Application of Geosynthetics in Cohesive Soils with Low Shear Strength

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ABSTRACT: In a unique, systematic and extensive experimental study applying a large shear frame testing device, the interaction between different geosynthetics and cohesive soils both with and without stabilizing additives has been observed. In order to reach an efficient experimental schedule, multistage tests have been successfully applied both in shear, friction and pull-out tests in the large shear frame device. The comparison with single-stage experiments under identical soil mechanical conditions has shown that multistage tests yield nearly identical experimental results slightly on the safe side. The interaction behaviour of different geosynthetics in cohesive soils has demonstrated that a perfect bond with interface factors of one is rarely reached. The interface factors showed higher values for friction failure than for pull-out failure of the examined geosynthetics. The use of stabilizing additives in the soil leads to the deterioration of the interface interaction performance. At the testing of cohesive materials, further issues regarding the sample installation procedure arise, leading to interesting additional information on geosynthetics interface behaviour.

Keywords: Geosynthetics, Cohesive Soil, Interface, Interaction, Behaviour , Testing, Equipment