NORTHEASTERN UNIVERSITY
College of Engineering
Distinguished Seminar Series
Civil & Environmental Engineering

MODELING OF SOIL STRUCTURE INTERACTION AND FLOW USING TRANSPARENT SOILS (+ AN INTRODUCTION TO SUSTAINABLE POLYMERIC PILING)

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ABSTRACT

Transparent Soils: Measurements of spatial deformations within a soil model are limited by soil sensors not providing a continuous image of the model. Additionally, soil sensors exhibit properties that are different the surrounding soils, and thus can change the measured response. The fundamental premise of this research is that transparent synthetic soil surrogates can be used to represent the behavior of natural soils in model tests in order to overcome these difficulties. An example of deformations due to tunneling is presented and related to tunnel support pressure. Deformations are obtained non-intrusively by slicing the model using laser light sheets, and correlating the captured images using digital image correlation. An example of soil remediation is also presented, where the effectiveness of surfactant flushing is assessed and related to surfactant viscosity. **Plastic Piles:** A brief introduction to sustainable piling made or recycled polymers will also be presented.

Magued Iskander, PhD, PE, F.ASCE is a Professor and Graduate Adviser of the Civil Engineering Department at NYU-Poly. Dr. Iskander is a recipient of NSF CAREER award, Chi Epsilon (Civil Engineering Honor Society) Metropolitan District James M. Robbins Excellence in Teaching Award, Polytechnic's Distinguished Teacher Award, and NYU-Poly's Jacobs Excellence in Education Award (twice). Dr. Iskander's research interests include geotechnical modeling with transparent soils, foundation engineering, and urban geotechnology. He is a recipient of over $9 Million in research grants and contracts. He published 10 books, over 100 papers, and graduated 6 doctoral and 27 masters students.

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