

Abstract

Fly ash was used in this evaluation study to replace 15% of the cement in Class D-57 structural concrete containing ASTM C494 Type B, retarding admixtures. Two Class "C" ashes and one Class "F" ash from Iowa approved sources were examined in each mix. When Class "C" ashes were used, they were substituted on the basis of 1.0 pound for each pound of cement removed. When Class "F" ash was used, it was substituted on the basis of 1.25 pounds of ash for each pound of cement removed.

Compressive strengths of the retarded mixes, with and without fly ash, were determined at 7, 28 and 56 days of age. In most cases, with few exceptions, the mixes containing the fly ash exhibited higher strengths than the same concrete mix without the fly ash. The exceptions were the 7, 28, and 56 days of the mixes containing Class F ash.

The freeze/thaw durability of the concrete studied was not affected by the presence of fly ash. The data obtained suggested that the present Class D-57 structural concrete mix with retarding admixtures can be modified to allow the substitution of 15% of the cement with an approved fly ash when Class III coarse aggregates are used.

Setting times of the concretes were not materially changed due to the incorporation of fly ash.