**Comparison of Beneficiated Fly Ash with a Popular Class F Fly Ash in Tennessee**

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**ABSTRACT**

With the amount of available fly ash sources dwindling, the beneficiation of previously undesirable fly ash is becoming more important. The utilization of beneficiated Class F fly ash (BFFA) could provide many benefits. The BFFA mixtures were compared to popular Tennessee Class F fly ash (F) mixtures.

TDOT bridge deck (Class D) and general use (Class A) concrete mixtures were selected for this preliminary investigation. Both the Class D and Class A were compared to two similar (25% substitution by weight of cement for both mixes) F mixtures.

Six batches of each mixture were tested. Surface resistivity (chloride permeability) and compressive strength was measured at 7, 14, 28, and 56 days. Static modulus of elasticity was measured at 28 and 56 days. Absorption after boiling was measured at 56 days. The BFFA bridge deck mixture was statistically superior or equal to the corresponding F mixture for all properties except absorption after boiling. To date, only 14-day data has been collected for the general mixture. BFFA has not been significantly different from F in three of four cases. All mixtures met TDOT Class D plastic and hardened property requirements and are expected to meet for Class A.

BFFA is expected to cost more than F. However, 25% BFFA cementing material cost less than $2.50 per cubic yard more. The advantage of BFFA is its environmental impact on the use of undesired fly ash by the process of beneficiation. BFFA use cuts down on the amount of fly ash placed into landfills.