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Research on aseismic behavior of assemble-type composited wall

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ABSTRACT

For assemble-type composited wall, 4 pieces of wall which are 1/2 scale models were made. By pseudo-static tests under low cyclic loading, the aseismic behavior indexes were compared and analyzed, including failure characteristics, bearing capacity, stiffness, deformation, ductility, energy dissipation, and so on. The results showed that the frame which composed by rib beams, rib column, and invisible frame can restraint bricks bearing and crack developing; the structure failed beginning at brick, then rib grim, and ending at invisible frame; this course can be described that the structure had multi-defense lines to resistant earthquake, and every components were used efficiently. The framework curve changed gently from yield to failure; there was no mutation and no collapse, which means that the wall had a good collapse-resistant capacity. A numerical modeling was built by ABAQUS to do push-over analysis, and the results were consistent with test results in load–displacement curve and frame stress nephogram. Furthermore, the influence of the changing key parameters were analyzed by numerical simulation to understand the axial compression ratio, the aspect ratio, and other key parameters how to affect the structure's stiffness, bearing capacity, and displacement ductility.

KEYWORDS: assemble-type composited wall, pseudo-static tests, numerical modeling