

**Development and Demonstration of High-carbon CCPs and FGD By-products in  
Permeable Roadway Base Construction**

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**ABSTRACT**

This investigation was conducted to develop and demonstrate permeable base course materials using coal combustion products (CCPs) for highways, roadways, and airfield pavements. Three types of CCPs, two flue-gas desulfurization (FGD) by-products, and a variable-carbon fly ash, are being evaluated for no-fines or low-fines concrete as a permeable base material. This third quarterly report includes the work completed during the period from June 1, 2000 through March 30, 2001. During this period, various parts of the work pertaining to Tasks 1, 2, and 3 of the project was completed.

Currently, additional work related to Tasks 2 and 3 is in progress. Mixture proportions for the base course materials are being finalized using a two-step experimental optimization process. The first step involved developing mixture proportions for permeable base course materials containing no CCPs. The optimum mixtures developed from the first step of the experimental process were used as candidate mixture proportions for the second step of the optimization process. The second step of the mixtures includes various combinations of the three CCPs for developing mixtures for base course materials. To date a total of 30 mixtures have been proportioned and manufactured. Specimens from each mixture were made using roller-compacted concrete (RCC) technology in accordance with ASTM C 1435. Experimental investigation pertaining to the first step of the optimization process has been completed. Mixture proportioning, manufacturing, and testing are in progress for the second step of optimization. Work related to the second step of optimization mixtures will be continued during the next quarter.