

عنوان مقاله:

The Effect of Reservoir Filling, on the Modification Factor of Steel Elevated Water Tanks, Considering Fluid-Structure Interaction

محل انتشار:

سومین کنفرانس بین المللی پژوهشهای کاربردی در مهندسی عمران، معماری و مدیریت شهری (سال: 1394)

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خلاصه مقاله:

In order to investigate the effect of fluid-structure interaction on the modification factor of steel elevated water tanks with braced columns, three real models having capacity of 134, 160 and 82 m³ are selected. Each model is considered to be empty, 25%, 50%, 75% and 100% full and is designed according to 4th version of Iranian 2800 seismic code, taking into account $S_a=0.25g$ & $S_a=0.35g$ spectral accelerations, for soil types 1, 2, 3 & 4. On each model, the information of Convective mass, Impulsive mass and the spring stiffness of the convective mass, is added according to Housner's method. Later all designed models are subjected to 10 accelerograms, recorded on each soil type and scaled to $S_a=0.25g$ & $S_a=0.35g$. Total 960 linear and nonlinear time history analyses are carried out on finite element models. Finally, after applying Modal Pushover analysis on each model, modification factors for various types of filling the reservoir is calculated and results achieved are discussed

کلمات کلیدی:

Time History Analysis, Fluid-Structure Interaction, Steel Elevated Water Tanks, Static Nonlinear analysis

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