Generation of site-specific response spectrum for different regions in india by the application of matlab and comparision with the different earthquake codes

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ABSTRACT

Since the Earthquake forces are very random in nature, the need of the hour is proper analysis of structures by both static and dynamic methods. The important inputs for the dynamic method are spectral displacement, velocity and acceleration. The fundamental objective of this study is to determine the site-specific response spectrum for different regions of India. New mark's β method was applied for computing the spectral quantities. The free vibration analysis provides the mode shapes and natural frequencies of the chosen building which along with obtained spectral values will be used as an input for response spectrum method to find the storey shear, top floor displacements and the base shear. The obtained values will be compared with the design spectrum of IS 1893 2016 and Euro code 8. This comparison will provide us an idea regarding the variation between site-specific, design spectrum of IS 1893 2016 and Euro code 8. The study also proposes the best tool among the three approaches for a possible spectral value.

Keywords: Earthquake, Response Spectrum method, New mark's β method, MATLAB.