



Department of Civil Engineering Indian Institute of Technology Kanpur

Mumbai - Ahmedabad High Speed Rail Link – Challenges & Opportunities –

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Mumbai Ahmedabad High Speed Rail Link (MAHSRL) is a landmark collaborative project between India and Japan. It is a monumental achievement of comprehensive cooperation, and is a part of the transportation infrastructure aimed at improving the mobility in the country.

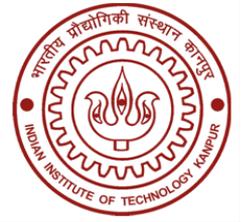
Setting up of IIT Kanpur with the help of a consortium of US Universities could be one model of collaboration that could be studied. (Compare to the recent experience in the setting up on IIT Hyderabad with Japanese collaboration in the same sector).



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The MAHSR Project :: Facts

- Dedicated track for passengers only
- Implemented by National High-Speed Rail Corporation Limited (NHSRCL)
- Length : 508.17 km (155.72 km in Maharashtra, 348.15 km in Gujarat and 4.3 km in Dadra and Nagar Haveli (DNH))
- Elevated corridor, except for a 21 km underground (7 km undersea)
- Number of stations : 12
- Travelling time : Approximately 2 hours
- Max Operating Speed : 320 kmph
- Max Design Speed : 350 kmph (Civil work and Alignment)
320 kmph (E&M)
- Project Cost : Approximately INR 976.36 billion
- **Very similar to the Tokaido Shinkansen line between Tokyo and Osaka length and population density wise**



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Schedule

	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Technical Standards and Regulations	→									
Design Preparation of Tender Document		→								
Resettlement and Land Acquisition			→							
Construction, Procurement				→						
Education and Training				→						
Trial Run and Test Run								→		
Commercial Operation									→	

Source: East Japan Railway Company



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Before coming to challenges and opportunities, I would like to share some personal thoughts on the backdrop of project.

Japan has a proven history in planning, designing, construction and operation of large infrastructure projects, including the Shinkansen network, Seikan Tunnel, Akashi Kaikyo bridges, Kansai International Airport, through largely in house expertise !!

MAHSRL is not like buying a ready to use product

In creating NHRCL, outside the framework of Indian Railways, the Indian Government has shown commitment to make a fresh start. The onus is now on this entity to deliver with available resources – and create additional resources, as and when required.



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Challenges and opportunities abound in all phases of the project – Planning, Design, Construction, Operation and maintenance

Always a good idea to know more about your team – the Indian team (drawn from all stakeholders) should learn about Japanese team and the way they work - bottom up management, team work, professionalism, and see what can or needs to be adopted !!

Japanese and Indian engineers need to understand each others' standards, design philosophy and procedures along with acceptable or permissible values for the hundreds of parameters involved.

What is 'obvious' in Japan is not at all so in India and vice versa !!



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Quality of construction work is huge challenge

Quality is an umbrella covering all aspects of performance, and perceptions in India and Japan are quite different

- Product quality vs process quality
- Test methods and specifications
- Quality of material, component and system

Setting up on laboratories and training personnel all along the route for timely, accurate and reliable results.

Instil the motto that 'Quality is everyone's business'



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Though the operation phase of MAHSRL is still some time in the future, it is important to prepare adequately and appropriately.

There are lessons to be learnt on all aspects of performance – Punctuality, Reliability, Safety, Cleanliness

A qualitative change in the outlook is required.

Being a green field project, the MAHSRL could be the first in an integrated design-construction-maintenance operations, in a framework of asset management.

Cataloguing and archival of all relevant planning, design and construction records, which could become the basis for future maintenance operations



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Apart from money, a successful project involves smart handling of materials, thorough understanding of methods used, use of appropriate machine and technologies, it is perhaps the right training and use of manpower that is most crucial.

Front line worker
Supervisor
Engineer/Manager



Education
Training
Certification



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Construction, operation and maintenance of the MAHSRL will be a major challenge and it is important that the NHSRCL is appropriately prepared.

- All disciplines of engineering (civil, electrical, mechanical, electrical, instrumentation), are involved
- Appropriate inspection manuals and procedures, need to be developed, for all services – housekeeping, security, commercial, food
- Trained manpower – not only in letter but also spirit. Needs to be kept in mind that manuals and rules cannot do anything, unless they are followed !!



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The MAHSRL could

- only be the beginning of several similar independent stretches, which could then be integrated to create a network
- usher in an attitudinal change in the way projects are looked and worked upon in India
- provide an opportunity to interface at several places with other government initiatives such as Skill India, Make in India



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:: Thank you ::