Correlations between depth of water penetration, chloride permeability, and coefficient of chloride diffusion in plain, silica fume, and fly ash cement concretes

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Abstract:

An experimental study was conducted to evaluate correlations between the depth of water penetration, chloride permeability, and coefficient of chloride diffusion in plain, silica fume, and fly ash cement concretes. A total of 27 concrete mixtures were prepared by varying the water to cementitious materials ratio and cementitious materials content and using Type I, fly ash (20 %), and silica fume (7.5 %) cements. The test results were statistically analyzed to develop correlations between the depth of water penetration, chloride permeability, and coefficient of chloride diffusion. A good correlation was noted between the depth of water penetration and chloride diffusion, and chloride permeability and coefficient of chloride diffusion (R^2>0.80).