

Inexpensive Brick Buildings from Foam Insulation Panel

By Les Knoll

Brick buildings can be made easily and inexpensively using materials readily available at Lowes. The building panels are made from foam insulation, Lowes Green Guard XPS, sold in 4' x 8' sheets. This is more than you will need for a number of buildings. Lowes will cut it up for you if you can't transport a full sheet. They use box cutters, not saws.

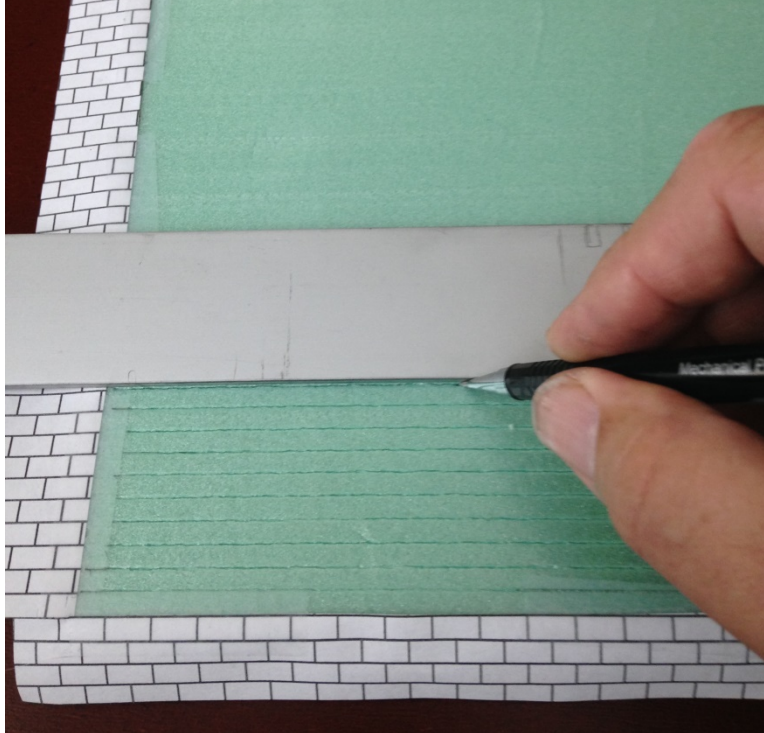
Before you start constructing a building, make a 'practice panel' to test out these construction techniques, and practice your mortar application and weathering.

Make a drawing of the building pieces you will need including some brick detail. You will need to draw the vertical brick spacing for all courses and the horizontal spacing for at least two courses, since brick courses are offset by one-half brick in the horizontal direction. CAD is handy for this, but manual drawings are OK, too. My brick is $\frac{1}{4}$ " high by $\frac{3}{4}$ " long, a bit large for G scale, but it looks good on the buildings.

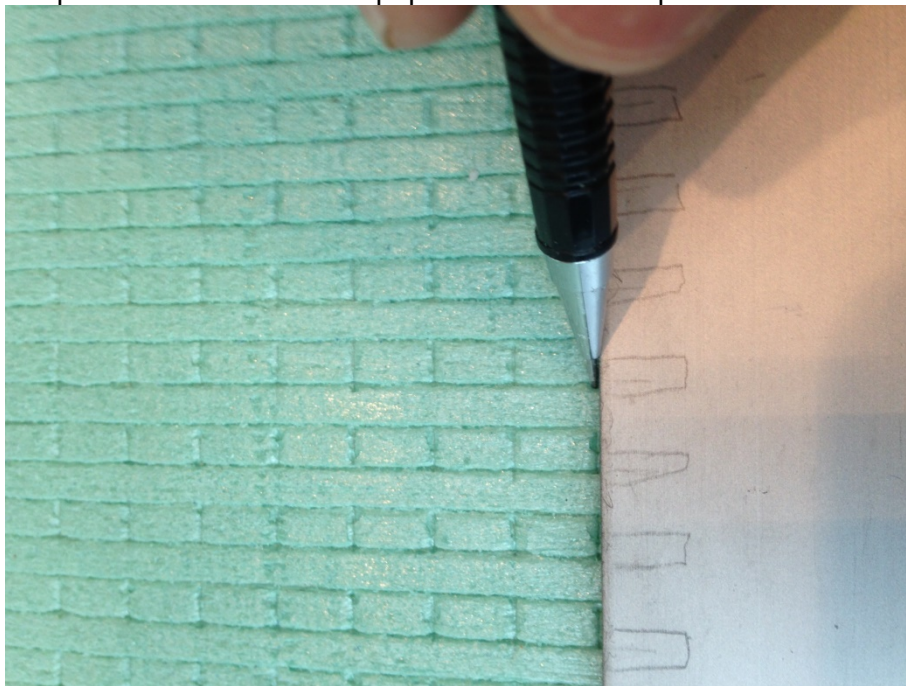
Lowes Green Guard XPS has a definite grain to it. The grain runs the long way on the sheets. When you lay out your building pieces on the insulation board, make sure that the brick course lines (horizontal) line up with the grain of the insulation board, the long way.

Cut building panels with either box cutter or table saw. The table saw is cleaner and more accurate. Cut out any openings for doors and windows at this point. In constructing a building, make one panel at a time, then assemble the building.

Applying the brick pattern is done by scoring the insulation material with an ordinary sharp pencil. On each end of your building panel, tape a piece of paper with lines corresponding to each vertical course of brick. These can be CAD or manually generated. If you follow the sizing I use, you will have $\frac{1}{4}$ " marks on a paper running the full height of your building panel on both ends.. Place a straight edge on the building panel, lining it up with the lowest mark on the paper on both ends. Gently score the insulation material to a depth of about $\frac{1}{16}$ ". Go slow and easy, maybe several passes to get the $\frac{1}{16}$ ", and press the pencil against the straight edge as well as down on the panel. Sharpen the pencil after several horizontal courses. The pencil may have a tendency to wander away from the straight edge, so use care here. Continue all the way up the building wall.



If your pencil 'wanders' and gets off track, simply fill in the bad line with spackling compound. I use heavy duty DAP Vinyl Spackling available from Lowes. Dab some on with your finger and let it completely fill the lines you wish to remove. Let it dry for a couple of minutes and gently wipe the surface off with a paper towel. It will be painted over later.



The vertical lines are done the same way as the horizontal, but each is only one brick high, and the lines are shifted one-half brick length from course to course as on prototype bricks. Use paper guides again, placing them on the top and bottom of the panel. Using a straight edge as a

guide, do one set of vertical courses (lines) first (see illustration) skipping every other horizontal course, then shift $\frac{1}{2}$ brick length, and do the other courses.

You could also do one set of vertical lines (remember to alternate your courses, only do every other one), shift one-half brick length, and do the other courses, alternating as you work your way across the panel. That way, if you keep your straight edge on the unscored side, you can check your work as you go. If it looks like brick, you're doing OK, if you make a mistake, you can use spackling compound to patch it up.

In addition to panels, I have made brick columns of the same material. The insulation board is approximately $\frac{5}{8}$ " thick and this seems to be a good depth for a column. In my recent roundhouse project, I made the columns $\frac{3}{4}$ " wide. I made the brick length slightly smaller to include more brick detail on the narrow column. I kept the height of brick the same. Remember to put brick pattern on three sides of the column, both of the $\frac{5}{8}$ " thick sides and one of the $\frac{3}{4}$ " sides. The other side gets glued to the building panel.

Take note of any panel ends that will be seen when the building is completed, and add brick detail to them also. You can use the existing horizontal lines as a guide for the horizontal courses on the ends. Usually one vertical line in the center of the panel end, on every other course is sufficient detail.

I used Valspar Color Radiance paint and primer for plastics, #84515, Radiant Red as my basic brick color. It is available from Lowes. You may want to shop this paint line for other brick colors as well. It is safe for plastics like this foam insulation and will not deform the foam insulation when applied. It is very important to use brick color that will not deform or 'craze' the foam insulation. This color looks quite vibrant when applied, but subsequent steps in the construction will tone it down.

Spray at least two coats of brick color on the panel and let dry overnight. You will want a robust layer of paint on the panel for the following steps.

Note that you do have the option of omitting the following mortar effect if you want. I have buildings on my layout both with and without mortar, and both look just fine. It's a matter of taste. Note that this mortar step is a good thing to practice on with a practice panel.

Fill in the brick lines with DAP Vinyl Spackling (NOT the light grade) available from Lowes. Spread it on the entire panel with a paper towel, let dry a few minutes then gently wipe it off the face of the brick with a swirling motion. Eventually the spackling will rub off the brick faces and remain only in the cracks. The spackling adds a little texture and maybe a little white to the brick face, but this adds to the appearance. Do the same painting and spackling techniques to the columns if you have made some. Do not attach them to the panels yet.

To make the building look less like it just arrived from the hobby shop, add a bit of weathering. This is done by very lightly spraying any color of flat black paint you prefer. I use the high heat black for Bar-B-Q from Rust-Oleum because it's always around to paint my live steamers. A tiny bit of grey primer might work as an additional step. Hold the can at least 18" from the panel and start the spray before the stream reaches the panel. 'Sneak up' on this paint operation, watch the panel gradually darken to taste as you spray ever so gently. Weather the columns separately from the panels. Practice on a practice panel first!

When the weathering is done, you can attach any columns you made. Use any type of construction cement that will not harm the foam insulation. This is done last because in doing a very light weathering spray, the corners where columns meet building panels could be missed, creating a very 'fake' looking effect.

Cap off the operation with Krylon Matte Finish #1311 to seal all the paint layers from the elements.

Assemble your building with construction cement and add windows and other detail. Roofs can be any material you like, although I find 1/16" plastic sheet in black works very well. This can be found at shops that sell sheet steel and steel shapes to the construction trade.

I have had buildings made in this way on my Rivendell & Midland Railroad for over three years with little effect from weather except the usual need for cleaning. The illustrations you see here are from my next major project, a four-stall roundhouse, my largest structure yet. One other thing: These buildings are so light that you may want to anchor them to your layout in some way so that high winds do not blow them away. Also you might want to spray them occasionally with Rodent Sheriff to humanely keep inquisitive (and hungry!) raccoons and squirrels away.

Good luck with your projects

Les Knoll
Rivendell & Midland Railroad