

ORIGINATION FORM

Date: **4-29-2014**

Originator: Ron Meyer

Contact Information: Traffic Engineering and Operations, Traffic Systems Section
850-410-5600

Specification Title: **PEDESTRIAN SIGNAL ASSEMBLIES**

Specification Section, Article, or Subarticle Number: 653

Why does the existing language need to be changed? Requirements previously contained in section A653 of the Minimum Specifications for Traffic Control Signals and Devices (MSTCSD) must be combined with content in Section 653 of the Standard Specifications for Road and Bridge Construction (SSRBC) as part of an ongoing project of the FDOT Central Office "Consolidation of Products and Specifications" (COPS) working group in conjunction with the C-team.

Summary of the changes: Move material requirements for pedestrian signal assemblies from A653 of the MSTCSD to Section 653 of the SSRBC.

Are these changes applicable to all Department jobs? If not, what are the restrictions? This requirement has typically been applicable to all jobs in the past, specifically those including pedestrian signal assemblies.

Will these changes result in an increase or decrease in project costs? If yes, what is the estimated change in costs? No increase or decrease in project costs is expected.

With who have you discussed these changes? In-house stakeholders (Traffic Engineering and Operations, Specifications, Construction, and Roadway Design staff).

What other offices will be impacted by these changes? Specifications and Estimates, Construction, Maintenance, and Roadway Design.

Are changes needed to the PPM, Design Standards, SDG, CPAM or other manual? No.

Is a Design Bulletin, Construction Memo, or Estimates Bulletin needed? No.

Contact the State Specifications Office for assistance in completing this form.

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ANANTH PRASAD, P.E.
SECRETARY

MEMORANDUM

DATE: July 17, 2014
TO: Specification Review Distribution List
FROM: Daniel Scheer, P.E., State Specifications Engineer
SUBJECT: Proposed Specification: **6530000 Pedestrian Signal Assemblies.**

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

This change was proposed by Alan El-Urfali of the State Traffic Engineering and Operations Office to consolidate material requirements from the Minimum Specifications for Traffic Control Signals and Devices (MSTCSD) and the Standard Specifications for Road and Bridge Construction (SSRBC). This activity is a planned part of an ongoing specification consolidation effort.

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 SP965DS, or daniel.scheer@dot.state.fl.us. Comments received after **August 14, 2014**, may not be considered. Your input is encouraged.

DS/dt
Attachment

PEDESTRIAN SIGNAL ASSEMBLIES.

(REV ~~4-29-14~~ ~~15-145-206-3-147-16-14~~)

SECTION 653 is deleted and the following substituted:

SECTION 653 PEDESTRIAN SIGNAL ASSEMBLIES

653-1 Description.

Install pedestrian signal assemblies as shown in the Plans and Design Standards, Index No. 17764. *Meet the requirements of Section 603.*

653-2 Materials.

653-2.1 General: Use ~~only~~ pedestrian signals ~~currently~~ listed on the Department's Approved Product List (APL). ~~Ensure that all equipment is marked in accordance with Section 603.~~ *Pedestrian signal assemblies must meet the requirements of the latest edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and the Institute of Transportation Engineers (ITE) standard for Pedestrian Traffic Control Signal Indications.*

653-2.2 Housing and Visor: *The housing must be weatherproof, sectional and may consist of as many sections as optical units. The housing must prevent light from escaping from one unit to another. The top and bottom opening of the housing must include a circular 72-tooth serrated connection (2 inch nominal I.D.) capable of providing positive positioning and alignment in 5 degree increments. When assembled and tightened, these connections must prevent rotation or misalignment. The serrated area must start at the outside of the 2 inch hole and be at least 1/8 inch wide. The teeth must have a minimum depth of 3/64 inch between peaks and valleys, free from burrs or other imperfections, and provide positive locking with the grooves of mating sections, framework, and brackets. The serration on the top circular connection of a signal section must have a valley at the 0 degree position and the serration on the bottom circular connection must have a peak at the 0 degree position, both aligned perpendicular to the front of the section. Housings must include latch pads and manual stainless steel latching devices that are captive, or non-removable. Housings must have at least two latching points.*

Reinforce all mounting points and adjacent housing material. The door enclosing the lens must be hinged and held securely to the housing. Provide a gasket meeting the requirements of ASTM D1056, Grade 2B2 between the housing and door and between the lens and door. If the fitting between the housing and door is weather-tight, the gasket may be omitted.

Provide a visor for each signal face. Light must not escape between the door and visor. The visor must be three-sided and extend a minimum of 7 inches at the top from the face of the lens. The visor must be constructed of noncorrosive sheet metal, not less than 0.05 inch thick, (No. 18 gauge in thickness) or polycarbonate.

All metal housings and visors must be powder-coat painted black in accordance with Military Standard MIL-PRF-24712A or AAMA-2603-02 with a reflectance value not exceeding 25 percent as measured by ASTM E97. For polycarbonate heads, the black color must be incorporated into the material before the molding process.

The housing must be constructed of a non-corrosive material. Cast metal parts must have a minimum tensile strength of 1 ksi (117 MPa) and sheet metal parts a minimum tensile strength of 27 ksi (186 MPa).

653-2.2.1 Die castings: *Meet the requirements in ASTM B85 for the physical characteristics and chemical content for alloys S12A, S12B, SC84A, SC84B, SG100A and SG100B.*

653-2.2.2 Sand Castings: *Meet the requirements in ASTM B26 for the physical characteristics and chemical content for alloys S5A and CS72A.*

653-2.2.3 Permanent mold castings: *Meet the requirements in ASTM B108 for the physical characteristics and chemical content for alloys S5A and CS72A.*

653-2.2.4 Polycarbonate: *Polycarbonate housing assemblies, doors and visors must be molded from ultraviolet stabilized polycarbonate plastic with a minimum thickness of 0.1 inches, plus or minus 0.01 inch, and provide the following physical properties:*

<i>Table 1</i>		
<i>Test</i>	<i>Minimum Requirement</i>	<i>Method</i>
<i>Specific Gravity</i>	<i>1.17</i>	<i>ASTM D 792</i>
<i>Vicat Softening Temp.</i>	<i>305-325°F (152 – 163°C)</i>	<i>ASTM D 1525</i>
<i>Brittleness Temp.</i>	<i>Below -200°F (-129°C)</i>	<i>ASTM D 746</i>
<i>Flammability</i>	<i>Self-extinguishing</i>	<i>ASTM D 635</i>
<i>Tensile Strength</i>	<i>Yield, 8500 psi (58 MPa)</i>	<i>ASTM D 638</i>
<i>Elongation at yield</i>	<i>5.5 - 8.5%</i>	<i>ASTM D 638</i>
<i>Shear Strength</i>	<i>Yield, 5500 psi (38 MPa)</i>	<i>ASTM D 732</i>
<i>Izod impact strength</i>	<i>15ft-lb/in (800 J/m)</i>	<i>ASTM D 256</i>
<i>Fatigue strength</i>	<i>950 psi (6.5MPa) at 2.5 mm cycles</i>	<i>ASTM D 671</i>

653-2.3 Light Emitting Diode (LED) Pedestrian Signal Optical Unit (State Standard): *Provide a countdown pedestrian signal module meeting the requirements of the latest ITE LED Pedestrian Signal Specifications.*

653-2.4 Electrical: *Wiring must be color-coded No. 18 AWG or larger, stranded wires with an approved 600 V outdoor insulation rating or equivalent. Wires must be a minimum of 3 feet long with self-insulating slide-on terminals with no bare wiring exposed where wires are secured.*

The pedestrian signal must include a terminal block containing a minimum of five circuits, each with two noncorrosive screw-type terminals. Each terminal must accommodate three No. 18 AWG conductors and be labeled for ease of identification. The terminal block must not be obstructed and be visible when the housing is open.

653-2.5 Hardware: *All brackets used to mount pedestrian signals must be an aluminum alloy cast fitting, pipe or equivalent material approved by the Department. Aluminum and aluminum alloy bars, rods, wires, profiles, and tubes must meet ASTM B221. Aluminum-alloy sand casting must meet ASTM B26. All mounting hardware must be painted black with a reflectance value not exceeding 25 percent as measured by ASTM E97.*

Ensure that all assembly hardware, including nuts, bolts, external screws and locking washers less than 5/8 inch in diameter, are Type 304 or 316 passivated stainless steel. Stainless Steel bolts, screws and studs must meet ASTM F593. Nuts must meet ASTM F594. All

assembly hardware greater than or equal to 5/8 inch in diameter must be galvanized. Bolts, studs, and threaded rod must meet ASTM A307. Structural bolts must meet ASTM A325.

653-3 Installation.

653-3.1 General: Use pedestrian signal assemblies capable of being maintained, adjusted, ~~or~~ *and* disassembled with ordinary hand tools. Pre-assemble the pedestrian signal, *with the exception (not of mounting hardware)*, prior to installation at the site. ~~Connect the proper signal cable wires to the proper connections in the pedestrian housing in order to provide the~~ *Construct the pedestrian signal assembly (including the mounting hardware) to be a weather-tight unit and ensure* proper signal indication display *after installation*. Conceal all conductors. ~~Construct the pedestrian signal assembly (including the mounting hardware) to be a weather-tight unit.~~

653-3.2 Placement: ~~Install the pedestrian signals at a location and mount them in the manner as shown in the Plans. Consider the Plans to be sufficiently flexible as to allow for unanticipated field conditions at the site. The Engineer will direct all variation from the locations shown. Mount pedestrian signals with bottom of housing not less than 8 feet (standard) or more than 10 feet above the sidewalk level. Position pedestrian signals and all mounting assembly members as either plumb or level, and symmetrically arranged. Properly aim the~~ *Align* signals in the line of the pedestrian's vision for the crosswalk being used.

653-3.3 Installation Sequence: Install all pedestrian signal assemblies at any intersection as a single operation unless a staged operation is approved by the Engineer. Do not install signals at any intersection until all other signal equipment, including the controller, and pedestrian detectors, are in place and ready for operation, unless completely covered, in accordance with 650-3.810. ~~Ensure that the cover remains in place until the pedestrian signal is placed into operation.~~

653-4 Method of Measurement.

~~**653-4.1 General:** Pedestrian signal assemblies will include any hardware necessary to make a complete installation and may include one or more pedestrian signals, as specified in the Contract Documents, including the appropriate mounting hardware.~~

~~Measurement for payment will be in accordance with the following work tasks.~~

~~**653-4.2 Furnish and Install:** The Contract unit price per assembly for pedestrian signal *assembly*, furnished and installed, (including mounting hardware but not including pedestals) will include all materials and equipment as specified in the Contract Documents, and all labor and materials necessary for a complete and accepted installation.~~

Payment for removal of pedestrian signal will be made only when the pole/pedestal is to remain. Removal of all other pedestrian signals will be incidental to the removal of the pole or pedestal.

~~**653-4.3 Furnish:** The Contract unit price per assembly for pedestrian signal, furnished, will include the cost of the assembly including all mounting hardware as specified in the Contract Documents, plus all shipping and handling costs involved in delivery as specified in the Contract Documents.~~

~~The Contractor shall deliver the pedestrian signal assembly in a pre-assembled state. The Contractor shall package and ship component parts of the assembly in accordance with the manufacturer's instructions to minimize the potential for damage during shipment.~~

~~**653-4.4 Install:** The Contract unit price per assembly for pedestrian signal, installed, will consist of all labor necessary to assemble all components for complete and accepted installation.~~

~~The Engineer will supply pedestrian signal assembly (including all mounting hardware) as specified in the Contract Documents. The Contractor shall furnish all conduit, risers, lead-in wires, posts or miscellaneous materials needed to complete the installation as specified in the Contract Documents.~~

653-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section.

Payment will be made under:

Item No. 653- Pedestrian Signals - per assembly.