Effect of cement-sodium silicate grout and kaolinite on undrained shear strength of reinforced peat

ABSTRACT

This article describes a laboratory study on the effect of cement as traditional binder, sodium silicate as chemical binders and kaolinite as filler on undrained shear strength of peat. Peat normally associated with high compressibility and low shear strength that poses difficulties for construction projects. One of the ground improvement methods for problematic soil such as peat is deep in situ mixing method by soil-grouting columns. The conventional binders used are cementitious materials, and an introduction of a new binder, sodium silicate as an additive gives a better output on the conventional peat treatment. Various amount of above mentioned components been used to stabilize the peat and the undrained shear strength of the samples is determined through triaxial compression test under unconsolidated undrained (UU) conditions. The addition of cement-sodium silicate to peat yield a substantial increase in shear strength in comparison with effect of pure cement only.

Keyword: Calcium chloride; Kaolinite; Ordinary Portland cement; Peat; Sodium silicate; Undrained shear strength