



Organised by IEM Geotechnical Engineering Technical Division (GETD)
Supported by The Malaysian Geotechnical Society (MGS)



MALAYSIAN
GEOTECHNICAL
SOCIETY
(PERTUBUHAN
GEOTEKNIKAL
MALAYSIA)

SEMINAR ON DEEP EXCAVATION; DESIGN INTEGRATION AND CONSTRUCTION REALITIES

SPEAKERS:



Ir. SHARMEELEE S.



Ir. LOH YEE ENG



Er. Dr DAVID NG



MR. LAURENT ALBERT



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**9 SEPTEMBER 2026, WEDNESDAY
8:30 AM - 6:00 PM
FOUR POINTS BY SHERATON, PUCHONG**

Registration fee (Subject to 8% SST)

**BEM Approved CPD: 7
Ref. No.: IEM26/HQ/317/S**

GRADE	FEE (VIA IEM WEBSITE)	FEE (THROUGH EMAIL)
IEM Student Member	RM230	RM250
IEM Member / HRDC for IEM Member	RM350 / NA	RM400 / RM425
Non-IEM Member / HRDC for Non-IEM Member	RM750 / NA	RM800 / RM850



**APPROVED DURATION:
13/7/2026 - 17/5/2027
HRD CORP SERIAL NO:
10001726997**

SYNOPSIS

Deep excavation works are among the most technically demanding and risk-sensitive activities in civil and geotechnical engineering, particularly in dense urban environments where basements, transit infrastructure, and utility corridors sit close to existing structures. Sound outcomes depend not only on rigorous geotechnical and structural design, but also on close inter-disciplinary collaboration and disciplined construction-stage control. This seminar brings together four experienced practitioners from Malaysia and Singapore to share current design philosophies, case histories, and lessons learned across the full lifecycle of a deep excavation project – from geotechnical design in challenging urban ground, through the integration of geotechnical and structural design for steel-strutted systems, to construction safety control strategies and practical case studies from local projects.

Objectives:

- To share geotechnical design approaches for deep excavation in challenging urban ground conditions, drawing on real Malaysian project experience.
 - To present control strategies for design and construction management that ensure site safety, referencing Singapore case histories.
 - To highlight the importance of integrating geotechnical analysis with structural design, particularly for steel-strutted excavation systems.
 - To draw practical lessons from Malaysian construction case studies on deep excavation.
 - To provide a forum for knowledge exchange and networking among geotechnical, structural, and construction professionals.
- Participants will gain insight into regional design practices, risk management strategies, and real-world project experience, while engaging directly with speakers during a dedicated panel discussion.

PROGRAMME

Time	Description	Speaker
8:30am – 8:50am	Registration & Light Refreshment	
8:50am – 9:00am	Welcoming Address	
9:00am – 10:15am	Session 1: Deep Excavation in Challenging Urban Environment: Geotechnical Design Approaches across 2 Malaysian Projects	Ir. Sharmeelee S.
10:15am – 10:45am	Q&A	
10:45am – 11:00am	Morning Tea Break	
11:00am – 12:30pm	Session 2: Bridging the gap between geotechnical analysis and structural design of a steel-strutted excavation system	Ir. Loh Yee Eng
12:30pm – 1:00pm	Q&A	
1:00pm – 2:00pm	Lunch	
2:00pm – 3:30pm	Session 3: Control Strategies in Design and Construction Management to Ensure Safety in Deep Excavation Projects in Singapore Illustrated with Case Histories	Er Dr David Ng
3:30pm – 3:45pm	Q&A	
3:45pm – 4:00pm	Afternoon Tea Break	
4:00pm – 5:30pm	Session 4: Performance of Diaphragm Wall with Buttressed Waling System for a 20 m Deep Urban Excavation – A Case History from RTS-TOD Johor Bahru	Laurent Aubert
5:30pm - 6:00pm	Token Appreciation to Speakers / Closure	

SPEAKERS' BIODATA

Ir. SHARMEELEE S.



Session 1: Deep Excavation in Challenging Urban Environment: Geotechnical Design Approaches across 2 Malaysian Projects

Synopsis:

Deep excavation in dense urban settings demands rigorous geotechnical engineering to safeguard adjacent infrastructure, manage groundwater, and deliver safe, buildable solutions within tight constraints. This talk presents the geotechnical design and construction challenges encountered across two development projects in Malaysia, each representing a distinct set of ground conditions and technical demands. The first project located in Jalan Pudu, Kuala Lumpur, involved a 25-metre deep excavation for a five-level basement. The scope required the design of a basement retention system, deep bored pile foundations, and temporary slopes, with particular attention to monitoring and design support throughout construction in a congested city-centre environment.

The second project, located in Jalan Raja Laut, Kuala Lumpur, presented compounded challenges: a very deep excavation extending to Basement 5 and lift pit level, construction of contiguous and secant bored pile walls adjacent to the aged buildings and the need to maintain stable groundwater levels throughout a hybrid top-down and bottom-up basement construction sequence. Instrumentation monitoring and iterative design review were central to managing retention wall movements. Across both projects, the approach combined thorough sub-soil investigation and interpretation, tailored retention and foundation design, and active construction-phase design support. The cases collectively illustrate how geotechnical solutions must be adapted to site-specific ground conditions, construction methodology, and proximity to existing structures.

Speaker's Profile:

Ir. Sharmeelee S. is presently a Director with ArdentGeo Consulting Services Sdn Bhd, a specialist geotechnical consultancy. She received her M. Eng. in Geotechnical Engineering from NUS Singapore in 2003 and she is presently pursuing her PhD in Malaysia. She is a Chartered, Professional Civil Engineer with more than 20 years of industry experience. During this time, she has been involved in many large infrastructure projects, providing geotechnical consultancy services for MRT1, MRT2 Underground, Electrified Double Track projects and other large civil infrastructure projects. Her scope covers the full range of geotechnical engineering including foundation, ground treatment, slopes, walls and retention systems for highways, railways, high rise buildings etc.

Session 2: Bridging the gap between geotechnical analysis and structural design of a steel-strutted excavation system

Synopsis:

Understanding the complicated soil-structural interaction between geotechnical analysis and structural design is crucial for ensuring the safety and stability of deep excavations. By bridging the gap between geotechnical analysis and steel structural design, engineers will be able to design a safe, cost-effective and constructable strutted excavation system.

This talk will discuss the design considerations for a steel-strutted wall system in accordance with available technical references, British Standards and Eurocode. The iterative design process involving geotechnical finite element analysis and steel member sizing using the simple P-L curve will be explained. Key elements and common arrangements of steel strutting used for deep excavation projects from past experiences will be shared to further explain the performance of steel-strutted walls in deep excavation.

Speaker's Profile:

Ir. Loh Yee Eng started TRIGEO Consultant in May 2015 after fifteen years working with Specialist Contractors and Geotechnical Consultants. She obtained her bachelor degree in Civil Engineering from University of Technology Malaysia (UTM) in year 2000 and Master of Science from National University of Singapore (NUS) in year 2007. She is a registered professional engineer and geotechnical accredited checker with the Board of Engineers Malaysia.

Ir. Loh has 26 years of experience in the field of geotechnical works, including geotechnical review of KL118 and TNB Monopole Transmission Towers next to Penang Bridge, foundation design of Oxley Towers, deep excavation design for KV-MRT line 1, Daya Bumi Phase 3, Chief Tower and FTB Tower.

Ir. LOH YEE ENG



SPEAKERS' BIODATA

Er. DR DAVID NG



Session 3: Control Strategies in Design and Construction Management to Ensure Safety in Deep Excavation Projects in Singapore Illustrated with Case Histories

Synopsis:

This section of the course will go through the introduction to Singapore geological conditions, coastal structures and reclamation projects. Singapore's unique geology, characterized by a mix of igneous, sedimentary, and metamorphic rocks, presents both challenges and opportunities for coastal development. The island's coastal areas, shaped by tidal currents, wave action, and sediment transport, require specialized design and construction approaches for structures like seawalls, breakwaters, and jetties. Reclamation projects, a key part of Singapore's land expansion strategy, demand careful planning and execution to ensure stability and sustainability. Effective design principles for coastal structures prioritize resilience against erosion, flooding, and saltwater intrusion, while optimizing construction methods like caisson placement, dredging, and land reclamation. This course explores these principles, highlighting case studies to equip professionals with practical insights into designing and constructing coastal infrastructure in Singapore's dynamic marine environment.

Speaker's Profile:

Er Dr David Ng is a Professional Engineer (Civil), Specialist Professional Engineer (Geotechnical) in Singapore. He has been involved in publication of more than 100 technical papers in the field of geotechnical and environmental engineering. He has more than 26 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. Er David Ng is Council Member and Vice President of The Institution of Engineers Singapore (IES) and Chairman of Civil & Structural Technical Committee of IES. He is also Chairman of AFEO AER AEI Structural Workgroup WG. Through his multiple key roles in various civil engineering fields, Er Dr David Ng is actively promoting circular economy and sustainability implementation in the built environment and infrastructures development internationally.

Session 4: Performance of Diaphragm Wall with Buttressed Waling System for a 20 m Deep Urban Excavation – A Case History from RTS-TOD Johor Bahru

LAURENT AUBERT

Synopsis:

This presentation discuss a case history of the design, construction, and performance of a diaphragm wall with buttressed waling system implemented for the RTS Transit-Oriented Development (RTS-TOD) basement excavation in Johor Bahru City Centre. The project involved a deep excavation of approximately 20 m in a highly constrained urban environment, characterized by irregular excavation geometries, varying excavation depths, localized lift pits, and close proximity to critical infrastructures, including an operating rail corridor and the Immigration, Customs and Quarantine Complex (ICQC) under active construction.

The presentation highlights the development of the diaphragm wall buttressed waling concept, key geotechnical and structural design considerations, and the construction methodology adopted to address challenging site constraints. Particular emphasis will be placed on excavation support performance, including measured diaphragm wall deflections and ground movements, and their implications for the protection of adjacent structures and utilities. The case study also discusses practical aspects of diaphragm wall construction, including site logistics planning, equipment deployment, manpower management, and the application of polymer-based stabilizing fluids. Major construction challenges encountered during implementation and the mitigation measures adopted to overcome these challenges will be presented, together with lessons learned from project execution.

Monitoring results and field observations demonstrated that the diaphragm wall buttressed waling system provided effective excavation support, maintaining acceptable deformation control while facilitating construction within a complex urban setting. The case study illustrates the suitability of this system for deep and irregular excavations where conventional support arrangements may present practical limitations. The experience gained from this project offers valuable insights for geotechnical engineers, designers, and construction professionals involved in deep excavation works, and contributes to the development of best practices for future large-scale urban infrastructure and transit-oriented developments in Malaysia.

Speaker's Profile:

Laurent Aubert is a geotechnical engineer with more than 35 years of international experience in deep foundations, deep excavations, underground structures, cut-off walls, dams and ground improvement works. He has held senior technical and operational positions within the Soletanche Bachy Group across Europe, Asia-Pacific and North America. Currently based in Malaysia, he serves as Managing Director of Geotechnical Alliance, Technical Director for Soletanche Bachy Asia-Pacific and Senior Advisor for Sol Expert International. Throughout his career, he has led and contributed to the design and construction of numerous landmark infrastructure and building projects involving diaphragm walls, deep excavation systems, various piling techniques, ground treatment and underpinning works. He has also served as a part-time lecturer at several engineering institutions in France, delivering courses on geotechnical techniques.





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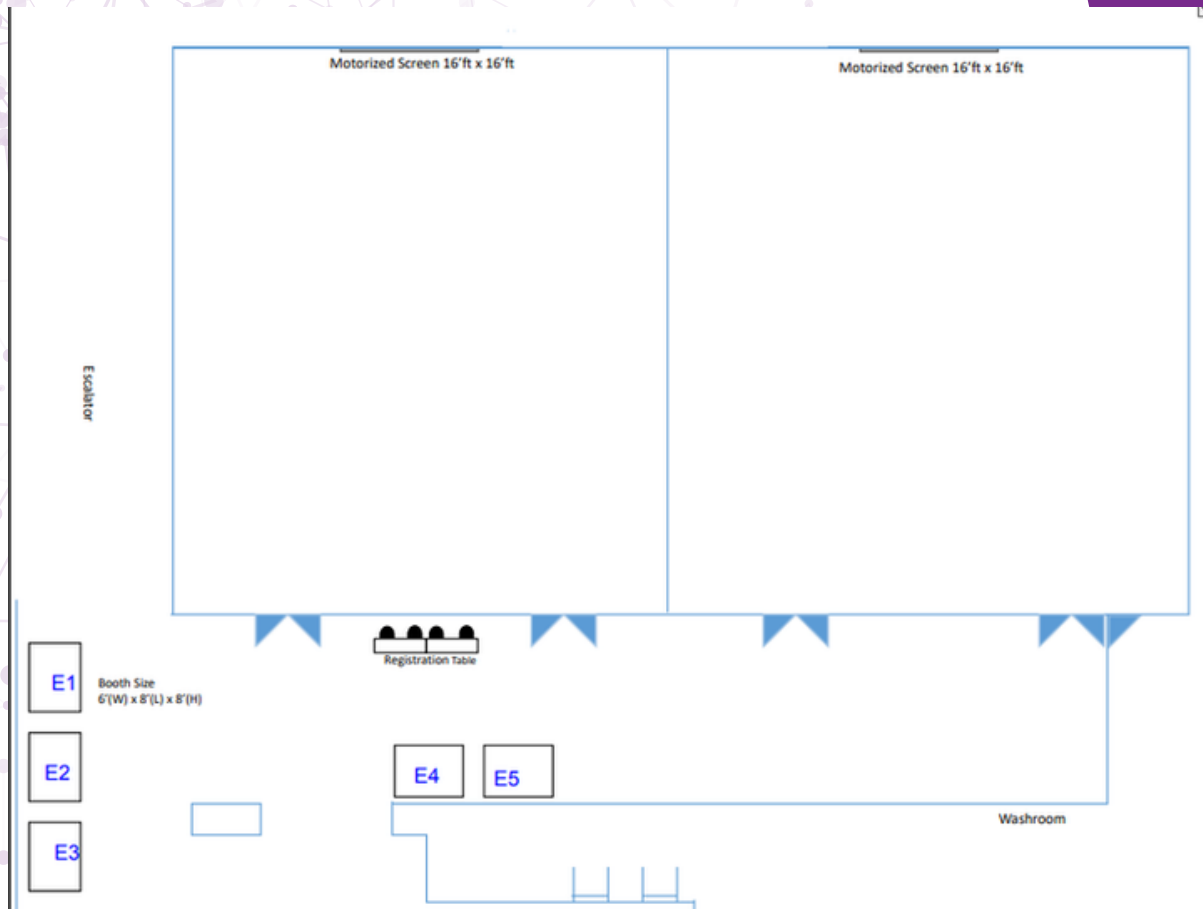
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