PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Concrete unit masonry

B. Related work specified elsewhere includes but may not be limited to:

1. Section 01012 - Preferred Purchasing
2. Section 01411 Testing and Inspection
3. Section 04100 - Mortar and Grout
4. Section 05501 - Metal Fabrications (steel lintels and miscellaneous steel frames)
5. Section 06100 - Rough Carpentry (wood nailers and blocking built into unit masonry)
6. Section 07180 - Water Repellant
7. Section 07901 - Joint Sealers/Fillers (sealants in masonry construction joints)
8. Section 08110 - Hollow Metal Doors and Frames (hollow metal frames in unit masonry openings)

1.02 PREFERRED PURCHASING

A. Unless noted otherwise, Contractor and all subcontractors are encouraged to purchase all products listed in this specification For more information, refer to Section 01012.

1.03 SUBMITTALS TO ARCHITECT OF RECORD

A. General: Submit product data material certificates signed by manufacturer and contractor certifying that each material complies with requirements for each different masonry unit, accessory, and other manufactured product indicated.

B. Colored Mortar Mix Design

C. Grout Mix Design - Each Type

D. Certificates for Fire-Rated Masonry Units - ASTM C119

E. Test Certificates for each type of Masonry Unit specified - ASTM C140

F. Samples: Submit manufacturers color and texture samples to match colors indicated on drawings

1.04 QUALITY ASSURANCE

A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures, " except as modified herein.

B. Fire performance characteristics: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance has been determined per ASTM E 119 by a testing and inspecting organization, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

C. The Owner will employ and pay for the services of an Independent Testing Contractor (ITC) to provide testing and inspections of the masonry work.

D. The services of the ITC, and the information provided by the ITC, are provided for the sole benefit of Owner. The information is provided to Contractor only so the Contractor is aware of what is being reported to Owner. The Contractor shall not, and is not entitled to, rely upon any information provided by the ITC in any manner. Contractor is solely responsible for assuring that the Work complies with the Contract Documents in all respects and may not rely on the ITC for this, or any other, assurance. The ITC and its representatives are not authorized to revoke, alter, relax, enlarge or release any requirements of the Contract Documents, approve or accept any portion of the Work, perform or excuse any duties of Contractor, or be a party to the scheduling of the Work. The ITC is not an authorized agent of the Owner with respect to the relationship between Owner and Contractor.

E. Masonry materials and operations shall be tested and inspected as the work progresses. Failure by the ITC to detect any defective work or material shall not in any way prevent later rejection (when such defect is discovered) nor shall it obligate the Owner for final acceptance.

F. See Section 01411 Testing and Inspection for a complete description of the services to be performed by the ITC and additional Contractor responsibilities to facilitate that work.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become west, do not place until units

are in an air-dried condition.

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

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

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

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Provide special shapes where indicated for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions. Provide square-edged units for outside corners.

B. Size: Comply with ASTM specifications for concrete masonry units.

1. Concrete Masonry Units: Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on drawings. Nominal Face Dimensions: 8" X 16" for full size units.

C. Exposed Faces (Exterior and Interior Masonry): Manufacturer's standard gray color and smooth face texture, unless otherwise indicated.

D. Exposed Faces (All Exterior Above-Grade Masonry): Manufacturers' integrally colored, split-face texture, unless otherwise indicated. The manufacturer and colors indicated on the drawings are listed for color and texture only. Other masonry manufacturers meeting the above criteria will be considered as comparable products. Samples are to be submitted to Owner 15 days prior to bid due date for consideration.

E. Custom Units:

1. Refer to drawings for color and location of integrally colored units (i.e., white, brown, gray, beige, etc.).
2. Refer to drawings for type and location of architectural or customized units (i.e., smooth, split-face, fluted, scored, ribbed, slump, etc.)
3. Where indicated, provide units called out by manufacturer and catalog number or approved equal.

F. Hollow Load-Bearing Concrete Masonry Units: ASTM C 90, Grade N and as follows:

1. Unit Compressive Strength: 1900 psi minimum average compressive strength.
2. Weight Classification: Normal weight.
3. Grade N, Type I.
4. Aggregate: ASTM C33.

G. Concrete Building Brick: ASTM C55 and as follows:

1. Unit Compressive Strength: 3500 psi
2. Weight Classification: Normal Weight
3. Grade N, Type I
4. Air cured or steam cured. Curing by Autoclave method not allowed.

H. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture, 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.

I. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

2.02 WATER-REPELLENT

A. Refer to Section 07180

2.03 MORTAR AND GROUT MATERIALS

A. Refer to Section 04100

2.04 REINFORCING STEEL

A. Steel Reinforcing Bars: Material and grade as follows:

1. Billet steel complying with ASTM A 615, Grade 60, deformed, unless noted otherwise.

2.05 JOINT REINFORCEMENT

A. General: Provide joint reinforcement complying with requirements of referenced unit masonry standard and this article, formed from the following:

1. Carbon steel wire, galvanized to conform to ASTM A153-B2.

B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units, and complying with requirements indicated below:

1. Wire Diameter for Side Rods: 0.1483 inch (9 gage).
2. Wire Diameter for Cross Rods: 0.1483 inch (9 gage).
3. For single-wythe masonry provided type as follows with single pair of side rods:
   a. Truss design with continuous diagonal cross rods spaced not more than 16 inches o.c.
   b. Ladder design with two or more parallel longitudinal rods weld connected to perpendicular cross rods spaced not more than 16" o.c.

C. Manufacturers: Subject to compliance with requirements, provide joint reinforcement by one of the following:

1. Dur-O-Wal, Inc.
2. Heckman Building Products, Inc.
3. Hohmann & Barnard, Inc.

2.06 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors specified in subsequent articles that comply with requirements for metal and size of reference unit masonry standard and of this article.

B. Galvanized Carbon Steel Wire: ASTM A 82, coating class as required by referenced unit masonry standard for application indicated.

1. Wire Diameter: 0.1875 inch.

C. Steel Plates and Bars: ASTM A 36, hot-dip galvanized to comply with ASTM A 123 or ASTM A 153, Class B3, as applicable to size and form indicated.

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

1. Dur-O-Wal, Inc.
2. Heckman Building Products, Inc.
3. Hohmann & Barnard, Inc.

2.07 ADJUSTABLE ANCHORS FOR CONNECTING MASONRY TO STRUCTURAL FRAMEWORK

A. General: Two-piece assemblies as described below allowing vertical or horizontal differential movement between wall and framework parallel to plane of wall, but resisting tension and compression forces perpendicular to it. Provide only when indicated on drawings.

2.08 RIGID ANCHORS

A. Provide straps of form and length indicated, fabricated from metal strips of the following width and thickness.

1. 1-1/2 inches wide by 1/4 inch thick

2.09 ANCHOR BOLTS

A. Anchor Bolts: Steel bolts complying with 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 diameter and length indicated.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

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

1. Dur-O-Wal, Inc.
2. Heckman Building Products, Inc.
3. Hohmann & Barnard, Inc.

B. Preformed Control Joint Gaskets: Material as indicated below; designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

1. Slot Seal Standard T015-3, Styrene-Butadiene Rubber Compound: ASTM D 2000, Designation 2AA-805.

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

D. Weep Holes: Provide the following:

1. Through masonry only: 1/4" sash cords, length to coordinate with thickness of wythe; or Weep vents (color to match mortar).
2. Tubing not permitted.

E. Joint Protection Board: Provide the following:

1. Closed Cell Expanded Polyethylene foam complying with ASTM D3575 - Tests AA, BB, B, C, D, E, F and ASTM D-790.
2. Size: 1" thick X 2'-0" wide X ±4'-0".
3. Color: White.
4. Adhesive: As recommended by Manufacturer.
5. Acceptable Products:
   a. Williams Products, Inc.: Expand-O-Foam 1380 Series.

2.11 EMBEDDED FLASHING MATERIALS

A. Copper-Fabric Laminated Flashing: Manufacturer's standard laminated flashing of type indicated below:

1. Copper sheet of weight per sq. ft. indicated below, bonded with asphalt between 2 layers of glass fiber cloth.
2. Weight: 3 oz.
3. Application: Use where flashing is fully concealed in masonry.
4. Acceptable Products:
   a. Afco Products Inc.: Copper Fabric
   b. Sandell Manufacturing Co., Inc.: Copper Fabric Flashing
   c. York Manufacturing, Inc.: Copper Fabric Flashing

B. Adhesive for Flashings: Of type recommended by manufacturer of flashing material for use indicated.

2.12 MASONRY CLEANERS

A. Acceptable Products:

1. Prosoco Inc.: Sure Klean Burnished Custom Masonry Cleaner
2. or approved equal when expressly approved for intended use by manufacturer of masonry units and mortars being cleaned.

2.13 MASONRY INSULATION

A. Masonry Cell Insulation: expanded polystyrene insulation inserts for standard two core masonry units. Provide 2" thick EPS insert in 12" wide masonry units, to be factory installed at the exterior wall face of all cells. Use original “horseshoe” insert in all 8" wide masonry units. Furnish insulation in all cells except bond beams, lintels and parapets above the roofline, and where otherwise indicated to be deleted.

B. Acceptable Products:

1. CBIS/Korfil: Korfil
2. Insul-Bloc Corp.: Insul-Bloc
3. No substitutions

PART 3 - EXECUTION

3.01 PROJECT CONDITIONS

A. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar and soil those come in contact with such masonry.

1. Protect base of walls from mortar splatter by means of covering spread over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and doorframes, as well as similar products with painted and integral finishes from mortar droppings.

B. Hot-Weather Construction: Comply with reference unit masonry standard.

C. Cold Weather Requirements:

1. Comply with IMIAC - Recommended Practices and Guides Specifications for Cold Weather Masonry Construction.
2. Then the ambient air temperature is below 40 degrees F, heat-mixing water to maintain mortar temperature between 40 degrees F until placed. When the ambient air temperature is below 32 degrees F, heat the water to maintain this mortar temperature.

3.02 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions effecting performance of unit masonry.

B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

C. Do not proceed until unsatisfactory conditions have been corrected.

3.03 INSTALLATION, GENERAL

A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in Project.

B. Thickness: Build single-wythe wall to the actual thickness of the masonry units, using units of nominal thickness indicated.

C. Build chases and recesses as shown or required to accommodate items specified in this and other Sections of Specifications. Provide not less than 8 inches of masonry between chase or recess and jamb of openings and between adjacent chases and recesses.

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

E. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting where possible.

1. At grouting clean-out locations, use face shell plugs adequately braced to resist grout pressure.

3.04 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arises, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), nor 3/8 inch in 20 feet (10 mm in 6 m), nor ⌣ inch in 40 feet (12 mm in 12 m or more). For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm or in 6 m), nor ½ inch in 40 feet (12 mm in 12 m) or more. For vertical alignment of head joints, do not exceed plus or minus 1/4 inch in 10 feet (6 mm in 3 m), nor ½ inch (12 mm) 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 inch in 20 feet (6 mm in 6 m), nor ½ inch in 40 feet (12 mm in 12 m) or more. For top surface of bearing walls, do not exceed 1/8 inch (3 mm) in 10 feet (3 m), nor 1/16 inch (1.5 mm) within width of a single unit.

C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed ½ inch in 20 feet (12 mm in 6 m), nor 3/4 inch in 40 feet (19 mm in 12 m) or more.

D. Variation in Cross-Sectional Dimensions: For column and thickness of walls, from dimensions shown, do not exceed minus 1/4 inch (6 mm) nor plus ½ inch (12 mm).

E. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus 1/8 inch (3 mm) with a maximum thickness limited to ½ inch (12 mm). Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than 1/8 inch (3 mm). Do not vary from head-joint thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary head-joint thickness from adjacent head-joint thickness by more than 1/8 inch (3 mm). Do not vary from collar-joint thickness indicated by more than minus 1/4 inch (6 mm) or plus 3/8 inch (10 mm).

3.05 LAYING MASONRY WALLS

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

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

C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

1. Running bond with vertical joint in each course centered on units in courses above and below unless otherwise indicated.

D. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

E. Stopping and Resuming Work: In each course, rack back ½"-unit length for one-half running bond; do not tooth. Clean exposed surfaces of set masonry, and remove loose masonry units and mortar prior to laying fresh masonry.

F. Built-In-Work: As construction progresses, build-in-items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in-items.

1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
2. 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.
3. Fill cores in hollow concrete masonry units with grout 3 courses (24 inches) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

G. Temporarily brace walls to provide stability during construction.

H. Temporarily shore masonry to provide support during construction.

3.06 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

B. Joint Tooling: Tool all exposed joints slightly concave ("U" grooved joints) unless otherwise indicated.

1. Flush Joints: Joints in masonry to receive finish work of trades other than painting shall be struck flush.

3.07 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 inch. Lap reinforcing a minimum of 6 inches.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

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. 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.

1. In addition to wall reinforcement, provide additional reinforcement at openings as required to comply with the above.

3.08 MOVEMENT (CONTROL AND EXPANSION) JOINTS

A. General: Install control and expansion joints in unit masonry as enumerated below and where indicated on drawings. Build in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

B. Place control joints in the following locations:

1. Vertical control joint spacing as shown on drawings or as follows:
   a. Vertical control joints to be spaced no more than 24’-0” on center.
   b. For high humidity areas (average annual relative humidity greater than 75%), vertical control joints to be spaced no more than 18’-0” on center.
2. Changes in wall height or thickness.
3. At construction joints in foundation, in roof, and in floors (where CMU bears on floor slab).
4. At chases and recesses for piping, columns, fixtures, etc.
5. At abutment of wall and columns.
6. At return angles in "L", "T" and "U" shaped structures.
7. At one or both sides of wall openings.
   a. Place control joint at one side of an opening less than six feet in width and at both jambs of openings over six feet wide. Extend control joint through wall finishes where applied directly to masonry units.
   b. Provide horizontal slip plane where reinforced lintel beam terminates at a control joint. Provide horizontal slip plane at junction of roof and load-bearing masonry terminating at a control joint. Bond between roof and wall should be broken 12-15 feet back from corners, with slip plane.

C. Form control joints in concrete masonry as follows:

1. Install special shapes designed for control joints. Install bond breaker strips at joint. Keep head joints free and clear of mortar or rake joint. Fill joints with elastomeric sealant; refer to Section 07901, "Joint Sealers."

D. Form building expansion joints in concrete masonry as follows.

1. Install special shapes designed for building expansion joint. Use primer from top of footing to 1'-0" above grade line. Silicone sealant shall meet requirements of Section 07901, Joint Sealants.
2. Material is compressed and recessed 1/4" into joint opening. A wet silicone sealant is caulked into reveals. Clean all joints prior to installing seal from loose particles, dust, foreign matter, grease, frost, water, etc.
3. Install according to manufacturer's instruction sheets and recommendations.
4. Caulking Wet Silicone Sealant: Caulk 6' sections independently. Caulk across the reveal at the head joint, then caulk down reveals on both sides of cured sealant and substrate. Tool the wet sealant.
5. Install protection board with the 2'-0" wide face centered on the expansion joint, apply adhesive on board to one side of foundation wall joint with adhesive recommended by manufacturer. Extent of protection board shall be from top of footing to 4" below grade line.

3.09 BOND BEAMS

A. Install horizontal reinforcing steel continuous through control joints.

B. Horizontal reinforcing steel shall not run continuous through building expansion joints.

3.10 LINTELS

A. Install loose steel lintels where indicated.

B. Provide masonry lintels where shown and wherever openings of more than 2"-0" for block size units are shown without structural steel or other supporting lintels. Provide formed-in-place masonry lintels. Cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.

1. For hollow concrete masonry unit walls, use specially formed bond beam units with reinforcement bars placed as indicated and filled with coarse grout.
2. Install pre-engineered precast concrete lintels where indicated and where concrete masonry will be concealed by other work.
3. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

C. Install miscellaneous steel frames where indicated.

3.11 FLASHING/WEEP HOLES

A. General: Install embedded flashing and weep holes in masonry at shelf angles; lintels, ledges, other obstructions to the downward flow of water in the wall, and where indicated.

B. Prepare masonry surfaces so that they are smooth and free from projections that could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetration in flashing with adhesive/sealant/tape as recommended by flashing manufacturer before covering with mortar.

C. Install flashings as follows:

1. Extend flashing from exterior face of outer wythe of masonry through the outer wythe, turned up a minimum of 4" and inserted 3/4" into the outer face shell of inner wythe. Do not extend flashing full depth of inner wythe. Installation into inner wythe may be accomplished by raking out horizontal joint, inserting flashing and sealing joint with sealant and backer rod.
2. At heads and sills, extend flashing as specified above unless otherwise indicated but turn up ends not less than 2 inches to form a pan.
3. Cut off flashing flush with face of wall after masonry wall construction is completed.

D. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashings. Space weep holes 36 inches o.c.

3.12 INSTALLATION OF REINFORCED UNIT MASONRY

A. General: Install reinforced unit masonry to comply with requirements of referenced unit masonry standard.

B. Temporary Formwork: Construct formwork and shores to support reinforced masonry elements during construction.

1. Construct formwork to conform to shape, line, and dimensions shown. Make 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.

C. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

D. 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.

E. Provide cleanout holes at least 3 inches (76 mm) in least dimension for grout pours over 60 inches (1524 mm) in height.

1. Provide cleanout holes at each vertical reinforcing bar.
2. At solid grouted masonry, provide cleanout holes at not more than 32 inches (813 mm) o.c.

3.13 REPAIRING AND POINTING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar or grout, point to eliminate evidence of replacement.

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

3.14 CLEANING

A. 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. Protect adjacent non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
3. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
4. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 45 applicable to type of stain present on exposed surfaces.
5. Test cleaning methods on sample wall area; leave ½ area uncleaned for comparison purposes. Obtain project managers approval of sample cleaning before proceeding with cleaning of masonry.

B. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

3.15 FIELD QUALITY CONTROL

A. The Owner will engage and pay for the services of an independent testing agency to perform the following testing for field quality control. Payment for these services will be made from the Inspection and Testing Allowance, as authorized by Change Orders. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

B. Testing Frequency: Tests and Evaluations listed in this Article will be performed during construction for each 5,000 sq. ft. (460 sq. m) of wall area or portion thereof, and as otherwise indicated.

C. Prior to each grouting operation, testing agency shall inspect clean out holes and inspect for rebar positioning and cleanliness of cores. Agency shall have authority to stop grouting operations if the wall has not been properly prepared to comply with ACI Code requirements and proper granting procedure.

D. Prism-Test Method: For each type of wall construction indicated, masonry prisms will be tested per ASTM E 447, Method B, and as follows:

1. Prepare 1 set of prisms for testing at 28 days.

E. Evaluation of Quality-Control Tests: In the absence of other indications of noncompliance with requirements, masonry will be considered satisfactory if results from construction quality-control tests comply with minimum requirements indicated.

END OF SECTION