



METRO CUBE

ADDING A NEW DIMENSION

A Mumbai Metro Rail Corporation Newsletter

Volume no.1

THE JOURNEY BEGINS...

A Mega metropolis across the globe has to deal with ever-growing demand of effective and comfortable mass rapid transport. Mumbai is no different and to say that the existing options are bursting from the seams would be a gross understatement. City planners identified the metro as an option way back in 1969, when it was put forth for the first time but it never got executed. In 2003-04, it was re-initiated by the Mumbai Metropolitan Region Development Authority (MMRDA) with plan of seven corridors measuring 153 km to add new routes and they were meticulously planned to cater to areas where the suburban rail had no connectivity but commuter demand was high. The 33.5 km Colaba-Bandra-SEEPZ Metro-3 is an integral part of the overall Metro plan. As this route was to cut across the overcrowded corridors where large scale land acquisitions was extremely difficult it was decided to go underground.



"I want to create a Metro network in the city which will decongest the suburban rail system that is overcrowded and provide easy, comfortable and safe journey to Mumbaiikars."

Hon. Chief Minister of Maharashtra
SHRI DEVENDRA FADNAVIS

The Metro network will have stations every 500 m which makes it easier to access on foot unlike railway stations that are about 1-2 km apart. The Metros can also be integrated with Monorail and suburban rail network. My aim is to create a commuter system that will enable people reach their destination in an hour's time. The environment friendly Metro will bring back the lost glory of the city."

Given the challenges in implementation it was decided to create a separate body to plan, build and execute this ambitious project. This led to the birth of Mumbai Metro Rail Corporation. Formed in 2008, Mumbai Metro Rail Corporation (MMRC) is a joint venture between the Central and State governments. The vision of MMRC is to 'strive towards creating a world class Mass Rapid Transit System (MRTS) to ease travel woes.' To achieve the goal, MMRC is to build a Metro line that's a highly standardized, reliable, sustainable and energy efficient. MMRC is positive that this metro line will provide the best results to the society and its stakeholders with pride and dignity.

The National Facilitation Committee (NFC) decided to expedite the metro connectivity to the airport and therefore put it in Phase-1, rather than Phase-3 as per the Metro Master Plan.

This was achieved by merging Metro Line-6, named BKC-Kanjurmarg via Airport under Phase-3 with Metro Line-3 under Phase-1, i.e. Colaba-Mahim-Bandra and run through services from Colaba to SEEPZ. MMRC commissioned the services of RITES to update both the studies; viz. the first conducted by DMRC for Colaba-Mahim-Bandra Metro Line (2007) and the second by RITES for Mahim-BKC-Kanjurmarg (2010) and prepare a combined Detailed Project Report for the running of services on the fully underground Colaba-Bandra-SEEPZ corridor.



The right of way and acquisition of land required for the project are two critical components in the implementation of any urban brown field infrastructure project. Even before the first brick has been laid MMRC has acquired 83% of the land required.

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THE JOURNEY BEGINS...

This is no mean task and will remove many hurdles in project implementation helping maintain the deadlines. MMRC has appointed AECOM Asia led consortium (JV between Padeco, Japan, LBG Inc., USA and Egis Rail, France) as General Consultants to assist MMRC in design, supervision, quality control, safety and contract management of the project. The pre-qualification bid for procurement of Rolling Stock has been floated. The pre-bid meetings have been conducted to apprise contractors about the bid conditions.

Project Benefits

- **Completely air-conditioned - better aesthetics and clean skyline**
- **Regenerative braking and use of solar energy to boost eco-friendliness**
- **Connects key locations that would shun usage of private vehicles and in turn reduce fuel consumption and improve environment of the city**
- **Platform screen doors and closed door coaches to improve security of the passengers**
- **CCTV cameras, escalators, elevators and FOBs to facilitate enhanced convenience and sense of security**

Project Highlights

- **33.5 km completely underground corridor, with 27 stations**
- **Will connect close to 30 educational institutions, 6 CBDs, 30 recreational centers and the Domestic & International Terminals**
- **Current estimated project cost is Rs.23,126 cr.**
- **Jointly funded by JICA, Government of India, Government of Maharashtra and others**

Similarly, pre-qualification bid tenders have been floated for commissioning of power supply & traction work, tunnel ventilation & environment control system & commissioning of heavy duty escalators & elevators. Considering the excellent planning, the work of Metro-3 will begin soon.

Manifesting the core philosophy of the corporation, a logo was created which spells the rising sun and its rays that mark the emergence of a well-connected, safe and trusted transportation for commuters in Mumbai. It also talks about diversity of the populace that will use the service daily, with multiple colored interlinking corridors. As a part of its commitment to engage with all stakeholders, the MMRC website has been given shades and tints of green to determine the eco-friendliness of the project.

For better communication and interaction with the stakeholders, The Metro-3 corridor is also active on social media networks like Facebook and Twitter. This is to effectively connect with the youth of the city and keep them informed about Metro-3 corridor. The challenges are immense and MMRC is adequately geared up to meet them. MMRC is committed to present Metro-3 corridor by 2020 which will certainly be welcomed by the smiling Mumbaikars.

WHY AT AAREY?

While Mumbai Metro Line-3; Colaba-Bandra-SPEEZ Corridor has been planned as fully underground to minimize visual intrusion and obstructions on Mumbai streets, the issue of Resettlement and Rehabilitation of the Project Affected Persons (PAPs), Environmental concerns and traffic diversion during construction will continue to remain as key concerns.

The proposed car shed at Aarey Colony has been the bone of contention since the issue was raised by selected Environmental NGOs, individual and resident groups. Being sensitive to the environmental issue, MMRC at DPR stage itself examined various alternative sites to this important component. The alternate sites examined included; Back-Bay reclamation at Colaba, Mahalaxmi Race Course, BKC-Kalina (Mumbai) University Campus and Aarey Colony. After screening for technical suitability and other social, financial and environmental considerations, Aarey Colony has been selected.

Key Considerations in Deciding Metro Car Depot

- **Metro corridors measuring 20 to 40 km would require a dedicated car depot**
- **The farthest point/station on the line from car depot explains the stable and dependable services**
- **End of the line depots require to operate accurate services to avoid accumulated delay which will affect stable operations.**
- **Depot facilities cannot be arbitrarily divided and located at different/remote location unless the site is directly connected by the line/service line**

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MD SPEAKS

Dear Reader,

We have embarked on a journey to create a marvel which will add immense value to the life of a Mumbaikar. This journey will add a new dimension to the fabric of this great city. The 33.5 km long Colaba-Bandra-SEEPZ Metro-3 corridor will offer unparalleled passenger comfort, engineering spectacle, safety standards, energy efficiency and environment friendliness. This completely underground corridor will run through Cuffe Parade, Kalbadevi, Worli, MIDC, Dharavi, BKC and the domestic and international terminals.

The route has been meticulously designed to cater to passenger needs that hitherto have not been catered to. In a first, this network will connect key locations directly without having to change modes of transport. The Metro-3 intercepts the suburban rail network at Churchgate, Chhatrapati Shivaji Terminus, Mumbai Central and Mahalaxmi, allowing commuters seamlessly reach a wide range of desired destinations.

The decision to go underground was difficult as it brings with it a set of challenges. However, keeping in mind Mumbai's major issue of congestion and space crunch, we have decided to take the difficult underground path. The journey has begun. Even before we started, we knew it would not be easy and issues would seem insurmountable. We know we will face challenges, some real while other not so much. And, of course, there are a few with vested interests.

We, however, are determined to walk the distance, as the old adage goes, 'When the going gets tough, the tough gets going.' We need all your support to implement what is the dream and need of millions of Mumbaikars.

Ms. Ashwini Bhide, IAS
Managing Director
MMRCL

WHY AT AAREY?

MMRC has been putting further efforts to minimize the depot requirement so that the land requirement from Aarey Colony will be minimized.

Key Considerations in Deciding Metro Car Depot

- With Metro Line 3 being fully underground, at-grade Depot at intermittent location would require longer depot connector.
- A 33.5 km corridor with 27 stations would require about 55 trains (8 Car-sets).
- A car depot for the same would require land ranging from 28 to 30 ha.

IMPORTANCE OF A CAR DEPOT

For reliable Metro operations, the trains must be in good working condition and regular maintenance is essential to achieve this. The maintenance facility in a Metro (depot) usually consists of a yard for night and day parking, a car cleaning area, an inspection area, light and heavy maintenance shop. Every corridor requires a certain number of trains, which is based on corridor length, stations, frequency (or headway) to be maintained and their parking. This, along with other maintenance facilities makes it imperative that the car depot have a certain minimum area and also fulfill other conditions for the smooth operations of the Metro. Trains need to be cleaned and serviced which means regular exterior wash and interior sweeping and dusting or vacuuming.

The rolling stock/train cars are subjected to wear and tear in daily operations. Therefore, to ensure punctuality, maintaining rolling stock is very important. Train wheels wear out due to the heat and friction during running or braking. It requires periodic re-profiling or replacing of wheels. A depot has to be equipped with the modern facilities that allow these functions while the wheels are still on the train. Access to the underneath of the train is also essential. The depot should also have adequate storage facility to stock spare parts and maintenance equipment.

A critical feature of any depot is good access so that trains can get in and out of the depot without delaying trains and upsetting operations. The depot has to be close to the line or else it would mean an extra track just for bringing the trains to the depot. This would be costly and inconvenient. A depot also requires a good road access so that large equipment or components could be delivered to the depot.

KEY METRO DEPOT'S OVERVIEW

City Name	Depot Name	Corridor Length	Total Area (in Ha)
Delhi (Phase-1)	Khyber pass Shastri nagar Najafgarh	65.10 km	107.60
Chennai	Koyambedu Depot	22 km	26.00
Hyderabad	Miyapur Depot	28.87 km	40.00

Did You Know ?

The escalators at all the Delhi metro stations are provided with unique 'sari guard' feature that sidetracks loose clothing such as saris of ladies from getting trapped in the escalator
 Source:- www.delhimetrorail.com

Joseph Stalin, the leader of erstwhile Soviet Union reportedly built a secret metro system (known as "Metro-2") to be used by the military in times of duress during the Cold War. The metro ran underground in Moscow.
 Source:- wikipedia.org

A lot of metro stations provide bicycles on rent for as meagre as 10 rupees for 4 hours with a valid ID proof
 Source :- www.delhimetrorail.com

Each metro stop in Paris has a theme. Mostly these are some historical figures. And there is one metro station that looks like a submarine
 Source :- worldofparis.wordpress.com

In 2014, Delhi Metro was ranked the second most popular metro system globally. The first was New York.
 Source :- indianexpress.com

News about other Metros

Riyadh Metro: PM Shri Narendra Modi visited L&T's Riyadh Metro project site on his maiden visit to Saudi Arabia, on 2nd April, 2016. He interacted with the project personnels working there and shared, his feelings with them, "India's workforce will soon meet the world's need for manpower and through their efforts across the globe they are enhancing India's prestige and value in the eyes of the world."

L&T's Group Executive Chairman, Mr. A.M. Naik said that it was indeed a remarkable day for Riyadh Metro and that they were grateful to PM Modi to have spared time to recognize this iconic project.
 Source :- Narendramodi.in

Noida Metro: The civil works on the Noida-Greater Noida Metro track is about 40% complete. Announcing this on 9th April, 2016, Delhi Metro Rail Corporation (DMRC) officials said the Metro corridor was likely to roll out by the end of next year and also set a world record as no Metro line has been commissioned in a span of two and a half years.
 Source :- Times of India

Nagpur Metro: Nagpur Metro project's Managing Director Mr. Brajesh Dixit and its German Finance KfW Director Peter Hilliges have signed the Project Agreement for funding of Rs 3,750 crore, which will be utilised for procurement of rolling stock, cars, electricity supply, traction and other infrastructure facilities on the 10th of April, 2016.
 Source :- Nagpur Today

Lucknow Metro: The European Investment Bank will give Euros 450 million (\$512 million) loan to India to finance the construction of Lucknow's first 23 km long metro rail line and purchase a fleet of new trains. An agreement on the first tranche of the credit was signed in Brussels, during the 13th EU-India summit attended by the Prime Minister, Shri Narendra Modi.
 Source :- The Economic Times

News @ MMRC



Drawing competition organized by MMRC and Jawahar Bal Bhavan

As many as 896 students from around 300 schools participated in an inter-school drawing competition jointly held by Mumbai Metro Rail Corporation (MMRC) and Jawahar Bal Bhavan at its premises at Mumbai on 28th February, 2016. The winners of both groups were given a prize money of Rs. 5000/-, while the second and third prize winners received Rs. 3000/- and Rs. 2000/- respectively. Ten consolation prizes of Rs. 1000/- each along with medals were also awarded.



Programme for PAPs on women's rights

A programme on women's legal issues exclusively for around 250 project affected women was organised to create awareness about women related laws, at the Eklavya Adiwasi Sewa trust ground. The programme was conducted by eminent lawyer Adv. Pooja Kute who threw light on women's rights and laws related to women including domestic violence, harassment at workplace, and dowry harassment among others. The programme also included answering queries by the attendees.

Excellent response from bidders for Tunnel Ventilation and Station Air-conditioning

The pre-bid meeting for tunnel ventilation and station air conditioning was conducted at MMRC Office, which saw the presence of five reputed firms including ETA Engineering. Pvt. Ltd., Bluestar Ltd., Voltas Ltd., Tata Projects Ltd., and Sterling & Wilson Pvt. Ltd., During the meeting, queries were clarified by MMRC officials in presence of its General Consultants.



Women employees celebrate International Women's Day

International Women's Day was celebrated on the 8th March, by conducting an hour long meditation session for women employees. The session was conducted by Ms. Nandita Mathur from *Heartfulness* organization, who spoke about stress-management with the help of meditation and also made them practice some techniques. Women employees actively participated in large numbers for the event.



Homes to 120 Project Affected Families

For the construction of Bandra-Kurla Complex metro station, MMRC needed to rehabilitate around 160 families, out of which 120 were granted letters of allotment in a 12-storey building near Kurla (W). In order to allot homes in an unbiased manner with utmost transparency, a computerized lottery system was adopted.

The residents were given a barcode basis their scanned photograph and digital signature, using which the allotment was conducted. The satisfaction of residents with the entire process was manifested by a letter of appreciation they gave MMRC post the allocations.