

INFLUENCE OF SURFACTANT TO FOAMED CONCRETE MIX

By

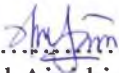
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Report is submitted as the requirement for the degree of
Bachelor Engineering (Hons) (Civil)

**UNIVERSITI TEKNOLOGI MARA
NOVEMBER 2006**

DECLARATION

I, Nurul Aini binti Mohamed, 2003358987, confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

(
.....)
Nurul Aini binti Mohamed
1st December 2006

ACKNOWLEDGEMENT

In the name of Allah, the most benevolent and the most merciful. All praises to Allah, God of the universes and peace be upon his messenger.

First and foremost, I would like to express my sincere gratitude to my supervisor, Miss Goh Lyn Dee, for her time, guidance and encouragement in helping me completing this report. Also not forgotten, my co-supervisor, Pn. Nor Maslina Mohsan for her knowledge and encouragement in helping me finishes this report. Without their help and guidance, I might not be able to accomplish this report successfully.

I also would like to thank to Faculty of Civil Engineering technicians, Mr. Roseffendy and Mr. Abdullah for their help and knowledge while conducting the laboratory. A special thanks for my colleague, Miss Nurul Izza Hussin, for her willingness and kindness, by sharing her ideas and suggestions with me to complete this report.

Lastly, I also want to thank all others who have, in one way or other, given me valuable help, assistance and advice to accomplish the Final Year Project successfully.

ABSTRACT

Lightweight Concrete or Foamed Concrete is developed as a new technology in building construction. It is developed to replace the conventional concrete in order to reduce the density of concrete with a practical range of density 250 – 1800 kg/m³. As conventional concrete the materials used are cement, sand, aggregate and water so does the foamed concrete are also used the same material. However, the coarse aggregate used in the conventional concrete is replaced with the foaming agent. The foaming agent acts as to reduce the weight of concrete. Therefore, foamed concrete is flowable and self-compacting which it may reduce the machinery usage and save in manpower. Two types of foaming agent used in this study are protein based as surfactant and synthetic based. This study is conducted to analyse the effect of surfactant to the compressive strength and indirect tensile strength of foamed concrete and to get the optimum percentage of surfactant when the density and cement-sand ratio are differ for compressive and indirect tensile test. The density of foamed concrete are tested in the range of 1200 kg/m³ – 1400 kg/m³ with the cement-sand ratio 1:1, 1:2 and 1:3. The surfactant added in the foaming agent with increment of 20% from 0% to 60% in each condition. Based on the result obtained from the laboratory testing, the strength for both compressive and indirect tensile test was reduced when the surfactant percentage increased. The strength for both tests increased when no surfactant added in the foaming agent especially for 1:1 cement-sand ratio. This is because the materials were having good bond to each other. In addition, the strength was increased when the density is increased. As a conclusion, it was suggested that the surfactant based should be change to the latest surfactant in market today.

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