

Assessment of Collapse Potential of Degrading SDOF Systems

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Abstract : Predicting the collapse potential of a structure during earthquakes is an important issue in earthquake engineering. Many researchers proposed different methods to assess the collapse potential of structures under the effect of strong ground motions. However most of them did not consider degradation and softening effect in hysteretic behavior. In this study, collapse potential of SDOF systems caused by dynamic instability with stiffness and strength degradation has been investigated. An equation was proposed for the estimation of collapse period of SDOF system which is a limit value of period for dynamic instability. If period of the considered SDOF system is shorter than the collapse period then the relevant system exhibits dynamic instability and collapse occurs.

Keywords : collapse, degradation, dynamic instability, seismic response

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