

Determining Moment-Curvature Relationship of Reinforced Concrete Rectangular Shear Walls

Authors : Gokhan Dok, Hakan Ozturk, Aydin Demir

Abstract : The behavior of reinforced concrete (RC) members is quite important in RC structures. When evaluating the performance of structures, the nonlinear properties are defined according to the cross sectional behavior of RC members. To be able to determine the behavior of RC members, its cross sectional behavior should be known well. The moment-curvature (MC) relationship is used to represent cross sectional behavior. The MC relationship of RC cross section can be best determined both experimentally and numerically. But, experimental study on RC members is very difficult. The aim of the study is to obtain the MC relationship of RC shear walls. Additionally, it is aimed to determine the parameters which affect MC relationship. While obtaining MC relationship of RC members, XTRACT which can represent robustly the MC relationship is used. Concrete quality, longitudinal and transverse reinforcing ratios, are selected as parameters which affect MC relationship. As a result of the study, curvature ductility and effective flexural stiffness are determined using this parameter. Effective flexural stiffness is compared with the values defined in design codes.

Keywords : moment-curvature, reinforced concrete, shear wall, numerical

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