

SECTION 04100
MORTAR

1. **SCOPE:**

Under this heading shall be included the furnishing of all mortar in the masonry work.

2. **APPLICABLE STANDARDS:**

Where any material or operation is specified by reference to published specifications or standards or the specifications or standards of any other organizations, the latest edition of the referenced specification or standard shall be as much a part of this Section as if quoted in full herein.

3. **MATERIALS FOR MORTAR:**

Materials for mortar shall comply with the requirements of the following pertinent standard specifications and shall be tested in accordance therewith:

Sand for mortar	ASTM C144
Portland cement	ASTM C150, Type I
Hydrated lime	ASTM C207, Type S
Masonry	ASTM C270, Type II

Water shall be clean and free of deleterious amounts of acids, alkalis or organic materials.

4. **PROPORTIONS:**

All proportions given are by volume, except as otherwise stated. Sand shall be measured damp and loose. Measurements shall be by suitable measuring boxes and not by counting shovels full.

a) **General Purpose Mortar.**

General purpose mortar, for use where other materials are not specified, shall be composed of one part Portland cement, one part Type S hydrated lime and five parts sand, with water as needed for the proper consistency.

b) **Masonry Cement Mortar.**

Mortar for interior partitions shall be masonry cement mortar, conforming to ASTM C270, Type N, proportions of which shall not be leaner than recommended by the manufacturer of the mortar nor less than one part of cement to three parts of sand. At the Contractor's option, general purpose mortar may be used where masonry cement mortar is specified.

c) **Non-Shrink Mortar.**

Non-shrink mortar shall be mixed in the proportions of 100 pounds of Master

Builder's Embecco Aggregate, or Ferrolith "G" Aggregate, or equal, 94 pounds of Type III Portland Cement, one cubic foot of sand, and just enough water to make a suitable stiff mortar.

d) Mortar for Below Grade masonry.

Mortar for below grade masonry walls or masonry foundation walls shall be Type S, ASTM C270 Masonry Cement Mortar proportions of which shall not be leaner than recommended by the mortar manufacturer nor less than one part cement (Type II) to three parts sand.

5. STORAGE OF MATERIALS:

Storage of materials shall be such as to prevent deterioration or intrusion of foreign materials.

6. MIXING MORTAR:

Mixing mortar shall be done with a motor driven batch mixing machine. Mix a minimum of 5 minutes or until thoroughly blended and of uniform consistency. Mortar shall be used within 30 minutes after mixing. Retempering of mortar shall not be permitted. Hand mixing may be permitted at the discretion of the Engineer. Clean mixer and/or tools frequently.

7. FREEZING WEATHER:

In freezing weather, materials shall be heated so that the resulting mortar, after mixing, will be between 50 degrees and 80 degrees F. Sand must be free of frozen lumps before being put into the mixer or mixing box. Admixtures to accelerate set and/or prevent freezing shall not be used.

SECTION 04150
MASONRY ACCESSORIES

1. **SCOPE:**

Under this heading shall be included all masonry accessories complete including but not limited to; horizontal joint reinforcement in masonry walls, reinforcing bars for masonry work, anchors and ties for masonry work.

2. **APPLICABLE STANDARDS:**

Where any material or operation is specified by reference to specifications or standards or the specifications or standards of any other organizations, the latest edition of the referenced specification or standard shall be as much a part of this Section as if quoted in full herein.

3. **MATERIALS:**

a) **Horizontal Joint Reinforcement.**

Joint reinforcement shall be prefabricated and designed for embedment in the horizontal mortar joints in masonry work. The reinforcement shall consist of two or more parallel, longitudinal rods, weld-connected to a continuous, diagonally oriented cross rod, forming a truss design. Out-to-out spacing of the longitudinal rods shall be approximately two inches less than the nominal thickness of the wall in which the reinforcement is placed. The side rods shall be 3/16 inch diameter deformed, cold drawn steel conforming to ASTM A82. Truss rods shall be No. 9 gauge. The reinforcement shall be hot-dip galvanized after fabrication.

b) **Reinforcement Bars.**

Rod type reinforcement shall conform to the applicable requirements of Section 03200.

4. **INSTALLATION:**

Refer to Section 04200 for installation.

END OF SECTION

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SECTION 04200
MASONRY

1. **SCOPE:**

Under this heading shall be included all masonry work. Furnish all masonry units. Mortar is specified in Section 04100. Masonry accessories are specified in Section 04150. Set work required to be built into the masonry work. Reinforcing for bond beams and lintels is specified to be furnished in Section 03200; place under this section. Furnish and install all other reinforcing for masonry work.

2. **APPLICABLE STANDARDS:**

Where any material or operation is specified by reference to published specifications or standards or the specifications or standards of any other organizations, the latest edition of the referenced specification or standard shall be as much a part of this Section as if quoted in full herein.

3. **GENERAL:**

Materials shall be used as shown on the drawings.

a) **Testing.**

Testing shall be as specified in the General and/or Special Conditions.

b) **Chases.**

The Contractor shall consult with the mechanical and electrical subcontractors with reference to recesses that may be required for their portion of the work and leave same accordingly.

c) **Freezing Weather.**

Masonry shall be kept at a temperature above freezing until the mortar has attained sufficient strength and set so that it will not be damaged by freezing. In freezing weather, all materials shall be heated to not less than 50 degrees F. and not more than 80 degrees F. before laying and the work shall be protected as necessary to prevent damage after laying. Air temperatures of not less than 50 degrees F. shall be maintained on all sides of the masonry for a period of at least 72 hours immediately after placing the masonry. In cold weather, after the covering has been removed and work is again to be commenced, the masonry shall be heated as heretofore outlined.

d) **Storage.**

All masonry units shall be stored off the ground and protected from the weather. Store reinforcement, ties, etc. so as to prevent contamination and rusting.

4. MATERIALS:

- a) Mortar.
See Section 04100.
- b) Masonry Accessories.
See Section 04150.
- c) Concrete Block.
Block Type A - Split Face
Block Type B - Spilt Face with Score Line

Blocks shall be stored on the site for at least 28 days prior to being used, except that the Engineer will approve the use of blocks steam cured under high pressure in an autoclave without an on-the-site curing period. Storage at the block manufacturing plant for the 28 day period may be approved by the Engineer if protection from weather and moisture, method of identification and records, certification, and facilities for inspection are satisfactory in the opinion of the Engineer. Unless units have been steam cured under high pressure, test reports shall be furnished to substantial compliance with moisture content requirements for each 25,000 units.

Blocks shall be uniform in color, regular in size and shape, whole, sound and unbroken. Provide special shapes and special blocks as required including bond beam blocks, lintel blocks, solid blocks, and all other specials required. Corner blocks and other standard shapes shall be used as necessary so that walls will be smooth and free of voids and depressions.

- d) Insulation.
Insulation in concrete blocks shall be equal to Korfill incorporated block insulation premolded to fit block cores.
- e) Concrete Brick.
Concrete brick shall conform to ASTM C55, Type II, Grade N.

5. LAYING:

- a) Bond.
All masonry work shall be laid in regular stretcher or running bond unless otherwise shown and/or specified. All masonry shall be laid level, plumb and to lines. Concrete block shall be laid out dry and adjusted before starting work. Adjusting of bond, after one or more courses have been laid, will not be permitted.
- b) General.
Concrete and masonry, on which blocks are to be laid, shall be cleaned and moistened just before starting this work to prevent excessive absorption of water from the

mortar and to provide good bond. Walls shall be anchored at ends and intersections. Walls shall be braced as may be necessary. Partitions shall be built up to the underside of work overhead unless otherwise shown and/or directed. Use special shapes, bricks, etc., and construct lintels and the like as required to fit work above ceiling lines to the structural and mechanical work. All masonry shall be covered and protected from the elements. All masonry, including partitions, shall be properly bonded together at corners and intersections. Moisture content of concrete blocks shall be the minimum consistent with mortar strength, bond and shrinkage of blocks. Fill voids in masonry units where necessary for securing bolts and anchors and other fastenings, or as shown on the Plans. Build in or provide for items to be built in.

c) Concrete Block.

Face joints shall be completely filled with mortar. Use concrete bricks to fill in where work will be concealed or as may be shown and/or directed. Construct bond beams in concrete block work as shown, filling voids in standard bond beam blocks with concrete and reinforcing steel. Concrete shall be equal to that specified in Section 03300. Reinforcing for bond beams will be furnished under Section 03200. Place reinforcing under this section; lap in accordance with requirements in Section 03200.

d) Joints.

Where not otherwise shown and/or specified, joints in exposed masonry work shall be tooled slightly concave. Special care shall be taken with the striking of joints so that the joints are completely filled, leaving a smooth, hard compact surface. To obtain this, striking tools shall be used and the mortar shoved with force so as to pack the mortar tightly against the masonry unit. Use a tool slightly larger than the joint.

In concealed work, joints shall be cut off flush.

e) Reinforcement.

All exterior walls and all concrete block partitions shall be reinforced with wall reinforcement in every alternate block course joint (every 16 inches in height). Also provide additional wall reinforcement in the first or second joints above and below openings, whichever does not otherwise have reinforcement, extending 2 feet beyond the jambs of the openings. Lap wall reinforcement at least 6 inches at necessary joints. Cut one thickness at intersections. Embed longitudinal wires completely in mortar. Provide vertical reinforcing in walls and/or partitions as shown. Place reinforcement for bond beams and lintels; note that reinforcement for bond beams and lintels is specified to be furnished under Section 03200.

f) Lintels.

Lintels shall be constructed as shown, using standard lintel blocks, filled with concrete and reinforced with reinforcing steel. Concrete shall conform with Section 03300. Build in steel lintels furnished under Section 05500. Bearings for lintels shall be not less than 8 inches for lintel blocks and 6 inches for steel lintels.

6. CLEANING AND POINTING:

The Contractor shall, at time approved by the Engineer near the completion of the work, clean down the new interior and exterior masonry work. Concrete block work shall have misplaced mortar removed and defective joints repaired.

Defective joints shall be raked out and pointed and all holes in mortar joints shall be filled.

END OF SECTION