

Long-term monitoring of FBEC steel bars corrosion in chloride-contaminated concrete

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Abstract: As corrosion of reinforcing steel is the principal cause of concrete deterioration, several techniques and materials are being utilized to mitigate/inhibit this phenomenon. Fusion-bonded epoxy-coated (FBEC) steel bars are being utilized to preclude corrosion problems. However, there are concerns on the effect of holidays and surface damage to the coating on the corrosion of the underlying FBEC steel bars. This apprehension is compounded due to the lack of long-term data on this issue. This paper reports the results of a long-term study conducted to assess the effect of holidays and surface damage to the coating on the corrosion resistance of FBEC steel bars in concrete contaminated with different levels of chloride ions. Reinforcement corrosion was evaluated by measuring the corrosion current density. After seven years of exposure to the chloride media, reinforcement corrosion was noted to increase with the degree of surface damage and the level of chloride contamination. The effect of holidays on corrosion was found to be negligible.