

Response Reduction Factor for Earthquake Resistant Design of Special Moment Resisting Frames

Authors : Rohan V. Ambekar, Shrirang N. Tande

Abstract : The present study estimates the seismic response reduction factor (R) of reinforced concrete special moment resisting frame (SMRF) with and without shear wall using static nonlinear (pushover) analysis. Calculation of response reduction factor (R) is done as per the new formulation of response reduction factor (R) given by Applied Technology Council (ATC)-19 which is the product of strength factor (Rs), ductility factor (R_{μ}) and redundancy factor (RR). The analysis revealed that these three factors affect the actual value of response reduction factor (R) and therefore they must be taken into consideration while determining the appropriate response reduction factor to be used during the seismic design process. The actual values required for determination of response reduction factor (R) is worked out on the basis of pushover curve which is a plot of base shear verses roof displacement. Finally, the calculated values of response reduction factor (R) of reinforced concrete special moment resisting frame (SMRF) with and without shear wall are compared with the codal values.

Keywords : response reduction factor, ductility ratio, base shear, special moment resisting frames

Conference Title : ICBB 2014 : International Conference on Bioinformatics and Biomedicine

Conference Location : Istanbul, Türkiye

Conference Dates : May 22-23, 2014