Supervision of Underground Projects with Deep Excavation & Bored Tunneling 1st Run

(Virtual Classroom)

** UTAP - Pending for Approval **
** This course is not SFC Funded **

Part 1: Supervision of ERSS and GBW Works for Deep Excavation Projects (2 Hours)

This session will give an introduction to the various types of temporary work for deep excavation projects. These temporary works are either classified as Earth Retaining & Stabilising System (ERSS) or Geotechnical Building Work (GBW) by BCA depending on the excavation depth and retained height. It is important to first understand the key factors affecting the design safety of the various types of ERSS and GBW, in order to be able to carry out the necessary supervision of these ERSS and GBW. Therefore participants will be able to learn the important features of these types of ERSS and GBW design concept and construction sequence in this session. The participants will also learn about the process of deep excavation management including managing the instrumentation & monitoring, and managing the groundwater control and ground settlement. This 2 hour session will prepare the participants to be able to have good understanding of the deep excavation project and thus

Course Outline

- Introduction to the various types of temporary work for deep excavation projects
- Understanding of temporary works classification as Earth Retaining & Stabilising System (ERSS) or Geotechnical Building Work (GBW) by BCA
- Learning the important features of these types of ERSS and GBW design concept and construction sequence
- Learning about the process of deep excavation management including managing the instrumentation & monitoring
- Learning about the process of deep excavation management including managing the groundwater control and ground settlement
- Understanding of the supervision procedures for deep excavation works

Details

Date: 7 & 8 July 2021
Wednesday & Thursday

Time: 2.00pm to 5.15pm

Duration: 3 Hours 15 Minutes

Delivery Mode: Zoom Webinar

CPD: 6 STU(Structural) – To Be Confirmed
6 PDU – To Be Confirmed

Course Fee (Include GST)
IES Member: $196.90 nett
Non-member: $231.10 nett

E-certificate of Attendance will be awarded to participants who have completed the course survey and assessment.

Target Audience

- Resident Engineer & Resident Technical Officer
- Contractor PM, Site Engineer and
- Specialist Contractor (Demolition, Piling, Excavation etc)

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Part 2: BCA Regulatory Framework for Supervision of Deep Excavation Projects Illustrated with Case Histories (1 Hour)

There are many current underground projects in Singapore such as Mass Rapid Transit (MRT) Thomson East Coast Line (TEL), North South Corridor (NSC) highway, Deep Tunnel Sewerage System (DTSS), Singapore Power Underground Substation (UGSS), underground drainage, sewerage and water pipelines projects. Hence it is very important to have a comprehensive and clear regulatory framework to ensure deep excavation underground projects are carried out in a safe manner and the supervision of deep excavation underground projects are well managed. This session will illustrate the BCA regulatory framework in Singapore for design submission approval and construction supervision and management of deep excavation projects. This session will use some case histories to illustrate some of the more commonly encountered regulations to be complied with and it will also highlight some of the latest guidelines for supervision of deep excavation projects.

Course Outline

- Introduction of current underground projects in Singapore such as Mass Rapid Transit (MRT) Thomson East Coast Line (TEL), North South Corridor (NSC) highway, Deep Tunnel Sewerage System (DTSS), Singapore Power Underground Substation (UGSS), underground drainage, sewerage and water pipelines projects
- Understanding of the comprehensive and clear regulatory framework to ensure deep excavation underground projects are carried out in a safe manner
- Understanding of the supervision procedures of deep excavation underground projects
- Illustration of the BCA regulatory framework in Singapore for design submission approval and construction supervision and management
- Discussion of some case histories to illustrate some of the more commonly encountered regulations to be complied with for deep excavation projects.
- Discussion of some case histories to highlight some of the latest guidelines

Part 3: Basic Principles and Key Performance Indicators for Supervision of Bored Tunneling & Pipe Jacking Works (2 Hours)

In this session, the participants will learn about the basic principles of segmental lining bored tunneling with Earth Pressure Balance Machine (EPBM) and Slurry Shield tunnel boring machine (Slurry TBM), as well as pipe jacking micro tunnel boring machine. With this understanding, the participants will next learn about the various Key Performance Indicator (KPI) for the safe bore tunneling process using bored tunnel machine (TBM). KPI for bored tunneling is important to ensure that the tunneling is safe and does not have adverse impact to the adjacent ground and buildings. The participants will learn about the sequence of work for bored tunneling from construction of TBM shaft, erection of reaction frame, temporary rings, initial drive and main drive. This will equip the participant the necessary basic knowledge in supervision of bore tunneling works.

Course Outline

- Learning about the basic principles of segmental lining bored tunneling with Earth Pressure Balance Machine (EPBM) and Slurry Shield tunnel boring machine (Slurry TBM), as well as pipe jacking micro tunnel boring machine
- Learning about the various Key Performance Indicator (KPI) for the safe bore tunneling process using bored tunnel machine (TBM)
- Understanding of the importance of KPI for bored tunneling to ensure that the tunnelling is safe and does not have adverse impact to the adjacent ground and buildings
- Learning about the sequence of work for bored tunneling from construction of TBM shaft, erection of reaction frame, temporary rings, initial drive and main drive
- Learning the other necessary basic knowledge in supervision of bore tunneling works;
- Understanding of the supervision procedures for bored tunnelling works

**Part 4: BCA Regulatory Framework for Supervision of Tunneling Projects Illustrated with Case Histories (1 Hour)**

It is very important to have a comprehensive and clear regulatory framework to ensure bored tunnelling underground projects are carried out in a safe manner and the supervision of these tunnelling underground projects are well managed. This session will illustrate the BCA regulatory framework in Singapore for design submission approval and construction supervision and management for bored tunnelling works. This session will use some case histories to illustrate some of the more commonly encountered regulations to be complied with and it will also highlight some of the latest guidelines for supervision of bored tunnelling works.

**Course Outline**

- Introduction of current underground projects in Singapore such as Mass Rapid Transit (MRT) Thomson East Coast Line (TEL), North South Corridor (NSC) highway, Deep Tunnel Sewerage System (DTSS), Singapore Power Underground Substation (UGSS), underground drainage, sewerage and water pipelines projects
- Understanding of the comprehensive and clear regulatory framework to ensure these underground projects are carried out in a safe manner
- Understanding of the supervision procedures of underground projects with bored tunnelling
- Illustration of the BCA regulatory framework in Singapore for design submission approval and construction supervision and management for bored tunnelling works
- Discussion of some case histories to illustrate some of the more commonly encountered regulations to be complied for bored tunnelling works
- Discussion of some case histories to highlight some of the latest guidelines for bored tunnelling work

**Speaker Profile**

Er David Ng is a Professional Engineer (Civil) and Specialist Professional Engineer (Geotechnical) in Singapore. He has been involved in publication of more than 70 technical papers in the field of geotechnical and environmental engineering. He has more than 20 years of experience in management, planning, design and construction of major infrastructure and transportation projects in Singapore, Malaysia and India. He is co-founder of One Smart Engineering Pte Ltd which has offices and operations in Singapore, Malaysia and India.

**Prior to attending this course, you should:**

- **Have a PC / laptop / tablet / smartphone with built-in or external webcam.**
- **Installed the zoom client.**
- **Have Wi-Fi / high speed internet connection available.**
- **Receive an email with a link for you to submit a registration for webinar 1 week prior to the commencement.**
- **Receive an email with a link and password for you to join the webinar session after your registration is successful.**
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** Delivery Mode: Zoom Webinar
Course Fee(include GST): IES Member: $196.90 Nett Non-member: $231.10 Nett

Please register online/email the completed form by **30 June 2021 before 3 pm** to:
Contact Person: Karen Phua
IES Academy@Jurong East
80 Jurong East Street 21, #04-10 Devan Nair Institute for Employment and Employability
Singapore 609607
Tel: 6463 9211 Email address: karen@iesnet.org.sg

*Name: ________________________________  *NRIC: ________________________________
(Please written in BLOCK Letter)

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☐ Sponsored by company (Please indicate the Contact person detail)

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~ All Fees are inclusive of 7 % GST. Cheque should be payable to: IES Academy Pte Ltd

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*Mandatory entry
#Compulsory Entry for participant who choose to be INVOICE to your company
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Registration
Any registration, whether on-line or fax will be on a first-come-first-served basis and will only be confirmed upon receipt of full payment by IES Academy Pte Ltd unless otherwise invoice to company. All registrations must be submitted with duly completed registration form.

Closing Date
The closing date of the event will be 1 week prior to event commencement date or earlier.

Confirmation of Registration
Confirmation of registration will be given at least 1 week before the commencement date via email. If you do not receive the said confirmation email, you are required to contact IESA at 6463 9211 during office hours.
IESA reserves the right to allow only confirmed registrants to attend the Event.

Withdrawals/Refunds of Fees
Written notice at least 1 week in advance before the commencement of the event.
Full course fee shall be refunded subjected to 4.5% transaction charge.
➢ NO refund otherwise.

No show of participant will not be accepted as a valid reason for withdrawal / refund.
One-time replacement is allowed only if written notice is received by us at least 1 week before the commencement of the event. However, when an IES member is replaced by a non-member, the participant has to pay the difference in the relevant fees.

Cancellation/Postponement
Changes in Venue, Dates, Time and Speakers for the Events can occur due to unforeseen circumstances. IES reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement.
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I consent to the processing by Institution of Engineers, Singapore of personal data, including sensitive personal data as defined in the Data Protection Act 2014, about me for the proper purposes of Institution of Engineers, Singapore (IES). I undertake to observe the provisions of the Data Protection Act 2014 in relation to any personal data I may myself hold and process as a Members of Institution of Engineers, Singapore, and I agree to indemnify Institution of Engineers, Singapore from liability for any claims or damages that may arise from the processing of this data. For more information kindly refer to here.

Enquiries
For further enquiries, please contact IESA general office at Tel: 6463 9211.