

Effect of Infill's in Influencing the Dynamic Responses of Multistoried Structures

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Abstract : Investigating the dynamic responses of high rise structures under the effect of seismic ground motion is extremely important for the proper analysis and design of multistoried structures. Since the presence of infilled walls strongly influences the behaviour of frame systems in multistoried buildings, there is an increased need for developing guidelines for the analysis and design of infilled frames under the effect of dynamic loads for safe and proper design of buildings. In this manuscript, we evaluate the natural frequencies and natural periods of single bay single storey frames considering the effect of infill walls by using the Eigen value analysis and validating with SAP 2000 (free vibration analysis). Various parameters obtained from the diagonal strut model followed for the free vibration analysis is then compared with the Finite Element model, where infill is modeled as shell elements (four noded). We also evaluated the effect of various parameters on the natural periods of vibration obtained by free vibration analysis in SAP 2000 comparing them with those obtained by the empirical expressions presented in I.S. 1893(Part I)-2002.

Keywords : infilled frame, eigen value analysis, free vibration analysis, diagonal strut model, finite element model, SAP 2000, natural period

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