

1.0 - GENERAL

- 1.1 Scope
Furnish mortar for setting masonry materials as indicated on the drawings and herein specified.
- 1.2 Delivery and Storage
- A. All mortar materials shall be delivered, stored and handled to prevent damage, deterioration or contamination. All mortar materials shall be stored under cover in a dry place and in the original packaging. Packages or materials showing evidence of damage will be rejected.
 - B. All materials shall be from one source of supply or manufacturer for duration of this project.

2.0 - PRODUCTS

- 2.1 Materials
- A. Water: Potable, clean and free from deleterious materials.
 - B. Portland Cement: ASTM C150, Type 1 or C205, Type II.
 - C. Prepared Masonry Cement: ASTM C91, Type II.
 - D. Hydrated Lime: ASTM C207, Type S or N.
 - E. Sand: ASTM C144 for aggregate for masonry mortar.
 - F. Waterproofing admixture: Sonneborn "Hydrocide Powder": Master Builders "OM" or A. C. Horn "Hydrate Plus".
 - G. Dark Grey mortar color, when indicated, shall be standard Dark Coosa as manufactured by the National Cement Company.
 - H. Mortar color for brick masonry shall be selected by Architect from Manufacturer's full range of standard selection as approved equal to LaFarge.
- 2.2 Grout - Reinforcement Cell
- A. Grout shall be provided as indicated by Structural Engineer.
 - B. Non-shrink grout used for grouting column case plates, and elsewhere as indicated, shall be pre-mixed Embecco Grout as manufactured by Master Builders.
 - C. Non-structural grout shall consist of mortar to which sufficient water is added to allow material to flow.
- 2.3 Admixtures
- A. No antifreeze liquids, salts, or other substances shall be used in the mortar in an attempt to lower the freezing point.
 - B. Accelerators or other admixtures will be permitted only after consultation with the Architect as to method and products to be used, and approval of the Architect

obtained.

3.0 - EXECUTION

3.1 Proportioning

- A. Mortar, except as hereinafter specified shall be Type "N" mortar in accordance with ASTM C270. Type "N" mortar shall consist of 1 part Portland cement, 3/4 part of the specified lime, and 5 parts sand; or shall be 1 part masonry cement and 2-1/2 parts sand, all measurements being by volume. Minimum compressive strength shall be 750 psi, 28 days.
- B. Mortar for masonry below grade shall be Type "M" or "S" mortar in accordance with ASTM C270. Type "S" mortar shall consist of 1 part Portland cement, 1/4 part of the specified lime and 3 parts sand; or shall be 1 part masonry cement, 1/2 part Portland cement, and 4 parts sand, all measurements being by volume. Minimum compressive strength shall be 1800 psi, 28 days.
- C. Design mix and strength test shall be submitted for approval.

3.2 Mixing

- A. Mortar shall be mixed by power driven mixer until the entire batch is homogeneous and of the proper consistency but not less than 5 minutes. Hand mixing acceptable when proper wood or metal box is used.
- B. Addition of admixtures or retempering of mortar at the mixer to extend its use will not be permitted.
- C. Mortar for exterior walls shall have waterproofing added in accordance with the manufacturer's recommendations.
- D. Prepared non-staining masonry cement will be required for all face brick and other exposed masonry.
- E. Wall parging, where indicated, shall be 3/8" thick regular mortar.

3.3 Mortar Use

- A. Workability or consistency of mortar on the board shall be sufficiently wet to produce easy working without reducing the design strength.
- B. Mortar not used within two hours after mixing of mortar in which setting has not started shall be discarded.
- C. Mortar shall not be used for cell grouting.

END OF SECTION

1.0 - GENERAL

- 1.1 Scope
The work required under this section consists of all unit masonry.
- 1.2 Quality Standards
All masonry construction shall conform to 2015 IBC and ACI 530.
- 1.3 Samples
When requested, the contractor shall submit for approval samples of materials he proposes to use.
- 1.4 Samples Walls
- A. Construct 4'x4' sample brick panels as directed by the architect for brick and mortar approval and protect until masonry work is complete.
 - B. Construct a full height sample wall to include approved brick, mortar joints, joint tooling, face brick, air space, pargeeting if required, wall ties, reinforcement and back-up as a complete unit based upon the complete wall design.
 - C. Approvals must be made for all components before any exposed masonry is placed.
- 1.5 Story Pole
Before beginning masonry work, prepare a project Story Pole which will be used for checking masonry construction.
- 1.6 Delivery, Storage and Handling of Material
All materials shall be delivered, stored and handled to prevent damage. Packages or materials showing evidence of damage will be rejected.
- 1.7 Related Work
Dampproofing - Section 07180.
Concrete - Section 03300
- 1.8 Special Inspections
Cooperate and adhere to the requirements of 2015 International Building Code - Special Inspections. All masonry and masonry reinforcing shall be subject to special inspections and observations, at stage intervals deemed necessary, by the Owners' third party Inspector, Engineer and/or the Architect prior to grout filling.
- 1.9 Special Markings
- A. The contractor shall chalk-line mark the floor slab for masonry wall locations.
 - B. The contractor shall mark on the floor slab location of reinforcing dowels to serve grouted cells so as to be clear as to locations of vertical cell reinforcement.
 - C. The contractor shall mark the concrete sub-floor with temporary marker paint to identify location of structural CMU reinforcing dowels so as to accurately locate reinforced cells during wall erection. Markings should be transferred to CMU surfaces as installation allows.

- D. Prefabricated Corner and "T" Wall Reinforcing - upon arrival to the job site and while material is in bundle state, the ends shall be spray painted in the field with permanent bright red paint for easy recognition during site inspections.

1.10 Special Sequencing

- A. After the special markings have been provided and prior to the start of CMU installation, an inspection of the concrete floor slab and CMU reinforcing dowels shall be required.
- B. CMU wall construction designed to receive structural reinforcement and cell grouting shall be installed in such sequencing as to consolidate the work of placing reinforcement and cell grouting to minimum concentrate intervals encompassing such significant quantities as to warrant truck delivery of ready-mixed grout.
- C. The work event of placing structural reinforcement and grouting shall require continuous special observation by the Owner's third party Inspector(s) as required by the 2015 International Building Code. Grout mix samples shall be required for testing purposes. The General Contractor shall directly schedule special masonry observations at least 24 hours in advance and notify Architect accordingly. Cost associated with special sequencing shall be considered and included in base bid.

2.0 - PRODUCTS

2.1 Face Brick

Face brick where indicated shall be selected range as approved and shall conform to ASTM C216 Grade SW, Type FBS. Size, texture and color shall conform to samples. Size shall be standard 2-1/4" x 3-3/4" x 8". Provide solid brick and special shapes as required.

2.2 Common Brick

Common brick shall be standard size conforming to ASTM C62 Grade SW for structures below grade or in contact with earth and Grade MW for exterior walls above grade.

2.3 Concrete Block (Also Indicated As CMU(Concrete Masonry Unit)

- A. Concrete block shall be shale or slag aggregate type meeting the following ASTM requirements. Block shall be air cured a minimum of 28 days. Block shall be of size as indicated and/or as required and shall be laid in running or stack bond as approved. Furnish all necessary halves, flush ends and specials. Note - Provide bull nose corner block at all outside corners. Coordinate with architectural details.

2.4 Wall Reinforcement and Anchors

- A. Continuous wall reinforcement at 16" o.c. for all masonry walls shall be hot-dipped galvanized and of either truss or ladder design with tabs for exterior two wyth walls. Reinforcement shall have not less than No. 9 steel wire cross rods and No. 9 deformed side rods. Wires shall conform to ASTM A82. Reinforcement shall have a drip when used in cavity walls, use rectangular pintle sections 16" o.c. in back-up masonry and adjustable double eyelet sections in face brick where rigid insulation is indicated or required in cavity space or where face brick and back-up masonry is not run up together. Use manufacturer's pre-formed corners and intersecting sections and splice as recommended. Basis of material selection shall be Hohmann & Barnard #270 or approved equals by Heckmann and Dur-O-Wall.

- B. Veneer wall reinforcement shall be designed to be installed behind the insulation board over the sheathing and secured through to the steel structure or stud. Pintle sections insert into veneer with minimum 1-1/2" embedment. Basis of material selection shall be Hohmann & Barnard HB-200 or approved equals from Heckmann and Dur-O-Wall.
- C. Anchors of various types shall be as indicated and/or required.
- D. Installation shall be in accordance with manufacturer's specifications. Note especially splices, intersections and corners specifications.

2.5 Lintels

Lintels other than steel, shall be constructed of lintel block, cast-in-place or pre-cast as required and/or indicated on the drawings. Concrete shall be as specified in the Concrete Section. Reinforcing shall be of size as indicated but not less than 2 - #5 bars and shall meet the qualifications as set forth in the Concrete Reinforcement Section. Exposed concrete lintels shall be scored and have texture to simulate block. All lintels shall have 8" minimum bearing subject to special sequencing and special inspections.

2.6 Bond Beams

Bond beams shall be as required and/or indicated on the drawings. Provide a continuous bond beam at top of all CMU walls subject to special sequencing and special inspections.

2.7 Cell Reinforcement and Grout

- A. Note: See the Structural for reinforcing and splice lapping.
- B. CMU cell reinforcement shall be provided as indicated by Structural Drawings meeting, but not limited to the following minimum requirements:
 1. Verify that CMU cell columns are free of debris and mortar build-up using 3" x 4" cleanouts at bottom course / floor intersection.
 2. Place and tie bottom of vertical reinforcing through cleanout openings.
 3. Prior to grout placement, provide flush cleanout closures to resist grout pressure.
 4. Grout Mix shall achieve 2,500 psi. (Min.) at 28 days.
 5. Maximum height of a grout pour shall not exceed 24'-0".
 6. Grout pours shall be placed in lift intervals not to exceed 5'-0" in height.
 7. Each grout lift shall be immediately vibrated upon placement using a standard 3/4" drop-down mechanical device.
 8. The pour height for incomplete, non-topped walls shall be held to 1 1/2" below the top of CMU to stagger the joints of the pour to follow.
- C. Contractor shall endeavor to consolidate the work of grout placement to concentrated tasks encompassing such significant quantity as to warrant truck delivered ready-mix grout. Site mixed grout shall be limited to only isolated, non-general conditions as approved by the Architect and the Structural Engineer.

3.0 - EXECUTION

3.1 General

- A. Lay out all masonry work according to the dimensions shown on the drawings. No work shall be laid unless the temperature is 35° F. and rising.
- B. All masonry work shall be laid straight, level, plumb, and true. Exterior walls shall be laid continuously around the entire structure and in no case racked up more than five (5) feet.
- C. Build in all flashing, anchors, reinforcing, inserts, wall plugs, lintels, bearing plates, bond beams and items as required to accommodate the work of others.
- D. All special details such as chases, openings, expansion joints, projections, corbels, etc., shall be built as required and/or indicated on the drawings.
- E. Lay all masonry, brick and block in full bed of mortar completely filling all joints with mortar. Allow for caulking joints at all window and door frames, and at all wall intersections.
- F. Joints of all exposed masonry surfaces shall be finished after the mortar has taken its initial set. Use a straight edge for horizontal joints. Vertical joints shall be in alignment from top to bottom.
- G. At the end of each day or when rain or frost is imminent, the tops of masonry walls and similar surfaces shall be properly protected by covering top of wall with a strong waterproof membrane well secured in place.
- H. Consult all other trades in advance and make provisions for the installation of their work to avoid cutting and patching. Do all cutting and patching of masonry required to accommodate work of others.
- I. Unfinished work shall be stepped back to permit joining of new work. Masonry work may be toothed only when approved. Before connecting new work with work previously built, sweep clean, remove loose mortar and thoroughly wet the old brick.
- J. As the work progresses, mortar daubs and smears shall be cleaned from masonry work.
- K. Door frames shall be set before the masonry walls are built. As the masonry walls are built around these frames, the inside of the frames shall be grouted solid with mortar. NOTE: See HOLLOW METAL DOORS AND FRAMES - SECTION 08110 for requirements to coat interior of frames prior to grouting.
- L. Extend all rated walls to the underside of structural deck above unless otherwise approved. Fit walls neatly with all joints filled where two levels of ceiling occur, extend walls to high level. Extend all partition walls to 8" above adjacent ceiling.
- M. Weep holes: Provide weep holes in head joints 32" o.c. at thru wall flashing where air space is not open downward. Weep holes shall be below finish floor line and above finish grade.

- N. MORTAR IN CONTACT WITH COPPER PIPING WILL NOT BE ACCEPTED.
Coordinate with plumbing or mechanical contractor if copper is encountered without sleeving/insulation. Anticipate additional corrective work.

3.2 Laying Brick

- A. Face brick shall be laid in full bed of mortar with shove joint in stack or running bond as approved with raked or "V" joints unless otherwise approved.
- B. Exposed face shall be laid free from trade mark, kiln marks, bumps, broken corners and broken edges.
- C. Brick and back-up shall be bonded together with wall reinforcing, ties or anchors as specified and/or indicated. Brick and back-up shall be brought up together.
- D. Three brick courses and joints shall equal 8". Joints shall be approximately 3/8" thick and uniform.
- E. Less than full brick shall be cut with a masonry saw.

3.3 Laying Concrete Block

- A. Lay concrete blocks in full bed of mortar on all bearing surfaces, in stack bond, plumb, level and true. All exposed joints shall be raked or "V"; unexposed joints struck flush. Jointing tool shall be approximately 1/8" greater than the joint.
NOTE: All three and four hour walls or Party Walls must be laid in running bond per UL requirements.
- B. Lay out all work in such a manner as to avoid using pieces less than 1/2 block in length. Make all exposed cuts with a masonry saw. Cut accurately around all pipe, duct openings, etc.
- C. Load bearing walls have 3 courses of concrete brick, solid block or filled concrete "U" block at point of structural member bearing to distribute load.
- D. At top course of all CMU walls, provide a continuous reinforced "U" block bond beam of same width. Provide continuous through control joints. See Structural for additional requirements.
- E. Provide Bullnose CMU at outside corners as directed by the Architect.
- F. Provide all special units and set as required to form all corners, returns, offsets, and closures, and maintain proper bond throughout the wall.
- G. Provide 4" wide x 3" high cleanout openings for all columns of structural reinforced/ grouted cells at bottom of CMU at floor intersection and prior to grout placement provide cleanout closures to flush finish and resist grout pressure.

3.4 Wall Reinforcing

- A. Reinforcing shall be installed in alternate courses in both exterior and interior walls; maximum of 16" o.c., lap ends a minimum of 8". Non-continuous at control joints.
- B. Reinforcing at openings in both exterior and interior walls shall be in the first two horizontal joints above for doors and first two horizontal joints above and below the windows. Extend extra reinforcing 24" beyond opening.

- C. Where not feasible to use ladder wall reinforcement, 3/16" "Z" bar anchors shall be used; spacing shall not exceed 24" horizontally and 16" vertically, staggered.

3.5 Pointing and Cleaning

- A. Point up all exposed masonry and fill all holes and joints.
- B. Remove smears or daubs left on masonry work.
- C. Concrete block shall be scrubbed down with strong detergents, water and stiff fiber brushes. Acid solutions shall not be used on block work.
- D. After brick walls have been brushed clean, they shall be thoroughly wet with a hose and scrubbed with a non-acid brick cleaning solution as recommended by the brick manufacturer. Cleaning solution shall be applied in strict accordance with the manufacturer's directions using ample quantities of water as directed. Protect surrounding materials and property as required.

END OF SECTION