

**Project Title:** W-Beam Guardrail Post Installation in Rock  
**State Technical Representative:** Ali Hangul  
**TTI Project Manager:** Nauman Sheikh  
**Project Contract Period:** 2/19/2007-2/18/2008  
**Reporting Period:** 2/23/2007-3/31/2007

### **Project Objective**

The objective of this project is to develop cost effective guidelines for placement of W-beam guardrail posts in rock by optimizing current placement guidelines and by investigating sensitivity of W-beam guardrail performance to post embedment depth.

### **Work Performed to Date**

After technical review of the TTI proposal, the project contract was signed on February 22, 2007.

TTI researchers have started evaluating existing guidelines for placement of guardrail posts in rock with the objective of suggesting ways to optimize the coring requirements.

Pendulum testing of guardrail posts at varying depths in soil has been scheduled for the second week of April.

### **Results of Work Performed**

No results can be reported for this time period as the work described above is currently underway.

### **Work Remaining to be Completed**

TTI researchers will revise the existing guidelines by optimizing requirements of coring in the rock for guardrail post installation. TTI researchers will perform pendulum tests to evaluate the performance of W-beam guardrail posts at reduced embedment depths. Finite element models of the posts in soil will then be developed to validate post-soil interaction using pendulum test results. Once the post-soil model has been validated, it will be used to develop a full system W-beam guardrail model. Parametric simulations will then be performed to evaluate the performance of W-beam guardrail when embedment depth of one or more posts is compromised by the presence of rock. Simulation results obtained from the parametric study will be used to develop guidelines for installation of guardrail posts when rock is encountered.