GEO-INSTITUTE
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LIVE STREAMING
WEB CONFERENCE
December 4-8, 2023

The Geo-Institute Embankments, Dams and Slopes Technical Committee will live-stream the session "**Embankments, Dams and Slopes Design and Case Histories**" on Monday, December 4, at 2 PM EST. The topics include:

"Triggering and post-triggering assessment of the Cadia tailings storage facility failure."

Jorge Macedo, Ph.D., P.E., M.ASCE

This talk will discuss the Cadia tailings storage facility (TSF) failure; specifically, the talk showcases the work conducted to re-examine and expand the triggering analyses conducted in the forensic study after the failure. In addition, the talk also discusses the first comprehensive post-triggering and run-out assessment of the Cadia failure. The triggering mechanisms are evaluated through Lagrangian-based analyses with the finite difference method (FDM), which is well suited for small to moderate deformations, whereas the post-triggering mechanisms and run-out are evaluated using the material point method (MPM), which is well suited for the evaluation of large deformations.

"Assessing the Impact of Sample Disturbance and Geology on Earthen Embankment Design and Construction," **H. Omar Ulloa**, Ph.D., Aff.M and **Navid H. Jafari**, Ph.D. M.ASCE

This presentation will discuss the influence of sample disturbance, sample size, and geologic characteristics on the geotechnical design of levee embankments. Conventional tube and piston samplers of different diameters continue to be widely used, potentially leading to underestimation of shear strength. This presentation focuses on comparing 7.6 cm and 12.7 cm diameter undisturbed Shelby tube samples and CPT data collected from three levee sites in the Greater New Orleans Area, which encompass diverse geologic histories. The findings provide valuable insights into optimizing sample collection methods and improving geotechnical design for earthen embankments.

"*Numerical Simulations of Fourth Avene Landslide Considering Cyclic Softening,*"
Jack Montgomery, Ph.D., P.E., M. ASCE.

Infrastructure damage attributed to strain-softening of clayey soils has been documented in many case histories involving seismic loading. Nonlinear deformation analyses are increasingly being used to examine the seismic response of critical infrastructure, but the reliability of results from these analyses depends on the ability of the selected constitutive model to capture the response of the soil. This presentation will discuss the cyclic softening and numerical modeling of fine-grained soils using the PM4Silt constitutive model. The

resulting numerical model are compared to the observed displacements that occurred in the Fourth Avenue Landslide during the 1964 Great Alaskan Earthquake. Guidance is provided regarding calibration of PM4Silt and the sensitivity of the solution to the input parameters is explored. The results using PM4Silt are then compared to a total stress-based constitutive model to understand how differences in model complexity affect the results at both the element scale and field scale.

"Portuguese Bend Landslide Stabilization," **Neven Matasovic**, Ph.D., PE., G.E., F. ASCE

The Portuguese Bend Landslide is in the City of Rancho Palos Verdes, California, about 20 miles southwest of Downtown Los Angeles.   Over 640 acres of coastal land is affected by landsliding, with portions of the slide moving as fast as 12 feet/year.   After over 50 years of study, the landslide mitgation measure has been selected, approved, and funded.   It involves installation, servicing, and monitoring of five hydrauger batteries, with hydraugers installed by means of directional drilling.   Individual hydraugers will extend for up to 1,400 feet below the basal failure surface.   The project is within an environmentally sensiteive area.   Many residences are affected as is a critical infrastructure, such as a major road and a sewer force main that serves about 12,000 people.   The site is heavily instrumented with installation of additional, rapid response instrumentation pending. Dr. Matasovic will outline the project, discuss design, permitting, funding, and construction challenges, and provide an outlook for a long term success of remedial measures.