



## Two-Day Workshop on Earthquake Design in Geotechnical Engineering.

*How do Ontario's seismic  
codes impact our designs?*

Organized by:

Canadian Geotechnical  
Society

Southern Ontario Section



## Schedule and Registration Fees

### Day One

Wednesday – February 21, 2018

*Introduction to Earthquakes and Ground  
Motions*

*Selection of Earthquake Time Histories*

by: [John Adams, Ph.D.](#)

Seismologist at Canadian Hazards Information  
Service, Natural Resources Canada,  
Government of Canada

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*Geophysical Methods for Shear Wave  
Velocity Measurement*

by: [Ali Nasser-Moghaddam, Ph.D., P.Eng.](#)

Associate Senior Geotechnical Engineer at  
GHD

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*Site Response Analysis*

*Introduction to Seismic Design in Ontario  
Design for Seismic Loads in Geotechnical  
Engineering*

by: [Michael Snow, P.Eng., M.A.Sc.](#)

Principal Geotechnical Engineer at Golder  
Associates Ltd.

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### Day Two

Thursday – February 22, 2018

*Fundamentals of Liquefaction Behaviour  
Implications for Field and Laboratory  
Testing*

*Application: Liquefaction Assessment and  
Methodology*

by: [Mason Ghafghazi, Ph.D., P.Eng.](#)

Assistant Professor at Department of Civil  
Engineering, University of Toronto

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*Cyclic Softening in Clays and Plastic Silts  
Consequences of Liquefaction and  
Mitigation*

*Design for Liquefaction in Geotechnical  
Engineering*

by: [Alex Sy, Ph.D., P.Eng.](#)

Vice President Technical. Klohn Crippen  
Berger

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CGS-SOS is pleased to present a two-day workshop, designed for Geotechnical Consultants, Geo-structural Designers, Specialty Geotechnical Contractors, Government Agencies, University Students and other contractors and designers who desire continual improvement to their geotechnical engineering skills. This workshop is an excellent source of information and professional development for geotechnical engineers practicing in Ontario.

Eight (8) PEO PEAK Professional Development Hours (PDH) are available per day.

**Registration Fee**

Membership	Each Day	Both Days
Members	120	210
Non-members	140	230

Registration fee covers your spot at the seminar, an access to workshop materials, continental breakfast, lunch and coffee.

Please register by February 14, 2018, using [Eventbrite](#)

The workshop will be held at:  
**Pearson Convention Centre**  
 2638 Steeles Avenue East, Brampton,  
 Ontario, L6T 4L7  
[Google Map Link](#)

**Day One: February 21, 2018**

7:30 to 8:00 Registration and Breakfast  
 08:00 to 12:00 Lectures with Coffee Break  
 12:00 to 13:00 Lunch  
 13:00 to 17:00 Lectures with Coffee Break

**1.1 Introduction to earthquakes, ground motion and selection of earthquake time histories**

- Tectonics, plate boundaries and faults
- Effects on civil infrastructure
- Magnitude, intensity, seismic wave types, ground motions on rock and soil, GMPEs and recurrence intervals
- Probabilistic seismic hazard analysis
- Earthquake spectra, Uniform Hazard Spectra, Web information sources, deaggregation of hazard and time history selection

**1.2 Site Response Analysis**

- Ground response analysis
- Equivalent linear and simplified methods
- Site classes and how to assign a site class

**1.3 Geophysical methods for shear wave velocity measurement**

- Basic Concepts of wave propagation
- Geophysical field investigation methods for shear wave velocity measurement
- Selection of appropriate measurement techniques
- Estimation of dynamic shear properties of soil and rock

**1.4 Introduction to Seismic Design in Ontario**

- Recent changes in CODE: CFEM, CHBDC provisions. Assessment of Site Class “F” in Ontario geology (Methods & numerical analyses)

**1.5 Design for Seismic Loads in Geotechnical Engineering**

- Seismic loads on structures
- Seismic slope stability analysis

**Day Two: February 22, 2018**

7:30 to 8:00 Registration and Breakfast  
 08:00 to 12:00 Lectures with Coffee Break  
 12:00 to 13:00 Lunch  
 13:00 to 17:00 Lectures with Coffee Break

**2.1 Fundamentals of liquefaction behaviour**

- Monotonic and cyclic loading and field manifestations

**2.2 Liquefaction assessment and methodology**

- Case history-based simplified method for liquefaction assessment
- Laboratory and field sampling and testing for liquefaction assessment using SPT, CPT and seismic based procedures

**2.3 Cyclic softening in clays and plastic silts**

- Liquefaction susceptibility criteria
- Cyclic softening potential assessment

**2.4 Consequences of liquefaction and mitigation**

- Residual strength
- Flow failure, Lateral spreading and settlements
- Ground improvement

**2.5 Design for Liquefaction in Geotechnical Engineering**

- Case histories: bridges, piles in liquefied ground, seismic evaluation of dams and challenges for tailings dams