Workshop & Lectures on:

1. **Pavement Maintenance and Management**
2. **Bridge Maintenance and Management Systems**
3. **Deep Excavations**
4. **Strength & Compressibility of Soft Soils in settlement and stability of structures for highways and motorways**

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

Module 1: Pavement Maintenance and Management; 12-13, November, 2007

Module 2: Bridge Maintenance and Management; 14, November 200

Module 3: Deep Excavations for Basement of Buildings and MRTA Stations 15-16 November

Module 4: Compressibility and Strength of Soft Soils in Settlement and Stability Evaluation of Structures for Motorway Constructions
19-20 November

Venue: Building G06- Lecture Theatre 1.04
Griffith University Gold Coast Campus

See "Registration form" for daily registration

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

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Introduction

During the Long Term Break at Griffith (from12-16 and 19-20, November), Workshops (and Lectures) are arranged in four modules as (1) Module 1: Pavement Maintenance and Management; (2) Module 2: Bridge Maintenance and Management; (3) Module 3: Deep Excavations for basements of buildings and MRTA Stations and (4) Module 4: Compressibility and Strength of Soft Soils in Settlement and Stability of Structures in Highways and Motorway Construction. These lectures are at post-graduate levels and are not offered at the undergraduate levels in most universities. They will be most valuable for practicing engineers.

Module 1: Pavement Maintenance and Management (12-13 November)

On Day 1 (12, November), the topics covered would be: Concept of Total Highway Management & PMS, Pavement Maintenance Management Systems , Pavement Distress Survey and Evaluation, Priority Rating of Pavement Maintenance Needs and Pavement Maintenance planning , Pavement Roughness Evaluation , Nondestructive Deflection Testing of Pavement .

On Day 2 (13, November), the topics covered are: Structural Evaluation of Flexible & Rigid Pavements, Skid Resistance Evaluation of Pavement, Budget Planning and Optimal Programming for PMS, Concept of Highway Asset Management, QLD Dept of Main Roads' Practises in pavement maintenance, rehabilitation, and pavement management system and QLD Dept of Main Roads' Practises in Road and Bridge Assets Management and Valuation.

These lectures will be delivered by Prof.T. F. Fwa of the Department of Civil Engineering and Director of the Centre for Transportation Research, National University of Singapore. Prof. Fwa received his BEng (First Class Hons) from the then University of Singapore (now known as the National University of Singapore), MEng from the University of Waterloo, Canada, and PhD from Purdue University, USA.

Dr. Fwa's research in the last 25 years covers all aspects of highway engineering, with special emphasis in the areas of pavement design, maintenance and management, and pavement performance evaluation and testing. He has published more than 200 technical papers in journals and conference proceedings, with more than 130 of them in leading international journals. His work has led to three patents in non-destructive pavement testing and evaluation. He is the editor of the recently published Handbook of Highway Engineering by CRC Press.

Module 2: Bridge Maintenance and Management (14, November)

The sections to be covered are: Bridge Management System, Inspection, evaluation and maintenance of bridges, Fatigue of steel members, Stress measurement and Bridge Weigh-in-Motion, Retrofitting, Example of Orthotropic Steel Deck and Corrosion and Anti-corrosion Measures and Case

Studies.
These lectures would be conducted by Prof. Kaedaro Yamada who was educated in Nagoya University and University of Maryland, USA. He was also a Post-Doctorate Research Fellow at the University of Maryland. A full Professor for nearly 20 years at the Nagoya University, Department of Civil Engineering and now at the School of Environmental Studies, Prof. Yamada was also a Visiting Scholar at ICON, EPLF Switzerland and at the Technical University of Denmark at Lyngby.

Module 3: Deep Excavations for Basements of Buildings and MRTA Stations

On day one (15, November), the sections covered are : An Overview of deep excavations problems and practice, Basal Heave Stability in excavations, Uplift & Toe Kick-in Stability, Strut Forces and Wall Bending Moments, Wall and Ground Movements and Post-excavation Settlements.

On Day 2 (16, November), the sections covered are: 1-D, 2-D and 3-D Finite Element Analysis , Mohr-Coulomb Soil Model , Limitations of Mohr-Coulomb Model , Design issues in Deep Excavations, Observational Methods and Case Studies -- Esplanade by the Bay, Nicolle Highway

The Workshop and lectures will be conducted by Prof. Wong Kai Sin of Nanyang Technological University, Singapore. Prof. Wong Kai Sin obtained his Bachelors Degree in civil Engineering from University of Illinois and his masters and Doctoral Degree from University of California, Berkeley. Prof. Wong developed his own program for finite element analysis of deep excavations. He is a Registered Professional Engineer in California USA and also in Singapore. Prof Wong worked in USA before for five years with Harding Lawson Associates. He is now with NTU in Singapore for over 23 years and held the position of the Chairman of Geotechnical Engineering Division of IES Singapore and also the Director of NTU-PWD Research Centre. He is also a Member of the Advisory Panel to LTA which are the clients for all MRT works in Singapore. Prof. Wong expertise include: soil structure interaction problems; deep excavations; building foundations; effect of soil movements on piles and down drag effects; and land reclamation works. Prof Wong was involved in the design and construction of many temporary works for basement excavations in Singapore. The more notable ones are art centre -- Esplanade by the Bay, the Marina Barrage and the Business Financial Centre Complex. He was also on the Independent Investigation Panel for the Land Transport Authority on the Nicholls Highway collapse. He is also a user of popular softwares such as Plaxis and Sage Crisp.

Module 4: Compressibility and Strength of Soft Soils in Settlement and Stability of Structures in Highways and Motorway Construction

On Day 1 (19, November), the following topics will be covered :

Interpretation of primary compression and settlement analysis , Interpretation of secondary compression and settlement analysis , Questions and answers related to primary and secondary compression; Settlement of embankments on soft clay and silt deposits ; Engineering properties of fibrous peats; Questions and answers on embankment settlements and peat properties.
On Day 2 (20, November), the following topics will be covered : Residual shear strength mobilized in first time slope failures, Questions and answers on analysis of slope failures and role of residual strength, Shear strength mobilized in undrained failure of soft clay and silt deposits , Questions and answers on undrained strength of soft clays and silts,

The Workshop and lectures will be conducted by Prof. Gholamreza Mesri, a world authority on the behaviour of soils and a leader in the study of the compressibility and consolidation of soils; Prof. Mesri is the Ralph B. Peck Professor Civil Engineering at the University of Illinois at Urbana-Champaign. Together with Karl Terzaghi and Ralph B. Peck, he co-authored the Third Edition of Soil Mechanics in Engineering Practice. He is an international scientific advisor on landslides to the Centre of Excellence on Geohazards established by The Norwegian Geotechnical Institute, Oslo, Norway, and an advisor to Harris County Flood Control District in Houston, Texas on stability of drainage way channels and detention basins.

Professor Mesri has served as consultant to government and private organizations in relation to construction projects in North and South America, Europe, Africa, and Asia, including airports, offshore facilities, tunnels, hydroelectric developments and building foundations. He is a member of the International Commission on Restoration of Metropolitan Cathedral of Mexico City, a member of the International Commission on Swelling Rocks, ISSMGE Technical Committee on Soft Soils Foundation Engineering, and a founding member of the International Committee on Coastal Geotechnical Engineering.

Professor Mesri is a member of the American Society of Civil Engineers, the Canadian Geotechnical Society, and International Society of Soil Mechanics and Foundation Engineering. Among his honours Mesri includes the 1988 and 2004 Norman Medal and 1992 Thomas A. Middlebrook Award of the American Society of Civil Engineers.

Daily Technical Program:

Module 1: **Pavement Maintenance and Management (12-13 November)**

November 12—Monday (Day 1) – Module 1

08:30	–	09:00am	Registration
09:00	–	10:00am	**Concept of Total Highway Management & PMS**
10:00	–	11:00am	**Pavement Maintenance Management Systems**
11:00	–	11:15am	Coffee break
11:15	–	12:15pm	**Pavement Distress Survey and Evaluation**
12:15	–	01:00pm	Lunch
01:00	–	02:15pm	**Priority Rating of Pavement Maintenance Needs and Pavement Maintenance planning**
02:15	–	03:30pm	**Pavement Roughness Evaluation**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**Nondestructive Deflection Testing of Pavement**

November 13--Tuesday (Day 2) --- Module 1

08:30	–	09:00am	Registration
09:00	–	10:00am	**Structural Evaluation of Flexible & Rigid Pavements**
10:00	–	11:00am	**Skid Resistance Evaluation of Pavement**
11:00	–	11:15am	Coffee break
11:15	–	12:15pm	**Budget Planning and Optimal Programming for PMS**
12:15	–	01:00pm	Lunch
01:00	–	02:15pm	**Concept of Highway Asset Management**
02:15	–	03:30pm	**QLD Dept of Main Roads' Practises in pavement Maintenance, rehabilitation, and pavement management system**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**QLD Dept of Main Roads' Practises in Road and Bridge Assets Management and Valuation**

Module 2: Bridge Maintenance and Management (14, November)

November 14--Wednesday

08:30	–	09:00am	Registration
09:00	–	10:00am	**Bridge Management System**
10:00	–	11:00am	**Inspection, evaluation and maintenance**
11:00	–	11:15am	Coffee break
11:15	–	12:15pm	**Fatigue of steel members**
12:15	–	01:00pm	Lunch
01:00	–	02:15pm	**Stress measurement and Bridge Weigh-in-Motion**
02:15	–	03:30pm	**Retrofitting, example of orthotropic steel deck**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**Corrosion and anti-corrosion measures**

Module 3: Deep Excavations for Basements of Buildings and MRTA Stations

November 15—Thursday (Day 1) – Module 3

08:30	–	09:00am	Registration
09:00	–	10:00am	**Overview**
10:00	–	11:00am	**Basal Heave Stability**
11:00	–	11:15am	Coffee break
11:15	–	12:15pm	**Uplift & Toe Kick-in Stability**
12:15	–	01:00pm	Lunch
01:00	–	02:15pm	**Strut Forces and Wall Bending Moments**
02:15	–	03:30pm	**Wall and Ground Movements**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**Post-excavation Settlement**

November 16--Friday (Day 2) –Module 3

08:30	–	09:00am	Registration
09:00	–	10:00am	**1-D, 2-D and 3-D Finite Element Analysis**
10:00	–	11:00am	**Mohr-Coulomb Soil Model**
11:00	–	11:15am	Coffee break
11:15	–	12:15pm	**Limitations of Mohr-Coulomb Model**
12:15	–	01:00pm	Lunch
01:00	–	02:15pm	**Design issues**
02:15	–	03:30pm	**Observational Method**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**Case studies – Esplanade by the Bay, Nicoll Highway**

Module 4: Compressibility and Strength of Soft Soils in Settlement and Stability of Structures in Highways and Motorway Construction.

November 19—Monday (Day 1) - -- Module 4

08:30	–	09:00am	Registration
09:00	–	10:00am	**Interpretation of primary compression and settlement analysis**
10:00	–	11:00am	**Interpretation of secondary compression and settlement analysis**
11:00	–	11:15am	Coffee break
11:15	–	12:00pm	**Questions and answers**
12:00	–	01:00pm	Lunch
01:00	–	02:15pm	**Settlement of embankments on soft clay and silt deposits**
02:15	–	03:30pm	**Engineering properties of fibrous peats**
03:30	–	03:45pm	Coffee break
03:45	–	05:15pm	**Questions and answers**

November 20--Tuesday (Day 2)—Module 4

08:30	–	09:00am	Registration
09:00	–	10:30am	**Residual shear strength mobilized in first time slope failures**
10:30	–	10:45am	Coffee break
10:45	–	12:00pm	**Questions and answers**
12:00	–	01:00pm	Lunch
01:00	–	02:30pm	**Shear strength mobilized in undrained failure of soft clay and silt deposits**
02:30	–	02:45pm	Coffee break
02:45	–	04:15pm	**Questions and answers**

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Registration Form / Tax Invoice

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Workshop and Lectures for Practitioners and Academics

Griffith University, Gold Coast, 12-16 & 19-20, November, 2007

Email: a.bala@griffith.edu.au | **Fax**: +61(0)7 5552 8065 | **mail**: Prof. A. S. Balasubramaniam, Griffith School of Engineering, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre Queensland 9726, Australia

DETAILS OF ATTENDEE

First Name: Last Name:

Organisation:

Email:

Phone: Mobile:

Fax:

Post Address:

State: Postcode:

WORKSHOP FEES (12-13 November 2007)

Please indicate day of participation and total amounts

- ☐ **AUD $ 390** - Monday, 12 November
- ☐ **AUD $ 390** - Tuesday, 13 November
- ☐ **AUD $ 390** - Wednesday, 14 November
- ☐ **AUD $ 390** - Thursday, 15 November
- ☐ **AUD $ 390** - Friday, 16 November
- ☐ **AUD $ 390** - Monday, 19 November
- ☐ **AUD $ 390** - Tuesday, 20 November

TOTAL AMOUNT: [AU$_____]

PAYMENT METHODS

☐ **CHEQUE ENCLOSED**

All Cheques crossed and payable to Griffith University (Griffith University is GST registered, ABN 78 106 094 461) Mail cheques to Prof. A. S. Balasubramaniam + Griffith School of Engineering, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, QLD 9726, Australia. ***Please enclose your registration form.***

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Please send your REGISTRATION / TAX INVOICE FORM **by 2, November,2007;** that will help us to operate this workshop more efficiently.

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Biodata

(1) Prof. T.F.Fwa

Module 1: Pavement Maintenance and Management (12-13 November)

Dr. T. F. Fwa is Professor in the Department of Civil Engineering and Director of the Centre for Transportation Research, National University of Singapore. He received his BEng (First Class Hons) from the then University of Singapore (now known as the National University of Singapore), MEng from the University of Waterloo, Canada, and PhD from Purdue University, USA.

Dr. Fwa's research in the last 25 years covers all aspects of highway engineering, with special emphasis in the areas of pavement design, maintenance and management, and pavement performance evaluation and testing. He has published more than 200 technical papers in journals and conference proceedings, with more than 130 of them in leading international journals. His work has led to three patents in non-destructive pavement testing and evaluation. He is the editor of the recently published Handbook of Highway Engineering by CRC Press.

A widely respected researcher, Dr Fwa has been invited to lecture and make technical presentations in 16 countries, including keynote lectures at a number of international conferences and symposia. He has received a number of awards for his academic and research contributions, including the 1985 Eldon J. Yoder Memorial Award by Purdue University, USA, the 1992 Katahira Award by the Road Engineering Association of Asia and Australasia, the 1992 Arthur M. Wellington Prize by the American Society of Civil Engineers, the 1995 Katahira Award by the Road Engineering Association of Asia and Australasia, the 2000 Engineering Achievement Award by the Institution of Engineers, Singapore, the Enterprise Challenge (TEC) Award 2002, Singapore, and the Frank M. Masters Transportation Engineering Award 2005 by the American Society of Civil Engineers, USA.

Professor Fwa serves the international community in various capacities. He is the Asia Region Editor for the ASCE Journal of Transportation Engineering. He also serves on the editorial board of three other international journals: the International Journal of Pavement Engineering, the International Journal of Road Materials and Pavement Design, and the International Journal of Pavements. He is currently Vice President of the International Society for Maintenance and Rehabilitation of Transport Infrastructure, Board Member of the Eastern Asia Society for Transportation Studies, and Special Advisor to the International Association of Traffic and Safety Sciences. Locally, he has been chairing the Transportation Engineering Technical Committee since 1993. He is the founding President of the Pavement Engineering Society (Singapore).

(2) Prof. Kentaro Yamada

Module 2: Bridge Maintenance & Management

Prof. Kentaro Yamada was educated in Nagoya University and University of Maryland, USA. He was also a Post-Doctorate Research Fellow at the University of Maryland. A full Professor

for nearly 20 years at the Nagoya University, Department of Civil Engineering and now at the School of Environmental Studies, Prof. Yamada was also a Visiting Scholar at ICON, EPLF Switzerland and at the Technical University of Denmark at Lyngby. Prof Yamada's lectures will concentrate on Inspection, Evaluation and Maintenance of Bridges; Fatigue of Steel Members; Stress Measurements in Bridges; Corrosion and Anti-Corrosion measures; Bridge Management Systems.
Prof. Yamada a well known authority on Bridge Engineering

(3) Prof. Wong Kai Sin

Module 3: Deep Excavations for Basements of Buildings and MRTA Stations

Prof. Wong Kai Sin obtained his Bachelors Degree in civil Engineering from University of Illinois and his masters and Doctoral Degree from University of California, Berkeley. Prof. Wong developed his own program for finite element analysis of deep excavations. He is a Registered Professional Engineer in California USA and also in Singapore. Prof Wong worked in USA before for five years with Harding Lawson Associates. He is now with NTU in Singapore for over 23 years and held the position of the Chairman of Geotechnical Engineering Division of IES Singapore and also the Director of NTU-PWD Research Centre. He is also a Member of the Advisory Panel to LTA which are the clients for all MRT works in Singapore. Prof. Wong expertise include: soil structure interaction problems; deep excavations; building foundations; effect of soil movements on piles and down drag effects; and land reclamation works. Prof Wong was involved in the design and construction of many temporary works for basement excavations in Singapore. The more notable ones are art centre -- Esplanade by the Bay, the Marina Barrage and the Business Financial Centre Complex. He was also on the Independent Investigation Panel for the Land Transport Authority on the Nicholls Highway collapse. He is also a user of popular softwares such as Plaxis and Sage Crisp.

(4) Prof Gholamreza Mesri

Module 4: Compressibility and Strength of Soft Soils in Settlement and Stability of Structures in Highways and Motorway Construction

Gholamreza Mesri, a world authority on the behaviour of soils and a leader in the study of the compressibility and consolidation of soils, is the Ralph B. Peck Professor Civil Engineering at the University of Illinois at Urbana-Champaign. Together with Karl Terzaghi and Ralph B. Peck, he co-authored the Third Edition of Soil Mechanics in Engineering Practice. He is an international scientific advisor on landslides to the Centre of Excellence on Geohazards established by The Norwegian Geotechnical Institute, Oslo, Norway, and an advisor to Harris County Flood Control District in Houston, Texas on stability of drainage way channels and detention basins.
Professor Mesri has served as consultant to government and private organizations in relation to construction projects in North and South America, Europe, Africa, and Asia, including airports, offshore facilities, tunnels, hydroelectric developments and building foundations. He is a member of the International Commission on Restoration of Metropolitan Cathedral of Mexico City, a member of the International Commission on Swelling Rocks, ISSMGE Technical Committee on Soft Soils Foundation Engineering, and a founding member of the International Committee on Coastal Geotechnical Engineering.
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