Vibration Control of Two Adjacent Structures Using a Non-Linear Damping System

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Abstract : The advantage of using non-linear passive damping system in vibration control of two adjacent structures is investigated under their base excitation. The base excitation is El Centro earthquake record acceleration. The damping system is considered as an optimum and effective non-linear viscous damper that is connected between two adjacent structures. A Matlab program is developed to produce the stiffness and damping matrices and to determine a time history analysis of the dynamic motion of the system. One structure is assumed to be flexible while the other has a rule as laterally supporting structure with rigid frames. The response of the structure has been calculated and the non-linear damping coefficient is determined using optimum LQR algorithm in an optimum vibration control system. The non-linear parameter of damping system is estimated and it has shown a significant advantage of application of this system device for vibration control of two adjacent tall building.