

Geotechnical Characterization of Residual Soil for Deterministic Landslide Assessment

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Abstract : Soil, as the main material of landslides, plays a vital role in landslide assessment. An efficient and accurate method of doing an assessment is significantly important to prevent damage of properties and loss of lives. The study has two phases: to establish an empirical correlation of the residual soil thickness with the slope angle and to investigate the geotechnical characteristics of residual soil. Digital Elevation Model (DEM) in Geographic Information System (GIS) was used to establish the slope map and to program sampling points for field investigation. Physical and index property tests were undertaken on the 20 soil samples obtained from the area with Pliocene-Pleistocene geology and different slope angle in Kibawe, Bukidnon. The regression analysis result shows that the best fitting model that can describe the soil thickness-slope angle relationship is an exponential function. The physical property results revealed that soils contain a high percentage of clay and silts ranges from 41% - 99.52%. Based on the index properties test results, the soil exhibits a high degree of plasticity and expansion but not collapsible. It is deemed that this compendium will serve as primary data for slope stability analysis and deterministic landslide assessment.

Keywords : collapsibility, correlation, expansiveness, landslide, plasticity

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