Thesis Title	Settlement Analysis of the Bangkok-Chonburi New Highway, Section 1-A/1
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Abstract

Bangkok-Chonburi New Highway met a settlement problem as other road embankments on soft clay. So prefabricated vertical drain (PVD) and preloading technique are used to accelerate settlement under embankment to reach the primary consolidation in the construction period. This thesis evaluated the settlement performance of the Bangkok-Chounburi New Highway in Section 1-A/1 from Sta. 0+910 to Sta. 5+100 after being installed with PVD in a triangular pattern with a spacing of 1.20 m. For construction of preloading the embankment, it was planned to construct in 3 stages of loading. In the first stage, the embankment was filled to 1.35 m. high and maintained for 35 days. In the second stage the embankment was filled to 1.95 m. high and maintained for 105 days. In the last stage the embankment was filled to 2.70 m. high and maintained for 9-12 months to reach 80% consolidation. The reason for construction sequence like this is to increase shear strength of soft clay and stability under embankment. However, In actual construction the waiting period was extended because of the rate of pore pressure dissipation as well as the factor of safety do not meet with the requirements especially in the final stage. Geotechnical instrument were also installed to monitor the soil behavior during the preloading stage. The result of time-settlement from the field records was analysed to predict the coefficient of horizontal consolidation (C_h) by Asaoka Method. It is found that the C_h value in this thesis are 1.545, 0.763, 0.576 m^2/year for the first, the second and the third stage of loading, respectively. The C_v value for the each stage are 0.695, 0.681, 0.657 m^2/year, respectively. The ratios of C_h/C_v for the each stage are 2.469, 1.342, 1.096 respectively.

The average values of C_h, C_v and C_h/C_v for all stages are 0.961 m^2/year, 0.678 m^2/year and 1.636 respectively. Analysing from the results of settlement of soil layer by stage preloading method with PVD analysis by Barron's theory and Hansbo's theory value. The settlement from single drain is less than the settlement from double drain a little. The settlement value from Barron's theory is lower than the settlement from Hansbo's theory too.

Keywords : Settlement / Stage Preloading Method / PVD / Vertical Drains / Consolidation