

**A STUDY ON SHEAR STRENGTH
OF
FIBRE REINFORCED SOIL**

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**B.Eng (Hons)(Civil)
UNIVERSITI TEKNOLOGI MARA
2005**

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OF
FIBRE REINFORCED SOIL**

By

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Report is submitted as
the requirement for the degree
Bachelor Engineering (Hons) (Civil)

**UNIVERSITI TEKNOLOGI MARA
APRIL 2005**

DECLARATION OF THE CANDIDATE

I, Chrisnadia Binti Sinam, UiTM No.2001498616 confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

(Signature of candidate and date)

ACKNOWLEDGEMENT

The work reported in this thesis has been carried out under the supervision of **PROFESSOR MADYA DR HAJI IQRAZ NABI KHAN**, Associated Professor of Civil Engineering Department.

The author is highly grateful to **PROFESSOR MADYA DR HAJI IQRAZ NABI KHAN** for his valuable guidance in planning , execution and reporting of this study and his keen interested in the progress of work throughout the investigation.

The author is indebted to the Head of Department of Civil Engineering and Coordinator of Final year Project for their help and moral support.

Sincere thanks also due to Mr. Lim Jit Kheng , Lecturer of Civil Engineering Faculty for his useful discussion and staff members of Library, Universiti Teknologi Mara Campus Pulau Pinang for their help providing a useful information and cooperation during this study.

Thanks are due to the staff of Geotechnical Engineering Laboratory for prompt help in carrying out the experimental investigation.

Finally, the author thanks to her beloved husband, Mr Tham Nyap Bing for his cheerful undergoing and hardship associated with an assignment of this kind and his patient during the whole work.

ABSTRACT

There are several methods for improving the strengths of soils. Reinforced Earth Technique is one of them. It was systematically introduced by a French scientist H. Vidal in 1966. Reinforced Earth is a composite material which is formed by the association of soil and tension resistant reinforcing elements in the form of sheet, strips, nets or mats of metal, synthetic fabrics of fibre-reinforced plastics and arranged in the soil mass in such a way that reinforcement reduces or suppresses the tensile strain which might develop under gravity or boundary forces. The other way of improving the strength is by mixing fibres in the soil, the composite material so formed is termed as Fibre Reinforced Soil. The reinforcement suppresses the normal tensile strains in the soil mass through frictional interaction.

Insertion of reinforcing elements in the soil mass modifies the strength of soil, which in shear strength tests appear either as an increased friction angle or as a cohesion intercept of Mohr envelope. The load deformation response of a reinforced soil can therefore be expected to be an improvement over the unreinforced soil. Keeping in view the above facts, a basic study was carried out in laboratory to study the effect of fibres on the shear strength of soil by conducting direct shear tests. The effect of angle of inclination of fibres, number of fibres, and length to diameter ratio of fibres was studied. Pull-out tests were also conducted to find out the coefficient of friction between fibre and soil. Effect of over burden pressure on coefficient of friction between soil and reinforcement was also studied. Shear strength of soil was found to increase with the inclusion of fibres.