



## ASCE SEATTLE SECTION GEOTECHNICAL GROUP DINNER MEETING

Thursday November 5<sup>th</sup>, 2009

**Topic:** Lateral Resistance of Deep Foundations in Liquefied Sand from Blast Liquefaction Tests

**Time:** 5:30 – Social Hour, 6:30 – Dinner, 7:30 – Program

**Place:** McCormick & Schmicks – 1200 Westlake Avenue North, Seattle, WA 98109

**RSVP:** Please RSVP with your dinner entrée preference (Chicken Marsala or Mushroom & Asparagus Risotto) via: Our website [www.seattlegeotech.org](http://www.seattlegeotech.org), e-mail to [rsvp@seattlegeotech.org](mailto:rsvp@seattlegeotech.org); or phone to Tyler Stephens at 206.818.0663 by **4:00 PM on Tuesday Nov. 3<sup>rd</sup>, 2009 for the advance RSVP rate.** Please let us know in advance if you would like to cancel.

**Cost:** \$35 with advance RSVP. \$40 with reservations made after November 3<sup>rd</sup> deadline or at the door. \$15 for non-reimbursed public agency employees and students. If you are a student and would like to be sponsored, please specify when you RSVP. You can pay via Paypal or credit card online, or at the door by cash or check payable to "ASCE Seattle Geotechnical Group"

**Speaker:** Dr. Kyle M. Rollins, Brigham Young University

**Abstract:** The lateral load capacity of deep foundations is often important in the design of bridges and high-rise structures in seismically active regions. Although fairly reliable methods have been developed for predicting the lateral capacity of piles in non-liquefied soils, there has been relatively little information to guide engineers in the design of piles that are surrounded by liquefiable soils. To improve our understanding of the lateral load behavior of deep foundations in liquefied soil, BYU and UC-San Diego conducted a series of lateral load tests on full-scale piles, pile groups and drilled shaft foundations using explosive charges to liquefy sand around the foundations. Initially, tests were conducted at the National Geotechnical Experimentation Site (NGES) in San Francisco Bay. Subsequently, tests were conducted on 2.4 m diameter shafts in connection with the construction of a large cable-stayed bridge in Charleston, South Carolina. At each site, static tests were first conducted in non-liquefied soil and then cyclic tests were performed with a high speed actuator after a surface layer was liquefied using controlled blasting techniques. In Charleston, Statnamic lateral load tests were also performed to evaluate damping effects due to rapid loading. The test results have been used to determine p-y curves for piles in liquefied sand. Dr. Rollins will show how the results from the field tests coupled with results from centrifuge and large scale tests provide a basis for design. Relative merits of large diameter and pile groups will be discussed. Dr. Rollins will outline the testing program and show videos of the blast liquefaction testing including the Statnamic loading.

**Bio:** Dr. Kyle M. Rollins is a professor of Civil and Environmental Engineering at Brigham Young University in Provo, Utah. He received his BS degree from BYU and his Ph.D. from the University of California at Berkeley working under Harry Seed. After working with his father as a geotechnical consultant, he joined the faculty at BYU in 1987 and was promoted to full-professor in 1998. His research has involved geotechnical earthquake engineering, deep foundation behavior, collapsible soils and soil improvement techniques. He has published over 120 technical papers and supervised over 80 graduate students. Dr. Rollins pioneered the use of controlled blasting to evaluate the lateral resistance of piles in liquefied sand under full-scale field conditions and performed the first lateral statnamic pile group tests. Over the past ten years, he has used full-scale testing to evaluate pile group interaction factors under lateral loading and passive pressure mobilization on abutment walls. His work has been recognized by ASCE with the Huber research award and the Wellington prize. Dr. Rollins was an international faculty scholar at the Indian Institute of Technology in Chennai in 2005. He was recognized as the engineering educator of year by the Utah Engineers Council in 2000 and received the Karl Maeser Research and Creative Arts Award at BYU this past year.

**Planning Committee Meeting:** Monday, Nov. 2<sup>nd</sup>, at 6:00 PM at CH2M Hill office in Bellevue. We would like to see a representative from each organization at our planning committee meetings. Please e-mail Michel Bouchédid at [Michel.Bouchédid@CH2M.com](mailto:Michel.Bouchédid@CH2M.com) no later than noon on Friday Oct. 30<sup>th</sup> for dinner reservation if you plan to attend.

### ASCE Seattle Section Geotechnical Group – 2009-2010 Officers

[www.seattlegeotech.org](http://www.seattlegeotech.org)

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