

Analysis of RCC Framed 45 Storey Building Using Different Combination of Outriggers

Nikhil Mulik¹, Ankit Mali², Smruti Patankar³, Trupti Gavit⁴, Digvijay Ghotkule⁵

Assistant Professor, Department of Civil Engineering¹

UG Student, Department of Civil Engineering^{2,3,4,5}

Indira College of Engineering and Management, Pune, Maharashtra, India

Abstract: *In this modern age of civil engineering, the construction industry has embraced a notable inclination towards erecting towering structures, with skyscrapers emerging as integral components of urban development. This trend presents a multifaceted challenge, not only for architects but also for structural engineers, who must ensure these high-rise edifices possess a robust design foundation capable of withstanding diverse loads and their combinations. While both wind and seismic forces exert significant pressures on tall buildings, the former often takes precedence due to its higher magnitude and frequency. Consequently, the structural design of high-rise buildings necessitates careful consideration of gravity, wind, and seismic loads.*

This study delves into the behaviour of reinforced concrete (RC) framed high-rise buildings (comprising 45 stories) augmented with outrigger truss systems constructed from both concrete and steel bracings. By exploring various configurations of outrigger placement, the aim is to mitigate structural deflection and compare the efficacy against conventional RC systems, both with and without shear walls.

Keywords: High-rise building, Outriggers, bracing, displacement & storey drift, Earthquake & Wind forces