عنوان مقاله:

Evaluation of Nonlinear Dynamic Response of Rigid and Semi-Rigid Steel Frames under Far-Field Earthquake Records

محل انتشار:

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خلاصه مقاله:

The purpose of this research was to evaluate the nonlinear dynamic response of rigid and semi-rigid steel frames under Far-Fault Earthquake Records. Accordingly, the fragility curve of the moment frames with rigid and semi-rigid connections was determined. Considering the analytical knowledge of structures in the past, the analysis and design of steel frames based on the assumptions of rigid or joint connections. While laboratory studies show that most connections are semi-rigid and due to the importance of connections in the structures, it is very important to recognize and accurately study their behavior, especially during an earthquake, and their design must be under their real structural behavior. For this purpose, three two-dimensional steel moment frame structures with ۶, ۱۲, and ۱۸ stories were used, which represent short, medium, and high structures. Considering the rigid and semi-rigid connections, their seismic performance was investigated using the nonlinear dynamic incremental analysis (IDA). Three cases of connections have been selected corresponding to ۵۰, ۶۰, and ۷۰% rigidity. Finally, the collapse fragility curve parameters obtained and compared. According to the obtained results, decreasing the rigidity of the beam-to-column connections increases the dispersion of the collapse fragility curve. Besides, it was observed that considering the semi-rigid connections leads to a reduction of the median of the collapse fragility curve. The result shows that the .mentioned difference cannot be neglected

کلمات کلیدی:

Steel moment frame, Rigid and Semi-Rigid Connections, collapse fragility curve, Incremental dynamic analysis, Far-Field earthquake Records