

Geotechnical Engineering Practice & Mega Projects

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

Date: April 06 – 09, 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

In 2010 a number of Workshops are planned with the most valued help of AGS members and friends. The second in this series for 2010 will be on the role of geotechnics in mega-projects; these projects are often high risk structures such as very tall buildings (sky scrapers as some time described) , long span bridges, major airport works, sea ports, land reclamation works and also large scale projects in developing countries. We are most fortunate to have some of the most outstanding geotechnical experts, Prof. Tatsunori Matsumoto, Mr. Patrick Wong, Dr. Stephen Buttlng, Prof. Harry G Poulos, Prof. Chris Haberfield, Mr. James D. McIlquham, Dr. T.H. Seah among others. The Workshop and lectures would be an excellent discourse of a mixture of site investigation works, soil and rock behaviour, model testing, analyses and design and construction details. These Workshops are now well received and have the strongest support of our industry colleagues. Participants are not only from SE Queensland, but are also from all other States in Australia.

Day 1: Tuesday, 6th April, 2010

Tatsunori Matsumoto, Prof. Graduate School of Kanazawa University, Japan

08:30 – 09:00am: Registration

**09:00 – 10:15am: A simplified three-dimensional deformation analysis of piled rafts PRAB
Load tests of piled raft models with different pile head connection conditions and their analyses
Prof. Tatsunori Matsumoto**

10:15 – 10:45am: Coffee break

**10:45 – 12:00pm: Piled raft foundation constructed using a reverse construction method: Field measurements and analyses
Prof. Tatsunori Matsumoto**

12:00 – 01:00pm: Lunch

**01:00 – 02:30pm: Piled raft foundations constructed by Takenaka Corporation
Prof. Tatsunori Matsumoto**

02:30 – 03:00pm: Coffee Break

**03:00 – 04:00pm: Piled raft foundations constructed by Taisei Corporation
Prof. Tatsunori Matsumoto**

**04: 00 – 05:00pm: Piled and piled raft foundations: Case Studies on Major Projects in SE Asia and Australia
Stephen Buttlng**

Day 2: Wednesday, 7th April, 2010

08:30 – 09:00am: Registration

**09:00 – 10:00am: An Introduction to the Incheon Bridge Project
Dr. Sung-Min Cho**

10:00 – 10:20am: Coffee break

**10:20 – 11:20pm: Geotechnical Designs of the Incheon Bridge
Dr. Sung-Min Cho**

**11.20 – 12:20pm: A 600 m high-rise tower (Tokyo Sky Tree) constructed by Obayashi Corporation
Prof. Tatsunori Matsumoto**

12:20 – 1:00pm: Lunch

**01:00 – 02:30pm: Prof. Harry G. Poulos
Foundation systems for tall buildings in Middle-East and Korea**

02:30 – 03:00pm: Coffee Break

**03:00 – 04:00pm: Foundation Constructions of Incheon Bridge
Dr. Sung-Min Cho**

**04:00 – 05:00pm: Ship Impact Protection System of Incheon Bridge
Dr. Sung-Min Cho**

Day 3: Thursday, 8th April, 2010

08:30– 09:00am: Registration

**09:00 – 10:00 am: Design aspects of deep foundations in rocks
Prof. Chris Haberfield**

10:00 – 10:20am: Coffee break

**10:20 – 12:20pm: Analysis and design of foundation system
for Nakheel Tower, Dubai
Prof. Chris Haberfield**

- 12:20 – 1:00pm: Lunch**
- 01:00 – 02:30pm: Gateway Bridge Upgrade Project
Mr.Greg Hackney**
- 2:30 – 03:15 pm: Rapid load tests of piles and rigid plates for design of
building foundations
Prof. Tatsunori Matsumoto**
- 03:15 – 03:30pm: Coffee Break**
- 03:30 – 05:00pm: Taiwan High Speed Railway Project
Dr. T.H. Seah**

Day 4: Friday, 9th April, 2010

- 08:30 – 09:00am: Registration**
- 09:00 - 10:30 am: Soft clay engineering and advanced soil testing
Dr. T.H. Seah**
- 10:30 – 11:00 am: Coffee break**
- 11:00 –12:30 pm: Ground improvement schemes at the Suvarnabhumi
International Airport in Bangkok
Dr. T.H. Seah**
- 12:30 – 1:15pm: Lunch**
- 01:15 - 02:00pm: Geotechnical Works at the Botany Bay Project
James D. McIlquham**
- 02:00 – 03:00pm: Performance versus Design Prediction of Various Ground
Improvement Schemes at Balina Bypass: conventional
preload, surcharge with wick drains, stone columns,
dynamic replacement, vacuum consolidation, and deep soil
mixing.
Patrick Wong**
- 03:00 – 03:30 pm Use of Wick Drains to Improve Deep Soft Clay Deposits –
Port of Brisbane Experience
Peter J Boyle**
- 03:30 – 04:00pm: Coffee Break**
- 04:00 – 05:30pm: Foundations and Highway Projects in Vietnam, Sri Lanka**

and Bangladesh
Dr. T.H. Seah

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State/Country:

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***Please note that password is also required. You will use this password to log into the User Admin area and modify your registration if necessary.**

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

- ☐ AUD \$ 480 –Tuesday , 6th April 2010
- ☐ AUD \$ 480 –Wednesday, 7th April 2010
- ☐ AUD \$ 480 –Thursday, 8th April 2010
- ☐ AUD \$ 480 –Friday, 9th April 2010

By ticking the box, you are now registered for the days you selected.

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

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LECTURERS BIO-DATA

(1) Prof. Tatsunori Matsumoto

Prof. Matsumoto is now with Kanazawa University in Japan for nearly 32 years. He was educated at the Kanazawa University and received his Doctoral Degree from Kyoto University for his work on steel pipe piles in 1989. He has extensive research and practical experience on piled foundations and piled raft foundations. Prof. Matsumoto has a Shake Table Facility for the study of dynamic and earthquake type of behaviour of piled foundations. He has also worked on the centrifuge with pile groups and piled raft foundations in collaboration with Taisei Corporation.

His research work on piled raft foundations range from the simplified calculation methods of Poulos - Davis and Randolph (PDR Method), Burland's method to approximate computer based methods such as the strip on spring and plate on spring approaches and hybrid methods. He has also worked on more rigorous method using boundary elements and finite elements.

From his vast practical experience, Prof. Matsumoto has selected more than ten case histories involving piled raft foundations in Japan. These foundations are under various soil conditions. These studies involve the long term performance as well.

Prof. Matsumoto also has wide experience in the seismic design of raft and piled raft foundations. Prof. Matsumoto is one of the authors of the computer software PRAB—Piled Raft Analysis with Batter Piles. With this software piled raft foundation can be analyzed with vertical and horizontal loads as well as moment. Prof. Matsumoto has travelled very widely and have lecture red in Piled foundation and Piled Raft Foundations. He has also published his research work in numerous journals and conferences.

(2) Patrick Wong

Patrick is currently a Senior Principal of Coffey Geotechnics. He joined the company after graduating with first class honours in Civil Engineering from The University of Sydney in 1978, and has enjoyed a fulfilling career as a geotechnical Consultant ever since.

Patrick has extensive management experience at both technical and corporate levels, including a 3 years period as a Director and 5 years as Manager of the Eastern Region of Coffey. Since 2005, his role has been to provide technical leadership, mentoring, and coaching to younger staff, and at the same time doing the challenging and interesting projects that he has a passion for. He has broad experience in a wide range of geotechnical projects including roads, bridges, dams, buildings, excavations, tunnels, marine structures, and landslip studies. Patrick's special areas of interest and expertise include soft soil engineering, ground improvement, deep excavations and retention systems, and deep foundation engineering.

(3) Dr. Stephen Buttlng

Stephen Buttlng graduated from Imperial College, University of London, in 1970 and immediately engaged in research at Bristol University leading to award of a PhD in January 1975. He has spent the last 36 years in geotechnical work, initially with Cementation Piling & Foundations for 5 years and then as a consulting engineer in the UK. He has lived in Hong Kong, Singapore, and Thailand, and from these bases has worked in China, Philippines, Malaysia, Indonesia, Taiwan and Burma.

During 16 years in Thailand he designed the foundations for a cable stayed bridge, and also a type of piled raft to support three 70 storey condominium towers. He spent his last 4 years in Thailand supervising the installation of 27,000 piles for the passenger Terminal Complex of the Second Bangkok International Airport, and supervising the civil and structural works of the Underground Train Station at the airport to serve the Airport Express. Since arriving in Brisbane in 2006 he has designed the piles for the Hale Street Link Bridge, and been involved with the Port Botany Expansion. Now he is National Technical Manager for Piling Contractors, where he looks after all technical matters, including design of piles and embedded retaining walls.

(4) Dr. Sung-Min Cho

Dr. Cho is a principal research engineer of Korea Expressway Corporation (KEC), a government-related organization whose main missions are planning, construction, operation, and maintenance of the national expressway of Korea.

He received his Ph.D. in 1998 and M.Sc. in 1994 in Geotechnical Engineering from the Seoul National University (SNU), Korea. He graduated from SNU with B.S. in civil engineering.

Dr. Cho has been involved in managements and supervisions of the design and the construction of highways in Korea as well as in establishments of technical specifications. Recently, he accomplished a great project to make the longest and largest bridge of Korea. He completed his task to build the Incheon Bridge, an 18.4 km long sea-crossing bridge which has an 800 m wide cable-stayed span. He was a technical advisory director of the Incheon Bridge Construction Office of KEC for 5 years. He transferred to the research institute of KEC as a research director in January, 2010. At present, he works as a project manager (PM) of the design appraisal consulting for Hanoi-Haiphong Expressway Project in Vietnam. This task will be completed in June, 2010.

Dr. Sung-Min Cho has directed research projects related to geotechnical characterizations of the subsurface, soft ground improvements, bridge foundations, slope stabilities, and reinforcement technologies for the highway maintenance since 1998. He carried out a collaborative research on the application of cone penetration tests with the University of British Columbia, Canada in 2004. He also took part in the preliminary study group to launch the national research project for the super-long-span bridge. He has consulting experience in various technical fields for the design and construction of the highway. And he has been lectured on soil mechanics,

geotechnical engineering, bridge engineering, and highway engineering at a number of educational institutions including universities. He has published dozens of academic papers (most of them was written in Korean) and also presented in a number of conferences.

Dr. Cho is currently a member of Korean Society of Civil Engineers (KSCE), Korean Geotechnical Society (KGS), Korean Geosynthetics Society (KGSS), American Society of Civil Engineers (ASCE), and International Society of Soil Mechanics of Geotechnical Engineering (ISSMGE). He is also a board director of KGSS, a Technical Committee Chair of KGS, and the counsel member of several advisory committees to the government and public firms in Korea. He won the Best Researcher Award of KEC in 2003, the Young Engineer Award by KGS in 2004, the Merit Award of KSCE in 2004, the Best Presentation Award of KGS in 2006, 2007, and the Prime Minister's Commendation (Citation Ribbon for contributions to the success of the Incheon Bridge Project) awarded by the Korean Government in 2009.

(5) Greg Hackney

Greg Hackney graduated from the University of NSW in 1995, and joined Coffey Partners International in the Sydney office. During his time in Sydney, Greg worked on many large scale infrastructure projects, and other projects such as the risk assessment and mitigation for Thredbo Alpine Village following the landslide in 1997. Whilst working with Coffey in Sydney, Greg returned to complete a Masters of Engineering Science degree in Geotechnical Engineering at UNSW. After some nine years in Sydney, Greg moved to the mid-north coast of NSW, to take up the role of managing the Coffs Harbour Office. After three years in Coffs Harbour, Greg moved to Brisbane, where he took on the role of Project Director for Coffey on the Gateway Upgrade Project for a two year period, before moving into the role of a Principal Geotechnical Engineer in the Newstead office. The Project Director's role for the gateway Upgrade Project spanned over the second half stages of the design phase, and throughout the construction phase. During this time, Greg was responsible for leading a team of up to 50 staff in the detailed design and construction monitoring of the geotechnical aspects of the project. Since then, Greg has taken on a design management role for a coffer dam in Papua New Guinea, and a geotechnical design manager role for a consortium bidding the Northern Link tunnel in Brisbane.

(6) Jamie Mcllquham

Jamie Mcllquham is a Senior Geotechnical Engineer working for Golder Associates in the Sydney Office.

He graduated from the University of Abertay, Dundee in 1999 with a BEng (Hons) in Civil Engineering. After graduation he worked for the respected UK geotechnical contractor Ritchies for three years, gaining experience as a Project Manager on a wide range of geotechnical contracts including installation of ground anchors, slope stabilisation works for roads and railways and grouting of disused mineworkings. These projects were located in the UK and Gibraltar.

In 2002 he joined the Highways Laboratory of Lancashire County Council and completed site investigations, geotechnical design and contaminated land investigation and remediation projects for many sites around Lancashire in the UK.

Major projects included investigation and design work for the Lancashire Waste Transfer Network, preliminary investigation and design for the Completion of the Heysham to M6 Link and contaminated land investigations of former ICI chemical works for the REMADE Project.

Since joining Golder in 2007 as a project manager he has completed technical design for a variety of multi-disciplinary projects, focussing on transport and building infrastructure.

He has worked on the Port Botany Expansion project from early 2008, the start of detailed design phase through to providing on-going geotechnical advice during construction. During the design he led design packages for the dredging and reclamation works and design of caisson blockwork units, which will form the outer corners of the new facility and the link to the existing port. Geotechnical analyses and design work included specification of ground improvement for the new reclamation, assessment of the impact of ground improvement techniques on structures and the assessment of berth structure stability and movements.

He is currently working on the Port Botany Expansion site, providing on-going geotechnical advice during construction, including temporary works design and construction supervision. He has also assessed monitoring results during construction to assess measured performance against design predictions. He is a Chartered Engineer in both the UK (CEng) and Australia (CPEng) and won the Australian Geomechanics Society (AGS) Young Geotechnical Professionals award in 2009.

(7) Dr. Chris Haberfield

Dr. Chris HABERFIELD: Chris is a Principal with Golder Associates Pty Ltd in their Melbourne Office and an Adjunct Research Associate of Monash University.

Chris is well known internationally for his work in soft, weak and weathered rocks and in particular the performance of socketed piles in these materials. During the 1990s Chris led the research team at Monash University into the analysis, design and performance of piles in weak rock, from which the analysis program ROCKET is based on. Other innovations during this time were the continued development of advanced constant normal stiffness direct shear testing equipment, development of laser based equipment for automatic measurement of socket roughness and socket inspection (SOCKETPRO) and the use of expansive cements to enhance rock socket and anchor performance. Chris was awarded the 2007 E H Davis Memorial Lecture for his work in foundations in weak rock.

Since joining Golder Associates in 2000, Chris has provided advice on many tall tower projects with respect to the foundation works, one of the most notable of which is the Nakheel Tower in Dubai.

(8) Dr. T.H. Seah

Dr. Seah is currently working as a Geotechnical Engineer with MAA Geotechnics,

Co., Ltd. and an Adjunct faculty at the Asian Institute of Technology (AIT) in Thailand.

He graduated from King's College, University of London, in 1985 and received his Doctoral degree from Massachusetts Institute of Technology in 1990 under the guidance of Professor Charles C. Ladd. He worked as a geotechnical engineer in Singapore and Malaysia before joining AIT as an assistant professor between 1991 and 1993. At AIT, he conducted experimental research on soils with several publications on testing of soft Bangkok clay, including constant rate of strain consolidation with radial flow, true triaxial testing, simulations of pressuremeter and vane shear modes etc.

After 1993, he worked as a geotechnical consultant in Bangkok, involving in design and construction of the ground improvement at Second Bangkok International airport (with over 400,000 m² of vacuum consolidation), design and construction of pile foundation in Taiwan High Speed Rail project, ground improvement design of several highways and expressways in Southeast Asia, and design and construction of ground treatment and foundation for various petrochemical facilities in Thailand and Vietnam. His main specialty includes laboratory and field testing, PVD preloading, vacuum consolidation and deep mixing methods etc.

At present, he is an advisory committee member of the Engineering Institute of Thailand, and a member of several International geotechnical societies.

(9) Peter Boyle

PETER BOYLE holds a Queensland University of Technology (QUT) civil engineering degree and is a Fellow of the Institution of Engineers, Australia. He has over 25 years of experience in the public and private sectors covering all facets of port development.

Peter was the Alliance Design Manager for the construction of the Port of Brisbane's FPE Seawall Project. The project involved 4.6km of wall to enclose 230ha footprint, which will enable progressive development of the port. The challenges and risk involved over 25m of soft compressible clay; additionally the project involved some 400,000 m³ of sand, filter and high strength geotextile of 350,000 m² and nearly 700,000 m³ of rockfill overhauled from long distance. The sea wall project won several awards including the ACEA Design Award.

Peter currently has the lead technical role in the reclamation and development of some 300 hectares of future Port Lands. This partially involved a very large number of fully instrumented test embankments with surcharge and vacuum consolidation with the use of wick drains. This is truly a remarkable set of test embankments carefully instrumented with extensive site investigation works. This ground improvement project recently won the Innovation Award of Engineers Australia (Qld).

(10) Prof. Harry G Poulos

Harry Poulos joined the Department of Civil Engineering at Sydney University in 1965, and was appointed a Professor in 1982, a position which he held until his retirement in 2001. In 1989, he joined the consulting firm of Coffey Partners International, and is currently a Senior Principal with Coffey Geotechnics. He is also an Emeritus Professor at the University of Sydney, and an Adjunct Professor at the Hong Kong University of Science and Technology.

He has published books and technical papers on foundation settlements, pile foundations, and offshore geotechnics, and has been involved in a large number of major projects in Australia and overseas, including high-rise building projects in Hong Kong, Singapore, Dubai and Qatar.

He is a Fellow of the Australian Academy of Science, a Fellow of the Australian Academy of Technological Sciences and Engineering, a Fellow of the American Society of Civil Engineers, an Honorary Fellow of the Institution of Engineers Australia and an Honorary Member of the Japanese Geotechnical Society.

In 1993, he was made a Member of the Order of Australia for his services to engineering, and in 2003 he was awarded a Centenary Medal by the Australian Government for his services to science and geotechnical engineering. He was selected as the Australian Civil Engineer of the Year for 2003 by the Institution of Engineers Australia and as the inaugural Geotechnical Practitioner of the Year by the Australian Geomechanics Society. He was the 1989 Rankine Lecturer of the British Geotechnical Association, the 2004 Terzaghi Lecturer of the American Society of Civil Engineers, and received the 2005 Kevin Gold Nash Medal from the International Society for Soil Mechanics and Geotechnical Engineering.