

Express Rail Link Contract No. 824

Detailed re-logging of drill core, tunnel inspection and rock mass characterisation

GeoRisk Solutions Limited (GRS) were commissioned by Donaldson Associates Limited (DAL) to carry out detailed re-logging of drill core, a discontinuity survey in an existing nearby rock tunnel and a rock mass characterisation for Contract No. 824 of the Hong Kong-Shenzhen-Guangzhou Express Rail Link.

DAL are the designer for the Kier-Kaden-OSSA Joint Venture on this project. As part of their efforts to optimise the original design, DAL proposed a significant re-design of part of the project to relocate a crossover cavern.

However, borehole logs at the proposed relocation site recorded a number of 'shear zones' and 'faults' and the Mass Transit Railway Corporation (MTR) and the Geotechnical Engineering Office (GEO) required more information and confidence as to the condition of these zones before they would permit the design change. They were concerned that faults and shear zones could be associated with hazards such as flowing ground, cave-in, squeezing ground and excessive groundwater inflow; conditions which might make the location unsuitable for a cavern.

Therefore, on behalf of DAL, GRS carried out detailed re-logging to describe these features. GRS were also tasked with carrying out a detailed rock mass characterisation to allow refinement of the Q analysis and improve the data available for rock engineering analysis. GRS found that the features represented a 'fossil' fault zone, which had subsequently been almost completely silicified by hydrothermal fluids. These findings indicated that while increased overbreak and block fall might be expected in localised areas, there was no indication of ground conditions that preclude the relocation of the cavern.

GRS met on site with representatives from MTR, GEO and the permanent works designer to inspect the core, discuss the findings and help to provide clarity on the engineering geological nature of the ground to the various parties. The assistance from GRS was invaluable in convincing the various stakeholders that the design change was appropriate and the proposed relocation was accepted.

For further details of our rock engineering services please contact Chris Jack on (852) 6790 3864 or cjack@georisksolutions.com.

