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Effectiveness of Column Geometry in High-Rise Buildings

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Abstract : Structural engineers are facing different kind of challenges due to innovative & bold ideas of architects who are trying to design every structure with uniqueness. In RCC frame structures different geometry of columns can be used in design and rectangular columns can be placed with different type orientation. The analysis is design of structures can also be carried out by different type of software available i.e., STAAD Pro, ETABS and TEKLA. In recent times high-rise building modeling & analysis is done by ETABS due to its certain features which are superior to other software. The case study in this paper mainly emphasizes on structural behavior of high rise building for different column shape configurations like Circular, Square, Rectangular and Rectangular with 90-degree Rotation and rectangular shape plan. In all these column shapes the areas of columns are kept same to study the effect on design of concrete area is same. Modelling of 20-storeys R.C.C. framed building is done on the ETABS software for analysis. Post analysis of the structure, maximum bending moments, shear forces and maximum longitudinal reinforcement are computed and compared for three different story structures to identify the effectiveness of geometry of column.

Keywords : high-rise building, column geometry, building modelling, ETABS analysis, building design, structural analysis, structural optimization
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