

عنوان مقاله:

Multi-objective Optimization of Seismic Vibration Control of Critical Equipments Isolated with Sliding systems

محل انتشار:

نهمین کنگره بین المللی مهندسی عمران (سال: 1391)

تعداد صفحات اصل مقاله: 8

نویسندگان:

M Faraji - Department of Civil Engineering, University of Guilan, Rasht, P O Box ۳۷۵۶, Iran

,N. Fallah

G. Zamiri

خلاصه مقاله:

Sensitive equipments as the secondary structures can be isolated from the floor vibrations caused by earthquakes using a proper isolation system. In this study the effectiveness of the sliding isolation system that is placed between the floor of the primary structure and the sensitive equipment is investigated under a group of earthquake records. In order to find the optimal values of the parameters of sliding isolator, namely: friction coefficient, damping coefficient and stiffness of restoring force device, a fast and elitist non-dominated sorting genetic algorithm (NSGA-II) method has been applied. The simultaneous minimization of acceleration and displacement of the secondary system are considered as objective functions. For the numerical study, the primary structure is considered as a ten-story shear frame with one lateral degree of freedom at each story level. The isolated equipment is considered at the fifth story of the primary structure. Results demonstrate the effectiveness of the considered isolation system in reducing the seismic vibration of the equipment. Also results reveal that the NSGA-II approach is strongly effective for evaluating the optimal values of parameters of the isolation system

کلمات کلیدی:

secondary structures, sliding isolation system, multi-objective optimization, genetic algorithm, seismic vibration

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/165873>

