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Comparative Performance Evaluation of Conventional and Base Isolated Building Including Life Cycle and Cost Analysis

Mayur J Patel[1], Devesh P Soni[1]

[1]PG Student [2]Head of Department Civil Engineering, Sardar Vallabhbhai Institute of Technology, Vasad-388306, Gujarat, India

Abstract

Comparative performance evaluation of conventional RC frame building and Base isolated building has been carried out including life cycle and cost analysis. The conventional building, base isolated building and isolation bearing will design as per relevant standard. The effectiveness of a base isolation system are designed as per bilinear characteristic offered by the isolator. The lead rubber bearing (NZ type) is used as an isolator. It has high flexibility and energy absorbing capacity, so that during an earthquake, when the ground in horizontal direction vibrates strongly only a small fraction of lateral forces are transferred in the super structure. The performance will be evaluated by non-linear time history analysis under earthquake ground motions and pushover analysis. Further, life cycle analysis will be done from fragility curves developed and cost comparison will be carried out to study economic impact of base-isolated buildings.

Keywords: Base isolation, Pushover analysis, Seismic vulnerability analysis, Cost analysis