

ABSTRAK

Judul: Komparasi kinerja struktur bangunan tinggi menggunakan sistem shearwall dan kombinasi sistem shearwall-outrigger (Studi kasus : Grand Indonesia Office Tower). Tugas Akhir, Nama: Briando Frederick , NIM: 41114310029, Dosen Pembimbing: Prof. Dr. Ir Syafwandi Drs. Msc., 2018

Hampir setiap tahun Indonesia dilanda gempa, ini karena Indonesia terletak pada pertemuan empat lempeng tektonik utama. Gempa yang terjadi mulai dari skala kecil hingga besar. Gempa mempunyai sifat getar yang tidak beraturan, merambat tanah dan menggoncang bangunan di atasnya. Jika bangunan tidak tahan terhadap gempa akan mengalami kerusakan atau runtuh. Dalam meminimalisir rusak atau runtuh dibutuhkan sistem struktur yang mampu memberikan hasil kinerja yang baik.

Dalam penelitian ini bertujuan membandingkan hasil pengaruh kinerja ke dua sistem struktur, yaitu : sistem shear wall (model 1) dan sistem shear wall-outrigger (model 2) sebagai objek digunakan Grand Indonesia Office Tower 43 lantai, kinerja dilihat dari periode getar (T), geser dasar, perpindahan lateral dan kontrol ketidakberaturan torsi. Penelitian ini menggunakan metode statik dan dinamik respons spektrum indonesia.)

Berdasarkan hasil penelitian: periode (T) model 2 lebih kecil dari model 1 dengan penurunan 17.42%. Geser dasar statik meningkat 0.181% di kedua arah dan dinamik meningkat 8.66% arah x dan 16.08% arah Y. Pada perpindahan lateral terjadi penurunan pada lantai 11, 22, dan 32 dimana outrigger diletakkan, untuk arah X 51.68%, 48.22% & 46.47% sedangkan arah Y 49.37%, 62.99% & 72.10%. Pada kontrol ketidakberaturan torsi Model 2 dapat mengurangi efek torsi sebesar 18.89% dibanding Model 1.

Kata kunci : Kinerja struktur, sistem shearwall, sistem shearwall-outrigger, statik dan dinamik respons spektrum

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ABSTRACT

Title: Comparative performance of high-rise building structures using a shear wall system and a combination of shear wall-outrigger systems (Case study : Grand Indonesia Office Tower). Final Project, Name : Briando Frederick, NIM : 41114310029, Supervisor : Prof. Dr. Ir Syafwandi Drs. MSc., 2018

Every year Indonesia is hit by an earthquake, because Indonesia is located at the meeting of four major tectonic plates. Earthquakes that occur from small to large scale. Earthquakes have irregular vibration properties, propagate the ground and shake the building above it. If the building is not resistant to earthquakes it will be damaged or collapse. To minimize damage or collapse a structural system is needed that can provide good performance results.

In this study aims to compare the results of the effect of performance on the two structural systems, namely: shear wall system (model 1) and shear wall-outrigger system (model 2) as objects used Grand Indonesia Office Tower 43 floors, performance seen from the period of vibration (T), style shear, lateral displacement and control of torque irregularities. This study uses static and dynamic methods of Indonesian spectrum response.

Based on the results of the study: period (T) model 2 is smaller than model 1 with a decrease of 17.42%. Static base shifts increased by 0.181% in both directions and dynamically increased by 8.66% in the direction of x and 16.08% in the direction of Y. In lateral displacements there was a decrease on floors 11, 22 and 32 where the outrigger was placed, for directions X 51.68%, 48.22% & 46.47% while Y direction is 49.37%, 62.99% & 72.10%. In control of torque irregularities Model 2 can reduce the effect of torque by 18.89% compared to Model 1.

Keywords: Performance of structure, shear wall system, shear wall-outrigger system, static and dynamic spectrum response.