Workshop and Lectures on Earth Pressure Theories, Deep Excavations for Basements of Buildings, Cut and Cover Tunnels and Mined Tunnels for MRT Works

Organised by: Centre for Infrastructure Engineering and Management and Griffith School of Engineering, Griffith University Gold Coast Campus

Date: September 27 – October 1, 2010

Venue: Griffith University Gold Coast Campus G30 1.09

See "Registration form" for daily registration

PLEASE NOTE THAT ONLINE REGISTRATION IS NOW AVAILABLE
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For additional information please contact (preferably by e-mail)
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INTRODUCTION

The September Workshop and Course will be on Deep Exacavations and Tunnelling. Excavation is an important segment of foundation engineering. For example, in the construction of the foundations or basements of high rise buildings, underground oil tanks, subways or mass rapid transit systems, etc. Though books on general foundation engineering introduce the basic analysis and design of excavations, they are usually too simple to cope with analysis and design in practice. With economic development and urbanization, excavation goes deeper and is larger in scale, sometimes it is carried out in difficult soils. These conditions require advanced analysis and design methods and construction technologies. Prof. Ou, the author of a well known text book would give two days of lectures (September 27-28) including several case histories including the MRT works in Taipei and Singapore and the 101 building basement of the Taipei World Trade Centre. At the same time, working with industrial builders, Prof. Ou has also taken part in many large-scale excavation projects and accumulated experience in analysis and design. Supported by extensive studies and combined with analytical experience, he has developed an excellent course on deep excavation at his university. Dr. Noppodol will lecture on the deep excavation works in Bangkok both for basements of buildings and MRT station works. The latter three days of September 28 to October 1 will be on cut and cover tunnels and mined tunnels. Authoritative lectures would be given by Profs. Mitsutaka Sugimoto, Keichi Ono, Noppodol Phienwej, Oliviera and engineers from Arup. These lectures also include excellent case histories in Japan and SE Asia, Brazil, and Australia.
All practitioners and academics will benefit immensely by attending the lectures given by Profs. Ou, Sugimoto, Ono, Noppodol Phienwej, Oliviera and others

Practice oriented Workshops and Courses are organised by Griffith University now for nearly eight years. These activities are planned round the year only during the time when there is no formal teaching. Such a restraint is there as it is during the non-teaching period only, the lecture rooms are available for this purpose. A number of students are helping these and other activities and as such, they need to be planned carefully in order that it can be self supporting by itself. In 2010, behaviour of saturated and unsaturated soils was the February Workshop with Profs. David Muir Wood, Eduardo Alonso and Thevanayagam. In April there was a Workshop on Mega projects: Profs. Harry Poulos, Chris Haberfield, Dr. Stephen Buttling, Prof. Tatsunori Matsumoto, Dr. Sung –Min Cho, Mr. Patrick Wong, Mr. James D. McIlquham, Dr. T.H. Seah and Mr.Greg Hackney lectured in the Workshop. The July 11-15 Workshop is on Eurocode 7 and Geosynthetics and Ground Improvement. Lectures will be given by Dr. Trevor Orr, Mr. Chris Lawson and Dr. Jie Han.

Technical Program on Deep Excavations: Monday, September 27, 2010: 1st Day
C.Y. Ou

Monday, September 27, 2010

08:30 - 09:00	Registration
09:00 - 10:30	Stability analysis- 1: Push in, basal heave and ground upheaval
10:30 - 10:45	Coffee break
10:45 - 12:00	Stability analysis- 2: Sand Boiling & Case studies with sand boiling
12:00 - 13:00	Lunch
13:00 - 14:30	Deformation analysis-1: Simplified methods- Effect of wall installation and wall lateral movements, 3D effects
14:30 - 15:30	Deformation analysis-2: Ground settlements: characteristics, influence zones, shapes of settlement patterns, 3D effects
15:30 - 15:45	Coffee break
15:45 - 17:15	Deformation analysis-2 (contd.): Empirical methods: Peck, Clough and O'Rourke; Ou and Hsieh; Case studies

Technical Program on Deep Excavations (contd): Tuesday, September 28, 2010: 2nd Day
C.Y. Ou & Dr. Noppodol Phienwej

Tuesday, September 28, 2010:

08:30 - 09:00	Registration	
09:00 - 10:30	Deformation and stress analysis (numerical method): (i) Beam on elastic foundations and (ii) FEM of analysis	**C.Y.Ou**
10:30 - 10:45	Coffee break	
10:45 - 12:00	FEM analysis continued and case studies	**C.Y.Ou**
12:00 - 13:00	Lunch	
13:00 - 14:00	Usage and performance of cement jet grouting and deep mixing soil cement columns for excavations in soft soils: The technique becomes increasingly used in Southeast Asia. The talk will be on the construction method, design practice, means of improvement on lateral resistance, and case studies.	**Noppodol Phienwej**
14:00 - 15:00	Excavation and protection of adjacent structures-1: (i) Procedure of evaluating the potential damage of adjacent structures (ii) Ground improvement	**C.Y.Ou**
15:00 - 15:20	Coffee break	
15:20 - 16:30	Deep excavation with diaphragm walls in Bangkok soft soil: General practice (design & construction methodology), control of ground movements (lesson learn from MRT projects), and a case study on value-engineering in deep excavation for the underground car park in front of Bangkok City Hall.	**Noppodol Phienwej**
16:30 – 17:30	Excavation and protection of adjacent structures-2: (i) Cross wall (ii) Buttress wall (iii) Micro piles (iv) Strengthening the retaining-strutting system	**C.Y.Ou**

Technical Program on Tunnelling:
Wednesday, September 29, 2010: 3rd Day
Sugimoto & Ono

Wednesday, September 29, 2010:

08:30 - 09:00	Registration
09:00 - 10:30	Introduction of Tunnelling: NATM, Shield driven method, cut and cover method **Sugimoto**
10:30 - 10:45	Coffee break
10:45 - 12:00	Overview of shield tunnelling technology (i) Segment lining (ii) TBM (iii) Ground movement (iv) New technologies **Sugimoto**
12:00 - 13:00	Lunch
13:00 - 15:00	(i) Use of tunnel and underground space; (ii) Tunnel fire and the damage **Ono**
15:00 - 15:20	Coffee break
15:20 - 17:15	Case studies on shied tunnelling (1) (i) SENSE method: This is a new technology by combining shield tunnelling concept and NATM one. The first application was done at Sanbongi Tunnel in Tohoku Shinkansen Line. (ii) URUP method: This is also a new technology which can launch a shield from the ground surface without a vertical shaft. The prototype test was done in 2007 and the first application just launched at the Shinagawa line of Metropolitan expressway **Sugimoto**

Technical Program on Tunnelling: September, 30, 2010: 4th Day
Prof. Sugimoto& Prof. Ono

Thursday, September 30, 2010: Sugimoto & Ono

08:30 - 09:00	Registration
09:00 - 10:30	Analytical behaviour of a shield tunnel lining during fire Lining protectors from fire and the fire test; Fire design concept to tunnel lining; Fire design concept to tunnel lining; **Ono**
10:30 - 10:45	Coffee break
10:45 - 12:20	Unique topics in tunnelling: Evaluation of the spring constant of the ground around a shield tunnel and measurement of load acting to the tunnel **Ono**
12:20 - 13:00	Lunch
13:00 - 15:00	Case studies on shied tunnelling (2): Ootsu flood tunnel: The ground displacement was analysed using the shield kinematic model and 3D FEM analysis. **Sugimoto**
15:00 - 15:20	Coffee break
15:20 - 17:15	Unique topics in tunnelling: Distortion of a TBM skin plate during excavation under the sea; A large excavation in a soft ground and displacement prediction of the retaining wall **Ono**

Technical Program on Tunnelling: October 1, 2010: 5th Day
Ono, Phienwej, Oliviera, and Arup Engineers

Friday, October 1, 2010:

08:30 - 09:00	Registration
09:00 - 10:30	Lesson learnt from bored tunnelling with EPB shields in the first Bangkok underground MRT projects. Use of Observational Method in control of impact on close-proximity tunnelling. Characteristics of induced ground movements – Actual versus prediction. **Noppodol Phienwej**
10:30 - 10:45	Coffee break
10:45 - 12:20	Lesson learnt from bored tunnelling with EPB shields in the first Bangkok underground MRT projects. Responses of building piled foundations. FEM analysis on effect of tunnelling on piles. **Noppodol Phienwej**
12:20 - 13:00	Lunch
13:00 - 14:30	Geotechnical challenges in construction of MRT stations in Bangkok soft soil in sensitive city area using non-conventional methods in the upcoming Extension Projects. A combination method of bored tunnelling, mining excavation with extensive ground improvement for soft marine clay and sand is proposed. Discussion will be on environmental constraints, design concept, method of analysis, and risk.
14:30 - 15:15	Experiences with the design and performance of cut and cover tunnels **Arup Engineer**
15:15 - 15:40	Coffee break
15:40 - 16:30	Numerical modelling of underground excavations. Modelling approach; Discontinuum versus pseudo continuum; case history - collapse of the Pinheiros Metro Station, Brazil in 2007 **Oliviera**
16:30 - 17:15	Temporary support design for mined tunnels **Arup Engineer**

Registration Can Now Be Done Online

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(B) BY CLICKING "NEXT STEP", YOU WILL BE ABLE TO SELECT THE MODULE YOU INTEND TO ATTEND.

- □ **AUD $ 480 –Monday, 27th September 2010**
- □ **AUD $ 480 –Tuesday , 28th September 2010**
- □ **AUD $ 480 –Wednesday, 29th September 2010**
- □ **AUD $ 480 –Thursday, 30th September 2010**
- □ **AUD $ 480 –Friday, 1st October 2010**

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***For additional information please contact (preferably by e-mail)**

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Bio-data:

(1) Prof. Chang-Yu Ou

Prof. Chang-Yu Ou received his Bachelor's Degree in Engineering in 1977 from National Cheng-Kung University in Taiwan and his Masters and Doctoral Degrees from Stanford University in 1984 and 1987 respectively. He has focused on studies of soil behavior and excavation problems since beginning to teach in a university and has published many journal and conference papers concerning the subjects. At the same time, working with industrial builders, he has also taken part in many large-scale excavation projects and accumulated experience in analysis and design. Supported by study results and analysis experience, he has opened a course on deep excavation at the university.

He is currently the Dean of engineering at the National Taiwan University of Science and Technology, Taipei, Taiwan. He was also the Director of Ecological and Hazard Mitigation Engineering Research Center of the National Taiwan University of Science and Technology, Taipei, Taiwan. He was also a Visiting Professor at University of California, Berkeley.
His areas of interest are deep excavations, soil behaviour, soft ground tunnelling and ground improvement.

(2) Prof. Koichi ONO

Prof. Koichi Ono did his Bachelor and Masters Degree in Engineering at Kyoto University back in 1965, 1967. He received his PhD from University of Toronto in Canada in 1972. He worked with Konoike Construction Company and was concurrently a Lecturer at Kobe University. He became a Professor at Kyoto University in 1996 and stayed there until he retired in 2005. He then became a Professor Emeritus of Kyoto University and the President of Maizuru National College of Technology.
Prof. Ono has been very active in tunnelling and underground works now for more than two decades and was a Vice-President of ITA in 2004. He was also the Chairman of the International Conference on shotcrete for rock support. He is an Expert to ITA Executive Council and served in several technical committees.
An author of over t 200 technical publications in the field of Tunnel, Underground, Foundation, Pipeline, Concrete and Concrete structures, Prof. Ono is an active consultant in many of the major tunnelling projects in Japan and abroad.

(3) Prof. Mitsutaka Sugimoto

Prof. Sugimoto is currently a Professor in the Department of civil Engineering at the Nagaoka University of Technology in Japan; he is the Head of the Graduate School in Engineering and

assistant to the President of that University. Prof. Sugimoto has an active research centre on practice oriented research in all kinds of tunneling and in particular shield tunneling. Among the vast professional activities in tunneling, Prof. Sugimoto was : an active member of the technical committee on tunnel design standard for shield tunneling for the Railway Technical Research Institute in Japan; a member of the Technical committee on tunnel design standard for mountain tunneling in urban areas; a member of the Technical committee of the Japanese Society of Civil Engineering (JSCE) on standard segments for shield tunneling; Chairman, Technical committee on construction loads during shield tunneling, JSCE.

Prof. Sugimoto was an active member of TC 28 on tunneling of ISSMGE. He has carried out extensive research on shield tunneling including: Evaluation of soil properties based on the in-situ data of the shield driven method; modeling of load acting on shield; shield behavior using 3-D shield simulator; development on ground reaction curve for shield tunneling; ground behavior using 4-centered slurry shield driving method; survey system on shield behavior during excavation; Influence of grout material in shield tail on shield tunneling perform; simulation of shield tunneling behavior along a curved alignment in a multilayered ground; development of kinematic shield model; pipe jacking studies.

Prof. Sugimoto is a member of the editorial committee of several journals including Journal of Tunneling Engineering; Soils & Foundations; Chairman, Editorial board for “Journal of Tunnel engineering; Journal of Construction Engineering and Management. A member of several geotechnical and tunnel engineering societies, Prof. Sugimoto has lectured very widely in Asia, Europe and North America.

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(4) Prof. Noppodol Phienwej

Prof. Noppadol Phienwej holds a doctoral degree in Civil Engineering from University of Illinois at Urbana-Champaign, U.S.A. He has 25 years of experience in geotechnical engineering as an academician and consultant; with ample experiences in the various aspects of dam engineering. He has been involved with investigation, design, construction supervision and rehabilitation of more than 20 dams in Thailand as well as a number of trans-basin water diversion projects

Prof. Noppodol is heavily involved with professional society and community service activities for instances, twice as advisor to the Minister of Transport of Thailand, and an advisor to a number of state enterprises responsible for infrastructure and utilities development. He serves as a liaison person of Thailand National Group of the International Tunnelling and Underground Space Association and was the past chairman of that group. He is also the editor of the Geotechnical Engineering Journal of the Southeast Asian Geotechnical Society and serve on editorial board members of two leading international journals, i.e. Tunnelling and Underground Space Technology and Felsbau. He was also the past chairman of the Geotechnical Committee of the Engineering Institute of Thailand and was also a member of its Executive Committee. He has been involved with a number of major infrastructure development projects in Thailand and Southeast Asian countries (hydropower dams, irrigation dams, power plants, tunnels, airport, and mines). Recently, he served on two important committees for development of the new Bangkok International Airport project (Suvarnabhumi Airport).

(5) Dr. David Oliviera

David has over 10 years geotechnical engineer experience. Before joining Coffey, he worked on a broad range of geotechnical investigation and design for major infrastructure projects in Brazil including ground improvement, slope stabilisation, foundations, dams and earthworks.

He received his PhD in Rock Mechanics from the University of Wollongong in 2009 which was supervised by Prof. Buddhima Indraratna with the collaboration of Prof. André Assis (former president of ITA-AITES) and Prof. E.T. (Ted) Brown. In Australia, David won significant awards for his contribution to geotechnical engineering such as the 2009 David Sudgen Award by the Australasian Tunnelling Society, AGS NSW Research Award (Runner-up) and Young Geotechnical Professional (2nd Prize) both by the Australian Geomechanics Society.

He was recently involved in the Tender Design for the Sydney CBD Metro and the Toronto Egliton Light Rail Tunnel.