



MMRC

ADDING NEW DIMENSIONS

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METRO CUBE

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MD Speaks

Ms. Ashwini Bhide, IAS

The month gone by and the first week of October proved to be the most TUMULTUOUS period till date. Considering this, it's important to summarize the events till 7th October here. The chaos around Tree Authority (TA), MCGM approval for felling of trees at Depot site, dismissal of all petitions by Hon. Bombay High Court (HC) and subsequent prompt action of tree felling by the Project team has caught attention of the entire Nation. For the understanding of all stakeholders and interest groups, this is to clarify that out of the 30 ha land allocated for depot, area under active depot including underground approach to Depot and JVLR-Aarey (at grade) stations is just 25 ha., while unutilized area with original tree cover is 5.0 ha. The 25 ha. depot has Operations Control Center (OCC), various inspection, repair & maintenance facilities, test track, stabling facilities, train washing etc. along with the complex metro track system and crossings for movement of trains between all these facilities, main line and JVLR stations.

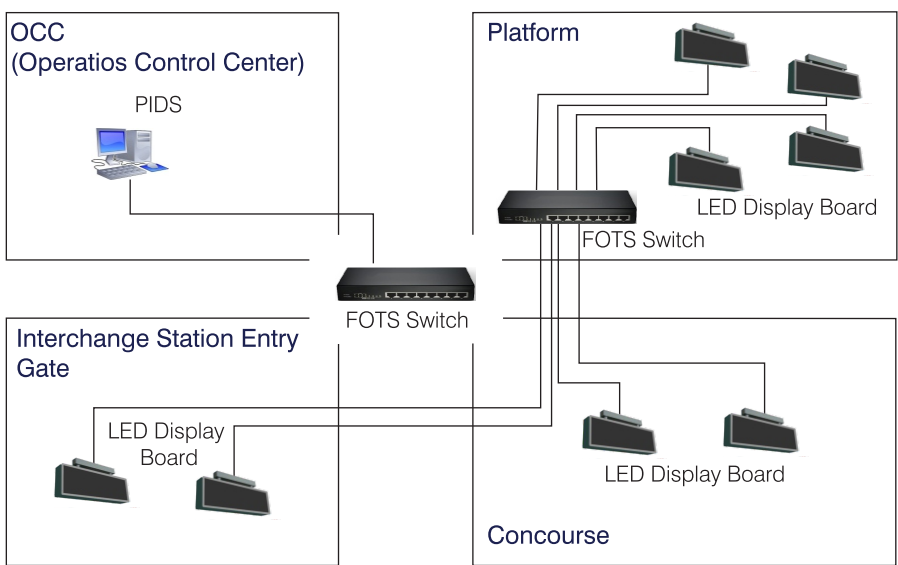
Continued on Page 2

PIDS

Passenger Information Display System

Passenger Information Display System is one of the vital elements of Metro Rail operations. PIDS will be located at convenient locations at all stations to provide trilingual (Hindi, Marathi and English) visual indication of the status of the running trains and will typically indicate information such as destination, arrival/departure time, and also special messages during emergencies. The display boards will be provided at all platforms and concourses of all stations

Passenger Information Display System allows controllers in the OCC (Operation Control Centre), BCC (Backup Control Centre) and SCR (Station Control Room) to send live and pre-recorded messages to selectable platforms and concourses at one station, selected stations or all stations display boards for passengers.



PIDS is interfaced with Signaling System. The Signaling & Train Control system sends data to the PIDS to display train related information including train arrivals, departures and train length on pre-designated display boards throughout the platforms and the concourses of all stations.

PIDS has double-sided LED display sign messages for passengers. It provides automatic playback of pre-recorded display sign messages triggered by date and time of day in Hindi, Marathi and English languages.

Based on information received from the Signaling & Train Control System, PIDS will initiate and coordinate train arrival/departure related PIDS message with the Public Announcement System. The PIDS also has features to provide automatic playback of pre-recorded evacuation display sign messages during emergency.



Source: <https://www.thetrams.co.uk>



Source: <https://www.directindustry.com>

MD Speaks

Continued from Page 1

The petitioners have primarily challenged the status of Aarey milk colony, depot location, decision and process followed by the TA. Hon. HC while dismissing all the petitions gave a well articulated Judgement. The felling of trees started by MMRC on 4th October, immediately after HC orders was challenged in front of a special bench of HC on 5th October and was dismissed. The petitioners then approached the Hon. Chief Justice of India pleading to stop felling of trees and other matters that lead to constitution of a Holiday Bench and hearing on 7th October. Hon. SC, based on submission of the Sate Govt. and MMRC, stayed further cutting of trees and scheduled the matters to be heard on 21st October. MMRC intends to carry out its scheduled works at Depot within the framework of SC orders.

As I have been mentioning, the project as it is has several technical challenges confronting the overall progress. The project and the TEAM will not be dogged by Aarey Depot matter any further though the issue may remain in media for some more time. Earlier we march towards completion, earlier the discussions & arguments will be put to rest.

Focusing on the project progress and achievements of the month; notwithstanding the Aarey issues rest of the project activities are in full swing. Tunneling completed has crossed 64%, TBM breakthrough was achieved by Pkg 7 at MIDC (Pali shaft -MIDC) making the total count to 18 out of 32. With this breakthrough, Wainganga-1 is 2nd TBM to complete its task on the project. Utility protection (hanging of pipelines) completed at Grant Road Station to facilitate station works. Updates on award of systems contracts are mentioned separately.

Team Mumbai Metro 3 wishes Greetings for the season a Very Happy Dussehra, Deepavali to all!

Supporting Underground Utilities

Vidhan Bhavan Station: Entry/exit structures of Vidhan Bhavan Station were infringed by 110 kV oil filled Extra High Voltage cable which is very old and sensitive. There are constraints for diverting these cables outside the structure viz. availability of sufficient land outside the station entry/exit structures and long lead time for importing oil filled special cables. The long lead time required for importing cable may jeopardise the project completion target. Therefore, there is no option but to support the cables in existing position. 110 kV oil filled cables belong to Tata Power, supplying power to BEST's Veej Bhavan substation wherein it is stepped down to 33kV/11kV and subsequently distributed to strategic establishments like, defence, police, Mantralaya, etc.

Uninterrupted power supply to these establishments is a must. Hence, a fool-proof supporting arrangement has been designed. While welding the structural member in-situ, lot of safety measures have been adopted to safeguard oil filled cables from damage due to welding sparks.



Step-1: Exposing of existing oil filled cables



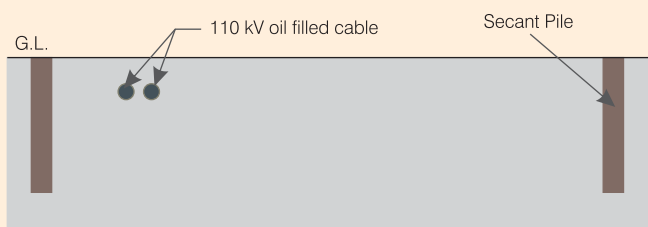
Step-2: Inserting bottom supporting member below the cables in staggered manner and supporting the same to secant pile wall.



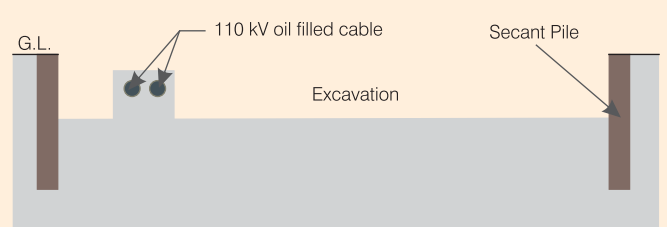
Step-3: Supporting the bottom member to secant pile wall



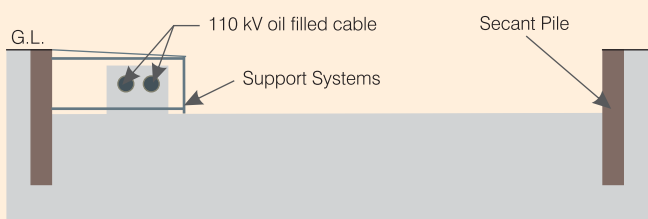
Targets are extensively used for the measurement of deformation during Tunneling, sub way construction, building structure on the top of the tunnel alignment, and for the building/structures in Influence Zone. The measuring range is 12 m to 140 m. Measurements are made by Total station.



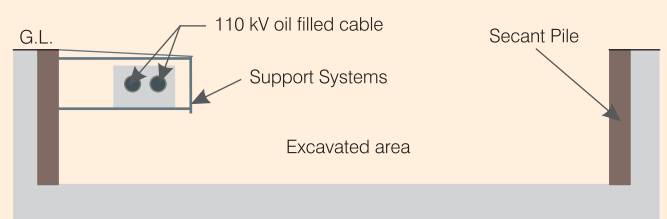
1- Secant piles are installed for excavation



2- Excavation, leaving oil filled cables' portion



3- Inserting Support System to Secant Piles



4- Complete Excavation to required depth

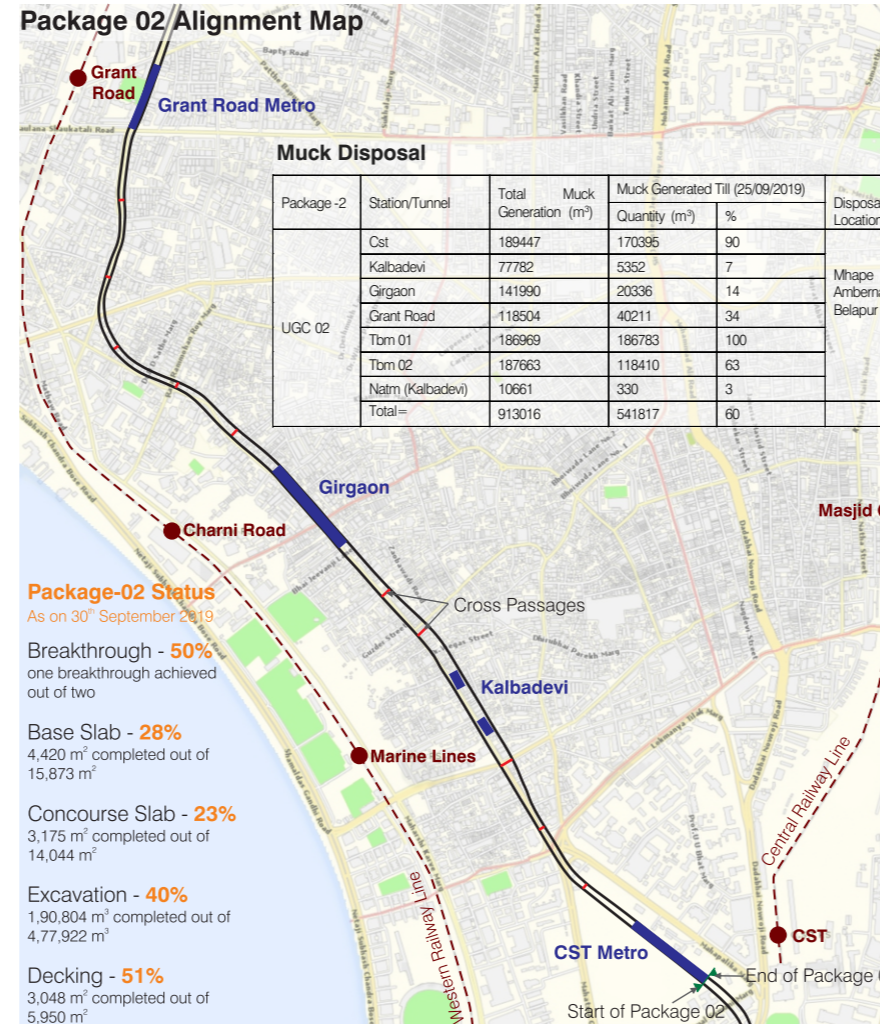
All About Construction Package - UGC02

Package-02 of Metro-3 starts from CST Metro Station and ends at Mumbai Central Metro station. This package includes four stations; CST Metro, Kalbadevi, Girgaon and Grant Road Metro. A unique construction methodology has been adopted for all these 4 underground metro stations, namely New Austrian Tunneling Method (NATM) and Cut & Cover method.

1. CST Metro Station - Cut & cover Off the road
2. Kalbadevi Station - NATM
3. Girgaon Station- Part NATM Part Cut & cover
4. Grant Road Metro Station - Part Cut & Cover & Part NATM

For tunneling entire package-02 alignment (upline & downline), two Tunnel Boring Machines (TBMs) are proposed. TBMs are named as Vaitarna-1 and Vaitarna-2 and are being used for downline and upline respectively. Total 38 cross passages have been proposed for Tunnel (7) and Stations(31). All cross passages are being constructed by NATM technology.

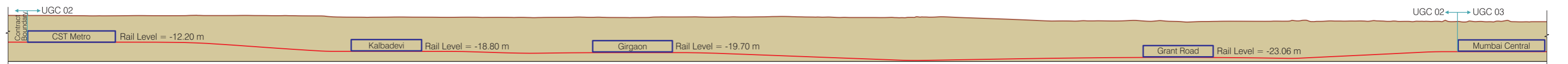
Name of TBM	Vaitarna- 1 (Down Line)	Vaitarna- 2 (Up Line)
Origin (Launching shaft location)	CST station (Azad Maidan)	CST station (Azad Maidan)
Manufacture of TBM	TERRATEC	TERRATEC
Type of TBM	Dual Mode Hard Rock TBM	Dual Mode Hard Rock TBM
Destination (Retrieval shaft)	Mumbai Central station (south end)	Mumbai Central station (south end)
Total km to bore	3.808 km	3.826 km
Total Tunneling done till date	Completed(02/08/2019)	2.459 km
Total numbers of rings to install	2720 nos.	2733 nos.
Total numbers of rings installed till date	2720 nos.- 1.4 m	1746 nos.- 1.4 m
Date of commencement of Initial Drive	04/12/2017	21/02/2018
Date of commencement of Main Drive	15/02/2018	02/05/2018
Length of Alignment	Down Line 3.80 km	Up Line 4.07 km



- **Operational challenges encountered in TBM 01 (Vaitarna 01):**
- Started with a challenge to complete single largest drive in the entire Metro-3 with the scope of 3.814 km long boring and with the installation of 2720 number of rings.
- Successfully crossed the most dangerous dilapidated building (JER Mahal), tallest building (Vardhaman Galaxy, G+22 floors), Shriram Mandir (approx. 200 years old), St. Teresa Church (approx. 270 years old). TBM- 1 has crossed directly below 169 structures including 14 high rise buildings & 28 heritage structures with no settlement.
- TBM-1 alignment runs parallel to the sea shore & ground water table is approx. 1 to 4 m below the ground level, with which the progress impacted by the huge ingress of water. The water encountered has been recycled & used for usage in station works (treated in sedimentation tank & RO unit).
- In our tunnel alignment we had 1004 structures (mostly varying between 80-120 years old) in our Zone of Influence (50 m on either side of centre line of Tunnel) among which structures are; Severe – 237, Very Severe – 28 and Heritage – 49.
- It was driven in densely populated & congested area so the poor structures as categorised above were supported if required additionally while tunnelling as per the design requirement.
- The tunnel alignment for package-2 runs through hard basalt and breccia rock mass with some pockets of very low strength shale bands at average depths below 20 m from the road level. So, technically a negligible settlement in the alignment was noticed. On 6th November 2018 TBM-1 successfully achieved building 18 rings in a single day (24 hours shift); which is considered as the highest by any TBM's in entire Metro-3 package.

Vaitarna 1 TBM's Achievements:

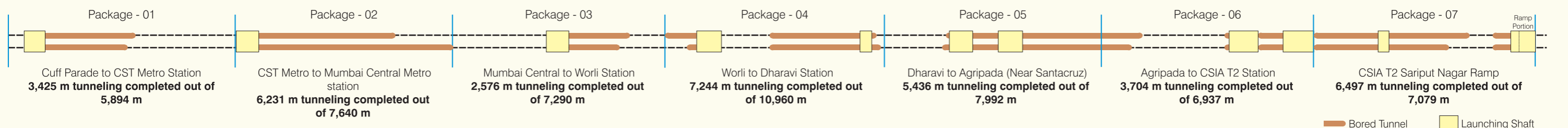
Vaitarna 1 was launched from the Azad Maidan and retrieved from the Mumbai Central Metro Station. It has completed its tunnel drive of 3.808 km in 20 months at a mining average of 190m/month or 7m/day on 02.08.2019 which is the longest metro tunnel bored in India in a single drive so far. It was driven in open mode throughout the stretch. TBM-1 is the first TBM to complete the entire stretch of tunnelling in the entire Metro-3 line among 7 packages.



Section of Package-02 Alignment



Tunnel Progress Update - As on 30th September 2019



Grievance Redress Mechanism

For Project Affected Persons (PAPs)

Government of Maharashtra, vide its G.R. No. MRD-3311/Pra-Kra 149/Navi-7 Dated 3rd March 2014 has approved Rehabilitation and Resettlement of the Project Affected Persons under the Mumbai Metro Line-3 (Colaba-Bandra-SEEPZ) Project by adopting the Mumbai Urban Transport Project Policy (MUTP) 1997 as amended in 2000. This is concurred by the Japan International Co-operation Association (JICA). Till date MMRC has rehabilitated 2782 PAPs.

In order to address the grievances faced by project affected people, two GRCs (Grievance Redress Committees) work independently in MMRC:

- i. Field Level GRC, [chaired by Smt. Sangeeta Warade, Tehsildar & DGM(R&R)]
- ii. Senior Level GRC [chaired by Mr. Babasaheb Redekar, District Superintendent of Land Records & DGM (Land)]. The SLGRC works as the appellate authority.

Process for Grievance Redress Mechanism:

1. Receipt of grievance & process of application: All grievances are received in written form only, prepared & signed by the aggrieved PAPs or through a legal representative. Head of GRC prepares a processing sheet (*Rojnama*) in suitable format where details of applicant, project, location, nature of grievance(s), current status of removal of structure, requirement of further info, observations on verifications carried out, respondents to be called for hearing, probable date of hearing, etc. GRC primarily considers grievances related to individual eligibility and entitlements including disputes between parties, which can be considered within framework of MUTP R&R policy.

2. Scrutiny of grievance: GRC scrutinizes the grievances based on the contents of applications, documents submitted by the applicants/respondents during hearing, site and document verification, etc. GRC considers whether the applicant's affected structure has been given an ID number and whether his/her name & structure is included in Baseline Socio-Economic Survey (BSES) report and map, based on reports received from General Consultants and R&R department. The SLGRC considers only those grievances which are rejected by FLGRC and in cases where FLGRC decision is challenged for modification.

3. Hearing of grievance: The Head of the concerned GRC gives a personal hearing to the applicant/respondents and concludes the matter at the end of such first hearing. In exceptional cases, GRC may consider holding a second hearing. The Head, GRC then passes an order as per the guidelines in this regard for either accepting the claim of applicant as it is or with any modification or reject the claim.

4. Orders of GRCs: Orders passed by GRC indicate name of applicant, address and contact details, date of application and hearing, description of grievance, salient points of findings of scrutiny, reasoning, conclusion and actual decision to specifically indicate applicant's affected structure is existing on site. An applicant, if not satisfied with FLGRC order can challenge the same with a written application to SLGRC within a period of 8 days from the date of FLGRC order. An applicant, if not satisfied with SLGRC order can challenge the same before Hon'ble High Court of Bombay.

Status of applications with GRCs as on 30th September 2019

Grievance Redress Committee	Applications Received	Applications Redressed
FLGRC	654	642
SLGRC	326	234

हिंदी सप्ताह आलेख

भारतीय संविधान निर्माताओं ने स्वतंत्रता संग्राम में हिंदी के निर्विवाद सर्वोच्च योगदान के आधार पर हिंदी भाषा को राजभाषा का दर्जा दिया। इस प्रकार १४ सितंबर १९४९ को हिंदी भारत संघ की राष्ट्रभाषा न होकर राजभाषा बन गई।

इसी उपरोक्त में राजभाषा हिंदी के प्रयोग को प्रोत्साहन देने हेतु मुंबई मेट्रो रेल कॉर्पोरेशन लि. में "हिंदी सप्ताह" का आयोजन किया गया। मुंबई मेट्रो रेल के हिंदी राजभाषा विभाग द्वारा दिनांक २३.०९.२०१९ से २७.०९.२०१९ के अन्तर्गत "हिंदी सप्ताह" मनाया गया। इस कार्यक्रम का उद्घाटन राजभाषा (The Official Language Implementation Committee) के उपाध्यक्ष, निदेशक वित्त एवं सभी निदेशको द्वारा दीपप्रज्वलन एवं संबोधन से हुआ।

इस उपलक्ष्य में विविध प्रतियोगिताएं आयोजित की गई थी। उपरोक्त के अन्तर्गत विभिन्न कार्यक्रम जैसे हिंदी निबंध लेखन, अनुवाद प्रतियोगिता, स्वरचित काव्य पाठ, हिंदी प्रश्न प्रतियोगिता, स्लोगन (नारा) लेखन आयोजित किये गये। यह प्रतियोगिताएं विविध विषयों के आधार पर रखी गयी थी जैसे हिंदी राजभाषा अधिनियम, मेट्रो का महत्व, पर्यावरण के प्रति जागरूकता इत्यादी। उपरोक्त नारा लेखन प्रतियोगिता में कुछ बड़े ही उत्कृष्ट नारे पाए गये जैसे की,

"मुंबई मेट्रो का एकही मिशन, हमारे पर्यावरण का संरक्षण"

"गाँधी का अरमान, स्वच्छता ही अभियान"

"हिंदी सप्ताह" के अन्तर्गत किये गये सभी कार्यक्रमों में कार्यालयीन अधिकारी एवं कर्मचारी बड़े ही उत्साह से प्रतियोगिताओं में सहभागी हुए। इस सप्ताह के अंतर्गत सम्मिलित हुए प्रतियोगियों में एकता तथा स्पर्धात्मक अनुभूति निर्माण हुई।



Continued on Page 8



Expert Speaks

Skywalk and TOD

This article is in continuation with the previous 'Expert Speaks' in August 2019, Volume 35.

Most readers of this newsletter know the Skywalks in Mumbai, some must be using it every day. I personally very much appreciate these Skywalks that facilitate access from/to the major stations for pedestrians. Perhaps it is the longest and largest elevated walkway network exclusive for pedestrians in the world, and the symbol of pedestrian friendliness and TOD enhancement, though I know the background why the skywalk were developed, essentially because walkways on the ground level are too narrow and occupied by hawkers, illegal parking, traffic accidents, poor drainage etc.

In Japan, we don't have much elevated walkways for TOD enhancement, but we have a network of several underground walkways connected to metro and railway terminals since 1970s. I would like to introduce some in this issue as a case of TOD.

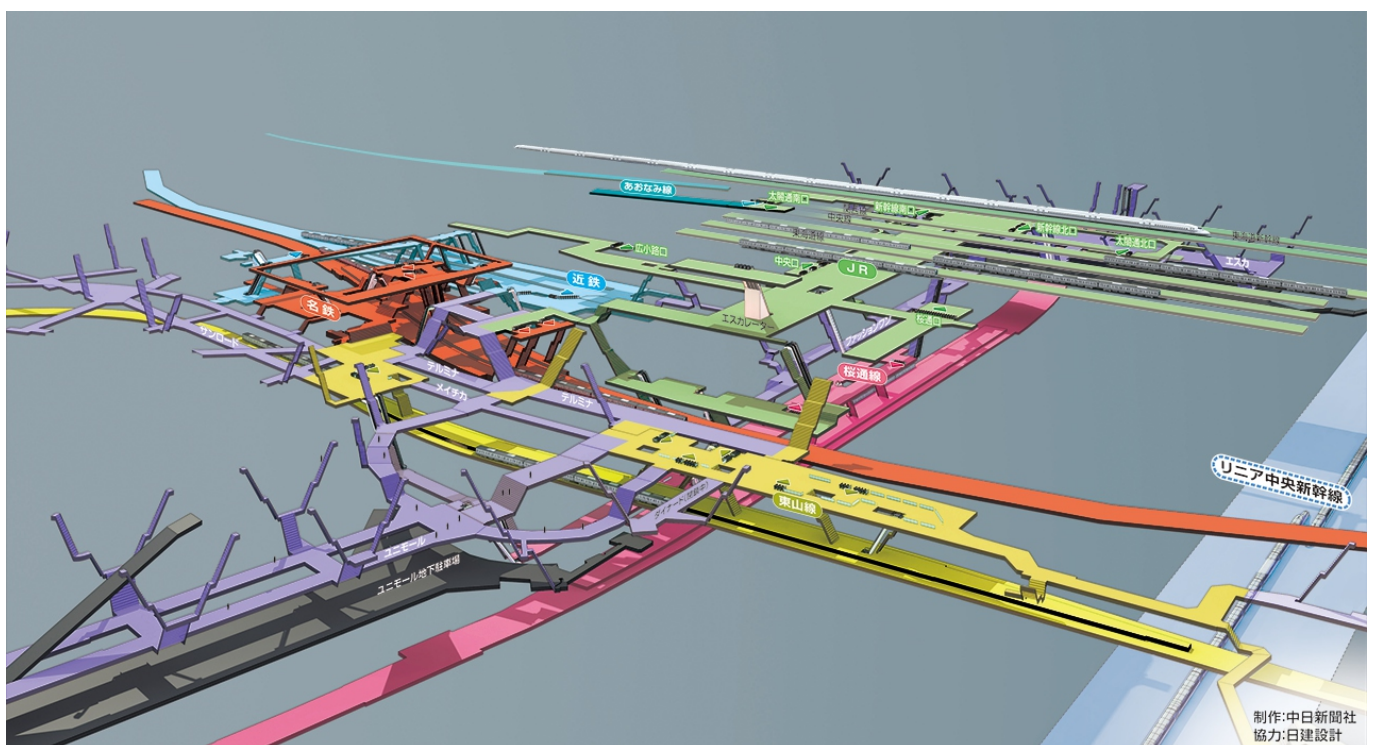
Nagoya city is famous about for its large underground walkway. Sakae district, CBD of Nagoya, has three metro lines in the underground level and all station are connected through underground walkways. The walkways were developed during 1960s to 1980s. The biggest difference of the walkways from the Skywalk was that they were built to create shopping malls.

There were several reasons which motivated the decision to build walkways in the underground. The metro construction in 1960s was biggest reason, and spaces created by the open-cut tunnel construction were utilized as shopping mall and walkway. Traffic accident mitigation is another social need. Planners tried to minimize the traffic accident among cars and passengers in the ground level, by segregating the pedestrian movement to underground walkways, which is like the same principle in Skywalks. Another reason was the vehicle parking development in the CBD and its subsidy. Due to shortage of parking space in the CBD, the central government invested in underground parking development with shopping mall beneath the road space.

The climate in Nagoya further made it popular. Its fridity in winter and humidity in summer attracted passengers from the ground level to underground.

Also, after 1980s, the direct connectivity of the walkway to neighboring buildings were continuously improved. The level of basement floor of the neighboring buildings and transport hubs were adjusted to the level of walkway and physically integrated. The passengers could scatter to various walkways and the metro owner can minimize its entry structure development. It can be said that the TOD in Sakae District is strongly supported by the underground walkway network. Some accidental experiences in the underground level in other cities later helped improving safety requirements for fire, smokes and drainage.

The Metro-3 is fully underground development, and some commercial establishments in the underground are expected. Though the vertical gap between the metro walkway and the Skywalk could be minimized, the existing Skywalks is a good heritage to enhance the Metro-3 ridership and TOD in Mumbai.



The underground metro station and walk network in Nagoya station ©Chunichi Shimbun

हिंदी सप्ताह आलेख

Continued from Page 6

News @ MMRC

आयोजित किये गये प्रतियोगिताओं में विजेताओं की नामसूची निम्नलिखित नुसार.

अ. क्र.	प्रतियोगिता	पुरस्कार			
		प्रथम	द्वितीय	त्रितीय	प्रोत्साहन
१)	हिंदी निबंध प्रतियोगिता	श्री कुंजबिहारी शर्मा	कु. प्रियंका विचारे	श्री रितेश कुमार	श्री कुशल नेहेते
२)	अनुवाद प्रतियोगिता	श्री कुंजबिहारी शर्मा	श्री सौरभ शेखर	श्री मयंक शर्मा	कु. प्रियंका विचारे
३)	स्वरचित काव्य पाठ प्रतियोगिता	श्री कुशल नेहेते	कु. भारती शर्मा	श्री अजय बाबू	श्री मयंक शर्मा
४)	हिंदी प्रश्न प्रतियोगिता	श्री अमोल पाटील श्री सौरभ शेखर	श्री आशीष सक्सेना श्री आशुतोष त्रिपाठी	श्री शमाइल जमाल श्री कुशल नेहेते	श्री पारस कांबले श्री विवेक भाराम्बे
५)	स्लोगन (नारा) लेखन प्रतियोगिता	श्री कुंजबिहारी शर्मा	श्री आशिष सक्सेना	---	कु. प्राची अतकुलवार

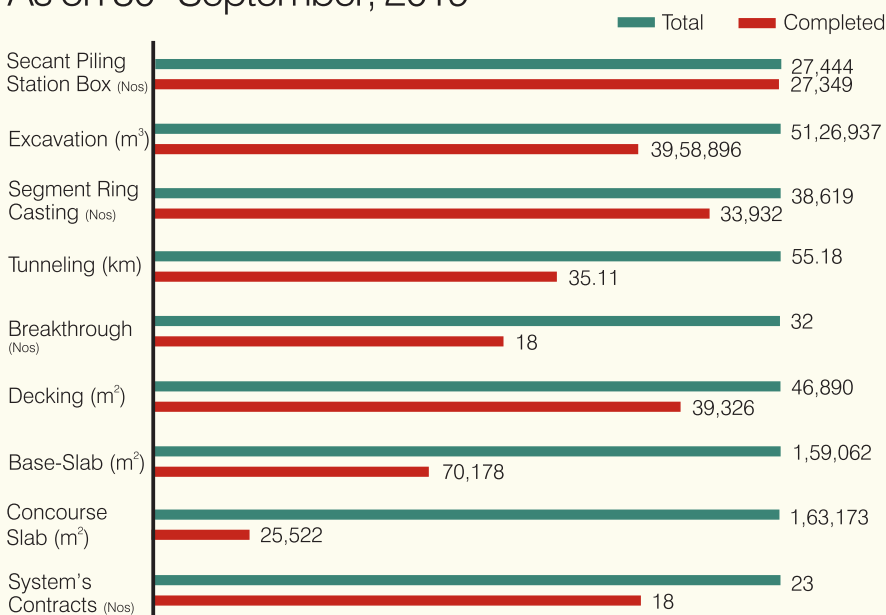
माननीय प्रबंध निदेशक महोदय की गरिमामयी उपस्थिति में हिंदी सप्ताह के विजेता प्रतियोगियों को मान्यवरों के कर कमलों से परितोषिक वितरण किया गया। निदेशककोके व्याख्यान द्वारा राष्ट्रीय स्तर पर हिंदी राजभाषा का महत्व तथा कार्यालयीन उपयोग बताया व समापन कार्यक्रम निष्कर्षित किया गया।

System's Contract

MMRC has awarded 3 system's contract this month.

1. Independent Safety Assessor (ISA)" issued to "M/s Bureau Veritas Italia S.p.A".
2. Pkg-9: Depot Plant & Equipment: Sub-package (9-01), Lot-1. Award of LoA for Procurement of CNC Under Floor Wheel Lathe to M/s. HYT Engineering Company Pvt Ltd.
3. Pkg-9: Depot Plant & Equipment: Sub-package (9-01), Lot-2. Award of LoA for Procurement of Battery-Operated Shunter to NITEQ - Renmakch JV.

Project Progress Update As on 30th September, 2019



Breakthrough



MMRC achieves its 18th breakthrough at SEEPZ Station, Package 7. TBM Wainganga-1 completed the 1689 m upline tunnel from Pali Ground shaft to SEEPZ Station. With this 92% tunneling of package 7 is completed.

CONTRIBUTIONS

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Website Link

MMRC Disaster Management Cell

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

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