

SIGNAL HEADS, PUSHBUTTONS, AND SIGNS**PART 1 - GENERAL****1.01 SECTION INCLUDES**

Traffic signal heads, signal lamps, pedestrian pushbuttons, and pushbutton signs designated for installation in the project plans or by the Engineer.

PART 2 - PRODUCTS**2.01 TRAFFIC SIGNAL HEADS**

- A. The housing for the individual signal sections shall be made of a durable polycarbonate clean, smooth, and free from flaws, cracks, blowholes, and other imperfections and containing no sharp fins or projections. The housing shall be a self-contained unit capable of separate mounting or inclusion in a signal face containing two or more signal sections rigidly and securely fastened together with openings and positive locking devices in the top and bottom so that it may be rotated between waterproof supporting brackets capable of being directed and secured at any angle in the horizontal plane. Provide doors and lenses with water-tight gaskets, hinges, and means to secure to the body of the housing by simple locking devices of non-corrosive material.
- B. The optical system shall prevent any objectionable reflection of sun rays. Lenses shall be polycarbonate.
- C. The visors section shall be durable polycarbonate not less than 0.10 inches in thickness designed to fit tightly against the door and not permit any perceptible filtration of light between the visor housing door. Visors shall be of the tunnel-type at least 8 inches long for 12 inches rectangular signals, at least 9 1/2 inches long for 12 inches diameter signals, and angle slightly downward.
- D. The reflector holder shall separately support the reflector and socket in proper relation to the lens. The reflector holder shall have one side hinged to the signal body and the other side held in place by a quick release mechanism. The reflector shall be mounted in a manner that does not require it to be removed from its normal position during bulb replacement. Both the hinge and the release mechanism shall be of a flexible nature which will permit the reflector holder to be pushed inwardly for at least one-sixteenth of an inch and to align itself correctly with the lens when the door of the optical unit is closed and pressed against the rim of the reflector holder. By such means, the joint between the reflector holder and the lens shall be rendered dust-tight. The reflector holder shall swing from the body section for access to the light socket without it being necessary to remove any screws or nuts. The reflector shall be Alzak treated aluminum or Lexalite^(C) polycarbonate. The reflector assembly shall be interchangeable and shall be designed so that it can be easily removed without the use of tools.
- E. The lamp receptacle shall be of the fixed focus type, positioning the lamp filament at the correct focal point in respect to the reflector. The assembly shall be designed so that the lamp socket can be rotated through 360 degrees and eight positions of adjustment for proper positioning of the lamp filament after relamping the signal. The lamp socket shall be equipped with color coded wire, either red, yellow, or green, depending upon the lens color of the section. The socket wires shall be a minimum of 26 inches long, composed of wire with insulation designed to withstand 105° C. Terminate the wiring leads with spade lugs. Equip the socket with a gasket to insure a dust-tight fit between the socket and reflector. When polycarbonate reflectors are furnished, gaskets shall be fabricated of silicone material.
- F. Equip each three section signal head with a six position terminal block and each five section signal head with an eight position terminal block for termination of field wiring.
- G. The signal heads, except door fronts and visors shall be federal yellow. Doorfronts and visors shall be black, except for City of Des Moines which shall be federal yellow. The color shall be an integral part of the materials composition.

2.01 TRAFFIC SIGNAL HEADS (Continued)

- H. Where shown on the plans, furnish and attach 5 inches backplates to the signal faces. Construct backplates of two piece durable black plastic capable of withstanding a 100 M.P.H. wind.

2.02 TRAFFIC SIGNAL LAMPS

- A. 135 Watt - 12 inches Traffic and Pedestrian Signal Heads:

Maximum Wattage	135 Watts
Light Center Length	3 inches
Rated Life	8,000 Hours
Rated Initial Lumens	1,750 Lumens
Rated Voltage	120-125 Volts
Fused Bulb	Yes

- B. 60 Watt - 9 inches Pedestrian Signal Heads:

Maximum Wattage	60 Watts
Light Center Length	2 7/16 inches
Rated Life	8,000 Hours
Rated Initial Lumens	610 Lumens
Rated Voltage	120-125 Volts
Fused Bulb	Yes

- C. The lamps shall have a standard medium screw type brass base and a clear glass envelope etched to show the manufacturer's insignia or trademark and the rated wattage.
- D. The filament shall be supported in a minimum of four (4) points to resist breakage of the filament from vibrations and handling.
- E. Each lamp shall contain a reflector disc located between the base and the filament to reflect light out of the front of the glass.
- F. Each lamp shall be gas-filled with Krypton(Kr) gas, with a minimum of ninety percent (90%) Krypton concentration by gas volume.

2.03 PEDESTRIAN PUSH BUTTONS

- A. Pedestrian push button detectors shall be the direct push contact type. The entire assembly shall be weather tight, secure against electrical shock, and able to withstand continuous hard usage. The contacts shall be normally open with no current flowing except at the moment of actuation. The housing shall be made of aluminum alloy and furnished with suitable mounting hardware.
- B. Furnish pushbutton signs conforming to the requirements of the MUTCD and consistent with the legend as shown on project plans.

PART 3 - EXECUTION**3.01 TRAFFIC SIGNAL HEADS**

- A. Signal mounting hardware for side of pole mounted signals shall consist of 1 1/2 inch pipe and appropriate fittings, each painted with one coat of primer and two (2) coats of federal yellow enamel. Signals shall be secured to pole by using a minimum 5/8 inch wide stainless steel banding material.
- B. Mast arm signal head assemblies shall be rigid mounted utilizing a suitable assembly consisting of both top and bottom brackets which are easily adjustable in both horizontal and vertical planes.

END OF SECTION