

Mumbai – Elevated Rail Corridor

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ABSTRACT: The Elevated Rail Corridor frameworks are high-limit open vehicles that are by and large observed in urban territories. Checking out the urban vehicle situation in Indian urban communities, this is the full-length investigation of the Rapidlyelevated rail framework in India. As of late the elevated rail corridor has come up as a favored option of a mass vehicles in urban spaces looked with developing populace, high vehicular traffic, and expanded contamination. Elevate rail corridor Route Maps are made according to traffic study and assessed in a precise way by utilizing GIS, Global Mapped and discover most brief doable courses. Focusing on the complexities of development setting up, Indian practice with those of its universal counterparts. There are steady advantages to the monetary specialists like government, private transporters, travelers, overall population and untalented workers. This Study focuses on significant exercises for future foundation ventures. While the railway corridor framework has excitingly improved its between city networks. This investigation of elevated rail corridors clarifies the essentialness and outcome of raised and underground elevated rail in India.

KEYWORDS: Elevated rail, vehicle, travelers, urban, population

I. INTRODUCTION

This early on section starts with a survey of the vehicle issues come across by urban areas in the nation. This is trailed by discourses of urbanization in India and the nation's urban vehicle approach, and overall practices in creating elevated corridors. The project is to be built at a cost of around Rs 20,000 crore, the project may turn out to be the railways' first public-private-partnership initiative in the passenger segment, with the responsibility of building the line, its operations, fare fixation and, collection being handed to the private partner.

The preliminary rate of return for the full corridor (Oval Maidan-Churchgate-Virar) was envisaged at 5.10 percent and for Mahalaxmi-Virar was 8.07 percent. The fare structure for the corridor would be similar to the one proposed for the Mumbai Metro Line 1 & 2 fare structure.

Though the western and central corridors of the Mumbai suburban railway network form the backbone of the city's transport network, there has been a long-standing demand for air-conditioned services in Mumbai. Besides, the existing suburban system is unable to handle the passenger volumes. The new corridor will fill this gap by not only redistributing traffic on the mass transit system but also by offloading a part of passenger traffic from the existing suburban system and roads. Mumbai with a daily suburban commuter movement of around 6.5 million, has no integrated planning for the transport system, as in the case in many other cities. The 62-km corridor will run from Churchgate to Virar, along the present Western Railway route, with an 8-km underground section and about 12 km of a stretch at ground level between Santa Cruz and Vile Parle,

II. ELEVATED SECTIONS

1 Typical construction sequence and traffic movement:

It is proposed to construct the elevated sections on a combination of monopile and multiple pile foundations.

This will involve blockage of a minimum 5m wide strip in case of monopile and 8m in case of multiple pile foundations.

Extra barricading width of 1.75m on either side would be desirable during nighttime for movement of equipment within the construction zone, and the same shall be withdrawn during daytime to maximize available road width.

At the station, the total width to be blocked for construction would be about 26m, to be blocked in one go. However, most of these would be over

Railway Land and only block part of the adjacent road in some cases.

2 Proposed Measures:

- Traffic Circulation Planning.
- Up-gradation/ widening of roads and walkways.
- Pedestrian cross-over facilities.
- New/ augmented bus/ IPT stands.
- Planned pick-up/ drop-off areas.
- Parking facilities.

3 Intermodal Integration & Dispersal:

Entry/ Exits of Proposed System are integrated with those of existing Suburban, Metro and, Skywalks.

Detailed worked out for Typical stations:

Dadar, Andheri, Goregaon, and Mira Road.

MCGM and Traffic Police agree that the schemes are doable.



4. Cost Stream & Revenue Stream:

Complete Project Cost – Rs. 20,654 Crores.

Includes- Inflation during construction.

Excludes- Interest during construction.

Investment accounted for in IRR calculation:-

Additional investment in Rollong stock in 2029-30 & 2039-40.

50% Replacement of S&T and 25% of Electrical assets (in 2037-38).

O&M Cost (as on 2019-20) :- Rs. 461.04 Crores.

Revenue Stream:

Fare box revenue : Rs. 1392 Crores (as on 2019-20)

Advt. & Others (5% of fare box revenue): 69.60 crores.

Project FIRR without VGF & commercial development 3.26% (based on MMRDA fare structure)

Sources of funding to improve FIRR

VGf

Commercial Development of airspace & sparable land parcels.

III. METHODOLOGY

There are two sorts of rail corridors

- Underground rail corridor
- Elevated rail corridor

Underground rail corridor



Fig : Underground Rail Corridor

Underground burrowing by utilizing TBM (Tunnel Boring Machine) otherwise called a mole, is a machine used to exhum burrows with a roundabout cross-segment through an assortment of soil and shake strata, They can drill through the hard shake, sand and, nearly anything in the middle.

Passage breadths can go from a meter to right around 16 meters. Passages not exactly a meter or so in distance across are regularly done utilizing trenchless development strategies or flat directional penetrating instead of TBMs. Passage drilling machines are utilized as an option in contrast to penetrating and impacting (D&B) strategies in shake and traditional hand mining in soil. TBMs have the benefits of restricting the unsettling influence to the encompassing ground and creating a smooth passage divider. This fundamentally diminishes the expense of covering the passage and makes them reasonable to use in vigorously urbanized zones. The significant drawback is the forthright cost. TBMs are costly to develop and can be hard to move. In any case, as present-day passages become longer, the expense of passage drilling machines versus drill and impact is reality less this is on the grounds that burrowing with TBMs is substantially more proficient and results in a shorter venture.

Elevated rail Corridor



Fig: Elevated Rail Corridor

The greater part of bridge structures are being developed utilizing pre-thrown sections introduced utilizing the under threw brace procedure. The benefit of this strategy is that it empowers the viaduct deck interruption to traffic underneath.

Viaducts are multi-spread over scaffolds going across over streets or waterways or valleys. On the Guard train venture, viaducts commonly length in the request for 40m to 50m between decks. Over the previous month's erection of viaduct, decks have been continuous at numerous areas along the course. Three supports are being utilized all the while and together they will erect roughly 10.5 Kilometers of the viaduct deck structure.

Results

The Elevated Railway Corridor has been surveyed to be aligned along the Western Side of the Western Railway Suburban Corridor. This means that the Elevated Corridor would duplicate the Existing route and compete for the same passengers.

Western Railway has vacant land only between Borivali to Jogeshwari and Bandra to Dadar to lay the Pillars of the Elevated Corridor. This would mean that Western Railway has to acquire a large number of expensive Multi-Storey properties between Jogeshwari and Bandra and Dadar to Churchgate to lay the Elevated Corridor.

There are many Road over Bridges on the Western Railway tracks between Churchgate and Virar which would have to be crossed over through Double Decker Bridges making them very expensive and complicated.

Western Railway would have to construct this immensely expensive project and at the same time maintain the same fare structure as on the existing Sub-urban Railway network making this

project highly financially unviable.

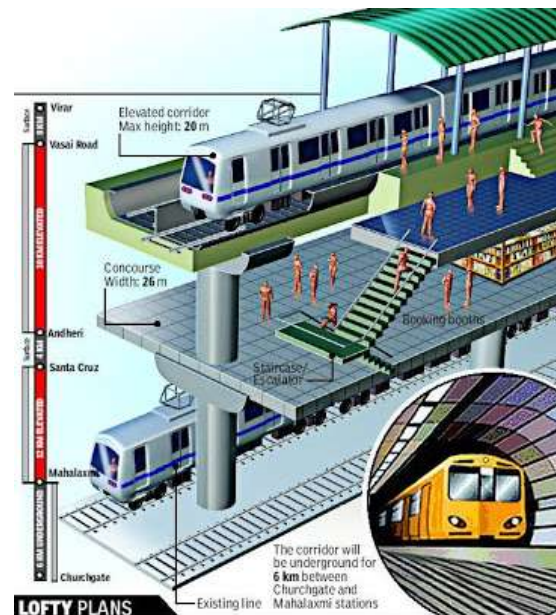


Fig: Elevated Rail Corridor

IV. ADVANTAGES AND DISADVANTAGES

ADVANTAGES

1. The economic cost of travel.
2. Good urban and architectural design.
3. Land-use planning.
4. Extended networks of linear parks and quiet streets for safer walking and cycling.
5. Less disruption to traffic and trains during construction.
6. Superior passenger experience, views, and way-finding.
7. The technical and operational requirements for effective public transport networks.
8. Fire-safe coaches.
9. State-of-workmanship plan and electronic ticketing frameworks.

DISADVANTAGES

1. Financial modeling of the project to make it viable
2. Integration with existing modes of transport.
3. Avoidance of disturbances to the existing suburban railway lines during the construction work.
4. Its construction cost is high.
5. Other Costs such as; land Acquisition, Rehabilitation and Resettlement costs, and also Litigation costs.

V. CONCLUSION

Consequently, there ought to be appropriate planning and usage to limit the effect on the condition so that there will be least bother or no-burden for the individuals. Any framework advancement completed in the city is intended for the individuals living in the city.

- An elevated rail corridor is required to decrease the traffic on streets.
- This is a genuinely necessary framework to help the present traffic states of the city.
- The social advantages exceed for the underground rail corridor contrasted with the elevated rail corridor.
- The raised corridor is superior to the Underground corridor. In the examination region, the development of the raised corridor will have less effect on condition than underground. The focuses watched are as per the following:

The geography of surface level isn't level, and it is hard to burrow for underground.

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