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Verification of Consecutive Modal Pushover Procedure for Estimating the Seismic Performances of Steel Plate Shear Walls

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ABSTRACT

In this paper, we evaluated seismic performance properties of steel plate shear wall (SPSW) using Consecutive Modal Pushover Procedure (CMPP). This method is performed on 3, 6 and 9-story SPSW frames subjected to seven earthquake records which are scaled according to ASCE/SEI 7-05 provisions. We conducted nonlinear time history analysis (THA) to verify extracted outputs. The SPSW models indicate a relatively accurate estimation in nonlinear story drift and story displacement response of pushover procedures compared to that of the THA with respect to responses like shear story; while, in the high-rise model in specific, the deformation parameters are more accurate through an increase in the height of the models.

Keyword:
Steel plate shear wall;
nonlinear time history analysis;
Consecutive Modal Pushover Procedure;
Story shear;
drift

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