



**PART 1- GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 01 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 schedule.
- B. Types of masonry work required include:
  - 1. Concrete Unit Masonry.
  - 2. Brick Masonry.
  - 3. Architectural units:
    - a. Smooth Face Unit Masonry.
    - b. Scored Unit Masonry.
  - 4. Reinforced Unit Masonry.
  - 5. Insulated Unit Masonry.

**1.03 RELATED WORK**

- A. Install work furnished under other sections, which must be built into unit masonry work, including, but not limited to:
  - 1. Glass Unit Masonry.
  - 2. Anchorage Devices.
  - 3. Flashings.
  - 4. Loose Steel Lintels.

**1.04 QUALITY ASSURANCE**

- A. Fire Performance Characteristics: Where indicated, provide materials and construction which are identical to those of assemblies, equivalent thickness, whose fire endurance has been determined by testing in compliance with ASTM E 119 by means acceptable to authorities 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. Field constructed Mock-Ups: Prior to installation of masonry work, erect representative sample wall panels to further verify selections made for color and texture characteristics, under sample submittals of masonry units and mortar, and to establish a standard for completed masonry work for qualities of appearance, materials, construction and workmanship.
- E. Build mock-ups for the following types of masonry in sizes approximately 6' long by 4' high, by full thickness, including face and back-up wythes as well as accessories.
  - 1. Each type of exposed unit masonry work.
  - 2. Typical exterior face brick wall.
  - 3. Typical interior brick wall.

**1.05 SUBMITTALS**

- A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory and other manufactured products.



- B. Compliance: Submit certifications that each type complies with specified requirements.
- C. Color selection: For initial selection submit:
  - 1. Unit masonry samples showing full extent of colors and textures available for each type of exposed masonry unit required.
  - 2. Colored mortar samples showing full extent of colors available.
- D. Samples: For verifications purposes submit:
  - 1. Unit masonry samples for each type of exposed masonry unit, include full range of color and texture to be expected in completed work.
  - 2. For selection of brick, submit products of all manufacturers that the manufacturers or their agents consider to be their closest match. Re-submit until match meets approval of Architect.
  - 3. Colored masonry mortar samples for each color required showing the full range of color which can be used in the finished work. Label samples to indicate type and amount of colorant used.

### **1.06 REFERENCED STANDARDS**

- A. Comply with the current applicable provisions of all codes, standards and specifications referenced in this section, except as modified by the requirements of these Contract Documents, including, but not limited to, the following:
  - ACI531- Building Code Requirements for Masonry Structures.
  - ACI5318R-Coimmentary on Building Code Requirements for Masonry Structures.
  - ACI 530.1- Specification for Masonry Construction.
  - ASTM C-90- Load Bearing Masonry Units.
  - ASTM C-129- Non- load Bearing Masonry Units.
  - ASTM C-140- Testing Concrete Masonry Units.
  - ASTM C-744-Specification for Pre-Faced Concrete and Calcium Silicate Masonry Units.
  - ASTM E-119- Fire Tests with Building Construction and Materials.
  - Technical Notes on Brick Construction.
  - NCMA-TEK Bulletins.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver masonry material to project in undamaged condition. Store and handle materials to prevent their deterioration or damage due to moisture, temperature, changes, contaminants, and corrosion or other causes.
- B. Limit moisture absorption of concrete masonry units during delivery and until time of installation.
- C. Store cementitious materials off the ground, under cover and in a dry location.
- D. Store and protect aggregates where grading and other required characteristics can be maintained.
- E. Store and protect masonry accessories including metal items to prevent deterioration by corrosion and accumulation dirt.

### **1.08 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.
  - 1. Extend cover a minimum of 24'' down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.
- C. Staining: Prevent ground, mortar or soil from staining the face of masonry to be left exposed or painted. Remove grout or mortar in contact with such masonry immediately.
- D. Do not apply concentrated loads for at least 3 days after building masonry wall or columns.
- E. Protect base of walls from rain – splashed mud and/or mortar splatter by means of



coverings spread on ground and over wall surfaces.

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

G. Cold Weather Protection:

1. Do not lay masonry units that are wet or frozen.
2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
3. Remove masonry damaged by freezing conditions.
4. For clay masonry units with initial rates of absorption which require them to be wetted before laying, comply with the following:
  - a. For units with surface temperature above 32 Degrees F, wet with water heated to above 70 Degrees F.
  - b. For units with surface temperature below 32 Degrees F, wet with water heated to above 130 Degrees F.

H. Perform the following construction procedures while masonry work is progressing.

Temperature ranges indicated below apply to air temperature existing at time of installation, except for grout.

1. For Grout: Temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10 Degrees F.
2. 40 Degrees F to 32 Degrees F:
  - a. Mortar: Heat mixing water to produce mortar temperature between 40 Degrees F and 120 Degrees F.
  - b. Grout: Follow normal masonry procedures.
3. 32 Degrees F to 25 Degrees F:
  - a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 Degrees F and 120 Degrees F. Maintain temperature of mortar on boards above freezing.
  - b. Grout: Heat grout materials to 90 Degrees F to produce in-place grout temperature of 70 Degree F at end of work day.
4. 25 Degrees F to 20 Degrees F:
  - a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 degree F and 120 Degrees F. Maintain temperature of mortar on boards above freezing.
  - b. Grout: Heat grout materials to 90 Degrees F to produce in-place grout temperature of 70 Degrees F at end of work day.
  - c. Heat both sides of walls under construction using salamanders or other heat sources.
  - d. Use windbreaks or enclosures when wind is in excess of 15 mph.
5. 20 Degrees F and Below:
  - a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 Degrees F and 120 Degrees F.
  - b. Grout: Heat grout materials to 90 Degrees F to produce in-place grout temperature of 70 Degrees F at end of work day.
  - c. Masonry Units: Heat masonry units so that they are above 20 Degrees F at time of laying.
  - d. Provide enclosure and auxiliary heat to maintain an air temperature of at least 40 Degrees F for 24 hours after laying units.
  - e. Do not heat mixing water for mortar and grout to above 160 Degrees F.

I. Protect completed masonry and masonry not being worked on in the following manner:

## Standard Concrete Masonry Units

### Division 4 Section 04200 Concrete Masonry Specification



(Temperature ranges indicated apply to mean daily air temperatures except for grouted masonry; if for grouted masonry, temperature ranges apply to anticipated minimum night temperatures.)

1. 40 Degrees F to 32 Degrees F:
  - a. Protect masonry from rain or snow for at least 24 hours by covering with weather-resistant membrane.
2. 32 degrees F to 25 Degrees F:
  - a. Completely cover masonry with weather-resistant membrane for at least 24 hours.
3. 25 Degrees F to 20 Degrees F:
  - a. Completely cover masonry with weather-resistant insulating blankets or similar protection for at least 24 hours: 48 hours for grouted masonry.
4. 20 Degrees F and Below:
  - a. Except as otherwise indicated, maintain masonry temperature above 32 Degrees F for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps or other methods proven to be satisfactory. For grouted masonry maintain heated enclosure to 40 Degrees F for 48 hours.

#### PART 2-PRODUCTS

##### 2.01 MASONRY UNITS, GENERAL

- A. Manufacturer: All concrete masonry units shall be manufactured by BUILDING PRODUCTS CORP. 950 Freeburg Ave., Belleville, IL 62220, 800-233-1996.
- B. Obtain masonry units from one manufacturer, of uniform texture and color for each kind required, for each continuous area and visually related areas.

##### 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.
- B. Provide special shapes where required for lintels, jambs, corners, sash, control joints, headers bonding and other special conditions.
- C. Concrete Block: Provide units complying with characteristics indicated below for Face Size, Exposed Face, and under each form of block included for weight classification.
  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.
- D. Hollow Load-Bearing Block ASTM C-90, normal weight (125 lbs. per cubic foot dry weight).
- E. Solid Load-Bearing Block: ASTM C-90n normal weight (125 lbs. per cubic foot dry weight).

##### 2.03 SMOOTH FACE CONCRETE MASONRY UNITS

- A. Manufacturer: BUILDING PRODUCTS CORP., 950 Freeburg Ave., Belleville, IL 62221, 800-233-1996.
- B. All units will conform to ASTM C-90.
  1. Weight Classification: Normal Weight.
  2. Minimum net Compressive Strength 1900 PSI.
- C. Sizes: Manufacturers Standard Nominal Sizes.
- D. Color: Shall be as manufactured by BUILDING PRODUCTS CORP., 950 Freeburg Ave., Belleville, IL 62221, 800-233-1996. and selected from BUILDING PRODUCTS CORP. ARCHITECTURAL SPLIT FACE BLOCK SERIES.
- E. Provide integral water repellent in BUILDING PRODUCTS CORP. ARCHITECTURAL SMOOTH TEXTURE PIGMENTED BLOCK SERIES as manufactured by BUILDING PRODUCTS CORP., 950 Freeburg Ave., Belleville, IL 62221, 800-233-1996. Basis of Design Rheopel by B.A.S.F.



- F. All BUILDING PRODUCTS CORP. ARCHITECTURAL SMOOTH TEXTURE PIGMENTED BLOCK SERIES shall be sound and free of cracks or other defects that would interfere with the proper placing of the units or impair the strength or performance of the construction.
- G. Cleaning: no muriatic acid or acid-based solutions shall be used in the cleaning of BUILDING PRODUCTS CORP. ARCHITECTURAL SMOOTH TEXTURE PIGMENTED BLOCK SERIES. Products and procedures shall be as outlined in BUILDING PRODUCTS CORP. "Architectural CMU Cleaning Recommendations."

#### 2.04 SCORED CONCRETE MASONRY UNITS

- A. Manufacturer: BUILDING PRODUCTS CORP. 950 Freeburg Ave. Belleville, IL 62221, 800-233-1996.
- B. All units will conform to ASTM C-90.
  - 1. Weight Classification: Normal Weight.
  - 2. Minimum Net Compressive Strength 1900 PSI.
- C. Sizes: Manufacturers Standard Nominal Sizes.
- D. Color: Shall be as selected from BUILDING PRODUCTS CORP., standard color selection.
- E. Provide an integral water repellent in BUILDING PRODUCTS CORP. Architectural SCORED BLOCK. Basis of Design Rheopel by B.A.S.F.
- F. All BUILDING PRODUCTS CORP. ARCHITECTURAL SPLIT RIBBED BLOCK shall be sound and free of cracks or other defects that would interfere with the proper placing of the units or impair the strength or performance of construction.
- G. Cleaning: No muriatic acid or acid-based solutions shall be used in the cleaning of BUILDING PRODUCTS CORP. ARCHITECTURAL SPLIT RIBBED BLOCK. Products and Procedures shall be as outlined in Building Products Corp. "Architectural CMU Cleaning Recommendations."

#### 2.05 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C-150, Type I, except use Type III for construction below 40 Degrees F. Provide natural color or white cement as required to produce required mortar color.
- B. Hydrated Lime: ASTM C-207, Type S.
- C. Aggregate for Mortar: ASTM C-144, except for joints less than 1/4 inch use aggregate graded with 100% passing the No. 16 sieve.
  - 1. White Aggregates: Natural white sand or ground white stone.
- D. Aggregate for Grout: ASTM C-404.
- E. Water: Clean and potable.
- F. Accelerators: Subject to compliance with requirements, non-chloride admixtures may be used in cold weather construction.
- G. Integral Water Repellent Admixture: Rheopel Admix by BASF.

#### 2.06 MORTAR AND GROUT MIXES

- A. General: Use only the specified additives to mortar and grout mixes.
  - 1. Do not use calcium chloride in mortar or grout.
- B. Mixing: Combine and thoroughly mix cementitious materials, water, aggregates and admixtures in a mechanical batch mixer. Comply with applicable ASTM standards and material manufacturer's recommendations for mixing time and water content. Measure and batch materials by volume so that required proportions can be accurately controlled and maintained.
- C. Mortar for Unit Masonry: Comply with ASTM C-270, Proportion Specifications, Cement-Lime Mortar, for types of mortar required, unless otherwise indicated.
  - 1. Use Type N mortar for interior non-load bearing walls.
    - a. Air Content: 8-14% Maximum.
- D. Colored Aggregate Mortar: Produce mortar of color required by use of colored aggregates in combination with selected cementitious materials.
  - 1. Color: To be selected by Architect.
- E. Limit Cementitious materials in mortar to Portland cement-lime.
- F. Grout for Unit Masonry: Comply with ASTM C-476. Use grout of consistency which at time of



placement will completely fill all spaces intended to receive grout

1. Mix: Portland cement, sand, gravel and water, proportioned as required to provide a 28-day minimum compressive strength of 3000 PSI.
2. Use for reinforced masonry lintels or bond beams, reinforced masonry piers, and wherever grouting full is indicated or specified.

## 2.07 JOINT REINFORCEMENT, TIES AND ANCHORS

- A. Materials: comply with requirements indicated below for basic materials, as well as requirements for each form of joint reinforcement, tie and anchor for size and other characteristics.
- B. 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 pre-fabrication into units.
- C. Joint Reinforcement: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10'-0", with prefabricated corner and tee units.
1. Width: approximately 2" less than nominal width of walls and partitions, to provide mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
  2. Wire Size for Side Rods: 9 gauge.
  3. Wire Size for Cross Rods: 9 gauge.
  4. Wire Size for Two-Part Reinforcing: 3/16" diameter in exterior walls.
  5. Configuration:
    - a. Single-Wythe Masonry: Truss design with continuous diagonal cross rods spaced not more than 16" o.c.
    - b. Multi-Wythe Masonry: For cavity or composite masonry walls, provide adjustable wall tie pintle section fitting into eye section of rectangular box-type cross ties spaced not more than 16" o.c. Truss type units with side rods spaced for embedment within each face shell of back-up wythe and ties extended to within 1" of exterior face of facing wythe.
- D. Flexible Anchors: Where flexible anchors are indicated for connecting masonry to structural framework, provide 2-piece anchors as described below which permit vertical or horizontal differential movement between wall and framework parallel to, but resist tension and compression forces perpendicular to, plane of wall.
1. Anchorage to Steel Framework: Provide manufacturer's standard anchors with crimped 1/4" diameter wire anchor section for welding to steel framework and triangular-shaped wire tie section sized to extend within 1" of exterior face of facing wythe.
- E. Unit Type Masonry Insets in Concrete: furnish cast iron or malleable iron inserts of type and size indicated.
- F. Dovetail Slots: Furnish dovetail slots, with filler strips, of slot size indicated, fabricated from 0.0336" (22 gauge) sheet metal.
- G. 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 configuration indicated.
- H. Pencil Rods at Construction Joints: As shown, dowels dipped in tar for half of length.
- I. Reinforcing Bars: Deformed steel, ASTM A-615, Grade 60 for Bars No. 3- No. 18.
- J. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which maybe incorporated in the work include, but are not limited to, the following.
1. AA Wire Products Co.
  2. Dur-O-Wal, Inc.

## 2.08 MISCELLANEOUS MASONRY ACCESSORIES

- A. 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 on drawings.



- B. Weepholes: Provide the following for weepholes:
1. Plastic Tubing: Medium density polyethylene, outside diameter and lengths indicated below:
    - a. 1/4" X 4"

## 2.09 INSULATION

See Section 3.11

## PART 3- EXECUTION

### 3.01. INSPECTION

- A. Verification: Prior to the start of masonry construction the Contractor shall verify:
1. Foundations are constructed with tolerances conforming to ACI 117.
  2. Reinforcing dowels are positioned in accordance with Project Drawings.
  3. Verify items provided by other Sections of the Work are properly sized and located.
- B. Notification: If conditions are not met notify the Architect/Owners Representative.

### 3.02. PREPARATION

- A. Establish Lines, Levels, and Coursing:
1. Protect lines from disturbance.
  2. Use non-corrosive material in contact with masonry.
- B. Surface Preparation: Prior to placing Concrete Masonry remove laitance, loose aggregate or other material that would prevent mortar from bonding to the foundation.

### 3.03 COURSING

- A. Placement: Place Concrete Masonry Unit to lines and levels indicated.
- B. Uniformity: Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- C. Bond Patterns: Place Concrete Masonry in 1/2 running bond unless otherwise noted.
- D. Course Height: Course one Concrete Masonry and one mortar joint equal to 4 inches.

### 3.04 PLACING AND BONDING

- A. Bed and Head Joints:
1. Joint Thickness:
    - a. Construct 3/8 inch bed and head joints unless otherwise indicated.
    - b. Construct bed joint at starting course on foundation not less than 1/4 inch and not more than 3/4 inch.
  2. Fill holes not specified in exposed and below grade masonry with mortar.
  3. Tool head and bed joints concave unless below grade or above ceiling height and to be concealed.
    - a. Use tool with large enough radius that joint is not raked free of mortar.



4. Remove masonry protrusions extending 1/2 inch or more into cells and cavities to be grouted.

B. Unit Placement

1. Concrete Masonry Unit- Lay units with bed and head joints filled from the faces of the units

to a distance in not less than the thickness of the face shell.

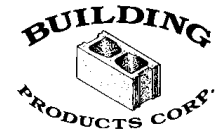
- a. Webs are fully mortared in all courses of piers, columns, pilasters, starting course on footings or foundations, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout.
  - b. Spread out full mortar bed including areas under cells, for starting course on footings where cells are not to be grouted.
  - c. Vertical cells to be grouted are aligned and unobstructed openings for grout are provided in accordance with drawings.
2. Keep cavity airspace and weep holes clean or mortar, clean out promptly if mortar falls into cavity airspace or plugs weep holes.
  3. In-Progress Cleaning:
    - a. Remove excess mortar.
    - b. Dry brush exposed masonry prior to the end of each workday.
    - c. Protect wall from mud splatter and mortar droppings.
      - i. Set scaffolds and scaffold boards so that mortar is not deflected onto masonry.
      - ii. At end of each workday turn scaffold boards so that rainwater is not deflected onto masonry.
    - d. Place Concrete Masonry Unit such that mortar does not run down the face of the wall or smear the masonry face.
  4. Adjustments:
    - a. Do not shift or tap Concrete Masonry Unit after mortar has taken initial set.
    - b. Remove unit and mortar and replace.
  5. After joints are tooled, cut off mortar tailings with trowel and dry brush excess mortar burrs and dust from the face of the masonry
  6. Fully bond external and internal corners and properly anchor intersecting wall.
  7. Termination of Wall Height:
    - a. For the fire-rated walls, construct walls to finish against bottom of roof or floor deck and fill voids in fire stopping.
    - b. For other than fire-rated walls, cut units to match the slope of the roof deck and finish construction to within 2-inches of a parallel to roof deck.
  8. Isolate masonry partitions from vertical structural framing members with the control joint.

**3.05 TOLERANCES: Erect masonry within the following tolerances from specified dimensions:**

A. Dimensions of Elements:

1. In cross-section or elevation: -1/4 inch, +1/2 inch.
2. Mortar joint thickness:
  - a. Bed: Plus or minus 1/8 inch or plus 1/8 inch.
  - b. Head: plus 3/8 inch or minus 1/4 inch.
  - c. Collar: plus 3/8 inch or minus 1/4 inch.
3. Grout space or cavity airspace except where passing framed construction:





plus 3/8 inch or minus 1/4 inch.

B. Elements:

1. Variation from level:
  - a. Bed joints: plus or minus 1/4 inch in 10 feet; plus or minus 1/2 inch maximum.
  - b. Top of bearing walls: plus or minus 1/4 inch in 10 feet; plus or minus 1/2 inch maximum.
2. Variation from plumb: plus or minus 1/4 inch in 10 feet, plus or minus 3/8 inch in 20 feet, plus or minus 1/2 inch maximum.
3. True to line: plus or minus 1/4 inch in 10 feet; plus or minus 3/8 inch in 20 feet; plus or minus 1/2 inch maximum.
4. Alignment of columns and walls (bottom versus top):
  - a. Bearing: plus or minus 1/2 inch.
  - b. Non-bearing: Plus or minus 3/4 inch.

C. Location of Elements:

1. Indicated in plan: plus or minus 1/2 inch in 20 feet; plus or minus 3/4 inch maximum.
2. Indicated in elevation: plus or minus 1/4 inch in story height; plus or minus 3/4 inch maximum.

D. Notification: If the above conditions cannot be met due to previous construction notify Architect/Owner's Representative.

**3.06. CUTTING AND FITTING**

- A. Coordination: Cut and fit for bearing plates, chases, pipes, and conduits, sleeves and grounds. Coordinate with other Sections of Work to provide correct size and shape.
- B. Notification: Prior to cutting and fitting any area not indicated or where appearance or strength of masonry work may be impaired, obtain approval from Architect/ Owner's Representative.
- C. Cutting Method: Perform jobsite cutting with proper tools to provide straight un-chipped edges and take care to prevent raking masonry unit corners or edges.

**3.07. REINFORCEMENT AND ANCHORAGES**

A. Basin Requirements:

1. Place reinforcement and anchorages in accordance with the sizes, types, and locations indicated on the Drawings, and as specified.
2. Do not place dissimilar metals in contact with each other.

B. Details of Reinforcement:

1. Completely embed reinforcement in grout in accordance with Article 3.08.
2. Maintain clear distance between reinforcing bars and any face of masonry unit or formed surface:
  - a. Not less than 1/4 inch for fine grout.
  - b. Not less than 1/2 for coarse grout.
3. Splice only where indicated on Drawings, unless otherwise specified.
4. Do not bend reinforcing bars after embedded in grout.
5. Place vertical reinforcing bars supported and secured against displacement by means of bar positioners.

Division 4  
Section 04200  
Concrete Masonry Specification



6. Support bars other than vertical bars and tie to prevent displacement.
7. Placement tolerances:
  - a. Tolerances for the placement of reinforcing bars:
    - i. 1/2 inch when the distance from the centerline of the reinforcing bar to the opposite outside face of the masonry,  $d$ , is 8 inches or less.
    - ii. 1 inch when the distance from the centerline of the reinforcing bar to the opposite outside face of the masonry,  $d$ , is 24 inches or less but more than 8 inches.
    - iii. 1-1/4 inch when the distance from the centerline of the reinforcing bar to the opposite outside face of the masonry is more than 24 inches.
  - b. Place vertical reinforcing bars within 2 inches of required location along the length of the wall.
  - c. If it is necessary to move bars more than one bar diameter of a distance exceeding the tolerances provided in Section 3.06.C.7.a. to avoid interference with other reinforcing bars, conduit, or embedded items, notify the Architect/Owner's Representative for the acceptance of the resulting arrangement of bars.

C. Joint Reinforcement:

1. Placement:
  - a. Install joint reinforcement at 16 inches on center vertically, except space at 8 inches on center in parapet walls and below finished floor unless otherwise indicated on Drawings.
  - b. Place joint reinforcement continuous in first bed joints below top of masonry wall and bed joint 8 inches below first bed joint below top of wall.
  - c. Place joint reinforcement so that longitudinal wire are embedded in mortar:
    - i. Minimum cover of 1/2 inch when not exposed to weather.
    - ii. Minimum cover of 5/8 inch when exposed to weather or earth.
  - d. Lap joint reinforcement ends minimum 6 inches.
  - e. Do not extend joint reinforcement through control joints.

D. Wall Ties:

1. Embed ends of wall ties in mortar joints at least 1/2 inch into outer face shell of hollow masonry construction.
2. Unless otherwise required, install adjustable wall ties in accordance with the following:
  - a. One tie for 1.77 sq. ft. of wall area.
  - b. Do not exceed 16 in. on center horizontally or vertically.
3. Install wire ties perpendicular to vertical line on the face of the wythe from which they protrude.
4. Unless otherwise provided, install additional unit ties around all openings larger than 16 inches in either dimension.  
Space ties around the opening at a maximum of 3 feet on center and place ties within 12 inches of the opening.

**3.08. BUILT-IN AND EMBEDDED ITEMS AND ACCESSORIES**

A. Incorporation: As work progresses build in metal doorframes, fabricated metal frames, window frames, anchor bolts, diaphragm anchors, embedded plates, and other items in the work supplied in other Sections.

B. Metal Door and Glazed Frames:



1. Embed anchors in mortar joints.
2. Fill frame void solid with grout.
3. Fill masonry cores with grout minimum 12 inches from framed openings.

C. Chases: Construct chases as masonry units are laid.

- D. Pipes and Conduits: When required, place pipes and conduits passing horizontally through masonry beams or walls in steel sleeves or cored holes.
1. Place pipes and conduits passing horizontally through non-load-bearing partitions piers, pilasters, or columns.
  2. When required, place horizontal pipes and conduits in and parallel to the plane of the masonry wall.

- E. Accessories: Install and secure connectors, flashing, weep holes, mailing blocks, reglets and other accessories.
1. Install reglet level and parallel to building lines. Set reglet as indicated on Drawings to coordinate with sloped roof surface.

F. Organic Materials: Do not build in organic materials subject to deterioration.

### 3.09. GROUT PLACEMENT

- A. Placement:
1. Place grout within 1-1/2 hours of introducing of mixing water and prior to initial set.
  2. Prevent grout from flowing onto or otherwise staining faces of CMU intended to be exposed.

B. Confinement: Confine grout to the area indicated on the Drawings.

C. Grout Pour Height: Use fine or coarse grout in accordance with requirements in Section 04070.

D. Grout Lift Height: Place grout in lifts not to exceed 5 feet.

- E. Consolidation: Consolidate grout at the time of placement.
1. Consolidate grout pours 12 inches or less in height by mechanical vibration or puddling.
  2. Consolidate grout pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.

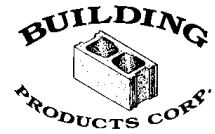
### 3.10. BRACING

A. Design and Installation: Design, provide and install bracing for walls, lintels and other masonry work that will assure stability of masonry during construction.

B. Duration: Maintain bracing in place until roof or other structural elements are complete and provide permanent support.

### 3.11. MASONRY FILL INSULATION

A. Install insulation in masonry unit cells of exterior walls.



B. ICON

C. Kor-Fil Foam

B. Granular Fill Insulation:

1. Verify that holes and openings have been sealed to prevent escape of insulation.
2. Place masonry fill insulation in accordance with manufacturer's instruction.
3. Ensure spaces are free of mortar to allow free flow of insulation.
4. Place as masonry is erected, completely filling space. Place in lifts and rod to eliminate air pockets. Place prior to covering cores with bond beams or lintels.
5. Place temporary signs on face of insulated walls warning workers to use caution to prevent loss of insulation if cutting into walls.

### 3.12. LINTELS

A. Steel Lintels:

1. Install loose steel lintels as scheduled.
2. Provide 9 gage Z- ties at each vertical joint of soap units covering steel lintels. Weld Z-ties to web of steel lintel.

B. Concrete Masonry Lintels:

1. Install reinforced unit masonry lintels over openings where steel lintels are not scheduled.
2. Construct lintels using grout fill and reinforcing.
  - a. Maintain minimum 8 inch bearing on each side of opening unless otherwise noted on Drawings.
  - b. Use reinforcing bars on one-piece lengths only.
  - c. Place and consolidate grout without disturbing reinforcing.
3. Allow lintels to reach strength before removing temporary supports.

### 3.13. MOVEMENT JOINTS

A. Control Joints:

1. Do not continue bond beams or joint reinforcing across control joints.
2. Install preformed control joint filler at locations indicated on Drawings.
3. Use proper size material to create sealant joint space.
4. Backer rod and sealant installed in accordance with Section 07900.

B. Expansion Joints:

1. Install expansion joint filler material on centerline of wall at locations indicated on Drawings.
2. Backer rod and sealant installed in accordance with Section 07900.

C. Seismic Joints:

1. Provide seal and cover at both faces of joint, as indicated on Drawings.
2. Secure seal to face of wall.
3. Provide un-faced batt insulation in cavity between exterior and interior seal.
4. Provide fire barrier blanket in cavity between exterior and interior seals of fire-rated separation wall.



**3.14. CLEANING**

- A. In-Progress Cleaning: clean unit masonry as Work progresses by dry brushing to remove mortar fins and smears before tooling joints as described in Article 3.04.B.3.
- B. Final Cleaning:
  - 1. After mortar has set, reached initial curing; within 7 days of completion of work for custom masonry units, clean exposed masonry as follows:
  - 2. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.
  - 3. Cut out any defective mortar joints and holes and re-point with mortar.
  - 4. Protect non-masonry surfaces from contact with cleaning solution by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
  - 5. Clean Concrete Masonry Units with proprietary masonry cleaner.
    - a. Materials:
      - i. Custom masonry cleaner by Prosoco, Kansas City, Missouri (800) 255-4255, diluted one part cleaning solution to at least 3 parts water.
    - b. Thoroughly wet surface of masonry.
    - c. Scrub using non-metallic brushes:
    - d. Immediately rinse with water.
    - e. Do small sections at a time.
    - f. Work from top to bottom.
  - 6. Do not use high pressure cleaning methods.
    - a. Do not exceed nozzle pressure of 500 PSI.
    - b. Use water flow of at least 4 gallons per minutes.
    - c. Use at least 40 Degrees fan nozzle.
    - d. Keep nozzle at least 18 inches from face of Ultra Brick.
  - 7. Cleaned surface shall appear as represented by mockup wall panel.

**3.16. PROTECTIONS**

- A. External Corners: Maintain protective boards at exposed external corners that may be damaged by construction activities.
  - 1. Provide protection with out damaging work.
- B. Base of Walls: Protect the base of walls from rain-splashed mud and mortar droppings.

END OF THIS SECTION