

Effect of Cyclic Loading on Bond Behavior of GFRP Rods Embedded in Concrete Beams

Bakis, C.E. , Al-Dulaijan, S.U. , Nanni, A. , Boothby, T.E. , Al-Zahrani, M.M.
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Abstract: Three types of glass fiber-reinforced plastic (GFRP) rods with different surface configurations were embedded in concrete beams to determine their bond behavior under cyclic loading. Load amplitudes and numbers of cycles were chosen based on the GFRP rod type and its bond behavior in virgin beams loaded monotonically to failure. After completion of cyclic loading, all beams were tested quasi-statically to failure to determine the residual bond strength. Results were presented as load-slip curves, load-midspan displacement curves, and slip versus number of cycles curves. In all types of GFRP rod evaluated, cumulative slip increased as the number of cycles and/or loading amplitude increased. The bond strength in cyclically loaded beams increased relative to the bond strength in virgin beams.