

Recommendations for Placement of Guardrail Posts in Rock

Midwest Roadside Safety Facility

January 30, 2003

Please note: These recommendations are based on results of a recent full-scale crash test and engineering judgement based on energy considerations. Currently, a report for submission to the FHWA is being prepared for their consideration.

For situations where competent rock is encountered at depths less than the specified embedment depth for guardrail posts, the following recommendations have been submitted to FHWA for approval. In the configurations detailed in Figure 1, the backfill material in the cored portion of the hole is ASTM C33, size number 57, hand tamped in 6" lifts. Native materials are utilized for backfill in the soil portion of the hole in cases where the bedrock underlies a soil on the surface. The different configurations are based on depth to rock. For Cases 1 through 3, the guardrail post will need to be shortened. This evaluation was based on competent rock. If weathered rock or cobbles prevent driving posts, then augering and full embedment should be utilized.

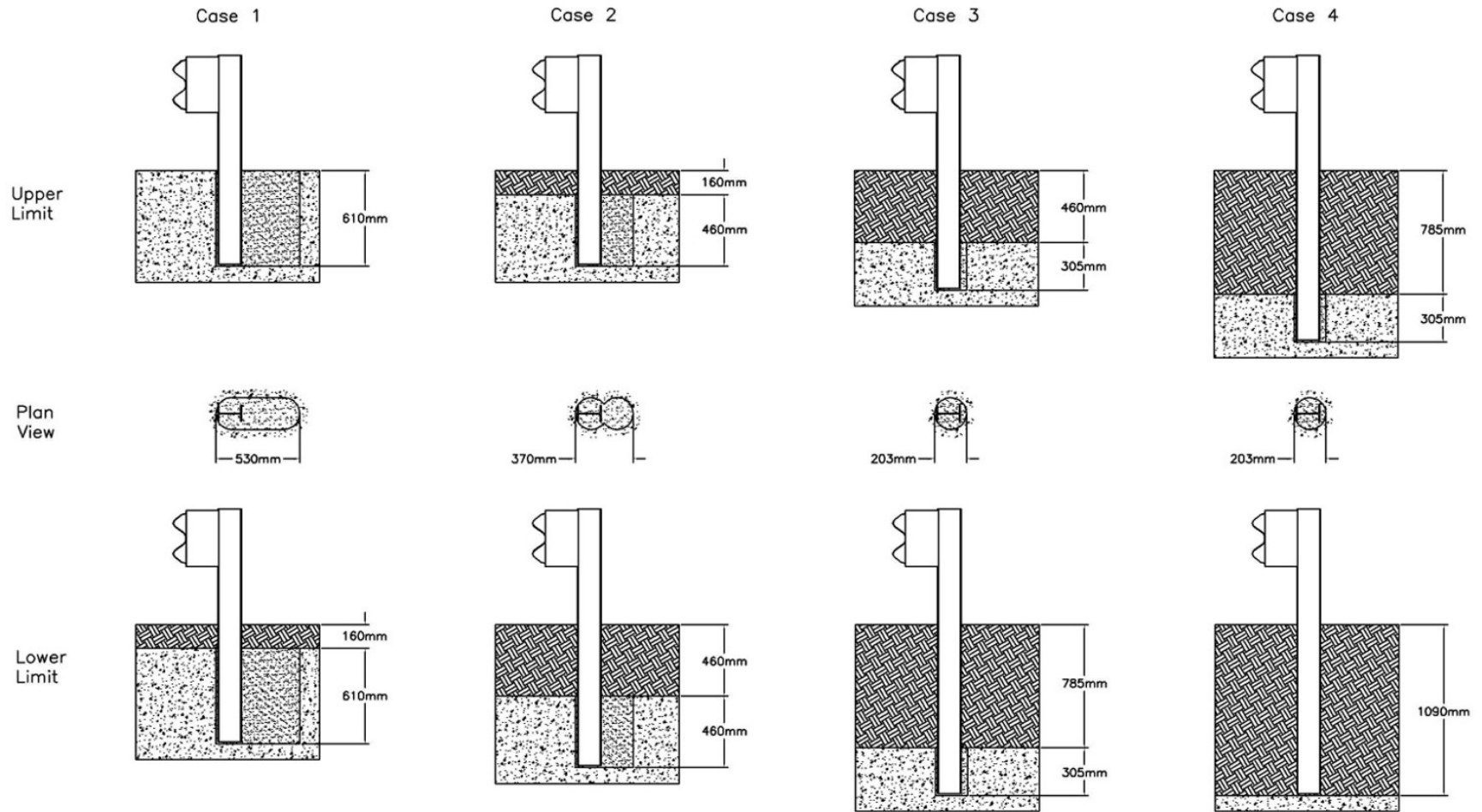
Based on this study, we further recommend the configuration detailed in Figure 2 for guardrail post installation through paving materials. Backfill material is again ASTM C33, size number 57.

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Figure 1: Post Installation Procedure when Competent Rock is Encountered



Notes

For overlying soil that ranges from 0 to 160 mm in thickness, drilled hole in rock will be constructed by drilling three 203-mm dia. holes on 165-mm ctrs, to a depth of 610 mm. The sides of the drilled hole should then be smoothed out.

For overlying soil that ranges from 160 to 460 mm in thickness, drilled hole in rock will be constructed by drilling two 203-mm dia. holes on 165-mm ctrs, to a depth of 460 mm.

For overlying soil that ranges from 460 to 785 mm in thickness, drilled hole in rock will be constructed by drilling one 203-mm dia. hole to a depth of 305 mm.

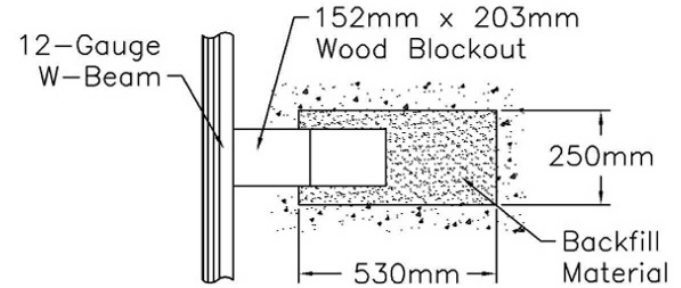
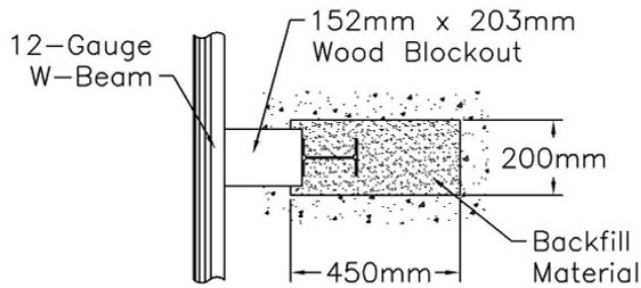
For overlying soil that ranges from 785 mm to 1090 mm in thickness, depth of 203-mm dia. drilled hole in rock will vary from 305 mm to 0 mm, so that the total embedment depth of the post does not exceed 1090 mm.

Figure 2: Installation Procedure Through Paving Materials

Pavement Blockout
Dimensions for
Steel Post

Pavement Blockout
Dimensions for
Timber Post

Plan
View



Elevation
View

