SECTION 828 GUARDRAIL

828.01 Description. This material consists of guardrail, structural steel posts, and related hardware.

828.02 Material Requirements.

1. *Steel Posts, Steel Offset Blocks, and Steel Shapes.* Steel posts, offset blocks, shapes, and all structural steel parts shall conform to the requirements of AASHTO M 183/M 183M, or shall be fabricated sections conforming to the requirements of ASTM A 769/A 769M. All shapes, except beams, shall be hot-dipped galvanized in accordance with AASHTO M 111.

   The Contractor may elect to use either hot-dipped galvanized rolled H sections or fabricated sections, that conform to the requirements of ASTM A 769/A 769M, Grade 36 (Grade 250).
2. *Beams.* All beams shall conform to the requirements of AASHTO M 180, Class A, Type I or Type I
3. *Hardware.* Bolts, nuts, and washers shall be the manufacturer's standard shoulder bolts for the purpose intended and shall conform to the requirements of AASHTO M 180. All hardware shall have a zinc coating conforming to the requirements of AASHTO M 232.
4. *Rods and Turnbuckles.* Rods and turnbuckles shall have a minimum tensile strength of 60,000 lb (270 kN). Rods, nuts, turnbuckles, and washers shall be hot-dipped galvanized according to the requirements of AASHTO M 111.
5. *Swaged Cable Assembly for Guardrail End Tre.* Threads for the stud shall be manufactured according to ANSI B1.13M, M24 x 3 - 6g. The cable shall be swaged into the fitting. The stud shall conform to ASTM F 568, Class C or AASHTO M 298 (ASTM B 695), Class 50. The 3/80 (10 mm) slot for the locking pin shall be milled into the stud end prior to the application of the zinc coating.

   The swaged fitting shall be machined from hot-rolled carbon steel conforming to ASTM A 576, Grade 1035, and zinc-coated according to AASHTO M 111 (ASTM A 123) before swaging. The material shall be annealed suitably for cold swaging. A lock pin hole to accommodate a **3**0 (6 mm) plated spring-steel pin shall be drilled through the head of the swaged fitting to retain the stud in the proper position.

   The wire rope shall be 3/40 (19 mm) diameter, 6 by 19 wire stem+core or independent wire rope core (IWRC), zinc-coated, right regular lay wire rope conforming to AASHTO M 30. The wire rope steel shall be improved steel with a minimum breaking strength of 42,000 lb (190 kN). The swaged fitting, stud, and nuts shall develop the breaking strength of the wire rope.
6. *Reflectorized Washers.* Reflectorized washers for guardrail posts shall consist of double-faced reflectorized washer units. Washers shall be fabricated from aluminum plates conforming to the requirements of ASTM B 209M, Alloy 5052-H32. Retroreflectorized sheeting conforming to the requirements of AASHTO M 268 shall be applied to the washer.
7. *Timber Post, Blocks and Offset Blocks.* Timber post, blocks, and offset blocks shall conform to the dimensiions shown on the Standard Construction Details. Timber used for post, blocks and offset blocks shall conform to the requirements of Section 601 and the preservative treatment requirements of Section 814(b). Offset blocks made of composite material tested and approved under National Cooperative Highway Research Program (NCHRP) Report 350 Criteria will also be acceptable.

   Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance and accepted manufacturing practices.