

Title Implementation of New Constitutive Relations for Shear-Flexure Interaction for Cyclic Response of SQUAT RC Walls

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Researcher Omar Hayat

Research Supervisor Dr. Naveed Anwar

Abstract

This study considers an existing model for the modeling of shear walls used in OPENSEes. The original model is based on monotonic loading conditions which fail to address the features pertinent to shear mechanism in walls. Thus, the refinement of the model is guaranteed through improvements in the constitutive relations of the materials (steel and concrete) used for wall modeling.

Hence, new and advanced cyclic constitutive relations are incorporated in the existing model in order to enhance the original model ability to capture the important features related in shear dominated walls and to extend the model ability to capture more accurately the cyclic behavior of walls under cyclic loadings. Thus, it enables the model to capture many important features in shear dominated walls like pinching mechanism, cyclic shear degradation, failure mechanism under cyclic loadings. This intended procedure for enhancing the original model would require changes in the element formulation, and is then implemented in object oriented program OPENSEes.

Keywords Shear-Flexure Interaction, Cyclic Response, SQUAT RC Walls, OPENSEes