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Seismic Response of RC Buildings with Shear Wall Incorporating Soil-structure Interaction

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Abstract

The present paper investigates the seismic response of the Reinforced Concrete (RC) building with a shear wall incorporating soil-structure interaction. The study is mainly concentrated on in situ clayey soil conditions considering soft, medium, and hard clayey soil. The purpose of this study is to analyze G+10 story RC buildings with and without soil-structure interaction. Effect of SSI is accounted through point spring element and fixed support condition. Analysis has been done on all the building models as per IS1893:2016. For a comparative study, G+10 story RC buildings with a fixed base is also considered. The responses of some parameters like story drift, story displacement, story shear, time period, and base shear are obtained to understand the different conditions of the soil on the structure for comparative study. The study has used the tools ETABs 17 for modeling and analysis and SAFE 16 for foundation design. From the obtained results, it is observed that without considering soil-structure interaction, the response of structures is overestimated and also, it is recommended that for the safety of a building SSI should be considered.

Keywords: Soil-structure interaction, Shear wall, ETABS, Seismic analysis