17th Symposium on Earthquake Engineering
November 14-17, 2022
IIT Roorkee, India
Paper No. 504

Failure Mechanism of Energy Dissipating Hysteretic Infill System: An Assessment

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Abstract

The sudden post-peak strength reduction and the resultant brittle failure of the brick infill is the primary reason for the failure of infilled RC frame buildings during large earthquakes. The infills that enhance strength and stiffness develop a strut diagonally that alters the lateral performance of the RC frames under lateral loading. The formation of the strut mechanism leads to a sudden shear failure of the non-ductile members of the frame. A novel infill system that does not develop a diagonal strut mechanism but enhances the strength and stiffness of the frame is discussed here. These infills that are developed from slotted concrete blocks and the energy dissipating hysteretic link elements exhibit an improved post-peak behavior and energy dissipation capabilities.

Keywords: Energy dissipating hysteretic infill, Full-scale cyclic testing, Infilled RC frames