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Performance of Reinforced Concrete wall with opening using analytical model

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Earthquake is one of the most catastrophic events, which makes enormous harm to properties and human lives. As a piece of a safe building configuration, R.C walls are given in structures to decrease horizontal displacements under seismic load. Shear walls are additionally used to oppose the horizontal loads that might be incited by the impact of wind. R.C walls in residential buildings might have openings that are required for windows in outside walls or for doors in inside walls or different states of openings due to architectural purposes. The size, position and area of openings may fluctuate from an engineering perspective. Shear walls can encounter harm around corners of entryways and windows because of advancement of stress concentration under the impact of vertical or horizontal loads. The openings caused a diminish in shear wall capacity. It might have an unfavorable impact on the stiffness of R.C wall and on the seismic reaction of structures. By using ANSYS, finite element modeling approach has been conducted to study the effect of opening shape, size and position in R.C wall with different thicknesses under axial and lateral static loads. The proposed F.E approach has been verified with experimental programme conducted by the researchers and validated by their variables. A very good correlation has been observed between the model and experimental results including load capacity, failure mode and lateral displacement. A parametric study is applied to investigate the effect of opening size, shape, position on different R.C wall thicknesses.

Biography

Youssef Ibrahim has completed his Bachelor's degree from Alexandria University. He is a Post-graduate student at Department of Building and Construction, College of Engineering and Techonolgy, The Arab Academy for Science, Technology & Maritime Transport in Egypt. He works as a Technical Office Engineer in Petrojet in Egypt. His research interests include reinforced concrete structures.

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