



2009 Seminar Seismology and Earthquake Engineering



Newspaper headline of 1954 Adelaide earthquake

Thursday September 24
9:00 am to 5:00 pm
Engineering House
11 Bagot St. North Adelaide

The first part of the seminar will deal with why we get earthquakes in South Australia, probabilistic seismic hazard analysis and the earthquake hazard in the state.

Later speakers will deal with the revised earthquake loading code and various aspects of earthquake engineering including the performance of masonry structures, site amplification and seismic design, pile design for liquefaction, seismic deformation of earth dams and earthquake induced landslides.

The seminar will be of interest to geotechnical engineers and engineering geologists, civil and structural engineers, planners and regulators from industry and government.

The seminar will include presentations by a number of local, interstate and international professionals, listed below:

- Dr Dan Clark
- Dr Paul Somerville
- David Love
- Dr. Mike Griffith
- Peter McBean
- Dr Peter Mitchell
- Dr Hendra Jitno
- Graham Hancox

Dan Clark is an earthquake geologist with Geosciences Australia in Canberra. He has investigated numerous neotectonic faults and has been involved in the development of models describing large earthquake occurrence in intraplate regions worldwide.

Topic: **Faults and Earthquakes in South Australia** – The presentation will describe the origin of stresses and the effect of seismogenic faulting in South Australia. Arguably some of Australia's most active faults occur in the Adelaide area with, in some cases, movements of several 100's of metres in the past 5 to 10 million years.

Dr. Paul Somerville is a Vice President and Principal Seismologist with the URS Corporation. He is an expert in seismic evaluation, modelling and prediction and runs the Pasadena office of URS and also spends a considerable amount of time in Australia.

Topic: **Probabilistic Seismic Hazard Analysis** – the presentation will describe earthquake source models, ground motion prediction models and soil amplification effects with particular reference to active faults in South Australia.

David Love has been managing a network of seismographs in SA for 23 years. He has been a committee member in the last two earthquake loading codes, and has been involved in hazard analyses, and detailed seismicity studies.

Topic: **Earthquake Hazard in South Australia** - the presentation will summarise studies relating to amplification in the metropolitan area, and review the largest earthquakes in the state, and local earthquake patterns.

Dr. Mike Griffith is an Associate Professor in the School of Civil, Environmental and Mining Engineering at the University of Adelaide. He was a member of the Standards Australia committee revising the Australian Earthquake Loading Code and Past-President of the Australian Earthquake Engineering Society. His main professional and research interests are in the field of earthquake engineering and structural dynamics.

Topic: - the presentation will describe how earthquake ground motions induce inertial loads into unreinforced masonry buildings and masonry parts of other building types. It will also cover how seismic loads are calculated according to the recently revised Australian Earthquake Loading Code, AS 1170.4 (2007).

Peter McBean is a Consulting Structural Engineer with 25 years major project experience throughout Australia. He is a Director of Wallbridge & Gilbert and his particular professional interests include earthquake engineering, structural dynamics, and solving tricky problems.

Topic: **Changes to Sub Soil Classification System** - The recently updated Australian Standard for Earthquake Structural Design Actions, AS1170.4-2007, introduced a new system of classifying sub soils for the purpose of determining site amplification. The presentation will discuss these changes and explore the consequences for seismic design in the Adelaide region.

Dr. Peter Mitchell is a specialist in Geotechnical Engineering with over 35 years experience in major projects throughout Australia, South-East Asia and the South Pacific. He was listed in the 2009 Top 100 Most Influential Engineers and was the 2008 Geotechnical Practitioner of the Year, awarded by the Australian Geomechanics Society.

Topic: **Pile Design for Liquefaction Effects** – the presentation will describe how pile design must cater for liquefaction in a design earthquake. Liquefaction is rare in Australia, however, when it occurs it can lead to a loss of shaft resistance, additional lateral displacement and bending moments, pile buckling and lateral spreading. The difficulties of assessing liquefaction potential from in situ testing will also be described.

Dr. Hendra Jitno is a Senior Geotechnical Engineer with Morobe Mining in PNG, who previously worked with Rio Tinto and URS.

Topic: **Seismic Deformation of Earth Dams** – the presentation will describe modelling of the deformation of earth dams (including crest settlement) induced as a result of various earthquake magnitudes and peak ground accelerations. Case studies from South Australia will be included in the presentation.

Graham Hancox is a senior engineering geologist with the Institute of Geological and Nuclear Sciences in Wellington, New Zealand. Graham specialises in earthquake hazard assessment, the processes and impacts of earthquake-induced landslides, and landslide hazard assessments.

Topic: **Earthquake Induced Landslides** – the presentation will describe the relationship between earthquake magnitude, shaking intensity (Modified Mercalli and peak ground acceleration), topography and slope modification and will be illustrated with examples from New Zealand and elsewhere. Graham will also discuss the vulnerability of natural and man-made slopes in the Adelaide region.

Venue: Engineering House 11 Bagot Street, North Adelaide.

Proceedings: All presented papers will be published in proceedings distributed at the beginning of the seminar.

REGISTRATION FORM AND TAX INVOICE

REGISTRATION FEES (including lunch and proceedings)	Cost per attendee	Number of Attendees	TOTAL (incl. GST)
AGS/AusIMM/EA Member	\$160		\$
Non Member:	\$240		\$
Concession	\$40		\$
Student*	Free*		\$
TOTAL			\$

* Must show current student card and be a member of AGS, free membership forms will be available on the day.

Organisation
Address
Contact phone
Contact email
Attendees:
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To assist with catering, please advise of any dietary requirements.

METHOD OF PAYMENT:	
1. My cheque for \$_____ is enclosed (payable to <u>Australian Geomechanics Society</u>)	
2. Electronic funds transfer to Commonwealth Bank BSB 062-910 Account 1001-3510 (Quote Organisation/Name)	
3. <input type="checkbox"/> MasterCard <input type="checkbox"/> Visa Expiry: _____	
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