OPTIMIZATION OF TRUSS STRUCTURES BASED ON MEMBER DISPOSITIONS

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by:

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AUGUST 2005

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Tuan

Projek : OPTIMIZATION OF TRUSS STRUCTURES BASED ON MEMBER DISPOSITIONS

Perkara di atas adalah dirujuk.

Sukacita dimaklumkan bahawa Mesyuarat Jawatankuasa Penilai Penyelidikan Fakulti pada 25 Jun 2004 telah membuat keputusan :

i) Bersetuju meluluskan cadangan penyelidikan yang dikemukakan oleh tuan dan Encik Jamaluddin Mahmud. Tempoh projek penyelidikan ini ialah **12 bulan**, mulai **16 Julai 2004 hingga 15 Julai 2005**.
ii) Kos yang diluluskan ialah sebanyak **RM 20,000** sahaja.
iii) Penggunaan geran yang diluluskan hanya akan diproses setelah perjanjian ditandatangani.
iv) Semua pembelian peralatan yang kosnya melebihi RM 500.00 satu item perlu menggunakan Pesanan Jabatan UiTM (LO). Pihak tuan juga dikehendaki mematuhi peraturan penerimaan peralatan.
v) Pihak tuan juga dikehendaki mengemukakan Laporan Kemajuan Projek Penyelidikan setiap 6 bulan. Laporan Akhir perlu dihantar sebaik sahaja projek penyelidikan disiapkan.

Bersama-sama ini disertakan Perjanjian untuk ditandatangani oleh pihak tuan. Sila penuhkan perjanjian berkenaan menggunakan pen berdakwat hitam dan kembalikan ke pejabat ini untuk tindakan selanjutnya.

Sekian, terima kasih.

Yang benar

PROF DR SHAHRANI HJ ANUAR
Dekan
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Date : 8 August 2005
Project File No :

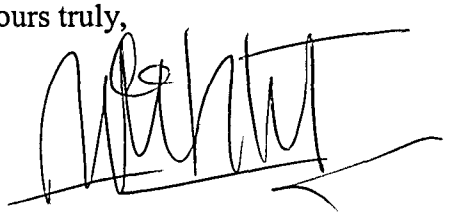
Prof. Dr. Azni Zain Ahmed
Penolong Naib Canselor,
Institute of Research, Development, and Commersialisation
UiTM, Shah Alam

RESEARCH FINAL REPORT "OPTIMIZATION OF TRUSS STRUCTURES BASED ON MEMBER DISPOSITIONS"

Referring to the above, enclosed are 2 (two) STG research final reports under the title of "Optimization of Truss Structures Based on Member Dispositions".

Thank you.

Yours truly,



ASSOC. PROF. DR. WAHYU KUNTJORO
Research Project Leader

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ABSTRACT

A design is optimum if a certain design objective function is minimum (or maximum), and still meets its design requirements. Truss structures can be optimized by deleting members which do not contribute significantly or at all to load carrying capacity. Through conventional member size optimization, non performer members can be identified, and then removed. Strength and displacement were formulated as the design constraints while the weight of structure was formulated as the objective function. The Linear Extended Interior Penalty Function was employed to optimize the structure. Finite Element Analysis, together with an approximation procedure were used to obtain the truss structural responses. This paper describes the development of truss optimization through members deletion. Three-bar and six-bar truss structures were used as case studies. Results showed that the truss disposition could be optimized using members deletion strategy.