Experimental Investigation of the Failure Behavior of a Retaining Wall Constructed with Soil Bags

Authors : Kewei Fan, Sihong Liu, Yi Pik Cheng

Abstract : This paper aims to analyse the failure behaviour of the retaining wall constructed with soil bags that are formed by filling river sand into woven bags (geosynthetics). Model tests were conducted to obtain the failure mode of the wall, and shear tests on two-layers and five-layers of soil bags were designed to investigate the mechanical characteristics of the interface of soil bags. The test results show that the slip surface in the soil bags-constructed retaining wall is ladder-like due to the interlayer insertion of soil bags, and the wall above the ladder-like surface undergoes a rigid body translation. The insertion strengthens the shear strength of two-layer staggered-stacked soil bags. Meanwhile, it affects the shape of the slip surface of the five-layer staggered-stacked soil bags. Finally, the interlayer resisting friction of soil bags is found to be related to the shape of the slip surface.

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Keywords : geosynthetics, retaining wall, soil bag, failure mode, interface, shear strength

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