

Building a turntable for the Jackson & Burke Railroad

Construct this quintessential railroad structure

by Bruce Chandler | Burke, Virginia | Photos by the author



I was inspired to build the turntable described here by the one on the East Broad Top at Orbisonia, Pennsylvania. It's a long one—65 feet—but I didn't want to make an exact-scale model in 1:20.3. I planned to leave it outside, so durability was the key.

I decided on 36" as a good diameter; it would hold any of my current locomotives and, if they ever make an EBT Mikado, it should fit as well. There are other advantages to 36". I can use my yardstick for quick measurements and the number "36" is handy for dividing up the bridge

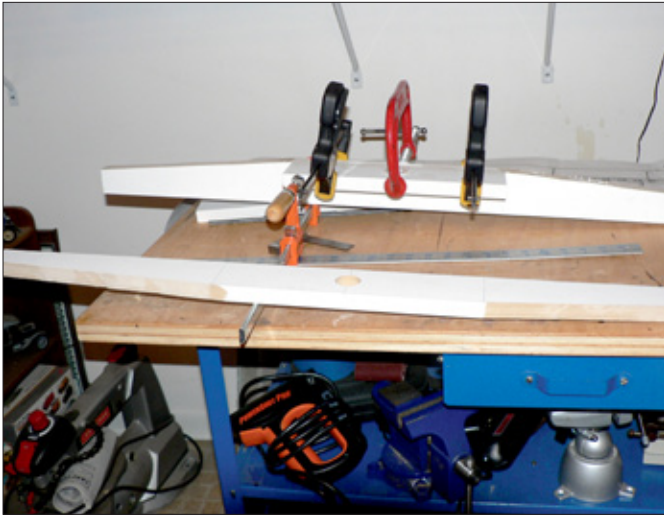
sections. It also allowed me to use one 8' board for all of the bridge parts.

I used Tuf Board, a composite plastic that works like wood. The 1 x 3 actually

Jackson & Burke No. 4 poses on the railroad's new turntable. In this article, the author describes in detail how it was built.

measures out to $\frac{3}{4}$ " x $2\frac{1}{2}$ ". I cut two 3'-long sections for the sides and two 1'-long sections for the top and bottom at the center of the turntable. I then cut some spacers to fill in the gaps. None of this structure would be visible after the ties and planking were installed. I then tapered each of the sides (photo 1).

For the pivot, I bought two Delrin flanged bearings, a 3" long x $\frac{7}{8}$ " OD steel



1. Pieces for the understructure have been cut from Tuf Board.



2. The turntable rides on a steel shaft and Delrin bearings.



3. Rivet detail and a styrene cover over the access hole have been added.



4. A 6" board forms the center of the base and houses the bearing.

shaft, and a clamp-on collar to hold the shaft in place (photo 2). I used a Forstner bit to drill the holes for the bearings. One of the bearings was placed in the turntable base (pit), the other in the turntable bridge. The steel shaft connects the two and allows the turntable to easily rotate about the center axis. Photo 2 shows the assembly upside down—the collar fits inside the turntable bridge and the bearing is inserted into the bottom of the bridge. I also made an access hole in one of the bridge sides in case I ever needed to make any adjustments to the collar. The holes were made in the individual pieces before they were assembled.

Although the prototype had lots of support wheels on each end, I decided to use a single one. I had some brass pulley-type wheels in my scrapbox, so I used them, with brass rods for axles. I sandwiched these between two spacer blocks and glued them in place. I used deck

screws to ensure that everything was firmly assembled.

I wanted the bridge to look like steel, so I glued plastic “T” beams along the bottom, and vertical angles on the side. I wanted the suggestion of rivets, but didn’t want to make a thousand of them, so I used brass escutcheon pins to hold the plastic in place. I made a styrene cover for my access hole and bolted it in place (photo 3).

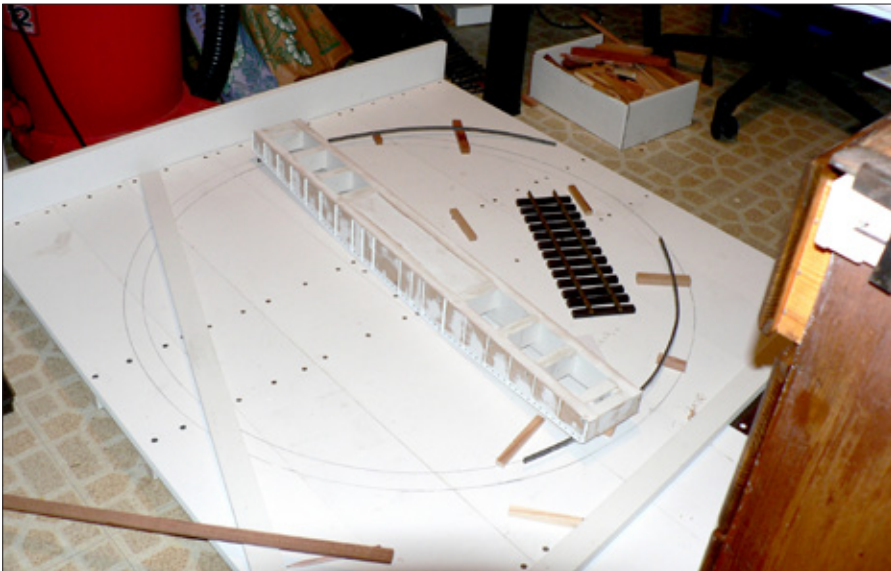
The next step was to start building the base, or pit. Again, I used Tuf Board, this time in 6" widths. A single board formed the center of the base, in which I drilled the hole for the sleeve bearing. I built a small box around this area for extra support (photo 4).

I continued to use the Tuf Board strips to build up the base, with smaller strips running perpendicular underneath for support. Glue and deck screws hold everything together (photo 5).

I shaved a pencil so it would fit between the spacer blocks at each end of the bridge and used it to trace the path on the base that the turntable’s wheels would follow. Then I held the pencil against the end of the bridge and traced a path for the turntable pit wall.

I built the wall from Precision Products “Perfic” panels, reinforced with Tuf Board trim pieces screwed in from below. The reinforcements were screwed in first (photo 6), then the panels were glued in place. I framed the pit on three sides (photo 7). The fourth side is where the unit would attach to the raised platform that serves as my yard. I used gray spray primer to give the pit a uniform look, and ruddy-brown primer for the bridge.

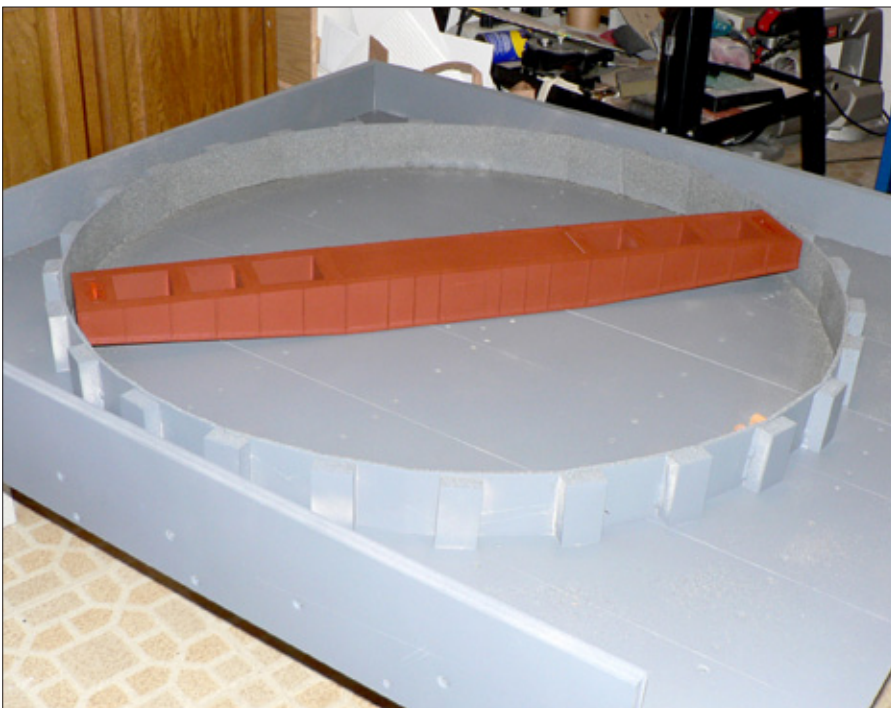
Since I had painted over my lines, I had to redo them before I could install the rails, which would be supported by ties. I calculated how much elevation I would need at each end to keep the turntable



5. Boards of the base are screwed into cross pieces underneath.



6. To form the pit wall, small pieces are screwed into place from underneath.



7. Walls are formed from Precision Products "Perfic" panels and the pit is framed in on three sides.

balanced and I cut spacers to put under each tie. I used code-250 brass rail for the turntable ring, held in place with two spikes to a tie (photo 8).

Now it was time to put the bridge ties and rail in place. I cut and stained the ties, then glued them on the bridge. I also nailed them in place with 1½" finishing nails. Code-250 brass rail was spiked to the ties (photo 9).

On to the next step: planking the bridge. Using some redwood veneer, I cut planks into scale lengths of 16', 12', and 8' so that I'd have some variety. I glued this down to the ties but also used some tiny brass ship-building nails to hold the planking in place (photo 10).

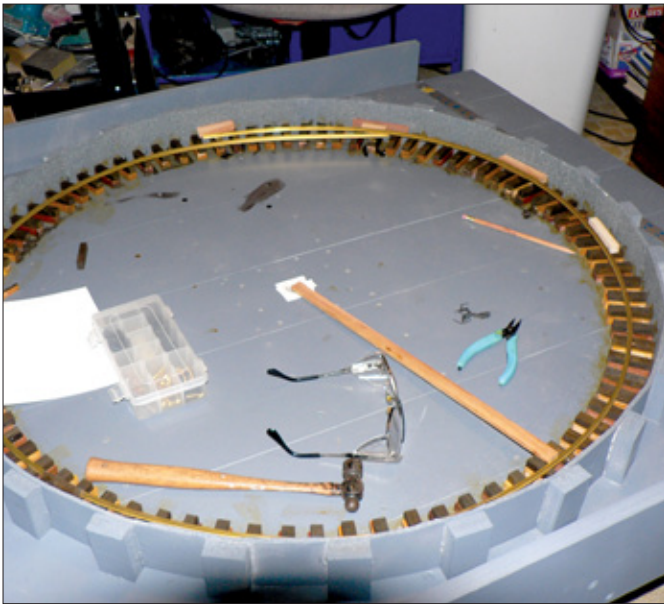
The Armstrong levers for manually rotating the turntable (photo 11) were made from ¼"-diameter aluminum rod that I found at the local hardware store. I first created some mounting blocks from scraps of Tuf Board. I cut some triangular mounting pieces and drilled ¼" holes in them at an angle to accommodate the aluminum rod. These I glued in place across the ties, but also used some miniature brass lag screws to hold these pieces in place. The screws were inserted from underneath the ties, so they don't show from the top. To finish up the bridge, I added my own version of a builder's plate to the side of it (photo 12).

Meanwhile, back at the base, I drilled some holes for drainage (photo 13), topped the walls with a ⅝" square block, and painted the "concrete" walls with spray-on texture paint. I covered the holes with weedblock cloth, stapling it in place (photo 14).

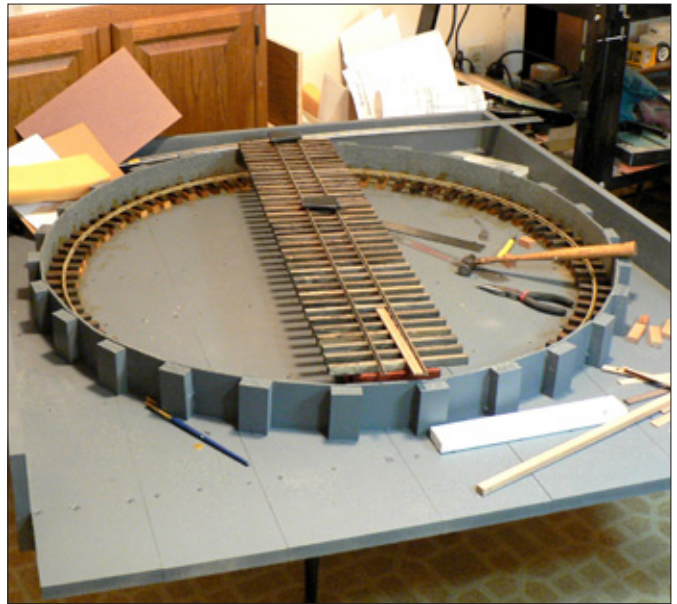
I filled the pit with crushed gravel to cover the spacers under the ties. Then I put the bridge in place. All it needed was handrails and rail trimming.

I struggled with how to make the handrails. I wanted something reasonably strong, but couldn't figure out a good way to make it. Then I hit on the idea of building the rails in place. I decided to make "tees" for the brass railings and use these to help make a mechanical connection to join the vertical to the horizontal.

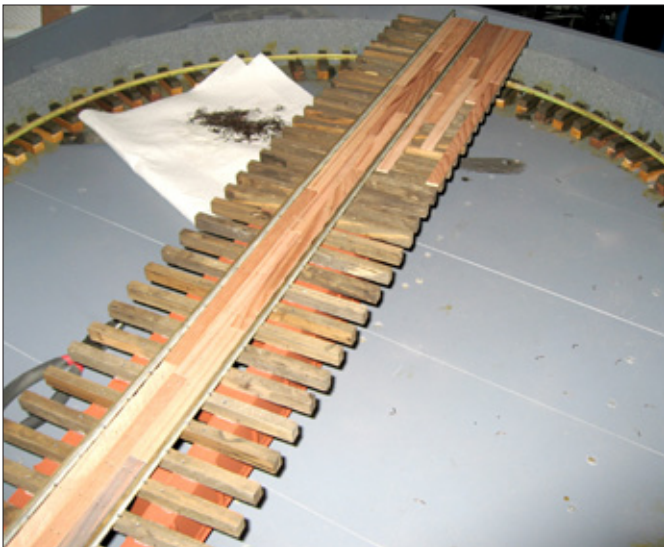
I finally adopted this approach: I cut ⅝"-diameter brass tube into ¼"-long pieces. I then drilled a ⅛" hole in the center of each of these tube pieces. These would act as the top of the "T." Then I cut the tube into ⅛"-long pieces for the vertical leg of the "T." I used five "Ts" per railing, the top



8. Ties, set on spacers, are fixed in place. Rail is bent and spiked to the ties.



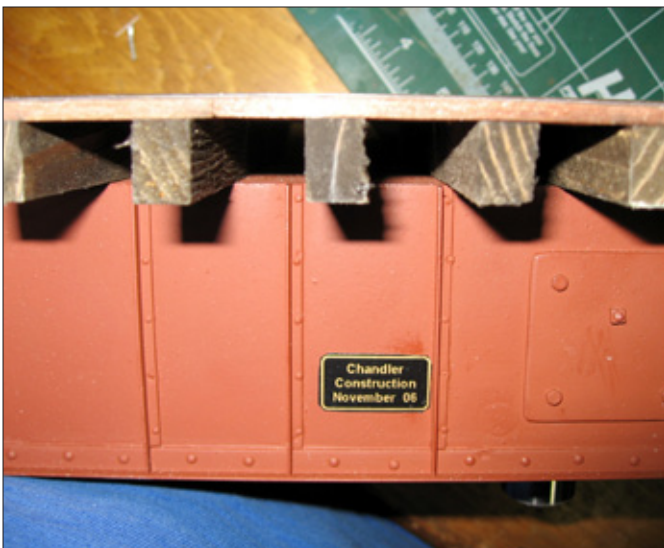
9. Ties and rails are attached to the bridge.



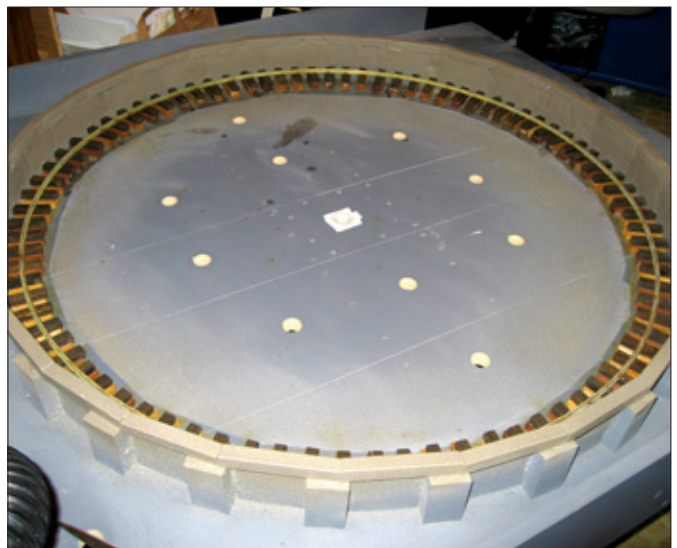
10. The deck of the turntable is planked with redwood.



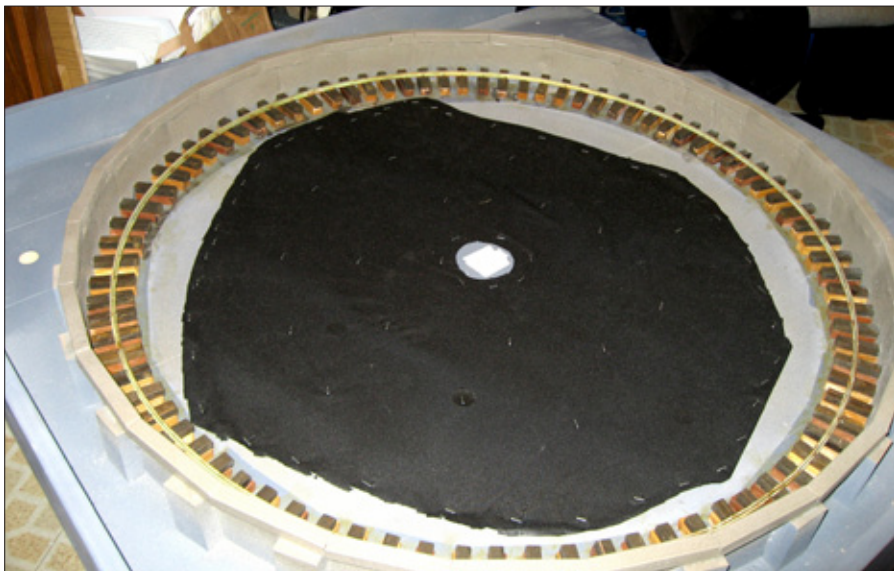
11. Armstrong levers are made from aluminum rods set into mounting blocks.



12. The author completed the bridge by adding a builder's plate.



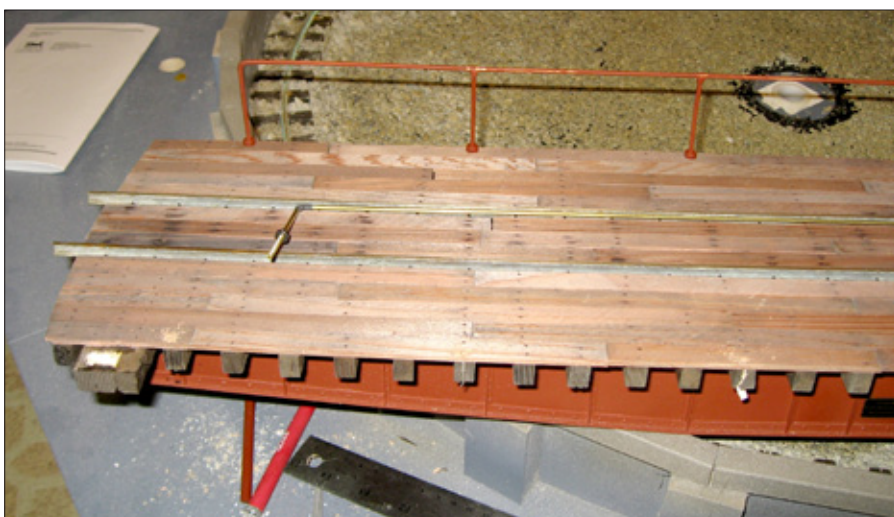
13. Drainage holes have been drilled into the floor of the pit.



14. Weed cloth is stapled over the drainage holes.



15. The top "T" sections have been slipped over the $\frac{3}{32}$ " rod.



16. Vertical legs for the railings are formed by bending the rod 90° at both ends.

pieces of which I slipped onto a 36"-long piece of $\frac{3}{32}$ " rod (photo 15). Then I bent the 36" rod at each end to form the vertical end legs (photo 16). I then cut vertical posts out of same $\frac{3}{32}$ " rod and threaded one end of each with a 2-56 die. Next, I drilled holes in the bridge for the support poles, making sure to align them with the existing ties for good support. I put a nut and washer on each of the vertical pieces and stuck them into the holes. I could now adjust the vertical pieces to ensure the railing is at the correct height (photo 17). I capped each of the vertical pieces with the small tube pieces to form the vertical piece of the "T". I then soldered everything together (photo 18). With this assembly, I nearly had a mechanical connection, making it easy to keep everything in place while soldering.

Once everything was satisfactorily assembled, I took the railings off to paint them, then reinstalled them. I then applied a final sealing coat to the planks.

Due to the slope of my backyard, one end of my railroad is elevated. I built a small rail yard there to serve the rest of the line. Here, I can build a small train, or break one down when it arrives. The turntable has been incorporated into this yard (photo 19). It is screwed to the raised benchwork and is supported by legs. The area around the pit was filled with ballast to bring it up to grade and blend it into its surroundings (photo 20).

The turntable allows me to turn arriving engines around so that they can head out in the right direction for the next outbound train. It also provides access to a couple of storage tracks for locomotives that are not currently in use and I also use one of these tracks as a point on which to place my locomotives on the line. I had always heard that turntables were very difficult to build, but I found this one to be very straightforward and it adds a lot to my operational capabilities. II

Resources

Tuf Board

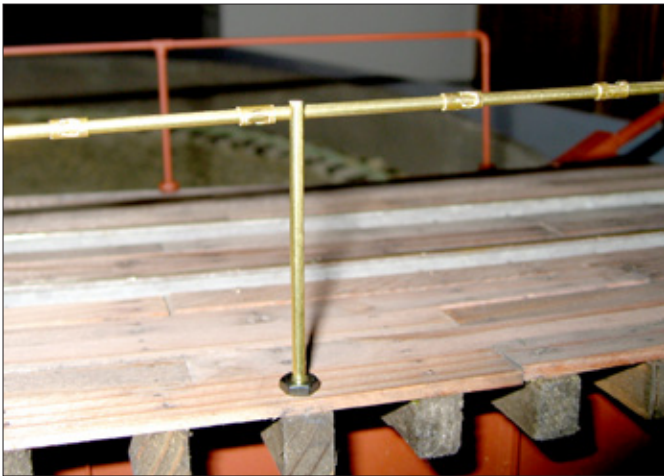
800-452-2117

www.tufboard.net

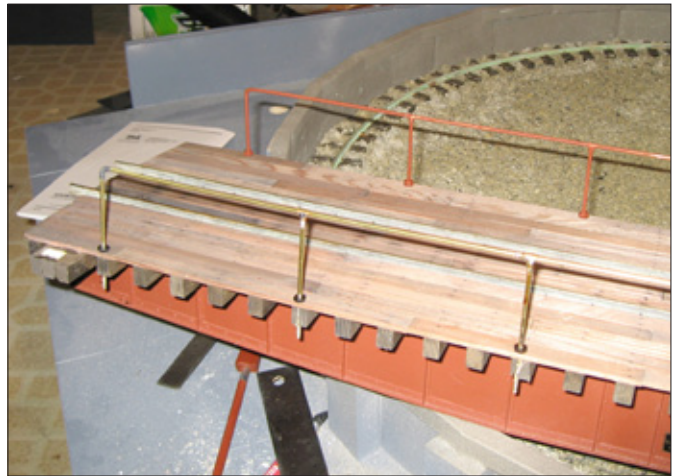
Precision Products

716-754-2997

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17. With nuts and washers in place, the legs are adjustable vertically.



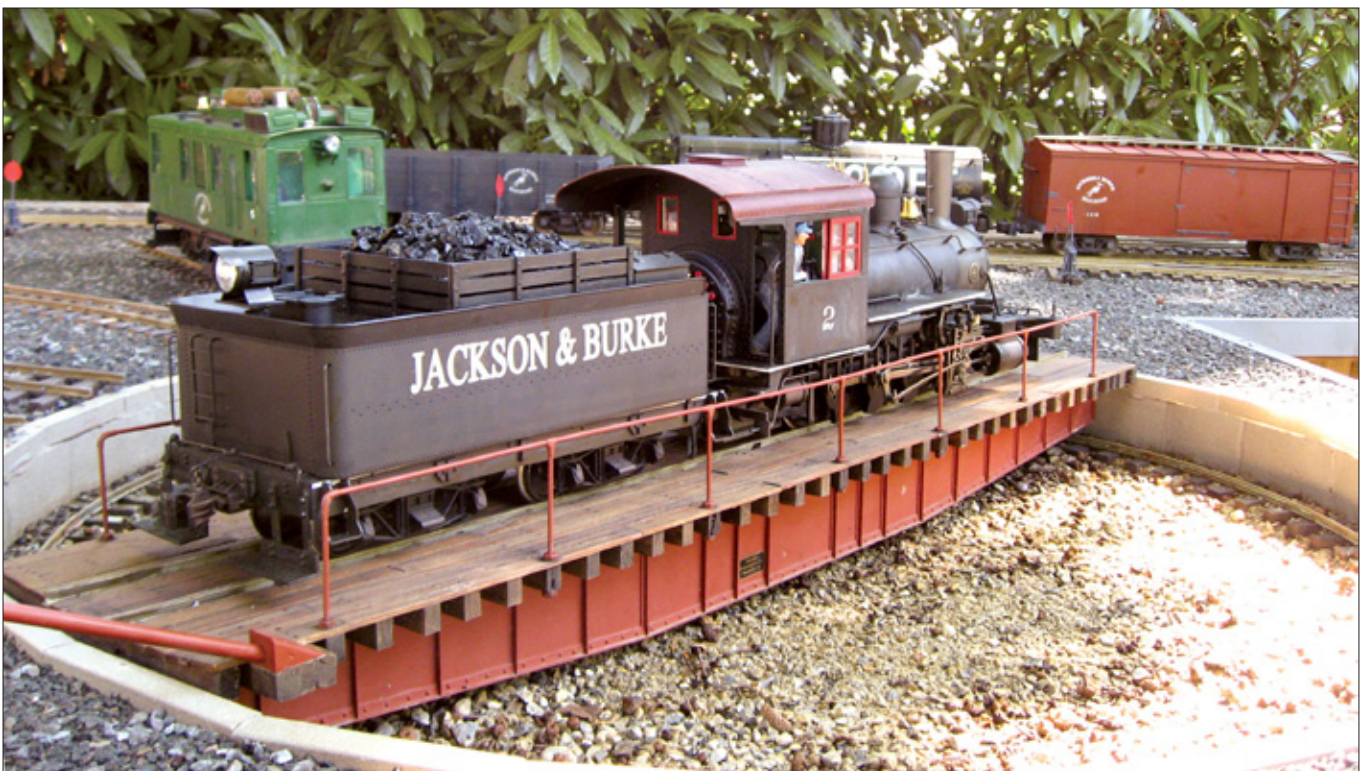
18. The entire railing assembly is soldered together in place.



19. The turntable is installed.



20. With added ballast, the new turntable looks right at home.



21. Jackson & Burke N° 2 is turned on the turntable. This new structure adds considerable operating potential to the line.