SOIL IMPROVEMENT TECHNIQUE USING WASTE MATERIALS FOR SOFT SOIL FOUNDATION

BY:

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Tuan/Puan/Prof.Madya,

KELULUSAN PERMOHONAN UNTUK MENJALANKAN PROJEK PENYELIDIKAN

Perkara di atas adalah dirujuk.

Sukacita dimaklumkan permohonan tuan/puan/Prof.Madya untuk menjalankan penyelidikan telah diluluskan dalam Mesyuarat Jawatankuasa Teknikal Unit Penyelidikan, Pembangunan dan Pengkomersilan Universiti Teknologi MARA (UiTM) Pulau Pinang yang telah diadakan pada 17 Mei 2004.

Butiran permohonan yang diluluskan adalah seperti berikut:

Nama Ketua Projek	:	Anas Bin Ibrahim
Ahli Projek	:	Muhammad Akram Bin Adnan Ir.Dr.A.Naser Bin Abdul Ghani Pusat Pengajian Perumahan, Bangunan Dan Perancangan USM
Tajuk Penyelidikan	:	Soil Improvement Technique Using Materials for Soil Foundation
Keputusan	:	Diluluskan dengan peruntukkan RM 19,990.00
Tempoh	:	Jun 2004 – Mei 2005

Berikut disertakan dokumen-dokumen untuk panduan dan tindakan pihak tuan/puan/Prof.Madya selanjutnya.

1. Perjanjian bagi menjalankan Projek Penyelidikan, sila isi dan kembalikan kepada pihak kami untuk ditandatangani oleh pihak seterusnya.

2. Borang laporan kemajuan yang perlu dikemukakan kepada pihak kami setiap empat (4) bulan.

Tarikh : 18 Mei 2006

No. Fail Projek : 600-IRDC/ST.5/3/742

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Yang Berbahagia Prof.,

LAPORAN AKHIR PENYELIDIKAN "SOIL IMPROVEMENT TECHNIQUE USING WASTE MATERIALS FOR SOFT SOIL FOUNDATION"

Merujuk kepada perkara di atas, bersama-sama ini disertakan 3(tiga) naskan Laporan Akhir Penyelidikan bertajuk "Soil Improvement Technique Using Waste Materials For Soft Soil Foundation"

Sekian, terima kasih.

Yang Benar

ANAS IBRAHIM

Ketua Projek Penyelidikan

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ABSTRACT

Most development projects currently have to face the limitation of exceptional construction sites, particularly due to fast growing of human population and economic development. At the same time, the abundance of waste tyres being dumped in landfill is one of major problems regularly faced in management of solid wastes. Being almost non-biodegradable, these waste materials need approximately hundred years to decompose; thereby, recycling ability is of golden opportunity to engineers. Recent technologies utilizing waste materials fortunately allow improvement of problematic sites in meeting design requirement while stressing on environmental and sustainable development. Study focused on the determination of physical and engineering properties of stabilized cohesive frictional soils using shredded scrap tires. Standard tests according to British Standard BS 1377 were performed on untreated river sand and cohesive frictional soil, 100% shredded tire and mixtures of the soil and shredded tire by ratios of 90%-10%, 70%-30%, 50%-50%, 30%-70% and 10%-90%. Results show that mixtures of soil-tyres by ratio of 70%-30% give highest improvement in term of shear strength parameters with 23% improvement of internal friction angle compared to the untreated cohesive frictional soil with 31° of internal friction angle. Mixtures of 70%- 30% produced the best lightweight mixtures with internal friction angle value was 38° and the maximum dry density was 44% lower compared to the untreated soils respectively. The mixture is indeed found to possess desired material characteristics for construction, i.e. strength, high permeability and lightweight. Overall results showed that utilization of shredded waste tyres as construction materials could improve the reinforced soil stability, hence reducing structural settlement.

Keywords: *Stabilized soil, shredded scrap tires and shears strength.*