

METRO CUBE

**VOLUME
4
JANUARY
2017**



ADDING NEW DIMENSIONS

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MD SPEAKS

Ms. Ashwini Bhide, IAS

On behalf of MMRC, I warmly wish our readers a Happy and Prosperous Year 2017. We have upgraded 'Metro Cube' to a monthly edition and in a new look with better clarity and content, which I am sure our readers will appreciate.



Milestones achieved with the beginning of new year include State Govt. approval for in-situ rehabilitation of PAFs at Girgaon and Kalbadevi areas and clearance from MCGM Tree Authority. We are expecting approval from Traffic Department soon. Although we still have a long way to go, we have cleared major hurdles to progress further.

MMRC is now focussed on streamlining the traffic diversions along the construction corridor with the support and cooperation extended from Mumbai Traffic Police. The Joint Commissioner of Traffic with his team and BEST recently reviewed the traffic management plans for all seven contract packages.

We have ensured minimum disturbance and interruptions to existing traffic with adequate enhancements and improvements to the existing roads.



'Mumbai Underground', a special resource group supporting Metro-3 presented a table top display of the underground metro alignment to Hon. Chief Minister



KNOW YOUR STATION

Churchgate

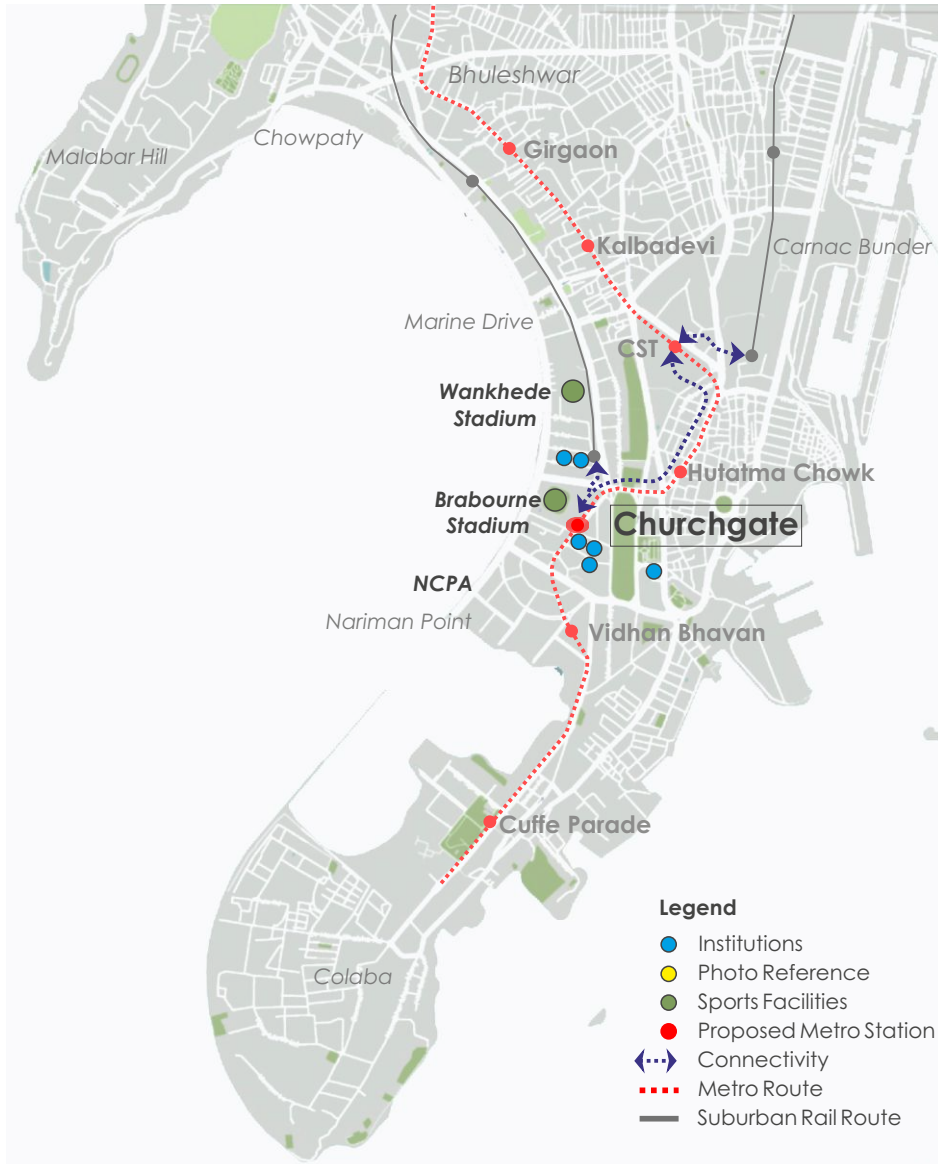


Peak hour commuters in Churchgate Suburban Station



Churchgate Suburban Station, Metro construction work in progress

The proposed Churchgate Metro Station is located below Jamshedji Tata Road, in close proximity to Churchgate Suburban Station and further connects Chattrapati Shivaji Terminus via Hutatma Chowk Underground Station facilitating easy transit between Western and Central line.



Station locations in South Mumbai

Churchgate precinct is located in the old Fort area of South Mumbai which was once the seat of British administration and now the busiest business districts of Mumbai. The name Churchgate comes from the proximity of the station to one of the three fort gates which was an entry to St. Thomas Cathedral. Though the fort gates are now demolished, the Churchgate station still makes a mark in the precinct with adjoining Western Railway headquarter building reminding of the rich heritage. Churchgate is the terminal station on the Mumbai Suburban Western line.



Western Railway Headquarters, Churchgate
Source: www.wikiwand.com

The Station precinct is uniquely characterised by Mumbai's best educational institutes, prime business destinations, sports stadii and recreational public spaces.

Educational Institutes

HR College, KC College, Jai Hind College, Sydenham College, Government College of Law, and Jamnalal Bajaj Institute.

Sports Hubs

Wankhede and Brabourne Stadium, Mumbai Hockey Association grounds, Mumbai University Grounds, Cooperage Football Stadium and Oval Maidan.

Recreation

Marine Drive, Eros Cinema, NCPA (National Centre for Performing Arts)



TUNNEL BORING MACHINE

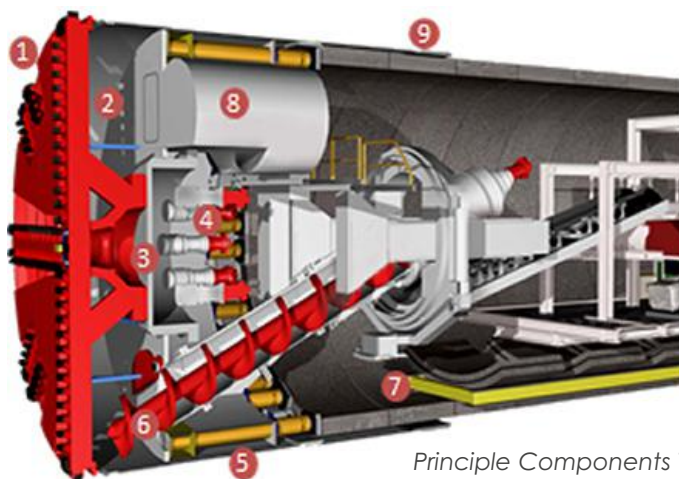
A tunnel boring machine (TBM), or tunnel "mole", is a machine used to excavate tunnels with a circular cross section through rock and soil. They can bore through any rock formations ranging from very hard rock to sand. These machines range in diameter from 2.6m to 19.25m and for MML3 Project, the diameter of the TBMs are 6.3m and a total of 17 will be used to bore the twin tunnels from Cuffe Parade to Seepz. TBMs are used as an alternative to another form of tunnel construction known as New Austrian Tunnel Methods which utilizes drilling and blasting methods in rock. Although this method will be used at some locations on the project, to minimize the Environmental and construction impact to local residences, TBM will be used.

Launching shaft is a working space created to insert the TBM for tunnelling operations, at designated locations and levels on the alignment corridor.

Advantages of TBMs:

- Reduces disturbance to the surrounding ground and structures
- Gives smooth tunnel lining
- Significantly reduces the cost of construction
- Construction efficiency and shortened completion time

Package No.	Package & Scope	Launching Shaft Location	TBMs Type
1	Cuffe Parade to Hutatma Chowk	Cuffe Parade	2 x Robbins hard rock Crossover TBMs
2	CST Metro to Grant Road	Azad Maidan	2 x Terratec hard rock dual mode TBMs
3	Mumbai Central to Worli	Science Museum	2 x Robbins NFM Slurry TBM's
4	Siddhivinayak to Shiladevi	Siddhivinayak, Naya Nagar	3 x Herrenknecht EPBMs
5	Dharavi to Santacruz	BKC, Vidyanaigari	5 x Terratec machines for both packages 5 and 6
6	CSIA to CSA International	Sahar Road	
7	Marol Naka to SEEPZ	Pali Ground, Sariput Nagar	3 x STEC TBMs



Principle Components TBM (Mole)



Package 3 TBM - Slurry



Completed Metro Tunnel Lining

Tunnelling Process:

A TBM advances the tunnel in an almost continuous, mechanical process by pressing a rotating cutter head against the tunnel excavation. The rock is sheared from the excavation by a number of freely rotating disc cutters which are mounted on the front of cutter-head.

- The TBM propels itself forward by means of Hydraulic Thrust Rams against the previously installed Tunneling.
- Once a section of the tunnel is excavated, the TBM is stopped and a steel reinforced concrete tunnel lining is installed.
- This process is continued until the TBM reached its final destination where it is recovered from the tunnel to the surface for re-use.

TBM Components

1. Cutting Wheel
2. Excavation Chamber
3. Pressure Bulkhead
4. Main Drive
5. Thrust Cylinders
6. Screw Conveyor
7. Erector
8. Double Chamber Airlock
9. Tailskin with Integrated Grout Lines

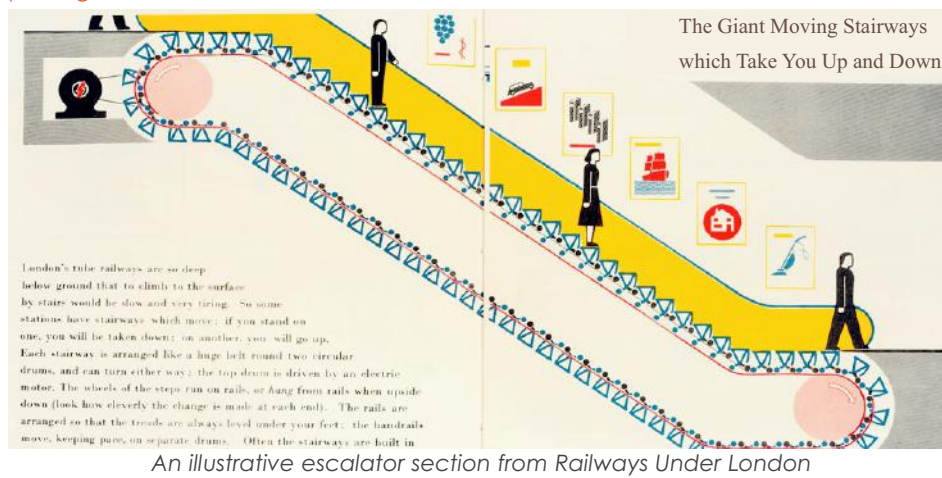


ESCALATORS

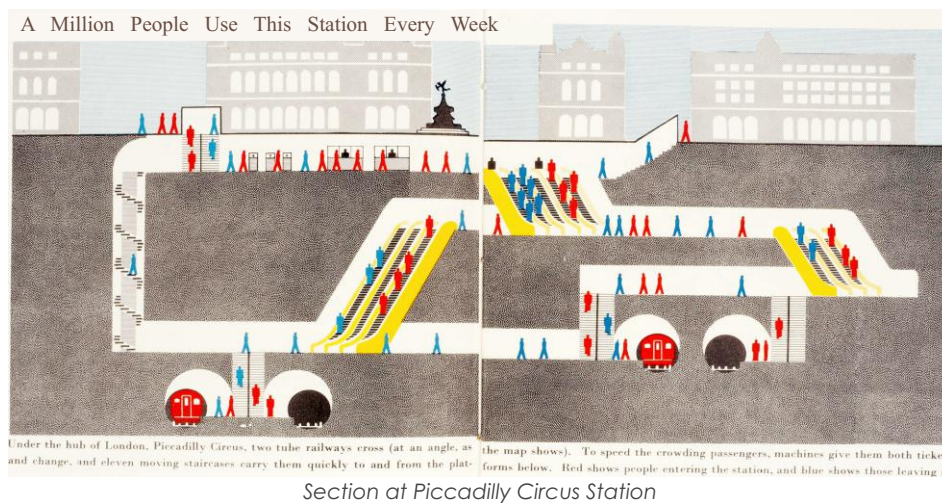
Smart and Energy Friendly

Worldwide, escalators are used in metro stations and transit hubs to transport people at multiple levels. In Metro-3, adequate number of escalators are planned to enable senior citizens/sick persons/pregnant women/differently-abled passengers to travel from platform to concourse and concourse to street level with ease. Escalators also assist in faster evacuation of public in emergency to meet the emergency evacuation criteria as per National Fire Protection Act-130.

London Underground is the first and oldest Underground Metro in the World. One of the best representations of the London Underground was a book for children, *Railways Under London* by Marie Neurath, published in 1948. This book explained to young readers with interesting illustrations, how the Underground worked, including escalators and lifts, printing tickets etc.



As quoted from the book *Railways Under London* "London's Tube Railways are so deep below ground that to climb the surface by stairs would be slow and tiring, so some stations have stairways which moves. Each stairway is arranged like a huge belt around two circular drums and can turn either way. The top drum is driven by an electric motor. The wheels of the steps run on rails or hang from rails when upside down. The rails are arranged so that the treads are always level under your feet. The handrails move keeping pace on separate drums."



"Series of eleven moving staircases (escalators) carry people to and from the platform. Red shows people entering the station and blue shows people leaving the station."

Source : <http://blogs.reading.ac.uk>

Innovative Measures:

Web based real time predictive maintenance solution and maintenance management information system are included.

LED Based Remote Monitoring System (RMS) Panel : LED based RMS shall provide continuous monitoring of the escalators.

Monitoring and Fault Diagnostic System: Provides information on the operation, identification and display of all faults that have caused the escalator to stop.

Energy Saving Device: Conserve energy when the escalator is operated at light-load and no-load and after certain time, escalator will come to crawling speed and then stop.

Fire Protection System: Escalators shall be equipped with a sprinkler system.

Variable Speed Drive: Operates at nominal speed of 0.65 m/s and reduced service speed of 0.50 m/s.

Design Features

- Step Width: 1000mm
- Inclination: 30°
- Speed: 0.65m/sec(rated), 0.2m/sec(idling)
- Design Life: 30 Years
- Maximum Capacity: 7300persons/hr at 0.65 m/sec
- Service Period: 20 hrs/day (0400 Hrs to 1200 Hrs)
- Comply with all national and international standards for the requirements of the heavy duty mass transit application.



Underground Metro Escalator



CONSULTATION WITH PAPs

Girgaon and Kalbadevi

MMRC addressed the PAPs of both Kalbadevi & Girgaon individually and informed them about the in-situ rehabilitation plan approved by State Government. A total of 13 buildings at Kalbadevi and 5 buildings at Girgaon will be affected by the construction of Metro-3.

As part of in-situ rehabilitation plan, PAPs will get double the area for their residential properties, hence for each flat of 202 sq.ft PAP's would be given 405 sq.ft and flats measuring above 444.5 sq.ft will get 35% extra area of their residential property.

Commercial units would get 20% extra area of their commercial space. The residents are cooperative and have positively supported the project.



Allocation of tenements to Sahar Road residents by lottery



Rehabilitation of affected families at Kurla Premier

PAP REHABILITATION

169 Families to Rehabilitate at Kurla Premier

MMRC allotted dwellings by a computerized lottery system to 169 families from Sahar Road, which will be affected during the construction of Metro-3 corridor. The Sahar Road Land will be used for TBM launching shaft.

Out of 169 affected properties, 163 are residential, 3 are commercial and 3 are residential-cum-commercial. Total 163 residential and 3 residential-cum-commercial units will be shifted to Mulgoan, Andheri and the 3 commercial units will be shifted to Gautam Nagar, Govandi, from next week.

Allotment letters will be handed over to the affected families soon. MMRC is committed to resettle all eligible PAFs units while constructing the Metro-3 corridor.

PROJECT UPDATES

- 31 buildings at Vidhan Bhavan relocated (political party offices and Government offices).
- Building condition survey at all packages in progress.
- Traffic permissions in progress.
- Hard piling work started at Naya Nagar.
- Launching shaft head wall piling started in package-2 out of which 81 piles are in progress.



Siddhivinayak utility identification



Excavation for utility diversion at Science Museum



Barricading - Acharya Atrre Chowk



LAND ACQUISITION

To ensure uninterrupted implementation of Metro-3 corridor, MMRC has already received the possession of around 96% government land required for the project.

- **The total Land required - 76.65 Ha**
- **Land needed on:** Permanent basis - 6.65 Ha.
Temporary basis - 70 Ha.
- **The total Land received - 73.2 Ha**
- **Land needed on:** Permanent basis - 5 Ha.
Temporary basis - 68.2 Ha.

MMRC has signed 27 MoUs with Private land owners. Out of total requirement, 3.45 Ha land belongs to 63 private owners. Temporary land acquired will be returned to Government after completion of the project and land acquired from public open spaces will be reinstated in a better condition and returned to its original use.

Major Govt. Lands Received

- Land in front of BEST Depot at Cuffe Parade.
- Political party offices and Govt. offices on Free Press Journal Road.
- Land parcel on Oval Maidan adjacent to Veer Nariman Road.
- Land parcel of Azad Maidan near CST.
- Land of Archives Dept. at Vidyanagari.
- Mumbai Central ST Depot

LAND FOR MUCK DISPOSAL



Areas identified for muck disposal

A large volume of muck which is expected to be generated from MML3 is planned to be disposed off at abandoned quarry sites in the outskirts of Mumbai. These sites have been identified on the basis of suitability criteria and feasibility for muck disposal.

Land Selection Criteria

- Are located away from any human habitation or ecologically sensitive areas
- Minimize the lead transportation time for disposal
- Free from active landslides
- Away from perennial water bodies

MARATHON

Dream Run

The 26 member Metro-3 team successfully completed the 6-km long 'Dream Run' of Mumbai Marathon from CST to Metro Big Cinema on January 15, 2017. Team MMRC donned special T-shirts with its slogan "Connecting the unconnected".

Director (Projects), Mr. S. K. Gupta, Director (Systems), Mr. A. A. Bhatt, and other senior officials completed the 6 Km stretch in leadership of MD, MMRC, Ms. Ashwini Bhide.



MMRC Team at Standard Chartered Marathon, Mumbai

Did You Know ?

11 million cubic meter (about 4,500 times as big as an Olympic Swimming Pool or 5,50,000 trucks) muck is expected to be dug out in the process for construction of Metro Line-3.



CITIZEN'S VOICE

मेट्रो-३ च्या पुनर्वसनाने जीवन बदलले - जुबेदा शेख, नरसिंग पृस्ती

मुंबईची जीवनवाहिनी म्हणून नावारूपास येत असलेल्या मुंबई मेट्रो रेल कॉर्पोरेशनचा मेट्रो-३ प्रकल्प गतीने पुढे जात आहे. एकीकडे आरामदायी वाहतूक आणि मुंबईतील उपनगरीय रेल्वेद्वारे न जोडलेल्या भागाला मेट्रोने जोडण्याचे काम करित असतानाच दुसरीकडे प्रकल्पबाधीतांचे देखील संपूर्ण समाधान होईल असे पुनर्वसन केले जात आहे. सध्या नया नगर, माहिम, संत ज्ञानेश्वरनगर, बीकेसी, सहार रोड येथील झोपडपट्टीत राहणाऱ्या जवळपास 700 नागरिकांचे 'कुर्ला प्रिमीयर' येथे पुनर्वसन केले गेले आहे. पुनर्वसनाच्या दरम्यान येणाऱ्या लहान मोठ्या समस्या देखील सोडविण्याचे काम मुंबई मेट्रो रेल कॉर्पोरेशनने केले आहे.

नेहमी पुनर्वसनाचा ताण नकोसा असल्याने प्रकल्पबाधित आपली जागा सोडत नाही मात्र या प्रकल्पाची कहाणीच न्यारी असल्याचे सांगत आहेत जुबेदा शेख व श्री नरसिंग पृस्ती आजच्या 'सीटीझन वॉईस' या सदरातून...

प्रश्न :- झोपडपट्टीतून कुर्ला प्रिमीयरच्या फ्लॅटमध्ये राहायला आल्याच्या प्रवासाबद्दल काय सांगाल?
जुबेदा शेख :- आयुष्यात सकारात्मक बदल झाला आहे. पूर्वी आम्ही ज्या झोपड्यात राहत होतो, ती जागा लहान होती शिवाय येथे आल्यापासून आमच्या राहणीमानाचा दर्जा सुधारला आहे.
श्री. पृस्ती :- येथे मुलांच्या विकासाच्या दृष्टीने पोषक वातावरण मिळाले आहे.

प्रश्न : तुमच्या मुंबई मेट्रो रेल कॉर्पोरेशन कडून काय अपेक्षा आहेत?
जुबेदा शेख व श्री. पृस्ती :- कॉर्पोरेशनने आम्हाला कबूल केल्याप्रमाणे दिलेल्या वेळेत घरे उपलब्ध करून दिल्याबद्दल आम्ही समाधानी आहोत. आमच्या मुलांच्या शाळेच्या प्रवेशाविषयी कॉर्पोरेशनने आम्हाला मदत करावी, मुलांच्या नोकरी संदर्भात मार्गदर्शन करावे. आतापर्यंत वेळोवेळी मदत झाली तसे पुढे देखील हे ऋणानूबंध असेच रहावेत हीच अपेक्षा आहे.

प्र:- मेट्रो-३ विषयी आपले मत काय आहे?
जुबेदा शेख :- आज प्रत्येक मध्यमवर्गीय मुंबईत खचाखच भरलेल्या रेल्वेने प्रवास करतोय. मात्र मेट्रो-३ आल्यानंतर हे चित्र बदलेल हे नक्की. आज अडचणीचा वाटणारा प्रवास हा उद्या सुखकर होईल.

श्री. पृस्ती :- मेट्रो-३ मुंबईकरांसाठी खऱ्या अर्थाने वरदान ठरणार आहे. मुंबईतील प्रमुख बाजारपेठा व अनेक महत्त्वाची कार्यालये मेट्रोने जोडली जाणार असल्याने प्रवासातील वेळ वाचेल.



पुनर्वसनाने जीवन बदलले - जुबेदा शेख, नरसिंग पृस्ती

प्रवास हा सुखाचा...

हि वाट दूर जाते स्वप्नामधील गांवा
कुलाबा ते सिद्ध भूमीगत प्रवास हा सुखाचा ॥ १ ॥

नियोजनाचे टप्पे प्राधिकरणात पार पडले
केंद्र - राज्य शासन उपक्रम तेथेच उभे राहिले
महानगर आयक्त मा. मदानसरांचे सहकार्य अपार लाभले
अतुट बंधनाचे धागे प्राधिकरणाशी बांधले
मेट्रो संस्था प्राधिकरणाच्या सदैव ऋणात आहे.. ॥ १ ॥

चतुरस्त्र याच्या MD सुरवात छान झाली
मेट्रोच्या कुटुंबाची जुळवाजुळव केली
संचालकांचे चार भक्कम खांबे रोवले
त्यांच्या समवेत एक कुटुंब उभे ठाकले
"Metro Family" असे त्याचे नामकरण झाले ॥ २ ॥

भूमीगत मार्ग मेट्रोचा प्रवास असेल सुखाचा
लहान, थोर, मोठे लाभ सर्वांनाच याचा
मार्गामधील अनेक अडचणी दूर झाल्या
पुनर्वसन त्याच ठिकाणी, असा शब्द दिला सर्वांना
नाही कुणा त्रास नाही कुठे अडवणूक
हिरवे पणा आम्ही नाही ढळू देणार
पुनरोपणाचा अमुचा पक्का आहे मानस ॥ ३ ॥

विश्वास असुचा मुंबईकर, उद्याचा करा विचार
मुले, बाळे, नातू - पणतू सारे करतील
सुखाचा, गारव्याचा प्रवास
आव्हान मेट्रो Family चे नका कर विरोध
मेट्रो मुळे तुम्हास मिळेल सुख अपार
मा. अश्विनी भिडे, MD चे तुम्हास
आश्वासन तुम्हास आश्वासन ॥ ५ ॥

प्रतिभा द. चेरकुटवार
विशेष कार्य अधिकारी (मा. सं)
मुंबई मेट्रो रेल कॉर्पोरेशन लि.



TRAFFIC REGULATORY MEASURES

1,500 Marshals to Regulate Traffic During Construction

Around 1,500 marshals will be deployed on Metro-3 project of MMRC to monitor and regulate traffic along the corridor while the construction of the project continues. As it was discussed during the meeting held with Joint Commission of Police (Traffic), Mr. Milind Bharambe in MMRC office recently, the marshals will be spread over the entire seven packages.

Apart from improving road geometries at crucial locations to improve traffic throughput, MMRC would also provide walkie-talkie to Mumbai Traffic Police and 4,000 sign boards as part of its traffic management plan. The meeting was also attended by General Consultants, the Contractors of all the seven packages who made presentations of their proposals. Mr. Milind Bharambe, Joint Commissioner of Police (Traffic) appreciated the efforts of MMRC in formulating traffic management plan.



Joint Commissioner Traffic Police and MMRC Team

TRAINING SESSION

The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

To educate its employees about the various laws framed to avoid the sexual harassment of women at work place, MMRC organized an orientation program for its staff.

Mr. Vishal Kedia, Founder and Director of Comply Karo, an NGO committed to foster a gender sensitive work environment, explained all aspects of the laws related to protection of women especially framed to prevent the sexual harassment at workplace.

All officials and staff of MMRC attended the program. The informative lecture was followed by a question answer session.

AFC SYSTEM

Response from Bidders

MMRC held a pre-bid meeting with designers and manufacturers of the Automatic Fare Collection (AFC) System to which the Corporation received excellent response from the prospective bidders.

The pre-bid meeting was attended by representatives of many reputed firms such as M/s. Nippon Signal, M/s. Datamatics, M/s. Larsen & Tourbro, M/s. Indra, M/s. 3iEPS, M/s. Asis Elektronik, M/s. Xerox Business Services and M/s. Thales.

The tender document is available on MMRC website (refer QR code) and can be purchased on payment of a non-refundable Tender Processing Fee of Rs.2,500. The last date for submission of bid documents is February 10, 2017.

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