

EFFECT OF SOURCE OF FLY ASH ON ABRASION RESISTANCE OF CONCRETE

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ABSTRACT

This investigation was performed to establish the effects of the source and amount of fly ash on abrasion resistance of concrete. A reference concrete was proportioned to have a 28-day age strength of 41 MPa. Three sources of Class C fly ash were used in this research. From each source, three levels of fly ash to total cementitious materials content (40, 50, and 60%) were used in producing the concrete mixtures. The water to cementitious materials ratio was kept constant at 0.30 for all mixtures. An accelerated abrasion testing method, a modified ASTM C 944 test, was used to measure the abrasion resistance of this high-strength concrete. The effects of both the source and the amount of fly ash on abrasion resistance of concrete were noticeable. All concrete mixtures with and without fly ash exhibited high abrasion resistance in accordance with the ASTM requirement. Concrete abrasion resistance was not greatly influenced by inclusion of Class C fly ash up to 40 % of total cementitious materials. However, a substantial decrease in abrasion resistance of High Volume fly ash (HVFA) concrete (especially at fly ash content above 50%) compared to the reference mixture without fly ash.