

_____ CEMENT

NOTE TO SPECIFIERS: When pozzolan or blended cement are allowed in lieu or portland cement, use paragraph Conc. 3. Specifiers should complete attachment to this standard regarding consideration of the use of fly ash and materials containing fly ash.

- a. General. - All cement shall be furnished by the Contractor.

Cement shall be free from lumps and other deleterious matter and shall be otherwise undamaged when used. Before a concrete placement is started, sufficient cement shall be in storage at the batch plant to complete the placement.

Transportation from the place of manufacture to the batch plant shall be by means which will protect the cement completely from exposure to moisture. Immediately upon receipt at the jobsite, bulk cement shall be stored in dry, weathertight, properly ventilated bins until the cement is batched. The bins shall be emptied and cleaned by the Contractor when so directed by the Government; however, the intervals between required cleanings will normally be not less than 6 months. Each shipment of bagged cement shall be stored so that it may readily be distinguished from other shipments and shall be stored in a dry, enclosed area protected from precipitation. To prevent undue aging of bagged cement after delivery, the Contractor shall use bags of cement in the chronological order in which they were delivered to the jobsite.

When empty, cement bags shall be disposed of in accordance with paragraph _____ (Cleanup and Disposal of Waste Materials). All storage facilities shall be subject to approval by the Government and shall be constructed to permit easy access for inspection.

- b. Materials. - Portland cement shall meet the requirements of ASTM designation: C 150 for ¹(type _____) cement and shall meet the optional false-set limitation specified therein. ²(In addition, the maximum percent of the calcium aluminate in type I cement shall be 15 percent.) ³[Cement shall also conform to the low-alkali limitation unless the Contractor selects concrete aggregate sources which have previously been tested by the Bureau of Reclamation and which, as evidenced by petrographic examination or mortar bar tests, or both, do not contain potentially deleterious amounts of particles which may react with cement alkalies. If available, information regarding the potential alkali reactivity of aggregate from a particular source may be obtained from the ⁴(Project) Construction Engineer, _____]. If the potential alkali-reactivity of an aggregate source is unknown, low-alkali cement shall be used.]

At least 30 days before first shipment of any cement ⁴(, including cement for use in shotcrete, soil-cement, grout, and precast concrete items such as pipe, beams, and tees,) the Contractor shall inform the Contracting Officer, in writing, of the following: the names and addresses of cement shipping points; the names and addresses of cement companies from which the Contractor will purchase the cement; the names and addresses of contractors to whom the cement will be shipped if other than the prime Contractor; the quantity of cement ordered;

whether cement will be ordered in bulk or in bags; and the purchase order number, contract number, or other designation that will identify the cement to be used by the Contractor.

The Contractor shall notify the Contracting Officer before implementing changes in cement production or handling which relate to the data previously submitted.

c. Acceptance. - The cement will be sampled and tested by the Government in accordance with Department of the Army Regulation No. ER 1110-1-2002, Cement and Pozzolan Acceptance Testing.

(1) Prequalified producer. - If the cement is supplied from a producer who is prequalified, as described in appendix C of the above-noted regulation, for the specific cement type to be supplied, cement may be shipped directly from the product bin. Prequalification shall include required optional low-alkali and false-set limitations when specified. A mill test report shall be submitted to the Bureau construction office for each lot of cement from which shipments are supplied.

All cement shipments shall be accompanied by shipping documents containing the following:

- (a) Certification that the cement meets all applicable requirements of these specifications.
 - (b) Type of cement shipped, including optional limitations such as "false set" or "low alkali."
 - (c) Manufacturing location and dates.
 - (d) Lot (bin) number.
 - (e) Date of shipment.
 - (f) Quantity of cement shipped.
- (2) Testing for non-pre-qualified producer. - If the producer is not prequalified for the cement type to be supplied, the cement shall be sampled and stored in sealed silos at the place of manufacture, and will be tested by the Government for compliance before it is shipped from the sealed silos.
- (3) Testing for other categories. - When a producer is removed from the list of qualified producers for the cement type being supplied, or when the Contracting Officer determines that sealed-silo testing and acceptance are otherwise necessary, cement acceptance will be by successful tests on cement reserved for Government use in sealed silos at the point of manufacture.

(4) Basis for acceptance, removal, and reinstatement. - Acceptance, removal, and reinstatement of a producer as a qualified cement source for a specific cement type are based primarily on project sample tests and statistical evaluations of past mill test results. These criteria are listed in Department of the Army Regulation No. ER 1110-1-2002.

When directed by the Contracting Officer, cement shall be tested for compliance with the false-set limitation at the latest time, prior to shipment, that the cement is still in possession of the cement company. Testing frequency shall be as directed by the Contracting Officer and may be as high as one test per truck load (about 25 tons) of cement shipped. Cement failing to meet false-set requirements at any time prior to shipment shall not be shipped for Government use.

Cement not meeting specifications requirements may be rejected by the Government at any time prior to its use in concrete, and the Contractor shall be entitled to no adjustments in price or completion time by reason of any delays caused by rejection of unacceptable cement, nor for additional expense of handling and replacing rejected cement. Cement may be rejected if it fails to meet false-set tests either at the Government-testing laboratory or at the cement plant. Concrete made with cement which is subsequently tested and does not meet specifications requirements may be rejected by the Government and shall, if rejected, be removed and replaced by the Contractor at his expense.

The cement producer shall evaluate cement strength uniformity in accordance with ASTM designation: C 917. The results shall be reported in tabular and graphical form for all test ages. One copy of each shall be sent to the ⁴(Project) Construction Engineer, _____, and one copy of each shall be sent to the Bureau of Reclamation, Attn D-1510, PO Box 25007, Denver CO 80225.

The Contractor may be charged the cost of Government quality control for tested cement which has been ordered in excess of the amount of cement used for the work under these specifications. When charges are assessed for Government expense invested in quality assurance of excess cement, such charges will be at the rate of \$1.00 per ton and will be deducted from payments due the Contractor.

d. Measurement and payment. - Measurement for payment for furnishing and handling cement will be made on the basis of batch weights and batch counts at the batch plant. When determined by the Contracting Officer, cement, either bulk or in bags, used for miscellaneous concrete will be measured for payment in the most practicable manner. One bag of cement will be considered 0.047 ton.

Payment for furnishing and handling cement will be made at the applicable unit price per ton bid in the schedule for furnishing and handling the various items of cement, which unit price shall include the cost of purchasing, transporting, handling, and storing cement. One ton will be considered as 2,000 pounds.

⁴(Payment) (Except as otherwise provided below, payment) will be made for cement used in concrete placed within the pay lines for such concrete.

Payment will be made also for cement used in concrete placed outside the pay lines for such concrete when directed by the Contracting Officer, except that no payment will be made when the requirement for such concrete is determined by the Contracting Officer to be the result of overexcavation or excavation intentionally performed by the Contractor to facilitate his operations: ⁴[Provided, That payment for cement used in concrete placed outside the neatlines for concrete in lining will be limited to the percentage specified in subparagraph _____ d. (Concrete in Lining).]

⁵(Payment for furnishing and handling cement for foundation grouting, backfill grouting, grouting concrete cooling systems, and contraction joint grouting will be made at the respective unit prices per ton bid therefor in the schedule.) No payment will be made for cement used in wasted concrete; cement used in replacement of damaged or defective concrete; cement used in extra concrete required as a result of overexcavation unless such overexcavation is directed by the Contracting Officer; and cement used in concrete placed by the Contractor in excavations intentionally performed to facilitate the Contractor's operations.

The cost of cement used in items of concrete specified in subparagraph _____ b. (Payment for Concrete) shall be included in the applicable prices bid in the schedule for the items for which such cement are required.

¹Determine type of cement to be used.

²Include only when type I cement is specified.

³If the need for low-alkali cement is not anticipated, revise as appropriate.

⁴Revise or delete as required.

⁵Include when separate payment will be made for any of the grouting items listed. Delete those items not applicable to the work involved.