

Design and Construction Standards

Division 04 – Masonry

General

In general, follow the guidelines below when designing, specifying and installing clay and concrete masonry, stone or similar masonry, and associated masonry accessories. Unless specifically indicated otherwise, these guidelines are not intended to restrict or replace professional judgment.

1. All masonry that is exposed to view (brick, CMU, stone, etc.) shall require selection prior to bidding. The Professional shall determine early in design phase if masonry selection is applicable and determine the criteria for selection.
 - a. Submittals shall be obtained from suppliers along with unit costs and applicable samples.
 - i. The Professional is required to obtain a minimum of three samples for inclusion in specification.
 - ii. Sample boards may be required – verify requirement with Physical Plant.
 - iii. Sample panels may be required to be erected on the jobsite for review. Panels shall be 4' x 8' unless otherwise allowed.
2. Masonry units shall be intermixed at site to ensure pattern randomness. If patterns are predetermined, the lay-up shall be per the design.
3. Cleaning shall not be hazardous to environment. This includes application or run-off or cleaning agents, debris, sealants, or similar.
4. Mechanical support of cantilevered, overhung, or similar masonry units shall only be with the express written permission of the EMU Physical Plant.
5. Coursing at Openings:
 - a. Coursing shall be designed with appropriate opening sizes and locations to develop full masonry unit coursing. Half height coursing may only be installed when approved by the EMU Physical Plant. Alternate coursings are prohibited.
 - i. Coursings shall accommodate lintel installations without extensive modification of surrounding masonry.
 - b. Provide appropriate door and window head heights to properly align with coursing.
 - c. Masonry sills shall have positive slope to promote drainage away from openings. Slope sills appropriately to align with coursing. For stone sills, provide flat “lugs” where necessary at ends of sills.
6. Marking of masonry to be left exposed or painted shall not be done with inks, paints, or other elements that may bleed through the finish.
7. Brick or mortar stains are prohibited. Masonry and mortars should have integral color where needed.
8. When possible, brick ledges should finish 2” to 4” above finished grade. Step brick ledges in 16” maximum vertical steps where grade slopes.

Section 04 01 20.91 Unit Masonry Restoration

1. Contractor / Sub-contractor shall have a minimum of 10-years experience prior to commencing work. Contractor / Sub-contractor to provide detailed resumes to University. The following paragraph, or similar requirements, shall be included in specifications for restoration work:
 - a. Masonry Subcontractor (who shall be a Masonry Restoration Specialist) shall submit references from previous projects and resumes of all employees to be assigned to the project.
 - i. Resumes shall include all projects of comparable size and materials worked on over the past 10 years, and the roles in which those individuals were utilized for said projects.
 - ii. Project foreman shall have a minimum of 10 years' experience with masonry restoration work of similar type.
 - iii. Provide references for a minimum of 5 projects among those listed, including contact names and contact information to verify work completed and Owner satisfaction.

Section 04 01 40.91 Stone Restoration

1. Contractor shall have same experience required under Section 04 01 20.91 Unit Masonry Restoration.
2. Wire brushes are prohibited.

Section 04 05 13 Masonry Mortaring

1. Mortar shall be appropriate for the proper strength and mixture as necessary for the structural design.
2. Colored mortars shall maintain required minimum strength and not be affected by the coloring agent.
 - a. Where necessitated by masonry or appearance, use white silica sand and white Portland cement.
3. Mortar shall include integral sealer where sealant is necessary.
4. Mortar joints shall be tooled as follows:
 - a. To promote positive drainage out of and away from the masonry
 - b. Shall avoid level / flat areas which could collect moisture (such as raked joints)
 - c. Uniform and clean in appearance. Use the same tooling throughout the building.
5. All mortars shall be chemically compatible with surrounding structure and shall not corrode metals, flashings, anchors, or other accessories.

Section 04 05 19 Masonry Anchorage and Reinforcing

1. Provide appropriate ties and anchors for all masonry assemblies. Ties and anchors shall be commercial grade sized for proposed use. Residential style ties are prohibited. Material shall be stainless steel, unless specifically authorized by the Physical Plant.
2. Reinforce joints with ladder or truss type reinforcing.
3. All reinforcing steel shall be appropriately tied, spliced, and grouted into place. Reinforcing shall be part of structural design.
4. Reinforcing shall be continuous in walls. Where openings are encountered, welds, hooks, or appropriate termination shall be provided to maintain reinforcing. All openings, including those by mechanical trades, must be properly designed to maintain structural integrity.

Section 04 05 23 Masonry Accessories

1. Weep Holes: Stamped aluminum louvered vents of size to fit head joints in brickwork are preferred over treated sash cord or rope. If cord or rope is specified, they shall be cotton cord or rope, and the material shall be left in place and cut off flush with the joint. Artificial fiber ropes, such as nylon or polypropylene, are prohibited.
2. Mortar Net or a comparable mortar collection product shall be added at the base of the veneer and single wythe concrete masonry walls to prevent clogged weep holes.
3. Weep holes to be spaced at a maximum of 24" O.C. or as required by Code.
4. Flashing to be copper, asphalt coated copper, dead-soft stainless steel, and rubberized asphalt flashing materials
 - a. Flashing to be mechanically attached to substrate for support. Adhesive attachment is prohibited.
 - b. Flashing to extend at minimum four inches beyond opening ends.
 - c. Flashing to be out of wall to ensure proper function.
 - d. Flashing at roofs adjacent to masonry shall include flashing and counter flashing, with reglets or similar insets into mortar joints. Pitch pockets or bar clamps are discouraged.

Section 04 20 00 Unit Masonry

1. Clay Facing Tile:
 - a. Brick to be generally specified to match brickwork in a specific adjacent building.
 - b. Bricks to show no efflorescence in accord with ASTM Method C67
 - c. Brick to be laid with modular coursing, three courses to every 8 inches unless otherwise specified to match existing coursing. Brick shapes not "Standard" shall only be allowed with express written consent of the Physical Plant.
 - d. A sample panel shall be constructed for inspection and approval. Panel to be built on firm foundation mimicking construction site.

2. Concrete Masonry Units:
 - a. Cinder Blocks are prohibited.
 - b. Concrete block shall be used wherever appropriate for interior walls to promote sound barriers, fire areas, and ease in maintenance. Exposed block at these locations shall be reviewed with EMU prior to final completion of construction documents. Suggested locations for concrete block walls include:
 - i. Stairwell perimeter walls
 - ii. Corridors
 - iii. Demising walls for office suites
 - iv. Storage rooms / Janitor closets
 - v. Fire rated partitions
 - vi. Loading docks
 - vii. Electrical / Mechanical / Data / Phone rooms
3. Block types and uses shall be as follows:
 - a. Load-Bearing: normal weight, standard size
 - b. Non-Load-Bearing: lightweight, made with expanded shale aggregate and of standard size
 - c. Exposed exterior: washed crushed limestone coarse aggregate and washed limestone sand. Block is required to have integral waterproofing.
 - d. Architectural Faced blocks shall have integral coloring and an integral waterproofing / sealing agent. Mortars associated with these blocks shall also have integral sealers. Use of sealing agent applied after masonry erection shall only be allowed with written consent of the Physical Plant.
 - e. Special Shapes of blocks may be required at finish locations for such items as sills, jambs, lintels, decorative locations, etc. The Professional shall identify each type on the drawings.
 - i. Provide bullnose edge for all jamb blocks.

Section 04 40 00 Stone Assemblies

1. Limestone and similar products shall be designed and installed per guidelines of the Indiana Limestone Institute (ILI).
2. Stone shall be a minimum of 4" above grade when adjacent to lawns or planting areas. Refer to "brick ledge" locations identified elsewhere in this standard.
3. Use a two-component, non-staining urethane elastomeric joint sealant for pointing. Specify products that do not require priming of joint surfaces.
4. Stainless steel dowels, anchors, and other accessories are required when used for setting stone.
5. Back surfaces shall have a water barrier.
6. Marbles, Granites, or other stone shall be reviewed for physical properties and proposed applications with the Physical Plant prior to specification or installation.

End of Division 04 – Masonry