

**ASCE LOS ANGELES SECTION GEOTECHNICAL GROUP
GEO-INSTITUTE LOS ANGELES CHAPTER**

MEETING NOTICE

Wednesday, November 16th, 2011

Liquefaction Analysis of Mild to Steep Slopes using Strength Ratios

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University of Illinois

ABSTRACT:

Liquefaction analysis typically is separated into problems where the static driving shear stress is less than the liquefied shear strength – level-ground liquefaction and lateral spreading – and problems where the static driving shear stress exceeds the liquefied shear strength – flow failures. These liquefaction problems can be evaluated using yield and liquefied shear strength normalized by the prefailure vertical effective stress, i.e., strength ratios. Analysis of liquefaction for sloping ground involves three steps: (1) susceptibility analysis; (2) triggering analysis; and (3) post-triggering stability analysis. Susceptibility analysis involves determining whether a soil is contractive and susceptible to flow liquefaction. The triggering analysis involves comparing the combined static shear stress and seismic stress ratios to the yield shear strength ratio of the soil. And a post-triggering analysis involves evaluating the stability of the structure using the liquefied shear strength ratio. Lateral spreads in mildly-sloping ground also can be evaluated using strength ratios. Remarkably, Newmark analysis-based strength ratios mobilized during these lateral spreads essentially coincide with liquefied strength ratios backcalculated from liquefaction flow failures.

SPEAKER BIO:

Dr. Olson is an associate professor at the University of Illinois, where he has been for the past eight years. Prior to starting at the University of Illinois, Scott spent seven years in practice with Woodward-Clyde Consultants and URS Corporation. Scott has been involved in a numerous high-profile consulting projects including the new I-70 bridge over the Mississippi River in St. Louis; the Port Mann bridge over the Fraser River in Vancouver, BC; and the Marsh Landing Generating Station, here in Contra Costa County, California. Prof. Olson has published over 80 journal and conference papers on liquefaction analysis and geotechnical earthquake engineering, paleoliquefaction and paleoseismology, seismic and static slope stability, geohazard identification and assessment, and cone penetration testing.

SOCIAL HOUR: 5.30 p. m.
DINNER: 6.30 p.m.
PROGRAM: 7.30 p.m.
PLACE: Stevens Steak House, 5332 Stevens Place, City of Commerce
PRICE: \$35 with reservation (free with valid student ID); \$40 at the door
RESERVATIONS: Andrew Liu
BY EMAIL TO: ahl_77@yahoo.com

Please make reservations by email prior to 12 noon, Friday November 11th, 2011