

**EVALUATION OF SLOPE FAILURE BASED ON SOIL PHYSICAL  
PROPERTIES AND SHEAR STRENGTH PARAMETERS FOR  
TROPICAL RESIDUAL SOIL**

**BY:**

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## **ABSTRACT**

In Malaysia, slope failure normally occurs during rainy seasons and almost no slope failures were reported during dry seasons. This is mainly due to the effect of water that flows through soil. When the soil becomes saturated, negative suction will be destroyed, the shear strength of soil was reduced thus causes slope instability. In other words, cause of slope failures are closely related to the additional weight of rainwater retained in the soil slope, causing the slope to fail. The main objective of this research is to determine the relationship between soil shear strength using shear box tests and ROM value obtained from particles size distribution curves. ROM value was obtained using ROM equation based on the percentages of sand, silt and clay. A total of 20 slope failure locations were selected at the specified area. Five slope failure locations were selected from Baling, Kedah and another five locations were selected in Gerik, Perak. Additionally, another 10 slope failure locations were selected along Route 6, Balik Pulau, Penang. Soil samples were collected at the failed and un-failed slope section next to the failed one. Seven soil samples were collected for each slope failure location. Soil samples were collected at about 100mm below the existing ground level. Bulk density was determined using field bulk sampler. Shear box tests under saturated at bulk density conditions and sieve with hydrometer tests were conducted. In conclusion, it was found that the soil shear strength increases as the ROM value decreases.

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