Analisis Kerentanan Struktur Bangunan Gedung C Rumah Sakit Regional Kota Langsa Menggunakan Metode Pushover Analisis

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ABSTRAK

Indonesia merupakan negara yang berada di wilayah jalur gempa pasifik (Circum Pasific Earthquake Belt) dan jalur gempa asia (Trans Asiatic Earthquake Belt) sehingga sangat berpotensi mengalami gempa. kondisi tersebut diatas berpengaruh besar dalam perencanaan desain struktur bangunan oleh karena itu sangat penting untuk dilakukan analisis kerentanan struktur bangunan terhadap beban gempa dikarenakan biasanya untuk perencanaan struktur bangunan hanya pada perhitungan komponen struktur bangunan seperti penulangan, Penelitian ini di Rumah sakit Regional kota Langsa dengan struktur bangunan 4 lantai dan tinggi sruktur 19,25 meter. Penilitian ini bertujuan untuk megetahui Level kinerja dan pola keruntuhan struktur bangunan. Metode yang digunakan menggunakan metode analisis statik beban dorong (*pushover*) yang mana adalah suatu analisis nonlinier statik, yang dalam analisisnya pengaruh gempa rencana terhadap struktur bangunan gedung dianggap sebagai beban statik pada pusat massa masing-masing lantai, yang nilainya ditingkatkan secara berangsur-angsur sampai melampaui pembebanan sehingga menyebabkan terjadinya pelelehan (sendi plastis). Hasil penelitian didapat nilai perpindahan maksimum arah x adalah 103,555 mm, gaya geser maksimum 9376,62 Kn, untuk arah Y nilai perpindahan maksimum 212,841 m dan gaya geser maksimum 19048,83 Kn, dan perhitungan Target Displacement metode *FEMA* 356 dan *FEMA* 440 adalah 295,989 mm, untuk arah x dan untuk arah y yaitu 710,250 mm. Dari hasil evaluasi struktur ATC 40, *FEMA* 356, dan *FEMA* 440 maka level kinerja struktur bangunan tinjauan berada pada batas antara *Immediate Occupancy (IO) – Life Safety (LS).*

Kata Kunci: Pushover analysis, Level kinerja, Kerentanan, Keruntuhan

Structural Vulnerability Analysis of Building C Regional Hospital Kota Langsa Using the Pushover Analysis Method

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ABSTRACT

Indonesia is a country that is in the area of the Pacific earthquake belt (Circum Pacific Earthquake Belt) and the Asian earthquake belt (Trans Asiatic Earthquake Belt), so it has the potential to experience earthquakes. the above conditions have a major influence on planning the design of building structures, therefore it is very important to carry out an analysis of the vulnerability of building structures to earthquake loads because usually for planning building structures only the calculation of building structural components such as reinforcement, this research was at the Langsa City Regional Hospital with building structures 4 floors and a structure height of 19.25 meters. This research aims to determine the performance level and pattern of collapse of the building structure. The method used is the pushover static analysis method which is a nonlinear static analysis, in which the design earthquake effect on the building structure is considered as a static load at the center of mass of each floor, whose value is increased gradually until exceeds the load resulting in melting (plastic hinge). The results showed that the maximum displacement value in the x direction was 103.555 mm, the maximum shear force was 9376.62 Kn, for the Y direction the maximum displacement value was 212.841 m and the maximum shear force was 19048.83 Kn, and the calculation of Target Displacement by the FEMA 356 and FEMA 440 methods was 295.989 mm , for the x direction and for the y direction, namely 710.250 mm. From the results of the structural evaluation of ATC 40, FEMA 356, and FEMA 440, the performance level of the review building structure is at the boundary between Immediate Occupancy (IO) – Life Safety (LS).

Keywords: Pushover analysis, Performance level, Vulnerability, Collapse