



Model test to evaluate the rainfall infiltration characteristics for various soil conditions

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Model tests were carried out to investigate rainfall infiltration characteristics in soils for different soil condition and rainfall intensity. Weathered granite soil (SP) and weathered gneiss soil (SM) were mainly selected as the soil materials in the model tests. The rainfall intensity of 80mm/hr was controlled by the rainfall simulator, and the variation of volumetric water content and matric suction were measured by sensors such as TDR and tensiometer during rainfall. The average saturation velocity of the granite soil was the fastest due to the uniform particle size distribution and a small amount of fine-grained soil, while that of gneiss soil was the slowest because of well-graded soil and a large amount of fine-grained soil included in the soil materials. Also, the saturated direction of the granite soil was progressed from the bottom to the top of the granite soil, whereas the saturated direction of the gneiss soil began at the surface of the soil layer and descended. i.e., the wetting front occurred at the surface and descended. As the result of the model test, the rainfall infiltrated and saturated from the bottom to the top of soils in the model box because the hydraulic conductivity of the granite soil was larger than that of the rainfall intensity. On the other hand, the hydraulic conductivity of the gneiss soil was smaller than infiltration capacity of the rainfall, ponding occurred on the surface of soils such that a part of the rainfall first infiltrated and the remaining rainfall then flowed out. So, the saturation was started at the surface and proceeded to the bottom of soils in the model box.