

The Incidence Of Alternative Minimum Load Values In Masonry Partition And Lightweight Partition Systems With A Cost Analysis In Barranquilla, Colombia

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Abstract

This paper presents the structural behaviour of a 11-storey tall rectangular building for residential use in three configurations with different partition systems. The three partition systems considered were as follows: masonry partitions made from clay brick, masonry partitions made from concrete block and lightweight partitions made from drywall. The structural analysis was carried out considering dead, live and earthquake loads. For the calculation of the dead loads generated by the non-structural elements such as partition walls two type of analysis were considered for each partition system. The first one with the alternative minimum loads suggested by the Colombian Earthquake Resistant Building Regulations, NSR-10 and the second one with the real calculated loads. In total six structural analyses were carried out. Lower values as much as 17% for maximum vertical deformations and 18% for story drifts have been obtained for the analysis with the alternative minimum loads compared to the real calculated loads. For both type of analysis, the building with lightweight partition system behaved best, lower values as much as 12% for deformations and 19% for drifts have been obtained. Also, the cost analysis shows that it is more economical to construct the building with drywall partitions, the reduction in cost being 12% in comparison to masonry partitions.

Keywords

Building; Costs; Drywall; Lightweight Partition; Masonry Partition