

ORIGINATION FORM

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Specification: SECTION 785 *ITS INFRASTRUCTURE*

Subject: 785-3.2.1 and 785-3.3

Origination date: October 8, 2008

Originator: Gene Glotzbach

Office/Phone: Traffic Engineering and Operations, ITS Section

Problem statement: *785-3.2.1 and 785-3.3 The pole requirements are not clear. Sections 641 and 649 are not entirely applicable for ITS applications and the Department requirements for centrifugally spun poles are not clear.*

Proposed solution: Clarification of the Design Requirements. *785-3.2.1 and 785-3.3 will reference Design Standards 18111 and 18113 for concrete and steel CCTV poles. These standards clarify the requirements.*

Information source: Structures Design Office

Recommended Usage Note:

Estimated fiscal impact, if implemented: None

Implementation of these changes, if and when approved, will begin with the July 2009 letting.

For State Specifications Office Use Only

Begin date: November 25, 2008

File Number: 7850300

Scheduled completion date: February 22, 2008

Implementation date: July 2009 maybe January 2010 due to time

Implementation team member: Frances

Usage Note: 785-1

Notes:

1. This is a revision to a supplemental.



Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS
SECRETARY

M E M O R A N D U M

DATE: December 9, 2008

TO: Specification Review Distribution List

FROM: Rudy Powell, Jr., P.E., State Specifications Engineer

SUBJECT: Proposed Specification: 7850300 Intelligent Transportation Systems – Infrastructure

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Gene Glotzbach for clarification of design requirements for poles.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at ST986RP or rudy.powell@dot.state.fl.us. Comments received after January 6, 2009 may not be considered. Your input is encouraged.

RP/ft
Attachment

INTELLIGENT TRANSPORTATION SYSTEMS INFRASTRUCTURE.

(REV ~~11-9-07~~ ~~12-1-08~~) (~~FA-1-10-08~~) (7-08)

SUBARTICLE 785-3.2.1 (of the Supplemental Specifications) is deleted and the following substituted:

785-3.2.1 Pole: ~~Use a pole as shown in the plans that meets the requirements of either Section 641 for prestressed concrete poles, Section 649 for steel poles, or Department requirements for centrifugally spun concrete poles. Provide shop drawings for poles in accordance with Section 5. Depending on the structural design requirements, use Class V (Special) or VI concrete pole, meeting the requirements of 346 specifications. Obtain poles from a manufacturing plant that is currently on the Department's list of qualified Incidental Precast Concrete Plants and currently listed on the Department's QPL for concrete CCTV Poles. Construct concrete poles in accordance with Section 450 specification. Assume responsibility for performance of all quality control testing and inspections in accordance with Sections 346 and 450 specifications and Section 8.2 of the Materials Manual. The PCI personnel and plant certifications are not required. Permanently and legibly mark each pole with the pole manufacturer, pole type, length, and the date cast at the same location of the pole as shown on the shop drawings. Provide written certification and delivery tickets from the pole manufacturer, in accordance with Section 8.2 of the Materials Manual, indicating that the poles meet the requirements of Section 785, Standard Index 18113, and the approved QPL drawings. Use a concrete or steel pole in accordance with Design Standard 18111 or 18113 and listed on the Department's Qualified Products List (QPL).~~

For concrete poles, use concrete meeting the requirements of Section 346 and construct in accordance with Section 450. Obtain concrete poles from a manufacturing plant that is currently on the Department's list of Producers with Accepted Quality Control Programs. Producers seeking inclusion on the list shall meet the requirements of 105-3. Assume responsibility for performance of all quality control testing and inspection required by Sections 346 and 450; however the PCI personnel and plant certifications are not required.

Use a pole that is equipped with a handhole of sufficient size to provide access to the pole interior and for temporarily securing and operating the lowering tool. Ensure that the pole-top tenon is rotatable.

SUBARTICLE 785-3.3 (of the Supplemental Specifications) is deleted and the following substituted:

785-3.3 Installation Requirements: Ensure that the divided support arm and receiver brackets self-align the contact unit with the pole centerline during installation, and that the contact unit cannot twist when subjected to the design wind speeds defined in the FDOT Plans Preparation Manual, Vol. I, Chapter 29, Table 29.1. Supply internal conduit in the pole for the power and video cabling if required by the Engineer.

Ensure all pulleys installed for the lowering device and portable lowering tool have sealed, self-lubricated bearings, oil-tight bronze bearings, or sintered bronze bushings.

Provide 1.25-inch-diameter PVC conduit in the pole for the lowering cable. Verify that a conduit mount adapter is furnished for the interface between the conduit and the internal back side of the lowering device.

————— Ensure that the poles and their foundations conform to the requirements of the PPM and Indexes 17723 and 17725 of the Design Standards, and with the AASHTO LTS 4 standard with current addenda. Use Vol. 1, Chapter 29, Table 29.1, Design Wind Speeds, of the PPM to compute the wind loads. Provide shop drawings that specify the overturning moment or ground line moment detail for the pole structure and all necessary design features.

785-3.3.1 Concrete Poles: Provide footings 4 feet in diameter and of the depth specified in the plans. Provide footings for all other pole applications as specified in the plans. Construct the footings with Class I concrete as specified in Section 347. For the excavation and backfill of the footing, meet the requirements specified in 125-4 and 125-8.2 with the exception of the backfill density. In lieu of the requirements for obtaining the specified density, the Contractor may hand tamp the backfill in 4 inch maximum layers or machine tamp the backfill in 6 inch maximum layers. When performing such operations, ensure that the material is neither dry nor saturated. The Contractor may backfill with concrete.

Use forms, when required, meeting the requirements of 700-7.3. If the footing is cast in an oversize hole, place the concrete in the top 6 inches in a form. Trowel all exposed surfaces to a smooth finish. Install foundation and pole in accordance with 641-4.2, except footing dimensions shall be in accordance with Design Standard 18113.

785-3.3.2 Steel Poles: Install foundation and pole in accordance with 649-5 and 649-6.

SUBARTICLE 785-4.2.9.6 (of the Supplemental Specifications) is deleted and the following substituted:

785-4.2.9.6 Generator and Auxiliary Power Connection: If shown on the plans, furnish an ITS field cabinet that has provisions for the connection of an external power source, such as a portable generator, through a weatherproof, water-resistant, secure interface. This feature should allow authorized personnel to access, connect, and secure an external power source to the cabinet in order to restore power within 5 minutes of arrival at the ITS field cabinet. *Provide the field cabinet with a transfer switch rated equal to or higher than the design load of the cabinet's main breaker and the generator input twist-lock connector rating. Ensure that the transfer switch provides a means of switching between normal utility power and auxiliary backup generator power. Ensure that the switching time between sources is no longer than 250 milliseconds. Ensure that the transfer switch meets UL Standard 1008. Ensure that the transfer switch does not allow simultaneous active power from two sources and does not allow generator backflow into normal utility AC circuits. Provide the field cabinet with a transfer switch rated for the design load of the cabinet's main breaker to provide an alternate power source using a generator. Use a transfer switch that can be permanently mounted inside the cabinet. Ensure that the transfer switch meets UL Standard 1008. Ensure that the transfer switch does not allow simultaneous active power from two sources.*

785-4.2.9.6.1 Manual Transfer Switch: Ensure the manual transfer switch is a two-position switch. Label the switch positions as "Generator Power" and "Utility Power".

Equip the transfer switch with a "Utility-on" indicator, which will illuminate when normal utility power service is

available and the switch is in the “Generator Power” position. The indicator must turn off when the transfer switch is moved to the “Utility Power” position. Ensure that the Utility-on indicator is clearly visible outside the cabinet and that the indicator’s on/off state can be visually determined from a distance of 30 feet.

785-4.2.9.6.2 Automatic Transfer Switch: To provide for automatic transition from generator power back to normal utility service after utility power is restored, an automatic transfer switch may be used instead of a manual transfer switch. Ensure that the automatic transfer switch has indicators that display the status of connected power sources and indicate which power source is actively energizing the cabinet.

If a relay circuit is used to provide switching, the normally closed circuits must be connected to normal utility power. The relay shall be energized only by the generator, not by the electric utility service. When energized, the relay must break the connection to normal utility power and make connection to the generator power input. Any automatic transfer switch or relay operated switch must include a bypass switch that permits the automatic switching function to be disabled and permits manual selection of the power sources connected to the cabinet.

785-4.2.9.6.3 Generator Access Panel: Include a generator connection panel consisting of, at a minimum, the manual transfer switch and three-prong, minimum 30-amp twist-lock connector for generator hookup. Locate and label the transfer switch and twist lock connector on a panel easily accessible behind a lockable exterior door. Ensure that this access door is labeled as “Generator Access Door”, equipped with a tamper-resistant hinge, and that the door assembly is weatherproof and dustproof. The access door shall be provided with a #2 lock unless otherwise specified in the plans. Provide the access door with a weatherproof opening for the generator cable. The generator hookup compartment itself shall be recessed into the cabinet and be deep enough to allow closing and locking of the access door when the generator cable is connected. Limit the generator hookup compartment and access panel’s intrusion into the cabinet interior to no more than 6 inches. Avoid blocking access to any other equipment in the cabinet. Locate this generator panel as close as possible to the main AC circuit breaker. Ensure that the bottom of the access panel is no less than 24 inches above the bottom of the cabinet. Never locate the generator access panel on the main cabinet door or back door.

Connect wiring from the Cabinet AC+ Input Terminal to the transfer switch. Connect the alternate power source’s wiring on the transfer switch to a receptacle that can accept a 120 VAC generator cord. Install a power service wire between the transfer switch and the existing power distribution panel in the cabinet.

~~Include a generator connection panel consisting of, at a minimum, the manual transfer switch and twist lock connector for generator hookup. Locate and label the transfer switch knob and twist lock connector on a panel easily accessible behind a lockable exterior door. Ensure that this access door is equipped with a tamper-resistant hinge, and that the door assembly is weatherproof and dustproof. Provide the access door with a weatherproof~~

~~opening for the generator cable. Locate this generator panel as close as possible to the main AC circuit breaker. Never locate the generator access panel on the main cabinet door or back door.~~
~~—————~~~~Connect the power service wiring entering the cabinet to the transfer switch. Connect the alternate power source's wiring on the transfer switch to a receptacle that can accept a 120 V_{AC} generator cord. Install a power service wire between the transfer switch and the existing power service panel in the cabinet.~~