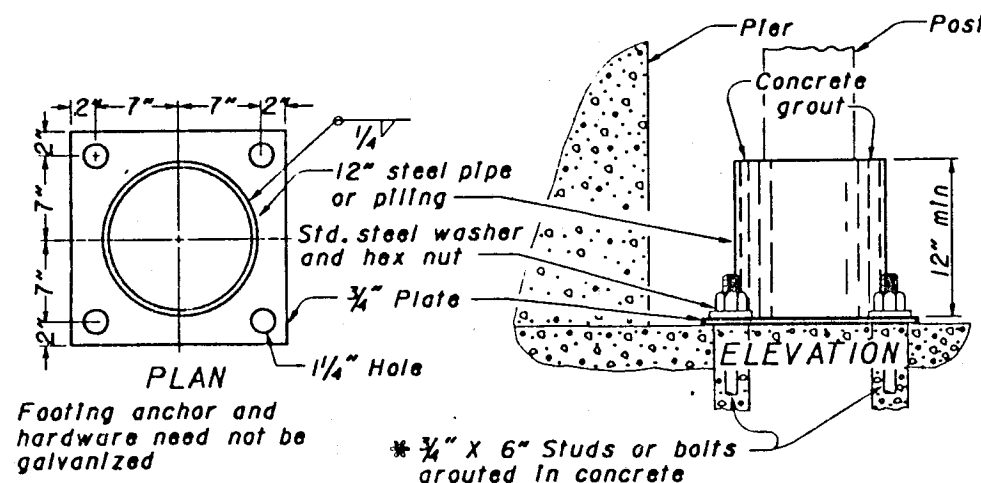
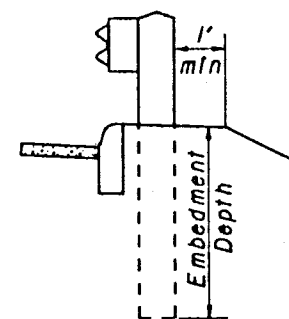


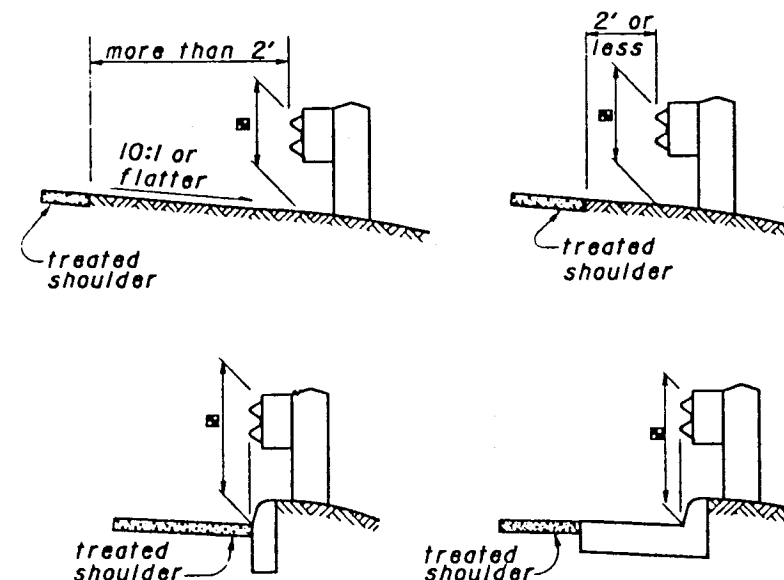
INLET MOUNTED POST



FOOTING ANCHOR



DETAIL A



MEASURING GUARDRAIL HEIGHT

NOTES

BEAM RAIL ELEMENTS shall be 12'-6" effective length, unless otherwise specified, with 3/4" x 2 1/2" post bolt slots on 6'-3" centers regardless of post spacing. Field punching or drilling of bolt holes or slots for irregularly spaced posts shall be according to 606.05.

BEAM RAIL SPLICE between two rail elements, or rail and terminal connector shall be lapped in the direction of traffic. The buffer or flared end sections shall lap on the traffic face. A 12" length of beam rail (Back-up Plate), with a 3/4" dia. bolt hole or a 3/4" x 2 1/2" slot, shall be provided at posts not having a rail splice.

EMBEDMENT DEPTH: Where less than 1' of graded shoulder width (10:1 or flatter) extends beyond posts (see Detail "A") longer posts shall be used so that a minimum of 5'-5" embedment depth is provided.

PROTECTIVE COATING: In lieu of the requirements of 710.06, expansion shields, anchors and insert anchor assemblies installed (embedded) in concrete shall be coated in accordance with ASTM A153 or Stainless Steel. Any bolts screwed into these embedded devices shall meet 710.06.

STEEL POST SIZES: The W6 x 8.5 posts may be used in lieu of the W6 x 9 which are shown on the various Standard Construction Drawings for guardrail.

SPECIAL POST MOUNTINGS: Inlet mounted posts are required for guardrail posts located on a drainage inlet. Footing anchors are required for guardrail posts located on footers with less than 3'-5" cover except that for footer cover of 2'-6" to 3'-5" the post may be installed by using a 4" minimum concrete encasement. The inlet mounted post may be used for footing anchors in runs with steel posts.

When standard post depth is not available due to a culvert, the guardrail posts directly over the culvert shall not be driven, but set in holes with a 4' minimum concrete encasement for the maximum post depth available.

Cost of the inlet mounted posts, footing anchors, and concrete encasement shall be included in the unit price bid for guardrail of the type required by the plan.

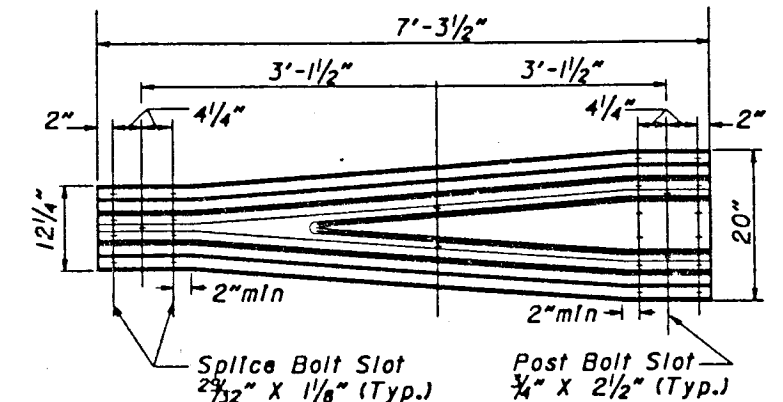
* **ANCHORS** conforming to 712.01 or anchors per FF-S-325 Group VIII, Type I with proof load certification per 712.01, may be substituted with the same bolt diameter specified.

Also, Partial Depth Resin-Bonded Anchoring Systems may be used. The anchor shall be galvanized and be the same diameter and strength as the bolts specified. 1/4" diameter anchor systems should resist an average ultimate tensile load of 43,700 pounds (1/8" diameter, 24,000 pounds). Test load data shall be submitted to verify manufacturers' recommended anchor, hole size, embedment depth, bonding medium, etc. to satisfy the load requirements.

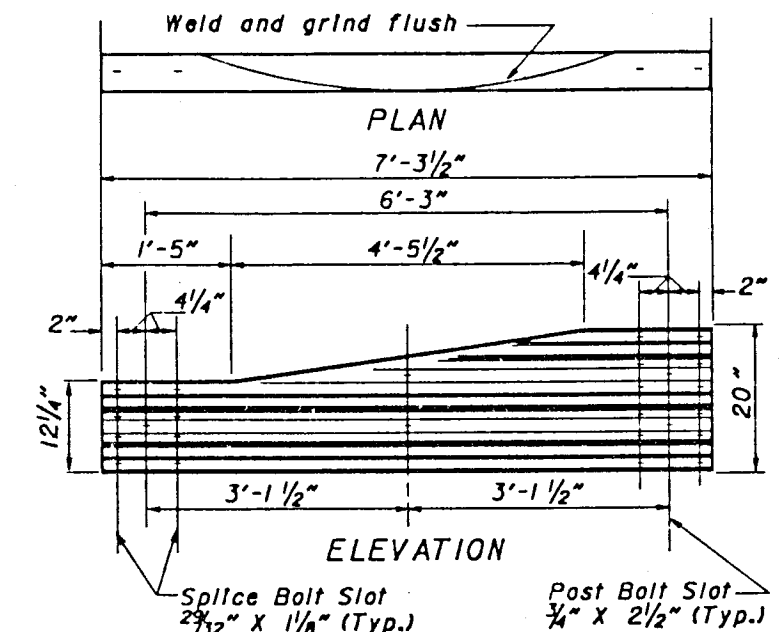
If anchor bolts are located within a haunch with slopes flatter than 6:1 and through-bolting is used, beveled plate washers shall be used on the bottom. For haunches with slopes steeper than 6:1, partial depth resin-bonded anchors should be used.

If there is any question of deteriorated concrete, expansion anchors will not be allowed, as determined by the Engineer. Where self-drilling anchors are permitted and used for guardrail construction, the holes shall be drilled with the expansion shield (not by a drill bit) and the shield shall be installed flush with the concrete surface.

The Engineer shall visually inspect, after installation, all expansion anchors used in guardrail construction. The Engineer may require the Contractor to test load any expansion anchor to 1/4 the certified proof load in direct pull. The equipment and method used shall meet the approval of the Engineer. Each expansion anchor that fails to meet the test requirements shall be reset or removed and replaced with bolts extending through the concrete or grouted in place, as directed by the Engineer.



TYPE 1



TYPE 2

TRANSITION SECTIONS

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL
DETAILS

STANDARD
CONSTRUCTION
DRAWING

GR-1.2

APPROVED *D.K. Hulman* ENGR., L. & D.

DATE
5-6-91