

Technology Deployment Initiatives and Partnership Program
Request for Funding
FY 2002

FHWA Strategic Goal Area: Safety and Productivity

Project Title: Retaining Wall Monitoring using TDR, Going To The Sun Road, in Glacier National Park.

Problem Statement: Dozens of dry laid stonewalls and stone masonry walls are in National Parks and National Forests throughout the U.S. These walls often weaken or fail due to age or damage caused by avalanches. Currently walls are inspected visually, from road level. Problems are difficult to find and often don't show until road integrity is threatened. New and innovative designs are being used to strengthen and or replace these walls. With a TDR remote monitoring system we can detect very small movements of a wall. We can take readings and send data as often as is appropriate for each situation. The data is sent by radio/telephone to WFLHD and/or the client agency. Alarms can be set to trip if threshold values of movement are reached. Alarms may be sirens, warning lights, automated phone calls to preset numbers, automated gates to close a road, or any combination of these options. Performance of new wall designs or new wall repair designs can be monitored using TDR and remote data acquisition hardware. The data could be used to support wider use of these new and innovative designs.

Proposal: To use vertically grouted TDR cable to monitor, collect, store, and send data via radio spread spectrum and cellular telephone to the Park Service and Federal Highway Administration offices.

Benefits: Safety to the traveling public provided by real time monitoring of retaining wall movement, buckling, or failure. Some designs for new walls or wall repairs are innovative, never been used before. TDR subsurface documentation of wall performance would support further use of these designs.

Resources/Cost: \$17,500 for hardware, software, installation assistance from a geotechnical instrumentation contractor.

Duration: One year set up, two year monitoring by WFLHD during which we would train Glacier National Park Service employees to use the system hardware and software. Turn operation over to the Park in 2 years.

Organization/Method: Purchase equipment parts, assemble in-house with assistance from a contractor, and install by contractor at one site for pilot evaluation.

Submitter:

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