



Vancouver Geotechnical Society

A Local Section of the Canadian Geotechnical Society

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NOTICE OF UPCOMING DINNER PRESENTATION

2009 FALL CANADIAN GEOTECHNICAL SOCIETY CROSS CANADA LECTURE TOUR WEDNESDAY, OCTOBER 28, 2009

SUBJECT: Lateral Load Analysis of Pile Groups Based on Full-Scale Testing

SPEAKER: Dr. Kyle M. Rollins
Professor of Civil and Environmental Engineering, Brigham Young University

Dr. Kyle M. Rollins is a professor of Civil and Environmental Engineering at Brigham Young University in Provo, Utah. He received his first degree from BYU and his Ph.D. from the University of California at Berkeley working under the late Professor 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.

CONTENT: Engineers are frequently required to evaluate the lateral resistance of pile groups for loads produced by wind, waves, earthquakes and landslides. Although the behavior of single isolated piles is reasonably well understood, relatively little information has been available to guide engineers in the design of closely spaced pile groups. Typically pile groups have much less soil resistance due to overlapping shear zones. Unfortunately, cost and logistical difficulties typically led to a shortage of information on pile group behavior. However, during the past 10 years, Dr. Rollins and his students have performed full-scale lateral load tests on 12 pile groups in clay, sand, and liquefied sand with different pile spacings. These tests have been performed both statically (hydraulic actuators) and dynamically (*Statnamic* load sled). Based on these tests, p-multiplier design curves have been developed to determine the reduced lateral resistance due to group interaction as a function of pile spacing. Group interaction primarily appears to be a function of row spacing and row position. In addition, group interaction increases as the friction angle of the soil increases. Group interaction leads to greater displacement as a function of load and greater moment for a given load. These field test results have been used to evaluate various design methods for predicting lateral pile behavior.

DETAILS **Executive Inn**, 4201 Lougheed Highway, Burnaby, BC V5C 3Y6 (Phone: 604-298-2010)
Social Hour: 5:30 to 6:30 pm (drinks available at the hotel bar)
Technical Presentation: 6:30 to 7:30 pm
Dinner: 7:45pm (\$10 will be charged for dinner to cover a small portion of the cost.)
RSVP: Dinner reservation to cwilliams@golder.com by Friday, October 23, 2009