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Rainfall-Induced Hydraulic Properties for Unsaturated Soil in Klang Valley

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Abstract

Klang Valley area is one of the most landslide-prone areas in Malaysia, especially at Hulu Kelang, Kuala Lumpur. The area has been frequently hit by landslide since 1990s. Soil instability is agreed by researchers occurred due to high precipitation and long duration of rainfall which cause property damage and leading to injury and fatality. Slope failure is also triggered by the antecedent rainfall leads to infiltration of rainwater into soil . Therefore, study of rainwater infiltration is vital to relates soil – water interaction and soil behaviour for varies of rainfall intensities and duration for unsaturated soil . The objective of this paper is to determine and compare soil water characteristic curve (SWCC) which is one of the soil hydraulic parameters for Klang Valley area. Samples were collected to determine the soil hydraulic properties at Hulu Kelang area, Universiti Kebangsaan Malaysia (UKM) and Universiti Pertahanan Nasional Malaysia (UPNM) campuses. SWCC was obtained by pressure plate extractor apparatus experiment and the analysis was performed using Van Genuchten equation. Result of parameters obtained shows significant differences of soil at Hulu Kelang area compared to soils at UKM and UPNM campuses. This research is relevant to supports national slope master plan 2009-2023.

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