# DIVISION 04

# MASONRY

## SECTION 04200 - UNIT MASONRY

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

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

### 1.02 DESCRIPTION OF WORK

A. Extent of each type of masonry work is indicated on drawings and in schedules.

B. Types of masonry work required include:

1. Reinforced concrete unit masonry.

2. Brick, if shown or indicated. Provide surface water repellent application to new exterior exposed brick veneer per Section 07175 Water Repellents.

### 1.03 QUALITY ASSURANCE

A. Fire Performance Characteristics: Where indicated, provide materials and construction which are identical to those of assemblies whose fire endurance has been determined by testing in compliance with ASTM E 119 by a recognized testing and inspecting organization or by another means, as acceptable to authority having jurisdiction.

B. Single Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.

C. Single Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

D. 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 an L-shaped mockup 48 inches long by 48 inches high by full thickness with a 24 inch leg. Mockup may be used in construction only with Engineer’s approval.

### 1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements.

B. Provide samples of brick masonry for Owner selection.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.

C. Store materials off the ground, under cover and in dry location.

D. Store aggregates where grading and other required characteristics can be maintained.

E. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

**1.06 PROJECT CONDITIONS**

A. Protection of Work: During erection, cover top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

C. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.

D. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.

E. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

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

G. Protect sills, ledges and projections from droppings of mortar.

H. Cold-Weather Requirements: Do not use frozen 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.

I. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.

**1.07 ALLOWANCE**

A. Include the allowance amount shown in Section 01210, Allowances, per thousand for face brick as specified in paragraph 2.1 of this section. This cost shall include delivery, taxes, and unloading on the project site.
B. Coordinate materials and their installation with related materials and installation to ensure that the allowance item is completely integrated and interfaced with related construction activities.

**PART 2 - PRODUCTS**

**2.01 BRICK MADE FROM CLAY OR SHALE**

A. Size: Provide 2-1/4" x 3-3/4" x 8" facing bricks.

B. Provide special molded shapes where indicated and for application requiring brick of form, size and finish on exposed surfaces which cannot be produced from standard brick sizes by sawing.

C. For sills, caps and similar applications resulting in exposure of brick surfaces which otherwise would be concealed from view, provide uncored or unfrogged units with all exposed surfaces finished.

D. Facing Brick: ASTM C 216, Grade SW, type FBS with a compressive strength of 7500 psi

average, per ASTM C67. Color to uniform in color as selected from standard colors available.

## 2.02 CONCRETE MASONRY UNITS

A. General: Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required. Provide special shapes where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions. Provide bullnose units for outside corners for interior partitions, unless otherwise indicated.

B. Integral Water Repellent for exposed Concrete Masonry Units: Provide units made with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength for exposed units and where indicated.
Coordinate subparagraph and list below with Part 2 "Manufacturers" Article. Retain "Available" for nonproprietary and delete for semiproprietary specifications.
Available Products:

1. Addiment Incorporated; Block Plus W-10.

2. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block.

3. Master Builders, Inc.; Rheopel.

C. Concrete Block: Provide units complying with characteristics indicated below.

1. Size: Manufacturer's standard units with nominal face dimensions of 16" long x 8" high (15-5/8" x 7-5/8" actual) x thickness indicated.

2. Hollow Loadbearing Block: ASTM C 90, normal weight, 2-core, plain-end units.

   a. Net area compressive strength of concrete masonry units shall be a minimum of 1,900 psi when tested in accordance with ASTM C140. Compressive strength of masonry (f'm) shall be a minimum of 1,500 psi in accordance with ACI 530.1 when these units are used with the mortar specified

3. Non-Loadbearing Block: ASTM C155, normal weight or use hollow loadbearing block.

4. Special Shapes: Provide normal weight loadbearing, non-loadbearing block units as required to perform work without exposing cut surfaces. Bullnose shape shall be provided on outside corners within the building and where indicated on Drawings.

5. Where special patterns or finishes are indicated, provide units with the following general description:
   a. Exposed Faces: Standard aggregate, split face finish.
   b. Integral color.
   c. Integral water-repellent admixture.

## 2.03 MORTAR AND GROUT MATERIAL

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color cement.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate for Mortar: ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.

D. Water: Clean and potable.

E. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with exposed concrete masonry units, containing integral water repellent by same manufacturer. Coordinate subparagraph and list below with Part 2 "Manufacturers" Article. Retain "Available" for nonproprietary and delete for semiproprietary specifications.
Available Products:

1. Addiment Incorporated; Mortar Tite.

2. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.

3. Master Builders, Inc.; Rheomix Rheopel.

## 2.04 JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES

A. Materials: Comply with requirements indicated below for basic materials and with requirements indicated under each form of joint reinforcement, tie and anchor for size and other characteristics:

1. Zinc-Coated (galvanized) Steel Wire: ASTM A 82 for uncoated wire and with ASTM C 641 for Class 3 (9.80 oz. per sq. ft. of wire surface). Use for masonry not exposed to exterior.

2. Hot-Dip Galvanized Steel Wire: ASTM A 82 for uncoated wire and with ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication into units. Use for masonry exposed to exterior and in contact with earth.

3. Zinc-Coated (Galvanized) Steel Sheet: Carbon steel with zinc coating complying with ASTM A 525, Coating Designation G90. Use for dovetail slots and where indicated.

4. Hot-Dip Galvanized Carbon Steel Sheet: ASTM A 366, Class 2 or ASTM A 635; hot-dip galvanized after fabrication to comply with ASTM A 153, Class B. Use for anchors.

5. Joint Reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:

   a. Width: Fabricate joint reinforcement in units with widths of approximately 2" less than nominal width of walls and partitions as required to provide mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.

   b. Wire Size for Side Rods: 0.1875" diameter.

   c. Wire Size for Cross Rods: 0.1875" diameter.

   d. For multi-wythe masonry provide adjustable eye-wire joint reinforcement. Ladder design with cross rods spaced not more than 16" o.c. and having one side rod for each face shell of concrete masonry back-up and adjustable wall tie with seismic clip and continuous 9 gauge wire for veneer.

6. Anchor Bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A 307, Grade A, hot-dip galvanized to comply with ASTM C 153, Class C, in sizes and configurations indicated.

7. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

   a. AA Wire Products Co.

b. Dur-O-Wall, Inc.

c. Heckman Building Products, Inc.

d. Hohmann & Barnard, Inc.

e. Masonry Reinforcing Corp. of America.

f. National Wire Products Corp.

## 2.05 CONCEALED FLASHING MATERIALS

A. Laminated Flashing: Manufacturer's standard laminated flashing consisting of 7 oz. per sq. ft. copper sheet bonded with asphalt between 2 layers of glass fiber cloth.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Copper Fabric Laminate Flashing:

a. Copper Fabric; Afco Products, Inc.

b. Copper Fabric Flashing; Sandell Mfg. Co., Inc.

**c.** Copper Fabric Flashing; York Mfg., Inc.

## 2.06 MISCELLANEOUS MASONRY ACCESSORIES

A. Reinforcing Bars: Deformed steel, ASTM A 615, Grade 60 for bars No. 3 to No. 18.

B. Non-Metallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D 1056, Grade RE41E1, capable of compression up to 35%, of width and thickness indicated.

C. Premolded Control Joint Strips: Styrene-butadiene rubber compound complying with ASTM D 2000, Designation 2AA-805, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

D. Bond Breaker Strips: Asphalt-saturated organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

E. Weep Holes: Provide round Plastic tubing, medium-density polyethylene, 3/8" outside diameter by CMU width long. Space as indicated on drawings.

## 2.07 INSULATION

A. Extruded Polystyrene Board Insulation: Rigid cellular polystyrene thermal insulation with closed cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578, Type IV; 5-year aged r-value of 5 Btu/(hr x sf x degrees F) at 75 degrees F (24 degrees C); in manufacturer's standard lengths and widths; thickness as indicated. Subject to compliance with requirements, provide one of the following:

1. Dow Chemical USA: Styrofoam SM/SB.

2. UC Industries: Foamular 250.

3. Minnesota Diversified Products, Inc.: Certifoam.

B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

## 2.08 MASONRY CLEANER

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one gallon of water. Modify mixture as required to meet requirements of the architectural concrete masonry unit and face brick manufacturer.

## 2.09 MORTAR AND GROUT MIXES

A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, anti-freeze compounds or other admixtures, unless otherwise indicated. Do not use calcium chloride in mortar or grout. Water repellant admixture shall be used for masonry mortar used with concrete masonry units with an integral water repellant admixture.

B. Mixing: Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for type of mortar required, unless otherwise indicated. Limit cementitious materials in mortar to portland cement-lime. Type S mortar for exterior, above-grade loadbearing and non-loadbearing walls; for interior loadbearing walls; and for other applications where another type is not indicated.

D. Grout for Unit Masonry: Comply with ASTM C 476 for grout for use in construction of reinforced and nonreinforced unit masonry. Use grout of consistency indicated or if not otherwise indicated, of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout. Use fine grout in grout spaces less than 2" in horizontal direction, unless otherwise indicated. Grout shall have a minimum compressive strength of 3,000 psi after 28 days.

# PART 3 - EXECUTION

## 3.01 INSTALLATION, GENERAL

A. Wetting Clay Brick: Wet brick made from clay or shale which have ASTM C 67 initial rates of absorption (suction) of more than 30 grams per 30 sq. in. per minute. Use wetting methods which ensure each clay masonry unit being nearly saturated but surface dry when laid.

B. Do not wet concrete masonry units.

C. Cleaning Reinforcing: Before placing, remove loose rust, ice and other coatings from reinforcing.

D. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.

E. Build chases and recesses as shown or required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.

F. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.

G. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. Cut

units as required to provide continuous pattern and to fit adjoining work. Use full-size units without cutting where possible. Use dry cutting saws to cut concrete masonry units.

## 3.02 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, walls and arrises do not exceed 1/4" in 10', or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minimum 1/4" in 10', 1/2" maximum.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" width of a single unit.

C. Variation of Linear Building Lines: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions, shown, do not exceed minimum 1/4" nor plus 1/2".

E. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8", with a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8".

## 3.03 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half-size units at corners, jambs and wherever possible at other locations.

B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.

C. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not shown, lay in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Rake back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

E. Built-in Work: As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core. Fill cores in hollow concrete masonry units with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar items, unless otherwise indicated.

## 3.04 MORTAR BEDDING AND JOINTING

A. Lay solid brick size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting courses on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

C. Set pre-cast concrete coping units in full bed of mortar with all vertical joints, slushed full. Fill dowel, anchor and similar holes solid. Rake head joints 1/2" to 3/4" and install elastomeric sealant and lead joint covers.

D. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

E. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.

F. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise indicated.

G. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

**3.05 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY**

A. Use continuous horizontal joint reinforcement installed in horizontal mortar joints for bond tie between wythes. Install at not more than 16" o.c. vertically.

B. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.

C. For horizontally reinforced masonry, provide continuity at corners with prefabricated "L" units, in addition to masonry bonding.

D. Intersecting and Abutting walls: Unless vertical expansion or control joints are shown at juncture, provide same type of bonding specified for structural bonding between wythes, provide continuity with horizontal joint reinforcement using prefabricated "T" units.

E. Non-bearing Interior Partitions: Build full height of story to underside of solid floor or roof structure above, unless otherwise shown. Wedge non-bearing partitions against structure above with small pieces of tile, slate or metal. Fill joint with mortar after dead load deflection of structure above approaches final position.

**3.06 CAVITY WALLS**

A. Keep cavity clean of mortar droppings and other materials during construction. Strike joints facing cavity flush.

B. Tie exterior wythe to back-up with continuous horizontal joint reinforcing, installed in mortar joints at not more than 16" o.c. vertically.

C. Provide weep holes in exterior wythe of cavity wall located immediately above ledges and flashing, spaced 2'-0" o.c., unless otherwise indicated.

**3.07 CAVITY WALL INSULATION**

A. On units of plastic insulation, install small pads of adhesive spaced approximately 1'-0" o.c. both ways on inside face. 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. Fill all cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

**3.08 HORIZONTAL JOINT REINFORCEMENT**

A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls, 1/2" elsewhere. Lap reinforcing a minimum of 6". Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

B. Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted.

C. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

D. Space continuous horizontal reinforcement for single wythe and multi-wythe walls at 16" o.c. vertically.

E. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcement placed in 2 horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcement a minimum of 2'-0" beyond jambs of the opening except at control joints.

**3.09 ANCHORING MASONRY WORK**

A. General: Provide anchor devices of type indicated.

B. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following: Provide an open space not less than 1" in width between masonry and structural member, rigid materials. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure. Space anchors as indicated, but not more than 24" o.c. vertically and 36" o.c. horizontally.

**3.10 CONTROL AND EXPANSION JOINTS**

A. General: Provide vertical expansion, control and isolation joints in masonry every 20 feet or where shown. Build-in related items as the masonry work progresses. Build-in non-metallic joint fillers where indicated.

**3.11 LINTELS**

A. Install steel lintels where indicated. Provide masonry lintels where shown and wherever openings of more than 1'-0" for brick size units and 2'-0" for block size units are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Cure precast lintels before handling and installation. Temporarily support formed-in-place lintels. For hollow concrete masonry unit walls, use specially formed U-shaped lintel units with reinforcement bars placed as shown filled with coarse grout. Provide minimum bearing of 8" at each jamb, unless otherwise indicated.

**3.12 FLASHING OF MASONRY WORK**

A. General: Provide concealed flashing in masonry work at, or above, shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar. Extend flashings through exterior face of masonry and turn down to form drip.

B. Extend flashing the full length of lintels and shelf angles and minimum of 4" into masonry each end. Extend flashing from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum of 8", and through the inner wythe to within 1/2" of the interior face of the wall in exposed work. Where interior surface of inner wythe is concealed by furring, carry flashing completely through the inner wythe and turn up approximately 2". At heads and sills turn up ends not less than 2" to form a pan.

C. Provide weep holes in the head joints of the first course of masonry immediately above concealed flashings. Space 24" o.c., unless otherwise indicated.

D. Install reglets and nailers for flashing and other related work where shown to be built into masonry work.

E. Damp cure parging for at least 24 hours and protect until cured.

**3.13 REPAIR, POINTING AND CLEANING**

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.

C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows: Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels. Protect adjacent concrete and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water. Use bucket and brush hand cleaning method described in BIA "Technical Note No. 20 Revised" to clean brick masonry made from clay or shale. Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.

D. Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

E. Water Protection: Water-repellant for all exposed brick walls shall be as specified in Section 07175 - Water Repellants.

END OF SECTION