# POLES

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

Traffic signal mast arm poles, traffic signal pedestals, and overhead mounted street name and traffic control signs designated for installation in the project plans or by the Engineer.

## PART 2 - PRODUCTS

### 2.01 TRAFFIC SIGNAL POLES

A. Poles shall be manufactured in accordance with the requirements of the latest Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals as approved by the American Association of State Highway and Transportation Officials.

B. Unless otherwise specified in the plans, the traffic signal mast arm and pole assemblies shall be designed to support the number of signal heads and signs as shown on Figure 8010.20.

C. The mast arms and support poles shall be tapered, round, steel poles of the transformer base type. Mast arms shall be continuous to 50 feet in length. Vertical pole configuration shall provide for two-piece combination pole with internal tapped plate connection to allow for addition or removal of luminaire pole extension. The poles shall be fabricated from low carbon (maximum carbon 0.30%) steel of U.S. Standard gauge.

   After manufacture, they shall have a minimum yield strength of 55,000 PSI. The base and flange plates shall be of structural steel conforming to AASHTO M183 (ASTM A 36) and cast steel conforming to ASTM A 27, Grade 65-35 or better. It shall not be permissible to fabricate poles and mast arms by welding two sections together.

D. Welding and fabrication shall conform to the Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges. Longitudinal butt welds, shall have a minimum 60% penetration for plates 3/8 inch and less in thickness, and minimum of 80% penetration for pates over 3/8 inch in thickness.

   Personnel performing nondestructive testing shall be qualified in accordance with the American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A and applicable Supplements B (Magnetic Particle) and C (Ultrasonic). Evidence shall be presented for approval of the Engineer, concerning their qualifications. A report shall be required showing that welds have been inspected and either found satisfactory or found unsatisfactory but repaired and reinspected and found satisfactory. The cost of all nondestructive testing shall be paid by the Contractor and will be considered incidental to other items in the contract.

   The mast arms and pole assemblies shall be galvanized inside and out in accordance with ASTM A 123, latest revision.

E. The pole shall be equipped with a minimum 8 inch by 12 inch handhole and cover located in the transformer base of the pole. Securing of the cover to the base shall be done with the use of simple tools. Hardware shall be corrosion resistant.

## 2.01 TRAFFIC SIGNAL POLES (Continued)

F. Where a combination street lighting/signal pole is specified on the plans, the luminaire arm is to be mounted in the same vertical plane as the signal arm unless otherwise indicated on the plans. The luminaire arm type shall be a single member tapered type arm. The pole shall be equipped with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.

G. The mast arms and poles shall be equipped with all necessary hardware, shims and anchor bolts to provide for a complete installation without additional parts. The anchor bolts shall meet the requirements of ASTM A 36 or better and be hot dip galvanized for a minimum of 12 inches on the threaded end.

The anchor bolts shall be threaded a minimum of 6 inches at one end and have a 4 inch long, 90 degree bend at the other end.

H. The fabricator shall submit drawings, or preapproved show drawings, for anchor bolts and base design. All hardware shall be steel, hot dipped galvanized meeting the requirements of ASTM A 153, Class D or electrodeposited coated of the same coating thickness, and so designed for this purpose.

Traffic signal poles shall be detailed on shop drawings, or preapproved shop drawings by the manufacturer indicating pole and arm dimensions and attachment method along with signal weight, projected areas, and type of mounting that it is designed to accommodate. See Section 8010, Part 1, 1.04.

I. The fabricator shall certify that the mast arms and pole assemblies are capable of withstanding winds up to 80 MPH with a 1.3 gust factor without failure; that only certified welding operators in accordance with AWS D1.1-80 or latest revisions were used; and that only electrodes as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel for Highway Bridges were used.

## 2.02 TRAFFIC SIGNAL PEDESTALS

A. The pedestal shaft shall be fabricated of aluminum tubing with a wall thickness of not less than 0.125 inches. It shall have a satin brush or spun finish. The top of the shaft shall have an outer diameter of 4 1/2 inches and be provided with a pole cap.

B. The pedestal base shall be cast aluminum, square in shape, with a handhole. The size of the handhole shall be at least 4 inches by 6 inches and equipped with a cover which can be securely fastened to the shaft with the use of simple tools. Bases shall have a minimum weight of 20 pounds and shall have a four bolt pattern uniformly spaced on a 12 1/2 inch diameter bolt circle. The exterior of the base shall be smooth and have a neat appearance.

C. Four 3/4 inch by 15 inch hot rolled steel anchor bolts shall be supplied, complete with all hardware required for installation. The anchor bolts shall have a right angle bend at the bottom end and be hot dip galvanized at the threaded end.

D. The fabricator shall certify that the pedestals are capable of withstanding winds up to 80 MPH with a 1.3 gust factor without failure.

**2.03 SIGNS**

A. All traffic signs shall conform to the requirements of MUTCD.

B. Street name signs shall be white letters, Series C Caps, 8 inches high on a green background. The sign shall have a white border, 0.75 inches wide. The sheeting material for the signs shall be encapsulated lens sheeting.

**PART 3 - EXECUTION**

**3.01 TRAFFIC SIGNAL POLES**

A. Erect poles so as to be vertical under normal load, with mast arms oriented at 90 degrees to the curb line. Securely bolt bases to the cast-in-place concrete foundations.

B. After leveling the poles, expansive type grout shall be troweled between the pole base and the foundation for gaps of 1 inch or greater. Exposed edges of grout shall be neatly finished. Place a weep hole in the grout.

C. Ground each pole by installing a No. 6 A.W.G. bare copper ground wire between the pole and the ground rod at the foundation.

D. If the painted or galvanized surface of any equipment is damaged in shipping or installation, such equipment shall be retouched or repaired in a manner satisfactory to the Engineer.

**3.02 SIGNS**

Mount signs on the mast arms utilizing a universally adjustable mast arm mounted sign bracket.

END OF SECTION