ULTIMATE STRENGTH OF CONCRETE MEMBERS

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Abstract

The dissertation consists of a study of the ultimate strength and deflexion of full-scale and model reinforced concrete beams under pure moment and of model reinforced members subject to moment and thrust.

The results of the first section suggest that the stress distribution in the concrete is not very different from a purely plastic distribution and that, for simplicity, a rectangular stress block may be assumed quite safely for the purpose of ultimate-strength calculations. A rational approach is also made to the problem of deflexion, with very satisfactory results for simply reinforced beams.

The problem subject to thrust as well as to moment, it seems that the results are quite well explained by the assumption for a linear stress distribution, but with some modifications from the standard design-theory.

The problem of doubly reinforced members proved intractable but some interesting information was obtained on the shear strength of beams, not sufficient, however, to allow of any general conclusion.

A critical analysis is also made of the current theory of reinforced concrete.