

Metro rail's phase 2 stations to be smaller but smarter

To Overcome Lack Of Space Below Narrow Roads, Facilities To Have Two Tunnels Stacked One Above The Other

U.Tejonmayam@timesgroup.com

In a few years from now, passengers may have to walk three floors below street level to board a metro train as Chennai Metro Rail Limited (CMRL) is going to build deeper and smarter stations.

The concourse level and two tunnels - for two lines - will be stacked one above the other. The facility will be as deep as Central Metro at 28m to 30m, but less than half its length at 157m and one-fourth its width at 9m.

CMRL has decided to go with underground stations with a stacked-up platform design to save the cost of land acquisition at locations where the width of the roads are as narrow as 10m. Such stations could also be built faster and may cause less public inconvenience.

A metro rail official said they have identified Pattalam, Perambur, Doveton and Thirumayilai for such facilities. Another four stations are

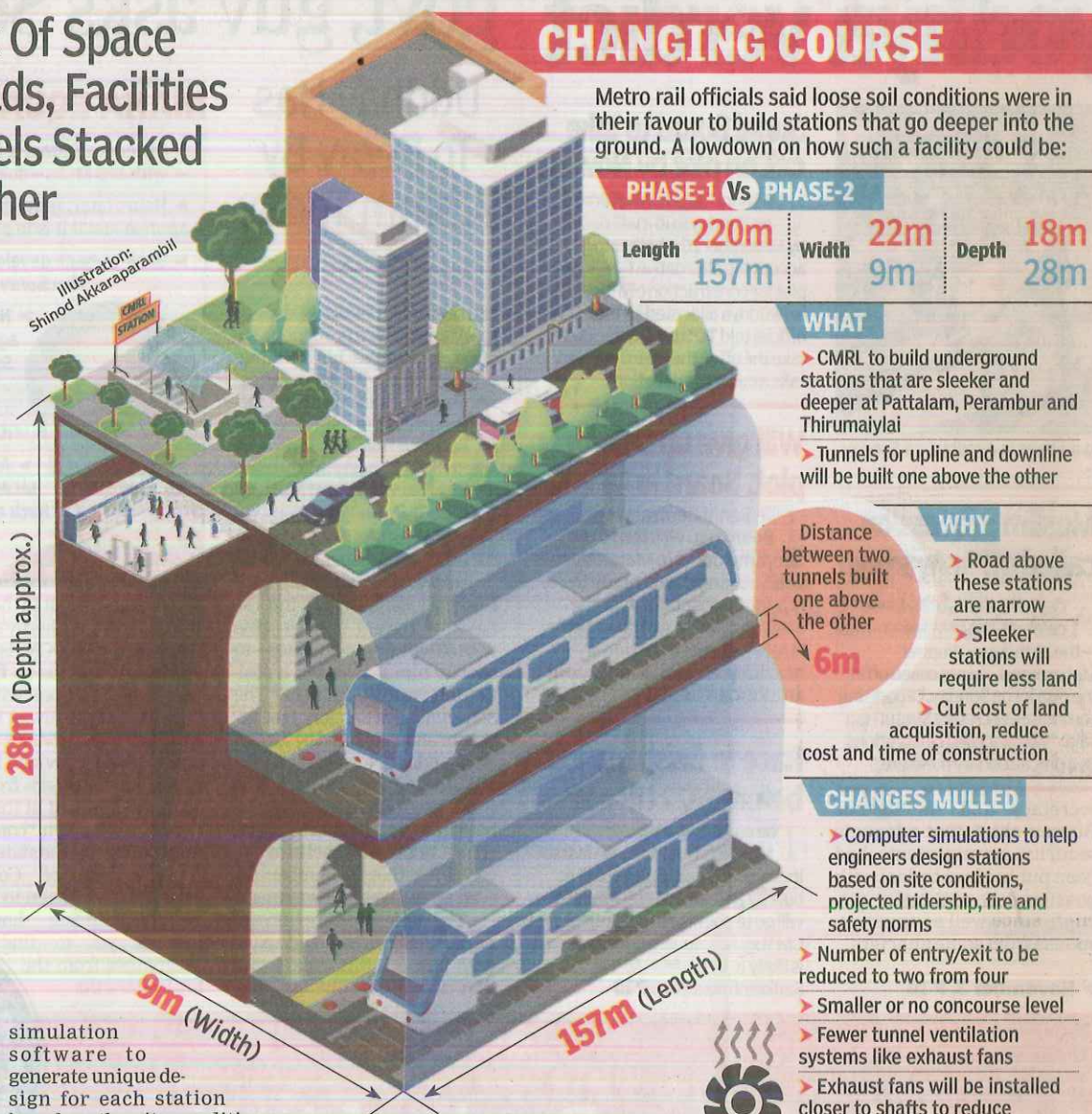
IN A NEW DIRECTION

being planned on corridor 4 from Light House to Poonamallee which will cut across Mylapore, T Nagar, Nandanam and Vadapalani.

"Why spend huge amounts of money to acquire properties and trouble people? Instead, we decided to optimise the space available and go deeper underground," an official said.

All 128 stations in the 118.9km phase-2 planned may look and feel different from one another as CMRL is now simulating site conditions and projected ridership to generate a unique design for every station. Construction for the phase is expected to begin by June 2020 with a 52km taken up first and is likely to be ready by 2024-25. At present, soil tests are being completed and detailed design for the stations is underway.

Compared to the standard station design that CMRL followed in the 45km phase-1, the detailed design consultants are now using computer



CHANGING COURSE

Metro rail officials said loose soil conditions were in their favour to build stations that go deeper into the ground. A lowdown on how such a facility could be:

WHAT

- CMRL to build underground stations that are sleeker and deeper at Pattalam, Perambur and Thirumayilai
- Tunnels for upline and downline will be built one above the other

WHY

- Road above these stations are narrow
- Sleeker stations will require less land
- Cut cost of land acquisition, reduce cost and time of construction

CHANGES MULLED

- Computer simulations to help engineers design stations based on site conditions, projected ridership, fire and safety norms
- Number of entry/exit to be reduced to two from four
- Smaller or no concourse level
- Fewer tunnel ventilation systems like exhaust fans
- Exhaust fans will be installed closer to shafts to reduce station size
- Number of escalators, elevators and staircases to be reduced according to station

simulation software to generate unique design for each station based on the site condition and projected ridership.

"In Pattalam and Perambur, the roads are as narrow as 10m or 11m. If we have to build stations like those in phase-1, we may have to acquire properties on either side of the road. Also, at some locations, the daily footfall may be less than others. So, instead of cut-and-paste design, we will build according to our requirements," a metro rail official said.

The stacked tunnels design is nothing new for Chennai. CMRL attempted the design in Central Metro, where two twin tunnels were built on two decks complete with a ticketing level on top. The mixed soil

conditions with loose soil top and rock below, however, posed a huge challenge and CMRL took nearly six years to complete. But soil tests conducted along corridor 3 between Madhavaram and Sholinganallur showed mostly loose soil up to 10m and charnockite rock below or clayey soil on top with rock below.

"Soil conditions are favourable. We have done a thorough soil for every 25m to 50m, so even if we come across rocks, we will use rock-cutting machines instead of tunnel boring machines," a top metro rail official said.



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SENIOR METRO RAIL OFFICIAL