

# "Selecting optimum structural system for R.C. multistory buildings considering direct cost"

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## **Abstract**

Reinforced concrete multi-story buildings are commonly used in residential, commercial, and administrative projects; therefore, selecting the optimum structural system with minimum cost is the top priority of the structural designer. Although earlier researches intensively studied this issue, it is still not completely covered. This research aims to introduce recommendations for the optimum gravity and lateral systems for a multi-story reinforced concrete (RC) building from a perspective of direct cost. In order to achieve that goal, a parametric study was carried out using 72 RC buildings with several stories ranged between 5 and 50 floors, and grid spacing ranged between 6.0 and 12.0 m. Four floor systems were considered, solid, 2 ways ribbed, waffle, and flat slabs. Also, three lateral loads resisting systems were considered which are intermediate moment resisting frames, shear walls, and a dual system. The study covered the low, medium and high rise buildings. The results indicated that the dual system is the most suitable system for medium and high rise buildings with combination with solid slabs for short spans and ribbed slabs for medium and long spans. On the other hand, frame with solid slabs is the optimum for low rise with short spans and shear wall with the flat slab is the optimum for low rise with medium and long spans.

*Structures 2020, April*