

A short course on

# Geotechnical Earthquake Engineering

*From Plate Tectonics, Response Spectra, to Earthquake Geotechnical Design*

**02-03-04 Oct 2013**

## Background:

Indonesia lie on the RING of FIRE, a seismically active area, therefore, geotechnical earthquake engineering is one of the important subject we, the geotechnical engineer, need to learn in order to be able to design an earthquake resistant geotechnical structures. Unfortunately, many of the engineers did not have the chances to learn about it while they were in the university. This course is designed for those who want to refresh or to learn about geotechnical earthquake engineering and the earthquake resistant design of geotechnical structures.

## Participants:

- The course is open for consultants, contractors, academicians (students and lecturers) and the practicing civil and geotechnical engineers.
- **To be effective the course is limited to maximum 24 participants.** Due to the limited space, the registration is based on **First come first serve basis.**

## Course Outline:

### A. The Earth and The Plate Tectonics

- *The Earth, The Internal Structure of Earth, What is an Earthquake, Seismic Waves, Continental Drift, Plate Tectonics, and The Ring of Fire.*

### B. Earthquake Sources, Location, Intensity, Magnitude and Energy

### C. Seismic Measurement and Ground Motion Parameters

- *Important Earthquake Characteristics, Strong Motion Measurement, Strong Motion Processing, Global Seismographs Network, Ground Motion Parameters, Attenuation, Seismic Test, Shear Modulus and Damping, Strength Reduction.*

### D. Site Specific Response Spectra

- *Response Spectrum, Attenuation, 1D Ground Response Analysis, Site Specific Response Spectra by Edushake program.*

### E. Liquefaction

- *What is Liquefaction; Liquefaction Phenomenon; Liquefaction induced Damages; Identifying Liquefaction Potential; Cyclic Stress Ratio – CSR; Assessing Liquefaction through SPT data; Assessing Liquefaction Potential through CPT data; Liquefaction of Deeper Layer; Calculation Examples.*

### F. Slope Stability, Earth Retaining Structures and Piles under Earthquakes Condition

### G. Designing with Geotechnical Software

- *Example and practice in using geotechnical software (EduShake, NovoLiq, Plaxis and Geo5) in analyzing Response Spectra, Liquefaction Assessment, and Assessing Geotechnical Structure under Earthquake Condition.*

## Course Fee and Certificates:

- **The course fee is Rp. 3,600,000.-/participants**
- Inclusive of course material (hard copy), coffee, lunch and certificates (in soft copy).
- Demo software shall be given (public domain software shall be given). Please bring your own laptop computer.
- Registration is accepted upon receipt of course fee. Cancellation refund is 50%, course material shall be given.

## Time and Place:

- Place: **GREEN GARDEN I-9/28A** (behind Mac Donald Green Garden) – Daan Mogot – Jakarta Barat.
- Course started at 9:00 and ended at 17:00 with lunch and coffee breaks.

## Course Instructor:

The course shall be given by **Ir. Gouw Tjie Liong M.Eng, ChFC**. A certified Professional Geotechnical Engineer. He has been working in the field of Geotechnical Engineering since 1984. His expertise covering geotechnical investigation, soil instrumentation, deep foundation and excavation for high rise buildings, pile load testing (Static and PDA), pile integrity testing (PIT), sonic logging test, vibration monitoring, slope stability, ground anchors, pumping test, dewatering, micropiles, tunnelling and ground improvement works, e.g. dynamic compaction, vertical drain, vibro-compaction, geosynthetic and grouting. The jobs cover more than 190 projects in Indonesia, Singapore and Srilanka. He has a great passion in the teaching and disseminating of geotechnical engineering knowledge. He serves as lecturer since late 1984. Currently, he serves as a senior lecturer at Bina Nusantara University, Jakarta, Indonesia. He also conduct regular geotechnical training for engineers.

**FIRST COME FIRST SERVE Registration only for up to 24 participants.**

**Registration:** via email: [gtloffice@gmail.com](mailto:gtloffice@gmail.com) or [limara65@yahoo.com](mailto:limara65@yahoo.com)

Or by Fax to: +62-21-58355051