SECTION 1070 -- HIGHWAY SIGNS

1070.01 -- Description

Materials authorized for use in constructing highway signs, Type A and Type B, are listed in this Section.

1070.02 -- Material Characteristics

1. a. The reflective sheeting for sign reflectorization shall meet the requirements of ASTM D 4956.

b. All reflective sheeting for Type A and Type B signs shall be Type III sheeting.

2. a. Overlay panels for Type B signs shall be at least 1.0 mm thick sheet aluminum (ASTM B 209M Alloy 6061-T6) surfaced with reflective sheeting. The type and color of the reflective sheeting shall be as shown in the plans.

b. Panels cut from coil sheet will not be accepted.

3. Letters, numerals, symbols, and borders for Type B signs shall conform to AASHTO M 268 high intensity direct applied Type III reflective sheeting.

4. Signs shall meet the size and shape requirements of the *Manual on Uniform Traffic Control Devices for Streets and Highways*.

5. Reflective background sheeting for all signs shall conform to ASTM D 4956.

6. a. The State, U.S., and Interstate Highway routemarkers to be used as legend units on Type B signs shall be fabricated from at least 2.0 mm thick sheet aluminum alloy 6061-T6 (ASTM B 209M) and shall be processed in accordance with the reflective sheeting manufacturer's recommendations.

b. Reflectorized sheeting shall conform to AASHTO M 268.

c. Color and sizes of routemarkers shall be shown in the plans.

d. The routemarkers shall be attached to the sign background in the same manner as the other legend units.

e. Special designs on the State routemarker shall be obtained from the NDR Traffic Engineer.

7. a. Supports for Type A and Type B signs shall be steel beam or wood breakaway posts. The size, shape, construction, and mass per meter shall be specified in the plans.

b. The sign supports shall be cut off at the same elevation as the top of the sign.

c. The steel beam breakaway posts and stub post steel shall comply with ASTM A 36/A 36M with a working stress of 138 MPa.

d. After all post fabrication is completed, the posts shall be hot-dipped galvanized in accordance with ASTM A 123.

e. The steel for base connection plates and fuse plates shall comply with ASTM A 36/A 36M. The fuse plate shall be hot-dipped galvanized in compliance with ASTM A 123.

f. The base connection and fuse plate bolts, nuts, and washers shall be as shown in the plans and galvanized to conform with ASTM A 153.

g. The stub post shall be hot-dip galvanized in accordance with ASTM A 123 after all holes have been drilled, slots cut, and base plates welded. The galvanizing shall extend a minimum of 150 mm below the base plate.

h. Treated timber sign posts shall conform to the requirements of Subsection 1075.06.

8. Brackets and Fasteners:

a. Mounting brackets for Type A signs shall be aluminum alloy 6063-T6 (ASTM B 221M) or steel (ASTM A 36/A 36M) galvanized to conform to the requirements of ASTM A 123. Thickness and dimensions shall conform to those shown on the plans.

b. The steel sign bolts for Type A signs shall be stove bolts 9 mm in diameter and in lengths as required. The steel bolts, nuts, and washers shall be in accordance with Section 1058.

c. An aluminum angle, 37.5 mm x 37.5 mm x 0.475 mm thick for use with extrusheet and extruded sign brackets on wood posts, shall be alloy 6061-T6 complying with ASTM B 308/B 308M.

d. Post clips shall be aluminum alloy 356.0 conforming to ASTM B 108. Post clips and sign bracket bolts shall be aluminum alloy 2024-T4 conforming to ASTM B 211. Locknuts for aluminum bolts shall be aluminum alloy 2017-T4 conforming to ASTM B 211M.

e. The sign brackets and fasteners specified above shall not be paid for directly but shall be considered subsidiary to the items for which direct payment is made.

9. Type A and B Backing Material:

a. (1) Type A signs shall be fabricated from Alloy 6061-T6 or 5052-H38 (ASTM B 209M) sheet aluminum.

(2) (i) The sign blanks shall be free from laminations, blisters, slivers, open seams, pits from heavy rolled-in scale, ragged edges, holes, turned down corners, or other defects which may affect their appearance or use for the intended purpose.

(ii) All blanks shall be uniform in thickness and flat.

(iii) All shearing, cutting, and punching shall be done before preparation of blanks for application of reflectorizing material.

(iv) Sign blanks cut from coil sheet will not be accepted.

(3) (i) The sheared edges of all blanks shall be straight and free from tears and raggedness.

(ii) All corners shall be rounded as shown in the plans.

(iii) All punched or drilled holes shall be round and free from tears, raggedness, or distortion of the metal.

(4) All thicknesses shall be as required in the plans.

(5) All sign blanks shall be given a chromate conversion coating meeting the requirements of ASTM B 449 Class 2. The chromate coating shall be suitable for use as a paint base and for corrosion protection.

b. Type B Signs shall be fabricated from extrusheet panels constructed of Alloy 3003-H18 (ASTM B 209M) flat sheets and Alloy 6063-T6 or 5052-H38 (ASTM B 221M) extruded stiffeners. The flat sheets shall be at least 2.0 mm thick, and the stiffeners shall have the dimensions shown in the plans. The panels shall be made in widths of 300 mm, 455 mm, 610 mm, and 915 mm as specified in the plans.

1070.03 -- Acceptance Requirements

Materials for highway signs will be accepted on the basis of compliance with the requirements of these *Specifications*.