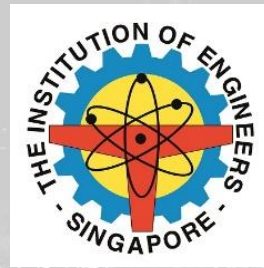


One Day Seminar - Avoiding Risks in Tunnelling & Deep Excavation Projects



Information

Date: 10 October 2017

Time: 9am – 5.30pm

Venue:
Furama Riverfront Hotel
405 Havelock Road
Singapore 169633
(Venus I, Level 3)

Fees:
\$250 (IES Members)
\$350 (Non IES Members)

CPD Programme:
STUs (Pending Confirmation)
7 PDUs (Approved)

Terms & Conditions

Fees Include:
** 2 Tea Breaks, 1 Int'l Buffet
Lunch and 7% GST*

**Complimentary Car Park
Coupons*

**e-Cert will be sent via email
within 1 working week after end
of seminar based on **Time Out***

*We would like to “save the
trees” There will be no
handouts given. However,
soft copy of the notes will be
given at the end of the
seminar.*

Introduction

This seminar aims to provide a refresher course to engineers and site supervision personnel on the various aspects of risk management in the construction challenges in deep excavation and tunnelling works, and the common pit falls of the design and construction of the deep excavation projects to be paid particular attention to during the excavation of the projects as the first order approach to risk mitigation.

Who Should Attend? Project Managers, Land Developers, Professional Engineers, Design Engineers, Project Engineers, RE/RTOS

8.20am – 8.50am	Registration
8.50am – 9.00am	Opening Address
9am – 10am	Managing Geotechnical Risk in Excavation and Tunnelling <i>Mr. Yang Kin Seng, BCA</i>
10am – 10.20am	Break
10.20am – 11.20am	Uses and Abuses of GIBR when Tunnelling <i>Prof. John Edicott, AECOM</i>
11.20am 12.20pm	Risk Mitigation of Tunnelling Works with Good Supervision Framework and Good Practices <i>Er. David Ng, One SMART Engineering Pte Ltd</i>
12.20pm – 12.35pm	Panel Discussion
12.35pm – 1.20pm	Lunch
1.20pm – 2.20pm	Control Measures to Avoid Damage to Buildings <i>Er. Dr. Poh Teow Yaw, BCA</i>
2.20pm – 3.20pm	Slurry Quality Control (KPI- Key Performance Indicators) for Slurry TBM Tunnelling <i>Mr. Rudrapathy Balamurugan, Dongah Geological</i>
3.20pm – 3.35pm	Tea Break
3.35pm to 4.35pm	Some Lessons Learnt From Geotechnical Problems And Failure Modes In Different Geological Formations In Singapore <i>Er. Chow Weng Lee, Trittech</i>
4.35pm – 5.35pm	Assessing and Mitigating the Effects of Underground Construction <i>Dr. Goh Kok Hun, LTA</i>
5.35pm – 5.50pm	Panel Discussion

MANAGING GEOTECHNICAL RISKS IN EXCAVATION AND TUNNELLING WORKS

Excavation and tunnelling works are often invariably faced with uncertainties in dealing with 'mother-nature' ground. Coupled with complex geology found in Singapore, its built-up urban environment and the difficulties in ground-related behaviour predictions, managing geotechnical risks is a must and should form an integral part in planning, design, procurement, execution and construction of deep excavation and tunnelling works to protect public safety and property. The presentation gives a perspective on how geotechnical risks can be managed for deep excavation and tunnelling projects in Singapore



Er. YANG Kin Seng is currently a Senior Principal Geotechnical Specialist with the Building and Construction Authority that regulates and oversees the safety of building and geotechnical building works under construction in Singapore. Er. Yang has served with the former Public Works Department as Assistant Chief Civil Engineer, Head (Roads, Planning and Design) and Head (Geotechnical Engineering). His involvement in civil, building and infrastructural projects ranges from roads, flyovers, bridges and expressways, including Changi Airport development, construction of schools and CTE tunnels, to parks and government buildings, as well as overseas projects in China and Brunei. He was the Chief Project Manager (Singapore) for the Singapore-Malaysia Second Crossing. He has published more than 40 papers in International conferences and seminars, and peer-reviewed journals. Er. Yang was awarded Public Administration Medal (Silver) in 1998.

Er. Yang was a Colombo Plan Scholar, and graduated in BEng (First Class Hons) in Civil Engineering from University of Melbourne and a recipient of Trinity College Scholarship, CWN Sexton Scholarship, AJ Francis Prize and an Exhibition Prize. Er. Yang was also a Commonwealth Scholar, and obtained MSc (with Distinction) in Soil Mechanics and Engineering Seismology and awarded the Soil Mechanics Prize at Imperial College London. He also obtained MSc (Civil Eng) from NUS, and LLB (Hons) from the University of London.

Er. Yang has co-chaired SPRING Singapore's Eurocodes Review Advisory Committee, and the Technical Committee on Civil and Geotechnical Works. He is a Professional Engineer and a Specialist Professional Engineer registered with the Professional Engineers' Board, and a Specialist Accredited Checker registered with the Building and Construction Authority. He is on the interview panel for the registration of Specialist PE. Er. Yang conducts courses for industry practitioners at BCA Academy, ACES and IES.

USES AND ABUSES OF GIBR WHEN TUNNELLING

Geotechnical baselines have been introduced in Singapore only a few years ago. Historically, tunneling has been perceived to be a high risk activity and claims, particularly over unforeseen ground conditions, have sometimes exceeded the value of the contract. The objective of geotechnical baselines is to define what ground conditions are expected in the Contract and what ground conditions are not expected. Given that tunneling in the past has given rise to massive claims, baselines were introduced to reduce massive claims and facilitate management of contracts.

Now that some of the contracts with GIBRs in Singapore are over or are drawing to a close, the numbers of claims are mounting up. Why is this? Have the GIBRs been properly drafted? Have the GIBRs been properly understood and properly used? What makes a good GIBR and what pitfalls have been experienced?

The talk will briefly introduce geological baselines and the form of GIBR used in Singapore. In order not to prejudice current claims in Singapore, the talk will draw upon experience with geotechnical baselines in other locations, mostly from Hong Kong where geological baselines were introduced quite recently and some of the contracts have been completed successfully and some have resulted in substantial claims.

Prof. John ENDICOTT is an AECOM Fellow in recognition for his expertise when working in ground engineering for over 45 years. Since 1975 he has been located in Hong Kong and has worked on many projects in Singapore and around South East Asia where he is well known for all aspects of geotechnical engineering.

He is a Fellow Commoner of St Catharine's College Cambridge and Adjunct Professor at Hong Kong University of Science and Technology and at University of Hong Kong.

His experience is broadly based. It includes involvement with more than 100 underground railway stations and associated tunnels. He has worked on many road tunnels and water tunnels with



experience in Cut and Cover Method, NATM, Drill and Blast, and TBMs. His role has varied between geotechnical specialist, Project Director and Supervising Officer of tunnel projects.

He has also been engaged on slope works, foundations, and reclamations including being Project Director for a reclamation involving extensive dry works and marine works 980ha (2,420 acres) for the Hong Kong airport.

He has been an Expert Witness in several high profile cases including Arbitration for Stage 1 of the deep sewer tunnels in Hong Kong and at the Inquiry into the collapse of the Nicoll Highway in Singapore.

He has been a Member of the International panel of Experts advising URA on strategic planning for the next 50 years in Singapore with a focus on development below ground.

DESIGN APPROACH TO TEMPORARY WORKS FOR DEEP EXCAVATION WORKS

Underground infrastructure development in Singapore has come to the stage where systematic and repeatable good supervision of the construction works would be required to ensure the safety and quality of the fast pace construction works. Under the Building Control Act which is being enforced by the Building and Construction Authority (BCA), a framework has been set up with the roles of Qualified Person (Supervision) (QPS) and Qualified Person (Supervision) specialized in Geotechnical Engineering (QPS(Geo)) has been set up to be the appointed professionals to ensure the Building Control Act is being observed. The objectives and roles of the QPS and QSS team is to ensure the construction of the infrastructure works is being carried out safely without necessary delay, as well as to as unobtrusively as possible to ensure the quality of the works comply with the Clients' and Authorities requirements through a systematic implementation of appropriate measures and check on the site activities. These measures are such as setting clear the Key Performance Indicators (KPI) for the works, understanding and continual checking of the ground conditions and potential obstructions or utilities in the ground, and actively identifying the various potential risks for the scheduled works to be carried out. In addition, the implementation of various good practices in bore tunnelling will also help in mitigating the risks of tunnelling. This presentation will present the frameworks and good practices implemented in Singapore for the construction of underground infrastructure projects in details.



Er. NG Chew Chiat, David, Executive Director of ONE SMART Engineering Pte Ltd and has 16 years of postgraduate working experience in consultancy and research in Singapore. He is a PE (Civil) as well as Specialist PE (Geo) registered with Professional Engineers Board (PEB), Singapore. He graduated in 1999 with a Master Degree in Geotechnical Engineering from NUS where he received the Innovation Award and NSTB Gold Award for his outstanding academic results and research work. Er. David Ng has been awarded The Young Consulting Engineer of the Year 2013 by Association of Consulting Engineers of Singapore (ACES) and The First Prize of Hulme's Prize Technical Paper Competition by Tunneling & Underground Construction Society of Singapore

(TUCSS) in 2000, for his technical paper in tunnelling. Er. David Ng has published more than 40 technical papers in the field of geotechnical engineering. He has been elected as SPRING Singapore Technical Committee (15th Term) for The Standards Council (Civil & Geotechnical Works), 2011-2014. He is serving as a member in the Institute of Engineers Singapore (IES) Civil and Structural Technical Committee in the Geotechnical Division. Er. David Ng is also elected as the Council Member of the Tunnelling and Underground Construction Society of Singapore (TUCSS) from 2011 to 2016. He had been a member of the LTA Design Criteria and M&W Specifications Review Committee from 2002 to 2010. He has been involved in the planning, design, project management and instrumentation & monitoring of major infrastructure projects such as DTSS, KPE, CCL & DTL which involve deep excavation, mined tunnels and bored tunnels during his 15 years of working experience.

CONTROL MEASURES TO AVOID DAMAGE TO BUILDINGS

For deep excavation and tunneling works in close proximity to buildings, the project parties may need to implement various control measures to ensure safety and prevent damage to buildings. This presentation highlights some good practices and control measures may be implemented during design and construction of deep excavations and tunneling works to avoid damage to buildings. Case studies will be presented to illustrate the effectiveness of these control measures.



Dr POH Teoh Yaw is a Deputy Director with Building and Construction Authority which oversees and administers the regulatory framework on building structure safety in Singapore. He is a geotechnical specialist with over 18 years of practical experience. He has authored over 18 publications in geotechnical design and construction including those published in international peer-review journals and conferences.

ASSESSING AND MITIGATING THE EFFECTS OF UNDERGROUND CONSTRUCTION

Activities associated with underground construction will inevitably cause ground movements that may affect buildings and structures within their zone of influence. This talk discusses the effects of underground construction in terms of how ground movements arise from tunnelling and deep excavation activities and how they can be estimated, and how the risk of building damage can be assessed and risk mitigation and protective measures implemented in underground construction.



Dr GOH Kok Hun obtained his Bachelor of Engineering and Masters of Engineering from the National University of Singapore, and received his doctorate from the University of Cambridge. He has more than 15 years of geotechnical engineering experience, and has been involved in the design aspects of several road and rail infrastructure projects in Singapore, including the Fort Canning and the Woodsville road tunnels and more recently the Downtown Line and Thomson-East Coast Line rail projects. He currently looks after the Geotechnical & Tunnels Division in the Land Transport Authority of Singapore. He is registered as a professional engineer in civil engineering as well as a specialist professional engineer in geotechnical engineering, and a chartered professional engineer. His doctoral study was on the “Response of ground and buildings to deep excavations and tunnelling” and he has also conducted specific studies in other aspects of geotechnical engineering design.

SLURRY QUALITY CONTROL (KPI- KEY PERFORMANCE INDICATORS) FOR SLURRY TBM TUNNELLING

The general issues and measures and approach to active slurry management and to establish Key Performance Indicators (KPI's) for slurry performance in the estimated and foreseeable ground conditions based on available GIBR data. The baseline statements and soil profile provided in the GIBR are to be used to the purpose of the application of Clauses of the Conditions of Contract.

The Mud/Slurry engineer along with the contractors PE are responsible to endorse these KPI's and hold points. The performance of the KPI's themselves are to be monitored throughout the project through the daily and regular on site meetings.

Mr. RUDRAPATHY Balamurugan graduated with a B.E Civil and Engineering has more than 10 years' experience in Deep Tunneling and 24 years of relevant construction experience. He is also a member of Professional Engineering Board, IES and TUCSS. He is currently the Tunnel Manager for Construction of Great World Station and Tunnels for Thomson East Coast Line Contract.

SOME LESSONS LEARNT FROM GEOTECHNICAL PROBLEMS AND FAILURE MODES IN DIFFERENT GEOLOGICAL FORMATIONS IN SINGAPORE

Singapore is a relatively small island-city but having different ground conditions with distinct geotechnical engineering properties and exhibiting peculiar engineering behaviours. In this session, Er Chow will share some interesting geotechnical problems and failure modes of various geotechnical building works (GBW) caused by different geological formations in Singapore. He will share some of the observations, mitigations measures that were carried out and lessons learnt from these case studies.



Er. CHOW Weng Lee has 20 years experience in geotechnical engineering and has strong project design and management expertise in providing technical services to major design and construction of MRT projects for both stations & Tunnels in Singapore, Malaysia and India. He also has extensive experience in providing geotechnical consultancy services including planning, excavation and reviews on deep excavations and foundations, pipe jacking and bored tunneling works, slope appraisal, geotechnical and geophysical investigation, instrumentation and monitoring schemes for residential and commercial developments in both public and private sectors

TERMS & CONDITIONS

Registration

1. Registration is based on first come first served. Please click [HERE](#) to register
2. Booking through phone will not be entertained.

Payment Mode

1. Payment via VISA/Master online
2. Payment via AXS Machine (Please click [HERE](#) for procedure). Remember to retain your receipt for verification.
3. Payment by Crossed Cheque payable to “**IES**”
*For cheque payment, please indicate Participate name & Event name at the back of the cheque and send to:

**The Institution of Engineers, Singapore
70 Bukit Tinggi Road
Singapore 289758
Attn: Shelly Ng**

Confirmation of Course

Confirmation of registration will be given 5 days prior to the commencement date of event via email. Otherwise, please call Ms Shelly Ng @ 6461 1222 to check on your confirmation.

(Please remember to check your Junk/Spam folder if you did not receive the confirmation)

[Cancellation](#)

In the event that participants are not able to attend, please inform us in writing **at least 3 working days** before the event date. Otherwise **full payment** is still applicable even if you did not turn up for the talk.

(Please be informed that there will be a cancellation charge of 4.5% if cancelled by participant)