

## **COMPARATIVE STUDY OF MULTI-STORIED RCC BUILDING WITH AND WITHOUT SHEAR WALL**

**AXAY THAPA & SAJAL SARKAR\***

Department of Civil Engineering, Sikkim Manipal Institute of Technology, Sikkim, India

### **ABSTRACT**

In the seismic design of buildings, reinforced concrete structural wall, or shear wall, acts as a major earthquake resisting member. Structural walls provide an efficient bracing system and offer great potential for lateral load resistance. Shear wall systems are one of the most commonly used lateral-load resisting systems in high-rise buildings. Shear walls have very high in-plane stiffness and strength, which can be used to simultaneously resist large horizontal loads and support gravity loads, making them quite advantageous in many structural engineering applications. The properties of these seismic shear walls dominate the response of the buildings, and therefore, it is important to evaluate the seismic response of the walls appropriately. In this study the main focus is to compare the dynamic responses of frame structure with and without shear wall.

Three models are generated with varying height with and without shear wall. G+5, G+10 and G+15 R-C frame models with and without shear walls are generated with varying structural member dimensions according to height. The models are analysed by Static Method and Response Spectrum Method considering seismic zone V in STAAD. Pro V8i. Parameters like lateral displacement, story drift, base shear and mode shapes are determined for all the models (with and without shear walls) by the three methods and are compared and the effectiveness of shear walls is enumerated. Also, comparisons are made based on some studies previously done by the other authors.

**KEYWORDS:** Base Shear, Response Spectrum Method, Shear Wall, Static Method