

# Efek perubahan posisi sistem penahan lateral pada respon seismik bangunan gedung

Anita Suryani Brahmana, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20283544&lokasi=lokal>

---

## Abstrak

Penelitian ini membahas tentang bangunan tinggi yang terdiri dari podium dan tower dengan sistem lantai flat slab dan balok di perimeter bangunan. Tujuan penelitian ini untuk menganalisa efek perubahan posisi sistem penahan lateral terhadap karakteristik dinamik bangunan dan respon struktur akibat gempa bumi. Struktur bangunan merupakan struktur beton bertulang 10 lantai dengan tinggi antar lantai 2,8 m. Sistem penahan lateral adalah sistem rangka (kolom-balok perimeter) dan dinding geser. Pembebanan, faktor reduksi beban, faktor kekakuan, faktor reduksi gempa, respon spektrum mengacu pada peraturan-peraturan yang berlaku. Modelisasi struktur dengan bantuan program ETABS. Pada penelitian ini akan dilakukan simulasi terhadap 3 variasi, yaitu variasi terhadap jarak perimeter podium-tower, variasi terhadap jumlah lantai podium, dan variasi sistem lantai (shell dan membrane). Parameter-parameter yang akan ditinjau adalah periode getar, rasio partisipasi massa, gaya geser dasar, lendutan, gaya geser tingkat, simpangan antar tingkat, momen guling dan gaya-gaya dalam pada elemen struktur (kolom, balok, dinding geser, atap podium). Berdasarkan penelitian yang dilakukan diperoleh bahwa akibat perubahan jarak perimeter podium-tower maka lendutan, gaya geser dasar, gaya geser tingkat, simpangan antar tingkat, momen guling dan gaya-gaya dalam semakin besar sedangkan periode getar, partisipasi rasio massa semakin kecil. Akibat perubahan jumlah lantai podium diperoleh bahwa gaya geser dasar semakin besar. Sistem lantai menggunakan shell menghasilkan periode getar, lendutan, simpangan antar tingkat lebih besar daripada membrane, sedangkan gaya geser dasar, gaya geser tingkat, momen guling, gaya-gaya dalam lebih kecil daripada membrane.

.....This research is about high rise building which consists of the podium and the tower with a flat slab floor system and beam at the perimeter of the building. The objective of this research is to analyze the effect of the modification of lateral resistance system position to the building dynamic characteristic and response structure due to earthquake. The building's structure is 10 floors reinforced concrete structure with 2.8 m height between the floors. The lateral resistance system is the framework system (column-beam perimeter) and shear walls. The loading, the load reduction factor, stiffness factor, earthquake reduction factor, spectrum response are referring to the applicable regulations. The structure modelization by using ETABS program. In this research will be conducted a simulation with three variations, namely the variation of the podium-tower perimeter distance, the variation of the podium floor number, and the variation of the floor systems. The parameters to be considered are vibration period, mass participation ratio, base shear force, deflection, story shear, (shell and membrane), story drift, overturning moments and internal forces in the structure element (column, beam, shear wall, podium roof). Based on the conducted research, concluded that due to the modification of the podium-tower perimeter distance so that deflection, base shear force, story shear, story drift, overturning moment and internal forces are increased, while vibration period, . Due to the modification of the podium floor concluded that the base shear force is increased. The floor system using shell produces greater vibration period, deflection, story drift than using the membrane, whereas the base

shear force, level shear force, overturning moment and the internal forces are smaller than the membrane.