

## **SECTION 1071 -- POSTS AND FASTENERS FOR HIGHWAY SIGNING**

### **1071.01 -- Description**

This Section covers galvanized or painted enamel steel posts, flexible posts, and zinc or cadmium plated fasteners for use in highway signing for other than Type A and Type B signs.

### **1071.02 -- Material Characteristics**

1. a. Sign posts shall be a standard "U" or channel shape. The posts shall be flange type, and the length shall be shown in the plans. The posts may be light or heavy duty.
- b. Steel posts for signs shall be made from hot-rolled rail steel conforming to the requirements specified in ASTM A 499 (Steel Grade B).
- c. All holes shall be at least 9.5 mm diameter. They shall be punched or drilled in each post and spaced 25 mm from center to center,  $\pm 1.5$  mm, beginning with the first hole at 25 mm from the top of the post. Punching shall be done so that there will be no cracks radiating from the holes.
- d.
  - (1) Painted posts shall be cleaned of all loose scale before finishing and painted with one or more coats of weather resistant enamel (black or green, as specified).
  - (2) The finish shall produce a glossy appearance with satisfactory elastic and adhering properties.
  - (3) The paint film thickness shall not be less than 38  $\mu\text{m}$ .
  - (4) After drying, the finish shall not crack or chip from the metal when struck a light blow with a hammer.
  - (5) The paint coating shall show no appreciable change in adhesion or appearance when immersed in water at room temperature for a period of 72 hours.
- e. Galvanized posts shall be hot-dip galvanized after fabrication in accordance with ASTM A 123.
- f. Painted posts which have been heavily scratched or marred in shipment and galvanized posts which have their galvanizing damaged shall be rejected.
- g.
  - (1) Light-duty post shall be at least 50 mm and not more than 62.5 mm wide on the side of the post to which the sign is to be fastened.
  - (2) The post's mass shall be at least 1.8 kg/m, and the post shall have at least 15 and not more than 20 holes.
  - (3) Light-duty posts shall be painted black.

h. (1) Heavy-duty posts shall be at least 75 mm and not more than 90 mm wide on the side of the post to which the sign is to be fastened.

(2) The post's mass shall not be less than 3.75 kg/m, and the post shall have at least 50 and not more than 60 holes.

(3) Heavy-duty posts may be painted black, green, or be galvanized.

2. Flexible sign posts:

a. The material from which the post is fabricated shall be rubber, plastic, or any other material which meets physical test requirements and results in little or no damage to impacting vehicles.

b. The post shall be black.

c. The top 275 mm of the post shall be flattened to approximately a 75 mm width to provide surfaces to mount reflectors.

d. A piece of white or yellow (as required by the plans) reflective sheeting no smaller than 75 mm x 225 mm shall be placed no more than 50 mm from the top of the post.

e. The reflective sheeting shall be ASTM D 4956 Type IV or V reflective sheeting.

3. a. Fasteners shall be round or pan head machine screws meeting the dimensional requirements of ASTM F 568 Property Class 4.6 with metric coarse threads meeting the dimensional requirements of ANSI/ISO.

b. The diameter of the fastener shall be shown in the plans.

c. The minimum thread length is shown in Table 1071.01.

**Table 1071.01**

Thread Length	
Length of Fastener	Minimum Length of Thread
50 mm and under	Entire Length
Over 50 mm	43 mm

4. a. Nuts shall be square, hex, or hex machine nuts meeting the requirements of ASTM A 563M, Property Class 5.

b. Threads shall be ANSI metric coarse.

5. Plain washers shall be Type A meeting the requirements of ANSI 18.22M and have the dimensions shown in Table 1071.02.

**Table 1071.02**

<b>Washer Dimensions</b>			
<b>Bolt</b>	<b>Inside Diameter (millimeters)</b>	<b>Outside Diameter (millimeters)</b>	<b>Thickness (millimeters)</b>
M5	6.22 to 6.73	14.15 to 14.66	0.91 to 1.65
M6	7.80 to 8.31	18.47 to 19.02	1.30 to 2.03
M8	9.40 to 9.91	22.05 to 22.99	1.63 to 2.64
M10	11.0 to 11.51	25.22 to 26.16	1.63 to 2.64

6. a. Lock washers shall be regular helical spring steel of a compatible size for the required fastener.

b. Lock washers shall meet the dimensional requirements of ANSI B18.21.1.

c. Lock washers shall have a Rockwell Hardness of C45 to C51.

7. The machine screws, nuts, and washers shall have a zinc or cadmium coating with a minimum thickness of 8 µm, with a Type III treatment conforming to ASTM B 633 Class Fe/Zn 8 or ASTM B 766 Class 8, respectively.

8. Fasteners for delineators shall be at least 5 mm diameter pan or round head machine screws (length as shown in the plans) conforming to the requirements of ASTM F 568.

### **1071.03 -- Acceptance Requirements**

1. Galvanized or painted enamel steel posts and zinc or cadmium plated fasteners will be accepted based on the requirements of this specification and the requirements in the NDR Materials Sampling Guide.

2. Acceptable flexible sign posts are shown on the NDR Approved Products List.