

TEMPERATURE EFFECTS ON COMPRESSIVE STRENGTH, SHRINKAGE AND BOND STRENGTH FOR FLY ASH CONCRETE

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ABSTRACT

This research work was undertaken to determine the influence of temperature and inclusion of ASTM Class F fly ash on strength, drying, shrinkage, and bond strength of concrete under simulated hot and dry weather conditions. In this study, two different types of concrete with compressive strengths of 2500 psi (17 MPa) and 4500 psi (31 MPa), were designed and tested. The performance of these concretes was measured at varying amounts of fly ash inclusion (0 - 30% cement replacement) and three different levels of test temperature 73, 95 and 125 F (23, 35, and 49 C). The results showed that the optimum Class F fly ash ranged from 10-30 percent for structural grade concrete with respect to compressive strength, shrinkage and ultimate bond strength under these adverse hot weather conditions.