ECO- EFFICIENCY INDEX ANALYSIS OF REINFORCED CONCRETE SINGLE STOREY HOUSE IN PROMOTING SUSTAINABLE STRUCTURE

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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi Mara. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi Mara,regulating the conduct of my study and research.

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ABSTRACT

Sustainable development is referring to the development that create based on the current requirement without affecting the future capability in order to fulfill the needs. This concept were classified into three criteria which are economical criteria, environmental criteria and social criteria. Environmental criteria was criteria that related with the production of natural resources. Economic criteria was criteria that consider the profit gained from the project as a people's benefits while social criteria was criteria that consider human safety, health and comforts. According to an annual report of United State Green Building Council, construction building has contributed more than 40 percent carbon emission compared with the industrial and transportation sector. This prove that inefficient design of structure was affected the environmental condition besides cost of project. Apart of that, this study was proposed an eco-efficiency index analysis method that integrate the cost and equivalent carbon emission content in single storey houses. In this method, the structural design were proposed in different value of concrete characteristic strength which are 20, 25, 30, 35 and 40MPa. By using environmental score and economical score approach, it was found that blast furnace slag concrete produce higher eco-efficiency index value where it gave better performance in environmental and economical impact compare to normal concrete. Therefore, an eco-efficiency index method can be used for selecting the best structural design in promoting sustainable design. Other than that, this method also can apply to any others type of reinforced concrete structure or infrastructure such as dam, bridge, drainage and others since it involve in concrete mixing.

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