

Trenchless Construction - Design Challenges and Construction Supervision for Pipe Jacking and Temporary Shaft (Structural - 6 Hours)

Part 1: Design Challenges, Basic Principles and Key Performance Indicators for Construction Supervision of Pipe Jacking for Trenchless Construction

In this session, the participants will learn about the design concept, basic principles of pipe jacking for trenchless construction. With this understanding, the participants will next learn about the various Key Performance Indicator (KPI) for the safe pipe jacking works to ensure that the jacking is safe and does not have adverse impact to the adjacent ground and buildings. The participants will learn about the sequence of work for pipe jacking and this will equip the participant the necessary basic knowledge in supervision of pipe jacking works.

- 1. Learning about the design concept, basic principles of pipe jacking for trenchless construction.
- 2. Learning about the various Key Performance Indicator (KPI) for the safe pipe jacking works
- 3. Understanding of the importance of KPI for pipe jacking to ensure that the jacking is safe and does not have adverse impact to the adjacent ground and buildings
- 4. Learning about the sequence of work for pipe jacking
- 5. Learning the other necessary basic knowledge in supervision of pipe jacking works
- 6. Understanding of the supervision procedures for pipe jacking works

Part 2: Supervision in Trenchless Construction - BCA Regulatory Framework for Supervision of Pipe Jacking Projects Illustrated with Case Histories

It is very important to have a comprehensive and clear regulatory framework to ensure that jacking of different diameter of pipes are carried out in a safe manner and the supervision of these pipe jacking projects are well managed. This session will illustrate the BCA regulatory framework in Singapore for design submission approval and construction supervision and management for pipe jacking 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 pipe jacking works.

- 1. Introduction of current underground infrastructure projects in Singapore such as Deep Tunnel Sewerage System (DTSS), underground drainage, sewerage, water pipelines and other utility pipes projects.
- 2. Understanding of the comprehensive and clear regulatory framework to ensure these pipe jacking projects are carried out in a safe manner
- 3. Understanding of the supervision procedures of pipe jacking projects.
- 4. Illustration of the BCA regulatory framework in Singapore for design submission approval and construction supervision and management for pipe jacking works
- 5. Understanding of the supervision procedures of pipe jacking projects Discussion of some case histories to illustrate some of the more commonly encountered regulations to be complied for pipe jacking and trenchless construction

Part 3: Design Challenges and Construction Supervision for Temporary Shaft

This session will give an introduction to the various types of temporary shaft construction for works involving jacking of sewer, water and other utility pipes. These temporary works are either classified as Earth Retaining & Stabilising System (ERSS) or Geotechnical Building Work (GBW) by BCA depending on the internal pipe diameter. It is important to first understand the design concept and key factors affecting the design safety of the various types of temporary shafts, 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 the design concept, impact assessment and construction sequence in this session. The participants will also learn about the impact assessment and challenges faced including managing the instrumentation & monitoring. This 2 hour session will prepare the participants to be able to have good understanding of the design and construction of temporary shaft.

- 1. Introduction to the various types of temporary shaft construction
- 2. Understanding of BCA ST Plan submission requirements and classification as Earth Retaining & Stabilising System (ERSS) or Geotechnical Building Work (GBW) depending on the internal pipe diameter
- 3. Learning the important features of these types of ERSS and GBW design concept and construction sequence
- 4. Learning about the impact assessment and challenges faced during shaft construction
- 5. Learning about the management of the instrumentation & monitoring
- 6. Understanding of the supervision procedures

Part 4 BCA Regulatory Framework for Supervision of Temporary Shafts Illustrated with Case Histories (1 Hour)

There are many current underground infrastructure projects in Singapore such as Deep Tunnel Sewerage System (DTSS), underground drainage, sewerage, water pipelines and other utility pipes projects. Hence it is very important to have a comprehensive and clear regulatory framework to ensure shaft excavation are carried out in a safe manner and the supervision of underground infrastructure projects are well managed. This session will illustrate the BCA regulatory framework in Singapore for design submission approval and construction supervision and management of temporary shaft construction for works involving jacking of sewer, water and other utility pipes. 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.

1. Introduction of current underground infrastructure projects in Singapore such as Deep Tunnel Sewerage System (DTSS), underground drainage, sewerage, water pipelines and other utility pipes projects.

- 2. Understanding of the comprehensive and clear regulatory framework to ensure temporary shafts construction are carried out in a safe manner
- 3. Understanding of the supervision procedures of temporary shafts construction.
- 4. Illustration of the BCA regulatory framework in Singapore for design submission approval and construction supervision and management
- 5. Discussion of some case histories to illustrate some of the more commonly encountered regulations to be complied for temporary shafts construction.
- 6. Discussion of some case histories to highlight some of the latest guidelines

Speaker Profile:



Er Dr ONG Chee Wee, Victor

Er. Dr. Ong is a Professional Engineer (Civil), Specialist Professional Engineer (Geotechnical), Specialist Professional Engineer (Tunnelling), Qualified Erosion Control Professional (QECP), ABC Water Professional, Competent Person (CP) for Periodic Facade Inspection (PFI) and Design For Safety Professional (DfSP) in Singapore. He obtained his PhD in Geotechnical Engineering from National University of Singapore (NUS) in 2010. He has more than 20 years of experience in management, planning, design and construction of major infrastructure, pipe jacking, transportation and coastal 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.

Dr. Ong is currently serving on two International Technical Committees for International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE). He serves as the Technical Committee for TC207 on Soil-Structure Interaction and Retaining Walls and TC 212 on Deep Foundations. Apart from this, he is also servicing as Technical Committee for Asian Technical Committee ATC6 Urban GeoEngineering. In Singapore, he is elected as SPRING Technical Committee for The Standards Council (Civil & Geotechnical Works), Standard Work Group on Bidirectional Load Test and Building & Construction Authority (BCA) Multiagency Work Group for Developing Pile Load Test Guidelines. He has been appointed as CEE Mentor for the School of Civil and Environmental Engineering of Nanyang Technologies University (NTU). Dr Ong is currently Immediate Past President of Singapore Institute of Building (SIBL).

Safety for Working at Heights(4 Hours Safety)

Working at heights work activities are prevalent operations and activities in the construction industry. The objective of this module is to inculcate and raise awareness in stakeholders at the worksites on the hazards of working at heights activities. This will enable them to understand the control measures that are implemented onsite to mitigate working at heights hazards. Their perspectives will be enhanced through the sharing of legal and other requirements on working at heights as well as relevant industrial workplace incidents.

This course will inculcate and raise awareness in stakeholders on the hazards of working at heights that are present in construction sites, the risks involved and the various control measures to mitigate the risks of working at heights.

- 1. Common working at height activities and work at heights hazards on site
- 2. Lessons learnt from past fall from height incidents / case studies
- 3. Legal and other requirements relevant to working at heights
- 4. Introduction to risk management and risk assessment

- 5. Good practices and control measures for working at heights
- 6. Introduction to development and implementation of the fall prevention plan
- 7. Permit to work for working at heights

Speaker Profile:

Winson Lee is currently in his own private engineering practice. He was a Deputy Director with the Electrical and Mechanical Engineering Department of the Building and Construction Authority. He graduated with a Bachelor's degree in Mechanical Engineering from the National University of Singapore in 2005. After graduation, he joined the Occupational Safety and Health Division, Ministry of Manpower (MOM) where he subsequently obtained a Master's degree in Safety, Health and Environmental Technology from his alma mater in 09.

Er. Lee has more than 12 years of regulatory public sector experience and had served the Ministry of Manpower from 2006 where he led inspectors in conducting workplace safety and health inspections and audits, conducting investigations into serious and fatal industrial accidents including fall from heights accidents. He has investigated a number of fall from heights accidents, prosecuting culpable parties under the WSH Act and its Regulations.

Having joined the Building and Construction Authority in 2012 after serving a brief stint as a Senior Workplace Safety and Health (WSH) Manager in the private sector, he assumes regulatory role by enforcing the Amusement Rides Safety Act.

Er. Lee is a qualified Train the Trainer for working at heights and has audited and drafted fall prevention height plans and emergency response procedures on working at heights for various companies. Er. Lee's interest lies in WSH risk management. In his current practice, he has been advising companies including rope access companies on matters pertaining to work at heights and adequacy of anchorage/lifelines as well as temporary edge protection.



Er. Winson Lee

B.Eng (Hons) - Mechanical Engineering
M.Sc (Safety, Health & Environmental Technology)
Professional Engineer (Mechanical Engineering)
Specialist Professional Engineer in Crane Engineering, Lift and Escalator
Engineering, Access Platform Engineering &
Amusement Rides Engineering
Ministry of Manpower Authorised Examiner in Lifting Equipment
Registered Workplace Safety and Health Officer
Qualified Workplace Safety and Health Auditor
Qualified Train the Trainer for Working at Heights

Pre-requisites for Zoom session on 17 July 2025 from 2.00pm to 5.15pm

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.

Trenchless Construction - Design Challenges and Construction Supervision for Pipe Jacking and Temporary Shaft and Safety for Working at Heights 3rd Run (Conducting via Virtual & Physical) Date: 17 & 18 July 2025, Thursday &Friday Time: 17 July 2025 via Zoom(Virtual) from 2.00pm to 5.15pm 18 July 2025 at Orchard Hotel Singapore(Physical) 9.00am to 5.45pm
Address: Orchard Hotel Singapore, 442 Orchard Road, Singapore 238879
CPD Programme: 2 STU(Safety) & 6 STU(Structural) – Confirmed 10 PDU (PEB & CEng) – Confirmed
Fees*: \$403.30 (IES Members) \$452.35 (Non-Members)
Please register online/email in the completed form by 2 July 2025 to: Karen Phua, <u>karen@iesnet.org.sg</u> 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 :
Address :
Please indicate: IES members IES M'ship No.: P.E. No.: (if applicable) Image: Non-members IES M'ship No.: P.E. No.: (if applicable) Image: Name: Designation: P.E. No.: If applicable)
Tel: Fax:
Email:
Payment Details Payment via bank transfer or PayNow. All Fees are inclusive of 9% GST. Beneficiary: IES PayNow: Academy Pte Ltd Bank: IES Academy Pte Ltd United Overseas Bank UEN:202026912H SWIFT: UOVBSGSG Bank Code: 7375 Branch Code: 016 Bank Account number: 339-326-153-4 Acceptance of Terms and Conditions for Registrations of IES Academy's Events Acceptance of 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.

<u>Closing Date & Payment</u>

The closing date of the event will be 2 weeks prior to event commencement date or earlier. Payment can be made via ATM, Bank Transfer or paynow. We No Longer Accept cheques.

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.

<u>Withdrawals/Refunds of Fees</u>

Written notice at least 10 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.

<u>UTAP (Union Training Assistance Programme)</u> 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.

<u>Enquiries</u>

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