عنوان مقاله:

Self-Centering Steel frames with perforated steel shear wall

نویسندگان:

Javad Amanabadi - *Amirkabir University of Technology, Tehran Polytechnic*

Ali Barzgar Torghabeh - *Amirkabir University of Technology, Tehran Polytechnic*

خلاصه مقاله:

In recent years, application of steel plate shear wall has been significantly noticed because of its appropriate behavior during earthquakes. One of the inherent problems in structures having steel plate shear wall is their plastic residual displacement after the earthquakes. This issue causes intended building being structurally robust but it has serious problems in the aspect of serviceability. One of the available strategies to overcome this problem is to use memory alloys that will impose extensive costs to the project. Another novelmethod is to utilize self-centering steel frame in the structure. In these frames using post-tensioned cables, theframe will return to its initial placement after completing lateral movement. In this way the intended frame willhave serviceability again after the earthquake occurrence. In this paper regarding the high cost of performingexperimental researches, it is attempted to create a numerical model for self-centering frame with steel plateshear wall using the theory of finite element with rational simplified assumptions and the final response will becompared to available experimental responses. Subsequently, considering the available limitations of usingsteel plates as shear wall, the effect of infill plate thickness and distributed opening on the behavior of selfcenteringsteel frame system with infill plate is investigated. Obtained results are representative of reduction ofenergy dissipation capacity by constructing opening and reduction of reversibility by increasing infill platethickness

کلمات کلیدی:

steel plate shear wall, self-centering frame, distributed opening, nonlinear analysis

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