

METRO CUBE



ADDING NEW DIMENSIONS



MD SPEAKS

Ms. Ashwini Bhide, IAS

Some citizens of Churchgate and Cuffe Parade have filed writ petition against the project in the Hon. High Court. Such obstructions are not unusual in mega projects. As MMRC has ensured all mandatory legal permissions for implementation, we are confident that the Hon. High Court will pronounce decisions in our favour. We are committed to protect the citizen's interest and environment and are ready to follow any specific directives that may arise during the course of court proceedings. We are happy to announce that MMRC has secured CRZ clearances from the State Level Environmental Impact Assessment Authority (SEIAA).

R&R activities have progressed satisfactorily to facilitate land transfer. In-situ rehabilitation of the PAPs is being undertaken through cluster development schemes (as per MCGM DCR 33/7). The process has been initiated with MHADA handing over 89 transit tenements at Pimplewadi, near Girgaon, which addresses part of the transit housing needs of the PAPs. The decision to offer residential tenements against commercial and industrial PAPs has provided an effective solution as we have a shortfall of adequate commercial and industrial premises. With this success, the balance commercial and industrial PAPs in good number have started opting for residential choices.

RFPs of 5 system packages were released earlier and we are expecting competitive bidding in all packages. Tenders will be received in the month of May. The contractors have placed order for TBM procurement and preparatory works are in progress. TBMs are expected to arrive in the third quarter of the year.

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KNOW YOUR STATION - KALBADEVI



Swadeshi Market - one of the old cloth markets



Jer Mahal - Goan socio - cultural club



Bhuleshwar Market (Source: Flickr)



Kalbadevi Metro Station Precinct

Kalbadevi is the 6th station from the south on Metro 3, on Jagannath Shankarshet Road, in one of the most busy market and residential area of South Mumbai. The Metro Station is expected to bring a new dimension to this area in the form of a Public Transit leading to major changes in the urban environment of Kalbadevi precinct. This also calls for a guided urban renewal mechanism which can protect the heritage value while accommodating the new infrastructure.

The area is currently serviced by Marine Lines station(0.5km) on Western Line and Masjid Bunder station(1.5km) on Central line. The underground metro station will provide direct access to traditional markets in Kalbadevi.

Named after Goddess Kalbadevi, the neighbourhood is a hub for traders and wholesale buyers for commodities like books, clothes, medicines, sports equipments etc.

Famous markets and retail streets around Kalbadevi like Swadeshi Market, Mulji Jetha Market, Zaveri Bazaar, Mangaldas Market, Princess Street, Kalbadevi Marg, Bhuleshwar Road etc. are spread over about 9 sqkm and will form a larger catchment area for the station. Among the celebrated heritage destinations are Parsi Fire Temple, Parsi Dairy, Metro Big Cinema, music hub Furtados, Edward Cinema, Jer Mahal etc.

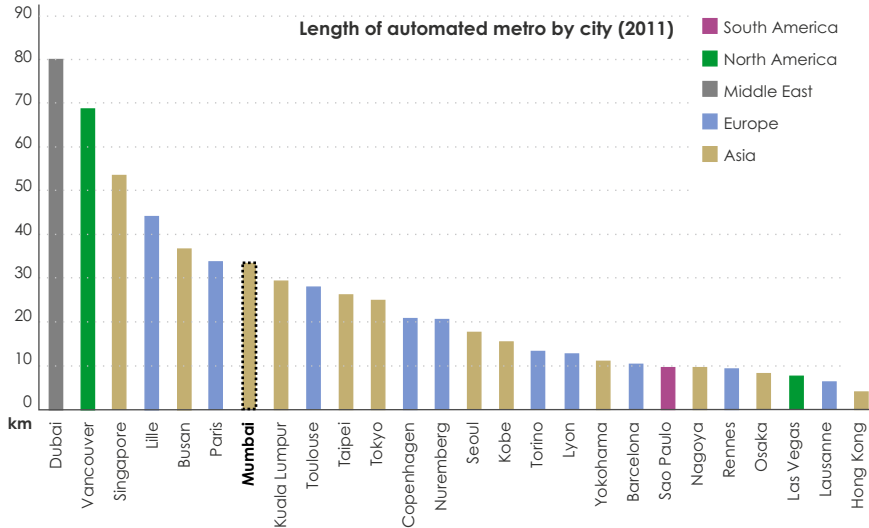


Market activities in Princess Street



TRAIN AUTOMATION SYSTEM

Since the beginning of rapid transit systems 154 years ago in London's Metro Railway, metro rail systems have advanced to most recent and updated technologies that took place in past 30 years. Almost a quarter of world's 150 metro cities have at least one line operating in fully automated mode. Automation in metro is significantly seen in Europe, Middle East and China.



Benefits of Automation:

- Regular and predictable run times, eliminating the variations inherent with manual driving, uniform ride quality and reduced wear-and-tear on propulsion and braking systems.
- Automatic passenger door opening and closing.
- Flexibility to operate more trains frequently, reduce turnover times at terminals.
- Flexibility in responding to unexpected rise in passenger demands by adding additional trains to the service.
- Regulate the performance of trains in relation to timetable and headway adherence.
- Real-time coordination of train acceleration, by synchronizing the acceleration of one train with the braking of another train to maximize use of brake energy recovery.
- Efficacious response to system disturbances and emergencies through the elimination of human error.

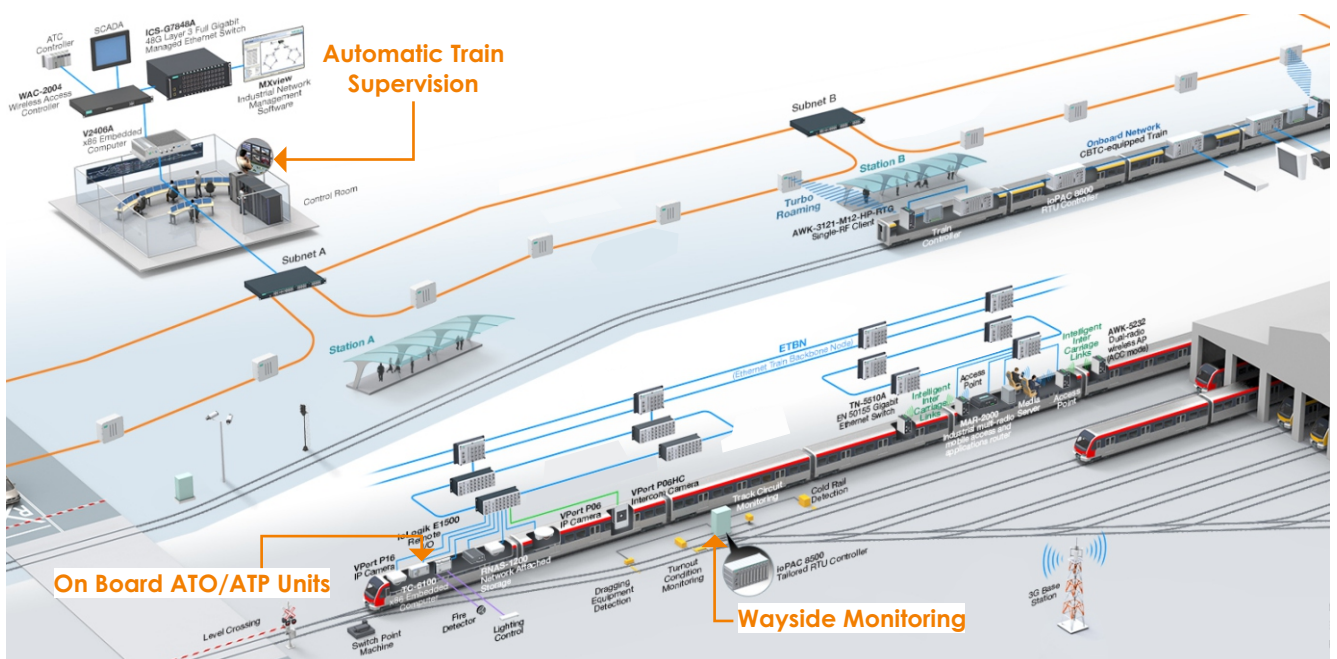
Key Elements of Automation

Automatic Train Protection (ATP) : Avoids collisions, red signal overrunning and exceeding speed limits by applying brakes automatically.

Automatic Train Operation (ATO) : Ensures partial or complete automatic train piloting and driver less functionalities.

Automatic Train Control (ATC) : Performs automatically normal signal operations such as route setting and train regulation.

Levels of Automation



Typical Automatic Train Control System

Source: www.moxa.com



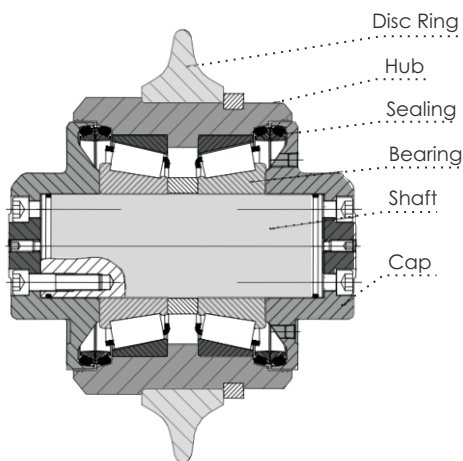
CUTTER DISKS FOR TBM

The “cutter disc” is one of the key component installed on TBM's to excavate very hard and abrasive rock efficiently. The most important economic factor in the TBM operation is wear and tear during cutting. Cutting disc is made of “Tungsten Carbide” (equal parts of Tungsten and Carbon) material is used for the manufacturing of cutter discs. Disc Cutters are manufactured from 280 mm to 483 mm in diameter and are available in a wide range of materials, each material and process type being specifically designed to match geology and project economics expressed as progress rate for excavation works by the TBM. High cutter wear and tear not only leads to high cutter replacement costs, but it also increases the amount of TBM interventions during operation and as such down times affecting the progress rate, project time schedule and economy.

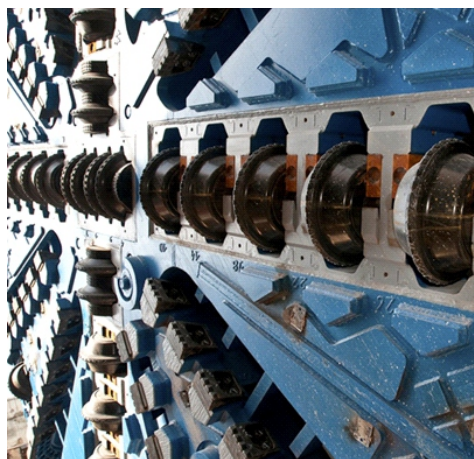
Main factors affecting cutter wear are:

- Cutter characteristics
- Properties of rock (rock class and compression strength, hardness, abrasive nature)
- Any effect from groundwater (i.e. chemicals and pollutants)
- Temperature

A linear cutting test prior to initiating the physical excavation works is used to measure the ability of cutting in rock formation under simulated field conditions. A Linear Cutting Machine (LCM) measures the forces acting on individual cutter discs while cutting the rock. The Cerchar Abrasivity Index (CAI) is a scratch and wear test used as an indication of cutter wear rate. A heat treatment modification can also been done to help improving durability of the cutter discs. These ongoing developments are continually being introduced into the latest cutter disc technology and provided by the manufactures of TBM, when appropriate.



Cross-sectional view of Disc Cutter



Cutter head dressed with mono-block cutters

It is of utmost importance for the success of any underground excavation works that the Contractor and his TBM manufacturer design the cutter discs and the whole cutter head to be provided in accordance with especially the factual geological conditions of the underground to achieve the planned progress rate, minimizing the constructions risks and comply with the quality and project safety as required.

MUCK DISPOSAL Compliance by Contractors

- The muck that can be used at a later stage in the construction work, shall be temporarily stored at an approved location.
- The surplus muck which is not usable, shall be disposed at a designated disposal location after obtaining clearances from the concerned authorities and site owners.
- The muck disposal site shall be ecologically restored to the maximum extent possible.
- Adequate precautionary measures shall be implemented to avoid soil erosion and flooding.
- The Contractor shall ensure that the muck disposal site will be free from active landslides .
- The disposed muck shall be mechanically compacted in layers and properly levelled with suitable safe slopes duly ensuring that proper drainage is provided.
- Muck disposal location shall be fenced. The Contractor shall also establish temporary wind barrier around the disposal areas to eliminate air pollution.
- All trucks shall be covered with tarpaulin sheets while transportation to avoid spillover.
- The vehicle speeds on unpaved roads shall be restricted to 25 Kmph.
- Wheel wash system shall be installed and operated at the exit of the muck/spoil disposal.
- Muck shall not be dropped from height such that it will cause dust emission.
- Contractor shall maintain valid PUC Certificates.



TRAFFIC MANAGEMENT

Mumbai, the ever bustling core of activity and energy, the city continues to grow and is clearly evident in the scale of development around. Be it the city skyline dotted with rising skyscrapers or the suburbs reaching out farther. Keeping in mind the quality of life that the future generations of this city would inherit, Metro 3 was envisaged to provide a sustainable transportation solution for the city of Mumbai.

There is a general consensus that once completed, this project would certainly ease traffic congestion on Mumbai's roads. But what happens in the transition period? What happens once the construction starts, roads get dug up and traffic is diverted onto alternate routes? The sight of numerous "Metro Works Ahead" signs, construction barricades and workers in hard hats operating heavy construction equipment is fairly common now. Is this the beginning of a very long and painful journey for the people of Mumbai?

Approach to Traffic Management

Although it may appear chaotic, there is a method to the madness. Road closures and the ensuing road diversions associated with the MML-3 construction have been designed in accordance with a Work Zone Traffic Management Plan (WTMP) which provides:

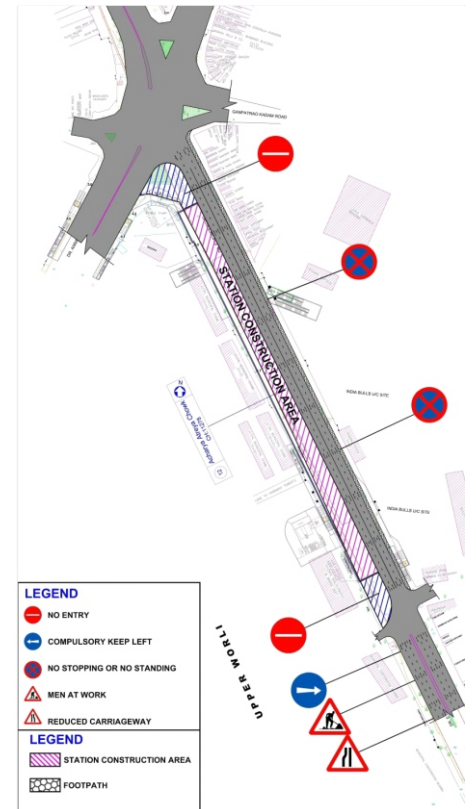
- safe and efficient movement of vehicular and pedestrian traffic through the numerous work zones
- access to businesses and residents, minimal traffic delays, motorist and worker safety

Traffic consultant teams working on each contract packages conducted traffic surveys and analysed traffic impacts to vicinity roads around proposed construction activity to identify routes with available road capacities and suggested measures to maximise available roadway capacities. This helped maintaining acceptable level of service standards on the impacted roads throughout the construction phase. Where necessary, construction sequences is altered to mitigate impacts to the flow of traffic and improve overall pedestrian safety. Special emphasis is placed on the movement of pedestrians and BEST buses to ensure least impact to their operations.

Numerous presentations, discussions and site visits with the Mumbai Traffic Police and other stakeholders, resulted in site appropriate suggestions being incorporated in the WTMP.



Traffic management initiatives and deployment of traffic marshals by the contractors (Package 7 SEEPZ Contractor : L&T - STEC)



Traffic management plan for Worli Station

Going forward, regular inspections of the traffic diversion plans by traffic consultants as well as Mumbai Traffic Police would be conducted to ensure that lane closures, junction improvements, parking restrictions, signage, channelizing taper lengths, traffic control devices, traffic control wardens etc. are being deployed as per the authorised WTMP. Based on these site observations, modifications to the existing traffic diversion plans will be undertaken as deemed necessary. The goal of this exercise is to restrict the inconvenience to the citizens while ensuring that the project deadlines are met in a time bound manner. MetroCUBE will present regular updates on the traffic management as we progress with the construction, in forthcoming issues.



BASELINE ENVIRONMENTAL MONITORING

Environmental monitoring plays an important role in planning and execution stage of all major infrastructure projects. The observations generated from the baseline environmental monitoring is useful in order to predict the environmental impacts of the project, ascertain efficiency and adequacy of mitigation measures undertaken. This in turn results in identifying, preparation and upgradation of effective mitigation measures. The environmental monitoring also ensures the compliance of regulatory requirements.

The Baseline Environmental Monitoring for Metro 3 project is carried out by a laboratory recognised by MoEFCC (Ministry of Environment, Forest and Climate Change). Each civil contractor carries out baseline monitoring for ambient air quality parameters (PM 10 & PM 2.5), noise and water quality for respective contract packages.

Air Quality Survey

The ambient air quality monitoring is carried out for 24 hrs, twice a week by using Respirable Dust Sampler (used for monitoring Total Suspended Particles (TSP) and pollutant gases in ambient air conditions) at 26 locations on Metro 3.

The parameter PM 10 -

- exceeds the permissible standards of 100 µg/m³ at 22 locations with range of 101 – 296.61 µg/m³
- within limit at 4 locations with range of 37.91- 91.55 µg/m³.
- PM 10 max value observed at CSIA International Airport Station and minimum level observed at Dharavi Station.

The parameter PM 2.5 -

- exceeds the permissible standard of 100 µg/m³ at 10 locations with range of 62 – 135.51 µg/m³
- within the limit at 16 locations with range of 20.28 – 59 µg/m³.
- PM 2.5 max value observed at Santacruz Station and minimum at Dharavi Station.

Noise Survey

Noise monitoring is carried out by using a weighted noise level meter for 24 hrs at 23 locations along the alignment.

The noise levels are observed as -

- day time as 60.4 to 74.1 dB(A)
- night time as 51.7 to 72.6 dB(A) in silent zone at all locations.

This exceeds the permissible standards of 50 dB(A) and 40 dB(A) during day time and night time respectively in silent, residential and commercial areas except MIDC Station (industrial zone) indicating that background noise levels are already exceeding the standards.

The mitigation measures for control of air pollution and noise levels will be implemented during construction phase of the project as per Environmental Management Plan. Noise barriers wherever necessary will also be considered for implementation.



Ambient Air Quality test using respirable dust sampler Azad Maidan



Ambient Air monitoring location Uttar Bhartiya Sangh



Ambient Noise Quality Monitoring at Xavier's college



Ambient Noise Quality Monitoring at Uttar Bhartiya Sangh



CITIZEN'S VOICE

Your views on Metro3 Alignment and connectivity with other places in Mumbai.

The Metro Line-3 passes through the locations which are not been catered to by the existing Rail routes. The stations like Worli, Siddhivinayak, Dharavi, BKC, Vidyangari, Sahar Road, Marol , MIDC will indeed improve connectivity and result in comfortable commuting for the citizens. The route also caters to the most important touch points in the form of Domestic and International Airport which will not only bring a great relief to the passengers arriving or departing the city but also give the city an International look. The very thought of this project brings in a hope for a drastic improvement in the Transport Infrastructure of the city.

What are your views on project implementation and expectations from MMRC.

Timely completion and minimum inconvenience to the public is my expectation. While I understand that the project of this magnitude is bound to face some hurdles in the course of its execution, the challenge will be to keep it to the minimum. While the Mumbaikars are very progressive in their approach to such developments causing little inconvenience, it will be the responsibility of MMRC to keep them informed about the progress on the project on real time basis. Facebook page is one good initiative by MMRC. This should be publicised and the citizens should be invited to give their feedback.

How Metro-3 will impact Public Transport connectivity to your locality?

The Metro Line 3 though is not touching my area (Goregaon), it will certainly help me commuting across the city. Metro-1 has set an example of how much comfort such transport system brings in.

How can you support and get involved the Metro-3 project?

As a true Mumbaikar I would go all out to extend all the possible support to motivate and encourage the MMRC officials to carry out the project execution work with complete zeal and zest. In fact I have pledged to plant 10 trees in my housing colony as part of the Tree Plantation drive carried out by MMRC. I have also created a Facebook page " Mumbai Supports Metro Rail Project 3 " to create a positive feeling around this magnificent project. The month long quiz conducted to create awareness about the project generated very good response and I wish to continue this community building exercise.

Your message to citizens.

I would request every Mumbaikar to do their bit to extend their support to this project and cooperate with MMRC authorities and be patient in case of any kind of inconvenience that they may have to go through during this phase of project execution. Once commissioned the project will bring Mumbai on a Global Metro Map of which every Mumbaikar can be proud of !!



Mr. Jayesh Asher, has been in media marketing for past 25 years and has an extensive exposure to public and semi public organisations executing infrastructure project. As an independent media entrepreneur, he has recently launched *Mumbai Supports Metro Rail Project 3*, a Facebook page to create awareness and gather public interest for Metro 3.

APPOINTMENT OF DIRECTOR FINANCE



Mr. Abodh Khandelwal is appointed as Director of Finance, MMRC. A certified Chartered Accountant from the Institute of Chartered Accountant of India, Mr. Khandelwal has over 27 years of experience handling Finance and Accounts, 9 years in JK Cement and later 19 years in Konkan Railway Corporation Limited since 1998 as Financial Advisor & Chief Accounts Officer.

Speaking on his new role, Mr. Khandelwal said "I believe my experience, in the financial sector and public sector, will prove valuable to us as we continue to work towards transforming this mega city."

Ms. Ashwini Bhide, MD, MMRC added, "We recognize Mr. Khandelwal's commitment to building and maintaining strong working relationships with all stakeholders and employees of the organization. I am confident that Mr. Khandelwal will help deliver financial expertise through analysis as this project advances forward."

Mr. Khandelwal was awarded for excellence in maintenance of Trust Accounts and Income Tax work at JK Cement Works Ltd. in 1995 & 1997 and Director level award in Konkan Railway for his work in Debt Financing and Treasury Management.



PROJECT NEIGHBOURHOOD

SOME MORE GLIMPSES



'Project Neighborhood' has received an overwhelming response from the Mumbaikars.

Some of the key areas where saplings were distributed are –

- Shivaji Park, Dadar
- Railway officers' residents, Badhwar Park
- Hutatma Chowk, Flora Fountain
- Directorate of Technical Education
- Cama & Albles Hospital, Fort
- Vidya Nagari, Kalina
- J. Tata Road, Churchgate
- Marine Drive

Through Project Neighbourhood, MMRC along with their contractors have successfully distributed more than 16,000 saplings in a span of one month, at 25 different key locations in seven civil packages.

R&R UPDATE

Land	Res.	Com.	Total
On Govt. land	1401	223	1624
Rehabilitated	965	185	1150
Balance	447	117	564
On Pvt. land*	312	331	643
Total	1713	554	2267

* Being rehabilitated under cluster development (MCGM DCR 33/7)

Balance 554 PAFs will be rehabilitated by September 2017.

Out of the total 31 offices (Govt. and political parties), 18 have already shifted, 13 will be shifted shortly.

CONTRIBUTIONS:

Articles

- Jorgen Holst
- Vaidehi More
- Umashankar Rukmangada
- Sandeep Sohani
- Rashmi Kadam
- Rohan Shiral
- Chaitanya Jasti
- Pratapsingh Bhonsle

Editing and Graphics

- Pallavi Kulkarni
- Neethu Mathew

Connect With Us

 @MumbaiMetro3

 Mumbai Metro Rail Corporation, MMRC

www.mmrcl.com

Mumbai Metro Rail Corporation
NaMTRRI Building,
Plot No. R-13, 'E' Block,
Bandra Kurla Complex, Bandra (E),
Mumbai 400051.



Website Link

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