

ABSTRAK

Judul : ANALISIS PUSHOVER STRUKTUR GEDUNG BETON BERTULANG BERDASARKAN ATC-40 DAN FEMA 440 (Studi Kasus : Gedung Apartemen 26 Lantai). Nama : Rima Deamas Syafitri, NIM : 41119010009, Dosen Pembimbing : Dian Rahmawati, S.T., M.T., 2023.

Pada wilayah yang memiliki pegeseran lempeng tektonik aktif seperti Indonesia, mengakibatkan perencanaan suatu struktur bangunan harus memiliki kriteria yang sangat penting yaitu tahan gempa. Salah satu metode yang dapat digunakan dalam perencanaan adalah metode berbasis kinerja layan atau *performance based design*. Melalui metode ini, kinerja layan suatu bangunan dan pola keruntuhan yang terjadi diinterpretasikan dalam bentuk kurva menggunakan metode analisa statis non-linear (*pushover analysis*) dengan cara memberikan suatu pola beban statik lateral pada masing – masing pusat massa setiap lantai suatu bangunan yang ditingkatkan secara berangsur-angsur sampai terjadinya pola keruntuhan hingga mencapai target perpindahan (*displacement*) tertentu.

Pada penelitian ini, menggunakan penilaian level kinerja berdasarkan ATC-40 dan FEMA 440 dengan pedoman perancangan bangunan tahan gempa terbaru, yaitu SNI 1726:2019. Adapun sumber data yang digunakan berasal dari *as built drawing*. Data diolah dengan melakukan permodelan ulang menggunakan parameter yang sesuai pada kondisi wilayah objek penelitian dengan bantuan software ETABS v2017.

Berdasarkan hasil analisis, didapatkan kesimpulan dengan penilaian level kinerja menggunakan metode ATC-40, diperoleh nilai maksimum *drift* arah sumbu X sebesar 0,00388077 dan arah sumbu Y sebesar 0,000993998. Sedangkan untuk penilaian level kinerja menggunakan metode FEMA 440, diperoleh target perpindahan arah sumbu X sebesar 0,3368 dan arah sumbu Y sebesar 0,329. Sehingga hasil analisa terhadap kinerja struktur gedung vertikal 26 lantai berada pada tingkat kinerja *Immediate Occupancy* (IO).

Kata kunci : *performance based design*, analisa pushover, level kinerja, ATC-40, FEMA 440

ABSTRACT

Title : *PUSHOVER ANALYSIS FOR REINFORCED CONCRETE BUILDING BASED ON PERFORMANCE LEVEL OF ATC-40 AND FEMA 440 (Study Case : Apartment Vertical Bulding 26 Story)*. Name : Rima Deamas Syafitri, NIM : 41119010009, Lecturer Assistent : Dian Rahmawati, S.T., M.T., 2023

In areas that has such active tectonic plate shifts like Indonesia, the planning project of a building structure must have very important criteria, such earthquake resistance. One such method that can be used in the planning is a performance based design method. Through this method, the service performance of the building and the collapse pattern that occurs are interpreted in the form of a curve using a non-linear static analysis method (pushover analysis) by providing a pattern of lateral static loads on each center of mass of each floor of a building which is gradually increased until the pattern of collapse occurs and reaches a certain displacement target.

In this case, the performance level used assessments based on ATC-40 and FEMA 440 with the latest earthquake-resistant building design guidelines, namely SNI 1726:2019. The data source is from as built drawing. Then, the data is processed by remodeling using the parameters that are appropriate to the conditions of the research object area with the ETABS v2017 software.

Based on the results of the analysis, it was concluded that by assessing the level of performance using the ATC-40 method, the maximum drift value in the X direction was 0.00388077 and the Y direction was 0.000993998. Otherwise, the performance level using the FEMA 440 method, the target displacement in the X axis direction is 0.3368 and the Y axis target is 0.329. So the conclude of the results in analyzing the performance of the 26 storey vertical building structure are at the Immediate Occupancy (IO) performance level.

Keywords : performance based design, pushover analysis, performance level, ATC-40, FEMA 440