

836.04. CONSTRUCTION METHODS.

The regulatory or warning sign assembly shall be installed and connected to a power supply in accordance with the Plans.

836.05. METHODS OF MEASUREMENT.

The *regulatory or warning sign assembly* will be measured by the unit, complete in place, wired and connected to power as shown on the Plans.

836.06. BASIS OF PAYMENT.

The accepted regulatory or warning sign assembly, measured as provided above, will be paid for at the contract unit price for:

REGULATORY OR WARNING SIGN WITH FLASHER EACH

which shall be full compensation for furnishing all materials, equipment, labor and incidentals necessary to complete the work as specified.

**SECTION 850
SIGNS**

850.01. DESCRIPTION.

This work shall consist of furnishing and erecting, complete in place, signs in accordance with these Specifications and in reasonably close conformity with the Plans or established by the Engineer. Included are signs of sheet aluminum and extruded aluminum panels, all with a retroreflective or nonretroreflective sheeting background, and with steel or aluminum sign bracket arms, bolts, and fittings.

850.02. MATERIALS.

Materials shall meet the requirements of Section 719. All panel signs, blue signs, warning signs, and R1-1, R1-2, R5-1 and R5-1A signs shall have Type III high intensity retroreflective sheeting. All other permanent signs shall have Type II-A medium-high intensity retroreflective sheeting. Shop drawings shall be required and shall be approved by the Department prior to fabrication for all special signs.

850.04. CONSTRUCTION METHODS.

- (a) **Cleaning.** To insure proper bond of the sheeting adhesive, thoroughly clean sheet aluminum and extruded aluminum panel signs to remove grease, oil, and other contaminants prior to the application of retroreflective and nonretroreflective sheeting.
- (b) **Application of Retroreflective or Nonretroreflective Sheeting.** Apply sheeting to properly treated base panels with mechanical equipment in a manner as specified below. Class 2 adhesive coated sheeting shall be pre-perforated.

1. *Vacuum Application.* Apply retroreflective or nonretroreflective sheeting to all sheet sign faces by an approved vacuum applicator. The precoated adhesive on the back of the sheeting shall be activated by a minimum temperature of 185°F (85° C), and the sheeting shall be evenly attached to the sign face by the diaphragm of the vacuum applicator which applies continuous even pressure, and evacuates, with a minimum vacuum pressure of 10 psi (84.4 kPa), all air between the sheeting and the sign face to insure that there are no air pockets or bubbles. This operation shall be in accordance with the recommendations of the manufacturer of the retroreflective sheeting. After aging for 48 hours at 75°F (24 ° C), the adhesive shall form a bond equal to or greater than the strength of the retroreflective sheeting.
2. *Continuous Roll Application.* Apply the sheeting with Class 1 adhesive coating in a continuous operation over the entire surface of the sign so that the surface is free of air pockets or bubbles. The retroreflective sheeting for extruded panel signs shall extend approximately 1/4 inch (6.35 mm) over each side of the panel and shall be adhered to each side. The sheeting on extruded panels shall not have more than one splice per panel.
3. *Color Match.* Sign faces comprising two or more pieces or panels of retroreflective sheeting shall be carefully matched for color at the time of sign fabrication to provide uniform appearance and brilliance, both day and night.

NOTE: Nonuniform shading and an undesirable contrast between adjacent widths of applied sheeting will not be acceptable.

4. *Splices.* At splices, Class 1 adhesive coated sheeting shall be overlapped not less than 3/16 inch (4.76 mm). Class 2 adhesive coated sheeting shall be butt spliced, gap not to exceed 1/64 inch (0.397 mm). Only butt splices shall be used on any sign face that is screen processed with transparent color.

Maximum allowable splices of retroreflective sheeting on sheet metal signs:

24 inch (0.61 m) height sign and under - no splices

36 inch (0.91 m) height sign and larger - one horizontal or one vertical splice

- (c) **Finishing Signs.** Following the application of the retroreflective sheeting background on sheet metal signs, apply the messages and border by the silk screen process; when specified, use a cutout legend.

Seal all sign face splices and edges with materials supplied and in a manner specified by the sheeting manufacturer.

Use stick-on copy for legend, symbols, and borders on extruded panel signs.

The finished signs shall show careful workmanship and have a smooth and uniform light surface. All letters and numbers shall be clear and sharp.

NOTE: Do not permit sheet signs to become wet during shipment or storage.

- (d) **Location and Positioning of Signs.** Erect signs so the sign face is vertical and at a horizontal angle away from the direction of travel, as shown on the Plans. Take care in the erection of all signs to eliminate or minimize specular reflection.

NOTE: If specular reflection is apparent on any sign, adjust its positioning at no additional cost to eliminate or minimize this condition.

Align the lower edge of extruded panel signs on overhead trusses along the centerline of the

lower horizontal chord member. After installation of the signs is completed, they shall be further inspected at night by the Engineer.

850.05. METHOD OF MEASUREMENT.

Signs will be measured by the square foot (square meter) of area of the vertical front face with no deduction for rounding off sign corners.

850.06. BASIS OF PAYMENT.

Accepted signs, measured as provided above, will be paid for at the contract unit price as follows:

- (A) SHEET ALUMINUM SIGNS SQUARE FOOT (SQUARE METER)
- (B) EXTRUDED ALUMINUM PANEL SIGNS SQUARE FOOT (SQUARE METER)
- (C) MAST ARM MOUNTED SIGNS SQUARE FOOT (SQUARE METER)
- (D) SPECIAL SIGNS.EACH OR SQUARE FOOT (SQUARE METER)

Such payment shall be full compensation for furnishing all materials, labor, equipment and incidentals necessary to complete the work as specified.

**SECTION 851
GALVANIZED STEEL SIGN POSTS**

851.01. DESCRIPTION.

This work shall consist of furnishing materials and constructing galvanized steel sign post footings in accordance with these Specifications and in reasonably close conformity with the dimensions and locations shown on the Plans or established by the Engineer.

851.02. MATERIALS.

Materials shall meet the requirements of Section 721.

851.04. CONSTRUCTION METHODS.

Should it be necessary to field cut a steel post, place the cut end in the concrete foundation. Any parts of steel posts from which galvanizing has been knocked or chipped off down to bare metal in transit, erection, or field alteration shall be regalvanized, metalized, or painted with an approved zinc dust-oxide paint.

851.05. METHOD OF MEASUREMENT.

Sign posts will be measured by the linear foot (meter) of the various sizes of galvanized steel posts erected in place as shown on the Plans or as directed by the Engineer.

On sign posts which require breakaway capabilities the breakaway design elements are considered a part of the sign post and are not measured separately.