Abstract

The response of reinforced concrete columns under lateral load has always been an area attracting research and practical interest. The importance of columns in building frame in terms of lateral stiffness has been subjected to growing attention in relation to soft storey phenomena and other seismic response analysis over times. Various numerical approaches has been attempted to correlate deflection with lateral load according to theories and field performance. A numerical analysis has been carried out in this study on column behavior subjected to lateral load. Cantilever columns have been modeled using finite element analysis package ANSYS considering non linear stress-strain relationship of concrete and bilinear behavior of steel. Effect of lateral reinforcement in terms of confinement has also been associated. For simplicity of analysis, only rectangular columns with single story height have been considered. The results have been compared with field experimental data. The response of load-deflection curve to change in column geometry has also been discussed. The load deflection curve found in this manner is almost linear with constant stiffness initially as suggested by ACI in the elastic zone. However stiffness gradually decreases in the plastic zone and finally tends to zero. Column response to change in column geometry is also according to the prescribed relations in ACI. Increase in stiffness has been found with decrease in height and increase in cross section. Finally the test results are compared with field experimental value where they show almost similar behavior.
References

- ASCE Task Committee on Concrete and Mesonary Structure. 1981, State of the Art Report on Finite Analysis of Reinforced Concrete, ASCE.

Index Terms

Computer Science Structural Applications

Keywords

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