Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

January 11, 2013

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **745**
Proposed Specification: **7450000 Traffic Monitoring Site Inductive Loop Assembly.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Special Provision.

The changes are proposed by Walton Jones of the State Transportation Statistics Office to include minimum test reading requirements for resistance, insulation and inductance.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965TT or trey.tillander@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4140.

Sincerely,

Signature on File

V. Y. “Trey” Tillander, III, P.E.
State Specifications Engineer

TTft/
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

TRAFFIC MONITORING SITE INDUCTIVE LOOP ASSEMBLY.
(REV ~~6-22-10~~*~~12-3-12~~1-10-13*) (~~FA 11-22-10) (1-13~~)

PAGE 864. The following new Section is added after Section 715:

SECTION 745
TRAFFIC MONITORING SITE
INDUCTIVE LOOP ASSEMBLY

745-1 Description.

Install traffic monitoring site (TMS) inductive loop assembly at the locations shown in the Plans.

745-2 Materials.

Use inductive loop assembly components listed on the Department's Approved Products List (APL) as compatible with the other components installed at the location meeting the following requirements:

745-2.1 Loop Wire: Use #12 AWG stranded copper wire with Type XHHW cross-linked polyethylene insulation, or #14 AWG stranded copper wire with Type XHHW cross-linked polyethylene insulation and an additional outer sleeve composed of polyvinylchloride or polyethylene insulation that meets the requirements of IMSA 51-7.

745-2.2 Shielded Lead-In Cable: Use #14 AWG two conductor, stranded copper wire with shield and polyethylene insulation, meeting the requirements for IMSA 50-2.

745-2.3 Splicing: Use closed end electrical crimp sleeves or threaded twist-on sleeves for physical connection of wire ends. Wire ends and sleeves will be totally immersed in the approved splice sealant as shown in the Design Standards, Index No. 17900.

745-3 Installation Requirements.

745-3.1 General: Install inductive loop assembly components and materials in accordance with the plans and the Design Standards.

745-3.2 Saw Cuts: Loop layout will be as shown in the Design Standards, Index No. 17900. Use a chalk line or equivalent method to outline the perimeter of the loop on the pavement and routes for lead-in cables. Do not allow the saw cut in the pavement to deviate by more than 1 inch from the chalked line. Ensure that all saw cuts are free of any dust, dirt or other debris and completely dry prior to the installation of the loop wire, loop wire twisted pair lead or lead-in cable.

Make saw cuts 3 inches to 3-1/2 inches deep, and wide enough to allow unforced placement of the loop wire in the slot. Loop corners shall be 1-1/4 inches to 2 inches in diameter, centered in the corners of the loop, drilled to loop depth and free of rough edges. Perform saw cuts across portland cement concrete pavement expansion joints as detailed in the Design Standards, Index No. 17781.

For pavement less than 3 inches deep, make saw cuts deep enough to allow 1 inch to 1-1/2 inch of sealant cover over the installed loop wire.

745-3.3 Loop Wire: Ensure that all loops have four complete turns of wire, wound in a clockwise manner. Do not damage the insulation.

Tag and identify the clockwise "lead" of each loop.

Use alternate polarity on adjacent loops.

Ensure that the hold down material is non-metallic; placed in the saw slot using segments 1 inch to 2 inches long, spaced 12 inches apart; and the distance from the top of the hold down material to the final surface of the roadway is not less than 1-1/2 inches.

745-3.4 Loop Wire Twisted Pair Lead: Create a loop wire twisted pair lead by twisting the loop wire pair a minimum of ~~*6* 10~~ twists to ~~*8* 12~~ twists per foot from the edge of the loop to the pull box located adjacent to the roadway. ~~Place only one loop wire twisted pair lead in a saw cut.~~ Ensure that the distance between a twisted loop wire pair lead within the roadway is a minimum of 6 inches from any other twisted loop wire pair lead or loop, until they are within 12 inches of the edge of pavement or curb, at which point they may be placed closer together.

Provide a minimum of 3 feet of twisted loop wire pair lead in the pull box located adjacent to the roadway. Do not route twisted loop wire pair lead directly through conduits to the cabinet, unless specified in the plans.

745-3.5 Loop Sealant: Prepare and apply ~~the~~ *a* loop sealant *listed on the APL* in accordance with the manufacturer's instructions. Remove excess sealant from the surface of the roadway. Ensure that the loop sealant has cured completely before allowing vehicular traffic to travel over the sealant.

745-3.6 Shielded Lead-In Cable: When loops are located more than 150 feet from the cabinet, shielded lead-in cable is required. Splice the loop wire twisted pair lead to the International Municipal Signal Association, Inc. (IMSA) Specification 50-2 shielded lead-in cable in the pull box located adjacent to the roadway. Splice cables in pull boxes only. Perform all splices in accordance with the Design Standards, Index No. 17900.

Ensure that the shielded lead-in cable is of sufficient length to extend through the conduits to the cabinet without additional splicing. Do not pull more than 250 feet of loop lead-in cable between pull boxes or a pull box and the cabinet.

745-4 Testing:

~~*All testing is conducted*~~*Conduct all testing with the leads disconnected from the backplane.*

745-4.1 Loop Resistance: ~~*All*~~ *Ensure new loops* ~~*will*~~ *have a resistance reading of 3.0 ohms or less.*

745-4.2 Inductance: ~~*All*~~*Ensure new loops* ~~*will*~~ *have a minimum inductance reading of 100 micro-henries.*

745-4.3 Insulation Resistance (Megging): ~~*All*~~*Ensure new loops will have a minimum reading of 200 mega ohms at 500 volt charge.*

745-*5*~~4~~ Guaranty Provisions.

745-*5*4.1 Contractor's Responsibility: Secure all guaranties that are customarily issued by the equipment manufacturers for the specific equipment included in the Contract. Ensure that the form in which such guaranties are delivered includes the provision that they are subject to transfer to the Department, and is accompanied by

proper validation of such fact. Transfer guaranties at final acceptance of the work (or equipment) by the Department.

745-54.2 Terms: Ensure that the manufacturers of the equipment stipulate the terms of guaranties when submitting a request to the Department for certification and for equipment submittal for construction projects. Include terms for a specified service performance with provisions for repair parts and labor, or for replacement. Provisions shall define the equipment "installation date" as the date for such guaranty to be in effect. For construction projects, the "installation date" is the first day of equipment "burn-in". For warehouse purchases, the "installation date" is the date of visual inspection approval, not to exceed ten days after delivery date.

745-54.3 Conditions: When guaranty is available, ensure that a written and signed guaranty accompanies the manufacturer's billing invoice. The Engineer will sign and retain the original and provide a copy to the manufacturer. If the Contractor does not comply with the terms of the guaranty, the Department may suspend the certification. Comply with additional terms and conditions as stated in purchasing agreements.

745-65 Method of Measurement.

745-65.1 General: Measurement for payment will be in accordance with the following tasks.

745-65.2 Furnish and Install: The Contract unit price per assembly for inductive loop assembly furnished and installed, includes loop wire, loop sealant and shielded lead-in cable, all equipment, materials, and labor necessary for a complete and accepted installation.

745-65.3 Furnish: The Contract unit price per assembly for inductive loop assembly, furnished, includes all components and materials as specified in the Contract Documents, plus all shipping, and handling costs involved in the delivery as specified in the Contract Documents.

745-65.4 Install: The Contract unit price per assembly for inductive loop assembly, installed, will include all materials and labor necessary for a complete and accepted installation.

The Engineer will supply the inductive loop assembly components as specified in the Contract Documents.

745-76 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, except conduit and pull and junction boxes.

Conduit will be paid for as specified in Section 630 and pull and junction boxes will be paid for as specified in Section 635.

Payment will be made under:

Item No. 745- 70- TMS Inductive Loop Assembly - per assembly.

TRAFFIC MONITORING SITE INDUCTIVE LOOP ASSEMBLY.
(REV 1-10-13)

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