

# CERAMAH TEKNIK TECHNICAL TALK

## The Mengkuang Dam, Penang

IR. KHOR CHAI HUAT (CONSULTANT)

Monday 15<sup>th</sup> October 2012

Department of Geology, University of Malaya, Kuala Lumpur

The talk on “The Mengkuang Dam, Penang” was presented by Ir. Khor Chai Huat (Consultant) on 15<sup>th</sup> October, 2012 at the Department of Geology, University of Malaya. The project actually involved an extension of the pre-existing Mengkuang Dam, to cater for increasing water demand in the area. Details of the presentation are contained in the synopsis below.

As usual, long discussions followed the rather lengthy presentation which had also included a short video (and another which was disallowed due to time constraints). As the project is currently under construction, another talk is possible in the future on completion of the project.

We thank the speaker, Ir Khor Chai Huat, for his contribution to the Society’s activities.

Tan Boon Kong,

Chairman, Working Group on Engineering Geology, Hydrogeology & Environmental Geology

**Synopsis:** The Mengkuang Dam Expansion Project involves raising the existing dam by 11.88 m and construction of a new dam about 50 m high and 1.67 km long on the left valley extending from the left abutment of the existing dam. Upon completion of the expanding work, the crest length will be increased to approximately 3.0 km. The dam foundation is widely covered with sandy clayey silt of alluvian or slope wash of the Quaternary system.

Residual soil layer varies widely from 2 m to 40 m. Highly to moderately weathered granite varying from zero to 8 m thick generally overlay the slightly weathered to fresh granitic bedrock. The residual soil and weathered granite have permeability coefficient in the range of  $10^{-4}$  cm/s.

The dam is a semi-homogeneous earthfill embankment. In order to control internal erosion and piping risk, a comprehensive filter and internal drainage systems and seepage cutoff measures are provided. The foundation seepage cutoff system comprised cut-off trench, plastic concrete cut-off wall, and jet grouting wall are incorporated to cutoff seepage in the residual soil and weathered granite formation. Consolidation grouting is incorporated below the claycore founded on moderately to slightly weathered granite.

Curtain grouting is provided to seal the potential leakage paths in the slightly weathered to fresh granite bedrock below the dam, drawoff tunnel and the dam abutments. The potential risks related to geotechnical and geological factors are discussed.