

INTISARI

Konstruksi bangunan modular baja pada daerah *non-seismik* menjadi populer di seluruh dunia dengan harapan mengurangi pemborosan sumber daya dan memberikan peluang inovasi yang memungkinkan kemajuan lebih lanjut di bidang tersebut. Menurut penelitian sebelumnya, sambungan antara komponen modular sangat penting untuk menjaga integritas bangunan modular, sehingga, kajian modular baja prefabrikasi perlu dilakukan.

Studi ini mengkaji evaluasi modular baja prefabrikasi sebagai *opsional* modular beton dengan memodelkan unit modular baja menjadi beberapa variasi kondisi yang dilengkapi dengan sambungan terpilih. Kemudian diakhir analisis akan dilakukan pemodelan struktur dengan variasi kondisi: *joint* baja *rigid core-wall crack*, *joint* baja *rigid core-wall uncrack*, *joint* baja *realese core-wall crack*, *joint* baja *rigid core-wall uncrack*. Nantinya output berupa *mode shape* dan *periode natural* dari variasi tersebut, *storey forces* serta pengecekan gaya geser baja sesuai SNI 1729:2020.

Hasil analisis menunjukkan parameter properties sambungan mengalami perubahan dikarenakan perbedaan panjang, panjang sendi plastis diambil 0,5 dari tinggi profil, semua hasil pemodelan variasi kondisi dengan menggunakan link memberikan *initial stiffness* yang kecil dibanding dengan model tanpa link, berdasarkan perbandingan hasil periode natural dan mode shape diketahui model F.RG-W.CR (*frame rigid, corewall crack*) dianggap lebih fleksibel daripada variasi model lainnya, serta setelah dilakukan pengecekan didapat prosentase gaya geser frame baja dan penahan dinding beton sebesar 99.903% terhadap gaya geser keseluruhan bangunan modular sehingga manfaat yang dapat diambil dari studi ini adalah sebagai *referensi* dari proses perencanaan bangunan modular khususnya di Indonesia.

Kata kunci: Sambungan Modular, Sendi Plastis, Unit Modular Baja, Bangunan Modular Baja.

ABSTRACT

Worldwide, the use of steel modular buildings in non-seismic areas is growing in popularity as a way to cut down on resource waste and create chances for innovation that will progress the industry. Prefabricated steel modular has to be studied because, as prior research has shown, the connections between modular components are essential to preserving the integrity of modular buildings.

This study models steel modular units into several condition variations furnished with specific joints in order to evaluate prefabricated steel modulars as optional concrete modulars. Following the study, structural modeling will be done under a number of conditions, including realese core-wall crack steel joint, rigid core-wall uncrack steel joint, and stiff core-wall crack steel junction. In accordance with SNI 1729: 2020, the output will be the mode form and natural period of variation, storey forces, and a steel shear force check.

The results of the analysis show that the parameters of the connection properties change due to the difference in length, the length of the plastic joint is taken 0.5 of the profile height, all the results of modeling the variation of conditions using links provide a small initial stiffness compared to the model without links, based on the comparison of the results of the natural period and mode shape, it is known that the F.RG-W.CR model (rigid frame, corewall crack) is considered more flexible than other model variations, and after checking the percentage of the shear force of the steel frame and retaining concrete walls is 99.903% of the overall shear force of the modular building so that the benefits that can be taken from this study are as a reference for the modular building planning process, especially in Indonesia.

Keywords: *Modular Joints, Plastic Hinges, Steel Modular Units, Steel Modular Buildings.*