

3rd EDITION | A VIRTUAL CONFERENCE

Construction in Railways

Progress and Opportunities;
New Technologies and Best Practices

December 14, 2021



Co-sponsor: **MACCAFERRI**



A VIRTUAL CONFERENCE

Metro Rail Construction

Opportunities, Challenges,
Solutions and Best Practices

December 15, 2021



Organiser:

Indian Infrastructure

Co-sponsor:

B BAJAJ REINFORCEMENTS LLP™



CONSTRUCTION IN RAILWAYS

Mission

- The railways sector has seen increased construction activity in the past one year both in terms of project award as well as work on the ground. The current construction rate is averaging at about 6.5 km per day. Despite the outbreak of the pandemic, Indian Railways (IR) managed to commission 2,370 km of new lines, gauge conversion and doubling work during 2020-21, and 133 km of doubling and third line work during 2021-22 (as of June 29, 2021). For 2021-22, highest-ever budget outlay of Rs 524.98 billion has been provided for construction works.
- The current year also marked the completion of many important projects. In a major development, the arch closure of the Chenab bridge under the Jammu-Udhampur-Katra-Qazigund-Baramulla railway line project was completed in April 2021. The Gandhinagar railway station was inaugurated in July 2021. Important sections of the eastern and western DFCs have been completed. Besides, construction of the first pillar of the 9.2 km-long elevated section under the 82 km-long Delhi-Meerut Regional Rapid Transit System has been completed.
- There is also an increased focus on digitalisation in design, engineering and construction. Advanced technologies for better geological and geotechnical investigations are being used. Also, aerial surveys, photogrammetry-based surveys and GPS-based systems with high accuracy levels are being deployed for rail construction in difficult terrains.
- In the next four to five years, the railways sector will see a quantum jump in infrastructure development. Massive track construction targets have been set. Over 125 track construction projects spanning a total length of 10,000 km are expected to be completed by 2024. As per National Infrastructure Pipeline, investments to the tune of Rs 13.67 are expected in the railways sector during the period from 2019-20 to 2024-25. New corridors and lines will be constructed under the DFC, HSR, RRTS and suburban rail systems. With this magnitude of required investments, there would be a significant opportunity for construction contractors, technology providers, design and engineering consultants, and equipment and material suppliers.
- **The mission of this one-day virtual conference is to discuss the network expansion and decongestion plans and targets, examine the upcoming construction opportunities, highlight the experience of contractors and identify the unresolved challenges. The conference will provide a platform for showcasing the latest technologies, design and engineering practices, and innovations in equipment and materials.**

Previous participants

The participating organisations in our previous conferences include: ABB, ABV Consultants, ACC, Accenture, ACME Cleantech, Adani Group, Adani Logistics, AdaniPetronet, Aditya Birla Finance, Afcons, AL Batra Group, Alcoa, Alstom, Amara Raja, Ambuja, Ambit Capital, Amtek, Anil Verma Associates, Ansaldo STS, Apar Industries, APM Terminals, Arconic of India, Areva, Arshiya Intl, Arup, Assignia Infra, Atmastco, Australian Trade Commission, Australian Trade and Investment Commission, AVB Consultants, Axis Bank, AZB & Partners, Azure Power, Balaji Railroad Systems, BARSYL, Baumer Technologies, Beekay Engineering, BEL, BEML, Bentley, BESCO, BPCL, Bharat Rail Automation, Bharat Wagon, BharujDahej Railway, BHEL, Bhilai Engineering, Bombardier, Bosch, British High Commission, British Steel, Brookings India, Bureau Veritas, Cargo Motors, CDM Smith, CRIS, Chennai Port Trust, Chhattisgarh Railway Corporation, CSIDC, Chittaranjan Locomotive, CIDCO, CIL, CLSA India, CONCOR, Contitech, CoreFab Projects, Coslight, Cosmo Energy, Crompton Greaves, CTI Engg, Cytech Associates, Dalmia Bharat, Dassault Systems, DB International, DFCCIL, DEHN, Delta Electronics, Delta Power Solutions (India), Desai Diwanji, Dhamra Port, DLW, Dow Chemicals, DPWorld, DSP Merrill Lynch, Dupont, EGIS, Elenium, EMD Locomotives, EY, ESAB, Essar steel, Essellnfraprojects, Essel Mining, ETA Engg, ETF, EtoE Rail, ETOE Transportation Infrastructure, Ewac Alloys, Exide, Experion, FAG Bearings, Faiveley Transport, FeddersLyod, Feedback Ventures, First Group, Fluid Controls, Fomento Mining, Ganges Internationale, Garware Wall Ropes, GatewayRail, Gati, GATX India, GE Infrastructure Transportation, GEISMAR, Geoconsult, GIDB, Global Infrastructure Partners, GMR Group, Haitong Securities, Halcrow, HMRDC, HCC, Henkel Adhesives, High Speed Rail Corporation, Hill International, Hind Terminals, Hindalco, Honeywell, HSBC, Huber Suhner, HUBNER Interface Systems, IBI Group, ICICI, IDBI, IDFC, IIFL, Indus Consultants, Ingsophy Consultants, InPhase Power Technologies, IL&FS, IMFA, IPRCL, Indian Railways, IRSDC, IndraSistemas, Inlogistics, Integra Hindustan, Integral Coach Factory, Involute Technologies, IPM, IRCON, IRCTC, JIC, JIC Consortium, JM Financial, JotunIndia, JSPL, JSW, K & J Projects, Kalindee Rail Nirman, Kalpataru Power, Kansai Nerolac Paints, KEC, KEL, Kesar Terminals, KFW, Kirloskar Pneumatic, Knorr Bremse, Kocchar & Co, Konkan Railway, L&T ECC, Lahmeyer, Lapp India, Lara Global, LEA Associates, Link Legal, LL Logistics, Lloyd Electric, Louis Berger, LMRC, Lucky Investment Managers, M&I Materials, Maccaferri Environmental Solutions, Maco Corporation, MAHA-METRO, Mahindra Logistics, Marubeni, Merrill Lynch, MGIL RITU HOUSING, Ministry of Defence, Ministry of Railway, Motsubishi, Monnet Projects, Morgan Stanley, Mumbai Port Trust, Mumbai Rail Vikas Corporation, N.C.Railway, N&S Solution, N.W. Railway (Indian Railway), National Academy of Indian Railways, NCRTC, National Instruments, NCC Limited, NCR HQ Allahabad, Nexans Singapore Pte Ltd, Nippon Koei, Nomura Financial, North Western Railway, North Central Railway, Northern Railways, NTPC, OPAL-RT Technologies, Oriental Consultants India, Outokumpu, Padeco, Performance Specialty Products, Patil Rail Infrastructure, PetronetLNG, Philips, Phoenix Contact, Plasser, PMC Projects, Premji invest, Progressive Construction, PWC, Rail Coach Factory, Rail Tech, RVNL, RailTel, Railway Energy Management Company, Raychem RPG, RDSO, Reliance Industries, Reliance Jio, Renaissance Group, RioTinto, RITES, Rodic Consultants, Ruchi Group, SAIL, Sany Heavy Industries, SBI Capital, Scope T&M, Seahorse Buss, Servomax, SET on Site Electricals, SEW Constructions, ShapoorjiPallonji, Sherman International, Siemens, Sojitz Corporation, Soma Enterprises, Southern Railway, Spain Business Overseas, SREI, Sterling & Wilson, SvarnInfratel, SVJ Corporation, SYSTRA MVA, Tata BlueScope, Tata Communications, Tata Motors, Tata Projects, Tata Realty, Tata Steel, TBEA Energy (India), TCE, Technica Telecom, Terre Armee, Testo India, Texon, Thales, TICIL, TMA, TouaxTexmaco, Transasia, Trans Rail Lighting, TRF, Trimble, TSGENCO, UGL Rail, Ultratech Cement, Uniseven Engineering, UL India, URC Construction, USBRL Project Northern Railway, UTC, Utkarsh Tubes & Pipes, Valvoline Cummins, Vinci Concessions, Vindhya Telelinks, Virgo Consultants, Vishakhapatnam Port Trust, Vishal Nimriti, Vizag Steel, VNR Group, Vossloh Corporation, Wabtec Corporation, Western Railway, Yes Bank, Yuken India, ZephirSpA, etc.

TENTATIVE CONFERENCE PROGRAM

IR'S PERSPECTIVE: NETWORK EXPANSION PLANS AND TARGETS

- ❖ What have been the key achievements of IR in terms of network expansion during the past couple of years?
- ❖ What are the plans and targets for new line construction, line doubling and gauge conversion in 2021-22 and 2022-23?
- ❖ What are the upcoming projects, and short-term and medium-term investment requirements?

CONTRACTOR VIEWPOINT: EXPERIENCE, CHALLENGES AND EXPECTATIONS

- ❖ What has been the contractors' experience so far?
- ❖ What are the unaddressed issues and challenges?
- ❖ What is your outlook on the future of rail construction in India?
- ❖ What are the expectations from the government and other stakeholders?

ZONAL RAILWAY VIEWPOINT: NEW CONSTRUCTION PROJECTS AND OPPORTUNITIES

- ❖ What are your plans and targets for new line, doubling and gauge conversion works?
- ❖ What has been the experience so far in rail construction? What are the best practices and lessons learnt?
- ❖ What are the construction-related issues and challenges?
- ❖ What are the targets for rail construction in the next one-two years (new line, doubling, gauge conversion, etc.)?

FOCUS ON MEGA PROJECTS: CONSTRUCTION EXPERIENCE, NEW TECHNOLOGIES AND OPPORTUNITIES

- ❖ What is the current status of the project? What are the key milestones, targets and timelines?
- ❖ What are the new and advanced design, engineering, construction techniques and solutions deployed? What are the biggest challenges?
- ❖ What are the upcoming opportunities for contractors, and technology and equipment suppliers?

There would be specific sessions on key mega programmes such as Dedicated Freight Corridors, Regional Rapid Transit System, Suburban Rail, High Speed Rail and Station Infrastructure Redevelopment

FOCUS ON DESIGN, ENGINEERING AND CONSTRUCTION TECHNOLOGIES

- ❖ DIGITAL TWINS
 - ❖ GEOGRAPHIC INFORMATION SYSTEM
 - ❖ INTELLIGENT INTERNET-OF-THINGS
 - ❖ LIDAR TECHNOLOGY
 - ❖ ARTIFICIAL INTELLIGENCE
- What are the emerging trends and advancements in design, surveying, engineering and construction of railway systems?
 - What are the safety aspects being considered?
 - What are some of the best practices and noteworthy projects?
 - What are the challenges in the adoption of these technologies?

CONSTRUCTION OF RAIL BRIDGES AND TUNNELS: EMERGING TRENDS AND ADVANCEMENTS

- ❖ What have been the trends and advancements in the construction of railway bridges and tunnels?
- ❖ What has been the experience in rail construction in geographically difficult locations (the Himalayan region, Western Ghats, etc.)?
- ❖ What are the challenges associated with the planning, design and construction of long-span rail infrastructure? How are these being addressed?

OPPORTUNITIES FOR STEEL IN RAIL CONSTRUCTION

- ❖ What is the current demand for steel in the railway sector?
- ❖ What are the recent advancements that IR is promoting in this segment?
- ❖ How is the demand for steel expected to increase in the next couple of years? What are the upcoming opportunities for private steel companies?

DEMAND FOR OTHER KEY CONSTRUCTION MATERIALS (Cement, Ballast, Geosynthetics, etc.)

- ❖ What are the other materials being deployed in rail construction projects?
- ❖ What are the recent advancements that IR is promoting in this segment?
- ❖ What is the overall outlook for the use of such materials?

EMERGING EQUIPMENT REQUIREMENTS

- ❖ What are the new and emerging equipment requirements in rail construction?
- ❖ How is the industry gearing up to meet these requirements? How have the procurement strategies evolved?
- ❖ What are the new advancements and innovations in this segment?

Target Audience

- The event is expected to draw participation from executives, managers and decision-makers from:
 - Indian Railways
 - Equipment manufacturers
 - Major consumers
 - IR-related organisations
 - Design consultants
 - Industry analysts
 - EPC contractors (bridges, tunnels, tracks)
 - Technology providers
 - Multilateral agencies
 - Suburban railway organisations
 - Legal firms
 - Etc.
 - Private operators
 - Construction material providers

METRO RAIL CONSTRUCTION

Mission

- The operational metro network has increased from 200+ km in 2014 to 706 km in 2020 across 13 cities and is further expected to cross 1,700 km in the next five years. This presents immense construction opportunity. The aim is to expand metro services to 50 cities in the next few years.
- Maharashtra has the highest upcoming length of over 600 km across several metro projects in Mumbai, Nagpur, Navi Mumbai and Pune among others. Tamil Nadu, Karnataka, Uttar Pradesh and Andhra Pradesh also offer sizeable opportunities in the area of metro rail construction.
- Over the years, there has been an increased focus on mechanised construction. Pre-cast construction methodology is increasingly being adopted across metro systems to expedite work. Metro corporations in Delhi, Chennai, Kochi and Mumbai have used U girders which are full span girders. Upcoming metro lines are also being developed using these girders.
- For underground stretches, the deployment of NATM has been gaining traction. Delhi Metro Phase III Corridors I, II and III, Delhi Metro Phase II, and Lucknow Metro Phase I are some of the key projects completed using NATM.
- Advanced telematics and intelligent control systems are being used for effective remote monitoring of equipment fleet. Solutions such as building information modelling (BIM), advanced analytics, drones, and IoT-based digital monitoring systems are also being increasingly deployed by metro rail corporations.
- Metro rail construction is a challenge, particularly along commercial establishments and congested urban spaces, due to different geological and soil conditions of each city. Meanwhile, delays in land acquisition continue to derail the project implementation. In the past, unavailability of land for construction of projects have affected timely implementation of projects in Delhi, Chennai, Kochi, Mumbai and Ahmedabad among others.
- Nonetheless, the sector is brimming with opportunities. Overall, the total capital expenditure of Rs 5.7 trillion is estimated to be incurred on the urban transport sector between 2019-20 and 2024-25.
- **The mission of this one-day virtual conference is to discuss the experience and emerging requirements, identify the key challenges and highlight the upcoming opportunities in metro rail construction. The conference will provide a platform for showcasing the latest technologies, best practices and innovative equipment.**

Previous participants

The organisations that have participated in our annual conferences on **Construction of Railways in India, Tunnel Construction in Asia, Tunnel Construction in India, and Bridge Construction in Asia** have included ABB, A.S Architects Civil architectural & interior consultant, Aarvee Associates, ADCOS, AECOM, Afcons Infrastructure, Aker, Aldesa, Al Arrab Contracting Company, Al Harsoosy-PDO, Amberg, Ambuja Cements, Alccofine Micro Materials, Arab Engineering Bureau – Qatar, Astaldi, Atkins, Bajaj Reinforcement LLP, Bangalore Metro Rail Corporation, BeKaert, Border Roads Organisation, Carpitech, CH2M Hill, Chennai Metro Rail Corporation, China Railway Construction, CoEvolve Estates, CSIR, COWI, Daishin Korea, Dassault, DFCCIL, Delhi Jal Board, Dextra, Delhi Metro Rail Corporation, DOGUS SOMA JV, Doka, DRDO, DSI Bridgecon, DSI-Dywidag, EGIS, EPIROC, FAMA SRL, FOGTEC, Gammon, Gates India, Geoconsult, Geo Constech, Geodata, Giertsen Tunnel, GMR, GMW, GR Infraprojects, Grenix Project, Gujarat Metro Rail Corporation, Gulermak Tata project JV, GVK Group, GZ Consultants, Halfen, HCC, Herrenknecht, Hill International, Hitachi Zosen, HPPCL, HSL Constructor, Hochtief, HPRIDC, ILF Asia, IRB Infrastructure, IRCON International, Isolux Corsan, ITD Cementation, J&K SPDC, J Square, Jaipur Metro Rail Corporation, Jakarta MRT, Jal India, JCB India, Jindal power, Jindal Steel, JMC Projects, JSW Infrastructure, K Rajagopalan & Co, Kalpan Hydro, 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 Construction, Leica Geosystems, Lombardi, Louis Berger, Lucknow Metro Rail Corporation, Maple Consortium, Mallcom, Maico Gulf L.L.C, Marti India, MBL Infrastructures, MC Bauchemie, Mekaster, Ministry of Physical Infrastructure and Transport, Nepal, MIT, Mitsui, Modern Road Makers, Monnet Projects, Mott MacDonald, Mumbai Metro Rail Corporation, Mumbai Rail Vikas Corporation, Mumbai Metropolitan Region Development Authority, Municipal Corporation of Greater Mumbai, MYK Arment, Navayuga Engineering, Nagarjuna Construction Company, Nagpur Metro Rail Corporation, NCRTC, NESPAK, Newkem, NHAI, NHIDCL, NHPC, National High Speed Rail Corporation, Nina Concrete, NICMAR, Normet, North East Frontier Railway, Northern Railway, NTPC, OBO Betterman, Outokompu, Pacadar, Patel Engineering, Pory, Pratibha Industries, Precision Drawell, PWD- Mumbai, Rail Vikas Nigam, Ramboll, RDSO, Reinforced Earth India, Renesco, RITES, Robbins, Robit Group, Sandvik, Savronik Sistem, SERING Ingegneria, SEW Infrastructure, Sika India, Simplex Infrastructure, SGB BY BRANDSAFWAY, Shapoorji Pallonji MIDEAST, SJVN, SMC India, SMEC, SMS Infrastructure, SNC Lavalin Engineering, Spar Geo Infra, SUCG Infrastructure, Surbana Jurong Systemair India, Systra MVA Consulting, TAM Construction Chemicals, TCE, Telcon, Telegra DOO, Terratec, Teksys Enterprises Private Limited, THDC, Tata Power, Tata Projects, Tej Engineering, Totem, Uttar Pradesh Metro Rail Corporation, Whetstone Business Solutions LLP, Yooshin Engineering etc.

TENTATIVE CONFERENCE PROGRAM

MOHUA'S PERSPECTIVE: OPPORTUNITIES IN METRO RAIL CONSTRUCTION

- ❖ What has been the recent progress in the construction of metro rail systems?
- ❖ What are the upcoming opportunities in this area?
- ❖ What are the key steps being taken by the ministry to promote faster and efficient ways of project execution?

METRO RAIL CORPORATION PERSPECTIVE: PROGRESS, PLANS AND FUTURE TARGETS

- ❖ What has been the project execution experience so far? What has been the recent progress?
- ❖ What are the key challenges? What are the key learnings and best practices?
- ❖ What are the upcoming plans and targets?

CONTRACTOR VIEWPOINT: EXPERIENCE, CHALLENGES, AND NEW INNOVATIONS

- ❖ What has been the experience so far with the construction of metro rail systems?
- ❖ What are the issues and challenges?
- ❖ What have been the most recent innovations?
- ❖ What is the outlook of metro rail construction in India?

EMERGING MATERIAL REQUIREMENTS: STEEL, CEMENT, GEOSYNTHETICS AND OTHERS

- ❖ What are the emerging material needs and requirements in the sector?
- ❖ What is the demand for pre-cast and pre-fabricated structures?
- ❖ What are the kinds of alternative materials being considered for use by the industry?

PROJECT SHOWCASE: CONSTRUCTION EXPERIENCE, BEST PRACTICES AND OPPORTUNITIES

- ❖ ELEVATED STRUCTURES
- ❖ UNDERGROUND STRUCTURES/TUNNELS
- ❖ AT-GRADE STRUCTURES
- ❖ STATIONS
- How has been the recent implementation experience? What are the key milestones, targets and timelines?
- What are the new and advanced design, engineering, construction techniques and solutions deployed?
- What are the biggest challenges?
- What are the upcoming opportunities?

FOCUS ON DIGITAL CONSTRUCTION SOLUTIONS

- ❖ Building Information Modelling (BIM),
- ❖ Digital Twins
- ❖ IoT-based digital monitoring systems
- ❖ Artificial Intelligence and Advanced Analytics
- ❖ Others
- What are the emerging trends and advancements in the use of digital construction solutions?
- What are some of the best practices and noteworthy use cases?
- What are the challenges in the adoption of these technologies?

EQUIPMENT SHOWCASE: ENSURING PRODUCTIVITY AND EFFICIENCY

- ❖ What are the new and emerging equipment requirements in metro rail construction?
- ❖ How is the industry gearing up to meet these requirements? How have the procurement strategies evolved?
- ❖ What are the new advancements and innovations in this segment?

Target Audience

- The event is expected to draw participation from executives, managers and decision-makers from:
 - Urban rail operators
 - Project developers
 - EPC contractors
 - Bridge and tunnel construction companies
 - Equipment manufacturers
 - Engineering and design firms
 - Technology providers
 - Urban local bodies and relevant government bodies
 - Urban transport planning companies
 - Sector consultants
 - Legal firms
 - Construction material manufacturers
 - Industry analysts
 - Etc.

REGISTRATION FORM

I would like to register for the “CONSTRUCTION IN RAILWAYS” conference (December 14, 2021)

I would like to register for the “METRO RAIL CONSTRUCTION” conference (December 15, 2021)

I would like to register for **both the conferences**

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are available**

Registration Fee

Both conferences

	INR	GST@18%	Total INR	Total USD
1 Login	12,000	2,160	14,160	203
2 - 3 Logins	18,000	3,240	21,240	304
4 - 5 Logins	24,000	4,320	28,320	405
6 - 9 Logins	30,000	5,400	35,400	506
10 - 20 Logins	36,000	6,480	42,480	607

Any one conference

	INR	GST@18%	Total INR	Total USD
1 Login	7,000	1,260	8,260	116
2 - 3 Logins	12,000	2,160	14,160	203
4 - 5 Logins	17,000	3,060	20,060	287
6 - 9 Logins	22,000	3,960	25,960	371
10 - 20 Logins	27,000	4,860	31,860	456

- GST @18 per cent is applicable on the registration fee.
- Registration will be confirmed on receipt of the payment.

Payment Policy:

- Full payment must be received prior to the conference.
- Payments for “early bird” registrations should come in before the last date of discount. Discount offers cannot be combined with any other offer.
- Conference fees cannot be substituted for any other product or service being extended by India Infrastructure Publishing Pvt. Ltd.

Organisers

The conference is being organised by **India Infrastructure Publishing**, the leading provider of information on the infrastructure sectors through magazines, newsletters, reports and conferences. It publishes **Indian Infrastructure**, **Power Line**, **Renewable Watch** and **tele.net** magazines and a series of reports on infrastructure sectors, including **Railways in India**, and **Urban Rail in India**. It also publishes the **Urban Mass Transit Directory and Yearbook**.

India Infrastructure Publishing has successfully organised over 60 virtual conferences in the past financial year. Some of our recent virtual events include the **15th Annual Conference on Railways in India**, the **12th Annual Conference on Tunnel Construction in India**, **9th annual Conference on Urban Rail in India**, and the **5th Annual Conference on Railway Electrification**.

For more details, please visit our website: <https://indiainfrastructure.com/conferences/>