A LABORATORY STUDY ON LATERITE SOIL AS GRANULAR REPLACEMENT MATERIAL IN EMBANKMENT WORKS

BY

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DECLARATION BY THE CANDICATE

I Mohd Idham B. Mokhtar, 2002330072 confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

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ABSTRACT

Laterite is one of the most common residual soils to be found in Malaysia. Construction of infrastructure such as road embankment in the area with such residual soil brings to the usage of this type of soil for cost saving purpose. Therefore, the properties of laterite are important to be studied, in order to determine the suitability of laterite soil as the granular replacement fill in embankment works. Based on the problems, Junjung laterite soil has been chosen as the main source for this research. Samples were taken using trial pit method, being preserve and tested in accordance to BS 1377 requirements. Each sample was taken in such a manner that the quantity can be used for property tests; moisture content, Atterberg limit, compaction, dry sieve, wet sieve, falling head, dry direct shear box and saturated direct shear box. 30 samples were chosen to go through each of the tests; dry sieve, wet sieve, falling head, dry shear box and saturated shear box test. Comparison was made with few previous researches on laterite and also with the properties of other Malaysian soil. The dry sieve test describes Junjung laterite as well graded sand meanwhile wet sieve shows that Junjung laterite is a fine soil with average fine content of 37.67 %. It can be found that Junjung laterite has a very low permeability with the average value of 6.15×10^{-6} cm/sec. The dry and saturated direct shear box test shows that the occurrence of water has effect on the strength of Junjung laterite. Dried samples produce higher strength with 512.06 kPa instead of the saturated samples with 487.18 kPa. The result shows that Junjung laterites can be used as the granular replacement fill in embankment works as the properties can be improve with proper drainage and suitable compaction effort.

Keywords: Junjung laterite, dry sieve, wet sieve, falling head, dry shear box, saturated shear box.