

**Virginia Tech**  
**Center for Geotechnical Practice and Research**  
**Annual Lecture Program**

Thursday, March 24, 2016

Alumni Assembly Hall  
Inn at Virginia Tech and Skelton Conference Center  
Blacksburg, Virginia



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**8:00-8:45**      **“Utilization of Micropiles for Stabilization of Collapsed Slopes”**  
**Jesus Gomez, P.E., D.GE** *GEI Consultants*

Micropiles have advantages over other technologies that make them attractive to owners. Typically, micropiles are used as an A-Wall system, and no visible evidence of structural stabilization remains after project completion. This is of great importance where owners are faced with expensive architectural surface treatments to conceal other types of stabilizing elements. Micropiles can also be installed in areas of very difficult access and through a wide range of materials, including obstructions and hard rock. They are ideal for slopes with precarious stability where small equipment weight and speed of construction are necessary.

**9:00-9:45**      **“Landslide Stabilization of I-95 in Whitemarsh Maryland”**  
**John Volk, P.E.** *AECOM*

A 50-foot high slope was excavated and excavation support was implemented to permit widening of I-95 in 2013. After heavy rains in June 2013, significant vertical and horizontal movements were noted in the Potomac clay geologic formation. An emergency counter berm was installed. This talk will discuss the events leading to the landslide, the instrumentation monitoring, the temporary counter berm stabilization, and the feasibility study for permanent stabilization. Stabilization of this landslide cost approximately \$12M.

**10:00-10:45**    **“Price, Quality, Schedule: Pick two... or three if we work together.”**  
**Allen Cadden, P.E., D.GE** *Schnabel Engineering*

As designers and constructors we work daily with owners trying to meet tight schedules to optimize their business interests. Fast-tracking a new steel mill in a coastal environment created numerous challenges. For this project, a 2500 ft-long shed structure was required to house the pelletized raw materials. We were provided geotechnical information and design recommendations for the entire facility during procurement phase. Following award, the data provided proved to be questionable and exposed significant geotechnical challenges, particularly because the shed structure was to house 45 ft high stockpiles of raw material. This presentation will focus on client communications, risk evaluation, geostructural design, ground improvement, peer review, cost, and schedule implications.

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**Keynote Speaker**

**11:00-12:00**    **“Geo-Alchemy (Turning Sand into Sandstone) and other Biogeotechnologies”**  
**Edward Kavazanjian, Ph.D., P.E., G.E., D.GE, NAE,** *Arizona State University*

Through 3.8 billion years of trial and error (i.e. evolution) nature has developed some efficient and sustainable solutions to many problems that vex geotechnical engineers. Biogeotechnical engineering seeks to apply these solutions, either directly or through biomimicry, in engineering practice. The biogeotechnology that has gained the most attention over the past 15 years is bio-mediated calcium carbonate precipitation, wherein microbes are used to induce precipitation of calcium carbonate (calcite) in granular soils, turning cohesionless sand into a sandstone-like material. Successes in laboratory testing and limited field trials suggest that this technique can non-disruptively mitigate the potential for earthquake-induced liquefaction under and around existing facilities. Applications of induced carbonate precipitation also include fugitive dust control, tunneling in running and flowing sands, and enhancement of foundation bearing capacity.

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