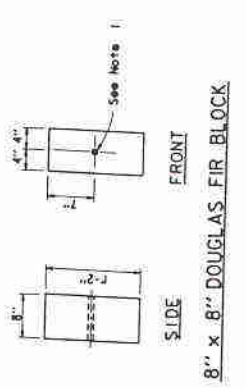
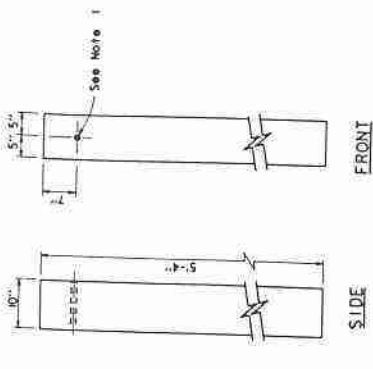
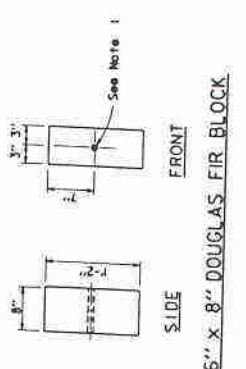
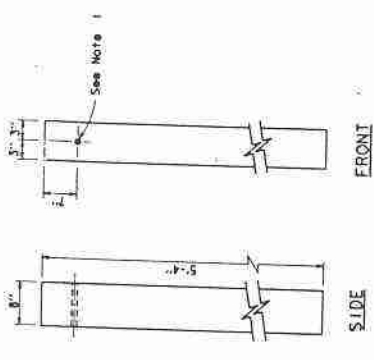
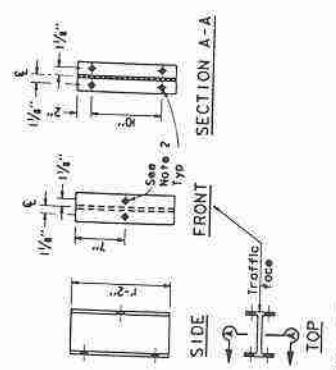
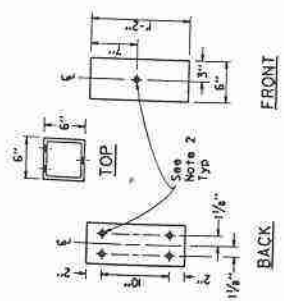
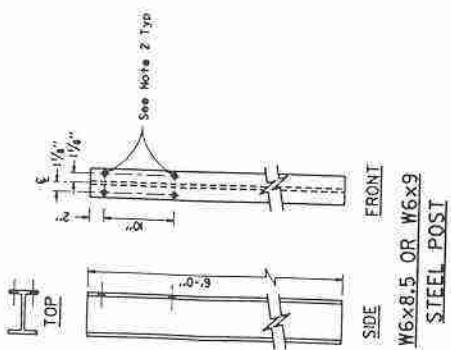
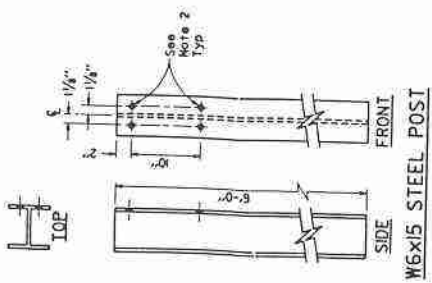


DIST. COUNTY ROUTE TOTAL MILES
 PROJECT NO. 100-100-100
 REGISTERED CIVIL ENGINEER
 JULY 1, 1992
 EXPIRES ANNUAL DATE

NOTES

1. All holes in wood posts and blocks shall be $\frac{1}{8}$ " & $\frac{1}{8}$ ".
2. All holes in steel posts and blocks shall be $\frac{1}{8}$ " & maximum.
3. Contractor may submit alternative steel post details for Engineer's approval.
4. Dimensions shown for wood post are nominal.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 POSTS AND BLOCKS**
 NO SCALE

The rail is blocked out from the post with a block generally of the same material and cross section as the post. Wood line posts are normally 150 mm x 200 mm x 1.83 m with the 200 mm dimension installed perpendicular to the rail element. All wood posts and blocks for guardrail must be pressure treated to resist decay. Two types of steel posts are approved for guardrail construction. The first is a galvanized MW150 x 14 hot-rolled, wide-flange post 2.0 m long. The other is a 150 mm, cold-rolled galvanized "C" shaped post 1.8 m long. Steel posts must be longer than wood posts in order to develop the same soil bearing resistance. Generally only one type of post, either wood or steel, should be used in a run of guardrail.

Where embankment width between the edge of shoulder and hinge point is less than 0.9 m, there is not sufficient soil to support a standard length guardrail post. If there is at least 0.6 m but less than the normal 0.9 m of embankment, a 2.1 m long, 200 mm x 200 mm wood post should be used. This design may also be used where embankment material is non-cohesive. If there is less than 0.6 m between the hinge point and the edge of shoulder, a 0.6 m diameter cast-in-drilled-hole pile should be used to support a 150 mm steel post. Details for these alternate designs are shown in Figure 7-4, Guardrail On Narrow Embankments.

When it is necessary to continue a roadside guardrail across a low-fill box culvert, pipe culvert or overside drain, full embedment of the guardrail post(s) may not be possible over the culvert due to the shallow soil cover. Posts located in the overside drain are undesirable and are often set back behind the drain with multiple blocks. The use of more than two blocks can cause serious guardrail rotational

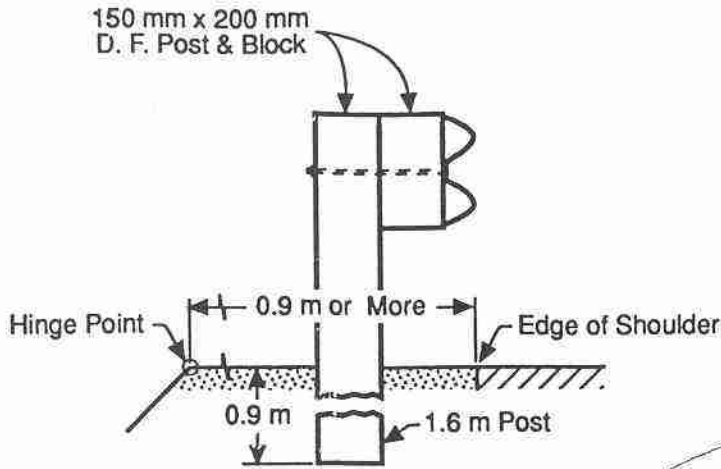
problems and should be avoided. One or two posts located directly over the culvert or drain may be eliminated and the guardrail spanning the gap doubled to provide the necessary stability. Design details are shown in Figure 7-5, Long Span Nested Guardrail. This design should not be used in transition areas.

Where larger posts are required in guardrail transitions approaching fixed objects, the wood posts are 250 mm x 250 mm with 200 mm x 200 mm blocks. The alternate steel posts are a MW150 x 22 section and the blockouts are a 150 mm x 150 mm section with walls 4.8 mm thick. All steel parts are to be galvanized. Backup plates, which are 300 mm lengths of guardrail, must be used between the rail element and all metal blockouts at posts without rail splices. This minimizes the possibility of the rail element tearing on the edge of a blockout during an impact. Details of the guardrail transition are shown in the Standard Plans.

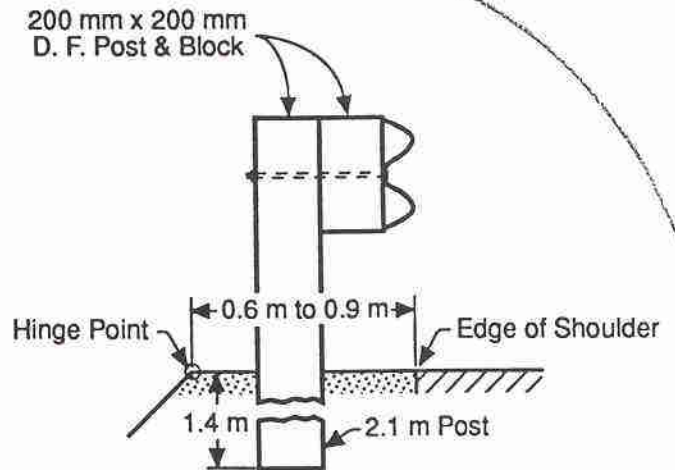
Adjustable rail-height guardrail posts may be used where it is anticipated that an overlay will be placed on the shoulder within the next 10 years. The adjustable post has three predrilled holes that allow the rail element and block to be raised when an overlay is placed on the shoulder. Details are shown in Figure 7-6, Adjustable Height Guardrail.

Guardrail can be installed on curving alignment without special fabrication where the radius of curvature is more than 45 m. Where the radius of curvature will be 45 m or less, down to a minimum radius of 1.5 m the rail elements require shop rolling to the required radius. Installations of guardrail with specially fabricated components should be held to a minimum to reduce the need to stockpile special

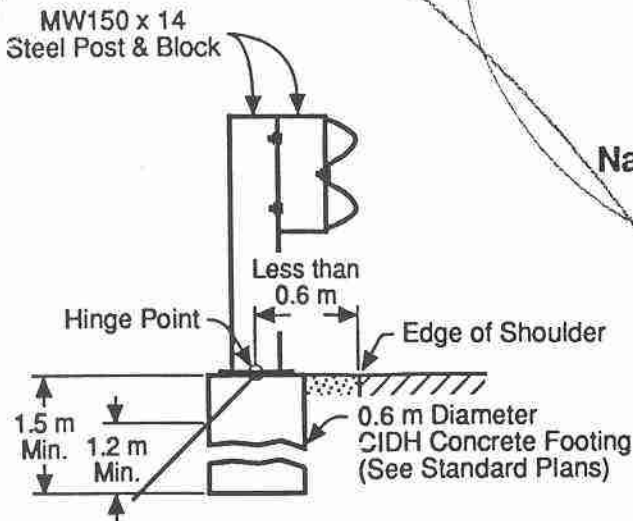
Figure 7-4
GUARDRAIL ON NARROW EMBANKMENTS



Standard Condition



Narrow Embankment or Non-Cohesive Soil



Very Narrow Embankment