

Potential Of Failure for Crocker Formation Soil Slope in Tuaran, Sabah

ABSTRACT

Study area is located around Tuaran, Sabah which consists of Crocker Formation age Late Eocene to Early Miocene and Quaternary alluvium deposits. Eight soil samples from Crocker Formation slopes (C1 to C8) were collected and tested for its engineering properties using British Standard parameters and to determine the potential of failure of Crocker Formation soil slopes in the study area. Based on particle size distribution, all samples have higher percentage of sand (>50%) and more than 40% of finer particles. Atterberg limits analysis indicate that all samples are within low to medium plasticity with the presence of quartz, kaolinite, illite and hematite. Results show the value of friction angles range from 9° to 29° and the cohesion values range from 6.3 kPa to 15.34 kPa. Slope stability analysis shows that C1 has the highest FoS with 1.43 and less than 5% of potential to fail which indicates stable slope. Slope C2 (FoS 1.01) and C5 (FoS 1.23) show 15% to 20% of potential to fail which indicate stable with doubtful safety, while other slopes show less than 1 that indicate unstable slopes. Overall, the instability of slopes are influenced by slope geometry, soil cohesion and internal friction angle due to the moisture content, soil plasticity and type of clay minerals other than weathering and erosion processes which may increase the potential of slope failure.