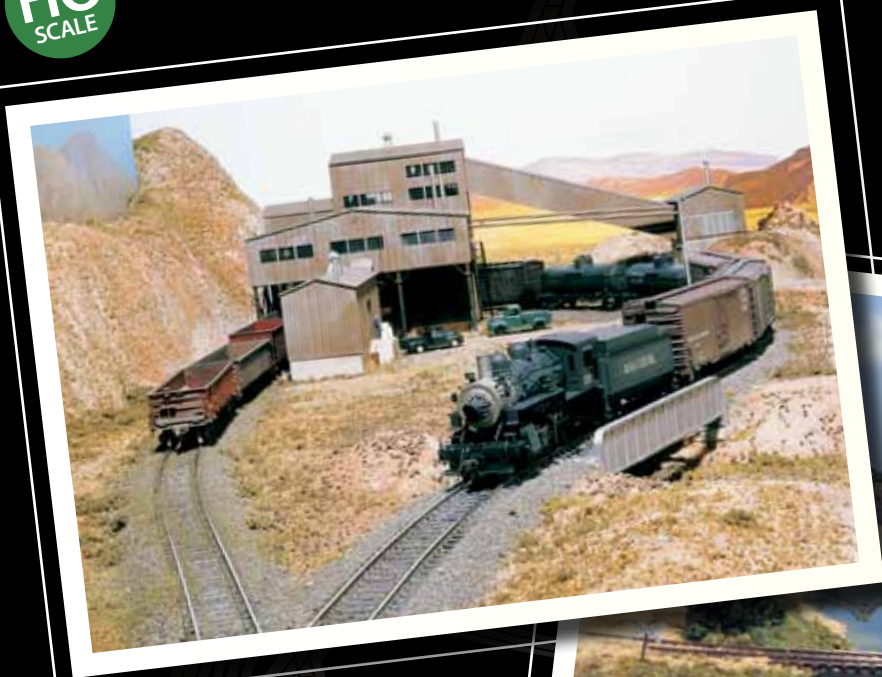


- PLANS FOR GETTING STARTED IN HO OR N SCALE
- INCLUDES COMPLETE TRACK LISTS
- A SUPPLEMENT TO *MODEL RAILROADER* MAGAZINE

Workshop tips

Two great layouts for beginners

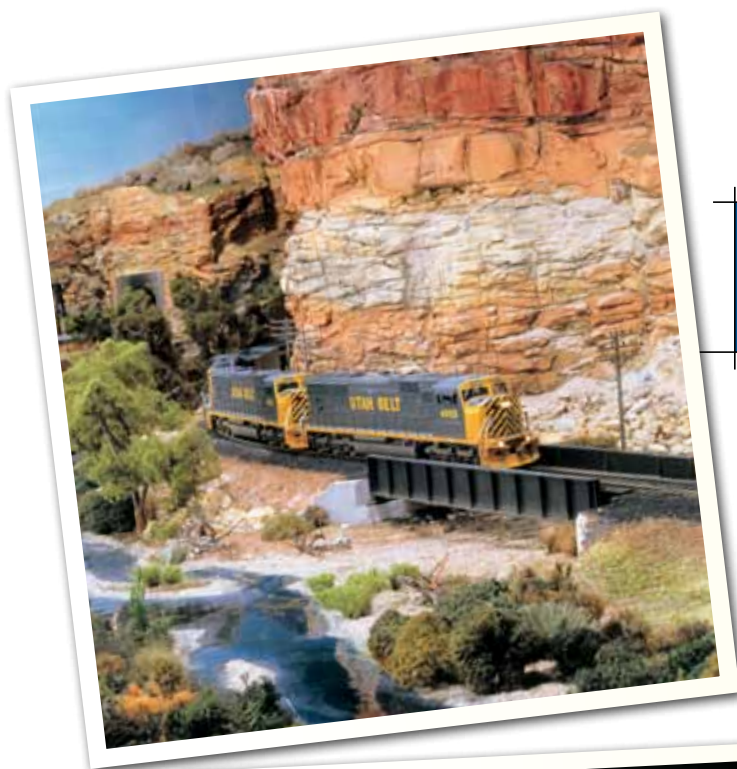
HO
SCALE



N
SCALE



- How to build simple table benchwork using plywood or a hollow-core door
- Complete wiring instructions for both layouts
- Tips for laying and ballasting track
- Scenery techniques for backdrops, rocks, water, trees, and more!



For some, building a model railroad means depicting hard-working trains running through rugged mountain passes, as seen on Eric Brooman's HO scale Utah Belt railroad. Eric Brooman photo



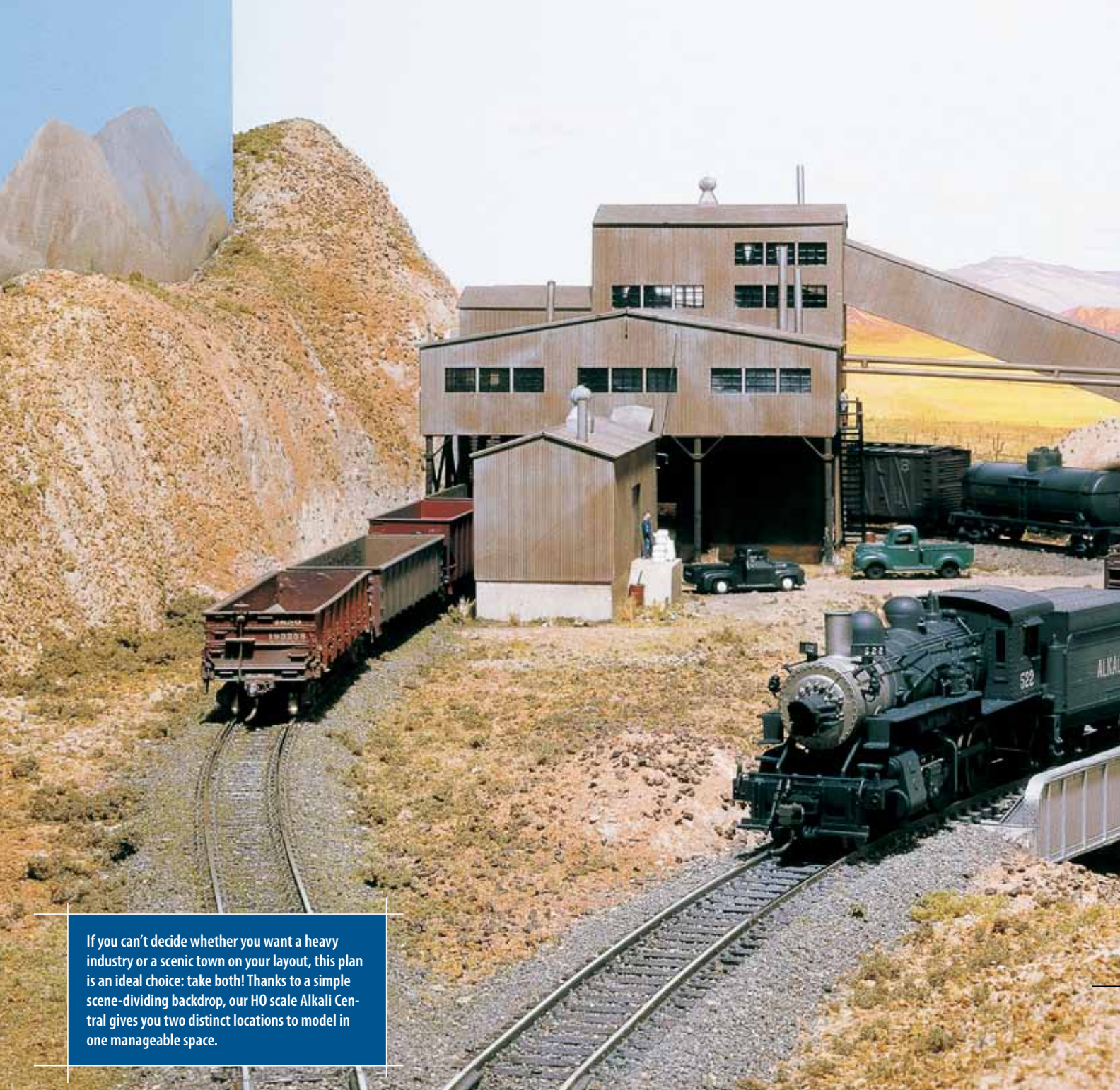
Others see model railroading with an eye on short trains running on casual schedules, as illustrated by this Eastern fishing village called Maggie's Cove, built by Dave Methlie. Jim Forbes photo



And still others try to capture the excitement of express passenger trains on fast main lines, like modeler Bill Aldrich has created on his HO scale New Haven layout. Paul Dolkos photo

Building a layout is the ultimate expression of the hobby of model railroading. While making models of trains and structures is very rewarding, putting them all together to construct a miniature world, like those shown in the photos on this page, gives those models a purpose.

A great way to jump into the hobby with both feet is to build a small layout. These are good for practicing techniques or trying new scales, and they have the benefit of showing quick results. The following pages contain plans for two such layouts, and both make interesting model railroads.



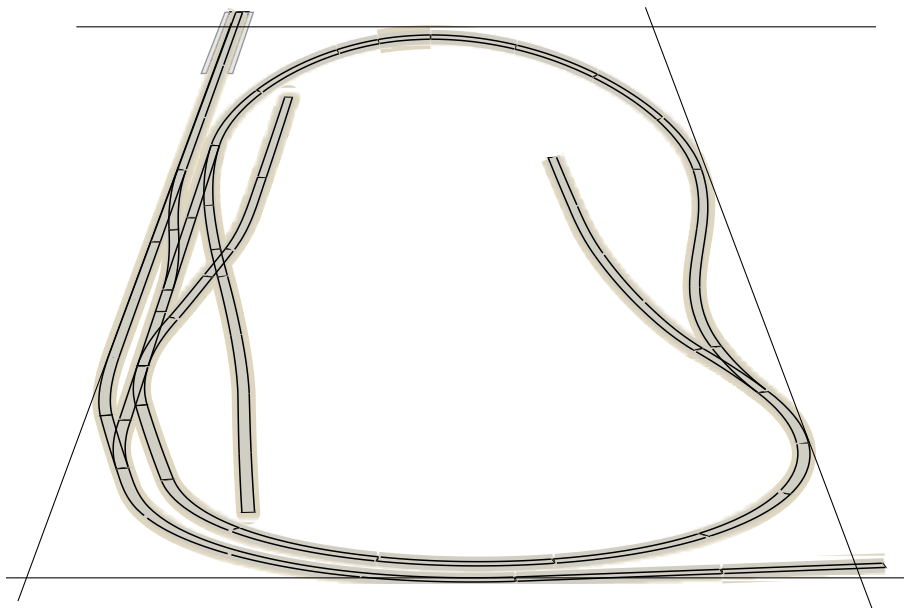
If you can't decide whether you want a heavy industry or a scenic town on your layout, this plan is an ideal choice: take both! Thanks to a simple scene-dividing backdrop, our HO scale Alkali Central gives you two distinct locations to model in one manageable space.

Flextrack through the desert

Taking advantage of both sectional and flexible track



The Alkali Central



SCALE:

HO

CONTROL:

DC POWER PACK

SIZE:

4 x 8 feet

SETTING:

SOUTHERN CALIFORNIA

The Alkali Central is an HO scale 4 x 8-foot model railroad with a backdrop. The backdrop runs diagonally down the middle of the layout, separating the tabletop into two long, dramatically different scenes on each side. This helps the layout seem bigger and the main line feel longer. The town side represents Alkali Junction, a foothills community enjoying the prosperity of the 1950s in Southern California. Many of the town's citizens work at the Haffa Phosphate Mine out

in the desert on the other side of the layout. Alkali Junction is served by the Southern Pacific, which interchanges cars with our shortline railroad, the Alkali Central. The small railroad is owned by the mining company and runs a steam locomotive it bought used from the SP. Though only a few feet, the run around the end of the backdrop in our scheme of things is 23 miles. You can simulate the distance by running a number of laps before arriving at the mine.

STEP 1

LET'S START BUILDING

Photos by William Zuback • Illustrations by Rick Johnson

For your version of the Alkali Central, we recommend that you use the basic Hediger table shown below. Its lightweight, all-plywood construction produces a rigid, yet portable table for your model railroad. We stained the wood on ours to give it a more finished appearance, though you could paint it or just leave the wood its natural color.

We covered the tabletop with a 2"-thick sheet of extruded-foam insulation board, making it easy to add the plan's two corner water features without having to cut through the benchwork. If you wish, you could keep the layout really simple by eliminating the water altogether. Making realistic water can be tricky for beginners, so you might prefer to model the river as a dry wash.

The rest of the scenic features on the layout, including the highway that rises up and crosses the track at one end, will be fairly easy to construct with more foam. To cement the layers of foam together, use a latex-based adhesive, such as Liquid Nails for Projects.

STEP 2

LIFT-OFF BACKDROP

Building the backdrop was simple – we just went out and bought a prefab interior door. Doors are typically 80" tall, so the one we found fit on the layout just right. Make sure if you do the same, you choose one with a smooth birch skin; it'll be easy to paint without the grain showing through. Prime the door, sand it smooth, then coat it with a flat blue latex paint.

There are several good reasons to make a backdrop removable. For one, it's easier to paint scenery or cement paper buildings to the backdrop if it's off the layout. To attach the backdrop to the layout, make a notch in the 2" foam base, then bolt 3" metal angles to the plywood base to serve as clips to hold the backdrop in place.

STEP 3

LAYING OUT TRACK

The track plan and materials list on the next page show the track pieces used to build the layout. We chose a combination of Atlas sectional track and flextrack, taking advantage of each system's benefits. Flextrack comes in 3-foot lengths, can be bent any way you want, and lets you build a layout with fewer rail joints. However, flextrack requires careful cutting and fitting, especially on curves.

With sectional track you just shove the pieces together and you're done. Though the geometry of sectional track may be restrictive, it does make it difficult to make mistakes, like

laying out bad curves that have kinks or are too tight.

To lay out the track plan for the Alkali Central on your table, purchase all the track components and start putting them together. Note that half the sections on the end curves are 18" radius and the other half are 22". The core of the railroad is all sectional track, so lay that out first. Use a track nail here and there driven only halfway down to keep the track from sliding around. Once you've laid out the sectional track, it's an easy matter to fill in the gaps with the flextrack.

STEP 4

WORKING WITH FLEXTRACK



Use a hobby knife with a dull blade to mark the cut locations, then use the nippers to make the initial cut. I make mine 1/4" or so long and trim back carefully with the nippers to get a good fit. Make sure you wear eye protection – those little pieces of rail can fly around with amazing velocity. If the cut is close but still not quite there, trim the rail the rest of the way with a flat file.

Don't force the rails to fit. If a joiner doesn't slide on easily, dress the rail end with a file, as shown in fig. 2. You should leave a slight gap between rail ends to allow for expansion. One trick is to place snippets of .020" styrene between the rail ends as an expansion gap spacer, pulling the styrene out when you're finished.

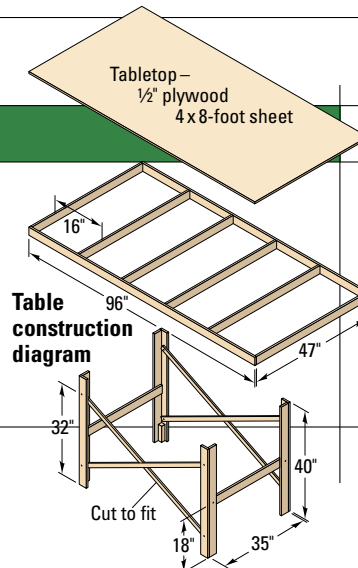
The steps involved in cutting and fitting flextrack are easy, but it's important to work carefully. The best tool for cutting the track is a pair of rail nippers, as shown in fig. 1. Designed to leave cut rail with a flat, flush end, they're available at most hobby shops.

Start by slipping one end of the track into the rail joiners for the section it'll connect to, then bend the section where you want it to go. Before cutting, check to make sure one of the rails hasn't slipped out of the rail joint. If it has, grip the offending rail with needle-nose pliers and shove it back into position. (It's easy to think you've done a perfect job, only to look several sections back and discover a 1/2" gap between rail ends!)



4 X 8 BENCHWORK

- | | |
|---|-------------------------------------|
| 4 x 8 sheet of 1/2" plywood ripped into 13 strips | 1/4" washers (16) |
| 3 1/2" x 96" (1) | 1/4" wing nuts (12) |
| 4 x 8 sheet of 1/2" plywood (1) | 1/4" stop nuts (4) |
| 8 foot 2 x 2 (1) | Small box 4d 1 1/2" finishing nails |
| 1/4" x 1" x 10'-0" lattice molding for cross braces (2) | Small box 1" panel board nails |
| 1/4" x 1 1/2" carriage bolts (16) | Adjustable furniture feet (4) |
| | Carpenter's wood glue |



MATERIALS

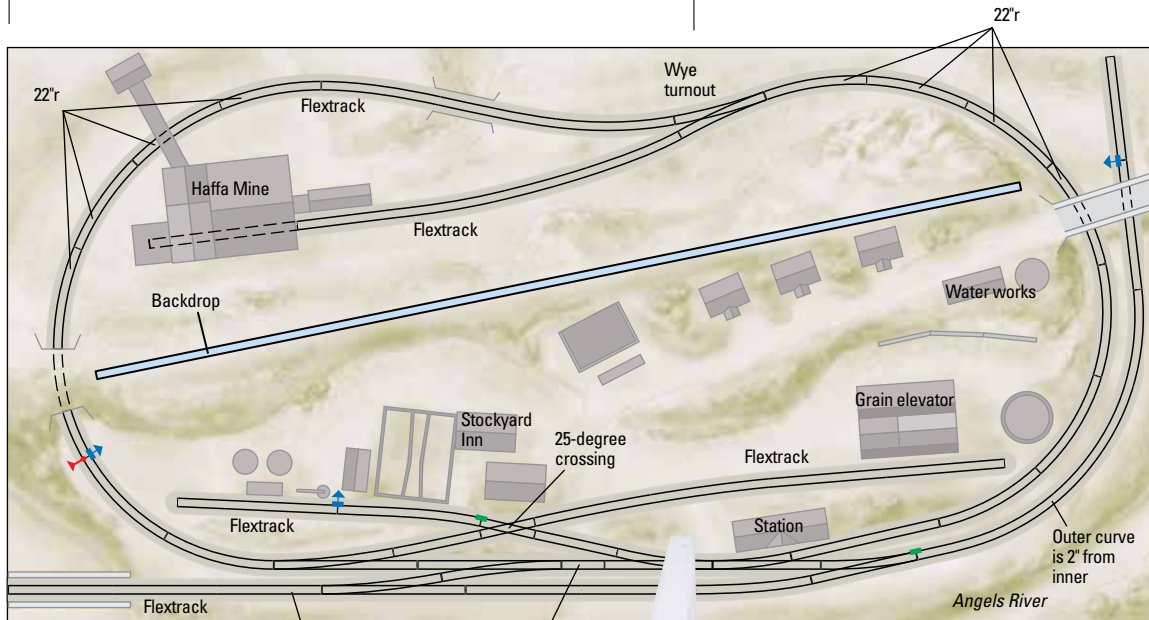
Atlas code 100 track

- 55 insulating plastic rail joiners
- 168 flextrack (7)
- 170 rail joiners
- 172 Custom-Line 25-degree crossing
- 280 Custom-Line wye turnout
- 281 Custom-Line no. 4 left-hand turnouts (3)
- 282 Custom-Line no. 4 right-hand turnouts (2)

- 821 9" straight (2)
- 825 1½" straight (2)
- 833 18"-radius curves (6)
- 836 22"-radius curves (8)
- 842 terminal rail joiners

Midwest Products

- cork roadbed, 3-foot strips (14)



HO scale (1:87)
Scale: ¾" = 1'-0"
Size: 4 x 8 feet

Unmarked curve sections: 18" radius
Unmarked straight sections: flextrack
Unmarked turnouts: no. 4

Alkali Junction



STEP 5

ROADBED



Once the track is laid out, trace its outlines with a pencil, then remove the track in manageable chunks. There's no need to take it completely apart again.

Mark the track center lines and then start laying cork, as shown in **fig. 1**. Note that the cork comes in straight-sided sections and is cut partially through at an angle in the middle. Complete this cut with a sharp hobby knife, making two narrow strips with beveled edges. (It's tempting to tear the strip apart, but cutting will yield a neater job.) Lay the halves back together with the beveled edges to the outside, and voila, you have roadbed!

On wood surfaces, glue down the cork using white or yellow glue. If you're gluing the cork to a foam surface, use a construction adhesive, such as Liquid Nails for Projects or PL300 (made by Loctite Products). In both cases you can tack the cork in place with map pins until the glue dries.



For laying roadbed at a location where two tracks converge, such as a turnout, start by laying both outer cork strips. Next, place the inner cork strip for the diverging route, trimming it with a sharp hobby knife. See **fig. 2**. After cementing that piece in place, cut and fit the inner strip for the straight leg of the turnout, as shown in **fig. 3**.

Once the adhesive has dried (about 24 hours), gently sand the roadbed edges with a sanding block, rounding them off slightly. It will make the job of ballasting easier.

STEP 7

LAYING TRACK



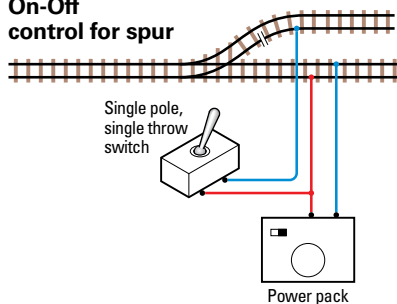
With the roadbed and wiring in place, at last you can lay the track. When laying track on a wood base I use track nails, being careful not to drive them in so far that they distort the ties.

For a layout built on a foam base, glue the track down with construction adhesive. A tiny bead of adhesive down the middle of the track is all you'll need, making sure you keep the adhesive away from the switch points. Use map pins or track nails to help hold things in alignment until the adhesive dries, as shown above.

STEP 6

ON-OFF SECTIONS

On-Off control for spur

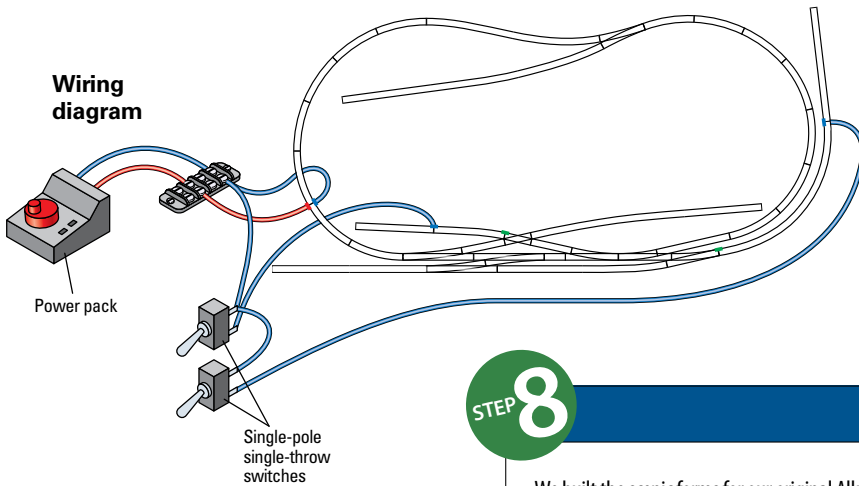


The Alkali Central is designed to be a two-train layout, but not with both running at the same time. For example let's say the SP train is coming into town from under the highway bridge to switch cars. The Alkali Central engine can be parked on the oil tank track with the power to that section turned off. Once the SP engine has dropped off its cars for interchange, it can either move forward to the river bridge or slip back under the highway bridge where it can be parked and that track section turned off. You can then return power to the oil track and run the AC steamer.

To do this we installed toggle switches (as shown above) on two track sections so we could turn power to them on and off. For placement of these sections, see the wiring diagram on the top of the next page.

It's a good idea to plan on-off sections from the get-go because they need to be electrically isolated. The easiest way to do that is with plastic insulating rail joiners. You need isolate only one rail, then use a single-pole single-throw (SPST) toggle switch to turn the track section on and off, as shown in the illustration above. Mount the toggles on the layout edge somewhere near the track they control.

At this point, you should also add feeder wires. For power to the layout you need only one set, and the wires can go anywhere except to an on-off track. We used a pair of Atlas feeders, as shown in the photo above. These are a pair of rail joiners with wires soldered to them. You'll also need to add one feeder wire to each rail you've isolated in your on-off sections.



LOOKING AHEAD

Once you've honed your layout-building skills on this 4 x 8 railroad, you'll be ready to tackle a bigger project. If you haven't noticed already, the SP's main line departs the layout at two corners, making the Alkali Central a good candidate for expanding your model railroading horizons.

STEP 8

SCENERY

We built the scenic forms for our original Alkali Central using plaster-dipped paper towels over a lattice of cardboard strips. However, if you're using the 2" foam top on the table, it would be easier to build your hills with foam. After carving the hills to shape, cover them with a thin coat of plaster or Scuptamold to hide joints and cut marks.

You'll want a parched look on the desert side of the layout and green grass on the other. The

easiest way to do this is to apply a coat of earth-colored latex paint to the terrain, then sprinkle dry scenery materials onto the wet paint. On the desert side we used Highball Products' Earth and various other sands and dirt available at the hobby shop. You could also use dirt you've taken from your yard, dried and sifted.

For the greener scenery on the town side we sprinkled on various shades of fine ground foam.

STEP 9

BALLASTING TRACK



To finish the track begin by painting it, using either spray cans or an airbrush. You'll need to clean the tops of the rails as soon as the paint has set (before it cures). Make one pass with a putty knife to get most of the paint off, then finish with a Bright Boy abrasive cleaning block.

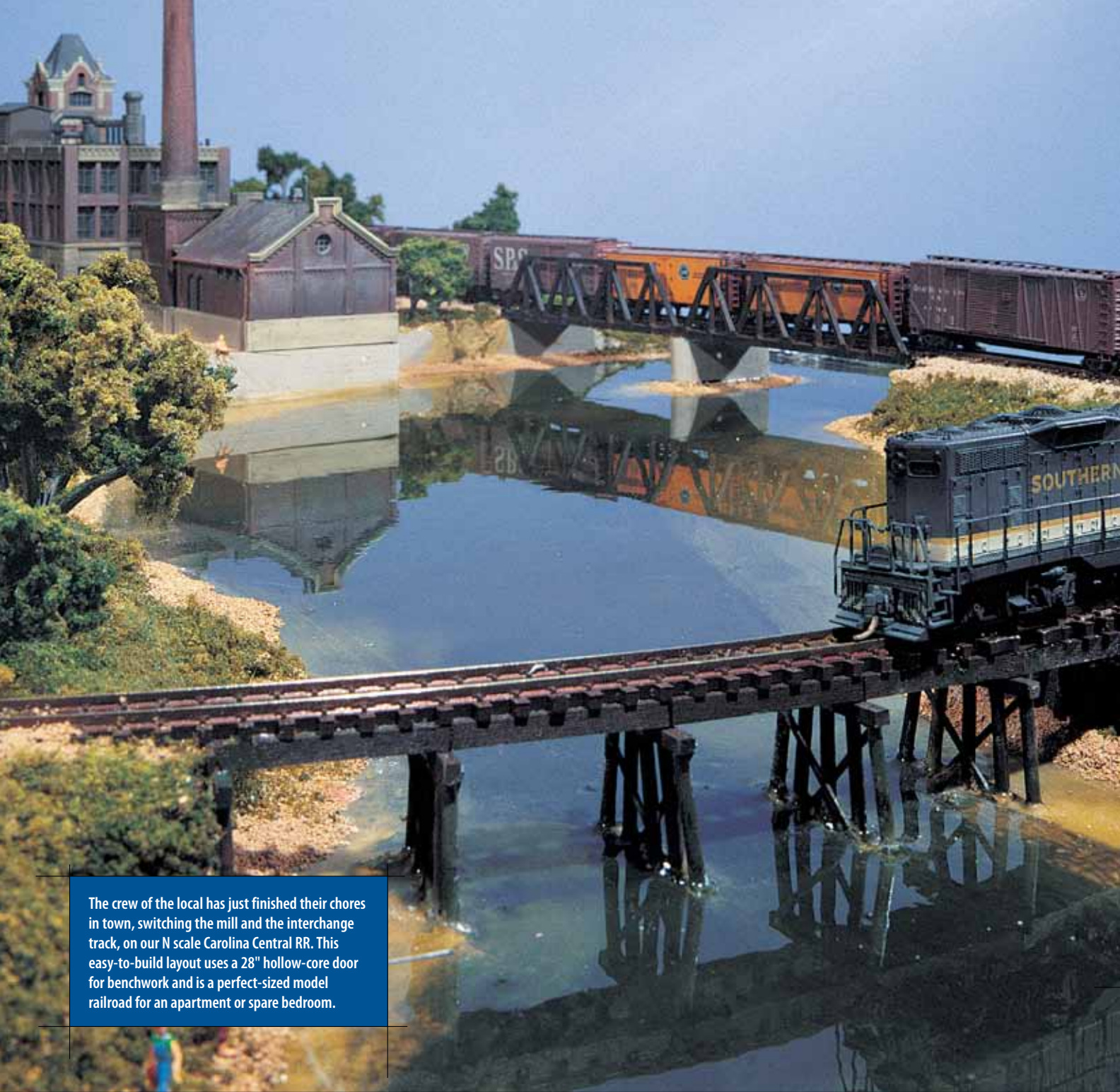
For ballast, we used Highball's gray on the Southern Pacific and cinders on the Alkali Central to visually reinforce the concept that these are two separate railroads, as shown in **fig. 1**. The photos of the ballasting procedure,

though **figs. 2** through **6**, were taken on a different project railroad, explaining the change in color.

Start by carefully spooning ballast down the middle of the track and along the sides, as shown in **fig. 2**. Keep the ballast well away from switch points. Gently spread the ballast with a paintbrush until it's evenly distributed. The photos show a 1" flat brush, which works well for most scales. See **figs. 3** and **4**. Take your time when ballasting track, and you'll get good results.

To cement the ballast in place, spray it with rubbing alcohol, as shown in **fig. 5**. Because of its low surface tension, alcohol soaks easily into the ballast, and the adhesive you apply will follow right in after it, forming an even bond. We used Scenic Cement from Woodland Scenics (see **fig. 6**), keeping it away from switch points.

Don't be afraid to use plenty of adhesive. You know you've used enough glue when you see it begin to seep from under the outside of the ballast.



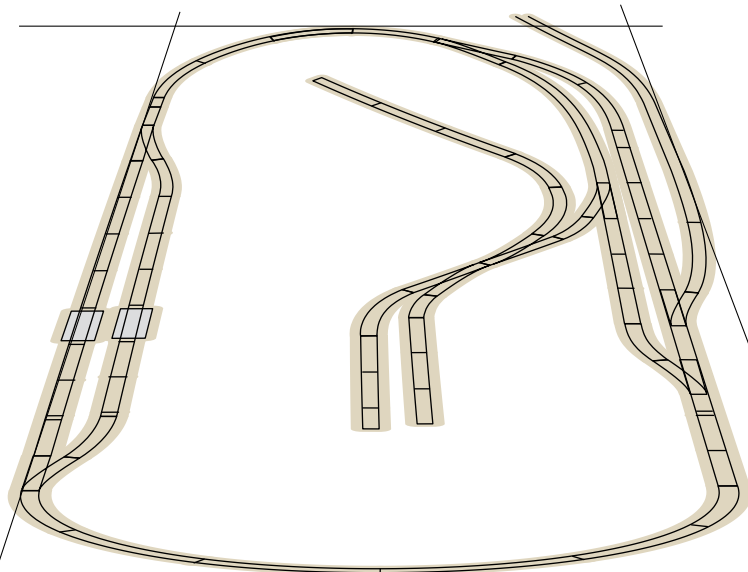
The crew of the local has just finished their chores in town, switching the mill and the interchange track, on our N scale Carolina Central RR. This easy-to-build layout uses a 28" hollow-core door for benchwork and is a perfect-sized model railroad for an apartment or spare bedroom.

N scale on a door

A scenic river and a staging yard add excitement to this layout



The Carolina Central



SCALE:

N

CONTROL:

DC POWER PACK

SIZE:

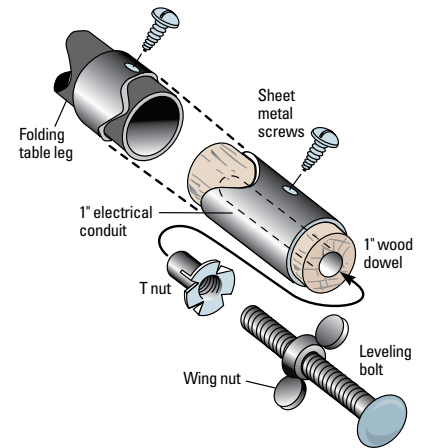
28" x 80"

SETTING:

**SOUTHEASTERN
UNITED STATES**

Because of its small size, N scale is great for making the most of your available space. The Carolina Central layout is a free-standing railroad built on a 28" hollow-core door supported by folding table legs. We set the Carolina Central in the 1950s and designed it to be a subsidiary of the Southern Ry. located somewhere near the Blue Ridge Mountains. The track plan features several rail-served industries, a passing siding, and an interchange track

with the Seaboard Air Line. For added operating interest, we included a two-track staging yard, giving trains a place to travel "beyond the layout." The model railroad also has a large scenic river. The Carolina Central is a good plan for beginners looking to build their first layout. However, the railroad also has enough scenic and operating features to work for more-experienced modelers who find themselves downsizing or just wanting to try modeling in a different scale.



Unlike most project layouts built by the staff of *Model Railroader* magazine, the foundation for the Carolina Central is a 28" x 80" interior hollow-core door. (Check your local home and building center for damaged doors. As long as it's structurally intact, a flat door with a few dents in it should work fine and save you some money.) We used folding table legs to support the layout, though you could easily set the door on a table, sawhorses, or even a few sturdy boxes. The folding legs offer the advantage of making the layout self-contained.

The folding legs are mounted on 1 x 4 supports screwed to the underside of the door. (Be sure you attach the legs to the 1 x 4s – by itself, the door's thin surface can't support the legs.) Cut four 1 x 4s 28" long and apply a bead of Liquid Nails. Place each 1 x 4 in position and secure it with drywall screws. Keep the screws about 1" from the edge, since the center of the door is hollow. To raise the layout to a more comfortable height, we added leg extensions using 1" electrical conduit. We slipped a 20"-long piece of electrical conduit over each

leg and fastened it in place with sheet metal screws. (If you don't want to drill pilot holes into the conduit and legs, you could use epoxy.)

We made the legs adjustable by adding leveling bolts and T nuts. After screwing a 1" dowel into the bottom of each leg, add the T nuts and leveling bolts as shown in the illustration above. The wing nuts are used to lock the bolt in place once the table is level. When finished with the legs, flip the table over and adjust the leveling bolts. Our finished table height is 42".

STEP 2

FOAM SCENERY



Any model railroad looks better when the scenery extends above and below the track. We used a sheet of 1" extruded-foam insulation board as a base for the entire layout, cutting it to match the door's dimensions. We then laid out the track and some of the key buildings to get a feel for the layout. (Don't worry about the flextrack sections at this point.) Once you're happy with how things look, mark the locations of the track, structures, bridges, and river on the foam with a marker.

Next, remove all the items and cut the river out of the foam with a sharp utility knife. Glue the remaining pieces of foam to the door with latex Liquid Nails for Projects construction adhesive (the latex adhesive will not attack foam.) To get the foam to lay flat, place heavy objects such as books on top of it. Let the adhesive dry overnight before proceeding.

After laying the roadbed and track, we came back and built the hillside out of foam as well, gluing and stacking it in layers.

STEP 3

ROADBED



We used N scale cork roadbed under our track to cut down on noise and make the layout look more realistic by raising the track above ground level. To apply the cork to the layout, break the sections in half along the factory-cut perforation, and spread some glue along the track center lines. (We used Elmer's carpenter's glue.) Place one section of cork against the center line and secure it with push pins while the glue sets. Next, place the second half of the cork against the section that's already in place as shown above.

You'll need to cut and fit roadbed sections around turnout locations, but the cork cuts easily with a sharp hobby knife. Once the glue dries, remove the push pins.



MATERIALS

BENCHWORK

- 28" x 80" interior door
- 1 x 4 lumber, 28" long (4)
- Folding table legs
- 1" electrical conduit, 20" long (4)
- Liquid Nails for Projects (2)
- Drywall screws
- 1" hardwood dowel, 18" long (4)
- 1" foam board, 4 x 8 sheet (1)
- T nuts, bolts, and wing nuts (4 each)
- Sheet metal screws (8)

TRACK (Atlas) AND ROADBED

- 2500 30" flextrack (3)
- 2501 5" straight (28)
- 2509 Snap Track assortment (2)

- 2510 9 $\frac{3}{4}$ "-radius curve (6)
- 2520 11"-radius curve (9)
- 2521 $\frac{1}{2}$ 11"-radius curve (2)
- 2538 insulated joiners (1 pack)
- 2539 terminal joiners (3 pairs)
- 2546 Warren truss bridge (2)
- 2517 rerailer (2)
- 2702 standard left-hand turnout (4)
- 2703 standard right-hand turnout (4)
- 3019 Midwest Products N scale cork roadbed (14)
- 308 Micro-Trains uncoupling magnet (2)

ELECTRICAL AND CONTROL

- Single-pole single-throw switches (2)

- Single-pole double-throw switch (1)
- $\frac{1}{8}$ " two-pole jack and plug
- Electrical junction box (1)
- blank cover plate (1)
- 220 Model Rectifier Corp. Tech 4 power pack

STRUCTURES

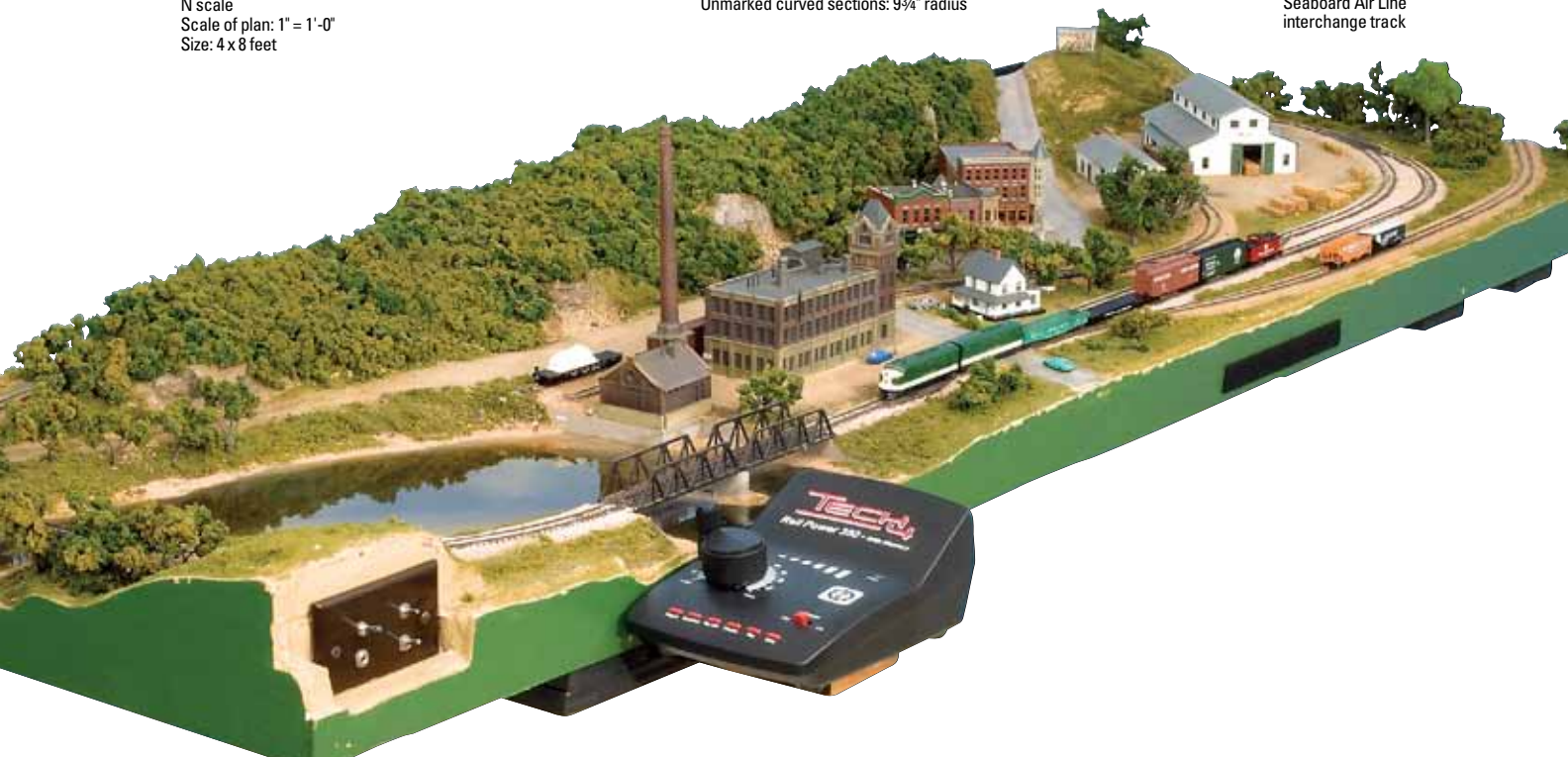
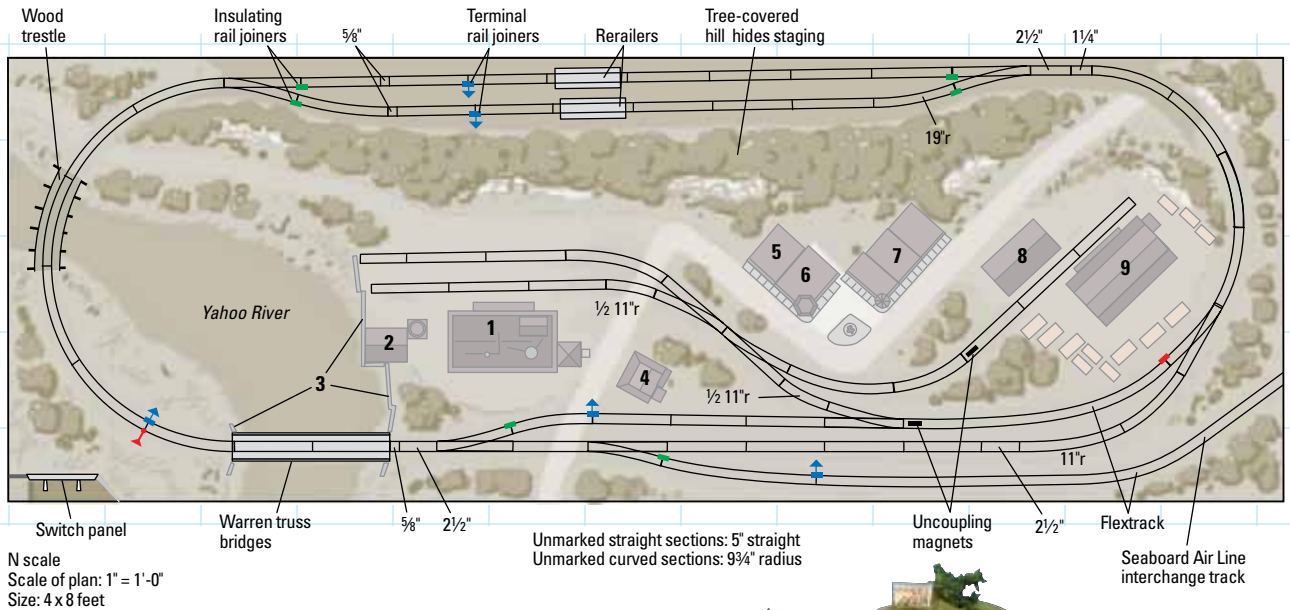
- 1.* Walthers 3253 American Hardware Supply
2. Model Power 1546 Holland Iron & Steel
3. Pre-Size 212 N scale cut stone retaining wall (2)
4. Atlas 2845 Kate's Colonial Home

5. Design Preservation Models 512 Roadkill Cafe
6. Heljan 601 restaurant
7. Walthers 3224 Merchant's Row II
8. American Model Builders 601 General Service Building
9. American Model Builders 604 Transfer Building
10. Blair Line no. 67 timber trestle

MISCELLANEOUS

- Push pins
- Wood carpenter's glue

*Corresponds to numbers on track plan below



STEP 4

TRACK



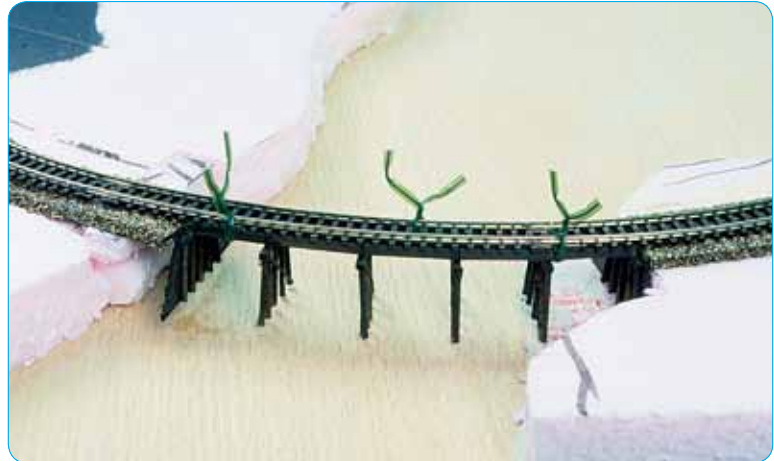
Assemble sections of the track on top of the roadbed. Make sure you add terminal rail joiners (those with feeder wires attached to them) at the locations shown on the track plan on the previous page. Also add insulated rail joiners where shown. These are very important for wiring the layout, so make sure you place them correctly.

Once the track is fit together, run a thin coat of Elmer's glue along the top of the cork roadbed and place the track in position. (This is the time to make any minor adjustments!) We held the track in place with push pins (shown in the photo above) until the glue dried.

For the sections that call for flextrack, follow the steps used on page 6 to size, cut, and lay the flextrack sections. When you have finished laying the track, you can paint and ballast it as described on page 9.

STEP 5

BRIDGES



We used two Atlas Warren Truss bridges and a Blair Line wood trestle kit on the layout. After assembling and painting the wood trestle (before laying the track), we checked how it would fit along the river and adjusted the foam scenery accordingly. After the track was laid, we glued the trestle to the track with carpenter's glue, using

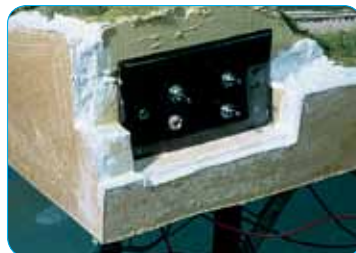
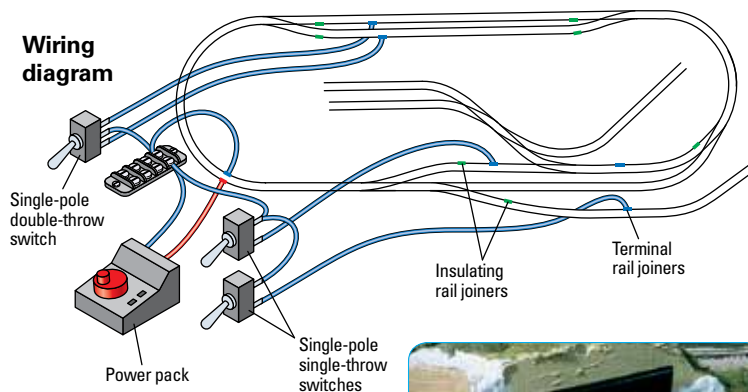
dried. Don't worry if the bridge supports don't quite touch the door surface – we'll take care of that later when we pour the river bottom.

To make the center support for the two Warren Truss bridges, we cut a 1" section out of a plastic Atlas bridge pier and made a new cap for it out of a piece of .020" styrene. A block of foam insulation painted gray would work equally well.

STEP 6

WIRING

Wiring diagram



The Carolina Central's wiring is simple, yet allows you to operate the railroad with more than one train. By adding several on/off switches, you can hold trains in staging, on the passing siding, or on the interchange track while running a train on the main line. This way, you can simulate meets by having one train wait on the siding while another rolls through town.

We used an electrical box for our control panel, drilling a hole through the box and the door to connect the wires to the track feeders. All the toggle switches are mounted in holes drilled in a plain plastic cover plate. The power pack's output wires plug into an $\frac{1}{8}$ " outlet jack, making it easy to remove the power pack for storage.

We used an MRC power pack for the layout, mounting it to a small 1 x 4 shelf that plugs into the side of the layout.

To convert the Carolina Central to Digital Command Control, simply swap the power pack for the DCC system of your choice, however note that you will need to equip your locomotives with DCC decoders.



TURF, SHRUBS, AND WEEDS

Our base scenery layer on this layout is ground foam turf. To start the ground-cover process, paint the scenery with a thick coat of earth-colored latex paint. (It's a good idea to cover the track and ballast with masking tape before starting this step.) While the paint is wet, sprinkle on various shades of Woodland Scenics fine ground foam. Applying ground foam with a shaker bottle really speeds up the process.

Once the paint dries, you'll see that the initial layer of ground covering looks too smooth and regular. To create scenery with more texture, we added some weeds and shrubs, as shown in **fig. 1**. Use coarser textured ground foam and foam foliage clumps to add shrubs and other small vegetation. You can glue the foam to the layout with white glue, or soak the weeds with rubbing alcohol and cement them in place with Woodland Scenics Scenic Cement. Allow the glue to dry overnight.

ROCKS

We added a few rock outcroppings to provide visual interest to the hillside. The rocks are plaster castings made from Woodland Scenics rock molds. Once the plaster hardens, remove the rock from the mold and cement it to the layout with Liquid Nails for Projects. See **fig. 2**. Blend the casting into the hillside with



Sculptamold, a papier-mache type product. Once the castings and surrounding Sculptamold are dry, place a few drops of India ink in a spray bottle of water and spray the rock surface, as shown in **fig. 3**. The ink will settle into the crevices, creating a very realistic effect. When the ink dries, you can use paint to add extra color and highlights to the rocks.

TREES

Even a small layout like this one would need hundreds of trees to look like Eastern mountains. For background trees we used Woodland Scenics clump foliage to simulate the tops of trees covering our hillside. Working in small sections at a time, start by covering part of the hill with Woodland Scenics Hob-E-Tac cement. See **fig. 4**. Next, stretch the foliage material apart in your



fingers until it just starts to crumble, then apply it directly to the hillside. Don't push the material down — just let it lie naturally. For the foreground trees we used Woodland Scenics tree kits.

WATER

Once the bridges and surrounding scenery were in place, it was time to start the river — the scenic highlight of the Carolina Central. First, pour a soupy mixture of plaster to form the river, as shown in **fig 5**.

Make sure to dam the ends with masking tape and work over a waterproof drop cloth. After the plaster sets, paint the deepest areas of the river with flat black latex paint, as shown in **fig. 6**. To represent the shallower areas, feather earth-colored paint from the riverbanks out into the black. See **fig. 7**.

We used Enviro-Tex, a two-part resin material that dries to a glossy surface. (You could also use Woodland Scenics Realistic Water, as a one-part water-based alternative to Enviro-Tex.) Follow the instructions for mixing and applying this material.

The resin creeps up the banks as it cures. This can't be prevented, so after the resin hardens completely, carefully blend the edges of the river and the scenery with ground foam or other texturing materials. We used tan ballast, as shown in **fig. 7**.

