

ABSTRAK

Kota Cirebon merupakan wilayah yang rawan gempa bumi akibat keberadaan sesar aktif dan pengaruh aktivitas tektonik regional. Oleh karena itu, analisis kinerja seismik struktur bangunan penting dilakukan untuk menjamin keselamatan dan keandalan struktur.

Penelitian ini bertujuan untuk mengevaluasi kinerja seismik struktur baja Gedung Puskesmas Gunungsari Kota Cirebon menggunakan metode *Non Linear Time History Analysis* (NLTHA) dengan pendekatan *Fast Non Linear Analysis* (FNA). Analisis struktur dilakukan menggunakan perangkat lunak ETABS dengan tiga rekaman gempa nyata yang telah melalui proses *spectral matching*, yaitu Imperial Valley 06 (1979), Kozani Greece 01 (1995), dan San Simeon (2003) sebagai data masukan gempa. Kinerja struktur dianalisis berdasarkan respons *base shear*, efek *P-Delta*, *interstory drift ratio*, dan distribusi *plastic hinge*.

Hasil penelitian ini menunjukkan bahwa struktur baja eksisting dengan Sistem Rangka Pemikul Momen Biasa (SRPMB) masih mampu mencegah terjadinya keruntuhan pada skenario gempa yang ditinjau. Namun, berdasarkan evaluasi kinerja global yang berada pada tingkat *Collapse Prevention* (CP), struktur diperkirakan memerlukan evaluasi dan perbaikan sebelum dapat digunakan kembali setelah mengalami gempa besar.

Kata Kunci: *Non Linear Time History Analysis*, Struktur Baja, Level Kinerja, ASCE/SEI 41-13

ABSTRACT

Cirebon City is located in an earthquake-prone region due to the presence of active faults and the influence of regional tectonic activity. Therefore, seismic performance analysis of building structures is essential to ensure structural safety and reliability.

This study aims to evaluate the seismic performance of the steel structure of the Gunungsari Public Health Center (Puskesmas) in Cirebon City using the Non Linear Time History Analysis (NLTHA) method with the Fast Non Linear Analysis (FNA) approach. Structural analysis was carried out using ETABS with three real earthquake ground motion records that had undergone the spectral matching process, namely Imperial Valley 06 (1979), Kozani Greece 01 (1995), and San Simeon (2003), as seismic input records. Structural performance was evaluated based on base shear response, P-Delta effects, interstory drift ratio, and plastic hinge distribution.

The results indicate that the existing steel structure with an Ordinary Moment Frame (OMF) system is capable of preventing collapse under the considered earthquake scenarios. However, based on the global performance evaluation, the structure reached the Collapse Prevention (CP) performance level, indicating that it may require further evaluation and repair before being reoccupied after experiencing a major earthquake.

Keywords: *Non Linear Time History Analysis, Steel Structure, Performance Level, ASCE/SEI 41-13*