



Florida Department of Transportation

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Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

December 30, 2014

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: State Specifications and Estimates Office
Section **684**
Proposed Specification: **6840202 Network Devices.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Alan El-Urfali of the State Traffic Engineering and Operations Office to allow approval and APL listing of video decoders that utilize newer technology.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965DS or daniel.scheer@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

signature on file

Daniel Scheer, P.E.
State Specifications Engineer

DS/ot
Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

NETWORK DEVICES.
(REV 11-14-14)

SUBARTICLE 684-2.2.6 is deleted and the following substituted:

684-2.2.6 Electrical Specifications: Verify that all wiring meets applicable NEC requirements and that the device server operates using a nominal input voltage of 120 volts alternating current (V_{AC}). ~~The input voltage range shall be 89 to 135 V_{AC}.~~ If the device requires nominal input voltage of less than 120 V_{AC}, furnish the appropriate voltage converter. Verify that the maximum power consumption does not exceed 12 watts.

Ensure that the device server has diagnostic LEDs, including link, TX, RX, and power LEDs.

SUBARTICLE 684-2.3 is deleted and the following substituted:

684-2.3 Installation Requirements: Mount the device server securely in a location in the equipment cabinet that allows the unit to be fully accessible by field technicians. Ensure that all unshielded twisted pair/shielded twisted pair Ethernet network cables are compliant with the EIA/TIA-568-B standard.

SUBARTICLE 684-3.2.6.1 is deleted and the following substituted:

684-3.2.6.1 Hardware-based Decoder: Provide a hardware-based decoder that has a minimum of one ~~analog NTSC~~ video output ~~and decodes digital video and data streams present on an IP network into analog formats for interconnection with other devices.~~ Use a DVD that has a minimum of one ~~serial~~ data interface for ~~transmission of command and control data to other devices, as well as console and~~ configuration functions. Use a DVD that includes an Ethernet interface for connection to IP networks.

SUBARTICLE 684-3.2.8 is deleted and the following substituted:

684-3.2.8 Video Specifications: Ensure that composite video inputs and outputs utilize BNC connectors. Ensure *analog* video inputs and outputs support 1 volt peak-to-peak (V_{p-p}) NTSC composite video. Ensure that the DVE and DVD operate with both color and monochrome video, and that DVEs allow the user to select and adjust video resolution. Ensure that the DVE and DVD support resolutions that include, but are not limited to, those defined in Table 3.1. Ensure that the DVE and DVD are capable of delivering color and monochrome video at 30 fps regardless of resolution.

Table 1 – Resolution Requirements	
Format	Resolutions
MPEG-2	352 x 240, 352 x 480, 720 x 480

H.264	176 x 120, 352 x 240, 720 x 480
Note: The resolutions attained depend on the data transmission rate.	

SUBARTICLE 684-3.2.9 is deleted and the following substituted:

684-3.2.9 Serial Interface: Ensure that hardware-based DVEs ~~and DVDs~~ provide a minimum of one serial data interface that supports EIA/TIA-232 and TIA-422. Ensure that the serial ports support data rates up to 115 kbps; error detection procedures utilizing parity bits (i.e., none, even, and odd); and stop bits (1 or 2).

Ensure that hardware-based DVEs ~~and DVDs~~ provide a TCP/IP interface to their serial port using a network socket connection with configurable IP address and port number. Serial interface ports may utilize RJ-45 connectors, D-sub connectors, or screw terminals.

SUBARTICLE 684-3.2.11 is deleted and the following substituted:

684-3.2.11 Front Panel Status Indicators: Provide DVEs and DVDs that have LED displays, liquid crystal displays (LCDs), or similar illuminated displays to indicate status for power, ~~and data activity, link status, and video transmission.~~

SUBARTICLE 684-3.2.13 is deleted and the following substituted:

684-3.2.13 Mechanical Specifications: Ensure equipment is permanently marked with manufacturer name or trademark, part number, date of manufacture and serial number.

Do not use self-tapping screws on the exterior of the assembly.

Ensure that *equipment intended for installation in a roadside cabinet* ~~uses~~ all parts ~~are~~ made of corrosion-resistant materials, such as plastic, stainless steel, anodized aluminum, brass, or gold-plated metal.

Ensure that the dimensions of the DVE accommodate the unit's installation in a control cabinet as specified in the plans.

SUBARTICLE 684-3.2.14 is deleted and the following substituted:

684-3.2.14 Electrical Specifications: Provide equipment that operates on a nominal voltage of 120 volts alternating current (V_{AC}). ~~The equipment shall operate within a voltage range of 89 V_{AC} to 135 V_{AC}. The operating frequency range for power shall be 60 hertz plus or minus 3 Hz.~~ If the device requires operating voltages of less than 120 V_{AC}, supply the appropriate voltage converter.

SUBARTICLE 684-3.2.15 is deleted and the following substituted:

684-3.2.15 Environmental Specifications: Ensure DVEs and DVDs installed in roadside cabinets perform all required functions during and after being subjected to the environmental testing procedures described in NEMA TS2, Sections 2.2.7, 2.2.8, and 2.2.9.

Ensure that a hardware DVD installed in a climate-controlled environment, such as a TMC computer room, ~~has an~~ ~~performs all required functions during and after being subjected to an ambient~~ operating temperature range of 32° to 113~~104~~°F.

SUBARTICLE 684-3.3 is deleted and the following substituted:

684-3.3 Installation Requirements: Ensure that the DVE is shelf- and/or rack-mountable, and designed for use in roadside control cabinets without climate control. ~~Ensure that the dimensions of the DVE allow installation in a control cabinet as specified in the plans.~~ Ensure that front panel status indicators remain unobstructed and visible. ~~All parts shall be made of corrosion resistant materials, such as plastic, stainless steel, anodized or painted aluminum, brass, or gold plated metal.~~ Ensure that all unshielded twisted pair/shielded twisted pair network cables are compliant with the EIA/TIA-568-B standard.

~~Because a DVD may be hardware or software based, these mechanical specifications apply only to hardware based DVDs. Field hardened DVDs shall be shelf and rack mountable, and designed for use in roadside control cabinets without climate control. The dimensions of the DVD shall allow installation in a control cabinet as specified in the plans.~~

~~Non-hardened DVDs shall be shelf and rack mountable, and designed for use in a climate controlled TMC. The rack mounted DVD shall be designed to fit in a standard EIA 19 inch rack and shall not require shielding from other electronic devices, such as power supplies and other communication equipment. The dimensions of the DVD shall allow installation as specified in the plans.~~

ARTICLE 684-6 is deleted and the following substituted:

684-6 Method of Measurement.

The Contract unit price for each MFES, device server, DVE, DVD, or media converter furnished and installed, will include furnishing, placement, and testing of all equipment and materials, and for all tools, labor, hardware, operational software packages and firmwares, supplies, support, personnel training, shop drawings, documentation, and incidentals necessary to complete the work.

Provide software-based decoders at no additional cost when furnished in conjunction with DVEs.

A software-based DVD provided individually shall be paid under the pay item below.

NETWORK DEVICES.
(REV 11-14-14)

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Ensure that the device server has diagnostic LEDs, including link, TX, RX, and power LEDs.

SUBARTICLE 684-2.3 is deleted and the following substituted:

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SUBARTICLE 684-3.2.6.1 is deleted and the following substituted:

684-3.2.6.1 Hardware-based Decoder: Provide a hardware-based decoder that has a minimum of one video output. Use a DVD that has a minimum of one data interface for configuration functions. Use a DVD that includes an Ethernet interface for connection to IP networks.

SUBARTICLE 684-3.2.8 is deleted and the following substituted:

684-3.2.8 Video Specifications: Ensure that composite video inputs and outputs utilize BNC connectors. Ensure analog video inputs and outputs support 1 volt peak-to-peak (V_{p-p}) NTSC composite video. Ensure that the DVE and DVD operate with both color and monochrome video, and that DVEs allow the user to select and adjust video resolution. Ensure that the DVE and DVD support resolutions that include, but are not limited to, those defined in Table 3.1. Ensure that the DVE and DVD are capable of delivering color and monochrome video at 30 fps regardless of resolution.

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Ensure that hardware-based DVEs provide a TCP/IP interface to their serial port using a network socket connection with configurable IP address and port number. Serial interface ports may utilize RJ-45 connectors, D-sub connectors, or screw terminals.

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Ensure that equipment intended for installation in a roadside cabinet uses parts made of corrosion-resistant materials, such as plastic, stainless steel, anodized aluminum, brass, or gold-plated metal.

Ensure that the dimensions of the DVE accommodate the unit's installation in a control cabinet as specified in the plans.

SUBARTICLE 684-3.2.14 is deleted and the following substituted:

684-3.2.14 Electrical Specifications: Provide equipment that operates on a nominal voltage of 120 volts alternating current (V_{AC}). If the device requires operating voltages of less than 120 V_{AC} , supply the appropriate voltage converter.

SUBARTICLE 684-3.2.15 is deleted and the following substituted:

684-3.2.15 Environmental Specifications: Ensure DVEs and DVDs installed in roadside cabinets perform all required functions during and after being subjected to the environmental testing procedures described in NEMA TS2, Sections 2.2.7, 2.2.8, and 2.2.9.

Ensure that a hardware DVD installed in a climate-controlled environment, such as a TMC computer room, has an operating temperature range of 32 to 104°F.

SUBARTICLE 684-3.3 is deleted and the following substituted:

684-3.3 Installation Requirements: Ensure that the DVE is shelf- and/or rack-mountable, and designed for use in roadside control cabinets without climate control. Ensure that front panel status indicators remain unobstructed and visible. Ensure that all unshielded twisted pair/shielded twisted pair network cables are compliant with the EIA/TIA-568-B standard.

ARTICLE 684-6 is deleted and the following substituted:

684-6 Method of Measurement.

The Contract unit price for each MFES, device server, DVE, DVD, or media converter furnished and installed, will include furnishing, placement, and testing of all equipment and materials, and for all tools, labor, hardware, operational software packages and firmware, supplies, support, personnel training, shop drawings, documentation, and incidentals necessary to complete the work.

Provide software-based decoders at no additional cost when furnished in conjunction with DVEs.

A software-based DVD provided individually shall be paid under the pay item below.