

SECTION 605 FLY ASH

605.1 DESCRIPTION

This specification allows the substitution of fly ash for a portion of Portland Cement in concrete.

605.2 MATERIALS

Fly ash shall conform to Section 753.

605.3 CONSTRUCTION REQUIREMENTS

A. Limitations:

1. **Dates:** The use of fly ash will be permitted only between April 15 and October 1.
2. **Cement:** Fly ash will not be permitted, when Type III cement is used.
3. **Pozzolan Modified Cement:** Pozzolan modified cement, if used, shall conform to AASHTO M 240. Fly ash may not be substituted for a portion of pozzolan modified Portland cement. If pozzolan modified Portland cement is used, the cement and fly ash shall conform to the requirements shown on the plans, and shall be mixed in the proportions shown herein.
4. **Class C Fly Ash:** When specified on the plans, Class C fly ash shall not be used for concrete in direct contact with the soil.

B. Storage: Fly ash shall be stored at the concrete plant site in clearly marked, separate containers. Use of divided bins in the same silo will be permitted if the silo is commercially manufactured with divided bins, or if the contractor/concrete supplier has a certification by a registered professional engineer that the divided bins will structurally handle the load associated with the use of the silo.

C. Design Mix: Fly ash may be substituted for cement in concrete. **The addition or deletion of fly ash from the mix will be at no cost to the Department.** If fly ash is used, the minimum amount of cement to be replaced is 10 percent and the maximum amount is 15 percent. The ratio of substitution of fly ash to cement shall be 1.25:1, by weight.

For concrete pavement, the 28 day compressive strengths of concrete with fly ash shall be at least 95 percent of the 28 day compressive strength obtained using the design mix with cement only. The Contractor shall furnish samples of the materials to be used on the project to the Materials and Surfacing Laboratory for the design mix.

Air entraining agent shall conform to Section 751.

Changes in coal supply or source of fly ash will require a new mix design.

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- D. Acceptance:** The Contractor shall provide test results from representative samples of fly ash proposed for use. If test results meet the specifications, the source will be approved. Fly ash may be furnished, provided tests continue to conform to the requirements.

After approval of a source, the Contractor shall sample and test fly ash as it is placed into storage or hauling vehicles.

Each load of fly ash shall be accompanied by two copies of a certificate of compliance. The certificate shall contain the following information:

1. Project number and Contractor.
2. Quantity of material and source.
3. Truck number.
4. Date of shipment.
5. Test results representing the material supplied, signed by the tester and showing who the testing agency is, for fineness, loss on ignition, and moisture tests.
6. Signed statement from the supplier that material supplied meets specification requirements.

Failure to produce an acceptable certificate of compliance upon delivery of the material shall be reason to not allow its use.

- E. Batching:** Fly ash may be weighed on a separate scale, or on the same scale as the cement. If the cement scale is used, the cement must be weighed first.

605.4 METHOD OF MEASUREMENT

No measurement will be made for fly ash.

605.5 BASIS OF PAYMENT

The Contractor shall absorb all costs involved in sampling, testing, and using fly ash.