

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Concrete masonry units.
 - 2. Face Bricks.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 7 Section "Flashing and Sheet Metal" for gutter and downspout for mockup.
 - 2. Division 7 Section "Joint Sealants" for sealing joint in mockup.
 - 3. Division 8 Section "Aluminum Architectural Windows" for window in mockup.
- C. Products installed but not furnished under this Section include the following:
 - 1. Steel lintels for unit masonry specified in Division 5 Section "Metal Fabrications."
 - 2. Hollow metal frames in unit masonry openings specified in Division 8 Section "Standard Steel Doors and Frames."

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each different masonry unit, accessory, and other manufactured product specified.

1.4 QUALITY ASSURANCE

- A. **Single-Source Responsibility for Masonry Units:** Obtain exposed masonry units of a uniform texture from one source and by a single manufacturer for each different product required.
- B. **Single-Source Responsibility for Mortar Materials:** Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

- A. **Protection of Masonry:** During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. **Stain Prevention:** Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt on completed masonry.

D. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. CMU: Lightweight Masonry Units
 - a. State Block Inc.
 - b. Masonry Products Inc.
 - c. Gats Masonry, Inc.
 2. Face Brick: Filler for Arches
 - a. Acme Brick Co.
 - b. Masonry Products Inc.
 - c. Gats Masonry, Inc.
 3. Portland Cement, Mortar Cement, Masonry Cement, and Lime: Type "N"
 - a. Glen-Gery Corporation.
 - b. Lafarge Corporation.
 - c. Lone Star Industries
 4. Joint Reinforcement, Ties, and Anchors:
 - a. Dur-O-Wal, Inc.
 - b. National Wire Products Industries.
 - c. Wire-Bond.

2.2 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows for each form of brick required.
1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, arches, bonding and other special conditions.
 2. Provide square-edged units for outside corners, except where indicated as bullnose.
 3. Unit Compressive Strength: 1,900 psi.
 4. Weight Classification: Light Weight.
 5. Size: Manufactured to the actual dimensions (within ASTM C 90 tolerances) for the corresponding nominal sizes indicated on drawings: 4 inch (3-3/8" actual), 8 inch (7-5/8" actual).

2.3 MORTAR AND GROUT MATERIALS

- A. Ready-Mixed Mortar: Cementitious materials, water, and aggregate complying with requirements specified in this Article; combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASTM C 1142.
- B. Water: Potable.

2.4 REINFORCING STEEL

- A. Steel Reinforcing Bars: Complying with ASTM A 615.

2.5 JOINT REINFORCEMENT

- A. General: Provide joint reinforcement formed from the following:
1. Hot Dip Galvanized carbon-steel wire, coating class as follows: ASTM A 153, Class B2 (1.50 oz/Ft²).
- B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units. Ladder design with perpendicular cross rods spaced not more than 16 inches o.c. Truss design with continuous diagonal cross rods spaced not more than 16 inches o.c. Wire-Bond Single Wythe and Series 900 or equal as applicable to CMU wall conditions.
- C. Manufacturer and Model No.: HB #345-BT Flexible Tie
Byna-tie 3/16 in dia x 4 in long (Hohmann & Bernard, Inc.)
HB Lox All Truss Reinforcement, Single Wythe Wall, #120
Truss-Mesh (Hohmann & Bernard, Inc.)

2.6 TIES AND ANCHORS, GENERAL

- A. General: Provide ties and anchors specified in structural drawings that comply with requirements for metal and size, unless otherwise indicated.

2.7 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength, general-purpose cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry surfaces of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Sure Klean No. 600 Detergent; ProSoCo, Inc.
 - b. Sure Klean Vana Trol; ProSoCo, Inc.

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
- B. Mortar for Unit Masonry: Comply with U.B.C. Standard No. 21-15, Proportion Specification, for Mortar Cement mortar of types indicated below.
 - 1. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated, use type indicated below:
 - a. Type: N.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.
- B. Leave openings for equipment to be installed before completion of masonry. After installing equipment, complete masonry to match construction immediately adjacent to the opening.
- C. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arrises, do not exceed 1/4 inch in 10 feet (6 mm in 3 m)
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m).
- C. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than 1/8 inch (3 mm). Do not vary from head-joint thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary head-joint thickness from adjacent head-joint thickness by more than 1/8 inch (3 mm). Do not vary from collar-joint thickness indicated by more than minus 1/4 inch (6 mm) or plus 3/8 inch (10 mm).

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.
- B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

- C. **Stopping and Resuming Work:** In each course, rack back 1/2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar prior to laying fresh masonry.

3.5 CONTROL AND EXPANSION JOINTS

- A. **General:** Install control and expansion joints in unit masonry where indicated. Build-in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

3.6 LINTELS

- A. Install steel lintels where indicated.

3.7 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. **Pointing:** During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.
- C. **In-Progress Cleaning:** Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.
- D. **Final Cleaning:** After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

5. Clean brick by bucket and brush hand-cleaning method described in BIA Technical Note No. 20 Revised, using the following masonry cleaner:
 - a. Job-mixed detergent solution.
 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain present on exposed surfaces.
 7. Clean limestone units to comply with recommendations in the "Indiana Limestone Handbook" of the Indiana Limestone Institute of America.
- E. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

END OF SECTION 04200