

UNIVERSITI TEKNOLOGI MARA

**FRACTURE ANALYSIS AND
MAPPING ON SLOPE STABILITY BY
USING GROUND PENETRATING
RADAR**

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Thesis submitted in fulfillment
of the requirements for the degree of
Surveying Science and Geomatic (Hons)

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Fracture and void existing can effect the slope stability that can lead into landslide. The present of fracture and void posing a major threat toward slope stability. Nowadays, non-destructive testing technique such as Groud Penetrating Radar (GPR) are being use to investigate the slope stability. The advantage of the GPR method in comparison to subsurface exploration is that it can be performed with less cost and time. Hence, due to the evaluation the change of subsurface image, the use of GPR signal that controlled by the electrical properties of the soil can be used to determine the electrical conductivity of the soil. The aim of this study are to detect and mapping any fracture or void that can effects the slope stability causes by using ground penetrating radar. In order to achieved the aim, the objective of this study is to detect fracture and void on the slope by using gpr and evaluate the accuracy of detection and fracture mapping on slope. The last objective is too generate slope stability mapping for the fracture and subsurface void by using arcgis. In this study, the study area size is about (13 m x 3 m). The data collection are be collect by using Mala ProEx GPR with 250 Mhz antenna frequency. Finally, GPR data are post-processed in the time and frequency domains to identify accurately the geometry of the instability. The analysis output to conclude that the GPR method can be an option at the exploratory stage of slope stability analysis. The position of fracture and the potential void can be seen in the topographic map.

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