DERIVING A FIELD SHEAR STRENGTH ENVELOPE FOR LANDSLIDE-PRONE SOILS

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Measurement of shear strength parameters for a large number of samples is necessary for the aerial evaluation of slope stability for watershed management purposes in mountainous catchments. In the instances where facilities for shear strength measurement are dearth, it is possible that limit equilibrium slope stability techniques can be employed to establish failure envelopes for given soil categories under likely field conditions. A field shear strength relationship for the residual and colluvial soil mantles occuring in the Belihul Oya Catchment of the Maturata area was derived from back stability analysis techniques. It was evident that the shear strength of these soils is stress dependent at low stress conditions. However, it was considered that a conventional Terzaghi - Coulomb type failure criterion can still be approximated for the material for the purpose of rapid assessment of slope stability in this catchment.