



ADDING NEW DIMENSIONS



## MD SPEAKS

Ms. Ashwini Bhide, IAS

The month began with yet another new challenge, in the form of Hon. High Court restrictions between 10:00 pm to 06:00 am on construction and ancillary activities by Civil contracts in response to a writ petition. Though the restriction at present is for a period of two weeks, this order has obviously put constraints on the working times and slowed down the pace of construction work. We have directed the contractors to address the grievances of the petitioner by deploying adequate measures. Based on our demonstrated measures and considering other restrictions like movement of heavy vehicles by Traffic Police, we are optimistic and hopeful that Hon. High Court will consider easing the restrictions.

Citizen involvement and stakeholder participation is highly essential in successful implementation of public infrastructure projects and we at MMRC value such collaborations. Thus, MMRC and Western Railway, with support from local residents jointly launched a tree transplantation programme at Agripada Railway Colony. Western Railway has offered to allocate land for transplantation of about 200 trees within their estates. The tree cutting permission for BKC Metro Station awaited from Tree Authority has been received. With this, now we have obtained tree cutting permission at all 26 station locations.

While the Civil works are progressing at steady pace, we are happy to share that bid process for Systems contracts have kicked off with receipt and opening of bids for first System contract of Traction Work (Pkg 11 A) followed by Power Supply (Pkg 11 B). MMRC aims to award both the contracts (Pkg 11A & 11B) by end of 2017. Accordingly, the bid evaluation process as per JICA procedures is being hastened.

Factory Acceptance Tests (FAT) of TBMs for UGC-06 and UGC-07 have been completed this month and we are looking forward for the arrival of first TBM (UGC-04) in Mumbai and delivery at Nayanagar site by 10<sup>th</sup> September 2017.

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## TBM FAT UGC-06, UGC-07

The Factory Acceptance Test on TBMs of UGC-06 & UGC-07 was completed in the month of August at Delhi and Singapore respectively.

The TBM for UGC-06 is a dual mode TBM which is the first of its kind to be used in India. The TBM can dig through very different geologies, earth and rock. In this case, the TBM is developed to receive two types of removal equipments, a belt conveyor and a screw conveyor, each one corresponding to a given type of ground condition.



FAT on 2 EPB TBMs for UGC-07 was performed on 3rd August 2017 in Singapore. The TBMs are refurbished TBMs manufactured by STEC (Shanghai Tunnelling and Engineering Company) who is also a JV partner for UGC-07.

Earth pressure balance (EPB), is the most common machine used in tunnelling today. The principle of EPB uses a mechanised method whereby the excavated material is used to support the tunnel face whilst it is being excavated. To do this successfully it plasticises the rock (makes the rock plastic) by using foams/slurry and other additives to make it transportable and impermeable. The soil is admitted into TBM via a screw conveyor which allows the pressure at the face of the TBM to remain balanced without the use of slurry.

This method allows soft, wet, hard or unstable ground to be tunnelled with speed and safety.



## MD SPEAKS

*Continued From Page 1*

To address the hindrances being created in development works of metro car depot at Aarey and to disseminate factual information to the citizens, a public appeal to Mumbaiers has been published stating the fact that activities undertaken at Aarey are legally permitted and aimed at providing a comfortable, safe and sustainable public transport for Mumbai.

In the mean time, State Government has also issued the final notification on change of land use at Aarey Depot land and this will help facilitate unhindered construction activities at Aarey.

Hon. High court has also allowed MMRC to use the Government land at Nariman point that was allotted to Shankarrao Chavhan Pratishthan for temporary activities facilitating project works. State Govt. order to facilitate the utilization is awaited.

As regards, company affairs and compliance of statutory requirements, our team has finalized the accounts for financial year 2016-17 and Statutory Audits are completed and approval of Board of Directors has been obtained.

Annual accounts have since been submitted to CAG (Comptroller and Auditor General) for their audit and final reports are awaited. The corporation will pass the accounts in AGM (Annual General Meeting) on or before 30<sup>th</sup> September as per time lines stipulated by Companies Act for holding AGM.

We are looking forward to more significant and visible progress in project implementation in the coming month.





## SAFE DRIVE ALONG METRO-3 ALIGNMENT

Road-users are largely affected by any urban infrastructure intervention. Metro-3 is no exception.

Traffic diversion is the first and foremost activity proposed by MMRC, to be implemented by various contractors, to minimize the adverse impact of the Metro-3 project construction on road users, the traffic movement due to the construction activity partly or fully on the road. The traffic diversion plans have been reviewed by MMRC's General Consultant and already approved by Mumbai Traffic Police.



Traffic management measures at various locations in South Mumbai

Based on approvals received from the Traffic Police, the contractors have started implementing traffic diversions and traffic management schemes at all the station construction locations.

Trial traffic diversions were implemented at Cuffe Parade, Vidhan Bhavan, Churchgate, Hutatma Chowk, Girgaon, Grant Road, Dadar Station, Shitladevi, Dharavi, BKC, Santacruz, CSIA Domestic, Sahara Road, Marol Naka, MIDC and SEEPZ locations to minimize inconvenience for traffic movements at these congestion points/bottlenecks.

Pedestrian access to all properties along the construction sites is ensured with minimum two metre wide footpaths, signage (both in English and Marathi), directions and adequate lighting.

## MONITORING DEEP EXCAVATIONS

Recently, a lot of underground metro rail networks have been opened to operation or are being constructed in major cities of India. In the construction of metro stations, deep excavations with large excavation areas, great excavation depths (upto 25m), and complex shapes and uncertain geological conditions remain a challenging task in metropolitan regions like Kolkata, Delhi, Bangalore, Chennai and Mumbai. Metro-3 has adopted the following measures to ensure effective and safe excavation and construction of the underground metro :

- For safe construction and reduced impact on the surrounding environments, informational construction technology is applied by implementing a real-time monitoring and safety evaluation system to track the process during excavation.
- Finite element analysis (a computerised method to predict how a product reacts to real-world forces, vibration, heat, fluid flow and other physical effects) is initially carried out prior to excavation to predict the ground behaviour. This predicted ground behaviour will be validated with instrumentation and monitoring.
- Furthermore, struts and anchors shall be monitored by strain gauges and some of them are monitored with load cells as well.
- De-watering method is designed, deployed and monitored during excavation to maintain an allowable ground water level and to ensure minimum adjacent ground settlement and property stability.



Supporting Members used in Deep Excavation of CST Metro station at the Azad Maidan (Mumbai)

The stability of structures during deep excavation is highly affected by soil/rock characteristics, groundwater, surcharge condition, stiffness of supporting members such as strut, water beam, anchors, secant pile etc. Field instrumentation and performance evaluation of deep excavations are of great importance for quality control and safety assurance.





KNOW YOUR STATION - MAHALAXMI



Mahalaxmi Dhobi Ghat as seen from Mahalaxmi railway bridge



Jacob Circle/Saat Rasta



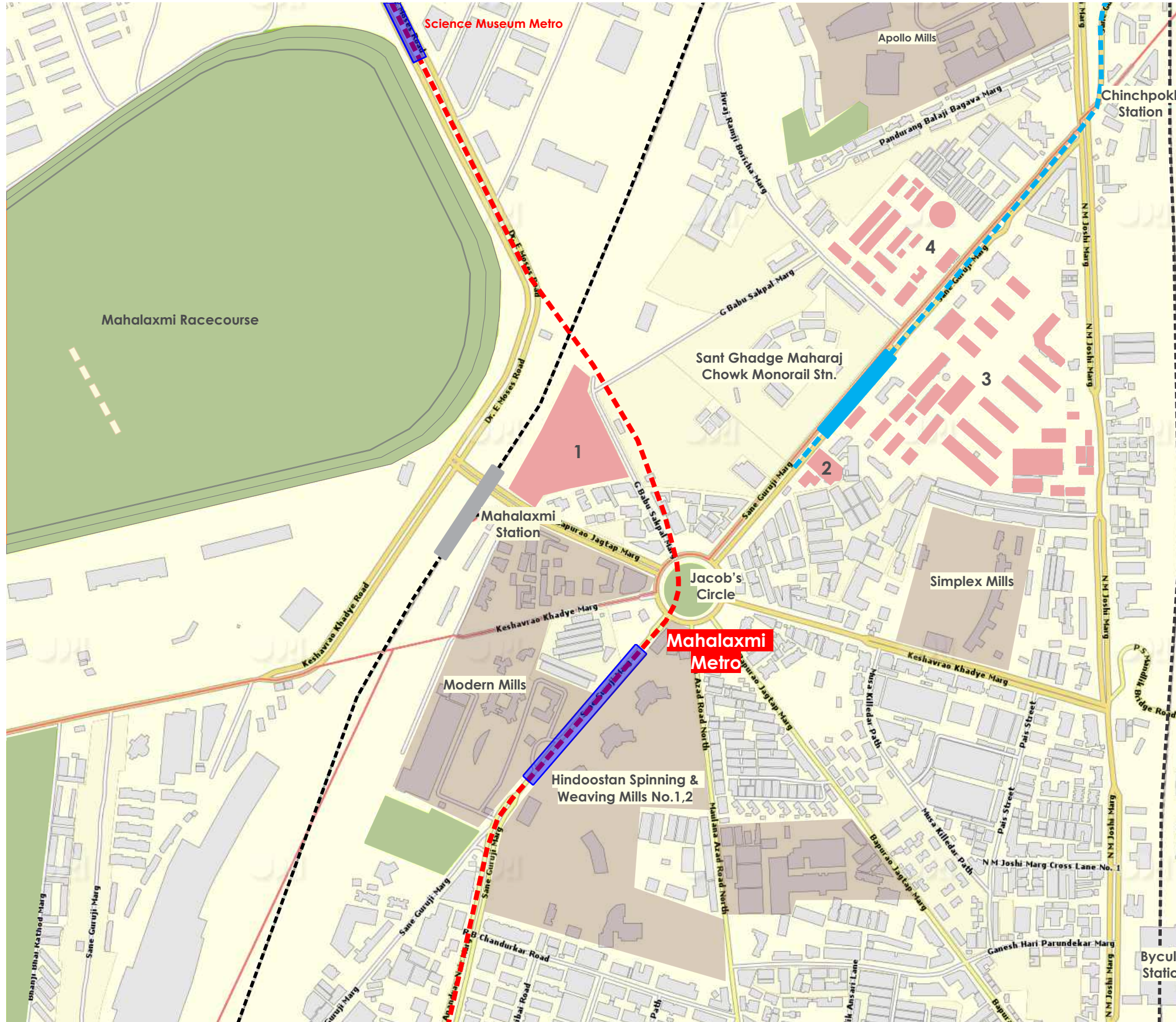
Monrail Station at Jacob circle



Arthur Road Central Jail



Hindoostan Spinning & Weaving Mill plot redeveloped into residential tower - Raheja Vivarea



Mahalaxmi precinct is bound by Worli, Lower Parel, Chinchpokli, Byculla and Mumbai Central. The famous Mahalaxmi temple after which the area is named, was built in ca.1784 during the execution of Hornby Vellard Project (project to connect the initial seven islands of Bombay).

The locality was once a busy industrial district, housing mills like Broadway Mills, Hindoostan Spinning & Weaving Mills, Modern Mills, Simplex Mills, Apollo Mills, Poddar Mills, Shakti Mills etc.

At present, these mill lands have been redeveloped into high rise residential towers and office buildings.

Subsequently, the demand for public transportation has escalated.

The proposed Mahalaxmi Metro station will run underneath Arthur Road close to Jacob Circle/Saat Rasta. The southern terminal station of Monorail Line-1 known as Sant Ghadge Maharaj Chowk Station adjoins the proposed metro station. The metro station, monorail station and suburban railway station together will form a multi-modal transit hub and can service the increased travel demand.

Other major landmarks in the vicinity include Dhobi Ghat, Arthur Road Central Jail, Haji Ali Dargah etc.

Mahalaxmi Metro station of has been planned to be constructed by standard cut & cover technique. A direct connection is proposed to Mahalaxmi suburban railway station through a dedicated underground passage.

- 1. Dhobi Ghat
- 2. St. Ignatius Church
- 3. Kasturba Hospital
- 4. Arthur Road Central Jail

Former Mill Locations



## FITNESS FIRST MEDICAL CAMP FOR PROJECT TEAM

Medical check-up camp was organized on 21<sup>st</sup> August 2017 at MMRC office with an intention to create an environment where the entire community is aware and sensitized about health-related issues and boost overall energy levels of the organization.

This was a pilot camp conducted by L&T-STEC JV (contractors for UGC-01 and UGC-07) in association with Advent Healthcare, Delhi and Sailee Hospital, Mumbai. Such medical health check-up camps can help boosting-up the energy level of the entire project team. This was a pilot camp and similar camps will be conducted in future periodically throughout the project life cycle. Medical and pathological check-ups included height, weight, eye test, color vision, long sight - short sight tests, blood sugar check, bone density, ECG etc. A well-equipped team of specialist doctors (experts in hyperbaric medicine - an occupational treatment for underground tunneling), consultants, nurses and volunteers facilitated the health check-up at the MMRC Office BKC Mumbai and at the project site.

Nearly 155 attendees connected with Metro-3 project were successfully examined and got benefitted from the free health care check-ups.

Participation from MMRC, MD, MMRC Ms. Ashwini Bhide, Director Project, Mr. Subodh Kumar Gupta and Director Finance, Mr. Abodh Khandelwal, were highly encouraging to conduct such activities in future. The entire initiative was driven by Mr. Paras Kamble, Chief Safety, MMRC together with Mr. Rishi Kumar, Deputy Chief Safety Manager for L&T-STEC JV and their teams.

## IMPLEMENTATION OF EMP FOR METRO-3

Metro-3, is a part of the metro system development for the city of Mumbai. Like any other project, Implementation of Environmental Management plan (EMP) is mandatory during construction and operational phase of the Metro Rail project. It is a site-specific plan and is required to be implemented to protect the environment and comply with environmental legislation.

MMRC is committed to take all measures for protecting the environment which has been disclosed in its environment policy.

EMP is the key to ensure that the environmental qualities of the area will not weaken due to the construction and operation of the project. The Environment Mitigation Plan covers all aspects of the construction and operation phases related to environment.

EMP is prepared considering all the factors that will have adverse impact on environment during construction and operation phase of Metro-3 project and describes all the environmental management activities and control measures that will be implemented to avoid or minimize environmental impacts. EIA/EMP prepared in September 2012 has been upgraded in January, 2016 accordingly.

Environment Management Plan of Metro-3 project includes mitigation measures for control of air pollution, water pollution, noise pollution, control of vibrations, muck disposal, construction and demolition waste, bio-medical waste and hazardous waste.



The pollution control measures under EMP adopted at the construction sites are sedimentation tank, wheel washing facility, dust screens, water sprinkling arrangement, construction of hard paved roads, transport of muck by trucks covered with tarpaulin and drip trays for containment of oil spillage, etc. Contractors have been instructed to implement the EMP effectively and it is ensured that shortcomings are being communicated for improvement. The Environment Team of MMRC and GC are carrying out regular visits to ensure implementation of EMP at the sites. Environment Monitoring Program is being implemented by contractors to justify the adequacy and effectiveness of EMP.

## CITIZEN'S VOICE

'सिटीझन वॉइस' हे नामांकित व्यक्तींची मुंबई मेट्रो-3 बदलची मते जाणून घेण्यासाठी सुरू केलेले सदर आहे. आजपर्यंत वेगवेगळ्या क्षेत्रातील व्यक्तींनी हा प्रकल्प मुंबईच्या भविष्यातील दळणवळणासाठी किती महत्त्वाचा आहे हे पटवून दिले. यावेळी आम्ही मराठी विज्ञान परिषदेचे महाराष्ट्राचे कार्यवाह श्री. अ. पां. देशपांडे यांची मुंबई मेट्रो-3 बदलची मते जाणून घेतली आहेत. मराठी विज्ञान परिषद ही विज्ञानाचा प्रचार व प्रसार मराठी भाषेतून करण्यासाठी कार्यरत आहे. संपूर्ण महाराष्ट्रात मराठी विज्ञान परिषदेच्या ७० शाखा आहेत. याशिवाय बेळगाव, निपाणी, वडोदरा व गोवा येथेही परिषद विस्तारली आहे. तर जाणून घेऊया श्री. देशपांडे यांच्या नजरेतून मेट्रोविषयी...

### मेट्रो-3 मुळे सार्वजनिक वाहतूक व्यवस्थेत काय प्रभाव पडणार आहे?

कुलाबा-वांद्रे-सीप्लॅन या मेट्रो मार्गिकेचा विचार अतिशय बारकाईने अभ्यासला गेला आहे. ही मार्गिका मुंबईकरांसाठी नक्कीच दुसरी जीवनवाहिनी ठरेल यात मला जराही शंका वाटत नाही. वाढत्या लोकसंख्येचा विचार करून राज्य शासनाने मेट्रो-3 प्रकल्प निर्मितीचा अतिशय उपयुक्त निर्णय घेतला आहे. मेट्रो-3 मार्गिकेमुळे शहरातील प्रमुख व्यापारी केंद्रे, इस्पितळे, शैक्षणिक तसेच मनोरंजनाची केंद्रे जोडली जाणार असल्याने समाजातील प्रत्येक व्यक्तीसाठी हा मार्ग सोईस्कर राहिल. दिल्लीत मेट्रोमुळे वाहतूक व्यवस्थेत झालेल्या सकारात्मक बदलानंतर देशाच्या आर्थिक राजधानीत मेट्रोची गरज अधिकच प्रकर्षाने जाणवू लागली होती. देशाच्या कानाकोपऱ्यातून अनेक लोक रोज विविध रोजगाराच्या संधीच्या शोधात मुंबईत येतात. परिणामतः मुंबईच्या लोकसंख्येचा विस्तार झपाट्याने होत आहे. शहराची लोकसंख्या लक्षात घेता सध्या अस्तित्वात असलेल्या सार्वजनिक वाहतूक व्यवस्था पुरेशा नाहीत. या सर्व बाबींचा विचार करता मेट्रो खरे तर १० वर्षाआधी येणे गरजेचे होते.

### प्रकल्प अंमलबजावणी विषयक तुमची मते काय आहेत? तसेच मुं. मे. रे. कॉ. कडुन तुम्हाला काय अपेक्षा आहेत?

नागरिकांची गैरसोय टाळण्यासाठी प्रकल्प लवकरात लवकर पूर्ण होणे गरजेचे आहे. प्रकल्प वेळेत पूर्ण होण्यासाठी प्रकल्पासाठी लागणारा निधी देखील वेळेत उपलब्ध होणे गरजेचे असते. कंत्राटदारांनी कामाचे योग्य नियोजन करून कामे वेळेत पूर्ण करणे गरजेचे आहे. तसेच प्रकल्पाचा दररोज आढावा घेणे देखील आवश्यक आहे.

### प्रकल्पासाठी तुम्ही कशाप्रकारे सहाय्य कराल?

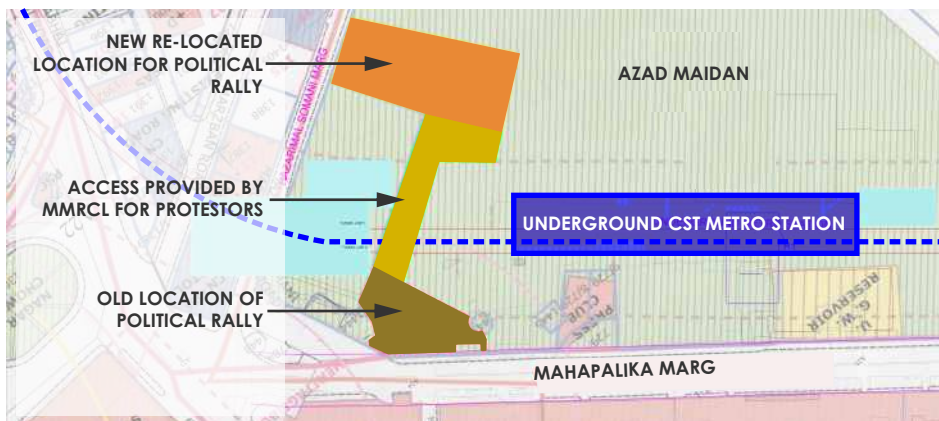
याप्रकल्पाची माहिती जास्तीत जास्त लोकांपर्यंत पोहोचण्यासाठी आम्ही मुंबई मेट्रो रेल कॉर्पोरेशनच्या व्यवस्थापकीय संचालक, श्रीमती अश्विनी भिडे यांचे व्याख्यान आयोजित केले होते.

### तुमचा संदेश.

कोलकता मेट्रो मध्ये रविंद्रनाथ टागोरान्च्या कविता मेट्रो स्थानकांवर लावल्या आहेत. महाराष्ट्राला अनेक महापुरुष लाभले आहेत तेव्हा कोलकता मेट्रोच्या धर्तीवर मुंबई मेट्रो रेल कॉर्पोरेशनच्या देखील विविध महान पुरुषांचे सुविचार/कविता यांचा समावेश मेट्रो स्थानकांच्या भिंतीवर करावा.



श्री. अ. पां. देशपांडे  
कार्यवाह,  
मराठी विज्ञान परिषद



Map indicating the new temporary Morcha location

## AZAD MAIDAN- RELOCATION OF PROTEST AREA

Azad Maidan, located on about 10 Ha of land near CST Station has been a popular destination for inter-school cricket matches, political rallies and protest meetings.

A part of Azad Maidan (temporary land admeasuring 3.07 Ha and permanent land admeasuring around 0.07 Ha) is acquired by MMRC from the Government of Maharashtra for construction of underground CST Metro Station.

The current location where protest meetings and political rallies are conducted has an entry from Mahapalika Marg, and this location is infringing the planned entry/exit to the CST Metro Station.

The physical possession of this area is required for carrying out the construction activities. Therefore, the location of the protest meetings and rallies is proposed to be shifted to another location in the same vicinity.

Accordingly, after assessment of various alternatives and on approval of the Home Department & Government of Maharashtra, land of approximately 0.7Ha (7000 sqm) near Human Right Commission facing Hazarimal Somani Marg at Azad Maidan is finalized for the rallies, on a temporary basis.

MMRC will arrange provision of necessary facilities like approach road, temporary cabins for police officers, lighting etc.

As this is a temporary arrangement until the completion of Metro-3 work, temporary facilities will be dismantled and the location for rallies will be shifted back to its original location.



## TREE TRANSPLANTATION

MMRC and Western Railway jointly organised a programme to initiate the neighbourhood tree transplantation programme at Agripada Railway Colony in Mumbai Central. Around 200 trees of Mumbai Central, Mahalaxmi, Science Museum areas will be transplanted at Railway Colonies in Agripada, Mumbai Central, Pali Hills and Bandra.

Ms. Ashwini Bhide, MD, MMRC and Mr Mukul Jain, DRM inaugurated the tree transplantation activity along with Mr. SK Gupta, Director Projects and other senior officers of MMRC and Western Railway in the Agripada railway Colony.

DRM Mr. Jain appreciated this initiative and assured full support. He has assigned dedicated group to take lead to make it a success. Local residents of the Agripada Railway Colony were also present and welcomed this initiative.

Speaking on the occasion, Ms. Bhide thanked Railway for their quick agreement and said that other Government establishments and housing societies in the areas along the alignment of Colaba-Bandra-Seepez line may also join in this initiative. She further said that MMRC would carry out professional transplantation of grown-up trees and maintain them for the required period.



## SYSTEM BIDS TO KICK OFF

MMRC has opened RFP bids for the first system contract of Traction Power Supply. The entire work has been divided into two contract packages, 11A (Traction Work) and 11B (Power Supply) for the purpose of smooth execution of work.

Reputed domestic and international firms participated and submitted bids for Power Supply and Traction Works for Metro-3 corridor. After completing evaluation of bids as per stipulated JICA procedures,

MMRC aims to award both contracts by November 2017. State-of-art and latest technology GIS base Substations are planned by MMRC as part of this contract.

The Pkg 11A consists of detailed design, engineering, supply, installation, testing and commissioning of overhead contact system, auxiliary substation, 33 Kv cable distribution network and integration with other systems, while Pkg 11B work will consist of detailed design, engineering, supply, installation, testing and commissioning of power supply works including receiving substations, 110 kV cabling works, traction substations, auxiliary main substations, switching stations, Supervisory Control and Data Acquisition (SCADA) System, and integration with other systems.

MMRC has fast tracked procurement of system contracts viz traction power supply, over conductor system, rolling stock, environmental control/tunnel ventilation system, lift/escalators. The procurement is based on JICA extant guidelines of two stages international competitive bidding.



### MMRC Control Room

Contact us @ 8291751545 to report monsoon related grievances pertaining to Metro-3 construction work.

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