

MACRO MODEL TO PREDICT INELASTIC SEISMIC RESPONSE OF REINFORCED CONCRETE STRUCTURAL WALLS

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Abstract: Multiple-vertical-line-element model has been used by the author and his colleagues to predict inelastic seismic response of reinforced concrete structural walls for 30 years. The element is relatively simple. However its robustness and ability to predict highly inelastic (predominantly flexural) behaviour of structural walls has been demonstrated by several post-experimental analyses and benchmark studies presented in the paper. Most important parameters in modelling flexural behaviour include: rocking of the wall related to the uplift of the tension edge, behaviour of the confined compression edge, loading history, initial stiffness of the pre-cracked walls, damping, and strain variation along the length of the plastic hinge. Some attempts to model inelastic shear behaviour, flexural-axial-shear interaction and the behaviour of coupling beams were made. However extensive research is still needed in these areas.

Key words: seismic response, inelastic model, macro model, RC structural walls.



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