

A Numerical Study on the Connection of an SC Wall to an RC Foundation

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Abstract : There are a large number of methods to connect SC walls to RC foundations. An experimental study of the cyclic nonlinear behavior of SC walls in the NEES laboratory at the University at Buffalo used a connection detail involving the post-tensioning of a steel baseplate to the SC wall to a RC foundation. This type of connection introduces flexibility that influenced substantially the global response of the SC walls. The assumption of a rigid base, which would be commonly made by practitioners, would lead to a substantial overestimation of initial stiffness. This paper presents an analytical approach to characterize the rotational flexibility and to predict the initial stiffness of flexure-critical SC wall piers with baseplate connection. The good agreement between the analytical and test results confirmed the utility of the proposed method for calculating the initial stiffness of an SC wall with baseplate connection.

Keywords : steel-plate composite shear wall, flexure-critical wall, cyclic loading, analytical model

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