

4 Masonry

GENERAL

Designers shall verify that all applicable portions of these standards are incorporated into the project's design, drawings, specifications and final construction. Requests for variances from these standards shall be submitted in writing to the DCM Project Manager, using the KU Standards Variance Request Form found in [Appendix A1.1](#), for review and written approval or rejection as indicated on the form.

RELATED DOCUMENTS & REQUIREMENTS

Refer to the following for requirements that also apply to work of this section.

- Division 1 - General Requirements**; refer to sections regarding construction testing and field quality control requirements.
 - Quality Control Testing: Unless directed otherwise, the Owner shall separately contract for quality control testing during construction, not the Contractor. Verify with DCM for each project.
- Division 3 - Concrete**: Coordinate with concrete specifications, if in this section.

MASONRY – DESIGN GUIDELINES

Material Selections: Masonry selections shall be discussed in detail with the Office of Design and Construction Management regarding color and texture conformity to the campus building materials palette.

- Existing Materials: The Designer is expected to closely match existing mortar colors and materials of adjacent work on remodeling and addition projects.
 - Older Buildings: Some of these mortars are lime mortars. If unsure of the mortar type when doing work which will place new mortars in contact with old mortars, such as tuckpointing, ask DCM to have mortars tested to verify type and composition. Designer will be responsible for specifying a compatible mortar with existing materials.
- Corridor Walls: Structural glazed tile, brick, ground-face concrete masonry units or tile finishes are recommended for maintenance-free durability. KU's experience indicates that stone walls may not be a good choice in public areas.

Material Approvals: Neither the Designer nor the Contractor shall consider masonry selections final until a sample masonry wall panel has been reviewed and approved by the Office of Design and Construction Management and the Designer.

Seismic Design: All masonry walls, both interior and exterior, shall be designed, detailed and reinforced to comply with applicable seismic code criteria. Designers shall verify required detailing with a structural engineer.

Brick Specifications: Brick may be incorporated into each project by either specifying one or more brick manufacturers, colors and patterns that have been pre-approved by the University, or by an allowance amount in the base bid.

- The University prefers that all brick for a project be pre-selected and specified in the project bid documents.
- Brick being used to remodel or within additions to existing buildings shall be pre-selected with the Owner and specified, or it shall be incorporated as an allowance. It is NOT acceptable to specify brick, in any case, to “match existing”, since this can lead to differing judgements and cost disputes with the low bidder.
- If an allowance is approved by the University, the cost of brick should be specified in the construction documents as an allowance, as a cost per thousand brick, which will be adjusted based upon the Contractor's final cost per thousand and the total quantity for the project.
- The specifications shall state that the Contractor's base bid shall include the delivery, handling and installation of all masonry materials. The only amount to be adjusted by allowance is the purchase price of the masonry materials.
- The bid documents shall include a space for bidders to identify the quantity of brick required to do the project, and upon which the allowance adjustment shall be based.

Stone:

- Limestone Exterior Walls: Detail to avoid placing limestone in contact with the ground, where moisture can be wicked into stone and cause staining or exfoliation. Use of other non-absorbent materials is recommended, such as cast stone, granite or concrete, to a height of 12" minimum above finish grade.
- Only stainless steel anchors are permitted for use with stone.

Concrete Masonry Units:

- Interior CMU partitions shall not be less than 6" thick.
- Exposed exterior concrete block surfaces shall all be waterproofed in a manner acceptable to DCM, and shall NOT be left unfinished.
- Parapet walls of concrete block construction shall be covered with roof flashings or a waterproof membrane compatible with adjoining roofing materials.

Weep Holes: Provide for each application as recommended by the appropriate professional association (BIA, NCMA, ILI).

- Weeps shall be spaced at 16" or 24" o.c. maximum, depending upon application.
- KU encourages the use of cotton rope weeps, that extend along the profile of the thru-wall flashings and are tied to a joint reinforcing wire or tie at least 16" above the thru-wall location of the weeps. Other weep details shall be reviewed with DCM.
- Weeps and flashings shall be shown to extend through wall at a point above finish grade.
- Cavities shall be shown to be grouted full below the bottom of thru-wall flashings, with additional flashings behind grouted cavity as required to prevent water intrusion.

CAST STONE - 04720

The University has had recently had some poor experiences with cast stone materials, mostly related to damage caused in handling by fabricators and erectors. Designers are encouraged to use real stone materials as much as possible.

- If cast stone products are used, Designers must verify that strict requirements are specified regarding handling and corrective work or replacement of defective or damaged materials.
- Review all cast stone applications, details and specifications in detail with DCM.

UNIT MASONRY – 04810

Standards: Masonry work shall be detailed and specified to meet the latest requirements of the following standards, as applicable to the type of masonry in each project.

- Brick Institute of America.
- National Concrete Masonry Association.
- Indiana Limestone Association.

Field Quality Control:

- Testing: An independent testing lab shall perform all required testing. Unless stipulated otherwise, the Owner shall retain the services of the testing laboratory.
- Sample Wall Panel: The Contractor shall construct a masonry sample wall panel, not less than 4' wide by 4' high, which incorporates each kind of masonry material to be used in the project, and demonstrates typical details of construction.
 - These include through-wall flashings, copings, control joints, expansion joints, corners and aesthetic details such as reveals or bands. Verify specifics with DCM.
 - Sample panel shall be located in proximity to existing building and parallel to primary existing wall elevation, so materials can be compared with the same sun exposures.
 - Sample walls shall be constructed before brick or other masonry materials are ordered in quantity, and shall be built upon a plywood-covered storage pallet, for portability.

Joint Reinforcing: All joint reinforcing in exterior walls shall be hot-dip galvanized.

- The specs shall stipulate that if the exterior veneer wythe is to be installed after the backup wythes are completed, the joint reinforcing shall be two-piece joint systems with adjustable, U-shaped wires which extend into the exterior veneer.

Through-Wall Flashings: The following materials are to be used in the locations noted, and shall be indicated in the project details and/or specs.

- Cut Stone or Precast Concrete: Stainless steel sheet flashing, with hemmed or soldered seams and joints.
- Brick or Stone Masonry: Copper-clad fabric; EPDM flashings are not recommended, and shall not be used if flashings are to be left exposed to UV / sunlight for extended periods of time, or if inner wythe is built before exterior wythe.
- Laps: 6" minimum, sealed with mastic at laps between like materials and where setting upon or abutting dissimilar materials.
- Parapet Flashings: Thru-wall flashings are required under parapet wall copings.

Concrete Masonry Units:

- Quality Control: The Contractor shall inspect all concrete blocks before installation, and shall cull out and remove all units that have chips or other blemishes that exceed specified tolerances.
 - Units with minor chips that are still within tolerances shall be culled out by the mason and laid in locations that are not readily visible, such as above ceilings or at higher wall elevations.
- Special Units: Provide bullnosed corners on CMU's at all outside corners or window sills.

Tooled Joints:

- All joints shall be uniformly tooled repeatedly in both directions at intersections, forming neat ridges on all sides, with no lipped edges.
- Masonry joints, as well as pattern bond, of new work shall match that of existing buildings, when new work occurs within or immediately adjacent to existing buildings.
- Raked joints are NOT acceptable.

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