GZ



Geotechnics | Tunnel Design | Engineering

Fort Canning Tunnel and Realignment of Stamford Road Singapore Land Transport Authority

Location:	Singapore
Date:	2004 – 2006
Structure:	Three-Lane Highway Tunnel
Length:	525 feet (160 meters)
Cross-Section:	Width: 48.2 feet (14.7 meters) Height: 38 feet (11.6 meters)
Geology:	Fill, Fort Canning Boulder Bed (FCBB) Formation and Residual Soil, Jurong Formation (Below Tunnel Invert); Groundwater 3 - 7 feet (1 - 2 meters) Below Existing Grade
Cost:	Approximately \$22 Million
Client:	T.Y. Lin International, Principal Designer; Sato Kogyo, Contractor
Owner:	Singapore Land Transport Authority (LTA)

Winner of the Building Authority Singapore Award NATM Design with Two-Pass Lining System:

A historic park area and a ground cover of only 10 - 32 feet (3 - 9.8 meters) above the proposed Fort Canning Tunnel posed significant design and construction challenges. Both the owner and the contractor sought an alternative tunnel construction method to avoid extensive surface disruption in the area.

Gall Zeidler Consultants (GZ) provided an alternative New Austrian Tunneling Method (NATM) design, utilizing continuous grouted steel pipe, pre-support, and a two-pass lining system for the mined portion of the proposed tunnel. The design earned a Merit Award at the 2008 Design & Engineering Safety Excellence Awards.



Figure 1. Final concrete lining and electrical-mechanical systems installation.



Figure 2. Multiple heading construction under way.