

040000 Masonry

Sections Included In this Standard:

- 1.1 Reference Standards
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- 1.4 Masonry Restoration and Cleaning
- 1.5 Water Repellents
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1.1 REFERENCE STANDARDS

- A. The Brick Industry Association (BIA), 11490 Commerce Park Drive, Reston VA 20191, www.bia.org
- B. National Concrete Masonry Association (NCMA) 13750 Sunrise Valley Drive, Herndon, VA 20171-4662, www.ncma.org
- C. Portland Cement Association (PCA), 5420 Old Orchard Road, Skokie, IL 60077, www.portcement.org
- D. Cast Stone Institute, 813 Chestnut Street, Lebanon, PA 17042, www.caststone.org
- E. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959, www.astm.org
 - 1. ASTM C216 Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
 - 2. ASTM C652 Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale)
 - 3. ASTM C780 Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
 - 4. ASTM C270 Standard Specification for Mortar for Unit Masonry
 - 5. ASTM C1019 Standard Test Method for Sampling and Testing Grout
 - 6. ASTM C109/C109M Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

1.2 UNIT MASONRY

- A. CLAY UNIT MASONRY (BRICK)
 - 1. Brick Type: For new work, brick shall be “smooth red flashed brick” complying with ASTM C216 and C652, type HBS, grade SW. Building additions and renovations shall match existing brick. The use of different color brick for accents and trim is strongly discouraged, particularly in the Historic District.
 - 2. Manufacturers: Full brick shall be manufactured by one of the following:
 - i. Cherokee (Macon, GA)
 - ii. Carolina Ceramics (Columbia, SC)

iii. Triangle (Raleigh, NC)

3. Coursing: New brickwork adjacent to existing brickwork, shall be coursed to match the existing brickwork.
4. Standards: All new brick work, including but not limited to expansion joints, ties and fasteners, and accessories, shall comply with the guidelines established by the Brick Industry Association (BIA).
5. Expansion and Control Joints: Expansion joints and control joints shall be detailed and specified to accommodate potential movement that may cause cracking.
6. Sealant Joints: Sealant joints shall have backer rod and sealant color shall match adjacent mortar joints to the extent possible. For exposed joints that do not receive a coating, silicone based sealant joint materials are required. See also Section 07000.

B. "THIN" BRICK IN PRE-CAST PANELS

1. Manufacturers: "Thin" brick shall be manufactured by one of the following:
 - i. Metro Brick & Stone Co. (Dallas, TX)
 - ii. Summitville Tiles (Summitville, OH)
2. Such products shall not be used in the historic district of campus.

C. CONCRETE UNIT MASONRY

1. Concrete Masonry Units (CMU): Concrete masonry unit construction shall comply with guidelines established by the National Concrete Masonry Association (NCMA).
2. Mortar Type: Specify type "N" for above grade masonry; specify type "S" for below-grade and other structural applications.
3. Expansion and Control Joints: Expansion joints and control joints shall be detailed and specified to accommodate potential movement that may cause cracking.
4. Reinforcing and Grouting: Hollow cells shall be reinforced and grouted per structural requirements. Test grout per ASTM C 1019.

D. MORTAR

1. Mortar: Mortar shall be specified based on performance criteria. Mortar specification and construction shall be sensitive to masonry materials especially for repairs or renovations of historic structures. To the extent possible, color shall match existing.
2. Mortar Joints: Mortar joints shall be tooled slightly concave. Struck or raked joints shall not be used in exterior walls unless required to match the existing joints in historic buildings.
3. Calcium chloride shall not be added to mortar mixes.
4. Test mortar per ASTM C780 and C109.

D. MASONRY ACCESSORIES

1. Metal Accessories: Brick ties, plates, fasteners, lintel angles, relieving angles and other metal accessories shall be galvanized steel (minimum G-90) or stainless steel.

2. Flashing: Flashing shall be carefully thought out and positioned. Flashing shall extend beyond openings and have end dams at vertical terminations. Through wall flashing for brick veneer shall extend a minimum of 8-inches above weep location. Coordinate and detail the interface between below grade waterproofing and through-wall flashing, as well as base flashing and weeps. For stone coping and brick masonry veneer above roof areas, through wall flashing shall be fabricated from copper sheet metal and shall have receivers for roof counter flashing. Stainless steel flashing may be used in non-historic areas.
3. Cavity Walls: Cavity walls shall be specified, detailed and constructed so that cavities drain freely without being obstructed with mortar accumulations in the cavity. Weep media products shall be used where necessary. Brick ties shall be specified with built-in drips to prevent water from bridging the cavity.
4. Weeps: Weeps shall be installed at all through wall flashing locations in accordance with Brick Institute of America guidelines. Open head joints with honeycomb plastic weep inserts are required rather than cords, tubes or open head joints. Locate through wall flashing and weeps a minimum of 12-inches above adjacent roofs to allow reroofing without interfering with their operation.

1.3 **CAST STONE**

- A. Use of "cast stone" (a Division 4 masonry product) or "architectural precast" (a Division 3 concrete product) in place of natural cut stone as decorative pieces to match, accentuate, or blend with the architectural style of the historic buildings on Campus is both permitted and encouraged. Window sills, headers, string courses, lintels, column caps, wall coping, and other accent details may be cast stone or architectural precast.
- B. Cast stone may be dry cast ("zero slump" concrete) or wet cast.
- C. The specifications shall require the manufacturer be a producing member of the Cast Stone Institute (CSI) and/or an Architectural Precast Association (APA) Certified Plant, with at least five years manufacturing experience. Bidders shall be required to provide satisfactory owner, architect, and contractor references on past projects.
- D. For either product, detailed shop drawings shall indicate structural attachments, flashing, dimensions, and other pertinent information.
- E. Provide full width thru-wall flashing with end dams. Rake back joints and install backer rod and sealant.
- F. Cast stone shall include a silane admixture or be coated with a siloxane water repellent to reduce surface absorbency.
- G. Reinforcement shall be per the applicable Architectural Precast Association guide spec-galvanized or epoxy-coated steel where coverage is less than 1.5 inches. The architect may also consider the use of non-corroding fiberglass reinforcement.
- H. In addition to tests for compressive strength, absorption, and others as required by the Cast Stone Institute, the Architectural Precast Association, or the American Concrete Institute, the specifications for cast stone or architectural precast shall require testing at the manufacturer's plant for chloride ions in the stone/precast and mortar per ASTM C1218 (water-soluble chloride) and/or ASTM C1152 (acid-soluble chloride). The maximum allowable chloride content, which varies depending on the exposure of the stone or precast, is established by ACI 318. These, and all other tests, shall be performed on one sample per every 500 cubic feet of material (stone or precast).

- I. For historic buildings, refer to Secretary of Interior Preservation Briefs, and Appendix D – Historic Buildings of the UF Design and Construction Standards, and www.ppd.ufl.edu/HistoricCampusWebsite/UFCampusHistoricPreservationGuidelines.html.

1.4 MASONRY RESTORATION AND CLEANING

Special care shall be used for restoration and cleaning of existing masonry wall surfaces. Do not sand blast or pressure wash brick surfaces as such cleaning techniques may deteriorate the integrity of the brick masonry and mortar joints. Before chemical cleaners or other methods are used, a sample area in an inconspicuous area should be test cleaned to verify that the method will not damage the masonry surfaces. Refer to www.ppd.ufl.edu/HistoricCampusWebsite/UFCampusHistoricPreservationGuidelines.html

1.5 WATER REPELLENTS

- A. If water repellent systems are used, provide breathable systems, not barrier systems.
- B. The use of water repellent systems on any buildings with historic designations may be used for special conditions with prior written approval from the Director of the responsible University maintenance entity. Reference Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitation. (Latest edition.)

1.6 QUALITY CONTROL

- A. Pre-Construction Conferences: The University may coordinate a building envelope preconstruction conference for all new construction and exterior wall renovation projects. Participants should include the University office responsible for administering the project, the University office responsible for maintaining the facility, the Architect/Engineer, Contractor, Masonry Installation Contractor, and other related trades representatives.
- B. Mock up panel assembly: Depending on the facility, a mock up panel assembly may be required to demonstrate the interfaces of building envelope systems. The project specifications shall indicate the nature of the mock up panel(s). Depending on the complexity of the building envelope systems, it may be necessary to provide schematic details of the mock up panel(s).
- C. Testing: Depending on the facility, performance testing of installed masonry systems shall be performed to verify that they are installed properly. The project specifications shall indicate the frequency and use of standard field test procedures developed by ASTM.
- D. Building Commissioning: The University may employ an independent consultant to serve as building envelope Commissioning agent. In such cases, the technical specifications should stipulate Commissioning procedures and requirements.

END OF SECTION