Chang, C.T., Wang, J.J., Pan, T.S. Sheild Tunnelling in Taipei Mass Rapid Transit Systems. 1994 Tunnelling Association of Canada Annual Publication.

Shield Tunnelling in Taipei Mass Rapid Transit Systems

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Abstract:
The construction of the Taipei Mass Rapid Transit (MRT) System comprising 5 lines in its initial systems was commenced in 1989. Among the 88 km long of the network, more than 20 km are twin tube running tunnels constructed by the soft ground shield tunnel boring machines. Special considerations such as selection of tunnel boring machines, control of ground subsidence and design of segmental lining were taken into account during the design phase to suit the soft ground conditions in Taipei basin which used to be a large lake deposits and drained due to tectonic actions long time ago. Currently, driving of the tunnels is either completion or in progress. The evaluations of the performance of the tunnel boring machines, ground movement during tunnelling, segmental lining design and fabrication, etc., with specially reference to monitoring fed back analysis are to be presented in the paper.

Keywords: lacustrine deposits; soft, wet, silty clay and silty sand known as the Sungshan Formation; Soil Stratum; TBM Performance; Settlement Caused by Tunnelling; Predicted vs Monitored Settlement; Segmental Lining Design; Waterproof Design; Corrosion Protection; Structural Design; Taipei MRT systems; EPB TBM and slurry TBM.

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