

Structural Optimization Method for 3D Reinforced Concrete Building Structure with Shear Wall

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Abstract : In this paper, an optimization procedure is applied for 3D Reinforced concrete building structure with shear wall. In the optimization problem, cross sections of beams, columns and shear wall dimensions are considered as design variables and the optimal cross sections can be derived to minimize the total cost of the structure. As for final design application, the most suitable sections are selected to satisfy ACI 318-14 code provision based on static linear analysis. The validity of the method is examined through numerical example of 15 storied 3D RC building with shear wall. This optimization method is expected to assist in providing a useful reference in design early stage, and to be an effective and powerful tool for structural design of RC shear wall structures.

Keywords : structural optimization, linear static analysis, ETABS, MATLAB, RC moment frame, RC shear wall structures

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