

THESIS INFORMATION

Title: STUDY ON METHODS TO EVALUATE CONSOLIDATION SETTLEMENT OF SOFT GROUND ACCORDING TO PLANE ANALYSIS CONSIDERING PORE WATER PRESSURE DEPENDS ON NORMAL STRESS

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Study on methods in order to evaluate consolidation settlement of soft ground according to plane analysis has practical significance in civil engineering and the development of infrastructures in the Southern provinces, which has a large thickness of soft soil layer. Experimental results show that the maximum pore water pressure approximates the normal stress. In addition, the pore water pressure tends to increase gradually after loading and reach its maximum value after about 50-70 minutes, which does not depend on the length of the infiltration path.

Based on the summarization of consolidation theory according to plane analysis, the method which can evaluate consolidation settlement considering the dependence of pore water pressure on the normal stress is proposed. The use of this method allows us to calculate the consolidation settlement of the ground which is natural and is treated with the method of preloading in combination with vertical drains. The applied calculation results show that the settlement due to volume deformation stemmed from the consolidation of the soft ground under embankments accounts for 80-95 %.

The consolidation settlement using the proposed method is consistent with monitoring results in terms of both tendency and value. This research can contribute to supplementing the current design method for the construction of infrastructures in the Southern provinces, where there is a large soft soil layer thickness.

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