SECTION 042613 - MASONRY VENEER

Revise this Section by deleting and inserting text to meet Project-specific requirements.

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section Includes:

Clay face brick.

Glazed brick.

Decorative concrete masonry units.

Concrete face brick.

"Stone trim units" Subparagraph below is intended for stone lintels and similar units built into masonry. Section 044313.13 "Anchored Stone Masonry Veneer" can also be used to specify stone built into masonry. For stone trim secured with stone anchors, use Section 044200 "Exterior Stone Cladding" instead of requirements in this Section. For thin stone trim set as adhered veneer, use Section 044313.16 "Adhered Stone Masonry Veneer."

Stone trim units.

Mortar.

Ties and anchors.

Embedded flashing.

Miscellaneous masonry accessories.

* + - * 1. Products Installed but not Furnished under This Section:

Cast-stone trim in masonry veneer.

Steel lintels in masonry veneer.

Steel shelf angles for supporting masonry veneer.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited.

* + - * 1. CMU(s): Concrete masonry unit(s).
      1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.
         5. Sustainable Design Submittals:
         6. Shop Drawings: For the following:

Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.

Retain "Fabricated Flashing" Subparagraph below for flashing material that is specially fabricated for corners, end dams, etc.

Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

* + - * 1. Samples for Initial Selection:

Clay face brick[, **in the form of straps of five or more bricks**].

Glazed brick.

Decorative CMUs, in the form of small-scale units.

Concrete face brick, in the form of small-scale units.

Stone trim.

Colored mortar.

Weep holes/vents.

Delete "Samples for Initial Selection" Paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain "Samples for Verification" Paragraph below with or without above.

* + - * 1. Samples for Verification: For each type and color of the following:

Clay face brick[, **in the form of straps of five or more bricks**].

Glazed brick.

Special brick shapes.

Decorative CMUs.

Concrete face brick.

Stone trim.

[**Pigmented] [and] [colored-aggregate**] mortar. Make Samples using same sand and mortar ingredients to be used on Project.

Weep holes[ **and vents**].

Accessories embedded in masonry.

Retain "List of Materials Used in Constructing Mockups" Paragraph below for critical work where record of mockup materials is desired.

* + - * 1. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Director’s Representative and approved in writing.

Usually retain "Material Certificates" Paragraph below. Material certificates are required for all masonry constructed under TMS 402/ACI 530/ASCE 5.

* + - * 1. Material Certificates: For each type and size of the following:

Masonry units.

Retain second option in first subparagraph below if required by authorities having jurisdiction or if the added assurance of quality that test reports provide is desired.

Include [**data on material properties] [material test reports substantiating compliance with requirements**].

For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.

For exposed brick, include test report for efflorescence according to ASTM C67.

For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing according to ASTM C67[ **or a list of addresses of buildings in Project's area where proposed brick has been used successfully and with a history of durability**].

Integral water repellant used in decorative CMUs.

Cementitious materials. Include name of manufacturer, brand name, and type.

Mortar admixtures.

Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

Anchors, ties, and metal accessories.

* + - * 1. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109 for compressive strength, ASTM C1506 for water retention, and ASTM C91 for air content.

* + - * 1. Cold-Weather[ **and Hot-Weather**] Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.
      1. QUALITY ASSURANCE
         1. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Retain first subparagraph below for limited mockups.

Build mockups for [**each type of exposed unit masonry construction] [typical exterior wall**] in sizes approximately [**48 inches] [60 inches] [72 inches] [96 inches] <Insert dimension**> long by [**36 inches] [48 inches] [60 inches] [72 inches**] high by full thickness, including face and backup wythes and accessories.

Include a sealant-filled joint at least 16 inches long in [**each**] mockup.

Include lower corner of window opening[, **framed with stone trim**,] at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.

Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).

Include [metal] [wood] studs, sheathing, [**water-resistive barrier] [sheathing joint-and-penetration treatment] [air barrier**], veneer anchors, flashing[, **cavity drainage material**], and weep holes in exterior masonry-veneer wall mockup.

Where masonry is to match existing, erect mockups adjacent and parallel to existing surface.

Clean[ **one-half of**] exposed faces of mockups with masonry cleaner as indicated.

Protect accepted mockups from the elements with weather-resistant membrane.

Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

Delete first two subparagraphs below if mockups are only for establishing appearance factors.

Approval of mockups is also for other material and construction qualities specifically approved by Director’s Representative in writing.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. DELIVERY, STORAGE, AND HANDLING
         1. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

Delete first two paragraphs below if requiring Contractor to use a preblended, dry mortar mix.

* + - * 1. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
        2. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

Always retain first paragraph below in case Contractor uses a preblended, dry mortar mix.

* + - * 1. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
        2. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.
      1. FIELD CONDITIONS
         1. Protection of Masonry: During construction, cover tops of veneer, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

Increase extent of cover in first subparagraph below as needed to suit local climatic conditions.

Extend cover a minimum of 24 inches down face of veneer, and hold cover securely in place.

* + - * 1. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry. Immediately remove grout, mortar, and soil that come in contact with masonry.

Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

Protect sills, ledges, and projections from mortar droppings.

Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

* + - * 1. Cold-Weather Requirements: 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 TMS 602/ACI 530.1/ASCE 6.

Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

* + - * 1. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products.

* + - 1. MANUFACTURERS
         1. 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.
         2. 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.
      2. UNIT MASONRY, GENERAL
         1. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
         2. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work[ **and will be within 20 feet vertically and horizontally of a walking surface**].

See BIA Technical Notes 16B and NCMA TEK 7-3 for information on determining fire-resistance ratings of masonry walls.

* + - * 1. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
      1. BRICK
         1. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

On Drawings, show details of special conditions and special shapes required. Revise three subparagraphs below to suit Project.

Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.

Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

Retain option in "Clay Face Brick" Paragraph below if hollow brick is acceptable. Hollow bricks use less material and energy to make and require less energy to transport.

* + - * 1. Clay Face Brick: [**Facing brick complying with ASTM C216] [or] [hollow brick complying with ASTM C652, Class H40V (void areas between 25 and 40 percent of gross cross-sectional area**)].

Grade: [**SW] [MW or SW**].

First three options in "Type" Subparagraph below apply to ASTM C216 (facing brick); last three options apply to ASTM C652 (hollow brick).

Type: [**FBX] [FBS] [FBA] [or] [HBX] [HBS] [HBA**].

Consider retaining "Initial Rate of Absorption" Subparagraph below; it eliminates the need to wet brick before laying. Before retaining, verify that brick selected complies with requirements. See the Evaluations.

Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C7.

**Requirement in "Efflorescence" Subparagraph below does not, by itself, prevent efflorescence. See the** **Evaluations.**

Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."

Delete "Surface Coating" Subparagraph below if not using surface-coated brick.

Surface Coating: Brick with colors or textures produced by application of coatings shall withstand 50 cycles of freezing and thawing according to ASTM C67 with no observable difference in the applied finish when viewed from 10 feet [ **or shall have a history of successful use in Project's area**].

Sizes in remaining subparagraphs are examples only. Verify availability of sizes with local suppliers and revise to suit Project.

Retain one of first 13 subparagraphs below for IP sizes with equivalent SI (metric) dimensions.

Retain one of first three "Size (Actual Dimensions)" subparagraphs below for three courses in 8 inches.

Size (Actual Dimensions): [**3-1/2 inches wide by 2-1/4 inches high by 7-1/2 inches long**] [**or**] [**3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long**].

Size (Actual Dimensions): [3**-1/2 inches] [or] [3-5/8 inches**] wide by 2-1/4 inches high by 8 inches long.

Size (Actual Dimensions): [**3-1/2 inches wide by 2-1/4 inches high by 11-1/2 inches long**] [**or**] [**3-5/8 inches wide by 2-1/4 inches high by 11-5/8 inches long**].

Retain one of first two "Size (Actual Dimensions)" subparagraphs below for nominal bed depth of 3 inches and five courses in 16 inches.

Size (Actual Dimensions): [**2-3/4 inches wide by 2-3/4 inches high by 8 inches long] [or] [3 inches wide by 2-3/4 inches high by 8 inches long**].

Size (Actual Dimensions): [**2-3/4 inches wide by 2-5/8 inches high by 9-5/8 inches long] [or] [3 inches wide by 2-3/4 inches high by 9-5/8 inches long**].

Retain one of first four "Size (Actual Dimensions)" subparagraphs below for nominal bed depth of 4 inches and five courses in 16 inches.

Size (Actual Dimensions): [**3-1/2 inches wide by 2-3/4 inches high by 7-1/2 inches long] [or] [3-5/8 inches wide by 2-13/16 inches high by 7-5/8 inches long**].

Size (Actual Dimensions): [**3-1/2 inches wide by 2-3/4 inches high by 8 inches long] [or] [3-5/8 inches wide by 2-13/16 inches high by 8 inches long**].

Size (Actual Dimensions): 3-5/8 inches wide by 2-5/8 inches high by 9-5/8 inches long.

Size (Actual Dimensions): [**3-1/2 inches wide by 2-3/4 inches high by 11-1/2 inches long] [or] [3-5/8 inches wide by 2-13/16 inches high by 11-5/8 inches long**].

Retain first "Size (Actual Dimensions)" Subparagraph below for nominal bed depth of 3 inches and course height of 4 inches.

Size (Actual Dimensions): [**2-3/4 inches wide by 3-5/8 inches high by 11-5/8 inches long] [or] [3 inches wide by 3-5/8 inches high by 11-5/8 inches long**].

Retain one of first two "Size (Actual Dimensions)" subparagraphs below for nominal bed depth of 4 inches and course height of 4 inches.

Size (Actual Dimensions): [**3-1/2 inches wide by 3-1/2 inches high by 7-1/2 inches long] [or] [3-5/8 inches wide by 3-5/8 inches high by 7-5/8 inches long**].

Size (Actual Dimensions): [**3-1/2 inches wide by 3-1/2 inches high by 11-1/2 inches long] [or] [3-5/8 inches wide by 3-5/8 inches high by 11-5/8 inches long**].

Retain first "Size (Actual Dimensions)" Subparagraph below for square brick, 8 inches in nominal size.

Size (Actual Dimensions): [**3-1/2 inches wide by 7-1/2 inches high by 7-1/2 inches long] [or] [3-5/8 inches wide by 7-5/8 inches high by 7-5/8 inches long**].

Retain "Size (Actual Dimensions)" Subparagraph below for products manufactured to metric sizes.

Size (Actual Dimensions): 90 mm wide by [**57] [70] [90] [190**] mm high by [**190] [290**] mm long.

Application: Use where brick is exposed unless otherwise indicated.

[**Where shown to "match existing**," ]provide clay face brick matching color range, texture, and size of existing adjacent brickwork.

<**Insert information on existing brick if known**>.

Delete "Color and Texture" Subparagraph below if brick is specified by product name. First three options are examples of descriptive requirements for appearance where proprietary specifications and allowances cannot be used. Retain last option if using allowance.

Color and Texture: [**Medium brown, wire cut] [Full-range red, sand molded] [Buff, velour] [Match Director’s Representative's samples] [As selected by Director’s Representative**].

* + - * 1. Glazed Brick: [**Facing brick complying with ASTM C216, with glaze complying with ASTM C126;] [single-fired glazed brick complying with ASTM C1405, Division Solid;] [hollow brick complying with ASTM C652, Class H40V (void areas between 25 and 40 percent of gross cross-sectional area), with glaze complying with ASTM C126;] [or] [single-fired glazed brick complying with ASTM C1405, Division H40V (void areas between 25 and 40 percent of gross cross-sectional area**)].

ASTM C216: [**Grade SW**] [**Grade MW or SW**].

ASTM C216: [**Type FBX**] [**Grade FBS**] [**Grade FBA**].

ASTM C652: [**Grade SW**] [**Grade MW or SW**].

ASTM C652: [**Grade HBX**] [**Grade HBS**] [**Grade HBA**].

ASTM C1405: [**Class Exterior**] [**Grade Interior**].

ASTM C1405: [**Grade S (Select)**] [**Grade SS (Select Sized)**].

Copy requirement for unit compressive strength from "Clay Face Brick" Paragraph and insert here if required.

Sizes in remaining subparagraphs are examples only. Verify availability of sizes with local suppliers and revise to suit Project.

Retain first "Size (Actual Dimensions)" Subparagraph below for three courses in 8 inches.

Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by [**7-5/8 inches] [8 inches] [11-5/8 inches**] long.

Retain first "Size (Actual Dimensions)" Subparagraph below for five courses in 16 inches.

Size (Actual Dimensions): 3-5/8 inches wide by 2-3/4 inches high by [**7-5/8 inches] [8 inches] [11-5/8 inches**] long.

Retain first "Size (Actual Dimensions)" Subparagraph below for 4-inch courses.

Size (Actual Dimensions): 3-5/8 inches wide by 3-5/8 inches high by [**7-5/8 inches] [11-5/8 inches**] long.

Retain first "Size (Actual Dimensions)" Subparagraph below for square brick, 8 inches nominal size.

Size (Actual Dimensions): 3-5/8 inches wide by 7-5/8 inches high by 7-5/8 inches long.

Retain first subparagraph below if units with two opposite exposed faces are required.

Provide Type I (single-faced units) where only one finished face is exposed when units are installed, and Type II (double-faced units) where two opposite finished faces are exposed when units are installed.

Application: Use where [**brick is exposed unless otherwise indicated] [indicated**].

Retain one of three options in "Colors" Subparagraph below; otherwise, retain second subparagraph.

Colors: [**As indicated by manufacturer's designations] [Match Director’s Representative's samples] [As selected by Director’s Representative from manufacturer's full range**].

[**Where shown to "match existing**," ]provide glazed brick matching color range, texture, and size of existing adjacent brickwork.

<**Insert information on existing brick if known**>.

Insert calcium silicate (sand-lime) brick if required. See the Evaluations.

* + - 1. CONCRETE MASONRY UNITS
         1. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

Retain "Integral Water Repellant" Paragraph below for increased water resistance of units if required. If retaining, also retain water-repellent mortar admixture.

* + - * 1. Integral Water Repellent: Provide units made with integral water repellent [**for exposed units] [and] [where indicated**].

Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.

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

ACM Chemistries.

BASF Corporation.

Euclid Chemical Company (The); an RPM company.

GCP Applied Technologies Inc.

Approved Equivalent.

* + - * 1. Decorative CMUs: ASTM C90.

Density classification in "Density Classification" Subparagraph below affects appearance and water absorption. Verify availability of lightweight decorative CMUs before specifying.

Density Classification: [**Lightweight**] [**Medium weight**] [**Normal weight**].

Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

Pattern and Texture:

Retain one of first two subparagraphs below and revise to suit Project. Retain option if appearance is critical.

Standard pattern, ground-face finish.[ Match Director’s Representative's samples.]

Standard pattern, split-face finish.[ Match Director’s Representative's samples.]

Colors: [**As indicated by manufacturer's designations] [Match Director’s Representative's samples] [As selected by Director’s Representative from manufacturer's full range**].

Retain "Special Aggregate" Subparagraph below if special aggregate is required to match sample.

Special Aggregate: Provide units made with aggregate matching aggregate in Director’s Representative's sample.

* + - * 1. Concrete Face Brick: ASTM C1634.

Retain one of three options in "Density Classification" Subparagraph below, or delete subparagraph for Contractor's option.

Density Classification: [**Lightweight] [Medium weight] [Normal weight**].

Size (Actual Dimensions): 3-5/8 inches wide by [**2-1/4 inches**] [**2-3/4 inches**] [**3-5/8 inches**] high by [**7-5/8 inches**] [**11-5/8 inches**] [**15-5/8 inches**] long.

Texture: [**Split-face] [Ground-face**] finish.

Match Director’s Representative's samples.

Colors: [**As indicated by manufacturer's designations] [Match Director’s Representative's samples] [As selected by Director’s Representative from manufacturer's full range**].

Retain "Special Aggregate" Subparagraph below if special aggregate is required to match sample.

Special Aggregate: Provide units made with aggregate matching aggregate in Director’s Representative's sample.

* + - 1. STONE TRIM UNITS

This article is intended for stone lintels and similar units built into masonry veneers. Section 044313.13 "Anchored Stone Masonry Veneer" can also be used to specify stone built into masonry veneers. For stone trim secured with stone anchors, use Section 044200 "Exterior Stone Cladding" instead of requirements in this Section.

* + - * 1. Granite: ASTM C615.

Retain "Description" Subparagraph below for a generic specification, or delete and specify by naming one or more acceptable varieties.

Description: [**Fine] [Medium**]-grained, [**white] [pink] [gray] [black**] stone.[ **Uniform pattern, without veining**].

First option in "Limestone" Paragraph below generally applies to very porous limestone that is used only in mild climates; second option applies to oolitic and some dolomitic limestone; third option applies to dolomitic limestone.

* + - * 1. Limestone: ASTM C568, [**Classification I Low**] [**Classification II Medium**] [**Classification III High**] Density.

Retain "Variety and Sources" Subparagraph below if Indiana limestone is required. If retaining, retain second option in "Limestone" Paragraph above.

Variety and Sources: Indiana oolitic limestone quarried in Lawrence, Monroe, or Owen Counties, Indiana.

Retain "Grade and Color" Subparagraph below for Indiana limestone. Select and Standard grades are hard to get in large sizes; gray is more plentiful than buff. Verify availability with producers.

Grade and Color: [**Select, buff] [Select, gray] [Standard, buff] [Standard, gray] [Rustic, buff] [Rustic, gray] [Variegated**], according to grade and color classification established by ILI.

* + - * 1. Marble: ASTM C503, [**Classification I Calcite] [Classification II Dolomite**].

Retain "Description" Subparagraph below for a generic specification, or delete and specify by naming one or more acceptable varieties.

Description: Uniform, fine- to medium-grained white stone with only slight veining.

* + - * 1. Quartz-Based Stone: ASTM C616, [**Classification I Sandstone] [Classification II Quartzitic Sandstone] [III Quartzite**].

Retain "Varieties and Sources" Paragraph and list below for semiproprietary or proprietary specification. See Section 016000 "Product Requirements."

* + - * 1. Varieties and Sources: Subject to compliance with requirements, provide[ one of] the following:

<**Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers**>.

Some finishes in "Finish" Paragraph below are not suitable for all stone varieties. For additional finishes, see Section 044313.13 "Anchored Stone Masonry Veneer."

* + - * 1. Finish: [**Polished] [Honed] [Smooth] [Machine tooled, four bats per 1 inch] [Machine tooled, six bats per 1 inch] [Machine tooled, eight bats per 1 inch] [Chat sawed] [Split face] [Rock face (pitched face**)].

Finish for [T**ops of Sills] [Jamb Returns] [and] [Soffits of Lintels]: [Sand rubbed] [Split face**].

* + - * 1. Provide stone units accurately shaped, with exposed faces dressed true, and with beds and joints at right angles to faces.

For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."

For marble, comply with recommendations in MIA's "Dimensional Stone - Design Manual VII."

* + - 1. MORTAR MATERIALS

Coordinate requirements in this article with those in "Mortar Mixes" Article.

* + - * 1. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

Requirement in subparagraph below can help reduce the likelihood of efflorescence.

Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.

* + - * 1. Hydrated Lime: ASTM C207, Type S.

Mix in "Portland Cement-Lime Mix" Paragraph below allows better control of color than job-mixed, portland cement-lime mortar. If retaining below, also retain "Portland Cement" and "Hydrated Lime" paragraphs above.

* + - * 1. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
        2. Masonry Cement: ASTM C91.

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

Cemex S.A.B. de C.V.

Essroc.

Lafarge North America Inc.

Lehigh Hanson; HeidelbergCement Group.

Approved Equivalent.

* + - * 1. Mortar Cement: ASTM C1329.

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

Fairborn Cement Company.

Lafarge North America Inc.

Approved Equivalent.

Retain "Mortar Pigments" Paragraph below for colored cement or for pigments added at Project site.

* + - * 1. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979. Use only pigments with a record of satisfactory performance in masonry mortar.

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

Davis Colors.

Euclid Chemical Company (The); an RPM company.

Solomon Colors, Inc.

Approved Equivalent.

Mixes in "Colored Cement Products" Paragraph below allow better control of color than job-mixed colored mortar. If retaining, also retain paragraphs above that specify materials included in the mixes retained below.

* + - * 1. Colored Cement Products: Packaged blend made from portland cement and hydrated lime, masonry cement, or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.

Colored Portland Cement-Lime Mix:

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

Essroc.

Lafarge North America Inc.

Lehigh Hanson; HeidelbergCement Group.

Approved Equivalent.

Colored Masonry Cement:

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

Cemex S.A.B. de C.V.

Lafarge North America Inc.

Lehigh Hanson; HeidelbergCement Group.

Approved Equivalent.

Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.

Retain one or both subparagraphs below to suit types of cement retained above. Percentages are for pigments containing only metallic oxides. If using pigments containing carbon black, carbon black must be limited to 2 percent of portland cement by weight or 1 percent of masonry or mortar cement.

Pigments shall not exceed 10 percent of portland cement by weight.

Pigments shall not exceed 5 percent of [**masonry cement] [or] [mortar cement**] by weight.

* + - * 1. Aggregate for Mortar: ASTM C144.

For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

White-Mortar Aggregates: Natural white sand or crushed white stone.

Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

"Cold-Weather Admixture" Paragraph below is an example of a requirement for a concrete admixture often used in cold weather as an antifreeze. Appendix X1 in ASTM C270 and BIA generally recommend not using admixtures unless they are known to have no adverse effects. Before approving the use of cold-weather admixtures, verify their acceptability by laboratory testing with mortar mix used.

* + - * 1. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

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

Euclid Chemical Company (The); an RPM company.

GCP Applied Technologies Inc.

Approved Equivalent.

Retain "Water-Repellant Admixture" Paragraph below if integral water repellent is used in CMUs.

* + - * 1. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

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

ACM Chemistries.

BASF Corporation.

Euclid Chemical Company (The); an RPM company.

GCP Applied Technologies Inc.

Approved Equivalent.

* + - * 1. Water: Potable.
      1. TIES AND ANCHORS
         1. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.
         2. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

Retain subparagraphs below only for those materials referenced in subsequent paragraphs.

"Mill-Galvanized, Carbon-Steel Wire" Subparagraph below is allowed only for anchors and ties in interior walls where humidity is less than 75 percent.

Mill-Galvanized, Carbon-Steel Wire: ASTM A82, with ASTM A641, Class 1 coating.

Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82, with ASTM A153, Class B-2 coating.

Retain first option in "Stainless Steel Wire" Subparagraph below unless higher corrosion resistance of Type 316 is required.

Stainless Steel Wire: ASTM A580, [**Type 304] [Type 316**].

"Galvanized-Steel Sheet" Subparagraph below is allowed only for anchors and ties in interior walls where humidity is less than 75 percent.

Galvanized-Steel Sheet: ASTM A653, Commercial Steel, G60 zinc coating.

Steel Sheet, Galvanized after Fabrication: ASTM A1008, Commercial Steel, with ASTM A153, Class B coating.

Retain first option in "Stainless Steel Sheet" Subparagraph below unless higher corrosion resistance of Type 316 is required.

Stainless Steel Sheet: ASTM A240 or ASTM A666, [**Type 304] [Type 316**].

TMS 402/ACI 530/ASCE 5 requires that corrugated-metal veneer ties be at least 0.030 inch thick and requires closer spacing for veneer ties less than 0.060 inch thick.

* + - * 1. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from [0.030-inch- thick, steel sheet, galvanized after fabrication] [**0.060-inch- thick, steel sheet, galvanized after fabrication] [0.031-inch- thick, stainless steel sheet] [0.062-inch- thick, stainless steel sheet**].
        2. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

If retaining last option in "Anchor Section for Welding to Steel Frame" Subparagraph below, note that TMS 402/ACI 530/ASCE 5 does not allow ties made from mill-galvanized wire for interior use in spaces where humidity exceeds 75 percent.

Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, [**hot-dip galvanized steel] [stainless steel] wire.[ Mill-galvanized wire may be used at interior walls unless otherwise indicated**.]

If retaining last option in "Tie Section" Subparagraph below, note that TMS 402/ACI 530/ASCE 5 does not allow ties made from mill-galvanized wire for interior use in spaces where humidity exceeds 75 percent.

Tie Section: Triangular-shaped wire tie made from [**0.187-inch-] [0.25-inch-] diameter, [hot-dip galvanized steel] [stainless steel] wire.[ Mill-galvanized wire may be used at interior walls unless otherwise indicated.**]

* + - * 1. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

Retain "Connector Section" and "Tie Section" subparagraphs below; otherwise, retain "Corrugated-Metal Ties" Subparagraph below.

Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from [**0.060-inch- thick, steel sheet, galvanized after fabrication] [0.105-inch- thick, steel sheet, galvanized after fabrication] [0.062-inch- thick, stainless steel sheet] [0.109-inch- thick, stainless steel sheet**].

Note that TMS 402/ACI 530/ASCE 5 does not allow ties made from galvanized-steel sheet for interior use in spaces where humidity exceeds 75 percent.

[**0.064-inch-] [0.108-inch-**] thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.

If retaining last option in "Tie Section" Subparagraph below, note that TMS 402/ACI 530/ASCE 5 does not allow ties made from mill-galvanized wire for interior use in spaces where humidity exceeds 75 percent.

Tie Section: Triangular-shaped wire tie made from [**0.187-inch-] [0.25-inch-] diameter, [hot-dip galvanized steel] [stainless steel] wire.[ Mill-galvanized wire may be used at interior walls unless otherwise indicated**.]

Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from [**0.060-inch- thick steel sheet, galvanized after fabrication] [0.075-inch--thick steel sheet, galvanized after fabrication] [0.105-inch- thick steel sheet, galvanized after fabrication] [0.062-inch- thick, stainless steel sheet] [0.078-inch- thick, stainless steel sheet] [0.109-inch- thick, stainless steel sheet**] with dovetail tabs for inserting into dovetail slots in concrete.

[**0.064-inch-] [0.079-inch-] [0.108-inch-**] thick, galvanized sheet may be used at interior walls unless otherwise indicated.

* + - * 1. Adjustable Masonry-Veneer Anchors:

General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.

Fabricate sheet metal anchor sections and other sheet metal parts from [**0.075-inch- thick steel sheet, galvanized after fabrication] [0.105-inch- thick steel sheet, galvanized after fabrication] [0.078-inch- thick, stainless steel sheet] [0.109-inch- thick, stainless steel sheet**].

Fabricate wire ties from [**0.187-inch-] [0.25-inch**-] diameter, [**hot-dip galvanized steel**] [stainless steel] wire unless otherwise indicated.

Fabricate wire connector sections from [**0.187-inch-] [0.25-inch**-] diameter, [**hot-dip galvanized, carbon] [stainless**] steel wire.

Usually retain "Contractors Option" Subparagraph below along with the acceptable types of anchors.

Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with a projecting vertical tab having a slotted hole for inserting wire tie.

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

CTP Anchors; a division of PROSOCO.

FERO Corporation.

Hohmann & Barnard, Inc.

PROSOCO, Inc.

Wire-Bond.

Approved Equivalent.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having holes for inserting vertical legs of wire tie formed to fit anchor section.

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

Heckmann Building Products, Inc.

Hohmann & Barnard, Inc.

Quality Steel and Wire LLC.

Wire-Bond.

Approved Equivalent.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a sheet metal anchor section, 1-1/4 inches wide by 9 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 5-1/2 inches long, stamped into center to provide a slot between strap and base for inserting wire tie.

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

Hohmann & Barnard, Inc.

Approved Equivalent.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 3-5/8 inches long, stamped into center to provide a slot between strap and base for inserting wire tie.

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

Heckmann Building Products, Inc.

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a gasketed sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and base for inserting wire tie. Self-adhering, modified bituminous gasket fits behind anchor plate and extends beyond pronged legs.

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

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Screw-Attached, Masonry-Veneer Anchors: Wire tie and a corrosion-resistant, self-drilling, eye-screw designed to receive wire tie. Eye-screw has spacer that seats directly against framing and is same thickness as sheathing and has gasketed washer head that covers hole in sheathing.

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

Heckmann Building Products, Inc.

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Anchors in first "Seismic Masonry-Veneer Anchors" Subparagraph below may be used for other than seismic conditions.

Seismic Masonry-Veneer Anchors: Connector section and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having slotted holes for inserting vertical leg of connector section. Connector section consists of a rib-stiffened, sheet metal bent plate with down-turned leg designed to fit in anchor section slot and with integral tabs designed to engage continuous wire.

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

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Anchors in first "Seismic Masonry-Veneer Anchors" Subparagraph below may be used for other than seismic conditions.

Seismic Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having holes for inserting vertical legs of wire tie. Wire tie has sheet metal clip welded to it with integral tabs designed to engage continuous wire.

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

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Anchors in "Seismic Masonry-Veneer Anchors" Subparagraph below may be used for other than seismic conditions.

Seismic Masonry-Veneer Anchors: Connector section and a gasketed sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and base for inserting connector section. Self-adhering, modified bituminous gasket fits behind anchor plate and extends beyond pronged legs. Connector section consists of a triangular wire tie and rigid PVC extrusion with snap-in grooves for inserting continuous wire.

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

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Fasteners in "Polymer-Coated, Steel Drill Screws for Steel Studs" Subparagraph below are for steel studs from 0.033 to 0.112 inch thick.

Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours according to ASTM B117.

See the Evaluations and BIA Technical Notes 28B for use of stainless steel screws.

Stainless Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads; either made from Type 410 stainless steel or made with a carbon-steel drill point and 300 Series stainless steel shank.

* + - 1. EMBEDDED FLASHING MATERIALS

See the Evaluations for discussion of flashing materials before revising this article.

* + - * 1. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

Insert terne-coated stainless steel or lead-coated copper if required.

Stainless Steel: ASTM A240 or ASTM A666, Type 304, 0.016 inch thick.

Copper: ASTM B370, Temper H00, cold-rolled copper sheet, 16-oz./sq. ft. weight or 0.0216 inch thick or ASTM B370, Temper H01, high-yield copper sheet, 12-oz./sq. ft. weight or 0.0162 inch thick.

Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.

Delete first subparagraph below if plain (flat) sheet metal flashing is acceptable. Revise if dovetail pattern is required for interlocking bond.

Fabricate through-wall metal flashing embedded in masonry from [**stainless steel] [copper**], with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.

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

Cheney Flashing Company.

Hohmann & Barnard, Inc.

Keystone Flashing Company, Inc.

Approved Equivalent.

Delete first subparagraph below if not required.

Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.

Usually retain one or both of first two subparagraphs below if metal through-wall flashing is used. See the Evaluations.

Fabricate through-wall flashing with drip edge [**where] [unless otherwise**] indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees[ **and hemmed**].

Fabricate through-wall flashing with sealant stop [**where] [unless otherwise**] indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 1/4 inch to form a stop for retaining sealant backer rod.

Retain first subparagraph below if either of last two subparagraphs above is used with ribbed metal flashing.

Fabricate metal [**drip edges] [and] [sealant stops**] for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam sheds water.

Retain one or both of first two subparagraphs below for use with flexible flashing if required. See the Evaluations.

Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees[ **and hemmed**].

Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.

Fabricate metal expansion-joint strips from [**stainless steel] [copper**] to shapes indicated.

Solder metal items at corners.

Delete "Flexible Flashing" Paragraph below if only metal flashing is allowed. If concealed metal flashing is required at certain locations, indicate those locations on Drawings or revise paragraph.

* + - * 1. Flexible Flashing: Use[ one of] the following unless otherwise indicated:

"Copper-Laminated Flashing" Subparagraph below is an example only; revise if other laminated products are required.

Copper-Laminated Flashing: [**5-oz./sq. ft.] [7-oz./sq. ft**.] copper sheet bonded between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.

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

Advanced Building Products Inc.

Hohmann & Barnard, Inc.

Wire-Bond.

York Manufacturing, Inc.

Approved Equivalent.

Asphalt-Coated Copper Flashing: [**5-oz./sq. ft.] [7-oz./sq. ft**.] copper sheet coated with flexible asphalt. Use only where flashing is fully concealed in masonry.

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

Hohmann & Barnard, Inc.

Wire-Bond.

Approved Equivalent.

Some rubberized-asphalt flashing products are 0.040 inch thick; some are 0.030 inch thick; others are 0.025 inch thick. BIA recommends 0.030 inch as a minimum thickness.

Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than [**0.030 inch] [0.040 inch**].

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

Advanced Building Products Inc.

Carlisle Coatings & Waterproofing Inc.

GCP Applied Technologies Inc.

Heckmann Building Products, Inc.

Hohmann & Barnard, Inc.

Polyguard Products, Inc.

Williams Products, Inc.

Wire-Bond.

Approved Equivalent.

Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

Self-adhesive flashing using butyl rubber is more expensive than that made with rubberized asphalt and must not be used in contact with asphalt; however, it is more adhesive than rubberized asphalt at cold temperatures and does not soften and run as readily at high temperatures.

Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than [**0.030 inch] [0.040 inch]**.

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

DuPont de Nemours, Inc.

GCP Applied Technologies Inc.

Protecto Wrap Company.

Raven Industries, Inc.

Approved Equivalent.

Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.

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

DuPont.

Hohmann & Barnard, Inc.

Mortar Net Solutions.

Wire-Bond.

Approved Equivalent.

Retain one or more of "Monolithic Sheet," "Self-Adhesive Sheet," and "Self-Adhesive Sheet with Drip Edge" subparagraphs below, or show on Drawings where each is required.

Monolithic Sheet: Elastomeric thermoplastic flashing, 0.040 inch thick.

Self-Adhesive Sheet: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch- thick coating of adhesive.

"Self-Adhesive Sheet with Drip Edge" Subparagraph below is for applications where flashing extends to face of masonry. This material may be unsuitable for use at sealant joints, because it is difficult to remove the sealant for replacement without damaging the flashing.

Self-Adhesive Sheet with Drip Edge: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch- thick coating of rubberized-asphalt adhesive. Where flashing extends to face of masonry, rubberized-asphalt coating is held back approximately 1-1/2 inches from edge.

Color: [**Gray] [White] [Tan/buff] [Black**].

Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637, 0.040 inch thick.

* + - * 1. Application: Unless otherwise indicated, use the following:

Where flashing is indicated to receive counterflashing, use metal flashing.

Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.

Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing [**with a drip edge] [with a sealant stop] [or flexible flashing with a metal drip edge] [or elastomeric thermoplastic flashing with a drip edge] [or flexible flashing with a metal sealant stop**].

Where flashing is fully concealed, use [**metal flashing] [or] [flexible flashing**].

* + - * 1. Solder and Sealants for Sheet Metal Flashings:[ **As specified in Section 076200 "Sheet Metal Flashing and Trim."]**

Retain option in "Solder and Sealants for Sheet Metal Flashing" Paragraph above or one or more of "Solder for Stainless Steel," "Solder for Copper," and "Elastomeric Sealant" subparagraphs below. Grade Sn60 solder is 40 percent lead; Grade Sn96 is 0.10 percent lead; and Grade Sn50 is 50 percent lead.

Solder for Stainless Steel: ASTM B32, [**Grade Sn60] [Grade Sn96**], with acid flux of type recommended by stainless steel sheet manufacturer.

Solder for Copper: ASTM B32, [**Grade Sn50] [with maximum lead content of 0.2 percent**].

Revise "Elastomeric Sealant" Subparagraph below if sealant of specific type, grade, class, and use is required.

Elastomeric Sealant: ASTM C920, chemically curing [**urethane] [polysulfide] [silicone**] sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and remain watertight.

* + - * 1. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
        2. Termination Bars for Flexible Flashing: [**Aluminum] [Stainless steel**] steel bars [**0.075 inch by 1 inch] [1/8 inch by 1 inch**].
        3. Termination Bars for Flexible Flashing: Stainless steel sheet 0.019 inch by 1-1/2 inches with a 3/8 inch sealant flange at top.
        4. Termination Bars for Flexible Flashing: Aluminum sheet 0.064 inch by 1-1/2 inches with a 3/8 inch sealant flange at top.
      1. MISCELLANEOUS MASONRY ACCESSORIES
         1. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from [**neoprene**] [**urethane] [or] [PVC**].
         2. Weep/Vent Products: Use[ **one of**] the following unless otherwise indicated:

Retain one or more of "Wicking Material," "Round Plastic Weep/Vent Tubing," "Rectangular Plastic Weep/Vent Tubing," "Cellular Plastic Weep/Vent," "Mesh Weep/Vent," "Aluminum Weep Hole/Vent," and "Vinyl Weep Hole/Vent" subparagraphs below; delete all if open-head joints are used for weep holes and vents.

Wicking Material: Absorbent rope, made from [**cotton] [or] [UV-resistant synthetic fiber**], 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity. Use only for weeps.

Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD by 4 inches long.

Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches long.

Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.

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

Advanced Building Products Inc.

Heckmann Building Products, Inc.

Hohmann & Barnard, Inc.

Mortar Net Solutions.

Wire-Bond.

Approved Equivalent.

Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.

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

Hohmann & Barnard, Inc.

Keene Building Products.

Mortar Net Solutions.

Approved Equivalent.

Mortar will corrode aluminum unless protected with paint.

Aluminum Weep Hole/Vent: Units made from sheet aluminum, designed to fit into a head joint and consisting of a vertical channel, with louvers stamped in web and with a top flap to keep mortar out of the head joint; factory primed and painted before installation to comply with Section 099113 "Exterior Painting" in color selected by Director’s Representative.

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

Hohmann & Barnard, Inc.

Approved Equivalent.

Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Director’s Representative.

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

Hohmann & Barnard, Inc.

Williams Products, Inc.

Wire-Bond.

Approved Equivalent.

Products described in "Cavity Drainage Material" Paragraph below can be used to keep weep holes clear. See the Evaluations.

* + - * 1. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

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

Advanced Building Products Inc.

Hohmann & Barnard, Inc.

Keene Building Products.

Mortar Net Solutions.

Wire-Bond.

York Manufacturing, Inc.

Approved Equivalent.

"Configuration" Subparagraph below can be retained to maximize competition in bidding. If only one configuration is used, revise subparagraph by inserting the selected configuration.

Configuration: Provide one of the following:

Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.

Strips, not less than [**3/4 inch] [1-1/2 inches**] thick and 10 inches high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.

Sheets or strips, full depth of cavity and installed to full height of cavity.

Sheets or strips not less than [**3/4 inch] [1 inch**] thick and installed to full height of cavity with additional strips 4 inches high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from clogging with mortar.

Insert other masonry accessories to suit Project.

* + - 1. MASONRY CLEANERS

Verify acceptability of cleaner for cleaning masonry with pigmented mortar joints and for types of masonry units specified.

* + - * 1. 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 expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
      1. MORTAR MIXES
         1. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

Do not use calcium chloride in mortar or grout.

Retain one or more of first three subparagraphs below to indicate acceptable mortar types.

Use [**portland cement-lime] [masonry cement] [or] [mortar cement**] mortar unless otherwise indicated.

For exterior masonry, use [**portland cement-lime] [masonry cement] [or] [mortar cement**] mortar.

For reinforced masonry, use [**portland cement-lime] [masonry cement] [or] [mortar cement**] mortar.

Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

Preblended, dry mortar mix can help ensure uniformity, but is inappropriate for small projects.

* + - * 1. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
        2. Mortar for Unit Masonry: Comply with ASTM C270, [**Proportion] [Property**] Specification. Use Type N unless another type is indicated.

Before retaining mortar types in subparagraph below, see Appendix X1 in ASTM C270 and BIA Technical Notes 8A and 8B for recommendations; coordinate with requirements for masonry compressive strengths.

For masonry below grade or in contact with earth, use [**Type M] [Type S**].

* + - * 1. Pigmented Mortar: Use colored cement product[ **or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products**].

Retain first three subparagraphs below if retaining option in "Pigmented Mortar" Paragraph above. Percentages in first two subparagraphs are for pigments containing only metallic oxides. If pigments containing carbon black are used, carbon black must be limited to 2 percent of portland cement by weight or 1 percent of masonry cement or mortar cement.

Pigments shall not exceed 10 percent of portland cement by weight.

Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.

Insert materials and proportions used for sample in first subparagraph below if known.

Mix to match Director’s Representative's sample.

Application: Use pigmented mortar for exposed mortar joints.

* + - * 1. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

Insert materials and proportions used for sample in first subparagraph below if known.

Mix to match Director’s Representative's sample.

Application: Use colored aggregate mortar for exposed mortar joints.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. INSTALLATION, GENERAL
         1. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
         2. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
         3. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
         4. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

Retain "Wetting of Brick" Paragraph below for high-suction brick. A simple test to determine if wetting is required consists of drawing a circle the size of a quarter on a brick and placing 20 drops of water in the circle; if water is absorbed within 1-1/2 minutes, the brick requires wetting.

* + - * 1. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.
      1. TOLERANCES
         1. Dimensions and Locations of Elements:

For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.

For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.

For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

* + - * 1. Lines and Levels:

For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.

For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.

For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.

For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.

For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

If using Type FBS Rough brick or Type FBA brick, revise tolerance in subparagraph below to allow for variation in brick size.

For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

* + - * 1. Joints:

If using Type FBS Rough brick or Type FBA brick, revise tolerances in five subparagraphs below to allow for variation in brick size. Consider restricting tolerances if Type FBX brick is used.

For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.

For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.

For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.[ **Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch**.]

For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

* + - 1. LAYING MASONRY WALLS
         1. 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.

Pattern is usually running bond. If other bond patterns are required, specify in "Bond Pattern for Exposed Masonry" Paragraph below or indicate on Drawings.

* + - * 1. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in [**running bond] [stack bond] [one-third running bond] [Flemish bond] [English bond] [bond pattern indicated on Drawings**]; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
        2. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
        3. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

Revise first paragraph below if flexible perimeter joint or thermal break is required.

* + - * 1. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
      1. MORTAR BEDDING AND JOINTING
         1. Lay[ **solid**] 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.
         2. Lay [**hollow brick] [and] [CMUs**] with face shells fully bedded in mortar and with head joints of depth equal to bed joints. At starting course, fully bed entire units, including area under cells.

At anchors and ties, fully bed units and fill cells with mortar as needed to fully embed anchors and ties in mortar.

* + - * 1. Set [**stone] [cast-stone**] trim units in full bed of mortar with full vertical joints.

Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.

Allow cleaned surfaces to dry before setting.

Retain last subparagraph above for relatively impervious stones, such as granite; retain first subparagraph below for absorptive stones, such as limestone and sandstone, and for cast stone.

Wet joint surfaces thoroughly before applying mortar.

Rake out mortar joints for pointing with sealant.

If another joint profile is used, revise paragraph below or show on Drawings.

* + - * 1. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.

* + - 1. ANCHORED MASONRY VENEERS
         1. Anchor masonry veneers to [**wall framing] [and] [concrete and masonry backup] with[ seismic**] masonry-veneer anchors to comply with the following requirements:

Fasten [**screw-attached] [and] [seismic**] anchors [**through sheathing to wall framing] [and] [to concrete and masonry backup**] with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.

Embed [**tie sections**] [**connector sections and continuous wire**] in masonry joints.

Locate anchor sections to allow maximum vertical differential movement of ties up and down.

Retain one of three subparagraphs below to suit Project. First subparagraph below is BIA recommendation for metal-stud construction. Second subparagraph below is based on TMS 402/ACI 530/ASCE 5 requirement for less than 40 psf wind load. First option is for adjustable two-piece anchors, wire anchors 0.148 inch in diameter, and corrugated sheet metal anchors; second is for all other anchors. Third subparagraph below is based on TMS 402/ACI 530/ASCE 5 requirement for 40 to 55 psf wind load for adjustable two-piece anchors, wire anchors 0.148 inch in diameter, and corrugated sheet metal anchors. Revise spacing to suit coursing, comply with requirements of authorities having jurisdiction, or comply with structural requirements imposed by wind or seismic forces.

Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

Space anchors as indicated, but not more than 16 inches o.c. vertically and 25 inches o.c. horizontally, with not less than one anchor for each [**2.67 sq. ft.] [3.5 sq. ft**.] of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.

Space anchors as indicated, but not more than 18 inches o.c. vertically and horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 24 inches, around perimeter.

BIA Technical Notes 28B recommends 2 inches of airspace. Wider airspaces require closer tie spacing.

* + - * 1. Provide not less than [**2 inches] [1 inch**] of airspace between back of masonry veneer and face of [**sheathing] [insulation**].

Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

* + - 1. ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE
         1. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete to comply with the following:

Provide an open space not less than [**1/2 inch] [1 inch] [2 inches**] wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.

Anchor masonry with anchors embedded in masonry joints and attached to structure.

Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

* + - 1. EXPANSION JOINTS
         1. General: Install expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span expansion joints without provision to allow for in-plane wall or partition movement.

Show locations of joints on Drawings.

* + - * 1. Form expansion joints as follows:

Retain one or more of first three subparagraphs below.

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.

Build flanges of factory-fabricated, expansion-joint units into masonry.

Build in compressible joint fillers where indicated.

Form open joint full depth of brick wythe and of width indicated, but not less than [**3/8 inch] [1/2 inch**] for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."

* + - * 1. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch.

Revise subparagraph below to suit Project. Show locations of joints on Drawings.

Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

* + - 1. LINTELS
         1. Install steel lintels where indicated.

Delete paragraph below if bearing is shown on Drawings.

* + - * 1. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.
      1. FLASHING, WEEP HOLES, AND VENTS

Retain option in "General" Paragraph below if wall is designed on rain-screen principle with vents acting to equalize air-pressure differential between cavity and exterior. Indicate spacing of vents and blocking on Drawings. See the Evaluations.

* + - * 1. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.[ **Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.]**
        2. Install flashing as follows unless otherwise indicated:

Retain option in subparagraph below for manufactured flashing; delete if only metal flashing is used.

Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape[ **as recommended by flashing manufacturer**].

Extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under [water-resistive barrier] [air barrier], lapping at least 4 inches.[ **Fasten upper edge of flexible flashing to sheathing through termination bar.**]

At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.

Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

Install metal [**drip edges] [and] [sealant stops**] with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

Retain one of three subparagraphs below if flexible flashing materials are used. See the Evaluations.

Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.

Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.

Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

* + - * 1. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
        2. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.

Use [**specified weep/vent products] [or] [open-head joints**] to form weep holes.

Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.

Space weep holes 24 inches o.c. unless otherwise indicated.

Retain last subparagraph above if weep holes other than plastic tubing or wicking are used. Retain first subparagraph below if plastic tubing or wicking is used.

Space weep holes formed from [**plastic tubing] [or] [wicking material**] 16 inches o.c.

Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.

Trim wicking material flush with outside face of wall after mortar has set.

* + - * 1. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

Retain paragraph below if wall is designed with vents acting to equalize air-pressure differential between cavity and exterior. Indicate spacing of vents and blocking on Drawings. See the Evaluations.

* + - * 1. Install vents in head joints in exterior wythes at spacing indicated. Use [**specified weep/vent products] [or] [open-head joints**] to form vents.

Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

* + - 1. FIELD QUALITY CONTROL
         1. Testing and Inspecting: Director’s Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.
      2. REPAIRING, POINTING, AND CLEANING
         1. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
         2. 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 sealant application, where indicated.
         3. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
         4. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Director’s Representative's approval of sample cleaning before proceeding with cleaning of masonry.

Delete first two subparagraphs below if cleaners are not specified in Part 2 or if cleaners are not allowed.

Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

Retain last subparagraph above or first subparagraph below. Coordinate with products retained in Part 2. If high-pressure water cleaning or other methods are acceptable, delete or revise subparagraph below and insert applicable requirements.

Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

Clean stone trim to comply with stone supplier's written instructions.

Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

* + - 1. MASONRY WASTE DISPOSAL
         1. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

Retain "Waste Disposal as Fill Material" Paragraph below if clean masonry waste can be used as fill in footing trenches, etc. This diverts some material from waste stream, conserving landfill space and energy required to haul waste away.

* + - * 1. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

Crush masonry waste to less than 4 inches in each dimension.

Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."

Generally, retain subparagraph below. If required, increase limit if acid-soil plants are used for foundation plantings.

Do not dispose of masonry waste as fill within 18 inches of finished grade.

Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Director’s Representative's property.

END OF SECTION 042613