NHSRCL
National High Speed Rail Corporation Ltd.

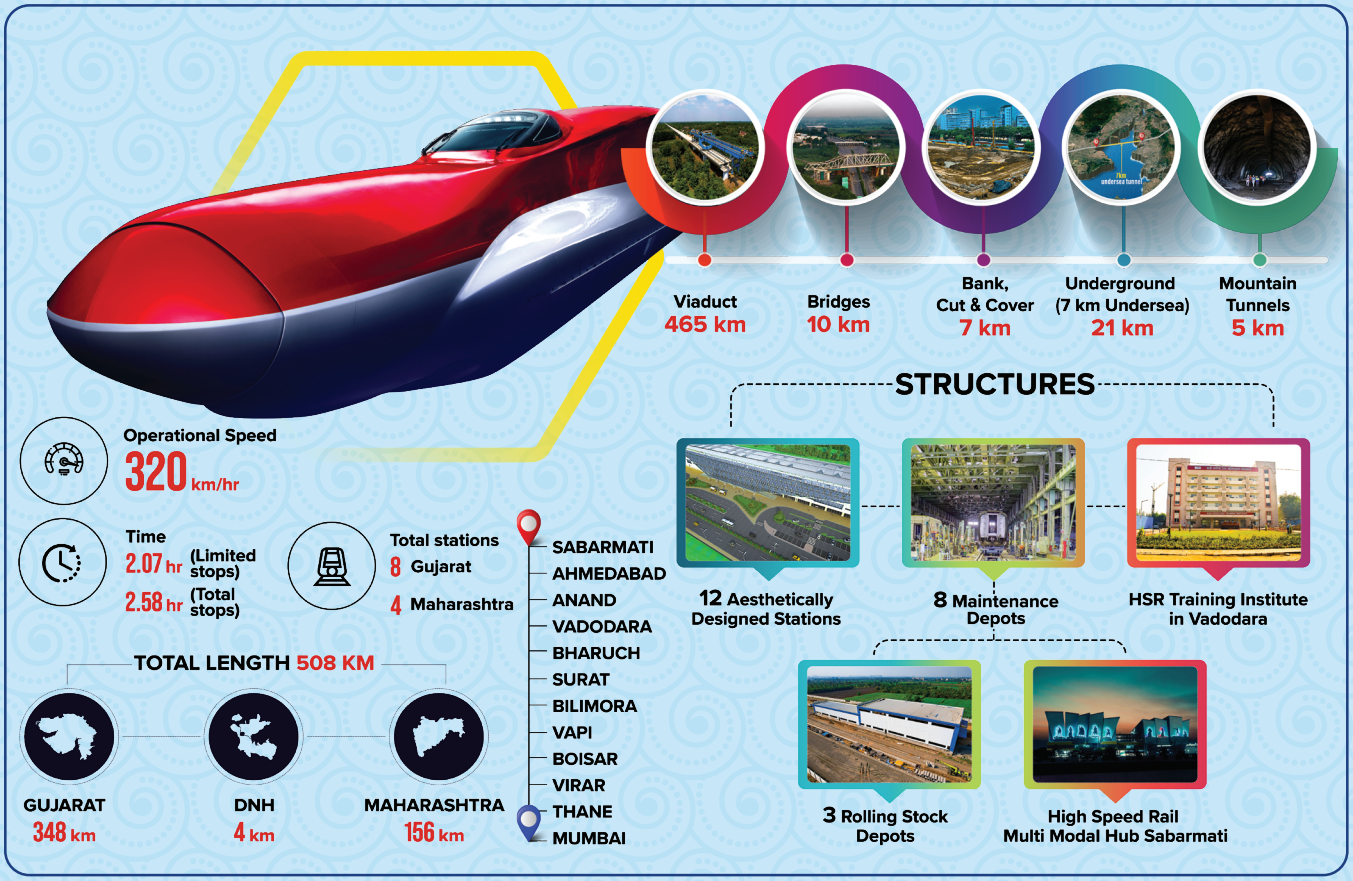
India's First Bullet Train Project

A Journey Into The Future

India's First Bullet Train Project - the **Mumbai - Ahmedabad High Speed Rail corridor,** spanning across 508 kilometres, will offer fast connectivity between the two financial hubs located in the states of Maharashtra and Gujarat in western India.

After starting from Mumbai's Bandra Kurla Complex (BKC) area, the high-speed train running at a speed of 320 km/h will revolutionise intercity travel in the region and will integrate the economies of Mumbai, Surat, Anand, Vadodara & Ahmedabad. It will have stops at 10 cities in between namely Thane, Virar, Boisar, Vapi, Bilimora, Surat, Bharuch, Vadodara, Anand, Ahmedabad and will terminate at Sabarmati.

The entire journey will be completed in about 2 hours 7 minutes with limited stops (at Surat, Vadodara and Ahmedabad), which is substantially less than the time taken by conventional trains or road journeys.



National High-Speed Rail Corporation Limited (NHSRCL) implementing this project was incorporated on 12th February 2016 under the Companies Act, 2013 with an object to finance, construct, maintain and manage the High Speed Rail Corridor in India. The Company has been modelled as 'Special Purpose Vehicle' in the joint sector with equity participation by Central Government through Ministry of Railways and two State Governments viz. Government of Gujarat and Government of Maharashtra.

Funding

As per the feasibility report, the estimated cost of the project is INR 1,08,000 crore (USD 17 billion) and being executed with Official Development Assistance (ODA) Loan assistance from Japan International Cooperation Agency (JICA).

In overall capital structure, 81% of the total cost of the project will be funded by the Government of Japan through JICA. The remaining project cost will be funded by Government of India. According to the equity structure of the Special Purpose Vehicle, 50% is held by the Government of India (GoI), through the Ministry of Railways, and 25% each by the Government of Maharashtra and the Government of Gujarat.

The conditions of the loan being given for MAHSR are at concessional terms and conditions. The tenure of the loan is 50 years at 0.1% interest rate and with a moratorium period of 15 years. Thus, the loan repayment will be done in 35 years.

Land Acquisition

100% land has been acquired for the project. Out of 1390 hectares earmarked for the line, 430 hectares is in Maharashtra and another 960 hectares is in Gujarat and Union Territory of Dadra Nagar Haveli.

Alignment

About 90% of the alignment is elevated and is being constructed mainly using the Full Span Launching Method (FSLM). This unique construction method, is being used for the first time in the country. India is one of the few countries in the world to use and master this technique.

FSLM is 10 times faster than the conventional segmental construction technique used for viaduct construction. Each girder is approximately 40 meters long and weighs about 970 tonnes. 'Make in India' equipment is being used for this purpose.

28 steel bridges of spans varying between 60 metres and 130 metres have been planned along the length of the corridor spanning over National and State Highways, Irrigation Canals and Railway tracks.

In addition, 24 river bridges are being constructed as part of the alignment, of which 20 bridges are located in the state of Gujarat and 4 bridges in the state of Maharashtra.

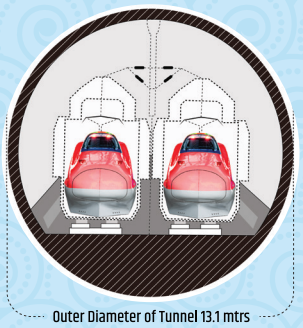
First Steel Bridge of 70 metres length

Bridges on Rivers

India's first Undersea Tunnel

The alignment features a 21 km long tunnel, a part of which is going to run under the sea bed. This is going to be the first undersea rail tunnel to come up in the country. The tunnel will start from Mumbai HSR station and come out at Kalyan Shilphata, of which about 7 km runs under the Thane creek, in Maharashtra.

The entire 21 km stretch will be constructed using a combination of two techniques – New Austrian Tunnelling Method (NATM) to carve out 5 km of the tunnel and Tunnel Boring Machine (TBM) for the remaining 16 km.



21 km (approx.)
Long Tunnel

7 km (approx.)
Undersea Tunnel at Thane Creek

A single tube of 13.1 m diameter will carry both the tracks in the tunnel. A cutter head of 13.6 m diameter which is the largest for any railways project in India, is being used.

Electrical

To meet the energy requirements of the trains, as well as various installations/equipment in several buildings like station buildings, Operation Control Centre, Depots, Training Institute and installations/ equipment along the MAHSR corridor, a network of 12 traction substations, 2 depot traction substations and 16 distribution substations will be built along the 508 km stretch.

Signalling & Telecom

The MAHSR project will use the Digital Shinkansen - Automatic Train Control technology, which has been proven to be safest technology for the high speed trains in the world. For the first time in India, the MAHSR corridor will use a gas-filled leaky cable for transmission of vital information between trains and Operation Control Centre (OCC) to reduce downtime caused by damage to cables.

Aesthetically Designed Stations

The design of each of the 12 stations on the MAHSR line will reflect the spirit of the city it is located in. This will bring about an instant connection with the local populace, and promote a sense of ownership of the high-speed rail system.

From an architectural point of view and to establish a connect with the local environment, some elements of the city that locals are proud of have been picked up and included in the station design concept. For instance, Ahmedabad's HSR station facade design is inspired by the rich cultural & historical ethos of the city with roof becoming a canvas for hundreds of vibrant kites flying in the sky.

The stations are being designed with contemporary architectural facade and state-of-the-art modern finishes.

*Ahmedabad HSR Station**

*Internal view of Vadodara HSR Station**

* *Graphic representation*

High Speed Rail Multi Modal Hub at Sabarmati

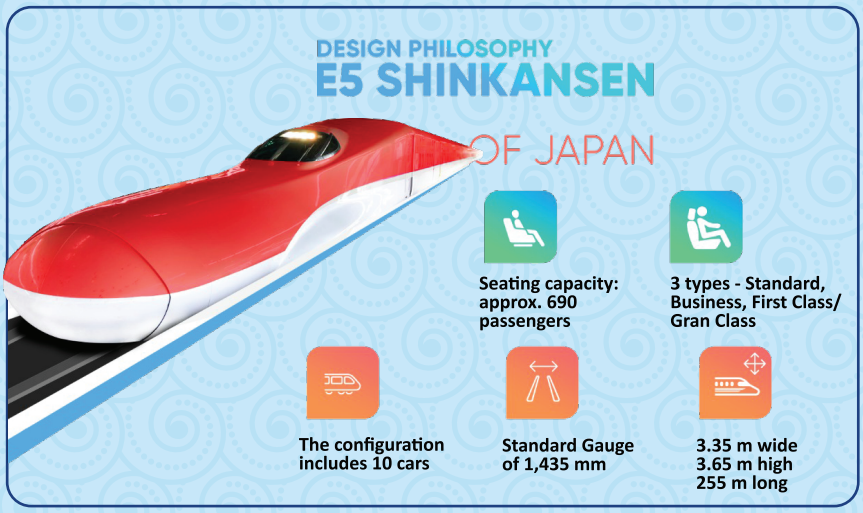
To achieve seamless integration of various transport modes around the HSR station, a multi-modal transit terminal has been constructed.

Comfortable Ride

One of the best global technologies in HSR – the Japanese Shinkansen technology – has been selected for the MAHSR corridor.

The Shinkansen system offers one of the highest safety levels in the world – there have been zero passenger fatalities since first Shinkansen train started in Japan, in 1964. They run at an average punctuality level of less than 1 minute per train.

- Double skin aluminium alloy body
- Seats for Wheel chair bound passengers
- Comfortable seatback
- Wheel chair accessible toilet
- Flip-up type armrests
- Reclining mechanism
- LED lighting facility
- Passenger information system
- Voice communication system
- Cameras for surveillance
- Braille Signage
- Multipurpose Room



The train will have double skin aluminium alloy air tight body and floors with noise insulation and active suspension to ensure a comfortable ride.

The reclining seats will be ergonomically designed with ample leg space.

Passengers will be able to talk to train crew in emergency situation. One car will be provided with multipurpose room with folding bed for sick persons or child feeding mothers.

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