Box Culvert Guard Rail (2005-2)
State Technical Representative
William Williams, P.E., Project Manager

Project Objective:

Develop a guard rail design for typical box culverts that will meet TL-3 requirements of NCHRP Report 350. This design will also simplify contractor installation through the use of a epoxy adhesive anchor system to anchor the post anchor bolts to the concrete box culvert.

Work Performed to Date:

Performed two detailed post designs using the Hilti RE 500 Epoxy anchoring system. Designs were submitted to panel members for review on September 19, 2006. Two designs using two different posts sizes were performed and submitted. The W6x9 design is recommended for guard rail installations constructed over shallow box culvert. The W8x21 design is recommended when greater post strength is required.

A new lead contact for this project was selected, Mike Elle, with Minnesota DOT (MnDOT). Mike is soliciting comments from the various states on the proposed designs. The proposed slab thickness may increase from 7 inches to 9 inches.

Results of Work Performed

Mike Elle with MnDOT has indicated that he has received comments on the designs submitted for this project from several participating states that are part of this pooled fund. Mr. Elle received this information in the middle of March 2007. This information has not yet been conveyed to TTI. However, on April 4, 2007, detailed design information was discussed with Mr. Khalid Obeidat, Bridge Design Engineer with MnDOT. Mr. Elle has agreed that a project time extension will be needed for this project.

No other work has been performed on this project for this reporting period.

Work Remaining to be Completed.

Full-scale pendulum testing of a single design is still planned for one of the design developed for this project to validate the analytical results. After review of the testing results and approval of the post strength performance, full-scale crash using a pick up truck is planned.