

LOW CYCLE FATIGUE DAMAGE OF REINFORCED CONCRETE MEMBERS

by

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A method to determinate hinge rotation in elasto-plastic systems under earthquake load was presented in [1], but the rotational capacity of the critical sections is still to be evaluated. Using the procedure given in [2] it is possible to calculate the time histories of steel and concrete strains due to hinge rotation of reinforced concrete beams. By procedures given in [3] and [4] the "strains at fracture" for various strain histories can be estimated. Hereby it is possible to neglect the elastic strains.

The method presented in [1] allows to consider moment deterioration. With regard to the great decrease in energy dissipation and the sensivity of numerical procedures to unimportant modifications of material properties, this region should be omitted in practical design. The evaluation of a lot of tests showed that under this limitations the degrading stiffness can be approached by Clough's method.

The procedure presented in [2], [3], [4] are based on tests with low straining rates. Tests to realize material properties for straining rates relevant to earthquake loads are being carried out by the authors.

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