1.01 SECTION INCLUDES
A. Mortar for masonry.
B. Grout for masonry.

1.02 RELATED REQUIREMENTS
A. Section 04.20.00 - Unit Masonry: Installation of mortar and grout.
B. Section 04.72.00 - Cast Stone Masonry: Installation of mortar.
C. Section 08.11.13 - Hollow Metal Doors and Frames: Products and execution for grouting steel door frames installed in masonry.

1.03 REFERENCE STANDARDS
A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2011.

1.04 SUBMITTALS
A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
B. 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.
C. Samples: Submit two samples of mortar, illustrating mortar color and color range.
D. Reports: Submit reports on mortar indicating conformance of mortar to property requirements of ASTM C 270 and test and evaluation reports per ASTM C 780.

E. Reports: Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C 1019.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the 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 ACI 530/530.1/ERTA 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 made from factory premixed dry materials with addition of water only or ready-mixed.

   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior Masonry Veneer: Type N.
   3. Exterior, Non-loadbearing Masonry: Type N.
   4. Interior, Non-loadbearing Masonry: Type O.

C. Grout Mix Designs:
   1. Bond Beams and Lintels: 3,000 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 C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type N.
   2. Color: Mineral pigments added as required to produce approved color sample.
   3. Water repellent mortar for use with water repellant masonry units.

B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing Type O mortar in accordance with ASTM C270 with the addition of water only.
   1. Color: Mineral pigments added as required to produce approved color sample.
C. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

   1. Type: Type I - Normal.
   2. Color: Color as required to produce approved color sample.

E. Masonry Cement: ASTM C91.
   1. Type: Type N.
   2. Colored Mortar: Premixed cement as required to match Architect's color sample.

F. Hydrated Lime: ASTM C207, Type S.

G. Quicklime: ASTM C5, non-hydraulic type.

H. Mortar Aggregate: ASTM C144.


J. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from manufacturer's full range.

K. Water: Clean and potable.

L. Accelerating Admixture: Nonchloride type for use in cold weather.

M. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.

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. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.

D. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

E. Do not use anti-freeze compounds to lower the freezing point of mortar.

F. 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.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

D. Do not use anti-freeze compounds to lower the freezing point of grout.

2.05 PRECONSTRUCTION TESTING

A. Testing will be conducted by an independent test agency, in accordance with provisions of Section 01.43.25.

B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.

C. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.
PART 3 EXECUTION

3.01 PREPARATION
   A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 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.

3.03 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 12 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.

3.04 FIELD QUALITY CONTROL
   A. An independent testing agency will perform field tests, in accordance with provisions of Section 01.43.25.
   B. Test and evaluate mortar in accordance with ASTM C780 procedures.
      1. Test with same frequency as specified for masonry units.
   C. Test and evaluate grout in accordance with ASTM C1019 procedures.
      1. Test with same frequency as specified for masonry units.
   D. Prism Tests: Test masonry and mortar panels for compressive strength in accordance with ASTM C1314, and for flexural bond strength in accordance with ASTM C1072 or ASTM E518/E518M; perform tests and evaluate results as specified in individual masonry sections.

END OF SECTION