Standing Seam for a Circular Turret

Prefalz aluminum coil stock bends like copper and comes in multiple colors

BY TONY BLUE

While on a layover at Chicago's Midway airport, I pulled my phone out to check my work email. A homebuilder we work with had sent me a set of drawings for an upcoming custom home overlooking Saratoga Lake in upstate New York, so I pulled out my iPad for a better look: multiple metal roofs, a concave cupola, a swooped entry, one large radius turret. "Sweet," I thought. Custom standing-seam projects are the type of work my guys specialize in. Then I read back through the email—hold up, they want a dark bronze-colored steel roof, not copper? Dang it; with that much custom and curve work, it's far preferable to use a more malleable metal like copper.

At the time, I was on my way home from attending the International Roofing Expo in Dallas, where I had chatted with representatives of Wuko, a roofing-tool company from Austria, about a unique aluminum sheet-metal product it offers called Prefa Prefalz.

What makes Prefalz unique is that it shapes and folds more easily than domestic aluminum or steel sheet metal, almost like it's softer. Prefalz also has a durable, gritty-textured coating that does not scratch easily. After carefully examining the Prefalz panels and talking to the Wuko crew (some of whom are skilled metal roofers), I was determined to find a job for this product.

While waiting for my next flight, I called the project manager and told him I had a product I wanted to try on his job. The catch? Since it was a special order from Austria, I didn't know how long it would take to get it. About two weeks later, I had a sample approved and the product—Prefalz in brown coil—ordered. I would have the material in just three to four weeks.

TURRET PAN LAYOUT

As much as this product worked out great for the various types of curved and flat roofs on this project, for this article I'm going to

Photos by Tony Blue

Prefalz painted aluminum coil stock comes in 500mm and 650mm widths **(1)**. Here, the author demonstrates how he uses his shrinker/stretcher tool to bend metal to a radius **(2)**, a step that was needed to form the drip edge to match the curved eaves of the turret. First, though, a metal brake was used to slit a 10-foot length of 650mm coil stock to 3 1/4-inch widths with 1-inch legs on each section, followed by shrinking/stretching guided by lines scribed to Ram Board to represent the curved eaves. Then metal benders were used to form the 3/8-inch roll hem for the kickout on the bottom leg **(3, 4)**.

break down the turret installation. The first thing we did was snap chalk lines on the roof deck for the pie-shaped pans, enabling us to visualize the layout and determine quantities. This is a small step that can help eliminate a costly math error.

On this turret, each standing-seam pan would measure 20 1/4 inches across the bottom eaves edge and taper to zero at the top point. Another way to think of the pan layout is as a series of isosceles triangles with a base of 20 1/4 inches and a height of 224 5/8 inches.

Prefa is a European company, so the aluminum coils we used came in 650mm, or 25 3/5-inch, widths (500mm widths are also available) **(1)**. After sending the material through a standing-seam-roof-panel machine to form 1-inch mechanical lock standing seams, we would be left with a 22 3/5-inch-wide panel. Choosing 20 1/4 inches for the widest point of our pie pans would leave us with extra material for another set of seams. Our plan was to get two pie pans out of one flat sheet, to minimize waste.

DRIP EDGE

On site, we traced the roof edge to a piece of Ram Board so that we could match the curve when fabricating the drip edge back in the

Workers ran a 228-inch-long section of coil stock through a standing-seam-roof-panel machine to form a female leg along one edge, then snapped a diagonal line on the pan following layout lines that they had already snapped on the floor **(5)**. Next, they flipped the section around and formed another female leg along the other edge **(6)**. When cut diagonally, each section will yield two pie-shaped pans **(7)**.

shop. There, I mocked up a 3 1/4-inch-by-10-foot piece of drip edge to be sure it would work before making the rest. My guys then took 10-foot sections and slit the necessary stretch-out (a term for the width of metal needed) and started forming the radius drip edge.

This process starts with bending each 3 1/4-inch-wide piece to 90 degrees on the shop brake, with a 1-inch leg and a 2 1/4-inch leg. We then used a step shrinker/stretcher tool, which squeezes its jaws to either shrink (pull together) or stretch (pull apart) the section of metal that's in the jaws, with a worker stepping on the pedal to form a curve. In our case, we stretched the 1-inch leg **(2)**. This is a tedious task, but gradually the metal begins showing its curved form.

After the curved drip edge conformed to the layout on our template, we finished by forming the 3/8-inch hem for the kickout on the bottom leg with a set of roller benders **(3)**. Unlike drip edge for a shingle roof, we don't need the leg that runs back onto the roof but, instead, hold the drip edge in place with cleats. The standing-seam pan's eaves edge is hemmed onto this, locking it all together **(4)**.

PIE-SHAPED PANS

The next step was to make the pie pans. Over the years, I've learned from my mistakes, which often cost me a lot of money, sometimes taking months or a year to recoup. To alleviate risks, I've learned to "soft start" projects whenever possible to avoid turning a small mistake into a big one. What I explain next is an example of a soft start.

To be sure that our plan to cut two pans out of one section would work, we snapped lines on the shop floor to represent one of the standing-seam pans in full-scale. With these lines as a guide, we then made a test pan before moving forward.

To do this, we cut a 228-inch-long section from the coil and sent it through a standing-seam-roof-panel machine, forming only the


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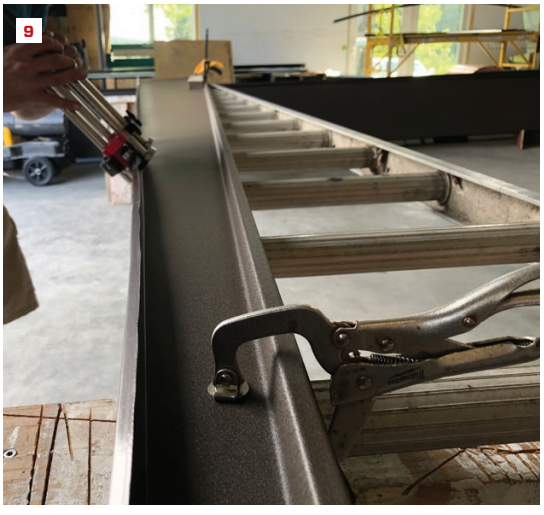
After one of the sections with two female legs had been slit into two pie-shaped pieces, a worker used a roll bender to hand-form first the 1-inch vertical leg **(8)**, and then the 3/8-inch horizontal leg **(9)** for the male leg on each tapered panel. In addition to the 34 tapered panels, several full-width standing-seam panels would also be needed to complete the porch roof **(10)**.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female leg of the pan and leaving the other side flat. Then we flipped the section around and sent all 228 inches back through, forming a female leg on the other side **(5)**. We then cut the section in half lengthwise at a long angle to make two pie-shaped pans and hand-formed the male leg on the other side of one of the pans **(6, 7)**.

Fabricating only this first pan and checking it against our full-scale sketch on the floor of the shop turned out to be a good idea, because we discovered the pan wasn't long enough. To account for the angle being cut at the eaves (and therefore some additional waste), we had to add 6 inches to the length of each pan, or 12 inches total to each section for two pans.

Once we were dialed in, we shifted into production mode to fabricate the 34 tapered panels we would need. While the machine formed the female legs, the guys used roll benders to hand-form the male legs, first forming the 1-inch-vertical **(8)** and then the 3/8-inch-horizontal legs **(9)**. It's one of those tasks that may seem mundane, but being in the shop with the radio on and the fan going isn't too bad during a hot summer day **(10)**.

INSTALLATION

We transported everything to the site in a trailer, and the fruits of our labor were sweet. The drip edge fit like it should, though had it needed some tweaking, we have a hand-held shrinker/stretcher that we can use on site **(11)**.

Workers used Prefalz coil stock to fabricate cleats to hold the drip edge in place along the eaves **(11)**, as well as the kickout flashings where the porch roof meets the wall and the wall flashings installed before siding **(12)**. Pan installation began where the flat section of the porch shed roof ended **(13)**. As the panels were installed, workers used a small set of roll benders to create the radius hem, then hand tongs to complete the joint **(14)**. Shown here is the completed turret roof **(15)**.

We started the pan layout from the straight sections on the front-porch shed roof and ended at the wall in the back. When installing standing-seam panels, we screw down clips over the male leg of the panel approximately every 24 inches **(12)**. The female leg of the next pan goes over the top and is double locked (the metal is folded over two times), creating a strong, watertight connection **(13)**. We do this with a combination of a hand seamer and a cordless-drill-powered seaming tool that drives up the seam and rolls it over twice.

To hem the eaves edge of the pan onto the drip edge, we used a small set of the same roll benders we used while fabricating the radius drip edge. Then we closed the hem off the rest of the way with a set of hand tongs **(14)**.

We purposely made fewer pans than we needed, knowing that we might need to adjust the last few panels if the final one was not exactly parallel with the wall (and it wasn't). We were able to fabricate the last couple of pans on site to cheat that and straighten out the sight lines, which are important with metal work. A pan that's a few inches different in width from top to bottom where it meets a wall would be noticeable.

In the end, I found that the Prefalz material was well-suited for the porch turret and the other curved work on this project. At about two-thirds the cost of copper with similar workability, this is a great option for clients who are looking for a metal standing-seam roof with a consistent color and textured finish **(15)**.

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