

عنوان مقاله:

Effect of Shear Walls on the Seismic Behavior of the Cast-In-Site Reinforced Concrete Buildings

محل انتشار:

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خلاصه مقاله:

Three different building system were analyzed in this work. The frame system that has only frames, the wall equivalent dual system that has solid shear walls and frames and the coupled shear wall system building that has coupled shear walls and frames were analyzed and load distribution on the load bearing (carrying) elements of the buildings were investigated and evaluated. Shear walls were placed thoroughly towards A and F lines and Y axis on the load bearing system. The building was modeled via ETABS commercial software by three dimensional finite elements modeling. These three seven story buildings which have different load carrying system were analyzed and the results were compared and evaluated. The shear forces, bending moments and lateral displacements that were obtained from the analyses due to seismic loadings were calculated and compared. 5x5 finite elements mesh was utilized for shear walls at each story level. Whole amount of shear force and bending moment values of framed system under seismic loads were carried by columns and beams. The shear forces and bending moments were carried by coupling beams and shear walls proportionally to the rigidities of the coupling beams and shear walls of the coupled shear wall system. A big part of the seismic load, on the other hand, was carried by the shear walls for wall equivalent dual system. The shear force and bending moment values of columns and beams tended to increase a bit due to the fact that rigidness of the shear walls in the coupled shear wall system decreased comparing to those of wall equivalent dual system. Lateral displacement values exhibited difference according to the results obtained from the analyses of frame system, coupled shear wall system and wall equivalent dual system under seismic loads. The level and the cost of the damage are reduced by limiting the values of the lateral displacement.

کلمات کلیدی:

Shear wall, moment resisting frame, shear wall frame, coupled shear wall, finite element method

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