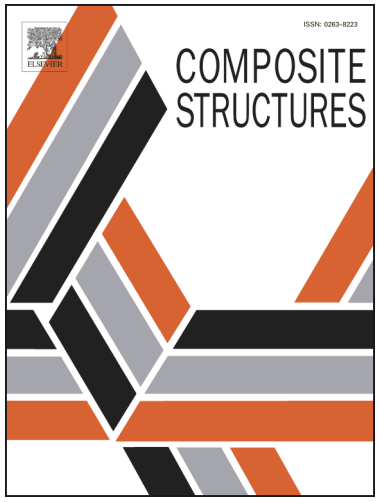

Cracking Control Comparison In The Specifications Of Serviceability In Cracking For Frp Reinforced Concrete Beams

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CRACKING CONTROL COMPARISON IN THE SPECIFICATIONS OF SERVICEABILITY IN CRACKING FOR FRP REINFORCED CONCRETE BEAMS

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ABSTRACT :

The purpose of this study is to examine the level of applicability of the four specifications of the serviceability in cracking for concrete beams reinforced with ribbed glass fiber-reinforced polymer (GFRP) bar. The four-point bending test was conducted with measuring the crack width at the bottom of the beams. For investigating the level of applicability of the four specifications of the serviceability in cracking, applied moment-maximum bar spacing was obtained by ACI 440 1R-15 for varying the bond coefficient, crack width, concrete cover depth, and the equivalent reinforcement ratio. Then, it compared with the relationships with the serviceability region specified by the four specifications. It was found that the evaluation of serviceability in cracking by the four specifications have provided quite different results according to the bond coefficient, allowable crack width as well as the equivalent reinforcement ratio. As a result, the four serviceability specifications should be seriously discussed for the cracking control of FRP reinforced concrete beams in case of considering some of influencing factor, especially for the equivalent reinforcement ratio.

Keywords: Ribbed GFRP bar, Serviceability in cracking, four-point bending test, equivalent reinforcement ratio.