**Effect of Longitudinal Steel Reinforcement on Shear-Flexural Behavior of Hybrid GFRP/Steel Reinforced Concrete Beams**

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**Abstract.** This paper presents experimental results on shear behavior of concrete beams reinforced with a combination of glass fiber-reinforced polymer (GFRP) and steel bars. A total of four reinforced concrete (RC) were cast and tested in a four-point bending scheme with the shear span/equivalent depth ratio *a/d* = 3.65. Different longitudinal steel reinforcement ratios, ranging from 0% to 1.01%, were analyzed in order to study the effect of the longitudinal steel reinforcement ratio on the shear-flexural behavior of hybrid GFRP/steel RC beams. The results obtained revealed the influence of the longitudinal steel reinforcement ratio on shear-flexural strength of hybrid GFRP/steel RC beams.

The measured shear-flexural strengths of hybrid GFRP/steel RC beams were compared to theoretical values calculated using available design equations for FRP RC structures from ACI 440.1R-06 and CSA-S806-02. The outcome showed that these design standards were not applicable for hybrid GFRP/steel RC beams.

**Keywords:** GFRP; Concrete beam; Hybrid reinforcement; Shear-flexural; Strength.