

Thesis Title	Stability Analysis and Counter Measured Method of Road Embankment at A. Nongsour - A. Nongkae
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### Abstract

This thesis is concerned with the stability analysis and counter measured methodology of road embankment in highway No.3261, Part of cross road No.305 at Amphur Nongsour in Phatumthani Province to Amphur Nongkae in Saraburi Province. The objective of this thesis is to study the stability analysis of road embankment. The thesis composes of 2 parts, the first part is to determine the cause of embankment failure, and the second is to purpose the ground improvement technique to prevent embankment failure.

The relevant information of failed locations was collected between STA. 8+150 - STA. 8+400 and STA. 20+100 - STA. 20+112.5, totaled up to 13 Sections. According to these data and results of Field Vane Shear Test (FVT) and Dutch Cone Penetration Test (CPT), the soil parameters were determined and used in stability analysis in term of Total Stress Analysis (TSA) by the computer program "SLOPE/W" to compute the factor of safety of the embankment.

The ground improvement scheme was utilized by installing at the position of side slope of the embankment as the Wall Type Formation in rows of soil-cement columns. The stabilizing scheme was adequate in case of 4 piles/row and 5 piles/row, respectively. However, the wall had stiffener to increased rigidity. The factor of safety was increased to more than 2.00, when

compared to the original slope without ground improvement, the factor of safety was less than 1.00. By this comparison, it was obvious that the road embankment tended to fail by the local failure if the water in a canal was suddenly dropped. The failure of embankment was still occurred after Piled Embankment Technique had been employed at location STA. 8+150 - STA. 8+400. Theory of circular arc analysis such as Simplified Bishop Method, Janbu Method and Morgenstern-Price Method, were used in stability analysis respectively. It was found that the F.S. value by Simplified Bishop Method is higher than that by Janbu Method about 10%, but the F.S. value is close to Morgenstern-Price Method. Thus, Simplified Bishop Method is appropriate to be used in stability analysis.

Therefore, the construction of soil cement columns at the side slope of embankment Dia. 0.60 m. x 12.00 m. with spacing of 0.85 m. in rows of piles as 4 piles/row and 5 piles/row, was adequate to prevent failure of road embankment.

Keywords :                      Soft Clay / Slides / Stability / Sensitivity / Piled Embankment /  
Soil-Cement Column