

SECTION 040511
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A Mortar for masonry.
- B Grout for masonry.

1.02 RELATED REQUIREMENTS

- A Section 042000 - Unit Masonry: Installation of mortar and grout.

1.03 REFERENCE STANDARDS

- A ASTM C5 - Standard Specification for Quicklime for Structural Purposes 2018.
- B ASTM C91/C91M - Standard Specification for Masonry Cement 2023.
- C ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022a.
- D ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.
- E ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.
- F ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.
- G ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.
- H ASTM C476 - Standard Specification for Grout for Masonry 2023.
- I ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry 2020.
- J ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2019a.
- K TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

1.04 SUBMITTALS

- A Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- B Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.
- C Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

- A Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

- A Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

- A Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

- A At Contractor's option, mortar and grout may be field-mixed from packaged dry materials or made from factory premixed dry materials with addition of water only.
- B Mortar Mix Designs: ASTM C270, Property Specification.
 - 1. Masonry below grade and in contact with earth: Type S.
 - 2. Exterior, Loadbearing Masonry: Type N.
 - 3. Exterior, Non-loadbearing Masonry: Type N.
 - 4. Interior, Loadbearing Masonry: Type N.
 - 5. Interior, Non-loadbearing Masonry: Type O.
- C Grout Mix Designs:
 - 1. Bond Beams: 2500 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

- A Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Color: Standard gray.
- B Portland Cement: ASTM C150/C150M.
 - 1. Type: Type I - Normal; ASTM C150/C150M.
 - 2. Color: Standard gray.
- C Masonry Cement: ASTM C91/C91M.
 - 1. Type: Type N; ASTM C91/C91M.
- D Hydrated Lime: ASTM C207, Type S.
- E Quicklime: ASTM C5, non-hydraulic type.
- F Mortar Aggregate: ASTM C144.
- G Grout Aggregate: ASTM C404.
- H Water: Clean and potable.

2.03 MORTAR MIXING

- A Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B Maintain sand uniformly damp immediately before the mixing process.
- C Do not use anti-freeze compounds to lower the freezing point of mortar.
- D If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

- A Mix grout in accordance with ASTM C94/C94M.
- B Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

PART 3 EXECUTION

3.01 INSTALLATION

- A Install mortar and grout to requirements of section(s) in which masonry is specified.
- B Work grout into masonry cores and cavities to eliminate voids.
- C Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.
- D Do not displace reinforcement while placing grout.
- E Remove excess mortar from grout spaces.

3.02 GROUTING

- A Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.
- B Low-Lift Grouting:
 - 1. Limit height of pours to 16 inches.
 - 2. Limit height of masonry to 16 inches above each pour.
 - 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
 - 4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

3.03 FIELD QUALITY CONTROL

- A Test and evaluate grout in accordance with ASTM C1019 procedures.

END OF SECTION