

# More Glimpses of Engineering Geology in Malaysia

By : Assoc. Prof. Tan Boon Kong, *Affiliate Member, IEM*

This short note provides more glimpses of Engineering Geology in Malaysia, following two previous articles in JURUTERA, Tan (2005b, 2006). Some other recent publications on Engineering Geology are listed in the references for those interested in knowing more about the subject.

The various applications or actual case histories of Engineering Geology as it relates to various aspects of civil engineering works are illustrated by photographs as follows. Detailed discussion is contained in the paper by Tan (2007) submitted to the 16<sup>th</sup> South East Asian Geotechnical Conference 2007, K.L.

## ENGINEERING GEOLOGY APPLICATIONS AND CASE STUDIES

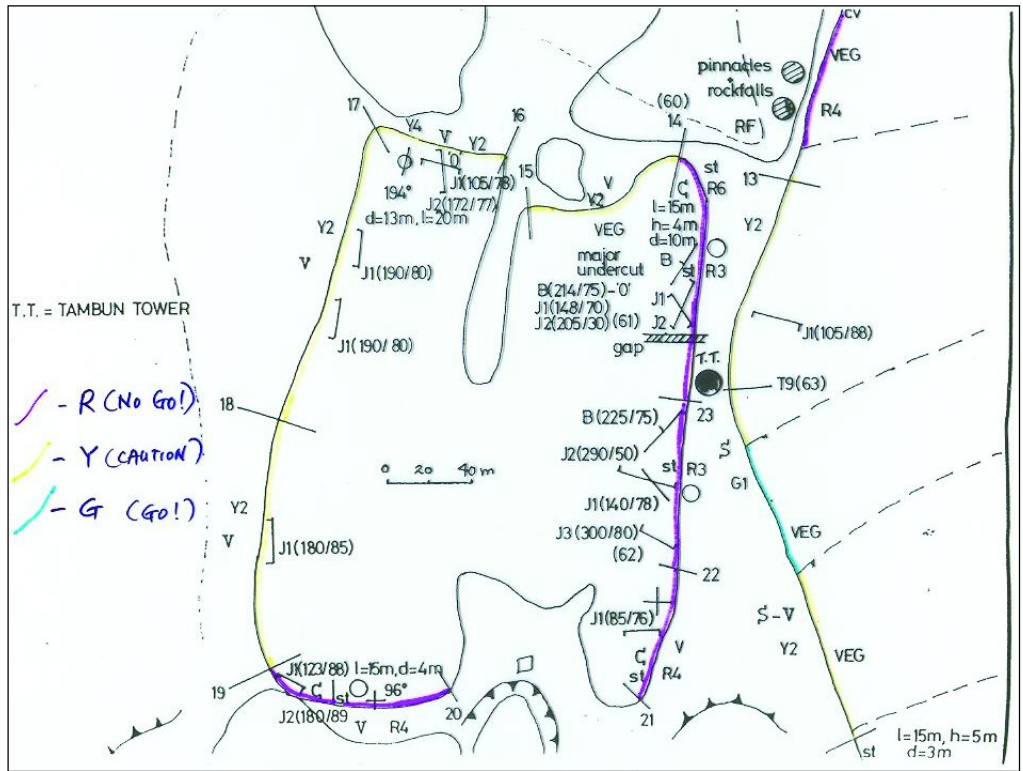
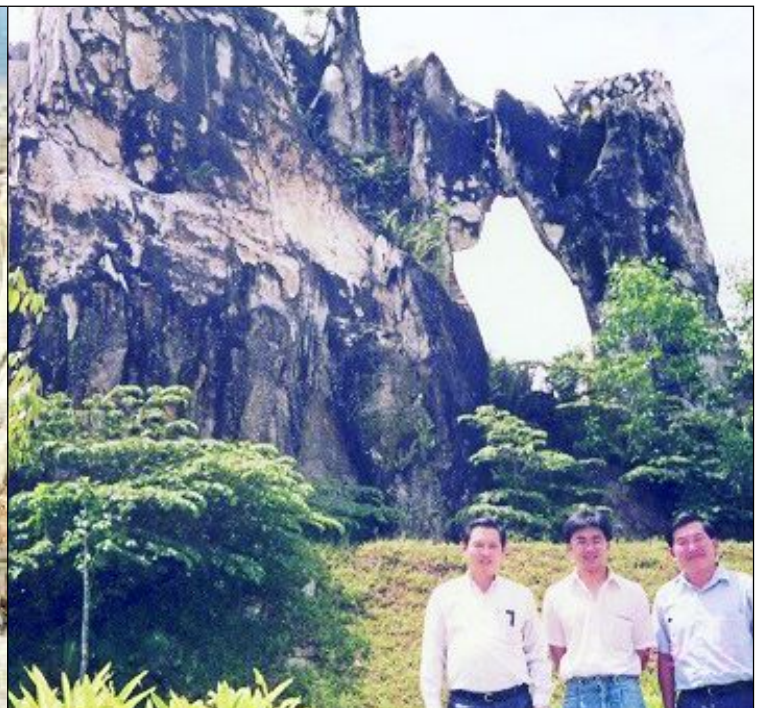
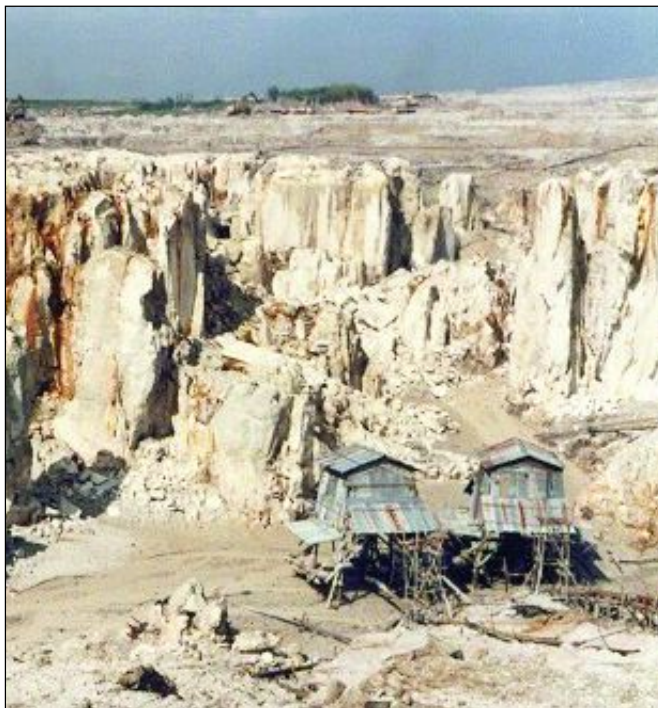


Figure 2: Rockfall hazard map, Tambun, Ipoh

### Foundation in Limestone



Figures 1a and 1b: Pinnacled limestone bedrock, Sunway





Figure 3: Sub-vertical bedding planes giving rise to rockfall, Tambun, Ipoh



Figure 4: Water tank at Batu Caves limestone cliff, Kuala Lumpur



**Rock Slope Stability**



Figures 5a and 5b: Graphitic schist, Senawang-Ayer Keroh Highway

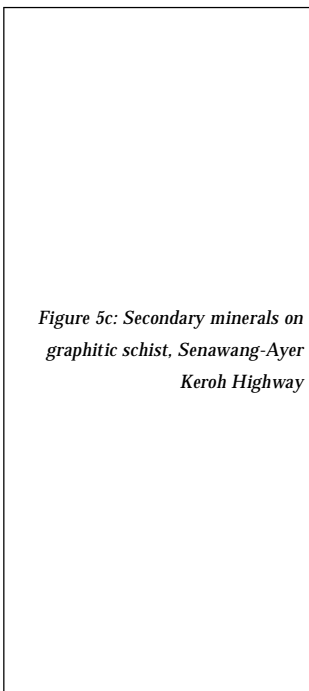


Figure 5c: Secondary minerals on graphitic schist, Senawang-Ayer Keroh Highway



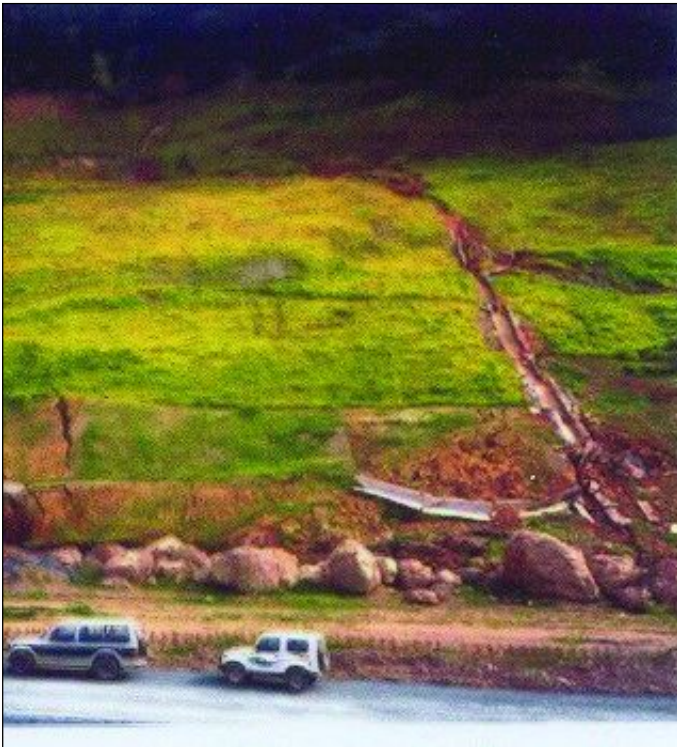


Figure 6a: Failures in graphitic schist cut slopes, Lojing Highway

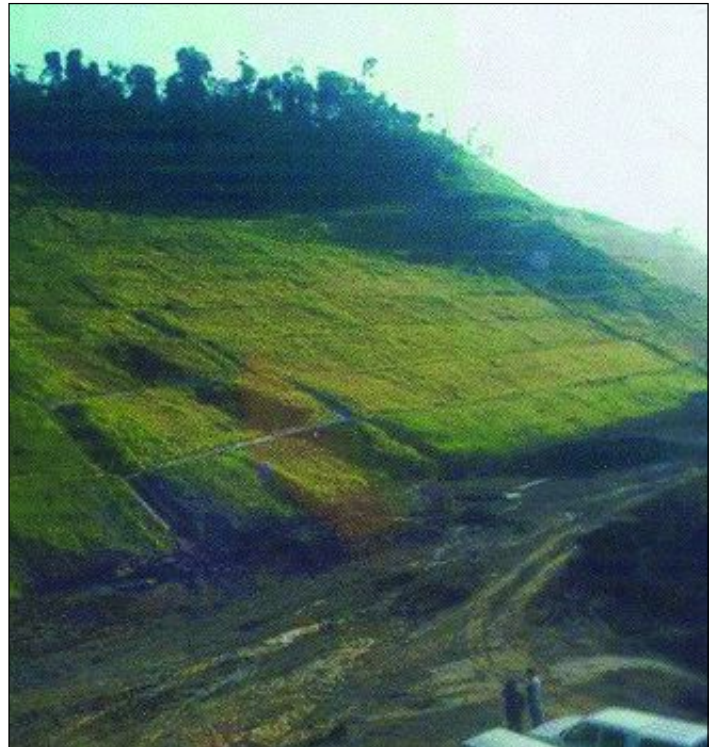
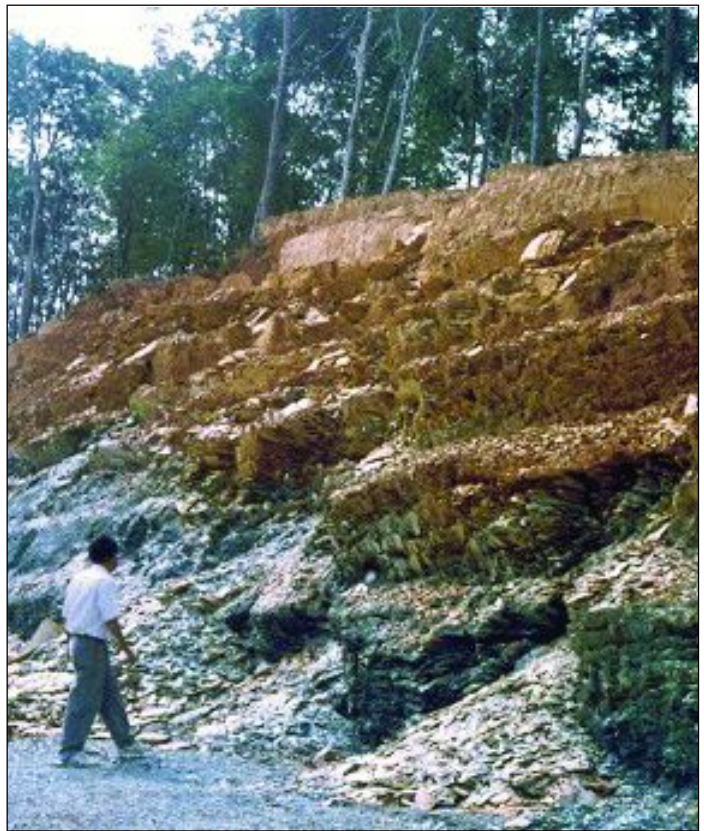
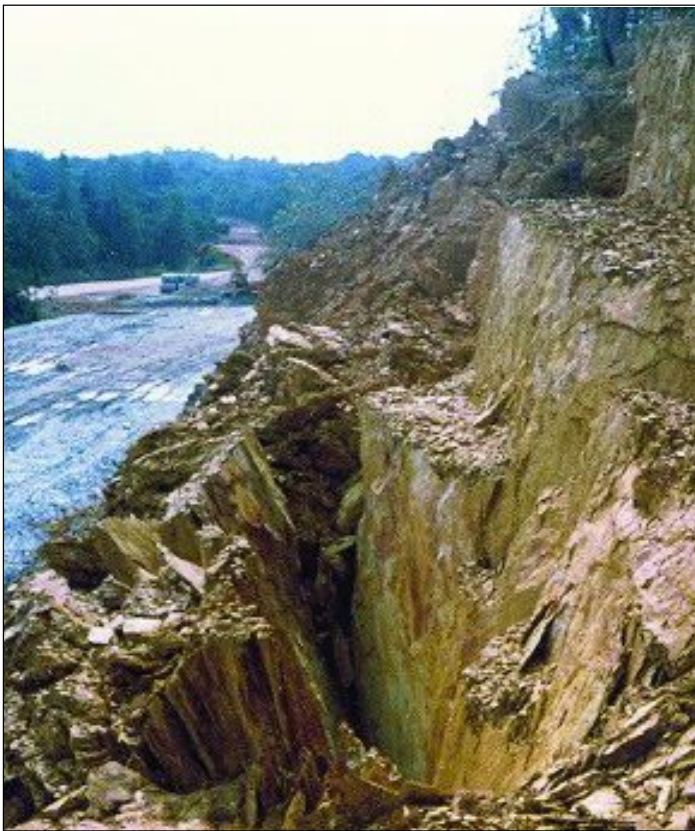


Figure 6b: Failures in graphitic schist cut slopes, Lojing Highway

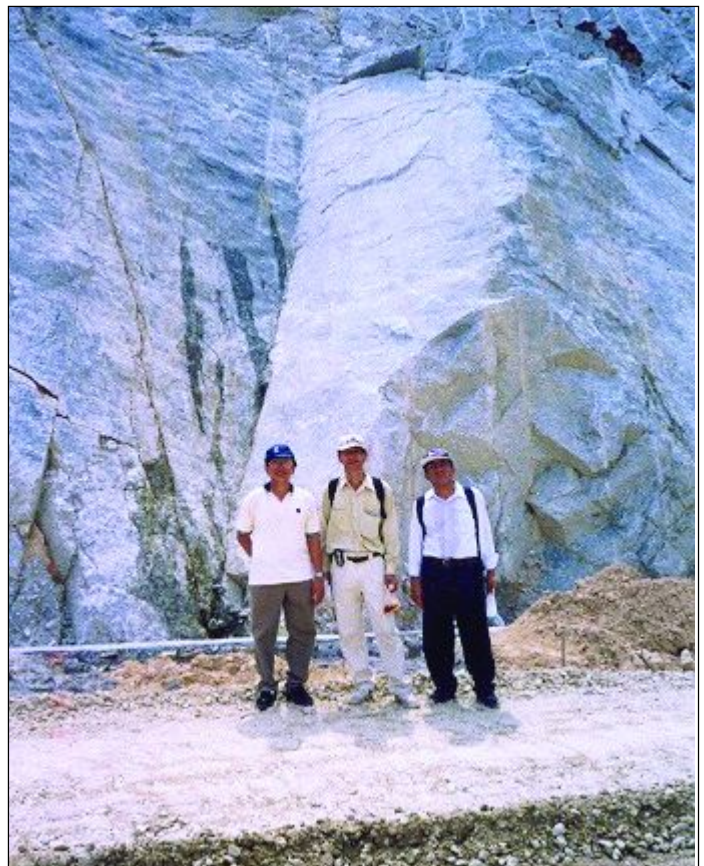
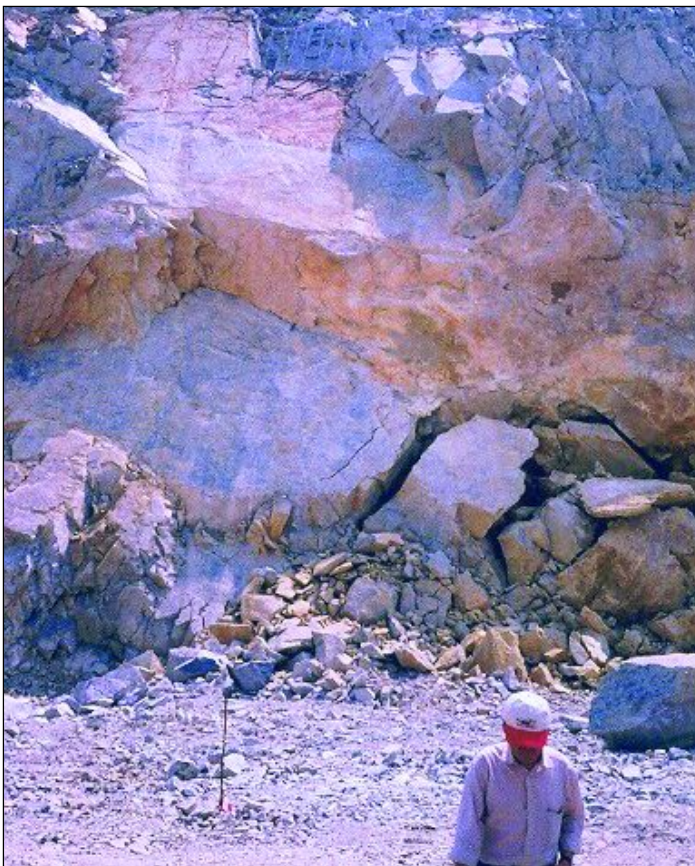


Figure 7: "Flattened" cut slope in graphitic schist, North-South Highway near Rawang





Figures 8a and 8b: Slope failures controlled by bedding planes and faults, Sarawak rural road



Figures 9a and 9b: Classic examples of planar and wedge failures in granite cut slope, SILK highway, Kajang



**Tunnels**

Figures 10a and 10b: Highly fractured granite and steel sets support, diversion tunnel, Sg. Selangor dam



**Riverbank Instability**



Figure 11: Riverbank instability, Sarawak

**Urban Geology and Hillside Development**

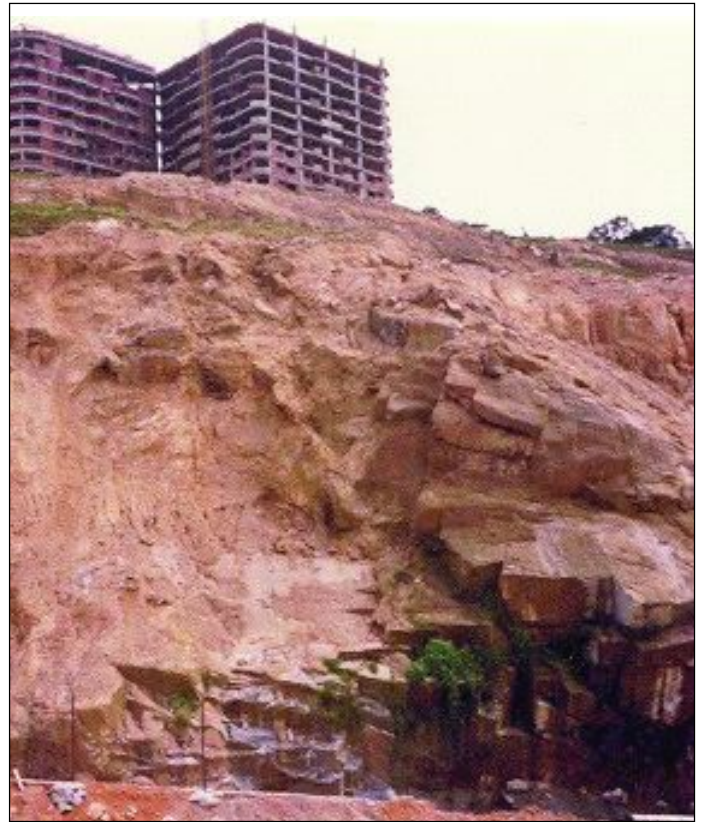


Figure 13c: Slope failures associated with housing projects in hilly terrains, Kuala Lumpur



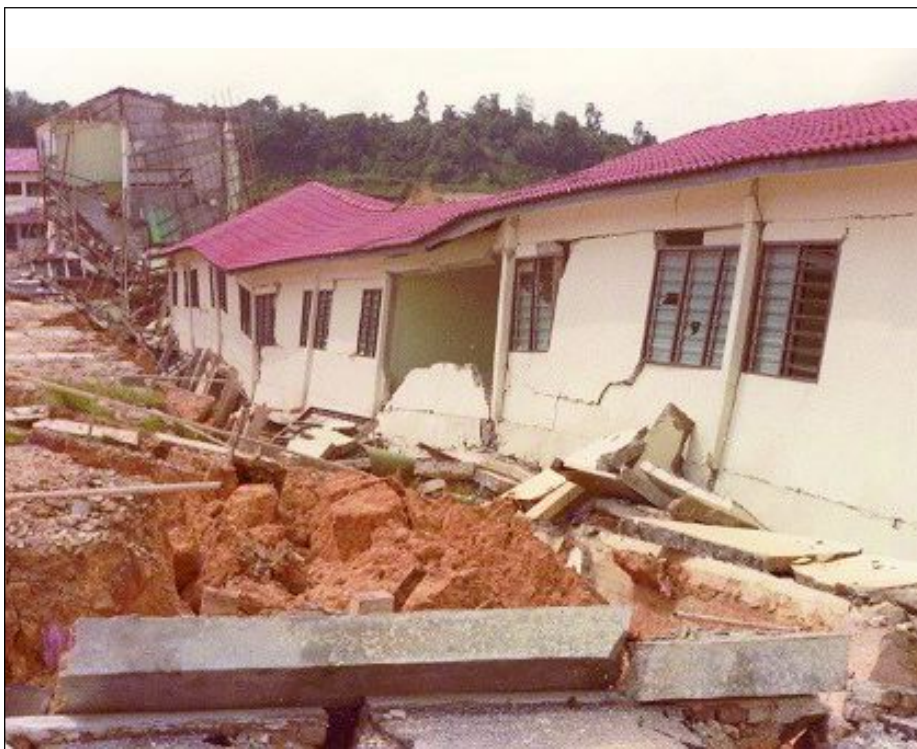
**Slope Failure due to Rapid Draw-Down**

Figure 12: Rapid draw-down of mining pond triggering slope failure and destroying houses, Kuala Lumpur





**Dam Geology**



Figure 14: Foundation grouting at Batu Dam, K.L.



Figure 15: Kenyir Dam, a rockfill dam, Kuala Berang, Terengganu. Dolerite dykes (black) in granite

**REFERENCES**

- [1] Tan, B.K. 2004a. The practice of engineering geology in Malaysia. Special Lecture, Proc. Malaysian Geotech. Conf. 2004, March 2004, Subang Jaya: 131-148.
- [2] Tan, B.K. 2004b. Country case study: engineering geology of tropical residual soils in Malaysia. Proc. Symp. on Tropical Residual Soil Engineering - TRSE2004, 6-7 July 2004, Universiti Putra Malaysia, Serdang, Invited Lecture, Chapter 14: 237-244, Balkema.
- [3] Tan, B.K. 2004c. Engineering geology of rock slopes - some recent case studies. Proc. GSM-IEM Forum on The Roles of Engineering Geology & Geotechnical Engineering in Construction Works, 21st Oct. 2004, Kuala Lumpur, Paper no. 8: 11pp.
- [4] Tan, B.K. 2005a. Assessment of limestone cliff stability - a case study in Batu Caves, Kuala Lumpur. Proc. Oktoberforum 2005, IEM-GSM Forum on Case Histories in Engineering Geology & Geotechnical Engineering, 4th Oct. 2005, Petaling Jaya, paper no. 17.
- [5] Tan, B.K. 2005b. A glimpse of engineering geology and rock mechanics in Geotechnical Engineering in Malaysia. JURUTERA, June 2005, p.8.
- [6] Tan, B.K. 2006. Another glimpse of engineering geology - a pictorial presentation of limestone bedrock pinnacles. JURUTERA, Nov. 2006, p.36.
- [7] Tan, B.K. 2007. A glimpse of engineering geology and rock mechanics in Malaysia. Proc. 16th S.E. Asian Geotechnical Conf., 40th Anniversary Commemorative Volume, 8-11 May 2007, Subang Jaya. (in press).