

COMMENTS FROM INDUSTRY REVIEW – 7850000

Bill Cook

* 785-1.3.5 Air Terminals: Ensure that air terminal lightning protection devices consist of either a hemispherical array type of dissipating air terminal or a single lightning rod constructed of a material compatible with the structure. There are enough scientific studies and papers that clearly state that dissipation arrays do not work. One of the most recent studies performed at the University of Florida in Gainesville, was funded, in part by the Federal government via the "National Science Foundation" I have attached a copy for your reference. Leaving these devices in the specification implies and supports their functionality by the state.

* 785-1.4.2 TVSS Device at Power Entry Point: Install a TVSS that complies with the requirements as detailed in Section 2.2.7 of the NEMA LS 1 standard. The Nema document LS1 is a standard of how to write a surge protector specification sheet. It is not a product or performance standard.

* 785-1.4.2 TVSS Device at Power Entry Point: Ensure that the suppression device is a hybrid, multi-staged device with a visual indication system that monitors the weakest link in each mode and shows normal operation or failure status and also provides one set of dry contacts to export this status information to other monitoring. This statement is erroneous for a primary AC surge protector connected in parallel with the load. A multi stage device is associated with a series connected surge protector, therefore delete multi-stage.

* 785-1.4.3 TVSS Device at Point of Use: The maximum allowable let-through voltages for the A1 waveform is 45 V line to neutral mode, 60 V line to ground mode, and 35 V neutral to ground mode. The let-thru-voltage cannot be lower than the service voltage. The sentence should continue to say - "above the nominal line voltage."

* 785-1.4.3 TVSS Device at Point of Use: Ensure that the suppression device is a hybrid, multi-staged device with a visual indication system that monitors the weakest link in each mode and shows normal operation or failure status and also provides one set of dry contacts to export this status information to other monitoring systems. Receptacle devices do not have sets of dry contacts to export the status information. This should be deleted.

* 785-1.4.4 TVSS Device for Low-Voltage Power, Control, Data and Signal Systems: Table 4.1 - values of Low-Voltage Circuits. The last item CAT 5 refers Cat 5 Up to 12 V - Up to 500 mA - Up to 100 Mbps - 3,000 Watts per mode(10x1000 ?s) - <30 Vpk (10 x 1000 ?s). The surge Capacity should not be stated as "Watts" this should be in the same manner as all the other devices - "1kA per wire (8 x 20 u/s) therefore the Let-Thru-Voltage should also reflect the 8 x 20 u/s test pulse instead of the 10 x 1000 u/s as shown.

Thank you for the opportunity to contribute to the specification, however if you require any additional explanation or input, please do not hesitate to contact me.

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Surge Protection for Professionals

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Suggest separating this section into 2, one for grounding, lightning protection and transient surge suppression (similar to section 620) and the other for ITS Poles. 785-1 applies to all ITS equipment, 785-2 deals specifically with poles and lowering devices.

785-1.2: the requirements of section 620 are for driving a specific linear foot of grounding rod. 785-1 is for a resistance to ground measurement. What portion of 620 is applicable? See 780-4 in specification 7800000, previously sent out for review. The reference in that article to 620 is more than a “guide”, it calls for ‘meeting the requirements of Section 620 and in Section 785-1’ (this should be article 785-1).

Suggest moving the warranty language from all ITS sections, as in 785-3, to Section 780, it has appeared in all other ITS sections and applies to all ITS work. Include language in it similar to 611-5.1 or 580-5.

Change the article number, and Subarticle numbers of 784-4 to 785-4.

784-4.1 mentions ‘Poles, with or without the lowering devices’. The item in 785-5 is for ITS Pole and Lowering Device. Is the cost of the lowering device significant? Should there be items for ‘785-x ITS Pole’ and another for ‘785-x ITS Lowering Device’? 785-2.2 refers to section 641 and 649. Can items for ITS poles use items from these sections for the poles and not create new items for the poles, only requiring a new pay item for ‘ITS Lowering Device’?

Delete the second paragraph of 784-4.2, 4.3 and 4.4 if a separate item for lowering device is needed. Does the reference in these to 'retrofit' refer to an externally mounted lowering device as mentioned in 785-2.2.6? If so, the cost would not be incidental to the installation of a pole since a pole exists.

Bijan Behzadi, P.E., PTOE Phone #: 813-975-6733

Overall Comment: The TSPs call for testing by TERL at many places. Is this a practical requirement for the number of projects that will be deployed simultaneously in Florida? Does TERL have the required staff to be responsive to the needs of these projects? If so, the TSPs need to specify when the units are to be submitted for testing and what timeframe TERL will need to complete its testing.

Section 784-1.1: Consider deleting the word "proprietary" from the first paragraph.

Section 784-2.2.7: The term device server, which is also called "terminal servers" in the industry, has been the source of confusion for managers, engineers, and contractors. Suggest adding a couple of sentences that define this term.

Section 784-3.2.3: Consider adding the word "MPEG-4" after the word "MPEG-2."

Section 784-3.2.5.1: Consider mentioning the format requirements for the decoder in this section.

Section 784-4: Consider standardizing warranty period for all devices.

Section 784-4.1: Please consider adding "maintaining agency" as another entity to whom the warranty should be transferable.

Training and technical support requirements should be included in the TSPs.

Requirements for system integration and configurations should be added to the TSPs.

Mark Burcham

- 1) For 785-1.3.5 Air Terminals section, suggest consideration to remove air terminals entirely since they can serve as a lightning rod due to Florida high concentration of lightning strikes. Reviewer realizes that topic is frequently debated conceptually. To the reviewer's knowledge, one definitive example exists. FDOT D5 has replaced several CCTV cameras due to lightning strikes. Once they removed the air terminal, the replacement of CCTV camera significantly decreased.

- 2) For 785-2.2.5 Wiring section, recommend inclusion that wiring shall meet all applicable NEC codes in addition to equipment manufacturer's recommendations.

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Comments:

Section 785-2.2.3 Lowering Tool: The last two sentences in the first paragraph state: Ensure that the lowering tool can be powered using a half-inch chuck, variable-speed reversible industrial-duty drill to match the manufacturer-recommended revolutions per minute, or supply a drill motor for the lowering tool as shown in the plans. Provide an electrically powered drill unit.

It appears the last sentence is either redundant, or unclear. To me the last sentence appears redundant and therefore unnecessary.

Mr. Bijan Behzadi, P.E., PTOE Phone #: 813-975-6733

Section 785-1.2, second sentence: The term “ahead of and behind” is not clear.

Section 785-1.3.2, second paragraph: The word “points” is too vague. Suggest using “rods” or “electrodes.”

Section 785-1.3.2, fourth paragraph: Considering the limitations of right-of-way along arterial streets (state routes), how can the minimum 40 feet spacing be met for any additional grounding electrodes given the Y configuration?

Section 785-1.3.2, fifth paragraph: The term “Bond all metal components of the ITS device subsystem” is too vague. Suggest defining the applicable elements – at least as some examples of applicable elements.

Section 785-1.3.5: It is not clear what structures/devices will require air terminals. Thought this is a design decision that must be incorporated in the specifications and plans, not all FDOT districts are treating this design requirement consistently and

uniformly. Suggest standardization of minimum requirements for qualified structures and devices.

Section 785-1.4: This section heading is orphan relative to its support text. Please place this section heading in page 4.

Section 785-1.4.2: Please consider replacing the term “ahead of” with “before.”

Section 785-1.4.2: Do you mean “NEMA TS 1” or “NEMA LS 1.”

Section 785-1.4.2: Please consider replacing the word “export” with “transmit.”

Section 785-2.2.2.2.2: Please consider adding the term “power over Ethernet” as another power option.

Section 785-2.2.3: Please specify the applicable length of cable for the specified 35 pounds weight limit.

Section 785-3.1: Please consider adding “maintaining agency” as another entity to whom the warranty should be transferable.

Section 784-4: This section and all associated subsections should be 785 instead of 784. The specs are not clear as to who will furnish the composite or other cabling between the device cabinet and device? Who will install the composite or other cabling between the device cabinet and device? Who will interconnect the composite or other cabling between the device cabinet and device to the lowering device connector that interfaces with the device? Typically, the Contractor provides the composite cable to the manufacturer of the lowering device and pole for termination with the lowering device connector and installation within the pole before the pole is erected by the Contractor. Language is needed here to ensure the device requirements for power, video, and PTZ control are considered in sizing the conductors for composite or other cabling between the device cabinet and device considering the length of the composite cable between the device and device cabinet.

Chung Tran, FHWA

785-2.2 -There were issues regarding the deflection of Prestressed concrete poles in D-4. Therefore, should this be changed the new standard, please verify with D-4 ITS office. Thanks

785-2.3 - Define high wind condition, 20, 30 40 mph? which is it?
