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Metro's men, methods, machines

The Metro-3 line, between Cuffe Parade and Seepz, will be Mumbai's only underground stretch. Here's what's happening beneath the surface

DNA Correspondent
correspondent@dnaindia.net

Work is underway on the Mumbai Metro's only underground stretch, connecting Cuffe Parade and Seepz via Bandra-Kurla Complex, and the corridor is expected to be commissioned in 2021. Once that happens, Mumbai-kars can travel comfortably on a 33-kilometre route.

DNA takes a look into what goes in the background for thousands of labourers, engineers and experts from around the globe who are working round the clock to ensure tunnelling work, that started around a year ago, is completed by 2021. Once that happens, the travel time for 15 lakh commuters will come down drastically.

At many places in south Mumbai and elsewhere, underground tunnels, 25-30 metres below the ground, are being built, for the first time since Independence in many cases that tunnels of such long distances are being built in Mumbai.

To make tunnelling a reality, the Mumbai Metro Rail Corporation (MMRC) has purchased 17 tunnel boring machine (TBM)'s, which were manufactured and shipped from China.

Work on tunnelling has already begun, and the entire stretch has been divided into seven packages, with separate contractors for each. Each section will account for three-four stations. The tunnels may range from the smallest at 5.88 kilometres, from Cuffe Parade to Hutatma Chowk, till as much as 10.95 kilometres, as the stretch between Siddhivinayak and Sitaladevi.

Work on tunneling this stretch is already underway on six out of seven sections, with the only section that's yet to see tunneling work being the one running under the airport.

LIVES IN A METRO

FROM SAVING TIME TO BEING ECOLOGICALLY AWARE, HOW MUMBAI IS GETTING SMART



A breakthrough is achieved when the TBM comes out of the encircled portion in Mumbai.



REDUCTION IN TRAVEL TIME
MMRC claims that present travel time of 100 minutes from Cuffe Parade to airport will come down to only 50 minutes due to Metro-3.



DECONGESTION OF ROADS
MMRC claims that due to Metro-3, traffic jams would be avoided. There could be about 4.5 lakh fewer vehicles, or about a 35% drop.



SAVE FOSSIL FUELS
Fewer vehicles means the city would end up saving approximately 2.5 lakhs litres of fuel per day, costing about Rs 550 crore per year.



REDUCE POLLUTION
Fewer vehicles would also mean air quality improves. Commuters would also prefer the comfort of a metro over other transport options.



ECOLOGICAL COACHES
The coaches used would have regenerative energy generated during braking. Likely emission reduce could be 1 lakh ton emissions per annum



WHAT IS TBM?

The tunnel boring machine (TBM) is a highly-mechanised Earth Pressure Balance (EPB) device that will be used around 20-25 metres below the ground to construct tunnels with a circular cross-section. The different parts of the machine are front shield, middle shield, cutter head, erector, screw conveyor and tail-skin shield.

DOES MUMBAI NEED IT?

Metro-3 will have 27 underground stations and will prove to be a crucial north-south link. The metro corridor will connect major central business districts (CBD) such as Nariman Point, Bandra-Kurla Complex (BKC) and Seepz in Andheri. The whole corridor is expected to be commissioned in 2021.



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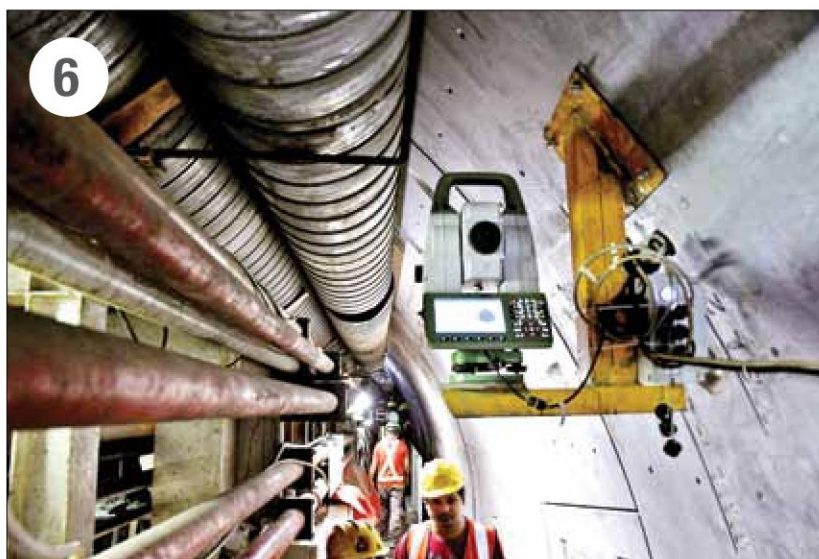
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1) Labourers hard at work on tunneling a stretch of the Metro. 2) All labourers undergo a registration process before getting into the tunneling section. 3) To ensure communication channels, there are telephone connections available every 250 metres inside the tunnels. 4) To ensure temperature inside the tunnels is maintained, ventilation shafts are installed in form of pipes that also remove smoke during emergency. 5) The Airport Metro station near the international terminal will come up on Sahar Road. 6) CCTV cameras help monitor the activity inside the tunnel section. 7) With the help of small trains, cement and other muck generated due to tunneling is moved out. According to MMRC, around 19,40,254 cubic metres of muck has been disposed.

PHOTOS: SALMAN ANSARI AND AADESH POKHARE/DNA



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