ABSTRAK

Judul : Evaluasi Kinerja Struktur Bangunan 8 Lantai Menggunakan Analisa *Pushover Sesuai Dengan ASCE 41-17 Dan ATC 40*
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Analisa *statis non-linear (pushover analysis)* digunakan untuk mengetahui perilaku struktur akibat gempa besar dan merupakan salah satu *performance based design* dengan konsep memberikan suatu pola beban lateral statik terhadap bangunan secara bertahap sampai memenuhi target perpindahan lateral yang direncanakan. Hasil dari metode ini adalah kurva *base shear-roof displacement* yang selanjutnya diproses untuk menentukan titik kinerja (*performance point*) dan tingkat kinerja struktur dengan menggunakan dua prosedur berdasarkan *ASCE 41-17* Dan *ATC-40*

Pada analisis ini dilakukan pemodelan dari gedung cimb niaga yang telah dimodifikasi, lalu gedung tersebut dianalisis untuk mengetahui simpangan antar lantainya, tingkat kinerja dari bangunan, dan titik performa yang dihasilkan dengan respon spektrum desain berdasarkan *SNI-2847-2019*. Analisis dilakukan dengan menggunakan bantuan program ETABS dan berdasarkan ketentuan yang ada di *ASCE 41-17 Dan ATC 40*

Hasil yang diperoleh dari pushover analysis ini berdasarkan ketentuan yang ada di *ASCE 41-17* (310,407 dan 313,078) ditunjukan dengan tingkat kinerja *Damage Control Structural Performance Level,* yang artinnya nilai beban gempa yang peluang dilampauinya dalam rentang masa layan gedung 50 tahun adalah 10%. Sedangkan titik performa untuk ATC 40 didapatkan simpangan *drift* rata-rata arah X sebesar = 0,0088 dan arah Y sebesar = 0,0089. Secara keseluruhan struktur baik menggunakan metode spektrum kapasitas *ATC-40* untuk arah X dan Y termasuk dalam level kategori *Immediate Occupancy* (IO) yang berarti bangunan aman saat terjadi gempa, resiko korban jiwa dan kegagalan struktur tidak terlalu berarti, gedung tidak mengalami kerusakan berarti dan dapat segera difungsikan kembali

Kata kunci: *based performanced,performance based design, pushover analysis, performance point, performance level*, analisis dinamik, *respon spektrum desain*

ABSTRACT

Title: Performance Evaluation of 8-Storey Building Structures Using Pushover Analysis In Accordance With ASCE 41-17 And ATC 40,
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Non-linear static analysis (pushover analysis) is used to determine the behavior of structures due to large earthquakes and is one of the performance-based designs with the concept of providing a static lateral load pattern to the building gradually until it meets the planned lateral displacement target. The result of this method is a base shear-roof displacement curve which is further processed to determine the performance point and performance level of the structure using two procedures based on ASCE41-17 and ATC-40. In this analysis, modeling of the Cimb Niaga building that has been modified was carried out, then the building was analyzed to determine the deviation between its floors, the level of performance of the building, and the resulting performance points with a design spectrum response based on SNI-2847-2019. The analysis was carried out using the help of the ETABS program and based on the provisions of the existing in ASCE 41-17 And ATC 40. The results obtained from this pushover analysis based on the provisions in ASCE41-17 (310,407 and 313,078) are shown by the performance level of the Damage Control Structural Performance Level, which means that the value of the earthquake load that it has the opportunity to exceed in the span of a 50-year building service period is 10%. Meanwhile, the performance point for ATC 40 obtained the average drift deviation of direction X by = 0.0088 and direction Y by = 0.0089. Overall, the structure both using the ATC40 capacity spectrum method for X and Y directions is included in the Immediate Occupancy (IO) category level which means that the building is safe when an earthquake occurs, the risk of casualties and structural failure is not very meaningful, the building does not suffer significant damage and can be immediately repurposed

Keywords: *performance based, performance based design, pushover analysis, performance point, performance level, dynamic analysis, design spectrum response*