

# CERAMAH TEKNIK TECHNICAL TALK

## Innovative approach in risk and stability assessment of an engineered rock slope

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The above talk was delivered by P. Geol. Koay Leong Thye (Minconsult Sdn. Bhd.) on 24<sup>th</sup> January, 2024 via Zoom. Some 80 members participated. An abstract of the talk is given below:

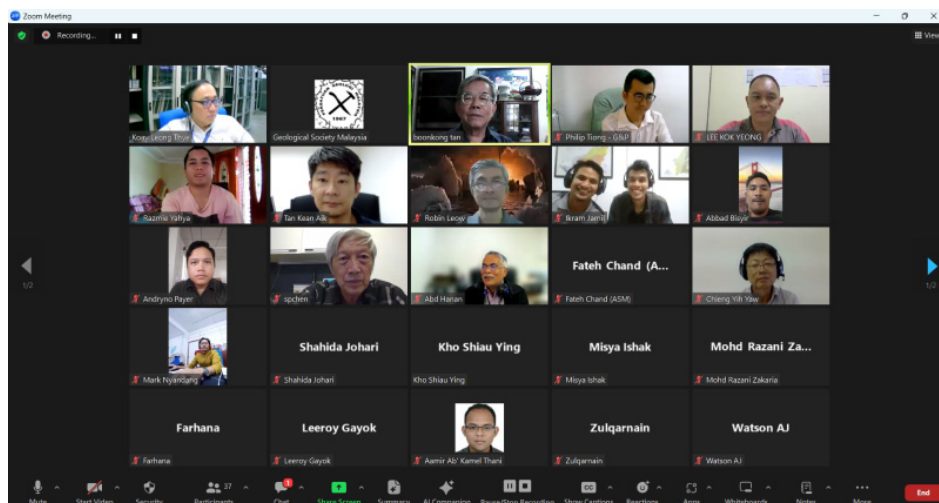
**Abstract:** The effects of weathering of rock mass and its discontinuities is well known in the highly humid Malaysian climate. A pilot study was carried out to assess the stability and risk categorization of rock slopes at a major expressway. The expressway operator was interested to ascertain the risks of slope instability and identification of priority areas for maintenance planning of remedial or mitigation works.

The principal methods to identify potentially unstable rock mass are geological and rock discontinuity mapping, LiDAR survey, kinematic analysis, stability and risk assessment of the slopes. At inaccessible areas, fieldworks were facilitated using roped access technique and a sky lift crane.

Geo-structural and discontinuity mapping was carried out to assess the rock mass condition and joint orientations at the slope face. Topographic contours and cross-sections, obtained from LiDAR survey, were used to evaluate the geometric profile of slopes while kinematic analyses were performed to verify the stability of rock face. The likelihood of a slope failure is caused by instability factors such as rock mass and joint conditions, slope angle and kinematic analysis. The related consequence factors are influenced by slope geometry, height of potential instability and safety features available at the slope.

High risk slopes were prioritised for future remedial works. With visual conditions and mapping data recorded in the base photographs, it is possible to continuously monitor the slopes over time, thereby providing a versatile tool in the long-term asset management of Expressway.

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