INSTALLATION
A. Refer to Section 04200 for installation.

FIELD QUALITY CONTROL
A. General requirement for testing shall be as specified in Section 01410. Specific test and inspection requirements shall be as specified herein.
B. Test shall indicate compressive strength, and shall be made in accordance with ASTM C780-90, Annex A6.
C. Perform tests for each type mortar and for each day mortar is used. For compressive strength, prepare and test specimens for: one at 3 days, one at 7 days and one at 28 days.
The water-soluble alkali content of the cement used in the mortar shall be tested in accordance with ASTM C114-88, or suitable certification furnished by the manufacturer of the cement, to establish that total water-soluble alkali content does not exceed 0.1 percent of the alkalies present.

UNIT MASONRY – SECTION 04200
Section includes concrete block masonry materials and masonry ties, anchors and reinforcement.

SUBMITTALS
1. Submit the following:
a. Manufacturer's Literature: Materials description and installation instructions for items, anchors, joint reinforcement and joint materials.
b. Samples: furnish one each (these can be furnished on site).
c. Certification: Written certification that ties, anchors and joint reinforcement, comply with requirements specified.

QUALITY ASSURANCE
1. Comply with laws, ordinances, rules, regulations and order of public authorities having jurisdiction over this part of the work.
2. The faces of unit masonry to be exposed shall be of uniform texture and free of chips, cracks and other imperfections detracting from the appearance of the finished work.
3. Mock-Up: Before starting masonry work, construct a sample wall panel 4 feet long and 3 feet high incorporating all exterior masonry units specified representing the proposed texture, bond, mortar color and joint treatment, and workmanship for approval by the Architect.
a. Clean sample panel prior to review.
b. Panel shall not be a part of the finished work, but shall remain at the Project site protected during the work and removed when directed, or upon completion of the work.
1. Where masonry construction is indicated on Drawings and where required by code to have fire resistant construction, provide masonry materials and methods in manner to obtain the necessary rating.

DELIVERY, STORAGE AND HANDLING
1. Deliver and handle materials to prevent damage. Store packaged material above ground on wood pallets or blocking and protect from the weather until used. Damaged and otherwise unsuitable material, when so determined, shall be immediately removed from the Project site.

PROJECT CONDITIONS
1. When the outside air temperature is below 40 degrees F., or expected to fall below 40 degrees F., comply with recommended practice for cold weather masonry construction set forth by The International Masonry Industry All-Weather Council and BIA Technical Notes IA, (1982).
2. Protect masonry construction from direct exposure to wind and sun when erected in an ambient air temperature of 99 degrees F. in the shade with a relative humidity of less than 50 percent.

MATERIALS
1. Concrete Masonry Units
a. Load bearing units shall conform to ASTM C 90.
b. Non-load bearing units shall conform to ASTM C 129.
c. Grade N-1 for use in exterior walls below grade, exposed to weather or exposed to frost action.
d. Grade S-1 for use above grade not subject to frost action.
e. Concrete masonry units shall be modular in size and of thickness called for on the drawings.
f. Special shapes, including end and jamb blocks and u-blocks for beams and lintels, shall be furnished as shown or as required.
g. Window jambs shall use standard shape CMU.
1. Anchors, Ties and Reinforcing
a. Rigid Anchors. 1/4" thick, galvanized steel bars ASTM A123-89a, 1" wide, with 3" bends at ends, 24" long (for bonding intersecting walls).
b. Reinforcing Bars: Billet steel deformed bars shall conform to ASTM A615-89, Grade 60. Located in walls and tie as indicated on Drawings.
c. Joint Reinforcement: Ladder, or truss-type, fabricated from cold drawn steel wire ASTM A82-88, galvanized ASTM A153-82 (1987), B-2, 1.5 oz., minimum No. 9 gage deformed side rods with 9 gage cross-rods, or diagonals, at 16" o.c. Width shall be 2" less than wall thickness. Provide prefabricated corners and tee sections.
d. Anchors and Ties. Copper-coated, ASTM B 227, Grade 30 HS, or zinc-coated steel, ASTM A 153 or A 116 of the types noted below. Metal ties between metal studs and veneer. Use 14 gage "DW-10" veneer anchor with ¼ inch wire tie, by Hohmann and Barnard, Inc. Anchor and tie shall be hot-dip galvanized after fabrication. Provide neoprene washers for each screw hole.
1. Mortar and Grout:
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.
1. For pigmented mortar, use a colored cement formulation as required to produce the color indicated or, if not indicated, as selected from manufacturer's standard formulations.
a. Pigments shall not exceed 10 percent of portland cement by weight for mineral oxides nor 2 percent for carbon black.
b. Pigments shall not exceed 5 percent of [mortar cement] [or] [masonry cement] by weight for mineral oxides nor 1 percent for carbon black.
1. For colored-aggregate mortar, use natural color or white cement as necessary to produce required mortar color.
a. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
1. White-Mortar Aggregates: Natural white sand or ground white stone
2. Colored-Mortar Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.
a. Aggregate for Grout: ASTM C 404.
b. Portar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
c. Water: Potable.
1. Miscellaneous Materials
a. Expansion or Control Joint Filler Strips: Strips shall be cross-shaped in section, wide flange-type, resistant to oils and solvents.
1. Expansion joints shall be closed cell neoprene conforming to ASTM D1056-85, Class RE41.
Control joints shall be rubber conforming to ASTM D2000-86, 2AA-805 with a durometer hardness of 80 when tested in accordance with ASTM D2240-86.

EXAMINATION
1. Examine the substrate and conditions under which unit masonry work is to be installed and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

PREPARATION
1. Coordination: Review installation procedures and coordinate with other work that must be integrated with masonry.

GENERAL REQUIREMENTS
1. Provide all masonry construction aligned, plumb and true in required layout, making straight level courses, unless otherwise specifically indicated. Construct masonry to full thickness as shown with masonry units of sizes as noted and specified, using whole units wherever possible. Cut masonry neatly by power saw to obtain sharp edges without damage, as approved for providing required bond pattern and proper fit at all adjoining items. Build-in items furnished by other trades, and leave accurate openings necessary for subsequent installation of other work, in a manner to maintain required strength and appearance of masonry construction.
2. Fill solidly around conduit and sleeves passing through masonry, with mortar.
3. Build-in all loose steel lintels, provide minimum 8" bearing and bed lintels in mortar.
4. Provide threaded steel anchors where indicated to be built into masonry construction for attachment of work by other trades. Conform to requirements of ASTM A307-88a, and include nuts with hardened washers where required, as approved. Provide minimum 1/2" shank diameter by 10" length with pigtail end, where size and type are not indicated on Drawings. All anchors shall be hot-dip galvanized where used in exterior-exposed construction.
5. Grout hollow metal frames in masonry walls solidly with mortar. Perform grouting without clogging holes, boxes and spaces required for the proper installation and operation of hardware.
6. Cold Weather Construction
a. Comply with recommended practice for cold weather masonry construction set forth by the International Masonry Industry All-Weather Council and as specified herein.
1. When the temperature of dry masonry units is below 20 degrees F, they shall be heated so they are above 40 degrees F. at their time of use. Overheating shall be avoided.
2. Masonry shall be placed only on sound, unfrozen foundations free of ice and snow.
3. All newly completed masonry shall be maintained above 32 degrees F. for at least 48 hours where Type I Portland cement is used in the mortar and grout, and for at least 24 hours where Type III Portland cement is used.

MORTAR BEDDING AND JOINTING
1. Concrete Block Masonry
a. Hollow units shall be laid with full mortar coverage on horizontal and vertical face shells. Webs shall also be bedded in courses of piers column, and pilasters, and in the starting course on footings and solid foundation walls. Solid units shall be laid with full head and bed joints.
b. Lay concrete masonry units with solid mortar joints of uniform 3/8" width and tool concave as specified above for all masonry except buried joints unexposed to view may be cut flush.
1. Remove masonry units disturbed after laying; clean and relay fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

PLACING JOINT REINFORCEMENT
1. Provide joint reinforcement in horizontal joints of masonry construction at 16" o.c. vertically, unless otherwise shown. Place reinforcement to provide continuous reinforcement with corner and "tee" sections at wall intersections, and splice reinforcement together by lapping side bars a minimum of 6" at adjoining ends of lengths. Stop reinforcement 2" away from both sides of vertical control joints. At openings in walls, place additional reinforcement in bed joint of courses above and below openings and extend at least 24" beyond each side of opening. Anchor ties shall be spaced to support not more than 2 s.f. of wall area.
2. Where masonry partitions supported on slabs on grade abut masonry walls supported on foundations and footings, provide an expansion joint at the face of the structurally supported wall and anchor the partition with adjustable wall ties spaced 24" o.c. vertically.
3. Do not use metal reinforcing and ties having loose rust and other coatings, including ice, which will reduce or destroy bond.

CONTROL JOINTS AND EXPANSION JOINTS
1. Construct control joints for concrete block walls using concrete sash block, and space control joints not over 30 feet o.c., unless otherwise indicated on the Drawings.
2. Space expansion joints as specified above for concrete block walls and elsewhere in accordance with guidelines.
3. Control joints and expansion joints shall be free of mortar droppings.

EMBEDDED ITEMS
1. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, and work supported by, concrete unit masonry. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached.

JOINING OF WORK IN NEW MASONRY
1. Where fresh masonry joins masonry that is partially set and totally set, the exposed surface of the set masonry shall be cleaned, roughed and lightly wetted to obtain satisfactory bond. Loose masonry units and mortar shall be removed.
1. If it is necessary to "stop off" a horizontal run of masonry, it shall be done only by racking back one-half a unit length in each course. Toothing will be permitted only for the joining of new masonry to existing masonry.

BOND BEAMS
1. Masonry bond beams shall be formed of units having the cells filled solidly with 3,000 psi concrete and provided with reinforcing bars scheduled.
a. Reinforcing shall overlap a minimum of 40 bar diameters at splices.
b. Bond beams and reinforcing shall be interrupted at control joints.
1. Refer to Structural Bond Beam at Control Joints detail for dowel sleeve.

CONSTRUCTION TOLERANCES
1. Unit masonry construction shall be within the following tolerances:
a. Maximum variation from plumb in vertical lines and surfaces of columns, walls and arises:
1. 1/4" in 10 feet
2. 3/8" in a story height not to exceed 20 feet
a. Maximum variation from plumb for external corners, expansion joints and other conspicuous lines:
1. 1/4" in any story or 20 feet maximum
2. 1/2" in 40 feet or more
a. Maximum variation from level of grades for exposed lintels, sills, parapets, horizontal reveals and other conspicuous lines:
1. 1/4" in any bay or 20 feet
2. 1/2" in 40 feet or more
a. Maximum variation from plan location of related portions of columns, walls and partitions:
1. 1/2" in any bay or 20 feet
2. 3/4" in 40 feet or more
a. Maximum variation in cross-section dimensions of columns and thicknesses of walls from dimensions shown on Drawings:
1. Minus 1/4"
2. Plus 1/2"

FIELD QUALITY CONTROL
1. Concrete Masonry Tests: For each type, class and grade of concrete masonry unit indicated, test units by method of sampling and testing of ASTM C140-75 (1988).
2. Refer to Section 04100 for mortar tests.

ADJUSTING AND CLEANING
1. Remove and replace masonry units which are loose, chipped, broken, stained and otherwise damaged, and if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
2. During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking and sealant compounds.
3. During the progress of the work, wipe off excess mortar as the work progresses. Dry brush at the end of each day's work.
4. After mortar is thoroughly set and cured, dry clean to remove large particles of mortar using wood paddles and scrapers. Use chisel or wire brush if required. Presoak wall by saturating with water and flush off loose mortar and dirt. Scrub down wall with stiff fiber brush and a solution of 1/2 cup of trisodium phosphate and 1/2 cup of household detergent dissolved in 1 (one) gallon of water. Rinse walls by washing off cleaning solution, dirt and mortar crumbs using clean, pressurized water. Acid cleaning of masonry will NOT be permitted. Verify cleaning procedure with unit masonry and mortar manufacturers before beginning.
5. At the conclusion of masonry work, remove scaffolding and equipment used in the work, clean up debris, refuse and surplus material and remove same from premises.

PROTECTION
1. Protect masonry materials during storage and construction against wetting by rain, snow and ground water, and against soilage and intermixture with earth and other types of materials.
2. During erection, at the end of each day's work, during a shutdown, and during adverse weather conditions, cover tops of walls with strong non-staining waterproof membrane. Cover partially completed walls when work is not in progress. Extend cover 24" down both sides and secure in place.
3. Protect masonry work from damage. Brace walls as necessary during construction. Protect against staining.
Protect masonry work from excessive changes in temperature when protective shelters are removed. Changes in temperature of the masonry shall be as uniform as possible and shall not exceed 5 degrees F. in any 1 (one) hour, and 50 degrees F. in any 24-hour period.

UNIT MASONRY ASSEMBLIES – Section 04810
Provide and install brick types and colors as shown on the building elevations in the Construction Documents.

SUBMITTALS:
In addition to Product Data, submit the following:
1. Shop Drawings: For masonry reinforcing bars; comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
2. Samples showing the full range of colors and textures available for exposed masonry units and colored mortars.
3. Material Test Reports: From a qualified testing agency, for each type of masonry unit required; mortar complying with property requirements, and grout complying with compressive strength requirements.
4. Material Certificates: For each type of masonry unit required.

SAMPLE PANELS:
Build sample panels as part of finished surface, to verify selections made under sample Submittals and to demonstrate aesthetic effects, for each type of exposed unit masonry assembly in sizes approximately 48 inches long by 48 inches high by full thickness. If accepted sample panel may become part of the finished construction.

COLD-WEATHER REQUIREMENTS:
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/TMS 602 or Section 2104.3 or the Uniform Building Code.

HOT-WEATHER REQUIREMENTS:
When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

PROJECT CONDITIONS:
1. 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.
a. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
b. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.

PRODUCTS
A. Color and Texture: Match Architect's building elevations.
B. Brick, General: Provide shapes indicated as follows:
1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
2. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
C. Face Brick: ASTM C 216 UBC Standard 21-1, Grade SW, Type FBA, and as follows:
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
2. Initial Rate of Asborption: Less than 20 g/30 sq. in. per minute when tested per ASTM C 67.
3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
4. Surface Coloring: Brick with surface coloring, other than flashed or sand-finished brick, shall withstand 50 cycles of freezing and thawing per ASTM C 67 with no observable difference in the applied finish when viewed from 10 feet.
5. Size: Manufactured to the following actual dimensions:
a. Standard: 3-1/2 to 3-5/8 inches wide by 2-1/4 inches high by 8 inches long.
D. Mortar and Grout Materials: As follows:
1. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
2. Hydrated Lime: ASTM C 207 or UBC Standard 21-13, Type S.
3. For pigmented mortar, use a colored cement or cement-lime formulation as required to produce the color indicated.
4. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
a. Colored-Mortar Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produced required mortar color.
5. Integral Water Repellant Admixtures: Dry-Block II Mortar Admixture will be added to all mortar used in exterior walls. The dosage rate of Dry-Block II Mortar Admixture will be as recommended by W.R. Grace Co. Aggregate for Grout: ASTM C 404.
6. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
7. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by the manufacturer for use in masonry mortar of composition indicated.
8. Water: Potable.
E. Masonry Joint Reinforcement: ASTM A 951 or UBC Standard 21-10; mill galvanized, carbon-steel wire for interior walls and hot-dip galvanized, carbon-steel wire for exterior walls.
1. Wire Size for Side Rods: As shown on the structural drawings.
2. Wire Size for Cross Rods: As shown on the structural drawings.
3. For singly-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches o.c.
4. For multi-wythe masonry, provide ladder type with perpendicular cross rods spaced not more than 16 inches o.c. and 1 side rod for each shell of hollow masonry units more than 4 inches in width, plus 1 side rod for each wythe of masonry 4 inches or less in width.
F. Ties and Anchors, General: Provide ties and anchors, specified in subsequent paragraphs, made from materials that comply with this paragraph, unless otherwise indicated.
1. Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating for exterior walls and Class 1 coating for interior walls.
G. Adjustable Masonry-Veneer Anchors: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to wall, for attachment over sheathing to wood or metal studs, and that are capable of withstanding a 50-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
1. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a triangular wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom; with raised rib-stiffened strap stamped into center to provide a slot for connection of wire tie.
2. Seismic Masonry-Veneer Anchors: Units consisting of a rib-stiffened, sheet metal anchor section with screw holes top and bottom; with raised rib-stiffened strap stamped into center to provide a slot for a connector section designed to engage a continuous wire embedded in the veneer mortar joint.
H. Embedded Flashing Materials: As follows:
1. Flashing Description: .8mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to .2mm (8 mils) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed. (Perm-A-Barrier by W.R. Grace or Architect approved equal.)
2. Metal Flashing: (for use where flexible flashing is not appropriate and a stiff flashing is required): Fabricate from the following metal complying with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim" and below:
a. Asphalt-Coated Copper Flashing: Manufacturer's standard product consisting of sheet copper coated with flexible asphalt. Use only where flashing is fully concealed in masonry.
b. Fabricate metal drip edges from sheet metal indicated above. Extend at least 3 inches into wall and 1/2 inch out from wall, with a hemmed outer edge bent down 30 degrees.
c. Fabricate metal flashing terminations from sheet metal indicated above. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and then down into joint 3/8 inch to form a stop for retaining sealant backer rod.
I. Miscellaneous masonry Accessories: As Follows:
1. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; formulated from neoprene or PVC.
2. Preformed Control-Joint Gaskets: Designed to fit standard sash block and to maintain lateral stability in masonry wall. Made from styrene-butadiene-rubber compound complying with ASTM D 2000, Designation M2AA-805.
3. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
4. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches.
5. Cavity Drainage Material: Thickness equal to cavity, free-draining mesh; made from polyethylene strands.
J. Masonry Cleaners: As follows:
1. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.
2. 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.
K. Mortar and Grout Mixes: Do not use admixtures, unless otherwise indicated. Do not use calcium chloride in mortar or grout.
1. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.
2. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification.
a. Extended-Life Mortar for Unit Masonry: Mortar complying with ASTM C 1142 may be used instead of mortar specified above, at Contractor's option.
b. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
c. For masonry below grade, in contact with earth, and where indicated, use Type S.
d. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; and for other applications where another type is not indicated, use Type S.
e. For interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
3. Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required. Limit pigments to the following percentages of cement content by weight:
a. For portland cement-lime mortar, not more than 10 percent.
4. Grout for Unit Masonry: Comply with ASTM C 476 or UBC color indicated.
a. Use grout for type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
b. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.

EXECUTION
A. Cut masonry units with moto-driven saws. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
C. Wetting of Brick: Wet brick before laying if the initial rate of absorption exceeds 30 g/30sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at the time of laying.
D. Comply with tolerances in ACI 520.1/ASCE 6/TMS 602 and the following:
1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
2. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
E. 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.
F. Bond Pattern for Exposed Masonry: Lay exposed masonry in bond pattern indicated; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
G. 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.
H. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
I. Lay hollow 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.
J. Lay solid brick-sized 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.
1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity.
K. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.
L. Keep cavities clean of mortar droppings and other materials during construction.
1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.
M. Provide continuous masonry joint reinforcement as indicated. Install 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. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections.
N. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated.
2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
O. Anchor masonry veneers to wall framing or concrete and masonry backup with [seismic] masonry-veneer anchors to comply with the following requirements.
1. Fasten each anchor section through sheathing to wall framing or to concrete and masonry backup with two metal fasteners of type indicated.
2. Embed connector sections and continuous wire in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of sheathing.
3. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.
P. Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
1. Extend flashing 4 inches at ends and turn flashing up not less than 2 inches to form a pan.
2. Install metal drip edges beneath flashing at exterior face of wall. Stop flashing 1/2 inch back from outside face of wall and adhere flashing to top of metal drip edge.
3. Install m metal flashing termination beneath flashing at exterior face of wall. Stop flashing 1/2 inch back from outside face of wall and adhere flashing to top of metal flashing termination.
Q. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing.
1. Use rectangular plastic tubing to form weep holes.
2. Space weep holes 24 (brick) to 32 (CMU) inches o.c.
3. Trim wicking material used in weep holes flush with outside face of wall after mortar has set.
R. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
1. 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.
S. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or Section 2104.5 of the Uniform Building Code.
T. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or Section 2104.6 of the Uniform Building Code for cleanouts and for grout placement, including minimum grout space and maximum pour height.
U. Parge predampened masonry veneer cavity walls, where indicated, with Type S or Type N mortar applied in 2 uniform coats to a total thick ness of 3/4 inch with a steel-trowel finish. Form a wash at top of parging and a cove at bottom. Damp-cure parging for at least 24 hours.
V. Cleaning: Clean unit masonry as follows:
1. By dry brushing to remove mortar fins and smears before tooling joints, as work progresses.
2. After mortar is thoroughly set and cured, clean exposed masonry as follows:
a. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
b. Protect adjacent surfaces from contact with cleaner.
c. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clean water.
d. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
e. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
f. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.
W. Water Repellent Sealer: Coat non-painted masonry walls with a liquid penetrating sealer.
X. Masonry Waste Disposal: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or contaminated sand, by crushing and mixing with fill material as fill is placed.
1. Do not dispose of masonry waste as fill within 18 inches of finished grade.
2. Remove excess, clean masonry waste that cannot be used as fille, as described above, and other masonry waste, and legally dispose of off Owner's property.

METAL FABRICATIONS – SECTION 05500
This Section includes the following:
1. Miscellaneous steel framing and supports.
2. Shelf angles.
3. Loose bearing and leveling plates.
4. Steel weld plates and angles.
5. Metal ladders.
6. Loose steel lintels.

SUBMITTALS
A. Product Data:
For the following:
1. Metal nosings and treads.
2. Grout.
B. Shop Drawings: Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PRODUCTS
A. where titles below introduce lists, the following requirements apply to product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

METALS
A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.
B. Ferrous Metals:
1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
2. Stainless-Steel Bars and Shapes: ASTM A 276, see Structural Drawings for Type.
3. Steel Tubing: ASTM A 500, cold-formed steel tubing.
4. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
5. Slotted Channel Framing: Cold-formed metal channels complying with MFMA-3, 1-5/8 by 1-5/8 inches (41 by 41 mm). Channels made from galvanized steel complying with ASTM A 653/A 653M, structural steel, Grade 33 (Grade 230), with G90 (Z275) coating; 0.079-inch (2-mm) nominal thickness.
6. Cast Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.
C. Nonferrous Metals:
1. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy 6063-T6.
2. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, alloy 6061-T6.
3. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

FASTENERS
A. General: Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
B. Cast-in-Place Anchors in Concrete: Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

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CONSULTANT

SEAL
STATE OF GEORGIA
ROBERT N PRESTON
CERTIFICATE NO. 007841
REGISTERED ARCHITECT

PROJECT
RESERVE AT THE BALLPARK, PHASE II, AKA REVEL AT THE BALLPARK
2885 CRESCENT PKWY
SMYRNA, GA 30080

FOR
ATLANTIC REALTY PARTNERS
ATLANTIC REALTY PARTNERS
3438 PEACHTREE ROAD
SUITE 1425
ATLANTA, GA 30326

ISSUES & REVISIONS — DATE

CONCEPTUAL DESIGN	08/21/2015
SCHEMATIC DESIGN	09/28/2015
GMP/DESIGN DEVELOPMENT	10/15/2015
GMP	04/03/2017
PERMIT SET	05/22/2017
3 BUILDING PERMIT	07/25/2017

DATE 05/22/2017
JOB NUMBER 1493101
DRAWN BY Author
CHECKED BY Checker
SHEET TITLE SPECIFICATIONS
SHEET NUMBER A10-03
COMMENTS

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