GLASS BLOCK Tips & Tricks

by Ron Porter

The phrase "attention to detail" is something of a cliché in the building trades. But if there's one architectural element where it applies, it's glass block. The difference between an acceptable installation and an excellent job — one that turns heads and that you can really be proud of — is all in the details. I have been installing glass block for over 14 years, and some of the techniques I've picked up along the way may help demystify what otherwise seems a difficult installation. With practice, any skilled tradesman can do a clean, well-laid-out, crisply executed job.

Glass block has been around since the 1930s. In the past, it was commonly used where additional daylight was required but where security was a concern, such as in factories or commercial spaces. But because it's attractive as well as durable, glass block has enjoyed a recent renaissance in residential and light commercial applications. Shower walls, kitchen and bath partitions, and workspaces in professional offices can all benefit from the thoughtful use of this material.

I use only real glass block (Premier Series, Pittsburgh Corning, 800 Presque Isle Dr., Pittsburgh, PA 15239; 800/624-2120; www.pittsburghcorning.com) because it's time-tested. I have my doubts about

With careful layout and installation, a glass block wall is a durable and elegant addition to any home

Figure 1. Because glass block cannot be cut, layout is crucial. Here, the author dry-stacks the last few courses to make sure he ends up where he planned.

Figure 2. Masking adjoining surfaces at the beginning of a job saves a lot of cleanup time at the end.

Figure 3. The author uses acrylic-fortified Quikrete mortar, which he mixes with an electric drill and paddle mixer.

the long-term durability of acrylics, and I doubt if any synthetic could be as abrasion- or UV-resistant as glass. Glass block is not structural, so it must be set on a firm foundation, and no loads can be imposed upon the wall after installation.

Layout

There are four steps to any glass block installation: layout, setting, grouting, and cleaning. If you need to spend a little extra time anywhere in the process, it's in the layout. If you don't get the layout right, nothing else you do will save the job.

Do the math. Before anything else, measure the opening where the block is to be installed and assess it relative to the size of block you'll be using. Figure your mortar joints at 1/4 inch, and make sure your block stack comes out evenly, both vertically and horizontally, since there is no such thing as cutting glass block.

If the arithmetic looks good (plus or minus 1/4 inch over 7 feet is acceptable), you can make small adjustments as you proceed. If it doesn't look like you can keep evenly spaced joints (give yourself no more than 1/16 inch to play with), then you'll have to adjust the width or height of the opening. If the opening isn't right, correct it before you begin setting block. If you have to deal with a radius, lay it out now.

About three or four courses from the top you can dry-stack a column of block to figure your final corrections (see Figure 1). I often dry-set the first course to get a visual sense of what I'm working with. Remember that unlike a window or door installation, there is no such thing as shimming with glass block, so check for plumb and level on all four

sides of the opening.

On a radiused wall, such as the one pictured in this article, the vertical grout spaces will be pie-shaped (the face of the blocks will be tangent to the curve), so the joints will be wider at the outside of the curve than on the inside. It is important to make sure these joints are uniform on both sides of the wall — this is one place you can't make any corrections after you've started. If you have a tight radius to work with, radiused blocks are available.

I lay out tape lines with blue painter's tape wherever the installation intersects a floor, wall, or ceiling. This helps keep transition lines straight and true. I'll also sometimes tape down masking paper to protect adjoining surfaces, which helps with cleanup at the end of the job (Figure 2).

Setting the Block

One of the first things everybody asks about is the mortar. There are special proprietary glass block mortars available, but I don't use them because they cost about $18 a bag and are unnecessary. For about $14 less I can buy a bag of Quikrete mortar mix (Quikrete, P.O. Box 2836, Norcross, GA 30093; 404/634-9100; www.quikrete.com). Fortified with about 1/2 cup of Quikrete Acrylic Fortifier per 3 gallons of mixed mortar, it works fine. I have done hundreds of installations, and I have never had a problem with the mortar. I mix it in a drywall bucket with a paddle mixer and a 1/2-inch drill motor at low speed (Figure 3). The mortar should be wet but not runny. If it's too wet, it won't stick to the block.

Spacers. Premanufactured plastic spacers are available, but I just use pieces of 1/4-inch by 3/4-inch screen molding cut into spacers that are a couple of inches longer than the block is wide. I set two pieces of screen molding on top of each block in the course that has already been laid, butter the bed and head joints for each successive block, and lay it into place (Figure 4). That ensures a consistent 1/4-inch bed joint. After the mortar has thickened (usually about 1 1/2 to 2 hours, depending on temperature and humidity), I go back and gently remove the spacers. But I don't throw them away — I have a whole collection of them, and the older ones are worn down enough that I can use them to set a minus-1/16-inch joint. If I have any doubt about whether the spacers are ready to remove, I gently push on the mortar with my finger to see if it's firm. Using this method I can go up three courses before I have to stop and wait for the mortar to set (Figure 5). If it's a waterproof installation, like a shower wall, I'll go back and pack mortar into the holes left by removing the spacers.

Plumb, level, and square. As you work your way up the wall, check each block with a torpedo level to make sure it's sitting true (Figure 6, next page). I also periodically check the overall true of the wall with a 4-foot level. If it's getting out

Figure 4. Wood spacers made from screen molding ensure consistent bed joints.

Figure 5. Three courses of block can be laid before waiting for the mortar to set.

Figure 6. Every block gets trued with a torpedo level (left), while the 4-foot level measures the overall plumbness of the wall (right).

of line, you can knock it back into shape with a rubber mallet (Figure 7). Don't be shy with this tool. Glass block is amazingly tough, and you can really beat on the block until the mortar has set up. You probably have three to five hours to make adjustments, depending upon the temperature and humidity of the room. Remember that the mortar will set up faster the closer to the ceiling you get, especially if you are working in a space that has temporary heat.

Figure 7. A rubber mallet is the tool of choice for making minor adjustments.

Wall Ties, Reinforcement, and Expansion Joints

Lateral support and joint reinforcement are required by the *UBC* (sections 2110.3 and 3110.4), spaced no more than 16 inches on-center. If you are in a seismically active area, check local requirements. Lateral support typically consists of wall ties (also called panel anchors), which are galvanized metal strips that you embed in the mortar joint and nail to the wall with galvanized nails (Figure 8).

Reinforcement uses a galvanized wire ladder-bar, like the type that block masons use. Bear in mind that the reinforcement takes up space in the joint, so you will have to arrange your spacers accordingly.

Expansion joints are flexible strips that replace the mortar at the top (head joint) and at the outer vertical edges (jambs) of the block installation. This material prevents structural loading of the block by accommodating normal movement from expansion and contraction, and is required by the *UBC* (section 2110.6) and the manufacturer. You can usually buy all of these accessories from your block distributor.

Figure 8. Every other course gets a panel anchor nailed to the wall with galvanized nails and embedded in the mortar.

Raking the Joints

One of the things that catches people's attention about my glass block installations is that the joints are

Figure 9. Sanded grout is applied evenly to the raked-out mortar joints.

clean, crisp, and symmetrical. Here's how to do it. After you have set a course, rake the mortar joints about 1/4 inch deep, using one of your wood spacers. Do not use a metal tool, because you risk scratching or chipping a block. After all of the block is installed, you'll come back and grout the joints with sanded grout, just like you'd do with tile (Figure 9).

Grouting the joints. There is no way you'll get the mortar to finish out as evenly as grout, so don't bother trying. Besides, with this method, if the mortar does crack, it's irrelevant since the grout will hide the cracks. If you can grout tile, you can grout glass block; there's no difference. Apply the grout with a rubber float, work it in well, let it set up, and wipe it down with a grout sponge (Figure 10). Keep the sponge clean and a bucket of clean water handy (this is the point in the job where it's nice to have a helper).

You'll see a haze develop on the block after you wipe it down the first time. At that point, you wipe it down again. You aren't just cleaning the block off, you are also floating the grout lines. This is what produces that clean, crisp appearance. It takes some practice, but it's not difficult. If you float the grout properly, you will get a dense, even finish. Don't worry about abrading the glass block, it's plenty hard enough.

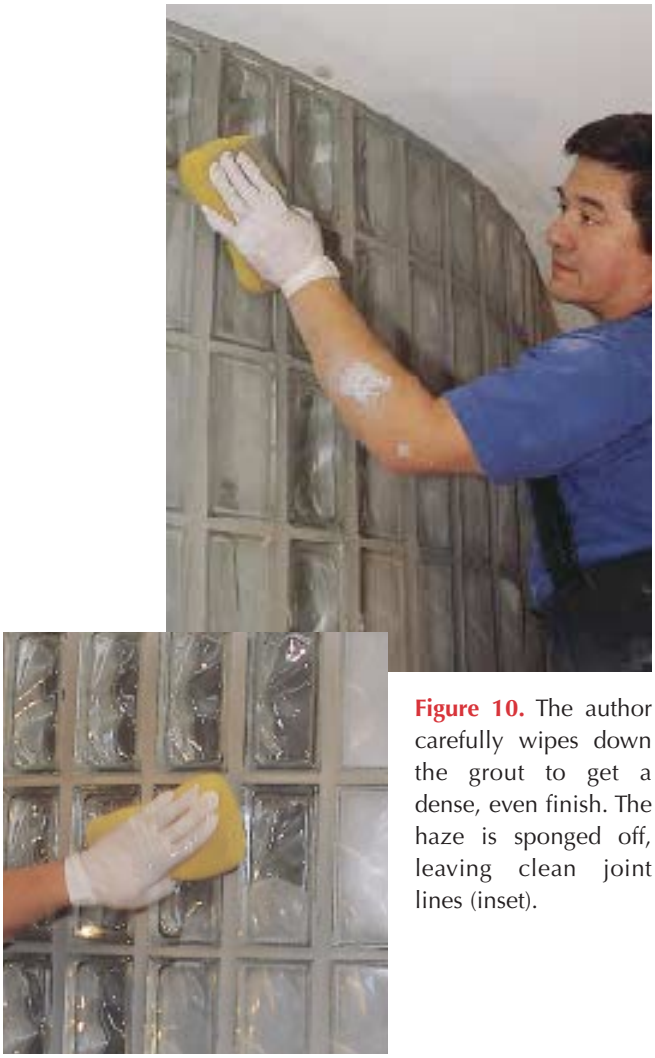

Figure 10. The author carefully wipes down the grout to get a dense, even finish. The haze is sponged off, leaving clean joint lines (inset).

Cleanup

This last phase of the job is essential. Go back over the block one more time with the sponge, making sure there is no grout film on it. Remove all of your masking and leave your work so clean that nobody else has to touch it. The sparkle and symmetry of a beautiful job should be the only thing anyone sees when they look at the finished wall.

Ron Porter *is a contractor from Pecos, N.M., who specializes in high-end glass block installation.*