

SECTION 04200 - CONCRETE UNIT MASONRY**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
1. Concrete masonry units (CMU).
 2. Mortar and grout.
 3. Reinforcing steel.
 4. Masonry joint reinforcement.
 5. Miscellaneous masonry accessories.
- B. Related Sections include the following:
1. Section 03010: Cast-In-Place Concrete
 2. Section 04200: Concrete Unit Masonry
 3. Section 07920: Sealants and Caulking

1.3 STANDARDS & CODESStandards:

ASTM - American Society for Testing Materials
SCPI - Structural Clay Products Institute
FCPA - Florida Concrete and Products Association

Codes:

MASONRY CEMENT ASTM C-91
PORTLAND CEMENT ASTM C0150 SAND M
SAND 210 ASTM - Use clean, sharp white mortar sand
BLOCK, REGULAR WT. ASTM C-129 with Aggregate ATM C-33
BLOCK, LIGHT WT. ASTM C-90 with 100% ASTM C-331 Aggregate

1.4 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths (f_m) at 28 days.
- B. Determine net-area compressive strength (f_m) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
- C. Qualification Data: For testing agency.

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- D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Grout mixes. Include description of type and proportions of ingredients.
 - 4. Reinforcing bars.
 - 5. Joint reinforcement.
 - 6. Anchors, ties, and metal accessories.
- E. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
 - 2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- F. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6.
- G. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- B. 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, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- E. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
 - 1. Build sample panels for typical exterior and interior walls in sizes approximately 60 inches long by 48 inches high. Install on 12" x 24" continuous foundation with (2) #5 continuous and (1) hooked dowel at 24" o.c.
 - 2. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
 - 3. Clean one-half of exposed faces of panels with masonry cleaner indicated.

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4. Protect approved sample panels from the elements with weather-resistant membrane.
 5. Approval of sample panels is for texture, and blending of masonry units; relationship of mortar and tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
 - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.
 - F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. 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.
 - B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
 - C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
 - D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.
- 1.8 PROJECT CONDITIONS
- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
 - B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
 - C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. 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.
 - D. 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 ACI 530.1/ASCE 6.
 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
 - E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6.

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- F. No admixture is permitted

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 2. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.3 CONCRETE MASONRY UNITS (CMU)

- A. Shapes: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide radiused/rounded edged units for outside corners, unless otherwise indicated.
- B. Concrete Masonry Units: ASTM C 90.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1500 psi .
 2. Weight Classification: Normal weight, unless otherwise indicated.
 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 4. Chipped and damaged or deformed units to be culled and removed from the jobsite unless other arrangements have been agreed to by Owner and Architect

2.4 CONCRETE AND MASONRY LINTELS

- A. General: Provide either concrete or masonry lintels as indicated on the structural drawings.
- B. Concrete Lintels: Precast units made from concrete matching concrete masonry units in color, texture, and compressive strength and with reinforcing bars indicated or required to support loads indicated. Cure precast lintels by same method used for concrete masonry units.
- C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Division 3 Section "Cast-in-Place Concrete."
- D. Masonry Lintels: Built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Temporarily support built-in-place lintels until cured.

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- A. Portland Cement: ASTM C 150, 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.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of Portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- D. Masonry Cement: ASTM C 91.
 - 1. Products:
 - a. Capital Materials Corporation; Flamingo Color Masonry Cement.
 - b. Essroc Italcementi Group
 - c. Holcim (US) Inc.
 - d. Lafarge North America Inc.
 - e. Lehigh Cement Company.
 - f. National Cement Company, Inc.; Coosa Masonry Cement.
- E. Mortar Cement: ASTM C 1329.
 - 1. Products:
 - a. Lafarge North America Inc.;
- F. Aggregate for Mortar: ASTM C 144.
- G. Aggregate for Grout: ASTM C 404.
- H. Cold-Weather Admixture: Non-chloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products:
 - a. Addiment Incorporated; Mortar Kick.
 - b. Euclid Chemical Company (The); Accelguard 80.
 - c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
 - d. Sonneborn, Div. of ChemRex; Trimix-NCA.
- I. Water: Potable.

2.6 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615, Grade 60.
- B. Masonry Joint Reinforcement, General: ASTM A 951.
 - 1. Interior Walls: Galvanized, carbon steel.
 - 2. Exterior Walls: Galvanized, carbon steel.
 - 3. Wire Size for Side Rods: #9.
 - 4. Wire Size for Cross Rods: #9.
 - 5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - 6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.

2.7 TIES AND ANCHORS(Where applicable)

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
 - 1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 641, Class 1 coating.

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2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
 3. Stainless-Steel Wire: ASTM A 580, Type 304.
 4. Galvanized Steel Sheet: ASTM A 653, Commercial Steel, G60 zinc coating.
 5. Steel Sheet, Galvanized after Fabrication: ASTM A 1008, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153.
 6. Stainless-Steel Sheet: ASTM A 666, Type 304.
 7. Steel Plates, Shapes, and Bars: ASTM A 36.
- B. 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 steel sheet, galvanized after fabrication not less than 0.043 inch thick.
- C. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, galvanized steel wire.
 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.188-inch-diameter, galvanized steel wire.
 3. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.053-inch-thick, steel sheet, galvanized after fabrication.
 4. Tie Section for Concrete: Corrugated metal ties with dovetail tabs for inserting into dovetail slots in concrete and sized to extend to within 1 inch of masonry face.

2.8 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Dovetail Slots in Concrete: Furnish dovetail slots with filler strips, of slot size indicated, fabricated from 0.034-inch, galvanized steel sheet.
- C. Anchor Bolts: L-shaped steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of dimensions indicated.
- D. Post-installed Anchors: Provide chemical anchors, with capability to sustain, without failure, a load equal to six times the load imposed when installed in solid or grouted unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
1. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.
1. Products:
 - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
 - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.

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- c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
- d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.10 MASONRY CLEANERS

- A. 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. Manufacturers:
 - a. Diedrich Technologies, Inc.
 - b. EaCo Chem, Inc.
 - c. ProSoCo, Inc.

2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Limit cementitious materials in mortar for exterior and reinforced masonry to Portland cement and lime.
- B. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine, or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 - 2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.
- C. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

2.12 SOURCE QUALITY CONTROL

- A. Owner will engage a qualified independent testing agency to perform source quality-control testing as indicated below:
- B. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C 140.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

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- A. Thickness: Build single-Wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. 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, un-chipped 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.
- E. Comply with construction tolerances in ACI 530.1/ASCE 6.

3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking 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.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition to structure above.
 - 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 7 Section "Fire-Resistive Joint Systems."
 - 4. Cutting of block is required. Excessive cuts to accommodate wall penetrations will be rejected.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay concrete masonry units as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.

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3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - B. 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.
 - C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- 3.5 MASONRY JOINT REINFORCEMENT
- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 1. Space reinforcement not more than 16 inches o.c.
 2. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
 - B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
 - C. Provide continuity at wall intersections by using prefabricated T-shaped units.
 - D. Provide continuity at corners by using prefabricated L-shaped units.
 - E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.
- 3.6 ANCHORING MASONRY TO STRUCTURAL MEMBERS
- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 1. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
 2. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.
- 3.7 CONTROL AND EXPANSION JOINTS
- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
 - B. Form control joints in concrete masonry using one of the following methods:
 1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
 2. Install preformed control-joint gaskets designed to fit standard sash block.
 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
 4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
 5. Neoprene rods one and one half size of joint surface caulked with silicone. Locate $\pm 25'-0"$ to $50'-0"$ o.c. coordinate with Architect prior to installation to allow for coordination with wall penetrations or decorative wall patterns.

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- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 2. Limit height of vertical grout pours to not more than 60 inches.

3.9 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
- B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports.
- C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- D. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C 140.
- E. Mortar Test (Property Specification): For each mix provided, per ASTM C 780.
- F. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.
- G. Prism Test: For each type of construction provided, per ASTM C 1314 at 7 days and at 28 days.
- H. Tolerance:
- Plumb = $\frac{1}{4}$ " wall height. Level coursing = $\frac{1}{8}$ " in 4'0", $\frac{1}{4}$ " full wall. Joint thickness = $\frac{1}{8}$ " max. Plane of wall = $\frac{1}{4}$ " max. Thickness of wall = $\frac{1}{4}$ " max.
 - Concrete Masonry units with chips and cosmetic blemishing are only to be used in electrical, mechanical and service closets.
- I. Control Joints are required and not to exceed 25'-0" max. Form control joint by the use of sheet of felt bond breaker. Stop wall reinforcing. Pack vertical joint with rod and caulk. Color to match masonry.

3.10 REPAIRING, POINTING, AND CLEANING

- A. 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.
- B. Pointing: During the daily 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

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sealant application, where indicated. Use a rubbing stone only where necessary and wire brushes are prohibited.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 4. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces. Contractor to inspect the masons work daily and point out workmanship concerns and issues that need to be corrected before additional work is restarted.

(END OF SECTION 04200)