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BEHAVIOUR OF PARTIALLY PRESTRESSED
CONCRETE BEAMS

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SYNOPSIS

This project work is concerned with the study of the flexural behaviour of partially prestressed beams with special references to deflection and cracking.

This work goes through three processes namely, design, casting and testing. Six rectangular beams of size 150 mm x 300 mm were designed in accordance with CP 110: Part 1: 1972 for Class 3 members. Tension reinforcements were introduced in the design. 7 mm diameter prestressing wires and 10 mm diameter of high tensile steel were used. The beams were tested on an effective span of 3.0 m under two third point loading. Testing of beams were done after 7 days of grouting for allowing prestress losses to take place. Deflection, cracks and strain were measured at various stages of loading.

The test results show that a significant improvement in ultimate load carrying capacity can be achieved by introducing a very small amount of non-prestressed reinforcements. It was also found that the beams tested easily satisfy the CP 110 serviceability requirements on deflection and cracking. Bonded beams greatly improve by reducing cracking and improvement in flexural behaviour.

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