

EXPECTED IMPLEMENTATION JANUARY 2022

965 GENERAL PROVISIONS FOR ALUMINUM ITEMS (INCLUDING WELDING)

(REV 8-9-21) (FA 8-9-21) (1-22)

SECTION 965 is deleted and substituted by the following:

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.

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

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accordance with AWS D1.2 Aluminum Structural Welding Code. Heat treat the structural profiles, until aged to the T6 condition.

| 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 | | |
| | B241 | 6061-T6 | | |
| | 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 | | |

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

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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. Produce other certificates of compliance at the request of the Engineer. Certificates of compliance shall identify 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.

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