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Engineering modelling for inelastic seismic response of RC structural walls

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SUMMARY

A multiple-vertical-line-element macro model (MVLEM) was used to simulate the seismic response of reinforced concrete structural walls. The post-experiment investigation was performed for a structural wall in a 7-story RC frame-wall building, tested pseudo-dynamically in full scale. The efficiency of the chosen model was also tested by a blind response prediction in the frame of a benchmark study of a cantilever RC structural wall. Several problems related to the choice of the parameters in the model (e.g. damping, initial damage effect, unloading and hardening parameters, pull-out of the reinforcement and inelastic shear) were identified. Nevertheless, the presented MVLEM proved to be successful in both simulations. This can be attributed to its relative simplicity and its ability of direct monitoring of force-displacement relationships in discrete springs. Consequently, the element is easy to understand and control.