# SECTION 04 05 16

# MASONRY GROUTING

## PART 1 - GENERAL

### 1.1 DESCRIPTION:

A. Section specifies grout materials and mixes.

### 1.2 RELATED WORK:

A. Grout used in Section:

1. Section 04 20 00, UNIT MASONRY.

### 1.3 TESTS:

A. Test grout and materials specified.

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 Resident Engineer.

E. After tests have been made and materials approved, do not change without additional test and approval of Resident 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 8000 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):

C40-04.....Organic Impurities in Fine Aggregates for Concrete
C91-05.....Masonry Cement
C150-05.....Portland Cement
C207-06.....Hydrated Lime for Masonry Purposes
C404-07.....Aggregate for Masonry Grout
C476-07.....Grout for Masonry
C595-08.....Blended Hydraulic Cement
C979-05.....Pigments for Integrally Colored Concrete
C1019-05.....Sampling and Testing Grout

**PART 2 - PRODUCTS**

**2.1 HYDRATED LIME:**

A. ASTM C207, Type S.

**2.2 AGGREGATE FOR MASONRY GROUT:**

A. ASTM C404, Size 8.

**2.3 BLENDED HYDRAULIC CEMENT:**

A. ASTM C595, Type IS, IP.

**2.4 MASONRY CEMENT:**

A. ASTM C91. Type N, S, or M.

B. Use white masonry cement whenever white mortar is specified.

**2.5 PORTLAND CEMENT:**

A. ASTM C150, Type I.

B. Use white Portland cement wherever white mortar is specified.

**2.6 LIQUID ACRYLIC RESIN:**

A. A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve physical properties.

**2.7 WATER:**

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

**2.8 GROUT:**

A. Conform to ASTM C476 except as specified.

B. Grout type proportioned by volume as follows:

1. Fine Grout:

   a. Portland cement or blended hydraulic cement: one part.
   b. Hydrated lime: 0 to 1/10 part.
   c. Fine aggregate: 2-1/4 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: 0 to 1/10 part.
   c. Fine aggregate: 2-1/4 to three times sum of volumes of cement and lime used.
   d. Coarse aggregate: one to two times sum of volumes of cement and lime used.

3. Sum of volumes of fine and coarse aggregates: Do not exceed four times sum of volumes of cement and lime used.

**PART 3 - EXECUTION**

**3.1 MIXING:**

A. Mix in a mechanically operated grout mixer.

1. Mix grout for at least five minutes.

B. Measure ingredients by volume. Measure by the use of a container of known capacity.

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.

END OF SECTION 04 05 16