

'We used 17 TBMs to create one of the longest Metro tunnels in India'

SUBODH K GUPTA, Director (Projects), Mumbai Metro Rail Corporation (MMRC), speaks to *SWEETYADIMULAM* on the challenges faced while digging through subterranean Mumbai.

How much tunnelling was required for the project and how did you go about the task?

We had to construct a 56-km-long tunnel for Metro Line 3. For this, we deployed 17 Tunnel Boring Machines (TBMs). These TBMs were of four different types and were deployed in areas based on the geology of places that they were to dig. While tunnelling we had rock all along. We needed machines that could negotiate these geological changes.

Was using TBMS the only option for making these tunnels? Did you come across areas where using TBMs was a problem?

TBMs are used everywhere for this type of work. They have been used in major Indian cities for metro work. Mumbai's case is unique as we used 17 TBMs to create one of the longest Metro



tunnels in India. There were some areas where using TBMs was a problem like in Cuffe Parade station. There we had to opt for the New Austrian tunnelling method (NATM). Using TBMs below the Mithi river was also an issue, and we used NATM there as well.

What challenges were there during the tunnelling work?

We had multiple challenges. One is the geology as Mumbai's sub-strata is all rocky. Then topographical challenges, since it is a congested city. Moreover, we had limitations in servicing the logistics of machines. As we know Mumbai is a coastal city with water on all three sides that was another challenge. Then some pockets had heritage buildings, some areas had dilapidated

buildings. So, we had to deal with multiple situations. We had factored all these and the work was carried out methodologically.

Did any mishap occur during the entire process? Were there incidents that you felt were insurmountable?

There were some operational issues. However, we did face a problem that seemed difficult. Once, the bearing of a TBM failed. The main bearing, which was the core of the machine that helps rotate the cutter head was having issues and it was during the Covid-19 pandemic. We had to locate where an alternate bearing can be procured that could fit that particular machine. It was in Singapore. The manufacturers were in France. The bearing had to be inspected, certified, and then transported. There were travel restrictions and people could not move. In such a situation we still managed to transport the bearing. It is the same machine, which made the last breakthrough.

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