

## Magnification Factor Based Seismic Response of Moment Resisting Frames with Open Ground Storey

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**Abstract :** During the past earthquakes, open ground storey buildings have performed poorly due to the soft storey defect. Indian Standard IS 1893:2002 allows analysis of open ground storey buildings without considering infill stiffness but with a multiplication factor 2.5 in compensation for the stiffness discontinuity. Therefore, the aim of this paper is to check the applicability of the multiplication factor of 2.5 and study behaviour of the structure after the application of the multiplication factor. For this purpose, study is performed on models considering infill stiffness using SAP 2000 (Version 14) by linear static analysis and response spectrum analysis. Total seven models are analysed and designed for the range of multiplication factor ranging from 1.25 to 2.5. The value of multiplication factor equal to 2.5 has been found on the higher side, resulting in increased dimension and percentage of reinforcement without significant enhancement beyond a certain multiplication factor. When the building with OGS is designed for values of MF higher than 1.25 considering infill stiffness soft storey effect shifts from ground storey to first storey. For the analysis of the OGS structure best way to analysis the structure is to analyse it as the frame with stiffness and strength of the infill taken into account. The provision of infill walls in the upper storeys enhances the performance of the structure in terms of displacement and storey drift controls.

**Keywords :** open ground storey, multiplication factor, IS 1893:2002 provisions, static analysis, response spectrum analysis, infill stiffness, equivalent strut

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