

ASCE Geo-Institute (G-I)

Soil Properties and Modeling Committee

2019 – 2020 Speakers Series

Soil characterization and variability

Possible Speakers: Don DeGroot, Jason DeJong, Bret Lingwall, Brina Montoya

Characterizing soil properties through laboratory and field testing is an integral part of any geotechnical evaluation. Assessing soil properties with appropriate techniques will be presented, including state of the art field and lab testing. Techniques to characterize variability of soil properties will also be discussed, and example case histories will be used to show why understanding the components of uncertainty is so important for determining the risk associated with a particular project or design.

Critical soil properties

Possible Speakers: Sheng Dai, Chadi El Mohtar, Mike Gomez, Hai (Thomas) Lin

Understanding where to invest resources during field investigations and laboratory testing is an important skill to develop for efficient geotechnical analysis and design. This presentation will focus on identifying critical soil properties for various types of geotechnical investigations. Characterizing the critical soil properties through field and lab tests, and integrating them into numerical models and statistical analyses will also be included.

Modeling 101: What goes in a model

Possible Speakers: Qiushi Chen, Alejandro Martinez, Chukwuebuka Nweke, Ujwalkumar Patil

This presentation focuses on an introduction to model development. Defining the model parameters, such as mesh size and boundary conditions, can influence the results if not done thoughtfully. Additionally, the selection of the constitutive models is important to capture the applicable soil behavior. Finally, best practices for using numerical models will be presented. These presentations will also be expanded to include finite difference, finite element, and discrete element methods and provide an overview as to the appropriate choice of each for a given project scenario.

SP&M: How do soil properties tie into modeling

Possible Speakers: Michelle Barry, Mustafa Al Saleh, Nadarajah Ravichandran, Audai (Ed) Theinat

The focus of this presentation is on developing appropriate soil properties and integrating them into numerical models. A summary of laboratory and field methods to characterize soil properties, and an overview of best practices for using numerical models will be presented. Sensitivity and parametric studies will also be used to demonstrate the most critical soil properties for several example projects. A case study will be included to illustrate the importance of appropriately assigning soil properties, model parameters, and constitutive models.