عنوان مقاله:

The Effect of Shear Wall Openings on the Response Reduction Factor

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خلاصه مقاله:

This research attempts to investigate the effect of shear wall openings on the response reduction factor. Openings are commonly necessary because of other engineering disciplines' requirements. When openings are modest in proportion to the size of the wall, their effects are frequently disregarded. On the other hand, when these openings are large or located in a high-risk area, they can have a significant impact. A broad literature review has been conducted in the present study. A verified comparative example consisting of eight stories was studied. Then, a numerical study has been conducted on two different model sets with ۱۶ and ۸ stories, which were designed according to the Egyptian code of loads, ECP-۲۰۱ (۲۰۱۲), and checked according to the Euro code, EC۸ (۲۰۰۴). ETABS software was used to conduct pushover analysis before and after applying different-sized openings. The ground-opening effect has also been studied. The results show that by increasing the opening area, the R-factor was reduced. It is more influenced by the opening height than the width, though. By increasing the number of stories, the reduction percentage in the R-Factor increased for openings that are less than ۳۰% of the wall area. The R-factor increases slightly when half of the reinforcement bars are added. Doi : ۱۰.۲۸۹۹۱/CEJ-۲۰۲۲-۰۸-۰۴-۰۱۳ Full Text : PDF

کلمات کلیدی:

Reduction/Modification Factor (R); Pushover Analysis; Nonlinear Static Analysis; Shear Walls with Openings; Spandrel; Coupled Wall; Modelling; Dual System; Multi-Story Buildings.