1.2.1.1 Optical Fiber section, recommend inclusion of Telcordia Technologies (formerly Bellcore) GR-20-CORE (which are generic requirements for optical fiber and fiber optic cable) or the US Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900 in addition to EIA/ TIA requirements.

ITS SECTION RESPONSE: Comment noted. Document changed to add reference to the RUS 7 CFR 1755.900.

- 4) For 783-1.2.1.1 Optical Fiber section, suggest removal of cabled fiber attenuation of less than or equal to 0.4dB/km for 1,383 nm wavelength. Most equipment uses 1310 or 1550 nm wavelengths. The 1383 nm wavelength is typically associated with water peak attenuation of less than 2.1dB/km, which isn't included as a requirement.

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 5) For 783-1.2.1.1 Optical Fiber section, suggest revision of macrobend attenuation to 100 turns at 1550nm, which is an industry standard and would avoid additional testing.

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 6) For 783-1.2.2 Splicing Materials section, suggest inclusion of requirement that the splice enclosures, splice trays, pigtails, and buffer tube fan-out kits shall be provided by the same manufacturer.

ITS SECTION RESPONSE: Comment noted. Document not changed. We believe the document adequately addresses the compatibility needs and overall functionality requirements for the complete system. Further, there is a submittal requirement that allows the Engineer to exercise professional judgment regarding the acceptance or rejection of individual components proposed by an installing contractor.

- 7) For 783-1.3.1.1 Pulling section, recommend inclusion of “The central strength member and aramid yarn shall be attached directly to the pulling eye during cable pulling. “Basket grip” or “Chinese finger” type attachments shall be used to ensure that the optical and mechanical characteristics are not degraded during the fiber optic cable installation.

ITS SECTION RESPONSE: Comment noted. Document edited to require use of the strength member to pull the cable so tension is not exerted on the fibers.

- 8) For 783-1.3.2.1 Splice Plan section, suggest inclusion of “All splicing shall be done according to the plans.”

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 9) For 783-1.4.2.2 OTDR Tracing section, suggest inclusion of specific wavelength(s) for OTDR testing (either 1310, 1550, or both 1310 and 1550).

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 10) For 783-2.2.3.1 Locate Wire Surge Protection section, suggest inclusion that grounding system should be a stand alone grounding system and shall not include power utility or any ITS device grounding systems.

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 11) For 783-2.3.1 Route Markers section, suggest additional installation guideline that route markers shall be placed at all splice box locations.

ITS SECTION RESPONSE: Comment noted. Document not changed. This is a design element that will be included in the Department’s *Plans Preparation Manual*.

- 12) For 783-2.3.4 Locate Wire Grounding Units section, suggest revision of “Do not use power utility ground(s) or any ITS device grounding system.

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

- 13) For 783-3 Pull Boxes and Splice Boxes for Fiber Optic Cable section, these pull boxes or splice vaults shall only contain fiber optic cable. Pull boxes, which contain

power for ITS devices or lighting circuit, shall be independent and not contained within these pull boxes or splice vaults.

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.

14) For 783-3.2.3 Splice Box section, suggest revision of "Use splice boxes at all fiber optic splice locations as shown in plans and other locations as approved by the Engineer."

ITS SECTION RESPONSE: Comment was accepted and incorporated into the document.