



MMRC

ADDING NEW DIMENSIONS

METRO CUBE

A MUMBAI METRO RAIL CORPORATION NEWSLETTER

MD Speaks

Ms. Ashwini Bhide, IAS

Development with human face is the greatest challenge of in all Urban Infrastructure Projects especially in Mumbai where public reservations are encroached by slums/unauthorized structures. World Bank funded MUTP followed by other projects have facilitated certain institutional capability to handle project affected families (persons) in Mumbai. MMRC started the R&R process in early 2015 and successfully completed the Rehabilitation of slum PAPs this month. The final lot of 30 families were allotted houses at Chakala and shops at Kanjurmarg (Hariyali Village) by online lottery system on 30th August 2018. The R&R team of MMRC has proactively worked in raising the bar of R&R process in terms of consultation process, transparency in allotment, secured documentation etc. The handholding of PAPs in graduating them to well managed sustainable cooperative housing colonies will be continued under post R&R activity will continue for some more time. We are happy to declare that all project lands under slum encroachment are now cleared.

Simultaneously the land acquisition process at Kalbadevi and Girgaon have progressed reasonably. As most of these buildings fall under cess buildings category, rehabilitation of tenants (to be certified by MHADA), and compensation to owners (land lords) is a complex process. The well thought of in-situ rehabilitation under MCGM DCR 33(7) will facilitate MMRC to use the robust framework under the cluster development to complete the same.

"It's raining TBMs this monsoon in Mumbai". 16 TBMs have already arrived in Mumbai and 14 TBMs are already lowered. 12th TBM – Wainaganga 2 of Package 7 was commissioned at the hands of Mr. Baldev Singh, IAS, Development Commissioner SEEPZ, in presence of Prof Eldho T.I., Head, Civil Dept. IIT Bombay along with Prof. Dasaka Murthy and Prof. Venkata Santosh.

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Students of L.S. Raheja College of Architecture visited Metro-3 Site

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Tidal Influence and Floods: Mumbai

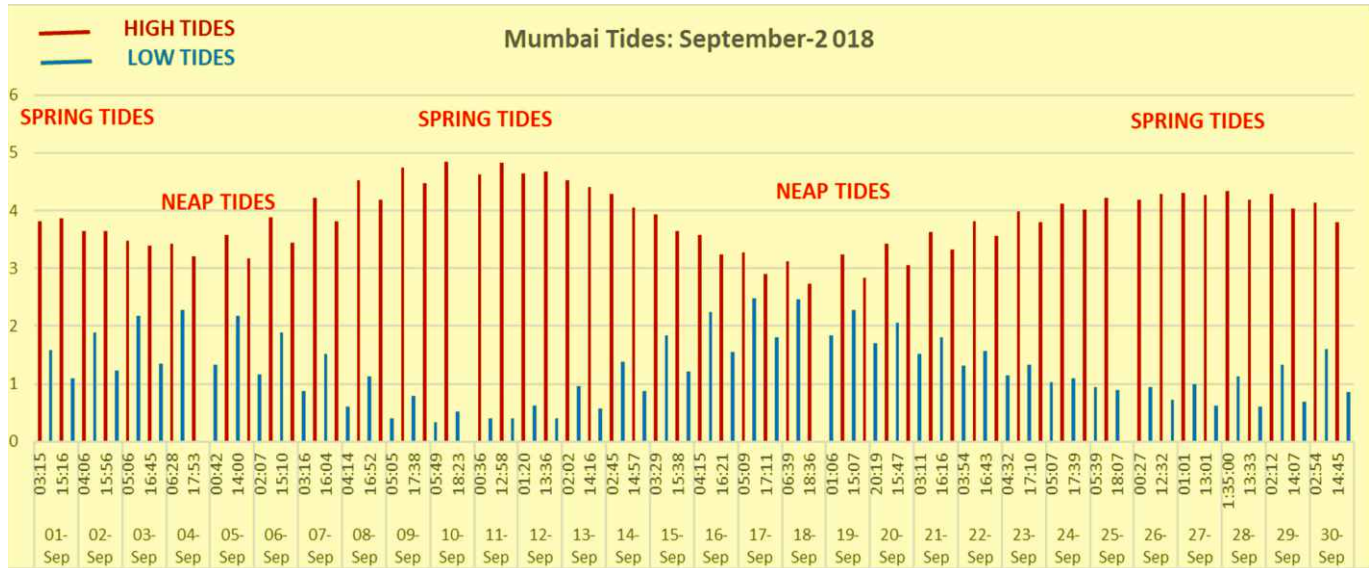
This is the last article in Monsoon Special series started in June 2018 issue.

To understand the effect of tides on floods, it is important to study the tide pattern in a region. If one analyses the 'Tidal Graph' for a full lunar month covering a new and full moon it can be observed that tide levels are very high around full and new moons, known as spring tides. When the high tides are very high, the low tides are also low during the spring tides.

Consequently, if there is heavy precipitation when the tide level is rising (flooding) during the spring tides, preventing rain water to drain out to sea, the coastal areas can experience flooding till the time tide reaches its peak. However, once the low tide i.e. ebbing commences, it takes away all the water accumulated during the high tide. Also the level of low tide being extremely low during spring tides all the water on shore is flushed through and proper evacuation takes place leaving no scope of flooding despite heavy precipitation during the spring low tides.

On the contrary, the difference between high and low tides is not much and certain level of water is maintained during the low tides. It may persist for days together not allowing water to evacuate from shore to sea. If there is heavy precipitation during this period, the standing sea water column will not allow the rain water to drain down to sea resulting in floods on shore. These floods will continue till commencement of next spring tides when there is gradual reduction in low tides.

It can therefore, be summarised from the above that Mumbai can experience floods, if there is heavy rain during rising water levels during spring tides. However, these could be for shorter durations till the flood water starts going down and flush out to sea fully during the low tides. If there are even moderate but continuous rains during the neap tides. These floods could last much longer till proper evacuations takes place on commencement of next spring low tides. The floods in Mumbai on 17th June 2017 is an example of floods during neap tides.



Tidal Graph: September-2018

Observations: -

1. Spring tides are extremely high. There could be flooding if there are heavy rains from 8 Sep to 12 Sep 2018 in Mumbai.
2. Low tides in the neap tides are very high in September this year. There could be water logging from 3rd to 5th September and from 16th to 20th September if there are heavy rains during this period.

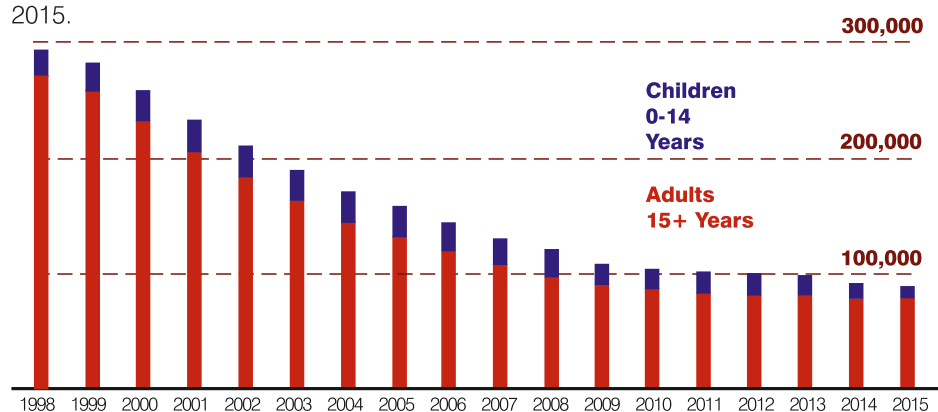
Conclusion: -

In view of the above, it is extremely important to monitor rains and rising sea water levels during the neap times as it could result in floods in Mumbai for much longer duration and adversely affect the progress of work during this period.

HIV Awareness Programme

The number of people living with HIV/AIDS has been steadily increasing across the world and reached 388 lakh (ranging between 376-404 lakh) in 2015. At the same time, HIV/AIDS mortality has been declining over the years – from a peak of 18 lakh deaths in 2005 to 12 lakh deaths in 2015, a new report in the journal The Lancet HIV has said.

India has the third largest HIV epidemic in the world. India had 1.96 lakh new human immunodeficiency virus (HIV) infections in 2015, a recent study has shown. This number is in addition to the existing 28.81 lakh people who were already living with HIV as of last year. Overall, India's HIV epidemic is slowing down, with a 32% decline in new HIV infections (86,000 in 2015), and a 54% decline in AIDS-related deaths between 2007 and 2015.



Source: National AIDS control organization (2015) 'HIV Data', AVERT.org

Estimated new HIV infections in adults and children between 1998-2015 - India

The HIV epidemic in India is driven by heterosexual sex, which accounted for 87% of new infections in 2015. However, the epidemic is concentrated among key affected populations such as sex workers. The vulnerabilities that drive the epidemic are different in various parts of the country. The five states with the highest HIV prevalence (Manipur, Mizoram, Nagaland, Andhra Pradesh and Karnataka) are in the south or east of the country. Some states in the north and northeast of the country have also reported rising HIV prevalence.

In the last 15 years, the global community has provided \$109.8 billion in development assistance to curb the HIV/AIDS epidemic. As a result, HIV mortality has declined overall in low-income and middle-income countries since 2004. In this scenario what is seen is that migrant workers coming to big cities like Mumbai are at high risk. In the forthcoming issues, we will see a larger picture of the risks involved and an impact of the HIV epidemic specifically in the context of large scale infrastructure projects like Metro-3.

In the light of this, NGO Purnata has been chosen to deliver an awareness programme for the immigrant workers working on all seven construction packages of Metro-3. We will have a glimpse through this campaign along with sharing our experiences and learnings through this activity.

India (2015)

- 2.1** million people living with HIV
- 0.3%** adult HIV prevalence
- 86,000** new HIV infections
- 68,000** AIDS-related deaths
- 43%** adults on antiretroviral treatment

Source: UNAIDS Gap Report 2016



HIV Awareness Programme at Metro-3 site

MD Speaks

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The 11th TBM; Tansa 1 of Package 3 started working from Science Museum to Acharya Atre Chowk. 10th TBM Godavari 3 of Package 5 already lowered at launching shaft at BKC will start tunneling shortly between BKC - Vidyanagari.

Among the eminent visitors to the project were top engineering team of Indian Railways led by Mr. M.K.Gupta, Member Engineering, Railway Board and Ex. Officio Secretary to the GoI, Mr. S.K.Tiwari, CAO Central Railway, Mr. Mahesh Gupta CAO, Western Railway, Mr. R.K.Meena, PCE Western Railway with other Chief Engineers. Mr. Ambuj Bajpai, Under Secretary, MoH & UA, Govt Of India, visited our project site to avail first hand experience about the ongoing construction activities.

Among the young visitors were 22 Architecture students of SL.Raheja College of Architecture, Mumbai taking a 1.5 km Tunnel walk at Naya Nagar.

As part of Citizen Engagement agenda, we had an opportunity to give away plant saplings and interact with the participants of Sravan Mahotsav, a cultural program for women at Dadar and tell them more about Metro-3 project.

MMRC tree plantation drive at SGNP entered in 2nd phase in presence of senior MCGM officers. As of today, 17000 trees have already been planted. MMRC will complete planting 20900 trees across 19 acres of SGNP shortly.



Know Your Station - CSIA (Domestic) Station



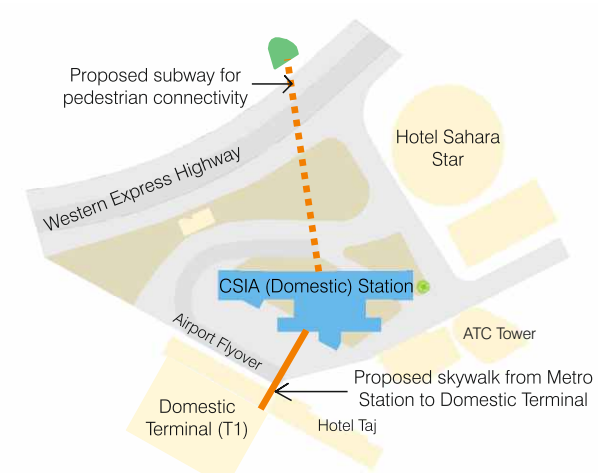
Ibis Hotel



Avion Hotel



Hotel Bawa International



Hotel Sahara Star

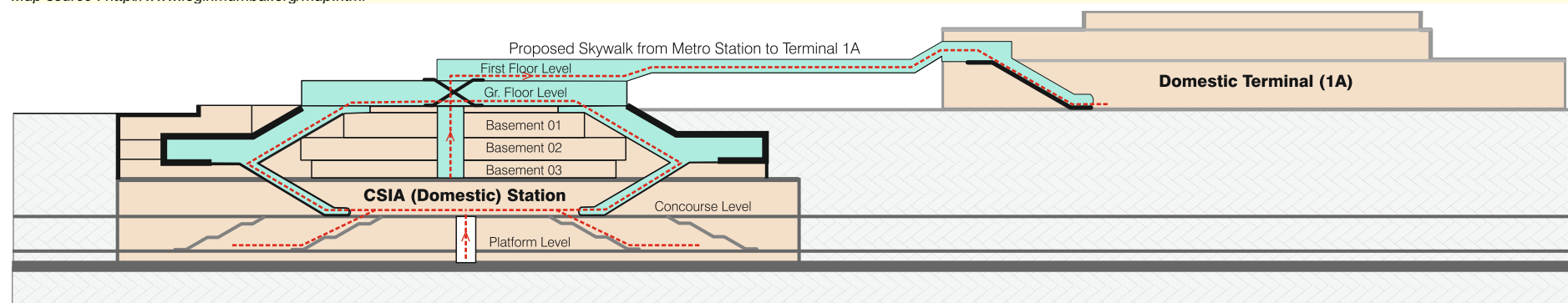
1. Domestic Terminal (T1)
2. Hotel Taj
3. ATC Tower
4. Hotel Sahar Star
5. Airport Post Office
6. Hotel Airport International
7. Hotel Bawa International
8. Ibis Hotel
9. Hotel Atithi
10. The Orchid Ecotel Hotel
11. Hotel Airlink
12. Nandgiri State Guest House
13. Avion Hotel
14. Hotel Aircraft International
15. Dixit Road Junior College of Science
16. Sathaye College
17. M.L. Dahanukar College of Commerce

Chhatrapati Shivaji International Airport (CSIA) is one of the major international gateways to India, hitherto known as 'Sahar International Airport'. It is the second busiest airport in the country after Delhi, situated across the suburbs of Santacruz, Vile Parle and Sahar village in Andheri. The nearest suburban railway stations are Andheri, Vile Parle and Santacruz on Western Railway Line which are at 1.5 to 4 km from Proposed metro station. So far, airport area has been largely depending on the BEST bus and taxi services for connectivity from nearby stations/ localities all over Mumbai.

CSIA has two terminals, Terminal-1 (Domestic Terminal) and Terminal-2 (International Terminal). Both terminals are about 4 km far from one other but operated by same runways and air facilities. They are connected from inside only for airport authority and not for passengers. Passengers have to commute between both the terminals by metered taxi or fixed rate Inter-Terminal transportation service.

The CSIA (Domestic) Station of Metro-3 is situated in front of Domestic Terminal (T1) and beneath the Airport Premium Parking Lot. The station is named after Chhatrapati Shivaji International Airport Terminal 1. T1 is located in Santacruz and serves only domestic flights like Indigo, SpiceJet, GoAir etc. The proposed metro station will serve the mainly Terminal-1 and would ease the commuting between both the terminals. Integration with the Domestic Airport Terminal will facilitate efficient passenger dispersal as it handles millions of people daily.

The major landmarks are hotels served by the station such as Hotel Sahara Star, Ibis Hotel, Bawa International Hotel, Taj Hotel, Atithi Hotel etc. Metro-3 will connect the Airport directly to the Western Railway Line.



Indicative Section - Direct pedestrian connectivity from Metro Station to Terminal 1A

What Lies Beneath The Earth

Last month, a brief of UGC-04 package has been presented. The next package, namely UGC-05 is being described in this edition. The package starts at Dharavi Station and ends at Mid Ventilation Shaft (MVS) near Santacruz Agripada area. It includes four underground Stations at Dharavi, BKC, Vidyanagri and Santacruz and associated tunnels. The alignment crosses the Mithi River after Dharavi Station.

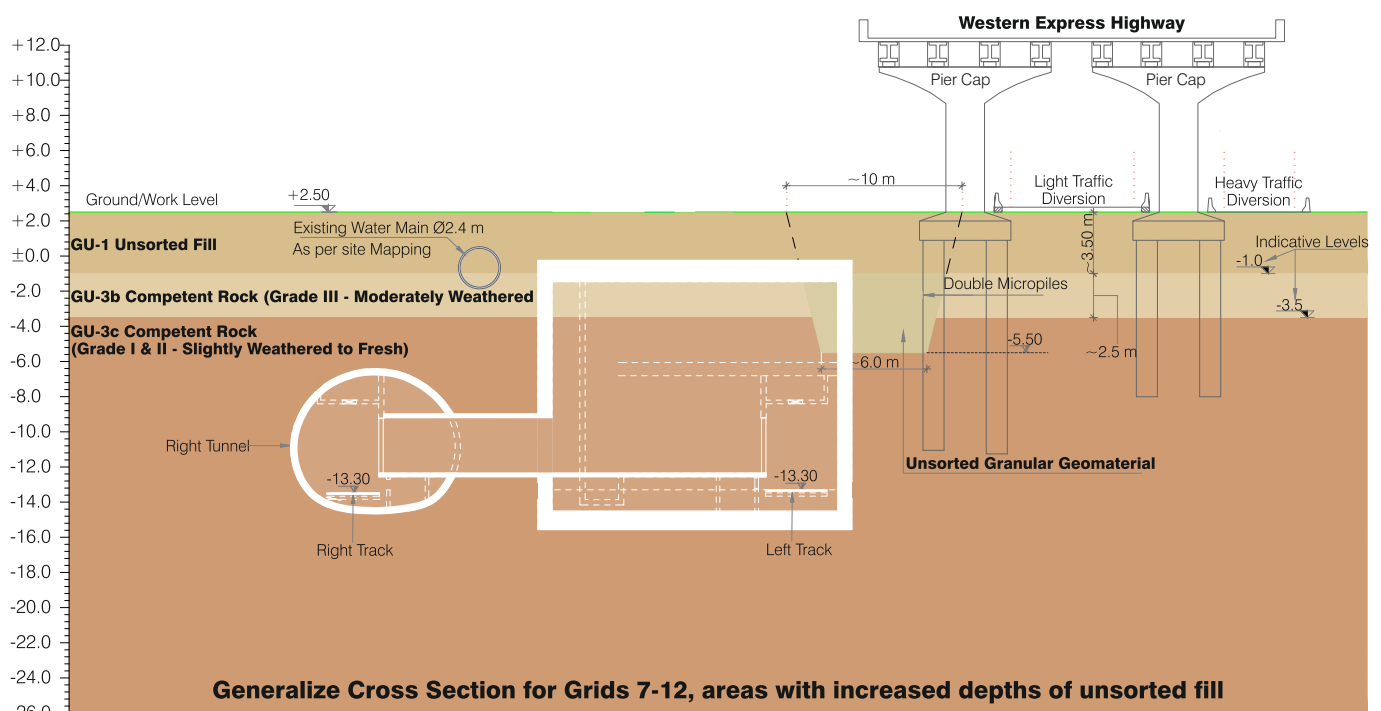
Major challenges anticipated in the package:

- Mixed Ground Conditions:** It is anticipated that better quality rock is mostly encountered. However, specific stretches of mixed ground conditions, as completely to highly weathered rock are to be identified during construction and suitable precautionary measures to be taken.
- Strength of Rock:** Strength of rock varies in similar grade of rock at different locations. Suitable construction methodology and contingency measures management will reduce the risk to lower levels.
- Ground Water Control:** For the stations, earth-retaining system for the upper soil and highly fractured rock mass layers will ensure water tightness. Perimeter ditches and intermediate sumps in the excavation will facilitate water collection. For the tunnels, controlled excavation by using Earth Pressure Balanced Tunnel Boring Machine (EPBM) will minimize seepage and loss of volume.
- Excavation Support System:** During the station construction, the top soil and weathered rock will be supported by suitable earth retaining system (Secant Pile Wall) prior to station or shaft excavation.
- NATM Works:** Generally the NATM works at Santacruz area is anticipated in good quality of Basalt rock. However, the support system and excavation sequences will be suitably adopted for the rock encountered.
- Alignment:** TBM has to negotiate locations near existing Vakola flyover at Santacruz station area. Earthworks close to the flyover is done using a stiff temporary support.



The generalized soil profile consist of fill layer underlain by native soil layer consisting of stiff clays on rock. As part of great volcanic formation building up the Deccan plateau of Mumbai region, the major rock encountered are weathered Basalt (both compact and amygdaloidal) associated with Tuff and Breccia. Basalt is harder and stronger than Breccia.

Stations are constructed by Cut-and-Cover method as well New Austrian Tunneling Method (NATM). Construction of Dharavi, BKC, Vidyanagri metro stations consists of Cut-and-Cover method while Santacruz Metro Station adopt a combination of Cut-and-Cover and NATM methods due to space constraints.



Expert Speaks

This article is in continuation with the previous article, in July 2018, Volume.

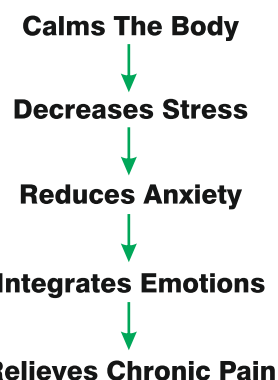
In the current circumstances, particularly while travelling, flight or fight response have become irrelevant. We can neither run away from the traffic nor push ourselves through it. All we can do is just sit tight. So unable to either fight or take flight, we remain stuck in the traffic. The stress hormones which naturally drop after some action has been taken, remain uncontrolled now. Their levels remain high for longer periods since there is no change in stressful circumstances. The efficacious flight or fight stress response becomes a fright response and lingers much longer leading to annoyance and irritation at small things. Research has proven the cumulative effect is ultimately hugely damaging and can lead to mental health problems in the long-run.

So what can be done about this? While you can plan your day to the minutest detail to avoid commuting during peak traffic hours, not every variable remains under control. While you should do what's possible to avoid traffic jams, the next-best solution is to deal with stress with greater equanimity. Which means while you can't control the bottleneck around you, you can manage your reaction to it. These evidence-based tips help you stay calmer and in the midst of bumper-to-bumper chaos:

- 1. Inhale-Exhale-Repeat:** When you start gripping the steering wheel like a vise, take some deep breaths. This is not only a proven technique for eliciting relaxation. It's also simple enough to do behind the wheel.
- 2. Redefine the situation:** Rather than thinking of the traffic snarl as an obstacle to getting where you want to be, tell yourself it's a welcome respite from work or a golden opportunity to listen to your favorite radio show.
- 3. Curtail angry reactions:** Don't expect to eliminate every negative feeling. If you feel a flash of annoyance when a driver cuts you off, that's okay. Notice and accept what you're feeling in the present moment, and then move on to the next moment. This helps stop yourself from fuming over the other driver's behavior, so a split-second of irritation doesn't turn into full-blown road rage.
- 4. Subdue anxious thoughts:** Likewise, if you feel a twinge of worry over being late, approach it with the same mindful attitude. Notice and accept the feeling nonjudgmentally, and then let it go. Turn your awareness to what's happening in the present moment: the sight of vehicles moving (or not) around you, the sound of sirens in the distance, the feel of your foot on the pedals.
- 5. Put on a happy face:** When you're doing 10 miles per hour in the fast lane, smile. If you're able to see the humor in the situation, that's a great stress reliever. But even if you're faking the smile, research suggests that going through the motions of smiling may reduce the intensity of your body's stress response.

Mindfulness is an excellent, well researched antidote to the stresses of modern times. It invites us to stop, breathe, observe, and connect with one's inner experience. And provides a workplace where employees are less stressed and more productive every day. A workplace where, for 8-hours a day, staff use tools to have a better balance between their desks and their families.

Mindfulness



MMRC's Officers got involved in exercises shared by Dr. Barve



Dr. Rajendra Barve, Motivational Speaker & HRD Trainer was invited for lecture/workshop on subject "Mind your Stress Mindfully" by MMRC for their employees, welcomed by Ms. Ashwini Bhide (MD, MMRC) and thanking note by Mr. R. Ramana (ED, Planning). Dr. Barve gave the definition & in depth explanation of Mindfulness. The content of Dr. Rajendra's presentations revolved around neuroscience, mental health, holistic healing that leads to mindful life. MMRC team had a very good interactive session with Dr. Barve. Wherein Dr. Barve elaborated, what is Mind, Stress & Anxiety and shared the small exercises to get Peaceful, Calm & Happy Mind Status.



News @ MMRC



MMRC interacted with the women participants of Shraavan Mahotsav organized by Miti Creations at Dadar to inform them about Metro-3. Saplings were also presented to them.



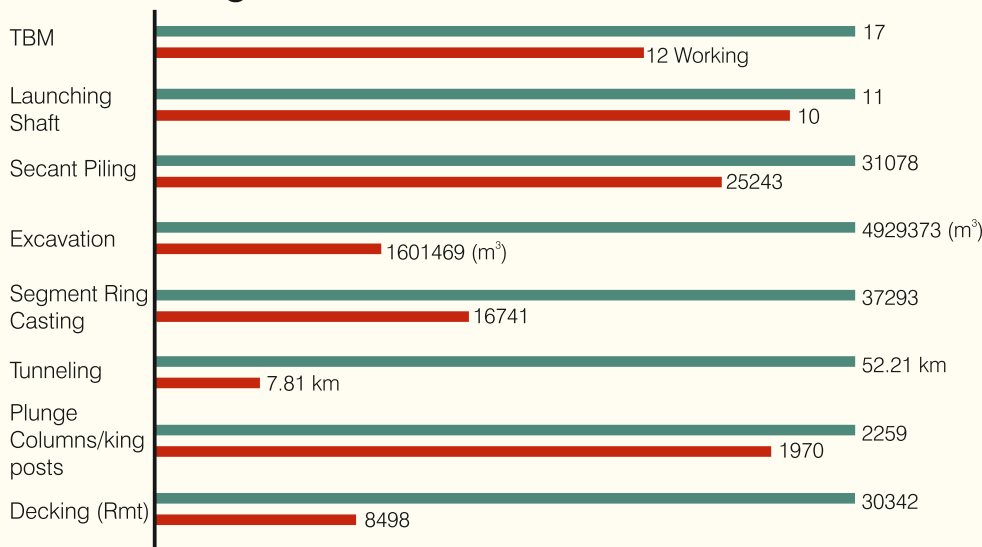
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MMRC tree plantation drive at Sanjay Gandhi National Park (SGNP) has entered in 2nd phase in presence of senior MCGM officers. 17000 trees have already been planted. MMRC will complete planting 20900 trees across 19 acres of SGNP.

Project Progress Update

As on 31st August, 2018



Tansa-1 TBM Assembly

Legend
█ Planned
█ Completed

MMRC Control Room

Contact us @ +91 9136805065 to report monsoon related grievances pertaining to Metro-3 construction work.



Website Link

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