Abstract

Axial shortening of columns due to long term creep and shrinkage is inevitable in tall reinforced concrete buildings. However, calculation of exact values of axial shortening is not a straightforward task since it depends on a number of parameters such as the type of concrete, reinforcement ratio, and the rate and sequence of construction. All these parameters may or may not be available to the design engineer at the preliminary design stage of construction.
Furthermore, long term shortening of columns could affect the horizontal structural members such as beams and floors and hence could affect the finishes and partitions. Therefore, a reasonable idea about the probable axial shortening could be important for construction engineers and project managers as well. This paper presents a set of guidelines so that the effect could be taken into account approximately, especially at the preliminary design stage and also during the construction phase. In this study it is assumed, construction stage analysis considers the creep and shrinkage effects of a 40-story building consist of an exterior concrete frame and interior shear walls. The displacements of vertical members are evaluated and compared with the results from conventional analysis (Without construction stage).

References

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Index Terms

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Axial Shortening  Concrete Buildings  Creep  Shrinkage  Construction Sequence And Deflection