

ADVANCED MASONRY DETAILING

Once you have mastered the basic technical requirements of masonry construction, you can concentrate on the dozens of advanced details which will make your design unique. Most of these advanced design tools do take more time and care and consequently, they cost more money than standard masonry construction. Used judiciously, however, these techniques can transform a simple brick box into an award-winning piece of architecture

COLOR

Color is one of the most fundamental tools at your disposal. Color in masonry is integral. It doesn't wear off. It doesn't need recoating. If it is chipped, the color is still there. Strong horizontal stripes can dramatically change the look of your building. Since masonry is laid in horizontal bands anyway, adding horizontal stripes to the design will typically cost no more than a plain masonry wall. More intricate color patterns will raise the cost of the masonry. Contact a mason contractor for advice about pricing.

Bricks are made from naturally occurring clay deposits. There are hundreds of colors and textures of brick to choose from. Most of them are earth-toned. You can also get glazed brick and concrete block which has a brilliant-hued glass coating fired to the surface of the masonry. Glazed brick and block does not breathe like most masonry does. Consequently, you need to be careful to ventilate the cavity behind a glazed veneer to prevent water vapor build-up.

TEXTURE

Brickwork of a century ago was often deeply textured, allowing shadowlines to add interest to the wall. Modern cavity walls and cored bricks and blocks make building deeply textured walls more difficult. If you keep the change of plane shallow ($3/4$ " for brick and 1" for block) you will not be exposing the holes in the units.

Sawtooth patterned masonry stripes can add a dramatic accent to the building at a reasonable cost. These deeply shadowed stripes are typically created by setting a row of brick or block at a 45-degree angle to the face of the building. The masonry units directly above and below the rotated units need to be solid so that their cores will not show. You can also create a large panel of texture by stacking these rotated units. This deeply ribbed panel will catch light and shadow, changing as the sun moves across the building. You might need to add water repellent or a wash of mortar to make sure that the "sill" at the bottom of the sawtooth pattern does not absorb water.

Corbels are another way to add depth and texture to your walls. They are built by cantilevering a row of masonry out beyond the face of the wall. If the corbel is made with a solid unit, the brick or block can extend $1/3$ of its width. ($2/3$ supported firmly in the wall, $1/3$ hanging out) If you are using cored units, the cantilever is typically shallow -- $1/2$ " to 1". If you are designing a tall corbel in a cavity wall with several rows of corbelled bricks, you should also cantilever the supporting wall behind the veneer. In a steel stud support wall, this is done with a kicker behind the corbel.

BRIDGING AN OPENING

LINTELS

Lintel beams (often mistakenly called bond beams) are an excellent way to create an opening in a masonry wall. They are integrally fireproofed. They are built and installed by the masons -- no coordination of different trades required. Lintel beams need adequate bearing at each jamb. Your structural engineer usually determines the bearing length required. Lintel beams can be built to bridge nearly any size opening. The larger the opening, the deeper the beam.

If you have deeply recessed window or door frames, make sure that your details at the head of the opening show a U-shaped lintel beam. This unit has a closed bottom while a bond beam does not. If the mason mistakenly installs a bond beam, the lintel will be structurally stable but the core holes of the block will show. The core holes can be filled with mortar, but they will always look cheezy.

MASONRY ARCHES

Arches were first used to span openings in masonry walls because an arch keeps all parts of the wall in compression. Masonry is strong in compression but weak in tension. Arches are built by placing a temporary support called a center in the opening and laying bricks around it. When the mortar is cured and firm the center is removed leaving the characteristic opening with a curved top. One way to save money with arches is to make them all the same size. The same centering form can be used over and over again for all openings.

INTEGRATING MASONRY WITH OTHER MATERIALS

Sometimes adding other materials to your wall will give it that spark it needs. It is important to consider the compatibility of the two materials before using them together. Compare the coefficient of expansion of the two materials. You want all parts of the wall to move together as one piece.

Metal is often used as part of a brick wall. Because metal expands and contracts much more aggressively than brick does, a metal rail or post needs a slip joint or a cushion of flexible sealant to keep it from cracking the masonry during freeze-thaw cycles.

Glass block is a natural accent piece for masonry walls. Glass block are manufactured to a size which will integrate easily with other masonry. The bricks and the glass block are both installed by the same craftsman. Those little pin dots of light can really make your design sing.

Architectural precast is another natural ally of masonry. They have similar reaction to heat and cold. The colors blend well together and both resist weather well. Window sills and parapet copings are the most typical uses of precast, but columns, balconies, and deeply shadowed cornices are also possible.

Natural or artificial stone also works well as a part of a masonry wall. Small pieces of stone (18" x 18") are laid up by the mason as just another piece of oversized brick or block. Larger pieces of stone are set on stainless steel anchor clips which are tied back to the structural support wall behind the veneer. Because very large pieces of stone may move differently than the field of brick or block surrounding them, you might need to consider isolating the stone panels from the rest of the wall with a flexible sealant joint.

CUSTOM-DESIGNED MASONRY UNITS

The vast majority of masonry work is done with standard sized brick and block. Occasionally, however, only a specialty shape will do. Consult with your supplier to see what specialty molds he has in his mold room. Sometimes modifying an existing mold will do the job and will save the project money. If a new mold is needed, the manufacturer must have an isometric dimensioned drawing showing the exact size and shape of the proposed unit.

Non-square corners are one of the places you might need a custom masonry unit. The brick manufacturer probably already has a mold for 135 degree and 120 degree angles. If your angle is an unusual one, sometimes a universal angle brick will do the trick. It is a brick with a circular pivoting end which can be rotated to any angle. If you need a unit to accommodate an acute (less than 90 degree) corner, a custom unit will do a much better job than a mitered joint. Blunt the corner of a sharp-angled brick to avoid chipping.

If the job calls for a tightly radiused column or tower, a curved brick or block will do the job with finesse, avoiding the faceted angles which show up when you use square shapes to build a round tower.

You can even hire an artist to design, build and install a one-of-a-kind masonry bas relief panel. This is a great way to integrate art with the architecture. The artist obtains clay which will match the bricks from the brick manufacturer. He or she then sculpts the panel inside of a plastic enclosure which keeps the clay from drying out and shrinking. Once the design is complete, the artist cuts it into brick shapes, numbers the bricks, dries them and fires them. The final step is to lay the sculpted bricks in the wall.