

HERE COMES THE POLAR EXPRESS!

A skill-building
compact holiday
layout project

STORY BY HAL MILLER

There are few things that say “holidays” like a toy train layout. Inspired by the 2004 Christmas movie *The Polar Express*, we wanted to create a display that would be entertaining to build and run for young and old.

We also wanted to involve the entire staff of *Classic Toy Trains* as well as anyone else who wanted to work on it. Layout building experience levels varied, but everyone brought something different to the process that made the finished product unique and festive.

When we planned this O gauge project layout, we had a few goals in mind:

- Make it simple enough for a family to build
- Get it "done" in a reasonable amount of time (we had a week)
- Use off-the-shelf trains and readily available materials
- Use basic tools most people may have
- Keep it as budget friendly as possible
- Make it to fit in a spare room or compact space

One other detail for us was the layout had to be portable. We had to be able to move it in and out of the workshop to accommodate other projects, so we added wheels to our table. You may not need this feature, but it does come in handy.

■ Where to start

We decided the layout should be constructed on a 4 x 8-foot sheet of plywood, as they are readily available at most lumber stores and home-improvement centers. It's also a good size layout to fit in a basement or spare bedroom.

At the heart of this project is a train set. We chose Lionel's No. 2123130 *Polar Express* LionChief Set with Bluetooth 5.0 and Disappearing Hobo Car. The O gauge outfit comes with a 40 x 60-inch oval of FasTrack, and the LionChief 2-8-4 Berkshire steam engine is controlled by a handheld remote. Wiring is minimal; one section of track has a jack to plug in a "wall-wart" transformer. The locomotive can also be controlled using the LionChief app and smart devices, such as a phone or tablet.

In addition to the hobo on the car, the set includes character figures from the movie that can be posed on top of the passenger

cars if desired, thanks to small mounting pegs.

The included track is easy to assemble and helped us determine a track plan. We added a No. 12020 FasTrack Inner Passing Loop Add-on Track Pack, which includes a pair of switches and two O-36 curves. This relatively inexpensive addition allowed us to significantly increase the play value of the display.

■ Small but not small

One of the keys to making a compact layout "play" bigger is creating discrete scenes. This involves using items and techniques to create view blocks. These keep a user's eyes focused on what's before them and guarantees they get new views as they move around the railroad. As shown later in this story, we used both a layout dividing mountain and building flats for this purpose to make three distinct scenes that reflected events in the movie.



David Popp (left) and Hal Miller made the frame from standard 1 x 4 and 2 x 2 lumber with a 3/4" plywood top. We designed our train table (shown below) to be sturdy yet easy to assemble.

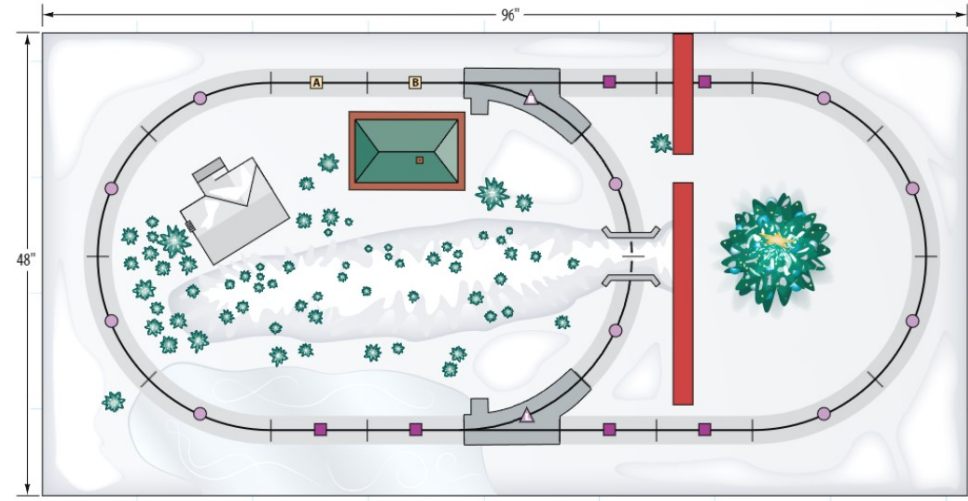
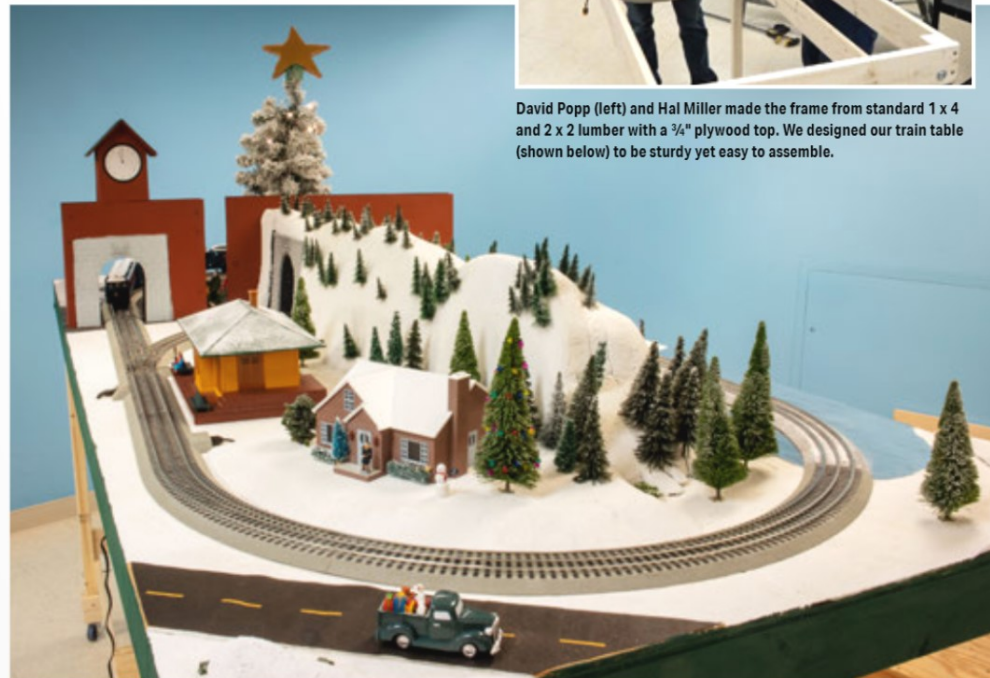


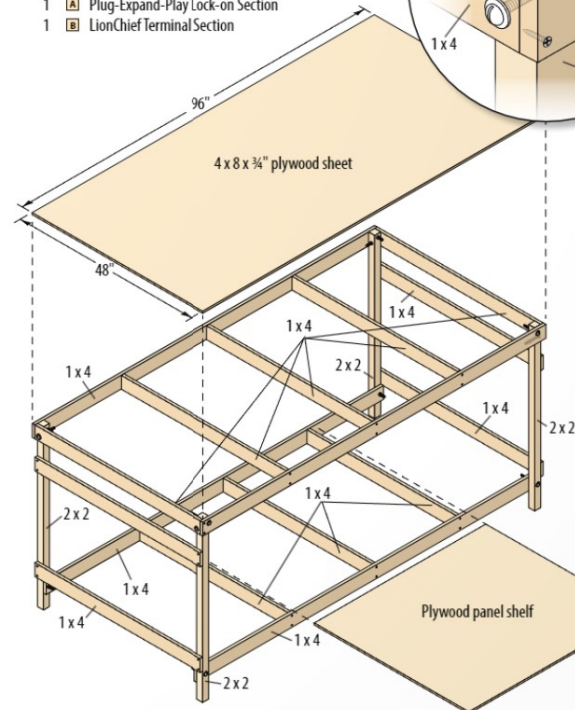
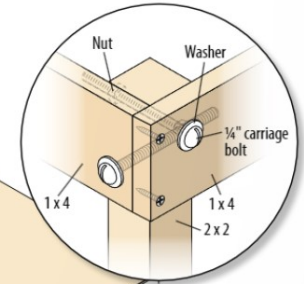
Illustration by Kelle Jueger

MATERIALS LIST

- Drywall screws
- 1/4" x 3" carriage bolts with nuts and washers (12)
- 3/4" plywood - 4 x 8 foot (1)
- 1 x 4 - 8-foot (10)
- 2 x 2 - 8-foot (3)
- 1/8" hardboard - 4 x 8 foot (1)
- 1" foam insulation - 4 x 8 foot (2)
- Liquid Nails
- Foam nails (T-pins)
- Chooch O scale cut stone tunnel portals (Wm. K. Walthers part no. 214-9940)
- Flexible stick-on mirror material
- Lionel No. 2123130 *Polar Express* LionChief Set with Bluetooth 5.0 and Disappearing Hobo Car
- Lionel No. 12028 FasTrack inner passing loop
- Lionel No. 83185 *Polar Express* Elves Figure Pack
- Lionel No. 85410 *Polar Express* Hero Boy's House
- Lionel No. 1830010 *Polar Express* Snowman and Children figure pack
- Lionel No. 12812 Illuminated Freight Station
- Woodland Scenics No. SN140 Soft Flake Snow
- Rust-Oleum No. 7718830 Bright Coat Chrome spray paint
- Scenic Express No. EX0200 Pine and Fir Set

LIONEL FASTRACK COMPONENTS

| Quantity | Description/Number |
|----------|--|
| 6 | 10-inch straight (12014) |
| 10 | O-36 curve, 45-degree curve (12015) |
| 1 | O-36 manual left-hand switch (12017) or (12045) |
| 1 | O-36 manual right-hand switch (12018) or (12046) |
| 1 | Plug-Expand-Play Lock-on Section |
| 1 | LionChief Terminal Section |





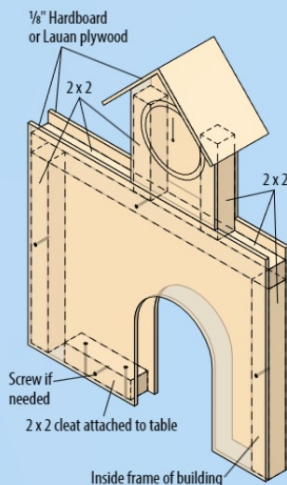
In *The Polar Express*, the North Pole is a vast brick city with Victorian architecture. Our layout uses easy-to-make building flats to simulate the scene.

To build the large brick buildings that make up the city at the North Pole, we decided to use simple building flats. We built our flats from 1/8" tempered hardboard supported by 2 x 2 frames. The bottom of each flat is left open, so it can slip over a 2 x 2 cleat attached to the tabletop. While

not necessary, we locked the flats in place by attaching them to the cleats with screws.

CTT's Rene Schweitzer painted the flats using crafts acrylics, as well as some ordinary brick-colored latex house paint. The flats make a great backdrop for our North Pole. - H.M.

SIMPLE BUILDING FLATS



We made the frozen lake by applying peel-and-stick flexible mirror plastic to the tabletop. The track that runs across the surface is not supposed to be track at all but frozen lake water. That's why we masked the rails to protect them and then painted the roadbed with Rust-Oleum Bright Coat Chrome.

Our first scene comes from the beginning of the movie, when the train picks up the boy, who is the primary character of the story. The second scene is from the middle of the film, when the train skids across the frozen lake. The final scene is the North Pole, where Santa Claus awards the first gift of Christmas.

While none of the features prevents you from seeing the entire layout, especially when viewed at an angle, they do help focus your attention. The mountain separates the boy's house from the frozen lake. The building flats represent the brick buildings and factories at the North Pole, making that area distinct from the other two as well.

■ Building a table

Construction of the benchwork can be accomplished by a couple of people, or just one in a pinch. We used readily available 1 x 4s and 2 x 2s for most of the construction. The assembly is held together with common bolts and drywall screws. The finished table is light enough that it can be picked up and moved by a couple of people. Additionally, since the major components are bolted, the legs and support structure can be removed as needed.

Most of the lumber can be cut with a portable powered miter saw or by hand with a miter box. The first step is to determine how tall you want your layout. We chose 48 inches as a good height for us, but you may want yours shorter or taller depending on whether children or adults will be the primary users.

The first step is to build the frame that supports the 4 x 8-foot plywood tabletop. As shown in the illustration on page 29, you make the frame by building a rectangle of 1 x 4s with three evenly spaced stringers through the middle.

Because we work on the second floor of the Kalmbach Media Co. building, we needed to build our layout 45" x 96" so it will fit into the elevator. However, unless you need to put the layout in an elevator to move it around, you shouldn't be limited by that sort of thing. You can build your layout to use the full 4 x 8-foot sheet of plywood.

Cut two 1 x 4s 96" for the sides, and five 1 x 4s 46 1/2" for the ends and stringers. Assemble the frame with drywall screws. You can use glue as well for a tighter bond; however, this also makes it more difficult to make changes to the layout table later. We built ours on the floor of the shop to make it easy to line up the parts and set the screws. Drywall screws will sometimes split the wood, particularly if it is really dry, so you may need to drill pilot holes before setting the screws.

Cut your 2 x 2 legs to the height you want your table minus 3/4" to adjust for the thickness of the plywood top. Also, cut four 46 1/2" 1 x 4s to act as the top and bottom leg braces. Then, following the plan, build the legs as subassemblies. The 1 x 4 braces attach to the legs 10" from the top and 4" from the bottom. Make sure they are square before attaching each brace with screws.

Finally, cut a pair of 94 1/2" 1 x 4s for the bottom leg braces. These, like the legs themselves, are removable from the layout.

With the frame and legs assembled, it's time to put the table together. Stand the frame on one long side and then position the two leg assemblies, one at each end, and clamp them temporarily in place. As shown in the diagram, the legs attach to the layout using two 3/4" x 3" carriage bolts each. Drill 3/4" holes for these and then insert the bolts and secure them with nuts and washers.

When the legs are secure, you can attach the long lower braces to the legs. Be sure to mount them to the inside of the legs to avoid kicking them while standing next to the layout. We added a



We used foam extensively to build the mountain that divides the layout into separate scenes. You can do this work quickly and easily using a hot-wire foam cutter, like the one shown here offered by Woodland Scenics.



To build our mountain, we stacked layers of foam on end. Here, David is fitting a section near the tunnel, using a scrap piece of plywood as a stand-in for the building flats, shown on the previous page.



Roger Carp and Rene Schweitzer stand by their snow-covered handiwork. They made the snow by painting the surfaces with flat white latex paint and then sprinkling Woodland Scenics snow into the wet paint for texture.



The final destination for the *Polar Express* is the North Pole. We filled ours with figures from the set, including Santa Claus and his elves.

shelf to ours as well, using a couple more 1 x 4 stringers as well as a 4 x 4-foot piece of plywood. Finally, stand the table up and install the 4 x 8 plywood top.

■ Putting down track (kind of)

With the table built, it's time to lay some rails. Assemble the oval with the power section in an accessible spot. The plan creates a 40 x 70-inch network with a siding across the middle.

The main idea is to enable you to let the train run through the siding several times on its journey before throwing the switch and sending it triumphantly to the North Pole.

Assemble the track on the tabletop. Then drill through one of the provided holes in every other section of track, insert a 1" dry-wall screw, and tighten by hand. Be careful not to overdo it so you avoid cracking the plastic roadbed.

Once the track has been fastened to the table, take a pencil and trace around it. When you've completed that task, take the screws out, disassemble the track, and set the sections aside. We don't want to get paint or scenery materials on them!

EASY SNOW-COVERED TREES

Being a winter layout, we knew we would need a lot of snow-covered trees. While commercial snow-covered trees are easy to come by during the holiday season, here's an option for you to make your own.

I was able to make a lot of snowy trees for the layout quickly by using the method shown here. You need just three things: cheap hairspray,

a bag or two of green pine trees in different sizes, and a shaker bottle of Woodland Scenics No. SN140 Soft Flake Snow. You probably already have the tools you need for this project, including a pair of self-closing tweezers, protective gloves, and a garbage can.

As shown in the photographs to the right, this is a straightforward three-step process. First, place a tree in the tweezers, then coat all sides of it with hairspray over a garbage can. (You'll be using a lot of hairspray, so you may want to do this outdoors.)

Second, while the hairspray is still wet, sprinkle the Soft Flake Snow over the top of the tree. You'll probably want to do this over a garbage can as well.

Finally, set the tree aside to let it dry for a bit and then plant it into the layout. Since we built much of the scenery using foam, it was easy to insert the wire tree trunks into the layout. —H.M.



An inexpensive can of hairspray, a bottle of Woodland Scenics No. SN140 Soft Flake Snow, and some model pine trees are all you need.



STEP 1: Coat the tree on all sides with hairspray. Be sure to wear gloves for this!



STEP 2: Sprinkle Woodland Scenics snow into the wet hairspray over a garbage can.



STEP 3: Plant the finished tree into the layout. The foam scenery makes this easy.

■ Scenic touches

Use your pencil to divide your scenes in a manner similar to what we have here. Then use white latex paint on the "winter" areas, and a black or deep red paint (to simulate cobblestones) for the North Pole area. Depending on how much time you have or how elaborate you want to get, you can even "grid" the area to resemble brick paving.

At this time you can also mark the area for the "frozen" lake. Make a note not to paint there; the panels or foil are self-adhesive and may have trouble sticking to paint. Better to put the material directly on the wood.

We built the mountain from layers of 1" foam insulation board stacked on end. We used a hot-wire foam cutter to shape the pieces and glued them together with foam-safe Liquid Nails construction adhesive. We used a pair of Chooch (now Walthers) cast-resin tunnel portals for the tunnel.

We painted the foam hill with white latex house paint and sprinkled on various amounts of Woodland Scenics Soft Flake Snow directly into the wet paint. If you want something with more sparkle, you may want to use some fine glitter as well.

We decorated the hill with an assortment of evergreen trees prepared with the hairspray technique shared on the previous page. Because the hills are made from foam, planting their wire trunks was as easy as pushing them into the foam – not a drop of glue was needed.

For the North Pole, in addition to the building flats shown on page 30, we added a small, lighted Christmas tree, and an assortment of small blocks wrapped up as giant gifts to add color and excitement. We completed the scene with more *Polar Express* figures from Lionel, including Santa and his elves.

We built this layout the first week of December last year, and everyone involved enjoyed the experience. It really helped us get into the holiday spirit, and we hope you enjoy building it too! CTT

GREAT PLAY VALUE!

THE SET INCLUDES POSITIONABLE FIGURES.



THE TUNNEL LOOP ADDS RUNNING ACTION.

THIS CAR FEATURES A FLIP-UP SCENE FROM THE MOVIE.



With the rugged hills, snow-covered trees, and frozen lake on this side of the layout, you'd believe you're racing through the Arctic tundra on your way to the North Pole aboard the *Polar Express*. The CTT staff was able to build this exciting layout in less than a week, and you can too!