

Empirical Formulation for Prediction of Flexural Strength of Reinforced Concrete Composite Beams

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Abstract

The guidelines of ACI 440.2R – 08, are based on the knowledge gained from experimental research, analytical work and field applications of Fiber Reinforced Polymer (FRP) systems used to strengthen concrete structures. ACI 440.2R – 08 declare that the design procedures have not, in many cases, been thoroughly developed and still require research and this research remains on going. This paper investigates the behavior of Reinforced Cement Concrete (RCC) beams strengthened externally by Glass Fiber Reinforced Polymer (GFRP) strips under flexure. The experimental investigation suggests that cross-sectional area of GFRP directly affects the moment capacity of RCC-GFRP composite beams. Based on the results, a new empirical model is proposed to predict the moment capacity of composite beams especially with high GFRP cross-sectional area.