

Novel method for strengthening insufficient steel reinforcement splice using CFRP sheets

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Abstract

A steel lap of reinforcing steel in reinforced concrete sections affects structural performance in two different schemes: by stress concentration in section, and through the configuration of the steel-concrete bond. In this paper, a new method for increasing the capacity of insufficient laps products by using carbon fibre reinforced polymer (CFRP) sheets on bond strength is investigated experimentally. To test the strength of new laps reinforcing bar anchorages and to quantify the effect of the bond of the bar surface on development length, reinforced concrete beams were cast having laps in reinforcing bars in the concrete for a known bending span length. Specimens were tested in four-point flexure test to assess strength and mode of failure. Results were summarised and compared within a standard lap according to ACI specifications. The new method for splicing has more efficient of insufficient splice laps when it was compared with a standard lap.