

SECTION 04 05 16
MASONRY GROUT

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. The Work of this Section specifies grout materials and mixes.

1.2 RELATED WORK:

- A. Grout used in Sections:
 - 1. Section 03 48 24, PRE-CAST CONCRETE COLUMBARIUM UNITS.
 - 2. Section 04 43 00, NATURAL STONE MASONRY.

1.3 TESTS:

- A. Test grout and materials specified herein and in 01 45 29, TESTING LABORATORY SERVICES.
- B. Certified test reports.
- C. Identify materials by type, brand name and manufacturer or by origin.
- D. Do not use materials until laboratory test reports are approved by the Contracting Officer's Representative (COR) or Memorial Service Network (MSN) Engineer.
- E. After tests have been made and materials approved, do not change without additional test and approval of the COR or MSN Engineer.
- F. Testing:
 - 1. Test materials proposed for use for compliance with specifications in accordance with test methods contained in referenced specifications and as follows:
 - 2. Grout:
 - a. Test for compressive strength; ASTM C1019.
 - b. Grout compressive strength of 2000 psi at 28 days.
 - 3. Cement:
 - a. Test for water soluble alkali (nonstaining) when nonstaining cement is specified.
 - b. Nonstaining cement shall contain not more than 0.03 percent water soluble alkali.
 - 4. Sand: Test for deleterious substances, organic impurities, soundness and grading.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Certificates:
 - 1. Indicating that following items meet specifications:
 - a. Portland cement.
 - b. Masonry cement.
 - c. Grout.
 - d. Hydrated lime.
 - e. Fine aggregate (sand).
 - f. Coarse aggregate for grout.
 - g. Color admixture.
- C. Laboratory Test Reports:
 - 1. Grout, each type.
 - 2. Admixtures.
- D. Manufacturer's Literature and Data:
 - 1. Cement, each kind.
 - 2. Hydrated lime.
 - 3. Admixtures.
 - 4. Liquid acrylic resin.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.
- B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.6 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C40.....Organic Impurities in Fine Aggregates for Concrete

C91.....Masonry Cement
C150.....Portland Cement
C207.....Hydrated Lime for Masonry Purposes
C404.....Aggregate for Masonry Grout
C476.....Grout for Masonry
C595.....Blended Hydraulic Cement
C979.....Pigments for Integrally Colored Concrete
C1019.....Sampling and Testing Grout

PART 2 - PRODUCTS

2.1 HYDRATED LIME:

ASTM C207, Type S.

2.2 QUICKLIME

A. ASTM C5.

2.3 LIME PUTTY

A. Made from hydrated lime or quicklime.

1. If made from quicklime, other than processed pulverized quicklime, slake lime and then screen through a No. 16 mesh sieve. Before using, store and protect slaked and screened lime putty for not less than 10 days.
2. Processed pulverized quicklime shall be slaked for not less than 498 hours, and shall be cool when used.
3. Lime putty prepared from hydrated lime may be used immediately after mixing.
4. Lime putty prepared from quicklime or pulverized quicklime shall have a plasticity figure, after slaking and screening, of not less than 200, and shall weigh not less than 83 lbs. per cubic foot. Lime putty prepared from hydrated lime shall conform to ASTM C 207, Type S.

2.4 AGGREGATE FOR MASONRY GROUT:

ASTM C404, Size 8.

2.5 PORTLAND CEMENT:

A. ASTM C150, Type I or II, low alkali, natural gray.

2.6 WATER:

Potable, free of substances that are detrimental to grout, masonry, and metal.

2.7 GROUT:

- A. Conform to ASTM C476 except as specified.
- B. Grout shall have a 28-day compressive strength of not less than 2000 psi. Proportion by volume and with sufficient water to produce consistency for pouring without segregation so that grout will flow into masonry joints. Grout shall conform to IBC Section 2103:
 - 1. Fine Grout:
 - a. Portland cement or blended hydraulic cement: one part.
 - b. Hydrated lime or Lime putty: 0 to 1/10 part.
 - c. Fine aggregate (sand): 2-1/4 times to three times sum of volumes of cement and lime used.
 - 2. Coarse Grout:
 - a. Portland cement or blended hydraulic cement: one part.
 - b. Hydrated lime or Lime putty: 0 to 1/10 part.
 - c. Fine aggregate (sand): 2-1/4 times to three times sum of volumes of cement and lime used.
 - d. Coarse aggregate (pea gravel): one to two times sum of volumes of cement and lime used. Not more than 5% of the coarse aggregate shall pass the No. 8 sieve and 100% shall pass the 3/8" sieve.
 - 3. Sum of volumes of fine and coarse aggregates: Do not exceed four times sum of volumes of cement and lime used.
 - 4. Add Sika Grout Aid admixture or equivalent to grout at the rate of 1 pound per 100 pounds cementitious material.

2.9 COLOR ADMIXTURE:

- A. Pigments: ASTM C979.
- B. Use mineral pigments only. Organic pigments are not acceptable.
- C. Pigments inert, stable to atmospheric conditions, nonfading, alkali resistant and water insoluble.

PART 3 - EXECUTION

3.1 MIXING:

- A. Mix in a mechanically operated mortar mixer.
 - 1. Mix mortar for at least two minutes but not more than five minutes. Then add lime putty and continue mixing to ensure uniform mass, but in no case fewer than 10 minutes.

2. Use mixers of at least one sack capacity; batches requiring fractional sacks will not be permitted unless cement is weighed for each batch.

B. Measure ingredients by volume. Measure by the use of a container of known capacity. Accurately Measure materials in suitably calibrated devices; shovel measurements are not acceptable. Each 94-lb sack of Portland cement will be considered as 1 cubic foot.

C. Mix water with grout dry ingredients in sufficient amount to bring grout mixture to a pouring consistency.

3.2 GROUT USE LOCATIONS:

A. Use fine grout for filling wall cavities and cells of concrete masonry units where the smallest dimension is 2 inches or less.

B. Use either fine grout or coarse grout for filling wall cavities and cells of concrete masonry units where the smallest dimension is greater than 2 inches.

C. Do not use grout for filling bond beam or lintel units.

3.3 DEFECTIVE MORTAR

A. Should the strength of mortar fall below that specified, remainder of Work shall be adjusted to reach required strength. Work in place representing inferior mortar and indicating strength less than the minimum specified shall be tested by taking and testing core samples. Number and locations of cores shall be determined by the COR.

B. Should compression tests of cores fail to meet required strength, masonry shall be deemed to be defective and shall be removed and replaced at no cost to the VA.

C. Costs relative to taking and testing of core samples shall be paid by Contractor. Cost of patching core holes shall be borne by Contractor.

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FORT SAM HOUSTON NC
REPAIR COLUMBARIA FAÇADE

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MASONRY GROUT