

RESEARCH NOTES

OREGON DEPARTMENT OF TRANSPORTATION
ENGINEERING SERVICES SECTION
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TWO-RAIL STEEL-BACKED TIMBER GUARDRAIL

**Crown Point Highway
Multnomah County, Oregon**

The Oregon Department of Transportation (ODOT) installed a two-rail steel-backed timber guardrail along a section of the Historic Columbia River Highway, formerly known as the Crown Point Highway, in March 1992 as an experimental features project. The guardrail was designed to simulate the 1920s timber rail used along the Columbia River Highway which later became a national standard. The two-rail steel-backed timber guardrail was approved for use by the Federal Highway Administration (FHWA) after it was crash tested by the Texas Transportation Institute (TTI).

The guardrail was installed using Douglas-fir posts and rails and galvanized steel backing for the rails. The wood was pressure treated with ammoniacal copper zinc arsenate (ACZA). The two-rail steel-backed timber guardrail cost \$134.50/m (\$41.00/foot) compared to \$36.09/m (\$11.00/foot) for a typical Type 2A guardrail.

Three problems were noted on site visits to the guardrail. First, the white paint that was applied to the guardrail had turned a blue-green color. Secondly, the paint was starting to peel and flake off in some spots. Finally, inspection of the galvanized steel hardware showed that rust was starting to form; corrosion was visible on the hardware at most of the posts. These problems can be directly credited to the leaching of the ACZA. If the preservative is not completely dry after treatment, the ammonia carrier can attack the paint and the zinc galvanizing causing the above problems. Better drying techniques are necessary for ACZA treated timber to be used in similar projects.

No maintenance of the guardrail has been necessary since its installation in 1992. However, the guardrail will need to be repainted due to chipping and flaking paint.

RECOMMENDATIONS

Recommendations from this research include: 1) pressure wash, seal and repaint the existing guardrail, 2) continue the evaluation of the guardrail by maintenance staff, 3) identify a funding source for routine maintenance, 4) revise the ODOT specifications for drying guardrail posts and rails, and 5) for future projects, the sealant and paint should be specified in the Special Provisions.

SUMMARIES OF CURRENT TRANSPORTATION RESEARCH

The design of the two-rail steel-backed timber guardrail has been approved by the FHWA and is therefore suitable for future placement along scenic areas of interest. ODOT has evaluated the guardrail, however, no accidents involving the guardrail have been reported. Continued evaluation of the guardrail is recommended to monitor the performance of the guardrail in the event of an accident.

ADDITIONAL INFORMATION

Recently, a report for this research project was published titled "Two-Rail Steel-Backed Timber Guardrail, Final Report." To obtain a copy of this report or any additional information regarding this project, please contact:

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