Final Year Project
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COMBINED ONE DIMENSIONAL INFILTRATION AND SLOPE STABILITY MODELLING

Prepared by:

CHE ADANAN BIN TAIB
91612554
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So... it shall be written
so... it shall be done.....

Once again, THANK YOU.

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Synopsis

Remarkable progress has been made in the study of landslides. However, there were much more to be done with the case of saturated soil. This thesis will discuss the failure of unsaturated soil slope with the influence of rainfall infiltration. Since most the slope failure occur during rainfall, K.L. – Karak Highway slopes have been selected as the 'subject' of study. Nine samples from nine different slopes were taken to the laboratory for research purpose. An attempt has been made to recognize the causes of failure. A slope in ITM was also incorporated in this study with the required data which have been obtained by previous student. Since the rainfall infiltration is of utmost concern, a combined infiltration and slope stability model was developed. Using the model, the stability of study slopes were predicted at the longest duration of rainfall allowed by DID design manual (72 hours). Such model could be a useful tool in the prediction of stability of unsaturated soil slope.

Chapter 1
THE PROBLEM AND ITS SETTING

1.1 Introduction

Remarkable progress has been made in the study of landslides both scientifically and technologically. However, disasters caused by landslides still occur extensively and caused major problems. New problems re-occur even after the old ones have been solved. Such being the case, there is no clear prospect yet of solving every landslide problem.

The problems of analysis and determination of soil stability are generally addressed and solved in term of:

a. determination and establishment of the pertinent soil properties,

b. formulation of a physical model which accurately describes the interaction of the various physical components providing stability of the soil mass--or potential instability, and

c. development of the associated analytical technique to represent the physical model for computational purposes leading to usage in terms of prediction or design.

Slope stability analyses have become a common analytical tool to assess the factor of safety of natural and man-made slopes. Saturated shear strength parameters are generally used in such an analysis. The portion of the soil above the groundwater table where the pore-water pressures are negative is usually ignored. This is a reasonable assumption for many situations where the major portion of the slip surface is below the groundwater table. However, for situations where the groundwater table is deep or where the concern is over the posibility of a shallow failure surface, there is need to understand how to perform a slope stability analysis where the soil