Infiltration characteristics of unsaturated residual soils of various weathering grades

ABSTRACT

This paper presents the results of a field study on the infiltration characteristics of unsaturated residual soils of various weathering grades. Two field sites were studied, namely site A and site B. These sites respectively represent two of the most commonly occurring residual soils or rocks in Malaysia, that is the granitic residual soil and sedimentary (sandstone) residual soil. The water infiltration rate was found to vary depending on the soil weathering grades. For the case of granitic residual soils, soil of weathering grade IV was found to have the highest infiltration rate. Water infiltration was found to increase from grade VI to grade IV, and decrease from grade IV to grade III. Water infiltration was also found to increase with the increase in the soil porosity and void ratio, and decrease with the increase in the soil density. While for the case of sedimentary (sandstone) residual soil, the soil of weathering grade III was found to have the highest infiltration rate. Water infiltration was found to increase from grade V to grade III.

Keyword: Infiltration; Landslide; Porosity; Residual soils; Unsaturated soil; Weathering