In-Person-Only Event

Flow Failure Assessment for Dams and Embankments

Professor Timothy D. Stark

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A procedure is proposed to assess whether a liquefied strength or liquefied strength ratio should be applied to a zone(s) along a potential failure surface in a static or dynamic stability analysis to assess the flow failure potential of dams and embankments. The procedure consists of the following five main steps, which no longer includes assessing contractive/dilative shear behavior: (1) assess static liquefaction potential of segments along failure surface, (2) assess seismic liquefaction potential of these segments; (3) if liquefaction is not triggered, assess the magnitude of shear-induced pore-water pressures due to small earthquakes or other vibratory events in each segment; (4) assign a liquefied strength to zone(s) that experience liquefaction or significant pore-water pressure generation, i.e., total (static plus dynamic) pore-water pressure ratio greater than or equal to 0.7; and (5) conduct a post-triggering stability analysis to assess flow failure potential. The procedure will be illustrated using the 1971 Upper San Fernando Dam deformations. A (simple) screening procedure based on CPT data will be also presented for identifying liquefiable layers based on the state parameter for the assessment procedure.

RSVP Here

Queensland Tailings Group

Timothy D. Stark is a Professor of Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign with an expertise in Geotechnical Engineering. In particular, Dr. Stark has been conducting research and teaching on the static and seismic stability of natural and manmade slopes, embankments, and earth structures for over twenty-five (25) years. Dr. Stark has received a number of awards for his research, teaching, and service activities including recently: 2023 J.E. Jennings Award, South African Institution of Civil Engineers; 2023 Martin S. Kapp Lecturer, Geo-Institute Met Section; 2022-2023 Cross-USA Lecturer from American Society of Civil Engineers (ASCE); 2022 T.H. Wu Lecturer at The Ohio State University; 2019 George H. Norman Medal, ASCE; Best Paper in Geosynthetics International Journal, 2016; 2015 James M. Hoover Lecturer at Iowa State University; Thomas A. Middlebrooks Award, ASCE, 2013 and 1998; and Associate Editor Award, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, 2012.

5:30 – 6:00 pm	**Welcome Drinks and Networking**
6:00 – 7:00 pm	**Prof Timothy D. Stark Presentation**
7:00 – 7:30 pm	**Q&A**

Date: Monday, 12 Feb 2024
Time: 5:30 to 7:30 PM
Venue: Treasury Casino and Hotel Brisbane
130 William St, Brisbane City QLD 4000

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