UNIVERSITY OF CAMBRIDGE
Department of Engineering

GEOTECHNICAL SOCIETY

Physics-Informed Semi-Emperical Probabilistic Models for Predicting Building Settlement and Tilt on Liquefiable Ground

Dr. Shideh Dashti

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University of Colorado Boulder

Seminar overview:

The presentation introduces predictive models for the seismic settlement and tilt of shallow-founded structures on liquefiable ground based on a integrated observational, experimental, numerical and statistical approach. A series of centrifuge experiments were performed to evaluate the dominant mechanisms of deformation near shallow founded structures. Experimental results were used to evaluate the predictive capabilities of 3D, fully coupled nonlinear dynamic finite element analyses of soil-structure interaction systems in OpenSees. Then a numerical parametric study (exceeding 63,000 simulations) was used to identify the most optimum Intensity Measures for permanent building settlement and tilt as well as the functional form of predictive models. Finally, a case history database helped validate and refine the models, accounting for field complexities not captured numerically or experimentally.

Biography:

Shideh Dashti is an Associate Professsor in Geotechnical Engineering and Geomechanics at the University of Colorado Boulder. She obtained her undergraduate degree at Cornell University and her graduate degrees at the University of California, Berkeley. Shideh worked briefly with ARUP and Bechtel on several projects in the US and around the world involving the design of foundation systems, slopes, and underground structures. Her research team at Colorado Boulder studies: (1) interactions and interdependencies among different infrastructure systems during earthquakes and other types of disasters (2) consequences and mitigation of the liquefaction hazard facing structures in isolation and in dense urban settings.

When and where:

Wednesday, 15th of May, 19:00 – 20:00
Newnham Terrace, Darwin College

Queries:
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