Mumbai-Ahmedabad Bullet Train Project Experience Lays a Strong Foundation for India's Future High-Speed Rail Network

Indigenisation of Heavy Construction Machinery, Homegrown Slab Track Components and Specialized Track Machines Boosts India's Domestic Manufacturing Capabilities

Around 1,000 Indian Engineers and Skilled Workers Trained in Japanese Methodology

MAHSR Designed for High-Frequency Operations with Fares Competitive with Existing Rail/Air Travel

406 Trains Operating Daily on EDFC and WDFC, Creating Additional Capacity on Conventional Rail Network

Posted On: 11 FEB 2026 6:53PM by PIB Delhi

Presently, the Mumbai-Ahmedabad High Speed Rail (MAHSR) Project (508 km) is under execution with technical and financial assistance from Government of Japan. The MAHSR project is planned and constructed on a elevated viaduct. The design for stations on the corridor provides for security measures like controlled entry points, baggage scanners, DFMDs (Door Frame Metal Detectors), CCTV(Close Circuit Television) cameras etc.

The experience and technical capabilities being developed through the MAHSR project, particularly in track construction, advanced signalling, Rolling Stock manufacturing & maintenance, project management etc. are expected to provide a strong foundation for future high-speed rail corridors in the country. With gain of such expertise, India will strengthen its position for planning and decision making in HSR Sector.

> इस बजट में माननीय प्रधानमंत्री जी ने उत्तर प्रदेश के लिए बुलेट ट्रेन हाई स्पीड कॉरिडोर की भी घोषणा की है, जो उत्तर प्रदेश के कई शहरों को जोड़ेगी जिसमें बुद्धिस्ट सर्किट से जुड़े हुए कई शहर भी शामिल हैं: रेल मंत्री श्री @AshwiniVaishnaw जी pic.twitter.com/uHytnNY7se
>
> — Ministry of Railways (@RailMinIndia) February 11, 2026

Indigenization & Capacity Building:

• Long-span steel truss girders are being fabricated in Indian workshops, supported by analytical modelling and field measurements to strengthen domestic HSR design capability.

• Heavy construction machinery used for full-span launching has been indigenised and is now being manufactured in India.

• Most slab track materials and specialized track machines are being developed and produced by Indian manufacturers, boosting domestic manufacturing capability.

• Design variations and detail regarding dynamic analysis are being handled by Indian agencies in collaboration with IITs, with advanced dynamic analysis tools and design charts developed to build long-term HSR expertise.

Innovation:

• Full-span launching method adopted for the first time in India for launching 40 m prestressed box girders (~1000 MT), enabling faster launching within 16 hours.

• Indigenous noise barriers being installed along the elevated corridor to minimise noise for nearby residents.

• Advanced simulation tools for OHE-pantograph interaction and Simulation model for designing of traction power supply developed with IIT Delhi for accurate design and planning.

• Underground station is being constructed with provision for a future 90 m high building on the same foundation.

• Indigenously developed Rail Turnover Prevention Device (RTPD) introduced to enhance safety during derailments.

Training:

• Indian Engineers and Skilled workers (approx. 1000 nos.) have been trained for Japanese methodology and presently, track works are being executed under their supervision.

• A Special Track training facility has been created at Surat for training and regular refresher courses.

Stations:

• HSR stations are being designed as city gateways reflecting local identity, with advanced security features such as controlled entry points, baggage scanners, Door Frame Metal Detectors (DFMDs) and Closed-Circuit Television (CCTV) surveillance.

• Safety-focused design includes anti-vibration measures, wind-pressure management in station roofs and provisions like anti-vibration hangers, clamps and bolting plates integrated during construction.

• Passenger convenience is ensured through ample parking, drop-off areas and seamless multimodal connectivity with coordinated city master planning.

• Sustainable and energy-efficient features aligned with Indian Green Building Council (IGBC) Platinum standards.

Geo-technical investigation:

• Greater emphasis has been put on Geo Technical Investigations (GTI) to be sure of structural adequacy and to rule out possibility of geological surprises.

• The GTI has been generally carried out at 100 m, and at shorter intervals in case of special structures.

• A new geo tech lab has also been been set up

Safety and security:

• A high level of security has been adopted for operational areas and buildings housing sensitive equipment to ensure passenger safety.

• Civil engineering structures are designed and constructed as per best international practices, with designs validated by a Japanese High-Level Committee.

• To enhance earthquake safety, structures have been designed considering relevant seismic zones, with steel and damper stoppers provided on viaducts and bridges to prevent dislodgement, along with installation of an Earthquake Early Warning System (EQEWS).

Progress of Mumbai-Ahmedabad High Speed Rail Project

The Mumbai-Ahmedabad High Speed Rail (MAHSR) Project (508 km) is passing through the States of Gujarat, Maharashtra and Union Territory of Dadra & Nagar Haveli with 12 stations planned at Mumbai, Thane, Virar, Boisar, Vapi, Billimora, Surat, Bharuch, Vadodara, Anand, Ahmedabad and Sabarmati.

Entire land (1389.5 Ha.) for MAHSR project has been acquired. All Statutory Clearances have been obtained. All 1651 utilities have been shifted. The delay in land acquisition in the State of Maharashtra has impacted the project till 2021. The land acquisition picked up in 2022 in Maharashtra.

The progress of various major items so far is as under:

Gujarat:

Item	Progress
Foundation	352 kms.
Piers	352 kms.
Girder Casting	342 kms.
Girder Launching	331 kms.
Track Bed Construction	152 kms.
OHE Masts Erection	121 kms.

Maharashtra:

Item	Progress
Foundation	74 kms.
Piers	65 kms.
Girder Casting	9 kms.
Girder Launching	3 kms.

Out of total 12 stations, foundation works has been completed at 8 stations (Vapi, Bilimora, Surat, Bharuch, Anand, Vadodara, Ahmedabad, and Sabarmati). In Maharashtra section, foundation work is in progress at 3 stations (Thane, Virar, Boisar) and excavation work at BKC station is near completion and Casting of base slab started.

17 river bridges have been completed. Work is in advance stage for 4 major river bridges (Narmada, Mahi, Tapti and Sabarmati) in Gujarat & in progress in 4 river bridges in Maharashtra. Work on Depots (Thane, Surat and Sabarmati) is in full swing.

Civil works at Bandra Kurla Complex (BKC) are progressing satisfactorily. Excavation works have achieved about 91% progress, and concreting works are at various stages, with 100% completion of the basement slab at Level-4. The work of the under-sea tunnel (approximately 21 km) has commenced, out of which 4.8 km of tunnel between Ghansoli and Shilphata in Maharashtra has been completed.

In line with the Make in India and Aatmanirbhar Bharat initiatives, Indian Railways is promoting indigenous manufacturing of high-speed rail systems and components to reduce import dependence. Building on the success of Vande Bharat, Integral Coach Factory (ICF) in collaboration with M/s Bharat Earth Movers Limited (BEML) is designing and manufacturing high-speed train sets with a design speed of 280 kmph.

Land acquisition for the project has been carried out in accordance with applicable laws, and affected persons have been compensated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act and relevant State policies. Rehabilitation and resettlement measures, including additional benefits and solatium, have been undertaken in coordination with State Governments.

The MAHSR corridor is designed for high-frequency operations with substantial passenger-carrying capacity. Ticket pricing is proposed to be competitive with respect to existing rail/air travel options. The viability of the project has been assessed on a long-term basis, taking into account projected passenger demand, economic benefits, time savings and regional development.

The Mumbai-Ahmedabad High Speed Rail (MAHSR) Project (508 km) is the only HSR Project under execution with technical and financial assistance from Government of Japan. Expenditure amounting to ₹ 86,939/- crore has been incurred on the project till 31.12.2025.

Dedicated Freight Corridors

Ministry of Railways has taken up construction of two Dedicated Freight Corridors (DFC) viz. Eastern Dedicated Freight Corridor (EDFC) from Ludhiana to Sonnagar (1337 Km) and the Western Dedicated Freight Corridor (WDFC) from Jawaharlal Nehru Port Terminal (JNPT) to Dadri (1506 Km) at a total cost of ₹ 1,24,005 Cr. The work on EDFC has been completed and commissioned. In WDFC, 1404 RKm out of total 1506 RKm has been completed and commissioned. The balance work on WDFC from Vaitarna-JNPT section (102 Rkm) has been taken up.

DFC has contributed to creating additional paths on the conventional network by diverting freight traffic to EDFC and WDFC. Presently, 406 average trains per day are being run on these corridors.

This information was provided by the Union Minister for Railways, Information & Broadcasting and Electronics & Information Technology, Shri Ashwini Vaishnaw, in a reply to questions in Lok Sabha today.

*****

Dharmendra Tewari/ Dr. Nayan Solanki/ Manik Sharma