

1618 - STEEL PLATE GUARDRAIL

SECTION 1618

STEEL PLATE GUARDRAIL

1618.1 DESCRIPTION

This specification governs corrugated sheet steel beams and related components utilized in the construction of highway guardrail systems.

1618.2 REQUIREMENTS

a. General. The guardrail system design, dimensions, method of corrosion protection, end terminals, and specific fabrication requirements are specified in the Contract Documents.

Property requirements for the steels and components are governed by the classifications, designations, or grades of steel, and the component specifications designated on the Contract Documents and **subsection 1618.2b**.

Proprietary energy dissipating end terminal systems may be supplied only if prequalified by the KDOT.

For threaded fastener components, comply with the thread series requirements of ANSI/ASME B1.1 Coarse Thread Series, with a tolerance class that accommodates the corrosion protective coating when applicable.

Provide corrosion protection for all steel components utilized in guardrail systems by a nonmagnetic metal coating. Non-coated copper bearing weathering steel is not an acceptable alternative.

Store guardrail components to prevent water retention and condensation, intimate contact between individual components, and contact with the soil.

b. Material Specifications.

(1) Unless specified otherwise, provide beams, transition sections, end terminals other than proprietary, beam washers, backing and splice plates that comply with AASHTO M 180, Class A, Type I beams. End terminals that are of KDOT design are to comply with the basis steel property and corrosion protection requirements of AASHTO M 180.

(2) Threaded fastener components are to comply with **SECTION 1616**. All fastener components are to be metal coated for corrosion protection in accordance with **SECTION 1616** and mechanical properties are to be equivalent to or greater than those specified within AASHTO M 180.

(3) Guardrail components produced from structural steel stock, tubing, or pipe are to comply with **SECTIONS 1607, 1608, or 1619** respectively. Steels not governed by these subsections may be utilized providing prior approval is granted by the KDOT and proper welding procedures are adhered to. These components include posts and offset blocks, soil, anchor, and bearing plates, etc. If not governed by the component specification or subsection, when corrosion protection coatings are specified, zinc coat these components by hot dip galvanizing after fabrication in compliance with ASTM A 123, Thickness Grade 85, minimum. Aluminum coating application after fabrication is acceptable when permitted and regulated by the specification that governs the component.

(4) Use wire rope that complies with AASHTO M 30, Type II, Class B zinc coating.

(5) Provide shackles and turnbuckles that comply with AASHTO M 269 with the thread series as specified in **subsection 1618.2a**.

(6) Use wood components, e.g., posts, blocks, etc., that comply with the applicable subsection of **DIVISION 2300**.

(7) Proprietary energy dissipating end terminal systems may be supplied only if prequalified by the KDOT. The prequalification process is specified in **subsection 1618.4**.

1618.3 TEST METHODS

Conduct all tests required by the applicable AASHTO, ASTM, or other component or material specifications of **subsection 1618.2**. Coating thickness may be measured by any one of the methods specified in ASTM B 633 and by eddy current methods, ASTM B 244, provided that appropriate calibration procedures and standards have been applied. The magnetic induction and eddy current methods are nondestructive in nature and are preferred. Destructive techniques, i.e., coating removal, may be utilized as referee methods.

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1618.4 PREQUALIFICATION

a. All guardrail system components provided by the manufacturer of the beam, except for proprietary energy dissipating end terminal systems, must be prequalified before approval for installation on KDOT projects. The prequalification procedure is to be in accordance with AASHTO M 180, section 5.3, "Acceptance by Brand Registration and Guarantee." Submit the information required by section 5.3 to the Bureau Chief, Materials and Research, for evaluation. For components not specifically addressed by section 5.3, provide the information relevant to the component that is required by **subsection 1618.2**. Include all FHWA notifications of acceptance relevant to the components or system.

b. Proprietary energy dissipating end terminal systems must be prequalified as a unit. The prequalification procedure requires that complete evaluation data, including design and test information and materials list, and the FHWA notification of acceptance, be submitted to the Bureau of Design, State Road Office.

c. All manufacturers will be notified of their prequalification status upon evaluation of the submitted information. When granted approval, the manufacturer, components, and or system will be placed on a listing of prequalified manufacturers and providers of guardrail system components and or energy dissipating end terminal systems. The list will be maintained by the Bureau of Materials and Research.

1618.5 BASIS OF ACCEPTANCE

a. Receipt and approval of a Type C certification as specified in **DIVISION 2600** for all components governed by **subsection 1618.2b.(1), (3), (4), (5), and (7)**. This supersedes the certification requirements of the specific **SECTIONS 1607, 1608, and 1619**.

b. Submit for approval to the project Engineer and MRC a copy of a Type A certification as specified in **DIVISION 2600** for all threaded fastener components, **subsection 1618.2b(2)**, , and required by **SECTION 1616**.

c. The disposition of wood components, e.g., posts, blocks, etc., **subsection 1618.2b.(6)**, is to be in accordance with the applicable subsection of **DIVISION 2300**.

d. The KDOT reserves the right to request and test specimens from certified component lots to verify the certification results or when there is reason to suspect their validity.

e. Inspection and testing by field personnel of all steel components for compliance with dimensional requirements and corrosion protection coating thickness. Coating thickness will measured according to any of the procedures of **subsection 1618.3**.

f. The final disposition of all components will be completed at the final destination as the result of inspection for the quality of workmanship and the delivery condition.