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# Evaluation of ASCE7 Simplified Procedure For Estimating Maximum Seismic Displacement of Structures with Friction Pendulum Isolators under Near-Field Earthquakes

*Seismic base isolation is a practical solution to reduce the seismic demand on civil infrastructures. In this paper, the maximum displacements of friction pendulum isolators resulting from simplified method prescribed by ASCE7-16 are compared with the results from nonlinear response history dynamic analyses for near-field pulse-like and non-pulse-like earthquakes. The maximum displacements of the friction pendulum isolators with four different coefficients of friction and four effective radii have been determined using simplified methods prescribed by ASCE7-16. Nonlinear response history dynamic analyses are then performed for the 16 aforementioned cases using OpenSees under seven near-field pulse-like earthquake records and seven near-field non-pulse-like earthquake. Adjustment factors are finally developed for the simplified method of ASCE7-16 to update the predictions. The results show that the values predicted by the code are less than the values obtained from nonlinear time history analysis. In addition, the adjustment factors obtained for pulse-like near-field motions are larger than adjustment factors for non-pulse-like near-field motions.*

Keywords: Seismic Isolation, ASCE7-16, Friction Pendulum Isolator, Simplified Method, Nearfield Ground Motion, Pulse-like Earthquake.

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