



Australian Geomechanics Society

Sydney Chapter



TECHNICAL PRESENTATION

Wednesday 14 April 2010

Light refreshments at 5.30 PM prior to 6.00 PM meeting

The NSW Research Award

Advance Researches in Geotechnical Engineering

Analytical and Numerical Studying of Disturbance and Pore Pressure in Soft Cohesive Soils Associated with the Installation of Mandrel-driven Prefabricated Vertical Drains

Speaker: Ali Ghandeharioon

University of Wollongong

This research investigates the installation of mandrel-driven PVDs and the associated disturbance in cohesive soils using a novel elliptical cavity expansion theory validated by laboratory experiments and numerical modelling. The pattern of the disturbed region surrounding the mandrels and the distribution of stresses in soils obtained from the analytical and numerical predictions are shown to be in agreement with the results of the laboratory tests. A number of case histories are also analysed to evaluate the associate soil disturbance during the installation of the mandrel-driven prefabricated vertical drains.

Confined comminution of granular materials: self-organisation, attractors and patterns

Speaker: Oded Ben Nun

University of Sydney

In this research a novel dynamical systems approach is used to study the micro-mechanics of confined comminution, the process of size reduction, of granular systems looking at the grain scale processes driving the evolution of grain crushing. This study examines the evolution of grain size distribution and contact force distribution in the context of self-organisation and attractors. A 2D model of grain crushing based on the discrete element method (DEM) is developed; which is aimed at identifying the physical conclusions that are beyond the details of any specific model.

Constitutive modelling of partially saturated soils

Speaker: Annan Zhou

University of Newcastle

This research presents a new method to couple the hydraulic component with the mechanical component in a constitutive model for unsaturated soils. Generalised constitutive relations on coupled hydro-mechanical behaviour are introduced. These generalised constitutive relations are then incorporated into existing mechanical and hydraulic models for unsaturated soils. Numerical examples are presented to show the performance of the proposed model in predicting soil behaviour along drying and loading paths. Finally the model is validated against experimental data for different soils.

Attendance may be credited (1 point) towards Continuing Professional Development requirements. Members are responsible for recording CPD for audit purposes.

Booking is not required.

For further information contact Mark Adams (mark.adams@arup.com.au)



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