

- b. Type “B” Fence: Use either wood or steel posts that are at least 3 ft (900 mm) long.
  - 1) If using soft wood, use posts that are at least 2 in (50 mm) in diameter or nominal 2 x 2 in (33 x 33 mm).
  - 2) If using hardwood, use posts that are 1 x 1 in (25 x 25 mm) with a minus tolerance of 1/4 in (6 mm) providing the cross sectional area is a minimum of 1 in<sup>2</sup> (625 mm<sup>2</sup>).
  - 3) If using steel posts, use types “U,” “T,” or “C” shapes with a minimum weight of 0.75 lb/ft (1.1 kg/m).
- c. Type “C” Fence: Use only steel posts that are at least 5 ft (1.5 m). Use “U,” “T,” or “C” shaped posts with a minimum weight of 1.15 lb/ft (1.7 kg/m). Use posts that have projections for fastening the woven wire and filter fabric.

**NOTE: You must use woven wire to provide extra support for Type “C” fence installations.**

- 3. Fasteners for Wooden Posts
  - a. Wire Staples: Use staples that are at least 17 gauge (1.37 mm), legs at least 1/2 in (13 mm) long, and a crown at least 3/4 in (19 mm) wide.
  - b. Nails: Use nails that are at least 14 gauge (2.03 mm), 1 in (25 mm) long, with button heads of at least 3/4 in (19 mm).

#### **B. Fabrication**

General Provisions 101 through 150.

#### **C. Acceptance**

General Provisions 101 through 150.

#### **D. Materials Warranty**

General Provisions 101 through 150.

## **Section 910—Sign Fabrication**

### **910.1 General Description**

This section includes the requirements for fabricating and applying messages on sign blanks, laminated panels, and extruded panels.

#### **910.1.01 Related References**

##### **A. Standard Specifications**

Section 107—Legal Regulations and Responsibility to the Public

Section 911—Sign Posts

Section 912—Sign Blanks and Panels

Section 913—Reflectorizing Materials

Section 914—Sign Paint

Section 915—Mast Arm Assemblies

Section 917—Reflective and Nonreflective Characters

##### **B. Referenced Documents**

Manual on Uniform Traffic Control Devices (MUTCD)

### **910.2 Materials**

Use the dimensions, colors, and reflectorizing as specified in the Plans, Proposal, and Manual on Uniform Traffic Control Devices (MUTCD).

## 910.2.01

The materials requirements are as listed below:

<b>Material</b>	<b>Section</b>
Posts for Groundmounted Signs	911
Aluminum Sign Blanks	912.2.01
Extruded Aluminum Sign Panels	912.2.02
Reflective Sheeting	913.2.01
Silk Screen Lettering Paint	914.2.01
Mast Arm Assemblies	915
Demountable Characters with Type VI Reflective Sheeting	917.2.01
Direct Applied Non-Reflective Characters	917.2.02

1. Handle the clean metal blanks and panels with either a mechanical device or with clean cotton gloves before applying any paint.
2. After the final metal treatment, protect the blanks and panels at all times from contact or exposure to greases, oils, dusts or other contaminants.
3. Get approval for all materials used to fabricate the finished signs according to these Specifications.

### 910.2.01 Painted Signs

#### A. Requirements

1. Use paint in fabricating these signs that meets the requirements in this Specification and is of the type specified.
2. Do not paint sign blanks or panels on which reflective sheeting shall be applied.

#### B. Fabrication

1. Coat the sign blanks or panels on one face and all the edges with one coat of primer. Allow the primer to dry thoroughly.
2. Apply a coat of the specified enamel to the primed face and edges.
  - a. Ensure the film is 2.5 mils,  $\pm 0.5$  mils ( $60 \mu\text{m}$ ,  $\pm 10 \mu\text{m}$ ) thick when dry. Determine the thickness with a suitable gauge accurate to 0.1 mil ( $3 \mu\text{m}$ ).
  - b. Apply the paint with either sprayers or rollers.
3. Ensure that the finished paint surface is smooth, uniform, and exhibits neat work quality.
4. Ensure that the paint does not run, curdle, or separate after application.

#### C. Acceptance

The Department will reject any sign panels or blanks with paint that is not of the proper thickness, or with paint that has run, curdled, or separated after application.

#### D. Materials Warranty

General Provisions 101 through 150.

### 910.2.02 Reflective Sheeting Signs

#### A. Requirements

Use materials that meets the requirements of these Specifications and is of the type specified.

#### B. Fabrication

1. Apply the reflective sheeting to the face of the sign blank or panel with either an approved vacuum applicator, using a combination of vacuum and heat, or an approved roller process, using heat when necessary.
2. Apply the specified sheeting type and level of reflectivity according to the sheeting manufacturer's recommendations.
3. Splice the sheeting on a sign according to the sheeting manufacturer's recommendations.
4. Age the sheeting for 48 hours.

**C. Acceptance**

After applying the sheeting properly, test the adhesion to ensure it produces a durable bond equal to or greater than the strength of the reflective sheeting.

1. Ensure that the adhesion is strong enough to resist stripping from the blank when tested with a stiff putty knife.
2. Ensure that no air pockets or bubbles exist between the sheeting and the sign blank.

**D. Materials Warranty**

General Provisions 101 through 150.

**910.2.03 Message****A. Requirements**

Ensure that all finished signs have the following characteristics:

- The signs are clear-cut
- The lines of all letters and details true, regular, and free from all waviness, unevenness, and furry edges or lines
- The signs do not have scaling, cracking, pitting, blistering, dents, or blemishes of any kind
- The size, style, and spacing of the letters, numerals, symbols, and borders used to convey the message are according to the details shown in the MUTCD and on the Plans.

See Subsection 107.03, “Patented Devices,” if patented materials are used.

**B. Fabrication**

Ensure that the legends and borders have one coat of silk screen paint as per Subsection 914.2.01.

1. Apply legends and borders by using one of the following processes:
  - Silk screening
  - Reverse screening
  - Directly applying nonreflective, durable, glossy plastic film that meets the requirements of Section 917.
2. Air-dry or oven-bake the sign at a temperature that will not affect the sign.
3. Demountable legends and borders may be used where approved by the Engineer.

**NOTE: Attach all demountable legends (letters, numerals, symbols, and borders) to the sign face with pull-through rivets recommended by the manufacturer.**

**C. Acceptance**

The Department will accept finished signs based on quality of workmanship and accuracy of dimensions and message.

**D. Materials Warranty**

General Provisions 101 through 150.

## **Section 911—Sign Posts**

**911.1 General Description**

This section includes the requirements for the following:

- Galvanized steel sign posts
- Galvanized steel structural shape posts
- Aluminum structural shape posts
- Delineator posts
- Wood sign posts
- Ground-mounted breakaway sign supports