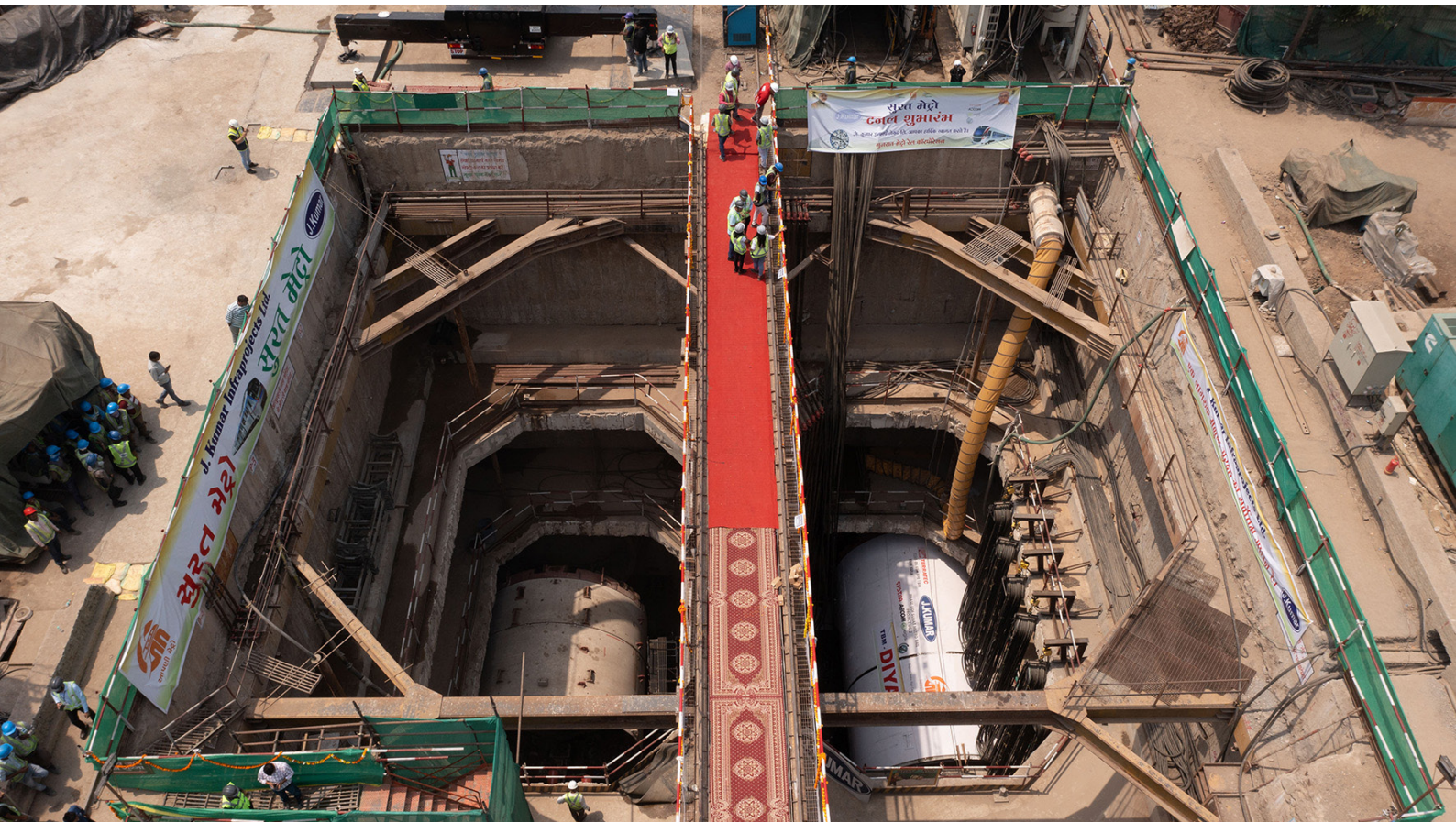


TERRATEC TBMS LAUNCHED FOR SURAT METRO



TERRATEC Tunnel Boring Machines keep on advancing on Surat Metro Rail project in India.

TERRATEC is pleased to announce the launch of another EPB TBM for Surat Metro in India. This unit is a refurbished 6.61m diameter Earth Pressure Balance Tunnel Boring Machine (EPBM) that will be used by J. Kumar on Phase I of Surat Metro Rail Project UG-02. TERRATEC is the sole TBM supplier for Phase I of Surat Metro Rail project.

TERRATEC has secured all four machine orders for this project: A combination of both brand new and refurbished

EPBMs will be used. For Package UG-01, Gulermak-Sam India JV will use a brand new EPBM and a refurbished TBM and for Package UG-02, J. Kumar will use two refurbished TBMs. TERRATEC provides all spare parts, onsite technical assistance and a key field service engineer for the whole refabrication.

Followed by successful Site Acceptance Tests, Contractor J. Kumar will deploy two 6.61m diameter refurbished EPBM TBMs at Chowk Bazar Station for Surat Metro Phase

I's 3.56 km underground Package UG-2 / CS-3 from Surat Railway Station to Chowk Bazar Ramp. These two EPBM TBMs had previously seen action at Delhi Metro's Phase III Pink Line's Package CC-24 from Lajpat Nagar to Hazrat Nizamuddin and underwent their refurbishment in India. The machines will be used for constructing 4 tunnels on the 21.61 km Line-1's 7.02 km underground section connecting Chowk Bazar and Kapodra Ramp.

The Surat Metro is an under-

construction rapid transit rail system for Surat in Gujarat state of India. Two corridors with a combined length of 40.35 kilometers are under construction since January 2021. The new 6.61m diameter EPBM TBM has completed approximately 490 rings as of today. All 4 machines are operated with the assistance of TERRATEC field service team.

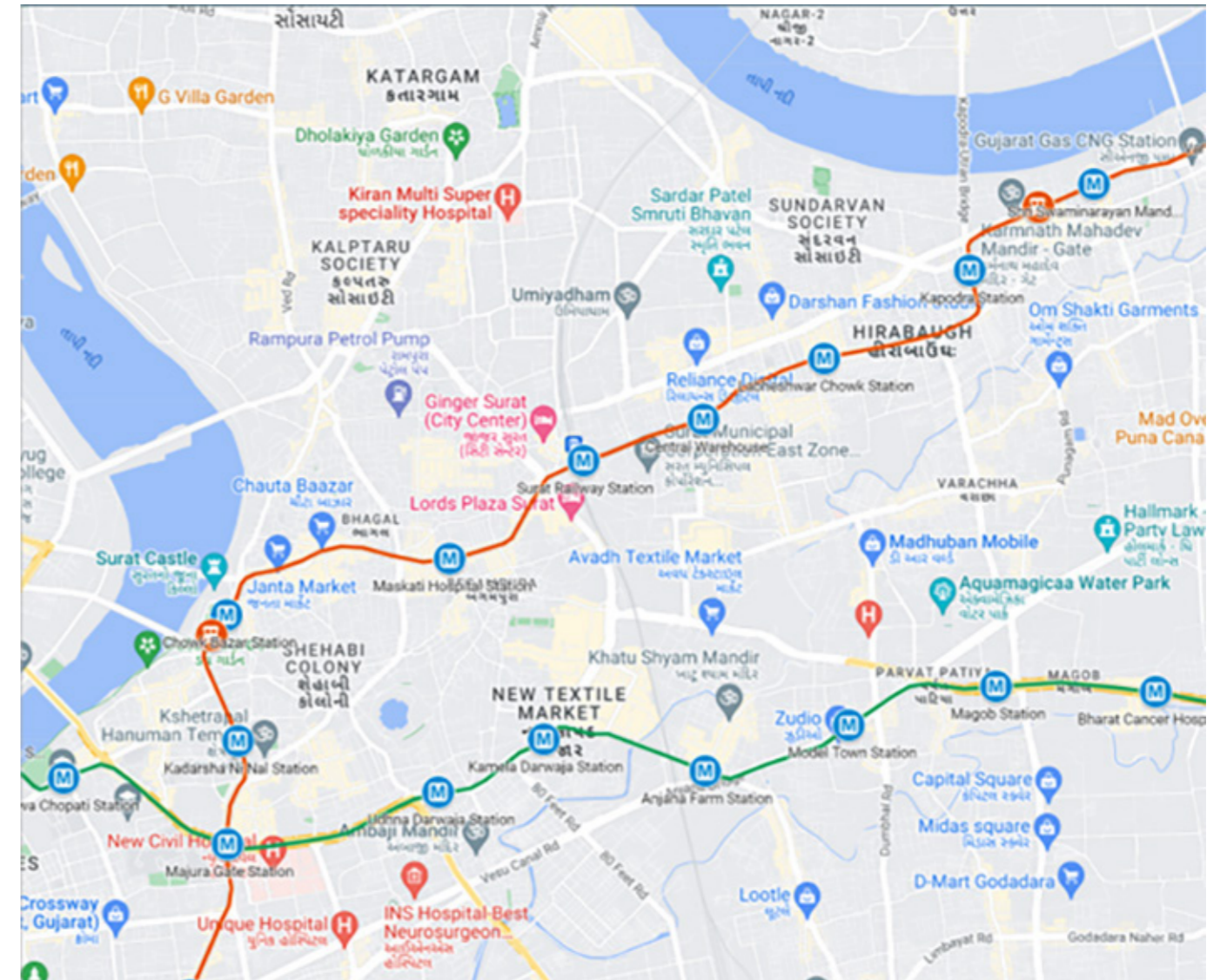
The geological conditions along the tunnel alignments will be sand, clay, gravel and silt. A twin bored underground tunnel will be built between the Northern ramp and Surat Railway Metro station, using all cut and cover method across 6 underground stations. For Package UG-01, it covers

Kapodra, Labheshwar Chowk and Central Warehouse stations. For Package UG-02, it covers Chowk Bazar, Maskati Hospital and Surat Railway stations. As for Gulermak-Sam India JV, a brand new EPBM and a refurbished TBM will be used to complete the tunnelling works for Phase-I of Surat Metro Rail Project. Package UG-01 and Package UG-02 consist of a 7km underground tunnel and six underground stations.

Both machines will build a total of 6 tunnels for the 3.46 km Package CS2 / UG-01 which was awarded in March 2021 by Gujarat Metro Rail Corporation (GMRC). Gulermak-Sam's

scope also includes the construction of 3 stations at Kapodra, Labheshwar Chowk and Central Warehouse. The versatile TERRATEC EPBM units have robust mixed-face dome-style cutterheads designed to work effectively in the expected geological conditions. As the TBMs progress, they will install 1,400mm wide by 275mm thick pre-cast concrete lining rings, which consist of five segments plus a key. Muck removal, segment transport and logistics supply will be via locomotive and muck cars.

For added versatility, TERRATEC has designed the CutterHead to allow the cutting tools to be exchangeable for



17" disc cutters, allowing the TBM to be able to bore through the D-walls and cope with the presence of any unexpected obstacle on its way, such as old wells or foundations.

Surat is a city in the Western Indian state of Gujarat and is one of the largest urban areas of Western India. Famous for its diamond cutting and polishing, Surat is also one of the world's fastest growing cities. In Phase I, 20 metro

stations will be built on the first corridor from Sarthana to DREAM City route and 18 metro stations will be built on the second corridor from Bhesan to Saroli.

TERRATEC has been chosen for the underground tunnel package in Surat Metro Rail Project due to TERRATEC's continuing success on projects such as Phase III & IV of the Delhi Metro, Lucknow Metro, Pune Metro, Kanpur Metro, Ahmadabad Metro

and Mumbai Metro. This is a result of tailor-made robust TBM design, prompt onsite assistance, readily available stock of TBM spares and highly-skilled specialised TBM support throughout tunnelling operations.

TERRATEC TBMS GET UP TO SPEED ON CHENNAI METRO

In December, TERRATEC celebrated the assembly of the third of five ordered 6.61m diameter Earth Pressure Balance Tunnel Boring Machines (EPBMs) for the Chennai Metro Rail project in India. Contractor, Tata Projects Ltd. is using these machines for its underground works contracts on Chennai Metro Rail Phase-II Corridors India. TERRATEC is proud to be supplying five out of the seven TBMs required for the package.

The TBMs are used on Chennai Metro Rail tunnelling contract for Chennai Metro Rail Limited (CMRL) to build Phase 2 -

Corridor 3, Package- TU01 from Venugopal Nagar Station to Kellys Station. The work involves the construction of a 9 km of twin tunnels for a total of 18 km.

Being the leading TBM supplier for Chennai Metro Rail Project, TERRATEC started dispatching the TBMs in 2022. In October 2022, TBM S96 was the first launched TBM of all the machines and along with TBM S97, both machines started its excavation towards Madhavaram High Road. While TBM S98 had also started excavating from the same shaft - Madhavaram Colony moving towards Venugopal Nagar (of

Line-5) to Kellys Station. TBM S99 on-site assembly is currently underway.

Meanwhile, the fifth machine (S81B) has passed the factory acceptance test (FAT) in Pune for Package TU01 of the 118.9 km Chennai Metro Phase 2 project. The TBM was refabricated as Purple Line. as per the ITA guidelines which is introduced for the first time in India. Back in 2021-2022, this Ø6.61m earth pressure balance (EPB) machine had been used to build a 2144m tunnel between Swargate and Budhwar Peth stations for Pune Metro Phase 1 project's

TERRATEC TBMs for Chennai Metro Rail Phase-II Corridors highly anticipated 18km Phase 2 - Corridor 3 are making good progress in India.



16.589 km Purple Line.

The Chennai Metro project Phase 2 - Corridor 3, Package - TU01 includes the construction of diaphragm walls and entry & exit structures of Madhavaram Milk Colony Station, Murari Hospital Station, Ayanavaram Station and Purasaiwakkam High Road Station, including the launching and retrieval shafts at the above stations. Major challenges of the project include tunnelling beneath historical structures in built-up areas.

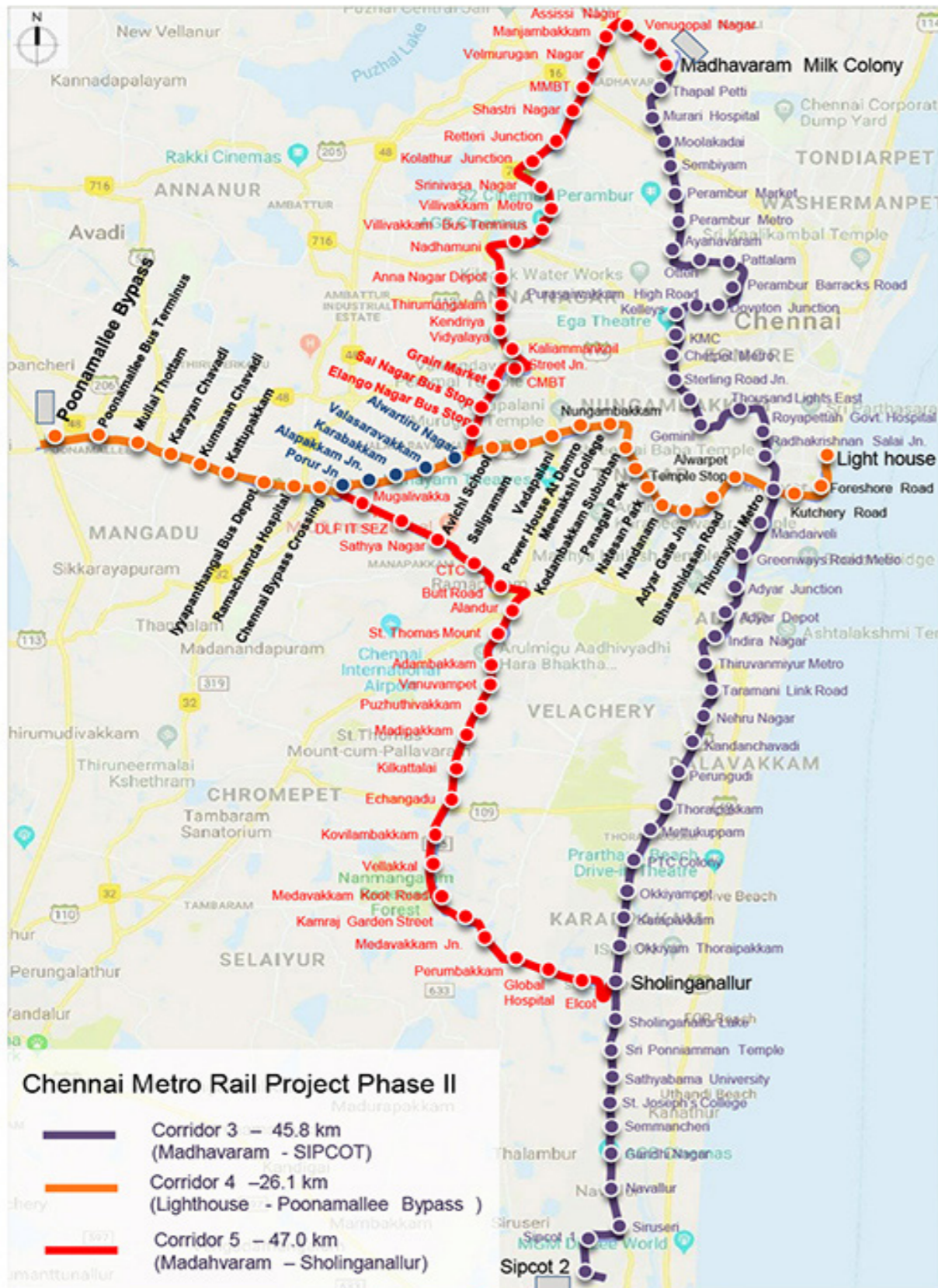
TERRATEC TBMs have versatile mixed-ground dome-style cutterheads that have proven to work extremely effectively in mixed geology – which includes mainly sand, silt, clay on the

tunnel drives with occasional weathered rock. 1,400mm wide by 275mm thick universal reinforced concrete lining rings are installed as the TBMs progress which consist of five segments plus a key.

Machine operation is assisted at all times by TERRATEC's highly-experienced Field Service staff, providing quality after-sales support to ensure optimum performance and successful project completion.

The population of Chennai has been growing rapidly and the traffic volumes on the roads have also been increasing enormously. This has laid severe stress on the urban transport system in Chennai. The metropolis now

has the new and modern way of commuting. Therefore, the government of Tamil Nadu has decided to implement the Chennai Metro Rail Project. This project will offer the people of Chennai with a fast, reliable, convenient, and economical way of public transport. The project is on a tight schedule and is anticipated to be completed in about four years. TERRATEC's continuing success on projects such as Phase III of the Delhi Metro, Lucknow Metro, Ahmadabad Metro, Kanpur Metro, Surat Metro, Pune Metro and Mumbai Metro is a result of tailor-made robust TBM design, prompt onsite assistance, readily available stock of TBM spares and highly-skilled specialised TBM support throughout tunnelling operations.



Chennai Metro is the fourth longest metro system in India. The network currently consists of two lines covering a length of 54.65 kilometres. The new Line 5 of Chennai metro will have 48 stations and connect from Madhavaram to Sholinganallur.

WATCH US ON YouTube

A video featuring TERRATEC TBM S93 is rocking at Kanpur Metro



WHEREABOUTS

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May 12-18 | Athens, GREECE



5th International Underground Excavations Symposium and Exhibition
June 5-7 | Istanbul, TURKEY



RETC 2023
June 11-14 | Boston, USA

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