

SECTION 04100
MORTAR AND GROUT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope

1. Furnish and install mortar and grout for masonry construction
2. Work to be installed
 - a. Bolts
 - b. Anchors
 - c. Nailing Blocks and truss bearing plates
 - d. Inserts
 - e. Flashing and other sheet metal
 - f. Steel lintels
 - g. Mechanical and electrical sleeves and blockouts
 - h. Reinforcing steel
 - i. All other built-in members

B. Additional Requirements Specified Elsewhere

1. Section 01010: Summary of Work
2. Section 01340: Shop Drawings, Product Data and Supplies
3. Section 01400: Quality Control
4. Section 01600: Materials and Equipment

C. Related Requirements Specified Elsewhere

1. Section 03200: Concrete Reinforcement
2. Section 03300: Cast-In-Place Concrete
3. Section 04150: Masonry Accessories
4. Section 04200: Unit Masonry
5. Division 6: Wood and Plastics
6. Section 07600: Flashing and Sheet Metal
7. Division 8: Doors and Windows
8. Section 09900: Painting
9. Division 15: Mechanical
10. Division 16: Electrical

1.2 QUALITY ASSURANCE

A. Testing Agency

1. Mortar and grout testing will be conducted by a testing laboratory selected and paid by the Owner
2. Testing agency must be experienced in masonry testing

B. Reference Standards

1. Materials: Follow recommendations of listed ASTM standards
2. Mixes: Follow recommendations of BIA Designation M1:71

1.3 SUBMITTALS

A. In accordance with Section 01340

B. Test Reports

1. Reports of mortar and grout tests shall be distributed by the testing laboratory in accordance with Section 01400

C. Product Data

D. Mix Design

1. Grout and mortar mix designs proposed for use shall be submitted to the Engineer prior to starting masonry work in accordance with Section 01340

E. Full line of color samples for color selection by Engineer and Owner

F. Certificate of Compliance

1. Manufacturer's affidavit of compliance

PART 2 - PRODUCTS

2.1 MATERIALS AND MIXES

A. Materials

1. Portland cement: ASTM C150, Type II
2. Hydrated lime: ASTM C207, Type S
3. Aggregates for mortar: ASTM C144
4. Water: Clean, potable, and free from deleterious amounts of acids, alkalis, or organic materials
5. Aggregates for grout: ASTM C404
6. Antifreeze compounds: Not permitted
7. Water repellency admixture: Dry-Block[®] Mortar Admixture as manufactured by W.R. Grace & Co., Grace Construction Products Division
8. Mortar color: Solomon Grind-Chem Service, Inc., Mortar Color, three "H" units
 - a. Use where colored CMU is specified

B. Mixes

1. All mortar shall be Type S mortar mixed in the following proportions
 - a. Portland cement: 1 part
 - b. Hydrated lime: $\frac{1}{4}$ to $\frac{1}{2}$ part

- c. Sand: Not less than 2¼ and not more than 3 times the sum of the volumes of lime and cement
2. Mortar shall attain 1800 psi in 28 days
3. Grout shall attain 3000 psi in 28 days
4. All mortar used shall contain the manufacturer's recommended amount of "Dry-Block® Mortar Admixture" for water-repellency and to assure proper bond strength
5. Mortar color per manufacturer's recommendations based on color selection by Engineer and Owner
 - a. Mortar color to be added only where colored CMU are specified

PART 3 - EXECUTION

3.1 PREPARATION

- A. All equipment for mixing, transportation, and placing mortar shall be cleaned before starting work

3.2 MEASUREMENT AND MIXING

A. Measurement

1. Method of measuring materials shall be by volume and such that specified proportions can be controlled and accurately maintained
2. Measurement by shovel is not allowable

B. Mixing

1. Mix cementitious materials and aggregate for at least 3 minutes and not more than 5 minutes in a mechanical batch mixer, with the maximum amount of workable consistency

C. Retempering

1. Mortars that have stiffened because of evaporation of water from the mortar shall be retempered by adding water as frequently as needed to restore required consistency
2. Mortar shall be used within 2½ hours after initial mixing

D. Placing

1. Hollow unit masonry shall have full mortar coverage on the face shells and on the webs surrounding cells to be filled with grout
2. Vertical head joints shall be well buttered for a thickness equal to the face shell of the unit
3. Carefully trim mortar from CMU cell voids to allow free passage of loose cell insulation

E. Grouting

1. Cells containing reinforcing shall be solidly filled with grout

2. Grout shall be poured in lifts of not more than 4'-0", then the grout shall be vibrated into place and shall be stopped 1½" below the top course to form a key with the next course above
3. All corners, bond beam courses and cells below finish grade shall be grouted solid
4. Vertical cells to be grouted shall maintain a continuous unobstructed cell area of not less than 2" x 3"

3.3 FIELD QUALITY CONTROL

A. Grout and Mortar Testing

1. Grout cylinders and mortar cubes shall be prepared, cured, and tested by an independent testing laboratory employed by the Owner
2. Two tests shall be required for each building, taken at proportionate intervals to provide representative samples of the entire work
3. Testing will be done in accordance with ASTM C91 and CMI-201.1

B. Cold Weather Protection

1. Refer to Section 04200 for requirements

END OF SECTION