ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 04/05/2021

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Office: Materials

Specification Section: 965

Article/Subarticle:

Associated Section(s) Revisions:

Will the proposed revision require changes to:

Publication	Yes	No	Office Staff Contacted
Standard Plans Index	○	◉	Rick Jenkins 4/14/2021
Traffic Engineering Manual	○	◉	Javier Ponce 4/14/2021
FDOT Design Manual	○	◉	Bobby Bull 4/14/2021
Construction Project Administration Manual	○	◉	Scott Arnold 4/14/2021
Basis of Estimate/Pay Items	○	◉	Melissa Hollis 4/14/2021
Structures Design Guidelines	○	◉	Ben Goldsberry 4/14/2021
Approved Product List	○	◉	Karen Byram 4/14/2021
Materials Manual	○	◉	Tim McCullough 4/14/2021

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction Bulletin** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Are all references to external publications current? **Yes** ◉ **No** ○

If not, what references need to be updated? (Please include changes in the redline document.)

Why does the existing language need to be changed?

The current Specifications did not meet the external publications, the design standard plans, or the ASTMs. The Specification was out of date and needed to be revised to become a current document that will meet project needs and provide the ability for a quick review of project requirements.

Summary of the changes:

Changed the numbering (sub-section) related the warranty paint requirements from 965-5 to 965-3, due to a reduction in the overall specification. Updated the welding code requirements throughout the document to meet current Code requirements. Introduced material requirements related to fabrication and performance of specific components that reference

Are these changes applicable to all Department jobs? **Yes** ◉ **No** ○

If not, what are the restrictions?

Contact the State Specifications Office for assistance in completing this form.
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M E M O R A N D U M

DATE: December 2, 2021

TO: Specification Review Distribution List

FROM: Daniel Strickland, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **9650000 General Provisions for Aluminum Items (Including Welding).**

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

This change was proposed by Tim McCullough from the State Materials Office to update the language that will meet project needs and provide the ability for a quick review of project requirements.

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 online at http://fdotewp1.dot.state.fl.us/programmanagement/development/industryreview.aspx . Comments received after **December 30, 2021,** may not be considered. Your input is encouraged.

DS/ra

Attachment

GENERAL PROVISIONS FOR ALUMINUM ITEMS (INCLUDING WELDING)
(REV 11-10-21)

SECTION 965 is deleted and the following substituted:

965-1 General.

This Section covers the material and fabrication requirements for aluminum components. All aluminum light poles, J-arms, and railings supplied under this Specification shall be from producers currently on the Department's Production Facility Listing. Producers seeking inclusion on the Department's Production Facility Listing must meet the requirements of Section 105.

965-2 Fabrication.

Provide fabricated components in accordance with AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, the Design Plans, and this section. Verify the strength of each Lot by tensile test. Alternate testing will not be accepted. ~~Provide certifications as specified in 965-4, upon request.~~ Protect against damage and marring during transit and delivery.

Table 965-1
Material Requirements for Aluminum Components

Product	Test Method	Alloy/Temper	Reported Properties
Pole, Arm, Extrusions	ASTM B221	6061-T6	Alloy, Temper, Thickness, Tensile Strength
		6063-T6	
Pedestal, Posts	ASTM B429	6061-T6	
Bars, Plates, Stiffeners, Backing Ring, Shims, Shapes	ASTM B221	6063-T6	
	ASTM B209	6061-T6	
Railing	ASTM B221	6351-T5	
	ASTM B241	6061-T6	
	ASTM B210		
	ASTM B429		
J-Arm Tube	ASTM B429	6061-T6	
	ASTM B221		
J-Arm Connection Plate	ASTM B209	6061-T6	
Sheet	ASTM B209	6061-T6 5154-H38 5052-H38	
Structural Shapes	ASTM B308	6061-T6	
Single Column Ground Sign Sand Castings	ASTM B26	A356-T6	
	ASTM B108		

965-2.1 Light Poles: Provide aluminum lighting poles in accordance with this section and Table 965-1. Weld arms and poles in the T4 condition, using the filler metal ER4043,

ER4047, ER5183, ER5356, or ER5556 in accordance with AWS D1.2 Aluminum Structural welding Code. Weld to castings in accordance with 965-2.3. Heat treat the arm and pole, until aged to the T6 condition. Transverse welds are only allowed at the base. Equip poles with a vibration damper, when specified in the contract documents.

Provide exterior surface with a clean, uniform silvery appearance, free of dark streaks and discoloration. Finish the pole and arm with a satin rubbed finish.

965-2.2 Overhead Sign Components: Provide aluminum toll gantry J-arms in accordance with this section and Table 965-1. Weld tube to plate connections in the T4 or T6 condition, using the filler metal ER4043, ER4047, ER5183, ER5356, or ER5556 in accordance with AWS D1.2 Aluminum Structural welding Code. Heat treat tube and plate in the T4 condition until aged to the T6 condition.

Provide exterior surface with a clean, uniform silvery appearance, free of dark streaks and discoloration.

965-2.3 Castings: Provide aluminum castings in accordance with this section and Table 965-1. Weld aluminum castings to itself or aluminum tube to castings using the filler metal ER4043, in accordance with AWS D1.2 Aluminum Structural welding Code. Heat treat the castings, until aged to the T6 condition.

965-2.4 Railing: Provide aluminum railing in accordance with this section and Table 965-1. Weld aluminum railing using the filler metal ER4043, ER4047, ER5183, ER5356, or ER5556 in accordance with AWS D1.2 Aluminum Structural welding Code.

965-2.5 Static Sign Assemblies: Provide aluminum sheet, plate and structural shapes in accordance with this section and Table 965-1. Weld structural profiles to itself or aluminum components using ER4043, ER4047, ER5183, ER5356 or ER5556 in accordance with AWS D1.2 Aluminum Structural Welding Code. Heat treat the structural profiles, until aged to the T6 condition.

965-2.6 Transformer Bases (Excluding Lighting):

965-2.6.1 Product Acceptance: Manufacturers seeking evaluation of products for inclusion on the APL shall submit an application in accordance with Section 6 and include the following documentation, showing that the product meets the applicable requirements.

Table 965-2
Submittal Compliance Requirements

Documentation	Requirements
Certified Test Report	Shows that product meets Moment Capacity
Installation Instructions	Include installation instructions
Product Identification Photo	Display’s the manufacturer’s name or logo and the model number.
Product Photo	Displays the significant features of the product as required in this section.
Technical Data Sheet or Product Drawing	Uniquely identifies the product and includes product details, notes, material specifications, dimensions, and sizes meeting the specification

965-2.6.2 Physical Requirements: Meet the requirements of Table 965-3

~~Table 965-1~~ ~~Material Requirements for Aluminum Components~~				
~~Product~~	~~ASTM~~	~~Alloy/Temper~~	~~Reportable Properties~~	~~Supplementary Requirements~~
~~Pole, Arm, Extrusions~~	~~B221~~	~~6061-T6~~	~~Alloy, Temper, Thickness~~	~~Report Tensile Strength~~
		~~6063-T6~~		
~~Bars, Plates, Stiffeners, Backing Ring, Shims, Shapes~~	~~B221~~	~~6063-T6~~		
	~~B209~~	~~6061-T6~~		
~~Castings~~	~~B26~~	~~356-T6~~		
	~~B108~~			
~~Railing~~	~~B221~~	~~6351-T5~~		
		~~6061-T6~~		
	~~B241~~			
	~~B210~~			
	~~B429~~			
~~J-Arm Tube~~	~~B429~~	~~6061-T6~~		
	~~B221~~			
~~J-Arm Connection Plate~~	~~B209~~	~~6061-T6~~		
~~Sheet~~	~~B209~~	~~6061-T6~~ ~~5154-H38~~ ~~5052-H38~~		
~~Structural Shapes~~	~~B308~~	~~6061-T6~~		

Table 965-3 Physical Requirements for Transformer Base		
Feature	Requirement	Documentation
Height	Base is 12 to 18 inches in height	Technical Data Sheet or Product Drawing
Base Material	ASTM B26, 356 T6 or 319	Technical Data Sheet or Product Drawing
Threaded Hub	Hub located at the top for mounting a nominal 4-inch Schedule 40 (4-1/2-inch outside diameter) aluminum pole. The threaded hub must be tapped to allow full pole engagement.	Technical Data Sheet or Product Drawing
Fastening	Provides for fastening to a foundation with four 3/4-inch anchor bolts located 90 degrees apart. The base design must allow for bolts that are placed off-center.	Technical Data Sheet or Product Drawing

Door Size	Provides a door opening of not less than 8 inches by 8 inches.	Technical Data Sheet or Product Drawing
Door Material	The door must be constructed of fiberglass or other non-combustible, non-aluminum material.	Technical Data Sheet or Product Drawing
Door Attachment	Attach the door to the base with cleats and one stainless steel socket button head screw or by other means suitable for NEMA 3 electrical enclosures.	Technical Data Sheet or Product Drawing
Moment Capacity	Supports an ultimate moment capacity of 10,000 foot-pounds, without breaking, cracking or rupturing in any manner.	Certified Test Report
Breakaway	Meets the requirements in the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.	FHWA Eligibility Letter.

965-3 Paint for Poles, Pedestals, and Posts.

Paint systems used on aluminum poles, pedestals, and posts shall meet the color requirements as specified in the Contract Documents. All paint systems shall possess physical properties and handling characteristics that are compatible with the application requirements of Section 646. Materials shall be specifically intended for use over aluminum. Paint systems shall exhibit no loss of adhesion or total color difference (ΔE^*_{ab}) greater than 8.0 units for five years after final acceptance as specified in 5-11. An aluminum pole, pedestal, post, or sign panel that exhibits a cumulative surface area of delamination in excess of 50 square inches will constitute an adhesion failure. Delamination shall be defined as any area of exposed metal surface subsequent to hand tool cleaning. A ΔE^*_{ab} value exceeding 8.0 units per the International Commission on Illumination L*a*b* 1976 (CIELAB) space and color difference formula, measured in accordance with ASTM D2244, will constitute a color retention failure.

The Department will measure and enter in the Department's database the CIELAB color chromaticity coordinates for the color of the top coat of sample coupons provided as required by 646-2.7 using a BYK-Gardner Handicolor colorimeter using D65 illuminant and 2-degree geometry settings. The Department-measured CIELAB chromaticity coordinates shall define the initial color and will be used for resolution of color retention failures and the resolution of color retention disputes.

965-4 Certification.

Produce a certificate of compliance for ~~all aluminum castings~~ non-APL products, upon request of the Engineer. ~~Produce other certificates of compliance at the request of the Engineer.~~ Certificates of compliance shall identify the reportable properties of Table 965-1~~that the material has been sampled and tested in accordance with the applicable ASTM and shall include the reportable properties and supplementary requirements of the applicable Sections listed above~~.