

Section 4155. Guardrail

4155.01 GENERAL REQUIREMENTS.

Provide guardrail materials meeting the requirements for the type of guardrail specified. Provide guardrail posts of wood or steel as specified in the contract documents.

4155.02 STEEL BEAM GUARDRAIL.

Comply with the following:

- A. **Rail elements, and terminal sections:** meet the requirements of AASHTO M 180, Class A, 12 gauge (2.67 mm thickness), Type I, unless a greater thickness is required.
- B. **Bolts used to attach steel beam guardrail to concrete barrier or bridge rail:** full-length galvanized and meet the requirements of ASTM A 325 or A 449, Type 1.
- C. **All other bolts:** meet the requirements of ASTM A 307, Grade A.
- D. **Washers used to attach steel beam guardrail to concrete barrier or bridge rail:** meet the requirements of ASTM F 436.
- E. **All other washers:** meet the requirements of ASTM F 844.
- F. **Nuts used to attach steel beam guardrail to concrete barrier or bridge barrier rail:** heavy hex, Class 2B meeting the requirements of ASTM A 563, DH.
- G. **All other nuts:** meet the requirements for ASTM A 563, Grade A, hex.
- H. **Galvanizing:** meet the requirements of ASTM A 153, Class C F 2329 or B 695 Class 50, Type I Coating.

4155.03 CABLES.

A. Cable Rail.

1. Meet the requirements of AASHTO M 30, Type I, Class A.
2. For high tension cable guardrail, meet the manufacturer's requirements.

B. Anchor Cable.

Meet the requirements of AASHTO M 30, Type II, Class A.

4155.04 POSTS.

A. Wood Posts.

Use posts sawed to the dimensions shown in the contract documents and meeting the requirements of Section 4164.

B. Steel Posts.

1. Use steel posts of the dimensions shown in the contract documents and that meet the requirements of ASTM A 36/A 36M structural steel.
2. Ensure bolt holes comply with Article 2408.03, S, 2.
3. Ensure steel posts and blocks are galvanized according to the requirements of ASTM A 123. Ensure galvanizing is done after fabrication and after all bolt holes have been drilled.

4155.05 BLOCKOUTS.

- A. For wood blockouts, meet the requirements for wood posts.

B. Blockouts manufactured from alternate materials that have received FHWA acceptance for use on the National Highway System may be substituted for wood blockouts.

C. Ensure galvanizing is done after fabrication and after all bolt holes have been drilled.

4155.06 MISCELLANEOUS ITEMS.

A. Ensure the following:

1. All miscellaneous items and materials are of the type, size, and dimension shown in the contract documents.

2. All metal parts are galvanized. However, any items or parts of items to be covered with 2 inches (50 mm) or more of concrete need not be galvanized.

3. All cable fittings required for cable guardrail installation are designed and fabricated so as to develop the full strength of a single cable or the multiple cable assembly, as applicable.

B. Internal threads of fasteners may be oversize, tapped after galvanizing.

C. When specific requirements are not stated in the contract documents, obtain the Engineer's approval for anchor angles, anchor cable, turnbuckles, hook bolts, compensating devices, and any other fittings or special hardware which may be required.