

Ronnapoom Limsriswad 2010: Improvement of Lateritic Soil by Bottom Ash and Lime Powder. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Prateep Duangdeun, M.Eng. 89 pages.

The research attempted to study the improvement of engineering properties of lateritic soil stabilized with bottom ash and lime powder for using in road embankment construction. The study involved the effects of grain size distribution, quantity of bottom ash and lime powder and curing times. Lateritic soil sample from borrow pit in Kanjanapuli province were sieved to obtain different grain size distributions and then prepared by controlling specified grain size distribution. Soil samples were prepared and grouped into B and D graded soil according to subbase standard specification of Department of Highway, Thailand. Lateritic soil were mixed with bottom ash and lime powder at the proportion of 5, 10, 15, 20 percent and 10, 20, 25 30 percent by dry weight of soil. Then, the specimens were tested to find out plasticity index, modified proctor compaction test, california bearing ratio and coefficient of permeability after compacted and curing for 3, 7, 14 and 28 days.

Experimental results showed that when the quantity of bottom ash and lime powder increased, the plasticity index and the maximum dry density appeared to decrease, while the optimum moisture content increased. The appropriate quantity of bottom ash and lime powder used in the mixture which gave the maximum value of Unsoaked and Soaked CBR value were 10% and 25% for B and D graded. Unsoaked and Soaked CBR values were increased with increasing curing time. Coefficient of permeability with bottom ash and lime powder after compaction, were decreased by 10 for B graded and increased by 70 times for D graded. At 28 days of curing time, coefficient of permeability with bottom ash and lime powder were decreased by 3 times for B grade and D grade were increased by 241 times.

Bottom ash and lime powder can be used to stabilize the lateritic soil if mixing with the appropriate portion.

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Thesis Advisor's signature