

A SYMBROJ MEDIA PUBLICATION

ISSN 2582-2330 / VOL. IX / ISSUE 97/MONTHLY/JANUARAY 2025



METRO RAIL NEWS

A JOURNAL ON METRO & RAILWAY

**EXCLUSIVE
INTERVIEW**



SHRI UDAY BORWANKER

DIRECTOR GENERAL, RDSO

- ▶ AHMEDABAD METRO
- ▶ BENGALURU SUBURBAN RAIL
- ▶ GORAKHPUR METROLITE
- ▶ BHOPAL METRO

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Vol. IX | Issue 97 | January 2025

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© Symbroj Media Pvt. Ltd., New Delhi

COVER PRICE: ₹ 100.00

Subscription	Inland	Overseas
1 Year (12 Issues)	₹ 1800.00*	\$ 750.00*
2 Year (24 issues)	₹ 3000.00*	\$ 1500.00*

* Including Shipping Charges

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The Editorial Board may or may not concur with the views expressed by various authors in this publication.

Printed, Published & Edited by Narendra Shah at Printpack Electrostat, G-2/56, Eros Apartment, Nehru Place, New Delhi-110019, India. behalf of Symbroj Media Pvt. Ltd., 32B/14, Patparganj, Mayur Vihar Phase-1, New Delhi - 110091, India

RNI REF. 2017-10-1274 | ISSN NO: 2582-2330

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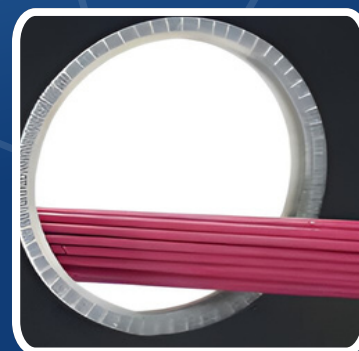
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EDITOR'S NOTE



Narendra Shah
Managing Editor

Stepping into 2025: A Year of Growth and Innovation in Rail Infrastructure

Metro Rail News: Celebrating a Decade of Trust

Dear Readers,

Welcome to the January 2025 issue of Metro Rail News. As we step into this new year of opportunities and growth, I am delighted to share that Metro Rail News has completed 10 Years as a trusted publication in the rail transportation industry. This journey wouldn't have been possible without your continued trust and support, and we sincerely thank all our readers for making 2024 a success. We hope this support will continue throughout this year and beyond.

Before discussing the potential of 2025, I'd like to mention that the previous year (2024) was remarkable for the rail transportation sector.

If we talk about Indian Railways, the expansion rate has been substantial with capital expenditure (Capex) allocation of ₹ 2,62,200 crores. This signifies a 77% increase compared to the previous five years. If we discuss the potential then it's going to be momentous for Indian Railways in the coming year, as the introduction of the new corridors is going to boost the operational frequency of both passenger & freight trains and the economy of India will also see a rise. Meanwhile, the launch of the Hydrogen Train will create a positive impact, leading Indian Railways closer to its Net-Zero vision by 2030. This growth has not been limited to railways only, India's metro infrastructure also evolved with the emergence of new metro projects like the Thane Metro and Bhubaneswar Metro in the year

2024. In this run, NCRTC has shown its commitment to completing India's first RRTS project which is now 55km operational while the remaining project is chasing the deadline of June 2025. Explore the cover story of the January 2025 edition to get in-depth insights into the upcoming developments and milestones achieved in 2024 in the Rail Transportation industry.

The state of Gujarat has a very instrumental role in driving India's economic growth. As per the statement of Mr Bhupendra Patel, Gujarat CM, Gujarat will spearhead India's growth to become a \$3.5 trillion economy by 2047. As the largest contributor to Gujarat's GDP, Ahmedabad holds an important role in working toward this vision. Recently PM Modi inaugurated Phase 2 of Ahmedabad connecting the city with the state capital Gandhinagar. This enhanced connectivity is expected to unlock diverse opportunities across multiple sectors in the region. Explore Ahmedabad Metro in the featured metro section of this issue. Similarly, the Bhopal Metro (Project of the Month) is a key component of Madhya Pradesh's broader developmental vision. The project is strategically designed to complement the city's evolving urban landscape. In the coming years, Bhopal Metro will unleash the city's potential for sustainable growth by providing a strong and efficient mode of transportation.

The heightened growth of rail infrastructure is further supported by the integration of modern

technologies like Artificial Intelligence (AI) and the Internet of Trains (IoT), which together create a complex web designed to harness the full potential of infrastructure. Under the immense pressure of urban growth, these technologies play a critical role in optimising resources. From automating trains to increasing operational frequency to implementing smart payment systems for hassle-free commuting, they enhance the appeal of smart transportation systems. However, these modern technologies also face vulnerabilities such as cyber-attacks and data privacy concerns. Despite these challenges, their role will be pivotal in transforming rail transportation. Explore the in-depth study on "Successful Implementation of AI & IoT-Based Solutions in Metro Systems" in the Train Technology section of the January edition.

As I wish a Happy New Year to all the readers of Metro Rail News, I hope this year brings abundant opportunities for growth and success. Like every year, Metro Rail News remains committed to providing valuable insights into the latest developments and trends in the rail transportation industry. I trust that this edition will enhance your understanding of India's advancements in urban mobility.

Narendra Shah
Managing Editor
Metro Rail News



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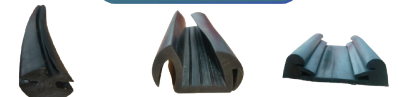


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News Highlights

METRO



Central Govt Approves Delhi Metro Red Line Extension From Rithala to Kundli

Delhi Metro Phase 4 advanced as India's Central Government's Cabinet approved the Red Line extension from Rithala to Nathupur (Kundli) spanning 26.463 km at an estimated cost of Rs. 6,230 crore on 7 December. Currently, the 34.69 Km of the Red line between Rithala and Shaheed Sthal New Bus Adda is operational. Out of 26.463 km of the Red Line extension, 23.73 km of the line will lie in Delhi out of which the 22.75 km will be elevated with 19 stations in total. The remaining 2.73 km will lie in Haryana with 2 stations



Karnataka Govt Approves Bangalore Metro's Phase 3A Project

The Karnataka Government approved the Detailed Project Report (DPR) of 36.59 Km long Phase 3A project with an estimated cost of Rs.28,405 Crores. The Bangalore Metro Phase 3A project will comprise one new corridor from Sarjapur to Hebbel with 28 stations out of which 17 stations will be elevated and 11 will be underground. The total length of the new metro will be 36.59 km out of which 22.14 km will be elevated while the remaining 14.45 km will be underground.



TBM S115 Records Final Breakthrough at Agra College station of Agra Metro

Afcon-Sam India Consortium's TBM S-115 recorded the final breakthrough at Agra College station of Line 1 spanning 14.25 km from Sikandra to Taj East Gate for package AGCC-02 of Agra Metro Phase 1. This was TBM S-115's third and final breakthrough for the Package AGCC-02. Afcon-Sam India Consortium bagged underground Package AGCC-02 at an estimated cost Rs.1819.79 Crore in March 2022 with a 48-month deadline.



AFCONS' TBM AMRIT COMPLETED LONGEST TUNNELLING DRIVE IN DELHI METRO PHASE-4

Delhi Metro Phase 4 advanced as Afcon Infrastructure TBM Amrit (372) recorded a breakthrough at Maa Anandmayee Marg Station of Golden Line spanning 23.622 Km from Aerocity to Tuglakabad through 16 stations for Package DC-07. This achievement marked a total of 5 breakthroughs for the Golden Line of Delhi Metro Phase 4. In January 2022, Afcon grabbed Package DC-07 from Delhi Metro Rail Corporation at an estimated cost of Rs. 1669.20 crore with a 42-month deadline.

→ ADB to Support Nagpur Metro Phase 2 with ₹1,527 Crore Funding

The 43.8 km Nagpur Metro Phase 2 will get financial assistance of Rs 1,527 crore from the Asian Development Bank (ADB). On 17 December, Shravan Hardikar, Managing Director of Maharashtra Metro Rail Corporation (Maha Metro) and Mr Mio Oka, ADB director signed a Memorandum of Understanding (MoU) in the presence of Chief Minister Mr Devendra Fadnavis in the cabinet hall of the Vidhan Bhavan. A total funding of Rs 3,586 crore will be secured for Nagpur Metro Phase 2 from the Asian Development Bank (ADB) and the European Investment Bank (EIB).



KFW & GoI Ink €340 million Loan For Bangalore Metro Phase 2

Bangalore Metro Phase has secured 100% external funding. On 13 December, the Government of India signed a Rs 3,044.54 Crore (€340 million) loan agreement with KfW Germany marking the 100% financial closure for the Phase 2 project. The agreement was signed by Ms. Manisha Sinha, Additional Secretary (DEA), on behalf of the

Government of India, and Ms. Carolin Gassner, Director (South Asia), on behalf of KfW Germany. The loan agreement was inked in the presence of the BMRCL Finance Director and officials from the offices of KfW Germany and India.

Kanpur Metro: Afcon Deploys TBM Azad Towards Kanpur Central Station



Afcons – Sam India Consortium deployed TBM Azad for its 3rd assignment from Transport Nagar Station (upline) on Corridor 1 under Kanpur Metro's package KNPCC-06 which connects Nayaganj Station and Transport Nagar Ramp. TBM Azad will construct a tunnel for the remaining stretch of approximately 1.80 km, passing through Jhakarkati to Kanpur Central. Previously, for its 2nd assignment, TBM Azad built a roughly 330m tunnel from the ramp area at Swadesh Cotton Mills to Transport Nagar Station.

Bangalore Metro: Titagarh delivered 1st Train For Yellow Line



Titagarh Rail System finally delivered the 1st of 14 locally assembled new trains for the Yellow Line spanning 19.143 km from RV Road to Bommasandra on 6 January 2025. In February 2024, China's CRRC Corporation Ltd. delivered the first prototype train for the Yellow Line. Additionally, CRRC delivered the 6-coach DTG (Distance-to-Go) prototype train for Bangalore Metro's Purple Line.

NAVI MUMBAI METRO RECEIVES 3 ISO CERTIFICATIONS

Navi Mumbai Metro has been awarded three major ISO Certifications ISO 9001, ISO 14001 and ISO 45001 in the very first years of operations. With this achievement, Navi

Mumbai Metro Line became the first ever metro line in Maharashtra to have all three ISO certifications. The CIDCO collaborated with Maharashtra Metro Rail Corporation Ltd (MMRC) to implement rigorous systems and protocols across all aspects of metro operations and maintenance.



Chennai Metro's 1st Driverless Train to Undergo Trials



CMRL is gearing up to initiate the trials of the first three-coach driverless train of Chennai Metro in December 2024. After performing all the tests CMRL will deploy these driverless trains on Line-4 which spans from Light House to Poonamallee Bypass through 28 stations under Phase 2. The train has been manufactured by Alstom at their manufacturing plant the Sri City, located in Andhra Pradesh. On October 17, the train arrived from Sri City and reached Poonamallee, the depot facility for Phase 2.

MMRC Managing Director Reviews Progress at Mumbai Metro Line 3 Stations



Ms. Ashwini Bhide, Managing Director of the Mumbai Metro Rail Corporation (MMRC), conducted a detailed review of the ongoing works at key stations on Mumbai Metro Line 3.

Accompanied by Mr Subodh Gupta, Director (Projects), Mr Rajeev, Director (Systems), and other senior officials, the team inspected the progress at Worli, Acharya Atre Chowk, and Dadar stations. The Managing Director emphasised the importance of maintaining quality and safety standards to meet the project's objectives efficiently.

DELHI METRO COMPLETES 22 YEARS OF PASSENGER OPERATIONS

On 24 December, the Delhi Metro Rail Corporation (DMRC) celebrated its 22nd anniversary of the commencement of its passenger operations. It was on 24th December 2002 that the first Delhi Metro train, TS-01, was flagged off by the then Prime Minister, Sh. Atal Bihari Vajpayee. TS-01 began as a 4-coach train but has been upgraded over the years to meet growing passenger demand, and expanded to 6 coaches in 2014 and further to 8 coaches in 2023.



RAILWAY

RAILWAYS CONDUCTS LOADED TRAIN TRIAL RUN ON ANJI KHAD BRIDGE

Indian Railways recently conducted a successful first-loaded train trial run on the Anji Khad Bridge, India's first cable-stayed rail bridge, located in the Reasi district of Jammu and Kashmir. The Ministry of Railways mentioned "The trial run on the Anji Khad Bridge, a key component of the Udhampur-Srinagar-Baramulla Railway Link (USBRL) project, has been successfully completed." Services on this vital connection are anticipated to begin in January 2025.



Railway



VANDE BHARAT SLEEPER TRAIN ACHIEVES 180KMPH SPEED DURING TRIALS

On January 2, the initial trial run of the Vande Bharat Sleeper train was successfully completed, covering a 30-km stretch between Kota and Laban in Rajasthan's Bundi district. Officials noted that during a separate 40-km trial conducted on January 1 between Rohal Khurd and Kota, the train achieved a top speed of 180 kmph. The testing phase, overseen by the Research Designs and Standards Organisation (RDSO) in Lucknow, will continue throughout January.

RRTS

SECRETARY, MOHUA INAUGURATES SOLAR POWER PLANT AT GHAZIABAD RRTS STATION

On 1st December, Shri Srinivas Katikithala, Secretary, MoHUA inaugurated the largest rooftop solar plant installed by NCRTC, with a peak capacity of approximately 1 MWp (965 kilowatts KWp) at Ghaziabad RRTS Station of Delhi Meerut RRTS corridor. The NCRTC has been aiming to reduce its carbon footprint by transforming its stations, depots, and substations into solar power generation hubs. With the current solar power generation capacity of 4-megawatt peak (MWp), NCRTC is achieving an estimated annual reduction of 4,100 tons of CO2 emissions.



DELHI-MEERUT RRTS: PM MODI LAUNCHED NAMO BHARAT ON DELHI SECTION

On 5 January 2025, The Hon'ble Prime Minister, Shri Narendra Modi, inaugurated an additional 13 km section of the Delhi-Meerut Namo Bharat Corridor between Sahibabad and New Ashok Nagar. The Namo Bharat Trains will now arrive in Delhi. With this inauguration, the operational stretch of the Namo Bharat Corridor expands to 55 km, with a total of 11 stations. Before this, a 42-km stretch of the corridor between Sahibabad and Meerut South was already operational featuring 9 stations.



Bullet Train



FIRST BASE SLAB CASTING COMPLETED AT MUMBAI UNDERGROUND BULLET TRAIN STATION

On 30th November, NHSRCL announced the placement of the first base slab completed at the Mumbai Underground Bullet Train Station of Mumbai Ahmedabad high-speed rail corridor. The first concrete slab out of 69 slabs of the Mumbai Bullet Station was cast at a depth of about 32 meters from the ground level. The slab is 3.5-meter-deep and the length and width of the slab measure 30 meters and 20 meters.

2,00,000 NOISE BARRIER INSTALLED ALONG THE MUMBAI-AHMEDABAD BULLET TRAIN CORRIDOR

The Mumbai-Ahmedabad Bullet Train Project has achieved a significant milestone with the installation of 206,000 noise barriers along both sides of the 103 km viaduct. For every 1 km stretch, 2,000 noise barriers have been strategically placed on each side of the viaduct.

Over 243 km of viaduct construction has been completed, along with 352 km of pier work and 362 km of pier foundation work. Track construction in Gujarat is progressing steadily, with Reinforced Concrete (RC) track bed construction underway in the districts of Anand, Vadodara, Surat, and Navsari. A total of 71 track kilometres of RC track bed have been completed, and rail welding has begun on the viaduct.



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Year- End Review

Analysing The Growth of the Rail Transportation Sector in FY 2024



Abstract

The year 2024 has been quite a great year for India's mobility sector, which has delivered a remarkable performance in rail transport and urban mobility. Right from engineering marvels to massive network expansions and eco-friendly metro projects, the nation has taken some vital steps to modernize its infrastructure.

Among the outstanding achievements, the expansion of 5,100 kilometres of railway tracks is a major step toward enhancing connectivity and strengthening the economic frameworks of the country. The launch of new metro projects, like the Thane Metro and Bhubaneswar Metro, made urban transportation progress.

This article discusses the highlights of 2024. The research delves into the budgetary provisions, strategic plans, and policies that spurred the development of Indian rail and metro infrastructure.

Indian Railways in 2024: Progress Toward Vikasit Bharat 2047

Indian Railways continued its modernisation and growth journey into 2024, in passenger experience improvement, enhancing freight efficiency, and harnessing advanced technologies. Improvements in stations, the launch of new train services, and safety systems introduced at various levels indicate how the rail network is evolving further. Indian Railways, with over 68,584 route km and 12.54 lakh employees stands as the fourth largest network in the world under single management. In the year 2024, Indian Railways' growth has been substantial. **Here's a brief overview of the critical aspects of railways that contributed to its growth.**

• **The Hike in Capital Expenditure:** In the Union Budget 2024-25, presented by Union Minister for Finance and Corporate Affairs **Smt. Nirmala Sitharaman** on July 23, 2024, **Indian Railways** saw a record capital expenditure (Capex) allocation of **₹2,62,200 crores**. This marks a 77% increase compared to the previous five years. Additionally, the Gross Budgetary Support (GBS) for the year is set at **₹2,52,200 crores**. This reflects a rise from **₹2,40,200 crores** in 2023-24 and a substantial increase from **₹28,174 crores** in 2013-14.

• **Revenue:** The Railways achieved a total revenue of ₹2.56 lakh crore (US\$ 30.76 billion) by the end of 2024.

Enhancing Rail Track Infrastructure & Speed

Track Renewal Works:

- 6200 Track km rails have been renewed with new rails.
- Complete track renewal for 6450 track km has been done.
- Through Turnout Renewal of 8550 sets have been done.

Raising of sectional speed:

- The sectional speed on over 2000 track kilometres, including segments of the Golden Quadrilateral, Diagonal routes, and other B routes, has been upgraded to 130 km/h.
- Raising of sectional speed to 110 kmph has been done over 7200 track km.

Infrastructure Development and Gati Shakti Initiatives in 2024

Indian Railways has made steady progress in infrastructure development during 2024.

Elimination of Manned Level Crossings and Bridge Construction

1. Level Crossings:

- 718 manned level crossings have been eliminated, improving safety and minimising delays.

2. ROBs and RUBs:

- A total of 1,024 Road Over Bridges (ROBs) and Road Under Bridges (RUBs) have been constructed.

Gati Shakti Multi-Modal Cargo Terminals (GCTs)

The Gati Shakti initiative aims to enhance logistics infrastructure and promote industrial investment through strategically located cargo terminals:



► Identified Locations:

- 354 locations have been identified for GCT development, with 327 on non-railway land and 27 on railway land.

► Operational Terminals:

- By the end of October 2024, 91 GCTs had been commissioned.

Sanction of Three Economic Corridors

Indian Railways has sanctioned the development of three key economic corridors in 2024, targeting critical sectors and high-demand routes. Under the ambitious infrastructure plan for 2024, Indian Railways has outlined 434 projects across three major economic corridors. Of these, 58 projects were sanctioned during 2024, with a combined track length of approximately 4,107 kilometres and an estimated completion cost of ₹88,875 crore.

Energy, Mineral, and Cement Corridors

• Projects: 51

- **Track Length:** 2,911 kilometres
- **Completion Cost:** ₹57,313 crore

COVER STORY

- **Focus:** Facilitating the transportation of energy resources, minerals, and cement.

High Traffic Density Routes

- **Projects:** 5
- **Track Length:** 830 kilometers
- **Completion Cost:** ₹11,280 crore
- **Focus:** Decongesting busy rail corridors and enhancing operational efficiency.

Port Connectivity Corridors (Rail Sagar)

- **Projects:** 2
- **Track Length:** 366 kilometers
- **Completion Cost:** ₹20,282 crore
- **Focus:** Expanding rail connectivity in coastal regions.

Commissioning of projects in 2024

Plan Head	Commissioning (Km)
New Line	1158
Gauge Conversion	259
Doubling	2016
Total	3433

Electrification Drive in 2024

Indian Railways continued its electrification momentum in 2024 to enhance its eco-friendly operations and efficiency:

- **Achieved Milestone:** A total of 3,210 route kilometres (RKM) were electrified in the calendar year 2024, extending electrification to approximately 97% of the Broad Gauge (BG) network.
- **Decade of Progress:** Since 2014-15, approximately 45,200 RKM of BG lines have been electrified.
- **Accelerated Pace:** The pace of electrification surged from 1.42 km/day (2004-14) to 19.7 km/day during 2023-24.
- **Budgetary Support:** For the fiscal year 2024-25, ₹8,070 crore has been allocated to further advance electrification projects.

Station Redevelopment Initiative

Indian Railways is striving to upgrade its infrastructure under

the **Amrit Bharat Station Scheme:**

- **Scope:**
A total of **1,337 railway stations** have been identified for redevelopment to improve passenger amenities and station facilities.
- **Progress:**
• **Tenders and Implementation:** Redevelopment work has started at 1,198 stations, with the remaining stations in various stages of tendering and planning.
- **Completed Projects:**
Several stations have been redeveloped and are now operational, including:
 - **Rani Kamlapati Station** (West Central Railway)
 - **Gandhinagar Capital Station** (Western Railway)
 - **Sir M. Visvesvaraya Terminal Station** (South Western Railway)
 - **The first phase of Gomti Nagar Station** (North Eastern Railway)
 - **Ayodhya Railway Station** (Northern Railway)
 - **Cuttack Railway Station** (East Coast Railway)

Telecom Developments in Indian Railways During 2024

1. Elephant Intrusion Detection System (EIDS)

- **Purpose:** Commissioned at critical locations in the Northeast Frontier Railway (NFR) to prevent accidents involving elephants.
- **Sanctioned Works:** The project covers multiple railway zones, including NFR, ECoR, SR, NR, SER, NER, and WR, with a total cost of ₹208.02 crore.
- **Progress:**
 - **Awarded Works:** 582.25 Route Kilometers (RKms)
 - NFR: 141 RKms
 - ECoR: 349.4 RKms
 - SR: 55.85 RKms
 - NER: 36 RKms
 - **Commissioned:** 141 RKms so far.



2. Application for Coach Guidance System (CGS) and Train Indicator Boards (TIB)

- Integrated with the National Train Enquiry System (NTES) as per RDSO specifications (Revision-4).

- Developed by CRIS for monitoring the integration of IPIS with NTES using API-based interfaces.

3. Centralised Public Address System

- This system has been implemented in the Bhopal Division (WCR) and Deen Dayal Upadhyaya (DDU) Division (ECR).

4. Digital VHF Walkie-Talkies

- The Railway Board has mandated the procurement of Digital 5W Walkie-Talkie sets for better communication between locomotive pilots and guards.

5. Optical Fiber Cable (OFC) and Quad Cable Installation

• FY 2023-24 Progress:

- OFC: 1,411 RKms installed, bringing the cumulative total to approximately 66,588 RKms.

- Quad Cable: 801 RKms installed, with a cumulative total of approximately 66,271 RKms.

7. Wi-Fi Facility at Stations

- Wi-Fi is now available at 6,112 stations across the Indian Railways network.

8. CCTV Cameras at Stations

- Indian Railways has sanctioned the installation of CCTV cameras at all stations (except halt stations).

- Current Status: Installed at 1,051 stations to date.

• Indian Railways' Increasing Steps Towards Net-Zero by 2030

• Renewable Energy Commissioned (as of November 2024):

- **Solar Power:** Approximately 487 MW of solar plants this includes rooftop and ground-mounted systems.

- **Wind Power:** Around 103 MW of wind power plants.

- **Renewable Energy - Round the Clock (RE-RTC):** 100 MW of RE-RTC has begun supplying energy.

- **Total Renewable Capacity Tied Up:** About 2,014 MW of renewable energy capacity has been secured

Indian Railways Expands Modern Train Services in 2024

- **Vande Bharat:** As of December 26, 2024, Indian Railways is operating a total of 136 Vande Bharat train services across its network. In 2024, 62 new Vande Bharat services were introduced.

- **Namo Bharat Rapid Rail:** The first Nammo Bharat Rapid Rail service between Ahmedabad and Bhuj was launched on September 17, 2024.

- **Amrit Bharat Train Services:** Amrit Bharat services, which consist of fully non-AC trains with 12 Sleeper Class coaches and 8 General Class coaches, are providing quality services to passengers. In 2024, two Amrit Bharat Express services—Darbhanga–Anand Vihar (T) Express and Malda Town–SMVT Bengaluru Express—were introduced, with plans for more services in the future.

Train Augmentation and Modernization Initiatives in

2024

• **Expansion of Coach Composition:** In line with existing policies, Mail/Express trains now feature 12 General and Sleeper Class non-AC coaches, along with 8 AC coaches, totalling 22 coaches for passenger convenience.

• **General Class Coach Addition:** Over 950 General Class coaches were added to Mail/Express trains operating with LHB coaches in 2024 to cater to unreserved passengers.

• **Permanent Coach Augmentation:** More than 875 coaches have been permanently deployed for the augmentation of train services.

• **Transition to Modern LHB Coaches:** Since April 2018, Indian Railways has transitioned to LHB coaches for all new train production. Additionally, over 75 pairs of trains have been converted to LHB coaches by November 2024.

Implementation of the Kavach System Across Railways

The Kavach system, an indigenously developed Automatic Train Protection (ATP) system, is designed to enhance train safety on Indian Railways. It requires stringent safety certification (SIL-4), which reflects its high technological standards.

Progress Update:

• A project to equip **10,000 locomotives** with Kavach has been finalized.

• **69 loco sheds** are being prepared to support the Kavach installation.

• Bids have been invited for trackside works, covering approximately **15,000 RKM** across all major railway zones, including GQ, GD, HDN, and identified sections.

• **Three OEMs** have been approved for the supply of Kavach systems, with trials and approvals for additional OEMs underway.

• Over **9,000 technicians, operators, and engineers** have been trained in Kavach technology through courses developed in collaboration with IRISSET.

S.N.	Items	Progress
1	Laying of Optical Fibre Cable	5,133 Km
2	Installation of Telecom Towers	540 Nos.
3	Provision of Kavach at Stations	523 Nos.
4	Provision of Kavach in Loco	707 Locos
5	Installation of Track Side Equipment	3,434 Rkm

Investments and Contracts

• **Major Contract:** A ₹2,041.04 crore contract was awarded to Kernex Micro Systems for 2,500 on-board Kavach systems.

• **Funds Utilised:** Railways has spent ₹1,547 crore on Kavach-related works so far, with ₹1,112.57 crore allocated for the 2024-25 financial year.

2024 Milestones in Freight Services of Indian Railways

• **Record Freight Loading on Indian Railways:** From January 2024 to November 2024, Indian Railways achieved **1473.05 million tonnes (MT)** in revenue-earning freight loading, reflecting a 3.86% increase compared to the same period in the previous year.

Corridors	No. of Train Runs		Gross Ton Kilometer (GTKM) (Millions)		Average Speed
	Oct-24	Cumulative Runs (2024-25)	Oct-24	Cumulative Runs (2024-25)	
EDFC	5,915	41,054	11,088	73,022	44.6
WDFC	5,109	31,563	5,643	33,255	51.3
Total	11,024	72,617	16,731	106,277	

Digital Initiatives Enhancing Passenger Convenience on Indian Railways

• **E-ticketing Growth:** E-ticketing has reached 86% in the reserved sector, while in the unreserved sector, it has increased from 28% at the start of the financial year to approximately 33% by October 2024.

• **Streamlined Refund Process:** Indian Railways has streamlined the refund process to ensure refunds are processed within 24 hours in 98% of eligible cases.

• **QR Code Payments:** Dynamic QR code-based payments have been introduced at all counters on Indian Railways. This payment method is being expanded to include parcel offices, to cover all parcel offices by the end of the current financial year.

Health and Cleanliness Initiatives on Indian Railways

• **Eat Right Certification:** Under the "Eat Right India" initiative by the Food Safety and Standards Authority of India (FSSAI), 182 stations have received the Eat Right certification, ensuring food safety and quality for passengers.

• **Namaste Health App:** Launched on 16th December 2024, the Namaste Health App provides emergency healthcare services to Western Railway suburban commuters in critical situations.

• Special Campaign 4.0:

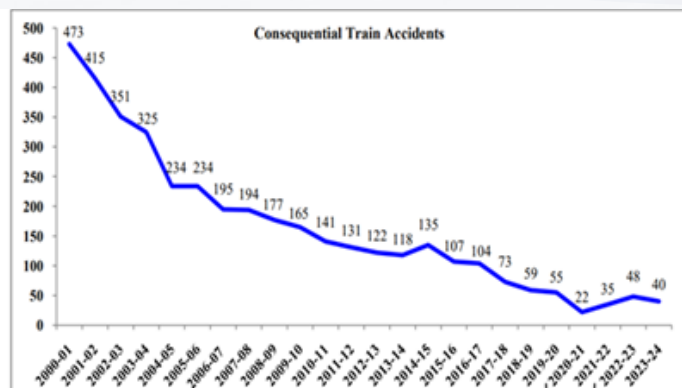
• Indian Railways conducted a total of 56,168 cleanliness drives, to improve workplace hygiene and maintain cleanliness at railway stations.

• The campaign resulted in freeing up 12.15 lakh square feet of space and generating Rs. 452.40 crores in revenue.

Reduction in Train Accidents on Indian Railways

• The number of consequential train accidents on Indian Railways has decreased over the years. During the period 2004-2014, there were 1,711 accidents (averaging 171 per year), which reduced to 678 accidents during 2014-2024 (averaging 68 per year)

Project Engineering and Management: A Step Towards



Efficiency

In 2024 Indian Railways has introduced several key measures to streamline project execution and engineering management, ensuring faster completion and better oversight:

1. Resolution of Contractual Disputes

• All pending cases within the Engineering Department across zonal railways have been resolved under the “Vivad Se Vishwas II (Contractual Disputes)” scheme, paving the way for smoother operations.

2. Enhanced EPC Framework

• To mitigate uncertainties in the Engineering Procurement and Construction (EPC) tendering process, a new “Schedule G-1” has been incorporated, providing separate Bills of Quantities (BoQ) for itemized works.

3. Dispute Redressal Mechanism

• A master policy has been issued for the appointment of Conciliators, Dispute Adjudication Board (DAB) members, Standing Arbitration Tribunal (SAT) members, and Arbitrators, with a clear framework for determining their fees.

4. Improved Contract Oversight

• Comprehensive procedure orders have been introduced for Project Management Services (PMS) and Project Supervision Services Agency (PSSA) contracts, covering areas like measurement protocols, material testing, and payment processes.

5. Delegation of Powers

• Powers of Acceptance for works tenders have been

enhanced, granting Chief Administrative Officers (Construction) full authority over all work contracts, including EPC tenders. Additional powers have been delegated under Modal SOP-2018 to field units for expedited project implementation.

6. Flexible Tendering Options

• Electronic Reverse Auction (e-RA) for works tenders has been made optional, offering greater flexibility in procurement.

7. Digital Advancements

• Four new web-based modules have been developed under the CRS Sanction Monitoring System to manage:

- ▶ Opening of additional or deviation railway lines (New Lines, Gauge Conversion, Doubling).
- ▶ Rebuilding and modification of major bridges.
- ▶ Minor works such as upgrading level crossings and yard remodelling.
- ▶ Manning and interlocking of level crossings.

8. Updated Norms for Track Maintenance

• The Modified Manpower and Cost Norms for Track Maintainers (MCNTM-2024) have been issued to standardise track maintenance protocols.

• A new budget category, “PU-49,” has been introduced for outsourcing manpower and activities related to track maintenance.

Progress of Bullet Train Project in 2024

Area	Progress Details
Viaduct Construction	Over 243 km completed
Pier and Foundation Work	352 km of pier work and 362 km of pier foundation completed.
Bridge Construction	13 rivers crossed; 5 steel bridges and 2 PSC bridges were constructed.
Track Construction (Gujarat)	RC Track Bed construction in Anand, Vadodara, Surat, and Navsari districts; 71 track km completed.
Track Welding	Welding of rails commenced on the viaduct in Gujarat
Mumbai Bullet Train Station (Maharashtra)	First concrete base-slab cast at 32 meters depth (equivalent to a 10-storey building)
BKC-Shilphata Tunnel (Maharashtra)	21 km tunnel construction underway; Intermediate Tunnel (ADIT) of 394 meters completed
Mountain Tunnels (Maharashtra)	Seven tunnels are under construction using New Austrian Tunnelling Method (NATM) in Palghar district
Mountain Tunnel (Gujarat)	One mountain tunnel completed

Indian Railway Beyond 2024: Future Prospects

India's railway sector is set for significant growth, driven by several key initiatives that focus on improving connectivity, sustainability, and operational efficiency.

1. Hydrogen-Powered Trains: Indian Railways plans to introduce hydrogen-powered trains on environmentally sensitive routes, with 35 trains set to operate across 8 heritage routes.

2. Super App for Railways: Indian Railways is preparing to launch a comprehensive 'super app' to integrate various railway-related services. The app will streamline ticket booking, cancellations, live train tracking, and onboard services like food ordering, improving overall convenience for passengers.

3. High-Speed Rail Initiatives: Feasibility studies are underway for high-speed rail corridors along key routes, including the Golden Quadrilateral routes: Delhi-Kolkata,



Delhi-Mumbai, and Mumbai-Chennai.

Increasing Metro Rail Footprints in India:

Annual Growth 2024

The Metro Rail sector in India has witnessed unprecedented growth during 2024. Till May 2014, about 248 km of metro rail lines were operational in the country. In the fiscal year 2024-25, the Indian Government allocated Rs 24,931.98 for MRTS projects. In 10 years this figure has increased by 943.61 km. Further, about 1080 km of metro rail projects are under construction in various cities across India namely, Delhi, Bangalore, Kolkata, Chennai, Kochi, Mumbai, Nagpur, Ahmedabad, Pune, Kanpur, Agra, Bhopal, Indore, Patna, Surat and Meerut.

Major Accomplishments In Metro Systems Across India

Ahmedabad Metro:

- **Inauguration of Phase II:** On September 16, 2024, Prime Minister Narendra Modi inaugurated a 20.8 km section of the 28.25 km Ahmedabad Metro Phase II project. This new line connects Motera to Sector-1 and includes a spur line to GIFT City.

Bengaluru Metro:

- **Completion of Tunnelling Work:** BMRCL achieved 100% Tunneling for the entire Bangalore Metro Phase 2 On October 28, 2024.

- **Central's Nod for Phase 3:** On 16 August 2024, the Central Government gave clearance for 44.65 km Bangalore Metro Phase 3 at Rs 15,611 crore.

- **State Approval for Phase 3A:** On 6 December GOK approved Bangalore Metro's 35 km long Red Line (Phase 3A)



at Rs 28,405.

Delhi Metro:

- **Record Ridership:** DMRC achieved its highest single-day ridership of 78.67 lakh journeys on November 18.

Phase-IV Developments:

- On 4 March 2024, central approved two new corridors:

- ▶ Inderlok-Indraprastha (12.377 km) and

- ▶ Lajpat Nagar-Saket G Block (8.385 km).

- Completion of an 865-meter underground tunnel on August 21.

- The first twin tunnel breakthrough was on September 18.

- Completion of the longest underground tunnel of 2.65 km on December 4.

- On September 23, 2024, Alstom delivered the first train set for Phase IV.

- **Technological Innovations:** Introduction of AI-powered crowd management and a QR-based ticketing system.

Kolkata Metro:

- **Opening of India's First Underwater Metro Stretch:** On 6 March 2024 PM Narendra Modi Launched the Esplanade-Howrah Maidan section of the East-West Corridor (Green Line) This section runs below the Hooghly River through the country's first underwater transportation tunnel.

- **40 Years of Journey:** On 24 October 2024 Metro Railway, Kolkata Celebrated 40 years of operations.

Meerut Metro

- **First Trainset Arrival:** On 27th February, the first trainset for Meerut Metro arrived at NCRTC's Duhai Depot. A total of seven trainsets have now arrived at the depot in Delhi.

- **Current Status:** Train testing and trials are currently underway as preparations for Meerut Metro operations continue.

Mumbai Metro

- **Operations on Aqua Line:** On 7 October 2024, Mumbai's fully underground metro Line 3 (Aqua Line) became operational from Aarey to BKC.

Nagpur Metro



- On 20 December 2024, Indora Square Station on the Orange Line became operational marking the completion of Phase 1 of the Nagpur Metro project.

Current status of Metro Project in Across India

Metro System	Operational Network	Under Construction New Routes
Agra Metro	5.2 km	6.70 km
Ahmedabad Metro	60.06 km	7.45 km
Bangalore Metro	75.20 km	94.81 km
Bhubaneswar metro	0 km	0 km
Bhopal Metro	0 km	6.22 km
Chennai Metro	54.1 km	116.1 km
Delhi Metro	351.28 km	65.1 km
Gurgaon Rapid Metro	12.1 km	0 km
Hyderabad Metro	67 km	0 km
Indore Metro	0 km	16.23 km
Jaipur Metro	11.98 km	0 km
Kanpur Metro	8.73 km	19.36 km
Kochi Metro	27.96 km	11.2 km
Kolkata Metro	58.68 km	41.94 km
Lucknow Metro	22.90 km	0 km
Meerut Metro	0 km	20 km
Mumbai Metro	59.19 km	143.65 km
Nagpur Metro	38.22 km	0 km
Navi Mumbai Metro	11.10 km	0 km
Noida Metro	29.70 km	0 km
Patna Metro	0 km	22.1 km
Pune Metro	31.25 km	27.85 km
Surat Metro	0 km	41.93 km

Celebrating the Progress and Achievements of

India's First RRTS Corridor

Namo Bharat Service Expansion in 2024

In 2024, the Delhi-Meerut RRTS Corridor witnessed substantial growth in its expansion:

- **Operational Progress:**

- A total of **25 km** of the corridor became operational this year, extending the operational RRTS network to 42 km.

- An additional **13 km** stretch in the Delhi section is ready to become operational, further increasing the corridor to 55 km, with 11 stations.



• Key Sections Opened in 2024:

- 6th March 2024: A 17 km section from Duhai to Modi Nagar North was opened for commercial use.
- 18th August 2024: The corridor was extended by 8 km to Meerut South station.

50 Lakh Commuters on Namo Bharat

- The Namo Bharat services have gained popularity for their speed, reliability, and comfort. To date, over 50 lakh commuters have travelled on Namo Bharat trains,

Construction Progress

The construction of the remaining sections of the Delhi-Meerut RRTS Corridor is advancing steadily:

- **New Ashok Nagar to Sarai Kale Khan (5 km):** Civil work is nearing completion.
- **Meerut South to Modipuram (23 km):** Civil work is also in its final stages.
- **Current Activities:** Track laying and Overhead Equipment (OHE) installation are underway on both stretches.

NCRTC's Initiatives Toward Improving Passenger Convenience

1. Namo Bharat NCMC Card

To streamline the digital ticketing experience, NCRTC has partnered with Airtel Payments Bank to introduce the Namo Bharat NCMC Card. This card offers the following:

► **Smooth Travel:** This card is valid across all transport modes across India.

► **Versatile Use:** This card functions as a travel card, debit card, and prepaid card for payments, including shopping and other services.

2. NCRTC Signed MoUs with DMRC and IRCTC

NCRTC has signed agreements to improve ticketing convenience for Namo Bharat passengers:

- Integrated QR-Ticketing with DMRC:

► This allows simultaneous bookings for Namo Bharat and Delhi Metro through their respective apps.

- Ticket Booking with IRCTC:

► This enables passengers to add Namo Bharat tickets while purchasing Indian Railways tickets on the IRCTC platform.

3. 10% Discount on Journeys via Namo Bharat App

The **Namo Bharat App** (formerly RRTS Connect App) is attracting Namo Bharat commuters with its salient features.

- New Features:
- Live train tracking.
- Real-time parking availability.
- Last-mile connectivity options.
- Station facilities and navigation.
- Lost-and-found service.

NCRTC's Momentum Toward Sustainability Goals

Solar Power Installation:

- NCRTC is installing solar plants across RRTS stations, depots, and buildings.
- So far NCRTC has achieved 4 MW of the targeted 11 MW renewable energy production.

Partnership with PTC:

- NCRTC has also partnered with Power Trading Corporation (PTC) India to secure low-cost energy for the Namo Bharat Corridor.



Net Zero Stations: A Landmark Achievement

NCRTC's efforts toward sustainability earned recognition at the **Green Building Congress 2024**, organized by the Indian Green Building Council (IGBC) in Bangalore:

• Historic Recognition:

- Sahibabad and Guldhar stations became the first in India to receive the **IGBC Net-Zero Energy** (Operations) rating.

- Both stations are also IGBC Platinum-rated.

• Solar Capacity and Environmental Impact:

- Each station has a solar capacity of 729 kW



• Financial Savings:

- Annual savings of **₹33 lakhs per station**.
- Over a 25-year lifespan, the savings are estimated at **₹8.3 crore per station**

Conclusion

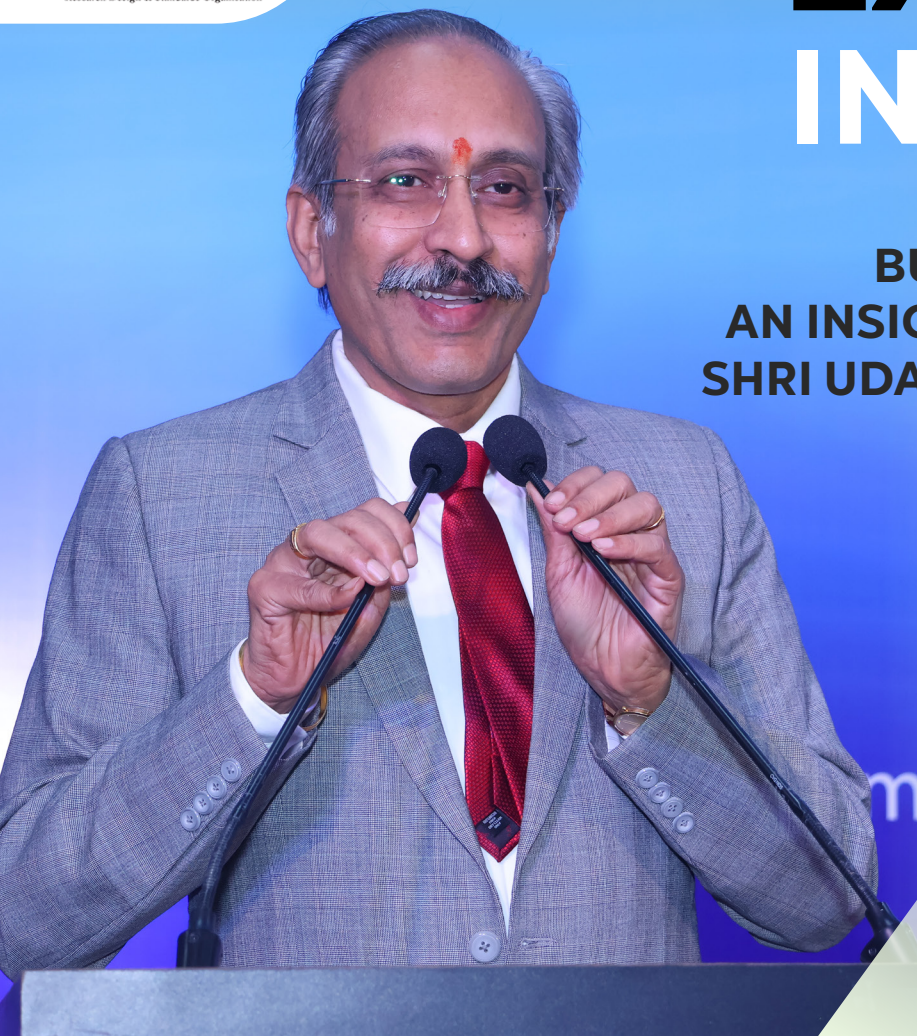
The year 2024 has been instrumental for India's rail transportation sector, with substantial growth in all verticals, including Metro, Railway, RRTS, and High-Speed Rail, in terms of infrastructure expansion and technological integration. The length of operational metro systems in India increased to 943.61 km. With the introduction of Amrit Bharat Trains, Namo Bharat Rapid Rail, and the new Vande Bharat Trains, Indian Railways reaffirmed its commitment to cater to all the diverse socio-economic demographics of India efficiently. Similarly, the Amrit Bharat Station Redevelopment scheme is strengthening and modernizing railway infrastructure. India's first bullet train project has also kept pace with this growth, moving steadily toward its first operations, expected to start in August 2026. Meanwhile, NCRTC has shown its dedication to making the Delhi-Meerut RRTS a reality. The project is on track to meet its deadline for operationalisation by June 2025 while fulfilling all sustainability goals. All current trends indicate that the heightened growth of the rail transportation sector will continue to rise in 2025, generating opportunities for stakeholders. These developments are set to push India closer to its vision of becoming a developed nation by 2047.



RDSO
Research Design & Standards Organisation

EXCLUSIVE INTERVIEW

**BUILDING SAFER RAILWAYS:
AN INSIGHTFUL DISCUSSION WITH
SHRI UDAY BORWANKER, DG, RDSO**



September 2024

Metro Rail News conducted an email interview with Shri Uday Borwanker, Director General of the Research Designs and Standards Organization (RDSO). The interview focuses on RDSO's role in metro and railway projects across India. Shri Borwanker also elaborated on RDSO's critical contributions to the development and deployment of the indigenous Automatic Train Protection (ATP) system known as Kavach. Shri Borwanker explains measures to ensure passenger safety and comfort, challenges in project implementation and efforts to improve passenger safety and comfort. The interview reflects RDSO's vital role in driving innovation, setting standards, and strengthening continuous improvement in India's rail transport sector. Here are the edited excerpts

Q1.What are RDSO's Primary responsibilities in the development and regulation of metro and railway projects in India?

Ans: The Research Designs and Standards Organization (RDSO) under the Ministry of Railways is the sole agency of Indian Railways for taking up Research & Development for various activities of Indian Railways and functions as the technical advisor to the Railway Board, Zonal Railways and Production Units. RDSO is fully involved in the development, adoption and absorption of new technologies, the development of new and improved designs of equipment and systems and setting standards for adoption on Indian Railways. RDSO is also involved in technical reviews, specification development as per the latest technology and updates and refinements of the specification to help drive continuous improvement in the product or service, statutory clearances and testing (including Metro Systems), apart from giving technical guidance to Zonal Railways. Vendor development with approval and inspection of safety and critical items are the other important mandates of RDSO. It plays a significant role in the development, regulation, and standardization of metro and railway projects across the country.

In the Metro Act 2009 "Central Government" has been defined as the "Ministry of Govt. of India dealing with Railways" which has been entrusted for the "Technical Planning and the Safety of Train Running in the Metro Railways". RDSO being the "Technical Advisor to the Ministry of Railways" has been assigned the responsibility to assist the "Ministry of Railways" to accord "In Principle approvals of broad technology as chosen and proposed by Metro Rail Administration.

Q2. RDSO recently conducted Oscillation and emergency braking distance trials for the Indore Metro Project. Could you summarise the findings from these trials?

Ans: RDSO recently conducted Oscillation and emergency braking distance trials for the Indore Metro Project from 09.11.2024 to 17.11.2024.

Trials have been completed and Rolling stock exhibited satisfactory performance in terms of riding behaviour and emergency braking at design speed.

Q3. How does RDSO ensure safety standards are met during the testing phases of metro rail systems?

Ans: As told earlier RDSO scrutinizes various technical documents like - Schedule of Dimension (SOD), Design Basis Report (DBR), Track Structure, and Technology for Signalling and Traction. Before conducting Oscillation Trial, Metro Rail has to certify that it has completed all necessary works and achieved the relevant standards/ technologies as approved by "Ministry of Railways".

Q4. How does RDSO collaborate with Metro rail Corporations and private organisations to improve railway infrastructure?

Ans: RDSO works in close collaboration with various Metro rail Corporations for safety certification. For this online portal has been developed, where Metro Rail can upload their proposals. Various sections/departments of RDSO examine and give their comments/ recommendations swiftly, using this online portal. The certification process is transparent and can be observed by the Metro authority as well as the rail authority. Further, RDSO consults with Metro organisations and private organisations for improvement in existing technologies/standards/specifications and to infuse new technology to improve railway Infrastructure.



Q5.What is RDSO 's role in upcoming projects, including Metro, RRTS and High-Speed Rail System?

Ans: RDSO, being a technical arm of Indian Railway, scrutinises the technical documents and accords in-principle approval to upcoming projects as specified in „Procedure for safety Certification and Technical Clearance of Metro System.

RDSO assists in the designing of various components of RRTS, and HSR systems. This includes specifying technical parameters for trains, stations, tracks, signalling, and stations that align with global best practices while accounting for Indian conditions. The organization is responsible for setting the technical standards, ensuring the safety and efficiency of operations, testing and certifying designs, collaborating with international and domestic partners, and guiding the infrastructure and technology development to meet India's evolving transportation needs.

Q6.What measures does RDSO take to ensure passenger comfort and safety in train operations?

Ans: The Research Designs and Standards Organization (RDSO) play a pivotal role in ensuring the comfort and safety of passengers in Indian train operations. Here are some of the key measures RDSO takes to ensure passenger comfort and safety:

- **Passenger Coaches Design and Improvement:** RDSO is involved in the design of passenger coaches to ensure comfort. This includes ensuring the appropriate interior layouts, seating arrangements, air-conditioning systems, and the use of modern materials that contribute to passenger comfort.
- **Safety Features in Coaches:** RDSO incorporates features like fire-resistant materials, emergency windows, and escape routes in the design of coaches. The organization also works on improving coach stability and reducing the risk of accidents like derailments or collisions.

- **Train Safety Systems:** RDSO continuously engages in the development of the latest technology for train safety. Train Collision Avoidance System (KAVACH) which helps prevent train collisions by providing signals when two trains are on a collision course. RDSO has developed and deployed various anti-collision technologies such as the Train Protection and Warning System (TPWS) and the Automatic Train Protection (ATP) system to prevent accidents and improve safety. Development of Specification for Indigenous WILD System used to identify the wheels with potential tread defects such as flat spots, out-of-rounds, built-up treads, Shell tread as well as defects in suspension, Development of Specification Wheel Profile Measurement System (WPMS), prepared to upgrade safety standards and precise measurement of wheel parameters at maintenance depot by studying available systems and incorporating state of art features. RDSO promotes the use of advanced braking systems (e.g., air brakes, disc brakes) to reduce stopping distances and ensure efficient braking during emergencies, contributing to passenger safety.
- **Infrastructure Safety and Maintenance Standards:** RDSO ensures the quality of tracks by developing standards for track maintenance, which helps prevent accidents caused by track failure. Development of R350HT Rail to permit 100kmph speed for 25t axle load- R350HT rails developed by IR 25/22.9 ton axle load @ 100kmph: Fit for Tangent and curve both.
- **Inspection and Testing:** RDSO regularly inspects and tests critical infrastructure, including overhead electrification, signal systems, and track integrity, ensuring that these meet safety standards.
- For comfort in Passenger Amenities RDSO has worked on developing and improving toilet systems in coaches, such as bio-toilets, Waterless Urinal for Electric Locomotives to ensure a clean and comfortable environment for passengers.
- **Wi-Fi and Entertainment:** In recent years, RDSO has facilitated the installation of Wi-Fi and entertainment systems in premium trains, enhancing passenger experience during their journey.
- **Improved Lighting and Ventilation:** RDSO oversees the design of energy-efficient, comfortable lighting systems, and ventilation to improve the travel experience inside the coaches.
- **Train Operation and Speed Safety:** RDSO oversees the implementation of speed monitoring systems and guidelines to ensure that trains run within safe limits, reducing the risk of accidents due to overspeeding.

- **Train Signal and Communication Systems:** RDSO also develops and refines signalling systems that enable better coordination and communication between train operators and control centres, reducing operational risks.

Q7. How is RDSO involved in the certification process for railway tracks?

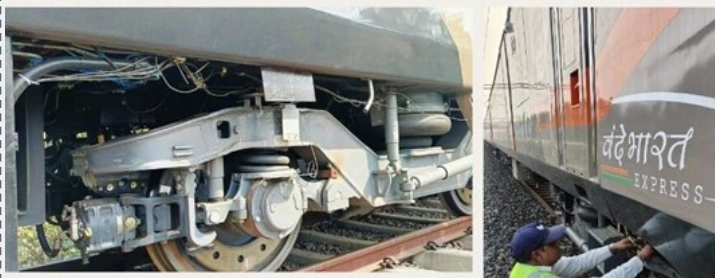
Ans: RDSO is involved for Procedure for speed clearance of rolling stocks from „Track“ point of view. For clearance of rolling stocks on IR, various field trials are required and are carried out by Testing Directorate such as:

- Detailed Oscillation Trials and COCR.
- Emergency Braking Distance & Coupler Force measurement.
- Rating & Performance and Signal Interference trials

Scrutiny of Detailed oscillation trials and COCR report carried out w.r.t “Third Report of the Standing Criteria Committee” by “Track” and other concerned directorates. Emergency Braking Distance & Coupler Force measurement and Rating & Performance and Signal interference trials are scrutinized by concerned directorates of RDSO.

Final Speed Certificate for operation is processed by respective rolling stock directorates as per provisions of “Policy Circular No. 6, 2023”, based on trial results and rolling stock being found satisfactory. Speed certificate is examined by “Track directorate” considering the Minimum Track structure, Provisions of IRPWM regarding Track geometry standards, speed on curves, fish plated and welded rail joints and Provisions of USFD Manual.

Condonation of infringements to IRSOD (BG) revised 2022, if any, is processed by the Rolling Stock directorate through ED (Track) for approval of the Railway Board.



Q8. What are some of the challenges RDSO faces in implementing metro and railway projects?

Ans: The Railway Design and Standards Organisation (RDSO) develop specifications/standards for railway and metro projects. However, the implementation of these projects often presents several challenges for RDSO. Some of these challenges include:

- **The complexity of Design and Technology:** Railway and metro projects, especially those involving metro rail, require the integration of advanced technologies like signalling systems, automated train control, and high-speed trains. Developing and implementing these technologies according to Indian conditions and standards can be complex.
- There are international standards for metro and railway systems, but the unique geographical, environmental, and socio-economic conditions in India often necessitate customized solutions. This requires extensive research and testing. An example of such a harsh environment is the Chenab Bridge construction
- **Regulatory and Safety Standards:** Ensuring the safety of passengers is paramount, and RDSO must ensure that all systems, whether new or adapted, comply with stringent safety norms. Balancing the introduction of modern systems with safety concerns often leads to delays.
- **Regulatory hurdles:** Different states and regions may have their own regulatory frameworks, which could conflict with central standards set by RDSO, making uniform implementation is difficult.
- **Collaboration with various agencies:** RDSO must collaborate with multiple stakeholders, including state governments, contractors, suppliers, and consultants. Misalignment in priorities, delays in decision-making, and lack of proper coordination can hinder project progress.
- **Land acquisition:** Coordinating the acquisition of land for projects, especially metro rail, is often a significant challenge. Delays in land acquisition can lead to project delays, as RDSO is often required to adapt designs based on available space.
- **Urban infrastructure:** In metro projects, particularly those in densely populated cities, the existing infrastructure and underground utilities often create design challenges. Modifying or diverting existing infrastructure to accommodate rail systems without disrupting daily life is a complex task.
- **Environmental concerns:** Metro and railway projects often require environmental clearances. Balancing the

need for infrastructure development with environmental protection, including wildlife conservation and air quality, is a constant challenge.

- **Cost overruns:** Railway and metro projects tend to be capital-intensive, and delays in implementation often lead to increased costs. RDSO must work within budgetary constraints while ensuring that the quality of the design and implementation does not suffer.
- **Unforeseen risks:** Natural disasters, economic downturns, and other unforeseen risks can disrupt timelines and project implementation. RDSO needs to incorporate risk management practices to handle such contingencies.

Q9. How does RDSO incorporate feedback from the public and stakeholders into its planning and operations?

Ans: The Research Designs and Standards Organization (RDSO) is a vital body within Indian Railways, primarily responsible for formulating standards for the design and manufacturing of railway components, rolling stock, and systems. RDSO incorporates feedback from the public and stakeholders into its planning and operations through several methods such as:

- **Public Consultations and Stakeholder Engagement:** RDSO regularly organizes meetings, workshops, and seminars with various stakeholders, including railway operators, manufacturers, and other concerned bodies. These forums allow for direct feedback on ongoing projects and future plans.
- **Stakeholder Involvement in Standards Development:** When new standards or specifications are being developed, RDSO actively seeks input from various stakeholders, such as industry experts, equipment suppliers, and railway staff. This ensures the standards are aligned with real-world requirements and technological advancements.
- **Collaboration with Industry Experts:** RDSO works closely with both domestic and international experts to stay updated with the latest trends in railway technology. This collaboration helps RDSO incorporate cutting-edge solutions that are based on global best practices while considering the needs of the Indian context.
- RDSO has an advisory group from different IITs, CSIR and Research Institute to collect feedback and consultation.
- **Collaboration with Indian Railways Zones and Divisions:** RDSO receives practical feedback from different railway zones and divisions regarding the performance of equipment, systems, and new technologies. These insights are crucial for refining designs, operational protocols, and

- ensuring the functionality of innovations. Feedback from training sessions and safety audits across the railway network is incorporated into RDSO's recommendations and operational guidelines.
- Online Platforms and Social Media: RDSO maintains an online presence, allowing stakeholders, including the general public, to submit feedback and suggestions. These online platforms serve as accessible and convenient avenues for feedback submission. RDSO also uses social media channels to engage with the public, addressing their concerns and responding to queries. This helps in building a transparent and responsive relationship with the stakeholders.
- RDSO continuously reviews its operational standards, procedures, and technologies. This review is often influenced by the feedback received from public interactions, technological advancements, safety improvements, and stakeholder consultations. The process ensures that RDSO remains responsive to evolving needs.

Q10. How is RDSO preparing to support future advancements in the rail transportation sector?

Ans: The Research Designs and Standards Organisation (RDSO) play a critical role in shaping the future of rail transportation in India, ensuring that the industry stays innovative, safe, and efficient. To support future advancements in the railway sector, RDSO is focusing on several key areas:

- In Technological Innovations RDSO is involved in the Electrification and Automation of railway track for improving operational efficiency and safety and Smart Stations by modernization, including smart platforms, automated ticketing systems, and integrated passenger information systems, which will enhance the travel experience.
- In High-Speed Rail Systems RDSO is actively engaged in the development of high-speed rail technology in India. It is working with international experts to introduce high-speed trains, with ongoing projects such as the Mumbai-Ahmedabad corridor. This includes researching new train designs, materials, and safety features specific to high-speed travel.
- In Environmentally Sustainable Practices by focusing on energy-efficient systems to reduce the carbon footprint of the rail sector, including the development of regenerative braking systems and eco-friendly train designs. In this Hydrogen Fuel cell is a milestone for Indian Railways. By using Green Technologies Indian Railway making Initiatives for sustainable infrastructure, such as solar-powered stations and energy-efficient trains are being explored.

- In Safety Enhancements RDSO has developed Train Collision Avoidance Systems (TCAS) also named as KAVACH systems to prevent train collisions and SigDATE (Signalling Design Automation Tool for EI). This includes the development and implementation of advanced signalling systems and safety measures to prevent accidents. For Continuous monitoring of tracks using drones, sensors, and AI is being developed to detect faults early, improving safety and reducing maintenance costs.
- Digitalization and Data Analytics of big size data by using Internet of Things (IoT) technology and big data, RDSO is developing solutions for real-time tracking of trains, predictive maintenance, and improving the operational efficiency of the entire network. By using AI and Machine Learning solutions for train scheduling, maintenance prediction, and performance analytics are being integrated to enhance decision-making and optimize operations.
- RDSO is working on modernizing the design and manufacturing standards for rolling stock such as Vande Bharat, Vande Bharat Sleeper, Vande Metro, Vista Dome, 9000 HP (EF9K), WAG12-B Locomotive & Amrit Bharat 2.0. RDSO includes the introduction of more comfortable, faster, and safer train designs for both passengers and freight services. New technologies like lightweight materials and advanced braking systems are being explored to enhance train performance.
- RDSO is also Collaborating with International Agencies for knowledge sharing, particularly on projects like bullet trains and advanced signalling systems. This global perspective helps integrate the latest technologies into the Indian railway.



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Bengaluru Suburban Rail:

A Strategic Solution to Overcome Traffic Woes and Enhance Mobility

Recognised as the "Silicon Valley of India," Bengaluru is home to large multinational technology companies and serves as a major semiconductor-centric aerospace and defence organisation. Additionally, Bengaluru houses several top-tier engineering and research institutions, along with state-owned the most prominent cities in India for high-technology-based heavy manufacturing industries.

Due to its economic potential Bengaluru has attracted intellectuals from around the country which resulted in the growth of the urban population. The city stands as India's 3rd most populous city and the fourth most populous urban agglomeration. Serving as the capital of Karnataka Bengaluru has a population exceeding 8 million, with a metropolitan population of around 15 million.



Existing Transport Modes in Bengaluru

Over the years, Bengaluru's infrastructure has evolved to support the city's growth in multifaceted ways and accommodate the growing number of residents in the city. The city is already served by a rapid transit system which is also named **Bengaluru Metro** or (Namma Metro) which stands as India's second-largest metro network with 75.20 km of operational route that carries about **7.5 lakh daily passengers**. Additionally, BMTC manages around 6,381 buses in the city.

Increasing Traffic Congestion: Highlighting Inadequacy of Public Transport

As of March 2024, Bengaluru reported a **vehicular population** exceeding **1.16 crore**, of which **80%** comprised **privately**

owned vehicles. The city has experienced a critical increase in private vehicle registrations over the past year. According to data from the Transport Department, approximately **6.37 lakh new private cars** and two-wheelers were registered **between April 2023 and March 2024**, compared to **4.37 lakh** during the same period the previous year (**April 2022 to March 2023**).

While the registration of new two-wheelers saw a **19% rise** during this period, the number of newly registered private cars increased substantially. In **2022-23**, around **36,000 private cars** were registered, a figure that grew to nearly **1.6 lakh** in the financial year **2023-24**.

This paradigm shift puts a question mark on the existing transport infrastructure and necessitates an efficient system that can bridge the increasing gap between growing urbanisation and the ability of current transportation networks to cater to rising demands for connectivity.

Significance of Commuter Rail Service in Bengaluru

Despite the availability of various modes of transport such as buses and the metro system, the city continues to suffer from congested roads, severe traffic, and overcrowded metro services, particularly during peak hours. The commencement of the 149.348 km Suburban Rail Network will support the existing transport modes to accommodate the growing number of commuters in the city.

This article will navigate through the critical aspects of the Bengaluru Suburban Rail project while examining its potential to accelerate the city's growth.

Bengaluru Suburban Rail Project (BSRP) Overview

The **Bengaluru Suburban Rail Project (BSRP)** is a 149.348 km commuter rail network. The project is currently under construction in Bengaluru, Karnataka. It will include 64 stations across 4 corridors.

Key Features Of The Project As Per DPR's Recommendation

Parameter	Details
Coaches	Broad gauge, Air-conditioned,
Track Gauge	3660 mm (Broad Gauge)
Traction System	25KV AC, 50 Hz single-phase traction system
Signaling System	CBCTC signalling proposed for high-frequency operations
Initial Operations	6-car rake with a headway of 12 to 20 minutes
Service Hours	5:00 AM to midnight
Design Speed	90 km/h
Maintenance and Stabling Facilities	Devanahalli (Corridor-1), Jnanabharathi (Corridor-3)

Project Development

The feasibility report and the final Detailed Project Report (DPR) were prepared by RITES, which concerned the design and alignment of the network.

Approval

India's Central Government approved the project in October 2020 with an estimated cost of ₹15,767 crore. The foundation stone for the project was laid on June 20, 2023, by Prime Minister Narendra Modi. The project is being executed by Rail Infrastructure Development Company (Karnataka) Limited (K-RIDE).

Deadline

The Bengaluru Suburban Rail Project was originally targeted for completion by 2026. However, several factors contributed to the delay in the project which may extend the completion deadline to 2027.

Update: Since Corridor-2 is in the most advanced stage, Section 4 of Corridor-2, which extends from Chikkabanavara to Yeshwantpur at a length of 7.4 km is expected to be the first section to be completed and commissioned by December 2025.

Expected Ridership

As per the Detailed Project Report (DPR), the estimated daily ridership on the study corridors is projected to be 9.84 lakh passenger trips in 2025, 13.41 lakh passenger trips in 2031, and 17.60 lakh passenger trips in 2041.

Depots

The land for establishing the depot is located at, Jnanabharathi & Devanahalli. The State Government proposed to mobilize approximately 61.27 acres of land at Devanahalli and 56.97 acres of land at Jnanabharathi for this purpose.

Land Requirement For The Project

As per the DPR by RITES, the project requires the acquisition of approximately 101.687 acres of private land. Additionally, around 326.9 acres of railway land will be used for its implementation.

Funding Mechanism

The Central Government will contribute up to 20% of the project cost, excluding land, Rehabilitation & Resettlement (R&R), and central and state taxes, as its equity contribution. The State Government will contribute an equal amount, bringing the total equity contribution to 40%.

SUBURBAN RAIL

Particulars	Amount ₹(In Crore)	% Share
Equity by Govt. of India	2479	20.0%
Equity by Govt. of Karnataka	2479	20.0%
Soft Loans from bilateral/ multilateral funding agencies	7438	60.0%
Total Cost	12396	100.00%
Sub-Ordinate Debt for Central GST & Basic Customs Duty by GOI	763	-
Sub-Ordinate Debt for land and R&R by Govt. of Karnataka	1470	-
Sub-Ordinate Debt for State GST by Govt. of Karnataka	785	-
Sub-Ordinate Debt for IDC for JICA ODA Loan @1.4% by Govt. of Karnataka	353	-
Total Cost	15767	-

€500 Million Loan from KfW

On 15 December 2023, **KfW Development Bank (Germany)** and Rail Infrastructure Development Company (Karnataka) Limited (K-RIDE) signed a loan agreement worth €500 million (approximately **₹4,552 crore**) along with a grant of **€4.5 million** (around **₹41 crore**) for the Bengaluru Suburban Rail Project (BSRP).

► The loan will support the development of the following Lines:

- **Corridor-1: KSR Bengaluru- Devanahalli**
- **Corridor-3: Kengeri - Whitefield**

€300 Million Loan from the European Investment Bank (EIB)

• On 14 June 2024, the Ministry of Finance's Department of Economic Affairs signed a Memorandum of Understanding

(MoU) with the European Investment Bank (EIB) for a €300 million loan to support the Bengaluru Suburban Rail Project (BSRP).

• According to K-RIDE, the agreement will enable the initiation of tenders for Corridor-1, Depot-2, and track and traction works.

Update:

• Railway Infrastructure Development Company (Karnataka), K-RIDE has successfully secured foreign funding of about **Rs 7,438 crore** (approximately €800 million) for BSRP. Funding Received (as of May 31, 2024):

- ₹500 crore from the Ministry of Railways.
- ₹665.42 crore from the State Government.

Total Expenditure Incurred:

- ₹1,031.03 crore.

The Corridors in the BSRP

The Bengaluru Suburban Railway Project will cover a total length of 149.348 km through 4 corridors. Each corridor is named after commonly found local flowers in Bengaluru and its surrounding areas. The corridors are:

- **Sampige Corridor:** Named after the Champa flower.
- **Mallige Corridor:** Named after the Chameli flower.
- **Parijata Corridor:** Named after the Prajakta flower.
- **Kanaka Corridor:** Named after the Priyadarsha flower or Kanak Champa flower.

Project Status:

- Under Construction: 54.9 km
- Approved: 94.4 km

Route Type:

- Elevated Routes: 45.392 km
- At-Grade Routes: 103.856 km

Corridor 1: Sampige Line

- **Route:** KSR Bengaluru City – Devanahalli via Yelahanka
- **Length:** 41.478 km
- **Type:** Elevated (19.22 km) & At-Grade (22.278 km)

- **Depot:** Akkupert Depot
- **Number of Stations:** 15 (8 elevated & 7 at-grade)
- **Station Names:** KSR Bengaluru City (interchange), Srirampura, Malleswaram, Yesvantpur (interchange), Muthyal Nagar, Lottogollahalli (interchange), Kodigehalli, Judicial Layout, Yelahanka, Nitte Meenakshi, Bettahalasoor, Doddajala, Airport Trumpet, Airport Terminal, Airport KIADB, Devanahalli

Update: On **June 26 2024**, a revised alignment plan was submitted to **South Western Railway (SBC Division)**, and approval is currently awaited. Line 1 has been divided into two packages: **Package 1A**, which covers the section from **Majestic to Yelahanka (17.63 km)**, and Package 1B, which covers the section from **Yelahanka to Devanahalli (23 km)**.

Corridor 2: Mallige Line

- **Route:** Baiyyappanahalli - Chikkabanavara via Hebbal
- **Length:** 24.866 km
- **Type:** Elevated (7.723 km) & At-Grade (17.143 km)
- **Depot:** Jalahalli Depot
- **Number of Stations:** 14 (6 elevated & 8 at-grade)
- **Station Names:** Chikka Banavara, Myadarahalli, Shettyhalli, Jalahalli, Yesvantpur (interchange), Lottogollahalli (interchange), Hebbal, Kanaka Nagar, Nagawara, Kaveri Nagar, Banaswadi, Seva Nagar, Kasturi Nagar, Baiyapanahalli (interchange)

Mallige Line Progress Update (Current Status)

Physical Progress:	28% completed.
Financial Expenditure	22% achieved.
Utility Shifting:	Signal and

Corridor 3: Parijata Line

Route: Kengeri – Whitefield via Bengaluru Cantonment & K R Puram

Length: 35.52 km

Type: Elevated (10.40 km) & At-Grade (25.12 km)

Number of Stations: 14 (4 elevated & 10 at-grade)

Station Names: Kengeri, RV College, Jnanabharati,

Nayandahalli, Krishnadevaraya, Jagjeevanram Nagar, KSR Bengaluru City (interchange), Kumara Park, Bengaluru Cantt, Bengaluru East, Baiyapannahalli, Krishnarajapura, Hoodi, Whitefield

Corridor 4: Kanaka Line

Route: Heelalige – Rajankunte via Channasandra & Yelahanka

Length: 46.285 km

Type: Elevated (8.96 km) & At-Grade (37.92 km)

Depot: Silkboard Depot

Number of Stations: 19 (4 elevated & 15 at-grade)

Station Names: Rajankunte, Muddana Halli, Yelahanka (interchange), Jakkur, Hegde Nagar, Thanisandra, Hennur, Horamavu, Channasandra, Benniganahalli (interchange), Kagadasapura, Doddanekundi, Marathahalli, Belandur Road, Carmelaram, Ambedkar Nagar, Huskur, Singena Agrahara, Bommasandra, Heelalige

Kanaka Line Progress Update (Current Status)

S&T Utility Shifting:	62% completed
Ongoing Works:	Electrical connections, drainage, and minor bridge construction.
Bridges Completed:	Five minor bridges have been constructed, with 15 more under progress.

Interchange Stations in BSRP

Interchange Stations	Corridors
Bengaluru City	Corridor-1 & Corridor-3
Yesvantapur	Corridor-1 & Corridor-2
Lottogollahalli	Corridor-1 & Corridor-2
Yelahanka	Corridor-1 & Corridor-4
Benniganahalli	Corridor-2 & Corridor-4

Recent Updates On the BSRP:

Land Allocation

On April 2, 2024, South Western Railway (SWR) signed agreements with Railway Infrastructure Development Company Limited (K-RIDE) to allocate land for the Bengaluru Suburban Railway Project.

SWR handed over 115.472 acres of land for Corridor-4 under a long-term lease. For Corridor 2, the allocated land was reduced from 157.07 acres to 85.707 acres.

Route Alignment

The Centre and the Karnataka government are discussing the possibility of excluding Corridor-3 (Whitefield-Kengeri) from the Bengaluru Suburban Railway Project (BSRP).

On 26 November 2024, Minister of State for Railways, V Somanna, stated that the current focus is on implementing Corridors 2 and 4.

Major Contractors Involved in BSRP

Corridor	Work	Amount & Package	Firm
Corridor 2	Design and construction of an elevated viaduct of length 8.027 km from Benniganahalli to Chikkabanavara excluding station buildings	Rs. 849.97 crore	Larsen & Toubro
Corridor 4	The contract includes the construction of an elevated viaduct spanning 8.960 km and an at-grade formation covering 37.920 km along the Heelalige-Rajanukunte section.	Rs. 1040.51 crore	Larsen & Toubro
Corridor 4	The contract involves the construction of 9 stations (1 elevated and 8 at-grade) at Heelalige, Singena Agrahara, Huskur, Ambedkar Nagar, Carmelaram, Bellandur, Marathahalli, Doddanakundi, Kaggadasapura	Rs. 613 crore (Package C4A)	RVNL – Rithwik JV (Lowest Bidder)
Corridor 4	The contract involves the construction of 9 stations (1 elevated and 8 at-grade) at Heelalige, Singena Agrahara, Huskur, Ambedkar Nagar, Carmelaram, Bellandur, Marathahalli, Doddanakundi, Kaggadasapura		



Initially, 306 rail coaches were planned for the BSRP. K-RIDE had invited tenders for the procurement of rolling stocks in two stages: Request For Qualification (RFQ) and Request For Proposal (RFP). In the first stage, RFQ, three bidders were qualified: BHEL, BEML, and CAF/Spain. K-RIDE initiated the second stage, RFP, on December 29, 2023. However, Despite extending the deadline to August 22, 2024, no bids were received during the Request for Proposal (RFP) stage.

Currently, a proposal is under review to procure rolling stock through an equity model, with a 50:50 cost-sharing arrangement between the Government of Karnataka (GoK) and the Ministry of Railways (MoR).

Encroachment Issues

According to N Manjula, Managing Director of K-RIDE, there are 62 encroachments identified along the Baiyyappanahalli - Chikkabanavara Corridor (Mallige Line). The encroachments primarily involve private buildings and other unauthorised structures on the railway land. These encroachments need to be cleared before the construction begins. However, the clearance process is complex and cumbersome as it involves the issuance of notices and proper documentation. This bureaucratic process can delay construction activities substantially.

Utility Shifts

The Major Roadblocks-Slowing The BSRP

No Bidder Participation for Rolling Stock Contract

Corridor-2 is facing challenges in shifting utilities, particularly water and sewer lines that are managed by the

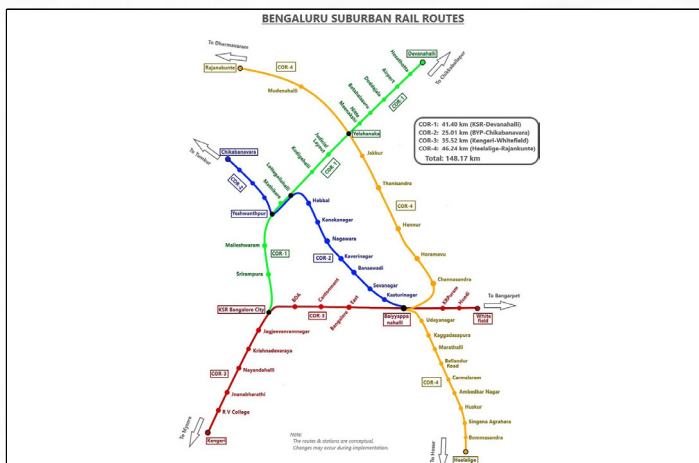
Bengaluru Water Supply and Sewerage Board (BWSSB), as well as the relocation of high-tension overhead power lines. BWSSB needs to relocate 15 water lines and 17 sewer lines from the project site



Benefits Associated with the BSRP

Multi-Modal Integration: The Bengaluru Suburban Railway Project will integrate with a number of transport systems like metro, BMTC buses, railway stations, and bus terminals. The BSRP stations will have car bays, bus bays, and electric vehicle charging facilities.

Hebbal station will integrate with the new multi-modal transport hub connecting metro, bus depots, and suburban rail. Other stations such as Bengaluru City, Yeshwantpur, and Benniganahalli will also have an integration of metro services with railway stations and bus depots.



Traffic Decongestion: Once completed, the Bengaluru Suburban Rail will be capable of carrying up to 10 lakh (one million) passengers on a daily basis. This will reduce the strain on other transport modes.



Cost-Effective Travel: The BSRP is designed to offer affordable ticket prices compared to existing metro services. **Economic Growth:** The approximately 149 km routes of the Bengaluru Suburban Rail Project have been strategically planned to pass through densely populated areas. This will change locations nearer to stations into integrated commercial hubs. This will boost the local economies as people will be employed and trade will increase in the surrounding areas.

Environmental Benefits: By promoting rail travel over road transport, the BSRP is expected to reduce carbon emissions and contribute to a more sustainable urban environment

Conclusion

The Bengaluru Suburban Rail Project (BSRP) is a joint initiative undertaken by the Government of Karnataka and the Ministry of Railways. K-RIDE (Karnataka Rail Infrastructure Development Company Limited), a special purpose vehicle (SPV) is executing the project. The Bengaluru Suburban Rail Project (BSRP) is the first railway initiative in India to be implemented under the National Suburban Rail Policy of 2018. With 4 Corridors the project will cover a total length of about 149 km streamlining connectivity across Bengaluru and its suburbs. The BSRP will alleviate traffic congestion in Bengaluru by reducing the number of road users by approximately 10 lakh. Despite its transformative potential the project faces critical challenges that could impact its timely and effective implementation. From land acquisition and escalating costs to coordination between multiple agencies. Environmental concerns, utility shifting, and delays in approvals further complicate the process. If these issues are tackled effectively, BSRP has the potential to not only ease the city's transport woes but also set a benchmark for suburban rail networks across the country.



Gorakhpur Metrolite: A Cost-Effective Transit System for a Growing City

Gorakhpur, a city in Uttar Pradesh, along the banks of the Rapti River in the Purvanchal Region is famous for its rich culture and heritage. The city is located 272 kms east of the state capital Lucknow. The city lies at an elevation of about 84 meters (276 feet) above sea level. Gorakhpur is famous for its architecture of Gorakhnath Math, a Gorakhnath temple. The city is one of the most flood-vulnerable districts in Eastern Uttar Pradesh.

Gorakhpur city has been witnessing a significant increase in population with the growing time. As of the 2020 report, the area of the city has increased from 145.5 km² in 2011 to 226.6 km² and 31 villages have been incorporated in the municipal corporation limits increasing the population to over 1 million. Due to the increasing population, the city was declared a Metropolis city by the State Government on 22 November 2021.

However, the city witnessed some major challenges due to the population growth, one of them being traffic congestion on the roads of the city. To conquer these challenges the city recognised a need for an efficient and modernised mode of transportation which led to the proposal of Gorakhpur Metrolite, a Light Rapid Transit System (LRT) for the city of Gorakhpur, Uttar Pradesh, India.

Why a Metrolite System for the Gorakhpur City?

The development of the Metrolite project instead of the regular Metro is beneficial for the city in multifaceted ways. The Primary reasons are mentioned below:

- **Low Implementation Cost:** Budget constraints are a crucial issue in small cities such as Gorakhpur. The cost of construction for a metro system is extremely high as compared to a metrolite system. For example, a conventional metro system costs about ₹200-300 crores per kilometre, whereas a metrolite system costs around ₹100-200 crore per kilometre. This reduction in the cost of construction makes a metrolite system less expensive, feasible, and possible for Gorakhpur.
- **Land Acquisition:** Gorakhpur is a densely populated city which creates a major challenge before the project which is land acquisition. Due to this in Gorakhpur, it's a critical task to acquire land for a metro system. To counter these problems, the authorities designed a metrolite system that should be appropriate for the city since a metrolite system often consists of in-grade tracks and relatively small stations, unlike a metro system and, therefore, solving land acquisition issues.
- **Infrastructure Limitation:** The expansion capability of the existing infrastructure in Gorakhpur city is limited. To put up a heavy metro system, more land would be needed and more complex infrastructure too. However, the metrolite system infrastructure is less complex and the rolling stock used is smaller in size as well. Thus, the metrolite system is suitable for Gorakhpur city.



Gorakhpur Metrolite Project

Overview

Gorakhpur Metrolite, a **Light Rail Transit System (LRT)** will consist of 2 corridors and 27 stations. The **Uttar Pradesh Metro Rail Corporation Ltd. (UPMRCL)** is responsible for overseeing the project. The project is estimated to cost **Rs 4,672 crore**.

The government of Uttar Pradesh appointed UPMRCL as the coordinator in 2017 to accommodate all the stakeholders together and start the construction work for Gorakhpur Metro Phase 1.

Development of DPR

MITES was appointed to create the feasibility report and **Detailed Project Report (DPR)** for the Gorakhpur Metrolite Project.

Timeline

- March 2019:** The MITES submitted the feasibility report and Detailed Project Report (DPR) to UPMRCL.
- 9 October 2020:** The State Government’s Cabinet approved the DPR of the Gorakhpur Metrolite Project.
- November 2021:** The Union Government’s Public Investment Board (PIB) approved the DPR of the Project.

Tentative Funding Mechanism

Source of Funding	Contribution %	Amount in crore	Remarks
Central Government (Equity)	16.32%	662	Equal proportion with the state government
State Government (Equity)	16.32%	662	Equal proportion with the central government
Central Government (Subordinate Debt)	3.68%	149	For central taxes
State Government (Subordinate Debt)	3.68%	149	For central taxes
Local Bodies Contribution	N/A	200	Provided by local authorities
Soft Loans from Funding Agencies	N/A	2,233	Includes 50% from the European Investment Bank (EIB



Routes

Operational:	0 km
Under Construction	0 km
Approved	0 km
Proposed	27.41 km

METRO LITE

Line-1 – Shyam Nagar – Sooba Bazar

- **Length:** (16.95 km)
- **Type:** Elevated
- **Depot:** Sooba Bazar
- **Stations:** 16
- **Stations Name:** Shyam Nagar, Bargadwa, Shastri Nagar, Nathmalpur, Gorakhnath Mandir, Hazaripur, Dharamshala, Gorakhpur Railway Station, University, Mohaddipur, Ramgarh Lake, AIIMS, Malviya Nagar, MMM Engineering College, Divya Nagar, Sooba Bazar

Line-2 – Gulriha – Kachehri Chauraha

- **Length:** (10.46 km)
- **Type:** Elevated
- **Depot:** Mugalaha
- **Stations:** 11
- **Stations Name:** Gulariha, BRD Medical College, Mugalaha, Khanjanchi Bazar, Basharatpur, Ashok Nagar, Vishnu Nagar, Asuran Chowk, Dharamshala, Gol Ghar, Kachehri Chauraha

Benefits of Gorakhpur Metrolite

1. Improved Connectivity: A metrolite system in Gorakhpur will connect major city areas including Gorakhnath Math, and Gorakhpur Railway Station. The enhanced connectivity in these areas of the city will facilitate a more efficient and comfortable journey for the commuters reducing the travel time.

2. Reduction in Traffic Congestion: As the population increased, the city experienced an increase in private vehicle ownership correspondingly. A metrolite system will give the city's people a less polluting and faster mode of transportation which will decrease the traffic jams on the roads of the city, especially during peak hours.

3. Economic Growth: With a metrolite system, the infrastructure of a city like Gorakhpur will become modernised and sophisticated, which will attract more business setups in the city. The construction of a metrolite system will also create more job opportunities, which will enhance the local economies and help in the economic growth of the city.

Roadblocks in Gorakhpur Metrolite

1. Ridership Concern: A prime concern always exists in front of the implementation of every project regarding its ridership level. For Instance, every metro system in India has failed to reach the anticipated ridership. The revenue sustainability of the Gorakhpur Metrolite Project directly depends on its

ridership level. In order to bring in feasibility with sustainability, the authorities concerned must devise strategies for Non-Fare Revenue.

Land Acquisition Challenges

As a fully elevated system, the Gorakhpur Metrolite project calls for efficient land acquisition processes. However, securing the needed land in such a densely populated city is quite a challenge. Authorities will need to come up with thorough planning, community engagement, and compensation mechanisms to make this feasible.

Integration with Existing Transport Systems

Smooth integration with existing modes of transport is essential to enhance commuter convenience and improve the overall efficiency of the transport network. The upcoming Metrolite project must establish well-planned connections with local buses, auto-rickshaws, and other public transport systems to ensure a smooth and unified commuting experience.

Conclusion

The Gorakhpur Metrolite project aims to address urban transport challenges in the city, including traffic congestion and limited connectivity. The introduction of this cost-effective and modern mode of transit would support Gorakhpur's growth as an emerging urban centre. The project's success will, however, depend on factors such as overcoming the hurdle of land acquisition and achieving adequate ridership. With careful planning, sustainable revenue strategies, and coordinated execution, the Gorakhpur Metrolite can be a tool to enhance urban mobility while becoming a model for transport systems in mid-sized Indian cities.





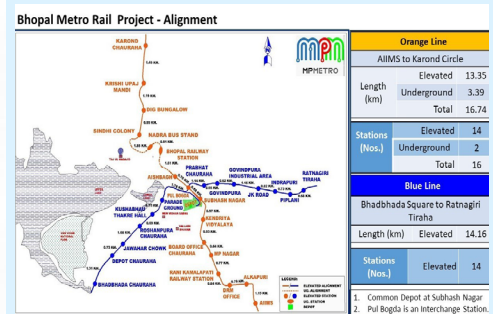
Bhopal Metro: Enhancing Urban Transportation in Central India

Introduction

Bhopal, the capital of Madhya Pradesh is the 16th largest city in India, famous for its history and cultural diversity. It was formed by Parmara King Bhoj in the 11th century. The city has a diverse natural and artificial lake. Situated on the Malwa Plateau, just north of the Vindhya Mountain ranges, the city is famous for its diversified architecture. The city is considered one of the most crucial hubs within Madhya Pradesh. Bhopal serves as a home to numerous research and educational institutes and institutes of national importance in India namely IISER, MANIT etc. With that, the city hosts a variety of industries including automobile manufacturing, textiles, pharmaceuticals and electrical appliances.

Bhopal is also one of the greenest cities in India which reflects the city's commitment toward sustainability. The city has been ranked as one of the Cleanest State Capitals of India for the last three years. However, major challenges arose in between this commitment when the city witnessed sudden population growth, leading to the increase in private vehicle ownership in the city. The increasing number of vehicles on the road of Bhopal increased the Air Pollution in the city.

The air quality of Bhopal became a major concern with the growing time. The Air Quality Index of the city was frequently indicating poor conditions. A recent report indicated that in 2023, for almost 140 days the AQI level of the city exceeded 300 on several occasions making the air unfit for breathing. Due to increasing urbanisation and deteriorating quality of air the city saw a need for a sustainable mode of transportation for the city like the Metro System. In September 2019 the Chief Minister of the state laid the foundation stone of Bhopal Metro.



Bhopal Metro Project

Overview

Bhopal Metro, also referred as Bhopal Metro is an under-construction Mass Rapid Transit System (MRTS) for the city of Bhopal by the Madhya Pradesh Metro Rail Co Limited (MPMRCL). The Phase 1 of the Bhopal Metro consists of 2 corridors with 28 stations in total. Phase 1 is expected to become operational by 2027.

May 2013: Rohit Associates Cities & Rails Pvt.Ltd was appointed to prepare the master plan for the Bhopal Metro Project. The master plan suggested a 105 km route with 6 corridors for Bhopal Metro out of which Lines 2 & 5 were identified for Phase 1.

PROJECT OF THE MONTH

December 2016: The state government approved the Detailed Project Report (DPR) of Phase 1 spanning 27.90 km.

October 2018: The DPR of Phase 1 with a route of 27.90 km was approved by the Central Government.

January 2019: The construction work on the Phase 1 of Bhopal Metro commenced.

September 2019: The Chief Minister of Madhya Pradesh laid the foundation stone of the Bhopal Metro and nicknamed it Bhoj Metro after Parmar King Bhoj.

Funding Mechanism

The Bhopal Metro Project is estimated to cost Rs. 6941.40 crores.

Loans

The project will be financed through a 400 million euro loan from the European Investment Bank (EIB) signed on December 20, 2019, and an official development assistance (ODA) loan from the Asian Development Bank (ADB).

- Note:**
- In the fiscal year 2024, the Union Ministry of Housing and Urban Affairs approved Rs 882 crore to the Bhopal Metro with an increase of Rs 269 crore from last year's budget.
 - Till now, the Union govt has allocated Rs 2239 crore for the Bhopal metro including this fiscal year.

Key Specification

Authorized Authority	Madhya Pradesh Metro Rail Co Limited (MPMRCL)
Speed and Track	Top Speed: 80 kmph
	Average Speed: 34 kmph
	Track Gauge: Standard Gauge - 1435 mm
Electrification	750 V DC Third Rail
Signalling	Communications-Based Train Control (CBTC)
Project Cost	Rs. 6941.40 crores (Approx)
Estimated Ridership	2.20 lakh/day (2027)

Contractor's List

Contract	Contractor
Preparation of Detailed project report (DPR) of Bhopal Metro	Rohit Associates Cities & Rails Pvt.Ltd
Package-01: Construction of Line-2's 6.225 km viaduct from AIIMS to Subhash Nagar including entry/exit viaduct to the depot.	Dilip Buildcon Ltd.
BH-04: Construction of 3.39 km underground twin tunnels and 2 underground stations at Bhopal Junction Station and Nadra Bus Stand.	KPIL - Gulermak JV
BH-07: Ballastless Track (BLT) of Standard Gauge at Elevated and Underground sections along with Ballasted & Ballastless Track in Depot	Larsen & Toubro (L&T)
BH-IN-02: 156 Rolling Stock cars for Bhopal metros including Signaling and Train Control and Telecommunication Systems	Alstom
BH-05: Construction of 12.91 km Blue Line's viaduct and 13 elevated stations	Afcons Infrastructure
BH-03: Construction of elevated viaduct and 6 stations between Subhash Nagar - Aish Bagh Ramp and Sindhi Colony Ramp - Karond Circle	URC Construction (Lowest Bidders)
BH-06: Construction of Subhash Nagar Depot	KEC - SAM JV (Lowest Bidders)
BH-02: Construction of 8 elevated stations on Line-2 between AIIMS - Subhash Nagar	URC Construction (Lowest Bidders)
BH-IN-21: Detailed Design Consultant for E&M works at : IN-04 (5 elevated stations) and IN-05 (7 underground stations) on Yellow Line	Ayesa India (Lowest Bidders)

Rolling Stock

May 2022: Alstom grabbed Bhopal Metro's rolling stock contract to supply and manufacture 27 trainsets (81 coaches) from MPMRCL.

March 2023: Alstom started the manufacturing of train sets in Savli, Gujarat. In

September 2023: Alstom delivered the first 3 coach train set for the Bhopal Metro at Subhash Nagar Depot.



Status of Bhopal Metro

Operational:	0 km
Under Construction:	6.22 km
Approved	21.65 km
Proposed	77.13 km



Bhopal Metro Phase 1

Line-2 (Orange Line): Karond Circle – AIIMS

- **Length:** 14.99 km
- **Type:** Elevated & Underground
- **Status:** 6.225 km is under construction between AIIMS and Subhash Nagar
- **Depot:** Subhash Nagar Underpass (Jinsi)
- **Number of Stations:** 16
- **Station Names:** Karond Square, Krishi Upaj Mandi, DIG Bungalow, Sindhi Colony, Nandra Bus Stand, Bhopal Junction, Aish Bagh Crossing, Bogda Pul (interchange), Shubhash Nagar Underpass, Kendriya Vidyalaya, DB City Mall, Sangam Cinema, Rani Kamalapati Railway Station, Habibganj Naka, Alkapuri Bus Stand, AIIMS

Line-5 (Blue Line): Bhadbhada Square – Ratnagiri Tiraha

- **Length:** 12.91 km
- **Type:** Elevated
- **Depot:** Subhash Nagar Underpass (Jinsi)
- **Number of Stations:** 14
- **Station Names:** Bhadbhada Chauraha, Depot Chauraha, Jawahar Chowk, Roshanpura Chauraha, Kushabhau Thakre Hall, Parade Ground, Bogda Pul (interchange), Prabhat Chauraha, Govindpura, Govindpura Industrial Area, JK Road, Indrapuri, Piplani and Ratnagiri Tiraha

Proposed Routes

Line-1 (Green Line): Bairagarh – Awadhपुरi

- **Number of Stations:** 24
- **Station Names:** Bairagarh, Bairagarh Stadium, Hemu Kalani, Hala Pura Bus Stand, Lal Ghati Square, Idgarh Hills, Collectorate, Cambridge School MG Hospital, Curfew Wali Mata Mandir, Kamala Park, Polytechnic Square, Roshanpura Square, TT Nagar Stadium, Mata Mandir, Jain Mandir, Sharda Mandir, Nutan College, Mansarovar Complex (Habibganj Station), Khushabhau Thakrey ISBT, Anna Nagar, Carmel Convent, Piplani Gurdwara Square, Mahatma Gandhi Square, Awadhपुरi

Line-3 (Red Line): Bhauri Bypass (NH12 Junction) – Vasant Kunj Bus Stop

- **Number of Stations:** 24

PROJECT OF THE MONTH

- **Station Names:** Bhauri Bypass/ NH12 Junction, Peepainer Village (Aerocity), Airport Road, Gandhinagar, Airport Tiraha, Manubhan Tekri, Lalghati Square, Idgarh Hills, Collectorate, Cambridge School MG Hospital, Curfew Wali Mata Mandir, Kamala Park, Polytechnic Square, Roshanpura Square, TT Nagar Stadium, Mata Mandir, Jain Mandir, Sharda Mandir, Nutan College, Mansarovar Complex (Habibganj Station), Habibganj Naka, 10 No. Square, Sai Board, Vasant Kunj Bus Stop.

Line-4 (Yellow Line): Ashok Garden Auto Stand – Mother Teresa School

- **Number of Stations:** 21
- **Station Names:** Ashok Garden Auto Stand, Krishna Campus, Railway Station, Jumerati Road, Curfew Wali Mata Mandir, Kamala Park, Polytechnic Square, Roshanpura Square, TT Nagar Stadium, Mata Mandir, MACT Square, Panchsheel Nagar Bus Stop, Ekant Park, Sahapura Lake, Bhoj University (Chunnabhatti), IIPM Sarvadharm, Mansarovar School, CI Height Nayapura Bus

Stop, Sanskar Marriage Garden, Bhairagarh Chichali, Mother Teresa School

Line-6 (Brown Line): Habibganj Naka – Mandideep

- **Number of Stations:** 12
- **Station Names:** Habibganj Naka, RRL, BU University, Bagsewania Bus Stop, Ashima The Lake City Mall, Sri Ram Colony, C21 Mall, Scope College (Bharopur), Regional 1 / NH-12, Harigangar Nagar, Regional 2, Mandideep.

Recent Updates:

Launching of OWG Bridge

- In September 2024, RKC Infratech launched the 416 MT and 65 meters long Open Web Girder (OWG) bridge for Bhopal Metro's priority corridor which covers 7 km distance from Subhash Nagar to AIIMS through 8 stations. This development took place at Habibganj Naka across the Indian Railways' 3 main-line tracks.



Track Work Progress

- Of the proposed 15 km-long track (upline and downline) between Subash Nagar and AIIMS, 14 km has been successfully completed. Work on the remaining 1 km section is currently in progress. Once completed, authorities will initiate a trial run across the entire stretch.



Benefits of Bhopal Metro

1. Enhanced Connectivity: A metro system in Bhopal will increase the connectivity in the city by connecting key areas like educational and medical institutions, workplaces and commercial centers through a more convenient mode of transport. This enhanced connectivity will facilitate the residents of the city to commute to different areas of the city more efficiently and in less time.

2. Reduced Traffic Congestion: Due to rapid urbanisation and increasing population the city is witnessing major traffic congestion on the roads. A metro system will provide the residents of the city with a fast and efficient mode of transport as compared to private vehicles which will alleviate the traffic congestion on the roads of Bhopal.

3. Economic Growth: The construction and operation of a metro system in Bhopal will create several job opportunities in the city and will attract more business setups and investments near the metro stations which will encourage the local economy and promote economic growth of the city.

4. Environmental Benefits: The Bhopal Metro project will promote a more sustainable and environmentally friendly mode of transportation in the city. A metro system will provide the residents with a reliable alternative to road transport which will lower the emission of pollutants such as carbon dioxide from vehicles reducing air pollution in the city.



2. Financial Constraints: Securing adequate funding for the Bhopal Metro project is critical for the MPMRCL. The delay in fund allocation can hinder the progress of the project and also increase its cost.

3. Integration with other modes of Transport: Integrating the Bhopal metro with the existing modes of transport like buses and rickshaws is a major challenge. To make the project successful it is very important to link the metro system with other modes of transport which will allow passengers to switch to different modes of transportation smoothly.

4. Encroachment Issues: The authorities have identified encroachment issues along the planned Bhopal metro development routes, particularly near main roads in areas like Jinsi and Karond. These issues can potentially impact the deadline of the project.

Conclusion

The Bhopal Metro project, implemented by Madhya Pradesh Metro Rail Corporation Limited is a notable step towards streamlining the connectivity in the state capital. With 2 corridors under construction of 6, Bhopal Metro is set to cater to over 2.20 lakh daily commuters, addressing the city's growing demand for efficient public transport. However, the project is running behind its original deadline of commencing operation on the priority corridor due to some critical challenges. While Bhopal Metro has the potential to set a benchmark for urban mobility in smaller cities, its success will depend on careful attention to operational efficiency, ridership engagement, and integration with the city's broader development goals.



Challenges In Bhopal Metro

1. Ridership Concern: The ridership level is a primary challenge before the establishment of any metro project. For Instance, the Pune Metro is currently facing a shortfall in the daily ridership level with only 150,000 passengers compared to a projected figure of over 600,000 for 2021. The financial viability of any metro project depends on its ridership level. Hence, achieving project ridership is very important to make any project successful and sustainable for a long period of time.

An Overview of Ahmedabad Metro's Development and Expansion

Ahmedabad: Where Heritage Meets Modernity

Ahmedabad city is situated near the banks of the Sabarmati River and lies approximately 25 kilometres from Gandhinagar, the capital of Gujarat. The city is famous for its rich cultural heritage and historical significance, blending tradition with modernity. Ahmedabad city was founded in 1411 A.D. by Sultan Ahmed Shah, who named it after himself.

Historically known as the "Manchester of India," Ahmedabad has been home to textile industries that have contributed to its economy. The city was the capital of Gujarat from 1960 to 1970, after which Gandhinagar became the state capital.

Ahmedabad is the fifth most populous city in India and the largest city in Gujarat, with an estimated population of 8.85 million. However, the city's transport infrastructure struggled to keep pace with rapid urbanisation and the growing number of commuters. This created an urgent need for an efficient and reliable transport system to meet the demands of its residents. The Ahmedabad Metro system was introduced as a viable solution to address these challenges and improve urban mobility.

Historical Background Of Ahmedabad Metro

2003 (Initial Study): Gujarat Infrastructure Development Board conducted a study for urban transport between Gandhinagar and Ahmedabad.

June 2005 (DPR Approval): Detailed Project Report (DPR) prepared by Delhi Metro Rail Corporation (DMRC) and RITES was submitted and approved by the Central Government.

2005 (Project on Hold): Due to its viability and substantial cost of ₹4,295 crore the project was put on hold to prioritise Ahmedabad BRTS and Suburban railway projects.

2008: The project was revived, and new corridors were designed to assess its feasibility.

4 February 2010: The Government of Gujarat established a special purpose vehicle (SPV), Metro Link Express for Gandhinagar and Ahmedabad Company Ltd, with an initial allocation of ₹202 crore.

2014: The Central Government decided to take a 50% ownership stake in the SPV.

2018: The SPV was renamed Gujarat Metro Rail Corporation Limited (GMRC)

Glance At Ahmedabad Metro

Overview

Ahmedabad Metro is an Urban Mass Rapid Transit System (MRTS). The project was previously known as 'Metro-Link Express for Gandhinagar and Ahmedabad' (MEGA). The Gujarat Metro Rail Corporation (GMRC) Limited is responsible for the execution of the Ahmedabad Metro.

Phase 1, which spans 39.26 km became fully operational on 8 December 2024.

Phase 2, includes the extension of the existing line and one new corridor, currently out of 28.254 km the 20.8 km is operational while the remaining 7.45 km is under construction.

Key Specification

Authorized Authority	Gujarat Metro Rail Corporation (GMRC) Limited.
Speed	Top Speed: 80 kmph
Electrification	750 V DC Third Rail
Signalling	Communication-based Train Control (CBTC)
Daily Ridership	90,000/day (March 2023)
Rolling Stock	Phase 1: 96 coaches (32 train sets x 3) supplied by Hyundai Rotem Phase 2: 30 Coaches (10 train sets x 3) will be supplied by Titagarh

Routes of Ahmedabad Metro

Operational: 60.06 km
Under Construction: 7.45 km

Phase 1

Overview

In February 2014, The Delhi Metro Rail Corporation (DMRC) prepared the DPR of Phase 1. The central government approved 39.26 km long Phase 1 of Ahmedabad Metro with 2 corridors on 18 October 2014. The entire Phase 1 project has been constructed at a cost of more than ₹12,900 crores.

- **14 March 2015:** Construction commenced on the 6.5 km (4.039 mi) long Vastral – Apparel Park stretch of the East-West Corridor.
- **March 2016:** Construction work for the North-South Corridor officially commenced.
- **June 2016:** Indian Railways granted permission for the construction of the North-South Corridor on its land.
- **November 2015:** Japan International Cooperation Agency (JICA) agreed to provide funding of ₹5,968 crore (US\$720 million) for Phase 1 of the project.
- **2016:** The first tranche of ₹4,456 crore (US\$530 million) was released by JICA.



Phase 1 Corridors

Line-1 (East-West Corridor / Blue Line): Vastral Gam – Thaltej Gam

- **Length:** 20.737 km
- **Type:** Elevated & Underground (6.83 km between Apparel Park and Sabarmati River)
- **Depot:** Apparel Park
- **Number of Stations:** 18
- **Status:** Operational
- **Stations Names:** Thaltej Gam, Thaltej, Doordarshan Kendra, Gurukul Road, Gujarat University, Commerce Six Roads, Stadium, Old High Court Interchange, Shahpur, Gheekanta, Kalupur Railway Station, Kankaria East, Apparel Park (Depot), Amraiwadi, Rabari Colony, Vastral, Nirant Cross Roads, Vastral Gam

Line-2 (North-South Corridor / Red Line): Motera – APMC

- **Length:** 18.522 km
- **Type:** Elevated
- **Depot:** Gyaspur
- **Number of Stations:** 15
- **Status:** Operational
- **Station Names:** Motera Stadium, Sabarmati, AEC, Sabarmati Railway Station, Ranip, Vadaj, Vijay Nagar, Usmanpura, Old High Court Interchange, Gandhigram, Paldi, Shreyas, Rajiv Nagar, Jivraj Park, APMC

FEATURED METRO

Phase 1 Timeline

Date	Section	Distance	Line
6 March 2019	Vastral – Apparel Park	6 km	Blue Line
30 September 2022	Apparel Park – Thaltej	13.34 km	Blue Line
30 September 2022	APMC – Motera	18.52 km	Red Line
08 December 2024	Thaltej – Thaltej Gam	1.4 km	Blue Line

Major Contractors Involved in Phase 1

Contract	Contractor
General Consultant (GC) Service for Ahmedabad Metro Phase 1	SYSTRA – RITES – Oriental – AECOM JV
Supply and manufacture of 96 Coach Rolling Stock for Phase 1	Hyundai Rotem
design, supply, install, test and commission ballastless tracks for Ahmedabad Metro's Phase 1 project.	Larsen & Toubro
Signalling and Train Control Systems	Nippon Signal
Telecommunication System for Phase 1 of Ahmedabad Metro	Larsen & Toubro
Power Supply Receiving & Distribution System, 750 V DC Third Rail Traction Electrification and SCADA System	Siemens Ltd. (India) – Siemens AG (Germany) JV
Construction of 6 km viaduct between Vastral Gam and apparel Park	J Kumar Infraprojects
Construction of 6 stations from Vastral Gam to Apparel Park	DRA – CICO JV
Construction of 4.62 km viaduct and 4 stations between Gyaspur Depot and Shreyas	IL&FS Engineering
Construction of 4.85 km viaduct from Motera to Ranip	Ranjit Buildcon
Construction of 5 stations between Motera and Ranip	Pratibha – Ranjit JV
Construction of 8.94 km viaduct and 6 stations between Shreyas and Ranip	Simplex Infrastructure
Construction of 2.45 km tunnel and 2 stations between East Ramp and Kalupur	Afcons Infrastructure
Construction of 4.38 km tunnels and 2 stations between Kalupur and West Ramp	Larsen & Toubro
Thaltej Gam to West Ramp (Viaduct, Sabarmati Bridge & 7 stations – 8.21 km)	Tata – CCECC JV

Phase 2

Overview

On 19 February 2019, the Central Government of India approved the Phase 2 expansion of the Ahmedabad Metro project. This phase spans a total length of 28.254 kilometres and features the creation of a new corridor and the extension of the existing Red Line. The estimated cost of Phase 2 is Rs. 5384.17 crores.

- **February 2016:** The Gujarat state government allocated ₹2 crore in its 2016-17 state budget for the preparation of the Detailed Project Report (DPR) for Phase 2. The Delhi Metro Rail Corporation (DMRC) was appointed to draft the DPR.
- **19 February 2019:** The Central Government Cabinet approved Phase 2.

Operational Route of Phase 2

Line-2 (North-South / Red Line): Motera Stadium – Gandhinagar Sector-1

- **Length:** 15.4 km
- **Type:** Elevated
- **Number of Stations:** 6
- **Station Names:** GNLU, Raysan, Randesan, Dholakva Circle, Infocity, Sector-1

Line-3 (Eastern Spur): Gujarat National Law University – Gujarat International Finance Tec-City (GNLU – GIFT City)

- **Length:** 5.416 km
- **Type:** Elevated
- **Number of Stations:** 3
- **Stations Names:** Gujarat National Law University (GNLU), Pandit Deendayal Petroleum University (PDPU) and Gujarat International Finance Tec-City (GIFT City)



Recent Update:

Trial Runs

- In February 2024, Gujarat Metro Rail Corporation (GMRC) initiated the trials on Ahmedabad Metro Phase 2's 3.3 km elevated section between Dholakuva and Gujarat National Law University (GNLU) in Gandhinagar District.
- On 11 March 2024, Gujarat Metro Rail Corporation (GMRC) began the trial runs on Line 3 of Ahmedabad Metro Phase 2 spanning 5.416 km from (GNLU – GIFT City).

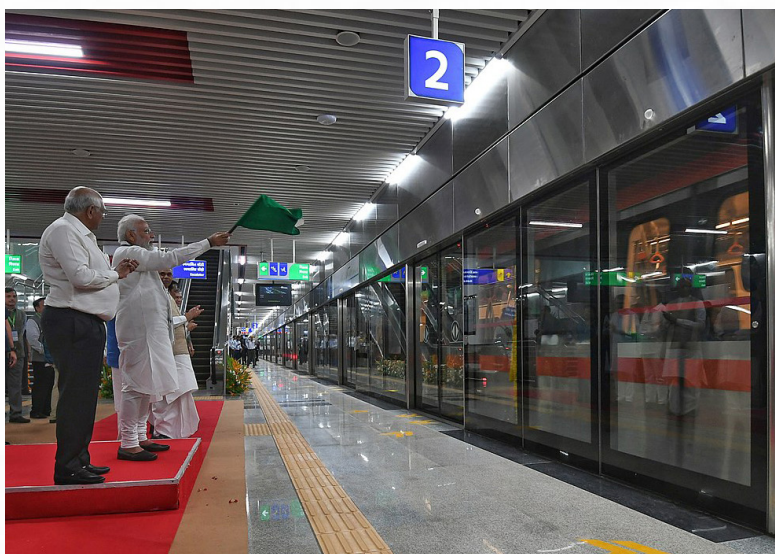
Inauguration

- Mr Narendra Modi, the Prime Minister of India, inaugurated the Ahmedabad Metro's Red Line extension from Motera Stadium to Gandhinagar Sector-1 and Line 3 of Phase 2 on 16 September 2024.



Timeline of Phase 2

Date	Section	Length	Line
16 September 2024	Motera Stadium – Gandhinagar Sector-1	15.4 km	Red Line
16 September 2024	GNLU-GIFT City	5.416 km	Line 3



Under Construction Route in Phase 2

Line-2 (North-South / Red Line): Gandhinagar Sector-1 – Mahatma Mandir

- **Length:** 7.45 km
- **Type:** Elevated
- **Depot:** Indroda (construction hasn't started)
- **Number of Stations:** 14
- **Station Names:** Koteswar Road, Vishwakarma College, Tapovan Circle, Narmada Canal, Koba Circle, Juna Koba, Koba Gam, Sector-10A, Sachivalaya, Akshardham, Juna Sachivalaya, Sector-16, Sector-24 and Mahatma Mandir

Overview

Indian Railways and Major Developments

Overview of Indian Railways

Indian Railways, the backbone of India's transportation Infrastructure, is a state-owned enterprise that is organised as a departmental undertaking of the Ministry of Railways of the Government of India and operates India's national railway system. As of 2024, the Indian railways has been recognised as the fourth largest network in the world in terms of size, covering a network of 68,584 kilometres. The Indian Railways is crucial for the country's socio-economic scenario. Railways has not only promoted the movement of people but it has also made the transport of goods more convenient through enhanced connectivity thereby, reducing the logistic cost. The Indian Railways recorded highest revenue of Rs 2.56 lakh crore for the financial year 2023-24.



Historical Background Of Indian Railways

Initial Proposal and Early Developments: The concept of Indian Railways was first proposed in 1832 in Madras. The British government acknowledged the potential associated with the idea. In 1845, The Madras Railway was formally established followed by the incorporation of the Great Indian Peninsula Railway (GIPR) in 1849 marking the beginning of organized railway construction in India.

First Passenger Train and Evolution: In 1853, the operations commenced on the first passenger train between Bombay to Thane covering a distance of 34 kms.

1880: The Indian Railways laid approximately 14,500 kilometres of track across major cities like Bombay, Madras, and Calcutta.

1951-52: The railway network across the country was reorganised into six regional zones for administrative purposes.

1925: The Indian Railway commenced operation on the first electric train in Bombay on DC traction.

1955: The Indian Railways established the Integral Coach Factory in Madras for manufacturing rail coaches marking a significant step toward modernization.

Record Capital Investments in Indian Railways

In the Union Budget for 2024-25, Union Finance Minister Smt. Nirmala Sitharaman announced a record capital expenditure allocation of ₹2,62,200 crore for Indian Railways. This represents a substantial 77% rise compared to the investment levels over the past five years. Additionally, the Draft National Rail Plan outlines a long-term vision for the sector, proposing a total capital expenditure of ₹38.22 lakh crore by 2050. This comprehensive strategy aims to modernise and expand railway services, improve safety, and boost the efficiency of freight and passenger transportation across India.

Indian Railways's Leading Footsteps Towards Modernisation

Throughout the years, the Indian Railways has been taking major steps to meet the increasing demands for modernization, sustainability, and efficiency.

1. Technological Advancement: The Indian Railways has been introducing a wide range of technological innovations to enhance the operation efficiency and passenger experience.

Example:

▶ Indian Railway also introduced **Online Monitoring of the Rolling Stock System (OMRS)**, a way-side inspection system that comprises technologies like **Acoustic Bearing Detectors (ABD)** and **Wheel Impact Load Detectors (WILD)** which monitor the functioning of train components in real-time. This system detects faults in bearings and wheels, allowing for timely corrective actions before failures occur.

2. Modernization Of Railway Infrastructure: The Indian Railways is aiming to enhance and modernise the station infrastructure to improve the passenger experience by providing better amenities.

Example:

▶ **Rani Kamalapati Railway Station**, formerly known as Habibganj Railway station, located in Bhopal is marked as



the first world-class railway station. The station has been redeveloped under the Public-Private Partnership (PPP) model by Indian Railway to modernise the railway infrastructure. The station provides ultra-modern amenities such as a large covered parking area, 24X7 power backup, air-conditioned lobby, high-speed escalator etc.

3. Amrit Bharat Station Scheme: The Indian Railways recently introduced the Amrit Bharat Station Scheme to upgrade and modernize the total of **1,337** stations across the Indian Railways System.

The scheme aims to improve station accessibility, waiting areas, toilet facilities, lift and escalator installations as needed, cleanliness, offering free Wi-Fi, setting up kiosks for local products through initiatives like 'One Station

One Product', enhancing passenger information systems, establishing Executive Lounges, designating spaces for business meetings, incorporating landscaping, and catering to the unique requirements of each station.

Completed Projects:

- 1. Gandhinagar Capital Station (Western Railway)**
- 2. Sir M. Visvesvaraya Terminal Station (South Western Railway)**
- 3. The first phase of Gomti Nagar Station (North Eastern Railway)**
- 4. Ayodhya Railway Station (Northern Railway)**
- 5. Cuttack Railway Station (East Coast Railway)**

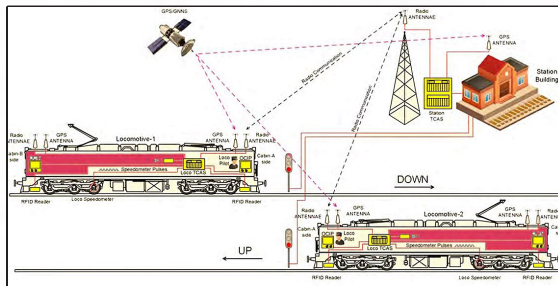
4. Enhanced safety: To create a more reliable and secure rail network the Indian Railway has been introducing new technologies which can contribute to achieving safe operations and increasing the efficiency of the operation.

Example:

• **Kavach:** The introduction of the **Kavach System**, an Automatic Train Protection (ATP) is one such initiative taken by Indian Railways. The Kavach



System prevents the trains collisions by applying emergency brakes through continuous monitoring. As of July 24, 2024, ₹1,216.77 crore had been spent on Kavach, with an additional ₹1,112.57 crore allocated for 2024-25. In the first phase, the Indian Railway plans to deploy the Kavach system in 10,000 locomotives along a 9000km railway network by December 2030.



Recent Updates:

In September 2024, Railway Minister Ashwini Vaishnaw reviewed the trial of **KAVACH 4.0**. The trial took place between Sawai Madhopur and Indargarh Railway stations in Rajasthan under the West Central Railway Zone.

5. Electrification of Railways: The Indian Railways has been targeting 100% electrification to achieve net-zero carbon emissions by 2030, promoting environmental sustainability and reducing operational costs. To reduce reliance on fossil fuels in rail operations. As of 2024, Indian Railways has completed electrification of 97% of its broad gauge network.

Example:

- **The Devlali railway station** near Nashik in Maharashtra is powered entirely by solar energy. The Devlali Station will cut 100 MT of CO2 emissions annually, driving Railways mission towards net zero by 2030.

6. Development of Dedicated Freight Corridors: To enhance freight transport efficiency across the country, the Indian Railways took the initiative by introducing Dedicated Freight Corridors. DFCs are specialized railway lines designed exclusively for freight trains.

Key Corridors

1. Eastern Dedicated Freight Corridor (EDFC):

- **Length:** Approximately 1,337 kilometres
- **Route:** Sonnagar in Bihar to Sahnewal in Punjab.
- **Status:** Fully operational as of April 2024.

- **Benefits:** The travel time for transporting coal from coal fields in Eastern India to power stations in North India has been reduced from 35 hours to just 20 hours.

2. Western Dedicated Freight Corridor (WDFC):

- **Length:** Approximately 1,506 kilometres
- **Route:** Jawaharlal Nehru Port in Mumbai to Dadri in Uttar Pradesh.
- **Status:** 93% operational,

Major Developments in Indian Railways

Throughout the years, Indian Railways has witnessed remarkable growth and modernisation through various major projects which aim at enhancing the infrastructure, efficiency and connectivity. Some of the most momentous developments include:

1. Chenab Bridge

Overview

Chenab Bridge, Inaugurated in **August 2022**, is a major infrastructure project carried out by Indian Railways. The Chenab bridge is a part of the Udhampur-Srinagar-Baramulla Railway Link (USBRL), a dream project worth **Rs 37000 crore**. The bridge will have a lifespan of 120 years.

With the development, the Indian Railways marked history by creating the world's highest arch bridge and Railway Bridge. The Indian Railways has conquered the biggest civil engineering challenge faced by any railway Project in India in recent history with the completion of this bridge.

Features of Chenab Bridge

- The Chenab Bridge is situated in Jammu and Kashmir's Reasi district, between Bakkal and Kauri.
- Standing 359 meters (1,178 feet) above the Chenab River, the bridge is 35 meters higher than the Eiffel Tower in Paris.
- The arch bridge is 1,178 feet above the riverbed, forming a crucial link from Katra to Banihal and able to withstand winds with speeds up to 260 kmph.

Recent Update: In June 2024, Indian Railways conducted the successful trial run of an eight-coach Mainline Electric Multiple Unit (MEMU) train on the Chenab Bridge. The trials were



Chenab Bridge

conducted at a speed of 40 Kmph on an electrified line section between Sangaldan in Ramban district and Reasi spanning 46 km.

2. Anji Khad Bridge

The Anji Khad Bridge is a true engineering marvel and a milestone for the Indian Railways. The Bridge spans the Anji River and is part of the ambitious USBRL project which aims to provide seamless rail connectivity to the Kashmir Valley. The Bridge marks history by being the country's first cable-stayed and second-largest railway bridge.

Key Features of the Anji Khad Bridge

- **Pylon Design:** Standing 331 m above the riverbed, the bridge features a single pylon
- **Total Length:** 473.25 meters.
- **Cost:** Rs. 435 crore.
- **Viaduct and Embankment:** The structure consists of a 94.25-meter central embankment and a 120-meter viaduct.

Recent Updates:

Indian Railways conducted a successful first-loaded train trial run on the Anji Khad Bridge. The Ministry of Railways mentioned "The trial run on the Anji Khad Bridge, a key component of the Udhampur-Srinagar-Baramulla Railway Link (USBRL) project, has been successfully completed." Services are anticipated to begin in January 2025 in this section.

3. High-Speed Rail Project

To bring transformative changes in the country's infrastructure and economy the Indian Railways developed India's first High-Speed Rail Project, reflecting the Indian Railways' modernised approach towards enhancing connectivity. With this pioneering project, the Indian Railways aims to position the country as a competitive



Anji Khad Bridge

player in the global transportation sector.

A Special Purpose Vehicle, **National High-Speed Rail Corporation Limited (NHSRCL)** was established on 12th February 2016, to execute the bullet train project in India. For the beginning of this dream project, The **Mumbai - Ahmedabad High-Speed Rail** corridor was prioritised by Indian Railways which is currently under construction and undergoing significant developments.

Mumbai - Ahmedabad High-Speed Rail corridor

The Mumbai - Ahmedabad High-Speed Rail corridor, spanning across **508 kilometres**, will provide enhanced connectivity through a sustainable and mass mode of transport between Maharashtra and Gujarat states in western India.

The route consists of 12 strategically positioned stations and the corridor is designed to accommodate bullet trains operating at speeds of up to **320 kmph** completing the entire journey in about **2 hours 7 minutes**.

Recent Development on the project:

- **BEML to Deliver First Indigenous Bullet Train By 2026:** In October BEML received a Rs. 867 crore order from ICF to manufacture India's first indigenous

Bullet Train. The trains will be designed to run at a maximum speed of 250 kmph.

- **Infrastructure Progress:** The foundation work on all 8 stations in Gujarat is completed.

- **Completion of 12 River Bridges out of 20:** With the completion of the bridge over the Kharera River in Navsari District, Gujarat, a major milestone has been achieved for the Bullet Train project. This is the 12th bridge finished out of 20 planned in Gujarat.



4. Vande Bharat Express

To modernize rail travel across the country, the Indian Railways introduced the first indigenously designed and manufactured semi-high-speed train, Vande Bharat Express which symbolises the Indian Railways ambition for advanced, efficient, reliable and convenient rail travel. The train is designed to run at a maximum speed of 180kmph.

The initiative is part of the government's **Make in India program**, aiming to enhance domestic manufacturing and infrastructure. The Vande Bharat trains offer passengers a world-class travel experience. The trains have been equipped with modern amenities like accessible toilets and developed safety features such as Kavach technology.

On 15 February 2019, the first-ever Vande Bharat Express was flagged up on the New Delhi-Kanpur-Allahabad-Varanasi route. The trains operate at a speed of 160 kilometres per hour. Currently, At present, 136 Vande Bharat trains operate across the Indian Railway.

Latest Update: Recently On August 31, 2024, Prime Minister Narendra Modi flagged off three Vande Bharat trains to enhance connectivity across the states of Uttar Pradesh, Tamil Nadu, and Karnataka.

• **Meerut City- Lucknow Vande Bharat Express**

• **Madurai- Bengaluru Vande Bharat Express**

• **Chennai Egmore- Nagercoil Vande Bharat**

Trials of Vande Bharat Sleeper: On January 1 2025, RDSO conducted the trial of Vande Bharat Sleeper on a 40km route between Rohal Khurd and Kota. During the trial, the train touched the peak speed of 180 km per hour. The trials will continue till the end of January 2025.

• Namo Bharat Rapid Rail (Vande Metro)

Originally inspired by the design of Vande Bharat, The Namo Bharat Rapid Rail (formerly Vande Metro) trains are designed for intercity travel. The trains are capable of reaching speeds of up to 130 km/h. In September 2024 PM Modi inaugurated the Namo Bharat Rapid Rail services between Bhuj and Ahmedabad. In November 2024 a successful trial was conducted between Ahmedabad and Mumbai at a speed of 130 kmph.

Future Outlook

1. Investment and Modernization

• **Substantial Investment:** Indian Railways plans to invest ₹17.4 lakh crore (approximately \$210 billion) by 2025 to streamline its operations, including high-speed rail projects

2. Infrastructure Expansion

• **New Tracks:** The plan includes constructing 100,000 km of new railway tracks over the next 20 years

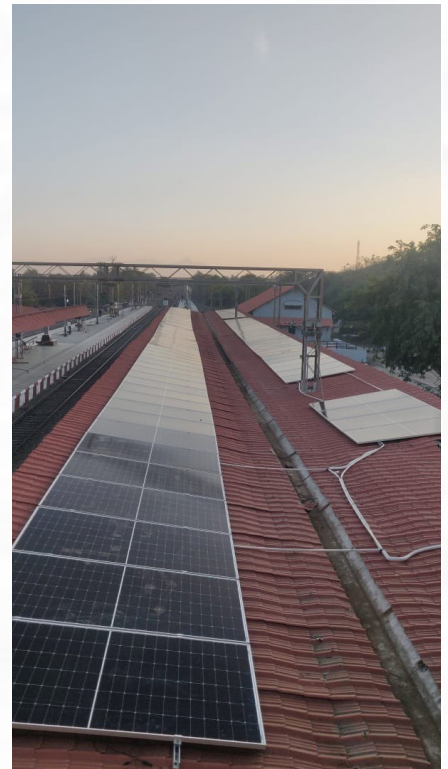
3. Train Modernization

• **Vande Bharat Trains:** Indian Railways aims to produce 400 new Vande Bharat trains over the next three years.

• **Introduction of Hydrogen Trains:** The hydrogen train project aligns with Indian Railways' goal of achieving net-zero carbon emissions by 2030. The trials of the Hydrogen train will soon be conducted on the Jind-Sonapat route in Haryana. These trains will utilise Hydrogen fuel cells to gain power supply.

4. Technological Advancements

• **AI Integration:** In coming years the railway plans to implement advanced traffic management systems and AI-powered predictive maintenance tools to improve operation frequency, and safety and reduce downtime.



Conclusion

In order to satisfy the expanding needs of the country's transportation industry, Indian Railways keeps up with technological developments and modernisation. The Indian Railways is making notable progress in enhancing efficiency, sustainability, and safety with projects like the Kavach safety system, electrification targets, and the construction of high-speed train projects. The engineering prowess of the Indian Railways is further demonstrated by infrastructure projects like the Chenab and Anji Khad Bridges. Indian Railways' dedication to improving connectivity and offering a better travel experiences is further evidenced by the ongoing expansion of the Vande Bharat Express and the launch of the Namo Bharat Rapid Rail. With the help of substantial investments, these advancements have the potential to make the railway network more dependable, and sustainable.

CONTRACTS AWARDED

Company	Package	Amount	Brief Description
Afcons	Package BH-05 of Bhopal Metro Phase 1	1006.74crores	Part Design and Construction of elevated Viaduct,thirteen (13) elevated Metro Rail Stations viz. Bhadbhada Chauraha, Depot Chauraha, Jawahar Chowk, Roshanpura Chauraha, Kushabhau Thakre Hall, Parade Ground, Prabhat Chauraha, Govindpura, Govindpura Industrial Area, JK Road, Indrapuri, Piplani and Ratnagiri Tiraha (excluding an Elevated Passenger Interchange Metro Rail Station), between Chainages 50+000 and 62+915, and access to Depot between Chainages 00+155 and 01+100 for Blue Line for Bhopal Metro Rail Project
Kernex Micro Systems (India)		Rs 2,041.04 crore	Supply, installation, testing, and commissioning of 2,500 sets of onboard Kavach equipment (anti-collision system) across the railway network.
NCC Ltd.	Package C2-A	Rs. 501.25 crore	Construction of Eight (08 Nos) Stations i.e., Elevated Interchange (1 No), Elevated (3 Nos.) and At-Grade (4 Nos) BSRP Stations of Corridor-2 at Benniganahalli, Kasturi Nagar, Seva Nagar, Banaswadi, Nagawara, Kanaka Nagar Hebbal, Mathikere, including Civil, Structural, Entry / Exit Structure, Steel Foot Over Bridge (FOB), Roof Structures, PEB Works, Architectural finishes, Plumbing, Façade, E&M Works and Detailed Design & Engineering (DDC) with all allied works for Bengaluru Suburban Rail Project (BSRP)

LOWEST BIDDERS

Company	Contract for	Contract Value	Brief Description
Jakson Ltd.	E&M	197.04 crore	Electrical and Mechanical Works comprising of LT Panels, LT Cables, Lighting, Hydraulics, Fire Safety Systems, UPS, DG Sets, HVAC and BMS for 28 Nos. of Elevated Stations, 2 Nos. of Wayside TSS and Cut-and-Cover section of Bangalore Metro Ph-2A and 2B Project

EVENTS CALENDAR

Dates	Event Name	Venue
Feb 22-26, 2025	ELECRAMA	India Expo Mart, Greater Noida , Delhi Ncr
Mar 15, 2025	India Logistics Submit & Awards 2025	Chennai, India
Mar 19 -21, 2025	10th Smart Cities Expo	Bharat Mandapam, Pragati Maidan , New Delhi
Mar 26-27, 2025	RailTech Belgium	Brussels
Apr 15-17, 2025	27TH INTERNATIONAL EXHIBITION OF ELECTRONICS: COMPONENTS AND TECHNOLOGIES, MATERIALS AND EQUIPMENT, EMBEDDED SYSTEMS AND TURNKEY SOLUTIONS	Moscow, Crocus Expo
Apr 24-26, 2025	INDIA STEEL 2025	Bombay Exhibition Centre, Mumbai
May 13-15, 2025	Railtex 2025	NEC, Birmingham
May 13-14, 2025	Africa Rail	Sandton Convention Centre, Johannesburg, South Africa
May 21 - 22, 2025	5th Edition InnoMetro	Bharat Mandapam(Pragati Maidan), New Delhi, India
Jun-25	Rolling Stock Maintenance & Depot Innovation - Europe 2025	Hilton London Paddington, United Kingdom
June 18-20, 2025	Eurasia Rail	IFM (Istanbul Expo Center), Turkey'
June 18-19, 2025	Rail Live 2025	Porterbrookâ€™s Long Marston Rail Innovation Centre
June 24-25, 2025	Middle East Rail	Dubai World Trade Center
June 24 - 26, 2025	SIFER 2025	Lille Grand Palais, France
July, 2025	Urban Rail 2024	Sofitel Brisbane, Australia.
July 3, 2025	Rolling Stock Networking	Derby Arena, England
Sep 23 - 26, 2025	16th International Railway Fair (TRAKO)	Gdansk, Poland
Oct 29 - 31, 2025	IREE 2025	New Delhi

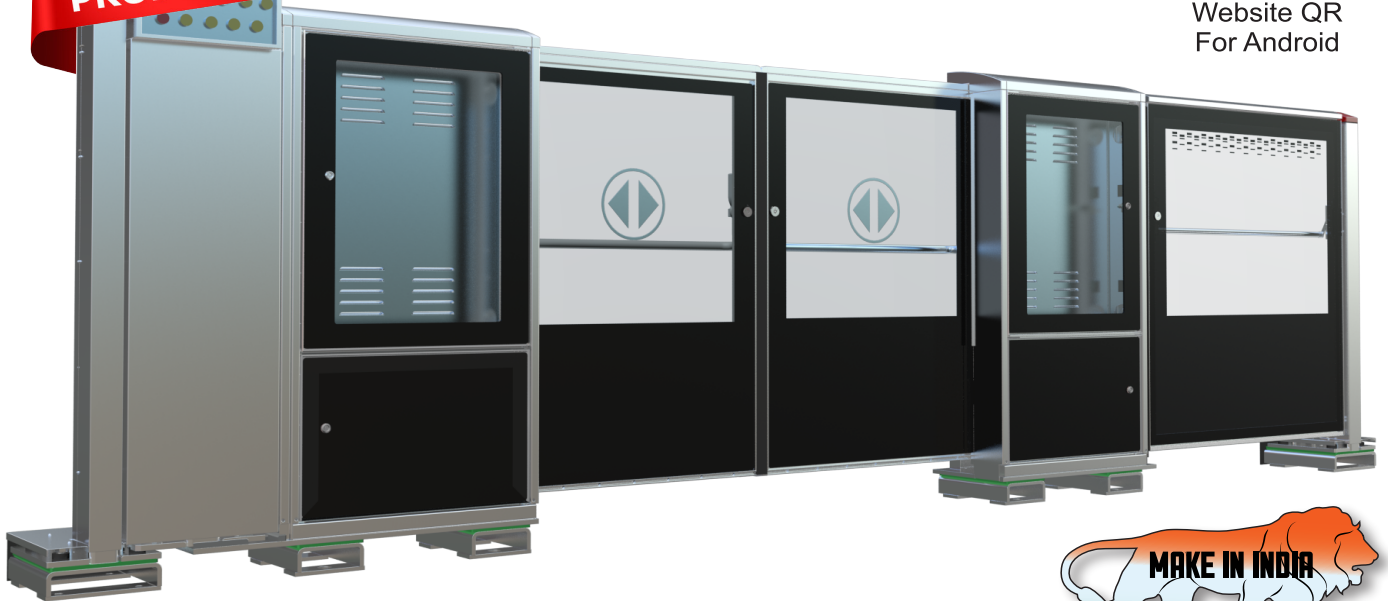
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LIVE TENDERS

METRO RAIL

TENDER DETAILS	LOCATION	VALUE	DEADLINE
facility management services - lumpsum based - metro railways; housekeeping, housekeeping staff on shift basis; cost of consumable to be reimbursed to service provider on actual , facility management services - lumpsum based - metro railways; housekeeping, cost of schedule b to e as per tender conditions; cost of consumable to be reimbursed to service provider on actual-msme exemption - no startup exemption - no	Mumbai, Maharashtra, India	₹ 61.28 Cr.	17-01-2025
corrigendum : design manufacture supply testing commissioning training of personnel 2 years dlmp for two 02 nos of catenary maintenance vehicle cmv works of line 2b dn nagar to mandale of mumbai metro rail project of mmrda	Mumbai, Maharashtra, India	₹ 24.67 Cr.	15-01-2025
corrigendum : providing administrative / technical support services in maharashtra metro rail corporation limited on outsourced basis for a period of 02 (two) years	Nagpur, Maharashtra, India	₹ 14.86 Cr.	03-02-2025
providing administrative / technical support services in maharashtra metro rail corporation limited on outsourced basis for a period of 02 (two) years	Nagpur, Maharashtra, India	₹ 14.86 Cr.	14-01-2025
supply, installation, testing and commissioning of uninterrupted power supply system at all elevated stations of priority corridor (isbt depot, isbt station, zero mile, bhootnath, khemni chak and malahi pakri) of patna metro rail project	Patna, Bihar, India	₹ 9.86 Cr.	20-01-2025
supply, installation, testing and commissioning of uninterrupted power supply system for signalling, telecommunication, automatic fare collection, platform screen door/gate system & emergency power supply to e&m at all elevated stations of priority corridor (isbt depot, isbt station, zero mile, bhootnath, khemni chak & malahi parkri) of patna metro rail project.	New Delhi, Delhi, India	₹ 9.86 Cr.	20-01-2025
renovation, repair and interior works of 120 dps road (annex of rpf barrack), tollygunge of metro railway, kolkata.	Kolkata, West Bengal, India	₹ 7.29 Cr.	28-01-2025
facilities management and housekeeping services with consumables and machineries at apparel park depot and project offices for ahmedabad metro rail project	Gandhinagar, Gujarat, India	₹ 4.04 Cr.	23-01-2025
design, manufacture, supply, installation, testing and commissioning of telecom system (fots, pas, pids and walkie-talkie) for priority corridor of patna metro rail project.	Patna, Bihar, India	₹ 2.77 Cr.	09-02-2025
maintenance cum man power supply contract towards maintenance works of psg/ psd system installed at ahmedabad metro rail phase -1	Ahmedabad, Gujarat, India	₹ 1.78 Cr.	03-02-2025
"appointment of consultant for noise and vibration study including design and implementation of mitigation measures for bhopal and indore metro rail projects	Bhopal, Madhya Pradesh, India	₹ 1.14 Cr.	12-01-2025 2 D
supply, installation, testing and commissioning of uninterrupted power supply system for signalling, telecommunication, automatic fare collection, platform screen door/gate system & emergency power supply to e&m at all elevated stations of priority corridor (isbt depot, isbt station, zero mile, bhootnath, khemni chak & malahi parkri) of patna metro rail project.	Patna, Bihar, India	₹ 9.86 Lakh	20-01-2025

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INDIAN RAILWAY

TENDER DETAILS	LOCATION	VALUE	DEADLINE
design manufacture supply testing and commissioning of 138 nos of dynamic track stabilizer dts along with training of indian railway personnel and 3 years post warranty amc	New Delhi, Delhi, India	₹ 1268.00 Cr.	18-02-2025
ultrasonic testing of rails including through testing of rails and welds with contractor's own b-scan machines equipped with 9 channels srt/drt and two extra 37 degree probes and operators on nominated routes over south eastern railway including hand probing (flange testing) of welds as per indian railway standard specification for ultrasonic testing of rails/welds, revised-2020 (document no. t-53) and manual for ultrasonic testing of rails and welds, revised 2022 (with latest amendment) issued by rdso.	Multi Location, Multi State, India	₹ 43.30 Cr	27-01-2025
"plan, construct, develop & operate gati shakti multi-modal cargo terminal (gct) for handling cargo on goods line no. 4 towards ambala end of new shambhu station on dfccil/railway land"under schedule- '2' of gct policy of indian railways.	New Delhi, Delhi, India	₹ 10.80 Cr.	16-01-2025
various s&t works in connection with engineering works of adste/east/ubl & adste/west/ubl section sub work1: proposed extension of pfl & 2 at ibrahimpur road (imr) railway station sub work2: raising and extension of platform pfl to make it high level of 560m length with cement concrete flooring at lakhmapur (lky) station sub work3: proposed construction of 02 additional rooms at officers rest house at badami sub work4: proposed construction of additional 3 suites in officers rest house at badami sub work5: proposed closure of lc no 10/rub	New Delhi, Delhi, India	₹ 21.98 Lakh	26-12-2024
"outsourcing the work of scrap disposal and new material between shops and store depot in 900 days."-3.1.1 performance of work:- a. the work shall be performed by the contractual unskilled staff at the place or places specified in the tender or at such other place or places as may be approved by the wee(i/c)/judw . total 2880 mt 25% of scrap material (20 mt 25% per week) will be disposed off in 900 working days by railway truck whereas new material will be loaded in truck as per material schedule from store depot/judw and unloading the sam	Jagadhri, Haryana, India	₹ 18.77 Lakh	22-01-2025
supply of running contract for manufacture and supply of 6mm thick nylon cord reinforced grooved rubber sole plates for placing beneath rails at trun out confirming to rdso drg. no. t-4865 alt 7 or latest with reference date as tender closing date for 1 in 8.5,60kg turnouts and conforming to indian railway standard specification for rail pads for placing beneath rails, si. no. t-55-2023 or latest with reference date as tender closing date. the list of fittings to be supplied per set is enclosed as annexure- e. [warranty period: 30 months after the date of	Jaipur, Rajasthan, India	₹ Refer Docs	22-01-2025
supply of design, manufacture, supply, testing, commissioning of rail inspection vehicle (riv) & training of indian railway personnel. [warranty period: 24 months after the date of delivery]]	Mumbai, Maharashtra, India	₹ Refer Docs	30-01-2025

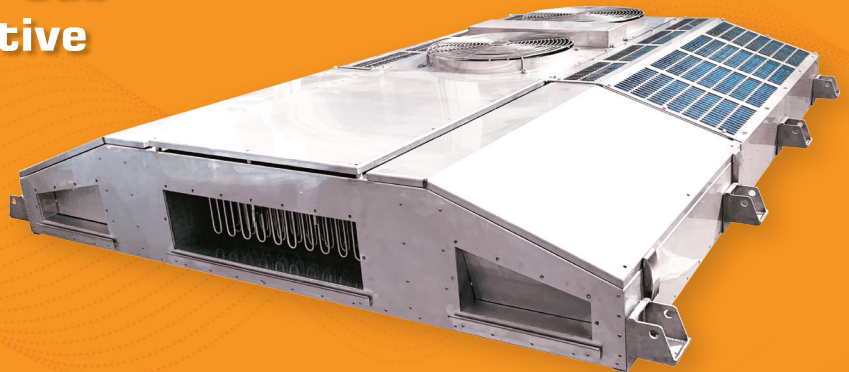
HIGH SPEED RAIL

TENDER DETAILS	LOCATION	VALUE	DEADLINE
design, supply and construction of track works including testing and commissioning on design-build lump sum price basis for double line high speed railway between mumbai stn. at bandra-kurla complex (mahsr km. -0.255) and zaroli village (km.156.600)	New Delhi, Delhi, India	₹ Refer Docs	31-01-2025
corrigendum : expression of interest (eoi) from reputed contractors having experience in expressway/ highway/ irrigation/ railway/ metro/ high speed rail/ power sector india/ overseas	New Delhi, Delhi, India	₹ Refer Docs	11-02-2025
construction of covered shed over washing cum pit lines no. 3, 4 & 5 in dlt complex and covered shed over washing cum pit lines no. 9 & 10 in rajdhani complex and other allied works to facilitate high speed train's maintenance at coaching maintenance complex in new delhi railway station (ndls).	New Delhi, Delhi, India	₹ 40.34 Cr.	27-01-2025

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