

# Singapore



**Name:** Tunnelling & Underground Construction Society (Singapore)

**Type of Structure:** Non profit, open association

**Number of Members:** 1329 members, 120 corporate members

## ASSOCIATION ACTIVITIES DURING 2022 AND TO DATE

In 2022, TUCSS continued to promote tunnelling and underground construction and share knowledge by organising monthly evening seminars, training courses, conference & site visits. These activities were well attended and helped the dissemination of tunnelling & underground related information and best practices from around the world. In addition the society held social networking events to bring together the practitioners from the different sectors of the industry. TUCSS also continued to support the accreditation of tunnelling resident site supervisory staff during the year.

### Annual Lecture

TUCSS Annual Lecture was held on Thursday, 20th October 2022 at SMU Ngee Ann Kongsi Auditorium. The topic was "Development and Use of Steel Fibre Reinforced Concrete in Singapore" by Prof Tan Kiang Kwee, National University of Singapore. The Annual Lecture was attended by 182 TUCSS members.

### Hulme Prize Award:

This annual competition is set up for young engineers or students (below 35) to submit and present technical papers on subjects related to tunnelling and underground construction. Three papers were shorted by the TUCSS Committee as follows:

- Parametric Design Study of Hybrid Steel Fibre Reinforced Concrete (SFRC) in Singapore Cut-and-Cover MRT Structures. Presented by Ang Wei Jian, Land Transport Authority
- Evaluation of Over-Excavation for Earth Pressure Balance (EPB) Shield through Data Analytics. Presented by Caroline Teo, Land Transport Authority
- Underpinning and Tunnelling Undercrossing Keppel Viaduct using specialised cutter tools to cut the piles. Presented by Bryan Chng, Land Transport Authority

The first prize was awarded to Ang Wei

Jian, second prize to Caroline Teo and the third prize to Bryan Chng.

### Training Courses

TUCSS held the "TUCSS Tunnelling Course 2022" on 19th to 20th April 2022. The two half-day course was attended by 250 participants. The purpose of the course was to provide a comprehensive background to certain contemporary practices in design and construction of tunnels and underground structures.

### Conferences

TUCSS held "Symposium on Innovations & Challenges in Asian Tunnelling 2022" on 21st & 22nd September 2022 at Parkroyal on Beach Road Hotel. The symposium was organised together with industry partners from China, Japan and Korea. Its objective is to share valuable experiences gained from recent underground

infrastructure projects across the four countries. In all 16 presentations was delivered by prominent experts and 280 participants attended the symposium.

### Annual Dinner

TUCSS celebrated its 25th Anniversary Dinner on 4th October 2022 at Raffles City Convention Centre. The event was attended by 800 members and guests.

### Golf Friendly

TUCSS organised its Golf Friendly on 12th August 2022 at Sentosa Golf Club.

### Project of the Year Award

TUCSS organised the 2nd edition of the Project of the Year Award. This award is an initiative to recognise best practices and enhance the professional standards of tunnelling & underground construction works in Singapore.

The winner of the 2022 edition was "T228 Construction of Gardens by the Bay Station & Tunnels for Thomson – East Coast Line".

There were also 2 merit awards presented to the following projects:

- Contract T211 – Design and Construction of Bright Hill station and Construction of Tunnels for Thomson – East Coast Line.
- T305 – Construction of Katong Park Station and Tunnels for Thomson – East Coast Line.

### Virtual Monthly Evening Seminars for members:

20th January 2022	The New Bern RBS Underground Station and Expansion of Bern SBB Station public facilities: Design and execution challenges (Bern, Switzerland)	Mr. Martin Schafer, Basler & Hofmann AG
17th February 2022	East Side Access – transforming Manhattan	Mr. Andy Thompson, Mott MacDonald
17th March 2022	City Rail Link – Delivery of the first underground railway project in New Zealand (Auckland, New Zealand)	Mr. Francois Dudouit, Link Alliance
21st April 2022	Thomson East Coast Line E1003 – Design Challenges & Solutions	Dr. Nicholas Mace, Mott MacDonald
19th May 2022	Design and construction challenges with tunnelling at speed: TBM tunnels for Brisbane Airport Link	Dr. Anthony Harding, Jacobs International Consultants
16th June 2022	Completing the full Circle Line – Tunnelling Challenges in CCL6 (Singapore)	Mr. Poh Chee Keong, Land Transport Authority
21st July 2022	Underground Infrastructure under extreme threats - How to cope with fire and explosion in a changing societal environment?	Dr. -Ing Goetz Vollmann, Ruhr University Bochum
18th August 2022	Role of Reinforcement in Tunnel Linings	Dr. Ralf Winterberg, Barchip Inc.
17th November 2022	Pawtucket CSO Tunnel – Cleaning Up Narraganset Bay R.I.	Mr. Bob Frew, AECOM Singapore

## CURRENT TUNNELLING ACTIVITIES

**1)** Tunnel boring works for Thomson East Coast Line and Circle Line 6 were completed using a total 57 pressure balance Tunnel Boring Machines including 2 Rectangular Machines, while the track and other works are in progress. The tunnelling was done in an urban environment and included the undercrossing of residential and heritage buildings and tunnelling in close proximity to the foundations of commercial buildings.

**2)** The first stage of tunnelling for the Thomson Line extension within Changi Airport have completed

**3)** Construction of North South Corridor, a 22.5km long expressway with a 12.5km underground section, is now in progress.

**4)** Cross Island construction contracts involving large diameter ( >12m) TBMs are being progressively awarded.

**5)** DTSS Phase 2 tunnel construction is nearing completion.

**6)** Changi Airport tunnel boring works for

large and smaller tunnels were completed in 2022 and fit out works are in progress.

**7)** Singapore Powergrid is building South East Asia's largest underground substation

## FUTURE TUNNELLING ACTIVITIES

**1)** Construction works for new MRT lines is expected to continue well into the 2030s

**2)** Changi Airport Terminal 5 project consists of large cut and cover tunnels and deep basements.