

# Special Specification 6127

## Camera Pole Structure



### 1. DESCRIPTION

Provide camera pole designed, fabricated, and delivered as described in this specification and as shown on details found in plans. Design to conform to AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," with Interim Specifications thereto and with additional interpretations as applied by the Department.

### 2. CONSTRUCTION

2.1. **General.** Construct the structure according to this specification and instructions on the plans.

2.2. Fabricate and weld in accordance with Item 441, "Steel Structures." Ensure that all welded joints develop the full required strength of the member.

2.3. Submit two prints of the shop drawings showing the fabrication and erection details for each support to the Engineer.

Prepare the drawings on sheets 22 x 34 in. in size, with 1-1/2 in. left margin and other margins of 1/2 in.

Include on each sheet a title in the lower right corner which includes the same sheet index data shown in the lower right corner of the project plans, names of the fabricator and contractor, and sheet numbering.

Submittal of drawings for only one support is acceptable when 2 or more supports in the submittal are of identical design and dimensions.

The Contractor is responsible for the correctness and completeness of the drawings and for shop fit and field connections, even after the drawings are approved by the Department.

2.4. Fabricate the camera pole to a design wind speed of 100 MPH plus a 1.3 gust factor. Inscribe the wind speed permanently on a surface visible after erection of the pole base plate.

#### 2.5. **Anchor Bolts.**

2.5.1. Provide anchor bolts that conform to the requirements in the standard drawings and comply with the requirements of ASTM A36 if 1 in. or less in diameter, and with ASTM A193-B7 or A687 if greater than 1 in. in diameter. If designated A36M55, provide bolts that comply with the requirements of Item 449, "Anchor Bolts," Article 449.3 "Medium-Strength, Mild Steel Anchor Bolts." Dimensions are based on the foundation size and design wind speed specified on the plans.

2.5.2. Install anchor bolts with standard nut anchorage. Provide nuts that comply with the requirements of ASTM A563 Grade A or better, heavy hex. Provide washers that comply with the requirements of Item 447, "Structural Bolting."

2.5.3. Provide two circular steel templates for each assembly, shipped without the anchor bolts attached if necessary. Tack weld the lower nut to the lower template. The upper template may be re-used providing it stays in place until the concrete has achieved its initial set.

- 2.5.4. Galvanize or paint the upper 14 in. of all anchor bolts. If painted, use 2 coats of a zinc-rich coating containing a minimum of 95% zinc and meeting Federal Specification DOD-P-21035A. Galvanize or paint with the same zinc rich paint any exposed nuts. Use galvanized washers.
- 2.5.5. Provide anchor bolts whose threads are rolled or cut according to unified coarse thread series except for ASTM A193-B7 bolts which are 8 pitch thread series. If rolled, ensure that the diameter of the unthreaded portion is not be less than the minimum pitch diameter nor more than the maximum major diameter of the threads. Ensure that threads have Class 2 fit tolerances. Tap galvanized nuts after galvanizing.
- 2.5.6. Coat threads of anchor bolts with pipe joint compound prior to installation of upper nuts when erecting pole. After poles are plumbed and in permanent alignment, clean the exposed upper threads of painted bolts and apply an additional coating of zinc-rich paint to seal the bolt thread-nut joint.
- 2.5.7. Provide mill test reports and/or laboratory test certifications to show that the materials conform to these requirements.

2.6. **Poles.**

Provide a tapered shaft for the pole. An octagonal shaft is permissible. Circumferential welds, other than at the ends of the shafts, are not permitted. Grind or smooth the exterior of longitudinal seam welds to the same appearance as other shaft surfaces. Weld longitudinal seam welds with a minimum of 60% penetration and with complete penetration when within 6 in. of circumferential base welds. Construct pole section with a maximum of 2 longitudinal seam welds. Use low hydrogen electrodes, or the equivalent in wire and flux for automatic welding. Preheat components before welding pole to the base plate in accordance with ANSI/AWS D1.1 Structural Welding Code.

Provide material for pole shafts that conforms to the requirements in the standard drawings and complies with the requirements of ASTM A570 Grade 50, or A572 Grade 50, or A607 Grade 50, or A595 Grade A, or if designated A36M50 with the requirements of Item 442, "Metal for Structures." Ensure that materials supplied under the A570 Grade 50 or A595 Grade A specifications meet their associated chemical and bend test requirements with the further stipulation that the materials must meet a minimum yield of 50 ksi and a minimum elongation of 18% in 8 in. or 23% in 2 in. prior to brake or tube forming operations. A570 Grade 50 material in thicknesses up to 5/16 in. is also acceptable providing it meets the above stated chemical, bend test, yield, and elongation requirements. A595 Grade A material which can be shown by tests to have a minimum of 50 ksi yield adjacent to base welds after fabrication will also be acceptable.

Provide mill test reports and/or laboratory test certifications show that the materials conform to these requirements.

Secure a galvanized metal cap to the top of all poles using galvanized or stainless steel welds.

2.7. **Finish.**

Provide a galvanized camera pole.

Round or chamfer to approx. 1/16 in. all sheared or cut edges and all other exposed edges that are to be painted or galvanized.

Provide proper filling, venting, and draining during the cleaning and galvanizing operations for camera poles required to be hot-dip galvanized.

Hot dip galvanize all parts, with the exception of the lower portion of the anchor bolts, nut anchorages, and the top and bottom templates, after fabrication in accordance with ASTM A123. Ensure that all screws, nuts, bolts, washers, shims, and the upper portion of the anchor bolts if galvanized are in conformance with the specifications of ASTM A153, Class C or D, unless otherwise specified. Repair any part of the camera pole assembly, from which the galvanizing has been knocked or chipped to bare metal in fabrication or transit, by

applying galvanizing-repair compounds in accordance with the manufacturer's recommendations. Ensure a neat appearance of the assembly after the galvanizing repair is completed.

2.8. **Delivery.**

The use of the detailed drawings does not relieve the supplier of the responsibility for providing proper fit of camera pole assembly components.

Furnish from the supplier 2 copies of mill certificates reflecting the physical and chemical properties of the base metal of the pole, base plate, and anchor bolts. Also, provide four certified copies of the galvanizing test report.

Identify all items of a shipment with a weatherproof tag. At a minimum, include on tag the manufacturer, contract number, and date and destination of shipment.

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3. **MEASUREMENT**

This Item will be measured as each unit complete in place, excluding foundations.

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4. **PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided for under "Measurement" will be paid for at the unit price bid for "Camera Pole Structure." This price will be full compensation for furnishing, fabricating, and erecting the camera pole structure; for furnishing and placing anchor bolts, nuts and washers; for furnishing and placing electrical conduit in the foundation; and for all the other details and incidentals necessary to provide a camera pole structure in accordance with the specifications, plans and approved shop drawings, complete in place and ready for the attachment of the camera, except as shown below.

Foundations will be paid for under Item 416, "Drilled Shaft Foundations."