

## Report on the 1<sup>st</sup> Symposium for the Young Tunnellers of Asia (SYTA 2020)

*Reported by Dr. Boon Chia Weng*

The 1<sup>st</sup> Symposium for Young Tunnellers of Asia (SYTA) was organised on 12 Sep 2020, as a pre-event of the World Tunnel Congress 2020 (11-17 Sep 2020), and was jointly organised by The Institution of Engineers Malaysia (IEM), IEM Training Centre Sdn Bhd and IEM Academy Sdn Bhd, with the support of the International Tunnelling and Underground Space Association Young Member group (ITAyM). A total of 65 participants, including the organising team, attended the digital symposium. The event started off with a Welcome Speech by the Organising Chairman, Dr. C.W. Boon, followed by the Organising Chairman of WTC 2020 and the Chairman of the Tunnelling and Underground Space Technical Division (TUSTD) of the Institution of Engineers Malaysia, Ir. Dr. Ooi Teik Aun, and finally the Chairman of ITAyM, Keith Bannerman. There were in total 10 lectures presented, namely:

1. Takuya Suzuki, Japan – “Excavating in Weak Ground, where Risk of Landslide is High”. The speaker shared how the support systems were tailored to the ground conditions, as soon as observations indicated signs of distress related to slope movement. The speaker also shared how the shape of the invert could reduce the bending moments of the lining.
2. Yuma Suenaga, Japan – “Features of Urban-Ring Method Adopted for Construction of Underground Structures”. The speaker shared this innovative method of installing the retention system of a circular shaft, and how it could be used in a congested environment where site laydown could be an issue. The reaction system for jacking the retaining system downward was also presented.
3. Abhijeet Kumar, India – “Challenges in Tunnelling- UGC02 Mumbai Metro Line 3”. The speaker shared new technologies on tunnelling logistics, innovative techniques to reduce the time for TBM assembly and launching, protecting 3<sup>rd</sup> party stakeholders and groundwater challenges in the project. A holistic view of the project was presented.
4. Ankur Chauhan, India – “Tunnelling in Granites: Case Study of a Highway Project in Afghanistan”. The speaker presented how feasibility studies of rock support could be approached from geology characterisation and rock mass classifications.
5. Virender Kumar Sattawan – “Construction of INA Metro Station over Operational Twin Tunnels”. The speaker presented on challenges of construction sequence interfacing between a station and an adjacent tunnel. Temporary works for the deep excavation was presented.
6. To Franklin Kwok Leung, Hong Kong – “A Comparison of Empirical and Numerical Approaches for Estimating Rock Support Pressure on Tunnel Lining”. The speaker shared how rock support pressures are estimated based on Terzaghi’s theory, and made comparisons with rock mass classifications and finite element analyses. It was found that Terzaghi’s solution was conservative.
7. Minh Ngan Vu, Vietnam – “On Blow-out in Tunnelling and a Case Study in Ho Chi Minh Metro Line 1”. The speaker shared how blow out could be predicted and compared the predictions against an actual case history.
8. Nalinii Ravichandran, Malaysia – “Ground Vibration Study in Karstic Limestone Formation for Controlled Blasting Works in Klang Valley”. The speaker shared a few parameters which could influence vibration, and the motivation of controlled blasting in an urban environment.
9. Sandeep Singh Nirmal, India – “Design of Steel Fiber Reinforced Concrete Segment with Curved Radial Joints”. The speaker shared design concepts in segmental lining design with fibre reinforced concrete, and methods to check bursting loads.
10. Divik Bandopadhyaya, India, UK – “Tunnelling in an Urban Environment and Managing 3<sup>rd</sup> Party Interfaces in London”. The speaker presented on the multitudes of considerations in a project, and need for good stakeholder engagement. Risks of encountering of archaeology artifacts and land mines at historical sites were also discussed.

In summary, the lectures presented consist of challenges in geological conditions and innovations in construction process such as the “urban ring method”. Case histories from the Mumbai Metro Line 3, INA Metro and Ho Chi Minh Metro Line 1 were presented. Technical considerations involving rock classifications, rock pressures, ground vibration, tunnel lining design were also presented by the speakers. Not to forget stakeholders engagement, the last speaker highlighted the importance and need for managing 3<sup>rd</sup> Party Interfaces in London.

After the presentations by the speakers, Mr. Sandeep Singh Nirmal, Steering Board Member of ITAyM (initiator of SYTA together with Ir. Khoo Chee Min, past chairman of TUSTD, IEM), shared future views of SYTA and that the 2<sup>nd</sup> SYTA in 2021

would be organised in India. Finally, Ir. Frankie Cheah, co-chair of SYTA, delivered the closing remarks and thanked the speakers for their insightful presentations (Figure 1).

Overall, the participants had benefited from the digital symposium, as the speakers had presented wide ranges of subjects relevant to the tunnelling industry being practised in the participating countries.



## Closing Remarks and Appreciation to Speakers



Takuya Suzuki



Yuma Suenaga



Abhijeet Kumar Chaudhary



Ankur Chauhan



Virender Kumar Sattawan



Franklin To



Minh Ngan Vu



Nalinii Ravichandran



Sandeep Singh Nirmal



Divik Bandopadhyaya

Organised by



Supported by



Figure 1. Appreciation slides to speakers



Figure 2. Organising chair, Dr. C.W. Boon (right) and co-chair, Ir. Frankie Cheah (left) on the event day