

Warunee Kakarndee 2010: Study of Slope Stability Analysis by Limit Equilibrium and Finite Element Method : Case Study of Excavation Work in Soft Bangkok Clay. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Assistant Professor Suttisak Soralump, Ph.D. 156 pages.

Recently, excavation work in Soft Bangkok Clay has been growing fast especially the excavation work for using clay as a fill material. However, these excavations are mostly done with low standard of practice. Many failure sites have been found everywhere. Three case studies have been brought to attention for the research. 1) The affect of depth, width and slope of excavation pit to slope safety. 2) The affect of undrained shear strength ( $S_u$ ) pattern of Soft Bangkok Clay. 3) Back analysis case that has been done to simulate the actual failure of the excavation pit in Nonthaburi province. Three analysis methods, have been used namely: LEM, FEM and SBM.

The study results are found that when cohesion( $c$ ) value of Soft Bangkok Clay  $\geq 2.5 \text{ t/m}^2$ , the excavation at 3 m depth is still in good safety. However, if  $c < 2.5 \text{ t/m}^2$  it found that the F.S. depend on the depth and slope of the excavation pit. As for the affect of weathered curst there has no affect on stability for shear strength pattern B. On the other hand pattern A and C, the weathered curst has positive affect to slope stability. The result also found that the majority of failure plane has been found in soft clay layer. For the back analysis case, the results are found that the underground water level in the model agrees with the actual water level at the time of failure. It is found that the main cause of failure is credited sudden to the changing of underground water level. Furthermore, FEM shows the result of yield points only near the toe slope. However, SBM\_FE might miscalculate actual yield points this were effect the safety of slope.

---

Student's signature

---

Thesis Advisor's signature