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Research Alliance : INNOVATIVE ENGINEERING

Faculty / PTJ : FAKULTI KEJURUTERAAN

School : SEKOLAH KEJURUTERAAN AWAM

Research Classification : STEEL AND COMPOSITE CONSTRUCTION RESEARCH GROUP (SCC) - SD - FAKULTI KEJURUTERAAN

Category : Science Technology (ST)

Type of Service : PERMANENT

Staff Classification : Major Research

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Title :

Stiffness formulation of ISO container structure for residential building

Maximum Duration : 36 month

Start Date : 01/01/2020

End Date : 30/06/2023

Duration : 3 years 6 months 0 days

Type of Grant : UTM Fundamental Research

Grant Category : Internal Grant

RMK : 11

EXECUTIVE SUMMARY

Container architecture had gained attention among Malaysia construction industry. Although the shipping container exhibits high strength for cargo transportation, its structural integrity is still questionable. There is lack of publication available for design of container structure especially with the opening on wall which is essential for building purpose. The absent of operative guideline in existing code of practice also burdens the engineer to develop their

own design method. This research aims to derive the theoretical framework for the stiffness calculation of container structure, formulate the stiffness relationship with respect to opening of corrugated wall on container structure and integrate the formulation into existing code of practice. This research will derive the theoretical formulation for stiffness of container structure for residential purpose considering effect of opening on the corrugated wall. Numerical model will be created to verify the theoretical formulation using commercial software and carry out parametric study. The experimental work will also be done with scaled down model to validate both theoretical formulation and numerical model. All the data will be analysed to make operative guideline for container structure construction. This research is expected to provide engineers with more comprehensive design procedure of container structure together with the effect of opening on the corrugated wall. This research output will encourage the implementation of stressed skin design in modular, rapid and lightweight construction among Malaysia construction industry.