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WEERASAK PANSAREEWONG : A STUDY OF USING GRANULAR PILES FOR IMPROVING THE STABILITY AND SETTLEMENT OF SOFT CLAY. THESIS ADVISOR : ASSOC. PROF. BOONSOM LERDHIRUNWONG, Dr.Ing., THESIS CO-ADVISOR : ASSIST. PROF. WANCHAI TEPARAKSA, D.Eng. 96 pp. ISBN 974-636-119-8

This study was conducted to evaluate the suitability of stone columns in improving stability and settlement of the embankment constructed on soft clay. The embankment for flood protection propose was located in the east of Samutprakarn province (Bangpu). The first step was the construction of a 5.5 m. thick plat form (lateritic soils) over the existing ground, allowing trucks and machines to be moved into the working area. The lateritic embankment was then constructed on the plat form to 1.5 m. in height followed by the execution of stone columns which were construction down to -10.00 m. The 60 cm. subbase course (20 cm. in each layer), 20 cm. base course and 20 cm. lateritic surface were consequently constructed until the embankment reached a total height of 2.5 m.

The analysis revealed that undrained settlement was 33.6 cm. and consolidation settlement was 52 cm. It is found that the embankment constructed on the existing ground had the lowest factor of safety, equal to 0.92. This value will become 1.5 and 1.71 in case of constructing the embankment on the plat form, and plat form with stone columns, respectively. Considering the highest ratio of shear strength incurred in soil mass to undrained shear strength, the lateral movement was estimated at 0.87 m. This value will be 0.90 m. and 0.73 m. if estimated based on the embankment height and lowest slope stability safety factor value, respectively.

Due to limited information obtained from field experiment, the study revealed that stone columns are not suitable to improve the stability and settlement of soft clay under embankment loading. Since it is difficult to construct stone columns to conform with the desired size and shape. It was concluded that slope stability of the embankment is mainly due to the plat form construction while the provision of stone columns will have a secondary impact by further increasingly the stability.

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