ABSTRAK

Perencanaan struktur bangunan gedung tahan gempa merupakan hal yang penting di Indonesia, hal tersebut bertujuan agar dapat memberikan kinerja sesuai dengan peraturan yang berlaku. Bangunan di Indonesia disyaratkan untuk mengikuti peraturan-peraturan yang sudah ditetapkan. Penelitian ini mengacu pada BSN (2012), FEMA (2000) dan ATC (1996). Tujuan penelitian ini adalah untuk mengevaluasi kinerja bangunan dengan cara mencari nilai simpangan gedung terhadap beban gempa dan menentukan level kinerja bangunan. Metode analisis simpangan (*displacement*) yang digunakan terhadap beban gempa yaitu Metode *Pushover*. Tujuan analisis *pushover* ialah untuk memperkirakan gaya maksimum dan deformasi yang terjadi serta untuk mengetahui perilaku keruntuhan struktur bangunan. Analisis program menggunakan *finite element* membantu dalam menghitung gaya-gaya lateral yang terjadi akibat beban gempa di gedung AR Fachruddin Universitas Muhammadiyah Yogyakarta. Hasil nilai *displacement* dari analisis *pushover,* arah x sebesar 0,07208 m, arah y sebesar 0,06901 m dan arah diagonal sebesar 0,03882 m. Untuk nilai *drift ratio*, nilai arah x sebesar 0,32 %, y sebesar 0,30 % dan diagonal sebesar 0,16 %, menurut ATC-40 dan FEMA 356 nilai *drift ratio* tercapai. Level kinerja struktur bangunan berdasarkan target perpindahan menurut metode FEMA 356 dan ATC-40 gedung AR Fachruddin pada struktur bangunan belum mencapai IO (*Immediate Occupancy*) karena bangunan aman, dan tidak terlalu memakan korban jiwa serta kerusakan pada struktur bangunan.

Kata-kata kunci: level kinerja, *pushover,* evaluasi, analisis, simpangan, *drift ratio*.

ABSTRACT

The planning of earthquake resistant building structureis important thing in Indonesia, it aims to provide performance according to the prevail regulation. Buildings in Indonesia are required to follow the regulations that have been established. This study refers to BSN (2012), FEMA (2000) and ATC (1996). The purpose of this study is evaluate the performance of a building by looking for the value of the building's deviation to the earthquake load and to looking for level the performance of building. Displacement analysis method which is used to the earthquake load is the *Pushover* method. The purpose of *pushover* analysis is to estimate the maximum force and deformation that occurs and to determine the building structure collapse behaviour. Program analysis used of finite element is assisting in calculating the lateral forces that occur due to earthquake loads in the AR Fachruddin building, Universitas Muhamadiyah Yogyakarta. The result of displacement value from *pushover* analysis, x direction is 0,07208 m, y direction is 0,06901 m and diagonal direction is 0,03882 m. For drift ratio value, the x direction is 0.32%, y direction is 0.30% and diagonal direction is 0.16%, according to ATC (1996) and FEMA (2000) the drift ratio value is reached. The performance level of the building structure based on displacement targets according to the methods of FEMA (2000) and ATC (1996), the AR Fachruddin building on building structure has not reached the IO (Immediate Occupancy) because the building is safe, not too much of victims and not experiencing collapse on the structural of building.

Keyword : level of performance, *pushover*, evaluation, analysis, displacement, drift ratio