

A preliminary study of the stresses in walls and columns of a low - cost medium rise building

Load-bearing walls reduce building cost a but their use is normally restricted to buildings of not more than two or three stories height. In a novel low-cost technique (pioneered by Dr. A.N.S. Kulasinghe,) walls are constructed of mortar rammed between nominal RC column elements of same thickness as walls, and this technique has been proposed for the construction of buildings as high as 13 -14 stores. However a detailed analysis of such a building has not been done so far, even though it is an essential requirement for a proper design.

This study is aimed towards fulfilling this requirement, and its objective is to do a preliminary analysis of wall panels of such a building 13 stories height. Centrally located wall panels over the full height of the building and framed by column elements, and under the vertical loadings were considered without openings as with door and window openings. The panels were analyzed using the finite element method and the stresses in the walls and columns were obtained.

The results indicate the necessity of using stronger mortar or thicker wall panels towards the bottom of the building. More analyses considering other types of wall panels and loadings as well as 3D models, needed to be done for a complete understanding of the behaviour of this type of building.