

ABSTRACT

Structural planning of a hospital building is critical due to its function as a vital facility that must remain operational after disasters, particularly earthquakes. This final project aims to design and analyze the structural system of a 9-story hospital building with 1 basement located in Jakarta, ensuring compliance with safety, serviceability, and seismic resistance requirements based on Indonesian standards, including SNI 1726:2019 (Seismic Design Requirements) and SNI 2847:2019 (Structural Concrete Requirements).

The structural analysis considers gravity loads (dead loads and live loads) and lateral loads (earthquake loads). The superstructure system is designed using a Special Moment Resisting Frame (SMRF). Structural modeling and analysis were conducted using structural analysis software. The materials used include concrete with a compressive strength of $f_c' = 35$ MPa and reinforcing steel with a yield strength of $f_y = 420$ MPa. The analysis results include the dimensioning and reinforcement design of structural elements such as slabs, stairs, beams, and columns. For the substructure, deep foundations using bored piles and a tangent pile retaining wall system were designed. Axial and flexural capacity calculations, along with transverse reinforcement design, were performed to ensure that the factored nominal moment capacity (ϕMn) exceeds the factored moment demand (M_u), and the factored shear capacity (ϕV_c) exceeds the factored shear force (V_u). Overall, the structural dimensions and reinforcement design satisfy the performance criteria for earthquake-resistant structures.

Keywords: *Hospital Building Structure, Reinforced Concrete, SNI, Earthquake Resistance, SMRF, Bored Pile.*