

MRTA ISP, UNDERGROUND STRUCTURES - NORTH, CUT&COVER TUNNEL

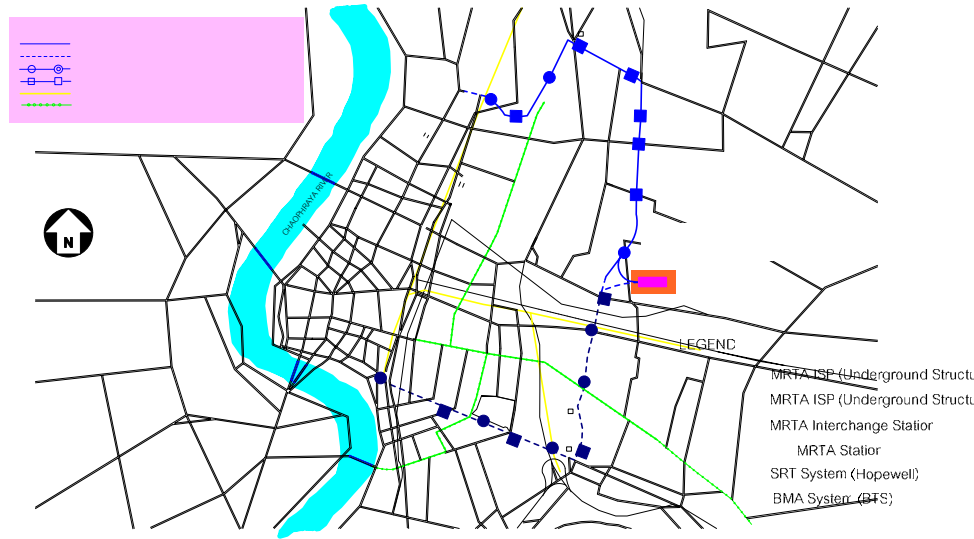
Technical Reference No. 07/99

Bored Piles and Diaphragm Walls

GENERAL

The Cut and Cover Tunnel of North Section, Metropolitan Rapid Transit Authority (MRTA) Initial System Project, is a connecting tunnel between Thiam Ruam Mit (Thailand Cultural Center) Station and the Depot. The approximately 200.0m long tunnel is made of cast in-situ concrete diaphragm walls 0.8m and 1.0m in thickness. On the west end of the tunnel is a TBM retrieval shaft where a 1.0m thick diaphragm wall is used for the tunnel opening. Glass Fibre Polymer Reinforcement was used in diaphragm wall panels at the tunnel opening location to allow direct break through for TBM. Diaphragm walls are embedded up to 25.5m deep for excavation works down to 16.0m below ground level.

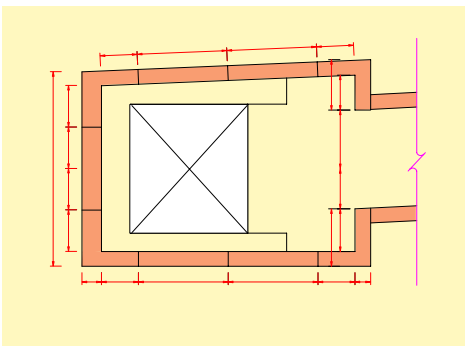
Beyond the diaphragm wall section, the tunnel and approach sections to the depot is made of normal reinforced concrete box and walls being supported by 0.6m diameter bored piles.



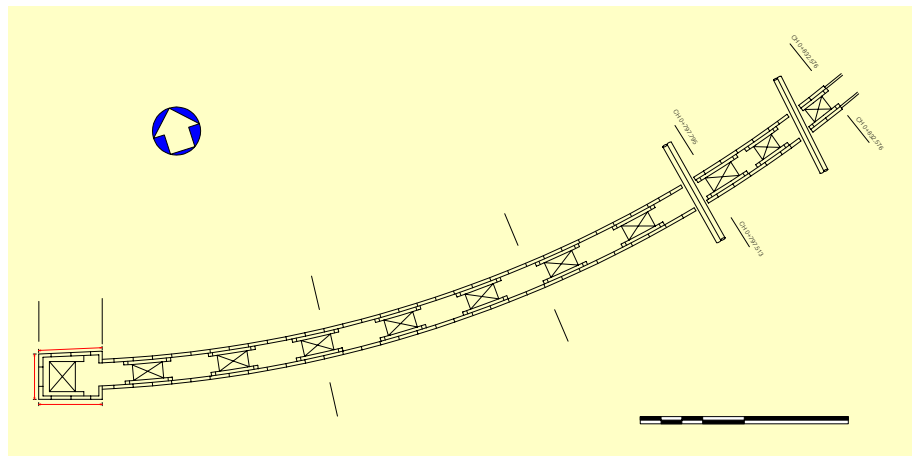
Location of Cut & Cover Tunnel.

WORK UNDERTAKEN

BORED PILES:	Dia. 0.6m x 19.0m – 36.0m	207 nos.
DIAPHRAGM WALLS:	9,507.0 sq.m. (0.8m Thick)	270.0 sq.m. (1.0m Thick)



Layout of TBM retrieval shaft.



Layout of Cut & Cover Tunnel section.

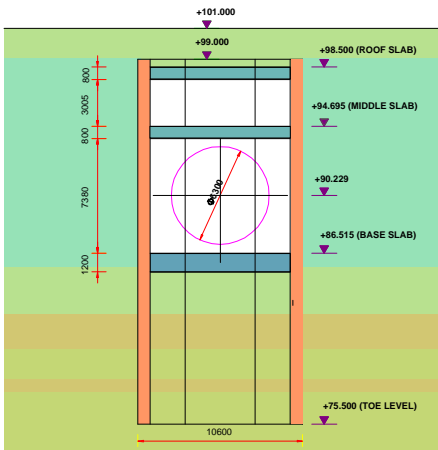
TYPE OF WORK:	Diaphragm Walls and Bored Piles
OWNER:	The Metropolitan Rapid Transit Authority
MAIN CONTRACTOR:	Nishimatsu Construction Co., Ltd. (ION Joint Venture)
DESIGNER:	Ove Arup and Partners International Limited
PERIOD:	1999



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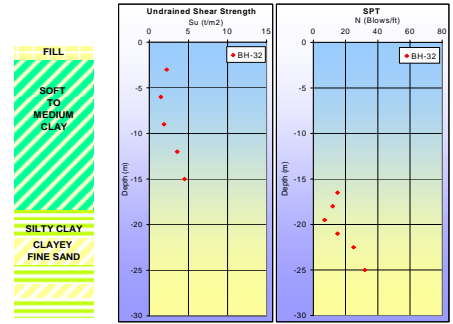
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Cross section of Cut & Cover Tunnel.



Guide wall construction.



Subsoil conditions at the site.



Panel excavation with grab.



Lowering a 25.5m long reinforcement cage into the excavated trench.



Concrete pouring using double tremie sets for a 4.5m long panel.



Bored piling in progress.



Cut and cover tunnel.

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Koden drilling monitoring equipment in position for checking trench verticality.



TBM retrieval shaft and cut & cover tunnel.

References

- Tepraksa, W., Thasnanipan, N., Maung, A. W. and Wei, S. H. (1998), "Prediction and Performances of Short Embedded Cast In-situ Diaphragm Wall for Deep Excavation in Bangkok Subsoil", Fourth International Conference on Case Histories in Geotechnical Engineering, St. Louis, Missouri, March 9-12, 1998. Pp. 686-692.
- Thasnanipan, N., Anwar, M. A., Maung, A. W. and Tanseng, P. (1999), "Performance Comparison of Bored and Excavated Piles in the Layered Soils of Bangkok", Symposium on Innovative Solutions in Structural and Geotechnical Engineering in Honor of Professor Seng-Lip Lee, AIT, Bangkok, May 14-15, 1999. Pp. 345-353.

