

Strengthening of Reinforced Concrete Beams Using Steel Plates

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Abstract : In this paper, external reinforcement to enhance a reinforced concrete structure performance has been done using externally bonded steel plate. This technique has been reported effective in enhancing the strength of reinforced concrete beam, a study to determine the effectiveness of steel plate as an external reinforcement was carried out. A total of two groups of beams and one group content five beams, each 750 mm long, 150 mm wide, and 150 mm deep were cast, strengthened and tested till failure under two point loads. One beam was act as a control beam without strengthening and other four beams were strengthened with steel plate at a different arrangement. Other group beams were strengthened with steel plate in shear zone and also strengthened at bottom as first group. The behaviours of the strengthened beams were studied through their load-deflection characteristic upon bending, cracking and mode of failure. The results confirmed that all steel plate arrangements enhanced the strength of the reinforced concrete beam, the positioning of the steel plate affect the moment carrying capacity of the beam.

Keywords : beams, bending, deflection, steel plates

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