

EXPECTED IMPLEMENTATION JULY 2023

921 PORTLAND CEMENT AND BLENDED CEMENT. (REV 7-29-22) (FA 8-1-22) (FY 2023-24)

SECTION 921 is deleted and the following substituted:

921-1 General.

Cement shall conform to the requirements of AASHTO M 85 or AASHTO M 240, as applicable, except as provided in this Section.

921-1.1 Type of Cement: Cement may be Types I, II, II (MH), III, IV, V (as defined by AASHTO M 85), or IL, IP, IS, IT (as defined by AASHTO M 240). Cement type shall be selected based on component and environmental conditions in accordance with Section 346. Different brands of cement, cement of the same brand from different facilities, or different types of cement shall be stored separately, identified, and shall not be mixed.

921-1.2 Heat of Hydration: The cement heat of hydration for Type II (MH), Type IT, and Type IL shall be tested in accordance with ASTM C1702 and reported at three days.

921-2 Definitions.

The following definitions are applicable to the production and Quality Control (QC) of cement:

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

2. **Producer:** A cement supplier, including but not limited to a plant, a terminal, or a transfer facility, that has been qualified by the SMO. The Cementitious Materials Production Facility Listing will be maintained by the SMO.

3. **Test Report:** A certification from the Producer showing that the cement meets the requirements of Section 921.

The test report must include, at a minimum, the following information:

- a. The type of cement.
- b. The production period.
- c. Chemical and physical analysis of the cement.
- d. The silo identification where the cement is stored.
- e. The base cement phase composition, except for blended cements.
- f. Amount of limestone and/or inorganic processing additions used, expressed as a percentage of the cement mass.
- g. The oxide composition of the limestone and/or inorganic processing additions.
- h. The specific gravity of cement reported as an average of the last twelve monthly tests, updated every six months.
- i. The heat of hydration at three days.
- j. The approved laboratory that performed all tests.

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Acceptable test reports are available in the appendices of AASHTO M 85 for portland cement and AASHTO M 240 for blended cement, except as modified by the requirements of this Section.

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

921-3 Quality Control Program.

921-3.1 General: Develop a Producer QC Program as specified in Section 105.

Producers shall submit a proposed QC Plan to the SMO for acceptance. Complete the Cementitious Materials Producer QC Plan Checklist (Appendix B02) and submit it along with the QC Plan, in a separate file. The checklist can be found on the SMO website:

<https://www.fdot.gov/materials/quality/programs/qualitycontrol/checklists/index.shtm>. In addition to the QC Plan, the Producer must submit monthly test reports from an approved laboratory which certifies that the cement in current production or supply conforms to the requirements of this Section.

Producers with an accepted QC Plan will appear on the Cementitious Materials Production Facility Listing.

QC test data that does not comply with this Section will not be a reason for rejection of the material if the Producer’s QC Plan indicated that material will be diverted and not used for Department work.

921-3.2 Sampling and Testing: An approved laboratory shall perform one QC test per day. Test reports representing no more than one month’s production shall be submitted to the SMO on a monthly basis, for foreign cement, refer to 921-5.

Representatives from the Department may take verification samples at the Producer’s plant, terminal, distribution facility, or the concrete production facility. Samples shall be obtained by one of the methods described in FM 5-503. Sample size shall be a minimum of one gallon. At the concrete production facility, cement samples shall be jointly obtained by the Department inspector and the concrete producer’s representative.

Upon request of the Department, the Producer shall provide split samples of the cement collected for QC testing. Split samples shall be delivered to the SMO and shall be identified as representing a designated LOT of cement.

Notification of failing verification sample test results will be distributed to the Producer and concrete producer, if applicable. Split samples of the initial sample may be provided to the Producer and concrete producer upon request, as available.

921-3.3 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 test report. Samples of any pulverized limestone and/or inorganic processing additions shall be provided to the SMO for evaluation upon request.

921-4 Shipping and Storage.

Cement shall be delivered in bags or in bulk. Portland cement from a Producer on the Cementitious Materials Production Facility Listing shall be shipped on the basis of test

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reports meeting the requirements of this Section. Ensure that each shipment is accompanied by a delivery ticket that is traceable to the test report and includes, at a minimum, the following information:

1. FDOT Facility Identifier
2. Type of cement
3. Date shipped
4. Silo Identification

The storage building, bin or silo shall be weatherproofed.

921-5 Foreign Cement Acceptance.

Cement being imported from a foreign source shall conform to all requirements of this Section and will be subject the following process:

1. The proposed QC Plan and the QC Plan Checklist (Appendix B02) referenced in 921-3.1 shall be sent to the SMO and will include information regarding the QC, sampling, storage, and handling of the cement at the arrival terminal as well as the shipping control to and from the arrival terminal. In addition, the QC Plan from the foreign source shall be translated to English and will be included with the proposed QC Plan for the arrival terminal.

2. An initial one-gallon sample of the imported cement shall be sent to the SMO for chemical and physical verification testing.

3. When the first ship is being loaded from foreign source, a one-gallon verification sample will be obtained and shipped to the SMO for chemical and physical property testing.

The material will be accepted for use on Department projects provided that the QC Plan has been accepted, and the results of the initial and verification samples have been confirmed to meet the requirements of this Section.

Upon receiving the shipment of cement at the arrival terminal, the Department will be notified, and a Department representative may obtain another verification sample.

Test reports representing each shipment shall be sent to the SMO.

921-6 Rejection of Material:

Reject the entire container of cement if it does not meet the requirements of this Section, including cement that has been damaged, is partially set, lumpy or caked.

Reject bagged cement if it varies more than 5% from the designated weight, or if the average weight of 50 randomly selected sacks is less than the designated weight.