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646 ALUMINUM POLES, PEDESTALS, AND POSTS.
(REV 7-15-15) (FA 8-24-15) (1-16)

SECTION 646 is deleted and the following substituted:

SECTION 646
ALUMINUM POLES, PEDESTALS, AND POSTS

646-1 Description.

Furnish and install aluminum poles, pedestals, and posts at the locations shown in the Plans and in accordance with the details shown in the Plans and Design Standards. An aluminum pedestal consists of a pole and a transformer base.

646-2 Materials.

646-2.1 Poles and Posts: Use nominal 4 inch diameter Schedule 40 aluminum poles and posts meeting the requirements of The Aluminum Association Alloy 6061-T6 and ASTM B241. Poles used with transformer bases must be threaded with No. 8 NPT threads. Sufficient threads are required to fully seat the pole into the hub of the pedestal base.

646-2.2 Transformer Base: Use transformer bases listed on the Department's Approved Product List (APL).

Manufacturers seeking APL approval of proprietary transformer bases must submit an application in accordance with Section 6, independent laboratory test report, and calculations and drawings showing details, notes, materials, dimensions, and sizes that the transformer base meets the following requirements:

1. Materials: Meets the material requirements of Aluminum Association Alloy 319 or 356-T6 and ASTM B26 or ASTM B108.
2. Height: Base is 12 to 18 inches in height with a threaded hub at the top for mounting a nominal 4 inch Schedule 40 aluminum pole. The threaded hub must be tapped to allow full pole engagement.
3. Fastening: Provides for fastening to a foundation with four 3/4 inch anchor bolts located 90 degrees apart and a bolt circle diameter of 14 inches. The base design must allow for bolts that are placed off-center.
4. Door: Provides a door opening of not less than 8 inches by 8 inches. The door must be constructed of fiberglass or other non-combustible, non-aluminum material. 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.
5. Moment Capacity: Supports an ultimate moment capacity of 10,000 foot-pounds. Provide certified test reports from the manufacturer verifying that each base model meets the moment capacity without breaking, cracking or rupturing in any manner.
6. Breakaway: Meets the requirements in the latest revision of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Provide the FHWA certification letter for product approval.
7. Identification: Is legibly and visibly marked with the manufacturer's name or logo and the model number.

646-2.3 Anchor Bolts: Provide ASTM F1554 Grade 55 right angle bend anchor bolts, 3/4 inch diameter, 18 inches long, 3 inch leg and with a 5 inch UNC thread length. For each bolt, provide two 3/4 inch ASTM A563 Grade A heavy hex nuts and one 3/16 inch thick by 3 inch

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round ASTM A36 plate washer or one ASTM F436 Type 1 washer. Anchor bolts, washers and hex nuts must be galvanized in accordance with ASTM F2329.

646-2.4 End Caps: Provide end caps sized for nominal 4 inch diameter Schedule 40 aluminum poles. The cap must be a minimum of 1/4 inch thick and tapped for at least two set screws. Set screws will be provided with the end cap.

646-2.5 Shims: Provide U-shaped galvanized steel shims 2 inches wide by 2-1/2 inches long, shaped to fit around a 3/4 inch anchor bolt.

646-2.6 Concrete: Use Class 1 concrete meeting the requirements of Section 346.

646-3 Installation.

646-3.1 General: Verify the length of the column supports in the field prior to fabrication to permit the appropriate sign or signal height.

646-3.2 Foundations: Construct foundations in accordance with the applicable Design Standards.

The Contractor may use precast foundations in augered or excavated holes that are a minimum of 12 inches larger than each axis dimension of the precast foundation. The holes must be clean and without loose material. Obtain precast foundations from a manufacturing plant that is currently listed on the Department's list of Producers with Accepted Quality Control Programs. Producers seeking inclusion on the list shall meet the requirements of 105-4.4. Fill the voids around precast foundations with flowable fill meeting the requirements of Section 121 or clean sand placed using hydraulic methods to a level of 6 inches below grade.

646-3.3 Setting Anchor Bolts: Set anchor bolts 90 degrees apart with a bolt circle diameter of 14 inches. Adjust anchor bolts to a plumb line and hold rigidly in position to prevent displacement while pouring concrete.

646-3.4 Installation: Do not erect poles until the concrete strength is at least 2500 psi. Plumb the poles after erection using shims if necessary to obtain precise alignment.

646-3.5 Grounding: Meet the requirements of Section 620 and the applicable Design Standards.

646-4 Method of Measurement.

The Contract unit price per each for aluminum pedestals and posts, furnished and installed, 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 aluminum poles will include the complete removal of the pole and foundation, pedestrian detector and pedestrian signal. Separate payment for the removal of the pedestrian detector and pedestrian signal will be made only when the pole/pedestal is to remain.

Payment for grounding will be incidental to the pedestal or post.

646-5 Basis of Payment.

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

Payment will be made under:

Item No. 646- Aluminum Poles - per each.