



Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS
SECRETARY

December 17, 2010

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **929**
Proposed Specification: **9290200 Pozzolans and Slag.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Susan Blazo of the State Materials Office to clarify the requirements for all Class C and F fly ash types, to align the acceptance of fly ash and metakaolin with the latest version of ASTM C-618, and to accept silica fume by certification instead of by submitting monthly test results.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4280.

Sincerely,

Rudy Powell, Jr., P.E.
State Specifications Engineer

RP/dt

Attachment

cc: Gregory Jones, Chief Civil Litigation
Florida Transportation Builders' Assoc.
State Construction Engineer

POZZOLANS AND SLAG.**(REV ~~69102-10241837~~-10)**

ARTICLE 929-2 (Pages 861 – 862) is expanded by the following:

929-2 Fly Ash.

929-2.1 ~~General Class C or Class F:~~ ~~Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618, Class C or Class F Fly ash.~~ Sampling and testing of fly ash shall follow the requirements of ASTM C-311. *Fly ash shall not include the residue resulting from the burning of municipal garbage or any other refuse with coal, or the burning of industrial or municipal garbage in incinerators.*

929-2.2 Fly Ash (Class F): *Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class F fly ash.*

929-2.2.1 Petroleum Coke Class -F: Fly ash resulting from the combustion of coal and petroleum coke shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When petroleum coke Class F fly ash is used in concrete, the test results shall verify improved or comparable strength, sulfate resistance, corrosion protective properties and other durability requirements of concrete, as compared to ASTM C-618 Class F fly ash concrete. The strength and durability tests of concrete shall be performed in accordance with ASTM C-39, ASTM C-157, ASTM C-1012, ASTM C-1202, ASTM G-109, FM 5-516 and FM 5-522. ~~Fly ash shall not include the residue resulting from the burning of municipal garbage or any other refuse with coal, or the burning of industrial or municipal garbage in incinerators. Sampling and testing of fly ash shall follow the requirements of ASTM C-311.~~

929-2.3.2 Bark Ash Class -F: Fly ash resulting from the combustion of timber bark ash and coal shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When bark ash is used in concrete, the strength and durability of the bark ash concrete shall be improved or comparable to the strength and the durability properties of ASTM C-618 Class F fly ash concrete. The tests shall be performed as specified in 929-2.2.1. ~~Sampling and testing of fly ash shall follow the requirements of ASTM C-311.~~

929-2.3 Fly Ash (Class C): *Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class C fly ash. When Class C fly ash is used in concrete, the test results shall verify improved sulfate resistance and improved or comparable corrosion protective properties, as compared to ASTM C-618 Class F fly ash concrete. The durability tests of concrete shall be performed in accordance with FM 3-C-1012.*

~~929-2.4 Special Requirements:~~

~~**929-2.4.1 Fly Ash (Class C):** When a Class C fly ash is used in moderately or extremely aggressive environments, tests made by the CCRL approved independent laboratory shall verify improved sulfate resistance of the concrete in accordance with ASTM C-1012, and improved or comparable corrosion protective properties measured by FM 5-522, as compared to similar concrete made with Class F fly ash.~~

~~929-2.4.2 Petroleum Coke and Bark Ash (Class F): For sources where the fly ash is not derived solely from ground or powdered coal combustion, certified test results performed by an independent approved laboratory, shall be submitted by the supplier. The performance-based comparison test results shall meet the requirements of 929-2.2 and 929-2.3 for petroleum coke and bark ash fly ashes, respectively.~~

929-2.54 Exceptions: Fly ash shall not be used in conjunction with Type IP or Type IS cements.

929-2.65 Acceptance Testing of Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified ~~quality control~~ tests *report* meeting the chemical ~~(Supplementary Optional included)~~ and physical requirements of ASTM C-618. When the loss on ignition exceeds 5%, the ~~Uniformity Requirements in the~~ Supplementary Optional Physical Requirements shall be mandatory *except that the Effectiveness in Controlling Alkali-Silica Reaction will not be required*. An approved laboratory shall perform the monthly quality control tests and a copy of their ~~mill certificates~~ *certified test reports* shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with ~~mill certificates~~ *certified test reports* shall be submitted to the Department, upon request.

SUBARTICLE 929-3.2 (Page 862) is deleted and the following substituted:

929-3.2 Acceptance Testing of Silica Fume: Acceptance of silica fume from sources operating under an approved quality control plan shall be based on ~~the monthly certified quality control tests meeting the chemical (Supplementary Optional included) and certification that the material meets the~~ physical requirements of ASTM C-1240. ~~An approved laboratory shall perform the monthly quality control tests and a copy of their mill certificates shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the silica fume meets the requirements of and this Specification. Also, the corresponding samples along with mill certificates shall be submitted to the Department, upon request.~~

SUBARTICLE 929-4.2 (Page 863) is deleted and the following substituted:

929-4.2 Acceptance Testing of Metakaolin: Acceptance of metakaolin from sources operating under an approved quality control plan shall be based on the monthly certified ~~quality control~~ tests *report* meeting the chemical ~~(Supplementary Optional included)~~ and physical requirements of ASTM C-618 Class N, as modified herein. An approved laboratory shall perform the monthly quality control tests and a copy of their ~~mill certificates~~ *certified test reports* shall be sent to the State Materials Office, when the material is in use on Department projects. Also, the corresponding samples along with ~~mill certificates~~ *certified test reports* shall be submitted to the Department, upon request. The certification shall indicate that the metakaolin meets the requirements of this Specification.

SUBARTICLE 929-6.3 (Page 864) is deleted and the following substituted:

929-6.3 Acceptance Testing of Ultra Fine Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified ~~quality control~~ tests ~~report~~ meeting the chemical ~~(Supplementary Optional included)~~ and physical requirements of ASTM C-618. When the loss on ignition exceeds 2.0%, the Uniformity Requirements in the Supplementary Optional Physical Requirements shall be mandatory. An approved laboratory shall perform the monthly quality control tests and a copy of their ~~mill certificates~~ ~~certified test reports~~ shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with ~~mill certificates~~ ~~certified test reports~~ shall be submitted to the Department, upon request.

POZZOLANS AND SLAG.**(REV 12-17-10)**

ARTICLE 929-2 (Pages 861 – 862) is expanded by the following:

929-2 Fly Ash.

929-2.1 General: Sampling and testing of fly ash shall follow the requirements of ASTM C-311. Fly ash shall not include the residue resulting from the burning of municipal garbage or any other refuse with coal, or the burning of industrial or municipal garbage in incinerators.

929-2.2 Fly Ash (Class F): Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class F fly ash.

929-2.2.1 Petroleum Coke Class F: Fly ash resulting from the combustion of coal and petroleum coke shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When petroleum coke Class F fly ash is used in concrete, the test results shall verify improved or comparable strength, sulfate resistance, corrosion protective properties and other durability requirements of concrete, as compared to ASTM C-618 Class F fly ash concrete. The strength and durability tests of concrete shall be performed in accordance with ASTM C-39, ASTM C-157, ASTM C-1012, ASTM C-1202, ASTM G-109, FM 5-516 and FM 5-522.

929-2.2.2 Bark Ash Class F: Fly ash resulting from the combustion of timber bark ash and coal shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When bark ash is used in concrete, the strength and durability of the bark ash concrete shall be improved or comparable to the strength and the durability properties of ASTM C-618 Class F fly ash concrete. The tests shall be performed as specified in 929-2.2.1.

929-2.3 Fly Ash (Class C): Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class C fly ash. When Class C fly ash is used in concrete, the test results shall verify improved sulfate resistance and improved or comparable corrosion protective properties, as compared to ASTM C-618 Class F fly ash concrete. The durability tests of concrete shall be performed in accordance with FM 3-C-1012.

929-2.4 Exceptions: Fly ash shall not be used in conjunction with Type IP or Type IS cements.

929-2.5 Acceptance Testing of Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618. When the loss on ignition exceeds 5%, the Supplementary Optional Physical Requirements shall be mandatory except that the Effectiveness in Controlling Alkali-Silica Reaction will not be required. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request.

SUBARTICLE 929-3.2 (Page 862) is deleted and the following substituted:

929-3.2 Acceptance Testing of Silica Fume: Acceptance of silica fume from sources operating under an approved quality control plan shall be based on certification that the material meets the requirements of ASTM C-1240 and this Specification.

SUBARTICLE 929-4.2 (Page 863) is deleted and the following substituted:

929-4.2 Acceptance Testing of Metakaolin: Acceptance of metakaolin from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618 Class N, as modified herein. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office, when the material is in use on Department projects. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request. The certification shall indicate that the metakaolin meets the requirements of this Specification.

SUBARTICLE 929-6.3 (Page 864) is deleted and the following substituted:

929-6.3 Acceptance Testing of Ultra Fine Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618. When the loss on ignition exceeds 2.0%, the Uniformity Requirements in the Supplementary Optional Physical Requirements shall be mandatory. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request.