



ANALYSIS OF SETTLEMENTS OF TEST EMBANKMENTS DURING 50 YEARS - A Comparison between Field Measurements and Numerical Analysis

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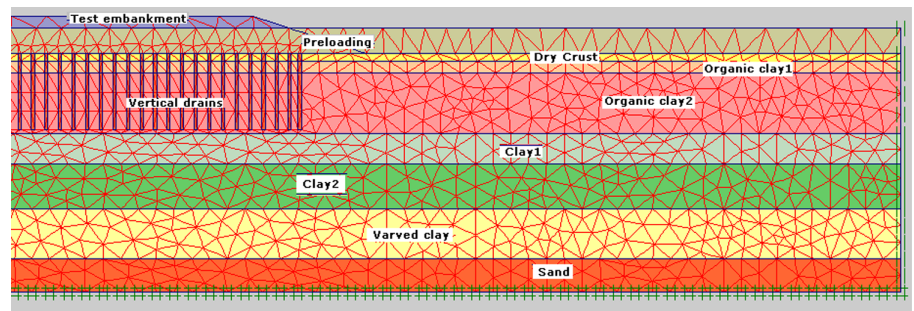
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For a little more than 50 years, the Swedish Geotechnical Institute (SGI) has had test embankments at different locations in Sweden. The aim with the test embankments has been to follow up settlements by field measurements in order to improve both the general knowledge and calculation methods. The purpose of this Master Thesis is that settlements will be calculated by numerical methods by use of the finite element program PLAXIS and compare the calculated result with field measurements. The main objective is to create a numerical model which describes the current field situation as realistic as possible.

The compared objects in this work will be test embankments at Lilla Mellösa and Skå-Edeby, located in Stockholm. At Lilla Mellösa two test fills were constructed by SGI in 1945 – 1947 while at Skå-Edeby four test fills were constructed in 1957. The background to the building of test fills was the search of a place for a new international airport outside Stockholm. The soil condition in both areas consisted of very com-

pressible soil layers with large thickness.

The two-dimensional version of Plaxis will be used for computing settlements. Plaxis is very practical for solving complex geotechnical problems involving settlement or slope stability. Those elements are then connected by nodes. The stress and tension in every element can later be calculated. The work will be carried out in several steps. The first part of the work will be a literature study in order to find relevant information on the topic. One important phase of this step is to identify previous work adopting the same or a similar method. Analyses will be carried out for embankments placed on different soil layer profiles. Different methodologies will be adopted, i.e. separation between the mechanical and the pore water phase, and incorporation of both at the same time (consolidation), respectively. Also different soil models can be adopted in order to describe the soil behaviour as correctly as possible. A raw presentation of the results without any interpretations or judgements will be given.

