

# **Analytical Study of Soil Structure Interaction Effects on Earthquake Response R.C. Frame Buildings**

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**Abstract:** *Soil–Structure Interaction plays a significant role in influencing the seismic behavior of reinforced concrete frame buildings especially when constructed on soft & medium soils. Conventional seismic analysis generally assumes a fixed-base condition, neglecting flexibility of soil & foundation system which may lead to inaccurate estimation of structural response. In present study, an analytical investigation is carried out to evaluate earthquake response of multi-storey R.C. frame buildings. Numerical models of G+5, G+7 & G+10 storey R.C. frames are developed considering both fixed-base and flexible-base conditions using spring-based soil models. Seismic response parameters are compared. These indicate that Soil–Structure Interaction increases fundamental natural period & lateral displacements while reducing base shear demands. Study highlights seismic design for realistic performance assessment of R.C. buildings.*

**Keywords:** Soil–Structure Interaction, Earthquake Response, R.C. Frame, Seismic Analysis, Flexible Base & Spring Model

