



## 6<sup>th</sup> Annual Web Conferences 2020

### Technical Committees

Live Streaming Daily – Technical Case Studies  
December 6 – 10, 2021

The Geo-Institute Embankments Dams and Slopes Technical Committee will live-stream the session “Extreme Events on Geotechnical Infrastructures” on Wednesday, December 8 at 2 PM EST. The topics include:

“2021 Highway 1 Embankment Failure at Rat Creek: Reconnaissance and Analysis,” **Dimitrios Zekkos**, Ph.D., P.E., M.ASCE  
This presentation will discuss the findings of the EDS Committee’s reconnaissance and analysis of the Edenville Dam Failure on the Pacific Coast Highway near Big Sur, California on January 28, 2021. The presentation will discuss the impact of about 0.23 m (9 inches) of rainfall in an area impacted by the August 18, 2020 Dolan Wildfire. The removal of vegetation by a wildfire can increase the amount and velocity of water runoff or overland flow, which causes more debris to be transported down the drainage channel, i.e., Rat Creek, and blockage of the channel. This resulted in the highway culvert becoming clogged and the debris flow overtopping the highway and eroding the supporting embankment. The retrogressed rapidly up the slope until the highway was breached and embankment erosion continued until a valley with a volume of about 382,000 cubic meters (500,000 cubic yards) was cut through the highway embankment fill material.

“Deterministic and probabilistic case analyses of slopes, with insights for LRFD,” **Bak Kong Low**, Ph.D., P.E., F.ASCE

This presentation will discuss deterministic and probabilistic analyses of several slope cases in soils and rocks, including an underwater slope failure in San Francisco Bay Mud, an excavated slope in London Clay that failed despite a high computed factor of safety, analysis of a Norwegian slope accounting for spatially autocorrelated soil properties, and reliability analysis of a rock slope in Hong Kong accounting for parametric uncertainties. This talk is similar in theme to the speaker’s paper which won the 2019 ASCE Thomas A. Middlebrooks award, but presents new slope cases from his 2021 book “Reliability-Based Design in Soil and Rock Engineering: Enhancing Partial Factor Design Approaches”, published by the CRC Press, <http://www.routledge.com/9780367631390>

“Mobilized Shear Strength of Overconsolidated Seattle Clays,” **Abedalqader Idries**, S.M.ASCE and **Timothy D. Stark**, Ph.D., P.E., D.GE., F.ASCE

An overconsolidated clay can exhibit a range of shear strengths, where the difference between the peak and residual effective stress friction angles can be as large as twenty degrees. This presentation will discuss the mobilized shear strength of overconsolidated clays in the Seattle area using inverse analysis of a number of slope failures in Qvgl clay.

“Reliability of Levee-Protected Power Network under Flooding in a Changing Climate,” **Farshid Vahedifard**, Ph.D., P.E., F.ASCE

This presentation will focus on quantifying the effects of climate adjusted flooding on the integrity of levee-protected infrastructure systems. There has been a growing interdependency among levees and other infrastructure systems due to rapid urbanization and technological developments in levee-protected areas. This presentation illustrates how a multi-disciplinary framework can be developed to quantitatively evaluate the effect of flooding in a changing climate on the fragility of earthen levees and the subsequent impacts on the resilience of a levee-protected electric power network for a study area in Northern California.