



Conceptual to Construction of Top-Down Construction & Essential Factors for a Successful Design for Safety (DfS) 3rd Run

By Er David Ng & Er Ng Lee Chian

UTAP SUPPORTED

Date: 12 & 13 June 2025, Thursday & Friday

12 June 2025: Virtual via Zoom from 2.00pm to 5.30pm

13 June 2025: Physical course from 9.00am to 5.45pm at Orchard Hotel Singapore

Address of Orchard Hotel Singapore: 442 Orchard Road, Singapore 238879

**CPD Programme: 2 STU(Safety), 6 STU(Structural) – To Be Confirmed
10 PDU (PE & CEng) - To Be Confirmed**

Fees: \$403.30(IES Members) / \$452.35 (Non-Member)

- *Actual venue (hotel) will be stated in the confirmation email which will be sent to paid participant 2 weeks prior to event date*
- *Please note that attendance for both the courses are compulsory, Certificate of Attendance will be issued to participants with 100% attendance for both courses*
- **This is a blended course comprising 3 hours of zoom session and 7 hours of physical course at hotel.**
- **This course is NOT SFC Funded**
- **This course DO NOT HAVE SDU Points**

- 2 Coffee Breaks & 1 Buffet Lunch(At Café) at Orchard hotel
- Special Full Day Parking Rate at \$10nett

(I) Conceptual to Construction of Top-Down Construction (6 Hours)

Part 1: Principles of ERSS and GBW Works for Basement Deep Excavation Projects in Compliance with BCA Regulations (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 for building basement projects.

S/No	Description	Duration
1.	introduction to the various types of temporary work for deep excavation projects	20min
2.	Understanding of temporary works classification as Earth Retaining & Stabilising System (ERSS) or Geotechnical Building Work (GBW) by BCA	20min
3.	Learning the important features of these types of ERSS and GBW design concept and construction sequence	20min
4.	Learning about the process of deep excavation management including managing the instrumentation & monitoring	20min
5.	Learning about the process of deep excavation management including managing g the groundwater control and ground settlement	20min
6.	Understanding of the supervision procedures for deep excavation works for building basement projects	20min

Part 2: BCA, LTA DBC, PUB and SPPG Regulatory Framework for Design and Supervision of Building Basement Deep Excavation Projects (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 building basement deep excavation underground projects are carried out in a safe manner and the supervision of building basement deep excavation underground projects are well managed. This session will illustrate the BCA, LTA DBC, PUB and SPPG regulatory framework in Singapore for design submission approval and construction supervision and management of building basement deep excavation projects.

S/No	Description	Duration
1.	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	10min
2.	Understanding of the comprehensive and clear regulatory framework to ensure building basement deep excavation underground projects are carried out in a safe manner	10min
3.	Understanding of the supervision procedures of building basement deep excavation underground projects	10min
4.	Illustration of the BCA, LTA DBC, PUB & SPPG regulatory framework in Singapore for design submission approval and construction supervision and management	10min

Part 3: From Conceptual to Construction for Top-Down Construction Sequence with concurrent excavation and superstructure construction for New Development of Building with Basement in Vicinity of MRT Viaduct Structures - Illustrated with a Case Study (1.5 hour)

In this session, the participants will learn about the basic principles of the approach from conceptual to construction for building basement in vicinity of MRT viaduct structure using top-down construction sequence with concurrent excavation and superstructure construction - illustrated with a case study. This is a process that Developers, Contractors, Design Engineers & Site Engineers should understand for New Development of Building with Basement. This will equip the participant with the necessary basic knowledge in planning, design and construction of building basement deep excavation projects with top-down construction method for building basement projects in vicinity to MRT viaduct structures.

S/No	Description	Duration
1.	Learning about the basic principles of the approach from conceptual to construction for top-down construction sequence with concurrent excavation and superstructure construction for building basement in vicinity to MRT viaduct structures - illustrated with case study.	30min
2.	Learning about the various key factors affecting the planning for the concurrent top-down and superstructure construction.	30min
3.	Understanding of the necessary compliance to the various Authorities and Agencies requirements such as BCA, LTA DBC, PUB and SPPG	15min
4.	Learning about the supervision and construction of the concurrent top-down and superstructure construction for building basement projects in vicinity to MRT viaduct structures.	15min

Part 4: Case Studies for Top-Down Building Basement Construction In vicinity to MRT Underground Structures - illustrated with Case Study (1.5 hour)

In this session, the participants will learn about the basic principles of the approach from conceptual to construction for building basement in vicinity of MRT underground structures using top-down construction sequence with concurrent excavation and superstructure construction - illustrated with a case study. This is a process that Developers, Contractors, Design Engineers & Site Engineers should understand for New Development of Building with Basement. This will equip the participant with the necessary basic knowledge in planning, design and construction of building basement deep excavation projects with top-down construction method for building basement projects in vicinity to MRT underground structures.

S/No	Description	Duration
1.	Learning about the basic principles of the approach from conceptual to construction for top-down construction sequence with concurrent excavation and superstructure construction for building basement in vicinity to MRT underground structures - illustrated with case study.	30min
2.	Learning about the various key factors affecting the planning for the concurrent top-down and superstructure construction for building basement projects in vicinity to MRT underground structures.	30min
3.	Understanding of the necessary compliance to the various Authorities and Agencies requirements such as BCA, LTA DBC, PUB and SPPG	15min
4.	Learning about the supervision and construction of the concurrent top-down and superstructure construction for building basement projects in vicinity to MRT underground structures.	15min

Trainer 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.

Essential factors for a Successful Design for Safe Er David Ng is a Professional Engineer (Civil) and Specialist

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Essential factors for a Successful Design for Safe

(II) Essential Factors for a Successful Design for Safety (4 Hours)

Objectives:

At the end of this course, participants will understand the right approach to Design for Safety (DfS) and acquire the necessary knowledge to apply DfS in their projects. The course will also explain the latest changes in the WSH (Design for Safety) Guidelines as well as discuss the key factors for a successful DfS implementation.

Course Outline:

- Introduction to Design for Safety (DfS)
- Scope & Extent of DfS
- Duties & responsibilities of key stakeholders stipulated in WSH (DfS) Regulations 2015
- Design Risk Management & Assessment
- Overview of the WSH (DfS) Guidelines revised in 2022
 - Key changes in the latest WSH (DfS) Guidelines
 - GUIDE process & recommended DfS tools
- Hierarchy of control for mitigation
- Conditions for a successful DfS review
- Guidance on conducting an effective and thorough DfS review meeting

Trainer Profile:



Ng Lee Chian is a Professional Engineer in the field of Civil Engineering, and has a diverse portfolio of projects including the MFA building & ICA Building; and infrastructures such as Changi Water Reclamation Plant, Sungei Sembawang Abstraction Pond & CTE/Braddell Road Interchange in Singapore. Her extensive experience in design, supervision, and project management has equipped her with a wealth of knowledge across various engineering domains.

Lee Chian has served as the DfS Professional for numerous diverse and challenging projects. From the intricate designs of medical centers and educational institutions to the complicated renovations of high-rise buildings, and the complex infrastructural projects like roadworks and tunnels, she has spearheaded the implementation of DfS throughout the design development and construction phase.

As a member of IES Health & Safety Engineering Technical Committee (HSETC), she actively advocates for the adoption of 'Design for Safety' principles, and conducting regular DfS training sessions to impart her knowledge on the implementation of DfS. Lee Chian has shared her experiences at events such as Design for Safety Seminars and WSH Conferences.

Pre-requisites for Zoom session on 12 June 2025 from 2.00pm to 5.30pm

Prior to attending this course, you should:

- Have a PC / laptop / tablet / smart phone 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.
- ***It is recommended that participants join the course on a 12-inch or larger screen in order to view clearly the text and photos in the presentation materials.***
- ***ALL PARTICIPANTS ARE REQUIRED TO KEEP WEBCAM OR CAMERA TURNED ON DURING 3-hours of zoom, FAILING OF WHICH THE E-CERTIFICATE OF ATTENDANCE WILL NOT BE ISSUED***

Target Audience

Consultant engineers & supervisors; Developers; Resident Engineer & Resident Technical Officer; Contractor PM, CM, site engineers & supervisors, Site WSHO/WSH Coordinator and Health & Safety Professionals.

Conceptual to Construction of Top-Down Construction & Essential Factors for a Successful Design for Safety (DfS) 3rd Run (Conducting via Virtual & Physical)

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Time: **12 June 2025 via Zoom(Virtual) from 2.00pm to 5.30pm**

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Please register online/email in the completed form by 28 May 2025 to:

Karen Phua, karen@iesnet.org.sg

IES Academy@Jurong East, 80 Jurong East Street 21 #04-10

Devan Nair Institute For Employment and Employability, Singapore 609607

Participant Details

Name: _____ NRIC: _____

Company: _____ Designation: _____

Address 1: _____

Tel: _____

Email: _____

Please indicate: ☐ IES members IES M'ship No.: _____ P.E. No.: _____ (if applicable)
☐ Non-members ☐ Sponsored by company

Contact Person Details (if different from participant)

Name: _____ Designation: _____

Tel: _____ Email: _____

Payment Details

Payment via bank transfer or PayNow. All Fees are inclusive of 9% GST.

**Beneficiary: IES
Academy Pte Ltd Bank:
United Overseas Bank
SWIFT: UOVBSGSG
Bank Code: 7375
Branch Code: 016
Bank Account number: 339-326-153-4**

**PayNow:
IES Academy Pte Ltd
UEN:202026912H**



Acceptance of Terms and Conditions for Registrations of IES Academy's Events

I agree to abide by the Terms and Conditions for Registration of IES Academy's Events.

Name: _____ Signature: _____

TERMS & CONDITIONS COURSE REGISTRATION

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 Engineers Singapore 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 2 weeks prior to event commencement date or earlier.

Confirmation of Registration

Confirmation of registration will be given at least 2 weeks 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 14 days 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 would 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.

Fees will be refunded in FULL if any Event is cancelled by IESA.

UTAP (Union Training Assistance Programme) is an individual skill upgrading account especially for NTUC members. As a member, you enjoy UTAP funding at 50% of the unfunded course fee capped at \$250 every year.

PERSONAL DATA PROTECTION ACT

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.