Build a foam "stone" bridge

Styrofoam makes a versatile and durable building material

by Rod Eaton | Champlin, Minnesota | Photos by the author

This arch bridge was simply and quickly constructed of Styrofoam. Here, the author describes how it was done.

When it became necessary to start rebuilding all of my trackwork, I decided it was time to address a small section that had never been properly finished. About 18 inches long, this section of track was hidden beneath a tree, so I had skimped and just laid the track on a board. Now I wanted to fill the space with a small, stone bridge. But, since the area was still hidden behind a tree, I didn't want to invest a lot of time, effort, or cash. A foam "stone" bridge seemed the perfect solution.

More than 12 years ago I built a long, stone arch bridge from Styrofoam. It still looks good today. When painted, Styrofoam is an exceptional garden-railway-building material. It's cheap, easy to work, and it's impervious to heat, cold (I live in Minnesota), water, and sun. The only problem I've encountered is some nuisance nibbling by the small varmints that use my railway as a giant Habitrail. (A little touchup paint in the spring generally hides their handiwork.)

Construction

For the bridge, I bought a 1" thick, 4 x 8' sheet of blue Styrofoam for about $10 at my local building-supply store. I used about a third of the sheet for the bridge. For this project, Styrofoam is a better choice than expanded foam, which sheds tiny, messy "popcorn" pieces when cut. Photo 1 shows the foam and the necessary tools to work with it.

I started by making a paper template

1. Here are the materials the author used to make his foam bridge: sheet Styrofoam, a marker, a serrated knife, sandpaper, and latex adhesive.

2. A wooden craft stick is all that's needed to emboss stone lines into the foam.

3. Working from the top down, each new layer is glued to the one above.

4. By cutting increasingly larger sections out of the middle of each new layer, the bridge's arch takes shape.

5. Various shades of gray latex paint color and protect the foam.

6. Partially hidden by a tree, a train crosses the finished bridge.

that matched the curve of the track the bridge would support, then traced this onto the foam. I used an old, serrated bread knife to cut the foam, then cleaned up the edges with medium-grit sandpaper. Since the bridge needed to match the existing track level, I began with its top layer. I undercut the foam piece a bit so it would rest at the right height on the end abutments.

To create the appearance of large stone blocks, I used a craft stick to emboss vertical lines about 1½" apart along the edge of the foam piece (photo 2). It doesn't take much pressure to indent the foam. If you want more stone detail, you can use almost any tool to scratch, scrape, or score the material. I also lightly sanded the edges of the piece to create separation for each course of stone.

Next, I cut a second curved section of foam and embossed the edges. I glued this piece to the bottom of the top piece with vinyl insulation adhesive in a caulking gun. Many adhesives will attack Styrofoam, so be sure to read the label.

Successive layers of foam were cut and glued together, working down toward the ground. It was like making a layer cake from the top down.

After gluing together three layers (photo 3), I began cutting an increasingly large section out of each new layer to rough in an arched opening (photo 4). When all the layers were glued together, I removed the entire bridge from its location and cleaned up the rough arch with my knife and sandpaper. I added some dirt at the base and settled the bridge back into place. Then I gave the entire bridge a coat of paint.

A GARDEN RAILWAYS PROJECT BEGINNER

Painting

Years ago, when I started my railroad, I bought a quart each of three different shades of gray latex paint. I've stuck with those colors ever since, using them on everything that's "rock." Most of my railroad is built of concrete and it's all stained (by thinning the paint liberally with water) with those grays. Even real rocks and stones on the railroad are stained with the paints to help blend them in. If I have a stone bridge, building, foundation, or abutment that's supposedly made from local material, it gets the three-gray treatment.

Latex paint is safe to use on Styrofoam. It goes on easily, lasts a long time, and protects the foam from sun damage. In the case of my new foam bridge, I brushed the paint on straight from the cans. I like using the a wet-brush technique: you apply one color, dip the brush directly into another color, and brush over the still-wet first coat. This blends the colors in subtle and realistic ways that require absolutely no artistic ability (photo 5).

After I laid track across the bridge, some of the glue I used to hold ballast in place dripped over the edge of the bridge. I like the effect and think it adds another layer of weathering. Serendipity is a blessing to garden railroaders (photo 6).

That's it. The entire project took almost no time and cost only a few dollars. Even with the annoying eating habits of our local fauna, the bridge should last many years. And it looks good. It's kind of a shame it's hidden behind a tree.