Thursday, March 21, 2024
Virginia Tech - CGPR Annual Lecture Program

Remembering Professor James K. Mitchell

The Inn at Virginia Tech - Skelton Conference Center
Blacksburg, Virginia
Zoom link: https://virginiatech.zoom.us/j/81275970708?pwd=ZURVcnhUMTBndlZReDlGRXN0R2ZzUT09
Pwd: VTGeo

8:00-8:45 AM **"James K. Mitchell – A 68-Year Perspective"**
Rick Mitchell, P.G., C.E.G., *RMC Geoscience*

Most people in the Geotechnical Engineering Profession know Jim Mitchell through his teaching, publications, and professional career. This presentation will touch on all of those aspects of his life. It will also provide a perspective from one who was his son, student at U.C. Berkeley, and colleague in the Geotechnical Engineering profession. Through this presentation, I hope to share some of the unique qualities of my father that made his life stand out both professionally and personally by providing a 68-year retrospective from one who had a closer view than many.

9:00-9:45 AM **"Geotechnical Opportunities and Challenges for U.S. Offshore Wind Farm Development"**
Christopher D.P. Baxter, Ph.D., P.E., Professor, *University of Rhode Island*

This presentation will focus on the current state of offshore wind development on the U.S. east coast from a geotechnical perspective. This industry is growing rapidly with construction of two new commercial wind farms currently underway and several additional farms in development. There are many opportunities and challenges for geotechnical engineers in this field, including the development of ground models and cable routing, choice of foundation types, and structural health monitoring for performance evaluation. Although Professor Mitchell never worked in this area, his teaching and mentorship of the presenter made moving into this exciting new frontier possible. Professor Mitchell would have been particularly interested in the impact that clay mineralogy is having on the micro-siting and foundation types of offshore wind towers in the northeast U.S.

10:00-10:45 AM **"Energy-Based Evaluation and Remediation of Liquefiable Soils"**
Russell A. Green, Ph.D., P.E., Professor, *Virginia Tech*

The states-of-practice for evaluating earthquake liquefaction potential and performing remedial ground densification of loose, saturated sands have evolved relatively independent of each other. This is in spite of the fact that the induction of liquefaction is typically requisite for remedial ground densification of sands. Using dissipated energy as a common link, a conceptual framework is proposed for how liquefaction triggering potential and remedial ground densification of saturated sandy soils can be evaluated/designed. The idea for this framework was originally proposed to the presenter by Professor Jim Mitchell and was the focus of the presenter's doctoral research performed under Jim's guidance. A recently published liquefaction triggering evaluation model authored by Ulmer et al., brings the framework originally proposed by Professor Mitchell one step closer to reality.

11:00-12:00 Noon **CPT Interpretation: Insights from Computation and Experimental Research**
Rodrigo Salgado, Ph.D., P.E., D.G., J.D., Professor, *Purdue University*

Prof. James K. Mitchell was among the first to study the Cone Penetration Test ("CPT"). A primary goal of most studies of the CPT has been to establish the relationship between cone resistance and both intrinsic and state variables for the soil. My Ph.D. work, which Prof. Mitchell supervised, sought to do that using both experimental (calibration chamber tests) and theoretical (cavity expansion analysis) approaches. There has been considerable progress in both tracks. It is now possible to realistically simulate cone penetration in either sand or clay using the Material Point Method (MPM). Calibration chambers now allow looking inside the soil (e.g., using digital image correlation to analyze images) as the cone advances through it. The lecture provides an overview of lessons learned from both experimental and theoretical simulations of cone penetration.

12:00 Noon - The lecturers, CGPR members, and Virginia Tech faculty and graduate students are invited to join us for lunch in the Latham Ballroom.