ABSTRACT

Indonesia is a country surrounded by active volcanoes and located at the convergence of three major tectonic plates, making it highly susceptible to seismic activities such as earthquakes. One of the mitigation efforts to reduce structural damage caused by earthquakes is the use of earthquake-resistant structural elements such as shear walls and base isolation. Shear walls are vertical reinforced concrete plates that increase structural stiffness and help limit lateral movement due to seismic forces. Meanwhile, base isolation is an element composed of rubber and soft steel installed between the foundation and columns, functioning to absorb seismic energy and reduce ground acceleration transmitted to the building structure. This study analyzes the performance of 4, 6, and 8-story reinforced concrete buildings using base isolation and shear wall systems located in Tebet District, South Jakarta. The analysis uses linear static analysis methods with equivalent lateral force procedures based on SNI 1726:2019, assisted by the Robot Structural Analysis Professional (RSAP) 2025 software. The performance parameters reviewed include base shear force, inter-story drift, and displacement. The analysis results show that the base isolation system can reduce base shear by 39.5% (8-story), 21.45% (6-story), and 19.30% (4-story), and reduce roof-level inter-story drift by ±64% (8-story), ±8,96% (6-story), but increase it by ±50% (4-story) compared to the shear wall system. These findings demonstrate the effectiveness of base isolation in high-rise buildings, while shear walls remain relevant in providing structural stiffness. Therefore, the optimal structural system selection should consider the building height and the objectives of seismic resistance design.

Keywords: *Base isolation, shear wall, seismic analysis, earthquake-resistant structure, RSAP*