Dottorato di Ricerca in Rischio Sismico
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Dottorato di Ricerca in Ingegneria Strutturale, Geotecnica e Rischio Sismico
Dottorato di Ricerca in Ingegneria dei Sistemi Civili

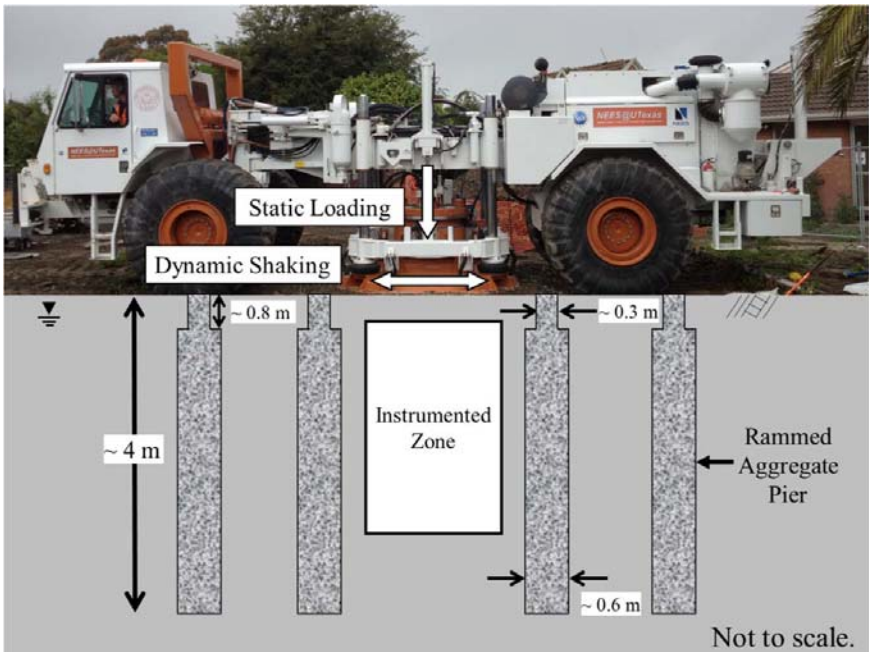
Avviso di Seminario

Lunedì 21 marzo 2016 ore 11:00

il prof. **Kenneth H. Stokoe, II**
(the University of Texas at Austin, USA)

terrà un seminario dal titolo

"Effectiveness of inhibiting liquefaction triggering by shallow ground improvement methods: field shaking trials with T- Rex in Christchurch, New Zealand"



Aula Croce

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Effectiveness of inhibiting liquefaction triggering by shallow ground improvement methods: field shaking trials with T- Rex in Christchurch, New Zealand

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ABSTRACT

Christchurch and the Canterbury region in New Zealand were devastated in 2010-2011 by a series of powerful earthquakes. The Christchurch area experienced widespread liquefaction that caused extensive damage. One critical problem facing the rebuilding effort is that the land remains at risk of liquefaction in future earthquakes. Therefore, effective engineering solutions must be developed to increase the resilience of homes and low-rise structures. To this end, a series of full-scale field trials of shallow ground improvement methods was undertaken. In the first stage, the following four methods were tested: (1) Rapid Impact Compaction (RIC), also known as dynamic compaction, (2) Rammed Aggregate Piers (RAP), which consist of gravel columns, (3) Low-Mobility Grouting (LMG) with a cement paste, also referred to as compaction grouting, and (4) a double row of horizontal beams (DRB) constructed beneath existing residential structures via soil-cement mixing. The improvement methods were targeted to improve soil within 4 m of the ground surface. Field trials involving test panels of the four improvement methods and two unimproved natural soil panels are presented. Each test panel was instrumented and characterized before shaking. A large mobile shaker operated by NEES@UTexas, called T-Rex, was used to excite each test panel with an increasing sequence of 100-cycle, dynamic horizontal loads. The pre-shaking characterization effort and the shaking results are presented. The effectiveness of inhibiting pore water pressure generation by the different ground improvement methods is discussed.

Biographical Sketch

Dr. Kenneth H. Stokoe, II is the holder of the Jennie C. and Milton T. Graves Chair in Engineering in the Civil, Architectural and Environmental Engineering Department at the University of Texas at Austin. He has been working in the areas of field seismic measurements, dynamic laboratory measurements, and dynamic soil-structure interaction for more than 40 years. He has been instrumental in developing several small-strain field methods for in-situ shear wave velocity measurements. He has also developed two types of resonant column systems that are used to evaluate dynamic soil and rock properties in the laboratory. Over the last 12 years, Dr. Stokoe has led the development of large-scale mobile field equipment for dynamic loading of geotechnical systems, foundations and structures, an activity that has been funded by the National Science Foundation in the NEES (Network for Earthquake Engineering Simulation) program. The equipment has already led to the development of new testing methods to evaluate soil nonlinearity and liquefaction directly in the field. Dr. Stokoe has received several honors and awards, including election to the National Academy of Engineering, the Harold Mooney Award from the Society of Exploration Geophysicists, the C.A. Hogentogler Award from the American Society for Testing and Materials, and the H. Bolton Seed Medal and the Karl Terzaghi Distinguished Lecturer from the American Society of Civil Engineers.