

## ABSTRACT

The purpose of this study is to compare two of the most common framing systems in Pakistan namely dual frame system and moment resisting system under seismic loading condition. The project aims towards the Linear Static and Dynamic analysis of both the structural systems and their comparison with respect to their rigidity, stiffness, storey drift, shear and their ability to withstand seismic loads. The case study is a 13-storey high-rise residential RCC irregular structure located at Shahrah-e-Faisal Road, Naval housing Scheme Phase 4, Karachi. The building dimensions are 300 x 160 ft covering a gross area of 48000 sq.ft. The case study structure is examined through the Linear Static and Linear Dynamic model analysis and the comparison of both the structural systems were done on the bases of their seismic response parameters enabling its resilience against the seismic loads such as Base Shear and Storey Drift. Due to the provision of more shear walls in y-direction relative to the x-direction, the base shear in Dual Frame model and IMRF model in x-direction is similar whereas in y-direction, the Base Shear in Dual Frame model is increasing up to 60% that of the IMRF model. The storey drift for static condition in case of the provision of Shear walls in the IMRF system has decreased significantly about 44% in x-direction and 90% in y-direction. The results thus obtained after the performance of Static and Dynamic analysis clearly indicates the fact that in a high rise building under the consideration of lateral loads, the seismic performance of a Dual structure is better than that of a IMRF structure due to the significant decrease in the Base shears, Fundamental Period and Storey drift of the structure. The loads are applied according to the specifications provided in UBC-97 and the design of both the structures are in accordance with ACI-318-9