

Metro tunnel work under Mithi's main channel complete

MUMBAI: A major engineering challenge—constructing a part of the city's 33.5-km underground Metro-3 corridor under water—has been completed, with work on the Colaba-Seezp line crossing the Mithi river's main channel. Of the 1.18-km tunnels being built between Bandra-Kurla Complex and Dharavi, 270m come under an active river channel, which has been crossed, said officials.



■ Ongoing work for BKC station on Metro-3 corridor below Mithi River at Bandra-Kurla Complex station on Thursday. PHOTOS: ANSHUMAN POYREKAR/HT



■ Around 40% of the tunnelling work for the underground station at BKC has been completed until January.

Sweet success for Metro-3: MMRC builds 270-metre tunnel under Mithi

MARCH DEADLINE Of the 1.18-km tunnels between BKC and Dharavi, the 270-m stretch toughest as water flows continuously, rest marshy land, mangroves

Tanushree Venkatraman
tanushree.venkatraman@htlive.com

MUMBAI: City's fully underground Metro-3 corridor from Colaba to Seepz has crossed the Mithi river's main water channel. Of the 1.18km tunnels being built between the Bandra-Kurla Complex (BKC) and Dharavi station, 270 metres (m) come under an active river channel, which has been crossed, said Mumbai Metro Rail Corporation (MMRC) officials on Thursday during a media visit to the BKC and Cuffe Parade Metro stations. The remaining work is expected to be completed by the end of March.

"Of the two tunnels, one tunnel has achieved 87% progress, while another has achieved 65% progress. However, we have already crossed the active river channel. We are also tunnelling almost 10m every day, so we aim to finish the rest of the work in a month's time," said SK Gupta, director (project), MMRC.

By active river channel, he was referring to the portion of the river where water continuously flows, making it the most challenging part to tunnel under. The remaining area above the tunnels includes marshy land and mangroves, which get flooded during high tide.

The 33.5 km Metro-3 corridor (Colaba-Andheri-Seezp) will be the second Metro in the country to have tunnels under a riverbed. The first one is being constructed

in Kolkata under Hooghly river.

To prevent water seepage between the segments of the tunnels, MMRC is using special gaskets that swell when they come in contact with water. A segment is used to form the rings of the tunnel. Each ring has about six segments in it.

At present, the business hub of BKC, which is not connected with existing suburban lines, will be the largest station along Metro line 3 (474m in length). This station will be a crucial intersection point as it will be a three-line station with two main platforms, a cross-over line which will connect to either side of the mainline, and two stabling lines.

The cross-over line is being constructed using the new Austrian tunnelling method (NATM), a more conventional method of tunnelling. As of January, 40% of the station works in BKC was completed.

BKC TO CUFFE PARADE WILL BE FASTER

With BKC being a crucial intersection station with reversal facilities, it will also offer better frequency of less than four minutes between two trains, officials said. MMRC is looking at making the line operational in two phases—Aarey to BKC by December 2021 and BKC to Cuffe Parade by mid-2022. The frequency between Aarey and Cuffe Parade is expected to be around 6-8 minutes, officials said.

METRO-3 ON RIGHT TRACK

HT gives you a progress report of the work on the 27 stations of the 33.5-km fully-underground Metro-3 (Colaba-Bandra-Seezp) corridor, which will connect the island city to suburbs

OVERALL PROGRESS OF WORK ON STATIONS*

Cuffe Parade	52.15%	Dadar	30.80%
Vidhan Bhavan	65.90%	Shitladevi	21.85%
Churchgate	47%	Dharavi	35.30%
Hutatma Chowk	44.25%	BKC	40.95%
CSMT	59.65%	Vidyanagari	50.30%
Kalbadevi	4.25%	Santacruz	55.80%
Girgaum	4.50%	Domestic airport	55.80%
Grant Road	15.50%	Sahar Road	53.05%
Mumbai Central	31.15%	International airport	49.20%
Mahalaxmi	19.50%	Marol Naka	66.80%
Science Museum	48.25%	MIDC	71.40%
Acharya Atre Chowk	9.50%	Seepz	58%
Worli	32.55%	Aarey car depot	Decision pending with state govt
Siddhivinayak	67.90%		

*As on January 2020 (Source: MMRC)

➤ Of the two tunnels, one has achieved 87% progress, while the other has achieved 65% progress. We are also tunnelling almost 10m every day, so we aim to finish the rest of the work in a month's time

SK GUPTA, director (project), MMRC



■ The corridor will be the second Metro in the country to have tunnels under a riverbed. The first one is being constructed in Kolkata, under the Hooghly river.

WHAT IS NATM?

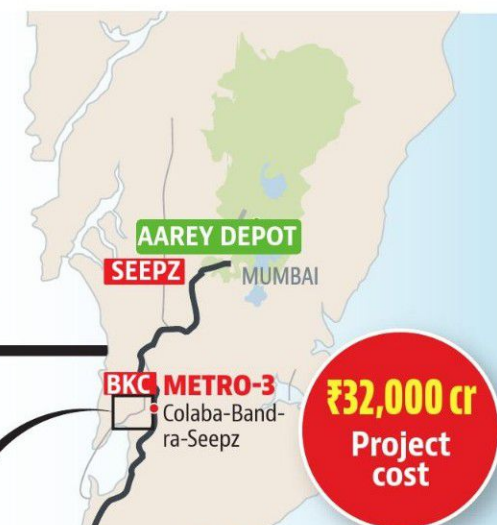
■ The New Austrian Tunnelling Method (NATM) is a modern tunnelling method appropriate for congested spaces.

■ It is a European method that was also used for the construction of the Delhi metro

■ In Mumbai, the technology will be used in seven stations, to widen the tunnels by using mining and equipment like breakers

ITS ADVANTAGE

For tunnels with variable geometry and in mixed ground conditions, NATM is more cost effective, flexible and safer



₹32,000 cr
Project cost

80% Completion of tunnelling work

December 2021
Deadline for Phase-1 (BKC to Aarey)

June 2022
Deadline for Phase-2 (BKC to Cuffe Parade)

THE UNDERWATER VISION

2 tunnels of 1.18km length each, 12.5m below the city's Mithi riverbed, between Dharavi and BKC (to be dug using tunnel-boring machines)

1,170 m cross-line tunnel to be dug using NATM
South-end of BKC station will be underwater

WHAT ARE TUNNEL-BORING MACHINES?

The TBMs are huge machines being used to drill underground tunnels in the city. The 17 highly-mechanised machines being used for Mumbai Metro-3 have been named after the rivers of Maharashtra