

**Testing of High Volume Fly Ash Concrete for Freezing and Thawing
Durability - Kingsford Dam**

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ABSTRACT

High-volume fly ash concrete was specified and used at the Wisconsin Electric Power Company's Kingsford Dam for rehabilitation. This dam is located near Kingsford, Michigan. Extensive technical information exists for mechanical properties of high-volume fly ash (HVFA) concrete. However, there is a lack of test data for freezing and thawing (F&T) durability of concrete produced in the field. This project was authorized by the Wisconsin Electric Power Company to obtain freezing and thawing durability data for the HVFA concrete used for the repairs and rehabilitation of the Kingsford Dam. The concrete mixture used for this project contained 54% fly ash by weight of the total cementitious materials. Test data and evaluation provided in this report should further augment the knowledge needed to promote the use of high-volume fly ash concrete. The analysis and recommendations presented in this report are based upon the F&T laboratory tests completed at the University of Wisconsin-Milwaukee Center for By-Products Utilization and additional data supplied to UWM-CBU by the Wisconsin Electric Power Company. Test results show that HVFA concrete tested has a very high resistance against freezing and thawing exposure.