

MASTER'S DISSERTATION AT GEOTECHNICAL ENGINEERING

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RELATIONSHIP BETWEEN SHEAR-WAVE VELOCITY AND CONSOLIDATION PARAMETERS OF PEAT

BACKGROUND AND DESCRIPTION

Peat is a difficult material in geotechnical applications because of the large settlements and the low bearing capacity. Obtaining undisturbed samples for the material is challenging. Therefore, the possibility of using in situ tests to obtain first order estimates of consolidation parameters for peat is investigated. A connection between shear wave velocity, V_s , and consolidation parameters has been shown for Norwegian clay.

The goal is to examine if there is a relation between V_s and consolidation parameters in Swedish peat. V_s will be measured at three different sites using "Down-hole method" (see figure 1) and undisturbed samples will be extracted for oedometer testing. The consolidation parameters are estimated through CRS-testing in the laboratory. The relation will be evaluated through a regression analysis where a best fit trendline will be shown as well as the coefficient of determination. The consolidation parameters that will be analyzed are the preconsolidation pressure σ'_c , the compression parameters M_0 and M_L and the modulus number m . Moreover, the water content of the peat will be measured every 0.1 meters in the laboratory and compared to V_s .

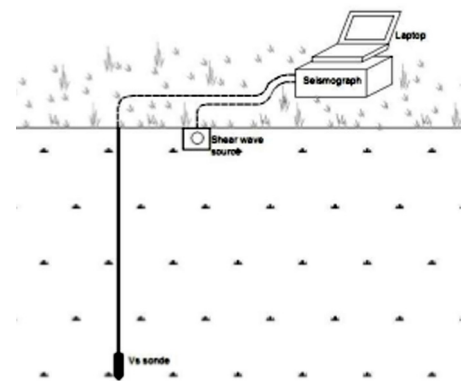


Fig. 1. Source: Trafford, A. and Long, M. (2016) Some recent developments on geophysical testing of peat. Proceedings 17th Nordic Geotechnical Meeting (NGM), Reykjavik, 215 – 224.

Samples will be extracted using a Russian sampler. Classification of the peat will be done according to von Post scale of humification which is commonly used for work on peat.

