

The Effect of Opening on Mode Shapes and Frequencies of Composite Shear Wall

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Abstract : Composite steel plate shear wall is a lateral loading resistance system, which is used especially in tall buildings. This wall is made of a thin steel plate with reinforced a concrete cover, which is attached to one or both sides of the steel plate. This system is similar to stiffened steel plate shear wall, in which reinforced concrete replaces the steel stiffeners. Composite shear wall have in-plane and out-plane significant strength. Also, they have appropriate ductility. The present numerical investigations were focused on the effects of opening on wall mode shapes. In addition, frequencies of composite shear wall with and without opening are compared. For analyzing composite shear wall, a new program will be developed using of finite element theory and the effects of shape, size and position openings on the behavior of composite shear wall will be studied. Results indicated that the existence of opening decreases wall frequency.

Keywords : composite shear wall, opening, finite element method, modal analysis

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