

水分觸發邊坡位移行為研究-室內砂箱試驗

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摘 要 引發崩塌的主要原因除了地質條件外，水文條件也為主要觸發因子之一，故本研究藉由室內實驗，進而評估水分引發邊坡土體位移之實際情況與趨勢。主要以砂箱配合地下水生產器，與人工模擬降雨實驗針對地下水及不同降雨強度之入滲試體，觀測不同坡度、降雨強度及地下水壓，土體位移之啟動、加速等行為，以及崩塌破壞模式、土壤飽和度、孔隙水壓值及土體位移之關係。研究結果顯示，當地下水與降雨同時施加時，濕潤線常在中層與入滲水分交會，使得土體中層之水分及水壓快速上升，使體位移也同時加速，因而中層之水壓值成為位移啟動的一指標。

關鍵詞：砂箱試驗、土體位移、崩塌、人工降雨、地下水。

Investigation on Slope Displacement Induced by Moisture-Sandbox Model Test

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ABSTRACT The rainfall and pore pressure interact to the failure behavior of artificial soil slope is explored by the sand box test. The sand box model includes groundwater supply unit, artificial rainfall instrument, and monitoring system to figure out the interaction of the water infiltration, pore pressure and of soil movement. The effect in the initiate, acceleration, and failure stages soil movement slope are observatal by monitoring system.

The result showing that, as the wetting fronts of rainfall infiltration and ground water crossed in the middle layer of slope, increasing rates of water content and pore pressure will rise up, and the soil displacement is also accelerating. The displacement speeds up significantly in heavy rainfall while wetting fronts crossed. Oppositely, the test, as the result indicate that displacement acceleration is not significant in light intensity rainfall case. The pore pressure of middle layer can be an good indicator to the soil movement.

Key Words: Sandbox test, slope displacement, landslide, infiltration, pore pressure.

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