MASTER'S DISSERTATION AT GEOTECHNICAL ENGINEERING

DEPARTMENT OF CONSTRUCTION SCIENCES | FACULTY OF ENGINEERING LTH | LUND UNIVERSITY

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PRESENTATION
June 2018

REPORT
Will be published as
Report TVGT-5064

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GEOTECHNICAL ENGINEERING,
LTH & WSP SAMHÄLLSBYGGNAD

IN COOPERATION WITH
WSP SAMHÄLLSBYGGNAD

EVALUATING SHEAR STRENGTH OF CLAY WITH DPSH IN THE CLAYS OF SCANIA, SWEDEN

BACKGROUND

The soil of the southernmost region of Sweden, Scania, consists mainly of clay-till. This type of soil material can be troublesome for the most commonly used method for evaluating shear strength: the CPTu. The CPTu is a pressure probe and hence sensitive to heterogeneous materials such as clay-till. The Swedish DPSH method, Hfa, is a more suitable option for coarser soil and till. However, the Hfa is a less reliable method when evaluating shear strength, compared to the CPTu. Previous tests on the correlation between Hfa and shear strength of clay have been conducted in other parts of the world, and relations have been established. It is however unclear whether these relations are applicable to the clays of Scania. Evaluating and validating these relations would be beneficial since the shear strength of the soil could then be evaluated from the better suited method of Hfa. This would be a first step to find further correlations between Hfa and the shear strength of clay-till.

OBJECTIVE

The objective of this master thesis is to evaluate the undrained shear strength of clay from Hfa by analysing existing relations found in previous studies and eventually find new relations applicable to the clays of Scania.

LIMITATIONS

Due to the fact that clay-till is a heterogeneous material that sometimes offers difficulties when sampling and testing, this thesis, as a preliminary study, will focus on the soil material clay, more specifically the clays of north-eastern Scania.

APPROACH

Data will be obtained from Hfa and triaxial tests, from specimens collected by piston sampling. Using existing relations, the shear strength will be calculated from output parameters from Hfa and compared to the shear strength derived from triaxial tests. CPTu will also be considered for comparative reasons. The results will then be evaluated with statistical methods. If necessary and possible, new relations will be proposed.

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xpTVGT-5064 (2018-02)