



Centrifuge Modeling of Slope Failure Induced by Rainfall

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Centrifuge modeling technique is used to study slope failure under normal and rainfall conditions. The slope models were prepared from sand mixed with 15% fines by weight, compacted at optimum water content of 7.7%. The modeling technique was first validated using slope models of different heights, inclinations and soil types. The Bishop's circular mechanism, together with the extended Mohr-Coulomb failure criterion, was able to simulate the slope failure reasonably well. The extended Mohr-Coulomb failure criterion expressed the strength of unsaturated compacted soil in terms of angle of internal friction and apparent cohesion. The rainfall of different intensities was then induced on the 60-degree stable slopes of sand with 15% fines. It was found that the failure of slope under rainfall may be interpreted as a reduction in apparent cohesion. The centrifuge tests also allowed the rainfall intensity-duration curve to be generated for the test slopes.