

SECTION 04 20 16
REINFORCED UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes concrete masonry units; firebrick, reinforcement, anchorage, and accessories; and [parged masonry surfaces].
- B. Related Sections:

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 530 - Building Code Requirements for Masonry Structures.
 - 2. ACI 530.1 - Specifications for Masonry Structures.
- B. ASTM International:
 - 1. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - 3. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - 4. ASTM A580 - Standard Specification for Stainless Steel Wire.
 - 5. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 6. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 7. ASTM A951 - Standard Specification for Masonry Joint Reinforcement.
 - 8. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
 - 9. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
 - 10. ASTM C27 - Standard Classification of Fireclay and High-Alumina Refractory Brick.
 - 11. ASTM C34 - Standard Specification for Structural Clay Load-Bearing Wall Tile.
 - 12. ASTM C55 - Standard Specification for Concrete Brick.
 - 13. ASTM C56 - Standard Specification for Structural Clay Non-Load-Bearing Tile.
 - 14. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
 - 15. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
 - 16. ASTM C73 - Standard Specification for Calcium Silicate Face Brick (Sand-Lime Brick).
 - 17. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
 - 18. ASTM C126 - Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.
 - 19. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
 - 20. ASTM C140 - Standard Test Methods of Sampling and Testing Concrete Masonry Units.
 - 21. ASTM C212 - Standard Specification for Structural Clay Facing Tile.

22. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
23. ASTM C315 - Standard Specification for Clay Flue Linings.
24. ASTM C530 - Standard Specification for Structural Clay Non-Loadbearing Screen Tile.
25. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
26. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale).
27. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.
28. ASTM C1261 - Standard Specification for Firebox Brick for Residential Fireplaces.
29. ASTM C1283 - Standard Practice for Installing Clay Flue Lining.
30. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
31. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
32. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

- C. National Fire Protection Association:
 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
- D. Underwriters Laboratories Inc.:
 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 PERFORMANCE REQUIREMENTS

- A. Clay Masonry Compressive Strength (f'm) 3,000 psi; determined by unit strength test method.
 1. Clay Masonry Units: 3,000 psi minimum net area compressive strength.
- B. Concrete Masonry Compressive Strength (f'm) 3,000 psi; determined by unit strength test method.
 1. Concrete Masonry Units: 3,000 psi minimum net area compressive strength.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal requirements.
- B. Product Data:
 1. Submit data for giant brick masonry units and fabricated wire reinforcement, wall ties, anchors, and other accessories.
 2. Indicate initial rate of absorption for clay and shale brick.
- C. Samples: Submit four samples of decorative block, units to illustrate color, texture and extremes of color range.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 530 and ACI 530.1.

- B. Fire Rated Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E119.
 - 2. Prescriptive Rating: determined in accordance with applicable code.
- C. Surface Burning Characteristics:
 - 1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with NFPA 255.
- D. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation insert.
- E. Perform Work in accordance with State of South Carolina Highways standard.
- F. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.7 MOCKUP

- A. Section 01 40 00 - Quality Requirements: Mock-up requirements.
- B. Locate where directed by Engineer.
- C. Remove mockup when directed by Engineer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept masonry units on site. Inspect for damage.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.
- C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate masonry work with installation of window and door anchors.

1.11 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.

- B. Supply 20 of each size, color, and type of units.

PART 2 PRODUCTS

2.1 REINFORCED UNIT MASONRY ASSEMBLIES

- A. Manufacturers:
 1. Acme Brick Co.
 2. The Belden Brick Co.
 3. Canada Brick
 4. Elgin Butler Brick Co.
 5. Endicott Clay Products Co.
 6. General Shale Brick
 7. Southern Brick
 8. Substitutions: Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

In the following paragraphs, Grades MW, SW, and NW identify durability of brick units under various weather and moisture conditions. Grade SW is the default if no other grade is specified. Types FBS, FBX, and FBA identify recommended end use applications. Type FBS is the default if no other grade is specified.

- A. Facing Brick: ASTM C216, Type FBS, Grade SW; color as selected.
- B. Building Brick: ASTM C62, Grade SW; solid units.

Types HBS, HBX, HBA, and HBB identify appearance and tolerances. Type HBS is the default if no other type is specified.

- C. Hollow Brick: ASTM C652, Grade [SW] [MW] [NW], Type [HBS] [HBX] [HBA] [HBB]; [] color [as selected].
- D. Calcium Silicate Face Brick: ASTM C73, Grade [SW.] [MW.]
- E. Ceramic Glazed Facing Brick: ASTM C126, Grade [S -Select] [SS - Select Sized], Type [I - Single] [II - Two Faced] units.
- F. Firebrick: [ASTM C27] [ASTM C1261].

Following paragraphs are applicable to one or several of the above paragraphs. Indicate coursing dimension, brick and joint size, in PART 3.

- G. Brick Size and Shape: Nominal size of [x x] inches. Furnish special units for [90] [] degree corners, [lintels] [bullnosed corners] [and] [].
- H. [Special Brick Shape: Shaped to [profile indicated] []; surface texture on [] sides [and ends].]

Grade LBX is for general purpose use including moderate exposure to exterior. Grade LB is for locations not exposed to freeze/thaw cycling.

- I. Structural Clay Load-Bearing Wall Tile: ASTM C34, Grade [LBX] [LB], [] color [as selected], [] texture, [] finish.
- J. Structural Clay Nonload-Bearing Wall Tile: ASTM C56, Grade NB, [] color [as selected], [] texture, and [] pattern.

Grades SE, ME, and NE vary in moisture absorption capabilities and relative durability. Type STX has higher degree of mechanical perfection and minimum size variation than Type STA.

- K. Structural Nonload-Bearing Screen Tile: ASTM C530, Grade [SE] [ME] [NE], Type [STX] [STA], [] color [as selected], [] texture, and [] pattern.

Type FTX and FTS identify application and exposure capabilities.

- L. Structural Clay Facing Tile: ASTM C212, Type [FTX] [FTS], [Standard] [Special Duty] Class; [smooth] [rough] surface finish, [single face] [two faces].

Describe special shaped, perforated, or decorative units in supplementary statements to the paragraphs below. Indicate coursing dimension, brick and joint size, in PART 3.

- M. Clay Tile Units: Nominal modular size of [x x] inches. Furnish special units for [90] [] degree corners, tee intersections, [lintels] [bond beams] [bullnosed corners] [and] [].
- N. [Special Clay Tile Shape: Shaped to [profile indicated] []; surface texture on [] sides [and ends].]
- O. Clay Flue Lining: ASTM C315, [rectangular [non-modular] [modular]] [round] [oval] shape, [x x] inches with wall thickness of [] inches.

Select appropriate concrete masonry units (CMU) from the following paragraphs. Edit decorative and acoustic perforated units into one of the following paragraphs. Surface texture of units varies between manufacturers and may not be suitable as base for some paint or high-build glazed finishes.

- P. Hollow Load Bearing Concrete Masonry Units (CMU): ASTM C90; [normal] [medium] [light] weight.
- Q. Solid Load-Bearing Concrete Masonry Units (CMU): ASTM C90; [normal] [medium] [light] weight.

Non-load bearing units are intended to be used for interior partitions and may not be suitable for use in exterior exposure, fire rated, or below grade applications.

- R. [Hollow] [Solid] Non-Load Bearing Concrete Masonry Units (CMU): ASTM C129; [normal] [medium] [light] weight.
- S. Decorative Concrete Masonry Units: ASTM C90; [normal] [medium] [light] weight; [] color [as selected] to the following design:
 - 1. [Single scored horizontally] [Single scored vertically] [Double scored vertically] [Triple scored vertically] to [V] [square] [half round] cut.
***** [OR] *****
 - 2. [Ribbed] [Ribbed and split] face with [three] [four] vertical ribs.
***** [OR] *****
 - 3. Split face with [] vertical splits.
***** [OR] *****
 - 4. [Ground face] [].
- T. Pre-faced Concrete Masonry Units: ASTM C744 with resinous surfacing on [ASTM C55; Grade N] [S,] [ASTM C90;] [ASTM C129;] masonry units; [normal] [medium] [light] weight; [] color [as selected].
 - 1. Furnish [single] [double] faced units.
 - 2. Furnish coved base units at first courser above finished floor.

Grade N units are recommended for above and below grade exterior wall applications and where high strength and resistance to moisture penetration and severe frost action is anticipated; Grade S is recommended for above grade work where moderate strength and resistance to moisture penetration and frost action is anticipated.

Exercise care when specifying Grade N and S units for same Project. Grades are impossible to visually differentiate; destructively test to determine one from the other. Cost difference between grades is negligible.

- U. Concrete Brick Units: ASTM C55, [Grade N] [S]; [normal] [light] weight] [same weight as block units].

The following paragraph is applicable to one or several of the above paragraphs. Indicate coursing dimension, block or brick and joint size, in PART 3.

- V. Concrete Masonry Unit Size and Shape: Nominal modular size of []x[]x[] inches. Furnish special units for 90 degree corners, bond beams, lintels, [coved base,] [and] [bullnosed corners].

2.3 ACCESSORIES

- A. Single Wythe Joint Reinforcement: ASTM A951; truss type; steel; 0.148 inch diameter side rods with 0.148 inch diameter cross ties; hot dip galvanized.
- B. Multiple Wythe Joint Reinforcement: ASTM A951; truss type; steel; with moisture drip; adjustable type; 0.188 inch diameter side rods with 0.148 inch diameter cross ties; hot dip galvanized.

- C. Reinforcing Steel: ASTM A615/A615M, 75 ksi yield grade, plain billet bars, galvanized uncoated finish.
- D. Strap Anchors: bent steel shape; ASTM A153/A153M hot dip galvanized.
- E. Wall Ties: Corrugated formed sheet metal; ASTM A153/A153M hot dip galvanized.
- F. Wall Ties: ASTM A82; steel wire, adjustable or eye and pintle type; ASTM A153/A153M hot dip galvanized.
- G. Dovetail Anchors: Bent steel strap; ASTM A153/A153M hot dip galvanized.
- H. Anchor Rods: ASTM A307; Grade C; J-shaped or L-shaped; complete with washers and heavy hex nuts; sized for minimum 15 inch embedment; galvanized finish.
 - 1. Hot-Dipped Galvanizing: ASTM A153/A153M.
 - 2. Mechanical Galvanizing: ASTM B695; Class 55.
- I. Mortar and Grout: As specified in Section 04 05 03.
- J. Plastic Flashings: Sheet polyethylene; 20 mil thick.
- K. Copper: ASTM B370, cold rolled; 20 oz/sq ft thick; natural finish.
- L. Coping Flashing: Stainless steel, soft temper; 0.015 inch thick; Copper, cold rolled; 16 oz/sq ft; smooth finish; formed with ribs 3 inches on center for integral mortar bond.
 - 1. Cheney Flashing Company.
 - 2. Keystone Flashing Company, Inc.
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- M. Preformed Control Joints: Rubber material. Furnish with corner and tee accessories, [heat] [cement] fused joints.
- N. Joint Filler: Closed cell polyethylene; oversized 50 percent to joint width; self expanding.
- O. Masonry Core Insulation: Molded expanded polystyrene, ASTM C578, Type 1; Insulation specially molded to fit into block cores at the block plant prior to shipment.
 - 1. Shelter Enterprises, Inc.
 - 2. Concrete Block Insulation Systems
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- P. Cavity Drain Material: Open polyethylene mesh thickness required to fill cavity space, and shaped to ensure moisture drainage to cavity weeps.
 - 1. Advanced Building Products, Inc.
 - 2. CavClear/Archovations Inc.
 - 3. Mortar Net USA, Ltd.
 - 4. Dur-O-Wal, Inc.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- Q. Building Paper: ASTM D226; [Type I, No. 15] [Type II, No. 30] unperforated asphalt felt.
- R. Nailing Strips: Softwood, preservative treated for moisture resistance, dovetail shape, sized to masonry joints.
- S. Weeps: Preformed plastic tubes, cotton wick filled.
- T. Cavity Vents: Aluminum; insect resistant.

- U. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
- V. Precast Concrete Lintels: size, as indicated on Drawings, 4,000 psi strength at 28 days.
- W. Steel Lintels: size as indicated on Drawings, hot-dip galvanized.

2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Test brick efflorescence in accordance with ASTM C67. Brick rated greater than "slightly effloresced" is not acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify field conditions are acceptable and are ready to receive work.
- C. Verify items provided by other sections of work are properly sized and located.
- D. Verify built-in items are in proper location, and ready for roughing into masonry work.

3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.
- C. Wet clay and shale brick before laying when initial rate of absorption is greater than 30 grams when tested in accordance with ASTM C67.

3.3 INSTALLATION

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness.
- C. Coursing of Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.
- D. Coursing of Brick Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.
- E. Coursing of Prefinished Units:
 - 1. Bond: Running.

2. Coursing: One unit and one mortar joint to equal 8 inches.
 3. Mortar Joints: Concave.
- F. Placing And Bonding:
1. Lay solid masonry units in full bed of mortar, with full head joints.
 2. Lay hollow masonry units with face shell bedding on head and bed joints.
 3. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
 4. Remove excess mortar as Work progresses.
 5. Interlock intersections and external corners.
 6. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
 7. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
 8. Cut mortar joints flush where wall tile is scheduled, cement parging is required, resilient base is scheduled, or bitumen dampproofing is applied.
 9. Isolate masonry from vertical structural framing members with movement joint [as indicated on Drawings].
 10. Isolate top of masonry from horizontal structural framing members and slabs or decks with compressible joint filler.
- G. Weeps and Vents: Furnish weeps and vents in outer wythe at 24 inches oc horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
- H. Cavity Wall: Do not permit mortar to drop or accumulated into cavity air space or to plug weeps. Build inner wythe ahead of outer wythe to receive cavity insulation and air/vapor retarder adhesive.
1. Install cavity drain material continuously at bottom of each cavity above through wall flashing.
- I. Joint Reinforcement And Anchorage - Single Wythe Masonry:
1. Install horizontal joint reinforcement 16 inches Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
 2. Place joint reinforcement continuous in first and second joint below top of walls.
 3. Lap joint reinforcement ends minimum 6 inches.
 4. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.
- J. Joint Reinforcement And Anchorage - Masonry Veneer:
1. Install horizontal joint reinforcement 16 inches oc.
 2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
 3. Place joint reinforcement continuous in first and second joint below top of walls.
 4. Lap joint reinforcement ends minimum 6 inches
 5. Embed wall ties in masonry backing to bond veneer at maximum 16 inches oc vertically and 16 inches oc horizontally. Place wall ties at maximum 8 inches oc vertically within 8 inches of jamb of wall openings.
 6. Place wall ties at maximum 8 inches oc vertically within 8 inches of jamb of wall openings.
 7. Place wall ties at maximum 8 inches on center horizontally within 8 inches of head and sill of wall openings.
 8. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.

- K. Joint Reinforcement And Anchorages - Cavity Wall Masonry:
1. Install horizontal joint reinforcement 16 inches oc.
 2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
 3. Place joint reinforcement continuous in first and second joint below top of walls.
 4. Lap joint reinforcement ends minimum 6 inches.
 5. Embed anchors in concrete. Attach to structural steel members. Embed anchorages in every second block joint.
 6. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.
- L. Reinforcement And Anchorages - Multiple Wythe Unit Masonry:
1. Install horizontal joint reinforcement 16 inches oc.
 2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
 3. Place joint reinforcement continuous in first and second joint below top of walls.
 4. Lap joint reinforcement ends minimum 6 inches.
 5. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
 6. Embed anchors embedded in concrete attached to structural steel members. Embed anchorages in every second block joint.
 7. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.
- M. Masonry Flashings:
1. Extend flashings horizontally through outer wythe at foundation walls, above ledge or shelf angles and lintels, under parapet caps, at bottom of walls, and turn down on outside face to form drip.
 2. Turn flashing up minimum 8 inches and bed into mortar joint of masonry seal to concrete seal to sheathing over wood backing.
 3. Lap end joints minimum 6 inches and seal watertight.
 4. Turn flashing, fold, and seal at corners, bends, and interruptions.
- N. Lintels:
1. Install precast concrete lintels over openings.
 2. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled or indicated.
 3. Openings Up To 42 inches Wide: Place two No. 3 (M9) reinforcing bars 1 inch from bottom web.
 4. Openings From 42 inches Up To 78 inches Wide: Place two, No. 5 ([M16) reinforcing bars 1 inch from bottom web.
 5. Openings Over 78 inches: Reinforce openings as indicated on Drawings.
 6. Do not splice reinforcing bars.
 7. Support and secure reinforcing bars from displacement.
 8. Place and consolidate grout fill without displacing reinforcing.
 9. Allow masonry lintels to attain specified strength before removing temporary supports.
 10. Maintain minimum 4 inch bearing on each side of opening.
- O. Grouted Components:
1. Reinforce bond beam with 2, No. 3 bars, 1 inch from bottom web.
 2. Reinforce pilaster with 2, No. 3 bars, placed 1 inch from bottom.
 3. Lap splices bar diameters required by code.
 4. Support and secure reinforcing bars from displacement.
 5. Place and consolidate grout fill without displacing reinforcing.

6. At bearing locations, fill masonry cores with grout for minimum 12 inches both sides of opening.
- P. Reinforced Masonry:
1. Lay masonry units with cells vertically aligned and cavities between wythes clear of mortar and unobstructed.
 2. Place reinforcing, reinforcement bars, and grout as indicated on Drawings.
 3. Splice reinforcement in accordance with Section 03 20 00.
 4. Support and secure reinforcement from displacement.
 5. Place and consolidate grout fill without displacing reinforcing.
 6. Place grout in accordance with ACI 530.1 Specification for Masonry Structures.
- Q. Control And Expansion Joints:
1. Install control [and expansion] joints at the following maximum spacings, unless otherwise indicated on Drawings:
 - a. Exterior Walls: 20 feet on center and within 24 inches on one side of each interior and exterior corner.
 - b. Interior Walls: 30 feet on center.
 - c. At changes in wall height.
 2. Do not continue horizontal joint reinforcement through control and expansion joints.
 3. Form control joint with sheet building paper bond breaker fitted to one side of hollow contour end of block unit. Fill resultant elliptical core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
 4. Size control joint in accordance with Section 07 90 00 for sealant performance.
 5. Form expansion joint by omitting mortar and cutting unit to form open space.
- R. Built-In Work:
1. As work progresses, install built-in metal door and glazed frames fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built-in the work and furnished by other sections.
 2. Install built-in items plumb and level.
 3. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout or mortar. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
 4. Do not build in materials subject to deterioration.
- S. Cutting And Fitting:
1. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
 2. Obtain Architect/Engineer's approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.
- T. Parging:
1. Dampen masonry walls prior to parging.
 2. Scarify each parging coat to ensure full bond to subsequent coat.
 3. Parge masonry walls in two uniform coats of mortar to total thickness of 3/4 inch.
 4. Steel trowel surface smooth and flat with maximum surface variation of 1/8 inch per foot.
 5. Strike top edge of parging at 45 degrees.

3.4 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Alignment of Columns: 1/4 inch.

- C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- D. Maximum Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- F. Maximum Variation from Level Coursing: 1/8 inch in 3 feet and 1/4 inch in 10 feet; 1/2 inch in 30 feet.
- G. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.
- H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.
- I. Maximum Variation for Steel Reinforcement:
 - 1. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.
 - 2. Plus or minus 1/2 inch when distance from centerline of steel to opposite face of masonry is 8 inches or less.
 - 3. Plus or minus 1 inch when distance is between 8 and 24 inches.
 - 4. Plus or minus 1-1/4 inch when distance is greater than 24 inches.
 - 5. Plus or minus 2 inches from location along face of wall.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Brick Units: Test each type in accordance with ASTM C67, 5 random units for each 50,000 units installed.
- C. Concrete Masonry Units: Test each type in accordance with ASTM C140.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Remove excess mortar and mortar smears as work progresses.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution.
- E. Use non-metallic tools in cleaning operations.

3.7 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect exposed external corners subject to damage.
- C. Protect base of walls from mud and mortar splatter.

- D. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.
- E. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

END OF SECTION