

HELEN & MARGARITA ready to dig in

Metro Tunnelling Will Begin In A Fortnight From Majestic Area

TIMES NEWS NETWORK

Tunnelling underground for the Metro will begin in full swing from Majestic area next fortnight, as part of the East-West corridor (UG-2).

By July 2012, tunnelling work will be complete up to Chinnaswamy Stadium near MG Road, BMRC MD N Sivasailam said. This will be followed by track work, signalling and

ventilation, that will take at least another year. This unique section of work was kicked off by Helen, the tunnel boring machine (TBM), on Friday. The second machine, Margarita, is being assembled nearby and will begin work after a month.

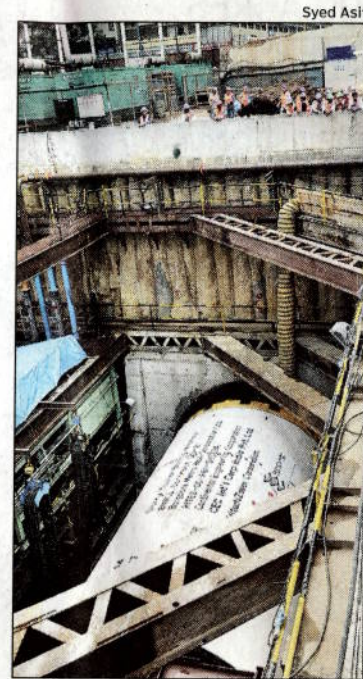
This is the first time a slurry TBM is at work in India. Experts at the site



ALL SET FOR ACTION: Metro men cheer the arrival of tunnel boring machines. (Right) Helen, the city's first boring machine for underground Metro work

maintain that such machines have been extensively used for metros in Japan and the United Kingdom. "These machines cost three times

what Earth Pressure Balance (EPB) machines do, and are tailor-made for Bangalore's mixed terrain. EPBs were used for the Delhi Metro,"



Robert L Moncrieff, MD of Rona Consulting Co. Ltd, one of the consultants for UG-2, told TOI.

The running track for UG-2 will be 16m below ground level. At Majestic, it will criss-cross with UG-1 of North-South corridor, 6m below. Tunnelling work for UG-1 will, however, begin only by June and will use three imported EPBs, considering the soft terrain.

INTERNATIONAL TOUCH

The Bangalore Metro team for underground stretches has experts and workers from at least seven nationalities across Asia. A majority of them at work on UG-2 are from Japan, Korea, Taiwan, Japan and UK. Friday's ceremony to commence tunnelling at Majestic also saw good representation from Japan, including its embassy staff in India, and financial institutions like Japan International Cooperation Agency, that's among the major financiers for Bangalore Metro.

LONG WAIT FOR METRO

The stalemate over Metro Reach-1 from Byappanahalli to MG Road continues. The final certification to begin commercial operations along this stretch still awaits some crucial clearances from the ministry of railways and commissioner for railway safety (CRS). The dates for oscillation trials, the first step, are not fixed yet. Even chief minister B S Yeddyurappa, who had earlier announced an Ugadi launch, has no clear answer. His assurance to the people in his address on Friday was: "We must make Reach-1 operational at the earliest. It's waiting for some clearances."

MACHINES ON A MISSION

- The two TBMs — Helen and Margarita — imported from Japan are like huge trains, 70m long and weighing over **300 tonne**
- Each TBM costs **\$10 million** (approx)
- Each unit comprises a tunnelling shield (fitted with a

rotating cutter head), control panel, back-up equipment and a slurry treatment plant on the surface to treat the slush collected during tunnelling

• Entire unit will burrow into the ground (16m underground) while surface facilities will remain untouched

• The finished tunnels will measure **5.6m** in diameter

• They can tunnel up to **11m per day**; the average tunnelling capacity is **6m** through hard rock and 8-9m for softer terrain

• It's fit to work **24 hours** a day and 26 days a month

• **Average power requirement: 3,000 km per hour**

• **Team at work:** Minimum **25 people** per shift on tunnelling shield and two on control panel

METRO UNDERGROUND TOTAL DISTANCE: 8.8 km

UG-1

PART OF NORTH-SOUTH CORRIDOR FROM HESARGHATTA CROSS TO PUTTENAHALLI

• LOCATION	Swastik to R V Road
• TOTAL LENGTH	4.37 km
• COST	Rs 707 crore
• WORK ON HAND	Two tunnels, 2.35 km each
• TIMELINE	150 weeks

UG-2

PART OF EAST-WEST CORRIDOR FROM BYAPPANAHALLI TO MYSORE ROAD

• LOCATION:	Minsk Square to Bangalore City Station
• TOTAL LENGTH:	4.45 km
• COST:	Rs 995.6 crore
• WORK ON HAND:	Two tunnels, 2.54 km each (Remaining for stations and ramp at both ends)
• TIMELINE:	174 weeks (from April 2010)