

عنوان مقاله:

Overall Response of Steel Midrise Buildings with Dual Lateral Load Resistant System

محل انتشار:

دومین کنگره بین المللی سازه ، معماری و توسعه شهری (سال: 1393)

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خلاصه مقاله:

It is required to perform a seismic analysis in order to evaluate behaviors of structures and do a seismic design. Recently the experience of recent near source earthquakes such as Northridge, Kobe and Tabas earthquakes have shown that the structures are more vulnerable in the near source earthquakes. This has also shown in many studies. The main reason for that is due to a strong and long period velocity pulse which generates in the near-field (NF) earthquakes. Near-Source ground motions have characteristics like pulse-like feature which make them distinctive from ordinary records. In midrise to highrise structures, dual systems (DS) enable a structural designer to satisfy the stringent drift limitations of current codes without compromising ductility. The resistance system against lateral loads is braced frame + moment resistant frame in all models. The behavior of selected structure has been studied using nonlinear dynamic analysis under three near and three far field (FF) earthquake recorders. According to the nonlinear analyses, the structural demands which are calculated subject to near field records are considerably more than those due to far field motions. The nonlinear time history analyses results indicate that dual structural system has appropriate seismic behaviour in midrise buildings. This paper includes the analytical results from nonlinear dynamic analyses of three models multi-storey buildings subject to strong ground motions. These example buildings are 15 storey structures which have three dimensional steel framing system. All selected earthquake records in this study, include strong ground motions recorded in Iran as well as some other downloaded records from PEER earthquake data base. According to the non linear analyses, the structural demands which are calculated subject to near field records are considerably more than those due to far field motions. The performances of the structures are analyzed by using Sap2000. Near-fault ground motions impose large demands on structures compared to far-fault ground motions. It has been observed that the drift, shear force, base shear coefficient of near-fault earthquake has been increased considerably against the far-fault earthquake. It was found that the response of structures to near-fault ground motion is substantially different from the response to far-field earthquake records.

کلمات کلیدی:

Dual systems, Near-fault, Far-fault, Nonlinear time history analyses, Midrise buildings, highrise structure

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