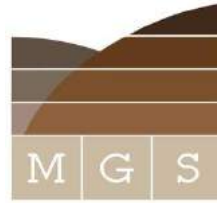


**Revised**



Malaysian Geotechnical Society

**Pre-AGM Seminar**

## One Day Seminar and Exhibition on Underground Construction

**Date: 22<sup>nd</sup> June 2023 (Thursday)**

**Time: 8.45 am – 6.00 pm**

*(Registration commences at 8.15am)*

**Venue: Four Points by Sheraton Puchong**

**BEM Approved CPD Hours: 7  
Qualified for 7 PDUs by PEB**

*Ref. No.: IEM23/PP /019/S*

### SPEAKERS



**Ir. Dr. Tan Yean Chin**



**Ir. Dr. Law Kim Hing**



**Ir. Loh Yee Eng**



**Ir. Dr. Ong Yin Hoe**



**Ir. Khoo Chee Min**



**Ir. Dr. Choo Chung Siung**



**Ir. Tan Joon Gei**



**Er. William Chong Hon Yeu**

# PROGRAMME

Time	Topic of Lecture
08:15 – 08:40	<b>Registration</b>
08:40 – 08:45	<b>Welcoming Address</b>
08:45 – 09:45	<p><b>Lecture 1 – Challenges in Design and Construction of Deep Excavation in Urban Areas</b>  <b>By Ir. Dr. Tan Yean Chin</b></p> <p>Due to scarcity of land, especially in urban areas, the need for basements to optimise the use of land has resulted in construction of deep excavation works. Deep excavation works pose great challenges to geotechnical engineers, particularly in complex ground conditions such as in limestone, where it exhibits notorious karstic features with irregular bedrock profiles, variable weathering condition, cavities and slime zones. With proper geotechnical input, costly failure and delay associated with underground works such as excessive groundwater lowering, occurrences of sinkholes, excessive ground settlements, etc. can be prevented. Suitable temporary earth retaining system and rock strengthening works have to be properly designed to prevent such failures. The speaker will present design principles of temporary earth retaining system together with vertical rock excavation as well as three case studies including from Mass Rapid Transport (MRT) projects, from various challenging geological formations found within the Klang Valley of Malaysia; Limestone, Kenny Hill formation and Alluvium with high ground water table.</p>
09:45 – 10:45	<p><b>Lecture 2 – Some Experience on Application of Buttressed in Diaphragm in Malaysia</b>  <b>By Ir. Dr. Law Kim Hing</b></p> <p>For urban excavation, ground improvements and strengthening of lateral earth support systems are commonly adopted to control excavation-induced wall and ground movements. This presentation will share 3 case histories in which buttressed diaphragm wall was adopted as a support system in deep basement excavations to control excavation-induced ground deformation. Case 1 involved the application of cantilever buttressed diaphragm wall for 11m deep strut-free wide excavation. Case 2 involved the application of progressively removed buttress walls in combination temporary ground anchor tie-back for 24m deep basement excavation in Limestone Formation. Case 3 involved the application of buttress walls in combination with top-down construction method for 25m deep basement excavation to limit LRT tunnels movement. The field performance and 3D numerical analysis results for the above 3 case histories will be presented and discussed during the presentation.</p>
10:45 – 11:15	<b>MORNING TEA BREAK</b>
11:15 – 12:00	<p><b>Lecture 3 – Challenges in Design and Construction of Substructure in Phnom Penh, Cambodia</b>  <b>By Ir. Loh Yee Eng</b></p> <p>Deep excavations for the construction of basements have increased drastically in Cambodia for the past 10 years. This presentation will share 2 cases of deep excavations projects in Phnom Penh, Cambodia. Both projects are utilising diaphragm walls as earth retaining wall system for the basement excavation of 14m to 25m deep. First project was completed during movement control operation (MCO) period and the monitoring results for this project will be discussed in this presentation. Second project is on-going project (completion of diaphragm wall installation and pending for excavation to commence after completion of bored pile installation) and hence only limited information will be shared during the presentation for technical discussion. Plaxis 3D analyses were used in both projects to check the impact of trench excavations to surrounding building during diaphragm wall installation. Challenges associated with the design and execution of deep excavation projects in Phnom Penh will be discussed.</p>

12:00 – 13:00	<p><b>Lecture 4 – Impact Assessment of Deep Excavation to Surrounding Structures – Selected Case Histories of Recent Developments</b>  <b>By Ir. Dr. Ong Yin Hoe</b></p> <p>Deep excavation involves changes in ground stress, pore water pressure (both excess pore water pressure and suction) and seepage flow in the ground. Ground stress history is captured by simulating construction activities within area of interest make known to the engineer. The effect of deep excavation onto the surrounding structures (typically pile and tunnel) needs to be assessed <i>a-priori</i>. The retaining wall and strutting system of deep excavation are designed so that the induced displacement (and therefore forces) in the surrounding structures is manageable. This presentation will demonstrate i) some pitfalls in design (by others) that lead to detrimental effect to surrounding structures ii) Class A prediction of basement excavations (by speaker) iii) advantages of 3-dimensional finite element analysis in deep excavation.</p>
13:00 – 14:00	<b>LUNCH</b>
14:00 – 14:45	<p><b>Lecture 5 – Geotechnical Challenges and Innovations in Urban Underground Construction – The Klang Valley Mass Rapid Transit Project</b>  <b>By Ir. Khoo Chee Min</b></p> <p>The Klang Valley Mass Rapid Transit (KVMRT) Project involves the construction of an urban passenger transport system, i.e. Mass Rapid Transit (MRT) system, together with the existing urban rail network, will form the backbone of the public transport system in the Greater Kuala Lumpur/Klang Valley region. The presentation will focus on some of the geotechnical challenges and some interesting learning lessons. as well as numbers of innovations embedded into this highly complex urban underground construction project. The use of the advances in engineering geophysics to highlight the areas of potential ground risks will be described. The knowledge gained, and lessons learned from the KVMRT Line 1 and Line 2 are being effectively transferred to the design and construction of Line 3 which is expected to have even greater technical challenges.</p>
14:45 – 15:30	<p><b>Lecture 6 – AI in Trenchless Technology - Cases from Pipe Jacking in Weathered Geology</b>  <b>By Ir. Dr. Choo Chung Siung</b></p> <p>As pipe-jacking continues to be a chosen method for constructing buried infrastructure in densely populated urban areas, it is paramount to understand the effects of geology on jacking forces and construction parameters. This knowledge gap remains, especially for drives negotiating weathered geology. This presentation presents the experiences gained from the construction of a trunk sewer pipeline at depths of up to 30 m below the central business district of Kuching city, Sarawak, Malaysia. The encountered rocks exhibited RQD values of 0%, which created difficulties when extracting rock samples for strength characterization.</p>
15:30 – 16:00	<b>AFTERNOON TEA BREAK</b>
16:00 – 16:45	<p><b>Lecture 7 – Difficulties Encountered in Deeper Excavation in Kenny Hill Formation</b>  <b>by Ir. Tan Joon Gei</b></p> <p>Basement excavation within Kenny Hill geology is normally consider ‘easier’ because of favourable geological condition affording high SPT and Metasedimentary rock. However, as excavation goes much deeper for example more than 40m; more unique and much more difficult challenges can be encountered due to deeper geological contact zones, unique testing and interpretation difficulties, adjacent existing building structures issues, machineries limitations, site and time consideration and etc; which the speaker will discuss.</p>
16:45 – 17:30	<p><b>Lecture 8 – Design and Construction of Deep Soil Mixing Retaining Wall to Facilitate a 10m Deep Excavation</b>  <b>by Er. William Chong Hon Yeau</b></p> <p>The speaker will share several cement-soil mixing method and sharing the design and construction of deep soil mixing retaining wall to facilitate a 10m deep excavation works for a diving pool construction. The sharing will include the design process, construction challenges and monitoring results during excavation.</p>
17:30 – 18:00	<b>Q&amp;A</b>

REGISTRATION FEES*		
Category 1	Members**	RM320.00 per person
Category 2	Non members	RM500.00 per person
Category 3	Group registration ( <b>5 and more</b> ) members	RM280.00 per person
Category 4	Group registration ( <b>5 and more</b> ) non members	RM440.00 per person

\*Inclusive of 2 tea breaks, 1 lunch and seminar handouts.

\*\* MGS/IEM/GeoSS/CTGS members

The registration fees must be **paid in full** before the participant is allowed to join the seminar.

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Scan event or [click here](#) to save into your calendar.

**REGISTER**

**CLOSING DATE: 16<sup>th</sup> June 2023**

#### **Terms & Conditions**

- ✓ FULL PAYMENT must be settled before commencement of the Seminar, otherwise participants will not be allowed to enter the hall. If a place is reserved and the intended participants fail to attend the Seminar, the fee is to be settled in full.
- ✓ The fee paid is not refundable.
- ✓ The Organizing Committee reserves the right to cancel, alter, or change the program due to unforeseen circumstances. Every effort will be made to inform the registered participants of any changes. In view of the limited places available, intended participants are advised to send their registrations as early as possible to avoid disappointment.

**Ir. Lee Peir Tien**  
**President**  
**Malaysian Geotechnical Society**



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