

عنوان مقاله:

Impact Stiffness of Linear Viscoelastic Model for Seismic Pounding Simulation : An Experimental Evaluation

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خلاصه مقاله:

Pounding between adjacent structures occurs when the separating distance within the two buildings is inadequate to contain the movement between them during an earthquake event. Seismic pounding can lead to significant harm or even the destruction of neighbouring structures. In creating a model for structural response, impact stiffness is considered as a critical factor in calculating the impact force throughout the collision within adjacent structures. It is important to derive realistic stiffness values when performing a numerical simulation of pounding forces within abutting structures to attain valid results. The objective of this study is to ascertain the impact stiffness within the linear viscoelastic contact model, using data obtained from shaking table experiments of pounding between neighboring five-storey and ۱۵-storey single-bay model of steel-frame. The steel models were subjected to scaled ground acceleration records, two far-field and two near-field. The study's findings indicate that there is a significant discrepancy between the theoretical impact parameters and the measured experimental value because the assumptions made to derive the theoretical formulas do not align with the actual impact conditions. The accuracy and precision of the experimental formula adopted in this study have been validated in comparison with the numerical results. Doi : ۱۰.۲۸۹۹/CEJ-۲۰۲۳-۰۹-۰۶-۰۱ Full Text: PDF

کلمات کلیدی:

Seismic Pounding; Steel Structure; Impact Stiffness Parameter; Shake Table Test; Linear Viscoelastic Model; Impact Force; Seismic Response; Seismic Performance.

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