

**Project Title:** Placement of Guardrail on Slopes  
**State Technical Representative:** Dick Albin  
**TTI Project Manager:** Akram Abu-Odeh  
**Project Contract Period:** 4/01/2006-6/31/2007  
**Reporting Period:** 4/01/2007-6/30/2007

### Project Objective

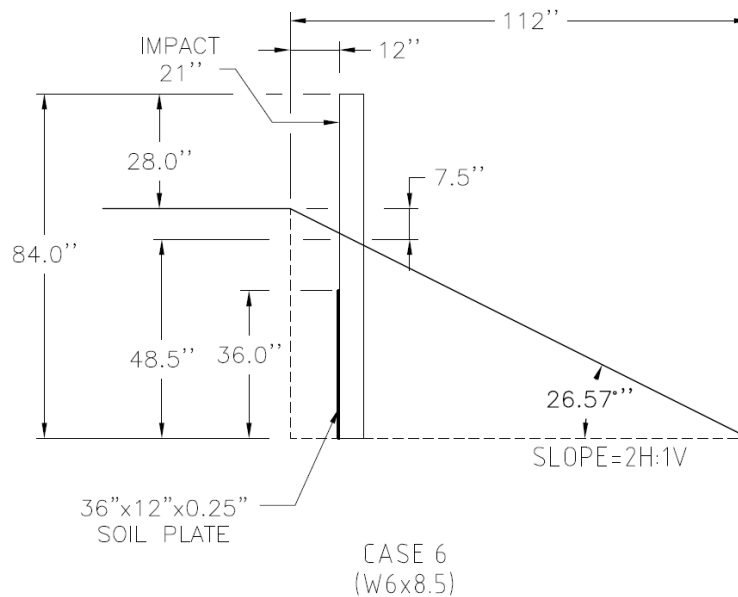
Develop a guardrail design that meets NCHRP Report 350 TL-3 crash test criteria and can be installed with the face of the beam element aligned with the slope break.

### Work Performed to Date

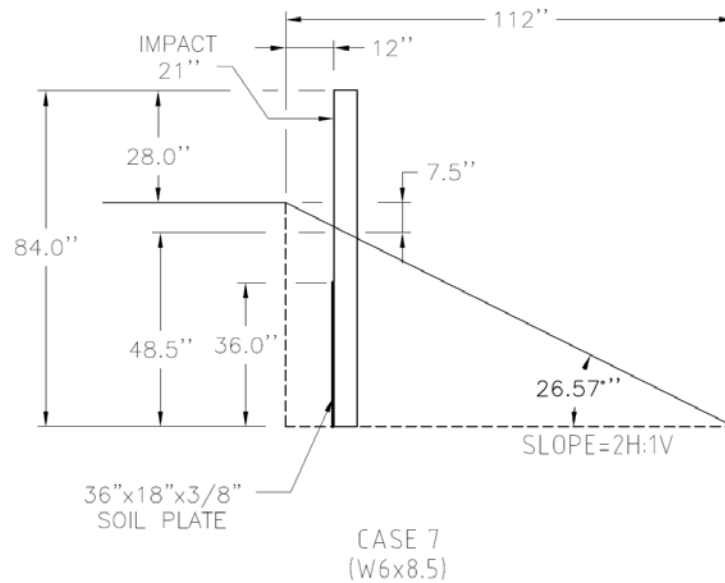
A potential design was recommended for a full scale crash test and forwarded to the State Technical Representative. The design features include a 10-Gauge W-Beam rail with an 8-ft steel post (W 6x8.5) placed at 6'-3" (standard post spacing). In response to that, the pool fund state expressed desire to analyze additional post designs with shorter post length than 8-ft.

A modification request for time extension and additional funding was filed with pool fund states to conduct this additional task.

Accordingly, two new post designs were identified for further analysis and testing. Both designs utilize a 7-ft long W6x8.5 steel post placed 1-ft beyond the break point on a 2H:1V slope. A soil plate is welded to each post on the front flange in order to increase the overall post stiffness. One design (Case 6) uses a 36"x12" by 1/4" thick plate and the other design uses 36"x18" by 3/8" thick plate. Figures 1 and 2 depict Case 6 and Case 7 respectively.



**Figure 1 Placement of the new post design (Case 6).**



**Figure 2 Placement of the new post design (Case 7).**

### Results of Work Performed

There are no results for these two designs at this point in time.

### Work Remaining to be Completed

The new post designs will be crash tested using a surrogate vehicle (bogie). These tests will be simulated to calibrate the new post design model. Subsequently, these models will be incorporated into the existing full system model to simulate NCHRP Report 350 TL 3-11 impact scenario. The results and recommendations will be forwarded to the pool fund states for review and approval. Once the final design of the guardrail system is approved, a full-scale crash test will be conducted to verify impact performance