CE

Graduate Seminar

Tyler Oathes, Ph.D.

Assistant Professor in the Civil and Environmental Engineering Department at Rutgers University

April 14, 2025 (4:00 pm - 5:30 pm), Tiernan Hall 106

Zoom Link: Click Here ***Meeting ID: 994 3917 6432 Passcode: 058807***

Lessons learned from a reexamination of the 2019 Feijão Dam 1 failure

Abstract

The rapid failure of Feijão Dam 1 in 2019 resulted in significant loss of life, massive environmental impacts, and substantial financial costs as well as large changes in the management of tailings facilities across the world. This presentation discusses the lessons learned from a reexamination of the 2019 failure and the development of new numerical methods to directly model viscous effects in numerical analyses of saturated, plastic soils. A brief discussion of the 2019 failure and subsequent investigations is presented alongside a short overview of the mining industry and tailings dam construction. Nonlinear analyses using FLAC 8.1 with the viscoplastic constitutive model PM4SiltR were performed to reanalyze the 2019 failure. Results of the analyses show that the numerical techniques were able to capture the failure observed in the field. Lessons learned and implications for practice are discussed.

About the Speaker

Dr. Tyler Oathes *is an Assistant Professor in the Civil and Environmental Engineering Department at Rutgers University. His expertise is in geotechnical engineering with research experience investigating soft soil behavior from the element to system scale as well as infrastructure performance and resilience. He received his Ph.D. and M.S. in Civil and Environmental Engineering from the University of California, Davis and his B.S. in Civil Engineering from Oregon State University. His research focuses on the interplay between fundamental soil behavior and the system response of geotechnical infrastructure systems under operational and transient loading (i.e., earthquake and floods). His research utilizes numerical and laboratory tools to reduce the hazard posed to communities by and increase the resilience and sustainability of infrastructure systems. Current ongoing research includes (1) investigating the behavior of plastic soils under concurrent extreme transient and operational loading, (2) accounting for the impact of spatial variability on the seismic and static stability of embankments and slopes, (3) the advanced testing and modeling of stabilized dredged sediments for beneficial use, and (4) evaluating alternative materials for use as more sustainable ground improvement approaches. He has ongoing research projects funded by USACE, USDOT, NJ Transit, and NYMTC, amongst others.*

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