

SECTION 16686  
TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL)

PART 1 DESCRIPTION

1.01 INSTALLATION

- A. Fabricate, furnish, and erect steel cantilever traffic signal pole assemblies.

1.02 RELOCATION

- A. Remove and relocate steel cantilever traffic signal pole assemblies.

PART 2 MATERIALS

- A. Provide new materials that comply with the details shown on the plans, the requirements of this Item, and the pertinent requirements of the following Items:
  - 1. Item 16421, "Hydraulic Cement Concrete"
  - 2. Item 16441, "Steel Structures"
  - 3. Item 16442, "Metal for Structures"
  - 4. Item 16445, "Galvanizing"
  - 5. Item 16449, "Anchor Bolts."
- B. Furnish alloy steel or medium-strength mild steel anchor bolts in accordance with Item 16449.2.A, "Bolts and Nuts."

PART 3 CONSTRUCTION

3.01 STANDARD DESIGN

- A. Alternate designs are not acceptable. Deviations that affect the basic structural behavior of the pole are considered to be alternate designs. For deviations that do not affect the basic structural behavior of the pole, submit 7 sets of shop drawings to the Owner's Representative for approval.

3.02 FABRICATION

- A. Fabricate and weld in accordance with Item 16441, "Steel Structures"; AWS D1.1, Structural Welding Code—Steel; and the requirements of this Item. Fabrication tolerances are given in Table 1.

**Table 1  
Fabrication Tolerances**

<b>Part</b>	<b>Dimension</b>	<b>Tolerance (in.)</b>
Pole and mast arm shaft	Length	±1
	Thickness	+0.12, -0.02
	Difference between flats or diameter	±3/16
	Straightness	1/8 in 10 ft.
	Attachment locations	±1
Base and mast arm mounting plates	Overall	±3/16
	Thickness	+1/4, -0
	Deviations from flat	3/16 in 24 in.
	Spacing between holes	±1/8
	Bolt hole size	±1/16
Anchor bolts	Length	±1/2
	Threaded Length	±1/2
	Galvanized Length	-1/4
Assembled shafts	Angular Orientation	1/16 in 12 in. <sup>1</sup>
	Centering	±3/16
	Twist	3° in 50 ft.

1. 1/8 in 12 in. between mounting plates and between mounting plates and base plates.

- B. Provide properly fitting components. Provide octagonal shafts for poles and mast arms tapered as shown on the plans. Fabricate mast arms straight in the unloaded condition unless otherwise shown on the plans. The Owner's Representative will accept bolted slip joints overlapping by at least 1.5 diameters in mast arms 40 ft. and longer.
- C. Provide circumferential welds only at the ends of the shafts. Provide no more than 2 longitudinal seam welds in shaft sections. Grind or smooth the exterior of longitudinal seam welds to the same appearance as other shaft surfaces. Ensure 100% penetration within 6 in. of circumferential base welds and at least 60% penetration at other locations along the longitudinal seam welds. Use a welding technique that minimizes acid entrapment during later galvanizing. Hot-dip galvanize all fabricated parts in accordance with Item 16445, "Galvanizing."
- D. Treat welds with Ultrasonic Impact Treatment as shown on the plans after galvanization and with the dead load (actual or simulated) applied. Repair damaged galvanizing in accordance with Section 16445.3.D, "Repairs."
- E. Connect the luminaire arm to the pole with simplex fittings. Ensure the fittings have no defects affecting strength or appearance.
- F. Ensure that the design wind speed is identified and permanently visible on the pole base plate and mast arm mounting plate.

- G. Deliver each traffic signal pole assembly with fittings and hardware either installed or packaged with its associated components. Ship all components with a weatherproof tag identifying the manufacturer, contract number, date, and destination of shipment.

### 3.03 INSTALLATION

- A. Locate traffic signal poles as shown on the plans unless otherwise directed to secure a more desirable location or to avoid conflict with utilities. Stake the traffic signal pole locations for verification by the Owner's Representative.
- B. Construct foundations in accordance with Item 16416, "Drilled Shaft Foundations." Orient anchor bolts as shown on the plans.
- C. Use established industry and utility safety practices when working near underground or overhead utilities. Consult with the appropriate utility company before beginning such work.
- D. Erect structures after foundation concrete has attained its design strength as required in the plans and Item 16421, "Hydraulic Cement Concrete." Coat anchor bolt threads and tighten anchor bolts in accordance with Item 16449, "Anchor Bolts."
- E. After the traffic signal pole assembly is plumb and all nuts are tight, tack-weld each anchor bolt nut in 2 places to its washer. Tack-weld each washer to the base plate in 2 places. Do not weld components to the bolt. Tack-weld in accordance with Item 16441, "Steel Structures." After tack-welding, repair galvanizing damage on bolts, nuts, and washers in accordance with Section 16445.3.D, "Repairs."
- F. Do not grout between the base plate and the foundation.

### 3.04 RELOCATION

- A. Disconnect and isolate traffic signal cables before removing the pole. Remove existing traffic signal poles as directed. Ensure that the poles or attached components suffer no undue stress or damage. Signs, signal heads, mounting brackets, luminaires, etc., may be left on the poles. Repair or replace damaged components as directed.
- B. Unless otherwise shown on the plans, remove abandoned concrete foundations to a point 2 ft. below final grade. Backfill the hole with materials equal in composition and density to the surrounding area. Replace surfacing material with similar material to an equivalent condition.
- C. Move existing poles to locations shown on the plans or as directed. Install existing poles on new foundations in accordance with Section 16686.3.C, "Installation."
- D. Accept ownership of unsalvageable materials and dispose of in accordance with federal, state, and local regulations.

## PART 4 MEASUREMENT

- A. This Item will be measured by each traffic signal pole assembly installed or relocated.

PART 5 PAYMENT

- A. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Install Traffic Signal Pole Assemblies (Steel)” of the types and sizes specified or “Relocate Traffic Signal Pole Assemblies (Steel)” of the types specified.
- B. New drilled shaft foundations will be paid for under Item 16416, “Drilled Shaft Foundations.”

5.02 INSTALLATION

- A. This price is full compensation for furnishing, fabricating, galvanizing, assembling, and erecting the pole upon a foundation; furnishing and erecting required mast arms and luminaire arms; furnishing and placing anchor bolts, nuts, washers, and templates; and equipment, materials, labor, tools, and incidentals.

5.03 RELOCATION

- A. This price is full compensation for removing traffic signal poles; removing existing foundations; backfilling and surface placement; storing the components to be reused or salvaged; furnishing, fabricating, and installing required new components; placing and securing traffic signal poles on new foundations; furnishing and placing conduit, ground rods, and wiring; disposal of unsalvageable material; loading and hauling; and equipment, material, labor, tools, and incidentals.

END OF SECTION