Studi komparasi bangunan SMRF profil baja WF dan CFST memperhitungkan rigiditas sambungan menggunakan analisis pushover dengan meninjau sendi plastis pada kolom dasar = Comparison study of special moment resisting frame behavior with wide flange and concrete-filled steel tubes profile considering rigidity of connection using pushover analysis with plastic hinge in column bases

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Abstrak

Peristiwa gempa bumi yang cukup sering terjadi di Indonesia seketika dapat merusak bahkan meruntuhkan seluruh komponen bangunan. Maka selayaknya bangunan yang dibangun di Indonesia memiliki sistem struktur penahan gempa dimana salah satu sistem struktur penahan gempa yang paling sering digunakan ialah Special Moment Resisting Frame dikarenakan daktilitasnya yang lebih tinggi. Mekanisme keruntuhan SMRF diawali dengan proses pelelehan yang ditandai dengan munculnya sendi plastis. Pengaruh target sendi plastis pada kolom dasar dengan mekanisme leleh lentur terhadap perilaku struktur secara keseluruhan terlihat dari analisis pushover dimana daktilitas struktur akan menurun. Selain itu, digunakan dua profil yang berbeda untuk membandingkan penggunaan profil CFST dan baja WF dimana profil WF memiliki kekuatan, kekakuan, dan daktilitas yang lebih tinggi. Penggunaan sambungan semi-rigid untuk suatu struktur memiliki pengaruh dimana kekuatan dan kekakuannya menurun sedangkan daktilitasnya akan meningkat. Penelitian ini menggunakan dua program yaitu ETABS untuk perancangan bangunan serta DRAIN-2DX untuk analisis kinerja struktur.

.....The earthquake phenomenon that usually occur in Indonesia can ruin or even destroy building components immediately. Therefore, buildings that constructed in Indonesia should have an earthquake resistance system, one of them is Special Moment Resisting Frame. This system has widely used in many buildings because it has high ductility and ability to dissipating energy. Collapse mechanism of SMRF building starts with yielding that marked by the existence of plastic hinge. The effect of plastic hinge that occur in column bases with flexural yielding mechanism on behavior of the overall structure can be seen from pushover analysis results which the ductility of structure will be reduced. Furthermore, the use of different profile Wide Flange and Concrete Filled Steel Tubes in the same building can affect the performance of that building, which the building with WF profile has higher strength, stiffness, and ductility. The type of connection that used is also affect performance of the buildings. Strength and stiffness will reduce while the ductility will increase. This research use two programs which is ETABS for designing the building and DRAIN 2DX for performance building analysis.