

BUILD A REALISTIC TOY TRAIN LAYOUT



HOW TO PROJECTS

Make rivers & lakes • Build roads •
Plan track • Scenery tips

Adding scenery adds a new dimension to a railroad. Use the ideas in this booklet to get started today. (Jim Forbes photo)

Just add water

THREE WAYS TO MAKE RIVERS AND LAKES

story and photos by Kent Johnson

Water, water everywhere – and it's never been easier to create a realistic body of water on your layout.

Modeling water can be as easy as using varying shades of green, brown, or blue paint to simulate a river or stream. To make this type of water even more authentic, you need only to blend dirt and sand with the wet paint.

If it's a glossy, yet highly durable body of water you want to create, then you'll likely find clear or tinted acrylic sheets quite useful. When laid over the top of a painted area, this material can give your water a greater sense of depth.

Lastly, if you want water that flows over your layout terrain, companies such as Woodland Scenics offer easy-to-use liquid materials. Unlike two-part epoxy-

resin that requires mixing, new products pour straight from a bottle or squeeze out of a tube. As these materials set, it's even possible to add natural-looking water effects, such as waves and rapids.

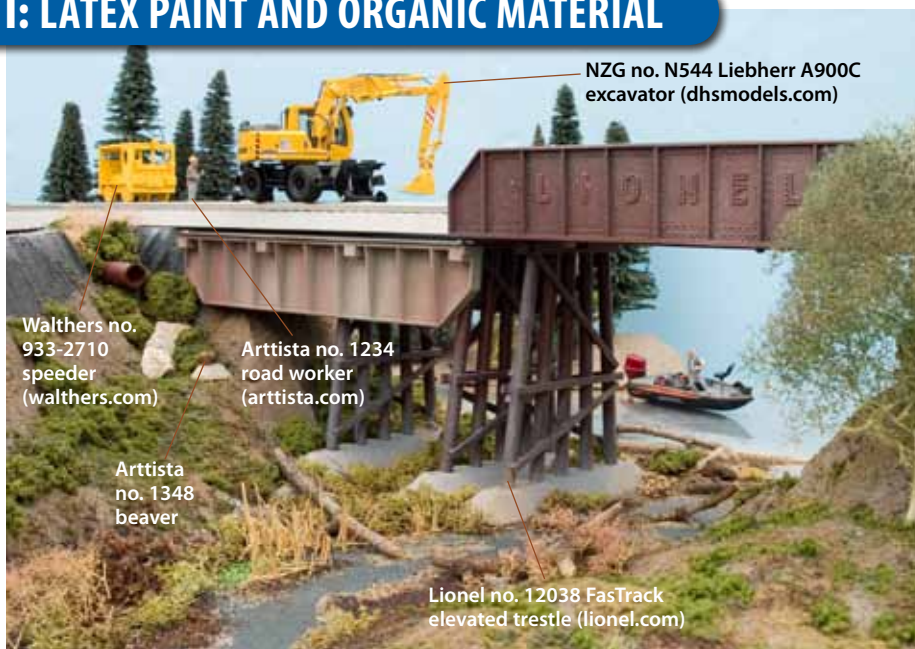
Use these three techniques independently, in progression, or in combination to vary the color and dimension of your layout scenery. But most importantly, just add water! **CTF**



Latex paint and organic materials

Sheet of clear or tinted acrylic

I: LATEX PAINT AND ORGANIC MATERIAL



Swamps, ponds, and backwater bogs are commonly found along the railroad right-of-way. It's quite easy to re-create this type of water using little more than latex paints and natural materials from your own backyard.

SUPPLY LIST

- **Earth-colored latex paint** – a light brown or tan shade (flat finish) provides a transition from the shoreline to the water.
- **Water-colored latex paint** – a dark brown, green, blue, or black shade (gloss finish) will work for most waterways.
- **Organic materials** – use dirt or fine sand to form silt deposits and add texture along shores. Other useful materials include lichen, peat moss, pea gravel, rocks, twigs, and dead leaves or plants. Make sure they're thoroughly dried and filtered.
- **Tools** – you'll need a few paintbrushes (½ to 1½ inches wide) and a spoon to evenly apply the organic material. Use airtight containers to store the dry materials you've filtered with a tea strainer or flour sifter.

BEFORE YOU BEGIN

YOU'LL WANT to keep track, trains, and accessories "high and dry" and away from any paint or scenery materials. After removing train equipment from the layout, cover the rails of your track with a 2-inch-wide strip of painter's masking tape.

Most of the organic scenery materials will leave behind a fine dust, so keep a handheld or shop vacuum ready for quick cleanup. Additionally, have a supply of paper towels or rags available to remove any paint spills.



1 To help visualize the scene and guide your work, use a permanent marking pen to outline a border for the body of water. You may even find it helpful to mark locations for other scenic details.



2 Use a narrow-width brush to apply a thick coat of earth-colored latex paint to the area that surrounds the water. The object is to create a natural-looking transition from ground to water.



3 While the earth-colored paint is still wet, apply water-colored latex paint to define the flow of your water. Paint down the center of the waterway before blending the colors at the perimeter.



4 Sprinkle a thin covering of fine sand, peat moss, and dried tea leaves along the edges of the shore to create a murky bog. You can even add a few sand bars to the water-colored paint.



5 Use white glue to attach shredded lichen, tree branches, and various dried plants along the edge of the bog. Lastly, insert sprigs of straw to represent reeds and then allow the scene to dry.

II: PLEXIGLAS SHEETS OR PANELS



Lakes or deepwater seaports are readily created using clear or tinted acrylic sheets. This type of flat waterway is quite durable and can be easily dusted and cleaned, making it ideal for placement along the edges of your layout.

SUPPLY LIST

- **Acrylic sheets or panels** – offered in a variety of tints and dimensions. This material is commonly called “Plexiglas” and is often found at hardware stores. It can be cut, sawed, and drilled without breaking.
- **Plastic wrap or film** – the same material used to keep food fresh can also be used to make waves under an acrylic sheet.
- **Water-based spray paint** – safe for use on wood, plastic, and foam board. Alternatively, use a paint roller to apply a thin, smooth coat of latex paint.
- **Tools** – you’ll need a plastic-cutting knife or fine-tooth saw to trim the acrylic panels to fit. Plastic-compatible adhesive can be used to attach acrylic.



1 Unlike other layout landscapes, large bodies of water are best modeled flat. If your layout framework doesn’t have a solid level tabletop, install a uniform surface made from plywood, hardboard, or thick insulation foam board.



2 Position the acrylic panel over the scene to determine what needs to be trimmed. Use a plastic-cutting knife to first score the panel, and then cut or snap the panel to fit. Use a straightedge and clamps to ensure safe cuts.



3 Use a paint roller or spray cans to apply dark blue, green, or black latex paint over the entire water scene. Your goal is to apply a thin covering-coat of paint that shows beneath the acrylic.



4 While the water-colored latex paint is still wet, add earth-colored paint along the perimeter. Use spray paint to keep the coat light and provide a subtle transition from water to land. Allow all the paint to dry overnight.



5 Most acrylic panels are sold with a protective film covering both sides. Remove the film before you use the panels. To simulate rippling waves, wad the film or a piece of plastic wrap into a ball and then spread the crinkled material over the painted water.



6 Place the cut acrylic panel over the film and then drill pilot holes for small screws that will hold the panel in place. Lastly, glue landscape forms and scenery details at the perimeter to hide the edges of the panel and screws.

III: WOODLAND SCENICS REALISTIC WATER



Bubbling brooks and wild rivers make intriguing water features. Using ready-mixed Woodland Scenics Realistic Water and Water Effects liquids, you can easily pour a natural-looking waterway for your layout.

SUPPLY LIST

- **Woodland Scenics water** – Woodland Scenics no. C1211 Realistic Water solution pours straight from a bottle. Allow the liquid to harden, and then add no. C1212 Water Effects.
- **Woodland Scenics talus** – Woodland Scenics nos. C1274 Fine Brown Talus and C1275 Medium Brown Talus can be used to line a streambed.
- **Adhesive** – Woodland Scenics no. S191 Scenic Cement holds the scenery materials. Mist the scene with 70 percent isopropyl alcohol, and then drizzle out the matte medium.
- **Latex paint** – earth-colored paint provides the base color.
- **Tools** – gather a few paintbrushes and a spoon.



1 Outline where the stream will flow, and then create a 1- to 2-inch-deep channel down the middle of the path. When you're satisfied with the path, seal any gaps and then paint the area with a thick coat of earth-colored latex paint.



2 While the earth-colored paint is still wet, add a few large stones first, followed by various sizes of Woodland Scenics Talus. To create a more natural look, avoid applying a uniform layer of talus or stone.



3 Randomly sprinkle fine gravel, sand, and dirt to cover the painted streambed. You'll also want to add a rough course of scenery material along the banks of the stream. Allow the paint to dry thoroughly.



4 Use an old dishwashing liquid bottle to drizzle Scenic Cement over the scene. Be sure to saturate the entire area, including the scenery along the streambed. Allow the material to dry thoroughly overnight.



5 Fill the streambed with Realistic Water and then allow the liquid to cure 24 hours before repeating the process to add depth. To create rapids, apply Water Effects on top of the cured water and shape with a paintbrush.

MAKE A SPLASHY SCENE

A **WATER** scene opens up your layout to intriguing details.

- Add fishermen, swimmers, and aquatic wildlife near the water.
- Place a buoy on the surface to enhance the illusion of depth.
- Find O scale boats and recreational watercraft in discount stores. Sand a rounded hull flat.



Go to classictoytrains.com and click on "Downloadable articles" to purchase other scenery features like this.



Street running is a common sight in this busy industrial area on Dennis Brennan's O gauge layout. A custom-crafted grade crossing makes it easier for vehicles to cross the tracks once the train clears.

Make a realistic ROADWAY CROSSING

WOOD PLANKS PAVE THE WAY OVER O GAUGE TRACK

story and photos by Dennis Brennan

We've all driven, ridden, or walked over railroad grade crossings, but have you ever looked closely at how they're constructed? Today, grade crossings are made from many different materials, including gravel, concrete, asphalt, steel grates, rubber, and wood.

Once you understand how grade crossings are constructed for real railroads, you'll find it's fairly easy to make a realistic wood grade crossing for your O gauge layout.

Close-up on crossings

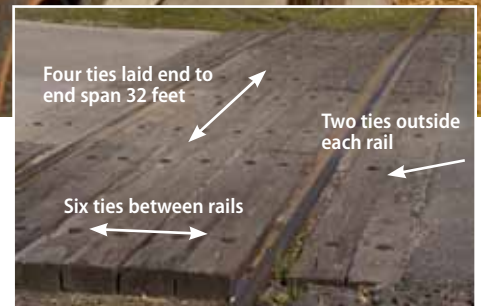
Wood grade crossings are made from standard 8-inch-wide by 8-foot-long railroad ties that are spiked directly to the track ties. In a typical arrangement, you'll find six ties placed side by side between the rails and two ties positioned outside of each rail. The inset

photo above shows these details.

The biggest variation in a crossing is the length. In order to span the full width of a roadway, one or more sets of ties are placed end to end. A two-lane road that's wide enough to allow parking on either side (about 32 feet) requires four sets of ties. There's rarely that much real estate on an O gauge layout, so I place three sets of ties end to end for a scale 24-foot-wide street.

To hold the ties in place, real railroads use either dome-head or square-head drive spikes. Two or three spikes are set into each tie – one in the middle and the other two spaced about 12 inches in from each end. Also the outside ties don't actually touch the rails. There's usually about a 1½-inch gap. Inside each rail, the gap is 3 inches wide to accommodate wheel flanges.

Now that you know the basics, you



Prototype grade crossings can be made from a wide variety of materials. As shown here, crossings assembled from wood railroad ties are fairly common.

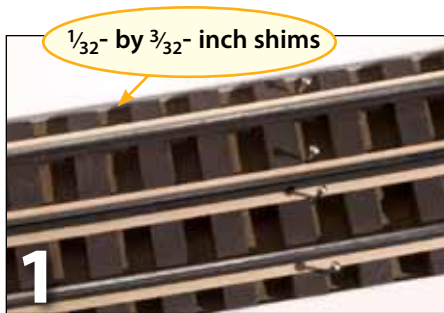
can start making a realistic crossing for your Atlas O or GarGraves track.

Making chopsticks

The first step is to cut ⅝-inch basswood strips into 2-inch-long pieces that you'll use to model wood ties (8 scale feet). Before cutting the square ⅝-inch stock that abuts the rail on GarGraves track, use a file or sanding block to bevel the edge of one corner. This helps to keep the tie level and flush with the adjacent ties. For Atlas O sectional or flexible track, the ⅝-inch-square strips need no modification.

Since the shim material won't be visible, you just need to cut it the width of your grade crossing – 6 inches long (24 scale feet) in this case.

To cut several pieces the same size, use a razor saw and a miter box with a stopping block. The advantage to using a stopping block is that you'll have to measure only the first piece you cut. After cutting the first tie, cleaning the cut with a file and verifying the accuracy



1
For a crossing over GarGraves track, you'll need to glue shims to both sides of the center rail and along the outer rails. Use pins to hold the shims against the rail until the wood glue has set.

of the initial cut, you can use this piece to position the block for additional cuts.

In a similar fashion, a cutting tool from Northwest Short Line (nwsl.com), called the Chopper also makes it easy to trim pieces to the same length. However, don't try to sever the ties with one cut. The thickness of the basswood strip will deflect the blade, causing it to cut at a slant. Instead, cut about one-quarter of the way through each side.

Stain the wood

After you've cut all the strips required, you'll want to stain the basswood before assembling your crossing. Mix 1 drop of black India ink, 1 tablespoon of brown drawing ink, and 1 tablespoon of alcohol in an old coffee cup. This mixture yields a brownish-gray stain that matches the color of a weathered wood tie.

Drop the ties into the cup of stain, swish them around a bit, and then



2
After installing the square 5/32-inch ties, glue the remaining rows of 5/32- by 3/16-inch ties. The unstained ties shown here have a staggered alignment to accommodate a slight curve in the track.

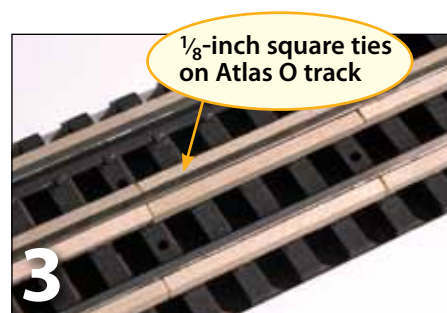
remove them to dry. Stain the uncut shim stock by drawing it through a stain-soaked rag. Even though this stock won't be visible, it doesn't hurt to finish all the wood.

Now is a good time to paint your rails (I used brown spray paint). Decant a little paint into a disposable cup or container and then load a small brush with paint. To simulate rusty and grimy steel rails, drag the brush along the web (side) of the rail. Keep paint thinner handy for cleaning up.

Crossing construction

To build a crossing over GarGraves track, start by gluing the shim pieces along each side of the center rail and the outer rails, as shown in **Photo 1**. I found it was best to apply carpenter's wood glue directly to shims, rather than the track ties.

Next, glue the square 5/32-inch ties adjacent to the center and outer rails.



3
Shims aren't needed on Atlas O track. Attach the 1/8-inch-square ties directly to the plastic ties using all-purpose adhesive. After these have dried, add the remaining 5/32- by 3/16-inch ties.

Be sure to maintain a 1/8-inch space between the outer rail and the ties placed closest to it. This gap is designed to accommodate the wide wheel flanges found on most O gauge trains. Also, remember to place the beveled edge along the base of the rail.

Press the ties into position and remove any excess glue with a toothpick. Allow the glue to set completely before adding the 5/32- by 3/16-inch crossties.

While waiting for the glue to dry, you can test-fit the remaining ties. It's also a good idea to roll a railcar back and forth through the crossing after you temporarily position the ties.

When you're certain everything fits properly, remove the loose pieces. Squeeze a bit of glue on a piece of wax paper, and then use a toothpick to transfer a small drop to each track tie. Start at one end and work your way across, one row at a time. See **Photo 2**.

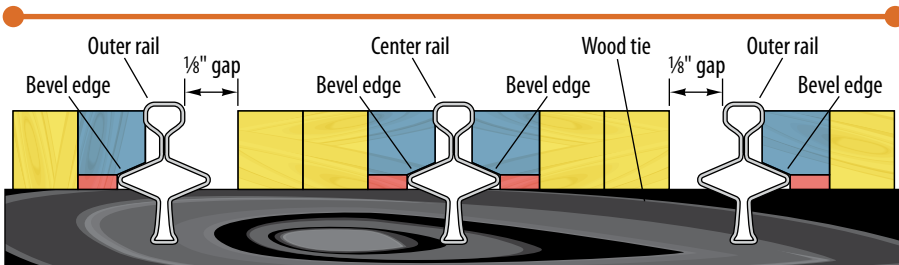
If you're using Atlas O track, start by gluing the 1/8-inch-square strips adjacent to the center and outer rails, as shown in **Photo 3**. I applied all-purpose adhesive along the bottom of the rail to bond the wood to the rail and the plastic tie plates. To keep the ties from getting too messy, use a small dab of adhesive.

Because the 1/8-inch strip doesn't completely cover the tie plate, the adjacent row of 5/32- by 3/16-inch ties will need a beveled edge to sit flush. Here again, use a small file or sanding block to angle one corner and then check the fit. As previously suggested, temporarily position the remaining ties before gluing them in place.

If you want to detail your crossing, use Tichy Train Group O scale no. 8035 square bolt and washer castings to add square-head drive spikes (tichytrain-group.com). To represent dome-head spikes, I use sequin pins.

Once you get started, the process goes fast. In one evening you can easily add several realistic grade crossings to your layout. **CTT**

TRACK CROSS-SECTION



Depending on which track you use, you'll need the following Northeastern Scale Lumber Company basswood strips to build an O gauge grade crossing that's 24 scale feet long (northeasternscalelumber.com):

PARTS FOR GARGRAVES TRACK

- 132STR532 1/32 by 3/32 by 24 inch (1)
- 532STR316 5/32 by 3/16 by 24 inch (2)
- 532STR532 5/32 by 5/32 by 24 inch (1)

PARTS FOR ATLAS O TRACK: 18STR18, 1/8 by 1/8 by 24 inch (1), 18STR532, 1/8 by 5/32 by 24 inch (1), 532STR316, 5/32 by 3/16 by 24 inch (2)

20 EASY SCENERY TIPS



HINTS FOR CREATING AN IMPRESSIVE LAYOUT SETTING

by Kent Johnson

Adding scenery to your toy train layout is one of the simplest ways to enhance its overall appearance. For me, it's also one of the most enjoyable aspects of the hobby. While that's not always true for every layout builder, there are certainly a number of steps you can take to help make the process much less intimidating and far more rewarding. Here are 20 of my favorites tips for creating effective scenery on any toy train layout. **CTD**



1 Work from photos. Before you start making scenery, it's best to have a clear mental image of the scene you'd like to create. Since my mind often fails me, I like to have plenty of digital images, color prints, or slides on hand to help guide construction and use of color.



2 Sketch a scenery plan. You already know how essential a good track plan is to building an entertaining and trouble-free layout, right? The same can be said of a plan that references where and how you'll add terrain to your layout.

On a photocopy of your track plan, use colored pencils, markers, or crayons to sketch where you'll place mountains, trees, rivers, roads, towns, and other scenic features. Additionally, you can use this plan to estimate the materials required and help you budget accordingly.



3 Add a photo backdrop. In addition to working from photos, you can work *with* photos to quickly create the illusion of expansive layout scenery. A wide variety of printed photo backdrops featuring natural settings or cityscapes is available from manufacturers such as Backdrop Warehouse (backdropwarehouse.com). You can also try taking your own image to a photo processor, who can generate oversized color prints.

Make sure that the photo backdrop is one of the first scenery elements you install. It may be all the "scenery" your layout needs, plus you'll find that it's much tougher to add a backdrop after you've completed other areas.





4 Scenery in a spray can. Peter Riddle, a frequent CTT contributor, turned me on to this fast and easy tip for ballasting track. In locations where the track is subject to close inspection, Pete uses rock ballast. But where it's more distant from visitors' eyes, he sprays his cork roadbed with a gray-colored textured paint (Krylon no. 18201 Black Granite or Rust-Oleum no. 7995830 Pebble) purchased at home-improvement outlets or paint stores.



7 Just add water. Water covers most of the earth's surface, so why not try modeling some form of it on your layout? Aside from applying a coat of blue, green, or brown latex paint over bare plywood, I like to use brown-tinted acrylic sheets to represent deep bodies of water. I prefer acrylic with a smooth surface, but some sheets have subtle textures that look a bit like rippling water. This material is commonly called "Plexiglas" and is often sold at hardware stores for use in replacing broken window glass.



5 Paint the rails with pens. One of my favorite scenery tasks takes only a few seconds to complete but will make your trackwork look spectacular. Even on days when I don't have much time or motivation to complete a big project, I can always grab a set of Floquil (testors.com) no. F3801 track weathering markers and use them to paint both sides of all three rails. Best of all, no preparation or clean-up is required here.



6 Use dirt to make dirt. The cost of commercial materials is one reason some layout operators choose not to add scenery. Thanks to my friend Lou Sassi, author of *Basic Scenery for Model Railroaders* (kalmbachbooks.com), I've found that combining raw materi-

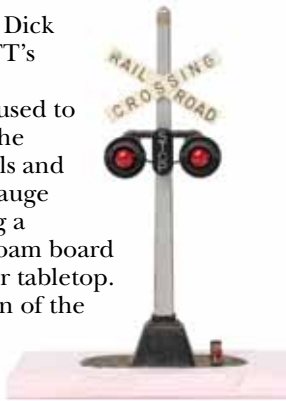
als, such as dirt, rocks, and twigs, with earth-toned latex paint yields realistic ground covering. Because I can find much of what I need in my own backyard, the expense is, well, dirt cheap!



8 Dense forest alternative. Buying or making enough trees to fill even a small O or S scale forest can cost a fortune and take days to complete. A less costly and time-consuming alternative is to make a forest that's thinned as a result of fire, disease, or harvesting. Manufacturers such as Woodland Scenics (woodlandscenics.com) offer bare tree armatures (no. TR1125) in bulk, along with a variety of stumps (nos. S31 and S32) and dead fall (no. S30).



9 Sunken signals. Dick Christianson, CTT's founding editor, showed me a trick he used to reduce the height of the oversized Lionel signals and accessories on his O gauge layout. Start by placing a ½-inch-thick layer of foam board or Homasote over your tabletop. Determine the position of the accessory, and then trace the outline of the base with a pencil. Use a sharp utility knife to cut the outlined area down to the plywood base. Finally, remove the foam plug and place the signal into the ½-inch-deep hole. The signal may still look oversized, but this tip helps minimize the effect.



10 Use sound to enhance scenes. Complete, full-featured sound systems have become an integral part of most toy train locomotives made today. While these engines offer an ideal entry point for adding sound to a layout, there are many other ways you can bring a scene on your layout to life using electronic sound effects.

Consider installing accessories, such as an MTH no. 30-9102 operating firehouse with fire truck and alarm sounds or a Lionel no. 24110 PRR tugboat with harbor sounds. Z-Stuff for Trains (z-stuff.net) also offers easy-to-install sound circuits for reproducing station announcements, water tower operations, locomotive refueling, and even warning-bell sounds from a simple crossing gate.



11 Paved streets and buried tracks. A layout with paved streets and highways included in the scenery makes for a great place to display O scale vehicles.

Unfortunately, not all layouts have room for train tracks and wide roads. In the May 2005 issue of CTT, Peter Riddle demonstrated how to accommodate both by routing a railroad down the middle of a street – an authentic practice called “in-street running.”

Pete cut ½-inch-wide strips of black foam-core poster board to fit between the rails of his O gauge track. He then placed wider portions of foam core against the outside rails (on top of the track ties) to represent asphalt roadway. To keep the roadway surface stable and level, Pete installed shims in various locations under the wide foam-core sections.



12 Driver behind the wheel.

Most locomotives manufactured these days include an engineer positioned at the throttle. You can easily maintain the same level of realistic detail on city streets by adding a figure behind the wheel of your cars and trucks. Most of my O scale drivers began as seated figures. Use a fine-tooth razor saw or rail nippers to trim the figure's legs to fit under the steering wheel.

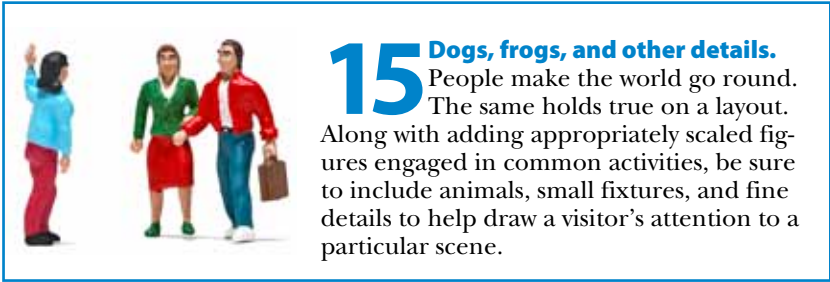
13 Scenery safety net. Position scenery and terrain elements, including clumps of ground foam, trees, and earthen berms, near track curves and along the edges of a layout. These elements will help beautify the scene, mask the hard edges of the table, and prevent a derailed train from plummeting to the floor.



14 Display track with a purpose. Peter Riddle has come up with an interesting alternative to displaying his favorite or collectible toy trains on a shelf or in a case.

Many small towns and cities in North America honor their railroad heritage by displaying a veteran locomotive or caboose in a municipal park. Pete does the same on his layout using older or whimsical locomotives.

Even better, the display track also serves a practical purpose. Pete has wired it to an unused throttle on one of his transformers and uses the track for charging MTH ProtoSound locomotives made without an external charging jack (see page 60 in the September 2007 issue of CTT).

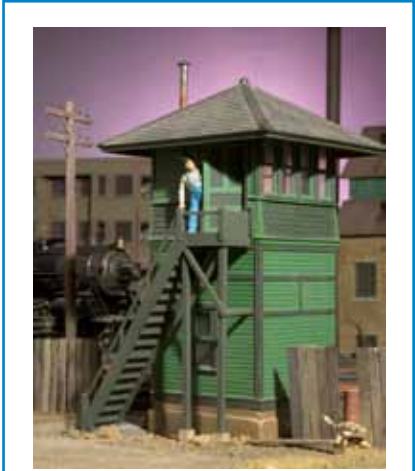


15 Dogs, frogs, and other details. People make the world go round. The same holds true on a layout. Along with adding appropriately scaled figures engaged in common activities, be sure to include animals, small fixtures, and fine details to help draw a visitor's attention to a particular scene.



16 Attractive table edges. Even if you are not a skilled carpenter, you can still give your layout a professional appearance using pre-finished laminate flooring. These hardwood panels measure 50½ inches long by approximately 7½ inches wide and come

in a variety of wood-grained patterns. They're grooved for easy assembly and are extremely tough, resisting virtually any type of damage that might accidentally occur in a train room. Despite their durability, they are easily cut with a power saw and can be drilled to accommodate control-panel switches. You can cover the edges with L-shaped wooden or PVC outside corner molding, as shown on Peter Riddle's layout.



18 Structures as scenery. CTT contributor Dennis Brennan is a master at enhancing the appearance of even the simplest Plasticville structures (see page 48 in the July 2006 issue of CTT). Try adding weathering effects, interior lighting, and printed signs to your buildings. They'll help visitors relate to the scene you've created and bring the layout to life.

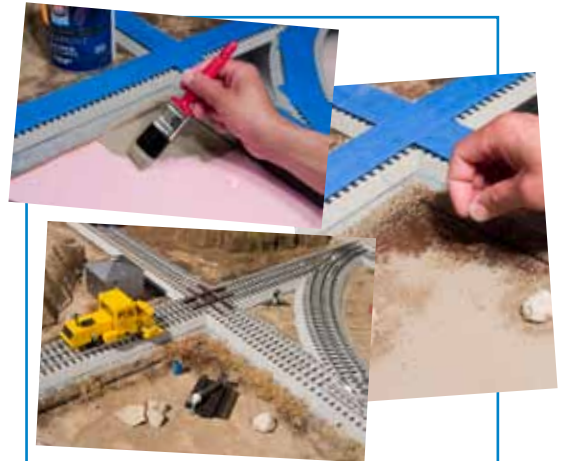


19 Dark tunnels. In the latest edition of Dave Frary's classic book, *How to Build Realistic Model Railroad Scenery* (kalmbachbooks.com), he makes a good suggestion on how to prevent light or exposed benchwork and wiring from showing through the end of a tunnel. Dave uses corrugated cardboard and dark-painted rock-wall castings to create a tunnel liner that extends from one portal to the other. He has also used sheets of Styrofoam insulation, styrene, and plywood to form a liner, but I prefer using 8-inch-diameter culvert pipe.



17 Keep a clean scene. Many scenic projects on a layout can be accomplished with paint and masking tape. I like to use 2-inch-wide blue painter's masking tape to protect track rails and ties as I add paint and scenery along the right-of-way.

Peter Riddle uses masking tape to define green-painted yards and to create straight edges along painted-on concrete patios, driveways, and sidewalks. When removing tape from delicate foam-core surfaces, he enlists the aid of a heat gun or hair dryer. With a bit of direct heat, the tape will release without leaving any adhesive residue behind.



20 Go ahead and make "mistakes." I can't begin to tell you how many people I've heard say, "I'm not an artist, so I don't do scenery on my layout." With all the materials and publications available today, you'll be amazed at what you can accomplish without much skill. And once you do try your hand at a bit of layout scenery, don't be afraid to make a goof or two. After all, scenery in the real world features many natural imperfections.



To purchase more information about adding scenery to your layout, go to ClassicToyTrains.com and click on "Downloads."

Step-by-step track plan



MOVING FROM PENCIL SKETCH TO COMPLETED DRAWING

by Neil Besougloff • Illustrations by Kellie Jaeger

Few of us can draw a perfect track plan on our first attempt. Most of us use up dozens of sheets of scrap paper before creating anything that resembles a workable plan.

Here's a look at part of the process I used, from a rough pencil sketch, to an initial computer-drawn plan that didn't quite work, to the final plan (or close to it) for my 15- by 17-foot O gauge layout. Following the same path could save you time and effort when designing your next layout, and result in a track plan that better fits your individual needs.

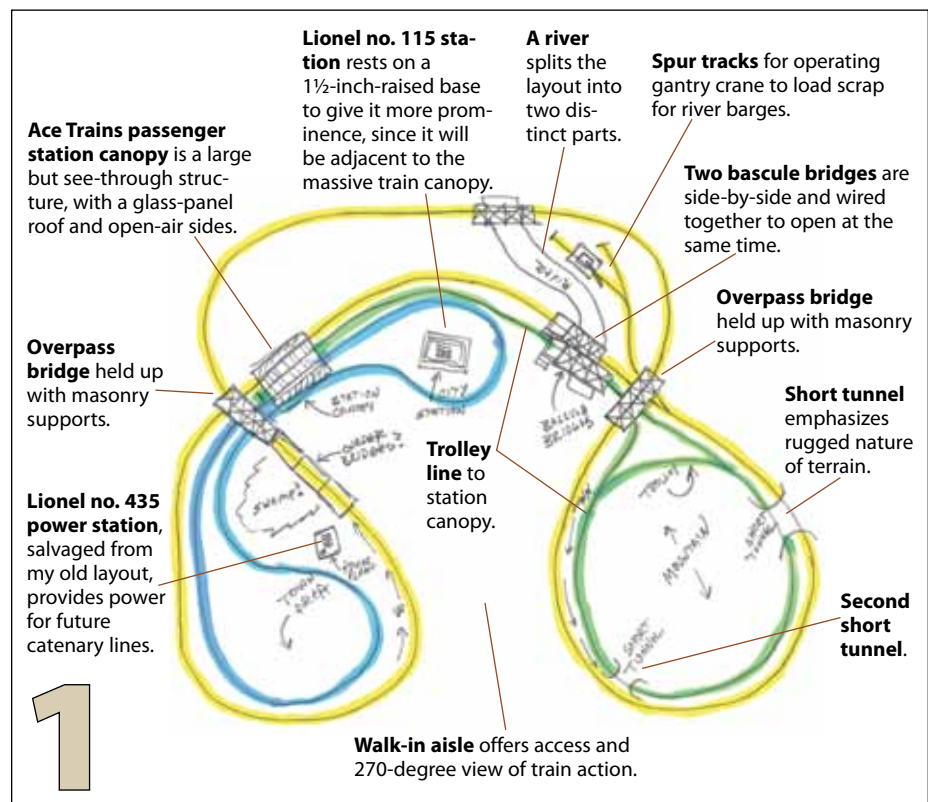
I had five goals in mind before I ever picked up a pencil. The goals were shaped by two elements: the strengths and weaknesses of my previous layout, and the manner in which I preferred to operate trains on that layout (primarily sit back and watch them go around).

For example, my old layout contained a pair of reverse loops, a big siding, and several spur tracks. As it turned out, I almost always ran my trains in the same direction (never using the reverse loops) and, since I overwhelmingly favor passenger trains, I never switched freight cars on the spurs. So while reverse loops and multiple spurs are important elements in many track plans, for me they were near the bottom of the list.

Here were my five goals:

1. A walk-in layout with separate loops for modern and prewar passenger trains. The modern loop needed to be able to handle an O-72 locomotive, and the prewar loop couldn't have track switches or crossings that might trip up some of my "flange-challenged" tinplate trains.

2. A waterway to justify the two bascule bridges that I kept from my old layout. Scenery-wise, the waterway needed to divide the layout into town and mountainous sections.



▲ **This is my original pencil sketch.** The different loops are highlighted with colored markers. To be accurate, I used the bottom of a coffee mug as a measuring tool for the O-72 curves of the modern loop (in yellow) and then made the O-31 and O-42 curves of the prewar loop (in blue) proportionately smaller. Note the green track, which started off as a loop-and-spur trolley line. In the subsequent drawings, it was split into an additional loop for prewar trains and a long siding for the O-72 loop.

3. Enough space on the layout for a Lionel no. 115 city station and an Ace Trains passenger station canopy, both removed from my old layout. Ideally, passenger trains would continuously run through the glass canopy. However, the canopy's footprint – 18 by 24 inches – makes positioning it a challenge.

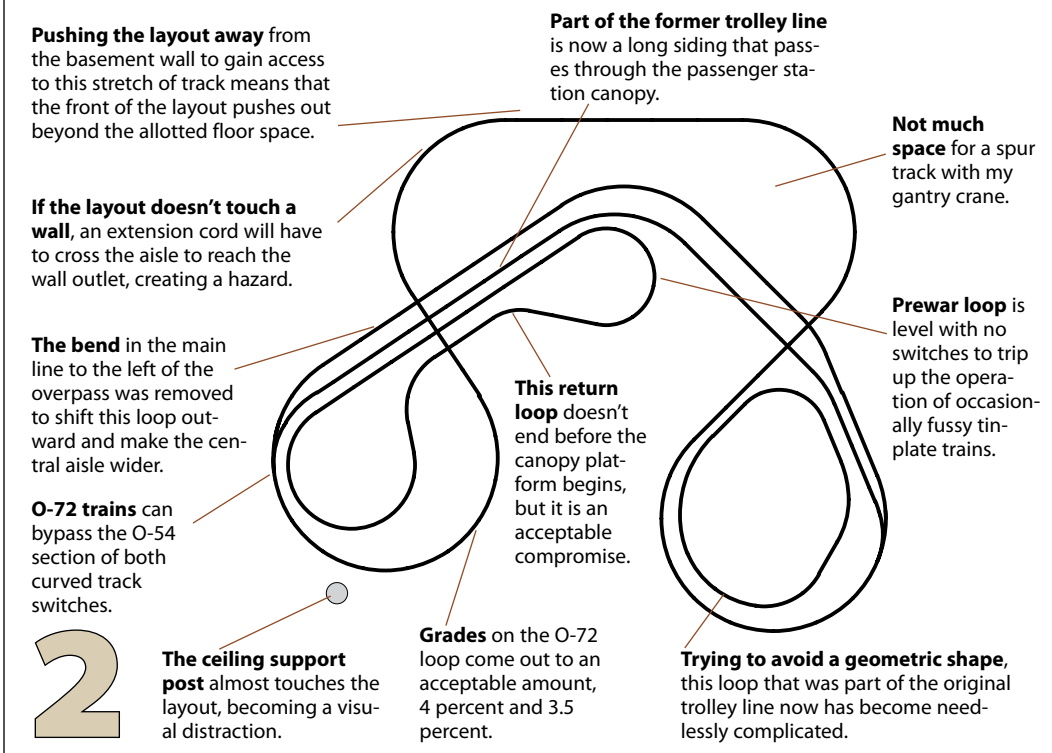
4. No part of the layout could be more than 3 feet away from an aisle. That's as far as I can reasonably reach. No climbing on top of the layout and

no pop-up hatches, either.

5. The layout would have to fit within a 14- by 16-foot corner space of my basement, defined by two exterior walls and an interior support column. The layout couldn't encroach on the adjacent TV/game/playroom area (wife's orders), as defined by an imaginary line between the support column and the wall.

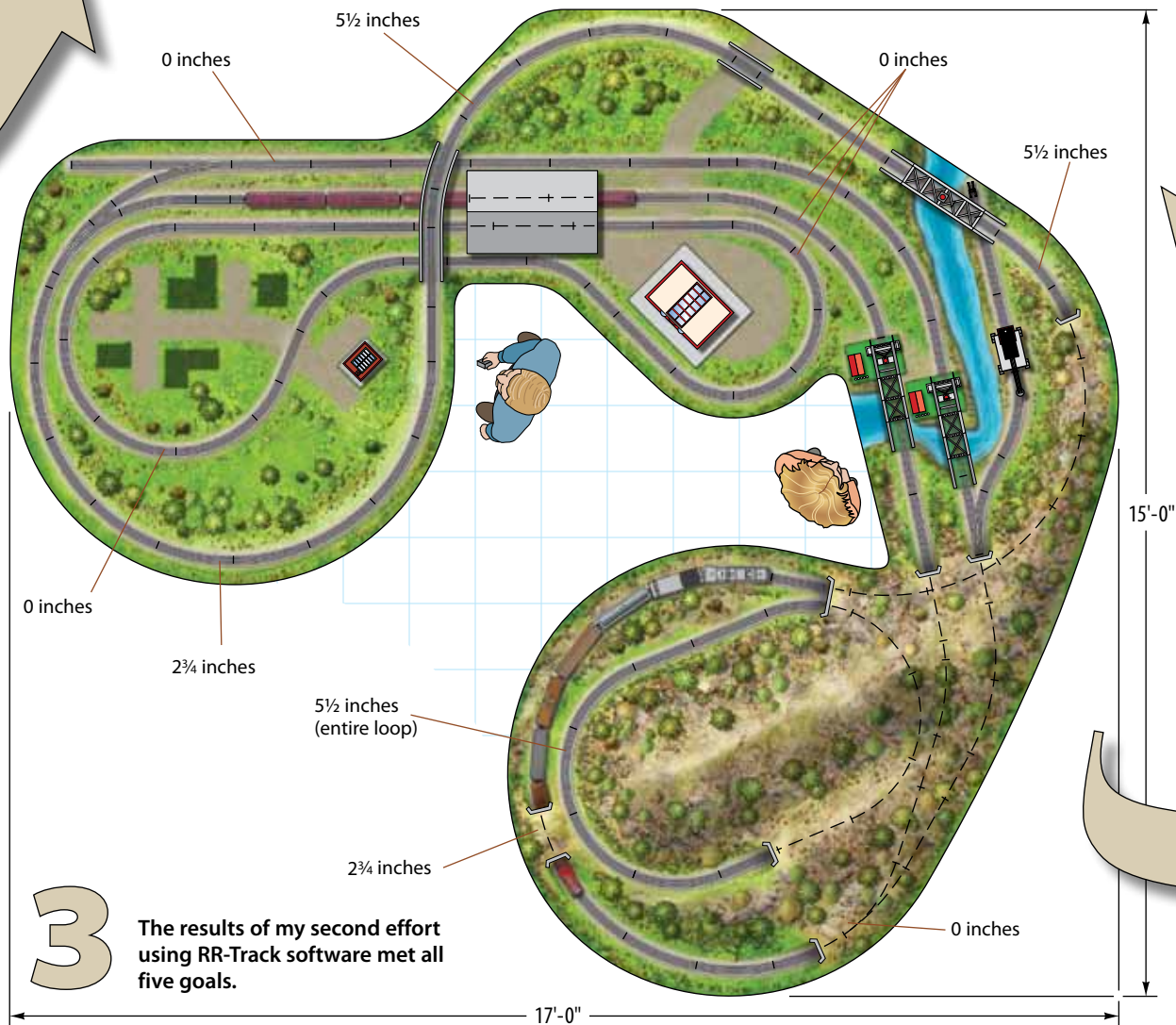
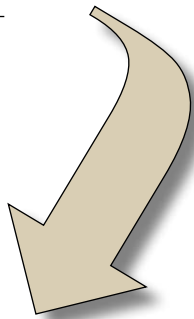
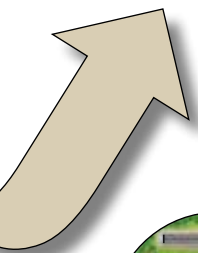
Follow along to see how I put these goals into my initial sketch, which evolved into a finished track plan. **CTT**

► My attempt to convert the pencil sketch to a real plan came out reasonably close. I used RR-Track software (rrtrack.com). Since I already owned a pair of Ross curved O-72/O-54 turnouts, I incorporated them into the design and proceeded to use Ross sectional curves throughout the entire design. This plan, however, fails to meet two of my goals. First, the interior of the central area is more than 3 feet away from an aisle. Second, by moving the layout away from the back wall to gain better access to that central area, the front edge of the layout significantly encroaches on the TV/game/playroom area.



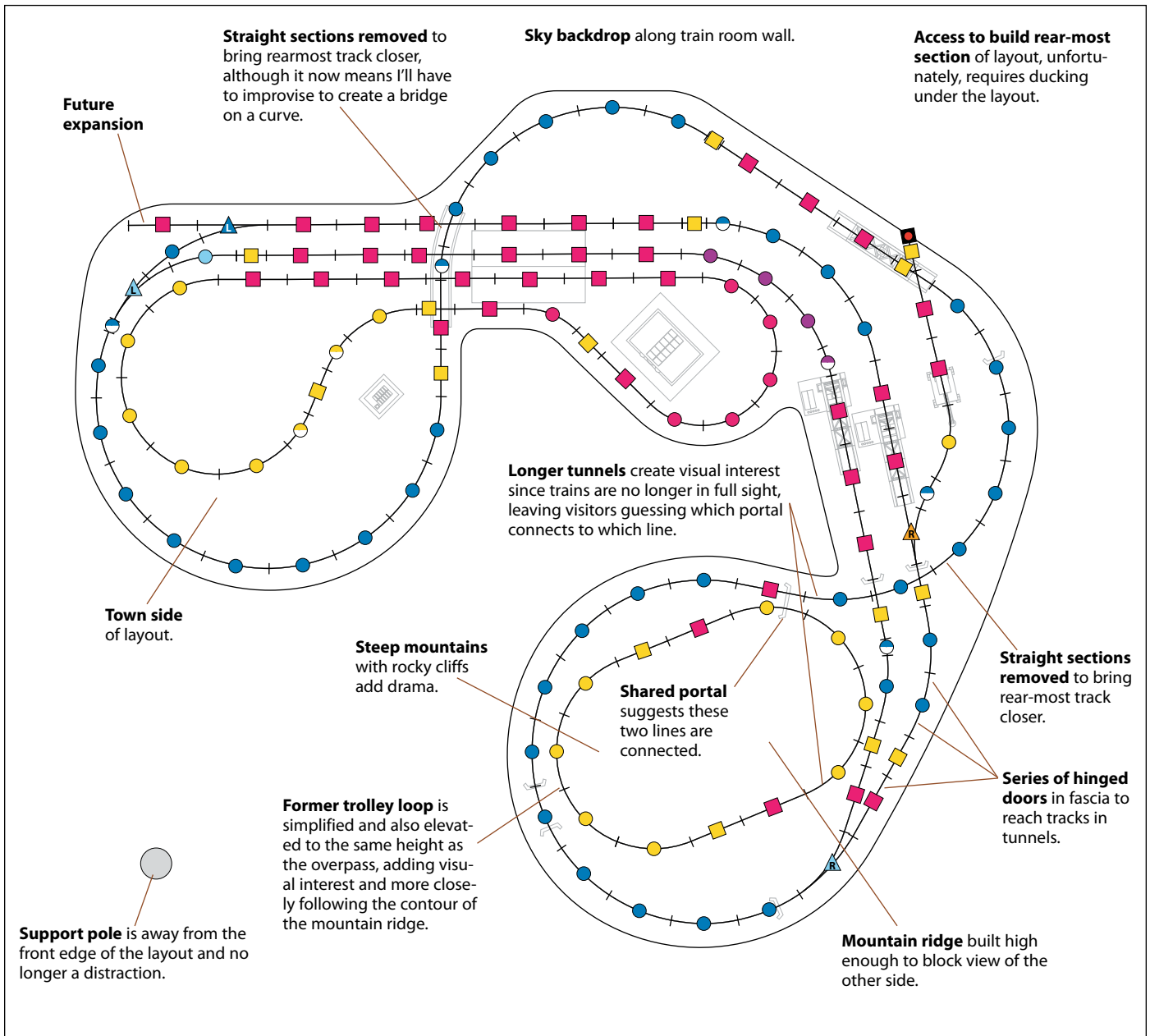
2

The ceiling support post almost touches the layout, becoming a visual distraction.



3

The results of my second effort using RR-Track software met all five goals.



▲ **Rotating the entire track plan 45 degrees clockwise allows most of the layout to fit in the allotted space.** Although the outer edges of the two O-72 curves extend slightly beyond my floor-space limit (defined by the support column and the basement walls), my wife said she could live with the overhang. To restore my 3-foot access goal, I brought the rear-most stretch of track closer to the rest of the layout by removing straight sections at both overpasses. On the downside, after shifting the layout 45 degrees, I now need to crawl under the layout to reach a triangular opening at the corner of the room to lay track and build scenery on the “backstretch” of the layout. I decided that was an acceptable compromise, because once the layout was built, I rarely would need to use that area.

ROSS CUSTOM SWITCHES TRACK COMPONENTS

Quantity	Description/Number
38	14.5-inch straight (020)
15	custom-cut straight
6	O-31 curve (031)
15	O-42 curve (042)
2	O-42 custom-cut curve
1	O-54 curve (054)
3	O-64 curve (064)
1	O-64 custom-cut curve
38	O-72 curve (072)
5	O-72 custom-cut curve
1	O-42 right-hand track switch (110)
1	O-72/54 curved left-hand track switch (161)
1	O-72/54 curved right-hand track switch (160)
1	O-72 left-hand track switch (126)
1	GarGraves track bumper (GG300B)