

2004 - FLY ASH FOR USE IN CONCRETE

SECTION 2004

FLY ASH FOR USE IN CONCRETE

2004.1 DESCRIPTION

This specification covers fly ash that may be used as a partial replacement for portland cement and blended hydraulic cement in concrete, when allowed by other parts of the Contract Documents.

2004.2 REQUIREMENTS

a. Fly ash sources must be prequalified.

b. Provide material that complies with the chemical and physical requirements of ASTM C 618, Class C or Class F, except the loss on ignition may not exceed 3.0%. The supplementary optional physical requirements apply, except that with the "Effectiveness in Controlling Alkali-Silica Reaction," the expansion of the test mixture as a percentage of the low-alkali cement control at 14 days may not exceed 120%. Conduct this testing with 15% fly ash and a Type I/II cement with an alkali content between 0.40% and 0.44%.

c. The quality-monitoring program must comply with the minimum sampling and testing frequencies established in ASTM C 311. This frequency may be altered slightly with the approval of the Bureau Chief of Construction and Materials, provided the monitoring intent of ASTM C 311 is met or exceeded.

d. There are other requirements that must be met for the fly ash/cement mixture in addition to those cited above for qualification of the fly ash alone. Additional testing will be required for specific applications. Consult the Contract Documents before proposing the use of fly ash in concrete.

2004.3 TEST METHODS

Sample and test fly ash according to ASTM C 311. Field sample according to Part V, KT-29.

2004.4 PREQUALIFICATION

a. **Becoming Prequalified.**

(1) Submit the following to the Engineer of Tests:

(a) A copy of the quality control plan for the source. The plan should include information on where and how sampling is performed, frequency, and what standards (ASTM, etc.) are used.

(b) A 2-gallon sample of fly ash representative of material intended for use on KDOT projects.

(c) Certified test results of fly ash produced by the power plant during the 6 months immediately before the prequalification request. Show the high, low and average values or statistical analysis for each month.

(d) Written information regarding the sources of coal utilized in the production of fly ash for the preceding 6 months, and that anticipated for the future.

(e) Written evidence of the latest Cement and Concrete Reference Laboratory (CCRL) inspection of the laboratory performing the fly ash testing.

(2) The Engineer of Tests will test the submitted sample and review the information submitted by the source, for compliance with the Contract Documents. The Bureau Chief of Construction and Materials will notify the source of the results in writing. Power plants complying with all requirements will be placed on a list of prequalified fly ash sources maintained by the Bureau of Construction and Materials.

(3) Prequalification of the source of fly ash will be based on material produced when the power plant is using specific materials, equipment and processes. Any change in materials, materials sources, equipment or processes voids the source prequalification, and a new prequalification will be required.

b. Maintaining Prequalified Status. After a fly ash source has gained prequalified status, the source will be permitted to furnish fly ash for use on KDOT projects provided the following conditions are met.

(1) Submit quality monitoring test reports monthly for all monitoring samples.

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(2) Use an approved laboratory to conduct quality control tests. The laboratory will be considered approved if it is properly equipped, has the capabilities to perform the tests required by the Contract Documents and is regularly inspected by the CCRL program. Continued approval of the control laboratory and the source will depend on satisfactory comparison of its test results with the results obtained by the Materials and Research Center.

(3) The source has not changed materials, material sources, equipment or processes since prequalification.

2004.5 BASIS OF ACCEPTANCE

a. Prequalification as specified in **subsection 2004.4.**

b. A proper certification must accompany each shipment of fly ash. Provide to the Field Engineer 2 copies of the bill of lading which includes the following certification statement and the signature of a responsible company representative.

Certification Statement

The material herein has been sampled and tested as prescribed by KDOT and complies with the applicable specification requirements for Class ___ fly ash.

Date _____ **Signed** _____

Identify the bills of lading with a project number, and denote the fly ash source, the type and the quantity in the shipment. Retain these copies at the project or ready mix plant for the Field Engineer's records.

In the case of more than one project being supplied by a ready mix plant, the plant must provide the Field Engineer with a copy of the bill of lading, or a signed listing of the bills of lading representing the fly ash incorporated in each project.

Note: Verification samples will be obtained by KDOT personnel at the project site. Test results which do not comply with the Contract Documents may be considered sufficient cause to rescind approval to furnish fly ash on a certification basis.