

# G&P Professionals' Involvement In MRT Line 1 and Line 2

*Since the start of the first Malaysian Mass Rapid Transit (MRT) Line (Sg. Buloh – Kajang Line) in 2010, G&P Professionals Sdn Bhd has been its Detailed Design Consultant for major temporary works and geotechnical support. G&P was appointed by Mott-MacDonald Malaysia (Lead Design Consultant of the Klang Valley MRT SBK Line from Bukit Bintang to Maluri).*



Overall view of TRX Underground Station.

A

According to G&P Professionals Sdn Bhd's Chief Executive Officer, Dato' Ir Dr Gue See Sew, the area involved is located on the Kuala Lumpur limestone formation, which exhibits karstic features with irregular bedrock profiles and variable weathering condition. There are three underground stations and various tunnel ancillary structures namely the Tun Razak Exchange (TRX) station, Cochrane Station, Maluri Station, Maluri Portal, Escape Shaft, Crossover structure and Tunnel Boring Machine (TBM) launching shafts.

The TRX Station is the deepest station with a maximum excavation depth of 45m below ground and is also one of the underground interchange stations for Line 2. The Cochrane Station with a maximum excavation depth of 32m below ground also serves as a launching shaft for the TBM from both ends of the station. Meanwhile, the Maluri Station with a maximum excavation depth of 20m below ground includes an underground train crossover as an operational requirement.

A safe and cost-effective temporary earth retaining system of secant pile wall supported by temporary ground anchors or temporary strutting was adopted for the challenging geological formations with high groundwater table. Grouting in rock prevented water ingress through rock fissures and cavities into the excavation pit and at the same time reduced ground settlement



*Completed tunnel lining for MRT Line 1.*

and occurrences of sinkholes due to groundwater drawdown. Support-free systems with circular shafts were designed to fulfil the project requirement during the TBM launching. The unique experiences (design and construction) gained from SBK Line 1 served as a useful reference for the current MRT Sungai Buloh – Serdang – Putrajaya (SSP) Line 2.

In 2016 when MRT Line 2 (SSP Line) was launched, G&P Professionals Sdn Bhd (in association with Geoconsult Asia Singapore Pte Ltd and Zaidun-Leeng Sdn Bhd) was once again

appointed as the Detailed Design Consultant by AECOM Malaysia (Lead Design Consultant of KVMRT-SSP) to design tunnel and tunnel ancillary structures for the underground works from Jalan Ipoh North Escape Shaft to the Desa Water Park South Portal. The underground works were distributed into a few detailed design packages.

In brief, the design package comprises approximately 13.5km (per bore) of twin tunnels; modification, integration and connections to existing and planned rail networking, transit oriented development, concessionaires, adjacent development and infrastructures; integration and connections to possible future developments, external and reinstatement works; tunnel ancillary structures; two intermediate ventilation shafts (IVS); three escape shafts (ES); TBM launch and retrieval shafts; transition structures to and including the South Portal; cross passages and tunnel sumps.

Other than tunnelling and tunnel ancillary structures, G&P is also involved in the underground station design package in the SSP Line, similar to the SBK Line. G&P Professionals Sdn Bhd was appointed by CECI Engineering Consultants Malaysia Sdn Bhd (a member of CECI Engineering Consultants, Inc., Taiwan) as the Detailed Design Consultant for major temporary works and geotechnical support in Conlay Station (CLYS) and Chan Sow Lin Station (CSLS). As a Malaysian homegrown company, G&P Professionals Sdn Bhd is both proud and pleased to be given the opportunity to be involved in both Lines 1 and 2; and as such, G&P is dedicated to putting forward its positive performance and expertise gained from this experience into the upcoming Line 3.

For further details about G&P Professionals Sdn Bhd, please visit [www.gnpgroup.com.my](http://www.gnpgroup.com.my).



*Site visit by Dato' Ir Dr Gue S S (CEO) (right) and Ir Dr Tan Y C (Project Director) during preparations for TBM launching.*