

Indonesia merupakan wilayah yang rawan terhadap gempa bumi akibat aktivitas lempeng tektonik yang aktif. Kejadian gempa bumi ini berpotensi menimbulkan kerusakan pada struktur bangunan sehingga diperlukan analisis dan perencanaan struktur tahan gempa. Penelitian ini bertujuan untuk menganalisis perilaku atau respons struktur Gedung Klinik Mata Ishk Tolaram berdasarkan partisipasi massa, periode getar alami struktur, dan gaya geser dasar. Selain itu, penelitian juga mengkaji ketidakberaturan struktur, kinerja sistem ganda, simpangan antar tingkat, serta keterlibatan P-Delta terhadap struktur.

Objek penelitian merupakan gedung rumah sakit dengan kategori risiko bangunan IV yang baru dibangun pada awal tahun 2024. Pemodelan struktur dilakukan secara tiga dimensi (3D) menggunakan *software* ETABS 20.2.0 berdasarkan data *Detailed Engineering Design* (DED). Metode yang digunakan dalam penelitian ini adalah analisis dinamik respons spektrum sesuai dengan SNI 1726:2019 dikarenakan sistem penahan gaya gempa yang digunakan terdiri dari sistem ganda, yaitu sistem rangka pemikul momen (SRPMK) dan dinding geser, serta termasuk dalam Kategori Desain Gempa (KDS) D. Selain itu, analisis ini juga merujuk pada standar teknis *Federal Emergency Management Agency* (FEMA) 356 untuk mengevaluasi tingkat kinerja struktur bangunan gedung.

Hasil analisis menunjukkan partisipasi massa terpenuhi di atas 90%, periode fundamental 0,585 detik, serta gaya geser dasar koreksi sebesar 6763,9 kN pada arah X dan Y. Sistem ganda berhasil mendistribusikan beban gempa dengan rangka menahan minimal 25% gaya lateral. Struktur mengalami ketidakberaturan horizontal tipe 1a namun masih dalam batas aman setelah dilakukan penyesuaian terhadap momen torsi tak terduga. Nilai simpangan antar tingkat dan pengaruh efek P-Delta berada di bawah batas maksimum yang telah ditetapkan. Selain itu, rasio simpangan antar tingkat juga kurang dari 1% sehingga berdasarkan kriteria yang ditetapkan oleh FEMA 356, struktur ini dapat dikategorikan dalam tingkat kinerja *Immediate Occupancy* (IO).

Kata kunci: Respons Spektrum, Rumah Sakit, Sistem Ganda, SRPMK, Tingkat Kinerja Struktur.

Indonesia is an area prone to earthquakes due to active plate tectonic activity. This earthquake incident has the potential to cause damage to building structures, so analysis and planning of earthquake-resistant structures are needed. This study aims to analyze the behavior or response of the structure of the Ishk Tolaram Eye Clinic Building based on mass participation, the natural vibration period of the structure, and the basic shear force. In addition, the study also examined structural irregularities, dual system performance, deviations between levels, and the involvement of P-Delta on the structure.

The object of the research is a hospital building with a risk category of building IV which will be built in early 2024. Structural modeling was carried out in three dimensions (3D) using ETABS 20.2.0 software based on Detailed Engineering Design (DED) data. The method used in this study is a dynamic analysis of the spectrum response in accordance with SNI 1726:2019 because the earthquake force suppression system used consists of a double system, namely the moment-bearing frame system (SRPMK) and sliding walls, and is included in the Earthquake Design Category (KDS) D. In addition, this analysis also refers to the Federal Emergency Management Agency (FEMA) 356 technical standard to evaluate the performance level of building structures.

The results of the analysis showed that the mass participation was fulfilled above 90%, the fundamental period was 0.585 seconds, and the base shear force of the correction was 6763.9 kN in the X and Y directions. The structure experienced horizontal irregularities of type Ia but was still within safe limits after adjustments were made to unexpected torque moments. The value of the deviation between the levels and the effect of the P-Delta effect is below the maximum limit that has been set. In addition, the deviation ratio between levels is also less than 1% so based on the criteria set by FEMA 356, this structure can be categorized in the Immediate Occupancy (IO) performance level.

Keywords: *Spectrum Response, Hospital, Dual System, SRPMK, Structure Performance Level.*