Florida Department of Transportation

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605 Suwannee Street
Tallahassee, FL 32399-0450

MIKE DEW
SECRETARY

November 8, 2018

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: **921**
Proposed Specification: **9210000 Portland Cement and Blended Cement.**

Dear Mr. Nguyen:

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

The changes are proposed by Thomas Frank of the State Materials Office (SMO) to modify the language.

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

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Dan Hurtado, P.E.
State Specifications Engineer

DH/dt
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

PORTLAND CEMENT AND BLENDED CEMENT.
(REV 9-21-1811-8-18)

SECTION 921 is deleted and the following substituted:

SECTION 921
PORTLAND CEMENT AND BLENDED CEMENT

921-1 General.

Cement shall conform to the requirements of AASHTO M85 or AASHTO M240, as applicable, except as defined below or as specifically restricted in Section 346.

921-1.1 Type of Cement: Cement may be Types I, II, II (MH), III, IV, V (AASHTO M85), or IL, IP, IS (AASHTO M240). Different brands of cement, cement of the same brand from different facilities, or different types of cement shall be stored separately and shall not be mixed.

921-1.2 Alkali Content: Portland cement containing a maximum of 0.60% alkali, or less, calculated as Na_2O (% Na_2O plus 0.658% K_2O), may be used with no further testing. High-Alkali Cement containing a maximum ofwith an alkali content greater than 0.60% andbut less than or equal to 1.00% alkali, or less, calculated as Na2O (% Na2O plus 0.658% K2O), may be used with the following requirements. When high alkali cement is used in cConcrete, the test results shall verify improved or comparable strength, sulfate resistance, corrosion protective properties and other durability requirements of concrete, as compared to AASHTO M85 low alkaliconcrete containing cement with a maximum alkali content of 0.60%. The strength and durability tests of concrete shall be performed in accordance with AASHTO T358, ASTM C39, ASTM C157, FM 3-C1012, and FM 5-516.

921-1.3 Heat of Hydration: The cement heat of hydration for Type II (MH) or Type IL shall be tested in accordance with ASTM C1702 and reported at three days.

921-2 Terminology.

The following definitions are applicable to the production and quality control of cement:

Approved Laboratory - indicates a laboratory acceptable to the State Materials Office (SMO) that is currently inspected by the Cement and Concrete Reference Laboratory (CCRL), is actively participating in their proficiency program and which has all deficiencies noted at the time of inspection corrected. The laboratory must also authorize CCRL to submit final inspection reports to the State Materials Office.

Approved Source - indicates a cement supplier, including but not limited to a plant, a terminal, or a transfer facility, that has been qualified by the State Materials Office. A list of Aapproved Ccement Ssources will be maintained by the State Materials Office.

Mill Test Report - indicates a certification from the cement supplier identifying that the cement meets Section 921, the Ttype, the production period the sample represents and the chemical and physical analyses of the cement, and the silo numbers where the cement is stored. The mill test report must identify that there isany limestone in the cement, if limestone is includedand/or inorganic processing additions, if either is incorporated into the finished product. The mill test report must also include the amount of limestone and/or inorganic processing additions used, expressed as a percentage of cement mass, the base cement phase composition,

and the oxide composition of any limestone and/or inorganic processing additions, where applicable. An acceptable mill test report is found in the appendix of AASHTO M85.

Purchaser - The term "purchaser" in the AASHTO ~~Specification~~requirements shall be taken as the Department.

Quality Control (QC) Plan Status - indicates quality control approval status, for each cement supplier and will be maintained by the S~~tate~~ M~~aterials~~ O~~ffice~~ in conjunction with the ~~A~~approved ~~S~~source ~~L~~list.

Source of Supply - indicates a cement supplier responsible for supplying the final product. Where the supplier has more than one manufacturing facility, the source of supply may be designated as the manufacturer/facility.

921-3 Packing, Handling and Storing.

Cement may be delivered in bags or in bulk. The storage building, bin or silo shall be weatherproof and shall be located convenient to the work. On small jobs, storage in the open may be permitted by the Engineer in which case raised platforms and adequate waterproof coverings shall be provided.

921-4 Rejection.

The entire contents of the sack or bulk container which contains cement that does not meet the requirements of this S~~p~~ec~~ifica~~tion or has been damaged, is partially set, lumpy or caked shall be rejected.

Bagged cement which varies more than 5% from the designated weight, or if the average weight of 50 sacks, taken at random, is less than the designated weight, the cement shall be rejected.

921-5 Quality Control Plan.

921-5.1 General: The Quality Control Program of a cement supplier shall conform to Section 105. Cement suppliers shall submit a proposed QC Plan to the S~~tate~~ M~~aterials~~ O~~ffice~~ for plan approval. In addition to the QC Plan, the supplier must submit test reports from an approved laboratory which certifies that the cement in current production or supply conforms to these S~~p~~ec~~ifica~~tion~~s~~. Upon initial QC Plan approval and receipt of the cement mill test report, the suppliers will be placed in an approved source status with an approved ~~q~~Q~~uality c~~C~~ontrol ~~p~~Plan. An approved laboratory shall perform one quality control test per day. Submit the monthly mill test report to the S~~tate~~ M~~aterials~~ O~~ffice~~. The mill test report shall indicate that the cement meets the requirements of this S~~p~~ec~~ifica~~tion. Also, the corresponding samples along with mill test reports shall be submitted to the Department, upon request.

~~Producers intending to use limestone as a component material in the production of cement shall describe the type and source of the limestone. In addition, the producer shall supply the Department with a sample of the limestone, a sample of the cement prior to the limestone being added and a sample of the cement after the limestone has been added. The analysis of these materials will be used as a baseline for information. In the event that the source of limestone used by the cement producer changes, additional samples of both the limestone and the cement with the limestone added shall be provided to the State Materials Office for evaluation.~~

Representatives from the Department may take samples from the cement production facility at a minimum of once per year to verify compliance with the producer's QC Plan.

The supplier's QC Plan shall be sufficient to ~~i~~ensure that more than 97% of all cement delivered for Department work shall meet all Specification requirements. Upon request of the Department, the supplier shall provide split samples of the cement collected for quality control testing. Split samples shall be delivered to the S~~tate~~ M~~aterials~~ O~~ffice~~ and shall be identified as representing a designated LOT of cement.

921-5.2 Limestone and~~or~~ Inorganic Processing Additions: Producers intending to use limestone and/or inorganic processing additions as component materials in the production of cement shall describe the type, source, and the target amount, expressed as a percentage of cement mass. In addition, the producer shall display the information required in 921-2 on the mill test report. Samples of both the limestone and/or any inorganic processing additions shall be provided to the S~~tate~~ M~~aterials~~ O~~ffice~~ for evaluation upon request.

921-5.~~2~~3 Acceptance of Portland Cement: Portland cement from an approved source with a current QC Plan approval may be accepted on the basis of mill test reports meeting the applicable AASHTO requirements ~~of the applicable AASHTO~~ and ~~F~~D~~OT~~epartment Specifications and a delivery ticket on the producer's letterhead and traceable to the mill test report. Mill test reports shall be submitted upon request to the S~~tate~~ M~~aterials~~ O~~ffice~~ and corresponding samples for verification testing. Quality control testing shall be performed by an approved laboratory.

921-5.~~3~~4 Cement Ownership and Responsibility: For purposes of QC Plan approval status, the cement supplier shall be responsible for cement quality until the cement is accepted by the concrete producer. Where the cement has been accepted by a concrete producer and is subsequently found deficient, the concrete plant QC Plan approval may be withdrawn with respect to further use of that cement and reinstated only when the deficiency is adequately resolved. Reinstatement is made by the S~~tate~~ M~~aterials~~ O~~ffice~~.

921-5.~~4~~5 Quality Control Plan Approval Control: The S~~tate~~ M~~aterials~~ O~~ffice~~ may withdraw QC Plan approval and may require cement shipments to be individually tested prior to incorporation into Department work. QC Plan approvals may be rescinded when the performance of cement is in question, including problems with concrete quality, inconsistent quality control data, or failure of quality control or verification test results. Discontinuance of approval may be based on testing at the point of use, testing by the manufacturer or proven poor performance of the cement in concrete.

In the specific instance of a failing cement sample taken by the Department at the cement source, the failure shall initiate the Department to retest the sample. Failure of the retest will be considered adequate evidence to withdraw the QC Plan of the cement supplier.

Notification of failing test results will be distributed to the cement supplier (and concrete producers, if applicable) as designated in the approved QC Plan. Split samples of the initial sample may be provided to the cement supplier and concrete producer upon request.

Reinstatement of the QC Plan will occur when the cement producer identifies and corrects the specific cause of the failures or that a statistical analysis indicates that the current cement production meets or exceeds the requirements of this S~~p~~ec~~ifica~~tion.

921-5.~~5~~6 Sampling of Cement: The verification samples may be taken at the manufacturer's plant, distribution facility or at the concrete production facility. Samples shall be obtained by one of the methods in FM 5-503. Samples sizes shall be a minimum of one quart. At the concrete production facility, cement samples shall be jointly obtained by the Department ~~I~~inspector and the concrete producer's representative.

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(REV 11-8-18)

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Approved Source - indicates a cement supplier, including but not limited to a plant, a terminal, or a transfer facility, that has been qualified by the SMO. A list of approved cement sources will be maintained by the SMO.

Mill Test Report - indicates a certification from the cement supplier identifying that the cement meets Section 921, the type, the production period the sample represents and the chemical and physical analyses of the cement, and the silo numbers where the cement is stored. The mill test report must identify any limestone and/or inorganic processing additions, if either is incorporated into the finished product. The mill test report must also include the amount of limestone and/or inorganic processing additions used, expressed as a percentage of cement mass, the base cement phase composition, and the oxide composition of any limestone and/or inorganic processing additions, where applicable. An acceptable mill test report is found in the appendix of AASHTO M85.

Purchaser - The term “purchaser” in the AASHTO requirements shall be taken as the Department.

Quality Control (QC) Plan Status - indicates quality control approval status, for each cement supplier and will be maintained by the SMO in conjunction with the approved source list.

Source of Supply - indicates a cement supplier responsible for supplying the final product. Where the supplier has more than one manufacturing facility, the source of supply may be designated as the manufacturer/facility.

921-3 Packing, Handling and Storing.

Cement may be delivered in bags or in bulk. The storage building, bin or silo shall be weatherproof and shall be located convenient to the work. On small jobs, storage in the open may be permitted by the Engineer in which case raised platforms and adequate waterproof coverings shall be provided.

921-4 Rejection.

The entire contents of the sack or bulk container which contains cement that does not meet the requirements of this Section or has been damaged, is partially set, lumpy or caked shall be rejected.

Bagged cement which varies more than 5% from the designated weight, or if the average weight of 50 sacks, taken at random, is less than the designated weight, the cement shall be rejected.

921-5 Quality Control Plan.

921-5.1 General: The Quality Control Program of a cement supplier shall conform to Section 105. Cement suppliers shall submit a proposed QC Plan to the SMO for plan approval. In addition to the QC Plan, the supplier must submit test reports from an approved laboratory which certifies that the cement in current production or supply conforms to these Section. Upon initial QC Plan approval and receipt of the cement mill test report, the suppliers will be placed in an approved source status with an approved QC Plan. An approved laboratory shall perform one quality control test per day. Submit the monthly mill test report to the SMO. The mill test report shall indicate that the cement meets the requirements of this Section. Also, the corresponding samples along with mill test reports shall be submitted to the Department, upon request.

Representatives from the Department may take samples from the cement production facility at a minimum of once per year to verify compliance with the producer’s QC Plan.

The supplier’s QC Plan shall be sufficient to ensure that more than 97% of all cement delivered for Department work shall meet all Specification requirements. Upon request of the Department, the supplier shall provide split samples of the cement collected for quality control testing. Split samples shall be delivered to the SMO and shall be identified as representing a designated LOT of cement.

921-5.2 Limestone and Inorganic Processing Additions: Producers intending to use limestone and/or inorganic processing additions as component materials in the production of cement shall describe the type, source, and the target amount, expressed as a percentage of cement mass. In addition, the producer shall display the information required in 921-2 on the mill test report. Samples of both the limestone and/or any inorganic processing additions shall be provided to the SMO for evaluation upon request.

921-5.3 Acceptance of Portland Cement: Portland cement from an approved source with a current QC Plan approval may be accepted on the basis of mill test reports meeting the applicable AASHTO requirements and Department Specifications and a delivery ticket on the producer's letterhead and traceable to the mill test report. Mill test reports shall be submitted upon request to the SMO and corresponding samples for verification testing. Quality control testing shall be performed by an approved laboratory.

921-5.4 Cement Ownership and Responsibility: For purposes of QC Plan approval status, the cement supplier shall be responsible for cement quality until the cement is accepted by the concrete producer. Where the cement has been accepted by a concrete producer and is subsequently found deficient, the concrete plant QC Plan approval may be withdrawn with respect to further use of that cement and reinstated only when the deficiency is adequately resolved. Reinstatement is made by the SMO.

921-5.5 Quality Control Plan Approval Control: The SMO may withdraw QC Plan approval and may require cement shipments to be individually tested prior to incorporation into Department work. QC Plan approvals may be rescinded when the performance of cement is in question, including problems with concrete quality, inconsistent quality control data, or failure of quality control or verification test results. Discontinuance of approval may be based on testing at the point of use, testing by the manufacturer or proven poor performance of the cement in concrete.

In the specific instance of a failing cement sample taken by the Department at the cement source, the failure shall initiate the Department to retest the sample. Failure of the retest will be considered adequate evidence to withdraw the QC Plan of the cement supplier.

Notification of failing test results will be distributed to the cement supplier (and concrete producers, if applicable) as designated in the approved QC Plan. Split samples of the initial sample may be provided to the cement supplier and concrete producer upon request.

Reinstatement of the QC Plan will occur when the cement producer identifies and corrects the specific cause of the failures or that a statistical analysis indicates that the current cement production meets or exceeds the requirements of this Section.

921-5.6 Sampling of Cement: The verification samples may be taken at the manufacturer's plant, distribution facility or at the concrete production facility. Samples shall be obtained by one of the methods in FM 5-503. Samples sizes shall be a minimum of one quart. At the concrete production facility, cement samples shall be jointly obtained by the Department inspector and the concrete producer's representative.