

India



Name: Tunnelling Association of India

Type of Structure: non-profit, open association

Number of Members: 600

ASSOCIATION ACTIVITIES DURING 2020 AND TO DATE

Main activities

- Organization of Conferences, Seminars, Workshops and Training Programmes;

TAI Awards Biennial

- Life Time Achievement Award; Tunnelling project of the year
- Technical innovation of the year; Environmental initiative of the year
- Young Tunneller of the year

TAI Young Member Group - Launched

Publications

Préparation of Manual and Guidelines

TAI journal - 2 Nos. (Half yearly)

CURRENT ASSOCIATION ACTIVITIES

Virtual training sessions

In the present COVID-19 situation where skill enhancement and training of professionals has emerged as an important aspect and a challenge, the

Tunnelling Association of India organized the Virtual Training Sessions on Tunnelling and underground space development to update the knowledge of tunnel professionals and young engineers who are in the early stage of their career development. The list of the virtual training sessions/webinars organized by TAI and TAIYM is given in the hyper link.

1. Tunnel & Underground Work Activity.
2. List of Virtual Training Session organised by TAI.
3. List of webinars organised by TAIYM.
4. TAI Publication
 - Guidelines for Design of Steel Fibre Reinforced Concrete Precast Segments in Tunnels.
 - Guidelines for Geo-physical investigation for tunnels.
 - Directory of Tunnels: Under Preparation.
5. TAI Journals
 - January 2020 Issue
 - July 2020 Issue

FUTURE ASSOCIATION ACTIVITIES

Life Cycle Cost Assessment May 2021

Webinar will be held in near future (Offline/Online/Hybrid)

S.No	Event Name	Date
1.	Workshop on Tunnel Design	June, 2021 in New Delhi
2.	International Conference on Construction of Road Tunnel in Himalayas: Issues and Challenges	July 2021 in New Delhi
3.	Workshop on Analysis of Design of Concrete Gravity Dams	August 2021
4.	BRO - Fire Safety Hazard in Tunnels - 3 days	Delhi
5.	Workshop on Best Practices in Cross Passages Construction	9 & 10 September 2021 in New Delhi
6.	Workshop on Dam Safety	October 2021
7.	Workshop on Observational Approach in Tunnelling: Evolvement, Issues and Challenges	9 November 2021
8.	Tunnelling Asia 2021- Underground Space - The Need of the Day TAI Awards 2021	10-13 November 2021
9.	ITA Award Function	12th November, 2021 in Mumbai
10.	International Conference on Challenges and Issues in Tunnelling for Infrastructure Projects	December 2021 in Chennai
11.	Workshop on Tunnelling in North East Area	February 2022 in Guwahati

STATISTICS

1. Tunnelling Association of India has analysed 1,641 tunnels spanning a length of over 3,445km. These tunnels are spread across three stages of development – awarded, under construction and completed.

In terms of no. of tunnels: Of the total no. of tunnels analysed, 77.76% have been completed, 19.44% are under construction and the remaining 2.80% have been recently awarded.

In terms of length of tunnels: Of the analysed tunnel length, 60.02% has been completed, construction work is going on 33.45% tunnel length and the remaining 6.43% has been recently awarded. According to the data analysed by Tunnelling Association of India, drill and blast method (DBM) is the most commonly used method of tunnelling. DBM is closely followed by the deployment of mechanised/advanced tunnelling techniques such as tunnel boring machines (TBMs) which has a share of 31.58%. Other than TBMs, the New Austrian Tunnelling Method (NATM) has also gained prominence over the years. A significant amount of tunnel length in the railways and roads sectors has deployed more advanced NATM technique, in sharp contrast to DBM.

Another advanced method of tunnelling which is deployed in the construction of sewerage tunnels is micro-tunnelling.

2. Amount (USD or EUR) of tunnelling / underground space facilities awarded in 2020: India Infrastructure Research has estimated that tunnels covering around 2,600km are planned to be developed in the next 3-4 years. Typically, about 25-30% of the tunnel construction cost is invested in purchasing material. Over the next 3-4 years, about Rs 1.02 trillion will be spent on procuring equipment and machinery for upcoming tunnel projects.

EDUCATION ON TUNNELLING IN THE COUNTRY

Include graduate courses, post graduate courses, technical courses / name of University, School...

1. M. Tech Tunnelling and Underground Space Technology in Indian Institute of Technology Indian School of Mines Dhanbad (Also known as: IIT DHANBAD)
2. M. Tech. in Tunnel Engineering at MIT WPU, Pune, Kothrud

TUNNELS UNDER CONSTRUCTION

Sector	Sector	Sector	Total project length (km)	Tunnel length (km)	Project cost (Rs million)	Expected date of completion
Metro	Ahmedabad-Gandhinagar Phase I	North-South Corridor (APMC to Motera Stadium)	18.87	-	125.00	NA
Metro	Ahmedabad-Gandhinagar Phase I	East-West Corridor (Thaltej Gam to Vastral Gam) (remaining stretch)	14.66	6.50	-	2021
Metro	Bhopal Phase I	Corridor 1 (Karond-AIIMS)	14.99	1.79	69.41	2023
Metro	Bhopal Phase I	Corridor 2 (Bhadbhada Square-Ratnagiri Trisection)	12.88	-	-	2023
Metro	Kanpur Phase I	Corridor 1 (IIT Kanpur-Naubasta)	23.78	8.62	110.76	2024
Metro	Chennai Phase-I Extension	Washermenpet to Wimco Nagar	9.00	2.40	37.70	June 2020
Metro	Indore (Phase I)	Ring line from Palasia to Bangali Chouraha	31.55	3.22	75.01	August 2023
Metro	Bengaluru Phase II	Baiyappanahalli-ITPL Whitefield (Extension of Eastern Line)	15.50	-	48.45	August 2021
Metro	Bengaluru Phase II	Mysore Road Terminal-Kengeri (Extension of Western Line)	6.47	-	18.68	October 2020
Metro	Bengaluru - Phase II	Hesaraghatta Cross-Bengaluru International Exhibition Centre (BIEC) (Extension of Northern Line)	3.77	-	11.68	January 2022
Metro	Bengaluru Phase II	Puttenahalli Cross-Anjanapura Township (Extension of Southern Line)	6.29	-	17.66	August 2020
Metro	Bengaluru Phase II	R.V. Road-Bommasandra (Reach 5)	18.82	-	57.44	November 2021
Metro	Bengaluru Phase II	Gottigere - IIM B - Nagawara (Reach 6)	21.25	13.79	110.14	June 2024
Metro	Kochi Phase IA	Petta to SN Junction	1.50	-	3.59	December 2021
Metro	Delhi Phase III	Remaining stretch (Mayur Vihar Pocket 1 - Trilokpuri) of Majilis Park - Shiv Vihar (Pink Line)	1.39	-	NA	September 2020
Metro	Delhi Phase III	Najafgarh - Dhansa Bus Stand	1.18	1.18	NA	December 2020
Metro	Delhi Airport Express Line Extension	Dwarka Sector 21-Dwarka Sector 25	1.70	1.70	3.10	2021
Metro	Kolkata East-West Project	Phase I (Salt lake stadium to Sealdah)	3.60	3.60	-	2021-22
Metro	Kolkata East-West Project	Phase II (Sealdah to Howrah Maidan)	7.20	7.20	-	2021-22
Metro	Kolkata Expansion Project	Joka to BBD Bagh via Majerhat	15.07	6.32	26.19	2021 (partly)
Metro	Kolkata Expansion Project	Noapara to Barasat via Bimanbandar	17.02	NA	48.29	2024
Metro	Kolkata Expansion Project	New Garia (Kavi Subhas)-Biman Bandar	29.10	NA	31.62	March 2021
Metro	Kolkata Expansion Project	Baranagar to Barrackpore	12.40	-	16.56	June 2021
Metro	Kolkata Expansion Project	Noapara-Baranagar-Dakshineswar	4.14	-	2.29	June 2020
Metro	Mumbai Project	Thane to Bhiwandi stretch of Line-5 (Thane-Bhiwandi-Kalyan)	12.81	-	-	2024
Metro	Mumbai Project	Line 6 (Swami Samarth Nagar to Vikhroli)	14.47	-	66.72	2022
Metro	Mumbai Project	Line 2A (Dahisar-DN Nagar)	18.59	-	64.10	December 2020
Metro	Mumbai Project	Line 2B (DN Nagar-Mandale)	23.64	-	109.86	2022
Metro	Mumbai Project	Line 3 (Colaba-Bandra-SEEPZ)	33.50	33.50	231.36	December 2021
Metro	Mumbai Project	Line 4 (Wadala-Kasarvadavali)	32.32	-	145.49	2022
Metro	Mumbai Project	Line 4A (Kasarvadavali-Gaimukh)	2.68	-	9.49	2022
Metro	Mumbai Project	Line 7 (Andheri East-Dahisar East)	16.48	-	62.08	December 2020
Metro	Mumbai Project	Line 9 (Dahisar East-Mira Bhayander)	10.48	-	65.18	2024

TUNNELS UNDER CONSTRUCTION (CONTINUED)

Sector	Sector	Sector	Total project length (km)	Tunnel length (km)	Project cost (Rs million)	Expected date of completion
Metro	Nagpur Phase I	North-South Corridor (Remaining stretch of Automative Square to MIHAN)	6.16	-	86.80	December 2020
Metro	Nagpur Phase I	East-West Corridor (Prajapati Nagar to Lokmanya Nagar)	7.56	-	-	December 2020
Metro	Navi Mumbai Phase I	Belapur-Pendhar	11.10	-	30.63	December 2020
Metro	Pune Project	Corridor 1 (PCMC to Swargate)	16.59	5.02	114.20	2021
Metro	Pune Project	Corridor 2 (Vanaz to Ramwadi)	14.66	-	-	2021
Metro	Delhi - Phase IV	R. K. Ashram-Janakpuri West (Corridor II)	28.92	7.74	-	2024
Metro	Delhi-Ghaziabad-Meerut Regional Rapid Transit System	Delhi-Ghaziabad-Meerut Corridor	82.15	14.12	302.74	2023 (priority stretch); 2025 (entire corridor)