

SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 SUMMARY

- A. Section Includes:

1. Concrete Masonry Units
2. Mortar and Grout
3. Steel Reinforcing Bars
4. Masonry Joint Reinforcement
5. Ties and Anchors
6. Embedded Flashing
7. Miscellaneous Masonry Accessories
8. Masonry Cell Insulation

- B. Related Sections:

1. Division 01 Section "Construction Waste Management".
2. Division 01 Section "LEED Requirements".
3. Division 03 Section "Cast-in-Place Concrete".
4. Division 03 Section "Clay Unit Masonry – Reinforced Structural Brick".
5. Division 05 Section "Structural Steel Framing".
6. Division 07 Section "Water Repellants".
7. Division 07 Section "Building Insulation".
8. Division 07 Section "Sheet Metal Flashing and Trim".

1.3 QUALITY ASSURANCE

- A. Codes and Standards - Comply with governing codes and applicable provisions of the following:

1. National Concrete Masonry Association (NCMA), including "TEK Bulletins".
2. American Concrete Institute (ACI), including ACI 531, ACI 531R and ACI 531.1.
3. Portland Cement Association (PCA), "Concrete Masonry Handbook".

- B. Fire Performance Characteristics - Where fire-resistance ratings are indicated for unit masonry work, provide materials and construction which are identical to those of assemblies whose fire endurance has been determined by testing in

Technical Specifications
Section 04810 – Unit Masonry Assemblies
Project No. 08232-018
Fire Station Number 8

compliance with ASTM E 119 by a recognized testing and inspecting organization or by another means, as acceptable to authority having jurisdiction.

- C. Field Construction Mock-Ups - Prior to installation of masonry work, erect sample wall representative of completed masonry work required for project with respect to qualities of appearance, materials and construction. Locate mock-ups during construction as standard for judging completed masonry work. Build mock-ups which are approximately 6' long by 4' high by full thickness. When directed, demolish mock-ups and remove from site.

1.4 SUBMITTALS

- A. Product Data - Submit manufacturer's product data for each type of masonry unit, accessory and other manufactured products, including certifications that each type complies with specified requirements.
- B. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.

1.5 JOB CONDITIONS

- A. Protection of Work - During erection, cover top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.
- B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- C. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.
- E. Staining - Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over all surface.
- F. Protect sills, ledges and projections from droppings of mortar.
- G. Cold Weather Protection
 - 1. Do not lay masonry units which are wet or frozen.
 - 2. Remove all masonry determined to be damaged by freezing conditions.
 - 3. No masonry work shall be performed when the air temperature is 38 deg. F. and falling.

PART 2 – PRODUCTS

2.1 MASONRY UNITS - GENERAL

- A. Manufacturer - Obtain masonry units from one manufacturer, of uniform texture and color for each kind required, for each continuous area and visually related areas.
- B. Masonry Unit Characteristics - Provide units complying with standards referenced and requirements indicated.

2.2 CONCRETE MASONRY UNITS (CMU)

- A. Size - Manufacturer's standard units with nominal face dimensions of 16" long x 8" (15-5/8" x 7-5/8" actual), unless otherwise indicated.
- B. Special Shapes - Provide where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.
- C. Hollow Load Bearing (HL) CMU - ASTM C 90 and as follows:
 - 1. Grade N.
- D. Weight Classification: Normal weight units unless otherwise indicated. (125 lbs. per cu. ft. or more, oven dry weight of concrete.)
- E. Cure units by atmospheric drying for not less than 30 days before installation, to comply with ASTM C 90, Type II.
- F. Exposed Faces - Provide manufacturer's standard color and texture, unless otherwise indicated.
 - 1. Where special finishes are indicated, provide units with exposed faces of the following general description matching color and texture as selected by Architect from manufacturers standard color and texture.
 - a. Standard aggregate, ground finish.
 - b. Standard aggregate, split face finish.
- G. Prefaced Concrete Block - Provide lightweight concrete units indicated below with manufacturer's standard smooth resinous tile facing complying with ASTM C744:
 - 1. For units on which prefaced surfaces are molded, comply with the following requirements:

Technical Specifications
Section 04810 – Unit Masonry Assemblies
Project No. 08232-018
Fire Station Number 8

- a. Hollow Loadbearing Block: ASTM C90, Grade N, Type I.
2. Size - Manufacturer's standard with nominal face dimensions of 16" long x 8" high (15-5/8" x 7-5/8" actual) x thickness indicated for units on which prefaced surfaces are molded; with 1/16" thick returns of facing to create 1/4" wide mortar joints with modular coursing.
- I. Color and Pattern - Match Architect's sample.
- J. Products - Subject to compliance with requirements, provide one of the following:
 1. "Astra-Glaze"; Nabco Glazed Products.
 2. "Spectra-Glaze II"; manufacturer approved by the Burns & Russell Co.

2.3 MORTAR MATERIALS

- A. Portland Cement - ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce required mortar color.
- B. Masonry Cement - ASTM C 91.
- C. Hydrated Lime - ASTM C 207, Type S.
- D. Aggregate for Mortar - ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.
- E. Aggregate for Grout - ASTM C 404.
- F. Water - Clean and potable.

2.4 MASONRY ACCESSORIES

- A. Horizontal Joint Reinforcing and Ties for Masonry - Provide welded wire units prefabricated in straight lengths of not less than 10', with matching corner ("L") and intersecting ("T") units. Fabricate from cold-drawn steel wire complying with ASTM A 82, with deformed continuous side rods and plain cross rods, into units with widths of approximately 2" less than nominal width of walls and partitions as required to position side rods for full embedment in mortar with mortar coverage of not less than 5/8" on joint faces exposed to exterior and not less than 1/2" elsewhere. Provide the following type of joint reinforcing unless otherwise indicated.
 1. Truss type with diagonal cross rods spaced not more than 16" o.c.

- B. Number of Side Rods - Single pair for single wythe masonry.
- C. Wire Sizes - Fabricate with 9-gage side and cross rods, unless otherwise indicated.
- D. Wire Finish - Provide manufacturer's standard mill galvanized finish except as otherwise indicated.
- E. For exterior walls hot-dip galvanized joint reinforcing after fabrication to comply with ASTM A 153, Class B-2 coating (1.5 oz. per sq. ft.).
- F. Steel Strap Anchors - Provide straps, bars, bolts and rods fabricated from not less than 16 ga. sheet metal or 3/8" diameter rod stock, unless otherwise indicated.
- G. Miscellaneous Masonry Accessories
 - 1. Reinforcing Bars - Deformed steel, ASTM A 615, Grade 60 for bars No. 3 to No. 18.

2.5 MORTAR AND GROUT MIXES

- A. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents.
- B. Do not use calcium chloride in mortar or grout.
- C. Mortar for Unit Masonry - Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated.
- D. Limit cementitious materials in mortar to portland cement - lime.
- E. Use Type N mortar for all interior masonry work.
- F. Use Type S mortar for all exterior masonry work.
- G. Grout for Unit Masonry - Comply with ASTM C 476 for grout for use in construction of unit masonry. Use grout of consistency indicated or if not otherwise indicated, of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout.

2.6 MASONRY-CELL INSULATION

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Technical Specifications
Section 04810 – Unit Masonry Assemblies
Project No. 08232-018
Fire Station Number 8

1. Forced Foam insulation in Masonry:
 - a. Core-Fill 500 by Tailored Chemical Products, Inc.
 - b. Thermco Foam Insulation by Thermco Corporation of America.
 - c. cfiFOAM, Inc. by Southern Foam Insulation, Inc.

PART 3 – EXECUTION

3.1 INSTALLATION - GENERAL

- A. Thickness - Build masonry construction to the full thickness shown, except, build single-wythe walls (if any) to the actual thickness of the masonry units, using units of nominal thickness shown or specified.
- B. Build chases and recesses as shown and as required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses unless otherwise noted.
- C. Cut masonry units with motor-driven saw designed to cut masonry with clean, sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Use dry cutting saws to cut concrete masonry units.
- D. Do not wet concrete masonry units.
- E. Pattern Bond - Lay exposed masonry in running bond vertical joint in each course centered on units in courses above and below except as otherwise noted.
- F. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations.
- G. Lay-up walls plumb and with courses level, accurately spaced and coordinated with other work.
- H. Stopping and Resuming Work - Rack back 1/2-masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required to be wetted), and remove loose masonry units and mortar prior to laying fresh masonry.
- I. Built-In Work - As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items.
- J. Fill space between hollow metal frames and masonry solidly with mortar.

- K. Where built-in items are to be embedded in cores of hollow masonry units, place a layer metal lath in the joint below and rod mortar or grout into core.
- L. Fill CMU cores with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar conditions unless otherwise indicated.
- M. Non-Loadbearing Interior Partition Walls: Build full height of story to underside of solid structure above, unless otherwise indicated.

3.2 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or to be filled with concrete or grout. For starting courses on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- B. Joints - Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not otherwise indicated, lay walls with 3/8" joints. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials. Tool all exposed joints in masonry walls slightly concave using a jointer larger than joint thickness. Rake out mortar in preparation for application of caulking or sealants where shown.
- C. Remove masonry units disturbed after laying; clean and relay in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

3.3 HORIZONTAL JOINT REINFORCING

- A. Provide continuous horizontal joint reinforcing as shown and specified. Full embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls and 1/2" at other locations. Lap reinforcement a minimum of 6". Do not bridge control and expansion joints with reinforcing, unless otherwise indicated. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend units as directed by manufacturer for continuity at returns, offsets, pipe enclosures and other special conditions.
- B. Space conditions horizontal reinforcing as follows:
 - 1. For single wythe walls, space reinforcing at 16" o.c. vertically, unless otherwise indicated.

Technical Specifications
Section 04810 – Unit Masonry Assemblies
Project No. 08232-018
Fire Station Number 8

2. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcing placed in 2 horizontal joints approximately 8" apart, both immediately above lintels and below sills.
3. Extend reinforcing a minimum of 2'-0" beyond jambs of the opening, bridging control joints where provided.

3.4 ANCHORING MASONRY WORK

- A. See Drawings.

3.5 MASONRY-CELL INSULATION INSTALLATION

- A. Foam wall insulation is to be pumped into open masonry cavities indicated to receive insulation, taking care to fill voids completely. Maintain inspection ports to show presence of insulation at extremities of each pour area. Close ports after confirming complete coverage. Follow manufacturer's recommendations for product liquid ratios at mixing gun.
- B. Foam wall insulation shall be installed from exterior face of masonry units. Wherever possible locate holes where they will be covered by the exterior finish material. Plug injection holes and inspection ports with materials matching adjacent materials in type, finish and color

3.6 LINTELS

- A. Provide masonry lintels where shown and wherever openings of more than 1'-0" are shown without structural steel or other supporting lintels. Provide precast or formed in place lintels. Cure precast masonry before handling or installing. Temporarily support formed-in-place lintels.
- B. Provide minimum bearing of 8" at each jamb, unless otherwise indicated.

3.7 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing - During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.

Technical Specifications
Section 04810 – Unit Masonry Assemblies
Project No. 08232-018
Fire Station Number 8

- C. Clean exposed CMU masonry by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings. Comply with recommendations in NCMA TEK Bulletin No. 28.

END OF SECTION 04810