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CONCEPTUAL MODEL FOR FLOOD PRONE AREA IN
MALAYSIA: NOAH PROJECT**Academic Session : **2007/2008**

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DEVELOPMENT OF INTEGRATED FLOATING HOUSE
CONCEPTUAL MODEL FOR FLOOD PRONE AREA IN MALAYSIA:
NOAH PROJECT

PATRICK YAU SIAW YANG

A project report submitted in partial fulfilment of the
requirements for the award of the degree of
Master of Science (Construction Management)

Faculty of Civil Engineering
Universiti Teknologi Malaysia

NOVEMBER 2007

I declare that this project report entitled “Development of Integrated Floating House Conceptual Model for Flood Prone Area in Malaysia: Noah Project” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Name : Patrick Yau Siaw Yang

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To my beloved mother, father, sisters and Clarice.

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ABSTRACT

The construction technology of integrated floating house system for flood prone area is a new idea and approach in Malaysia. Up to the present, there is still no proper design or practical concept of how beneficial is an integrated floating house during the period of flooding. The raise of the sea level due to the effect of global warming, Southwest Monsoon and Inter-Monsoon greatly increase the risk of flood for low-lying area in Malaysia. Thus, this project is an effort towards saving valuable household and human. The objective of the project is to develop an integrated floating house conceptual model with the ability to endure lateral current forces, with the specification of stability, suitable foundation, economy in costs and practicality. There are several methodologies has been carry out for this project. Observation has be done on various floating house system regardless of it purpose. The overview on the current existing floating system including the strength of the structure, materials, degree of stability, the degree of withstand the lateral forces of water current and cost of construction. Through the interview and questionnaire, the idea of floating house and the comment regarding the existing floating house was obtained from the local experts. After the investigation on the existing floating house system and the experts' opinion, a new construction technology of floating house has been developed and tested with CSC structural analysis software and several related scientifically calculation. With the validation of local experts, the conceptual model can be use to conduct the prototype testing and real time testing. This is the new integrated floating house conceptual model with comply with the standard of floating structure, safety requirements, economical and suit to the local requirement. By this new construction technology of integrated floating house, we believe that we will be able to minimize the effects of flooding for flood prone area in Malaysia.

ABSTRAK

Teknologi pembinaan rumah terapung integrasi bagi kawasan kerap banjir di Malaysia masih merupakan idea dan penyelesaian baru. Setakat ini, masih tidak terdapat rekaan terperinci dan konsep praktikal rumah terapung integrasi serta kesesuaiannya semasa berlakunya banjir. Kenaikan paras laut, musim monsoon meningkatkan risiko banjir bagi kawasan rendah di Malaysia. Oleh itu, projek ini berusaha untuk menyelamatkan nyawa dan barangan bernilai. Tujuan projek ini adalah untuk mencipta model konsep bagi rumah terapung integrasi dengan spesifikasi mampu merentangi daya lintangan arus, kesetabilan struktur, asas yang sesuai, harga yang ekonomi dan kesesuaian dalam penggunaan. Pemerhatian tentang pelbagai sistem apungan sediada diambil tanpa mengira aplikasinya. Pemantauan dibuat terhadap sistem apungan sediada merangkumi kekuatan tetulang, bahan, darjah keseimbangan, darjah merintang daya hentaman arus air dan kos pembinaan. Temuduga telah dibuat dengan pakar tempatan untuk mendapatkan komen dan maklumat bagi sistem apungan. Dengan pengajian terhadap sistem apungan sedia ada dan pendapat pakar, satu teknologi baru dijana dengan sekali dengan model tiga dimensi dan rekaan rusuk dengan perisian tiga dimensi. Dengan pengesahan daripada pakar tempatan, model konsepsi ini boleh digunakan untuk pengujian prototype and penyelidikan sebenar. Konsep rumah terapung yang dihasilkan ini memenuhi syarat dan spesifikasi struktur apungan, aspek keselamatan, ekonomi dan sesuai dengan keperluan tempatan. Dengan adanya, teknologi ini, kita yakin bahawa kita akan dapat mengurangkan hakikat banjir di kawasan kerap banjir di Malaysia.

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LIST OF SYMBOLS AND ABBREVIATIONS

RM	-	Malaysia Ringgit
£	-	British Paun
€	-	Euro Dollar
NZ \$	-	New Zealand Dollar
ρ	-	Density
M	-	Mass
V	-	Volume
ρ_s	-	Density of substance
ρ_w	-	Density of water
GM	-	Metacentric height
GZ	-	Righting lever
SHS	-	Square Hollow Section
RHS	-	Rectangular Hollow Section
BS	-	British Standard
DID	-	Department of Irrigation and Drainage
f_{cu}	-	Strength of concrete
f_y	-	Strength of steel
A_{st}	-	Steel Area
I	-	Moment of Inertia

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