SECTION 042113

BRICK MASONRY

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Masonry Restoration: Section 040121.

B. Mortar: Section 040513.

C. Concrete Unit Masonry: Section 042200.

D. Built-In Flashings: Section 076000.

1.02 SUBMITTALS

A. Samples:
   1. Building Brick (Exposed Exterior): 12, showing full range of shading.

   2. Accessories: Each item specified, full size or 24 inch long sections as applicable.

B. Quality Control Submittals:
   1. Test Reports: At the written request of the Director, submit certified test reports for each type of brick specified as follows:
      a. Compressive strength.
      b. Twenty-four hour cold water absorption.
      c. Five hour boiling water absorption.
      d. Saturation coefficient.
      e. Initial rate of absorption (suction).

1.03 QUALITY ASSURANCE

A. Field Examples:
   1. Prior to installation of brick masonry, construct a sample brick masonry wall panel at the Site.
   2. Build panel 2 feet long by 1.5 feet high by full wall thickness, with materials, bond, joints, accessories, and back-up masonry required for the Work.
   3. Do not start brick masonry until a sample panel has been approved by the Director's Representative.
   4. Approved panel will be the standard of workmanship required for all masonry built of the same materials. Failure to maintain this standard will be cause for rejection of the masonry.
   5. Maintain approved panel intact until all brick masonry has been installed and approved; then remove panel from the Site.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver brick for use in exposed Work on pallets. Handle by mechanical means, by hand or tongs. Dumping will not be permitted.

B. Store brick off the ground to prevent contamination by mud, dust or other materials likely to cause staining or other defects.

C. Cover brick, when necessary, to protect from the elements.

D. Protect accessories from the elements.

1.05 PROJECT CONDITIONS

A. Environmental Requirements; Cold Weather Conditions:
   1. At temperatures below 40 degrees F, maintain mortar temperature between 40 degrees F and 120 degrees F. If necessary, heat mixing water and sand to produce the required results.
   2. At temperatures between 40 degrees F and 32 degrees F, protect masonry from rain and snow for 24 hours after laying.
   3. At temperatures between 32 degrees F and 20 degrees F, provide wind breaks and cover the masonry to prevent wetting and freezing. Maintain masonry above freezing for not less than 24 hours using auxiliary heat or insulating blankets.
   4. At temperatures below 20 degrees F, provide heated enclosures for laying the masonry. At the end of the workday, maintain the enclosures and keep the Work from freezing for not less than 24 hours.
   5. Do not lower freezing point of mortar by use of antifreeze, calcium chloride or other additives.
   6. Do not use frozen materials or materials coated with ice or frost.

PART 2 PRODUCTS

2.01 BUILDING (COMMON) BRICK

A. Building Brick (Exterior): ASTM C 62, Grade SW.

   1. Size, Color, and Appearance: Match existing adjacent brickwork.

2.02 ACCESSORIES

A. Masonry Wall Reinforcement: Joint reinforcement factory fabricated from cold-drawn steel wire, ASTM A 82, truss or ladder design, with 9 gage deformed steel wire longitudinal rods welded to 9 gage steel wire cross ties spaced 16 inches oc; width 1-1/2 to 2 inches less than total wall thickness. Furnish factory fabricated corner and tee sections for corners and wall intersections.
   1. Finish for Exterior Walls: 1.5 oz per sq ft hot dipped galvanized after fabrication, ASTM A 153, Class B-2.

2. For walls with concrete masonry unit back-up wythe, reinforcement shall have a third longitudinal rod located for proper embedment at internal face shell of concrete masonry units.
3. Provide units with adjustable 2 piece rectangular ties where horizontal joints of facing wythe do not align with those of back-up.

B. Adjustable Wall Ties: 3/16 inch diameter cold-drawn steel wire, ASTM A 82; 2 piece construction consisting of pintle section with 2 legs and corresponding eye section. Maximum clearance between connecting parts shall be 1/16 inch. Wall tie shall be of size for at least 1-1/2 inch embedment into the mortar bed of solid masonry units.
1. Finish for Exterior Walls: 1.5 oz per sq ft hot dipped galvanized after fabrication, ASTM A 153, Class B-2.
2. Finish for Interior Walls: 0.8 oz per sq ft mill galvanized, ASTM A 641, Class 3, except interior walls exposed to moist environment shall have finish specified for exterior walls.
3. For solid masonry wythes, provide z-shaped ties.
4. For composite wythes (face brick with hollow concrete masonry backing), provide rectangular shaped ties.

C. Flexible Anchors: 1.5 oz per sq ft hot dipped galvanized steel anchors which will permit horizontal and vertical movement of masonry but will maintain lateral restraint, and as follows:
1. For Anchorage To Concrete Framework: 2 piece anchors with 14 gage sheet steel dovetail section and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.
2. For Anchorage To Steel Framework: 2 piece anchors with crimped 1/4 inch diameter bar for welding to steel and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.

D. Dovetail Anchor Slot Concrete Inserts: 24 gage galvanized steel, with filler strip; slot sized to fit dovetail anchor.

E. Buck Anchors (For Anchoring New Masonry To Existing Construction): 1-1/4 x 1/8 x 8 inch long z-type steel buck anchor with 2 inch long right angle bent ends, bolt hole in one bent end, 1.5 oz per sq ft hot dipped galvanized after fabrication. Furnish 3/8 inch diameter galvanized machine bolt and non-ferrous metal expansion shield.

2.03 CLEANING AGENTS

A. Powder:
1. Trisodium phosphate.
2. Detergent, biodegradable type.

B. Liquid: Green Clean-100 by L&W Stone Corp., 1036 South St., Orland, CA 95963, (800)-346-9739, www.lwstonecorp.com or; “Clean As You Go” by Diedtech Technologies, Inc., 7373 S. 6th St., Oak Creek, WI 53154, (800) 323-3565, www.diedrichtechnologies.com.

2.04 SOURCE QUALITY CONTROL

A. Brick Tests: Test brick in accordance with ASTM C 67. Have tests performed by a qualified independent testing laboratory.

PART 3 EXECUTION

3.01 PREPARATION

A. Wetting Brick:
   1. Wet brick that absorb 20 drops of water (placed in a one inch circle) in less than 90 seconds.
   2. One day before use of brick (or several hours in extremely warm weather), play a waterhose on the brick pile until excess water runs off. Allow brick surfaces to dry before use.

B. Clean loose and foreign materials off supporting surfaces just prior to laying brick.

C. Protection:
   1. Protect face materials against staining.
   2. Remove misplaced mortar immediately.
   3. Protect sills, ledges, off-sets, and similar items from mortar drippings and other damage during construction.
   4. Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, and other harmful elements.
   5. Cover top of walls with non-staining waterproof covering when Work is not in progress. Place with minimum 2 foot overhang of protective covering on each side of wall and securely anchor.

3.02 INSTALLATION

A. General:

   1. Pattern Bond:
      a. Lay exposed brick in running bond, unless otherwise indicated.
      b. Bond unexposed brick by lapping units at least 2 inches.
   2. Joining of Work:
      a. When a run of brickwork cannot be completed by the end of the day, stop off horizontal run of brickwork by racking back 1/2 length of unit in each course.
      b. Toothing is not permitted unless approved in writing by the Director's Representative.
      c. Where fresh brickwork joins set brickwork, remove loose brick and mortar. Clean and lightly wet exposed bond surfaces of set brickwork.
   3. Cutting Brick: Cut exposed brick with a motor-driven saw or by other methods which provide straight and true cuts.
   4. Mortar Joint Thickness:

a. Lay brick with 3/8 inch joints.
b. Match existing joint thickness.

5. Joint Tooling:
   a. Tool exposed joints when "thumb-print" hard with a rounded jointer which is slightly larger than thickness of joint.
   b. Trowel-point or concave-tool exterior joints below grade.
   c. Flush-cut all other joints not required to be tooled.
6. Movement Joints:
   a. Install expansion joints and control joints as required by the Drawings.
   b. Keep joints free of mortar and debris.
   c. Do not bridge expansion joints and control joints in wall system with reinforcement, anchors or ties.
7. Sealant Recesses:
   a. Unless otherwise shown on the Drawings, leave 3/4 inch deep by 1/4 inch wide open joints around outside perimeters of exterior door frames, window frames, and other framed wall openings.
9. Flashings:
   a. Clean contact surfaces and remove projections which might puncture the flashing.
   b. Place flashing on bed of mortar and cover with mortar.
10. Built-In Work:
   a. Fit brick closely around built-in Work.
   b. Except where cavities are required, fill all spaces between built-in Work (including metal frames and structural steel) and brickwork solidly with mortar.

B. Laying Brick:
1. Unless otherwise required by the design, lay brick plumb, true to line and with level courses accurately spaced within allowable tolerances.
2. Completely fill mortar joints. Do not furrow bed joints. Butter ends of brick with sufficient mortar to fill head joints. Point closure joints full.
3. Collar Joints: Except in cavity walls, fill vertical-longitudinal joint between wythes by slushing and rodding the joint full of mortar.
4. Do not pound corners and jambs to fit stretcher units after they are set in position. Where an adjustment must be made after mortar has started to harden, remove units and clean units and joints of mortar and re-lay with fresh mortar.

C. Structural Bonding:
1. Use masonry bond method for corners and intersections of loadbearing brick walls wherever possible.
2. Anchoring Intersecting Bearing or Shear Walls Required to be Erected Separately:
   a. Regularly block vertical joint with 8 inch maximum offsets.
   b. Place tiebars in horizontal joints at not more than 3 foot centers vertically.
3. Bond multi-wythe brick walls with continuous masonry wall reinforcement, spaced not more than 16 inches vertically. Lap individual lengths of reinforcement 6 inches.

D. Anchoring Brick to Concrete Unit Masonry:
   1. Tie adjacent wythes of masonry walls together with continuous masonry wall reinforcement spaced vertically not more than 16 inches oc. Lap individual lengths of reinforcement 6 inches.
      a. Where horizontal mortar joints of back-up wythe and face wythe do not align or where one wythe is required to be constructed before the other, tie adjacent wythes of masonry walls together with adjustable wall ties spaced 16 inches vertically and 24 inches horizontally, in conjunction with continuous masonry wall reinforcement.

E. Anchoring Non-Bearing Partitions:
   1. Anchor partitions abutting or intersecting other walls or partitions with adjustable wall ties, placed at vertical intervals of not more than 24 inches.

F. Anchoring Partitions and Infill Abutting Existing Construction: Install buck anchors in bed joints 16 inches oc vertically. Build one bent end into the masonry. Expansion bolt other bent end to existing construction.

3.03 TOLERANCES

A. Maximum Allowable Variation From Plumb:
   1. In lines and surfaces of columns, walls and arises:
      a. 1/4 inch in 10 ft.
      b. 3/8 inch in any story or 20 ft maximum.
      c. 1/2 inch in 40 ft.
   2. For external corners, expansion joints and other conspicuous lines.
      a. 1/4 inch in any story or 20 ft maximum.
      b. 1/2 inch in 40 ft.

B. Maximum allowable variation from level or grades for exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
   1. 1/4 inch in any bay or 20 ft.
   2. 1/2 inch in 40 ft.

C. Maximum allowable variation of linear building line from an established position in plan and related portions of columns, walls and partitions:
   1. 1/2 inch in any bay or 20 ft maximum.
   2. 3/4 inch in 40 ft.

D. Maximum allowable variation in cross-sectional dimensions of columns and thickness of walls: Not less than 1/4 inch smaller nor more than 1/2 inch larger than walls.

3.04 CLEANING

A. Dry brush brickwork after mortar has set, at end of each day's Work.

B. Clean brickwork, using the following steps:

1. Clean initially with stiff brushes and water.
2. If staining or soiling persists, reclean with stiff brushes and a solution of trisodium phosphate, detergent, and water (1/2 cup of each in one gallon of water). Rinse with clean water.
3. If the above methods are unsuccessful, use specified liquid cleaning agent in conformance with the manufacturer's instructions. Test the cleaning agent on a sample area, selected by the Director's Representative. Proceed with the cleaning of the Work after the sample has been approved by the Director's Representative. Protect adjacent non-masonry Work from contact with the cleaning solution.

END OF SECTION