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10th Annual Conference

TUNNEL CONSTRUCTION IN INDIA

New Opportunities, Challenges, Emerging Technologies and Best Practices

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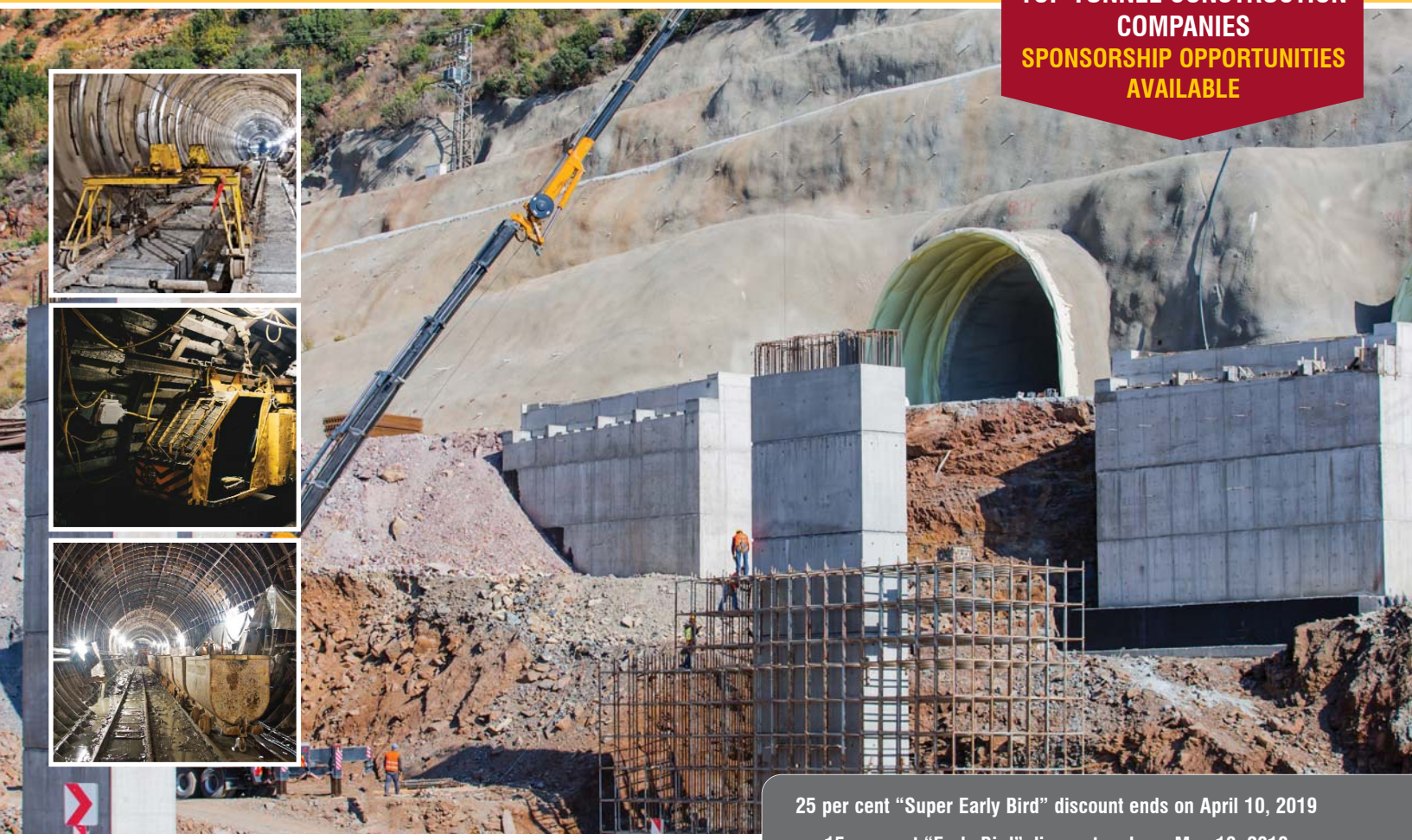

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TUNNEL CONSTRUCTION IN INDIA

Mission

- Tunnel development in India has picked up pace over the past few years. There is an increased uptake of projects involving longer tunnel lengths. Tunnelling activity in India is driven by a robust project pipeline in the urban mass transit, railways, roads and highways, water supply and sewerage sectors.
- A number of landmark and challenging tunnel construction projects are under execution across sectors. These include the 9 km Rohtang tunnel on the Leh-Manali highway, the 56 km Kaleshwaram irrigation tunnel (Link 7), the 9.7 km Chembur-Wadala-Parel water tunnel, 59 km of tunnels on the Jiribam Tupul-Imphal rail line and the 33.5 km Mumbai Metro Line 3.
- Underwater tunnels are also being constructed. India's first underwater metro tunnel, the 502 metre tunnel below the Hooghly river, was completed in May 2017. The Mumbai-Ahmedabad high speed rail project also involves the construction of a 3 km tunnel under the sea.
- Meanwhile, new designs, technologies and construction techniques for tunnelling are gaining importance, with the increase in the size and depth of tunnels.
- Tunnel boring machine (TBM) technology and the new Austrian tunnelling method (NATM) are gaining uptake in tunnelling activities in urban areas. Another advanced tunnelling method that is seeing increasing acceptance is micro-tunnelling. Conventional methods such as drill and blast continue to play a dominant role in tunnel construction projects in the Himalayan region and the Western Ghats as well in the construction of hydro tunnels.
- There is a growing focus on IT and automation in tunnelling. New tools and devices such as strength monitoring using thermal imaging (SMUTI), remote blast monitoring and 3D monitoring systems are being deployed. New materials are also being used to improve the durability and strength of tunnels.
- Going forward, there is immense scope for tunnelling in the infrastructure sectors. More than 4,000 km of tunnel length is planned to be added in the next four to five years. For the successful implementation of these projects, there is a need to deal with challenges in a time-bound and effective manner. The factors that can slow down the execution of tunnelling projects include safety risks, contractual issues, inadequate investigation and geological complexities.
- **The mission of this conference is to discuss the trends and developments, and highlight the opportunities and challenges in the tunnelling segment. The conference will provide a platform to showcase recent innovations in technology and equipment, noteworthy projects and best practices.**

Target Audience

The conference is targeted at top and middle-level managers from:

- Project Developers
- EPC Contractors
- Metro Rail Operators
- Indian Railways
- Water & Sewage System Developers
- Urban Local Bodies
- Hydro Power Developers
- Irrigation Companies
- Technology Providers (TBMs, excavator, drill rigs, cranes, loaders, roadheaders, shotcrete machines, etc)
- Consultants and Design Service Providers
- Etc.

Previous Participants

The organisations that have participated in our previous conferences on ***"Tunnel Construction in India"*** *include* ***Aarvee Associates, Adcos, AECOM, AF Colenco, Afcons, Aker, Amberg, Ambuja Cements, Alccofine Micro Materials, Atkins, Bajaj Allianz, Bangalore Metro Rail Corporation, Bekaert, Border Roads Organisation, Cads Software, Chicago Pneumatic Construction Equipment, CH2M Hill, Chennai Metro Rail, CMRL, COWI, Dassault, DFCCIL, Delhi Jal Board, Dextra India, DMRC, Draeger Safety India, DRDO, DSI Bridgecon, Duraflex, Dywidag, EGIS, Epiroc, Essar Power, Essel Infraprojects, Eurostar Engineering, FOGTEC, Gammon, Gates India, Geoconsult, Geo Constech, Geodata, Giertsen Tunnel, GMR, GMW, GR Infraprojects, Grenix Project, GVK Group, Halfen, HCC, Herrenknecht, Hitachi Zosen, HPPCL, Hochtief, HPRIDC, IL&FS Transportation Networks, IRB Infrastructure, Ircon International, Isolux Corsan, ITD Cementation, ITNL, J&K SPDC, J Square, Jaipur Metro, Jal India, JCB India, Jindal power, Jindal Steel, JMC Projects, JSW Infrastructure, K Rajagopalan & Co., Kalpan Hydro, Kalpataru Power Transmission, Kameng Dam Hydro Power, KEC International, Kolkata Metro Rail Corporation, Kross Air Distribution Systems, Konkan Railway Corporation, Krishna Hydro Projects, KSK Dibbin Hydro Power, Kutch Railways, Larsen & Toubro, Lahmeyer, Lanco, Leighton, L&T, Laviosa India, Leica Geosystems, Lombardi, Louis Berger, Mallcom, Marti India, MBL Infrastructures, MC Bauchemie, Mekaster, Mitsui,Monnet Projects, Mumbai Metro, Mumbai Rail Vikas Corporation, Municipal Corporation of Greater Mumbai, Nagarjuna Construction Company, Newkem, NHAI, NHIDCL, NHPC, Nina Concrete, NIS Marketing, Normet, North East Frontier Railway, Northern Railway Construction, NTPC, OBO Betterman, Outokompu, Patel Engineering, Poyry, Pratibha Industries, Precision Drawell, Promat India, Punj Lloyd, PWD, Rail Vikas Nigam, Railway Board, Ramboll, RDSO, Reinforced Earth India, Renesco, Rex Polyextrusion, RITES, Robbins, RVNL, Sammon Infracorp, Sandvik, Savronik Sistem, SERING Ingegneria, SEW Infrastructure, Sika India, Simplex Infrastructure, SJVN, SMC India, SMEC, SMS Infrastructure, SNC Lavalin Engineering, Spectrum, Star Drilling, Sterling Wilson, Sunil Chemicals, Systemair India, Systra MVA Consulting, TAM Construction Chemicals, TCE, Telcon, Terratec, THDC, Tata Power, Tata Projects, Tej Engineering, Totem Infra, Tractors India, Transstroy India, TROX India, Tvastar Engineering, Uniquest Infra, Unity Infraprojects, Ultra Tech Cement, Vayam***

Previous Speakers

- **Ashwani Bhide (IAS),** MD, Mumbai Metro Rail Corporation
- **R.B. Bamble,** Dy. Municipal Commissioner, MCGM
- **Stephen Lowry,** Team Leader, Delhi Metro Rail Corporation
- **Ashwani Saxena,** Director Projects, Jaipur Metro Rail Corporation
- **Lt. Col Parikshit Mehra,** Joint Director, Border Road Organisation
- **R.N. Dwivedi,** Project Director, Chennai Metro Rail Corporation
- **S.K. Dharmadhikari,** Advisor, NHIDCL
- **Brigg. D.N. Bhatt,** Chief Engineer, Border Road Organisation
- **Dr Subhash Soni,** Geotechnical and Tunnelling Lead, HCC
- **D.P. Deshmuk,** General Manager - Civil, MMRC
- **C. Sankarlingam,** VP & Head-Special Projects, L&T Construction
- **N.C. Karmali,** GM-Civil, Kolkata Metro Rail Corporation
- **Dr D.V. Subrahmanyam,** GM, Rail Vikas Nigam Limited
- **G.B. Nagendra,** Chief Engineer, Konkan Railway Corporation
- **Hari Singh,** Dy. Chief Engineer, Northeast Frontier Railway
- **J.S. Rathore,** Project Director, IL&FS Transportation Networks
- **Dr Chetan Hazaree,** Dy. GM-Engg Mgmt & R&D, HCC
- **Purnendu Parui,** AGM & Tendering Head, AFCONS
- **Rashul Goswami,** DGM-Town Planner, JMRC
- **Satish Kumar Sharma,** CTO, HCC
- **Arindom Chakraborty,** Manager, NHPC, etc.

AGENDA/STRUCTURE

EMERGING TRENDS, REQUIREMENTS AND CHALLENGES

KEY TRENDS AND DEVELOPMENTS
- What have been the key trends and developments in the tunnelling sector?
- What are the new opportunities? What is the future outlook?
- What are the key issues and challenges?

CONTRACTORS' PERSPECTIVE: CONSTRUCTION EXPERIENCE AND CHALLENGES
- What has been the experience of contractors?
- What have been the key challenges? What lessons have been learnt?
- What are their expectations from the government and other stakeholders?

INVESTIGATION AND SURVEY REQUIREMENTS: NEW TECHNIQUES AND INNOVATIONS
- What are the investigation and survey requirements for tunnelling projects?
- What are the advancements in instruments and techniques for geotechnical investigations?
- What are the key challenges? How can these be addressed?

FOCUS ON TECHNOLOGY: TRENDS, INNOVATIONS AND NEW OPPORTUNITIES

TUNNEL BORING MACHINE TECHNOLOGY
- What has been the experience with TBM technology? What are its specific features (cost per km, equipment, material and manpower requirements, etc.)?
- What are the trends and advancements in this field? What are the global best practices?
- What are the key issues and challenges? What is the future outlook?

NEW AUSTRIAN TUNNELLING METHOD
- What has been the experience with NATM? What are its specific features (cost per km, equipment, material and manpower requirements, etc.)?
- What are the trends and advancements in this field? What are the global best practices?
- What are the key issues and challenges? What is the future outlook?

MICRO TUNNELLING
- What has been the experience with micro-tunnelling? What are its specific features (cost per km, equipment, material and manpower requirements, etc.)?
- What are the trends and advancements in this field? What are the global best practices?
- What are the key issues and challenges? What is the future outlook?

DRILL AND BLAST METHOD
- What has been the experience with the drill and blast method (DBM)? What are its specific features?
- What are the trends and advancements in this field? What are the global best practices?
- What are the key issues and challenges? What is the future outlook?

FOCUS ON KEY SECTORS: EXPERIENCE SO FAR, UPCOMING PROJECTS AND CHALLENGES

METRO RAIL TUNNELS
- What has been the experience in metro rail tunnel construction?
- What are the most suitable techniques? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

ROAD TUNNELS
- What has been the experience in road tunnel construction?
- What are the most suitable techniques? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

RAIL TUNNELS
- What has been the experience in rail tunnel construction?
- What are the most suitable techniques? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

WATER SUPPLY AND SEWAGE TUNNELS
- What has been the experience in water and sewage tunnel construction?
- What are the most suitable techniques and methods? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

HYDRO TUNNELS
- What has been the experience in hydro tunnel construction?
- What are the most suitable techniques and methods? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

IRRIGATION TUNNELS
- What has been the experience in irrigation tunnel construction?
- What are the most suitable techniques and methods? What are the new trends and advancements?
- What are the upcoming projects and opportunities? What is the segment outlook?
- What are the key challenges and lessons learnt?

EMERGING FOCUS AREAS

NEW MATERIALS AND DESIGN
- What are the new and emerging material requirements (steel- and fibre-reinforced polymer active anchors, steel passive anchors, etc.) for tunnel construction?
- What are the new options and innovations in tunnel design?
- What are the cost savings that can be achieved? What are some of the global advancements?

TUNNELLING IN DIFFICULT TERRAIN: NEW SOLUTIONS AND TECHNOLOGIES
- What has been the tunnelling experience in difficult terrain (Himalayan region, Western Ghats, etc.)?
- What are the most promising and relevant technologies for tunnel construction in these areas? What are the key challenges and lessons learnt?
- What are the new trends and advancements? What are some of the noteworthy projects?

HVAC AND SAFETY REQUIREMENTS
- What are the current HVAC and safety requirements for tunnel construction?
- What are the technological advancements in this field?
- What can be learnt from the global experience?

MONITORING AND CONTROL SYSTEMS (3D monitoring, SMUTI, RCMS, remote blast monitoring, etc.)
- What are the different types of technologies and equipment available for the monitoring and control of tunnelling activity?
- How has been the uptake of such solutions so far? What benefits can be derived from these?
- What are the new trends and advancements? What are the global best practices?

EQUIPMENT AND PROJECT SHOWCASE

EMERGING EQUIPMENT REQUIREMENTS (TBMs, excavators, drill rigs, cranes, loaders, roadheaders, shotcrete machines, etc.)
- What are the emerging trends and advancements in the equipment segment?
- How is the industry gearing up to meet the emerging equipment requirements for tunnel construction?
- What are the key issues and challenges?

SHOWCASE OF NOTEWORTHY PROJECTS
- What are some of the noteworthy/landmark tunnel projects?
- What are their key characteristics (construction technique/method, project cost, shape, completion period, etc.)?
- What have been the biggest challenges? What lessons can be learnt from the experience of these projects?

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One delegate	22,125	367	25,075	418	25,000	4,500	29,500	492
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Three delegates	48,675	811	55,165	919	55,000	9,900	64,900	1,082
Four delegates	61,950	1,032	70,210	1,170	70,000	12,600	82,600	1,377

- There is a 25 per cent "SUPER Early Bird" discount for those registering before April 10, 2019.
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- There is a special low fee of Rs 5,000 per participant for state-owned hydro power producers, PWDs, ULBs, Indian Railways, metro rail corporations, research organisations and academic institutions.
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