EFFECTS OF TEMPERATURE AND TYPE F FLY ASH ON COMpressive Strength AND ABRasion RESISTANCE OF CONCRETE

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ABSTRACT

This study was carried out to investigate the effects of temperature and fly ash addition on concrete strength and abrasion resistance under simulated hot weather conditions. Test data were collected at four levels of fly ash content (0.10, 20 and 30 percent cement replacement), three levels of temperature (73, 95 and 100°F) with varying relative humidity (20-80%) depending upon age and temperature during the curing. Two different types of concretes A and B with their respective design strengths of 2500 psi and 4500 psi were tested for compressive strength. Concrete A was used for abrasion resistance tests.

The results revealed that fly ash inclusion was more effective in concrete A as compared to concrete B. The optimum fly ash content varied between 10 to 20 percent depending upon age and type of concrete. The resistance to abrasion increased with increasing fly ash content at 70°F. However, the abrasion resistance at higher temperatures was adversely affected by inclusion of fly ash.