

SECTION 2610

METAL GUARDRAIL

1.00 GENERAL

1.01 Scope. Work under this section shall consist of furnishing all materials, labor, equipment and miscellaneous items necessary to furnish and install metal guardrails as shown on the Drawings.

1.02 Reference Standards. All Work and materials shall be in compliance with applicable standards of the Colorado Department of Highways.

2.00 MATERIALS

2.01. General. All materials shall conform to M-606-2, Guardrail for Local Roads and Type 3 Bridge Rail, Department of Highways Bridge Standards.

2.02 "W" Beam Rail. The types of guardrail are designated as follows:

Type 3	Guardrail	- "W" Beam
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The rail elements shall be corrugated sheet steel beams conforming to the requirements of AASHTO M 180 of the designated class and type. The beams and metal offset devices shall be galvanized.

2.03 Guardrail Posts. Railing posts shall be of wood or metal I-beam.

A. Wood posts shall be fabricated from an approved or specified timber species and shall be of the quality, diameter or section, and length as specified or as shown on the Drawings. When treated posts are specified, they shall be fabricated or framed before treatment. Timber preservatives shall conform to the requirements of AASHTO M 133. Preservative treatment shall conform to the requirements for "Preservative Treatments for Timber" of the AASHTO Standard Specifications for Highway Bridges.

B. Metal I-beam posts specifications shall be submitted to the Town for approval.

2.04 Guardrail Hardware. Splices and end connections shall be of the type and design specified or shown on the Drawings, and shall be of such strength as to develop the full design strength of the rail elements.

End anchor rods and accessories shall be as specified or as shown on the Drawings and shall be of such size and strength as to develop the full design strength of the rail elements.

High strength bolts, nuts and washers conforming to ASTM A325 shall be hot dip galvanized in accordance with AASHTO M232, or electroplated in accordance with ASTM A164, or cadmium plated in accordance with ASTM A165. Unless otherwise specified, all other fittings, bolts, washers and other accessories shall be galvanized in accordance with the requirements of AASHTO M111 or AASHTO M232, whichever may apply.

Where high strength bolts are required, they shall conform to the requirements of ASTM A325. Nuts, bolts and washers shall be galvanized in accordance with AASHTO M232 or ASTM B454, Class 50 thickness, and threaded to the dimensional tolerance required.

2.05 Structural Steel. Steel shall be of the self-rusting type or "Corten".

2.06. Painting System. Not Applicable.

3.00 METHODS AND PROCEDURES

3.01 Post and Rail Elements.

- A. Posts shall be set firm and aligned with a tolerance of $\pm \frac{1}{4}$ " from plumb, grades and lines as staked. All fittings and metal plates shall be placed securely in position to conform to designated dimensions and requirements.

Posts shall be set as required in Drawings by one of the following methods:

1. Driven in place.
2. Set in dug holes.
3. Set in concrete base.
4. Posts on bridges shall be as shown on Drawings.

Driving of posts shall be accomplished with approved methods and equipment that will leave the posts in their final position free from any distortion, burring or any other damage.

Excavated post holes shall have a firm bottom and be backfilled with acceptable material placed in layers and thoroughly compacted.

When required, posts shall be spliced with break-away plates as shown on the Drawings.

Dissimilar metal-to-metal or aluminum-to-concrete posts or rail installations shall have contact surfaces separated by an approved protective coating.

Wood posts cut in the field shall have the cut surfaces protected with two coats of hot creosote or a 5% pentachlorophenol-in-oil solution. When the cut surface is above ground, the treating solution to be used shall be the same type as was used in the original treatment.

- B. Rail elements shall be erected in a manner resulting in a smooth, continuous installation. All bolts in the finished rail shall be drawn tight. Bolts shall be of sufficient length to extend beyond the nuts. Rail shall be shop bent for installations on horizontal curves having a radius of 150 feet or less.

3.02 Painting. Not applicable.

4.00 FIELD QUALITY CONTROL

4.01 Inspection and Testing. Inspection and testing to be performed at the direction of the Engineer. Contractor to cooperate fully with all persons engaged in testing.

End of Section