

## Pre AGM Talk on Framework of Supervision and Risk Mitigation Measures in Construction of Major Underground Rail Infrastructure Projects – The Singapore Way and Challenges And Potential Disputes In Tunneling

Organized by Tunnelling & Underground Space Technical Division, IEM

BEM Approved CPD/PDP Hours: 2 Ref No: IEM17/HQ/171/T

Date : 13 May 2017 (Saturday)  
Time : 09.00am – 11.00am (Refreshments will be served at 8.00am)  
Venue : Auditorium Tan Sri Prof. Chin Fung Kee, 3<sup>rd</sup> Floor, Wisma IEM, Petaling Jaya  
Speaker : **Ir. Er. Dr. ONG Chee Wee, Victor and Er. David Ng Chew Chiat**

### SYNOPSIS

#### ***Challenges And Potential Disputes In Tunneling by Ir. Er. Dr. ONG Chee Wee, Victor.***

In this era of rapid globalisation, the ambitions of mankind has driven surface space to become increasingly scarce, forcing creative solutions in the underground space. Advances in tunneling techniques have come a long way since its inception, and has seen wide applications, from the secret escape tunnels, to the various mined tunnels undercrossing mountains, and to the modern day mechanised circular tunnels, and beyond. However, underground space is not infinite; interfaces between surface developments and underground expansions, as well as underground-underground interfaces arise as mankind expands their "horizons". Protective as we are, disputes arise from such interfaces, drawing out legally binding agreements and engineering assessments. Hence, engineers play a deterministic role in the coexistence of factions of development. The talk will address some tunnelling and underground space design and supervision considerations, with risks as well as impacts due to tunnelling works.

#### ***Framework of Supervision and Risk Mitigation Measures in Construction of Major Underground Rail Infrastructure Projects – The Singapore Way by Er. David Ng Chew Chiat***

Railway infrastructure development in Singapore has come to the stage where systematic and repeatable good supervision of the construction works would be required to ensure the safety and quality of the fast pace construction works. Under the Building Control Act which is being enforced by the Building and Construction Authority (BCA), a framework has been set up with the roles of Qualified Person (Supervision) (QPS) and Qualified Person (Supervision) specialized in Geotechnical Engineering (QPS(Geo)) has been set up to be the appointed professionals to ensure the Building Control Act is being observed. Under this framework, there are also specific numbers of Qualified Site Supervision Personnel being appointed to assist the exaction of supervision works for QPS and QPS(Geo). In Singapore context of rail infrastructure development being solely managed by Land Transport Authority of Singapore (LTA), this framework has been successfully implemented by LTA by LTA appointing a separate QPS and QPS(Geo) team under a separate contract from the main civil contractors' contracts and the design engineers' contracts. This is to further enhance the independency of the various roles and responsibilities of the Qualified Persons for design responsibilities and supervision responsibilities. The objectives and roles of the QPS team is to ensure the construction of the infrastructure works is being carried out safely without necessary delay, as well as to as unobtrusively as possible to ensure the quality of the works are in compliance with the Clients' and Authorities requirements. These roles and objectives can be achieved through a systematic implementation of the appropriate measures and check on the site activities. These measures are such as setting clear the Key Performance Indicators (KPI) for the works, understanding and continual checking of the ground conditions and potential obstructions or utilities in the ground, and actively identifying the various potential risks for the scheduled works to be carried out. This paper will present the supervision frameworks and risk mitigation measures implemented in Singapore for the construction of rail infrastructure projects in details.

#### **ADMINISTRATIVE FEE**

- Kindly be informed that an administrative fee of RM15 is payable for talks organized by IEM. GST is inclusive.
- Student Members are however exempted.

#### **ANNOUNCEMENTS TO NOTE:**

- Non members may also attend the talk but will need to pay a registration fee of RM50 and an administrative fee of RM15. GST is inclusive.
- Limited seats are available on a "first come first served" basis (maximum 100 participants). To secure your seat, kindly register online at [www.myiem.org.my](http://www.myiem.org.my).

**BIODATA OF SPEAKERS**



*Ir. Er. Dr. ONG Chee Wee, Victor is Managing Director of ONE SMART Engineering (Malaysia & Singapore) Sdn. Bhd. He is a PE (Civil) registered with Board of Engineers Malaysia, ASEAN Chartered Professional Engineer, APEC Engineer and International Professional Engineer. He is also a Specialist PE (Geotech) as well as a PE(Civil) registered with Professional Engineers Board (PEB), Singapore. He obtained his PhD in Geotechnical Engineering from the National University of Singapore (NUS). Dr. Ong is currently serving on two International Technical Committees for International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) - Technical Committees TC 207 on Soil-Structure Interaction and Retaining Walls and TC 212 on Deep Foundations. Dr. Ong is also serving as Technical Committee of Asian Technical Committee (ATC-6) "Urban GeoEngineering". He was elected as SPRING Singapore Technical Committee for The Standards Council (Civil & Geotechnical Works). Dr. Ong is a recipient of the Best Contribution Award in Asian Young Geotechnical Engineers Conference and The Hulme's Prize Award by Tunnelling & Underground Construction Society of Singapore (TUCSS). He was also named Young Consulting Engineer of the Year in 2014 by the Association of Consulting Engineers Singapore (ACES). Recently, Dr. Ong has been awarded Singapore's Top 50 Engineering Achievements by Institution of Engineers Singapore (IES).*



*Er. David Ng is Executive Director of ONE SMART Engineering Pte Ltd which have offices operating in Singapore and Malaysia. David Ng is Qualified Person (Civil) and Qualified Person (Geotechnical) of Supervision for Thomson East Coast Line (TEL) Contract T220 Great World City Station and Tunnels and Contract T221 Havelock Station. He is a Specialist Geotechnical PE registered with Singapore PEB. He graduated in 1999 with a Master Degree in Geotechnical Engineering from NUS where he received the Innovation Award and NSTB Gold Award for his outstanding academic results and research work. In 2000, he was awarded the First Prize of the prestigious Hulme's Competition by the Tunnelling & Underground Construction Society of Singapore for his technical paper in tunnelling. In 2013, he has received the Young Consulting Engineer Award 2013 by the Association of Consulting Engineers of Singapore (ACES). He has published more than 50 technical papers in the field of geotechnical engineering. He has been involved in the design, supervision and project management of major infrastructure projects in Singapore with deep excavation, mined tunnels and bored tunnels in Deep Tunnel Sewerage System, Kallang Paya Lebar Expressway, North East Line, Circle Line, Downtown Line and Thomson East Coast Line during his past 20 years of working experience.*

***Ir. Syed Rajah Hussain Shaib Bin A.H. Mohd Haniff***  
***Chairman***  
***Tunnelling & Underground Space Technical Division, IEM***

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