

Seismic tests on reinforced concrete and steel frames retrofitted with dissipative braces

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Seismic tests have been conducted on two 3-storey structures protected with pressurized fluid-viscous spring damper devices. One of the structures was a reinforced concrete frame with clay elements in the slabs, while the other one was a steel frame with steel/concrete composite slabs. The spring dampers were installed through K bracing between the floors. The tests were performed by means of the pseudodynamic method, which allowed the use of large and full-size specimens, and by implementing a specific compensation strategy for the strain-rate effect at the devices. The test results allowed the verification of the adequacy of the attachment system as well as the comparison of the behaviour of the unprotected buildings with several protected configurations, showing the benefits of the application of the devices and the characteristics of their performance. The response of the protected structures was always safer than that of the unprotected ones mainly due to a significant increase of equivalent damping. The increase in the damping ratio depends on the level of deformation.