

DIVISION 4

MASONRY

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SECTION 04200

UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units.
 - 2. Fire Rated Concrete masonry units.
 - 3. Face brick.
 - 4. Cavity-Wall Insulation
 - 5. Embedded Flashing
 - 6. Mortar and Grout
 - 7. Reinforcing Steel
 - 8. Masonry Joint Reinforcement
 - 9. Ties and Anchors
- B. Related Sections:
 - 1. See Division 05 Section "Metal Fabrications" for furnishing steel lintels and shelf angles install in unit masonry assemblies.
 - 2. See Division 07 Section "Sheet Metal Flashing and Trim" for furnishing manufactured reglets installed in masonry joints for metal flashing.

1.2 SUBMITTALS

- A. Product Data: For each masonry unit, accessory, and other manufactured product indicated.
- B. Shop Drawings: For masonry reinforcing bars; comply with ACI 315, "Details and Detailing of Concrete Reinforcement. Show elevations of reinforced walls.
- C. Samples: Showing the full range of colors and textures available for exposed masonry units and colored mortars. Provides cavity drainage, weep hole, and embedded flashing.
- D. Material Test Reports: For each type of masonry unit, mortar, and grout required.
- E. Material Certificates: For each type of masonry unit required.

1.3 QUALITY ASSURANCE

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- C. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on each type of unit required per test method indicated.
 - 1. Clay Masonry Units: ASTM C 67.
 - 2. Concrete Masonry Units: ASTM C 140.
 - 3. Mortar: For properties per ASTM C 270.
 - 4. Grout: For compressive strength ASTM C 1019.

- D. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
 - 1. Provide fire rating on glazed concrete units up to 4 hours as required by NCMA TEK Notes and as required on the drawings.
- E. Mockups: Build sample panels for each type of exposed unit masonry assembly to verify selections made under sample Submittals and to demonstrate aesthetic effects.
 - 1. Build sample mockups sizes approximately 48 inches (1200 mm) long by 48 inches (1200 mm) high by full thickness.

1.4 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, 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) down both sides and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600) down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor and 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, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from 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.
- D. Cold-Weather Requirements: Do not perform masonry work when air temperature is 40 degrees F (4 deg. C) or lower. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- E. 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. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with a wind velocity greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 MASONRY UNITS

- A. Concrete Masonry Units: ASTM C 90.
 - 1. Unit Compressive Strength: 1900 psi- (13.1-Mpa-) minimum, average net-area compressive strength for 3 units.
 - 2. Weight Classification:
 - a. Weight Classification: Above Grade: 105 to 125 pcf.
 - b. Weight Classification: Below Grade: 125 pcf or greater.
 - 3. Special Shapes: Provide for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
 - a. Provide bullnose corners as indicated on drawings.
- B. Fire Rated Concrete Masonry Units: ASTM E 119
 - 1. Unit Compressive Strength: 1900 psi- (13.1-Mpa-) minimum, average net-area compressive strength for 3 units.
 - 2. Weight Classification:
 - a. Weight Classification: Above Grade: 105 to 125 pcf.
 - b. Weight Classification: Below Grade: 125 pcf or greater.
 - 3. Penetrations: If the penetrating item is steel, ferrous or copper pipes, tube or conduits no larger than 6 inches in diameter, the annular space between the item and the fire-resistance-rated wall by me filled with concrete, grout or mortar the full thickness of the wall or as required to maintain the fire-resistance rating. The opening through the wall cannot exceed 144 square inches.
 - 4. Control joints in fire rated wall assemblies should be rated to maintain the fire-resistance rating of the wall.
- C. Brick, General:
 - 1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
 - 2. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
- D. Face Brick: ASTM C 216, Grade SW, Type FBS
 - 1. Pine Hall Brick; Spektra Salmon Modular Face Brick
 - 2. Unit Compressive Strength: 3000-psi- (20.7-Mpa-) minimum, average net-area compressive strength.
 - 3. Initial Rate of Absorption: Less than 20 g/30 sq. in. (20 g/194 sq. cm) per minute when tested per ASTM C 67.
 - a. Maximum saturation coefficient 0.7
 - b. Maximum 5 hour boil 17%.
 - 4. Efflorescence: When tested per ASTM C 67 and brick is rated "not effloresced."
 - 5. Where shown to "match existing" provide face brick matching color range, texture, and size of existing adjacent brickwork.
 - 6. Size: Manufactured to the following actual dimensions:
 - a. Modular: 3-1/2 to 3-5/8 inches (89 to 92 mm) wide by 2-1/4 inches (57 mm) high by 7-1/2 to 7-5/8 inches (190 to 194 mm) long.

2.2 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
- B. Hydrated Lime: ASTM C 207, Type S.

- C. Pigmented Mortar: Colored cement or cement-lime formulation as required to produce the color indicated.
 - 1. Colored Portland Cement-Lime Mix:
 - a. Available Products:
 - 1) Blue Circle Cement; Eaglebond.
 - 2) Glen-Gery Corporation; Color Mortar Blend.
 - 3) Holnam, Inc.; Rainbow Mortamix Custom Color Cement/Lime.
 - 4) Lafarge Corporation; Centurion Colorbond PL.
 - 5) Lehigh Portland Cement Co.; Lehigh Custom Color.
 - 6) Riverton Corporation (The); Riverton Portland Cement Lime Custom Color.
- D. Aggregate for Mortar: ASTM C 144; except for joints less than ¼ inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
 - 1. Colored-Mortar Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.
- E. Aggregate for Grout: ASTM C 404.
- F. Water: Potable.

2.3 REINFORCING

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/ASTM A 615M Grade 60 (Grade 400).
- B. Masonry Joint Reinforcement: ASTM A 951; mill galvanized, carbon-steel wire for interior walls and hot-dip galvanized, carbon-steel wire for exterior walls.
 - 1. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
 - 2. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
 - 3. Single-Wythe Masonry: Use either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches (407 mm) o. c.
 - 4. Multiwythe Masonry: Use ladder type with perpendicular adjustable (2-piece) type with single pair of side rods and cross ties spaced not more than 16 inches (407 mm) o.c. and with separate adjustable veneer ties engaging the cross ties. cross rods spaced not more than 16 inches (407 mm) o.c. and 1 side rod for each face shell of hollow masonry units more than 4 inches (100 mm) in width, plus 1 side rod for each wythe of masonry 4 inches (100 mm) or less in width tab type with single pair of side rods spaced for embedment within each face shell of backup wythe and rectangular box-type cross ties spaced not more than 16 inches (407 mm) o.c.
- C. Provide joint reinforcement at the top and bottom of all banding. When different materials are used in conjunction with each other a differential movement may occur. Provide reinforcement at these situations as recommended per the Masonry Association.

2.4 TIES AND ANCHORS

- A. Materials:
 - 1. Galvanized Carbon-Steel Wire ASTM A 82; with ASTM A 153, Class B-2 coating for exterior walls and Class 1 coating for interior walls.
 - 2. Galvanized Steel Sheet: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153, at exterior walls; and ASTM A 653/A 653M, G60 (Z180), commercial-quality, steel sheet zinc coated by hot-dip process on continuous lines before fabrication at interior walls.
- B. Bent Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide, made from 3/16-inch- (4.8-mm-) diameter, galvanized steel wire.

- C. Adjustable Anchors for connecting to steel Frame: Two piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to wall.
 - 1. Anchor Section: Crimped 1/4-inch- (6.4-mm-) diameter, galvanized steel wire anchor section for welding to steel.
 - 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.1875-inch- (4.8-mm-) diameter, galvanized steel wire.
- D. Anchors for Connecting to Concrete: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
 - 1. Anchor Section: Dovetail anchor section formed from 0.0528-inch- (1.35-mm-) thick, galvanized steel sheet.
 - 2. Tie Section: Triangular-shaped wire tie, sized to extend mm) of within 1 inch (25 masonry face, made from 0.1875-inch- (4.8-mm-) diameter, galvanized steel wire.
- E. Veneer Anchors: Use hot-dip galvanized anchors to attach face brick veneer to CMU backup.
 - 1. Manufacturer/Product:
 - a. Hohmann & Barnard, Inc.; #180 - BL Dub... Loop-Lok with Byna-Lok Wire Tire
 - b. Prior approved equal.
- F. Veneer Anchors: Use hot-dip galvanized anchors to attach face brick veneer to metal stud back-up.
 - 1. Manufacturer Product:
 - a. Hohmann & Barnard, Inc.; X-Seal S.I.S Anchor
- G. Veneer Anchor Seal Tape: Provide adhesive backed seal tape that is applied to the substrate behind the anchor for additional protection against air and moisture infiltration.
 - 1. Manufacturer/Product:
 - a. Hohmann & Barnard, Inc.; X-Seal Tape.

2.5 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing and Accessories: Fabricated to complying with requirements specified in the following requirements:
 - 1. Aluminum-Zinc Alloy-Coated Steel "Galvalume": Fabricate from 0.0217 inch thick sheet, Kynar coated in a color to be selected by the Architect.
 - 2. Aluminum: Fabricate from 0.032 aluminum sheet, Kynar coated in a color to be selected by the Architect.
 - 3. Extend drip edge 1/2 inch out from face of the wall, with a hemmend outer edge bent down 30 degrees.
- B. Concealed Flashing: For flashing partly exposed to the exterior, use metal flashing specified above. Or flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
 - 1. Rubberized-Asphalt Flashing: Manufacturer's standard composite flashing product consisting of a pliable and highly adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of 0.040-inch. Application: Use where flashing is fully concealed in masonry.
 - a. Manufacturers/Products:
 - 1) Dur-O-Barrier; Dur-O-Wall, Inc.
 - 2) Perm-A-Barrier Wall Flashing; W.R. Grace & Co.

- 3) Textroflash; Hohmann & Barnard, Inc.
2. Extend concealed flashing a minimum of 7 inches into wall, turn up on the wall 2 inches, and ½ inch in from face of the wall.
- C. Adhesive, Primers, and Seam Tapes for Flashing: Flashing manufacturer's standard products or products recommended by the flashing manufacturer for bonding flashing sheets to each other and to substrates.
 1. Flashing Terminations: 1/8 inch by 1 inch stainless steel termination bars.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; formulated from neoprene or urethane.
- B. Vertical Control & Expansion Joint: Provide either polyurethanes, silicones or polysulfides sealant that complies with ASTM C 920 Class 25 or Class 50. Use a circular form backer rod behind the sealant. Provide backer rod that complies with ASTM C 1330, Type C (closed-cell material with a surface skin) polyurethane foam rod, oversized 20-50 percent larger than joint width as approved in writing by joint-sealant manufacturer. The depth of the sealant should be approximately one - half the width of the expansion joint, with a minimum sealant depth of ¼ inches.
 1. The sealant and/or gasket for the vertical joint shall match the brick/block color as selected and approved by the Architect.
 2. The sealant and/or filler for the horizontal joint shall match the mortar color as selected and approved by the Architect.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Cavity Drainage Material: 2-inch- (50-mm-) thick, free-draining mesh; made from polyethylene strands.
 1. Available Products:
 - a. Advanced Building Products Inc.; Mortar Break.
 - b. CavClear; CavClear Masonry Mat.
 - c. Mortar Net USA, Ltd.; Mortar Net.
 - d. Polytite Manufacturing Corp.; Mortar Stop.
 2. Color: As selected by Architect from manufacturer's full range.
- E. Cell Vent Weep (Dur-O-Wall: D/A-1006): UV resistant polypropylene co-polymer weep of size and shape to fit vertical mortar joint of veneer.

2.7 CAVITY-WALL INSULATION

- A. Extruded-polystyrene Board Insulation with Increased R-Value: Rigid, moisture-resistant, durable and lightweight extruded polystyrene foam thermal insulation with closed cells and integral high-density skin; formed by the expansion of polystyrene base resin with a carbon-black filler in an extrusion process to comply with ASTM C 578-85, Type IV, but with an aged thermal resistance (R-value) for 1-inch (25-mm) thickness of 5.6 deg F x h z a . ft./Btu at 75 deg F (1.0 K x sq. m/W at 24 deg C at 5 years).
 1. Manufacturers: Provide the named product below or a comparable product.
 - a. Dow Building & Construction; Styrofoam Cavitymate Ultra.
 - b. Architect approved equal.
- B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

2.8 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of 1/2-cu (0.14L) dry measure tetrasodium polyphosphate and 1/2-cu (0.14-L) dry measure laundry detergent dissolved in 1 gal. (4 L) of water.
- B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Available Products:
 - a. Cleaners for Red and Light-colored Brick Not Subject to Metallic Staining with Mortar Not Subject to Bleaching:
 - 1) Dierich Gechnologies, Inc.; 202 New Masonry Detergent
 - 2) ProSoCo, Inc; Sure Klean No. 600 Detergent.
 - b. Cleaners for Red and Dark-Colored Brick Not Subject to Metallic Staining:
 - 1) Diedrich Technologies, Inc.; 200 Lime Solv.
 - 2) ProSoCo, Inc., Sure Klean No. 101 Lime Solvent.
 - c. Cleaners for Brick Subject to Metallic Staining:
 - 1) Diedrich Technologies, Inc.; 202V Vana-Stop.
 - 2) ProSoCo, Inc.; Sure Klean Vana Trol.

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, unless otherwise indicated. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.
 - 1. Limit cementitious materials in mortar to Portland cement, mortar cement, and lime.
 - 2. For masonry below grade, in contact with earth, and where indicated, use Type M.
 - 3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls, use type S.
 - 4. For interior load-bearing walls, use Type S.
 - 5. For interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type S.
- C. Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required. Limit pigments to the following percentages of cement content by weight:
 - 1. For Portland cement-lime mortar, not more than 10 percent
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 - 2. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143/C.

2.10 SOURCE QUALITY CONTROL

- A. Brick Tests: For each type and grade of brick indicated, units will be tested according to ASTM C 67.
- B. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cut masonry units with motor-driven saws. 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..
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- D. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:
 - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet (6 mm in 6 m), 1/2 (12 mm) maximum.
 - 2. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.

3.2 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Lay exposed masonry in bond pattern indicated; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
- D. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- E. Where intersecting interior walls are installed at differing dates, the second wall built shall be the abutting mortar joint raked back and the void filled with a backer rod and joint sealant similar to a control joint.
- F. Provide joint reinforcing at all wall intersections.

3.3 MORTAR BEDDING AND JOINTING

- A. Lay hollow masonry as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilaster, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
- B. Lay solid brick-size masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

3.4 CAVITIES

- A. Keep cavities clean of mortar droppings and other materials during construction.
 - 1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.

3.5 MASONRY JOINT REINFORCEMENT

- A. Provide continuous masonry joint reinforcement as indicated. Install with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
- B. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections.

3.6 ANCHORING MASONRY

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 - 1. Provide an open space not less than 1 inch (25 mm) in width between masonry and structural member, unless otherwise indicated.
 - 2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
- B. Anchor masonry veneers to masonry backup with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten each anchor section through sheathing to wall framing to concrete and masonry backup with two metal fasteners of type indicated.
 - 2. Embed veneer anchor in masonry joints. Provide not less than 2 inches (50 mm) of air space between back of masonry veneer and face of CMU.
 - 3. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 24 inches (610) o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. (0.25 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of opening and at intervals, not exceeding 36 inches (914 mm), around perimeter.

3.7 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
 - 1. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.
- B. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.8 FLASHING, WEEP HOLES, AND VENTS

- A. General: Install imbedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Provide a continuous bead of sealant between flashing and steel lintel and masonry trim.
- C. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:

1. Form weep holes by keeping head joints free and clear of mortar. Color to be selected by Architect from manufacturers full range.
 2. Space weep holes 16 inches o.c.
 3. Place cavity drainage material immediately above flashing in cavities.
- D. Install reglets and nailers for flashing and other related construction where shown to be built into masonry.

3.9 MASONRY INSULATION INSTALLATION

- A. Cavity Wall Insulation Installation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.10 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
1. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height

3.11 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as 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.
- B. Form control joints in concrete masonry as follows:
1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake joints in exposed faces.
 2. Install preformed control-joint gaskets designed to fit standard sash block.
 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake joint.
 4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete.
- C. Form expansion joints in brick made from clay or shale as follows:
1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints, if any.
 2. Build flanges of factory-fabricated expansion-joint units into masonry.
 3. Build in joint fillers where indicated.

4. Form open joint of width indicated, but not less than 3/8-inch for installation of sealant and backer rod specified in Division 7 Section "Joint Sealants." Keep joint free and clear of mortar.
 - D. Build in horizontal, pressure-relieving joints where indicated; construct joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants".
 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.
- 3.12 FIELD QUALITY CONTROL
- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work area, as needed to perform inspections.
 1. Place grout only after inspectors have verified compliance of grout spaces and graded, sizes, and locations of reinforcement.
- 3.13 CLEANING
- A. Clean unit masonry by dry brushing to remove mortar fins and smears before tooling joints, as work progresses.
 - B. After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
 2. Protect adjacent surfaces from contact with cleaner.
 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
 4. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.
- 3.14 MASONRY WASTE DISPOSAL
- A. Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

