



Colaba-Bandra-SEEPZ Metro-3 Corridor

MMRC achieves its Final Breakthrough at Mumbai Central Metro Station

100% Tunnelling Completed of Metro Line-3

Mumbai, Nov 30, 2022 – Mumbai Metro Rail Corporation (MMRC), achieved its 42nd and final Breakthrough on the Colaba-Bandra-SEEPZ Metro-3 corridor today at its Mumbai Central Metro Station. Robbins made TBM Tansa-1 completed its most challenging drive of 837 meters from Mahalaxmi Metro Station to Mumbai Central Metro Station up line in 243 days using 558 concrete rings. Package-3 includes Mumbai Central, Mahalaxmi, Science Museum, Acharya Atre Chowk and Worli Metro Stations, is one of the longest stretches of the line-3 corridor.

“It was with great pleasure that I witnessed the final breakthrough today. It marks 100% tunnelling of Metro-3 corridor. Tunnelling below Mumbai’s heritage precincts, in close proximity of old dilapidated buildings, existing Metro line, Railway lines, Water body with different and sometimes difficult geological conditions has been a daunting task”, expressed Ms. Ashwini Bhide, MD, MMRC.

“We used advanced technology without compromising the safety of workers. This was a daunting task for the MMRC team along with General Consultants, Contractors, JVs. Once operational, Metro-line 3 aims to provide a speedy, comfortable, and safe commuting experience to the Mumbaikars”, said Mr. S.K. Gupta, Director (Projects), MMRC.

The overall project progress stands at 76.6%. (Ends)

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Colaba-Bandra-SEEPZ Metro-3 Corridor

- The 33.5-km long corridor running along Colaba-Bandra-SEEPZ is the first underground metro corridor of the city.
- The project deployed highly mechanised 17 Tunnel Boring Machines (TBMs) in 7 civil contracts to carry out 55 km of tunnels of 5.8m finished diameter.
- TBMs were named after historic rivers in Maharashtra such as Surya, Vaitarna, Tansa, Krishna, Tapi, Godavari and Wainganga.
- Entire tunnelling has been done in rocky strata mainly made of Basalt, Breccia and Tuff.
- These 17 TBMs can be classified under 1.Cross Over/Dual Mode machines 2.Slurry machines 3.Earth Pressure Balance machines
- They all were capable of working in Close mode
- First TBM Krishna 1 arrived on 5th Sept 2017 at Naya Nagar of Package 4 and lowered at Naya Nagar shaft on 22nd Sept 2017
- First breakthrough was achieved by Wainganga 1 of package 7 at CSMIA T2 after completing tunneling of 1.26 km from Pali ground Marol Naka to CSMIA T2 in September 2018
- First Twin tunnel breakthrough of line-3 and 3rd in country achieved in January 2019 at Dadar

TBM Insights:

- Full length of TBM is about 110 m, while the Shield part is about 10-12m. Average excavation diameter is 6.5 meter, though the finished diameter after segment erection was 5.8m
- Average weight of TBM is 800 tonnes
- TBMs deployed for this project are manufactured by various TBM companies namely Herrenknecht (Germany), Robins (USA), STEC (China) and Terratec (Australia). Manufacturing of the new machines took place in China.
- TBMs were lowered through 12 TBM shafts in 7 packages: Cuffe Parade, Azad Maidan, Science Museum, Nayanagar, Siddhivinayak, Vidyanagari, BKC, Sahar Road, Airport T2 Terminal, Pali Ground and Marol Naka
- Excavated tunnels are lined with segment rings. Total 2.8 Lakh segment rings were manufactured for entire project.
- MMRCL Contractors set up factory-like facilities called casting yard for manufacturing of segment rings which are used to line the tunnels. To meet the whole project demand six casting yards were set up. These were equipped with specialised moulds, batching plant, quality labs and other setup required for the purpose
- Total Muck -1,65,02,886 cum
- Muck disposal sites are Kalwar, Ulwe, Mhape, MIDC, Ambernath, Dhapode, Bhiwandi, Waliv, Daniv, Ulwe, Adai & Kundevahal

Challenges: Various challenges faced in construction of metro-3 include tunnelling in complicated geology and below old, dilapidated buildings around congested neighbourhood and in close vicinity of heritage buildings. Also, certain limits for vibrations have to be maintained and continuously monitored while tunnelling to ensure the safety of such buildings in vicinity of the station area surrounded by historical structures.

- One of the daunting tasks was tunnelling beneath difficult geology beneath the Mithi river. However, the teams of experts and engineers have surmounted such challenges by using latest technical knowhow and engineering expertise. The MMRC has successfully completed 3-km (Up and Downline) tunnelling by TBM from BKC to Dharavi – Out of the total of 3-km stretch from BKC to Dharavi, 484-meter tunnel lies below the active Mithi river channel.
- Tunnelling below existing Metro line at Marol Naka, Western Express Highway at Santacruz, heritage precinct at Hutatma Chowk, areas of Kalbadevi to Grant Road etc have been equally challenging.