

SCENERY & STRUCTURE

PROJECTS FOR TRAIN LAYOUTS



**Make realistic
trees, p. 60**

WINTER 2017

18 projects to make your layout more realistic!

From the pages of *Model Railroader* magazine

Fit a big industry into a small space p.24

How to paint and detail figures p.56

Use static grass along your right-of-way p.42

AND MUCH MORE!

**Learn how to get big
scenic impact from
buildings only a few
inches deep. p. 24**





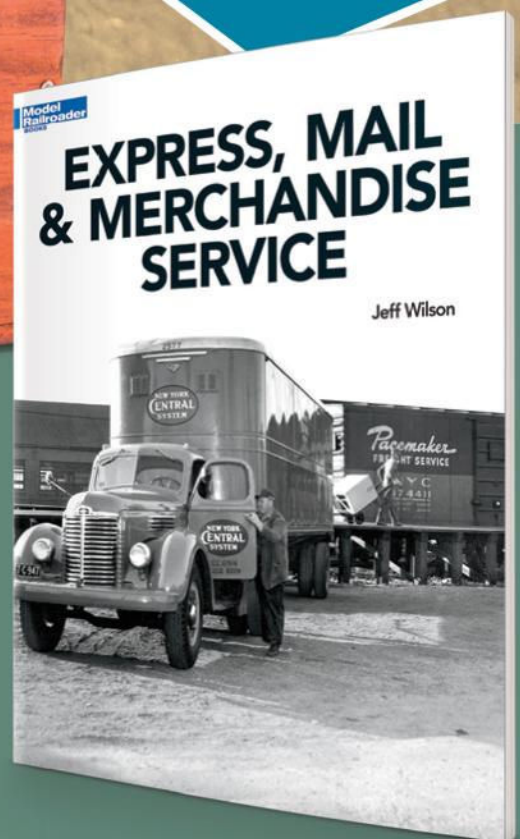
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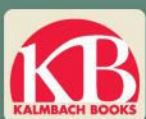
Express, Mail & Merchandise Service is a prototype guide that describes rail express service and merchandise traffic on railroads from the early 1900s through 1960s when railroad personnel handled packages and merchandise – everything from baby chicks and cornflakes to money and machinery – and delivered them to their final destination. A wonderful historical reference that will inspire modelers and railfans alike.

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SCENERY & STRUCTURE

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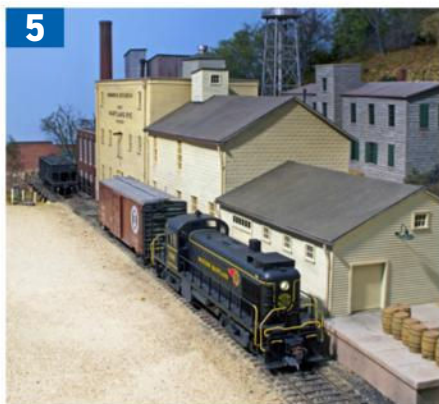
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ON THE COVER: If you're looking for big scenic impact but don't have much room, you can rearrange the parts of a large industry kit to make it fit your space. See page 24. Photo by Bill Zuback



BRINGING LIFE TO YOUR LAYOUT



I'M SURE it will come as no surprise to you that many of the questions we get from *Model Railroader* readers are about scenery and structures. After all, both are key components of bringing a model railroad to life.

Without them, all you have is a piece of plywood, track, and trains. For some people, that's plenty. A rich imagination fills in everything else. But for others, those basic building blocks are only the beginning of an empire.

By adding some grass and trees to your layout, you start to create a sense of time and place. Adding a building or two – or 17 – gives your trains a reason to run and customers to serve. Adding

roads starts to tie the transportation network together. And nothing brings things to life like small figures going about the various tasks of the day.

Really, scenery and structures go hand-in-hand. A street or a road is scenery. But if you think about it, it's also a structure. Likewise, a simple lineside shed is a structure. But it also gives the eye something to see, so it's scenery, too.

While it does involve some work, frequently simpler is better. Sometimes just adding some details to the scenery you already have can help focus attention on certain spots, helping create scenes that carry the viewer through your layout as they run trains.

This special publication isn't just for the beginner. While we bring you the basics, we also provide advice on how to fit industries into small spaces, and what signs to put along the railroad right-of-way, and how to make roads look prototypical – issues that confront model railroaders of all experience levels.

So if you're ready to get off the "Plywood Plains" and bring your vision of your railroad to life, read on. There's plenty here that can bring life to your railroad, no matter what size.

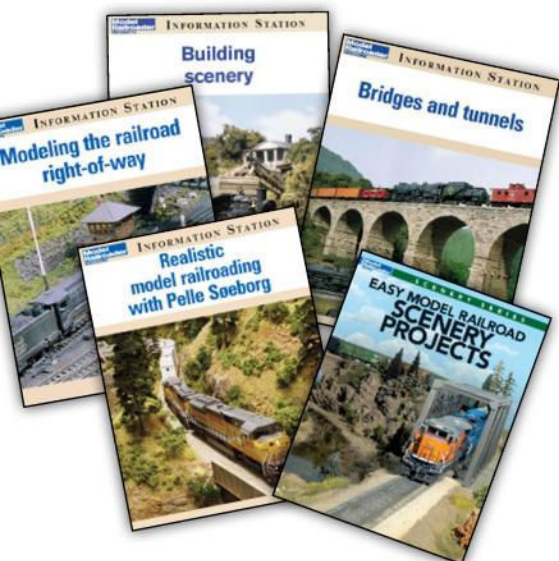
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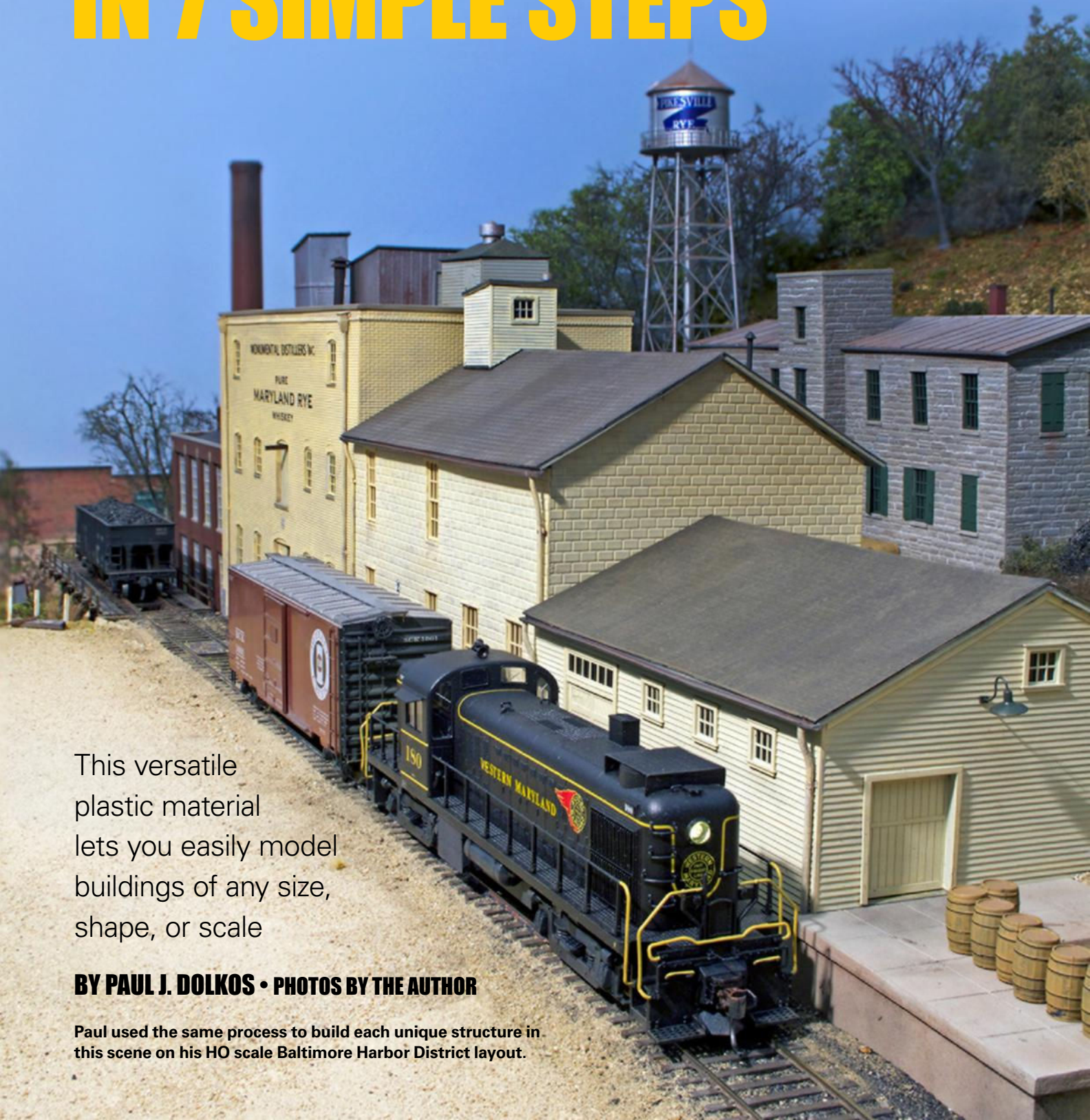


STYRENE STRUCTURES IN 7 SIMPLE STEPS

This versatile plastic material lets you easily model buildings of any size, shape, or scale

BY PAUL J. DOLKOS • PHOTOS BY THE AUTHOR

Paul used the same process to build each unique structure in this scene on his HO scale Baltimore Harbor District layout.



>> THOUGH PAPER, STRIPWOOD, AND RESIN are still viable modeling materials, styrene has clearly become the most common product today's model railroaders use to build layout structures. Styrene, a type of plastic, is available in many different thicknesses, sizes, and styles, including strips, beams, tubes, and sheets made to replicate clapboard, brick, and other textures. Suppliers include Evergreen Scale Models, JMD Plastics, JTT, Midwest Products, Plastruct, and The N Scale Architect.

Modelers find styrene is easy to cut with a hobby knife or to simply score and snap. The edges can be easily

dressed using a file or sanding stick. Styrene bonds quickly and easily using a small amount of plastic-compatible adhesive such as cyanoacrylate (CA) or plastic cement.

Even delicate-looking assemblies are durable enough to withstand handling or modification. Holes or voids in styrene can be easily filled with putty or styrene scraps. Many commercially available built-up structures and kits are made from styrene, so grafting a new component to a manufactured part is an easy task to complete.

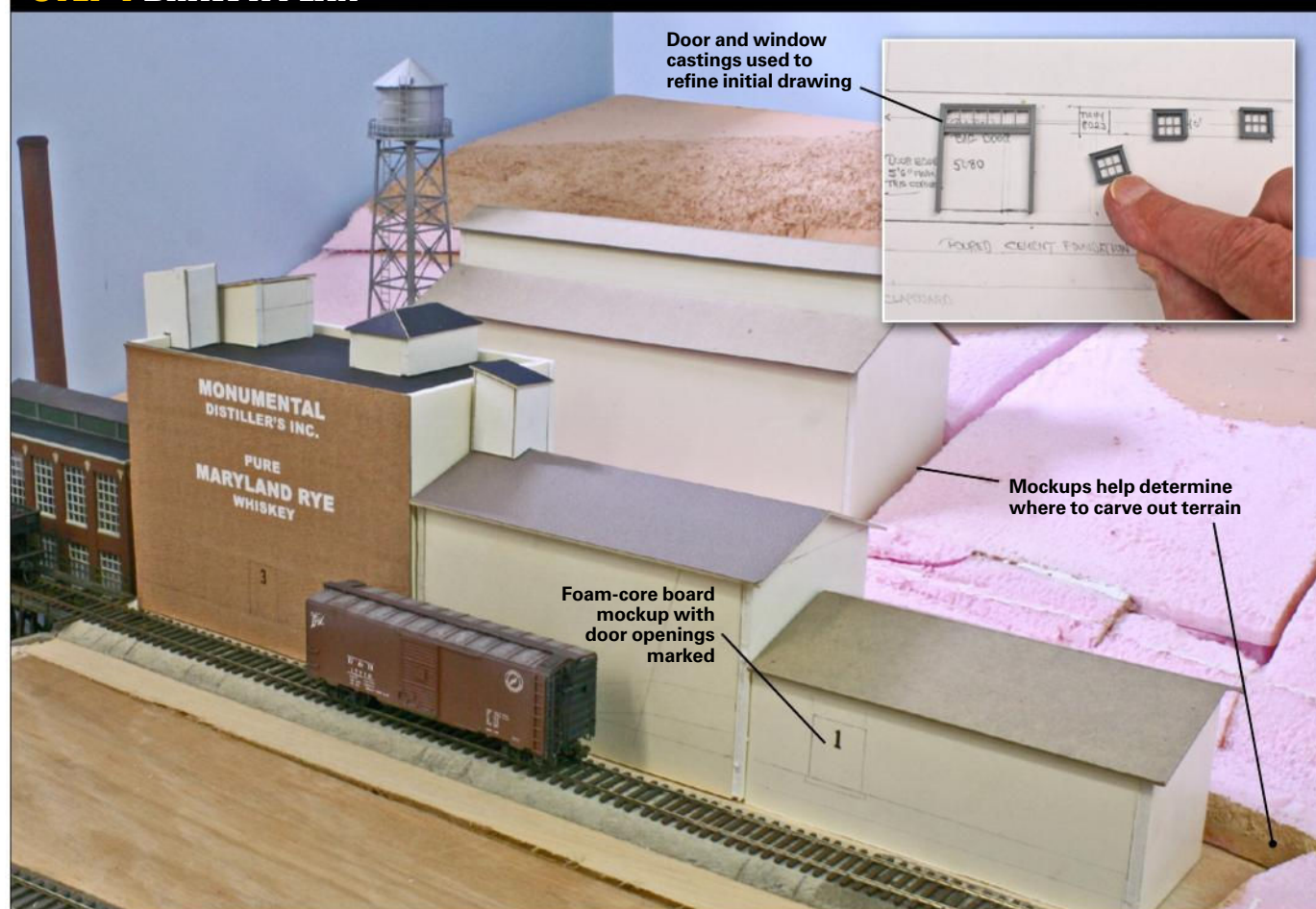
I've built numerous styrene structures or modified commercial structures to

reflect specific prototypes, including the distillery complex represented here. Regardless of the size, shape, or complexity of my scratchbuilt styrene structures, I typically follow the same basic construction process. Those seven steps are outlined here.

Now on ModelRailroader.com

Download a PDF of the full track plan for Paul's Baltimore Harbor District. Click the *Scenery & Structure* cover image under the Special Issues tab at www.ModelRailroader.com.

STEP 1 DRAW A PLAN



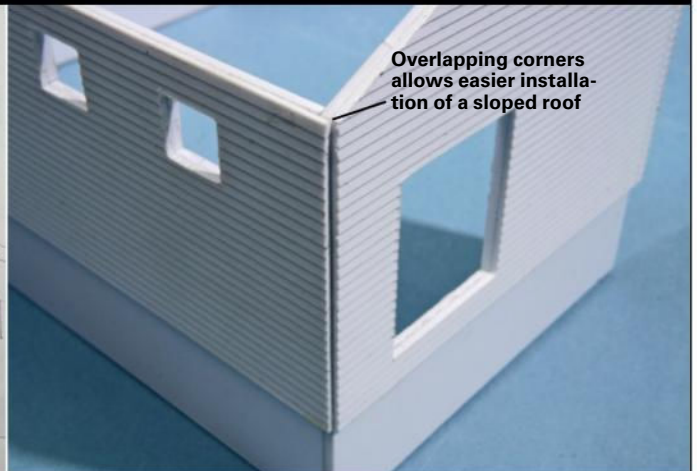
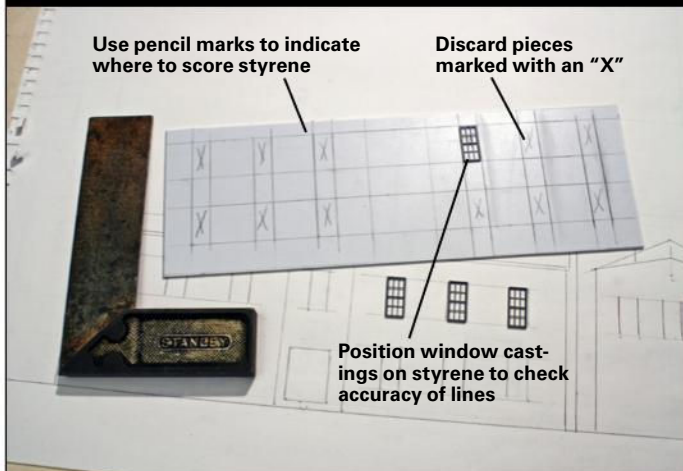
Artist sketch sheets measuring 18 x 24 inches are ideal for making full-size plans of each structure wall. Paul sometimes assembles cardboard or foam-core board mock-ups to help determine the ideal arrangement for structures.

I BEGIN BY DRAWING a plan and elevations of the structure I envision. Typically I draft the plan to match my modeling scale (HO), although a smaller and less precise sketch may be suitable for small structures such as sheds or shanties. My objective here is to determine the exact measurements and define the basic components. To determine the best window and door placement, I place castings on the plan and reposition them until I'm satisfied the arrangement will work.

If you use a computer to generate a plan, you'll probably still want a full-size printout to provide a clear visualization of the project, particularly if you plan to use commercial window castings.

Even with a drawing or printout at hand, I might still have questions regarding the size, shape, or logistics of assembling the structure. In this case, building a simple cardboard or foam-core board mock-up often helps resolve these issues.

STEP 2 BUILD INNER CORE WALLS



Here, Paul is transferring the design onto a styrene sheet that will later form the core walls of the structures.

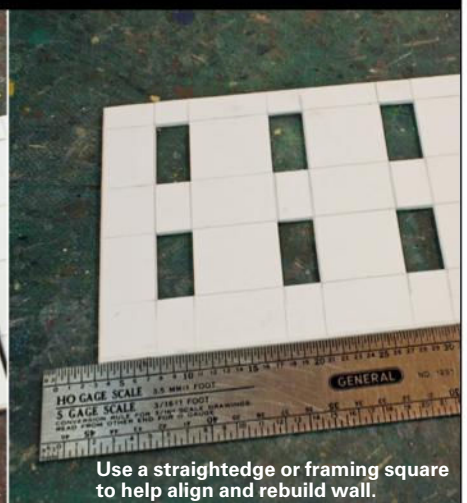
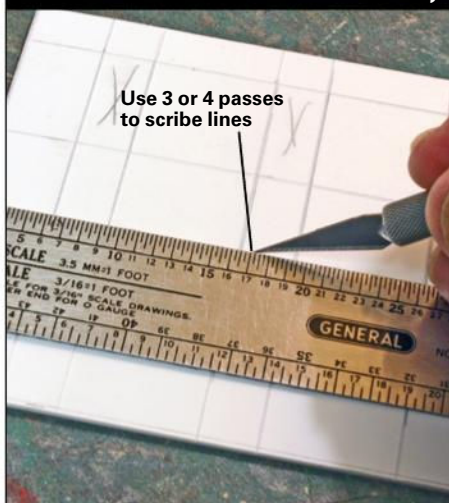
I BEGIN CONSTRUCTION by using a pencil to scribe the plan for the inner walls on a plain sheet of .060" thick styrene. Because wall sections require a large quantity of material, I purchase 4 x 8-foot sheets economically in this thickness from a plastics distributor. You can start with smaller sheets if you desire. Building inner walls from thinner styrene, .030" or .040", makes it easier to cut out openings. However, using thinner material requires the addition of internal bracing to prevent walls from warping or bowing.

Paul builds inner wall sections to overlap the .060" thickness of the abutting wall at adjoining corners.

While a structure built using only .040" thick styrene siding is another option, I prefer using the inner core walls to construct a much sturdier model. I've also found that cutting out openings through the back of the plain inner walls makes for quicker, easier, and neater cuts.

If an inner wall section includes a roof peak, consider how the section will join an abutting wall. I always factor in an additional length (the thickness of the adjoining wall) to allow the peaked section to overlap the other wall section and accommodate a sloped roof.

STEP 3 SCORE AND SNAP, SORT AND ASSEMBLE



Paul uses a hobby knife and metal straightedge to score rather than carve through styrene.

After breaking up the previously scored styrene sheet, Paul arranges the loose pieces for reassembly.

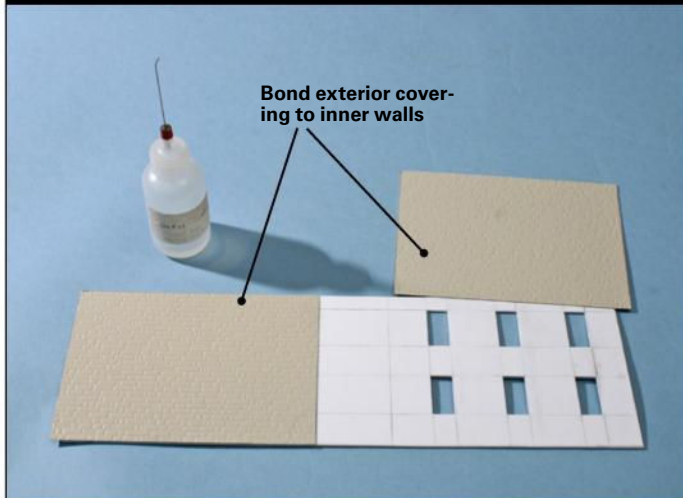
The styrene pieces are now sorted, assembled, and cemented into complete wall section.

WHEN DIVIDING STYRENE sheets, I prefer using a hobby knife to score and snap the material rather than attempting to cut through the entire thickness. After transferring the plan onto the .060" styrene, I use a metal straightedge and hobby knife to make three or four passes along the defined lines. I then use my hands to bend and snap sections apart.

To create window and door openings, I use a hobby knife to score a grid pattern around the areas I want to remove after cutting up a wall section.

After reassembling the walls, I test-fit the window and door castings. I use a file to expand openings that are too tight. Conversely, I glue strips and scraps of styrene into oversized openings.

STEP 4 FORM LAMINATED WALLS

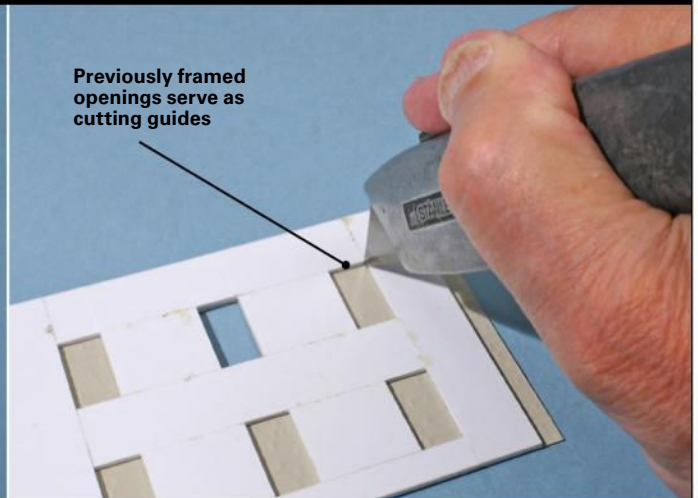


A needlepoint applicator bottle allows you to apply cement more quickly than when using a brush.

AFTER BUILDING a set of inner walls, the next step is to add the exterior covering with styrene representing clapboard siding, brick, stone, or other construction material. Regardless of which covering I use, I laminate the sheet to the inner walls before assembling the side and end sections of the structure. Following this sequence makes it easier to cut out wall openings through the siding. Typically the exterior covering should overlap at the corner of an adjoining wall. After considering how the pieces overlap, I cut the material a bit oversize and trim it down later.

When working with thinner .020" brick sheets of styrene, I use a disk sander to add beveled edges to adjoining sections. This option usually isn't necessary for clapboard or other sheets of styrene used to represent wood covering, as trim pieces will easily cover corner joints.

As I'm laminating larger sections of styrene, I sometimes find liquid plastic solvent evaporates faster than



Paul finds a heavy-duty utility knife is the best tool for cutting out window and door openings.

I can apply it over the entire surface. My solution is to use an A-West needle-point bottle applicator with a larger .013" (inside diameter) tip that allows me to quickly cover the wall with solvent.

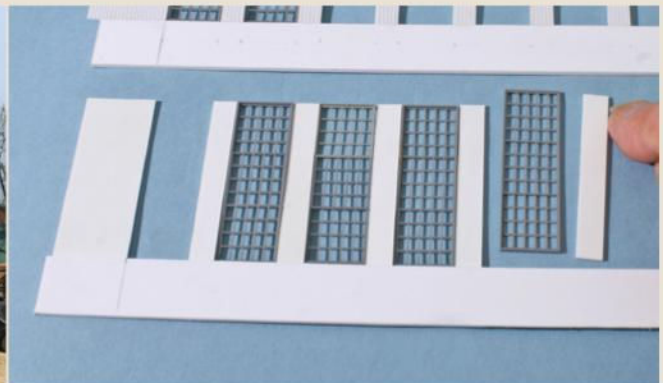
Although I use sheet styrene to cover most of my structures, clapboard exteriors can be built using individual .010" strips of styrene. For this, I use coarse sandpaper to add simulated wood grain to the strips. To install the individual strips, I start at the bottom of each wall section and add overlapping strips up to the top edge. Installation goes quickly and you'll end up with some irregularities that give your structure character.

After adding the exterior siding, I use a utility knife to cut out the openings on each wall piece. I cut from the back side of the wall sections, using the openings in the inner core walls to guide the sharp blade. I then re-test the window and door castings before assembling the walls to form the basic building.

MORE WINDOWS THAN WALLS

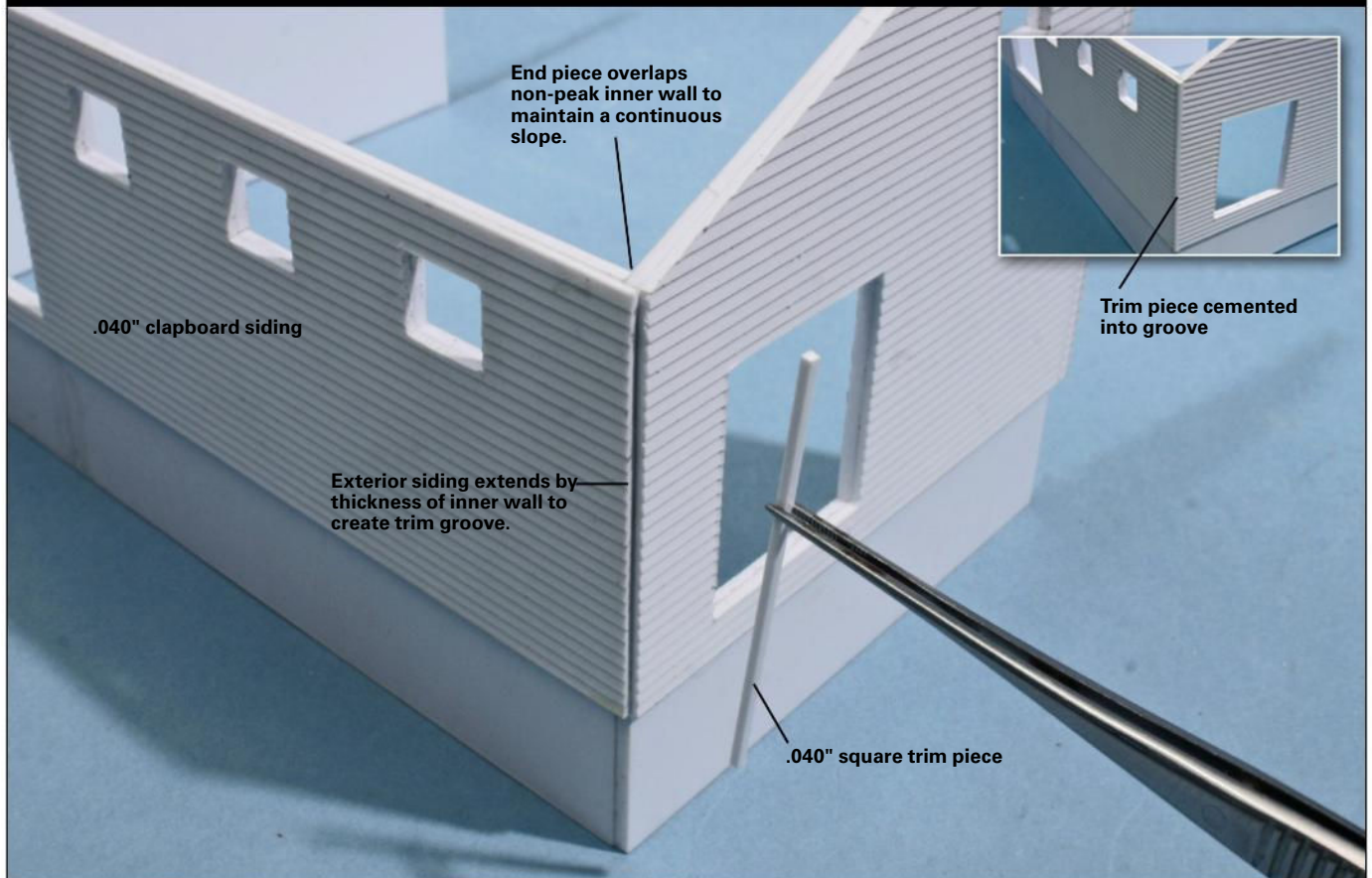


THOUGH THE SCORE-AND-SNAP technique works fine for building any styrene structures, I used an alternative approach for the Sackett Co., an industrial building that's mostly windows. Here, I use stock roundhouse window



castings (Grandt Line no. 5010 or Tichy no. 8036) to serve as spacers while I glue the solid pieces that form the side walls. On this structure, I used plastic corrugated siding to cover the basic wall assembly. – P.D.

STEP 5 APPLY TRIM



Paul designed one end of the clapboard siding to accommodate a .040" square trim piece.



The contrasting color of the concrete on this brick building livens up the facade.

A STRUCTURE'S UNIQUE character and charm often stems from the trim added to the basic building shape. Many times this decoration is simply an overlay along the eaves or around windows and doors. I like to use a variety of layered styrene strip, angle, and half-round pieces to model prototypical combinations of dimensional lumber or shapes. For more complicated forms and shapes, such as corbels, I use commercial cast parts.

Gutters and downspouts also add visual interest to a model structure. To model gutters, I attach channel along

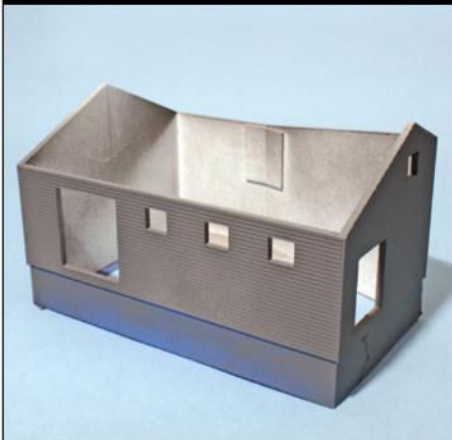


The cornices on these row houses are a combination of styrene strips and corbel castings.

roof edges and use bent styrene or metal rod to represent downspouts.

The various substructures found atop structures, especially industrial buildings, can enclose conveyors, pumps, or machinery that are critical to site operations. The substructures on my distillery are freelanced, but they're based on prototype designs. While some of these substructures may look complex, I assembled the box-like components following the same techniques for making the main structures.

STEP 6 ADD PAINT AND WEATHERING EFFECTS



Assembled structures receive a primer gray undercoat, followed by a coat of white paint Paul applied using a brush.

Paul sprays brick with red primer before applying Depot Yellow paint.

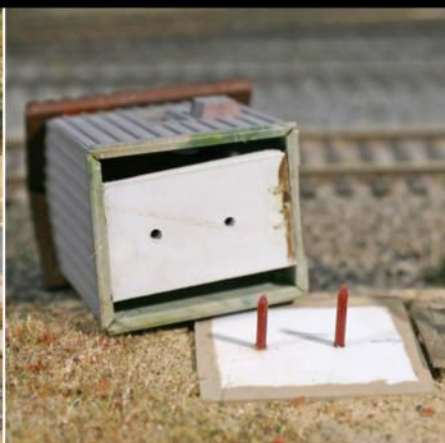
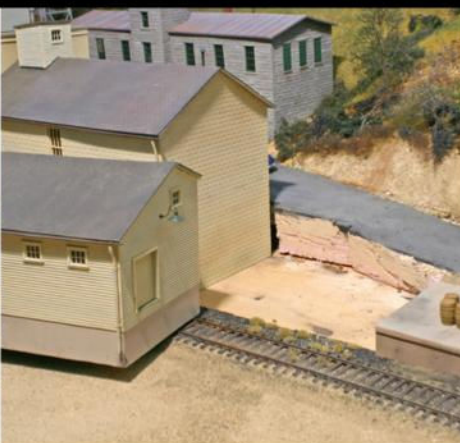
FOR THE BASIC STRUCTURE, especially those representing wood buildings, I use a spray can of gray primer to cover the exterior walls. Then I use a brush to paint the final color, typically white or off-white. Since a brushed-on coat isn't as evenly applied, the primer shows through to produce a subtly weathered appearance. For structures needing less of a weathered effect, I simply brush on another coat of paint. In either case, there's always an option to apply additional weathering effects later.

If I decide to make windows and doors a different color than the siding, it's much easier to paint all of the castings

before attaching them to the base structure. This is also true for trim pieces. I avoid marring finished surfaces by using only a small amount of adhesive applied with pinpoint accuracy.

My largest distillery structure represents a painted brick building. However, brick industrial structures are more often left unpainted. For these I simply apply a shade of dull red paint and ignore the absence of mortar lines, which are often not readily visible from a distance. When it's absolutely necessary to add mortar lines, I use a brush to apply a gray wash over the red.

STEP 7 INTEGRATE STRUCTURES INTO THE SCENE



A small structure fits into the open area framed by $\frac{1}{32}$ " wood strips.

The building on the left fits into the carved-out area at the center.

Pins keep the structure in position and make it easy to remove.

HERE AGAIN, the logistics of installing a styrene structure are something I like to consider before construction begins. Even large structures are relatively lightweight, so I make them easily removable. This allows me to lift them off for dusting, repairs, or nearby scenery work.

In most cases I use strips of wood to build a frame, sized to the footprint of the structure, to form a barrier between the ground and foundation. I glue ground cover to the top edge of the frame so it won't be visible after installing the structure.

For hillside installations, I often cut out a recessed space that lets me plug the structure into a spot. This type of installation is easy to create in a scenery base made from extruded-foam insulation board.

Yet another option is to make the building foundation a styrene slab that's separate from the rest of the structure. After setting the slab level on the terrain, I use plaster to blend the foundation into the scenery. I then add pins to the slab and fasten a corresponding plate to the bottom of the building to ensure the exact placement. **S&SP**

BASIC SCENERY TECHNIQUES



Installing a foam berm, adding ground foam, and planting trees are simple ways to improve your layout. Jim Forbes photos

Take your layout from a blank canvas to a detailed scene with these ideas

BY CODY GRIVNO

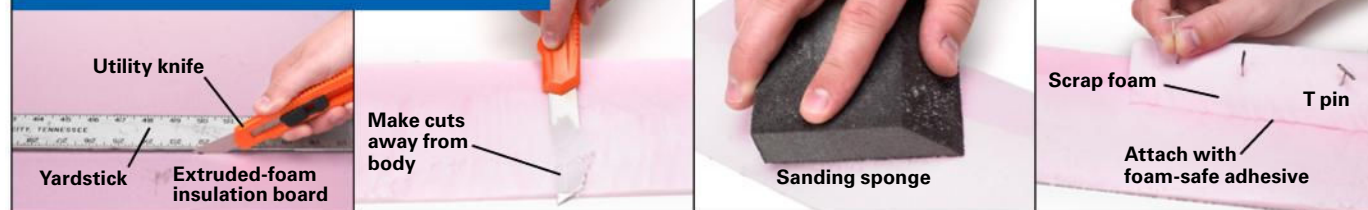
>> MANY MODELERS SPEND HOURS painstakingly detailing locomotives and weathering freight cars, and that's understandable. These are the stars of the show on a model railroad. But when it comes time to bring their stage to life and add scenery to a layout, several of those same people will cringe.

With the wealth of scenery products available today, it's easier than ever to have a realistically scenicked model railroad. Gone are the days of dyed sawdust, lichen, and flat plastic trees. Today we're blessed with ground foam in an amazing assortment of colors and textures, clump and fine leaf foliage, and great looking

trees of all description (some even have realistic wood trunks!)

If you've put off scenery on your model railroad, give these techniques a try. The scene shown above is just 4" deep, but can easily adapt these methods to any scene. Scenery will turn your layout from the Plywood Pacific to a showcase.

STEP 1 CUTTING AND SHAPING



THE DISTANCE BETWEEN the back-drop and roadbed for our scenic berm is 4", but I didn't want to fill the entire space with foam. Instead, I cut the foam $3\frac{3}{4}$ " wide with a large utility knife. To prevent the foam from tearing, I made several light passes instead of trying to cut through it in one pass. A metal yardstick is an ideal cutting guide.

To make the rectangular block of foam look more like a berm, I tapered the edge closest to the aisle at a

45-degree angle with the same knife. To prevent injury, make the cuts away from your body. The foam has just enough resistance that the knife may slip, potentially causing injury.

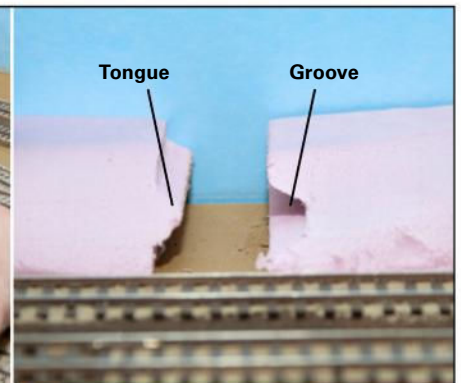
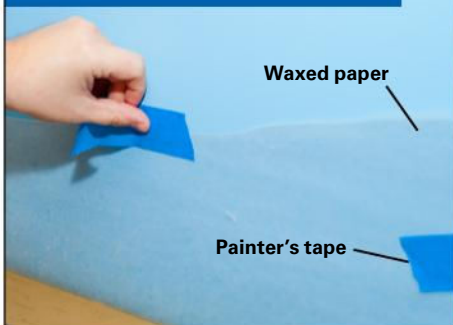
I further shaped the foam with sanding sponges. The sponges are offered in a variety of shapes, including a rectangular block, 45-degree edge, and round edge.

You can also shape the foam with rasps. However, these have a tendency to tear the foam. No matter

which option you choose, work with the foam in a well-ventilated area and wear proper safety gear.

I randomly attached pieces of scrap foam to give the berm some small elevation changes. It's important to use an acrylic (foam-safe) adhesive, such as Liquid Nails for Projects or DAP Dynaflex 230. Solvent-based adhesives will attack the foam, causing it to dissolve. I used T-pins to hold the foam in place while the adhesive dried.

STEP 2 INSTALLATION



WITH THE FOAM PIECES rough cut, it was time to install them on the layout. I'll be blending the berms into the layout with Sculptamold, so I needed to protect the freshly painted backdrop. To do this, I used Scotch blue painter's tape to secure pieces of waxed paper to the tempered hardboard. Sculptamold, a papier-mache-based product, won't stick to the waxed paper, making it easy to remove.

Next, I applied DAP Dynaflex 230 sealant to the back of the foam. The color doesn't matter – I used gray because that's what was in the

workshop. I used a putty knife to evenly distribute the adhesive.

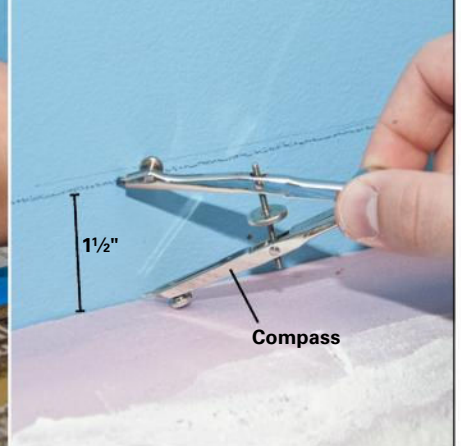
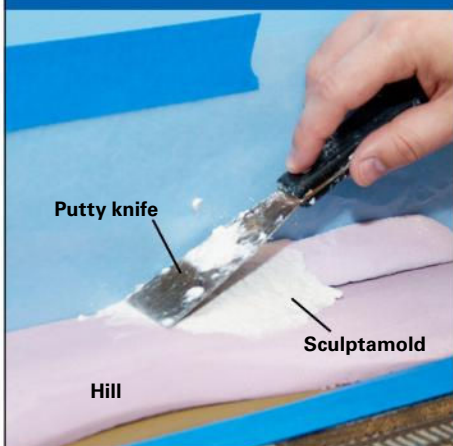
The extruded-foam insulation board has a tongue-and-groove edge, which was quite beneficial. The first berm I shaped had the tongue to the right, so I shaped the second piece so the groove was to the left. This created a barely discernible joint.

I wanted to give the adhesive plenty of time to dry, so I installed the foam on a Friday afternoon. However, when I set the foam in place, I noticed it had a slight bow in the middle. To prevent the foam from lifting over the weekend, I weighed it down with



Model Railroader bound volumes (an old trick I learned from former managing editor Jim Kelly). On Monday morning, the adhesive was dry and the foam was flat.

STEP 3 SCULPTAMOLD AND HILLS



AFTER TAKING THE T PINS out of the scrap pieces of foam, I blended the hills into the rest of the berm with Sculptamold. I also used the material to blend the front edge of the berm into the tabletop.

Sculptamold has a short working time (10-15 minutes), so I worked in small areas. I used a putty knife to spread the scenery material, though any similar smoothing tool will work.

I let the Sculptamold set up for about 5 minutes before using a damp

sponge to blend any seams or ridges left by the putty knife. To prevent the Sculptamold from lifting, I worked in a gentle, blotting motion.

I let the Sculptamold dry for about 3 hours before I removed the waxed paper. It was still far too soon to add scenery (the Sculptamold should be free of cold, damp spots before moving to this step), but I could work on the backdrop.

Since I knew I'd be adding trees to the berm (see **Step 5**), I didn't want

the sky blue backdrop to be visible at the horizon line. Then I remembered Lance Mindheim's article in the August 2009 issue of *Model Railroader* where he wrote about using scuff pads to model distant hills. I didn't have any scuff pads on hand at the time, and the magazine deadline was coming fast. Instead of using scuff pads, I painted the backdrop.

To do this, I first set a compass so there was 1 1/2" between the spike and the pencil lead.

STEP 3 SCULPTAMOLD AND HILLS (CONT.)



Soften edge by dusting color



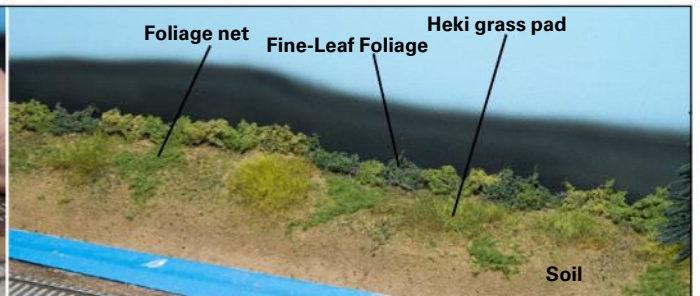
NEXT, I ROUGHLY MASKED along the pencil line with the painter's tape. Then I sprayed the backdrop with Model Master Grimy Black, which is similar in color to a scuff pad. When

airbrushing in a layout room, be sure to wear proper protection for the paint you're using.

I removed the masking tape but didn't like the look of the hard edge.

To soften it, I dusted the edge with more Grimy Black. The soft edge made all the difference, and better captured the look of a distant tree line.

STEP 4 GROUND COVER



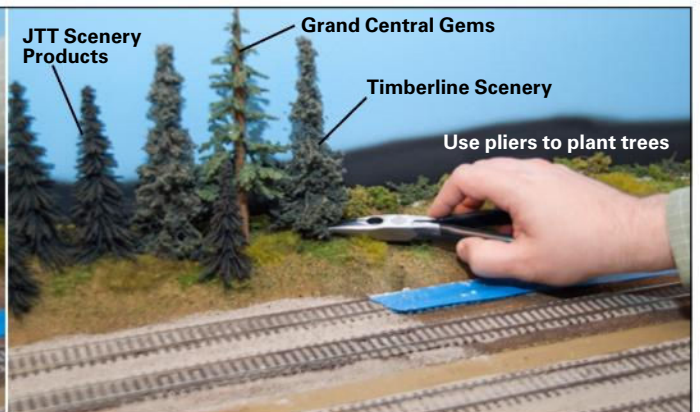
WHEN THE SCULPTAMOLD was completely dry, I painted it and the foam with an earth-tone latex paint. Once the paint had dried, I coated the scenery base with thinned white glue (9 parts glue, 1 part water). I worked in small areas so the glue wouldn't dry before I had time to add the scenery materials.

I used a variety of scenery products for the floor of the wooded area. First, I applied Woodland Scenics burnt and light green, green blend, and earth blend turf. I followed that with Scenic Express farm pasture blend Flock & Turf and fine soil. This provided a good base, but the berm looked far too manicured.

To give the berm an unkempt look, I added chunks of Heki wild grass pad (no. 1575) and Woodland Scenics medium green foliage net.

Finally, I added assorted colors of Woodland Scenics Fine-Leaf Foliage. This simulates low-lying scrub and softens the edge between the berm and backdrop.

STEP 5 TREES



USING FOAM FOR THE BERMS is ideal when it comes to planting trees. I used an awl (a metal straight pick will also work) to poke holes in the foam. If I didn't like the location of the

tree, I simply plugged the hole with ground foam and tried again.

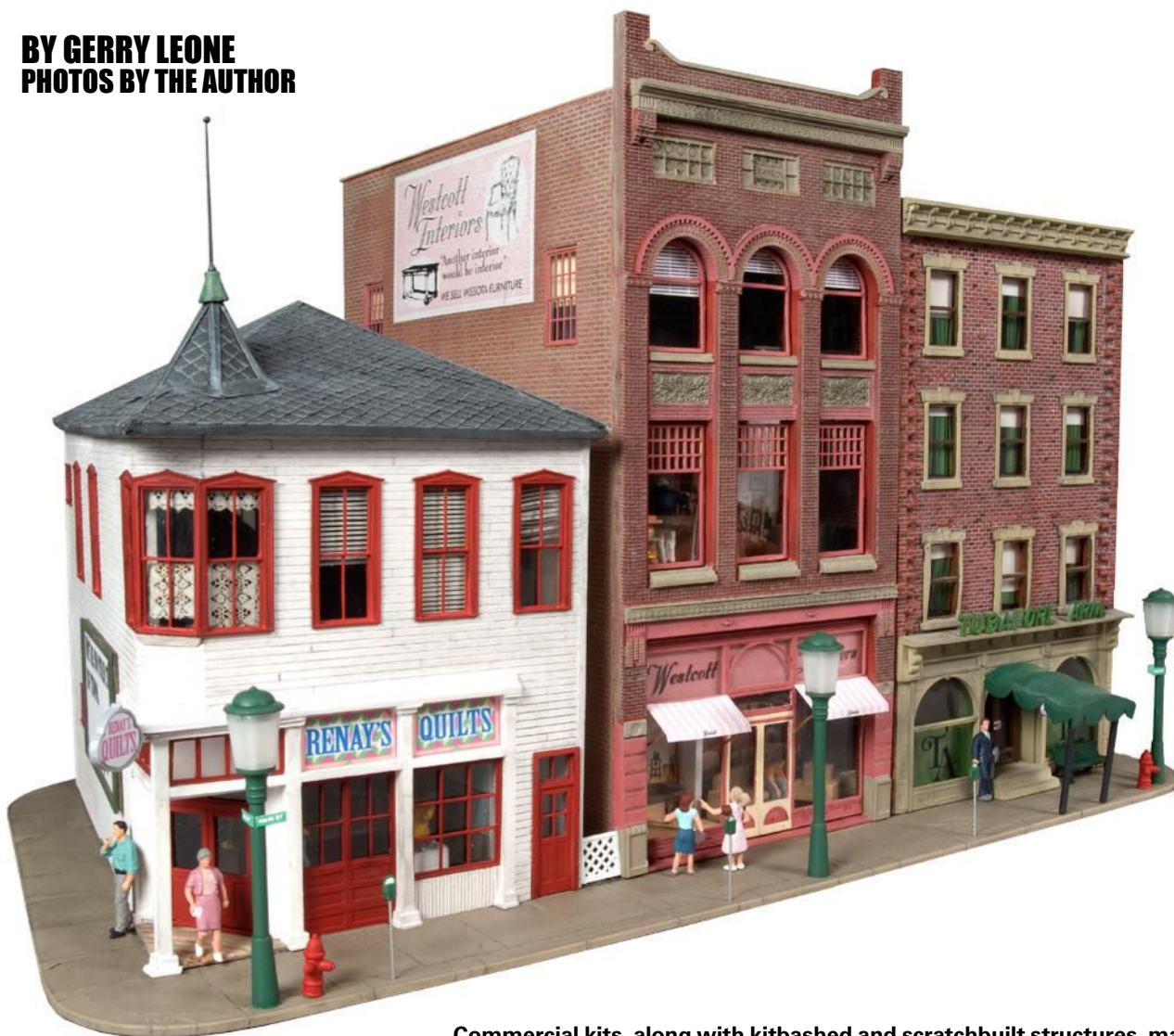
I used trees from Grand Central Gems, JTT Scenery Products, and Timberline Scenery to match those

used on other portions of the Milwaukee, Racine & Troy. I secured the trees with full-strength white glue. I used clothespins to keep stubborn trees upright while the glue dried. **S&SP**

SMALL-TOWN STRUCTURES WITH BIG-TIME APPEAL

Tips and techniques for adding charm and character to a downtown district

BY GERRY LEONE
PHOTOS BY THE AUTHOR



Commercial kits, along with kitbashed and scratchbuilt structures, make up a big portion of downtown Westcott, a small town on Gerry Leone's HO scale Bona Vista RR. In this article, Gerry shares how he added interior and exterior details to give the setting a sense of time and place.

>> ALTHOUGH SCENERY on my HO scale Bona Vista RR is nearly complete, I specifically reserved space to include a small downtown district that featured structures and details typical of towns set in the Upper Midwest. And from the beginning I planned to name my town Westcott, in honor of *Model Railroader's* former editor and one of my model railroading heroes, Linn Westcott.

Perhaps building a town named after a person of such stature was the reason I avoided doing it for so long. I wanted to be absolutely sure my modeling efforts in this area would yield a scene with a character worthy of its namesake.

Westcott is situated against the backdrop in a corner of my 15 x 35-foot layout. At its widest point, the space is only about 36" deep. As I planned it, the town

would have two main blocks of buildings positioned just 12" from the aisle. These would be showpiece structures – detailed with interiors and possessing enough visual appeal to make visitors linger.

With that frame of reference, I began assembling the city of Westcott using an array of kit building, kitbashing, and scratchbuilding techniques, many of which I've shared in the following pages.



This is one of the two city blocks Gerry assembled near the front edge of his layout, where visitors can easily view exterior and interior structure details.

CORNER DRUG STORE



Gerry used scratchbuilding techniques to assemble Treeg's Drugs from styrene sheets stamped with a brick pattern.



Small but highly visible vignettes, like this rooftop scene Gerry added atop Treeg's Drugs, give visitors something fun to discover.



Because the interior of the drug store isn't clearly visible, Gerry used roughly formed shapes to represent store displays and merchandise.

WHILE I ORIGINALLY planned to build Westcott completely from scratch, I had two structures from a previous layout I couldn't resist including. The most compelling was scratchbuilt from a Lewis Lehrman article in the May 1971 issue of *Model Railroader*. The most notable characteristic of this structure is the side-street wall – it isn't set at a 90-degree angle to the front.

Years ago, I built Treeg's Drugs using Vollmer brick sheets and Grandt

Line window castings, along with miscellaneous pieces of strip styrene. I made the distinctive cornice from thin basswood. I also designed and printed a "painted-on" sign for the brick wall, based on a prototype I found online.

The pharmacy has an entire interior featuring a cash register counter, an ice cream freezer, and window decorations, along with a pharmacist and customer. All the details were fashioned from bits and pieces of styrene,

wood, and even pencil eraser. For a bit of whimsy, I added a couple of workers loafing on the rooftop, and two "Bell System Public Telephone" signs give a hint at the timeframe.

The second building that migrated from my previous layout was the hotel, the Tubafore Arms, named after the 2 x 4 lumber I used as a placeholder. This model began as AHM's Gruesome Casket Company before I reworked it into a four-story structure.

BEGIN ANEW WITH AN OLD-LOOKING BUILDING



Gerry built Renay's Quilts to include an angled side wall, a distinctive hip roof, and a well-detailed interior.

WITH THE TWO REPURPOSED structures serving as the starting point for the downtown, I decided to build the structure across the side street from Treeg's next. I based this new structure on "Faber's Cyclery," as depicted in the September 1973 issue of *Model Railroader*. The early 20th century architecture of this wood building suggests it could have been one of the first structures built in the young town of Westcott.

To build Faber's, I used sheets of Northeastern 1/16" scribed siding. I transferred the plans onto the wood, making sure all the window openings were square and plumb, and then used a hobby knife to cut the openings. Backing the siding with strips of masking tape helps prevent the wood from splitting.

The only deviation from the printed plan was the rear wall I resized as a result of the angled side street wall. Making a cardboard mock-up of the building helped me determine the correct measurements. I also opted not to build the details on the rear of the building, as they'd never be seen.

While there are many reasons to love the Faber's building, the hip roof wasn't one of them. This jaunty, odd angle roof gave me headaches. After spending several evenings cutting mounds of scrap cardboard, I came up

with a geometrically sound design that looked good on the structure. Technically, it's called a "pyramid hip roof" because all four roof faces meet at a single point.

I scratchbuilt the roof shingles by cutting thin strips of typing paper with pinking shears. I fashioned the lightning rod on the witch's hat roof from the needlepoint applicator on a bottle of model oil. I topped it with a small decorative bead.

To create the bay window, I sanded the sides of three Grandt Line windows to a flat surface and used a solvent adhesive to join them. I set the left and right windows at the same angle as the side wall, and placed the center window at an angle that split the difference between them. Next, I built the walls that support the windows, and added the entrance using two Tichy door castings I glued together.

I decorated the bay windows using cut lace curtains from Builders In Scale (www.builders-in-scale.com). Other upstairs windows received Venetian blinds, also by Builders in Scale.

I named this building "Renay's Quilts," in honor of my wife. To add an appropriate interior, I built a floor and walls using .040" thick sheet styrene and then glued printed photos of fabric racks to the walls. I also added photo-reductions of



Plans in the September 1973 issue of *Model Railroader* helped Gerry scratchbuild this structure from scribed basswood siding.



After cutting out the window openings, Gerry then loosely assembled the walls and test-fit the Grandt Line windows and Tichy doors.



By design, Gerry built the interior of Renay's Quilts on a styrene foundation that slips out of the building for close-up viewing.

actual quilts Renay made. Three-dimensional cutting tables, counters, fabric bolts made from typing paper, and several Preiser figures complete the scene.

I anchored the entire interior assembly to the building using two small brass pins that slip through holes in the exterior walls and into the styrene floor. When I want to show off the detailed interior to Renay's friends, it's easy enough to remove the pins and slip out the interior.

CITY PLANNING

AS I CONSIDERED THE next buildings for Westcott, I thought it would be best to first determine the size of the actual city blocks. That measurement would mandate the size of the remaining buildings to be built. After some maneuvering, I figured that each of the city blocks should be about 85 scale feet. While this is shorter than a prototypical block, I knew that smaller

blocks meant more streets, which would give the town more visual interest and make it seem larger than it actually is.

The right-hand block would have Renay's Quilts on one corner and the Tubafore Arms on the other. But this meant I had a scant 26 scale feet available for adding a structure between them – and I still had to

subtract space to accommodate the overhang on Renay's roof. All things considered, I knew the remaining structures would need to be narrow.

The ideal solution came in the form of a Chooch Enterprises Ultra Scale limited-run set of building facades, which leaves the modeler to add side and back walls and a roof. I chose the Branson Building facade.

SQUEEZING IN A FURNITURE STORE



Gerry found the origins for Westcott Interiors in a simple facade from Chooch Enterprises.

TO BUILD A TALL, narrow structure, I started with the Ultra Scale Branson Building facade. I made the sidewalls using 3M Super 77 Spray Adhesive to laminate Model Builders Supply (www.modelbuilderssupply.com) brick material onto a .040" thick styrene sheet. The tricky part was punching the holes for the masonry-style windows, which should be embedded in the bricks rather than overlapping them. Careful cutting with a nibbling tool yields a precise fit. Since it would never be seen, I decided not to detail a back wall. Instead, I simply cut a plain styrene sheet to fit the space.

The large display windows give the building a retail store feel, so I named the building Westcott Interiors ("Another interior would be inferior"). I designed a billboard for the brick side



Gerry used a shadowbox technique to build three separate, highly visible showroom displays.

wall using computer graphics software and line art from the Internet.

The large windows made a well-detailed interior necessary, so I used a "shadow box" technique in which the three-dimensional details are only about 1" deep. I built the box from thick, black cardboard, and attached three 1" deep showroom displays at each floor level.

Again using the Internet for source photos, I glued several pictures of furniture store interiors to the back walls. I then used styrene scraps to build a three-dimensional couch, chair, and table. To add more interest, I included a seated Woodland Scenics figure and a salesman in a suit and tie.

With all the details in place, I glued the shadowbox to the inside of the fascia. Even though the roof is only



Gerry added printed photos to the back wall of the shadowbox to make it appear much greater than 1" deep.



An otherwise blank brick wall draws more interest after Gerry added a computer-generated sign.

visible to the tallest of visitors, I added a variety of vents and stacks.

As the final step to completing this structure, I used my computer to make a "Westcott Interiors" banner for the front window and printed out two awnings to give the building a more refined, upscale appearance.

BUILDING A BIG BANK



Gerry built his bank from a Supply Line kit. He added the weatherball and debossed sign to give it a distinctive Upper Midwestern character.

ANOTHER ARTICLE printed in the May 1974 issue of *Model Railroader* inspired me to add a bank in Westcott.

I wanted a massive structure in the middle of the block, so I used Supply Line's Redwood Street Building kit as the basis for my bank. I built this cast-resin kit as per the directions but saved the rear wall for future projects. I also added a skylight by Model Memories.

As with the rest of these front row buildings, I knew the details would make the structure more authentic. I made this a "Northwestern Bank," a regional bank chain found in the Upper Midwest during the 1950s. Northwestern Banks had a distinctive "Weatherball" sign that would be lit various colors, depending on the forecast. I made the sign from styrene scraps,



To create this sign over the bank, Gerry used 3mm lettering to build a mold he developed into a debossed casting.

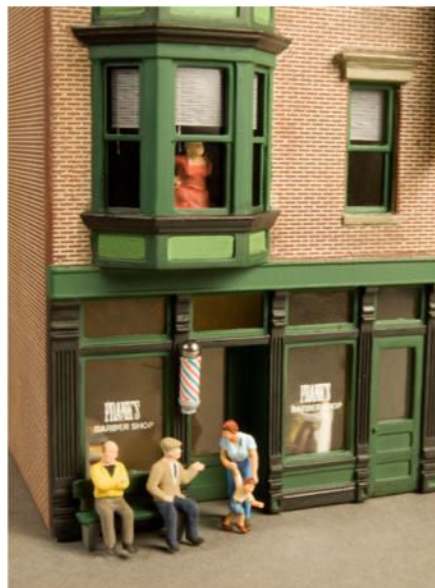
and topped it with a plastic jewelry pearl that I drilled out to fit a red grain-of-wheat bulb.

Banks like this always had a "carved in" (or "debossed") sign over the door. I first found a 3mm set of Slater's Plastikard three-dimensional letters. I mounted those face-down on a piece of styrene, built a mold box around them, then poured in Micro-Mark's 1-to-1 Rapid Silicone Mold Rubber. After allowing the mold to cure, I applied Micro-Mark's Rubber-to-Rubber Mold Release, then made a new mold of that initial mold. Finally, I used Bragdon Enterprises resin in the second mold to create a correct-facing sign with debossed letters. I filed it to size and glued it above the bank doors.

A BARBER SHOP CUT TO SIZE



Frank's Barber Shop, an unaltered Design Preservation Models' kit, completes the six-building scene in Gerry's small town of Westcott.



Gerry used a computer graphic, a styrene rod, and a silver ball bearing to form the barber pole attached to the front of the shop.

KNOWING HOW LONG my city block would be, I found one last structure to fill the space. Design Preservation Models' Stone Bakery kit has a very interesting bay window and intriguing storefront windows at ground level. Even better, it was the perfect width.

I built the kit per the manufacturer's instructions, again saving the rear wall. The building quickly became "Frank's Barber Shop," named for my dad's first career. Again, I used a shadow box technique to build a detailed interior.

Along the sidewalk, I made the requisite barber pole by rendering red and blue stripes on a computer, then gluing a printout to a short length of styrene rod. At the top of the pole I added a silver ball bearing.

Two senior citizens on a bench outside add the final touch. One holds a small dog on a leash, the other is talking to a mom and her barber-averse young son.

INSTALLING SIDEWALKS

AFTER COMPLETING the structures, I turned to the sidewalks. Rather than adding sidewalks that abut the buildings, I created each city block using a single piece of styrene and mounted the buildings on top. I contacted a local materials supplier to find a 4 x 8-foot sheet of .080" styrene, about 8 scale inches thick, that was large enough to build my city block.

For the main street of my town, 8-foot-wide sidewalks looked right, with 5-foot walks on side streets. I arranged the buildings on the sheet of styrene, marked their locations, and cut the thick styrene by making multiple passes with a knife blade guided by a metal straightedge.

To cut the corners, I traced the bottom of a plastic bottle and carefully cut along the line. I then scored the sidewalks using a scribing tool. I also used the tool to scribe random cracks and chips.

I painted both blocks using Polly Scale Concrete. [Testor Corp. is now selling this color in its Model Master line. – Ed.] After allowing the paint to dry, I used a paintbrush to apply an India ink mixture (½ teaspoon India ink in ½ pint of 70-percent isopropyl alcohol), which settled into the cracks to make them more visible.



Gerry built both city blocks on a sheet of .080" thick styrene he purchased from a sign materials supplier. He used a plastic bottle to shape the curved corners.



Gerry made joints and cracks using a scribing tool. He also added a wash of India ink after painting the walkway.

DETAILS ALONG THE BOULEVARD

I COMPLETED BOTH of my downtown blocks by adding a number of small details that help establish the era and character of downtown Westcott. First, I installed several Old Time Street Lamps from Walthers that I salvaged from my previous layout. I also added a mailbox, a few shoppers, and some debris, including newspaper pages I made from computer printouts.

In an effort to further define the era of the setting, I made and installed parking meters that were around in the early 1950s. To build a familiar inverted-teardrop meter, I used two discarded plastic part sprues, one smaller than the other, and a solvent adhesive to attach them to each other. While the plastic was still soft, I squeezed the two sprues together.

Then, as if slicing bread, I used a sharp hobby knife to cut thin slices from the sprue "loaf." Before each cut I sanded the next meter face flat, since



Gerry added figures and objects such as newspapers, lamp posts, and parking meters to establish the period.

it was easier to handle that way. Once I had enough meter bodies created, I used a no. 75 bit to drill a hole in the bottom of each, into which I glued a short length of .022" brass wire.

Using a fine-tipped brush, I painted each of the meters Stainless Steel and



A wide array of parking meters was used in the 1950s, but Gerry found this teardrop style was simplest to build.

added a dot of white paint to represent the timer dial (plus a red mark for expired meters).

That completed the main blocks of Westcott. I imagine the town's namesake would be proud to stroll down these city streets. **S&SP**

17 TIPS TO CREATE AUTHENTIC SCENES



Use details selectively for more realism

BY PELLE K. SØEBORG • PHOTOS BY THE AUTHOR

>> WHEN MY HO SCALE Union Pacific Daneville & Donner River layout first appeared in the March 2005 issue of *Model Railroader* magazine, I was quite thankful to hear complimentary remarks. However, I was puzzled why so many people considered my model railroad to be “highly detailed.” On the contrary, my layout doesn’t include many details at all, yet that didn’t prevent viewers from believing it does.

From these comments I concluded that people will sometimes mistakenly think that a realistic-looking layout must include numerous details. But in my

experience, adding lots of details – large or small – won’t guarantee realism. More often, extensive detailing detracts from an otherwise authentic scene.

To clarify my point, imagine a one-square-mile real-world setting that you’d like to model in HO (1:87.1) scale. In order to make that scene fit in the context of your layout, you’ll have to compress or even eliminate some major components. Now try to collect the same amount of fine detail present on the real setting and add it to this relatively smaller area. The result will be a model railroad scene that looks much

Is this what you might consider a highly detailed model railroad scene? Author Pelle Søbørg is a master at composing realistic layout scenes like this one, but he does it without excessive use of small details.

too cluttered and inauthentic.

I’ve found that layout detailing is really an exercise in restraint. What I decide to omit from a scene is equally as important as what I elect to include. You don’t need a lot of details to create a realistic scene – just the right details. Additionally, making a realistic model railroad goes beyond adding a few figures here or an old wood pallet there; detailing covers everything above the benchwork. Let’s look at the following tips one by one.

BALANCING TRACK AND TERRAIN

IN MY OPINION, a realistic-looking model railroad starts with a simple track plan. A single track winding through the landscape might be viewed as a waste of space on a model railroad, but it looks authentic. This is especially true when you model the American West.

Even if your goal is to build a layout for realistic operation, there are still various detailing considerations that will help you enhance operations while contributing to layout realism.

1 Elevated main line. If you examine the main line on a Class 1 railroad, you will notice that the ballast is fairly tall. Most commercial cork roadbed I have seen in HO is $\frac{3}{16}$ " thick. That's not thick enough for my modern main line, so I cut my own roadbed from sheets of $\frac{5}{16}$ " thick cork flooring material.

2 Lowered sidings and spurs. Be sure to vary the height of your track depending on if it's on a main line, a siding, or a spur. Sidings and spurs are laid directly on the ground, using a small amount of ballast. These tracks are also not maintained as well as the main line, so you can model that detail too.

3 Broad curves and turnouts. Factoring wide-radius curves and long turnouts into your plan provides reliable operation and enhances the authenticity of your right-of-way. Avoid the temptation to install unusual trackwork, such as three-way or double-slip turnouts, along your main line.

4 Vary the rail size. I use code 83 for main lines, code 70 for sidings, and code 55 for spurs. The difference in height may not be apparent to viewers, but there's no reason not to do it. After all, it isn't any harder to lay code 70 flextrack than it is to lay code 83 flextrack.

5 Service roads. If you're modeling a modern-era railroad, leave room for service roads along your right-of-way. These utilitarian paths give maintenance trucks access to remote locations along the tracks.



Pelle installed the sidings on his layout at lower height than the main line roadbed. In some places the track looks as if it's embedded in the ground.



Using code 70 flextrack on the sidings and code 55 flextrack on the spurs helps distinguish these tracks from the mainline, with its code 83 rail.



Including a service road along the main line is essential if you want a realistic-looking modern-era layout. Also note the high ballast supporting the tracks.

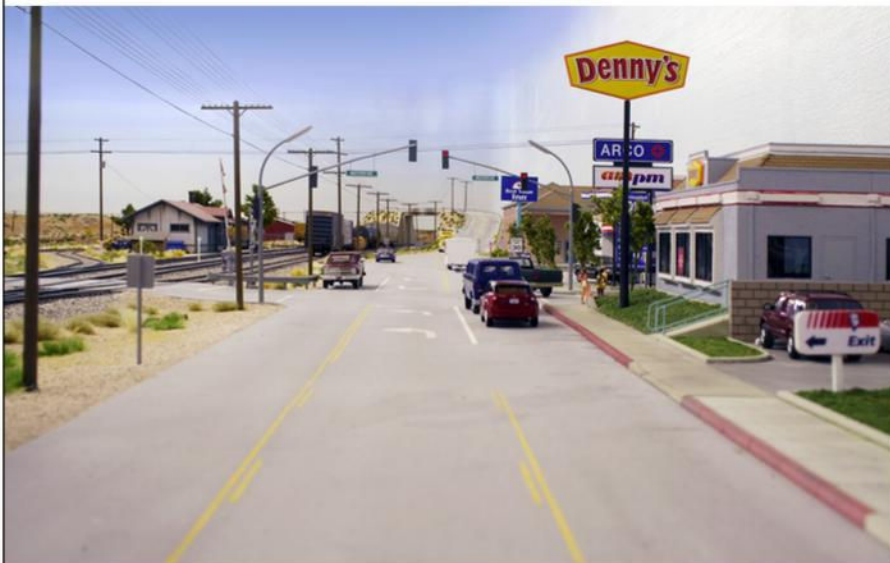
SCENERY ALONGSIDE THE TRACK



Roads follow the contours of the terrain more than railroad tracks do. Pelle also tints the color of the asphalt to blend with the surrounding terrain.



Make realistic billboards and business signs using photos of actual displays. Scale and print your images on self-adhesive paper fed through a color laser printer.



Adding signs and line poles along the roads or railroad right-of-way can enhance a layout. Wide thoroughfares also add realism to your scenes.

BEFORE BUILDING scenery along the track, it's a good idea to observe the world around you. One thing you'll notice is that the world isn't flat, not even in the desert region I model. In fact, the only flat area on my layout is the city.

As you build a layout, make an effort to vary the height of the landscape. Uneven terrain looks more natural and provides a more interesting setting to view trains.

For the most natural-looking scenery, blend a simple selection of colors throughout each scene.

6 Route through the landscape.

Railroad tunnels and trestles are often used to add interest to a layout. Be sure to include the dips and hills in the terrain that make these engineered structures essential.

7 Cover the earth. The terrain needs to be covered with rocks, dirt, grass, weeds, bushes, and trees.

8 Color your world. Your choices of colors greatly influence how your layout will appear. I prefer light colors for my Western scenery. In hot, dry areas the colors are gold

tones and olive green. In areas with more rain or along rivers and lakes, the colors tend toward fresh green.

9 Blend the scenery. Look at the world around you and you'll notice how natural elements blend together. Capture the same effect on a layout by applying all ground covering, including ballast, before you wet or glue it in place. I normally work one square-foot section at a time and then repeat the procedure on an adjacent section of the layout.

10 Include roads. There are a couple of things to keep in mind when making roads. Open roads and highways follow the contours of the terrain more so than a railroad line that seeks to limit grade changes. Additionally, I've noticed that many modelers tend to build their roads too narrow. Keeping them as close to scale width as possible helps make the scene look real.

11 Add asphalt accents. I enhance the appearance of my road by matching the color of the asphalt to the surrounding terrain. Since my roads cross the desert, I mix my asphalt gray color with beige to yield a shade that blends well with the surrounding scenery. Road markings are also easy roadway improvements.

SELECTIVE DETAILS

LET'S NOW EXAMINE the process most often regarded as detailing a layout. Adding figures, wood pallets, road signs, junk, and other small details is important, but these items can't stand alone. They must first be supported by realistic trackwork, scenery, and structures.


12 Line poles. These are often along railroad tracks or roads. The poles on my layout are by Rix Products. Line poles without lines don't look authentic, so I've wired mine with EZ Line elastic polymer string from Berkshire Junction.

13 Billboards and signs. Although they're more commonly seen within towns, you'll also see billboards in the countryside, often along highways. My billboards and signs are laser prints of actual displays I photographed on trips.

14 Railroad-related details. Signals, relay sheds, switch stands, and other equipment are essential to real railroad operations. You can't leave these out of if you want to create a plausible scene. Minimally, you'll want to include a relay shed near signals and remote-controlled turnouts.

15 Scene-specific details. Here, the details make the scene. Examples include adding junk to form a junk yard, construction materials to form a lumberyard, or stored replacement rail to suggest a maintenance-of-way stockpile.

16 The trains. Your choice of locomotives and rolling stock also influences how realistic your layout appears. Choose commonplace items over the rare. A roster full of heavy-duty flatcars and gigantic tank cars detracts from your efforts to build credible layout settings.

17 Weathering. It just isn't possible to make a model railroad look realistic without some degree of weathering. Weathering is mostly associated with locomotives and rolling stock, but can be found on anything exposed to the elements. 



In most cases, only a few detail parts are needed to create a realistic scene. Weathering effects and some graffiti on buildings and trains also helps.

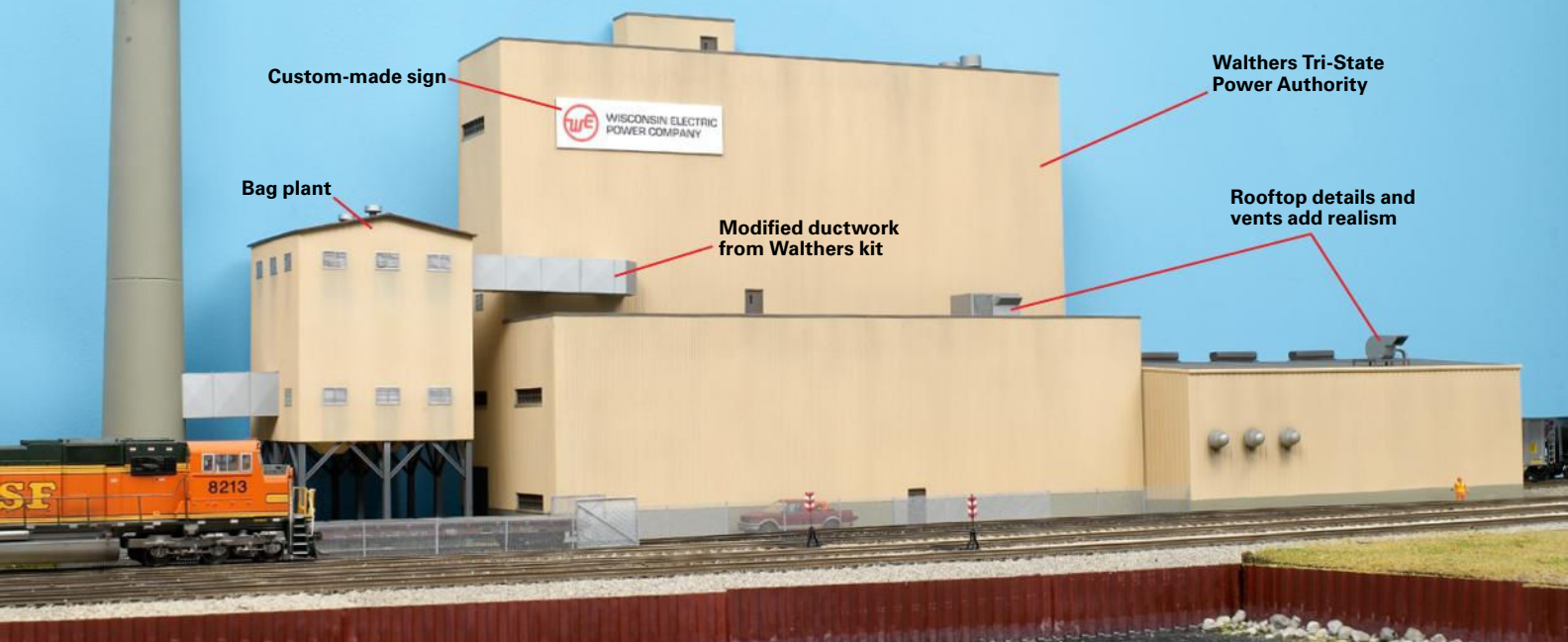


Sometimes specific details are needed to make the scene look appropriate. Judging by the junk on this property, the owner must run a salvage business.



There are some small detail parts your layout can't do without. Most of these are railroad-related details, including signals, relay sheds, and switch motors.

BUILD A BIG INDUSTRY IN A SMALL SPACE



The Wisconsin Electric Power Co. is one of the first things visitors see when they visit the HO scale Milwaukee, Racine & Troy. Cody Grivno describes how he built this big industry in a small space. Photos by Bill Zuback and Jim Forbes

Rearranging the parts from a kit helped it fit the space

BY CODY GRIVNO

>> **WHETHER YOU'RE ON A DATE**, at a business meeting, or hosting a model railroad open house, you always want to make a good first impression. Though we have many beautifully finished scenes on our HO scale Milwaukee, Racine & Troy club layout, the first things visitors see when they enter the room is plywood benchwork, and unballasted track. To give the entrance some visual interest, I built a low-relief coal-fired power plant.

Modeling the Wisconsin Electric Power Co. plant was more than building Walthers Tri-State Power Authority, kit no. 933-3055, and plunking it on the layout. The kit's footprint is 10" x 13 $\frac{7}{8}$ ", which would cover a siding and the MR&T's double-track main line. A better option was to turn the kit into a low-relief structure and expand it horizontally by kitbashing two kits to better fill the 9" x 38" space I had to work with.

In addition to the Walthers kits, I used Pikestuff's Shop kit, no. 15, to represent an enclosed shed for the rotary dumper. I trimmed 4" off the building, but it still looks realistic.

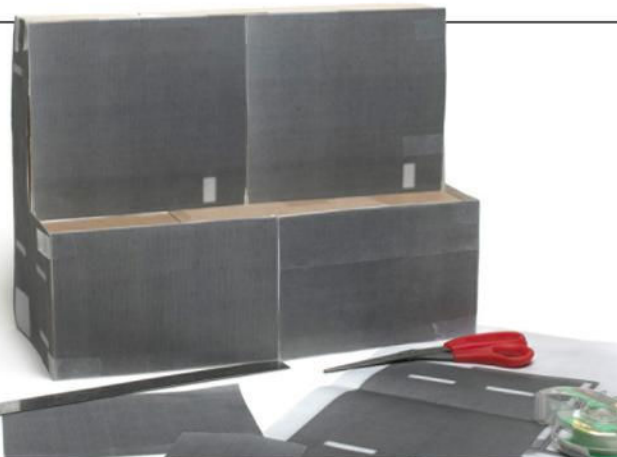
Do you need a lot of space for a big industry? Not always. By converting full kits to low-relief structures, you can add a power plant, steel mill, or whatever industry you want in a relatively small space.

STEP 1 PAPER MOCK-UP

BEFORE I TOOK A NO. 11 BLADE to a pair of \$65 kits, I made a paper mock-up to verify my plan would work.

I started by photocopying the kit parts that I planned to use. Some of the end walls were too large to copy on a single 11 x 17 sheet, so I made the first copy, repositioned the panels, and made the second copy.

I cut the copied parts, taped them to cardboard, and placed the mock-up on the layout. I marked the opening on the right end of the plant where trains pass through the building to reach hidden storage tracks. It's easier to modify a paper structure than to rework a plastic kit.

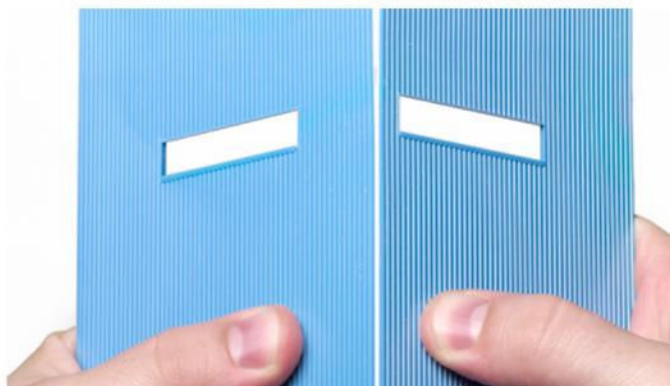


STEP 2 SCORING AND SNAPPING

I NEEDED TO REDUCE THE SIDE WALLS (nos. 102 and 105) to 6 $\frac{1}{8}$ " wide. To do this, I scored the panels with a no. 11 blade in a hobby knife and snapped the plastic apart. I started by placing the blade against the edge of the corrugation at the top of the wall and carefully dragging it the length of the wall. Work slowly here, especially with the first few passes, as it's easy for the knife to wander off course and damage the molded detail.

After making six passes with the front of the blade, I flipped it over and used the back edge to speed up the scoring, as shown in the upper right photo. Using the back of the blade removes more material on each pass.

I made six more passes with the back of the blade before snapping the wall. I carefully flexed the wall back and forth along the line I'd scored until it snapped apart, as shown in the bottom photo. Don't apply a lot of pressure when snapping the plastic, as this may damage the walls. Once the wall panels were separated, I cleaned up the edges with a mill file so the walls would seat flush against the backdrop.



STEP 3 SPLICING WALL PANELS

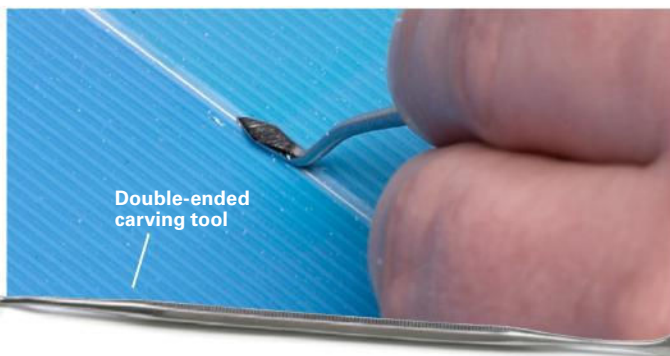
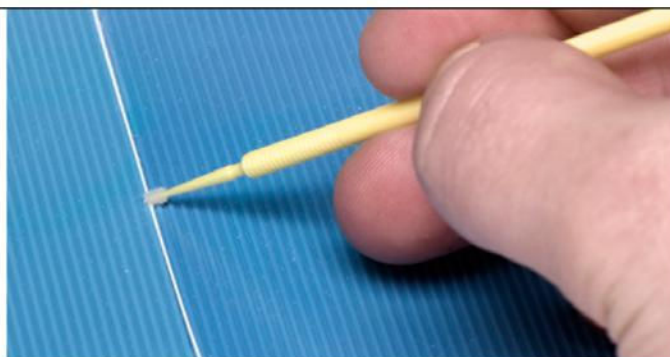
I DOUBLED THE LENGTH of the front walls by splicing together two wall panels on the upper and lower levels (parts 104 and 103, respectively). Straight from the box, these walls have beveled edges on the left and right to meet with the side walls. However, to form a flush butt joint on the wider plant, I squared off the edges where the panels meet in the middle.

Though I was careful when I cut and filed the plastic wall panels, there were still gaps. I filled the gaps with .010" styrene rod and liquid plastic cement. First, I set the styrene rod in the gap. Then I applied the cement with a Microbrush, as shown in the top photo. As the styrene was starting to soften, I pressed it into the gap.

I LET THE GLUE DRY for 24 hours before smoothing the joint with a double-ended stainless steel carving tool (the kind used for wax and ceramics, see middle photo). I carefully shaved away the excess styrene rod to form a seamless joint. Then I made several light passes with the carving tool, being careful not to gouge the plastic.

I FINISHED BLENDING THE SEAM with a product not typically associated with model railroading, a Scotch-Brite no. 7448 abrasive hand pad (available at most auto part stores and building supply centers). In the past I used sandpaper for tasks like this, but it didn't conform to the siding well.

Then I remembered the abrasive pads my dad used at his auto-body repair shop for prepping plastic bumpers. I tried the pad here and it worked great. The pad conformed well to the contours of the corrugated metal siding, and it also removed the plastic fuzz left over from the carving tool.



STEP 4 PLUGGING OPENINGS

WITH TWO KITS, there are plenty of extra wall sections to cut up to fill unwanted door and window openings. For example, when I spliced the two no. 104 wall panels, there were two door openings. To disguise the fact I spliced two of the same parts, I filled the door on the right with a scrap piece of wall panel. I cut the plastic slightly oversize, then used a file and sanding sticks to remove enough material for it to fit in the opening. I set the plug into the wall with liquid plastic cement. Then I brushed two coats of cement along the joint, which helped fill the seam. I smoothed the seam with the abrasive hand pad I used earlier.

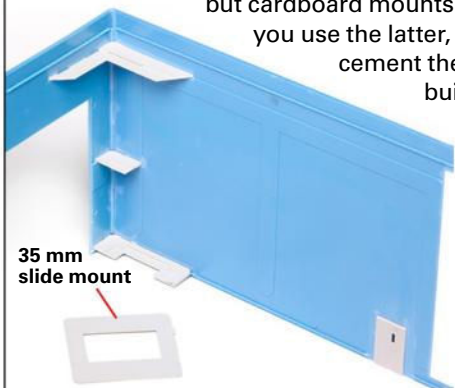


STEP 5 BRACING



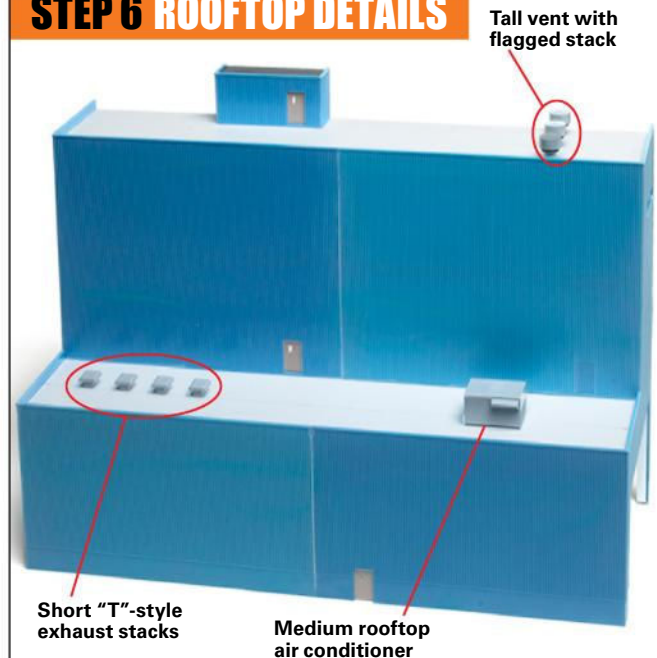
THE KEY TO SUCCESS when building big structures is sufficient bracing. Over time, plastic walls may bow or door openings curl. To prevent this, I braced the butt joints with .040" styrene sheet and the walls and roof with .250" x .250" styrene strip.

For those of you in the digital photography age, you can put those no-longer-needed plastic slide mounts to use as corner braces for structures. As you can see in the bottom photo, I cut the mounts in a variety of shapes. I like using plastic slide mounts for the corners, but cardboard mounts will also work. If you use the latter, you'll need to cement them to the



building with cyanoacrylate adhesive (CA). If you don't have a stock of slide mounts, triangles cut from styrene will work just as well.

STEP 6 ROOFTOP DETAILS



I REPLACED THE STOCK ROOF with .040" styrene sheet and attached it with liquid plastic cement. When I stood back and surveyed the building, it was too plain. To see how full-size coal-fired power plants looked, I used Google Earth. The satellite images of plants in southeastern Wisconsin revealed that my model was lacking rooftop details. Blowers, vents, and air conditioners were just some of the things I could add to enhance the buildings.

Fortunately, I had a pack of roof details (no. 933-3733) from Walther's. The set includes more than 30 parts, of which I used four short "T"-style exhaust stacks, three tall monitor vents with round bases, and a medium roof-top air conditioner.

Though the details are shown on the unpainted building, I didn't glue them on until I painted the structure. I painted the rooftop details with Floquil Bright Silver from a spray can. I let the paint dry for 24 hours, and I then toned down the silver with Model Master Lusterless Flat (Testor's Dullcote would also work). I lightly weathered the rooftop details with thinned Polly Scale Steam Power Black.

STEP 7 ROTARY DUMP SHED

MOST MODERN POWER PLANTS have a covered building that houses a rotary dumper. I made the one at right using Pikestuff's Shop kit. I built most of the kit following the instructions, leaving off the office and wall that would be against the backdrop (I made that wall from .040" styrene sheet instead). The door opening is $3\frac{1}{16}" \times 4\frac{3}{16}"$.

In addition to the supplied roof vents from the Pikestuff kit, I added motorized vents and a motorized blower from the Walthers vent set.



STEP 8 PAINTING AND WEATHERING

EVEN THOUGH THE WALTHERS AND PIKESTUFF buildings have different siding, I was able to give the structures a unified corporate look with paint. I started by spraying both structures with Rust-Oleum Gray Automobile Primer.

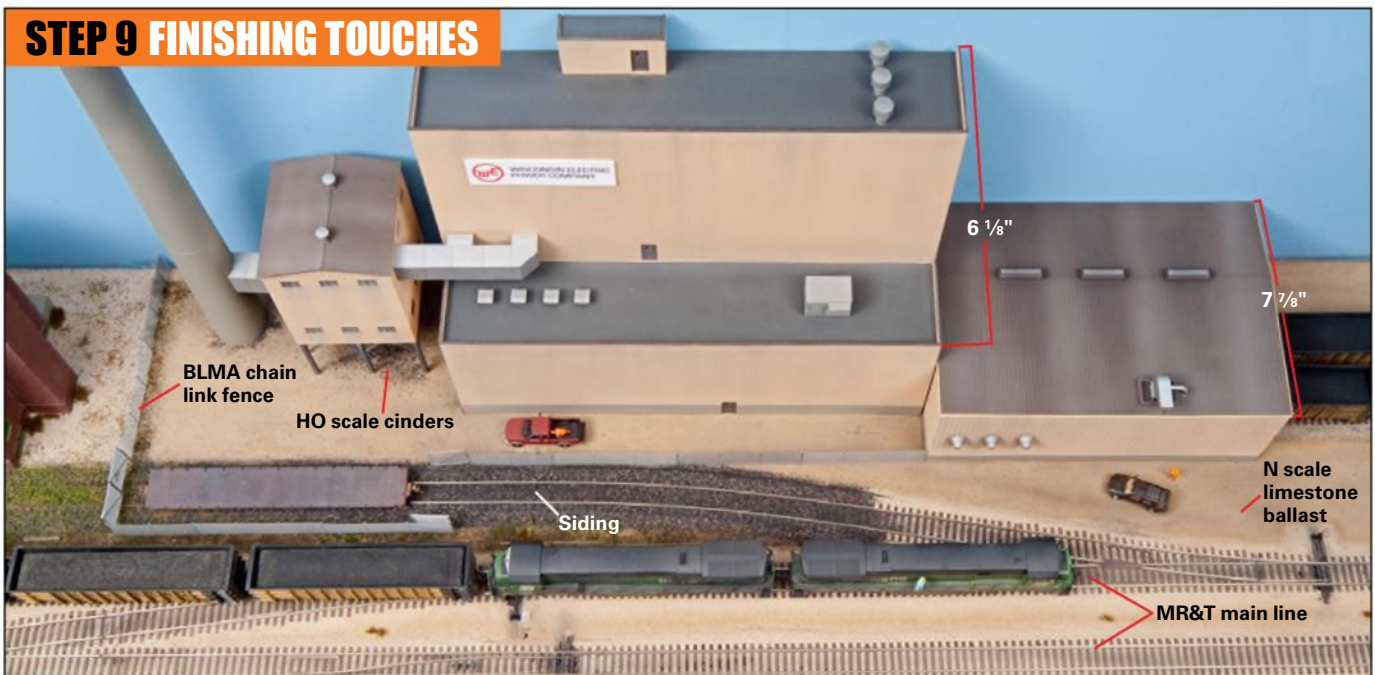
Then I used an airbrush to spray the buildings with Polly Scale Sand (siding), Roof Brown (bag house and rotary dump shed roofs, trim on power plant), Union Pacific Dark Gray (roof of power plant and bag house legs), and Concrete (stack and building foundations).

I weathered the buildings with thinned L&N Gray and Steam Power Black (1 part paint to 4 parts 70 percent isopropyl alcohol). I built up the weathering in thin layers. It's easier to add more weathering than it is to remove it.



The corrugated siding is a pain to mask over. Instead of masking the bag house and airbrushing its vents, I used a silver paint marker to color in these details. Then I applied an India ink wash to the vents (two teaspoons India ink to one pint 70 percent isopropyl alcohol).

STEP 9 FINISHING TOUCHES



THIS BIRD'S-EYE VIEW shows how the Wisconsin Electric Power Co. fits in the scene. By doubling the length of the front walls, I was able to fill the 9" x 38" space.

Scenicking around the power plant was easy. I used N scale limestone ballast, with some HO scale cinders

sprinkled in, for the driveways. Then I installed BLMA chain link fence around the plant's perimeter.

Though two tracks go into the rotary-dump shed, I added a siding long enough for one car so we could spot a flatcar loaded with heavy equipment for the plant. **S&SP**



BUILD AN N SCALE DIORAMA

This scene is designed to be dropped into a new or existing layout

BY STEVEN OTTE
PHOTOS BY THE AUTHOR

Associate editor Steven Otte built this N scale cattle pen diorama using a laser-cut wood kit from The N Scale Architect, a piece of 1" extruded-foam insulation board, and a length of scrap flextrack.

>> DIORAMAS ARE an underappreciated practice in model railroading. Building one is a great way to keep your hand in the hobby if you don't have the room, resources, or time for a full layout. They're great for displaying your rolling stock (and your modeling skills). They let you work on a scene that may not be in your usual era, locale, or even modeling scale. And it's a way to create scenes for your layout at the comfort of your workbench.

The kit I'm using is Quality Meat Stockyard from The N Scale Architect (www.thenarch.com). After preparing the extruded-foam insulation board diorama base with a quick layer of ground cover, I got to work on the structure. Once it was done, I affixed it to the base and dressed it up with a few details (some purchased, some homemade). A stretch of weathered N scale track completed the scene.

Consider building a diorama the next time you want to practice a new technique, experiment in another scale, or get a jump on a future project.

MATERIALS LIST

AIM Products powders

3105 Dark Rust
3110 Medium Gray
3111 Dark Gray

Highball Products

121 N scale ballast, light gray
510 Real Dirt

The N Scale Architect

10703 Quality Meat Stockyard

Model Master acrylic paint

4881 Boxcar Red
4884 Roof Brown
4886 Reefer Gray
4887 Grimy Black

Woodland Scenics

631 static grass flock, wild honey
1343 fine turf, yellow
1349 blended turf, green
2217 N scale black Angus cattle

Miscellaneous

1/16" square stripwood
1/8" square stripwood
earth-tone latex paint
N scale flextrack
Brass wire

STEP 1 PREPARE THE BASE



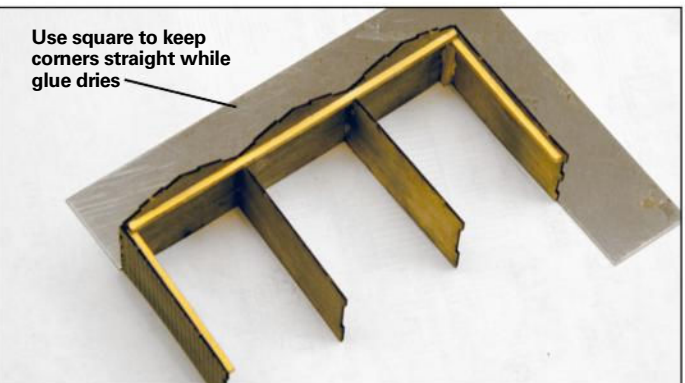
I USED A UTILITY knife to cut my diorama base from a sheet of 1" thick extruded-foam insulation board. The model has a 5" x 10" footprint, so I cut my base 8" x 14" to leave at least 2" on each side. I painted the surface with earth-tone flat latex house paint, then while the paint was wet, sprinkled on Real Dirt from Highball Products. Though the paint adhered the ground cover well, I could see brush strokes in several places. Once the paint was dry, I wet the surface with a few sprays of 70 percent isopropyl alcohol, sprinkled on more dirt, and affixed it with Woodland Scenics Scenic Cement. This resulted in a realistic surface.

STEP 2 WEATHERING THE WOOD



WHEN ASSEMBLING WOOD KITS, I usually weather the parts with a stain of black paint diluted in isopropyl alcohol. However, this can cause thin wood parts to warp, and since most of this kit is exposed fences, I wouldn't be able to fix it with hidden bracing. So instead, I aged the wood parts with dark gray weathering powder from AIM Products. I tried brushing the powder onto the wood sheets, but worried it would come off with handling during assembly. So I sprinkled the powder onto the wood, then rubbed it in with a fingertip. This gave the wood a gray, aged look.

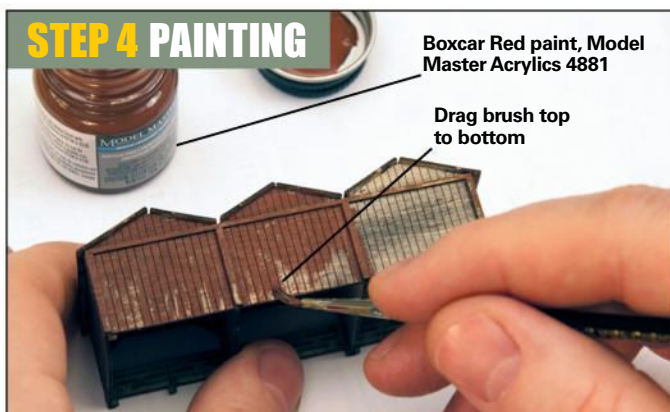
STEP 3 BRACING THE ASSEMBLY



WHEN YOU'RE DEALING with parts as thin as 1/32", even microplywood can warp, especially when it's scribed with board detail. To counter this on the two shelters that come with the kit, I added 1/16" square stripwood bracing under the roof, where it won't be seen. Normally I'd use

1/8" bracing, but for walls this thin, 1/16" was all I needed. I cut notches at the top of the inner walls to clear the long brace across the rear wall and also reinforced the back corner joints. I strengthened the more visible front wall joints with an extra fillet of glue.

STEP 4 PAINTING



THE FENCES in a cattle pen would simply be plain weathered wood, but the attached shelter/hay barn structures would be painted. I used Boxcar Red from Testor's Model Master acrylic line. I dragged the brush in vertical strokes, parallel with the scribed siding, leaving random patches at the bottom uncovered to represent peeling paint.

STEP 5 ROOFING



Dark rust weathering powder, AIM Products 3105

THE KIT COMES with corrugated foil roofing, which was far too shiny for my tastes, even if I were modeling a new structure. To tone it down, I applied a wash of Model Master Grimy Black acrylic paint, thinned by dipping the loaded brush into my wash cup. Once that dried, I brushed on Medium Gray weathering powder from the peaks down, and Dark Rust powder from the eaves and valleys up. I left the provided white-metal roof vents off because I didn't like how they fit. With the shelters finished, I then completed the kit assembly, as per the included instructions.

STEP 6 INSTALLATION



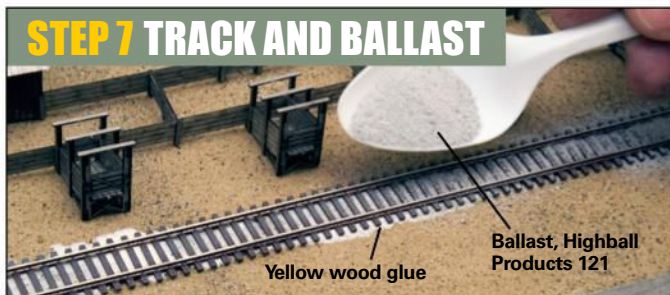
Brass wire mounting pin, painted brown



TO ATTACH THE STRUCTURE to the foam base, as well as to straighten some slightly curved fences, I cut a handful of mounting pins from brass wire. I painted the pins Roof Brown to help hide them against the weathered wood fences and glued them into selected corners using

medium-viscosity cyanoacrylate adhesive (CA). After the glue cured, I positioned the stock pen on the base and gently pushed the pins home. I glued the base of the shelters to the terrain with white glue, and sprinkled on green turf to disguise the glue bead and represent weeds.

STEP 7 TRACK AND BALLAST

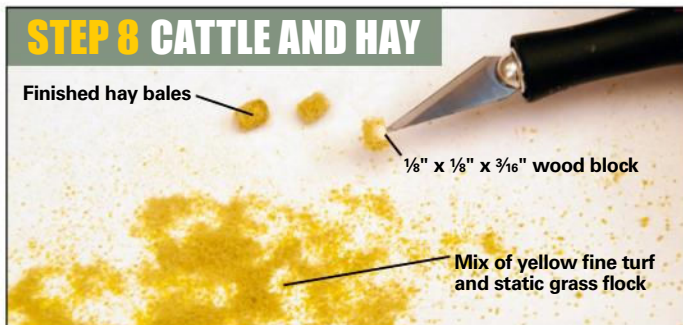


Yellow wood glue

Ballast, Highball Products 121

IN MY SCRAP BOX, I found a weathered piece of N scale flextrack from a previous project. Since a spur alongside a cattle pen wouldn't be laid on a high bed of ballast like a main line, I didn't use roadbed. Instead I glued the track directly to the base with yellow wood glue. While the glue was still wet, I sprinkled on the ballast. After the glue dried, only a thin layer of ballast stuck, but that produced the poorly maintained look I was going for.

STEP 8 CATTLE AND HAY

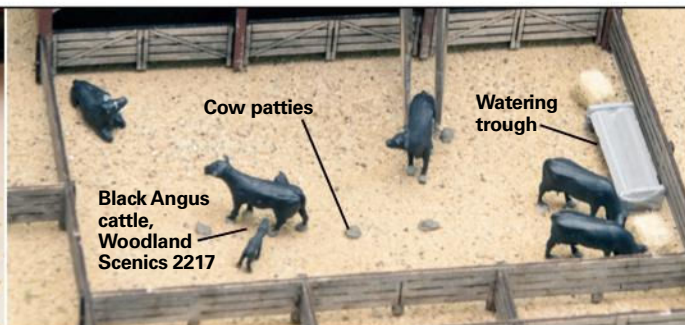


Finished hay bales

$\frac{1}{8}$ " x $\frac{1}{8}$ " x $\frac{3}{16}$ " wood block

Mix of yellow fine turf and static grass flock

I MADE HAY BALES for the cattle to munch on while waiting for their train. I cut several $\frac{3}{16}$ " long blocks of $\frac{1}{8}$ " square stripwood. Sticking my hobby knife into one side to make it easier to handle, I covered the other five sides of a block with white glue, then rolled it in a pile of fine yellow ground foam mixed with straw-colored static grass. The result was more of a fuzzy ball than a bale, but



Cow patties

Watering trough

Black Angus cattle, Woodland Scenics 2217

squeezing it between my fingers before the glue dried returned it to its rectangular shape. I glued a few of the hay bales into each of the pens, along with the watering troughs included with the structure kit. Finally, I populated the pens with two sets of N scale cattle, which came with a few scale cow patties for that extra touch of realism. **S&SP**



Railroads have always needed signs for safe, efficient operation. While each railroad was reasonably consistent with signs on its own right-of-way, shapes, colors, and messages varied a lot from railroad to railroad. Jeff Wilson photo

SIGNS ALONG THE LINE

Essential to prototype railroad operations, trackside signs add realism to the model scene

BY JEFF WILSON

>> THE RAILROAD RIGHT-OF-WAY

is rich with signs that convey information, warnings, place names, mileage, and other messages. The signs come in a variety of shapes and sizes and have varied in appearance and content from railroad to railroad.

Lots of sign models are commercially available (see the accompanying sidebar), and there are many ways to make your own. Though your model railroad would operate just fine without signs along the right-of-way, with them you've added credibility. You've made your layout look like a railroad.

CROSSING SIGNS



The familiar X-shaped crossbuck has long been the most common crossing warning sign. Through the steam era many signs, such as the Cadillac & Lake City crossbuck (left), had reflective glass beads in the lettering. James A. Brown photo The more recent Monon grade-crossing signal (right) has the beaded crossbuck, a beaded "stop on red signal" sign, and flashers. David P. Morgan Library collection

THE MOST FAMILIAR LINESIDE SIGNS

are located where roads and tracks intersect. Since the early 20th century, the most common grade-crossing sign has been the familiar X-shaped crossbuck. Grade-crossing signs are either passive (signs only) or active (with flashing lights and/or gates).

Although most crossbucks look alike, there have been many variations over the years. One variation has the boards meeting at a sharper angle. Additional markers on posts show the number of tracks and perhaps the name or herald of the railroad. Both X-sign boards can be on the same side of the post, or they can be on opposite sides. The ends are most often square but can be pointed, or the ends can be cut perpendicular to the ground.

Crossbucks have black lettering on white boards. Before Scotchlite and other reflective panels became the norm, reflecting beads were often placed in the letters, giving them a distinctive look.

The posts supporting these signs varied as well. Wood was the norm through the steam and early diesel eras, though some railroads opted for concrete. For the past few decades shaped steel posts have become the standard support.

During the steam era, some railroads painted crossbuck posts with diagonal stripes to increase visibility.



In 1957, zebra stripes for visibility adorned this crossbuck post on Camas Prairie at Craigmont, Idaho. The signboards are on opposite sides of the post. John C. Illman photo



This ex-Chicago, Burlington & Quincy crossbuck has sharply angled signboards. You can still see the pattern for the zebra stripes once painted on the concrete post. Jeff Wilson photo



Some of the Pennsylvania RR's distinctive oval crossing signs lasted into the 1960s. Philip R. Hastings photo



This ancient former Milwaukee Road wig-wag signal was still in use in Waukesha, Wis., in 2002, but with a newer crossbuck sign added. Jeff Wilson photo

You don't see many of these today, but some newer signs have additional reflective panels on the posts.

Crossbucks weren't always standard at crossings. Into the early 1900s, railroads used a number of styles. Among the best known were the Pennsylvania RR's oval, cast-metal STOP, LOOK, AND LISTEN signs. Some of these survived into the 1950s and '60s, but by the late steam era most had been replaced by crossbucks.

Active crossing signs feature some type of warning device. Wig-wag signals were among the earliest, with some lasting into this century. Flashing red lights and gates are now the most prevalent warning devices. Variations can include additional warning signs on the post, as well as overhead

arm-mounted lights and additional lights aimed at side streets.

Generally, crossbucks remain in place as long as the rails are still embedded in the road. If a line has been abandoned or is no longer in service but the rails are in place, the signpost will have an additional sign saying "abandoned" or "exempt," which lifts operating restrictions on vehicles such as buses and on trucks carrying hazardous materials.

Where there's a crossbuck, there's often an advance warning sign. Although not truly trackside signs, these familiar orange-yellow highway signs are located in advance of public crossings. Since the 1950s, these have featured an X; earlier signs had the crossing in a "plus" shape.

WHISTLE POSTS AND MILEPOSTS



New Haven used solid wooden posts, with a black-painted W. Robert S. McGonigal photo



Cast keystone-shaped posts were common on the Pennsy. Robert S. McGonigal photo



A modern twist to whistle posts is illustrated by this Canadian Pacific sign that lets crews know whistles and horns are prohibited in this town or area. Robert S. McGonigal photo



The Southern Ry. used the standard whistle/horn pattern (long, long, short, long) to graphically indicate an approaching grade crossing. Robert S. McGonigal photo



Typical of more-modern signs along the right-of-way, this Milwaukee Road whistle marker has a metal signboard mounted on a formed steel post. Gordon Odegard photo



We're 64 miles from Boston on the Boston & Albany line. Jeff Wilson photo



Modern mileposts usually have sheet-metal signs bolted to steel posts. Jeff Wilson photo



Since line poles were already in place along their rights-of-way, some railroads simply had them do double duty by attaching mile markers to them. Gordon Odegard photo

PLACED PRIOR TO GRADE crossings, whistle posts alert the engineer to blow the proper signal (two longs, a short, and a long). The most common is a simple black W on a white sign, mounted on a post. The Pennsylvania RR once used its keystone herald as the shape for its whistle posts.

Other variations include using an X instead of a W or showing the pattern of the whistle signal (two longs, a short, and a long), as on the photo of the Southern Ry. sign (top right).

A relatively new variation is the no-whistle sign. Some municipalities have passed ordinances restricting the use of horns. In these areas you'll find either no whistle posts or signs with a no-whistle indication, as shown on the Canadian Pacific sign (top middle).

Along with whistle posts, some railroads used similar signs for bells, using an R for "ring." (The Pennsy was one example, using the same keystone shape as its whistle posts.) These were typically found approaching stations.

Mileposts, as the name implies, are located every mile along a railroad. The most common type of milepost today is a small metal signboard with black numerals on a white background, attached to a steel or wood post. The sign is usually mounted atop or offset to the side of the post so that the number can be marked on both sides of the sign.

As with other signs, in the early days railroads sometimes chose style and permanence, using stone or concrete, as on the New York Central's

Boston & Albany milepost shown in the row above.

Instead of erecting a separate milepost, railroads often put mile markers on line poles. Even after many pole lines began disappearing in the 1980s and '90s, the mile-marker poles were often left in place.

Although the average model railroad wouldn't be able to use many true mileposts (a scale mile is 33 feet in N scale, 60'-6" in HO, and 110 feet in O scale), you can fudge on this a bit without giving up realism. Frank Ellison, a pioneer of model railroad operations, suggested using "smile posts" every tenth of a scale mile. This allows you to have more mileposts than your layout would need otherwise, without seeming unrealistic.

SPEED SIGNS



This former Milwaukee Road speed sign has limits for both passenger and freight trains. Robert S. McGonigal photo



The speed limit is 60 for all trains on this portion of the Atlantic Coast Line, as indicated by the diamond-shaped sign at right. Also note the NO TRESPASSING sign behind the speed sign. Ralph Coleman photo



The BNSF Ry. has three speed boards here at Vancouver, Wash., for Talgo, other passenger, and freight trains. Robert S. McGonigal photo



Temporary plain yellow boards placed trackside indicate an approaching restricted-speed zone. Gordon Odegard photo



Red boards, placed either next to track or between the rails, mean stop. Gordon Odegard photo

RAILROADS, LIKE HIGHWAYS, have speed limits. Curves, bridges, and other hazards may have additional speed restrictions. Speed limit signs mostly have yellow backgrounds to differentiate them from mileposts. Lines hosting both freight and passenger trains will have two numbers, with the higher speed indicating passenger trains and the lower for freights. A single-speed sign is shown in the top right photo.

Sometimes separate signboards are used on the same post, as shown in

the Burlington Northern Santa Fe photo (second above, left). The prefixes P and F refer to passenger and freight trains; the additional board has a T for Talgo train speeds.

A resume-speed sign, following a restricted-speed zone (such as a curve), will let the engineer know he has left the restricted zone. Some railroads used a plain green board on a post; others used yellow or green with "R" or "RS" for resume speed.

Use of speed limit signs also varied. Some railroads used one style of sign

as an advance warning with another style at the start of the zone itself.

Related to permanent speed limit signs are temporary slow order signs. Yellow signs or flags indicate that trains are approaching a restricted-speed area. These indicators are generally used for temporary slow-speed stretches of track, such as construction areas. A green board (sometimes with an R for "Resume") marks the end of the restricted-speed area. Red boards mean stop and indicate track that's out of service.

LOCATIONS AND BOUNDARIES

EVERY STATION LOCATION listed in a timetable is marked by a sign. In many cases, especially through the steam era, this was done by signboards on depots. However, at places without a depot, the station location is indicated by a signboard on a post or posts.

Yard limit signs are placed along main lines where operation under Rule 93, the yard limit rule, is to begin. (Contrary to expectations, Rule 93 applies to main tracks and not to yards. Within yard limits, trains and engines may use main tracks without respect to the schedules of other than first-class trains but must give way when other trains approach.) Yard limit signs are sometimes oval or rectangular, but in steam days V-shaped and triangular signs were also common.

Signs are used to indicate upcoming stations, yard limits, and junctions, usually at the one-mile point. The sign in the photo at right warns crews that they're 500 feet from the fouling point of a junction switch. Boundaries of control blocks, signal blocks, and other signal boundaries require signs.

Signs were also used to aid crews working near a station or yard, to give crews guidelines in switching, or to let them know when they were clear of a station, crossing, or other point.



The V-shaped yard limit sign may be the most recognizable version. Gordon Odegard photo



This small sign to the right of the milepost marks the distance to the fouling point of a junction switch.

Donald Sims photo



This sign, a mile away from a yard limit board, warns engineers to approach the yard limit with their trains under control. Gordon Odegard photo

WARNING SIGNS



Bridge approaches often feature a collection of warning signs, as at the St. Louis-San Francisco's Mississippi River bridge at Memphis, Tenn. The bridge has a 10 mph speed limit. James G. La Vake photo

MANY LINESIDE SIGNS deal with safety, warnings, and cautions. The photo above shows a collection of them at a bridge approach – always a good location for warning signs. The photo shows “no trespassing,” “danger: keep off,” and “no smoking” signs (which are often located at

trestles and at bridges with wood decks). Other warning signs can be seen on other photos in this article.

A type of warning sign that often goes unnoticed is the flanger post. These can be found in many styles, but they most often have a black angle or V (to be better seen against a snowy

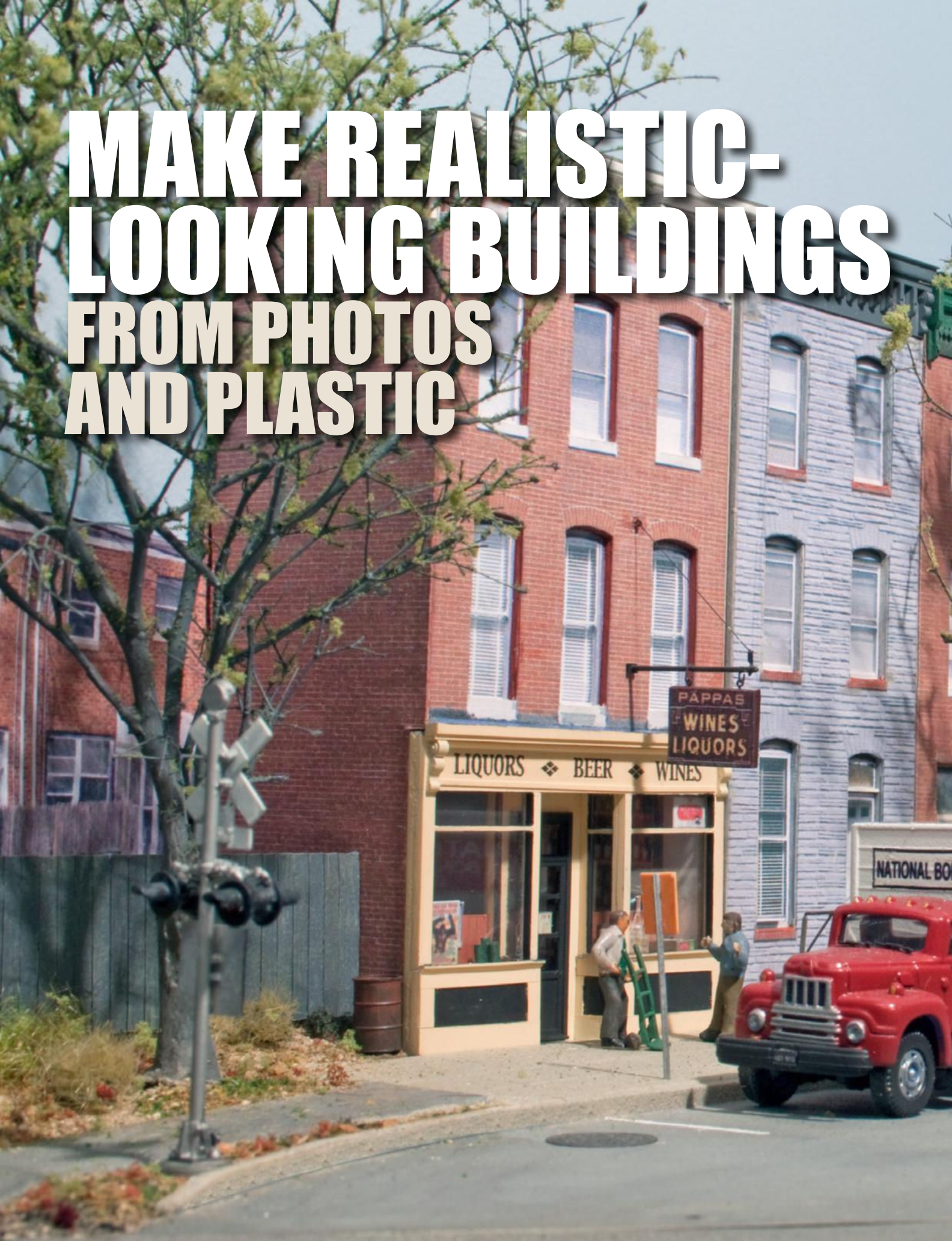


Just in front of and below the yard limit sign stands a V-shaped flanger post. Gordon Odegard photo

background) on a post. They let flanger operators know to raise their blades for an obstruction between the tracks, such as a grade crossing.

Other common warnings include clearance signs of various types, which can be found on structures and bridges, as well as on signposts. **S&SP**

MAKE REALISTIC- LOOKING BUILDINGS FROM PHOTOS AND PLASTIC





Print photos and styrene trim combine to form credible foreground structures

BY PAUL J. DOLKOS
PHOTOS BY THE AUTHOR

>> WITH SO MANY DETAILED plastic structures now available to model railroaders, you might wonder who would consider building a structure using paper these days. Maybe as a mock-up, but hardly as a permanent building, right? Well, don't be so quick to relegate pulp products to the shredder.

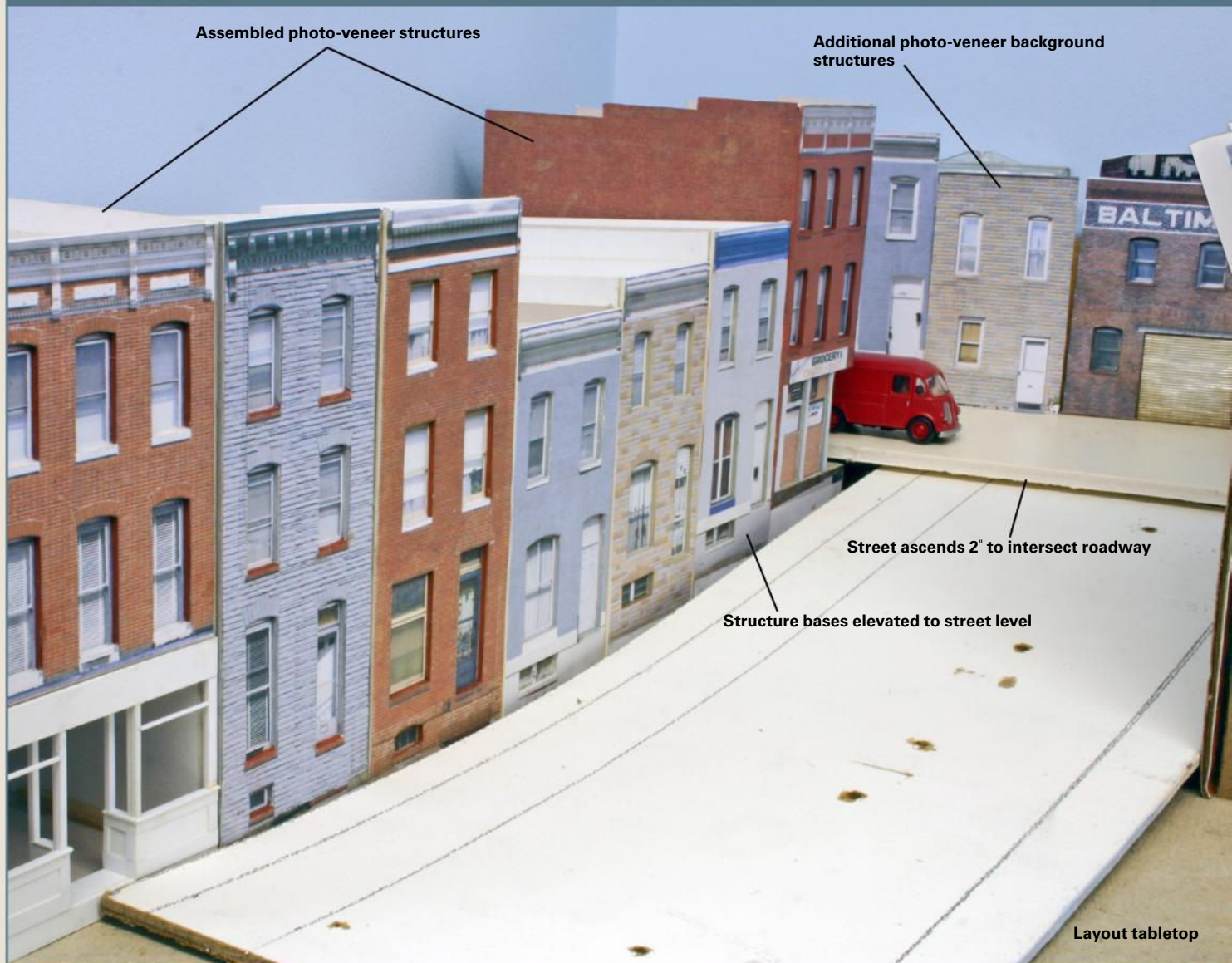
Thanks to refinements in paper products and construction techniques, it's never been easier to assemble paper buildings that include as much detail as commercial plastic structures. Today, using digital photography, photo-editing software, and inexpensive home printers, we can design and build realistic paper-based buildings that challenge even the most discerning eyes.

Although I initially intended to combine digital photos on a sheet of cardboard to make a background building flat with recessed windows, there was no reason why I couldn't use the technique to make photo-veneer foreground buildings. Some may think of the photo-veneer building as a cop-out to modeling a dimensional structure, but photos introduce a look that's virtually impossible to capture on traditional models.

My technique captures window glass color and reflections, curtains and blinds, subtle coloring and weathering of masonry, and seldom modeled details like address numbers, mailboxes, and electrical conduits – all with minimal effort.

Without reservation, Paul Dolkos placed paper structures enhanced with plastic trim at the front and center of his well-detailed urban scene on his HO scale Baltimore Harbor district layout.

STEP 1 CAPTURING AND SIZING IMAGES



These assembled photo-veneer row houses line a street with a gradual grade. Accordingly, Paul adjusted the height of each facade to follow the slope of the street. The background structures are flats that don't need additional side walls.

THE FIRST STEP in constructing a photo-veneer structure is to capture suitable building photos. In some instances, this can be the most challenging part of the process. First, you'll need to find a structure where the facade is not obscured by trees, vehicles, or other large obstructions. Next, it must be properly lit. Some sunlight is fine, but a cloudy or partially cloudy day is better for minimizing distracting shadows, particularly those that appear in deep doorways.

There's no need to use anything more than a basic point-and-shoot digital camera for these shots – even a smartphone camera that provides sharp, high-resolution images will do. In fact, some modelers, including *Model Railroader* author Lance Mindheim, simply use Street View images culled from Google Maps as the basis for some structures. Similarly, there are commercial photo offerings that eliminate the need to take your own photos.

Level and position the camera perpendicular to the facade to minimize perspective distortion. This may not be

possible with taller structures, but some distortion can be corrected in the photo-editing process. Ideally, the perfect camera angle is centered not only horizontally, but vertically too. For instance, the best place to shoot a five-story building is from a location two and a half stories high.

If there's a clear view of the subject from a distance, try using a longer focal length camera lens setting to eliminate some distortion. Don't worry about making your photo perfect, as many incongruities just aren't noticeable in the resulting structure.

Using photo-editing software, virtually anything can be altered, deleted, or even created using elements from various images. Fortunately, that much effort typically isn't required. I work with images that require only minor tweaks – nothing more than an offending tree branch or a portion of a sign needs to be fixed. My tool of choice is Adobe Photoshop Elements, as it offers a wide range of capabilities, many of them automated.



Paul captured digital images of Baltimore row houses and printed them on contact sheets to expedite the selection process. Samples of printed and trimmed facade photos are also shown. Although they aren't required here, side view photos are also needed to model multi-sided structures.



Before arriving at this preferred arrangement, Paul first test-fit various printouts to determine which facades would best fill the allotted horizontal and vertical space. When necessary, he resized and reprinted specific facades to fit the space.

Once it's refined, the image must be sized for printing. Calculating a scale print size may be difficult due to the varying sizes of the original. To keep the printouts uniform in size, I measure front entry doors and window openings and adjust the printer's output percentage until I obtain the desired dimensions. I've found it's best to have images printed slightly smaller than scale to help form a forced perspective.

STEP 2 PRINTING IMAGES

WHEN IT COMES to printing facades, I've been most satisfied using plain white bond paper. This durable writing paper has no sheen and provides moderate image saturation. These characteristics help my paper structures blend with the adjacent plastic models viewed under the same fluorescent lighting. Although photo-grade paper will produce a sharper printout, the heavier stock makes it harder to obscure thicker raw paper edges at corners or wherever two pieces join. If you do use photo paper, be sure to adjust the printer settings to produce the optimum quality image.

In addition to reproducing a higher quality image, heavier stock photo paper makes it possible to add shallow relief by cutting door and window openings in a print and simply inserting a second print underneath, without the need for a layer of cardstock between them. To model stucco or rough cement exterior finishes, also consider using textured papers that are compatible with your printer.

The inkjet printer I use produces water-soluble images. An errant spray of water while adding scenery can quickly cause image colors to run or bleed. To protect facades, I overspray my printouts with Krylon no. 41311 matte finish. Test any protective finish first, as some may cause image color to shift. Another option is to print out images using a color laser printer or photocopy an inkjet printout using a color copier.

PAPER STRUCTURES FOR SALE

THERE ARE COMMERCIAL OFFERINGS that range from complete building images to collections of surfaces such as brick, cinder block, or roofing materials. This eliminates the need to find suitable structures to photograph. Here's a partial list of manufacturers.

As with nearly anything printed on paper, there is the possibility that a photo-based structure could fade or discolor over an extended period. However, in most cases the effects of prolonged exposure to direct light isn't any worse than the dulling that comes from a moderate accumulation of dust.

CLEVER MODELS, www.clevermodels.net

Sells N, HO, S, and O scale structure kits printed on cardstock and exterior surface texture sheets. The website offers tips and instructions for building these types of models.

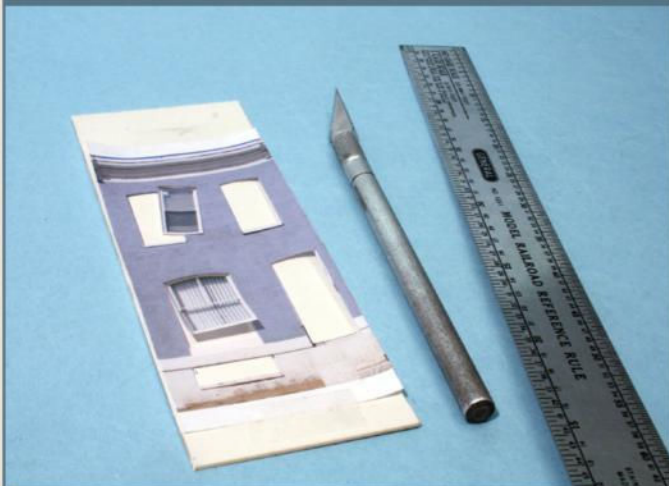
EVAN DESIGNS, www.modeltrainsoftware.com

Offers software packages to design your own structures and some sample structure images that can be built-up.

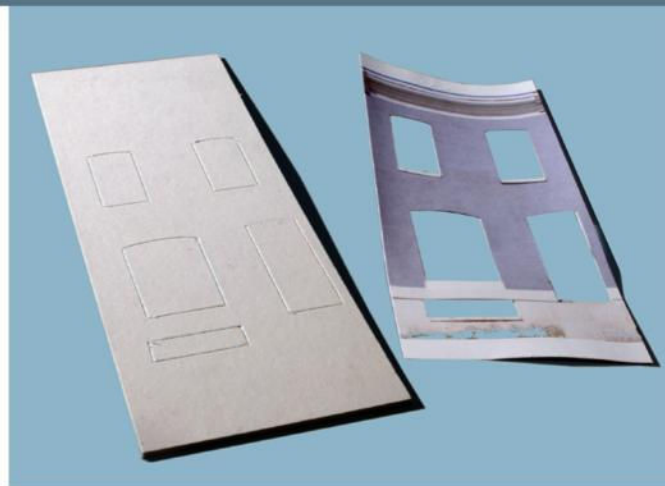
MICRO-MARK, www.micromark.com

Has a line of self-adhesive building paper that includes factory brick and details, cinder block, random stone, and shingles. All are offered in HO and O scales.

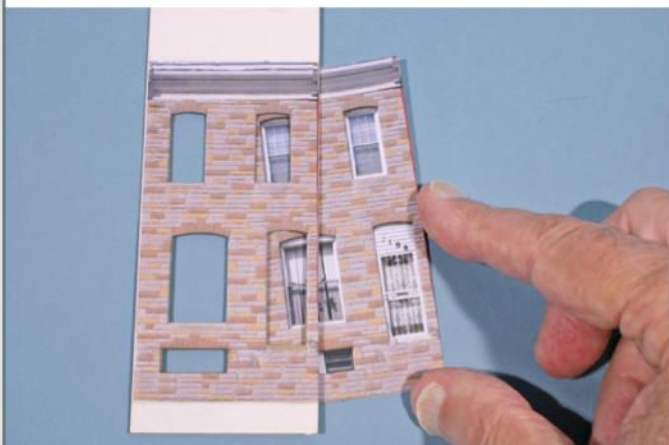
STEP 3 ASSEMBLE THE STRUCTURE CORE



After taping the facade image to illustration board, Paul used a hobby knife and metal straightedge to cut door and window openings from the printout.



Paul removed the remaining image before using a hobby knife to cut out the openings previously scribed on the front wall section.



Paul used a small brush to apply touch-up paint along the raw edges of the openings and attached an identical image to the back side of the wall.

PHOTO-VENEER BUILDINGS require a core assembly to support the structure and provide a surface to attach images. You can use styrene, wood, and sheets of other typical construction materials, but I find .040" to .060" thick illustration board is the best option. The board should be heavy enough to resist bending, but not so thick that it's a chore to cut out structural openings.

After selecting illustration board of the appropriate thickness, I used cellophane tape to temporarily secure the images to the wall sections. Next, I used a sharp hobby knife (no. 11 blade) and a metal straightedge to cut along the door and window openings on the image. If you intend to use the structure in a background scene, this step isn't necessary.

Cutting the image while it's attached to the board leaves an outline for cutting the thick board material. After removing the photo cutouts and the remaining image from the board, I used a hobby knife and various blade types to cut out wall openings following the scribed lines.

I've typically used a thin coat of plain white glue to secure the printed facade to the front side of a wall section



To construct the core assembly, Paul added side walls made from illustration board and installed internal bracing to prevent warping.

with cutouts. However, a glue stick is probably the best option to avoid the mess and the possibility of smudging the ink on an image. Spray adhesive is another option, but I'd rather not worry about controlling the overspray or issues related to incompatibility with the paper or ink.

After gluing the cut-out image to the front, I completed the wall section by adding an identical uncut image to the back. I worked carefully to make sure I aligned the printout with the wall openings.

To complete the core assembly, I used white glue to attach illustration board sidewalls to the facade wall section. After allowing the glue to dry, I added an adjoining facade section. When adding a new facade section, I used a hobby knife to bevel the adjoining edges so one facade overlaps the other. At corners, as well as along door and window openings, I've used touch-up paint, colored pencils, and pastels to cover any exposed edges of the illustration board.

After assembling the structure, I installed wood strips to reinforce the interior corner joints and additional illustration board to help prevent the side walls from warping.

STEP 4 PERFECTING PLASTIC



The first floor of this row house is retail space. Unfortunately, the storefront was obscured by harsh shadows in the photo, so Paul constructed the lower facade from styrene components.



To model the protruding cornice on this building, Paul combined Grandt Line castings, styrene strips, and a printed photo of the etched detail.

ON MANY PHOTO-VENEER structures, recessing the door and window openings is all that's needed to produce a visually satisfying model. But in some cases, especially where shadows or a flaw that can't be fixed detract from the photo, I've enhanced facades by adding cornice trim, retail store windows, and entrances formed from plastic.

In many cases just combining varying sizes of styrene strips provides enough trim detail. For more complex items, castings such as cornices or structural components offered by Grandt Line and Tichy Train Group can be used in conjunction with styrene strips, sheets, columns, and tubing.

With or without this additional plastic trim, I've found that contemporary products, materials, and techniques help produce realistic paper structures that are worthy of placement at the front and center of my layout. [S&SP](#)



Paul's completed row houses stand just inches from the front edge of his layout. But even at close range, it's hard to identify their paper and plastic origin.



You can quickly add realistic fields along your roads and rights-of-way like those shown here, simply by using a static grass applicator and several common scenery materials.

MODEL REALISTIC TALL GRASS

Using multiple scenery techniques to make convincing fields and prairies

BY PETER ROSS • PHOTOS BY THE AUTHOR

>> **MUCH OF THE PART** of New Zealand's South Island where I live has low rainfall, hot dry summers, and grassy plains. A large part of the land is grazed or cultivated, except around railway rights-of-way and roadsides where the grass can be very thick and dry. But how could I model those wild grassy surroundings convincingly? Static grass was my answer.

On the same principle as a rubbed comb picking up bits of paper or a balloon rubbed on a sweater sticking to the ceiling, static grass requires a special applicator to give fibers an electric charge before releasing them onto the scenery. This charge of static electricity makes the fibers stand on end, and when applied to a bed of wet glue, the fibers stick in place upright.

I first learned about the technique from a friend who had read about building a static grass applicator in D. Derek Verner's article "Zap texturing for foliage" from the September 1980 *Model Railroader*. In the article, Verner had harnessed the static charge from a Wimshurst machine [This is a type of electrostatic generator often built for science projects. – Ed.] He used this

machine to get the flocking to stand on end, achieving realistic grass and foliage effects. My friend designed his own version of the Verner applicator, substituting some electronics for the Wimshurst machine to get the required charge. Since then, Noch and several other companies have produced battery-powered static grass applicators. See **fig. 1**.

STARTING WITH SHORT GRASS

When I started experimenting with the zap-texturing technique, my first challenge was to find a suitable flocking material. Several scenery manufacturers make static grass. I chose Woodland Scenics static grass flock.

I knew pastures of short grass would be the easiest to make, so that's where I started practicing the technique on my layout. I painted an area of the scenery a light brownish green and then set to work applying static grass.

To begin, I put some static grass in the applicator, spiked the ground wire into the general working area, and then sprayed the ground with adhesive (dilute matte medium) where the grass would be applied. I then turned on the applicator and, as shown in **fig. 2**, brought its mouth to within about $\frac{1}{2}$ " of the wet surface. Next, I gently shook the applicator and out came the grass in a steady, even stream. Soon I had a nice lush pasture.

Before applying static grass to more of my scenery, I first had to solve the problem of applying the flocking close to buildings, fences, and roads without making them as grassy as the surround-

ings. With 20/20 hindsight I realized it would have been better to set the buildings in place later, but since I hadn't, I had to figure out a way to work around them.

One solution was to cover the structures and roads with loose-fitting cardboard. After working with the grass for a bit, I discovered that I could drape damp paper towels over these objects. This worked a lot better because the damp paper trapped the unwanted flock. This technique also proved to be effective for masking along fence lines, especially in places where I wanted to make the grass shorter and greener on the grazed side of the fence.

LONGER GRASSES

After my initial scenery tests, I was pleased with the general results, but I wasn't quite there yet. Though the shorter grass looked great for pastures and grazed fields, I needed taller grass in places where the prairie had been left undisturbed. After more experiments, modeling long grasses proved remarkably easy.

One of the great things about the static applicator is that you can apply multiple coats of static grass. The Woodland Scenics fibers are just over $\frac{1}{16}$ " tall, but I made some areas with grass more than $\frac{1}{4}$ " tall in places. How did I do this? The static charge not only makes the fibers stand up, it also makes them stick to each other almost end on end. You can create amazingly tall stalks all from $\frac{1}{16}$ "-long segments.



Fig. 1 Applicator. Though Peter and his friends built their own static grass applicator, ready-made applicators are available from several manufacturers, including the Noch Gras-Master shown above.

When I first tried to put additional coats of static grass down, there was one practical difficulty. I needed to spray on more matte medium before each new coat of fibers to get them to stick together. However, when using a misting bottle to spray the adhesive, little droplets always came out, making pock marks wherever they hit.

In looking for a better solution, I turned to my airbrush. I set the air pressure as low as it would go and still function (about 3 to 4 psi) so as to minimize the blast of air. I then filled the airbrush paint jar with dilute matte medium (mixed 1:1 with water plus a drop of dish soap), set the proper spray pattern, and had no more problems. In fact, there was an added benefit – the misty spray dulled the unnatural sparkle from the grass fibers.

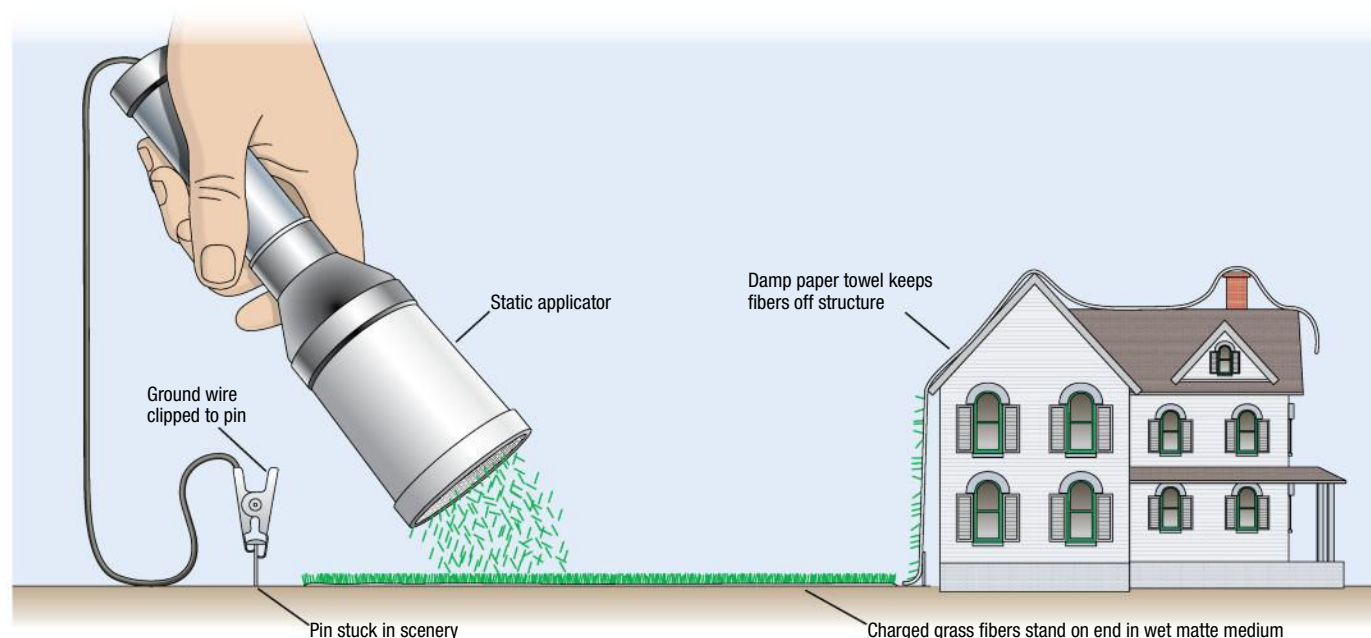


Fig. 2 Applying grass. After clipping the static applicator's ground wire to the scenery close to the work area, hold the static gun about $\frac{1}{2}$ " from the surface and gently shake the grass fibers into the adhesive.

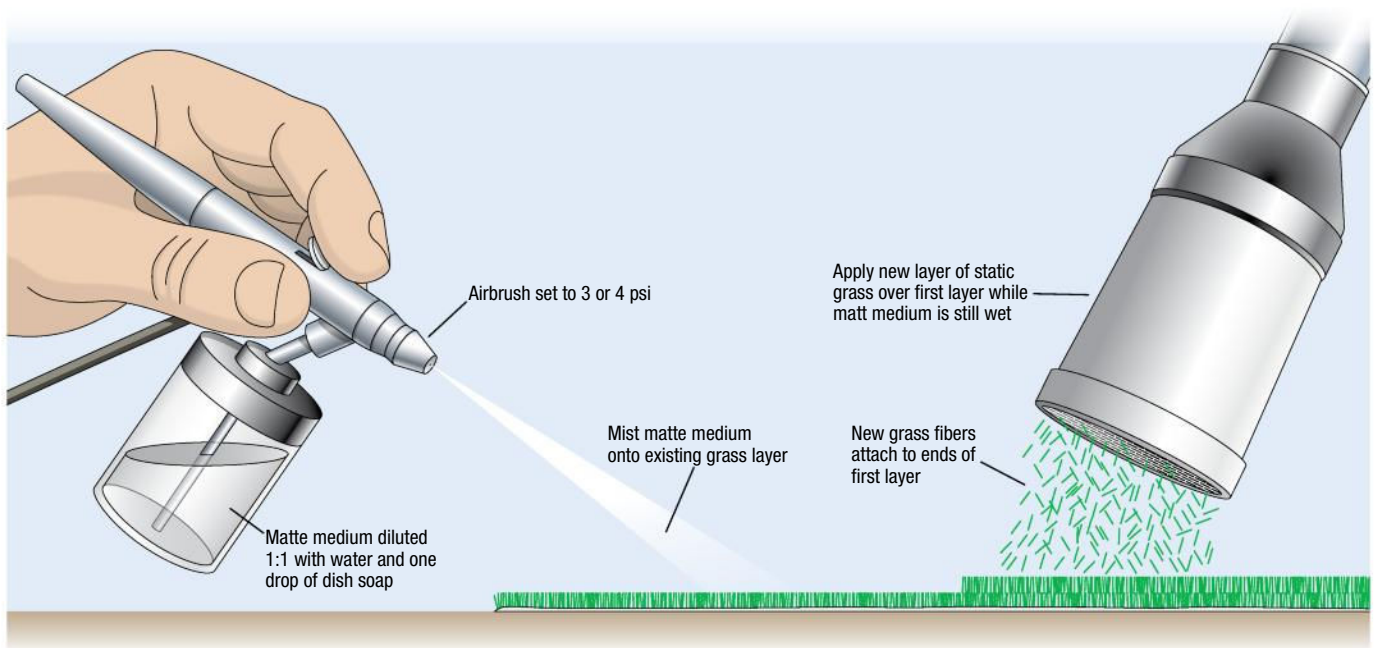


Fig. 3 Layering the grass. After using an airbrush to mist the existing grass with matte medium, Peter applies another layer of static grass. These fibers attach to the ends of the earlier grass, making taller blades.



Fig. 4 Finished grass. To finish the fields, Peter sprayed the static grass with one final coat of diluted matte medium and then sprinkled in various shades of fine turf to represent seed pods, weed leaves, and wildflowers.

As shown in **fig. 3**, after applying the initial layer of grass and letting it dry, I airbrushed matte medium over it from a distance of at least 12". I then zapped on another coat of static grass, let it dry, applied more matte medium, and so on. I found it best to work in 1-square-foot areas at a time. Depending on temperature and humidity, it can be difficult to get through much more before the matte medium loses its tackiness.

By alternating between two areas I could work continuously while still allowing time for the adhesive to dry sufficiently before the next coat.

CREATING REALISTIC COLORS

Now that I had a good technique established for making grasses the

correct length, my only remaining problem was getting the right color.

The Woodland Scenics line has no color that resembles that burnt-dry-in-the-sun-and-wind grass I was looking for. The firm's Wild Honey color is too pale and pinkish, and Harvest Gold is too gold. Apart from those two warm-tone colors, Woodland Scenics offers only various shades of green.

My answer was to apply a sequence of colors of flock. Though I never quite achieved the rich, tawny gold of mid-summer grasses I was hoping for, I did get a credible look for early summer or fall. When applying the layers of static grass fibers, I used a different color flock for virtually every coat. I started with Woodland Scenics Medium Green as the

base. Next, I applied the Wild Honey followed by a layer of Light Green. The final coat was Harvest Gold, which warmed things up nicely.

If I put on too much Harvest Gold, I added a touch of Wild Honey fibers to adjust the color. In a few places I put more Medium Green into the mix, just for variety. I think it worked out really well, especially for making a rolling effect – the depressions are greener than the drier crests, so I added the medium-green grass to the low places.

ADDED TOUCHES

Partway through the process, I experimented with chopping up bits of Woodland Scenics field grass and putting them in the static applicator. The field grass worked in exactly the same way, standing up nicely as individual fibers. I continued to add coats of regular static grass over them; the field grass formed the stem of stalky plants.

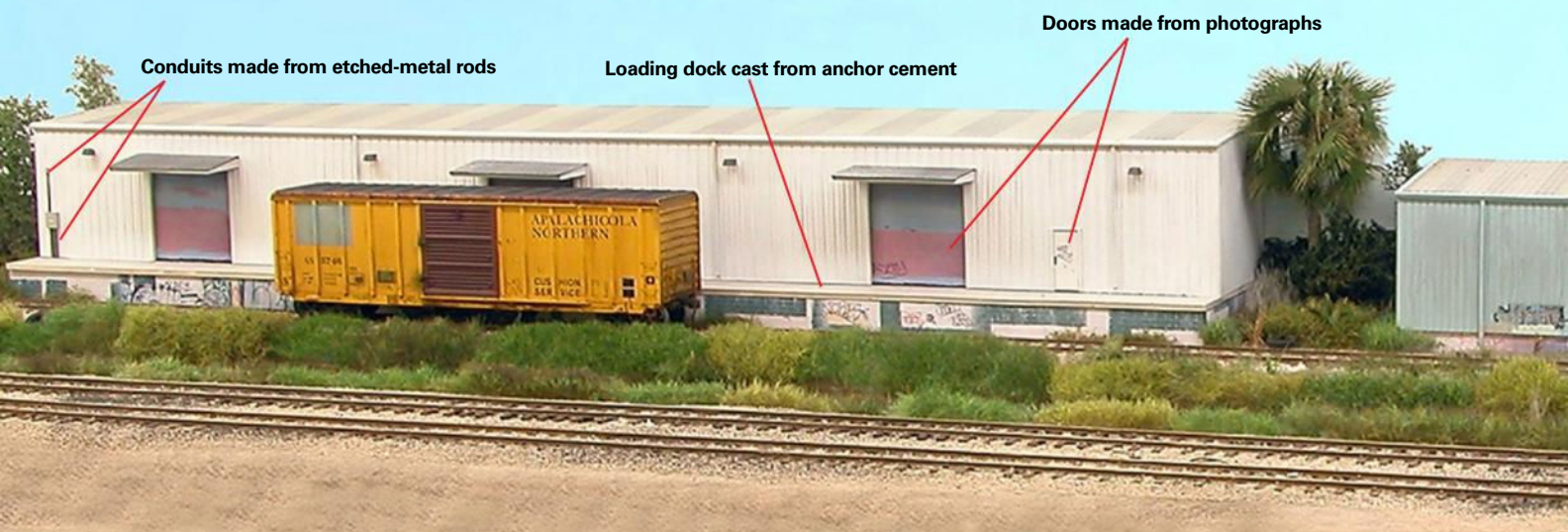
Once I was satisfied with the way the grasses looked, I sprayed the area with a final coat of matte medium to dull the gloss of the flock fibers. While the matte medium was still tacky, I scattered on several shades of Woodland Scenics turf to represent weeds, seed heads, and wild flowers. See **fig. 4** for the finished field.

I'm very pleased with my grassy fields, and the techniques I developed with my good friends Geoff Elmsly, Barry Fitzgerald, and Lawrence Boul are easy to use and produce good results. Soon, you can have tall, lush prairies on your layout, too. **S&SP**

3 CLEVER IDEAS FOR DETAILING STRUCTURE MODELS

Digital photographs, cement, and metal parts provide many useful textures

BY LANCE MINDHEIM • PHOTOS BY THE AUTHOR



>> STYRENE IS MY MATERIAL of choice for structure modeling. It's readily available in a variety of shapes, glues easily, and accepts paint well. But eventually we have to make the styrene look like the wood, steel, or concrete it's supposed to represent by matching the color and texture.

Some common building materials are difficult to reproduce convincingly. The color might be hard to match, the shape might not lend itself well to injection molding, or the texture may be difficult to model. For example, concrete block is an extremely common form of masonry construction that's tricky to model convincingly. Viewed from a distance, as shown in **fig. 1**, these walls take on a sophisticated mix of colors. In addition, this type of wall is what I call a shallow-relief element because there's so little depth between the face of the block and

the recess of its mortar lines. This shallow relief is difficult for manufacturers to produce accurately, and most plastic castings tend to have oversize blocks.

Industrial steel doors (both roll-up and personnel types) are another example of shallow-relief elements that can be tricky to model effectively. Injection molding can't reproduce lines that are fine enough, and these oversize details ultimately tip off the viewers that they're looking at a model.

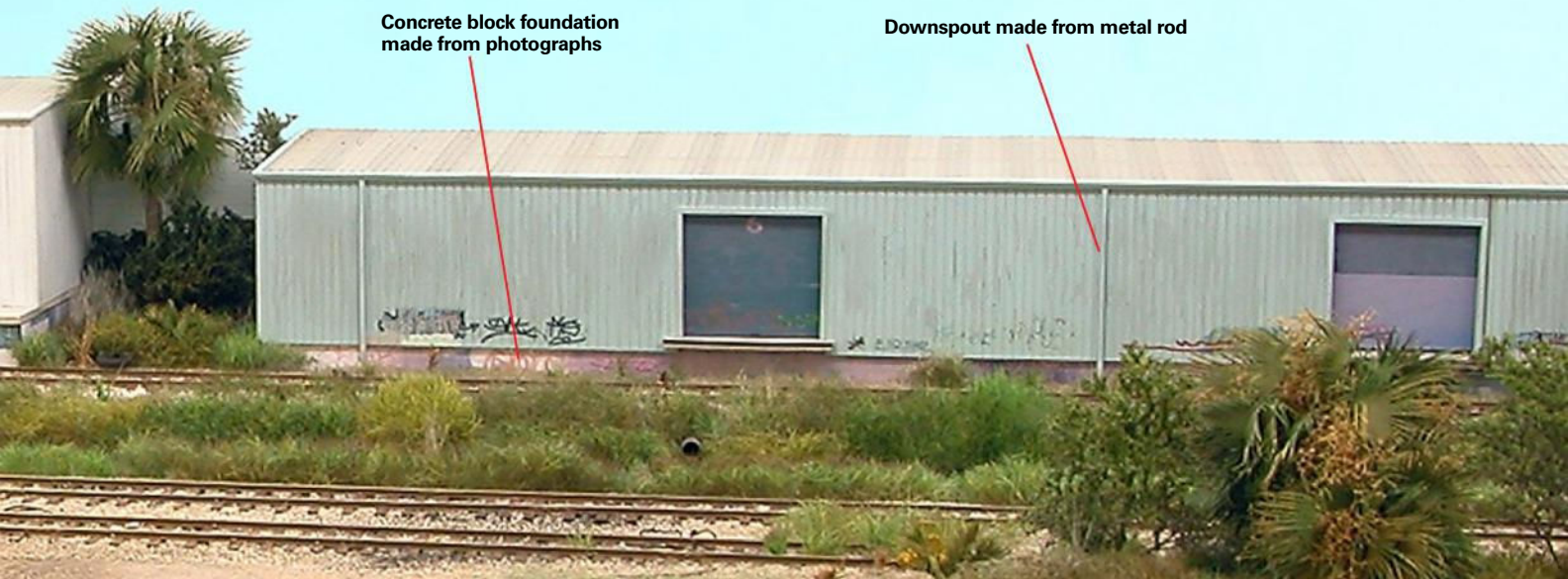
In other cases, it's the color and texture that pose the challenge more than the shape of the object being modeled. Concrete and metal products (such as columns and posts) are two examples. Rather than trying to make painted plastic look like something it's not, let's look at some alternatives.

Recently, I've been using a combination of three methods to detail structure

Lance Mindheim blends digital photos and prototype materials with traditional modeling methods to get outstanding results.

models. Styrene still serves as the structure's base material. For low relief elements, such as masonry foundations and steel roll-up doors, I use digital photographs judiciously reworked with photo-editing software and mounted on a stiff backing material. To simulate concrete parts, I use actual concrete. For steel posts and galvanized metal conduits, I use small diameter, unpainted steel and aluminum tubing instead of painted styrene shapes.

I recently completed the two HO scale modern steel warehouses shown above using this composite technique. These techniques will also work in other scales and on other types of structures.



Concrete block foundation
made from photographs

Downspout made from metal rod

The styrene walls and roof in this warehouse are complemented by digital photos of doors and foundation walls, and metal rods for downspouts.

CONCRETE BLOCK WALLS

One of the most common building materials is the 8" x 8" x 16" concrete block. Whether used to construct the foundation or the building as a whole, you'll find them everywhere. However, the concrete block walls can be tricky to model, as the mortar groove between the blocks is only about $\frac{1}{8}$ " deep, which in HO is only .0001".

Compounding the problem is the fact that concrete blocks weather to distinct color patterns and are often covered with graffiti. Fortunately, the relief in block walls is so shallow we can get away with using a photo in lieu of embossed or injection-molded styrene. The digital image captures all the natural colors and avoids the dead giveaway of out-of-scale moldings. A photo, like the one in **fig. 2**, also allows me to make subtle corrections with a photo-editing program on my personal computer, and I can even add my own graffiti. Unlike using an airbrush, the photo editing programs have an "undo" button. All it takes is a little time to go out and take some digital photos of a prototype wall. Then use photo-editing software to clean up and resize the images, print them out, trim to size, and glue the photographic details on the model.

The first step is to find and photograph some block walls. I try to find examples with subtle but interesting weathering and graffiti. Over time I've collected a large file of wall images and

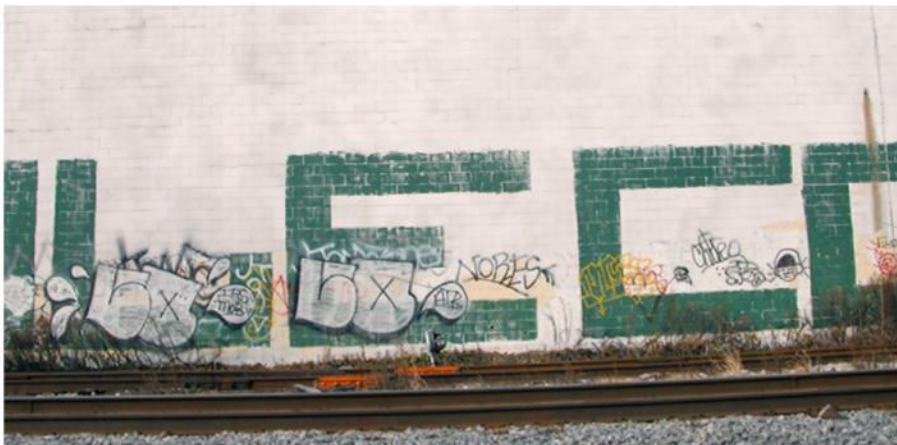


Fig. 1 Initial image. Here's a good starting image, but it has some fairly pronounced perspective and distortion problems that need to be fixed on the computer as explained in "An intro to digital photo editing" on page 48.



Fig. 2 Squared image. In this view Lance squared the wall by correcting for the barrel effect and perspective distortion. Copying and pasting plain images of adjacent blocks covers the undesirable pipe, shrubs, and weeds.



Fig. 3 Partial image. Here Lance "harvested" one section of the initial image that he can copy as any times as needed to stitch together with other images to make a longer wall. A little editing conceals the repetitive images.

stored them on my computer for future use. Just be careful that you take the photo with the sun to your back. Get as far back as you can from your subject to minimize the perspective effects and try to shoot perpendicular to the wall. Don't worry if the photo isn't perfect – that's what photo-editing programs are for. Also, use the camera's larger file size settings to get crisper images.

Unless you're really lucky, you'll probably have occasional wires, weeds, and other unwanted objects in your photo. The next step is to remove these items from your image. Because concrete blocks are so uniform in shape, it's easy to copy an unblemished block, or group of blocks, to paste over any area you don't want. [See "An intro to digital photo editing" on the next page. – Ed.] Arc Soft's Photo Studio, the program I use, has a cloning tool that allows you to point to an area you want to copy and then repeatedly paste the copied area over a blemish until it's completely covered. [Arc Soft no longer supports Photo Studio, but you can find other image-editing software online, some of it free, by searching "digital photo editing software." – Ed.]

As your image starts coming together, you can add artistic enhancements. Rust streaks are easy to apply using the pen tool to draw a narrow, rust-colored vertical line. Follow up with a smudge tool to smear the line downward. You can also use the "spray can" tool to make your own graffiti. If you don't like the looks of your results at any point, you can always just hit the undo key and start over.

I often end up with a wall section that's too short for the length of my structure. Photo Studio has a "stitch" tool that lets you import two images, like **fig. 3**, onto your screen and then stitch them together. For example, if your wall section is only 3" long, just stitch a few of those images together to create a 9" wall. Under close inspection, you may see subtle repetitive patterns in the stitched image. If this occurs, you can go back later and do some blending to hide obvious details and break up the patterns so they aren't noticeable.

Once I'm satisfied with the image, I print it out on matte photo paper. For best results, I set the printer to its maximum dots per inch (dpi) and use the photographic ink cartridge if applicable. You can use the normal concrete block dimensions as a guide to make sure you're printing the image out to exact scale. Since a block is 8" tall, six vertical blocks in your photo should measure 4 feet tall on your scale rule.

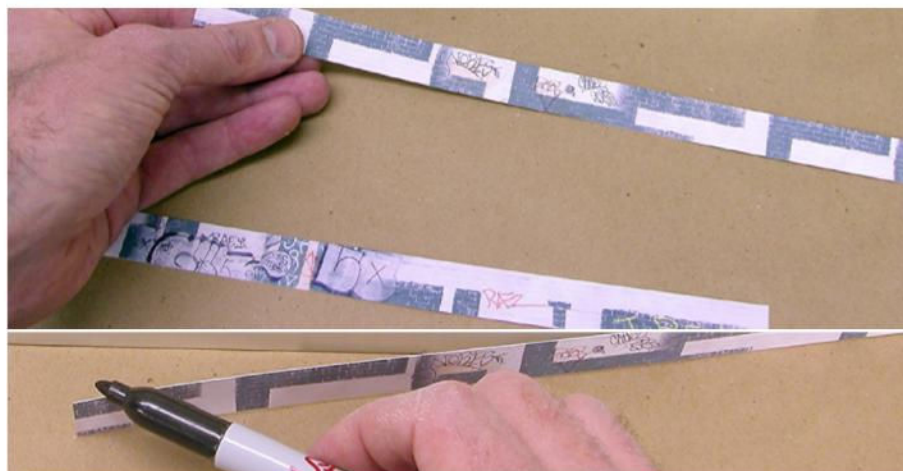


Fig. 4 Trimming the image. A sharp no. 11 blade makes it easy for Lance to trim the printed photo images to size. Then he conceals the edges of the images using a black marker before gluing them onto the aluminum foundation bars.

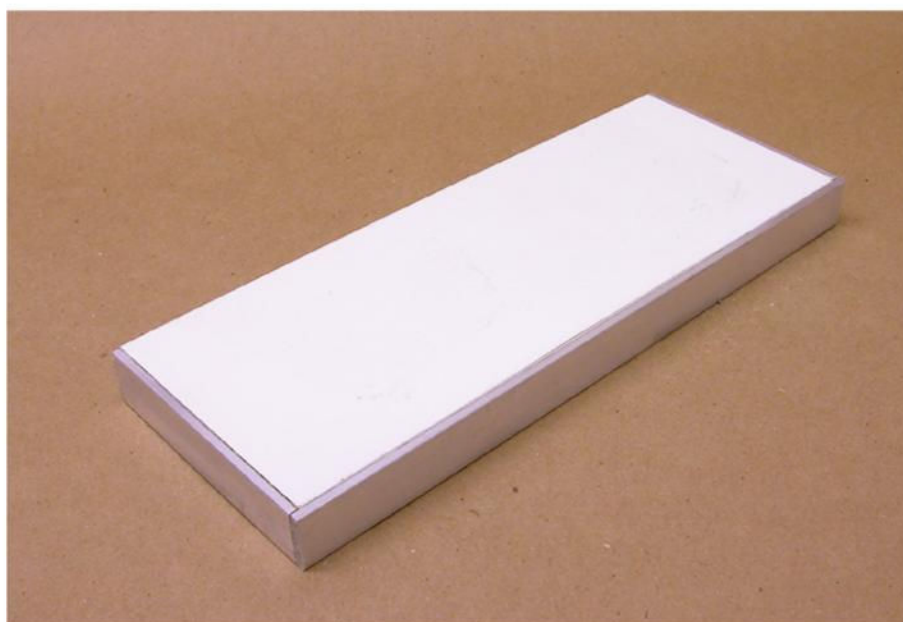


Fig. 5 A stable base. Lance constructed a stable base for each warehouse from vinyl board framed with $\frac{3}{4}$ " aluminum bars. Then he mounted the photographs of the foundation with contact cement, which doesn't deteriorate over time.



Fig. 6 Steel dock door. This prototype door photo on the left was Lance's starting point. He used photo-editing software to resize and crop the image. Then he added a door gasket across the bottom from the photo on the right.

AN INTRO TO DIGITAL PHOTO EDITING

GOOD RESULTS can be achieved with inexpensive or free photo-editing programs. The two I use are the software that came with my camera (Photo Studio 4.0 by Arc Soft, which is no longer supported) and Photo Brush by Media Chance. Each has some unique features, so I'll typically work back and forth between them.

The initial image will likely be skewed, have some perspective, and have a curved upper surface caused by the barrel effect. Photo Brush allows you to rotate the image in tenths of a degree and has barrel effect and perspective correction. You can crop the section that interests you, but make the image slightly larger than you need. Then trim the image to fit.

A few basic techniques will get most computer users through the initial digital photo-editing process:

1. Square up the image with your photo editor using the barrel and perspective correction tools.
2. Crop the photo down to the actual portion of the image you want.
3. Fix blemishes (like guy wires) by using the system's clone tools.
4. Add artistic enhancements, including additional graffiti and rust or dirt streaks applied with your editor's clone, spray can, pen, and smudge tools.
5. Combine several images to make longer walls using a "stitch" tool.
6. Finally, print the image to the desired scale size on matte-finish photo paper.

Following are some helpful basic photo editing tools:

Clone. This tool duplicates one part of your image to another part of the image. Some software refers to this function as Copy-paste.

Stitch. This command merges two or more images.

Barrel correction. A distortion associated with wide angle (or minimal zoom) lenses that causes the images to appear spherical (curved outward). It's most noticeable in straight edges near the side of an image. Most digital and compact film cameras suffer from this type of distortion, especially if they have a zoom lens, and the photographer stands too close to the subject. Barrel correction compensates for this effect.

Perspective correction. The perspective correction tool allows you to straighten out a distortion where vertical lines slope inward on the subject in relation to the frame. In most photo editors this is done by positioning handles over the image which allow you to stretch the image until it's straight. – L.M.

I allow the image to dry and then lay it on a hard, smooth surface such as plate glass or steel, and trim it with a new, sharp blade in a hobby knife. See **fig. 4** on the previous page. This produces a clean cut edge. Then I run a black marker along the edges of the photo to hide the white paper edges.

MOUNTING THE PHOTO

Finally, I attach the photo to a stable base, as in **fig. 5**, with an adhesive that won't break down over time. For foundations I use ¾" strips of aluminum bar (purchased at a home improvement center) for the base and contact cement for the adhesive. For larger walls I use thick styrene as the base. I clean the surface with alcohol and carefully position the photo using bits of masking tape as hinges along the top edge. Next, I apply contact cement, being careful to keep it off the printed surface of the photo. After the specified drying time, I press the photo into place and remove the masking tape.

Contact cement only gives you one shot, so I make sure I have the photo lined up accurately. On longer walls, I often have a seam or two where the photos butt against one another. I add small bushes, downspouts, electrical conduits, plumbing, weeds, and similar items to hide these seams.

STEEL DOORS

Steel roll-up freight doors and personnel doors are other elements that can be a challenge to model using traditional methods. Here again, the relief between panels tends to be shallow and the metal coloring and weathering of the panels can be subtle. As with concrete block walls, the judicious use of photographs, as seen in **fig. 6**, and a basic digital photo-editing program can yield convincing doors on a scale model.

Using photographs for doors is a relatively simple process. For roll-up doors, I start with an open door frame casting. For my modern structures I like to use Pikestuff's 12 x 12-foot open freight doors (part no. 1112). Then all I do is produce a photograph slightly larger than the frame, attach it to a .060" styrene panel, and glue it behind the door frame. See **fig. 7**.

As before, I start with a crisp photo of the door I'd like to use. I've made a habit of photographing and storing images of interesting subjects. In each case, I try to be squarely in front of each subject when I take the photo. Even if this isn't possible, I can correct the image later.

Once I have a properly sized image of the door, I add details, starting with a

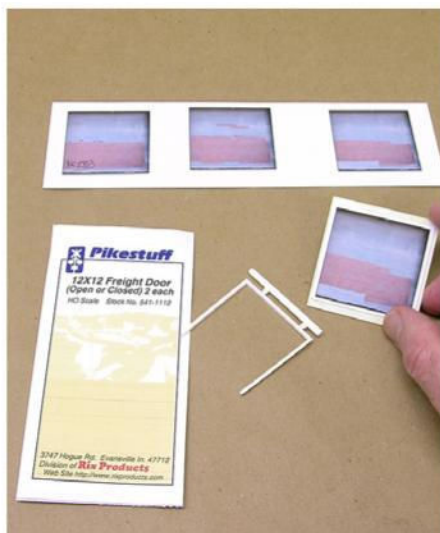


Fig. 7 Dock door installation. Once the door images are printed to size, Lance trims each one and glues it to a piece of .060" styrene slightly larger than the door frame. Then he glues the doors in place behind the frames.

rubber weather strip gasket across the bottom. All it took was one good photograph of a gasket, like the one in **fig. 6** on page 47, and I was able to cut and paste it on the bottom of all of my doors, as in **fig. 7**, opposite.

Graffiti is easy to add using the software's spray can tool. When I apply graffiti, I keep the lines relatively thin and on the lower portion of the doors. I remove any blemishes with the cloning tool.

For personnel doors I start with a one-piece molded-plastic door and frame casting, such as those made by Pikestuff, Grandt Line, and Tichy Train Group. Next, I make a photograph that matches the exact size of the door. Then I scrape off any details on the plastic door like doorknobs, carefully trim the photo to fit the doorway, and glue it place on top of the plastic door, as shown in **fig. 8**.

CONCRETE SLABS AND PLATFORMS

Most masonry block foundations are capped with poured concrete floors and exterior loading platforms. What better way to capture the color and texture of concrete than to use the real thing? While concrete is too coarse and gritty for modeling purposes, a related product, anchor bolt cement, fits the bill perfectly. I use the Sakrete brand sold by The Home Depot stores in a 20-pound pail.

Anchor bolt cement is similar to concrete but has a much finer texture, making it ideal for modeling. I explained how to use anchor bolt cement to model concrete structures in the August 2007 *Model Railroader*. It's a relatively easy process.

The drawing and photo in **fig. 9** show a simple mold I made from two pieces of aluminum angle and styrene. I mix the cement with water and pour it into the mold. Although the cement sets in about 30 minutes, I allow the thin casting to harden for 24 hours to achieve its maximum cure strength before I open the mold. This reduces the chances of breaking the cured casting during final finishing and installation on the model.

Though the aluminum form worked fine as is, I added one more step to incorporate the form lines seen on large slabs. I cut a strip of styrene the same size as one face of the form and scribed lines across it a scale 10 feet apart. Then I glued this styrene "texture strip" onto the form's face. See **fig. 10** on the next page. Before closing the form, I wipe a light coat of WD-40 oil on each face to make removal of the finished casting easier.

Because this particular casting was relatively thin, I gave extra attention to getting air bubbles out of the wet cement and



Fig. 8 Personnel door. The prototype image on the left is Lance's starting point. Once he cleaned up the image, he printed the photo, trimmed it, and glued it over the plastic door casting. Notice the push-button security lock.

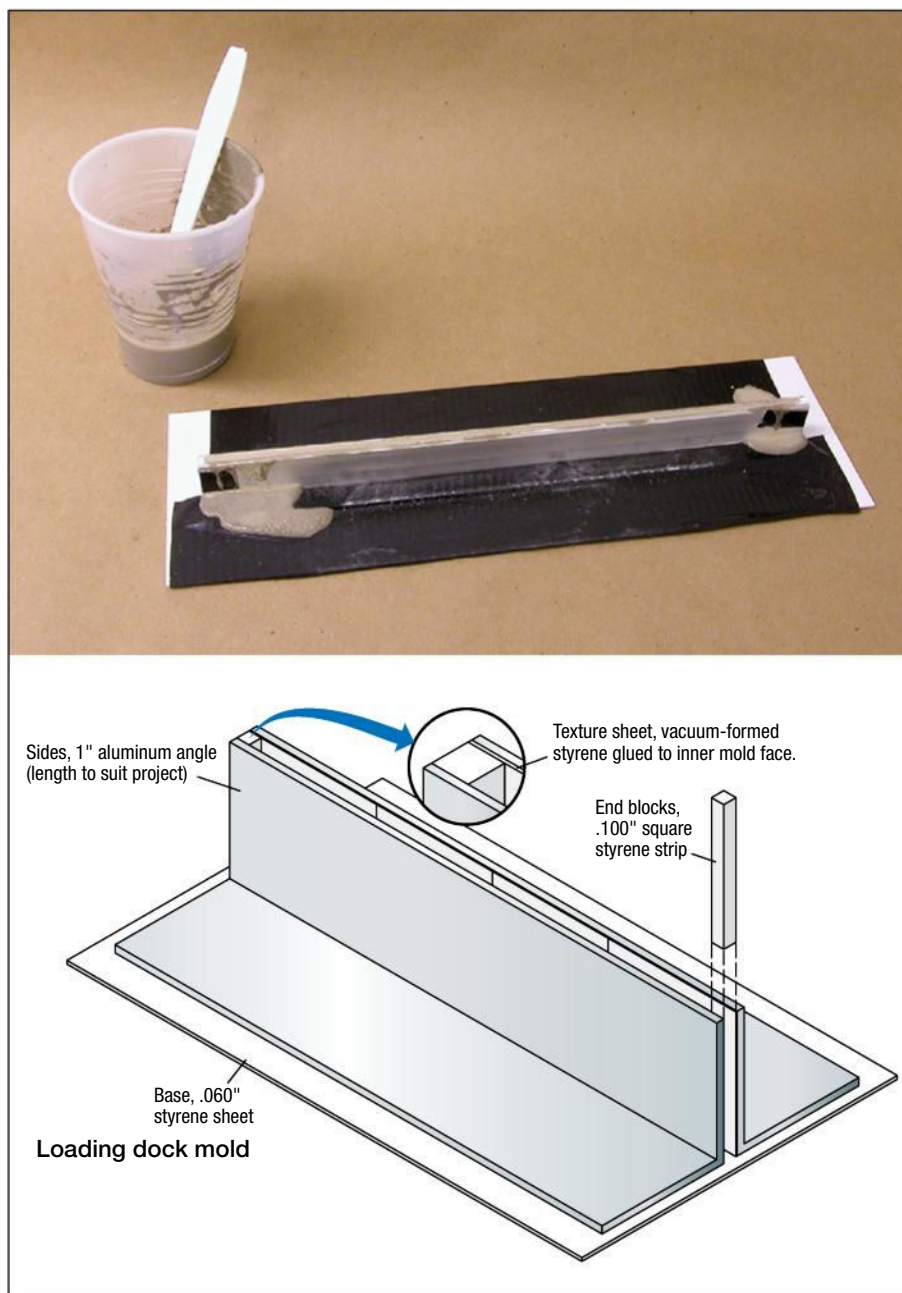


Fig. 9 Concrete slab. Lance pours the cement slabs for his loading docks in a simple mold made from aluminum angles and styrene. Once he finishes a mold, he can cast slabs of anchor bolt cement with it on 24-hour intervals.

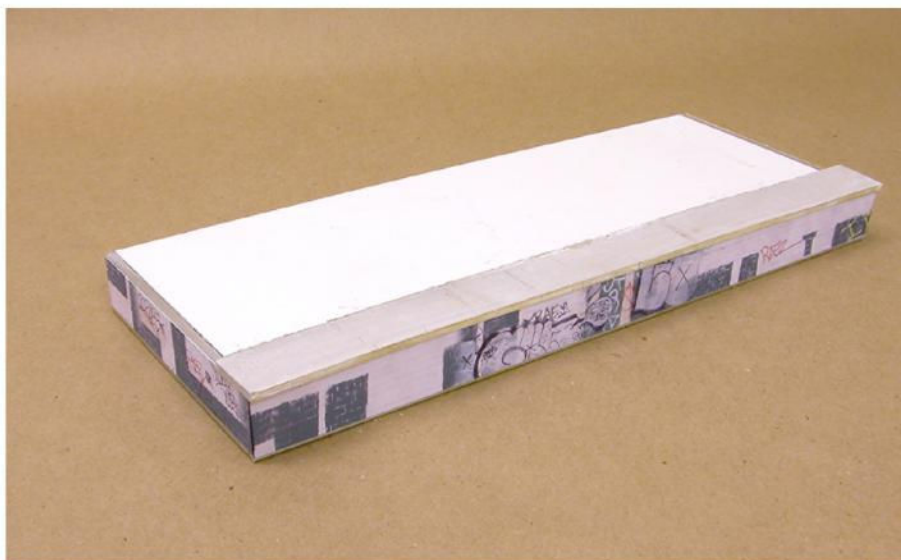


Fig. 10 Cement loading dock. Here's one of Lance's finished castings after he removed it from the mold, smoothed its edges, and glued the dock in place on the structure's foundation. Once dry, he adds weathering with thin stains.

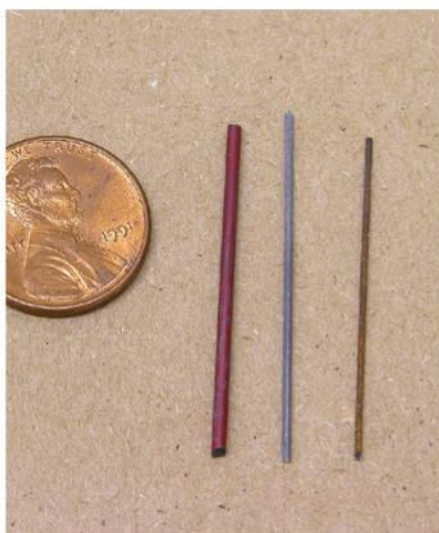


Fig. 11 Etched details. The items shown above include .055" steel music wire that Lance painted, chipped, and etched; 1/32" aluminum rod with light etching; and .025" music wire etched and allowed to rust naturally. Eye protection and proper safety precautions are necessary to safely handle the hazardous ferric chloride etchant solution he uses to speed up the natural weathering process.

forcing it to the bottom of the mold. To do this, I held a vibrating sander against the mold for a few moments right after I poured the cement. After the casting set for 24 hours, I gently peeled back the mold to release the part. If the slab breaks, I glue it back together with gel-type cyanoacrylate adhesive (CA). Then I glue the completed slab on top of the building's foundation to simulate the dock floor.

METAL POSTS AND CONDUITS

A typical warehouse, particularly a more modern one, frequently has all sorts of exposed metal fittings including steel pipe columns that support awnings, galvanized electrical conduits, and natu-

ral gas lines. Fortunately the colors and textures of these different metals are easy to reproduce.

I've found it's easier to use steel rods and metal tubing to represent these pipes than trying to paint styrene parts to represent this material. By using metal parts and speeding up mother nature's oxidation and rusting processes, I've been able to reproduce convincing metal details.

However, capturing the grayish look of galvanized metal conduits and steel support posts with peeling paint proved to be somewhat challenging. Take a look at the examples in **fig. 11**.

Galvanized steel electrical conduits are commonly mounted on buildings to serve

door openers, power heads, and security lighting. To capture the oxidized color of the galvanized conduits, I use 1/32" K&S aluminum rod. The raw aluminum color of this rod is pretty close to fresh galvanized steel, but a little on the bright side. To obtain a slightly darker, oxidized, and more realistic appearance, I chemically etch each piece of rod with printed-circuit board etchant. It only takes a couple of short dips in this strong chemical to get the subtle effect I want.

Safety Note: RadioShack

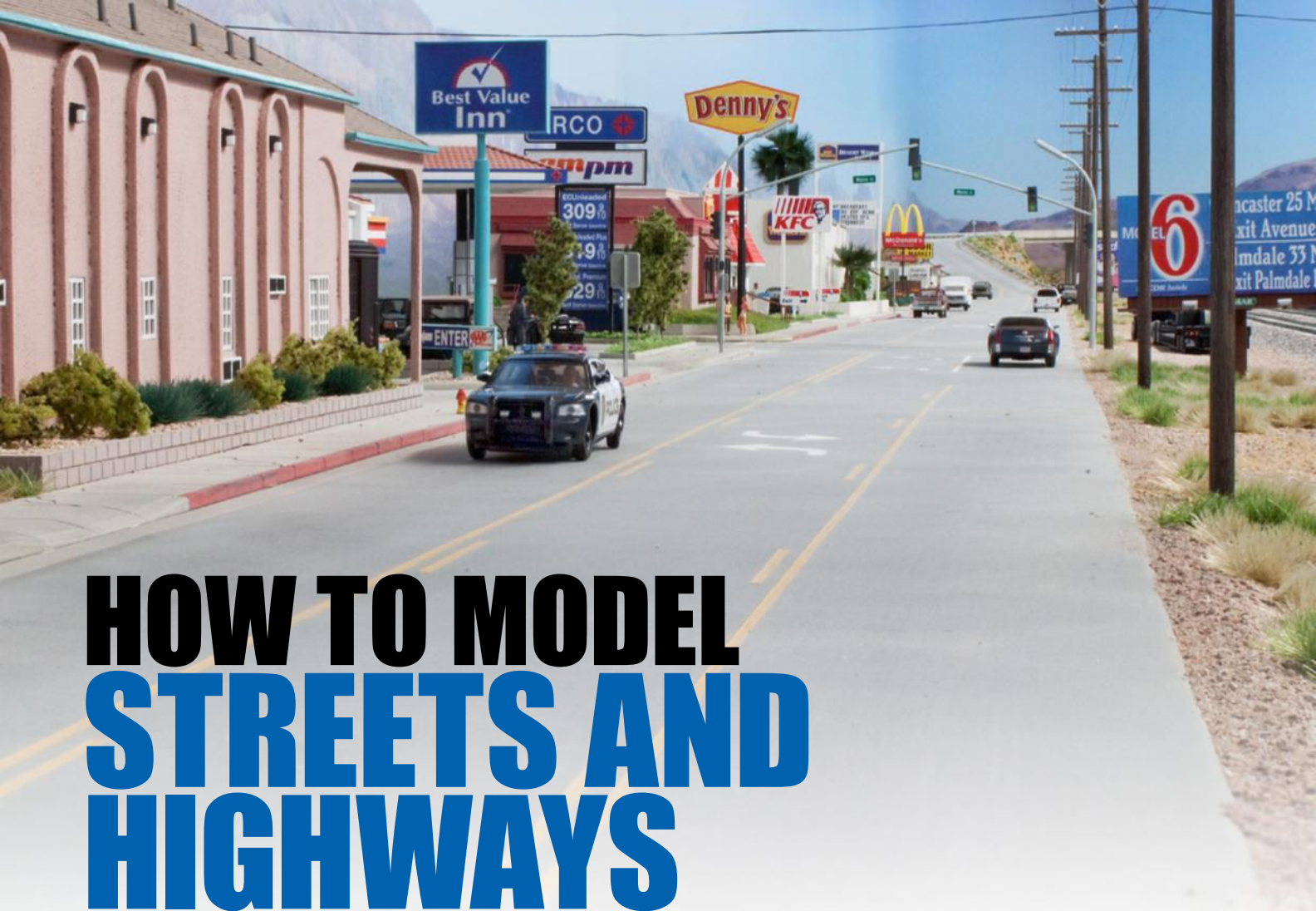
no. 2761535 etchant solution is a hazardous chemical for making printed-circuit boards. It contains ferric chloride, harmful if swallowed, and can cause severe chemical burns on unprotected skin. Wear proper eye protection, rubber gloves, and a rubber apron. Keep this product out of the reach of children.

To etch the aluminum, I begin by lightly sanding the smooth rod with 600-grit sandpaper to give it a rough texture. Then I clean the rod by wiping it down with lacquer thinner. Next, I place a porcelain container of water next to the bottle of etchant. I dip a long section of rod into the etchant bottle for about 10 seconds, hold it in the air for a second or two to let the oxidation work, and then I quickly dip it in the water to stop the chemical reaction. Sometimes I repeat the process two or three times to obtain the color and texture I'm looking for.

Many industrial structures have doorway awnings supported by 4" or 6" steel pipe columns. In HO scale, these columns are roughly .046" and .069" in diameter, so I simulate them with K&S .045" and .070" music wire. This steel wire has the perfect dark metallic color that matches the prototype pipe, so I only need to add the peeling paint effect.

I spray-paint the rod, allow it to dry, and then come back later and simulate peeling paint by randomly sticking bits of duct tape to the painted pipe. After briskly pulling the tape off, I dip the rod in the etchant for four or five seconds and then quickly immerse it in water. Finally, I dry and trim the wire to fit under an awning and cement it in place with CA to complete a convincing column with peeling paint.

As modelers, we sometimes do things in ways that are far more difficult than necessary. Rather than trying to make our trusty styrene stand in for every kind of prototype building material, I hope these examples show you that there are easier and more convincing ways to model some of the common elements that appear in our structures. **S&SP**



HOW TO MODEL STREETS AND HIGHWAYS

Add realism to your layout by giving the vehicles on it some accurate roads

BY PELLE SØEBORG
PHOTOS BY THE AUTHOR

>> **IN MY OPINION**, streets and highways are the second most important things on a model railroad layout after track. When modeled properly, roads can be used to add realism, create viewing lines, and divide scenes.

My old HO scale Union Pacific Danville Subdivision was covered with roads. The widest road was Main Street in Danville. The three-lane street was nearly 14 feet long. Some people couldn't understand why I devoted that much space to a street instead of adding more track. The explanation is simple. The restaurants and hotels lining the



Streets and highways can be an important part of a model railroad. In this article, Pelle Søborg shares his techniques for modeling them.

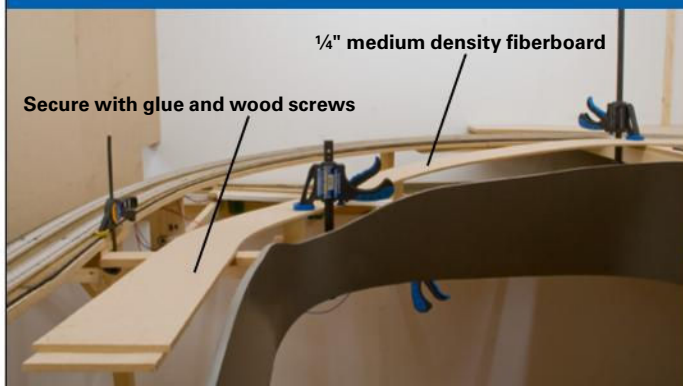
street are important scenic cues that give Danville the look of a city in the American West.

Then there are highways. One goes over the track and creates a great scene divider. Highway 41 parallels the main line for more than 22 feet before crossing the track and fades off into the distance. I also modeled service roads that parallel almost every inch of mainline track.

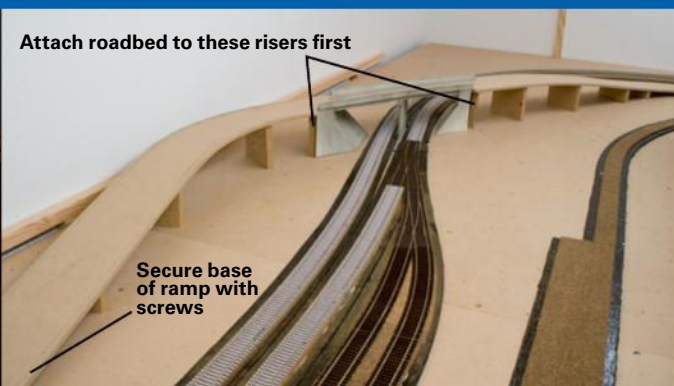
I prefer to finish my streets and highways completely before I apply any scenery materials. Then I don't have to worry about getting the scenery dirty with sanding dust or spilling paint on it.

I have a passion for streets and highways. Whether they're paved, dirt, or simple trails, I've followed roads on all my railfanning adventures. I can't imagine a model railroad without roads.

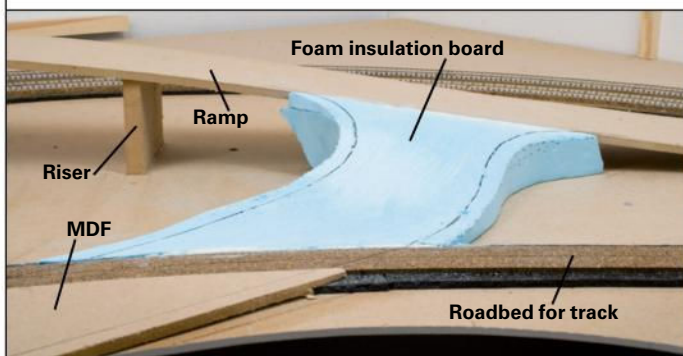
STEP 1 A SOLID BASE



TO GET AN IDEA of how the highway would look, I cut pieces of cardboard and taped them together. Once I was happy with the look of the road, I used the cardboard as a template for the 1/4" medium-density fiberboard (MDF) subroadbed. I attached the subroadbed with wood glue and screws. It's a good idea to wear a respirator and work in a well-ventilated area when cutting MDF. It generates a lot of dust when cut.



I HAD TO RAISE the subroadbed to the height of the overpass at the west end of Daneville (see the December 2011 *Model Railroader* to learn more). I made the risers from scrap pieces of MDF. First, I attached the subroadbed to the riser closest to the bridge. After the glue dried, I applied glue to the rest of the risers and pressed the subroadbed down. I fastened the opposite end of the ramp to the layout with screws.

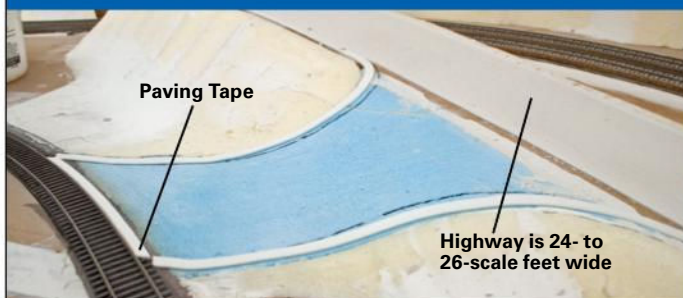


THOUGH I USED MDF for most of the project, I used a piece of extruded-foam insulation board for the ramp at the highway 41 junction. It was easier to cut and shape the foam than laminate and taper pieces of MDF. After cutting the foam with a serrated knife, I marked the outside edges of the road with a marker. These marks served as my guide for applying the Paving Tape, shown in **Step 2**.



I USE CORK ROADBED under my secondary tracks. This material is thinner than the roadbed I use on my main line, so I had to trim the MDF at the grade crossings to keep the road surface level with the rails. I made fillet-like cuts in the MDF with a sharp no. 11 blade, though a retractable utility knife would also work. Making several light passes reduces the chances of the blade slipping.

STEP 2 PAVING THE WAY

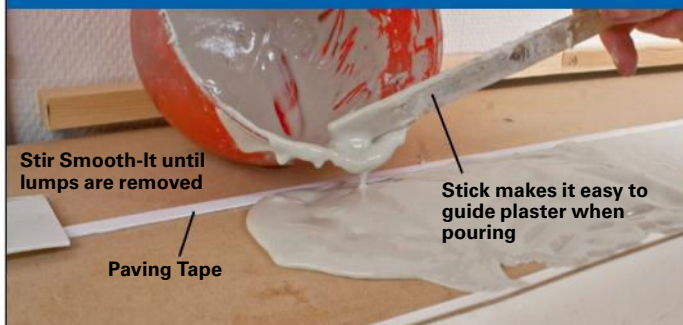


I USED WOODLAND SCENICS Paving Tape for the streets and highways. I first applied the tape to the outside edges of the area I wanted to fill with the same firm's Smooth-It. I made the highways 24- to 26-scale-feet wide, which is close to prototypical width. Though the highways eat up space, they look better than roads that are too narrow.



I USED A SLIGHTLY DIFFERENT approach on the streets. On the side closest to the backdrop, where the businesses are located, I used latex construction adhesive to attach strips of .040" styrene strip. I'll attach the sidewalks to the styrene strips when I install the businesses. I used the paving tape on the opposite side of the street.

STEP 2 PAVING THE WAY (CONT'D)



WITH THE STYRENE STRIP and Paving Tape in place, I mixed a batch of Smooth-It in a bowl. I stirred the plaster material carefully until it was free of lumps. Don't stir the Smooth-It too vigorously, though, as this will create air bubbles, which will be nearly impossible to remove.

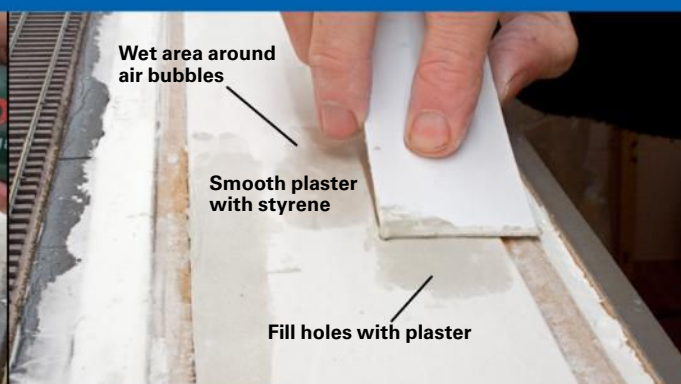


I THEN USED A SCRAP piece of .080" styrene as a screed to level the wet plaster. After I'd spread the first layer evenly and let it set up, I poured a second, thinner layer of Smooth-It. I used a putty knife to clean up any excess Smooth-It before it dried.

STEP 3 SMOOTHING AND PATCHING



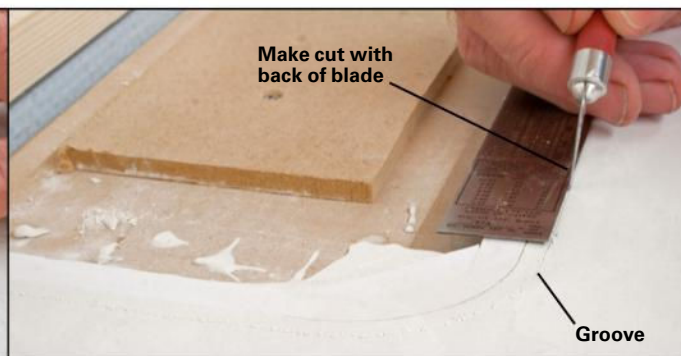
I LET THE PLASTER DRY completely (about two days) before I removed the Paving Tape. Then I used an electric sander to smooth the surface. I learned that you have to keep the sander moving constantly to avoid damaging the plaster. If you're not comfortable using an oscillating sander, a sanding block with 400-grit sandpaper will also work. No matter which sander you choose, don't use coarse sandpaper, as it will leave gouges in the Smooth-It.



SOMETIMES SANDING REVEALS small holes caused by air bubbles (remember the part about not stirring too vigorously?) To repair these holes, I first wet the area. This prevents the dry plaster from soaking the moisture out of the fresh wet material. Then I filled the holes with a little plaster and smoothed the repairs with a piece of styrene. After the plaster dried, I lightly sanded the patches to blend them in.



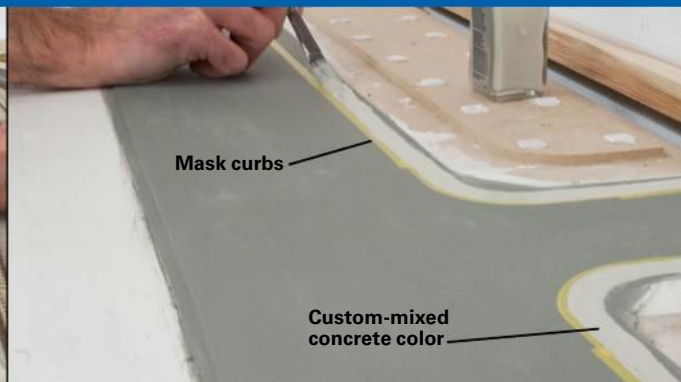
I TRIMMED THE ROADS at the grade crossings to make sure the BLMA modern grade crossing panels would fit. This is best done before painting the plaster. First, I used a pencil to mark the width of the panels. Then I used a sharp hobby knife to cut the plaster, using a steel rule to get a straight line. I checked the spacing with one of the panels, and trimmed off more plaster if the fit was too tight.



ON THE STREETS, I used the back edge of a hobby knife to cut a shallow groove $\frac{1}{8}$ " from the edge where the sidewalks will be. The groove simulates a concrete curb.

A steel straightedge works great for cutting grooves parallel to the future sidewalk. You'll want to use a circle template or a food container lid as a guide for the curved sections of curb.

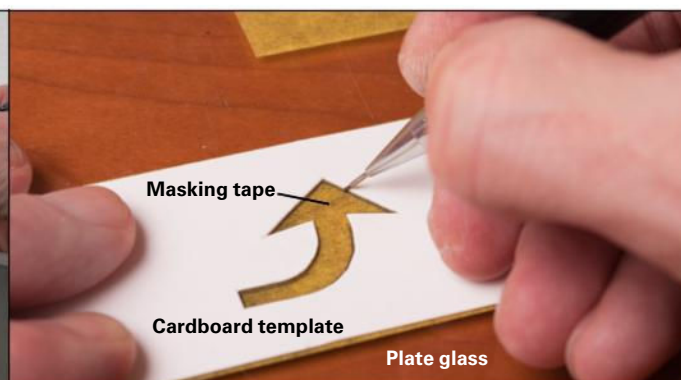
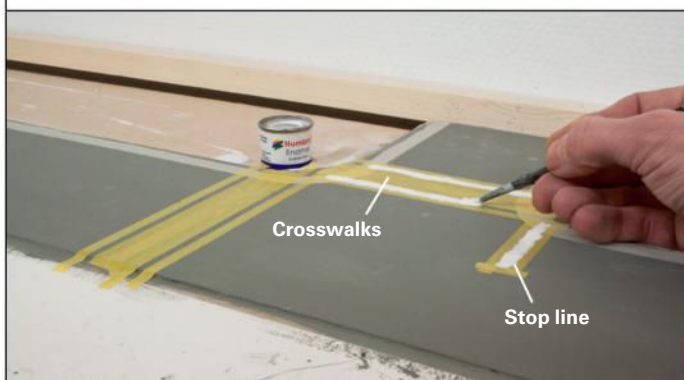
STEP 4 PAINTING AND ROAD MARKINGS



YOU CAN PAINT the Smooth-It with acrylics or enamel paints, but I find the latter soak into the surface better and dry flatter. I painted the highway and streets a warm gray color made by mixing equal parts Humbrol Gull Gray and Radome Tan. For new pavement, I applied at least three coats. Older pavement received two, and very old roads

got a single coat. In many cases a less uniform finish looks more realistic.

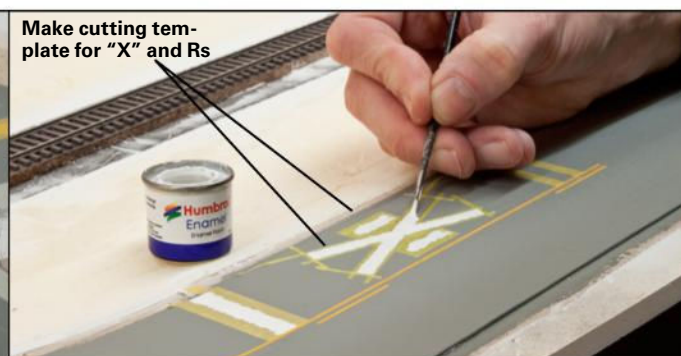
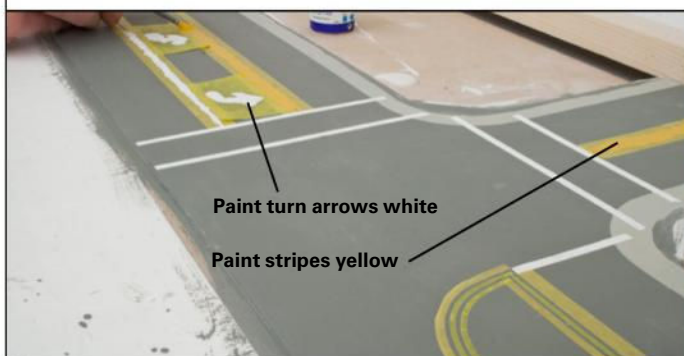
For the streets, I masked the outside edge of the curbs and brush-painted these areas with a concrete color that I mixed from equal parts Model Master Flat Gull Gray, Sand, and Flat White.



I LET THE PAINT DRY thoroughly (24 hours, or until there was no discernible odor) before applying the road markings. For the streets, I started by adding the white stop lines and pedestrian crossings. I masked these areas and burnished the edges of the tape with my fingernails to prevent paint from bleeding under it. You can find the dimensions for pavement markings in the *Manual on Uniform Traffic Control Devices* (mutcd.fhwa.dot.gov).

TO ENSURE ALL of the turn arrows were identical, I made a template from a piece of cardboard. I traced the outline of the arrow on a piece of masking tape, as shown in the photo at right.

Then I cut the masking tape with a sharp no. 11 blade, carefully following the outline. It's best to do the cutting on a hard surface, like a piece of plate glass, so the knife blade doesn't tear the masking tape.

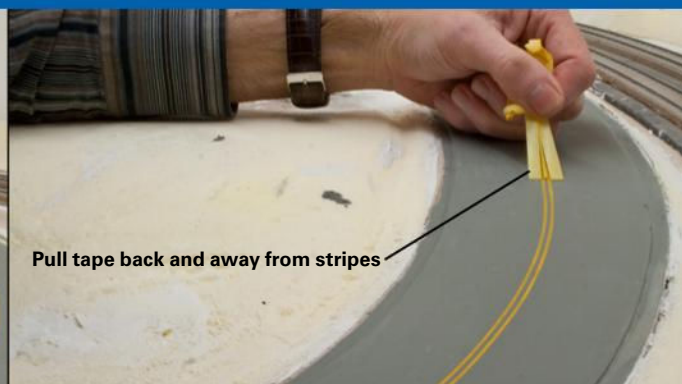
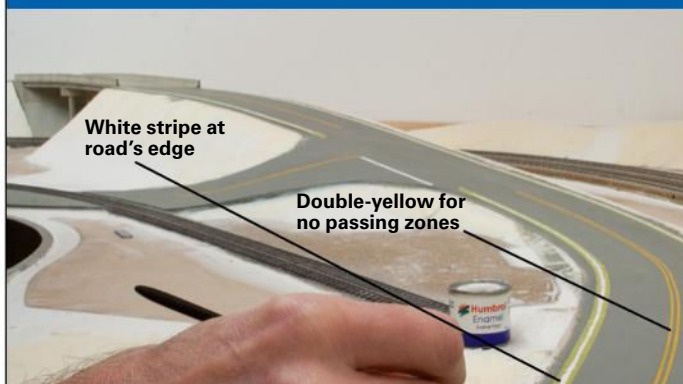


AFTER I APPLIED THE MASKS for the turn arrows and the rest of the road stripes, I brush-painted the markings with Humbrol paint. I painted the arrows white and the stripes yellow or white, following information in the *Manual on Uniform Traffic Control Devices*. As with the road color, you can make the stripes look old or new depending on how many coats of paint you apply.

I ALSO USED TEMPLATES to cut masks for the railroad crossing markings. I marked the "X" on the pavement with a pencil and masked along the outside edges. I cut the two Rs on the plate glass I used for the turn arrows.

I later learned that Summit Customcuts released decals for highway markings. You can learn more about the decals at www.summit-customcuts.com.

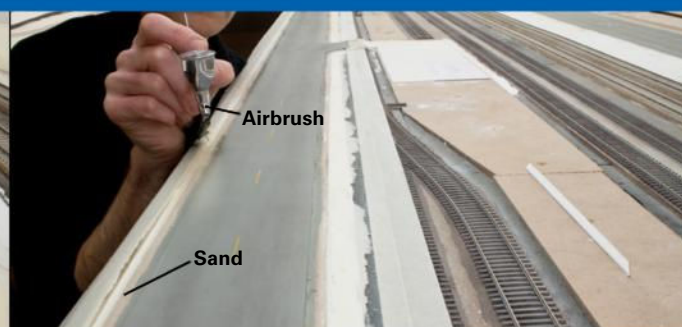
STEP 4 PAINTING AND ROAD MARKINGS (CONT'D)



THE HIGHWAY STRIPING isn't as complex. I started by masking the double yellow center line and painting it with one coat of Humbrol Yellow. Then I masked the stripe along the edge and painted it with one coat of white. Neither color covered evenly, but it looked realistic to me.

BE CAREFUL WHEN REMOVING the masking tape so it doesn't lift the gray paint. I found it works best to slowly pull the tape back and away. You can minimize the likelihood of exposing the white plaster by tinting the Smooth-It with gray acrylic paint.

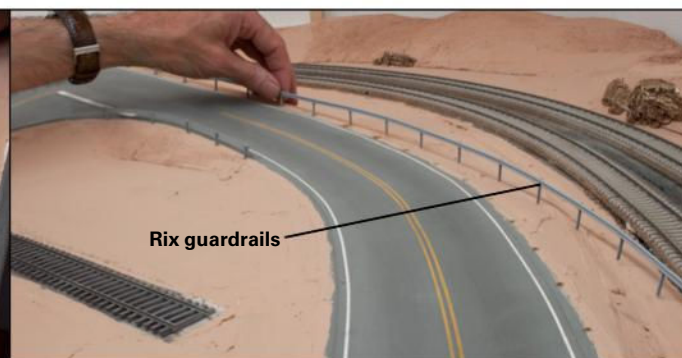
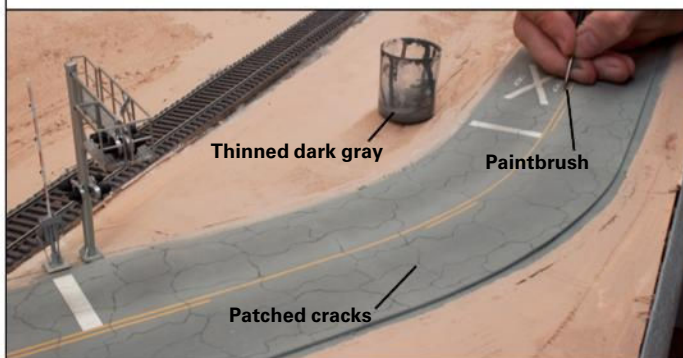
STEP 5 WEATHERING AND DETAILS



THE LAST STEP was to weather the streets and roads and add details like guard rails and highway signs. I started by using a cosmetic applicator sponge to apply black powdered pastels down the center of each lane. Don't apply too much powder, though. I wiped the sponge on a sheet of paper after I dipped it in the pastels. It isn't necessary to seal the pastels, as the powder sticks well to the porous road surface.

NEXT, I USED AN AIRBRUSH to apply a light coat of Model Master Sand to the edges of the highway. Make sure the room is ventilated and your wear proper safety equipment during this step.

The Sand color helps blend the shoulders of the road with the surrounding desert scenery. If you don't model the desert southwest, replace Sand with a color more appropriate to the area you're modeling.



I LATER GOT INSPIRED by a photo I took along old Route 66 that showed a web of patched cracks in the road. To simulate this, I used a fine brush (the size doesn't matter – just pick one that looks suitable for the job) to apply dark gray paint that I thinned 50 percent with thinner. This effect looks best on older, secondary roads. Newer roads would have fewer patched cracks.

ON SHARP CURVES, I installed Rix Products highway guardrails. After assembling the plastic kit, I painted the rails Model Master Light Ghost Gray, followed by a dusting of the same firm's Cam Gray. The latter is a lighter gray that gives the guardrails a weathered look.

I installed the guardrails before adding the scenery, as it's easier to drill holes on an unscenicked surface. **S&SP**

FIGURE PAINTING 101



How to prepare and paint plastic and metal figure castings for model railroads

BY DAVID POPP
PHOTOS BY JIM FORBES

>> ADDING SCALE PEOPLE to your layout can be as simple as opening the box and gluing them in place. Manufacturers such as Preiser, Merten, Woodland Scenics, and others offer a selection of realistic, factory-painted plastic figures for model railroads.

However, if you have a railroad that requires a large population, it can be more economical (and more fun) to paint your own figures. For the examples I've shown here, I'm using Dart Castings (www.dartcastings.uk) 1:76 proportion metal figures, as well as plastic models from Preiser (www.preiser.com). In addition, there's a wealth of unpainted plastic and metal castings from other manufacturers in various scales.

You don't need a lot of tools and materials to get started painting your own figures. As for painting supplies, good quality red sable brushes in no. 3 and no. 3/0 sizes are all that's initially required. Chances are you already have an assortment of acrylic model paints on hand, but if you don't, about a dozen basic colors, including white, black, and skin tones, are what you need to begin. As you hone your figure-painting skills, you can add other paint colors and brushes. You'll also need a hobby knife and small jeweler's file or two.

Figure painting can be an enjoyable hobby all its own. The best part is that my figures don't look like everyone else's.

FIGURE PREPARATION

THOUGH YOU MAY WANT TO START painting figures as soon as you take them out of the package, you need to do some cleanup work on the castings first. Almost all castings will have seam lines where the parts of the mold fit together. Seam lines and flash (leftover molding bits) must be carefully removed. I use several tools for this project, including a hobby knife, rounded needle files, and a sanding stick.

This is also the time to level a figure's feet so it will stand up properly. If it's a plastic figure, I use a fine-grit sanding

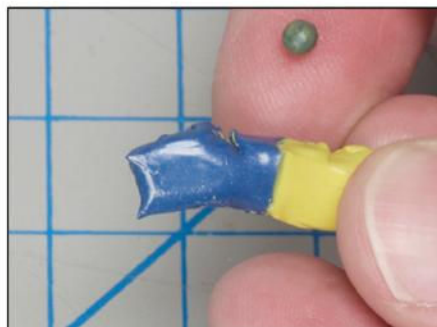
stick for this step. To level the feet of metal figures, I use a flat file. When filing feet, metal or plastic, be very gentle to avoid bending the figure's legs or snapping off its feet.

I use Kneadatite (a two-part epoxy putty from Polymeric Systems) to fill gaps in the figure or add missing details. I apply the putty to the figure with a hobby knife, and then I let the putty dry overnight before I file or carve it.

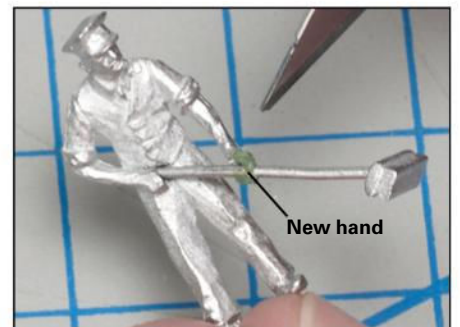
Next, I wash the castings in warm water with a little dish soap to remove any oils and let the figures dry.



Use a needle file to remove any visible molding seams. Otherwise they'll show through the paint.



To use the Kneadatite epoxy putty, mix equal parts of the two colors. When it turns green, it's ready to use.

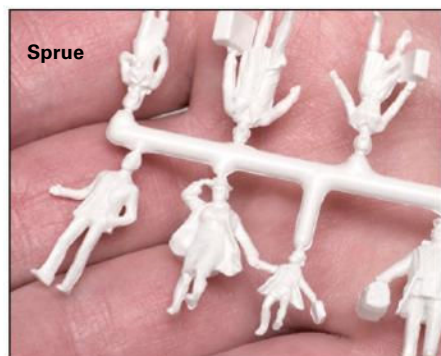


You can use the epoxy putty to replace missing details, such as this man's left hand on the broomstick.

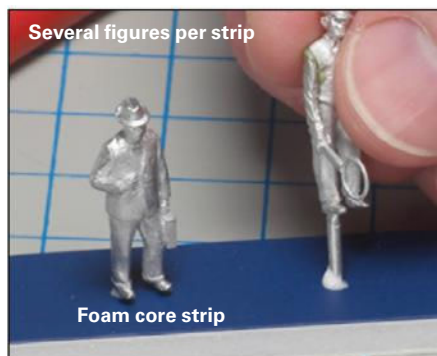
MOUNTING AND PRIMING

ONCE THE CASTINGS HAVE BEEN WASHED, they need to be mounted to a handle so you can hold them while painting. Some figures, such as the plastic HO scale Preiser figures shown at left, come attached to a sprue, which makes a good handle. When finished with a figure, clip it off the sprue. Don't forget to touch up the top of its head.

I typically work on about a dozen figures or so at the same time, so I've taken to mounting individual figures on strips of foam core board. I cut the strips $\frac{3}{4}$ " wide and 4" to 6" long. This allows me to mount four to six figures per strip. I cement the figures to the foam core with white glue.



Some figures come on sprues, such as these Preiser HO scale figures, making them easy to hold and paint.



If figures are individual castings, mount them to a stick or strip of foam core, making them easier to hold.

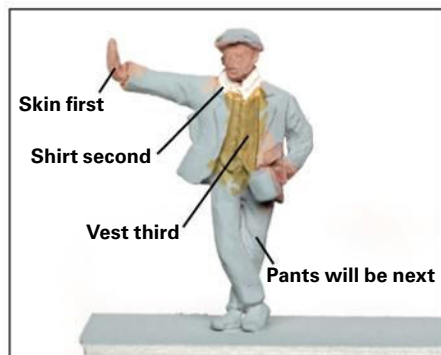


Applying a primer to figures is a must. Paint will chip away easily from castings that are not primed.

STARTING WITH SKIN TONES

AT LAST, IT'S TIME TO PAINT! I use acrylic hobby paints because they are water soluble, making them easy to work with. I've painted figures for more than 25 years, so I have a lot of paint in many colors from various manufacturers.

When painting figures, I like to use the "in to out" technique. As shown in the left-hand photo, you start by painting the details that are deepest into the surface of the figure casting and work your way out along the layers of clothing and details. This means that most figures will start with the skin around the face, chest, arms, and legs. Though the hands are at the extremities, I like to do those at the same time. It also means that you don't need to be all that careful in the early stages of painting, since the outer edges of your work will be covered by the next layer of paint.



David uses the "in to out" technique, painting the innermost parts of the figure and working outward in layers.



Apply a reddish-brown wash to the skin color to bring out facial features and individual fingers on hands.

As shown in the center photo, I've applied a basic skin-tone paint to the face and hands of the engineer. To give the face more detail, and to keep the skin from appearing as one solid color, I next apply a wash of reddish-brown paint over the skin tone. The wash can be anywhere from a 50/50 mix of paint and water to hardly any paint at all. The more paint you use in the wash, the ruddier the complexion. For women and children, I use very little red, as they generally have fairer skin. The red wash is also good for hands, as it brings out the detail of individual fingers. I let the wash dry before continuing.

On darker-skinned figures, such as African-Americans, I start with a deeper skin tone as a base coat and then use a much darker red-brown wash, as seen at right.



For darker skin tones, start with a darker base coat and apply a deeper red-brown wash to the skin.

LIGHT-COLORED CLOTHING

IT'S POSSIBLE TO PAINT hundreds of figures in solid colors and never be happy with the finished work. The key to adding realism is to include highlights and shadows. The three-step process below shows how to achieve that result with three shades of paint. This method works best for light-colored clothes, such as white shirts.

I start by painting white shirts with a solid coat of an off white, such as ivory. Once that base coat has dried, I paint the shadow areas a slightly darker shade of off white. The color shouldn't be too dark to make it look like the shirt has stripes. The color I've used in my example is a light shade of taupe. I use the folds and creases sculpted into the figure as my guide to placing shadows. Sometimes I'll hold the figure

under a strong lamp, so I can see where the shadows occur naturally. I then fill them in with paint accordingly.

Finally, I use a lighter shade than my base coat to add highlights to the fabric. In this case I used pure white. I drybrush the highlights sparingly.

Drybrushing involves dipping the tip of the brush into the paint, wiping most of it off on a piece of cardstock or paper towel, and then lightly applying the remaining paint to the high spots on the figure. I use the highlight color to bring out the crease in the folds in the clothing, as well as any broad, flat surfaces that would receive a lot of light. You can do the same thing with other light or bright colors, such as yellow.



To paint light objects, start with a base coat of the middle tone. In this case, David used an ivory color.



Next, fill in the shadows with a darker shade of off-white paint. On the white shirt, David used a light taupe.



Finally, drybrush the highlights using a color that is lighter than the base color, like the pure white shown here.

SHADING DARK CLOTHING WITH WASHES

YOU CAN EASILY BRING OUT DETAILS in a figure's clothing by using washes (applications of diluted paint). When applied to a figure, the wash's pigment gathers in recesses, such as the folds of clothing, providing a contrast to the base color. Washes are effective for dark blues, grays, browns, and even black. Washes also work great for creating leather effects, such as coats, boots, and bags.

For this example, I'll use the blue overalls on a trainman figure, shown below. I started by painting the overalls a solid medium blue, as shown in step 1. Once the paint dried, I mixed a wash of 1 part dark blue paint to 1 part water and flowed the diluted color over the base coat, as shown in step 2. The finished result is shown in step 3. (I used the

same technique for the man's jacket.) After the wash dried, I highlighted the overalls, as explained on the next page.

Because washes are thinned paint, they tend to spread to other parts of your work. Using small brushes to apply a wash provides more control over where it goes. Excess wash can be removed from the figure by touching the liquid with a dry paintbrush.

The second thing to keep in mind is that you want to maintain a wet surface until you have the wash completely in place. If the wash dries in an area before you finish applying it, the pigment will tend to collect along the edge of the wash. In this case, you'll need to do a bit of touch-up work.



As shown with these blue overalls, begin by painting the item with a solid color, in this case, a medium blue.



Next, make a wash of a darker shade of blue and carefully apply it over the base color with a small brush.



Finally, drybrush the overalls with the original medium-blue color to bring out the clothing's highlights.

ADDING HIGHLIGHTS AND DETAILS

EVEN THE LIGHTEST WASHES will darken a figure's base coat, so you'll need to lighten the areas that would be natural highlights. There are several ways to do this, depending on the original base color. For the blue overalls in the last example, the wash I used was very dark. As a result, I could use my original base-coat blue as the highlight. Using the same drybrushing technique from the shirt example, I added the blue highlights to the figure's pants.

However, for the example figures shown here, their gray base coat was dark to begin with. Using the same dark gray color for the highlights after I'd applied the darker wash wouldn't make much difference. In this case, as shown in the left-hand photo, I added a hint of white to the original

color to produce a slightly lighter shade of gray. I then applied this color to the highlight areas.

When adding highlights, don't forget that there can be flat-area highlights (places without pronounced creases and seams) to paint as well. In the middle photo, I've applied highlights to the man's pants and vest.

A LITTLE EXTRA DETAIL goes a long way to making figures look the part. Both workmen in the right-hand photo have brass buttons on their vests, brass badges on their caps, and blue neckties. While these details are just hinted at in the castings, painting them on the figures makes them look all the more realistic.



The highlight color for these figures comes from the base color with a hint of white added to it.



Area highlights are important too, such as those found on the pants and vest of this figure.



Simple details, such as the brass buttons, hat badges, and neckties shown here, add a lot to a figure.

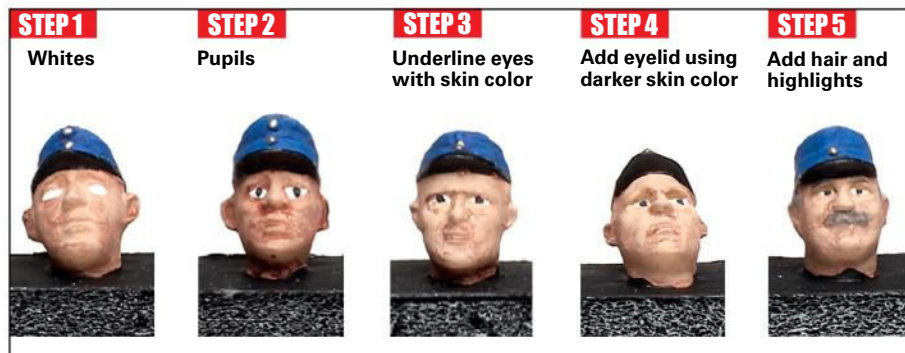
EYES AND FACIAL DETAILS

BECAUSE SCALE FIGURE EYES are so small, they are the hardest feature to paint. I don't bother painting eyes on HO scale figures or smaller. Even with very fine brushes, eyes on small figures are much too large, so I let the skin wash darken the eyes instead. However, for larger figures, eyes can be a very important detail.

The steps I use to paint eyes and finish the facial features on larger figures are shown below on five 1:23.5 heads. I used a fine-point 10/0 paintbrush for this task. Be especially careful that the pupils (step 2) are applied evenly for both eyes, so that the gaze of the figure isn't cross-eyed (or worse). You can cover a lot of sins by making a figure look slightly to the left or right, but not straight ahead.

While the 5-step eye process works great for large scale figures, I use an abbreviated version for smaller figures. On the 1:76 figures shown in the right photo, I skipped the eyelid step. The brims of the figures' hats make it difficult to paint eyelids, but from a normal viewing angle, the lack of that feature isn't visible. In the photos shown here, you're seeing the figures much more closely than you do on the layout. Though their eyes appear too large here (because they are), they look fine when viewed in the model scene.

One more thing you can do with washes and details: Note that the man on the left has a 5 o'clock shadow. You can make this by applying a dark brown wash to the beard area of a figure's face. **S&SP**



These 1:23.5-proportion heads show the eye process from start to finish. Start by applying the whites, then draw the pupils as straight lines of color. Next, underline the eyes with the skin color, then use a darker shade for the eyelid.



These finished 1:76-proportion figures have simplified eyes. The 5 o'clock shadow is a brown wash.

MAKING REALISTIC SUMMER TREES



Trees add new interest to GO Tower on the HO scale Milwaukee, Racine & Troy, *Model Railroader's* staff layout.

Do-it-yourself tree kits enhance this junction scene

BY CARL SWANSON • PHOTOS BY CODY GRIVNO

>> **ON OUR HO SCALE** staff layout, the Milwaukee, Racine & Troy RR, the Wisconsin Central crosses the MR&T main west of GO Tower, an interchange that leads to a sneak-off tucked behind a hill. It's one of my favorite places on the "Myrt," but it bothered me that the scenery here looked more like the grassy hills of Wyoming than the forested slopes of Wisconsin. I decided a grove of trees would add Badger State authenticity to the scene.

Most of the trees in southeastern Wisconsin and northern Illinois, the territory served by the MR&T, are broad-leaf hardwoods like maples, oaks, and ash. If our railroad had ventured a little farther north, the forests would be dominated by conifers like white pine, hemlock, and spruce.

That's not to say that there aren't subtle differences among southern Wisconsin's woody residents. In any grove of trees, some are brighter green than others, and quite a range of sizes is represented. I needed model trees that would look generally uniform, while allowing a little size and color leeway.

But what tree to use? There are many different trees on the market in both ready-made and kit form. Over the years, the MR staff has used most of them, and usually with good results. Located at nearly eye-level and immediately next to an aisle, GO Tower is the kind of in-your-face location that demands finely detailed trees. Poly fiber puff balls weren't going to cut it here!

Instead, I used a SuperTrees starter kit from Scenic Express, www.scenicexpress.com.

STEP 1 A BOX OF TREES

A SUPERTREES HO starter kit (no. EX0220) contains 15 to 18 tree armatures in the form of dried plants from Scandinavia. Given the kit's suggested retail price of \$44.98, the per-tree cost works out to just over \$2. But there's a catch – some assembly is required.

Usually when I open any kit, I discover I lack a crucial material or tool to get the job done. That wasn't the case here. In addition to the tree armatures, the starter kit included illustrated instructions, two quart-size shakers of coarse ground foam, seven packets of fine ground foam in a wide range of summer and autumn shades, two boxes of Noch Leaf Flake Flock, a spray bottle, matte medium, four self-closing tweezers, and a set of plastic trays.

The only other items I needed were a container to mix the matte medium, a clothesline, clothespins, dishwashing detergent, paint, a drill, and white glue. Once I'd gathered these items, I was ready to make a shady glade for the MR&T.



STEP 2 PREPPING THE TRUNK



THE TREE ARMATURES are clumps of dried shrubbery that you snap apart to form tree shapes. This is an easy process since the plant material is quite brittle. As the top photo shows, there are bits of leaves amid the branches. Some I could pinch off; others I needed to slice off with a sharp hobby knife.

When I was done cleaning and shaping the armatures, I soaked them (middle) in a solution of 1 part concentrated matte medium to 7 parts water, with a capful of dish soap

added. I let them soak for about a minute, then I clipped them to a clothesline to dry.

Some of the trees in my starter kit were curled. As the photo at far right shows, these can be straightened by suspending weights (the self-closing tweezers here) from the trees as they hang to dry.

The light tan of the branches looks nothing like a tree trunk, so a little painting will be necessary before we can add the foliage.

STEP 3 PAINT, PAINT, AND MORE PAINT

AROUND HERE, tree trunks aren't brown. Gray, with a dusting of black, seemed close enough for us. Associate editor Cody Grivno volunteered to airbrush the trees.

Using Polly Scale acrylics, Cody started with a coat of no. 414176 Union Pacific Harbor Mist Gray mixed 6 parts of paint to 4 parts of 70 percent isopropyl alcohol. He then dusted on no. 414110 Steam Power Black mixed 2 parts of paint to 8 parts of alcohol. [Polly Scale paints have been discontinued. See "Hobby Paint Roundup" in the March 2014 *Model Railroader* for other paint sources. – Ed.]

The result looked a little ashen to us, so Cody warmed it up a bit with no. 414352 Light Freight Car Red, also mixed 2 parts of paint to 8 parts of alcohol.



STEP 4 TURNING OVER A NEW LEAF

THE SUPERTREES kit contains a variety of foliage colors. Some of them are suitable only for autumn, but there were plenty of shades of green for the MR&T's endless summer. [For tips on modeling an autumn scene using SuperTrees, see *Model Railroader* Video Plus producer David Popp's Step by Step column in the November 2005 MR. – Ed.]

This part of the project was fun. With lots of tree armatures and a range of different flocking material, I tried several different effects before settling on a combination that was pleasing to my eye.

I started by dipping the trees once again in the diluted matte medium, then I sprinkled on the foliage, using the plastic trays to catch the excess. I thought the coarse Scenic Express Flock and Turf ground foam gave the trees a suitably dense look, but it also made them look a



STEP 4 TURNING OVER A NEW LEAF (CONT'D)

little too clumpy on close inspection. I switched to fine ground foam, which better preserved the branch structure's naturally airy appearance.

When the sun shines on a tree, the outer leaves are very bright green, while the leaves on the shaded branches look nearly black. I modeled this effect by sprinkling on dark green, letting the tree dry, then re-dipping the tree and dusting it with a brighter shade of green.

I had my best results using medium green Noch Leaf Flake as a base coat with a top coat of light green.

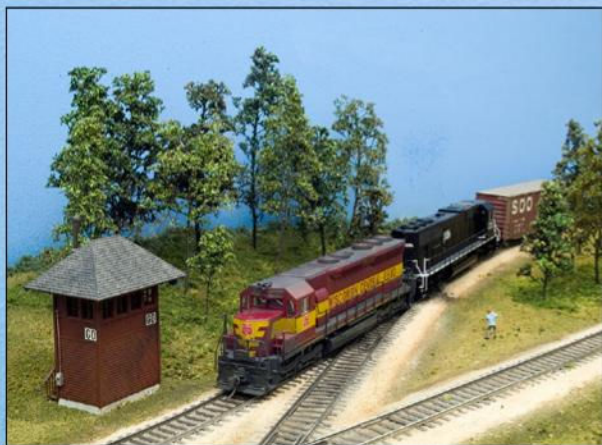
Then I had the not-so-bright idea of letting the trees dry by poking the trunks into a scrap piece of extruded

foam insulation board. Although I'd dipped only the branches in the diluted matte medium, the entire plant quickly became saturated thanks to capillary action. Cody's careful multi-coat paint job rubbed off when I poked the trees into the stiff foam board.

Making SuperTrees was pretty easy. Telling Cody he had to repaint all those trees? Now that was difficult!

While Cody went to work painting tree trunks for the second time, I finished the last few trees. This time I wisely hung them on the clothesline shown on the previous page to dry overnight, with tweezers hanging from the tree tops to keep the armatures from curling.

STEP 5 A FOREST FOR THE PLANTING



PLANTING OUR FOREST went swiftly. We added some of the dark green Flock and Turf to soften the edge where the hill meets the painted backdrop, then began planting our trees.

Armed with an electric drill with an $\frac{1}{8}$ " bit, I drilled a series of holes along the hillside and the wedge of land between the WC and MR&T tracks. I staggered the holes to avoid the appearance of orchard-like rows, dipped the trunk ends in white glue, and set them in place.

Some of my trees were more successful than others. I planted my favorites at the front and used the ugly ducklings as background.

As shown in the photo, I set the trees in place, rotated them to face their best side toward the aisle, then used the self-closing tweezers and clothespins to hold the trees upright for a few hours while the glue dried.

With its new grove of trees, GO Tower has never looked better. **S&SP**

SCRATCHBUILD AN ABANDONED BARN



A photo of a collapsing, partly burned barn Horst Meier found on the internet was the inspiration for the scratchbuilt wood barn seen above. Horst shares techniques for assembling and weathering wood structures.

Weathered stripwood and peeling paint give a building history

BY HORST MEIER • PHOTOS BY THE AUTHOR

>> SOMETIMES, A PARTICULAR spot on your layout will call for a structure that just isn't available in the usual catalogs. You may want to fill that empty corner with something you won't see on any other layout, but you'd also like it to be easy to build.

Perhaps a building from your own neighborhood would fit the bill, like an old barn or a shanty, maybe a bit damaged or run down. I found my inspiration on the internet, a photo of an old barn in El Dorado County, Calif. The building was half burned out, rather tumbledown, and with just a trace of paint. This gave the building character and prompted me to scratchbuild it from stripwood.

Such projects are easier than they look, and the materials cost very little. I built my model in HO scale, but with different sizes of stripwood, you could build yours in another scale. I'm not providing a plan for this barn because you'll want to model a building that fits the era, location, and size of your own layout. My idea is to show you how easy it is to scratchbuild a wood structure for yourself.

It's a nice feeling to create a structure that stands out as unique next to the other, more recognizable ones on your layout. Models like this are an eye-catcher for every visitor, often prompting the question: "Which catalog did you find this in?"

LIST OF MATERIALS

Stripwood

1/8" square (or HO scale 10 x 10)
5/64" x 1/8" (or HO scale 6 x 10)
1/32" x 5/64" (or HO scale 3 x 6)
Thin wood veneer strips

Miscellaneous

White glue
Thinned dark wood stain
Dark red latex paint
Gouache (watercolor), various colors
Weathering powders

STEP 1 BASIC FRAMEWORK AND RAFTERS

FIRST, stain all the wood. I use thinned wood stain from my local hardware store. I mix it three parts black to one part of a not-too-reddish brown stain, such as walnut, then dilute the stain about 10:1 with thinner. It's better to mix your stain light, as you can always apply another coat if the wood doesn't get dark enough. [You can also use a commercial weathering solution from a manufacturer such as A-West, AIM Products from Monroe Models, or Micro-Mark, or mix your own from 1 part India ink and 10 parts isopropyl alcohol. – Ed.]

The basic framework for my barn went together quickly using scale 10 x 10 stripwood. Use full-strength white glue to assemble the framework for each wall on a flat surface. After allowing the wall sub-assemblies to dry, assemble them to form a three-dimensional framework. Add diagonal bracing to strengthen the corners and keep them square. You can then extend the footprint of the basic rectangle with lean-tos and sheds.

Using a square-edged file, notch the scale 6 x 10 rafters where they will rest on the ridge beam and the lower joists. The photo to the right shows how I did this. Then glue them in place with undiluted white glue.



STEP 2 SIDING AND ROOF



I USED THIN WOOD veneer, cut into strips, for the barn's siding. Stain this material before cutting and gluing, just like the framework. Cut the veneer into strips of varying widths from scale 3" to 12" using a sharp hobby knife, then cut them to length. Mix up your siding planks well, so that as you apply them to the framework, you'll get a realistic variation of width, grain, and stain color. Apply



white glue to the basic framework at manageable intervals and set the wall planks in place with tweezers, as shown in the left-hand photo.

Make the longitudinal roof stringers from thinner wood than the rafters. For these I used scale 3 x 6 stripwood. Spring-loaded metal hair clips make handy clamps to hold the stringers while the glue dries, as shown at right.

STEP 3 A TRACE OF RED

OTHER THAN THE desolate condition of the front of the barn, another thing I liked was the red paint job on one end, started at some point but never finished. To reflect the peeling, faded paint on the model, I used latex-based wall paint, custom-mixed in small sample-sized bottles. After loading the brush, I wiped it off on a paper towel before using it. I didn't wipe the brush off as much as I would when drybrushing. The trick is to apply enough paint to hint at a cover layer, as shown in the photo.



STEP 4 FIRE!



IF YOU'RE PLEASED with your barn at this stage, you can stop now. But to represent the damaged prototype, I took some more destructive measures.

Using small flat-nosed pliers, I broke off parts of the stringers in the open part of the roof, as well as some of the beams, supports, and planks. This doesn't take a lot of force. It's sufficient just to bend the thin strips. I then glued a separately constructed tilted side wall to the broken side beams.

Signs of the fire responsible for the dilapidated condition of the barn can't be easily imitated using paint. Instead, I passed a lit cigarette lighter to and fro at a safe

distance under the broken ends of the lumber. If you hold the flame at the right distance, the wood will change color without burning. But if the stripwood does catch fire, blow it out at once!

After the structure was sufficiently damaged, I applied styrene corrugated metal roofing to the intact roof rafters with cyanoacrylate adhesive (CA). I painted it black and weathered it by drybrushing it with rust-colored gouache, commonly known as watercolor paint. I later added a pile of weathered roofing and broken wood to the floor of the barn after installing it on the layout.

STEP 5 WEATHERING



LAST OF ALL, I GAVE my ruined barn signs of age and the effects of weather. Near the ground, the color of the wood darkens, an effect you can imitate with wood stain or weathering powders.

On the other hand, the top parts of the walls that are sheltered by the roof overhang don't get as much sun or rain as the rest. Therefore, these parts retain some of the original color of the wood. I colored these areas

very carefully and sparingly using a little sienna-colored gouache.

In the same way, I simulated patches of moss and mildew near the ground using green paint and weathering powder. This can be lighter or heavier, depending on how old the barn is and how much grass is growing around it. A scattering of ground foam likewise simulates moss growing on the roof. **S&SP**

Boston & Maine 2-8-0
Consolidation no. 2360 leads a
local across a deep ravine in New
Hampshire's White Mountains. It's
heading for Bristol on Tom
Oxnard's Boston & Maine layout.

HOW TO BUILD A

DEEP ROCKY



RAVINE

An impressive scenic feature greets visitors

BY THOMAS OXNARD
PHOTOS BY THE AUTHOR

>> AS MY RETIREMENT APPROACHED,

I realized I was going to need a new project to work on for my layout. At the time my New Hampshire Division of the Boston & Maine RR was in the dreaded state of being nearly finished and I'd run out of real estate in my basement. (See "Modeling the main line of the Minutemen" in the December 2009 *Model Railroader*.) I'd already replaced most of the early structures with better ones built from craftsman kits, scratchbuilt many others, and redone much of the scenery to higher standards.

Participation in a recent National Model Railroad Association regional convention and operating on a number of layouts inspired me to find more real estate to expand my layout. All it took was moving a freezer and tearing down a small wall to clear the way for an 8-foot extension of my shortest peninsula. This addition proved to be a major improvement, and it gave me a wider aisle.

PLANNING GOALS

I wanted an impressive scene visitors would encounter as soon as they entered the train room. In particular, I was looking for a river flowing through a deep rocky ravine with a mountain behind it.

My plan was to have a two-span deck girder bridge in the middle of the scene to carry trains across the ravine. The view up the river beyond the bridge would lead the eye to a pair of New England-style mill buildings scratchbuilt from wood.

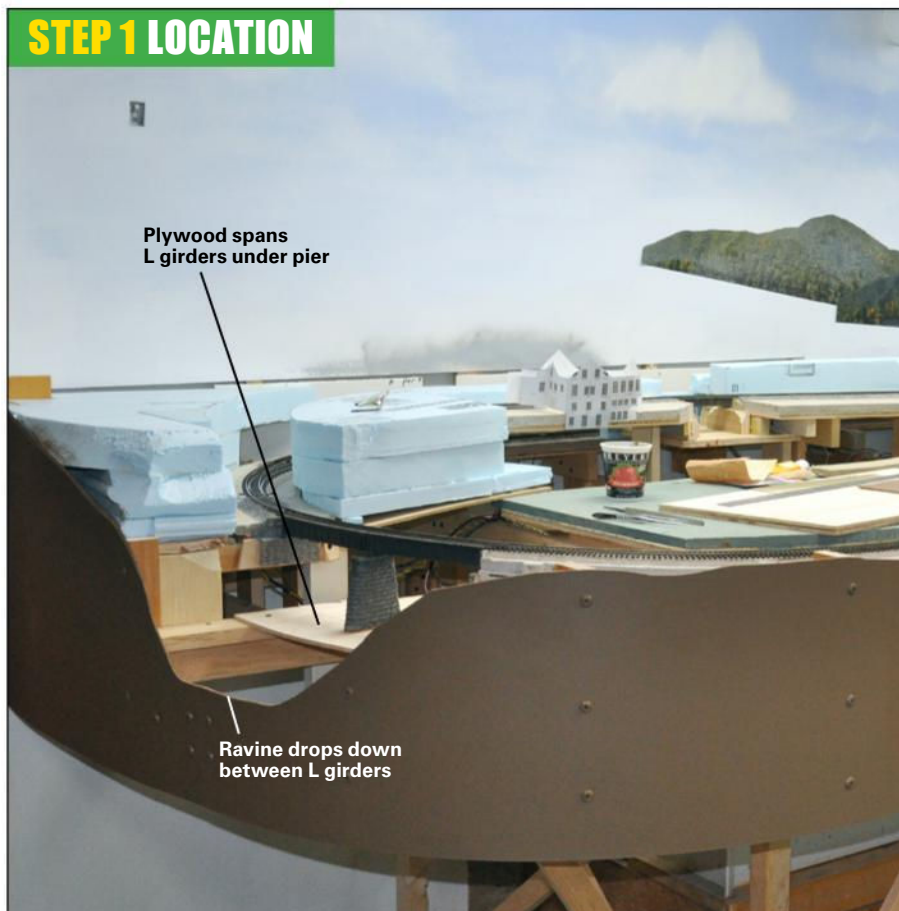
For the mountains, I had to think in terms of the available cubic space from side to side, from the track to the rear wall, and how high they could go. The ultimate height was determined by how steep I wanted to make the front slope.

My mill building was only a foot from the wall, so I reduced the overall height of the mountains to 20", which is about a foot below the ceiling. This reduced the angle of the slope for more realism.

The ravine starts at a 52" elevation and descends 11" on its way down through the scene.

Once my planning was complete, it was time to move into the construction phase, which follows step-by-step.

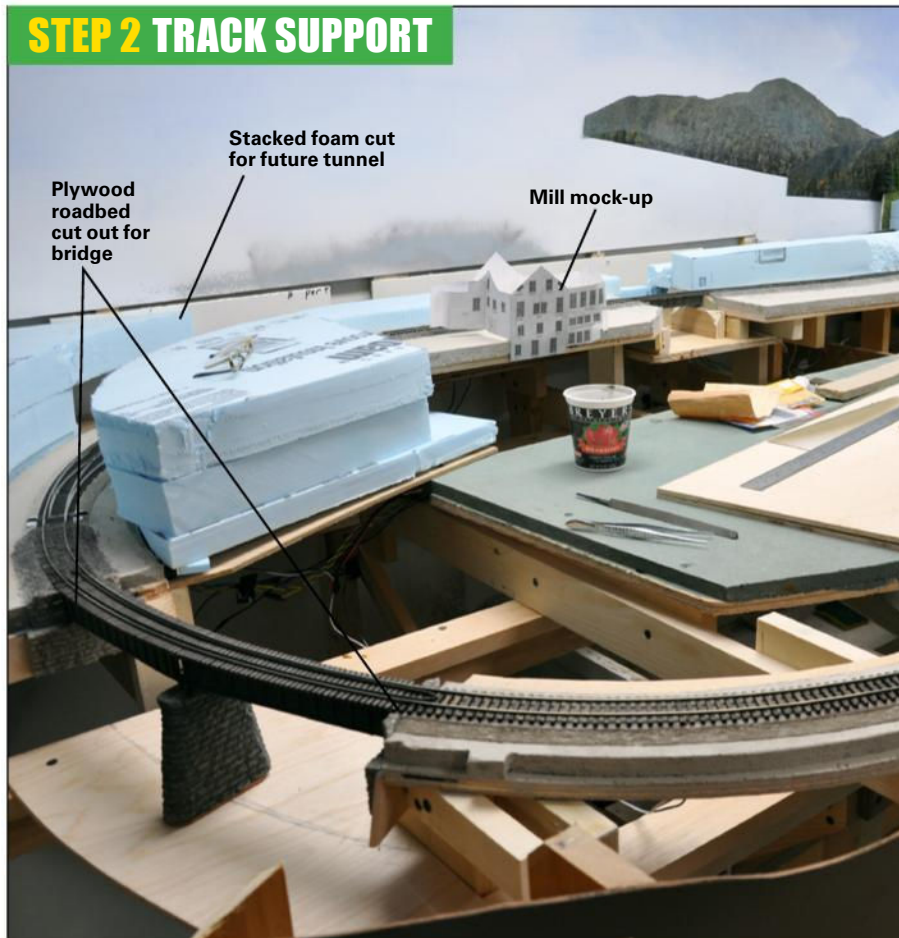
STEP 1 LOCATION



POSITIONING A DEEP RAVINE in the benchwork is important, as it affects how the benchwork is built. I wanted my ravine at the end of an aisle near the room entrance, so I was able to locate it between the L girders in the benchwork. I've found Linn Westcott's book *How To Build Model Railroad Benchwork* (Kalmbach Books, 1990, out of print) is an invaluable resource that I often refer to.

I placed my first joist 12" in from the fascia so it could become a reference point for the depth of the ravine. I wanted my two-span bridge to sit on a stone pier that was more in keeping with typical B&M railroad practices, and that also partially determined the depth of the ravine. At this time I also decided that most New England waterfalls are much shallower than a cascade all the way to the floor, so I drastically reduced this scenic feature. Instead, I turned the course of the river into a shallower stream that flowed from a mill pond down to the edge of the fascia.

STEP 2 TRACK SUPPORT



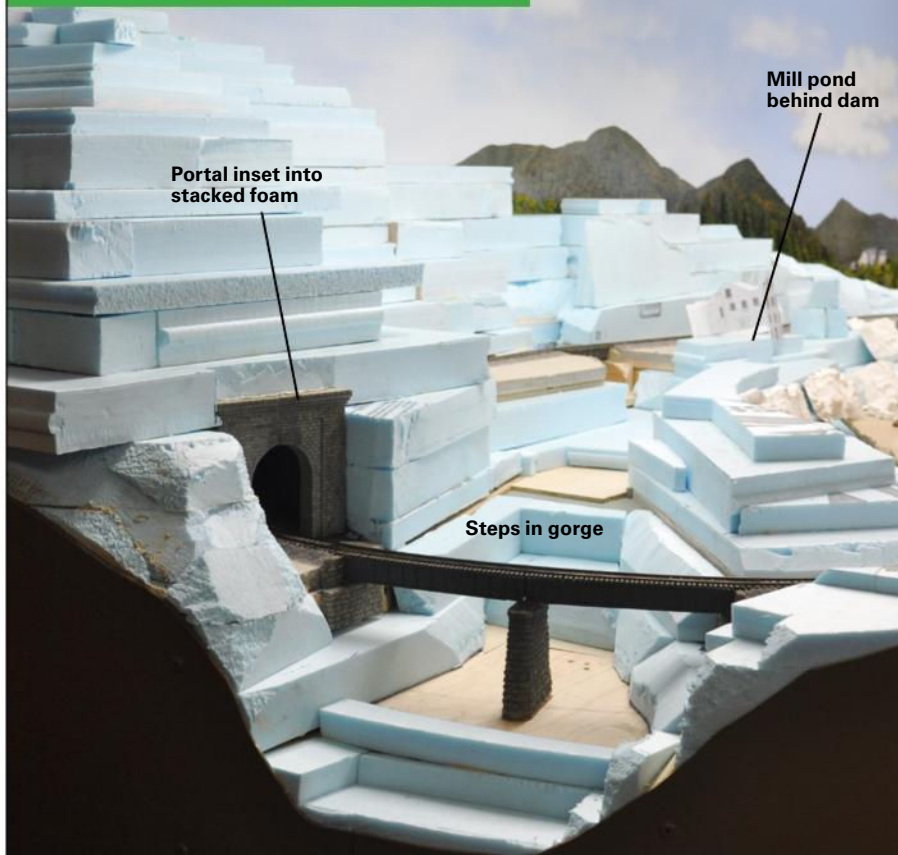
I INSTALLED THE SUBROADBED as a continuous piece of $\frac{1}{2}$ " thick plywood and Homasote through the bridge site. Then I added the necessary risers and cleats to support both river banks and ensure perfect alignment of the bridge approaches at each end. Finally, I made the cuts to open up the 14" space for the bridge in the middle of the curve.

At this point I cut a piece of $\frac{1}{4}$ " thick plywood that spanned the tops of the L girders and formed the bottom of my ravine. This plywood panel is sized to support the bridge pier and both of the stone abutments.

I finished painting the stone pier and matching abutments, scratch-built the two-span deck girder bridge, and handlaid the code 83 track through the site. Then I fit and installed the fascia and trimmed it to define the shape of the river bottom.

I test-fit cardboard mock-ups of all the major structures included in the scene and began fitting blocks of shaped extruded-foam insulation board for the tunnel.

STEP 3 STACKING THE SCENE

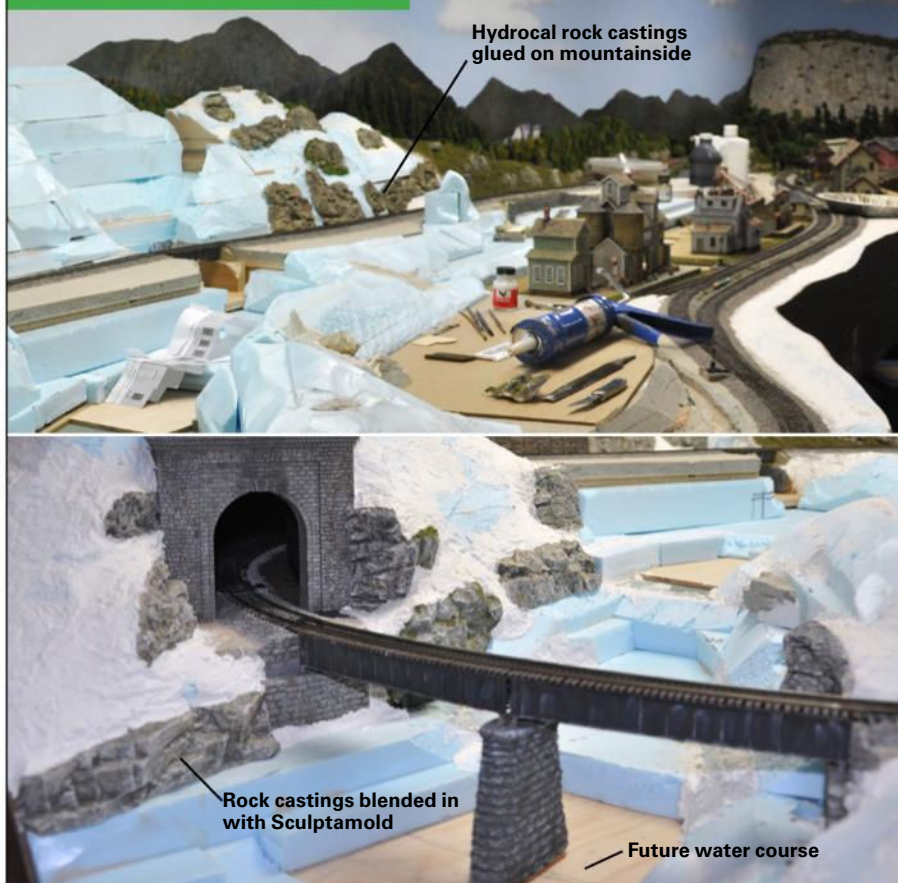


TO SUPPORT THE SCENERY, I stacked up roughly contoured layers of 1" and 2" thick extruded-foam insulation board and glued the pieces in place with Liquid Nails brand Projects & Foamboard adhesive no. LN-604. This adhesive requires some time (usually over-night) to fully cure, and setting some weight on top helps make the bond more secure.

I filled in both banks of the river up to the mill dam with additional layers and scraps of foam that I cut to fit – essentially creating a long U-shaped riverbed. The 3" riverbed widens to 7" at the fascia. I also installed plywood foundations for the buildings around the dam.

The mill buildings and track in that area are 2" above the dam. Below the bridge, I was able to work a further 3" drop into the riverbed between the plywood edge and the end fascia. I also had to trim another inch out of the fascia to lower the water level so it matched the revised, deeper shape of the riverbed.

STEP 4 ROCK DETAILS

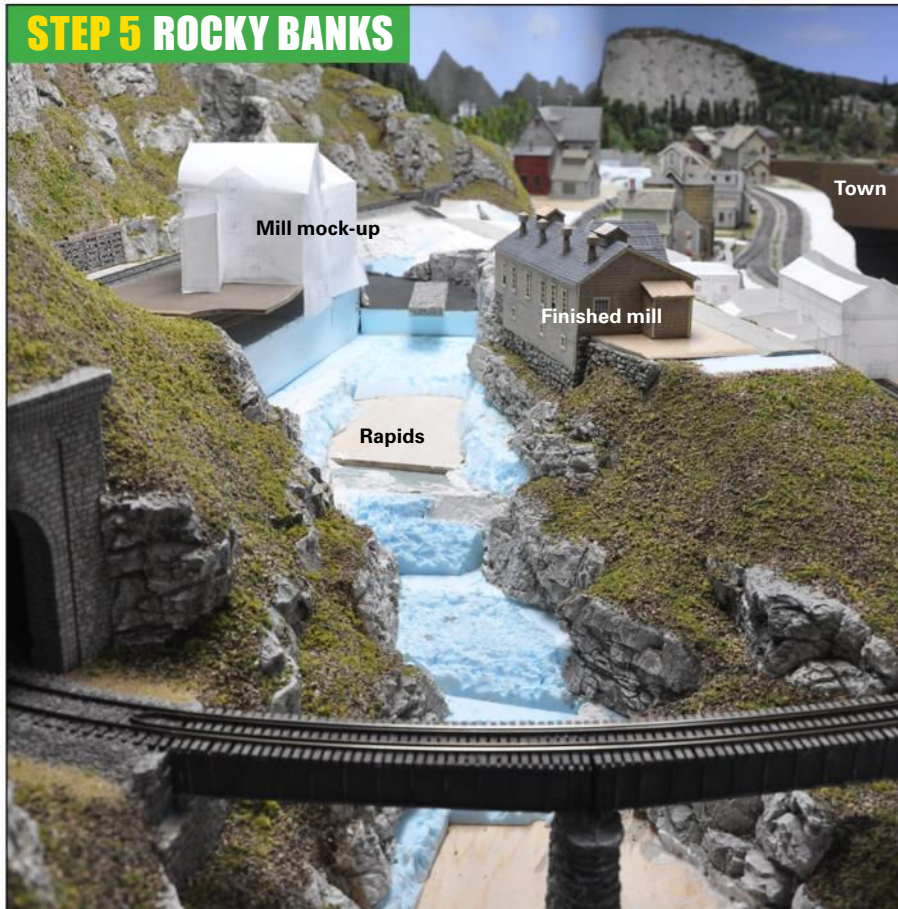


I CARVED THE MOUNTAINSIDES and blended in all of the stacked foam corners and edges using a variety of cutting tools as well as a wood rasp and coarse sandpaper. At the same time, I began making dozens of castings using Hydrocal in various rock molds.

Once I had made a good supply of Hydrocal rock castings, I stained them all with New Hampshire granite colors I mixed from Woodland Scenics liquid pigments including Stone Gray, Slate Gray, and Concrete. After they dried, I laid all the castings out in trays so it would be easier to see their details.

I started placing the castings along the mountainside (top) above the future mill building locations. Whenever my rock combinations looked right, I secured them with more Liquid Nails. I then added more rock castings along the riverbanks (bottom), notching the banks and trimming the castings as necessary on a bandsaw. Once the adhesive set overnight, I applied Sculptamold to blend the rock castings into the foam surfaces.

STEP 5 ROCKY BANKS



I NARROWED THE RIVERBED to create a steeper watercourse as I worked upstream toward the mill dam with the rock castings. I also angled the faces of the individual rock castings slightly toward the aisle along both banks when looking upstream. Next, I made rough cardboard mock-ups of my future structures to help visualize the finished scene.

Then I took a break from the rock installation work to build and finish some of the other details like the stone retaining walls and the mill dam. I scratchbuilt the large wooden mill buildings for both river banks. By then, the adhesive had fully cured and the rock castings were secure, so I moved on to filling in any gaps between the castings with Sculptamold. After that, I applied the finished scenic texturing to everything adjacent to the ravine.

In preparation for the next step, I carefully checked the entire watercourse to make sure any open gaps between the stacked foam blocks were sealed.

STEP 6 CREATING THE RIVERBED

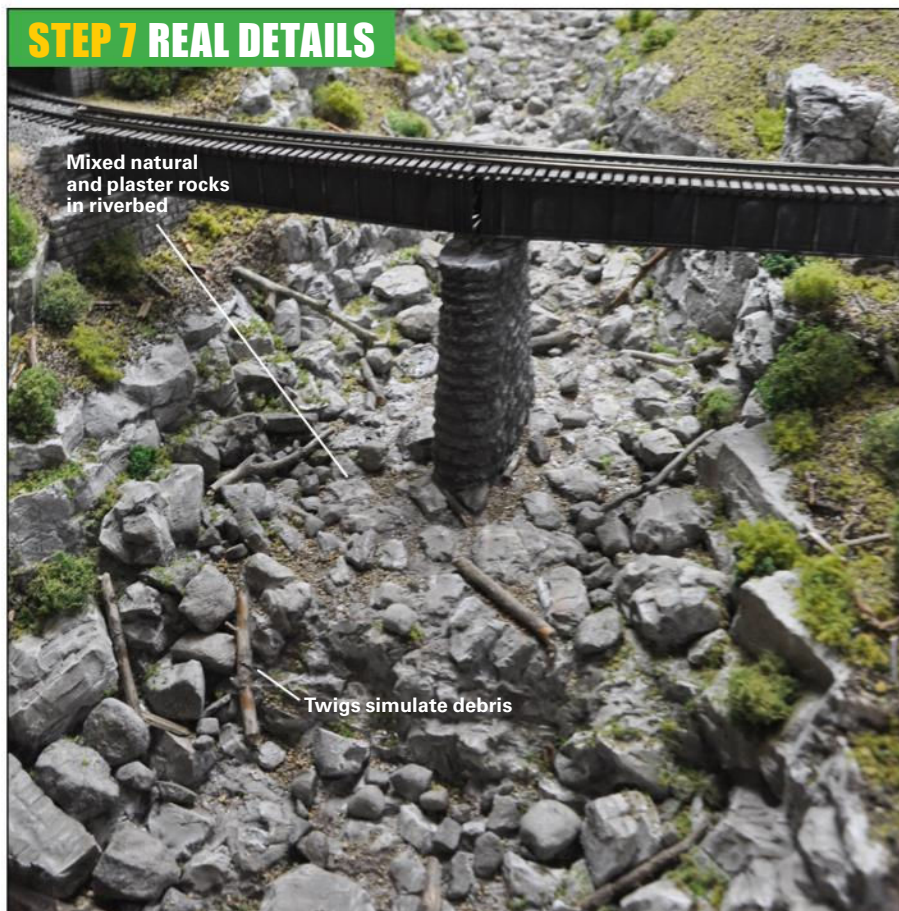


MIXING AND POURING a plaster riverbed that “flows” down and around the rocks was my next step. Regular plaster will work, but I chose Hydrocal because it would provide a harder surface. My riverbed is 40" long and required far more Hydrocal than I could work with in a single batch. Therefore, I divided my finishing pours over the riverbed into 12" long segments.

I let each pour set for 20 to 30 minutes before I began carving rock details with a 1/4" chisel. The idea was to carve the riverbed into rocks that looked like they came off the mountainside. In the process, I tried to create channels for the water to flow and places where it could pool.

As I carved the details, I removed the chips with a 1/2" paintbrush and a shop vacuum. I sprayed the area with a diluted mixture of India ink and alcohol to bring out the details. If I wasn't happy with the result, I went back and carved more. By the time I was finished, my ravine had five flat areas and five cascades (waterfalls) using the tiers that were built in during construction.

STEP 7 REAL DETAILS

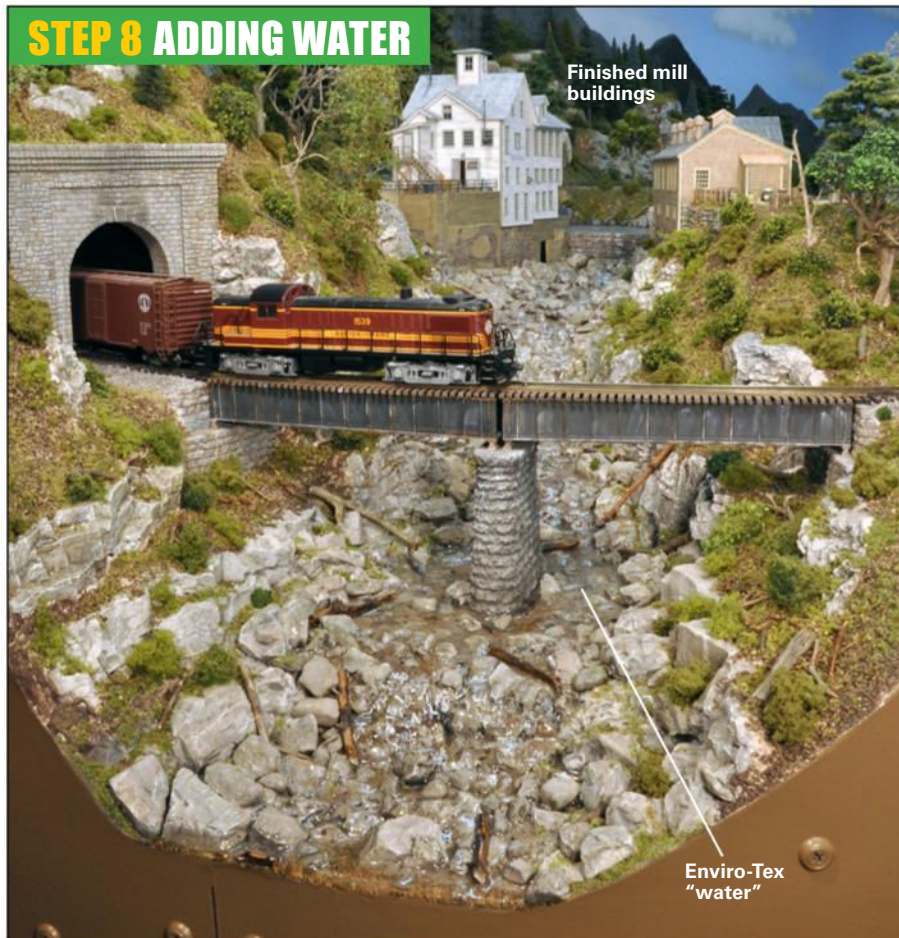


AS A FINISHING TOUCH I gathered small stones, $\frac{1}{4}$ " to $\frac{3}{4}$ " in diameter, from my gravel driveway to simulate more of the loose debris (referred to as talus) that comes off the mountainsides. I stained all of these natural stones with diluted Model Master Concrete paint to give them more of a granite color. Then I placed the stones in the riverbed and secured them with white glue. When the painted gravel was mixed in with my carved plaster rocks, I found it hard to tell them apart.

Next, I sifted some finer gravel from the driveway into the riverbed and secured it all with diluted white glue. As it dries, the white glue turns clear and disappears.

The spring thaw brings high water to the ravines that carries all sorts of dead branches and small brush that washes off the steeper slopes. I simulated this debris with broken bits of dry twigs gathered from the shrubs in my yard. I glued these into places where the branches would probably get caught between the rocks.

STEP 8 ADDING WATER



I SIMULATED WATER with Enviro-Tex Lite high-gloss finish, making three separate pours above the dam and let them set for three days. Starting at the top, I poured "water" below the dam and worked it into the outflow areas with a clean disposable paintbrush.

As I poured the Enviro-Tex I could see how far it flowed downhill until it was stopped by the rock formations and rose in the riverbed. I brushed the material evenly around the other rocks and into the side channels within each area. Next, I poured the middle section down by the bridge and used a fresh disposable brush to work the Enviro-Tex in and around these details as before.

Before my last pour, I made a dam using clear plastic tape along the fascia to prevent an overflow. Then I poured the lower end of the stream with enough Enviro-Tex to just reach the tape. Once it hardened overnight, I went back and embellished areas with simulated falling water and filled in any empty pools. **S&SP**



John Pryke assembled and modified a Branchline Trains laser-cut wood kit to serve as an interlocking tower on his HO scale layout.

HOW TO BUILD A LASER-CUT WOOD STRUCTURE

12 simple steps to construct an authentic HO scale interlocking tower

BY JOHN PRYKE • PHOTOS BY THE AUTHOR

>> IN RECENT YEARS, STRUCTURE KITS MADE of molded plastic have been the most commonly used and popular in the hobby. However, kits made of other materials are also available. Of these, wood kits are some of the most plentiful.

The texture of the unfinished wood components makes craftsman-style kits ideal for modeling wooden structures on a layout. But these kits often require considerable work to complete. Builders must cut, sand, and shape the raw wood to form a structure. Fortunately, laser-cut wood kits are readily available for builders who like the natural look and texture of wood structures but don't have the time or skill required to complete a craftsman kit.

By pairing computer software with precision lasers, kit manufacturers can fabricate the wood parts used to form a laser-cut structure. Using computer-aided design (CAD) software, manufacturers first develop an electronic pattern for a structure. Computer-guided lasers then use the design to cut thin sheets of wood into the precise kit parts.

Small tabs hold the wooden parts in a carrier sheet until they're ready for use. In some kits, manufacturers coat one side of some parts with an adhesive covered by a protective coating. When it's time to assemble a kit, the builder needs only to cut the tabs, peel away the protective film covering the adhesive, and press the part into place.

Building a laser-cut kit

The following photos show how I assembled a simple laser-cut wood kit. I needed an interlocking tower for my main yard, so I chose the HO scale no. 669 Ellinor Tower made by Laser-Art (Branchline Trains).

This 4" x 4" x 4" tower is a model of an Atchison, Topeka & Santa Fe Ry. prototype, which has a large roof overhang. This type of roof isn't found on railroad structures in the eastern United States. However, changing the roof was an opportunity to see how easily I could modify the kit.

The fabrication process isn't difficult, so I'll also share the techniques I used to add a realistic painted finish and install details to the interior and exterior of my tower kit.

STEP 1 ASSEMBLE CORE



AFTER USING A HOBBY KNIFE to separate the parts from the sheet, I assembled the structure's core. I used a steel square to align the corners. Then I applied a bead of gap-filling cyanoacrylate adhesive (CA) at each joint, with a spray of CA accelerator to speed the curing time.

STEP 2 ADD SECOND-STORY FLOORING



NEXT, I USED CA to secure the second-story floor to the core. I made sure the scribed side was facing up. I stained the floor with a wash of 1 part India ink and 9 parts isopropyl alcohol. The dark coloring settled into the scribing and helped make the floorboards more distinct.

STEP 3 PAINT EXTERIOR PARTS



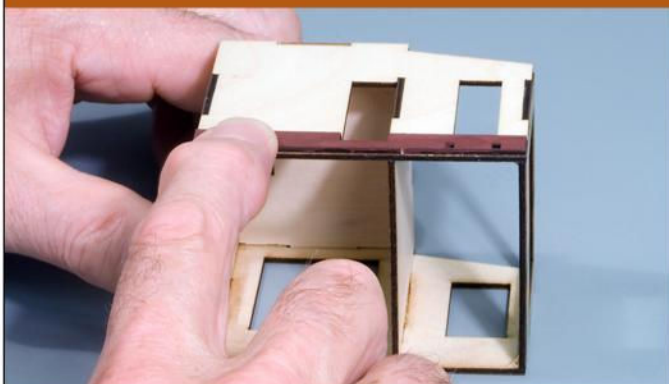
WHILE ALLOWING the core to dry, I painted the exterior parts, including the sides, windows, and trim pieces. In my era, the New Haven painted structures a buff color with brown trim. I used a brush to paint the parts. [Prime both sides to prevent warping. – Ed.]

STEP 4 TRIM PARTS, REMOVE BACKING



AFTER THE PAINT dried, I used my hobby knife to separate the parts from the sheets. I used a no. 11 blade to slice through the tabs on thin sheets. On thicker sheets I substituted a no. 2 chisel blade. I used needle-nose pliers to peel the protective backing from the core parts.

STEP 5 ADD SIDES



I STARTED BY APPLYING the foundation to the core, then added the sidewall above it. For peel-and-stick parts, I removed the backing, aligned the part over the frame,



and pressed it into place. If a side wasn't properly aligned, I inserted a hobby knife between the parts and gently separated them, then repositioned them.

STEP 6 FRAMING WINDOWS



TO BUILD THE WINDOWS, I made an assembly jig from two 3" lengths of $\frac{1}{16}$ " square stripwood glued together at a 90-degree angle. I placed each window adhesive-side up, so its corner fit snugly in the jig. After measuring the window, I cut plastic glazing to the appropriate size.

STEP 7 ADD GLAZING



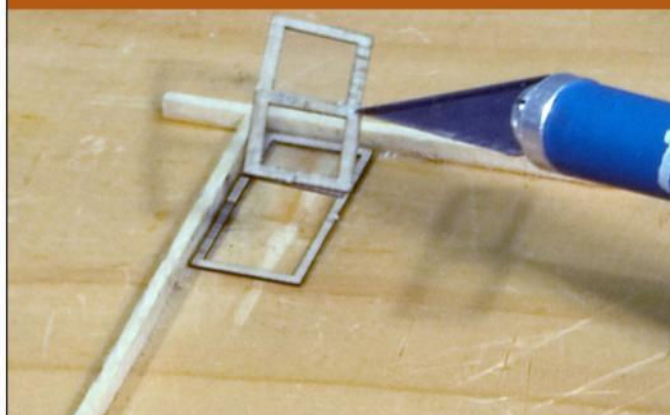
USING THE POINT OF A HOBBY KNIFE to hold the glazing, I could easily see through the material to align it. (I also used the hobby knife this way to handle other window parts.) I then placed the glazing over the upper sash and used a paintbrush to gently press the plastic into place.

STEP 8 INSTALL SASH



NEXT, I PLACED THE LOWER SASH in the jig and used CA to secure glazing to it. [A clear-plastic parts cement will also work and reduce the chance of hazing the plastic. – Ed.] I then removed the lower sash from the jig, replaced it with the window, and installed the sash.

STEP 9 ADD WINDOW TO FRAME



TO COMPLETE THE window assembly, I placed the frame (adhesive side facing up) into the jig. Using the point of a hobby knife again, I picked up the assembled window and placed it in the frame so that a portion of the frame was exposed around the entire window.

STEP 10 INSTALL COMPLETED WINDOWS



TO INSTALL A COMPLETED WINDOW, I inserted the assembly behind the appropriate opening in the structure's core. After checking the alignment of the window in the opening, I used my fingertips to gently press the window



against the edge of the opening. I repeated this process to install the remaining windows before installing the doors. If anything wasn't aligned properly, I used a hobby knife to gently remove the part and re-applied it.

STEP 11 ADD INTERIOR DETAILS



TO FILL THE EXPOSED TOWER INTERIOR, I made an interlocking machine from a 1/4" square piece of wood with pieces of .020" wire inserted in no. 76 holes. I cemented the assembly to the floor, painted a red knob on each lever, and installed figures behind the machine.

STEP 12 MODIFY THE ROOF



Remove 4 scale feet (on all four sides)

THE TOWER KIT is based on a Santa Fe prototype with a large roof overhang, which isn't needed in the region I model. I temporarily held the roof parts in place to determine how much of the overhang to remove. Removing 9/16" from the edges gave me the look I wanted.

ADDITIONAL DETAILS

AFTER COMPLETING THE tower, I added various details and weathering effects that gave my structure a realistic appearance appropriate for its rail yard setting.

Weathering. Naturally occurring elements and soot often left dark streaks on the walls. The roof also had white streaks caused by bird droppings. To add these effects, I applied powdered pastels using a stiff-bristle paintbrush.

Chimney. I cut four sides from a scrap brick molded sheet. I beveled the inner edges of each side at a 45-degree angle and glued the four sides together to form a square.

Signs. Towers often have signs with names identifying their location on the railroad. Using a computer and printer, I made a sign with white letters on a black background. I used Walther's Goo to cement the paper sign to the front my tower.

Stairs. To add the external staircase, I used a pencil to trace the outline of the outside handrail stringer against the side of the structure. This mark provides a guide to attach the inside stringer so that it will be aligned with the outside stringer and the steps will be level.

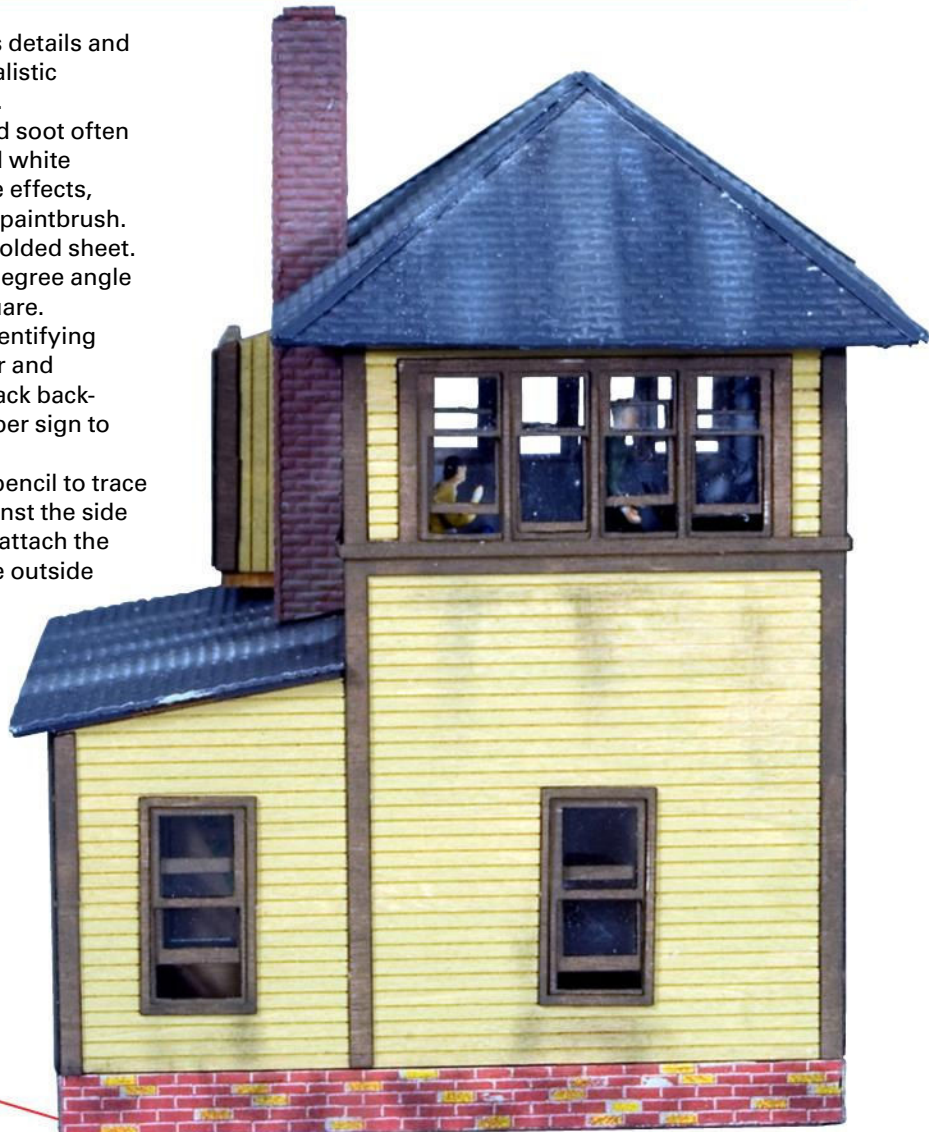
Brick foundation. To finish the foundation, I trimmed pieces of HO scale brick paper to cover each side of the structure. I used Walther's Goo to cement the four strips in place. **S&SP**



Sign

Stairs

Brick foundation





With a few detail parts and some painting, this simple kit becomes the centerpiece of a locomotive servicing facility.

HOW TO UPGRADE A BASIC PLASTIC COAL TOWER KIT

A few easy steps spruce up this common steam-era structure

BY CODY GRIVNO • PHOTOS BY JIM FORBES AND BILL ZUBACK

>> ONE OF MY ASSIGNMENTS for our HO scale Rice Harbor project layout in the January-April 2014 issues of *Model Railroader* was to upgrade the Life-Like no. 1377 coal tower kit. On the surface, it sounded like an easy project. Replace the thick door and window castings with more proportional parts, add a realistic chute, and the project would be done.

Well, not so fast. This project turned out to be more than a modeling exercise. It turned into a research project that yielded a better finished model.

The project started out smoothly and I felt pretty good about it. I assembled the tower and hoist house and installed doors and windows in short order.

Next came the stairs. Installing them and the railings was easy, but I didn't have documentation on how to brace the stairs and landings. This resulted in a walk down the hall to the David P. Morgan Library, where I came across a 1922 sales booklet from the T.W. Snow Construction Co. that included a three-quarter view of a coal tower illustrating stair bracing. So I got out some scale 2 x 6 styrene and started to add bracing. Things were back on track – or so I thought.

I then turned my attention to the coal chute, coaling apron, and related parts. Assembling the Tichy Train Group styrene kit was simple enough, but I was

at a loss on how to rig the chains. The Tichy website noted that kit no. 8003 is based on a Fairbanks-Morse standard coal chute. I made another walk down to the library. Much to my surprise (okay, relief), I found the Fairbanks, Morse & Co. booklet *Locomotive Coaling Stations*. Inside this undated publication, I found a diagram of the chute Tichy based its model on. Fortunately, it also included a diagram that illustrated the chain placement and rigging.

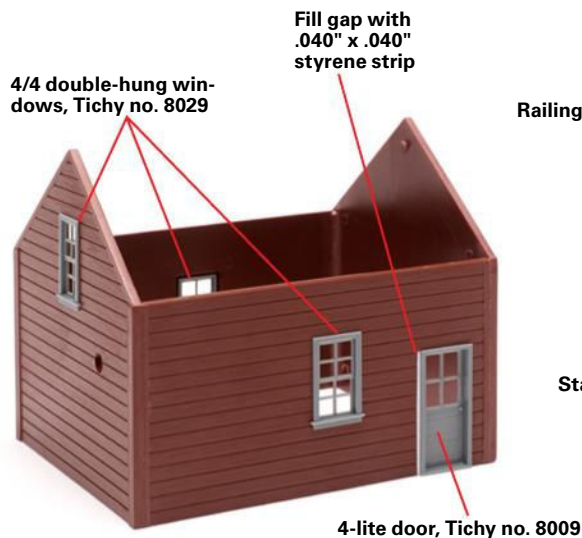
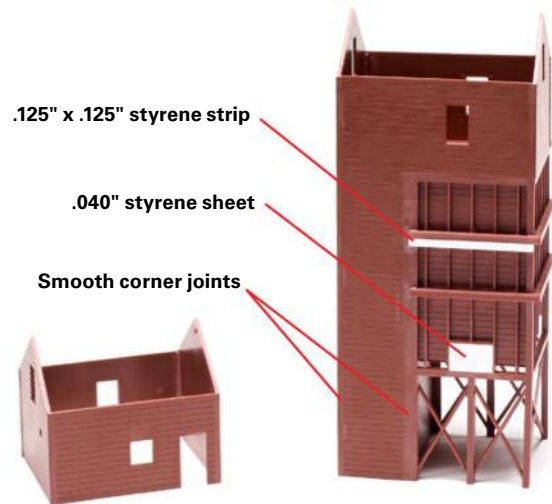
Though it may be tempting to overlook basic kits such as the Life-Like coal tower, you may want to take another peek. These easy-to-build kits can be the starting point for a fine looking model.

STEP 1 ASSEMBLY

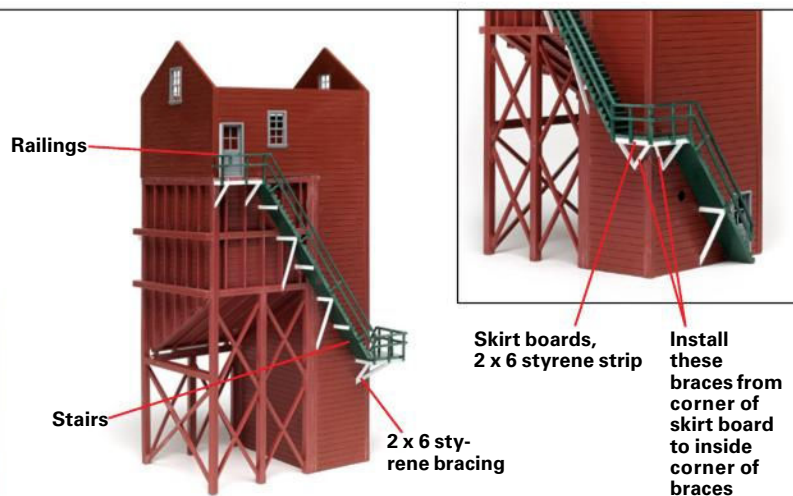
I START BY ASSEMBLING the tower and hoist house per the kit's instructions. I use a Squadron Tools no. 10203 seam scraper and 600-grit sandpaper to smooth the corner joints.

With the basic structure assembled, I test fit the Tichy Train Group no. 8003 coal chute. I notice the opening on the tower is too wide for the chute. To remedy this, I plug the opening with a piece of .040" styrene sheet.

I also notice that the sheave brackets are taller than the width of the exterior bracing. After talking over the situation with senior editor Jim Hediger, we decide the best course of action is to double the bracing at this location. I attach a piece of .125" x .125" styrene strip and file it flush with the kit's bracing.



Next, I install Tichy no. 8029 4/4 double-hung windows and no. 8009 4-lite doors at the appropriate locations. Because the scale 30" x 80" doors are a little bit narrower than the openings, I fill the gap on one side with .040" x .040" styrene strip.

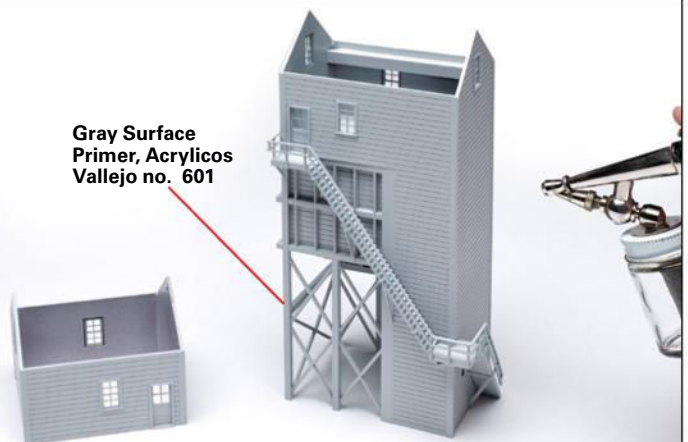


Finally, I install the stairs and railings. I brace the stairs with Evergreen no. 8206 2 x 6 styrene strip, following prototype photos for placement. I use the 2 x 6 to add skirt boards to the landings; I install the bracing behind the boards. Since the lower landing is L-shaped, I run two additional braces from the corner of the skirt boards to the corner of the wall-mounted braces.

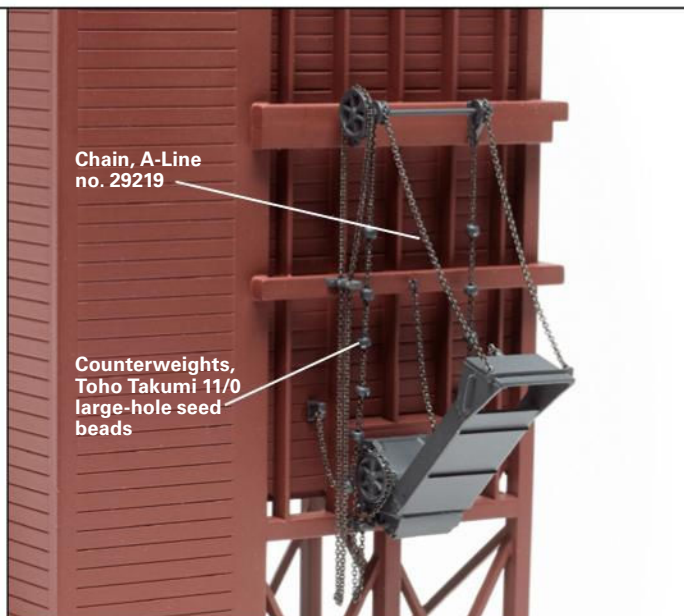
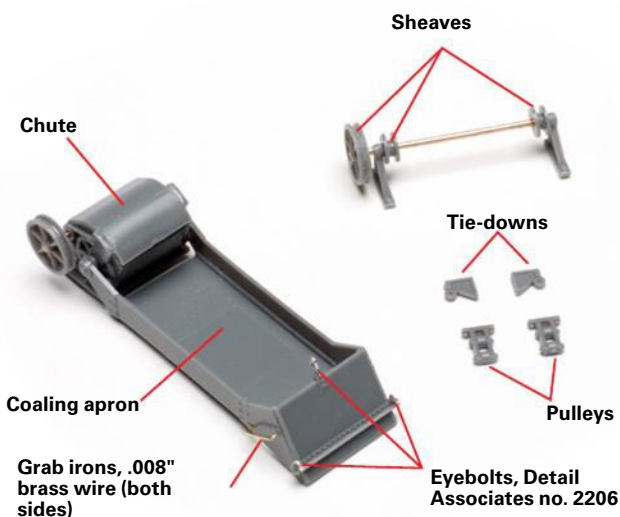
STEP 2 PAINTING AND WEATHERING

WITH RED, GREEN, WHITE, and gray parts, the model looks like it belongs in a Christmas village display, not on a model railroad. To ensure the final color will cover evenly, I spray both buildings and the underside of the roof (see **step 4**) with Acrylicos Vallejo Gray Surface Primer. I use the water-based acrylic-polyurethane (no. 601). The firm also offers a solvent-based version in an aerosol can (no. 28011).

I let the primer dry for 24 hours and then spray the structures with Acrylicos Vallejo Shadows Flesh (no. 70.343), part of the firm's Panzer Aces line. This color, similar to barn red, looks like the red used on many lineside structures during the 1930s.



STEP 3 COAL CHUTE



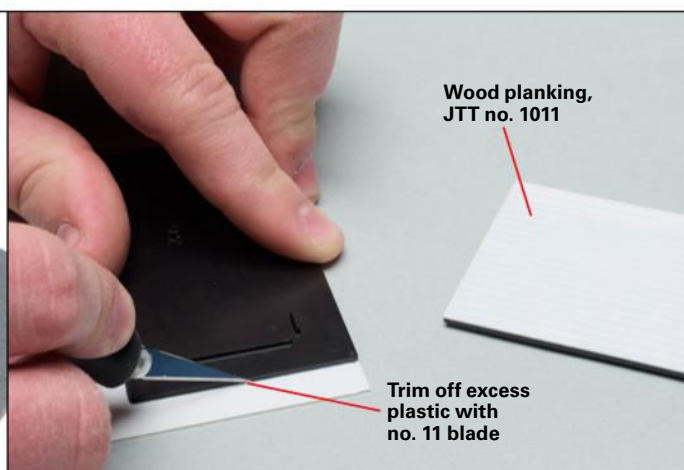
I REPLACE THE KIT'S simple coaling apron with Tichy Train Group's coal chute. The styrene kit includes a chute, coaling apron, sheaves, pulleys, and tie-downs.

I form grab irons for both sides of the apron with .008" brass wire. Then I open the molded drill-starter points with a no. 80 bit and a pin vise. I secure the grab irons by using cyanoacrylate adhesive (CA). I also install Detail Associate eyebolts at the chain-attachment points, trimming off the excess shank. I open the eyes prior to installation, making it somewhat easier to install the 40-link-per-inch chain.

After airbrushing the Tichy parts Model Master acrylic Grimy Black, I carefully scrape paint off the gluing faces on the tower and secure the parts with CA.

With the coal chute in place, I install A-Line no. 29219 chain, following a diagram in the Fairbanks, Morse & Co. booklet *Locomotive Coaling Stations*. This factory-blackened chain was the smallest I could find (40 links per inch). I use Toho Takumi 11/0 large-hole seed beads to simulate the counterweights. I got mine from a colleague at our sister magazine *Bead & Button*, but you can find them at most well-stocked bead and craft supply shops.

STEP 4 ROOF



THE ROOF PIECES for the tower and hoist house feature molded rolled roofing texture, which to my eye doesn't look very realistic. I attach each roof panel to a piece of scrap wood with masking tape and sand the surface smooth with 320-, 400-, and 600-grit sandpaper, working from the coarsest grit to the finest. I leave the non-roof sides of the roof panels as-is, since they have molded alignment guides.

If you aren't concerned about having the alignment guides on the underside and want to skip the messy and time-consuming sanding step, you can use the roof pieces as a template and cut new panels from .040" plain styrene sheet.

I came across a prototype photo of a coal tower where the rolled roofing had deteriorated due to the effects of weather and time, revealing the subroof underneath. To re-create that look, I attach JTT no. 1011 wood planking plastic pattern sheet to each roof panel with CA. I cut the plastic oversize and trim off the excess with a no. 11 blade after the adhesive dries.

After gluing the roof halves with a plastic-compatible cement, I airbrush the wood planking with Acrylicos Vallejo Old Wood (no. 70.310), another color in its Panzer Aces line. Once the paint dries, I use a brush to apply the same firm's Black Shade Wash (no. 73.201), giving the Old Wood a further aged appearance.

STEP 4 ROOF (CONT'D)

Rolled roofing,
American Model
Builders no. 286

Roofing torn to
reveal subroof

Attempted sanding
didn't work as well

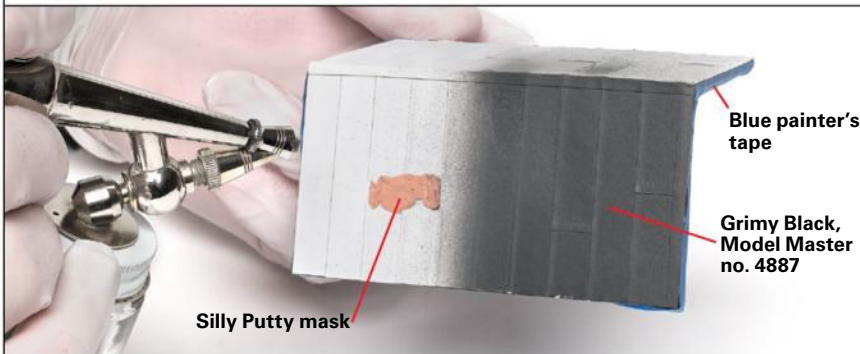
There are plenty of options for HO scale rolled roofing, but I used American Model Builders no. 286 because it has a peel-and-stick backing. I tear pieces of the roofing to reveal the subroof below. I also tried sanding the material, but that didn't work as well.

Reefer Gray, Model
Master no. 4886

Sanded area
weathered to
simulate exposed
subroof

Keep brush
parallel
to roofing
material

The sanded area of the roofing looks a bit odd, so I cut slits in the material to reveal the wood planking and paint and weather the area using the previously mentioned techniques. I then drybrush the roofing with Model Master acrylic Reefer Gray and a 1/2"-wide paintbrush. For a realistic weathering effect, keep the brush parallel to the rolled roofing.



Blue painter's
tape

Grimy Black,
Model Master
no. 4887

Silly Putty mask

I mask the edges and underside of the roof with blue painter's tape and cover the exposed subroof with Silly Putty. This stretchy material works well for masking irregularly shaped areas. Then I airbrush the roof Model Master acrylic Grimy Black.

STEP 5 WEATHERING

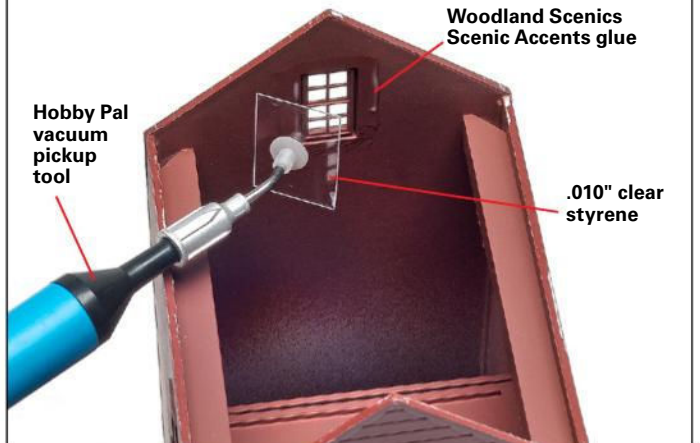
Drybrush with
Reefer Gray and
Shadows Flesh



Woodland Scenics
Scenic Accents glue

Hobby Pal
vacuum
pickup
tool

.010" clear
styrene



TO WRAP UP the coal tower project, I again use Reefer Gray to drybrush the tower and hoist house. The weathering looks a bit heavy, so I drybrush over the gray with Acrylicos Vallejo Shadows Flesh, not cleaning the brush between colors. This simulates the look of faded and chipped paint. Then I spray the both structures and their roofs with MicroLux no. 29006 acrylic Clear Flat Finish, giving everything a uniform dull finish.

I apply Woodland Scenics Scenic Accents glue, a pressure-sensitive adhesive, around each window opening. Then I use the Hobby Pal vacuum pickup tool (available from Micro-Mark and Walthers) to press the .010" clear styrene window glazing into place.

After attaching the roof to the tower and hoist house with Plastruct Bondene, I install the structures on the layout, completing our locomotive servicing area. **S&SP**

DETAILS TO MAKE YOUR RAIL YARD REALISTIC



Visits to railroad yards in the United States and Canada inspired Horst Meier to add weeds and other details to his club's North American-themed layout in Germany.

Vegetation, spilled loads, roads, and industrial debris add texture and interest

BY HORST MEIER • PHOTOS BY THE AUTHOR UNLESS NOTED

>> RAILROAD YARDS aren't just vast acres of ballast and gravel. Small plants and grass, the remnants of carloads, trash or debris often catches your eye, sometimes in a very picturesque way. There are also service roads winding through them for employee access.

When the book *North American Rail-yards* by Michael Rhodes (MBI Publishing Co., 2003) came into my hands, the title photo brought back the impressions I had visiting North American yards.

In our club in Germany, we're working on a classification yard with more than 10 tracks, and the plain ballasted tracks looked a little bit boring with just gravel and sand. Using prototype photos as our guide, we detailed the space between the tracks by adding grass, garbage, and debris from carloads.

Follow along as I show how I used both commercial materials and scraps from my workshop to improve the look of our yard.

MATERIALS LIST

Track/vegetation

Different ballast in various sizes and scales
Flock
Electrostatic grass fibers

Adhesive

Matte medium

Miscellaneous

Real dust and dirt
Metal and wood chips from previous projects
Coal and coke remains
Bits of fine sand
Scraps of track-building material

STEP 1 ALL KINDS OF DIRT



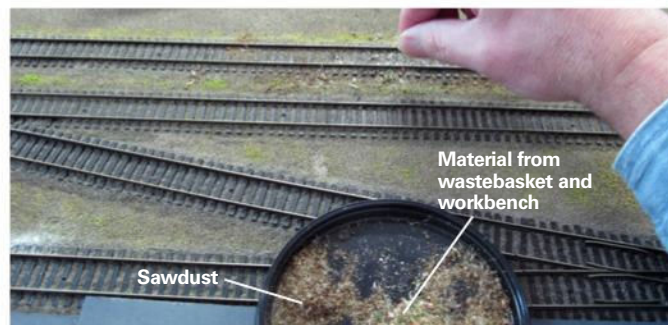
Remains of carloads, oil drippings, or just garbage can be found in large rail yards, such as the Union Pacific's yard in Green River, Wyo. Peter Roth photo



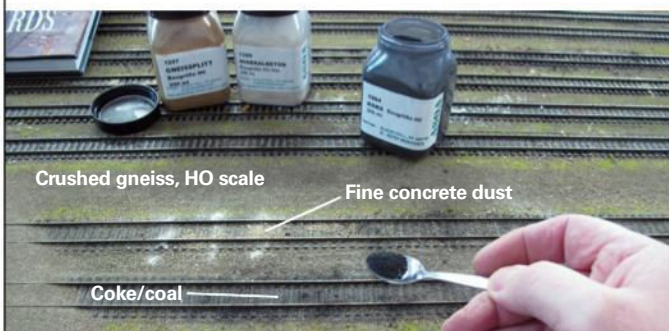
Maintenance-of-way material like rails, tie plates, spikes, joint bars, bits of wood, and broken barrels or cases can be found between the tracks.



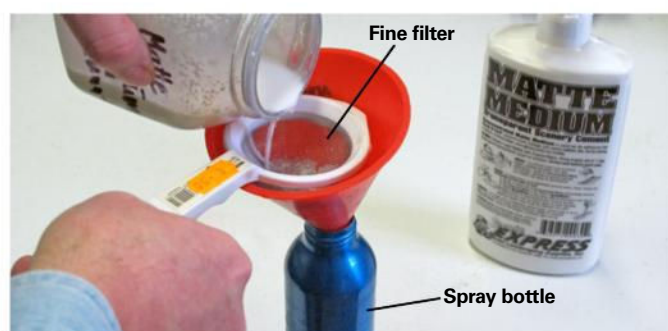
Horst found a variety of materials by searching his workbench and wastebasket.



Horst sprinkles material he has collected to simulate debris in the railroad yard.



Use a spoon to spread fine material.



Filter matte medium before spraying to limit clogging.

THE LAND AROUND a yard is filled with weeds, grass, and shrubs. I reproduce this with fine Woodland Scenics turf, larger pieces of clump foliage, static grass, and grass tufts.

Not only does nature leave its mark in the railroad yard, much of the debris is man-made. Finding material to model the man-made debris isn't really a challenge, and it can be done economically. I searched through the wastebasket in my workshop and found wood chips, dust, dirt, bits of flock and turf, and plastic flash from model kits I'd assembled.

From the workbench I found chips from drilling aluminum or steel and fine, bright bird sand. [Keep metal chips away from track. —Ed.] This stuff can be used to model spilled debris from loads, such as coal or gravel, items that fell from open cars, or spilled ore.

There's also cribbing, bracing, and packing material on open cars; dust; and even bits of bark. Sand piles up near the track from locomotives on start-up and braking.

I sprinkle the material between yard tracks with a small spoon. If possible, I use different material in various sizes and from several sources to get a varied look. Then I wet these areas with a sprayer filled either with isopropyl alcohol or a mixture of water and a few drops of dish-washing detergent to break the surface tension. This allows the adhesive to soak into the material.

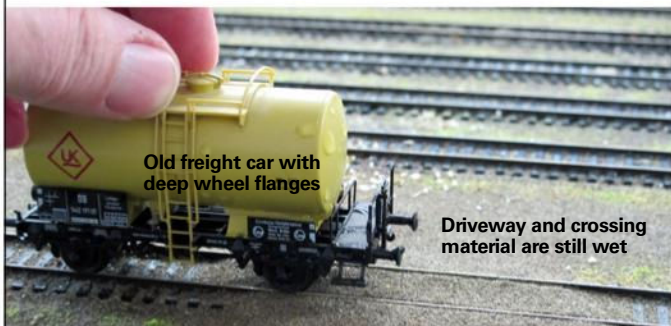
I use two methods to secure the scenery material. In small and/or clearly defined yard areas, I drizzle thinned white glue with an eyedropper in the area being worked. This is time-consuming, but it's important to be careful around turnouts or between closely spaced buildings.

In large areas, I'll use a hand pump sprayer with thinned cement, but be careful: glue tends to block the spray nozzle. I use matte medium from Scenic Express thinned 1:4 with water. This produces a fine, atomized spray, but even this mixture should be strained through a very fine filter to prevent clumps.

STEP 2 ROADS IN THE YARD



A road snakes through the BNSF Ry. yard at Barstow, Calif.



An old freight car with deep flanges can be used to cut flangeways in the road crossing.

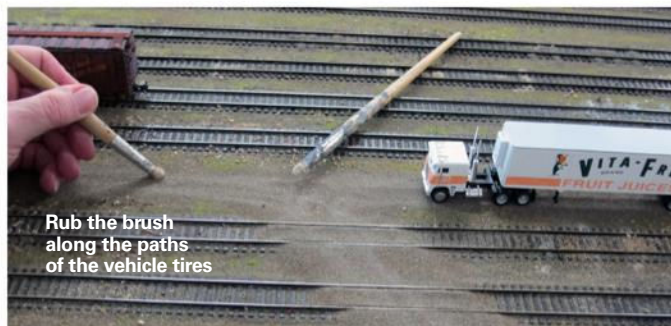
ROADS ALSO WEND THEIR WAY through rail yards. Here's how I model a gravel crossing and an access road.

First, I mask the area for the road and crossing with two sheets of paper. Then I sprinkle the space between them with fine sand. I apply a final layer of fine ballast in various textures and colors. With the mixture in place, I wet it as described in **Step 1**. Next, I fix the material with thinned glue or matte medium.

After the road material has begun to set a little bit, I roll a freight car with deeper wheel flanges over the rails to



Horst uses scrap paper to mask out the area for his road.



Old, well-used brushes with stiff bristles are best for smoothing paths in the gravel road.

create flangeways and clear the rails of any road material. A small screwdriver can also help to clear the rails.

The top surface of the crossing on both sides of the rail should be below the top of rail so you can clean the track without interfering with the modeled driveway.

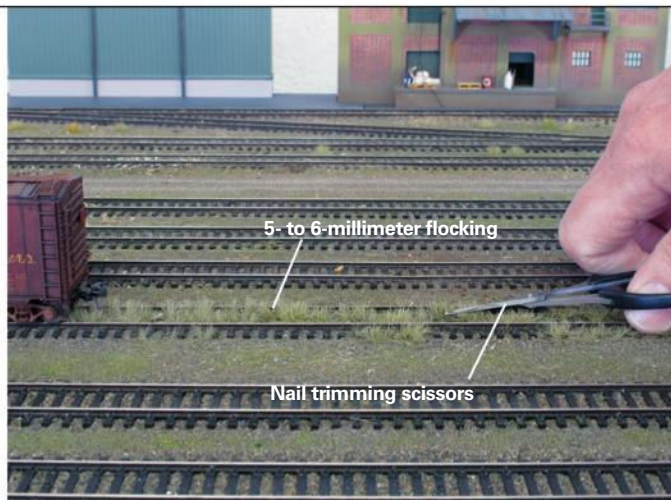
Now I'll work on the roadway itself. First I add some ground foam to simulate the weeds between the tire paths. Then I smooth the path where the wheels of vehicles have compacted the gravel using a hard, short brush. This greatly improves the looks of the road.

STEP 3 CUTTING CREW



Grass grows between the ties of seldom-used tracks at the Canadian National yard in Jasper, Alberta, Canada.

ONE LAST DETAIL is the result of leaking grain cars. Spilled grain leads to an undesired growth of plants. I use grass flocking to model this, but the short fibers don't look very realistic, so I use longer ones, about 5 to 6 millimeters,



Horst uses flocking to simulate the growth of grain between the rails, trimmed so it won't derail rolling stock.

then trim them with nail scissors to keep them from interfering with passing freight cars.

The same method can also work on seldom-used tracks that have sprouted weeds. **S&SP**

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