Effect of holidays and surface damage to FBEC on reinforcement corrosion

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Abstract: This study was conducted to evaluate the effect of holidays and damage to fusion bonded epoxy coating (FBEC) on reinforcement corrosion in chloride-contaminated concrete. The effect of these parameters on the corrosion of FBEC bars was compared with corrosion of mild steel by measuring the corrosion potentials and corrosion current density at regular intervals. The corrosion current density measurements indicated that the defect-free FBEC bars were in a passive condition in the concrete specimens with up to 2% chloride by weight of cement. The long-term maintenance-free performance was not assured in the concrete specimens with chloride concentration of 1% and above and made with FBEC bars having > 1% surface damage or with 3 holidays per linear foot. The long-term performance of FBEC bars with up to two pinholes (ASTM A 775 limit) was satisfactory in the concrete specimens with up to 2% chlorides, by weight of cement. Furthermore, surface damage to FBE coating is more critical compared to holidays, from the point of view of corrosion of FBEC bars, in chloride-bearing concrete.