

SECTION 04212

BRICK VENEER MASONRY

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the requirements for furnishing and installing brick veneer masonry units at light court walls, new parapets and as indicated.
- B. Related Sections:
 - 1. Selective structure demolition is specified in Section 02070.
 - 2. Precast concrete specialties are specified in Section 03480.
 - 3. Gypsum sheathing is specified in Section 06169.
 - 4. Wall membrane is specified in Section 07195.
 - 5. Water repellents are specified in Section 07190.

1.02 SUBMITTALS

- A. Samples:
 - 1. Salvaged brick veneer showing full range of exposed color and texture expected in the completed work.
 - 2. For initial mortar selection, samples showing full extent of colors available. For verification purposes, colored masonry mortar for each color required, showing the full range of color to be expected in the finished work. Label samples to indicate type and amount of colorant used.
- B. Mortar and grout mix designs for Architect's review and the Owner's Testing Laboratory approval at least 7-days before block placement begins.
- C. Certificates: Show mortar and grout cement conforms with specified requirements.
- D. Visual Jobsite Mock-Up:
 - 1. Provide a mock-up sample panel, minimum 4-feet x 8-feet, as a mock-up for architectural review of materials, color, quality of workmanship, finish, and conformance with the architectural design intent. Mock-up shall include a control joint with sealant each type of brick required.
 - 2. The mock-up units will be reviewed by the Architect for visual quality only; compliance with other requirements is the responsibility of the Contractor. If any mock-up unit is deficient, it shall be redone until satisfactory results are obtained. The mock-up units, when accepted by the Architect, shall be retained at the jobsite to serve as standard of quality for all brick masonry. Do not begin installation of brick masonry until the mock-up units are accepted by the Architect.
 - 3. Mock-up of sealant work around the mock-up panel shall be provided prior to commencement of any further sealant operation.

1.03 QUALITY ASSURANCE

- A. Obtain exposed masonry units of uniform texture and color, or a uniform blend within the same ranged from one manufacturer for each type required.

- B. Tolerances:
1. Variation from plumb of lines and surfaces of walls shall not exceed 1/4-inch in 10-feet, 3/8-inch in 20-feet, 1/2-inch in 40-feet, and 1/2-inch total.
 2. Variation from plumb of external corners, expansion joints, and similar vertical lines shall not exceed 1/4-inch in 20-feet, 1/2-inch in 40-feet, and 1/2-inch total.
 3. Variation from level of exposed sills, horizontal grooves, and similar horizontal lines shall not exceed 1/2-inch in 20-feet, 3/4-inch in 40-feet, and 3/4-inch total.
 4. Variation of linear building lines from established position in plan and related portion of walls shall not exceed 1/2-inch in 20-feet, 3/4-inch in 40-feet, and 3/4-inch total.
 5. Variations of thickness of walls shall not exceed plus 1/2-inch, minus 1/4-inch.
- C. Compressive strength F'm, assumed in design shall be 1,500-psi.
- D. Pre-installation Conference: Conduct conference at Project site. Review methods and procedures related to brick masonry system, including but not limited to, the following:
1. Inspect and discuss condition of substrate and other preparatory work performed by others.
 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 3. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Mortar and Grout:
1. Deliver and store packaged materials in manufacturer's original packaging off the ground, in a dry, enclosed space until ready for use. Do not use materials that have been exposed to moisture.
 2. Stockpile and handle aggregates to prevent segregation and contamination.
 3. Maintain sand for volume proportioning of mortar and grout in a damp loose condition.

1.05 JOB CONDITIONS

- A. Environmental Requirements:
1. Do not erect brick masonry when the ambient air temperature is below 40-deg. F.
 2. Maintain temperature above 40-deg. F. for at least 24-hours after installation.
- B. For mortar and grout, follow requirements of ACI 530 for cold and hot weather conditions.

PART 2 - PRODUCTS

2.01 MORTAR MATERIALS

- A. Portland Cement: ASTM C150, Type I or II.
- B. Hydrated Lime: ASTM C207, Type S.

- C. Sand: ASTM C144. For joints less than 1/4-inch, use aggregate graded with 100-percent passing a No. 16 sieve.
- D. Water: Suitable for drinking, clean, and free of harmful amounts of acid, alkalis, salts, or organic materials.
- E. Admixtures: When required, use only non-chloride based accelerators. Do not use antifreeze substances.
- F. Pigments: When required, use mineral oxide pigments not to exceed 5-percent of the weight of masonry cement or 10-percent of the weight of portland cement in the mortar.

2.02 GROUT MATERIALS

- A. Portland Cement: ASTM C150, Type I or II.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Aggregate: ASTM C404.
- D. Water: Suitable for drinking, clean, and free of harmful amounts of acid, alkalis, salts, or organic materials.
- E. Admixtures: When required, use only non-chloride based accelerators. Do not use antifreeze substances.

2.03 MORTAR MIXES

- A. Mortar:
 - 1. Comply with CBC Table 21-A, Type S.
 - 2. Mortar shall be mixed as follows, with a total mixing time not less than 10-minutes.
 - a. Place approximately half of required water and sand into mixer while running.
 - b. Add cement and remainder of sand and water into mixer in that order and mix for a period of at least 2-minutes.
 - c. Add lime and continue mixing as long as needed to secure a uniform mass.
 - d. Colored Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required. Do not exceed pigment-to-cement ratio of 1-to-10, by weight.
 - 3. Use and place mortar in final position within 2-1/2-hours after mixing. Mortars that have stiffened due to evaporation of water may be re-tempered with water as required to restore required consistency during this period.

2.04 GROUT MIXES

- A. Grout: Comply with CBC Section 2103.4.
 - 1. Minimum Compressive Strength: 2,000-psi.
 - 2. Proportions: As specified in CBC Table 21-B.
 - 3. Materials for grout shall be measured in suitable calibrated devices. After the addition of water, all materials shall be mixed for at least 3-minutes in a drum type batch mixer. Mixing equipment and procedures shall produce grout with the uniformity required for concrete by ASTM C94.

2.05 BRICK

- A. Veneer Brick: Salvaged existing brick matching approved samples and mock-up.
- B. Provide new brick veneer to match existing as required, at light court, and as indicated.

2.06 MASONRY ACCESSORIES

- A. Veneer Anchors: Burke "Fleming Masonry Anchor System", Hohmann & Bernard, Inc. or approved equal, consisting of 22-gauge double-hooked anchor channel and corresponding 14-gauge anchors of required length, hot galvanized finish.
- B. Laminated Masonry Flashing: Laminated flashing consisting of 3-ounce copper sheet bonded with asphalt between 2-layers of glass fiber cloth; Afco Products, Inc. "Copper Fabric", York Manufacturing, Inc. "Copper Fabric Flashing", W.R. Grace "Perm-A-Barrier Wall Flashing" or approved equal.
- C. Masonry Control/Expansion Joints: Everlastic "Neo-Seal IV 2218-3" or approved equal extrusion of four connected closed-cell neoprene sponge rubber tubes.
- E. Weep Holes: White polyethylene tubing, 3/8-inch O.D. x 4-inches long.
- F. Mortar Stop: Heckman Building Products "Mortar Net", Hohmann & Barnard, Inc. "Mortar Net" or approved equal manufactured of high density polyethylene (HDPE) or nylon strands woven into a 90-percent open mesh. Thickness as required to fill air space.

2.07 SOURCE QUALITY CONTROL

- A. Mortar and grout materials will be tested by the Owner's Testing Laboratory as follows:
 - 1. When full stresses are used in design for concrete masonry, grout shall be tested for each 5,000-sq. ft. of wall area, but not less than one test per Project, to show compliance with the compressive strength required in CBC Table 21-D, Footnote 4.
 - 2. When one-half the allowable stresses are used in design for concrete masonry, testing is not required for the grout. A letter of certification from the grout supplier shall be furnished at the time of, or prior to, delivery of the grout to the jobsite to assure the grout complies with the compressive strength required in CBC Table 21-D, Footnote 4.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Cut masonry units with motor-driven saw producing clean sharp, unchipped edges.
 - 1. Cut units as required to provide pattern indicated and to fit adjoining work neatly.
 - 2. Use full units without cutting wherever possible.
- B. Wet clay brick which have ASTM C67 initial rates of absorption of more than 30-grams per 30-sq. in. per minute. Use wetting methods that ensure that units are nearly saturated but surface dry when laid.
- C. Pattern Bond: Lay exposed masonry in bond pattern to match approved mock-up.
- D. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths, and to properly locate openings, movement-type joints, returns and offsets. Avoid the use of less than half-size units at corners and jambs.
- E. Lay walls plumb, with courses level, accurately spaced and coordinated with other work.
- F. Stopping and Resuming Work: Rake back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly and remove loose masonry units and mortar prior to laying fresh masonry.

- G. Built-In Work: Build-in items specified under this and other Sections as the work progresses. Fill in with masonry around built-in items.

3.02 MORTAR BEDDING AND JOINTING

- A. Lay brick with completely filled bed, head and collar joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- B. Joints: Maintain 1/2-inch joint widths, except for variations required to maintain bond alignment.
 - 1. Tool exposed joints slightly concave using a jointer larger than joint thickness.
 - 2. Rake out mortar in joints to receive caulking or sealants.
- C. Remove masonry units disturbed after laying; clean and relay in fresh mortar. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

3.03 CAVITY WALLS

- A. Keep cavity clean of mortar droppings and other materials during construction. Strike joints facing cavity flush.
- B. Provide weep holes in exterior wythe of cavity, located above ledges and flashing, spaced 2'-0" o.c., unless otherwise indicated. Provide mortar stop material at weep holes and around openings. Install in accordance with manufacturer's instructions.

3.04 ANCHORING MASONRY WORK

- A. Anchor single wythe masonry veneer to backing with metal ties as follows:
 - 1. Anchor veneer through insulation board and into concrete masonry units with specified veneer anchors.
 - 2. Anchors in alternate courses shall be staggered.
 - 3. Unless otherwise indicated, space veneer anchors not more than 12-inches on center vertically and 16-inches on center horizontally. Provide additional anchors within 8-inches of openings and space not more than 3'-0" around perimeter.

3.05 FLASHING OF MASONRY WORK

- A. Provide concealed masonry flashings at or above shelf angles, lintels, ledges, and other obstructions to the downward flow of water in the cavity.
- B. Place through-wall flashing on bed of mortar and cover with mortar.
- C. Extend flashing from exterior face of brick veneer, through the cavity and turn up 2-inches and secure to sheathing.
- D. Provide weepholes in the head joints of the same course of masonry embedded in the flashing mortar.

3.06 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or 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.
- B. During tooling of joints, enlarge voids or holes, except weep holes, and fill with mortar.

- C. Clean exposed brick masonry surfaces by the bucket and brush hand cleaning method or by high pressure water method.
 - 1. Comply with requirements of BIA Technical Notes No. 20.
 - 2. Use commercial cleaning agents in accordance with manufacturer's instructions.

3.07 QUALITY CONTROL

- A. General: Comply with requirements specified in CBC.
- B. Mortar and Grout:
 - 1. At the beginning of work, at least one test sample of mortar and grout shall be taken on three successive working days and at least at one week intervals thereafter. The samples shall be continuously stored in moist air until tested. They shall meet minimum strength requirements specified in CBC.
 - 2. Test specimens for mortar and grout shall be made as specified in UBC Standards.

END OF SECTION