

FUNDAMENTALS
ADVANCED



Two One-Day Seminars

Organized by:

Canadian Geotechnical Society

Southern Ontario Section



Seminar One

Fundamentals of Soil Behaviour & Geotechnical Investigation and Assessment of Rock

by:

[Dr. John Atkinson](#), City University, London, UK

[Dr. Mark Diederichs](#), Queen's University, Kingston, Ontario

Tuesday - February 16, 2016

Seminar Two

Advanced Soil Behaviour & Advanced Rock Behaviour (Ontario Shale)

by:

[Dr. John Atkinson](#), City University, London, UK

[Dr. K.Y.Lo](#), Western University, London, Ontario

[Dr. Silvana Micic](#), EXP, Ontario

Wednesday - February 17, 2016

CGS-SOS is pleased to present these two (2) one-day seminars, 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.

Seminar One is an excellent source of information and professional development, particularly for young and intermediate engineers. Seminar Two introduces the latest advancement in soil and rock mechanics for day to day professional practice and design, and it is suitable in particular for intermediate and senior engineers. The overall course is designed such that participants can register for either of the seminars. Attending both seminars is strongly recommended for intermediate and senior engineers. Further details for the lectures and registration are provided in the following pages. A certificate for proof of Professional Development Hours (PDH) will be available upon request.



SEMINAR ONE – FUNDAMENTALS OF SOIL BEHAVIOUR & GEOTECHNICAL INVESTIGATION AND ASSESSMENT OF ROCK

Soil 1

Fundamental of Soil Behaviour by
Dr. John Atkinson

S1.1 Basic Soil Behaviour:

Strength and stiffness of soils: influence of water, pore pressure, suction, seepage: total and effective stress, drained and undrained strength: choices of strength and stiffness parameters for design.

S1.2 Geological origins of engineering soils:

Formation of soils by near-surface processes; weathering and deposition from water, wind and ice; objective description of engineering soils; soils properties and parameters related to geological formation and description.

S1.3 Basic geotechnical analyses:

Basic hand calculations for stability and settlement of foundations, stability of slopes and walls, seepage and groundwater flow, rates of consolidation.

S1.4 Lessons from Failures:

A review of some historic and recent failures small and large; reasons for the failures and the lessons that can be learned from them.

Rock 1

Geotechnical Investigation and
Assessment of Rock
by Dr. Mark Diederichs

R1.1 Rock and Rockmass:

- Why rocks aren't just strong soils
- Rock and Rockmass properties and instability modes
- Sources of uncertainty in Rock Engineering
- Measurable rock properties (lab and field)
 - Summary of rock testing and data to be obtained
 - Need for quality control
 - Old standards and new data requirements

R1.2 Rockmass characteristics and classification

- Identifying possible problems with testing data
- Non-measurable characteristics of rockmass and classification
 - RQD, Q, RMR, GSI (and other variants)
 - Discrete Structural Data
 - Stress
- Classification from Images

R1.3 Engineering Geology and Tunneling

- Using rock mass data in Tunnelling:
 - Very Old School: Empirical Design
 - Not Too Old School: Empirical Rock Properties for Mechanistic Analysis
 - New School: Discrete Mechanistic Analysis
- Problems with rockmass classification (Engineering Geology)
- Selecting a support system based on rock data.

R1.4 Rock data processing

- Challenges in Data Collection
- Group Exercise: Core Logging challenges
- Implications of data collection on final design
- Some final case histories
- Summary
- Discussion

SEMINAR TWO – ADVANCED SOIL BEHAVIOUR & ADVANCED ROCK BEHAVIOUR (ONTARIO SHALE)

Soil 2

Advanced Soil Behaviour
by Dr. John Atkinson

S2.1 Fundamentals of Geotechnical Engineering:

Reviews of current theories for soil strength and stiffness; methods for analysis of geotechnical structures; geotechnical engineering and engineering geology.

S2.2 Numerical Modelling of Soil:

Review of the basic numerical models and their relationship with real soil behaviour: elastic-plastic and elasto-plastic models.

S2.3 Parameters for Design:

Basic soil parameters related to the proposed analysis; estimation of soil parameters from description and classification; measurement of parameters in laboratory tests.

S2.4 Lessons from Failures:

A review of some historic and recent failures small and large; reasons for the failures and the lessons that can be learned from them.

Rock 2

Advanced Rock Behaviour
(Ontario Shale)

by Dr. K.Y. Lo and Dr. Silvana Micic

R2.1 Fundamental Concept of Stress and Deformations around Underground Openings:

Discussion of initial stress conditions in rock formations in Southern Ontario, stress measurements, discussion of stresses, elastic deformation and time-dependent deformation due to excavations, illustrative case histories.

R2.2 Measurements of Strength, Deformation and Time-Dependent (Swell) Parameters of Rocks:

Review of standard laboratory tests on rock cores to measure strength and deformation properties of intact rock and specialized laboratory tests for evaluation of time-dependent properties of swelling rock; examples of time-dependent behaviour of swelling rocks in Southern Ontario.

R2.3 Field Monitoring Programs and Observational Methods for Excavation in Rock:

Review of available monitoring tools; identification of risks due to deep excavations; implication of monitoring program for design and construction.

R2.4 Case Histories of Design, Construction and Performance of Tunnels and Excavations in Southern Ontario:

Case histories include: Heart Lake Tunnel, Scotia Plaza, Billy Bishop Tunnel and Shangila; review of site conditions, design and construction requirements, monitoring results.

Schedule and Registration Fees

Seminar One - Fundamental of Soil Behaviour & Geotechnical Investigation and Assessment of Rock (Soil 1 and Rock 1)

Date: Tuesday - February 16, 2016

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
17:00 to 18:00 Networking

\$195: Students, CGS Members, or Government Employees

\$220: Non-CGS Members

Seminar Two - Advanced Soil Behaviour & Advanced Rock Behaviour (Ontario Shale) (Soil 2 and Rock 2)

Date: Wednesday - February 17, 2016

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
17:00 to 18:00 Networking

\$300: Students, CGS Members, or Government Employees

\$350: Non- Members

Registration fee covers your spot at the seminar, a USB Key with seminar materials, continental breakfast, lunch and coffee.

Please register by February 10, 2016, using Eventbrite:

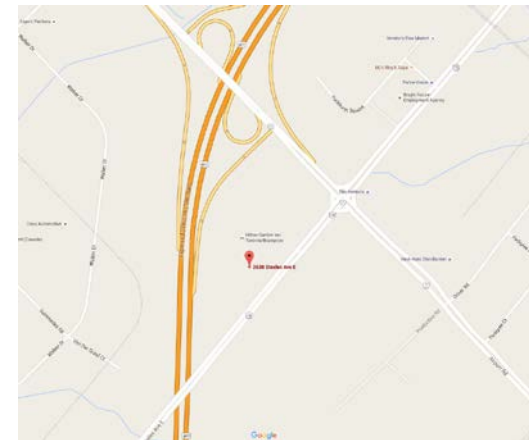
[Registration Link](#)

If you have difficulties using Eventbrite, please contact Andrew DeSira at Andrew.DeSira@ontario.ca for assistance.

The seminars will be held at:
Pearson Convention Centre

2638 Steeles Avenue East, Brampton,
Ontario, L6T 4L7

[Google Map Link](#)





**CANADIAN GEOTECHNICAL SOCIETY - SOUTHERN ONTARIO SECTION
TORONTO GROUP
FEBRUARY 2016 SEMINAR SPONSORSHIP FORM**

The CGS-SOS Toronto Group is a non-profit, volunteer-run, group with a mandate to organize technical and social activities at the local grassroots level for the benefit of members and the profession. The technical events cover various engineering related topics and provide an opportunity to network with colleagues, make business contacts, meet future employees or employers, promote student participation, learn about interesting projects, and participate in state-of-the practice workshops and seminars. Events usually consist of monthly evening lectures, annual graduate student competition and at least one annual one or two day short course or seminar.

This year two one-day seminars are organized by CGS-SOS group in order to provide suitable advancement for a wide range of geotechnical practitioners. The two one-day seminars **“Soil to Rock – Fundamentals to Advanced”** will be held on February 16 and 17, 2016 and sponsorships from companies are requested and appreciated. All sponsorships will also be acknowledged at the Seminar, which also provides an effective advertising opportunity for your organization. Donors are asked to send their company logo/ name electronically to Andrew DeSira at Andrew.DeSira@ontario.ca for use at the event.

To make your donation, you may choose your sponsorship level using Eventbrite ([Sponsorship Link](#)). Available sponsorships include:

SEMINAR SPONSOR (both days)	\$3,500	Marquis and unique sponsorship for both seminar days with prominent logo placement throughout the event, powerpoint display during breaks and printed materials plus Two (2) complimentary registrations and special mention during opening remarks
Lunch Sponsor for Seminar One:	\$800	A unique opportunity for each seminar with logo and name recognition – signs displayed throughout the lunch tables, PowerPoint display during breaks and printed materials plus One (1) complimentary registration
Lunch Sponsor for Seminar Two:	\$1,200	
Breakfast Sponsor for Seminar One:	\$400	A unique opportunity for each seminar (logo and name recognition – signs displayed throughout the breakfast tables, PowerPoint display during breaks and printed materials)
Breakfast Sponsor for Seminar Two:	\$400	
Coffee Break Sponsor	\$250	Two opportunities for each seminar for a total of four (logo and name recognition – signs displayed at coffee stations, PowerPoint display during breaks and printed materials)

Please make your donation through the Eventbrite website NO LATER THAN February 10, 2016. Any inquiries about registration, donation or for help with using Eventbrite, please contact Andrew DeSira at Andrew.DeSira@ontario.ca.

CGS-SOS website address: www.cgs-sos-toronto.com