

Slope Stability Study at Jalan Tun Sardon and Sungai Batu, Pulau Pinang, Malaysia by Using 2-D Resistivity Method

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Abstract : Landslides and rock falls are the examples of environmental and engineering problems in Malaysia. There are various methods that can be applied for the environmental and engineering problems but geophysical methods are seldom applied as the main investigation technique. This paper aims to study the slope stability by using 2-D resistivity method at Jalan Tun Sardon and Sungai Batu, Pulau Pinang. These areas are considered as highly potential for unstable slope in Penang Island based on recent cases of rockfall and landslide reported especially during raining season. At both study areas, resistivity values greater than 5000 ohm-m are detected and considered as the fresh granite. The weathered granite is indicated by resistivity value of 750-1500 ohm-m with depth of < 14 meters at Sungai Batu area while at Jalan Tun Sardon area, the weathered granite with resistivity values of 750-2000 ohm-m is found at depth < 14 meter at distance 0-90 meter but at distance of 95-150 meter, the weathered granite is found at depth < 26 meter. Saturated zone is detected only at Sungai Batu with resistivity value <250 ohm-m at distance 100-120 meter. A fracture is detected at distance about 70 meter at Jalan Tun Sardon area. Unstable slope is expected to be affected by the weathered granite that dominates the subsurface of the study areas along with triggering factor such as heavy rainfall.

Keywords : 2-D resistivity, environmental issue, landslide, slope stability

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