

**Engineering Brief # 33A**

Date: July 13, 1984

Reply To Attn. Of AAS-200

Subject: INFORMATION: Engineering Brief No. 33, Use of  
Fly Ash as a Partial Replacement for Cement

From: Manager, Engineering and Specifications Division, AAS-200  
To: All Regions

Attn: Manager, Airports Division

Engineering Brief No. 33 discusses the Environmental Protection Agency's Guidelines regarding the use of fly ash in concrete. It also contains several proposed changes to our standard for Item P-501.

A copy of the guidelines, as published in the January 28, 1983, Federal Register, is attached for your information.

ORIGINAL SIGNED BY:  
EDWARD AIKMAN

Attachment

ENGINEERING BRIEF NO. 33

USE OF FLY ASH AS A PARTIAL REPLACEMENT FOR CEMENT

On January 28, 1989, the Environmental Protection Agency (EPA) published guidelines regarding the use of fly ash in concrete purchased with Federal funds. The guideline recommends that procuring agencies include provisions in construction contracts which specifically allow for fly ash to be used as an optional or alternate material.

Paragraph 2.10(a) of Item P-501, Portland Cement Concrete Pavement, allows the use of fly ash only if approved by the engineer and does not contain any guidance on the quantities to be specified.

In conformance with the EPA guidelines we propose to make the following changes to Item P-501 :

1. Add to paragraph 2 .10(a). The use of fly ash as a partial replacement for cement, at the rate specified in paragraph 7.6, will be allowed at the contractor's option.
2. Add Note to the Engineer after paragraph 2.10(a). "The contract specifications should allow the optional use of fly

ash as a partial replacement for cement unless its use would be technically inappropriate for a particular project. Alternatively, bids may be taken with fly ash as an alternative material."

3. Add to paragraph 3.6. When fly ash is used as a partial replacement for cement, the minimum cement content may be met by considering portland cement plus fly ash as the total cementitious component. The replacement rate should not exceed 15 percent.

4. Add Note to the Engineer after paragraph 3.6. "The replacement rates of fly ash for cement in the production of blended cement generally do not exceed 20 to 30 percent. However, 15 percent is the more accepted rate when fly ash is used as a partial replacement as an admixture in concrete. In general, the concrete mix is adjusted by adding fly ash, while decreasing cement, water, and fine aggregate. The fly ash must be checked for compliance with ASTM C 618 and trial mixes should be made to verify compliance with of such mixes with the specified quality parameters of Item P-501 ."

The above changes should be incorporated in project specifications until the coordination process is completed and a formal change is issued.

ORIGINAL SIGNED BY:  
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Civil Engineer