

## **Non-linear push over and proposal of a method for design based on Ductility**

There are many methods for analyzing structures subjected to earthquakes namely linear and non-linear methods. Of course each method has its strong and weak points, but it seems that non-linear analysis describes the system better. One such method is nonlinear dynamic analysis in which structure is subjected to increasing time history for evaluation. In this study Iranian records were used. A non-elastic single-degree-of-freedom (SDOF) system was modeled as bilinear and elastoplastic system (post-yield stiffness ratio  $\alpha = 3\%$ ) with 5% damping. This system was subjected to different records and ductility was measured. Statistical procedures were utilized for 64% probability of occurrence and mean plus standard deviation of 84% occurrence. Based on this non-linear spectra for three levels of ductility were calculated which then were calibrated and used for earthquake coefficient. This was performed for earthquakes with maximum acceleration of 0.1g to 1.0g.

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