

عنوان مقاله:

Impact of Tuned Mass Damper on the Strength of Concrete and Steel Structures under Earthquake Load given Nonlinear Effects

محل انتشار:

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خلاصه مقاله:

Application of dampers in the reinforcement of structures is one of the most practical and effective methods of controlling the applied forces and increasing the resulting energy loss. A tuned mass attenuator is a passive energy absorption device. The main purpose of using the separation system is based on reducing the horizontal movement of the earthquake entering the structure, which can provide a good performance for the protection and safety of the structure in combination with the tuned mass damping system. One of the objectives of this study is the optimal design of dampers and evaluation of the performance of structures with and without soil-structure interaction and identification of classes in need of dampers. During the life of structures, various forces are applied to the structure, one of the most important of which is the force caused by the movement of the structure or earthquake. Dampers reduce the energy input to the structure by ۲ to ۵ times and the displacement by ۲ to ۳ times. In other words, dampers reduce the force of the members of the structure and deform due to the absorption of input energy into the structure and change the distribution of force in the structure, so this method can be used as a suitable option to modify the distribution of forces. The use of adjustable mass dampers significantly reduces the acceleration responses of classes, which increases with the non-linear hardness of adjustable mass dampers. The use of adjustable mass dampers increases the ductility of the structure. Also, the use of adjustable mass dampers reduces the sections in the structure by reducing the displacement of the floors. The use of adjustable mass dampers improves the vibrational performance of the structure and also improves the seismic performance of the structure by the stiffness of the damper.

کلمات کلیدی:

Damper - Structure - Structural strength - Earthquake - Reinforcement - Mass damper

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