



**International Conference on
Innovative Trends in Civil Engineering for Sustainable Development (ITCSD - 2019)**



Seismic Appraisalment of Building with Silt Floor Using Composite Column

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Abstract:

This paper investigates the effects of providing steel-concrete composite column at soft storey level in place of a reinforced concrete column. The main parameters considered include the storey displacement and drift, base shear, axial force, shear force and bending moment. Linear and nonlinear analysis are used to assess the seismic response of the building using steel-concrete composite columns at the soft storey level. For linear analysis response spectra method (RSA) is used and for nonlinear analysis time history method (THA) is used. The analytical work was conducted considering the three different analytical models and modelling infill walls as an equivalent strut approach. The analysis is performed using finite element software SAP2000. The results obtained indicate that the replacement of soft storey reinforced concrete columns with steel-concrete composite columns is possible because of higher strength and efficiency of a steel-concrete composite column having. It is strongly recommended to provide steel-concrete composite column at the level of soft storey to increase the performance of silt floor.

Keywords: Steel-concrete composite column, Soft storey, Non-linear analysis