

Krit Lousuphap 2011: Behaviour of Compacted Clay Related to Cracks on Asphaltic-Concrete Shoulder. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Assistant Professor Apiniti Jotisankasa, Ph.D. 173 pages.

The problem of cracks along asphaltic-concrete shoulder of highways in central part of Thailand is related to the use of compacted high plasticity clay as construction material. This clay can exhibit a highly shrink-swell behavior with varying moisture content. This study thus emphasizes on the properties of the compacted clay samples with different shrink-swell potentials on highway route no. 357, the by-pass route of Suparnburi. This study involves various aspects of the behavior of compacted soil including physical properties, soil-water characteristics curve (SWCC), peak and residual shear strength in saturated state, peak shear strength in unsaturated state. These test results are used in stability analysis and seepage analysis related to movement of shoulder.

The test results from soil-water characteristics curve (SWCC) show that air-entry suction and volume change of the high shrink-swell potential soil is higher than the medium shrink-swell potential one. From the direct shear tests on fully saturated sample, it is shown the shear strength of compacted clay with higher shrink-swell potential is lower than the medium shrink-swell potential clay and shrinkage in higher shrink-swell potential is higher than the medium shrink-swell potential clay too. The slope stability analysis results show that the change in ground water level and decrease in shear strength greatly affects the stability, which is related to movement and cracks along asphaltic-concrete shoulder. The seepage analysis related to slope stability results shows that the amount of rain during rainy season influence the stability related to movement of shoulder too. These experimental and analysis results are of significance in the selection of subgrade material for highway shoulder.

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