



GEO-INSTITUTE 7th ANNUAL LIVE STREAMING WEB CONFERENCE

The Geo-Institute Embankments, Dams, and Slopes Technical Committee will live-stream the session “Extreme Events on Geotechnical Infrastructure” on Friday, December 9, at 2 PM EST. The topics include:

“Port of Anchorage: Design and Construction Failure,” **Bryan Strohman**, P.E., G.E., P.Eng.

This presentation will discuss design issues for a large Open Cell Sheet Pile System (OCSP®) wharf structure constructed at the Port of Alaska (POA) as part of the Ports Intermodal Expansion Project (PIEP). The OCSP® system is similar to the conventional closed cell system, but it omits sheet piles' rear arc and replaces it with longer diaphragms. The longer diaphragms balance the lateral soil loads on the front face sheet piles by transferring these loads to the soil by friction.

A portion of the wharf structure was identified as an Essential Facility, meaning it must remain functional after a major earthquake. As critical infrastructure, the POA has been designed for higher performance levels than required by the codes in an attempt to ensure it will be operational after a design-level event. After the wharf design at the POA was complete, construction issues and lawsuits led to extensive investigations of the wharf's design. This paper discusses the design issues and presents recommendations for the design of earth retaining structures in high seismicity regions.

“Torsional Ring Shear v. Direct Shear Testing,” **Peter Jacke**, PE., M. ASCE

This presentation will discuss the advantages and disadvantages of torsional ring shear testing to measure the peak, fully softened, and residual strengths of fine-grained soils. Peter will also discuss the problems and limitations of direct shear testing as compared to ring shear testing.

“Highway 1 Rat Creek Embankment Failure: 2021 Reconnaissance and Analysis,”

Dimitrios Zekkos, Ph.D., M. ASCE

This presentation will discuss the Highway 1 embankment failure in Big Sur, California, and the investigation performed by a team mobilized by the Embankments, Dams, and Slopes Technical Committee. Dimitrios will discuss in detail the following topics: (1) Overview of Big Sur Highway 1, including the history, geological context, and description of the embankment failure, (2) data collection activities, such as terrestrial LiDAR and Unmanned Aerial Vehicle (UAV) data acquisition, exposure mapping and sampling, radiocarbon dating of soil samples, precipitation and geospatial analyses and satellite-based assessments, (3) repair of the roadway, and (4) Recommendations to avoid embankment erosion that may potentially cause similar highway failures.

“Underwater Slope Failure: Observations and Analyses,” **Alex Cordogan**, **Abedalqader Idries**, S.M. ASCE and **Timothy D. Stark**, Ph.D., PE., M. ASCE

This presentation will discuss the investigation and analysis for an underwater slope failure during construction of a port facility. The analysis simulates the retrogressive failure and bathymetry data is used to confirm the failure mechanism. The analysis is used to assess the impact of causeway construction and underwater dredging on the failure in submarine glaciolacustrine clays.