



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

Winner of the Building Authority Singapore Award – New Austrian Tunneling Method (NATM) Design with Two-Pass Lining System:

A historic park area and a ground cover of only 10 to 32 feet (3 to 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 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.

Location: Singapore

Date: 2004-2006

Structure: Three-lane highway tunnel

Length: 525 feet (160 meters)

Cross-Section: 1,440 square feet (134 square meters)

Geology: Three major soil deposits: Made ground (fill), Fort Canning Boulder Bed (FCBB) Formation/Residual Soil, and Jurong Rock Formation (below tunnel invert); groundwater is only 3 to 7 feet (1 to 2 meters) below existing grade

Cost: Approximately US \$ 22 million

Client: T.Y. Lin International, Principal Designer; Sato Kogyo, Contractor

Owner: Singapore Land Transport Authority



Figure 1:
Final Concrete lining and systems installation



Figure 2:
Multiple heading construction under way