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ROCK CUTTING TECHNIQUE : A CASE STUDY

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ABSTRACT.

Rock cutting technique is a technique to excavate , cut or break the rock to prepare the construction site or underground space like a tunnel, road or highway and dam foundation.

There are several types of rock cutting technique such as drilling and blasting or by mechanical tools. The rock cutting technique by mechanical technique was developed in rock cutting mechanism theory . The theory is to characterised the cutting force to cut the rock materials required under the action of specified tools.

This study is concern with the different rock cutting techniques conducted for rock engineering works . In Malaysia case study is carried out to study the different techniques adopted presently at two differents project in Malaysia. The projects involved are :-

- i) Sungai Kerinchi Water Transfer Tunnel. (Tunnel Boring Machine)
- ii)The New Genting Sempah Tunnel (Drill and blast)

The two sites presented the different rock types and its mechanical properties which are related to the rock cutting techniques selected.

1.0 INTRODUCTION.

1.1 General.

Nowadays, the development of space utilisation has also expanding into rock strata. Underground space utilisation such as underground tunnel, dam and rock slope in highway construction are classified as rock engineering works. In this regard engineer must be exposed in the rock cutting technology in order to lead with these type of construction projects. Some example of rock engineering works in Malaysia is Light Rail Transit (LRT) which is also consists the underground space. Bukit Lanjan highway involves open excavation works. Project hydroelectric in Pergau also consists the tunnel. Therefore, the technology of rock cutting techniques is very important in order to conduct any rock surface or underground excavation.

There are several types of rock cutting techniques can be used which are arising from different philosophies. Generally rock cutting techniques can be divided into two method as follows :-

- i. Drill and blast and
- ii. By using mechanical cutter.

The purpose of rock cutting is to prepare the space desired. Therefore, proper rock cutting techniques is important in order to create a desired space of construction. For example , when we want to have a smooth tunnel wall and long free standing stability during constructing , so we have to control the wall by applying a proper rock cutting techniques with respect to the mechanical and geological properties of rock.