

DUCTILITY OF BENT MEMBERS OF PRESTRESSED EXPANDED CLAY CONCRETE

by

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The main parameters of the ductility have been investigated : space between the stirrups, the amount of passive (non-pretensioned) reinforcement, simple and double pretension, the *strength* and the age of concrete for beams loaded with monotonous static increasing cycles up to failure. The following may be appreciated :

- The plastic behaviour of the compressed concrete area and of the passive reinforcement defines the plastic behaviour of the beam, although the active reinforcement may be in the elastic range. The maximum strains have been recorded : 0,45-0,5 % in the compressed area of the concrete, 0,5-0,6 % in the passive reinforcement and 0,6-0,8 % in the active reinforcement.

- The ductility factors $\mu_1 = 5 \dots 10$ and $\mu_2 = 7 \dots 14$ (Fig.1) do not depend on the spread of the plastic hinge.

- If the space between stirrups decreases, then only μ_2 is increasing.

- The residual deflections increase with damage increasing in the compressed area of the concrete and with increasing of the cracks opening.

- The ductility factor may be approximately expressed with relations (Fig.1 and 2) :

$$\mu = P_{K_0} / P_{cr} K ; \mu = Z_s (\epsilon'_{cs} - \epsilon'_{ci}) / Z_{cr} \epsilon'_{ccr}$$

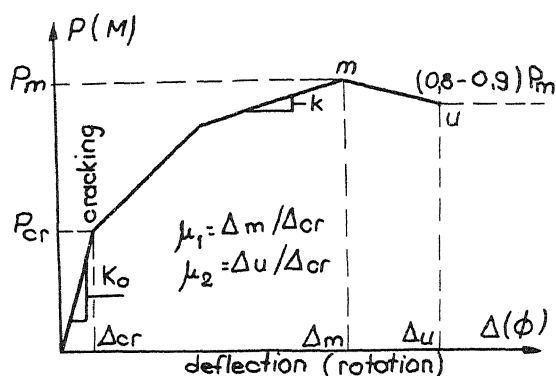


Fig.1.

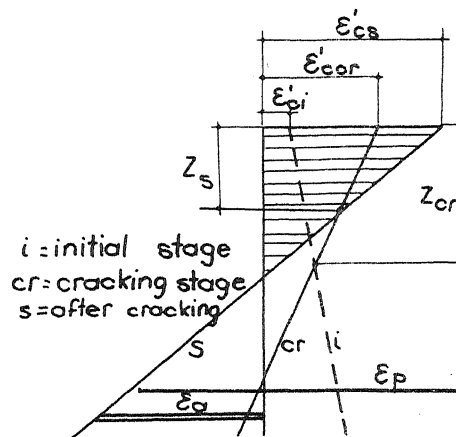


Fig.2.

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