

Project dossier



PROJECT DOSSIER

Baden Slide Monitoring Project, USA

PROJECT OVERVIEW

Southwestern Pennsylvania has a high concentration of landslides due to the terrain and geology, many of which impede safe travel on the roadways. This slide was selected for investigation as part of the state's slide remediation program.

WHY MONITORING?

A slow moving slide adjacent to a roadway is producing pavement cracking and displacement. Slide characteristics are needed to develop for cost effective repair design and construction. Monitoring is required to determine slide properties, such as rate of displacement and a displacement profile with depth, at the top and toe of the slope. This will aid in determining the best engineering solutions for remediation.

MONITORING SOLUTION

Rite Geosystems Inc., USA was entrusted to provide complete instrumentation and automated, real time monitoring results for the project. The type of instrumentation installed at this site included in-place inclinometers installed in 30 feet deep boreholes. The sensors were all read by remote dataloggers, transmitting data to the cloud, providing threshold limit alerts.

Project	Baden Slide Monitoring Project
Location	Pittsburgh, PA, USA
Owner	Pennsylvania Department of Transportation
Client	American Geotechnical & Environmental Services, Inc.
Duration	2022 - 2024



In-place inclinometer installed with datalogger, at the top of slope



SCOPE OF WORKS

Rite-Geosystems, USA scope of works included:

- Supply of instrumentation
- Technical support and supervision of the installation
- Training to the client's team on datalogger commissioning and configuration for automatic monitoring at desired frequency,
- Setting up an online web-based data management system (WDMS) with instant alerts via SMS/emails, and training to client's team on setting up dashboard and using the software

INSTRUMENTS USED

- Wireless In-place inclinometer - IPI
Four model EAN-52M digital in-place inclinometers were used for monitoring - two were placed 60 ft apart at the top, and two were placed 50 ft apart at the toe of the slope. Each system included chain of digital IPI sensors, with 5 ft gage length.

The data from each string of IPIs was collected by model ESDL-30 dataloggers. The datalogger collected the data at required frequency and sent recorded data wirelessly to the cloud server via cellular network.

The data was available in near real time over our web based data management software, with instant alerts via SMS and emails.



In-place inclinometer installed with datalogger, at the toe of slope

RESULTS

Online data management platform displays the displacement profile of the slide. It will continue to monitor for the duration of the study. This will aid in working out the optimal solution for slide remediation.



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