

Recommended Design Criteria for Grade Crossing Signs

Revised 2025 (3 Pages)

A. Purpose

This Manual Part recommends design criteria for signs of various designs for grade crossing warning systems.

B. Applicable Manual Parts

1. Manual Part 3.2.70 Recommended Design Criteria for 90 Degree Grade Crossing Sign, Extruded Aluminum Retroreflective Sheet Type for all Pipe Sizes.
2. Manual Part 3.2.71 Recommended Design Criteria for 90 Degree Grade Crossing Sign to Meet Canadian Federal Government Requirements.
3. Manual Part 3.2.75 Recommended Design Criteria for Number of Tracks Sign, Extruded Aluminum, Retroreflective Sheet Type, Detail & Assembly.
4. Manual Part 3.2.76 Recommended Design Criteria for Number of Tracks Sign for Use in Canada, Aluminum Sheet, Retroreflective Sheet Type, Detail & Assembly.
5. Manual Part 3.2.80 Recommended Design Criteria for Single Adapter Clamp for Signs, Details.
6. Details for bolts conforming to Manual Part 3.2.96A Recommended Design Criteria for Bolts for Grade Crossing Signs for 4 in, 5 in and 6 in Pipe.
7. Numeral for number of tracks see Manual Part 14.6.2 Recommended Design Criteria for Letters and Numerals.

C. Material

1. Unless otherwise specified on drawings, castings, extrusions and sheet metal should be as follows:
 - a. Aluminum castings should conform to American Society for Testing & Materials ASTM International B26/B26M-18e1 Standard Specification for Aluminum-Alloy Sand Castings Alloy G4A, SC51A or SC64D.
 - b. Extruded aluminum should be in accordance with ASTM International B209-21a Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate Alloy GS11A, T6 or B221, Alloy GS10A-T5 or T6.

D. Design

1. Unit Assembly.
 - a. Adapter clamps conforming to Manual Part 3.2.80 Recommended Design Criteria for Single Adapter Clamp for Signs, Details should be used to attach sign to mast.
 - b. The unit assembly of sheet or extruded section should be attached to the adapter clamp by stainless steel bolts, nuts and washers to prevent electrolytic action between dissimilar metals.
2. Surface preparation
 - a. Paint, for other than aluminum surfaces, should be used conforming to Manual Part 1.5.10 Recommended Instructions for Painting and Protective Coatings.
 - b. Aluminum sheet and extruded section need not be painted, but should be cleaned, and etched or coated with wash primer prior to application of retroreflective sheeting conforming to manufacturer's recommendations for applying such sheeting.
3. Retroreflective Sheet Finish.
 - a. Retroreflective material shall be for background only as called for on drawings.
 - b. The retroreflective sheet should conform to Manual Part 15.2.20 Recommended Developmental Criteria and Functional Guidelines for Retroreflective Sheet Material and should be cut with square corners for application to the entire front surface of the front plate

except for a space of approximately, but not less than 1/16 in (0.159 cm) from the edges.

- c. The adhesive backing should form a durable bond and not be closer than 1/16 in (0.159 cm) to any edge of plate and should be edge sealed conforming to manufacturer's recommendations.
- d. Legend should be applied over the reflex sheeting by use of precut synthetic lettering film having adhesive backing, or by use of heavy black paste enamel preferably applied by the silkscreen process.
- e. Letters and numerals should be true as to edge, form, size and spacing.

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