

## **Analytical Model for Columns in Existing Reinforced Concrete Buildings**

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**Abstract :** Existing reinforced concrete structures are designed and built without considering seismic loads. The columns in such buildings generally exhibit widely spaced transverse reinforcements without using seismic hooks. Due to the insufficient reinforcement details in columns, brittle shear failure is expected in columns that may cause pre-mature building collapse mechanism during earthquakes. In order to retrofit those columns, the accurate seismic behavior of the columns needs to be predicted with proper analytical models. In this study, an analytical model is proposed for accurately simulating the cyclic behavior of shear critical columns. The parameters for pinching and cyclic deterioration in strength and stiffness are calibrated using test data of column specimens failed by shear.

**Keywords :** analytical model, cyclic deterioration, existing reinforced concrete columns, shear failure

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