

AN EVALUATION OF STRUCTURAL JOINT IN IBS CONSTRUCTION SYSTEM

by

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APPROVAL AND DECLARATION SHEET

This project report titled “An Evaluation Of Structural Joint In IBS Construction” was prepared and submitted by Mohd Khairil Hakimi bin Khairolazar (Matrix Number: 091200673) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Building Engineering) in Universiti Malaysia Perlis (UniMAP).

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PENILAIAN SAMBUNGAN DALAM STRUKTUR BANGUNAN BERINDUSTRI

ABSTRACT

Pratuang papak konkrit dan dinding ricih kian mendapat sambutan popular dalam industry pembangunan di Malaysia. Tesis ini membincangkan penilaian struktur dalam Sistem Bangunan Perindustrian (IBS) untuk menentukan apakah jenis struktur sambungan yang dilaksanakan di kolej kediaman Sungai Chuchuh. Dalam usaha untuk menentukan jenis sambungan dua model pratuang papak telah direka menggunakan Staad Pro 2004. Model pertama terdiri daripada ricih dinding dan papak pratuang dibina dengan besi bar dan model kedua dibina tanpa besi bar. Lukisan pembinaan diambil untuk membangunkan kedua-dua model demi memastikan dimensi adalah tepat dan selaras dengan tapak pembinaan. Seterusnya, gabungan beban mati dan beban hidup yang diberikan kepada struktur model untuk menghasilkan output yang tepat untuk kolej kediaman keseluruhan. Objektif kajian ini adalah untuk menentukan keupayaan momen, daya ricih dan bentuk anjakan kedua-dua model. Berdasarkan output yang dihasilkan oleh Staad Pro 2004 penilaian boleh dibuat dari momen lentur, daya ricih dan rajah anjakan. Tambahan pula, jenis sendi disematkan, sambungan sendi separa tegar dan tegar. Ketiga-tiga sambungan yang berbeza dari segi kekuatan, kemuluran, kos, dan kelebihan. Seterusnya, selepas membandingkan output hasil dengan gambar rajah daripada satu lagi kajian yang dilampirkan pada kajian literatur kesimpulan boleh dibuat bahawa jenis sambungan bagi struktur IBS di kolej kediaman di Sungai Chuchuh adalah sambungan tegar.

ABSTRACT

Precast concrete slab and shear wall are leading the Malaysian construction industry as the usage of the precast component has increase from previous years. This thesis of evaluation of joint structure in Industrialized Building System (IBS) is to determine what type of joint structure implemented in Sungai Chuchuh residential college. In order to determine the type of joint two model of precast slab are develop using Staad Pro 2004. The first model consists of shear wall and precast slab constructed with dowel bar and the second model is constructed without the dowel bar. Construction drawing is taken to develop these two models as to ensure the dimension is exact with construction site. Next, the combination loading of dead load and live load are assigned to the models structure to produce an accurate output for the whole residential college. The objectives of this study are to determine the moment capacity, shear forces and the displacement form the two models. Based on the output produce by the Staad Pro 2004 evaluation can be made from the bending moment, shear force and the displacement diagram. In additional, the types of joints are pinned, semi rigid and rigid joint connection. These three connections is differ in term of the strength, ductility, cost, and advantages. Next, after comparing the result output with the diagrams form another study attached on the literature review a conclusion can be made that the type of joint connection for the IBS structure at residential college of Sungai Chuchuh is a rigid connection.

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LIST OF ABBREVIATIONS

IBS	-	Industrialized Building System
kN	-	Kilo Newton
mm	-	Millimeter
kNm	-	Kilo Newton Meter
CIDB	-	Construction Industry Development Board
BS	-	British Standard
GUI	-	Graphical User Interface
Kg	-	Kilogram