EQUATIONS FOR NORMAL DISTRIBUTIONS OF THE SHEAR STRENGTH PARAMETERS FOR SLOPE FAILURES

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Contents

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5.2 Enhanced Executive Summary

In Malaysia, slope failures usually occurred during monsoon seasons. The main factor is the reduction of shear strength parameters of the soil slope as the soils become saturated during prolonged rainy seasons and its highly variable depending on the weathering profiles of the soil. In this study, 19 slope failure locations were selected along Teluk Bahang-Balik Pulau-Teluk Kumbar-Gertak Sanggul road in Penang, The road is located in Balik Pulau district and is within the granitic residual soil. Another 10 slope failure locations were selected along Baling-Gerik road, near the border of Kedah and Perak. The road is located in sedimentary residual soil. Seven soil samples were taken at each slope failure location in which 4 soil samples were taken at the failure zone while another 3 soil samples were taken at the un-failed slope sections next to the failed slope. Soil samples were taken at 100mm depth from the existing soil surface. Field tests that were carried out near the locations where soil samples were taken, were JKR Probe and field bulk density tests. Consolidated drained (CD) direct shear box tests at very slow shearing rate were carried out to determine the soil effective shear strength parameters under saturated condition. The distributions of the shear strength parameters were carried for the 2 roads for means, standard deviations and distribution equations. These results were later compared with the effective shear strength parameters obtained from consolidated un-drained (CIU) triaxial tests done by MTD Sdn. Bhd. (private sector) for JKR along the new road from Pos Selim-Lojing near Perak and Pahang border and UIA By-Pass, Gombak, Selangor. These data were secondary data and the 2 new roads were located within the granitic residual soil. Results show that the distribution equations, means and standard deviations for the 2 roads carried out in this study are comparable with the results obtained by MTD Sdn. Bhd.

5.3 Introduction

Slope failures, landslides, slips, mudflows, slumps are some common terms used to describe downward and outward movements of slope as mentioned by Neoh and Che Zain (1997). Since slope failures ranked among the worst natural disaster occurring in Malaysia, the researches on the slope failures in residual soils are becoming more important. This study is to determine the effective cohesion and effective friction angle of soils under saturated condition. The saturated shear box tests were conducted to determine the shear strength for soil samples taken from slope failure locations and also at the un-failed slope section next to the failed slope. Slope failure locations selected were along Teluk Bahang-Balik Pulau-Teluk Kumbar-Gertak Sanggul in Penang and along Baling-Gerik road.