SECTION 042000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Clay facing brick.

C. Hollow brick.

D. Mortar and grout.

E. Reinforcement and anchorage.

F. Flashings.

G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 040500 - Cold and Hot Weather Masonry Construction.

B. Section 040511 - Masonry Mortaring and Grouting.

C. Section 055000 - Metal Fabrications: Loose steel lintels.

D. Section 072100 - Board and Batt Insulation: Insulation for cavity spaces.

E. Section 079200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.

C. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

D. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2023.

E. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale); 2022.

F. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).

G. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.

H. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.

I. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.

J. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.

K. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units and fabricated wire reinforcement.

C. Samples: Submit four samples of decorative block and facing brick units to illustrate color, texture, and extremes of color range.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 MOCK-UPS

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.

B. Locate where directed.

C. Mock-up may remain as part of work.

D. Do not proceed with work until finish color, texture pattern, joint size, and installation workmanship are approved by Architect.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Nonloadbearing Units: ASTM C129.
      a. Hollow block, as indicated.
      b. Normal weight.
   3. Fire Resistance Rating: Where indicated provide material and construction identical to U.L. Assembly to provide required Fire Resistance Rating.

2.02 BRICK UNITS

A. Manufacturers:
   1. Endicott Clay Products Co; Face Brick - FBX: www.endicott.com/#sle.
   2. General Shale Brick: www.generalshale.com/#sle.
   3. Boral Bricks, Inc.: www.boralbricks.com/#sle.

B. Hollow Facing and Building Brick: ASTM C652, Grade SW; Type HBX; Class H40V.
   1. Color and texture to match Architect's sample.
   2. Nominal size: As indicated on drawings.

2.03 MORTAR AND GROUT MATERIALS

A. Mortar and Grout: As specified in Section 040511.

2.04 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
   1. Hohmann & Barnard, Inc: www.h-b.com.

B. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Ladder.
   2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to 16 CFR 1201 Class B.
   3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

C. Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Ladder.
   2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to 16 CFR 1201 Class B.
   3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

2.05 FLASHINGS

A. EPDM Flashing: ASTM D4637/D4637M, Type II, 0.040 inch thick.
   1. Manufacturers:

a. Hohmann & Barnard, Inc; Epra-Max EPDM Thru-wall Flashing: www.h-b.com.
2. Premolded seamless stainless steel corners and end dams by Hohmann & Barnard, Inc.

B. Drip Plate: 3" wide type 304 Stainless Steel 26 gauge standard with adhesive strip. Provide DP-FTSA manufactured by Hohmann & Barnard, Inc.

C. Lap Sealant: Epra-Max Adhesive Tape by Hohmann & Barnard, Inc.

2.06 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints to meet ASTM D2000-05 and ASTM D2240-05.
1. Manufacturers:
a. Hohmann & Barnard, Inc; RS Series - Rubber Control Joint: www.h-b.com.

B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
a. Manufacturers:
1) Hohmann & Barnard, Inc.; Product Mortar Trap: www.h-b.com.

C. Weeps: Molded PVC grilles, insect resistant. Color: Clear.

D. Neoprene Sponge: For placing horizontally beneath relieving angle to meet ASTM D1056, Grade 2A1.
1. Manufacturers:
a. Hohmann & Barnard, Inc.; Product NS - Closed Cell Neoprene Sponge.
b. Substitutions: See Section 01 60 00 - Product Requirements.

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or applicable building code, whichever is more stringent. See Section 040500.

B. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

3.05 PLACING AND BONDING

A. Lay hollow masonry units with face shell bedding on head and bed joints.

B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

C. Remove excess mortar and mortar smears as work progresses.

D. Interlock intersections and external corners, except for units laid in stack bond.

3.06 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 32 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

B. Install weeps a minimum of two (2) per opening.

3.07 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

3.09 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

C. Extend laminated and EPDM flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.

D. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.10 LINTELS

A. Install galvanized after fabrication per ASTM A153 loose steel lintels over openings. See Loose Lintel Schedule per Structural Drawings.

B. Maintain minimum 8 inch bearing on each side of opening.

3.11 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

D. Form expansion joint as detailed on drawings.

E. Horizontal Expansion Joints: Install joint filler in joint underneath shelf angles, beams, slabs, and decks and sealant tape as secondary seal behind primary joint sealant to establish weather barrier at face of assembly.
   1. Joint Sealant: See Section 079200.
   2. Locations: Install where indicated on Drawings. If joints are not indicated, install at every other floor.

F. Vertical Control Joints:
   1. Exterior Brick and CMU Veneer Joints: Install joint fillers through veneer wythes.
   2. CMU Joints: Install CMU Control Joint Strip in slots in CMU Sash Units through CMU wythes.
   3. Brick and CMU Joints in Composite and Cavity Walls: Coincide.

4. Ensure joints are free from mortar and horizontal reinforcing.
5. Utilize control joint filler to maintain width and depth of clear joint. Locate to permit proper placement of primary joint sealant and joint backer material.
6. Joint Sealant: See Section 079200.
7. Locations: Install where indicated on Drawings and at building expansion joints. If joints are not indicated, install in accordance with following:
    a. At control or expansion joints in structure.
    b. At 30 feet OC maximum horizontal run of uninterrupted wall and around corners.
    c. At 15 feet OC maximum horizontal run for parapets, balconies, and free standing walls and at their junctions with walls of other building areas. Extend joints through masonry parapets and from top of parapet down to horizontal expansion joints.
    d. Within 10 feet of inside and outside corners on one wall. Provide next vertical control joint around corner on other wall with distance between joints within maximum spacing requirements above.
    e. At offsets and setbacks in wall.
    f. At changes in thickness, height, or direction of wall.
    g. At openings greater than 24 inches wide. Provide for independent movement of loose lintels at vertical control joints by means of slip plane formed of masonry flashing and joint sealant in accordance with recommendations in BIA Technical Note 18A.
    h. Where more than one of above conditions occurs in area, combine above requirements to minimize number of joints while creating continuous expansion control and visual appearance.
    i. Consult Architect for final location.

3.12 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.13 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.14 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.15 PARGING

A. Dampen masonry walls prior to parging.

B. Scarify each parging coat to ensure full bond to subsequent coat.

C. Parge masonry walls in two uniform coats of mortar to a total thickness of 3/4 inch.

D. Steel trowel surface smooth and flat with a maximum surface variation of 1/8 inch per foot.

E. Strike top edge of parging at 45 degrees.

3.16 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution recommended by brick manufacturer.

3.17 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION